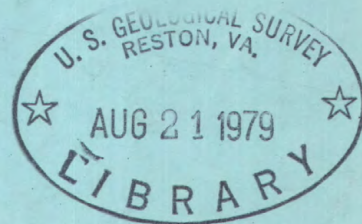


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Water Resources Data for North Dakota Water Year 1977



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT ND-77-1

Prepared in cooperation with the State of North Dakota
and with other agencies

CALENDAR FOR WATER YEAR 1977

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Water Resources Data for North Dakota Water Year 1977



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT ND-77-1

**Prepared in cooperation with the State of North Dakota
and with other agencies**

UNITED STATES DEPARTMENT OF THE INTERIOR

CECIL D. ANDRUS, Secretary

GEOLOGICAL SURVEY

Dr. H. William Menard, Director

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821 East Interstate Avenue
Bismarck, North Dakota 58501

PREFACE

This report was prepared by the U.S. Geological Survey in cooperation with the State of North Dakota and with other agencies, by personnel of the North Dakota district of the Water Resources Division under the supervision of W. R. Scott, District Chief, and Alfred 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 G. W. Whetstone, Assistant Chief Hydrologist for Scientific Publications and Data Management.

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

VII

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

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WATER RESOURCES DATA FOR NORTH DAKOTA, 1977

INTRODUCTION

Water resources data for the 1977 water year for North Dakota consist of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water-levels and water quality of ground water. This report contains discharge records for 131 gaging stations; stage and contents for 13 lakes and reservoirs; water quality for 49 gaging stations, 13 partial-record stations, 12 lakes, 27 wells, and water levels for 33 observation wells. Additional water data were collected at various sites, not involved in the systematic data collection program, and are published as miscellaneous measurements. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State and Federal agencies in North Dakota.

Records of discharge of streams, and contents 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 in the United States or may be purchased from Branch of Distribution, U.S. Geological Survey, 604 South Pickett Street, Alexandria, VA 22304.

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. These reports provided rapid release of preliminary water data shortly after the end of the water year. The final data were then released in the water-supply paper series mentioned above. Beginning with the 1975 water year, water data will be released on a State-boundary basis in final form and will not be republished in the water-supply paper series. The 1976 and

subsequent water year reports will be in a series which will 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 report is identified as "U.S. Geological Survey Water-Data Report ND-77-1." Water-Data reports are for sale by the National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia, 22161.

COOPERATION

The U.S. Geological Survey and organizations of the State of North Dakota have had cooperative agreements for the systematic collection of streamflow records since 1903, for ground-water levels since 1937, and for water-quality records since 1946. Organizations that assisted in collecting data through cooperative agreement with the Survey are:

North Dakota State Water Commission
Vernon Fahy, Chief Engineer.

Oliver County Board of Commissioners
John Weber, Chairman.

Assistance in the form of funds or services was given by other Federal agencies:

Corps of Engineers, U.S. Army
International Joint Commission, U.S. Department of State
Bureau of Land Management, U.S. Department of the Interior
Bureau of Reclamation, U.S. Department of the Interior
Fish and Wildlife Service, U.S. Department of the Interior
Surveillance and Analysis Division, U.S. Environmental
Protection Agency
Soil Conservation Service, U.S. Department of Agriculture
Other Federal agencies of the U.S. Department of Interior
for the development of the Missouri River basin.

Certain stations are maintained under agreement with Canada and the records are obtained and compiled in a manner equally acceptable in both countries. Most of these stations are designated as "International gaging stations."

ACKNOWLEDGMENT

North Dakota personnel who contributed significantly to the preparation of this report were: D. B. Hanson, D. G. Emerson, O. O. Holmen, R. A. Pewe, D. J. Ackerman and J. E. Wagner.

HYDROLOGIC CONDITIONS

Streamflow was generally much below normal across the State. The drought which began in 1976 persisted most severely in the eastern half of the State. Thunderstorms, some of which dropped four or more inches of rain over isolated areas, resulted in only slightly below normal runoff in the southwestern part of the State. Streamflow at the two index stations, the Cannonball River at Breien and the Red River of the North at Grand Forks, was 56 percent and 19 percent, respectively, of the 1941-70 median (see fig. 3).

The mean annual discharge of the Red River of the North at Grand Forks was the lowest since 1935, reflecting the extremely dry conditions throughout the Red River of the North valley. Water conservation was observed by most communities in that area but water rationing was not implemented.

The drought was broken near the end of the water year with rains bringing relief to the entire State. Several weather stations reported record precipitation for the month of September.

Reservoir levels were below normal in all but the southwestern part of the State. Releases were held to a minimum in expectation of continuing drought conditions. At the end of the water year, however, most reservoirs were rising and were near normal.

Ground-water levels were much below normal in nearly all sections of the State. Record lows were recorded in many wells in the eastern part of the State.

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 English 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.

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 + 0.5°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 $35^{\circ}\text{C} + 0.5^{\circ}\text{C}$ on KF Streptococcus 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 a streambed, lake, pond, reservoir, or estuary bottom is composed.

Benthic organisms (invertebrates) are animals inhabiting the bottom of an aquatic environment. They include a number of different types of organisms, such as bacteria, fungi, insect larvae and nymphs, snails, clams, and crayfish. They are frequently used as indicators of environmental quality because many have restricted mobility during their aquatic life phase, as well as a relatively long lifespan which allows for response to prevailing and changing water-quality conditions. Many benthic organisms inhabit specific types of environments, which if changed, results in changes in the composition of the benthic community.

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 milligrams per cubic meter (mg/m^3), and periphyton and benthic organisms in milligrams per square meter (mg/m^2).

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.

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.

Coliform organisms are a group of bacteria used as an indicator of the sanitary quality of the water. The number of coliform colonies per 100 milliliters is determined by the immediate incubation membrane filter method.

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

Continuing-record station is a specified site which meets one or all conditions as listed:

1. When chemical samples are collected daily or monthly for 10 or more months during the water year.
2. When water temperature records include observations taken once or more times daily.
3. When sediment discharge records include those periods for which sediment loads are computed and are considered to be representative of the runoff for the water year.

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 refers to the amount of substance present in true chemical solution. In practice, however, the term includes all forms of substance that will pass through a 0.45 micrometer membrane filter, and thus may include some very small (colloidal) suspended particles. Analyses are performed on filtered samples.

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

$$D = - \sum_{i=1}^s \frac{n_i}{n} \log_2 \frac{n_i}{n}$$

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

Drainage area of a stream at the 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 noncontributing areas, within the area unless otherwise noted.

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

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

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

Hardness of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap required to produce lather. It is attributable to the presence of alkaline earths (principally calcium and magnesium) and is expressed as equivalent calcium carbonate (CaCO_3).

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

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

Methylene blue active substance (MBAS) is a measure of apparent detergents. This determination depends on the formation of a blue color when methylene blue dye reacts with synthetic detergent compounds.

Micrograms per gram (UG/G, $\mu\text{g/g}$) 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, $\mu\text{g/L}$) 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.

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

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 multi-celled and are counted according to the number of contained cells per sample volume, usually milliliters (mL) or liters (L).

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.

Periphyton is the assemblage of microorganisms attached to and growing upon solid surfaces. While primarily consisting of algae, they also include bacteria, fungi, protozoa, rotifers, and other small organisms. Periphyton is a useful indicator of water quality.

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.

pH indicates the degree of acidity or alkalinity of water and is expressed in terms of pH units. The pH value of a solution is the negative logarithm of the concentration of hydrogen ions, in moles per liter. A pH of 7.0 indicates that the water is neither acid nor alkaline. pH readings progressively lower than 7.0 denote increasing acidity and those progressively higher than 7.0 denote increasing alkalinity. The pH of most natural surface waters ranges between 6 and 8.

Picocurie (PC, pCi) is one trillionth (1×10^{12}) of the amount of radioactivity represented by a curie (Ci).¹⁰ 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.

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.

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

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

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

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

Specific conductance is a measure of the ability of a water to conduct an electrical current. It is expressed in 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 is the height of a water surface above an established datum plane; also gage height.

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 a surface stream course. The term "streamflow" is more general than "runoff" as streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

Substrate is the physical surface upon which an organism lived.

Natural substrate refers to any naturally occurring emersed or submersed solid surface, such as a rock or tree, 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 multiplate samplers (made of hard-board) for benthic organism collection, and polyethylene strips for periphyton collection.

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.....	<u>Hexagenia</u>
Species.....	<u>Hexagenia limbata</u>

Thermograph is a thermometer that continuously and automatically records, on a chart, the water temperature of a stream. "Temperature recorder" is the term used to indicate the presence of a thermograph or a digital mechanism that automatically records water temperatures on paper tape.

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 a substance in solution or suspension that passes a stream section during a 24-hour day.

Total (as used in tables of chemical analyses) refers to the amount of a substance that is present both in solution and in suspension. Analyses are performed on representative samples of water-suspended sediment mixtures.

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 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 indention in a list of stations in the front of the report. Each indention represents one rank. This downstream order and system of indention show which stations are on tributaries between any two stations and the rank of the tributary on which each station is situated.

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 for a partial-record station indicates downstream-order position in a list made up of both types of stations. Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete 8-digit number for each station such as 05051700, which appears just to the left of the station name, includes the 2-digit part number "05" plus the 6-digit downstream order number "051700".

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 below.

In order to compare data for wells in other publications, such as the county ground-water studies, the wells in this report are also numbered according to a system based on the location in the public land classification of the U.S. Bureau of Land Management. The system is illustrated in figure 2. The first numeral denotes the township north of a base line, the second numeral denotes the range west of the fifth principal meridian, and the third numeral denotes the section in which the well is located. The letters A, B, C, and D designate, respectively, the northeast, northwest, southwest, and southeast quarter section, quarter-quarter section, and quarter-quarter-quarter section (10-acre or 4-hectare tract). For example, well 139-049-15ADC is in the SW $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 15, T. 139 N., R. 049 W. Consecutive terminal numerals are added if more than one well is recorded within a 10-acre tract.

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.

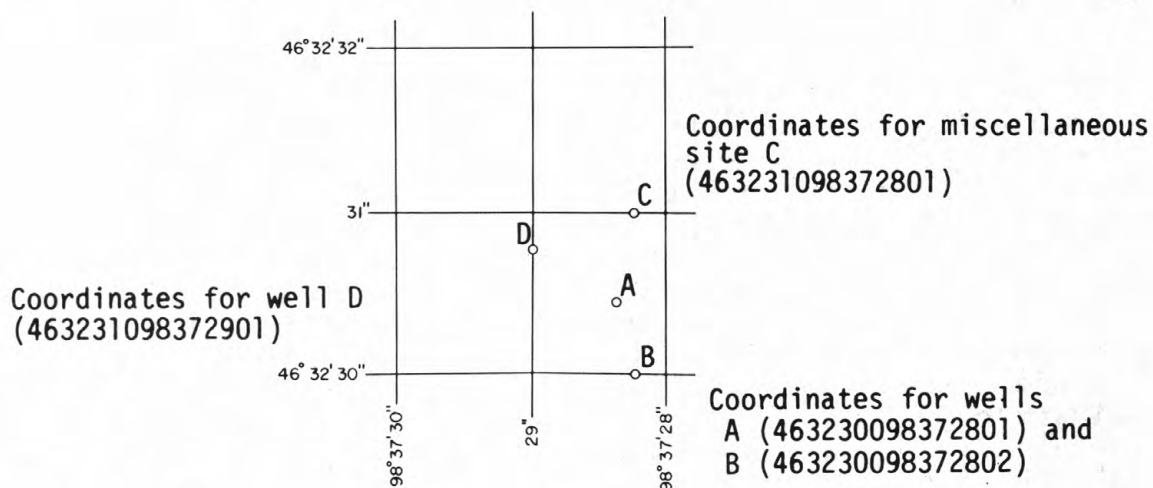


FIGURE 1--System for numbering wells and miscellaneous sites (latitude and longitude)

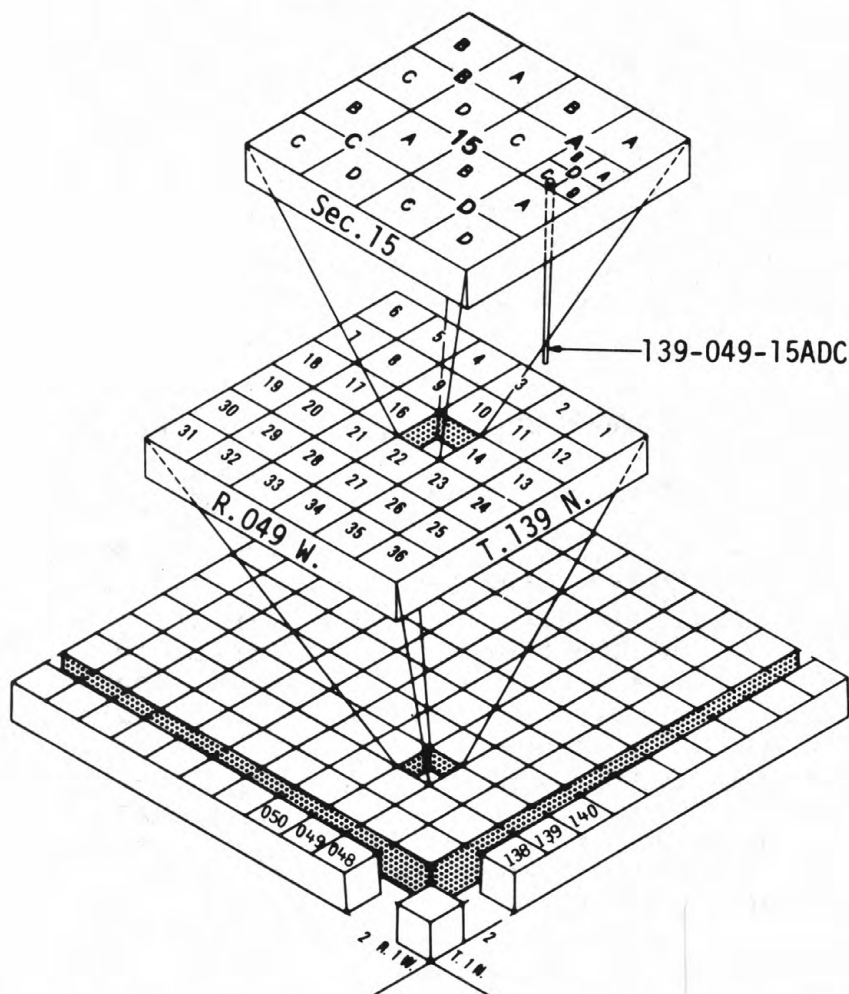


FIGURE 2--System for numbering wells and miscellaneous sites (township and range)

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. Areal 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

Collection and computation of data

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, observations 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 text books, 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 discharge 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 the backwater from reservoirs, tributary streams, or other sources. This necessitates the use of the slope method in which the slope or fall in a reach of the stream is a factor in computing discharge. The slope or fall is obtained by means of an auxiliary gage set at some distance from the base gage. At some stations the stage-discharge relation is affected by changing stage; at these stations the rate of change in stage is used as a factor in computing discharge.

At some stream-gaging stations the stage-discharge relation is affected by ice in the winter, 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 station, 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 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.

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 the 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 above mean sea level, and a condensed history of the types, locations, and datums of previous gages used during the period of record are given under "GAGE." In references to datum of gage, the phrase "mean sea level" denotes "Sea Level Datum of 1929" as used by the Topographic Division of the Geological Survey unless otherwise qualified.

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 addition, the median of yearly mean discharges is given for stations that have 10 or more complete years of record, if the median differs from the average by more than 10 percent. Under "EXTREMES" are given first, the extremes for the period of record, second, information available outside the period of record, and last, 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.

Skelton rating tables are published, immediately following EXTREMES, for stream-gaging stations where they serve a useful purpose and the dates of applicability can be easily identified.

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. Discharge 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 annual maximum stage and discharge at crest-stage stations and the second is a table of both low flow and high flow measurements. 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 discharges 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 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 on the availability of unpublished data or statistical analyses may be obtained from the district office.

Records of discharge collected by agencies other than
the Geological Survey

The National Water Data Exchange, Water Resources Division, U.S. Geological Survey, National Center, Reston, Va. 22092, maintains an index of all discharge measurement sites in the State. Information on records available at specific sites can be obtained upon request.

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 temperature or sediment discharge) extremes for the period of daily record; extremes for the current year; and general remarks.

For ground-water records, no descriptive statements are given; however, the well number, depth of well, date of sampling and/or other pertinent data are given in the table containing the chemical analyses of the ground water.

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 case where an apparent inconsistency exists between a reported pH value and the relative abundance of carbon dioxide species (carbonate and bicarbonate), the inconsistency is the result of a slight uptake of carbon dioxide from the air by the sample between measurement of pH in the field and determination of carbonate and bicarbonate in the laboratory.

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

Water temperature

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

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

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 discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided day method. For periods when no samples were collected, daily loads of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge.

At other stations, suspended-sediment samples were collected periodically 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.

EXPLANATION OF GROUND-WATER LEVEL RECORDS

Collection of 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 figures 1 and 2.

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 mean sea level (msl) or land-surface datum (lsd). Mean sea level 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 mean sea level is given in the well description. The height of 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 in determining the absolute value of the total depth to water may be a few tenths of a foot, whereas the error in determining the net change of water level between successive measurements may be only a hundredth or a few hundredths of a foot. For lesser depths to water the accuracy is greater. Accordingly, most measurements are reported to a hundredth of a foot, but some are given only to a tenth of a foot or a larger unit.

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 January 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. 1973. 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. \$0.65.
- 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. \$0.35.
- 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. Ehlike, 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.

*These publications are available ONLY from Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. They are in looseleaf format and are subscription items. Additional supplements will be issued to subscribers at no extra cost. Checks should be made payable to Superintendent of Documents. Requester should emphasize to Superintendent of Documents that this is a subscription item.

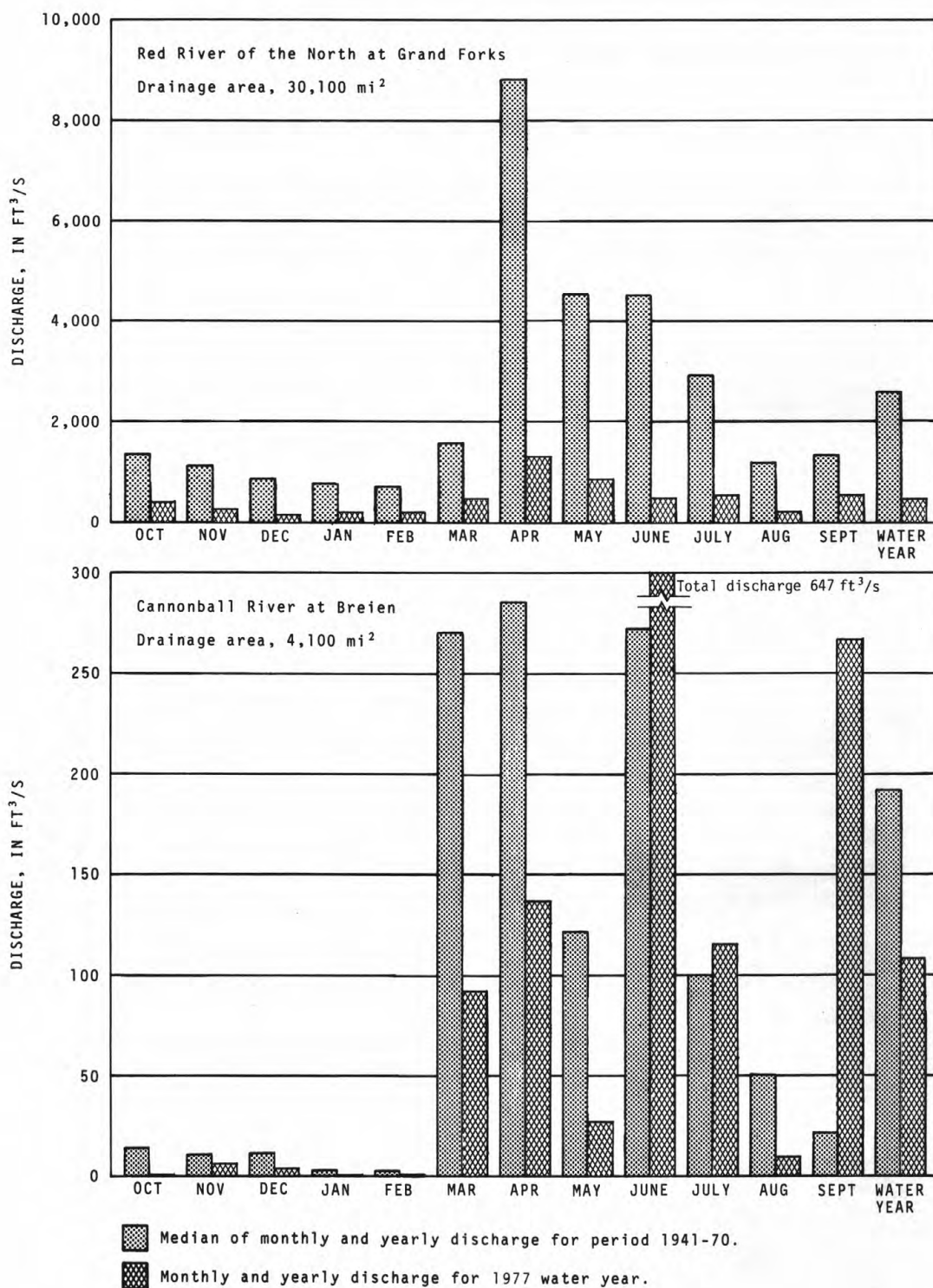


FIGURE 3.--Discharge during 1977 water year compared with median discharge for period 1941-70 for two representative gaging stations.

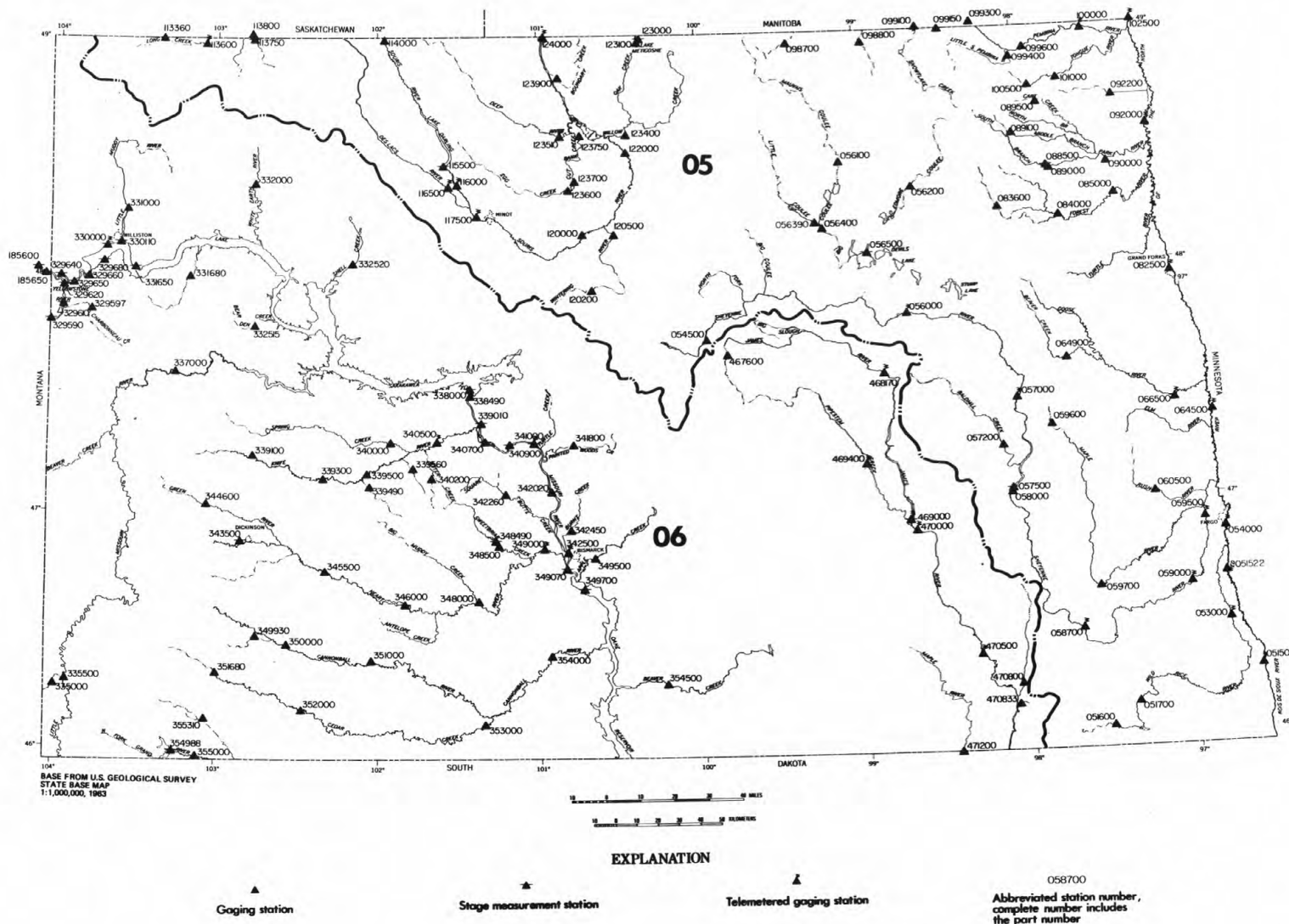
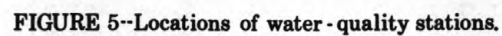
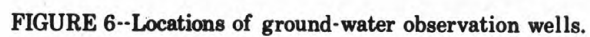


FIGURE 4- Locations of lake and stream gaging stations.





RED RIVER OF THE NORTH BASIN

05050000 BOIS DE SIOUX RIVER NEAR WHITE ROCK, SD

LOCATION.--Lat 45°51'45", long 96°34'25", in SW¼SW¼ sec.27, T.128 N., R.47 W., Roberts County, Hydrologic Unit 09020101, on left bank just downstream from Big Slough Outlet, 300 ft (91 m) downstream from White Rock Dam, 4 mi (6 km) south of White Rock, and 5 mi (8 km) northwest of Wheaton, Minn.

DRAINAGE AREA.--1,160 mi² (3,000 km²), approximately.

PERIOD OF RECORD.--October 1941 to current year.

GAGE.--Water-stage recorder. Datum of gage is 960.00 ft (292.608 m) above mean sea level, adjustment of 1912 (levels by Corps of Engineers). Prior to Jan. 14, 1943, nonrecording gage at same site at datum 0.11 ft (0.034 m) lower. Jan. 15, 1943, to Sept. 30, 1963, water-stage recorder at same site at datum 0.11 ft (0.034 m) lower.

REMARKS.--Records fair. Flow regulated by Lake Traverse-Bois de Sioux Flood Control and Water Conservation project, available capacity for flood control, 137,000 acre-ft (169 hm³).

AVERAGE DISCHARGE.--36 years, 75.2 ft³/s (2.130 m³/s), 54,480 acre-ft/yr (67.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,770 ft³/s (107 m³/s), occurred during period Apr. 19-21, 1969, gage height, 15.07 ft (4.593 m), from floodmark; no flow at times in most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 27 ft³/s (0.76 m³/s) Mar. 13, gage height, 5.52 ft (1.682 m), backwater from ice; no flow for several months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						0	.65	.97	.06	.01	.01	.05
2						0	.65	.68	.02	.01	.01	.05
3						0	.65	.48	0	.01	0	.04
4						0	.65	.33	0	.01	0	.05
5						0	.65	.81	0	.01	0	.04
6						0	.65	.88	0	.01	0	.03
7						0	.65	.65	0	.01	0	.04
8						0	.65	.57	0	.01	0	.01
9						0	.62	.40	0	.01	0	.01
10						.01	.57	.26	0	.01	0	.01
11						.02	.54	.20	0	.04	0	0
12						.05	.47	.18	0	.05	0	0
13						.88	.43	.17	0	.04	0	0
14						19	.46	.10	0	.04	0	0
15						15	.60	.03	0	.05	.04	0
16						11	.69	.02	0	.05	.05	0
17						10	.97	.06	0	.04	.03	0
18						8.6	3.8	.02	0	.02	.01	0
19						7.5	3.8	.02	0	0	.01	.02
20						5.0	2.7	.02	0	0	.01	.02
21						3.0	2.9	.04	0	0	.01	.02
22						2.4	2.0	.06	0	0	.01	.13
23						1.7	2.9	.02	.02	0	.01	.18
24						1.0	2.1	.01	.03	0	0	.43
25						.70	1.5	0	0	0	0	.65
26						.64	1.5	0	0	0	0	.63
27						.58	1.2	0	.06	.01	.01	.13
28						.52	.83	0	.09	.01	.01	.05
29					---	.65	.69	.01	.01	.01	.01	.01
30					---	.78	.64	.02	0	.02	.01	.02
31		---			---	.70	---	.05	---	.02	.03	---
TOTAL	0	0	0	0	0	89.73	37.11	7.06	.29	.50	.27	2.62
MEAN	0	0	0	0	0	2.89	1.24	.23	.010	.016	.009	.087
MAX	0	0	0	0	0	19	3.8	.97	.09	.05	.05	.65
MIN	0	0	0	0	0	0	.43	0	0	0	0	0
AC-FT	0	0	0	0	0	178	74	14	.6	1.0	.5	5.2
CAL YR 1976	TOTAL	11632.06	MEAN 31.8	MAX 434	MIN 0	AC-FT 23070						
WTR YR 1977	TOTAL	137.58	MEAN .38	MAX 19	MIN 0	AC-FT 273						

RED RIVER OF THE NORTH BASIN

35

05051500 RED RIVER OF THE NORTH AT WAHPETON, ND

LOCATION.--Lat 46°15'55", long 96°35'40", in NE¼ sec.8, T.132 N., R.47 W., Richland County, Hydrologic Unit 09020104, on left bank in Wahpeton, 800 ft (240 m) downstream from confluence of Bois de Sioux and Otter Tail Rivers and at mile 548.6 (kilometer 882.7).

DRAINAGE AREA.--4,010 mi² (10,390 km²), approximately.

PERIOD OF RECORD.--April 1942 to current year. Gage-height records collected in this vicinity since 1917 are contained in reports of the U.S. Weather Bureau.

GAGE.--Water-stage recorder and concrete and wooden dam. Datum of gage is 942.97 ft (287.417 m) above mean sea level. Prior to Aug. 6, 1943, U.S. Weather Bureau nonrecording gage 800 ft (240 m) upstream, converted to present datum. Aug. 6, 1943, to Oct. 27, 1950, nonrecording gage at present site and datum.

REMARKS.--Records good. Flow regulated by Orwell Reservoir, capacity, 14,100 acre-ft (17.4 hm³) at elevation 1,070 ft (326.136 m) above mean sea level, adjustment of 1912; Lake Traverse, capacity, 137,000 acre-ft (169 hm³), available for flood control; numerous other controlled lakes and ponds, and several powerplants.

AVERAGE DISCHARGE.--34 years (1943-77), 517 ft³/s (14.64 m³/s) 374,600 acre-ft/yr (462 hm³/yr); median of yearly mean discharges, 470 ft³/s (13.3 m³/s) 341,000 acre-ft/yr (420 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,200 ft³/s (261 m³/s) Apr. 10, 1969, gage height, 16.34 ft (4.980 m); minimum daily, 1.7 ft³/s (0.048 m³/s) Aug. 28 to Sept. 5, 9, 10, 1976; minimum observed gage height, 0.63 ft (0.192 m) Aug. 29, 1976.

EXTREMES OUTSIDE PERIOD OF RECORD.--A stage of 17.0 ft (5.182 m), discharge, 10,500 ft³/s (297 m³/s) occurred in the spring of 1897 and has not been exceeded since.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 526 ft³/s (14.9 m³/s) June 25, gage height, 4.49 ft (1.369 m); minimum daily, 2.0 ft³/s (0.057 m³/s) Nov. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.0	8.0	5.0	7.8	14	20	121	60	16	90	35	161
2	3.0	8.0	5.0	7.8	14	20	101	40	13	77	36	120
3	3.0	8.0	4.6	7.8	14	20	90	34	13	73	35	70
4	3.0	8.0	4.6	7.8	14	20	79	30	12	81	35	94
5	3.0	2.0	4.6	7.8	14	20	66	30	8.8	83	34	113
6	3.0	2.5	4.6	7.8	14	20	59	35	7.7	77	35	116
7	3.0	3.0	4.6	7.8	14	25	50	50	6.6	74	41	137
8	3.0	4.0	4.6	7.8	15	30	54	45	6.0	72	40	116
9	3.0	5.5	4.6	7.8	15	45	64	40	5.3	80	37	99
10	3.0	7.5	4.6	7.8	17	42	70	29	5.4	73	35	101
11	3.0	7.6	4.6	7.8	18	50	66	25	7.4	76	32	103
12	3.0	7.5	4.8	7.8	20	80	56	20	9.2	70	32	103
13	3.0	7.5	5.0	7.8	20	80	55	15	12	70	35	103
14	4.1	7.5	6.0	7.8	20	110	100	18	14	66	34	101
15	4.1	7.5	7.0	7.8	20	170	200	11	29	58	40	101
16	4.1	7.5	8.0	7.8	20	160	300	9.9	36	67	40	101
17	5.0	7.5	8.5	7.5	20	140	270	12	74	65	40	101
18	7.5	7.5	8.5	7.5	20	85	236	11	155	63	38	118
19	8.8	7.5	8.5	7.5	20	65	250	11	109	58	38	116
20	9.0	7.5	8.3	7.5	20	55	300	11	71	57	36	120
21	9.0	8.0	8.3	7.5	20	45	250	12	62	60	36	135
22	9.0	10	8.2	7.5	20	45	150	15	74	60	36	193
23	9.0	10	8.2	7.5	20	40	170	14	116	105	36	190
24	9.0	10	8.0	7.8	20	45	200	13	243	73	36	225
25	9.0	10	8.0	8.0	20	65	170	12	513	62	39	257
26	9.0	10	8.0	10	20	143	152	12	415	57	65	220
27	8.5	10	8.0	14	20	250	140	14	281	49	74	206
28	8.5	9.5	8.0	14	20	218	130	16	161	31	70	260
29	8.5	7.0	8.0	14	---	185	110	13	113	33	126	307
30	8.2	6.0	8.0	14	---	179	80	17	113	39	200	287
31	8.0	---	8.0	14	---	140	---	23	---	35	212	---
TOTAL	177.3	222.1	204.7	273.1	503	2612	4139	697.9	2701.4	2034	1658	4474
MEAN	5.72	7.40	6.60	8.81	18.0	84.3	138	22.5	90.0	65.6	53.5	149
MAX	9.0	10	8.5	14	20	250	300	60	513	105	212	307
MIN	3.0	2.0	4.6	7.5	14	20	50	9.9	5.3	31	32	70
AC-FT	352	441	406	542	998	5180	8210	1380	5360	4030	3290	8870

CAL YR 1976 TOTAL 90342.5 MEAN 247 MAX 2650 MIN 1.7 AC-FT 179200
WTR YR 1977 TOTAL 19696.5 MEAN 54.0 MAX 513 MIN 2.0 AC-FT 39070

RED RIVER OF THE NORTH BASIN

05051522 RED RIVER OF THE NORTH AT HICKSON, ND

LOCATION.--Lat 46°39'35", long 96°47'44", in SW¼ sec.19, T.137 N., R.48 W., Clay County, Minnesota, Hydrologic Unit 09020104, on right bank 60 ft (18 m) downstream from bridge on township road 1 mi (2 km) southeast of Hickson.

DRAINAGE AREA.--4,300 mi² (11,100 km²), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1975 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 890 ft (271.3 m) from topographic map.

REMARKS.--Records good. Flow regulated by Orwell Reservoir, capacity, 14,100 acre-ft (17.4 hm³) at elevation 1,070 ft (326.136 m) above mean sea level, adjustment of 1912; Lake Traverse, capacity, 137,000 acre-ft (169 hm³), available for flood control; numerous other controlled lakes and ponds, and several powerplants.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 2,500 ft³/s (70.8 m³/s) Mar. 31, 1976, gage height, 16.94 ft (5.163 m), observed, backwater from ice; no flow from Oct. 26, 1976 to Jan. 9, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 408 ft³/s (11.6 m³/s) June 27, gage height, 10.30 ft (3.139 m); no flow Oct. 26 to Jan. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.7			0	7.0	25	224	62	23	152	26	166
2	2.7			0	7.0	25	220	33	23	128	28	205
3	2.7			0	7.5	25	195	23	23	108	26	191
4	2.7			0	7.5	25	180	19	20	89	28	148
5	2.7			0	8.0	25	160	24	19	85	28	104
6	2.5			0	8.0	25	121	27	16	85	26	79
7	2.5			0	8.0	25	129	44	15	85	28	88
8	2.5			0	8.0	25	139	39	13	74	29	94
9	2.5			0	8.5	25	101	23	10	68	35	107
10	2.5			6.5	8.5	25	73	20	8.4	55	37	127
11	2.5			7.0	9.0	25	76	22	6.8	71	35	111
12	2.5			7.0	9.0	25	92	24	6.8	78	31	94
13	2.5			7.0	9.5	25	100	24	6.8	74	29	89
14	2.5			7.0	9.5	25	89	23	5.3	64	29	92
15	2.5			7.0	9.5	25	93	19	6.8	68	29	89
16	2.5			7.0	9.5	74	89	18	12	74	33	89
17	2.5			7.0	20	85	276	18	16	64	33	88
18	2.5			7.0	20	93	288	18	24	61	37	85
19	2.5			7.0	20	128	224	15	78	58	37	91
20	2.5			7.0	20	144	268	12	164	51	35	98
21	2.5			7.0	20	124	292	12	160	52	32	107
22	2.5			7.0	20	104	236	15	124	49	30	128
23	2.5			7.0	20	78	152	17	89	53	29	178
24	2.5			7.0	22	78	148	18	85	71	26	255
25	1.5			7.0	22	89	172	16	112	116	25	263
26	0			7.0	24	89	191	16	260	93	27	306
27	0			7.0	25	104	183	15	388	64	41	339
28	0			7.0	25	140	172	13	376	55	47	334
29	0			7.0	---	200	154	13	304	53	73	317
30	0			7.0	---	215	125	16	196	47	74	330
31	0	---		7.0	---	232	---	24	---	29	80	---
TOTAL	62.5	0	0	153.5	392.0	2352	4962	682	2590.9	2274	1103	4792
MEAN	2.02	0	0	4.95	14.0	75.9	165	22.0	86.4	73.4	35.6	160
MAX	2.7	0	0	7.0	25	232	292	62	388	152	80	339
MIN	0	0	0	0	7.0	25	73	12	5.3	29	25	79
AC-FT	124	0	0	304	778	4670	9840	1350	5140	4510	2190	9500
CAL YR 1976 TOTAL	94364.0			MEAN 258	MAX 2450	MIN 0	AC-FT 187200					
WTR YR 1977 TOTAL	19363.9			MEAN 53.1	MAX 338	MIN 0	AC-FT 38410					

RED RIVER OF THE NORTH BASIN
05051522 RED RIVER OF THE NORTH NEAR HICKSON, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1975 to current year.

REMARKS.--No flow Oct. 26, 1976 to Jan. 9, 1977.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1975 to current year.
WATER TEMPERATURES: October 1975 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,900 micromhos Jan. 27, 1977; minimum daily, 399 micromhos Aug. 6, 1976.
WATER TEMPERATURES: Maximum daily, 30°C July 23, 1977; minimum daily, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,900 micromhos Jan. 27; minimum daily, 430 micromhos Mar. 11.
WATER TEMPERATURES: Maximum daily, 30.0°C July 23; minimum daily, 0.0°C on many days during winter months.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	HARDNESS (CA, MG/L)	NON-CARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)
JAN											
21...	1045	6.9	1330	7.9	1.0	90	8	1.0	680	210	120
FEB											
14...	1445	9.4	1590	7.5	.5	55	9	1.0	800	160	140
MAR											
16...	1230	71	960	--	1.5	--	--	--	--	--	--
24...	1500	81	615	8.7	1.0	25	10	18.6	300	60	61
APR											
06...	1555	123	490	--	1.0	--	--	--	--	--	--
13...	1550	97	530	--	9.5	--	--	--	--	--	--
26...	1445	196	560	9.4	16.0	27	60	15.5	270	150	63
MAY											
25...	0910	15	740	8.2	23.0	11	5	7.1	360	110	76
JUN											
29...	1055	295	700	8.0	23.5	25	25	5.4	320	150	68
JUL											
26...	1015	92	650	8.2	25.0	13	25	5.0	330	73	65
AUG											
24...	0915	26	600	8.3	18.0	18	15	6.2	270	43	53
SEP											
21...	1005	101	600	8.4	15.5	12	10	8.2	290	49	57

DATE	DISSOLVED MAGNESIUM (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CaCO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)
JAN										
21...	92	55	15	.9	11	576	0	472	12	280
FEB										
14...	110	92	20	1.4	16	786	0	645	40	340
MAR										
16...	--	--	--	--	--	--	--	--	--	--
24...	35	20	13	.5	6.5	288	0	240	.9	91
APR										
06...	--	--	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	--	--	--
26...	28	16	11	.5	5.5	150	3	130	.1	160
MAY										
25...	41	25	13	.6	8.0	300	0	246	3.0	130
JUN										
29...	37	25	14	.6	6.8	210	0	170	3.4	180
JUL										
26...	40	20	11	.5	6.7	310	0	250	3.1	84
AUG										
24...	34	22	15	.6	6.3	280	0	230	2.2	84
SEP										
21...	37	18	11	.5	6.3	300	0	250	1.9	72

RED RIVER OF THE NORTH BASIN

05051522 RED RIVER OF THE NORTH NEAR HICKSON, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED CHLO- RIDE (CL) (MG/L)	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO ₂) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO- GEN (N) (MG/L)
JAN 21...	24	.3	16	938	883	1.28	17.5	.01	.01	.56
FEB 14...	44	.6	17	1180	1150	1.60	29.9	.04	.04	4.4
MAR 16...	--	--	--	--	--	--	--	--	--	--
24...	11	.2	7.5	389	383	.53	85.1	2.0	.89	.57
APR 06...	--	--	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	--	--	--
26...	5.4	.3	.1	348	355	.47	184	.00	.00	.01
MAY 25...	13	.3	4.4	473	446	.64	19.2	.01	.02	.07
JUN 29...	9.4	.2	11	464	441	.63	370	.02	.00	.26
JUL 26...	13	.2	12	386	394	.53	95.9	.05	.05	.09
AUG 24...	14	.2	6.6	356	358	.48	25.0	.03	.00	.06
SEP 21...	11	.2	7.1	368	357	.50	100	.03	.02	.00

DATE	TOTAL ORGANIC NITRO- GEN (N) (MG/L)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L)	TOTAL NITRO- GEN (N) (MG/L)	TOTAL NITRO- GEN (NO ₃) (MG/L)	TOTAL PHOS- PHORUS (P) (MG/L)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L)	TOTAL ORTHO PHOS- PHORUS (P) (MG/L)	TOTAL HYDRO- LYZABLE PHOS- PHORUS (P) (MG/L)	TOTAL ORTHO + HYDRO- PHOS- PHORUS (P) (MG/L)	TOTAL ORGANIC PHOS- PHORUS (P) (MG/L)
JAN 21...	.64	1.2	1.2	5.4	.15	.06	.16	.00	.13	.00
FEB 14...	.40	4.8	4.8	21	1.2	.84	.89	.21	1.1	.00
MAR 24...	1.3	1.9	3.9	17	.41	.17	.04	.24	.28	.09
APR 26...	1.3	1.3	1.3	5.8	.26	.05	.04	.17	.21	.01
MAY 25...	1.4	1.5	1.5	6.7	.30	.23	.10	.15	.25	.00
JUN 29...	1.3	1.6	1.6	7.2	.24	.07	.10	.09	.19	.00
JUL 26...	1.3	1.4	1.5	6.4	.19	.10	.09	.05	.14	.00
AUG 24...	1.0	1.1	1.1	5.0	.14	.07	.09	.01	.10	.00
SEP 21...	1.1	1.1	1.1	5.0	.11	.04	.01	.10	.11	.00

DATE	DIS- SOLVED ALUM- INUM (AL) (UG/L)	DIS- SOLVED ARSENIC (AS) (UG/L)	DIS- SOLVED BARIUM (BA) (UG/L)	DIS- SOLVED BERYL- LIUM (BE) (UG/L)	DIS- SOLVED BORON (B) (UG/L)	DIS- SOLVED CAD- MIUM (CD) (UG/L)	DIS- SOLVED CHRO- MIUM (CR) (UG/L)	DIS- SOLVED COBALT (CO) (UG/L)	DIS- SOLVED COPPER (CU) (UG/L)
JAN 21...	--	--	--	--	280	--	--	--	--
FEB 14...	--	--	--	--	530	--	--	--	--
MAR 24...	40	3	0	0	120	1	0	1	3
APR 26...	--	--	--	--	260	--	--	--	--
MAY 25...	--	--	--	--	130	--	--	--	--
JUN 29...	--	--	--	--	130	--	--	--	--
JUL 26...	--	--	--	--	130	--	--	--	--
AUG 24...	--	--	--	--	120	--	--	--	--
SEP 21...	--	--	--	--	120	--	--	--	--

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WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS-SOLVED SILVER (AG) (UG/L)	DIS-SOLVED STRONTIUM (SR) (UG/L)	DIS-SOLVED VANADIUM (V) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)	DIS-SOLVED ORGANIC CARBON (C) (MG/L)	SUSPENDED ORGANIC CARBON (C) (MG/L)	CYANIDE (CN) (MG/L)	PHENOLS (UG/L)
JAN 21...	--	--	--	--	22	.7	--	2
FEB 14...	--	--	--	--	18	1.1	--	1
MAR 24...	0	250	.1	10	9.9	<3.4	4.0	2
APR 26...	--	--	--	--	22	>5.0	--	6
MAY 25...	--	--	--	--	11	.6	--	1
JUN 29...	--	--	--	--	8.6	3.2	--	2
JUL 26...	--	--	--	--	8.7	1.0	--	2
AUG 24...	--	--	--	--	9.2	1.1	--	2
SEP 21...	--	--	--	--	8.5	14	--	3

[illegible]

RED RIVER OF THE NORTH BASIN

05051522 RED RIVER OF THE NORTH NEAR HICKSON, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL HEPTA- CHLOR (UG/L)	TOTAL HEPTA- CHLOR EPOXIDE (UG/L)	TOTAL LINDANE (UG/L)	TOTAL MALA- THION (UG/L)	TOTAL METHYL PARA- THION (UG/L)	TOTAL METHYL TRI- THION (UG/L)	TOTAL PARA- THION (UG/L)	TOTAL TOX- APHENE (UG/L)	TOTAL TRI- THION (UG/L)	TOTAL 2,4-D (UG/L)	TOTAL 2,4,5-T (UG/L)
JAN 21...	.00	.00	.00	.00	.00	.00	.00	0	.00	.16	.00
MAR 24...	.00	.00	.00	.00	.00	.00	.00	0	.00	.21	.01
JUL 26...	.00	.00	.00	.00	.00	.00	.00	0	.00	.06	.00

DATE	TOTAL SILVEX (UG/L)	SUS- PENDE SED I- MENT (MG/L)	SUS- PENDE SED I- MENT DIS- CHARGE (T/DAY)
JAN 21...	.00	22	.41
FEB 14...	--	28	.71
MAR 24...	.00	21	4.6
APR 06...	--	26	8.6
26...	--	104	55
MAY 25...	--	30	1.2
JUN 29...	--	64	51
JUL 26...	.00	44	11
AUG 24...	--	22	1.5
SEP 21...	--	26	7.1

RED RIVER OF THE NORTH BASIN

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05051522 RED RIVER OF THE NORTH NEAR HICKSON, ND--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	540			---	1550	1300	520	625	760	450	580	---
2	542			---	1600	1400	550	675	775	450	570	600
3	---			---	1600	1350	---	675	780	---	560	560
4	554			---	1600	1450	500	---	790	470	550	---
5	563			---	1600	1500	480	675	---	490	540	550
6	567			---	---	---	460	700	775	490	550	560
7	569			---	1600	800	460	625	760	500	---	560
8	572			---	1600	1400	480	---	780	520	560	560
9	573			---	1250	800	500	675	775	540	560	540
10	---			950	1450	500	---	675	750	---	550	560
11	578			950	1400	430	500	650	750	550	540	---
12	578			960	1400	1000	540	675	---	590	520	570
13	576			940	---	---	500	700	740	590	540	625
14	579			1000	1400	830	480	700	740	600	---	625
15	585			990	1500	940	530	---	740	600	560	625
16	586			---	1450	900	530	700	710	590	560	625
17	---			1150	1500	850	---	725	700	---	580	625
18	590			1200	1400	750	580	725	730	590	580	---
19	591			1300	1450	670	540	725	---	580	600	600
20	593			1300	---	---	480	775	850	590	600	600
21	597			1400	1500	500	460	750	850	590	---	600
22	---			1300	1400	625	500	---	850	600	650	625
23	612			---	1400	625	500	750	750	600	600	600
24	---			1250	1350	650	---	750	750	---	600	550
25	613			1200	1300	600	490	760	650	---	600	---
26	---			1350	1250	540	550	760	---	600	600	520
27	---			1900	---	---	675	775	640	600	600	540
28	---			1400	1200	560	600	775	640	600	---	520
29	---			1500	---	570	600	---	660	600	600	560
30	---			---	---	540	625	750	510	600	625	540
31	---			1600	---	550	---	750	---	---	600	---
MEAN	578			1240	1450	838	524	712	739	559	577	578

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15.5			---	-0.5	0.0	3.5	19.0	23.0	24.0	24.5	17.5
2	18.0			---	-0.5	0.0	1.5	20.0	23.5	24.0	25.5	18.5
3	---			---	0.0	0.0	---	19.0	22.0	---	24.0	18.0
4	13.0			---	0.0	0.0	0.5	---	24.5	25.5	25.0	---
5	10.5			---	0.0	0.0	0.0	19.5	---	29.5	22.5	19.5
6	8.5			---	---	---	2.0	16.0	25.0	28.5	20.0	18.0
7	9.5			---	0.0	0.0	2.0	20.5	24.5	27.5	---	18.0
8	10.0			---	0.5	0.0	3.0	---	24.5	24.5	25.5	20.5
9	12.5			---	0.5	0.0	7.0	19.5	20.5	24.0	23.5	17.5
10	---			-0.5	0.5	2.5	---	20.0	22.5	---	21.0	19.5
11	13.5			-0.5	0.5	1.0	8.0	21.0	23.5	23.0	21.5	---
12	13.0			-0.5	0.5	1.0	8.0	22.0	---	25.5	22.0	17.5
13	11.0			-0.5	---	---	9.5	24.0	23.5	25.5	21.5	18.5
14	10.0			-0.5	0.0	2.5	10.0	22.0	24.0	25.5	---	19.5
15	5.0			-0.5	0.0	2.0	12.0	---	24.0	26.0	18.5	18.5
16	5.0			---	0.0	1.0	15.5	23.0	24.5	29.0	20.0	17.5
17	---			-0.5	0.0	0.5	---	24.0	23.5	---	20.0	18.0
18	4.0			0.0	0.0	1.0	12.5	25.0	22.5	29.5	21.5	---
19	4.5			0.0	0.0	2.0	12.5	24.0	---	29.0	22.0	15.5
20	4.0			0.0	---	---	12.0	24.5	22.0	26.5	20.0	15.0
21	3.5			0.0	0.0	0.0	13.0	22.0	21.5	27.5	---	15.0
22	---			0.0	0.0	0.0	13.5	---	21.0	28.0	19.0	14.5
23	4.0			---	0.0	0.0	14.0	23.0	28.0	30.0	18.0	14.5
24	---			0.0	0.0	2.5	---	25.0	27.0	---	20.5	14.0
25	3.5			0.0	0.0	2.0	15.0	25.0	26.0	---	18.5	---
26	---			0.0	0.0	1.5	16.0	24.0	---	26.0	21.0	13.5
27	---			-0.5	---	---	15.5	24.0	25.0	26.0	18.5	14.0
28	---			-0.5	0.0	3.0	15.5	25.0	24.0	27.5	---	14.0
29	---			-0.5	---	1.5	16.5	---	24.0	25.5	20.0	14.0
30	---			---	---	1.0	19.0	23.0	22.5	25.0	21.0	13.0
31	---			-0.5	---	1.5	---	23.0	---	---	19.0	---
MEAN	9.0			-0.5	0.0	1.0	10.0	22.0	23.5	26.5	21.5	16.5

RED RIVER OF THE NORTH BASIN

05051600 WILD RICE RIVER NEAR RUTLAND, ND

LOCATION.--Lat 46°01'20", long 97°30'40", in SE¼SE¼ sec.36, T.130 N., R.55 W., Sargent County, Hydrologic Unit 09020105, on right bank 1,000 ft (305 m) upstream from bridge on county highway, 2 mi (3 km) south of Rutland, and 10 mi (16 km) upstream from Lake Tewaukon.

DRAINAGE AREA.--546 mi² (1,410 km²), of which about 250 mi² (648 km²) is probably noncontributing.

PERIOD OF RECORD.--October 1959 to current year.

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,197.73 ft (365.068 m) above mean sea level. Prior to Dec. 11, 1960, nonrecording gage at same site and datum.

REMARKS.--Records good.

AVERAGE DISCHARGE.--18 years, 8.72 ft³/s (0.247 m³/s), 6,320 acre-ft/yr (7.79 hm³/yr); median of yearly mean discharges, 5.0 ft³/s (0.14 m³/s), 3,600 acre-ft/yr (4.4 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,270 ft³/s (36.0 m³/s) Apr. 8, 1969, gage height, 8.77 ft (2.673 m), backwater from ice; maximum gage height, 8.78 ft (2.676 m) Apr. 8, 1969, backwater from ice; no flow for several months each year.

EXTREMES FOR CURRENT YEAR.--No flow for entire year. No peak above base of 30 ft³/s (0.85 m³/s).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0
MEAN	0	0	0	0	0	0	0	0	0	0	0	0
MAX	0	0	0	0	0	0	0	0	0	0	0	0
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	0	0	0	0	0	0	0	0	0	0	0	0
CAL YR 1976	TOTAL	2156.98	MEAN 5.89	MAX	185	MIN 0	AC-FT 4280					
WTR YR 1977	TOTAL	0.00	MEAN .000	MAX	.00	MIN 0	AC-FT 0					

RED RIVER OF THE NORTH BASIN

43

05051700 WILD RICE RIVER NEAR CAYUGA, ND

LOCATION.--Lat 46°07'30", long 97°21'40", on line between secs.29 and 30, T.131 N., R.53 W., Sargent County, Hydrologic Unit 09020105, on left bank 20 ft (6 m) downstream from county highway bridge, 1.2 mi (1.9 km) downstream from Shortfoot Creek, 2.5 mi (4.0 km) downstream from Crooked Creek, and 3.5 mi (5.6 km) northeast of Cayuga.

DRAINAGE AREA.--955 mi² (2,473 km²), of which about 390 mi² (1,010 km²) is probably noncontributing.

PERIOD OF RECORD.--May 1956 to current year.

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,095.64 ft (333.951 m) above mean sea level, levels by Bureau of Reclamation. Prior to Oct. 9, 1957, nonrecording gage 0.8 mi (1.3 km) upstream at different datum.

REMARKS.--Records good. Some regulation by Fish and Wildlife Service reservoirs, of which Lake Tewaukon is the largest. Small diversions for irrigation.

AVERAGE DISCHARGE.--21 years, 17.2 ft³/s (0.487 m³/s), 12,460 acre-ft/yr (15.4 hm³/yr); median of yearly mean discharges 8.2 ft³/s (0.23 m³/s), 5,900 acre-ft/yr (7.3 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,710 ft³/s (48.4 m³/s) Apr. 12, 1969, gage height, 9.32 ft (2.841 m); maximum gage height, 10.90 ft (3.322 m), Apr. 7, 1969, backwater from ice; no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3.6 ft³/s (0.10 m³/s) Mar. 26, gage height, 2.98 ft (0.908 m); no flow for several months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						0	.13					
2						0	.13					
3						0	.12					
4						0	.11					
5						0	.09					
6						0	.07					
7						0	.06					
8						0	.05					
9						0	.05					
10						0	.04					
11						0	.02					
12						0	.01					
13						0	.01					
14						0	.01					
15						0	.02					
16						0	.02					
17						0	.01					
18						0	.01					
19						0	.02					
20						0	.03					
21						0	.02					
22						0	.01					
23						0	.01					
24						0	.01					
25						0	0					
26						1.4	0					
27						.13	0					
28						.13	0					
29					---	.23	0					
30					---	.27	0					
31		---			---	.11	---		---			---
TOTAL	0	0	0	0	0	2.27	1.06	0	0	0	0	0
MEAN	0	0	0	0	0	.073	.035	0	0	0	0	0
MAX	0	0	0	0	0	1.4	.13	0	0	0	0	0
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	0	0	0	0	0	4.5	2.1	0	0	0	0	0
CAL YR 1976	TOTAL	3519.95	MEAN 9.62	MAX	175	MIN 0	AC-FT 6980					
WTR YR 1977	TOTAL	3.33	MEAN .009	MAX	1.4	MIN 0	AC-FT 6					

RED RIVER OF THE NORTH BASIN

05053000 WILD RICE RIVER NEAR ABERCROMBIE, ND

LOCATION.--Lat 46°28'05", long 96°47'00", in NE¼NE¼ sec.36, T.135 N., R.49 W., Richland County, Hydrologic Unit 09020105, on right bank 420 ft (130 m) upstream from bridge on county highway, 0.75 mi (1.2 km) upstream from rubble masonry dam which serves as control, 3.2 mi (5 km) northwest of Abercrombie, and 7 mi (11 km) downstream from Antelope Creek.

DRAINAGE AREA.--2,080 mi² (5,390 km²), of which about 590 mi² (1,530 km²) is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1932 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1388: 1939, 1941(M). WSP 1728: Drainage area.

GAGE.--Water-stage recorder and masonry control. Datum of gage is 907.94 ft (276.740 m) above mean sea level. Prior to Dec. 7, 1939, nonrecording gage at site 420 ft (130 m) downstream at datum 5.0 ft (1.52 m) lower. Dec. 7, 1939, to Nov. 24, 1952, nonrecording gage at site 0.75 mi (1.2 km) downstream at present datum.

REMARKS.--Records good. Some regulation by Fish and Wildlife Service reservoirs, of which Lake Tawaukon is the largest. Some small diversions for irrigation.

AVERAGE DISCHARGE.--45 years, 70.8 ft³/s (2.005 m³/s), 51,290 acre-ft/yr (63.2 hm³/yr); median of yearly mean discharges, 29 ft³/s (0.82 m³/s), 21,000 acre-ft/yr (26 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,540 ft³/s (270 m³/s) Apr. 11, 1969, gage height, 24.58 ft (7.492 m); no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in spring of 1897 reached a stage of 27.5 ft (8.38 m) present site and datum, from floodmarks pointed out by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 91 ft³/s (2.58 m³/s) Sept. 27, gage height, 2.41 ft (0.735 m), no peaks above base of 300 ft³/s (8.50 m³/s); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						0	31	6.4	3.1	3.5	1.0	.02
2						0	29	4.6	2.6	1.8	.79	.03
3						0	26	4.6	2.6	1.4	.58	.48
4						0	28	5.2	1.8	1.2	.58	.92
5						0	26	5.8	1.2	1.2	.32	1.0
6						0	24	5.8	.92	.92	.24	.79
7						0	23	5.8	.79	.68	.32	1.0
8						0	19	14	.51	.58	.32	1.0
9						0	17	23	.40	.40	.18	1.0
10						0	14	18	.18	.24	.10	.79
11						0	12	13	.10	.24	.05	.58
12						0	10	9.6	.07	.13	.02	.40
13						0	11	9.0	.04	.10	.01	.24
14						0	14	6.4	.02	.05	.01	.18
15						0	18	4.6	.18	.02	.01	.13
16						0	15	3.1	.48	.02	.01	.10
17						0	32	2.6	.58	.02	.01	.05
18						0	39	2.6	.58	.02	.01	.24
19						0	30	1.8	.40	.01	.01	.32
20						0	32	1.4	.32	.01	.01	.18
21						0	39	1.2	7.0	.01	.01	.24
22						0	34	1.2	12	.01	.01	1.0
23						0	23	1.2	12	.48	.01	1.0
24						0	19	1.0	9.0	4.6	.01	5.2
25						11	16	.79	8.3	31	.01	14
26						38	12	.79	7.7	25	.01	42
27						36	9.7	.79	7.7	13	.01	88
28						36	9.0	.68	7.7	6.4	.01	73
29					---	38	8.3	.58	5.8	3.1	.01	54
30					---	43	7.7	.92	5.8	2.2	.01	44
31		---			---	34	---	3.2	---	1.2	.01	---
TOTAL	0	0	0	0	0	236	627.7	159.65	99.87	99.54	4.69	331.89
MEAN	0	0	0	0	0	7.61	20.9	5.15	3.33	3.21	.15	11.1
MAX	0	0	0	0	0	43	39	23	12	31	1.0	88
MIN	0	0	0	0	0	0	7.7	.58	.02	.01	.01	.02
AC-FT	0	0	0	0	0	468	1250	317	198	197	9.3	658
CAL YR 1976	TOTAL	14831.63	MEAN	40.5	MAX	800	MIN	0	AC-FT	29420		
WTR YR 1977	TOTAL	1559.34	MEAN	4.27	MAX	88	MIN	0	AC-FT	3090		

WATER-QUALITY RECORDS

WATER TEMPERATURES: October 1966 to current year.

WATER TEMPERATURES: Maximum daily, 29.5°C Aug. 7, 1973; minimum daily, 0.0°C on many days during winter months.

WATER TEMPERATURES: Maximum daily, 28.0°C July 17, 18; minimum daily, 4.0°C Apr. 5 and 6.

DATE	TIME	INSTANTANEOUS DIS-CHARGE (CFS)	SPECIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	HARD-NESS (CA, MG)	NON-CAR-BONATE HARD-NESS (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)
APR									
01...	1555	30	905	8.3	6.5	45	350	220	82
06...	0920	25	900	--	2.0	--	--	--	--
13...	1320	10	1030	--	11.0	--	--	--	--
19...	1600	27	1070	--	13.5	--	--	--	--
20...	1600	27	1070	--	13.5	--	--	--	--
MAY									
12...	1150	9.6	1200	7.7	21.0	28	460	230	110
JUN									
13...	1845	.02	1200	8.5	27.0	35	490	210	110
JUL									
20...	1000	.01	1050	8.0	25.0	35	410	130	87
AUG									
15...	1700	.02	600	7.9	22.0	37	210	12	49
SEP									
20...	1445	.20	550	7.9	14.5	33	210	4	49
28...	1200	70	--	--	13.5	--	--	--	--

[illegible][illegible]

RED RIVER OF THE NORTH BASIN

05053000 WILD RICE RIVER NEAR ABERCROMBIE, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS-SOLVED-PHOSPHORUS (P) (MG/L)	DIS-SOLVED-ALUMINUM (AL) (UG/L)	DIS-SOLVED-ARSENIC (AS) (UG/L)	DIS-SOLVED-BARIUM (BA) (UG/L)	DIS-SOLVED-BERYLLIUM (BE) (UG/L)	DIS-SOLVED-BORON (B) (UG/L)	DIS-SOLVED-CADMIUM (CD) (UG/L)	DIS-SOLVED-CHROMIUM (CR) (UG/L)	DIS-SOLVED-COBALT (CO) (UG/L)	DIS-SOLVED-COPPER (CU) (UG/L)
APR 01...	.21	60	3	0	0	180	1	0	2	4
MAY 12...	.29	--	--	--	--	290	--	--	--	--
JUN 13...	.74	--	--	--	--	350	--	--	--	--
JUL 20...	.88	--	--	--	--	330	--	--	--	--
AUG 15...	.69	--	--	--	--	210	--	--	--	--
SEP 20...	.45	1	10	100	10	140	1	0	0	3

DATE	DIS-SOLVED-IRON (FE) (UG/L)	DIS-SOLVED-LEAD (PB) (UG/L)	DIS-SOLVED-LITHIUM (LI) (UG/L)	DIS-SOLVED-MANGANESE (MN) (UG/L)	DIS-SOLVED-MERCURY (HG) (UG/L)	DIS-SOLVED-MOLYBDENUM (MO) (UG/L)	DIS-SOLVED-NICKEL (NI) (UG/L)
APR 01...	60	10	40	100	.0	1	3
SEP 20...	20	5	40	270	.0	1	4

DATE	DIS-SOLVED-SELENIUM (SE) (UG/L)	DIS-SOLVED-SILVER (AG) (UG/L)	DIS-SOLVED-STRONTIUM (SR) (UG/L)	DIS-SOLVED-VANADIUM (V) (UG/L)	DIS-SOLVED-ZINC (ZN) (UG/L)	CYANIDE (CN) (MG/L)
APR 01...	2	0	360	1.7	10	2.0
SEP 20...	0	0	210	.0	20	.01

DATE	SUSPENDED-SOLID-MENT (MG/L)	SUSPENDED-SOLID-MENT-DISCHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	BED MAT. SIEVE DIAM. % FINER THAN .062 MM	BED MAT. SIEVE DIAM. % FINER THAN .125 MM
APR 01...	4	.32	--	--	--	--	--
APR 06...	9	.61	--	--	--	--	--
MAY 12...	31	.81	--	--	--	--	--
JUN 13...	10	.00	--	--	--	--	--
SEP 20...	11	.01	--	--	--	--	--
SEP 28...	125	24	65	93	100	80	81

DATE	BED MAT. SIEVE DIAM. % FINER THAN .250 MM	BED MAT. SIEVE DIAM. % FINER THAN .500 MM	BED MAT. SIEVE 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
APR 01...	--	--	--	--	--	--
APR 06...	--	--	--	--	--	--
MAY 12...	--	--	--	--	--	--
JUN 13...	--	--	--	--	--	--
SEP 20...	--	--	--	--	--	--
SEP 28...	84	87	90	91	97	100

RED RIVER OF THE NORTH BASIN

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05053000 WILD RICE RIVER NEAR ABERCROMBIE, ND--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1							---	820	1350	1100	580	580
2							---	900	1350	1120	610	620
3							---	920	1320	1100	600	580
4							---	950	1350	1140	590	560
5							---	1000	1240	1100	600	560
6							---	1050	1220	1200	590	500
7							---	1150	1300	1100	600	480
8							---	1400	1250	1100	580	500
9							---	1200	1200	1100	600	490
10							---	1350	1200	1140	580	460
11							880	1220	1220	1080	600	500
12							900	1200	1200	1100	600	500
13							900	1240	1200	1100	580	540
14							900	1240	1200	1100	580	600
15							800	1240	1180	1150	560	600
16							1000	1200	1240	1150	570	600
17							1100	1250	1200	1200	560	580
18							1000	1300	1180	1200	560	600
19							940	1350	1200	1200	560	560
20							850	1340	1150	1150	600	580
21							1000	1340	1100	1150	600	600
22							960	1280	1150	1140	580	600
23							880	1300	1500	1100	560	620
24							800	1360	1600	900	560	650
25							750	1400	1440	750	560	720
26							800	1400	1350	600	560	800
27							850	1380	1250	620	580	700
28							900	1400	1200	640	600	520
29							980	1400	1200	600	600	480
30							950	1380	1200	630	640	470
31							---	1300	---	600	580	---
MEAN							907	1230	1260	1010	585	572

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1							6.5	15.5	21.0	21.5	21.5	17.0
2							5.5	15.5	20.5	22.5	22.0	18.5
3							7.0	16.0	20.5	24.0	21.5	17.0
4							6.0	16.0	21.0	24.0	21.5	18.0
5							4.0	16.5	23.5	25.5	21.0	18.5
6							4.0	15.5	21.5	26.0	20.5	17.5
7							5.0	17.0	23.0	24.0	21.5	17.5
8							6.0	19.0	21.5	23.0	20.0	18.5
9							9.0	19.5	20.0	21.5	21.5	17.0
10							13.5	19.0	19.5	24.0	20.0	16.5
11							12.5	19.0	20.0	23.0	20.5	18.0
12							12.0	21.0	22.0	22.5	20.5	16.5
13							11.5	22.0	22.0	23.0	19.5	17.5
14							11.0	22.5	21.0	23.0	20.0	17.5
15							13.0	21.5	21.5	24.0	18.5	17.0
16							14.0	21.0	24.0	25.0	20.0	18.0
17							16.0	21.5	22.5	28.0	18.5	18.5
18							14.0	22.5	21.5	28.0	19.0	16.5
19							12.5	23.0	22.0	27.0	19.0	14.0
20							12.0	22.5	20.0	25.0	20.5	14.0
21							11.5	21.5	20.5	23.0	20.5	14.5
22							11.5	20.5	19.5	23.0	19.5	14.0
23							12.0	20.5	21.0	24.0	18.0	14.0
24							15.0	22.0	23.5	23.0	17.5	14.0
25							14.0	23.0	23.5	23.0	18.0	14.5
26							15.0	23.0	25.0	22.0	18.5	14.0
27							15.5	22.5	23.5	23.0	18.0	14.5
28							16.0	22.5	23.0	24.0	20.0	13.5
29							17.5	23.0	22.5	22.0	18.5	13.0
30							17.0	22.0	22.0	25.0	21.0	12.5
31							---	20.5	---	22.0	18.0	---
MEAN							11.5	20.0	22.0	24.0	20.0	16.0

RED RIVER OF THE NORTH BASIN

05054000 RED RIVER OF THE NORTH AT FARGO, ND

LOCATION.--Lat 46°51'40", long 96°47'00", in NW¼NE¼ sec.18, T.139 N., R.48 W., Cass County, Hydrologic Unit 09020104, at city waterplant on 4th St. S. in Fargo, 25 mi (40 km) upstream from mouth of Sheyenne River and at mile 453.0 (kilometer 728.9).

DRAINAGE AREA.--6,800 mi² (17,600 km²), approximately.

PERIOD OF RECORD.--May 1901 to current year. Published as "at Moorhead, Minn." 1901. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1902-4, 1906-7, 1910-14, 1916, 1918, 1924. WSP 1388: 1905-6, 1917-20(M), 1935(M), 1938-39(M), 1943.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 861.8 ft (262.68 m) above mean sea level. Oct. 1, 1960, to Sept. 30, 1962, water-stage recorder at present site at datum 5.6 ft (1.71 m) higher. See WSP 1728 or 1913 for history of changes prior to Oct. 1, 1960.

REMARKS.--Records good. Flow regulated by Orwell Reservoir, capacity, 14,100 acre-ft (17.4 hm³) at elevation 1,070 ft (326.136 m) above mean sea level, adjustment of 1912; Lake Traverse, capacity, 137,000 acre-ft (169 hm³), available for flood control; other controlled lakes and ponds and several powerplants. Some small diversions for municipal supply. Figures of daily discharge do not include diversions to cities of Fargo and Moorhead and from Sheyenne River.

AVERAGE DISCHARGE (UNADJUSTED).--76 years, 541 ft³/s (15.32 m³/s), 392,000 acre-ft/yr (483 hm³/yr); median of yearly mean discharges, 440 ft³/s (12.5 m³/s) 319,000 acre-ft/yr (390 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,300 ft³/s (716 m³/s) Apr. 15, 1969, gage height, 37.34 ft (11.381 m); no flow for many days in each year for period 1932-41, Sept. 30, Oct. 1, 2, 1970, Oct. 10-19, 1976.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 7, 1897 reached a stage of 39.1 ft (11.92 m) present datum, discharge, 25,000 ft³/s (708 m³/s) at site 1.5 mi (2.4 km) downstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 878 ft³/s (24.9 m³/s) July 4, gage height, 14.99 ft (4.569 m); no flow Oct. 10-19; minimum gage height, 12.44 ft (3.792 m) Oct. 14-16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.8	6.7	13	10	18	20	332	107	130	165	27	70
2	.90	6.7	13	10	18	20	310	63	156	121	20	122
3	1.0	8.4	13	10	18	20	285	40	124	100	21	174
4	9.2	9.2	13	10	18	20	252	45	82	299	22	181
5	17	10	13	10	18	20	196	638	56	133	12	136
6	13	9.2	13	10	18	20	154	598	43	87	8.1	100
7	6.7	9.2	13	10	18	40	136	248	33	79	10	83
8	2.6	8.4	13	10	18	60	141	125	29	72	8.1	82
9	.60	9.2	13	10	18	60	159	65	24	61	7.6	81
10	0	12	13	10	18	60	142	37	23	57	10	95
11	0	8.4	12	12	20	60	111	22	16	69	10	105
12	0	6.7	12	15	20	80	99	20	16	49	7.6	98
13	0	8.4	12	15	19	65	96	18	14	53	7.6	89
14	0	13	12	15	19	55	101	21	8.3	55	8.1	89
15	0	14	12	15	19	55	91	28	21	58	10	91
16	0	12	12	15	19	60	82	21	27	164	14	88
17	0	10	12	15	19	78	118	17	23	66	13	88
18	0	13	12	18	19	95	341	12	27	51	13	114
19	0	12	12	20	19	104	318	7.0	37	49	14	96
20	.70	9.2	12	19	19	122	268	3.1	69	44	14	94
21	1.0	10	11	19	20	129	335	.58	112	30	12	110
22	2.6	12	11	18	20	117	332	12	109	30	14	170
23	5.1	17	11	18	20	90	232	25	89	31	14	155
24	6.7	19	10	18	20	74	177	29	63	36	18	373
25	9.2	21	10	18	20	76	179	25	55	39	16	419
26	9.2	21	10	18	20	80	188	20	73	59	21	413
27	6.7	19	10	18	20	84	175	20	226	66	33	413
28	5.1	16	10	18	20	99	173	20	395	55	47	413
29	5.1	16	10	18	---	172	159	19	390	46	42	399
30	5.9	13	10	18	---	277	135	30	263	52	46	389
31	6.7	---	10	18	---	329	---	54	---	42	54	---
TOTAL	116.80	359.7	363	458	532	2641	5817	2389.68	2733.3	2318	574.1	5330
MEAN	3.77	12.0	11.7	14.8	19.0	85.2	194	77.1	91.1	74.8	18.5	178
MAX	17	21	13	20	20	329	341	638	395	299	54	419
MIN	0	6.7	10	10	18	20	82	.58	8.3	30	7.6	70
AC-FT	232	713	720	908	1060	5240	11540	4740	5420	4600	1140	10570
(+)	994	835	828	1090	983	930	919	1130	1070	1050	1040	881
(-)	1540	1490	1540	1540	1390	793	0	595	942	0	0	0
MEAN*	-5.11	.97	.13	7.45	11.8	87.5	209	85.9	93.3	91.9	35.5	192
AC-FT*	-314	58	8	458	653	5380	12460	5280	5550	5650	2180	11450

OBSERVED

CAL YR 1976 TOTAL 98497.20 MEAN 269 MAX 3000 MIN .00 AC-FT 195400 MEAN 278 AC-FT 201900
WTR YR 1977 TOTAL 23632.58 MEAN 64.7 MAX 638 MIN .00 AC-FT 46880 MEAN 67.4 AC-FT 48810

ADJUSTED

+ Diversions in acre-feet to cities of Fargo and Moorhead.

- Diversions in acre-feet from Sheyenne River.

* Adjusted for diversions to cities of Fargo and Moorhead and from Sheyenne River.

05054020 RED RIVER OF THE NORTH BELOW FARGO, ND
(National Water-Quality Accounting Network Station)
(Radiochemical Station)

LOCATION.--Lat 46°55'50", long 96°47'05", in SW¼NE¼ sec.19, T.140 N., R.48 W., Cass County, Hydrologic Unit 09020104, at bridge on county highway 2 mi (3.2 km) north of North Dakota State University campus in Fargo, and 12 mi (19 km) above mouth of Sheyenne River.

DRAINAGE AREA.--6,820 mi² (17,660 km²), approximately.

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

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1973 to September 1974, October 1975 to current year.

WATER TEMPERATURES: October 1973 to September 1974, October 1975 to current year.

INSTRUMENTATION.--Water-quality monitor since October 1973.

REMARKS.--Fragmentary records of specific conductance and temperature for October 1974 to September 1975 are available in the Bismarck District office. Records of discharge are given for station 05054000 Red River of the North at Fargo, N. Dak., and are unadjusted for treated sewage inflow between sites. Interruptions in the record were due to malfunctions of the instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 1,220 micromhos Nov. 7, 1976; minimum, 206 micromhos July 4, 1977.

WATER TEMPERATURES: Maximum, 31.5°C July 19, 1977; minimum, 0.0°C on many days during winter months.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	DIS- SOLVED OXYGEN (MG/L)	PER- CENT SATUR- ATION	FECAL COLI- FORM 7UM-MF (COL./ 100 ML)	FECAL STREP- TOCOCCI KF AGAR (COL. PER 100 ML)	HARD- NESS (CA,MG) (MG/L)
OCT											
27...	1130	8.9	960	7.6	.5	5	9.3	67	450	660	250
NOV											
18...	0930	12	1050	8.3	1.0	3	11.6	82	630	2250	320
DEC											
21...	1020	11	1140	7.6	.5	4	8.8	63	406	640	310
JAN											
19...	0950	20	1120	7.8	.0	9	6.8	48	77	320	360
FEB											
15...	0935	19	1100	8.4	.5	7	5.6	18	3300	3850	330
MAR											
23...	1130	120	1090	8.2	.5	10	11.6	83	510	960	500
APR											
25...	1145	181	710	8.4	14.0	35	8.9	88	130	300	310
MAY											
23...	1155	29	790	8.3	22.0	15	8.4	96	310	1700	270
JUN											
27...	1255	246	660	8.2	25.0	15	5.8	71	1000	1800	280
JUL											
25...	1200	40	620	8.2	23.5	25	4.7	56	140	210	250
AUG											
22...	1100	10	780	8.2	20.5	30	7.7	86	290	250	290
SEP											
20...	1130	94	540	8.0	15.5	15	4.6	45	875000	58	240

DATE	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	ALKA- LINITAS AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)
OCT											
27...	42	44	34	100	45	2.8	13	254	0	208	10
NOV											
18...	51	64	38	110	42	2.7	12	323	0	265	2.6
DEC											
21...	31	69	34	94	39	2.3	10	343	0	281	14
JAN											
19...	37	81	39	110	39	2.5	11	397	0	326	10
FEB											
15...	52	68	38	110	41	2.7	11	332	1	274	2.1
MAR											
23...	110	84	70	61	21	1.2	11	471	0	390	4.8
APR											
25...	130	64	37	29	16	.7	6.9	220	0	180	1.4
MAY											
23...	110	54	32	63	33	1.7	9.6	190	0	160	1.5
JUN											
27...	83	61	31	37	22	1.0	8.0	240	0	200	2.4
JUL											
25...	74	49	32	33	21	.9	7.0	220	0	180	2.2
AUG											
22...	73	52	38	45	25	1.2	9.0	260	0	210	2.6
SEP											
20...	51	45	31	23	17	.6	6.6	230	0	190	3.7

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

RED RIVER OF THE NORTH BASIN

05054020 RED RIVER OF THE NORTH BELOW FARGO, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED SULFATE (SO ₄) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO ₂) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	TOTAL FILT- RABLE RESIDUE (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	TOTAL NON- FILT- RABLE RESIDUE (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)
OCT 27...	190	53	.4	10	573	--	570	.78	13.8	--	2.0
NOV 18...	210	65	.6	13	663	--	672	.90	21.5	--	1.4
DEC 21...	210	59	.5	20	753	--	666	1.02	22.4	--	1.8
JAN 19...	220	62	.5	22	751	--	741	1.02	40.6	--	.94
FEB 15...	180	96	.6	21	558	--	689	.76	28.6	--	1.9
MAR 23...	210	35	.7	16	761	810	720	1.04	247	25	.79
APR 25...	160	15	.3	.9	457	--	421	.62	223	--	.29
MAY 23...	190	29	--	--	497	--	--	.68	38.9	--	.89
JUN 27...	120	24	.3	7.3	428	--	407	.58	284	--	.52
JUL 25...	120	14	.3	10	397	--	374	.54	42.9	--	.52
AUG 22...	140	28	.5	14	478	--	455	.65	12.9	--	2.4
SEP 20...	79	13	.3	8.0	331	--	319	.45	84.0	--	.57

DATE	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L)	TOTAL NITRO- GEN (N) (MG/L)	TOTAL NITRO- GEN (NO ₃) (MG/L)	TOTAL PHOS- PHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	SUS- PENDED ARSENIC (AS) (UG/L)	DIS- SOLVED ARSENIC (AS) (UG/L)	TOTAL CAD- MIUM (CD) (UG/L)	SUS- PENDED CAD- MIUM (CD) (UG/L)	DIS- SOLVED CAD- MIUM (CD) (UG/L)
OCT 27...	3.4	5.4	24	4.1	--	--	--	--	--	--
NOV 18...	2.3	3.7	16	2.1	2	0	2	<10	<7	3
DEC 21...	2.4	4.2	19	1.1	--	--	--	--	--	--
JAN 19...	4.2	5.1	23	.99	4	1	3	<10	<9	1
FEB 15...	2.5	4.4	19	1.1	--	--	--	--	--	--
MAR 23...	4.1	4.9	22	.82	8	--	5	10	9	1
APR 25...	1.1	1.4	6.2	.34	--	--	--	--	--	--
MAY 23...	1.2	2.1	9.3	1.3	--	--	--	--	--	--
JUN 27...	.90	1.4	6.3	.47	--	--	--	--	--	--
JUL 25...	1.3	1.8	8.1	.62	8	--	8	<10	<10	0
AUG 22...	1.6	4.0	18	1.0	--	--	--	--	--	--
SEP 20...	1.3	1.9	8.3	.35	--	--	--	--	--	--

DATE	TOTAL CHRO- MIUM (CR) (UG/L)	SUS- PENDED CHRO- MIUM (CR) (UG/L)	DIS- SOLVED CHRO- MIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	SUS- PENDED COBALT (CO) (UG/L)	DIS- SOLVED COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	SUS- PENDED COPPER (CU) (UG/L)	DIS- SOLVED COPPER (CU) (UG/L)
NOV 18...	0	0	0	<50	<49	1	<10	<6	4
DEC 21...	--	--	--	--	--	--	--	--	--
JAN 19...	0	0	0	<50	<50	0	<10	<8	2
FEB 15...	--	--	--	--	--	--	--	--	--
MAR 23...	0	--	0	<50	<50	0	10	6	4
JUL 25...	10	--	0	<50	<50	0	<10	<9	1

RED RIVER OF THE NORTH BASIN

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05054020 RED RIVER OF THE NORTH BELOW FARGO, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL IRON (FE) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	SUS- PENDE LEAD (PB) (UG/L)	DIS- SOLVED LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	SUS- PENDE MANGANESE (MN) (UG/L)	DIS- SOLVED MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)
NOV 18...	430	10	<100	<88	12	70	40	30	.0
JAN 19...	570	10	<100	<92	8	220	30	190	3.6
MAR 23...	900	50	100	97	3	140	70	70	.6
JUL 25...	1100	20	<100	<98	2	180	120	60	.0

DATE	SUS- PENDE MERCURY (HG) (UG/L)	DIS- SOLVED MERCURY (HG) (UG/L)	TOTAL SELE- NIUM (SE) (UG/L)	SUS- PENDE SELE- NIUM (SE) (UG/L)	DIS- SOLVED SELE- NIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	SUS- PENDE ZINC (ZN) (UG/L)	DIS- SOLVED ZINC (ZN) (UG/L)	DIS- SOLVED GROSS ALPHA AS U-NAT. (UG/L)
NOV 18...	.0	.0	0	0	0	10	0	10	--
JAN 19...	3.6	.0	0	0	0	20	10	10	--
MAR 23...	--	.0	1	0	1	20	0	20	<9.2
JUL 25...	.0	.0	2	--	0	20	20	4	--

DATE	SUS- PENDE GROSS ALPHA AS U-NAT. (UG/L)	DIS- SOLVED GROSS BETA AS CS-137 (PC/L)	SUS- PENDE GROSS BETA AS CS-137 (PC/L)	DIS- SOLVED GROSS BETA AS SR90 /Y90 (PC/L)	SUS- PENDE GROSS BETA AS SR90 /Y90 (PC/L)	DIS- SOLVED RA-226 (RADON METHOD) (PC/L)	DIS- SOLVED NATURAL URANIUM (U) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)
NOV 18...	--	--	--	--	--	--	--	8.9
JAN 19...	--	--	--	--	--	--	--	9.9
MAR 23...	1.7	14	2.3	11	1.9	.12	2.5	14
JUL 25...	--	--	--	--	--	--	--	7.0

DATE	SUS- PENDE SEDI- MENT (MG/L)	SUS- PENDE SEDI- MENT DIS- CHARGE (T/DAY)	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM
OCT 27...	15	.36	80
NOV 18...	11	.36	88
DEC 21...	10	.30	81
JAN 19...	12	.65	88
FEB 15...	12	.62	83
MAR 23...	8	2.6	90
APR 25...	112	55	70
MAY 23...	36	2.8	98
JUN 27...	29	19	97
JUL 25...	88	9.5	52
AUG 22...	56	1.5	97
SEP 20...	28	7.1	94

RED RIVER OF THE NORTH BASIN

05054020 RED RIVER OF THE NORTH BELOW FARGO, ND--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	---	---	946	819							---	---
2	---	---	858	805							---	---
3	---	---	886	819							---	---
4	---	---	922	824							---	---
5	---	---	956	906							---	---
6	---	---	953	909							---	---
7	---	---	1220	939							---	---
8	523	506	---	---							---	---
9	---	---	---	---							---	---
10	---	---	769	679							---	---
11	---	---	---	---							---	---
12	---	---	---	---							---	---
13	---	---	---	---							---	---
14	---	---	---	---							---	---
15	---	---	---	---							---	---
16	---	---	---	---							---	---
17	---	---	---	---							1060	1050
18	---	---	---	---							1090	1050
19	---	---	---	---							1120	1090
20	---	---	---	---							1110	1070
21	---	---	---	---							1110	1080
22	1070	867	---	---							1110	1090
23	1150	1070	---	---							1090	1040
24	1120	1070	---	---							1030	919
25	1120	1100	---	---							915	870
26	1100	1030	---	---							864	836
27	1040	978	---	---							846	794
28	1000	906	---	---							899	742
29	932	874	---	---							737	618
30	899	816	---	---							622	528
31	929	827	---	---							526	487
MONTH	1150	506	1220	679							1120	487

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	524	487	---	---	727	691	794	668	---	---	674	618
2	528	509	---	---	710	653	672	657	521	484	700	610
3	548	524	---	---	738	691	665	654	---	---	684	661
4	578	552	---	---	750	713	677	206	---	---	693	677
5	563	552	---	---	772	757	459	333	---	---	719	650
6	585	563	---	---	788	519	529	465	---	---	705	674
7	597	576	---	---	843	754	616	531	507	467	696	650
8	603	574	---	---	---	---	769	622	533	509	745	659
9	616	591	---	---	---	---	742	693	540	509	703	641
10	616	583	---	---	---	---	735	714	---	---	681	605
11	589	576	---	---	---	---	722	616	---	---	705	652
12	593	572	---	---	---	---	668	601	---	---	684	657
13	570	489	1200	717	892	807	665	605	783	710	714	652
14	565	397	1160	707	830	763	665	628	750	639	707	637
15	548	381	1040	624	813	781	648	605	745	663	724	657
16	---	---	---	---	810	772	648	406	748	727	693	646
17	---	---	---	---	788	744	546	497	769	729	632	492
18	526	489	---	610	760	699	572	486	769	742	608	542
19	563	529	---	---	763	688	628	563	777	750	---	---
20	570	559	---	---	791	716	628	578	---	---	---	---
21	581	561	---	---	803	778	639	601	---	---	595	487
22	601	537	---	---	775	688	657	618	---	---	583	462
23	657	603	---	727	683	633	679	593	722	652	576	462
24	677	661	719	525	630	599	672	583	719	628	585	514
25	686	668	698	608	---	---	630	610	696	650	---	---
26	677	641	712	591	---	---	654	601	724	679	764	735
27	648	612	708	628	---	---	650	585	703	686	748	701
28	614	574	686	544	775	696	643	583	735	585	727	698
29	624	546	531	472	849	777	661	593	753	641	758	729
30	670	624	611	498	855	799	---	---	786	688	750	710
31	---	---	705	618	---	---	---	---	742	688	---	---
MONTH	686	381	1200	472	892	519	794	206	786	467	764	462

RED RIVER OF THE NORTH BASIN

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05054020 RED RIVER OF THE NORTH BELOW FARGO, ND--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	---	---	5.5	3.5							---	---
2	---	---	5.5	3.5							---	---
3	---	---	4.0	2.0							---	---
4	---	---	3.0	2.0							---	---
5	---	---	3.5	1.5							---	---
6	---	---	3.0	2.0							---	---
7	---	---	2.0	1.0							---	---
8	9.5	5.5	1.0	0.5							---	---
9	---	---	1.5	1.0							---	---
10	---	---	1.5	1.0							---	---
11	---	---	---	---							---	---
12	---	---	---	---							---	---
13	---	---	---	---							---	---
14	---	---	---	---							---	---
15	---	---	---	---							---	---
16	---	---	---	---							---	---
17	---	---	---	---							1.0	0.5
18	---	---	---	---							1.0	1.0
19	---	---	---	---							1.0	1.0
20	---	---	---	---							1.0	1.0
21	---	---	---	---							1.0	1.0
22	2.5	0.5	---	---							1.0	1.0
23	2.5	1.5	---	---							1.5	0.5
24	2.5	1.0	---	---							2.0	1.0
25	2.0	1.5	---	---							5.0	2.0
26	1.5	0.5	---	---							5.0	4.0
27	1.5	0.5	---	---							5.5	3.5
28	3.0	1.0	---	---							7.0	5.5
29	4.5	2.5	---	---							6.5	3.5
30	4.5	3.0	---	---							3.0	2.0
31	4.0	2.5	---	---							3.0	1.0
MONTH	9.5	0.5	5.5	0.5							7.0	0.5

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	3.5	2.0	---	---	23.5	20.5	24.0	21.5	---	---	19.5	18.5
2	3.0	1.5	---	---	25.5	22.0	24.5	21.5	24.5	19.5	19.0	17.5
3	2.5	1.0	---	---	25.5	20.5	25.0	23.5	---	---	18.0	17.0
4	3.0	1.5	---	---	26.0	21.0	24.5	20.0	---	---	17.0	15.5
5	2.5	1.0	---	---	25.5	21.5	25.0	22.0	---	---	16.0	15.5
6	3.0	1.0	---	---	23.0	19.0	26.5	24.5	---	---	16.5	15.5
7	5.5	3.0	---	---	22.0	17.5	25.5	24.0	22.5	17.5	17.5	16.0
8	7.0	4.5	---	---	23.5	19.0	24.0	22.0	23.5	16.5	17.5	16.5
9	9.0	5.5	---	---	---	---	23.5	21.0	21.0	17.5	17.5	16.5
10	10.5	8.0	---	---	---	---	25.0	21.5	---	---	18.0	17.0
11	10.5	9.0	---	---	---	---	23.5	22.0	---	---	18.0	17.5
12	11.5	10.0	---	---	---	---	25.0	21.0	21.5	19.5	18.0	17.0
13	13.5	8.0	---	---	26.5	22.5	26.0	22.0	21.5	18.5	18.0	17.5
14	13.5	8.5	---	---	25.5	22.5	26.0	24.0	21.0	18.0	18.5	17.5
15	15.0	8.5	---	---	24.5	20.5	26.0	22.0	23.0	18.0	19.0	18.0
16	---	---	---	---	23.0	20.5	26.5	22.0	24.0	19.0	19.0	18.0
17	---	---	---	---	22.5	20.0	29.5	26.0	23.0	19.5	19.0	16.0
18	13.5	10.0	---	---	22.5	20.5	31.0	27.0	23.0	20.0	16.0	13.5
19	11.5	9.5	---	---	22.0	21.0	31.5	28.5	22.5	20.0	---	---
20	11.5	10.5	---	---	25.0	20.5	28.5	26.0	---	---	---	---
21	12.5	10.0	---	---	25.5	23.5	28.0	23.5	---	---	16.5	15.0
22	13.5	7.0	---	---	26.0	22.5	28.0	23.5	---	---	16.5	16.0
23	15.0	13.0	---	---	27.5	24.5	29.5	25.5	21.0	20.5	16.0	16.0
24	14.5	12.0	26.5	23.5	26.0	24.5	28.5	26.0	21.0	20.5	17.0	16.0
25	15.0	12.0	---	---	---	---	27.0	23.0	23.0	21.0	---	---
26	16.0	13.5	---	---	---	---	27.0	23.0	22.5	19.5	---	---
27	16.0	15.0	---	---	---	---	26.0	24.0	20.5	16.0	---	---
28	16.5	14.0	24.0	21.0	25.0	22.5	---	---	19.5	16.5	---	---
29	17.0	15.0	23.5	20.5	24.0	22.5	---	---	19.5	18.0	---	---
30	18.5	16.0	23.5	20.5	23.5	22.5	24.0	20.0	19.0	18.0	---	---
31	---	---	23.0	21.0	---	---	---	---	19.5	18.5	---	---
MONTH	18.5	1.0	26.5	20.5	27.5	17.5	31.5	20.0	24.5	16.0	19.5	13.5

RED RIVER OF THE NORTH BASIN

05054020 RED RIVER OF THE NORTH BELOW FARGO, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	OCT 27,76 1130	NOV 18,76 0930	DEC 21,76 1020	JAN 19,77 0950	FEB 15,77 0935					
TOTAL CELLS/ML	610	10000	310	1400	14000					
DIVERSITY: DIVISION	0.2	0.8	1.3	0.6	0.0					
..CLASS	0.2	0.8	1.3	0.6	0.0					
...ORDER	0.8	1.1	1.8	0.6	0.0					
....FAMILY	2.0	1.3	2.0	0.7	0.0					
.....GENUS	2.2	1.5	2.1	0.0	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										
...CHLOROCOCCALES										
....CHARACTIACEAE										
....SCHROEDERIA	--	-	--	-	--	-	--	-	--	-
....COELASTRACEAE										
....COELASTRUM	--	-	--	-	--	-	--	-	--	-
....HYDRODICTYACEAE										
....PEDIASTRUM	--	-	--	-	--	-	--	-	--	-
....MICRACTINIACEAE										
....MICRACTINIUM	--	-	--	-	--	-	--	-	--	-
....OOCYSTACEAE										
....ANKISTRODESMUS	--	-	550	5	20	6	80	6	*	0
....DICTYOSPHAERIUM	--	-	--	-	--	-	--	-	--	-
....KIRCHNERIELLA	--	-	--	-	--	-	--	-	--	-
....OOCYSTIS	--	-	--	-	--	-	--	-	--	-
....SELENASTRUM	--	-	--	-	--	-	--	-	--	-
....TETRAEDRON	--	-	--	-	--	-	--	-	--	-
....SCENEDESMACEAE										
....ACTINASTRUM	--	-	--	-	--	-	--	-	--	-
....CRUCIGENIA	--	-	61	1	--	-	--	-	--	-
....SCENEDESMUS	--	-	--	-	--	-	--	-	--	-
....TETRASTRUM	--	-	61	1	--	-	--	-	--	-
..TETRASPORALES										
...PALMELLACEAE										
....SPHAEROCYSTIS	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	110	1	--	-	*	0	--	-
..ZYGNEATALES										
...DESMIDIACEAE										
....COSMARIVUM	--	-	--	-	--	-	--	-	--	-
....STAUSTRUM	--	-	--	-	--	-	--	-	--	-
....ZYGNEMATACEAE	--	-	--	-	--	-	--	-	--	-
....MOUGEOTIA	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
....COSCINODISCACEAE										
....CYCLOTELLA	38	6	150	1	83#	26	7	1	--	-
....MELOSIRA	38	6	*	0	--	-	--	-	--	-
...RHIZOSOLENIACEAE										
....RHIZOSOLENIA	--	-	--	-	--	-	--	-	--	-
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	--	-	--	-	--	-	--	-	--	-
....COCCONEIS	13	2	--	-	--	-	--	-	--	-
....RHOICOSPHEINIA	--	-	--	-	--	-	--	-	--	-
...CYMBELLACEAE										
....AMPHORA	13	2	--	-	--	-	--	-	--	-
....CYMBELLA	25	4	--	-	3	1	7	1	--	-
....RHOPALODIA	--	-	--	-	3	1	--	-	--	-
...DIATOMACEAE										
....DIATOMA	--	-	--	-	--	-	*	0	--	-
...FRAGILARIACEAE										
....SYNEDRA	--	-	*	0	--	-	--	-	--	-
...NAVICULACEAE										
....GYROSIGMA	--	-	--	-	--	-	--	-	--	-
....NAVICULA	89	15	*	0	3	1	*	0	--	-
...NITZSCHACEAE										
....DENTICULA	--	-	--	-	3	1	--	-	--	-
....NITZSCHIA	340#	56	240	2	33	11	36	3	--	-
...SURIARELLACEAE										
....SURIARELLA	25	4	*	0	7	2	7	1	--	-
..XANTHOPHYCEAE										
...HETEROCOCCALES										
....CHLOROTHECIACEAE	--	-	--	-	--	-	--	-	--	-
....OPHIOCYTIUM	--	-	--	-	--	-	--	-	--	-

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

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

CONTINUED ...

RED RIVER OF THE NORTH BASIN

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05054020 RED RIVER OF THE NORTH BELOW FARGO, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

(CONTINUED)

DATE TIME	OCT 27,76 1130		NOV 18,76 0930		DEC 21,76 1020		JAN 19,77 0950		FEB 15,77 0935	
ORGANISM	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										
...CHROCCOCCALES										
...CHROCCOCCAEAE										
....ANACYSTIS	--	-	240	2	--	-	--	-	--	-
...HORMOGONALES										
...NOSTOCACEAE										
....APHANIZOMENON	--	-	170	2	--	-	--	-	--	-
...OSCILLATORIACEAE	--	-	--	-	--	-	1200# 90	--	--	-
....LYNGBYA	--	-	380	4	--	-	--	-	--	-
...OSCILLATORIA	--	-	8000# 78		160# 49		--	-	14000#100	
....SPIRULINA	--	-	*	0	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
..CRYPTOPHYCEAE										
...CRYPTOMONIDALES										
...CRYPTOCHRYSIDACEAE										
....CHROOMONAS	--	-	91	1	--	-	--	-	--	-
...CRYPTOMONODACEAE										
....CRYPTOMONAS	25	4	--	-	--	-	--	-	--	-
..EUGLENOPHYCEAE										
...EUGLENALES										
....EUGLENACEAE										
....EUGLENA	--	-	--	-	--	-	--	-	--	-
....PHACUS	--	-	--	-	--	-	--	-	--	-
....TRACHELOMONAS	--	-	150	1	3	1	--	-	--	-

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

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

RED RIVER OF THE NORTH BASIN

05054020 RED RIVER OF THE NORTH BELOW FARGO, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	MAY 23,77 1155	JUN 27,77 1255	JUL 25,77 1200	AUG 22,77 1100	SEP 20,77 1130
TOTAL CELLS/ML	20000	6400	7000	9900	53000
DIVERSITY: DIVISION	1.3	1.0	1.8	1.7	0.6
..CLASS	1.3	1.0	1.8	1.7	0.6
...ORDER	1.5	1.0	2.3	2.0	0.7
...FAMILY	1.8	2.3	2.6	2.6	0.7
....GENUS	2.6	2.6	3.1	2.8	0.7

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										
...CHARACIACEAE										
...SCHROEDERIA	--	-	140	2	--	-	--	-	--	-
...COELASTRACEAE										
...COELASTRUM	--	-	960#	15	--	-	640	7	--	-
...HYDRODICTYACEAE										
...PEDIASTRUM	--	-	2200#	34	--	-	--	-	--	-
...MICRACTINIACEAE										
...MICRACTINIUM	--	-	34	1	--	-	--	-	--	-
...OOCYSTACEAE										
...ANKISTRODESMUS	980	5	120	2	240	3	440	4	*	0
...DICTYOSPHAERIUM	--	-	--	-	--	-	160	2	--	-
...KIRCHNERIELLA	980	5	--	-	280	4	160	2	*	0
...OOCYSTIS	--	-	--	-	240	3	160	2	--	-
...SELENASTRUM	--	-	--	-	--	-	*	0	--	-
...TETRAEDRON	160	1	--	-	170	2	--	-	*	0
...SCENEDESMACEAE										
...ACTINASTRUM	650	3	--	-	--	-	--	-	--	-
...CRUCIGENIA	3700#	19	320	5	350	5	*	0	*	0
...SCENEDESMUS	1300	6	900	14	520	7	2100#	21	*	0
...TETRASTRUM	980	5	90	1	--	-	--	-	--	-
..TETRASPORALES										
...PALMELLACEAE										
...SPHAEROCYSTIS	--	-	--	-	480	7	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
...CHLAMYDOMONAS	--	-	--	-	--	-	360	4	*	0
..ZYGNEMATALES										
...DESMIDIACEAE										
...COSMARIUM	--	-	--	-	130	2	--	-	--	-
...STAUSTRUM	--	-	--	-	--	-	*	0	--	-
...ZYGNEMATAACEAE										
...MOUGEOTIA	--	-	--	-	--	-	--	-	5100	10
CHRYSTOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...COSCINODISCEACEAE										
...CYCLOTELLA	9400#	47	--	-	--	-	--	-	--	-
...MELOSIRA	--	-	34	1	1200#	17	3300#	34	430	1
...RHIZOSOLENIACEAE										
...RHIZOSOLENIA	--	-	--	-	*	0	--	-	--	-
..PENNALES										
...ACHNANTHACEAE										
...ACHNANTHES	--	-	--	-	--	-	--	-	*	0
...COCCONEIS	--	-	--	-	--	-	--	-	*	0
...RHOICOSPHEMIA	--	-	*	0	--	-	--	-	--	-
...CYMBELLACEAE										
...AMPHORA	--	-	--	-	--	-	--	-	--	-
...CYMBELLA	--	-	--	-	43	1	--	-	--	-
...RHOPALODIA	--	-	--	-	--	-	--	-	--	-
...DIATOMACEAE										
...DIATOMA	--	-	--	-	--	-	--	-	--	-
...FRAGILARIACEAE										
...SYNEDRA	--	-	--	-	--	-	--	-	--	-
...NAVICULACEAE										
...GYROSGMA	--	-	*	0	--	-	*	0	--	-
...NAVICULA	330	2	*	0	280	4	*	0	*	0
...NITZSCHACEAE										
...DENTICULA	--	-	--	-	--	-	--	-	--	-
...NITZSCHIA	160	1	--	-	--	-	120	1	--	-
...SURIPELLACEAE										
...SURIPELLA	--	-	--	-	43	1	--	-	--	-
..XANTHOPHYCEAE										
...HETEROCOCCALES										
...CHLOROTHECIACEAE										
...OPHIOCYTUM	--	-	--	-	--	-	*	0	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
 * - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

CONTINUED ...

RED RIVER OF THE NORTH BASIN

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05054020 RED RIVER OF THE NORTH BELOW FARGO, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

(CONTINUED)

DATE TIME	MAY 23,77 1155		JUN 27,77 1255		JUL 25,77 1200		AUG 22,77 1100		SEP 20,77 1130	
ORGANISM	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										
...CHROCCOCCALES										
...CHROCCOCCAEAE										
...ANACYSTIS	--	-	--	-	2600#	37	--	-	--	-
..HORMOGONALES										
...NOSTOCACEAE										
...APHANIZOMENON	--	-	1500#	23	--	-	--	-	--	-
...OSCILLATORIACEAE	--	-	--	-	--	-	--	-	--	-
...LYNGBYA	--	-	--	-	--	-	--	-	--	-
...OSCILLATORIA	--	-	--	-	--	-	1900#	19	46000#	88
...SPIRULINA	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
..CRYPTOPHYCEAE										
...CRYPTOMONIDALES										
...CRYPTOCHRYSIDACEAE										
...CHROOMONAS	--	-	--	-	--	-	--	-	--	-
...CRYPTOMONODACEAE										
...CRYPTOMONAS	160	1	--	-	--	-	80	1	--	-
..EUGLENOPHYCEAE										
...EUGLENALES										
...EUGLENACEAE										
...EUGLENA	330	2	--	-	150	2	160	2	*	0
...PHACUS	980	5	--	-	110	2	--	-	*	0
...TRACHELOMONAS	--	-	79	1	150	2	*	0	*	0

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

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

PERIPHYTON

Date	Length of exposure (days)	Biomass (mg/m ²)		Chlorophyll ^a (mg/m ²)	Chlorophyll ^b (mg/m ²)	Biomass pigment ratio	Sampling method
		Dry weight	Ash weight				
Nov. 18	51	65,540	9,325	5.04	3.85	9,325	Polyethylene strip
July 25	30	8,910	6,320	.185	.026	14,000	Polyethylene strip

RED RIVER OF THE NORTH BASIN

05054500 SHEYENNE RIVER ABOVE HARVEY, ND

LOCATION.--Lat 47°42'10", long 99°56'55", in SW¼SE¼ sec.24, T.149 N., R.73 W., Wells County, Hydrologic Unit 09020202, on right bank just downstream from county road and 4.5 mi (7.2 km) south of Harvey.

DRAINAGE AREA.--424 mi² (1,098 km²), of which about 270 mi² (700 km²) is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1955 to current year.

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,547.30 ft (471.617 m) above mean sea level.

REMARKS.--Records fair except for the winter period, which is poor.

AVERAGE DISCHARGE.--22 years, 6.02 ft³/s (0.170 m³/s), 4,360 acre-ft/yr (5.38 hm³/yr); median of yearly mean discharges, 4.5 ft³/s (0.13 m³/s), 3,300 acre-ft/yr (4.1 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 410 ft³/s (11.6 m³/s), Mar. 15, 1966, gage height, 9.21 ft (2.807 m); maximum gage height, 10.30 ft (3.139 m) Apr. 1, 1971, backwater from ice; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 20 ft³/s (0.56 m³/s), Sept. 24, gage height, 5.51 (1.679 m), no peak above base of 25 ft³/s (0.71 m³/s); maximum gage height, 7.74 ft (2.359 m) Mar. 9, backwater from ice; no flow for several days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.10	.63	.20			0	2.4	1.9	1.4	.63	.67	3.0
2	.15	.29	.20			0	2.2	1.3	1.1	.63	.67	5.9
3	.40	.35	.20			0	2.0	2.3	.50	.63	.67	4.2
4	.70	.35	.20			0	2.1	2.8	.35	.63	.67	2.4
5	.71	.25	.20			.20	2.2	4.4	.32	.71	.67	.50
6	1.4	.25	.18			1.2	2.5	2.9	.41	.71	.92	.32
7	1.4	.25	.15			3.0	3.5	2.6	.44	.71	.81	.63
8	1.0	.25	.15			4.5	3.3	2.5	.44	.91	.71	3.6
9	.44	.25	.15			7.5	3.4	2.2	.41	.67	.81	14
10	.38	.25	.15			10	2.3	2.0	.44	.71	.67	9.2
11	.32	.25	.15			8.0	3.0	1.1	.41	5.0	.81	4.1
12	.20	.25	.15			6.0	2.4	.71	.53	11	.76	2.7
13	.24	.25	.15			5.5	3.0	.91	.59	2.2	.81	2.2
14	.32	.25	.15			5.0	2.8	.86	.76	.67	.86	1.5
15	.35	.25	.15			4.6	2.5	.91	1.3	1.1	.96	1.5
16	.35	.25	.15			4.4	2.8	1.8	.86	.63	.96	1.4
17	.47	.25	.15			4.2	3.6	1.6	1.2	.44	.63	.96
18	.86	.25	.15			4.0	2.4	1.2	1.5	.29	.59	1.7
19	.86	.25	.15			3.8	2.4	.71	1.8	.24	.63	2.1
20	.81	.25	.12			3.6	2.8	.96	3.0	.16	.59	1.9
21	.76	.25	.10			3.4	2.7	.96	2.5	.12	.67	1.8
22	.67	.25	.10			3.4	2.5	1.1	.67	.09	.71	.76
23	.81	.25	.10			3.2	2.3	1.6	.63	.08	.71	2.7
24	.81	.25	.10			3.2	1.8	1.6	.63	.22	.71	18
25	.81	.25	.10			3.4	7.0	1.1	.63	.16	.59	19
26	.76	.25	.10			3.8	1.5	.96	.63	.12	.71	14
27	.91	.20	.10			4.0	1.5	.81	.63	.16	.86	9.1
28	1.1	.20	.08			4.4	3.6	1.4	.63	.32	1.4	5.7
29	1.1	.22	.06			4.4	1.4	1.4	.63	.53	1.1	4.5
30	8.6	.20	.04		---	4.0	2.0	1.4	.63	.63	.87	4.3
31	2.9	---	.02		---	3.0	---	1.4	---	.67	1.6	---
TOTAL	30.69	7.94	4.15	0	0	115.70	79.9	49.39	26.07	31.67	24.80	143.67
MEAN	.99	.26	.13	0	0	3.73	2.66	1.59	.87	1.02	.80	4.79
MAX	8.6	.63	.20	0	0	10	7.0	4.4	3.0	11	1.6	19
MIN	.10	.20	.02	0	0	0	1.4	.71	.32	.08	.59	.32
AC-FT	61	16	8.2	0	0	229	158	98	52	63	49	285
CAL YR 1976	TOTAL	4153.11	MEAN 11.3	MAX 200	MIN 0	AC-FT 8240						
WTR YR 1977	TOTAL	513.98	MEAN 1.41	MAX 19	MIN 0	AC-FT 1020						

RED RIVER OF THE NORTH BASIN

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05054500 SHEYENNE RIVER ABOVE HARVEY, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS)	SPECIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	HARD- NESS (CA, MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)
OCT									
04...	1240	.69	1450	--	7.0	--	--	--	--
NOV									
04...	0950	.24	1850	--	.5	--	--	--	--
MAR									
08...	1240	4.4	920	--	1.0	--	--	--	--
11...	1130	7.7	1100	--	.0	--	--	--	--
16...	1045	4.4	1180	--	.0	--	--	--	--
21...	1825	3.4	1250	--	.0	--	--	--	--
APR									
06...	1240	2.5	1100	8.2	3.5	37	160	0	36
MAY									
31...	1030	1.4	1410	--	16.0	--	--	--	--
JUL									
07...	1050	.74	1010	8.1	22.0	140	150	0	30
AUG									
01...	1130	.70	1520	8.4	20.0	65	120	0	23
29...	1030	.98	1290	8.0	14.0	25	130	0	29

DATE	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	ALKA- LITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)
OCT									
04...	--	--	--	--	--	--	--	--	--
NOV									
04...	--	--	--	--	--	--	--	--	--
MAR									
08...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--
APR									
06...	18	220	74	7.5	5.0	510	0	420	5.1
MAY									
31...	--	--	--	--	--	--	--	--	--
JUL									
07...	17	260	79	9.4	5.0	630	0	520	8.0
AUG									
01...	14	370	87	15	7.8	810	4	670	5.2
29...	13	310	83	12	6.6	700	0	570	11

RED RIVER OF THE NORTH BASIN
05054500 SHEYENNE RIVER ABOVE HARVEY, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED SULFATE (SO ₄) (MG/L)	DIS- SOLVED CHLOR- IDE (CL) (MG/L)	DIS- SOLVED FLUOR- IDE (F) (MG/L)	DIS- SOLVED SILICA (SiO ₂) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L)
OCT 04...	--	--	--	--	--	--	--	--	--
NOV 04...	--	--	--	--	--	--	--	--	--
MAR 08...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--
APR 06...	200	34	.2	26	765	791	1.04	5.16	.04
MAY 31...	--	--	--	--	--	--	--	--	--
JUL 07...	150	12	.3	18	848	804	1.15	1.69	.01
AUG 01...	210	21	.4	8.7	1090	1060	1.48	2.06	.03
29...	180	21	.4	17	901	923	1.23	2.38	.01

DATE	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L)	DIS- SOLVED ALUM- INUM (AL) (UG/L)	DIS- SOLVED ARSENIC (AS) (UG/L)	DIS- SOLVED BARIUM (BA) (UG/L)	DIS- SOLVED BORON (B) (UG/L)	DIS- SOLVED CAD- MIUM (CD) (UG/L)	DIS- SOLVED CHRO- MIUM (CR) (UG/L)	DIS- SOLVED COBALT (CO) (UG/L)	DIS- SOLVED COPPER (CU) (UG/L)
APR 06...	.18	--	--	--	530	--	--	--	--
JUL 07...	.22	30	4	200	870	0	0	0	1
AUG 01...	.12	--	--	--	1100	--	--	--	--
29...	.16	--	--	--	860	--	--	--	--

DATE	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED LEAD (PB) (UG/L)	DIS- SOLVED LITHIUM (LI) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)	DIS- SOLVED MERCURY (HG) (UG/L)	DIS- SOLVED MOLYB- DENUM (MO) (UG/L)	DIS- SOLVED NICKEL (NI) (UG/L)	DIS- SOLVED SEL E- NIUM (SE) (UG/L)	DIS- SOLVED STRON- TIUM (SR) (UG/L)	DIS- SOLVED VANA- DIUM (V) (UG/L)	DIS- SOLVED ZINC (ZN) (UG/L)
JUL 07...	170	5	120	30	.1	0	2	0	190	1.4	8

RED RIVER OF THE NORTH BASIN

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05056000 SHEYENNE RIVER NEAR WARWICK, ND

LOCATION.--Lat 47°48'20", long 98°42'57", on south quarter of line between secs.15 and 16, T.150 N., R.63 W., Eddy County, Hydrologic Unit 09020203, on left bank on downstream side of county highway bridge, 3.3 mi (5.3 km) south of Warwick.

DRAINAGE AREA.--2,070 mi² (5,360 km²), approximately, of which about 1,310 mi² (3,390 km²) is probably non-contributing - includes 227 mi² (588 km²) in closed basins.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1949 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1438: 1952(M). WSP 1728: Drainage area.

GAGE.--Water-stage recorder and rubble masonry control. Altitude of gage is 1,370 ft (418 m) (by barometer).

REMARKS.--Records fair. Records include flow of spring which enters below gage and just above control. Discharge measurements of spring inflow made during the water year are listed below:

Discharge			Discharge			Discharge		
Date	(ft ³ /s)	(m ³ /s)	Date	(ft ³ /s)	(m ³ /s)	Date	(ft ³ /s)	(m ³ /s)
Oct. 7	1.4	0.040	Feb. 3	1.4	0.040	June 15	1.1	0.031
Nov. 3	1.3	.037	Mar. 2	1.1	.031	July 11	1.1	.031
Dec. 7	1.2	.034	15	1.6	.045	Aug. 8	1.1	.031
Jan. 5	1.3	.037	Apr. 12	1.6	.045	Sept. 12	1.2	.034
			May 5	1.8	.051			

AVERAGE DISCHARGE.--28 years, 51.4 ft³/s (1.456 m³/s), 37,240 acre-ft/yr (45.9 hm³/yr); median of yearly mean discharges, 50 ft³/s (1.42 m³/s), 36,200 acre-ft/yr (45 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,660 ft³/s (132 m³/s) Apr. 14, 1969, gage height, 7.51 ft (2.289 m); maximum gage height, 7.83 ft (2.387 m) Apr. 18, 1956; no flow Aug. 7 to Sept. 1, Sept. 3-9, 1961.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 66 ft³/s (1.869 m³/s) May 5, gage height, 2.64 ft (0.805 m), only peak above base of 200 ft³/s (5.66 m³/s); minimum, 0.32 ft³/s (0.009 m³/s Aug. 1, gage height, 2.02 ft (0.616 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	3.2	2.2	2.9	3.5	3.2	17	11	3.2	1.1	.48	1.6
2	1.8	3.2	2.2	2.9	3.5	3.2	19	11	4.1	1.1	.80	1.6
3	1.6	1.8	2.2	2.9	3.5	3.5	21	12	6.0	1.6	.80	1.5
4	1.6	1.8	2.2	2.9	3.2	3.5	20	27	6.0	1.5	1.1	1.6
5	1.1	1.8	2.2	2.9	3.2	3.5	17	56	4.5	1.8	.96	1.8
6	1.1	1.8	2.2	2.9	3.2	3.5	17	50	3.5	1.5	.96	2.0
7	1.1	1.8	2.2	3.2	3.2	3.2	16	44	2.7	1.6	.80	2.2
8	1.3	1.8	2.2	3.2	3.2	6.0	17	29	2.7	1.1	1.3	2.4
9	1.3	1.8	2.2	3.2	3.2	11	17	20	2.2	1.1	1.3	2.0
10	1.5	2.0	2.2	3.2	3.5	12	17	18	2.2	1.1	1.3	1.3
11	1.8	2.0	2.2	3.2	3.8	15	17	16	2.0	1.3	.96	1.1
12	2.4	2.0	2.2	3.2	3.8	15	16	15	2.0	.96	.64	1.3
13	2.9	2.0	2.2	2.9	3.8	19	16	12	2.0	.96	.96	1.6
14	2.7	2.0	2.2	3.2	3.8	25	16	8.4	1.8	.96	.80	1.3
15	1.5	2.0	2.9	3.2	3.8	25	17	6.5	2.2	.80	1.1	1.1
16	1.6	2.0	2.9	3.5	3.8	25	16	5.5	1.8	.96	1.3	.96
17	1.6	2.2	3.2	3.2	3.5	28	16	3.5	2.0	.96	1.1	1.1
18	2.2	2.2	3.2	3.2	3.5	27	16	2.9	1.6	.96	.96	1.3
19	2.2	2.4	3.2	3.5	3.5	21	16	2.7	1.3	.80	1.1	1.5
20	2.2	2.4	3.2	3.5	3.2	16	16	2.7	1.3	.80	1.3	1.3
21	2.2	2.4	3.2	3.5	3.2	15	16	2.4	1.5	.80	1.3	1.5
22	2.2	2.4	3.2	3.5	3.2	14	15	2.9	1.3	.80	1.3	1.5
23	2.2	2.4	3.2	3.5	3.5	16	13	3.2	1.5	.80	1.3	1.5
24	2.2	2.4	2.9	3.5	3.5	17	14	3.2	1.3	.80	1.3	2.0
25	2.2	2.4	2.9	3.8	3.2	19	14	2.9	1.1	.80	1.5	2.4
26	2.2	2.4	2.9	3.8	3.2	21	13	2.7	1.1	.80	1.5	2.4
27	2.2	2.4	2.9	3.8	3.2	21	12	2.9	1.1	.96	1.8	2.4
28	2.2	2.4	3.2	3.8	3.2	21	12	3.5	1.1	1.1	2.0	2.4
29	2.2	2.2	3.2	3.8	---	23	13	3.5	1.1	1.1	1.6	2.2
30	2.4	2.2	3.2	3.5	---	22	13	3.5	1.1	1.3	1.5	2.0
31	2.9	---	2.9	3.5	---	21	---	3.5	---	.80	1.6	---
TOTAL	61.0	65.8	83.1	102.8	95.9	478.6	475	387.4	67.3	33.02	36.72	50.86
MEAN	1.97	2.19	2.68	3.32	3.43	15.4	15.8	12.5	2.24	1.07	1.18	1.70
MAX	2.9	3.2	3.2	3.8	3.8	28	21	56	6.0	1.8	2.0	2.4
MIN	1.1	1.8	2.2	2.9	3.2	3.2	12	2.4	1.1	.80	.48	.96
AC-FT	121	131	165	204	190	949	942	768	133	65	.73	101
CAL YR 1976	TOTAL	21064.74	MEAN	57.6	MAX	1050	MIN	.96	AC-FT	41780		
WTR YR 1977	TOTAL	1937.50	MEAN	5.31	MAX	56	MIN	.48	AC-FT	3840		

RED RIVER OF THE NORTH BASIN

05056000 SHEYENNE RIVER NEAR WARWICK, ND--Continued
(Irrigation network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1951 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1951 to current year.

WATER TEMPERATURES: January 1951 to September 1962, October 1963 to September 1964, October 1965 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,940 micromhos Feb. 1, 1955; minimum daily, 165 micromhos Mar. 17, 1975.

WATER TEMPERATURES: Maximum daily, 30.5°C July 1, 1974; minimum daily, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 998 micromhos Feb. 27; minimum daily, 384 micromhos Sept. 10.

WATER TEMPERATURES: Maximum daily, 29.0°C July 18; minimum daily, 0.0°C on many days during winter months.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	HARD- NESS (CA, MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)
OCT									
07...	1720	.67	440	8.5	8.0	--	220	7	56
NOV									
03...	1445	1.8	470	7.9	2.0	3	210	0	59
DEC									
07...	1315	2.2	530	8.0	2.0	4	230	0	57
JAN									
05...	1300	2.6	725	7.6	1.0	7	280	2	61
FEB									
03...	1600	3.3	725	7.8	2.0	12	280	0	66
MAR									
02...	1215	3.2	910	7.4	.0	12	380	0	86
15...	1450	24	750	--	1.0	--	--	--	--
APR									
12...	1210	17	510	--	5.5	12	190	0	41
MAY									
05...	1515	66	695	8.3	15.5	23	250	6	53
09...	1700	21	670	--	18.0	--	--	--	--
JUN									
15...	1315	2.4	625	8.6	20.5	14	240	5	49
JUL									
11...	1510	1.2	480	8.4	21.5	7	200	13	46
AUG									
08...	1200	1.2	440	8.3	19.5	7	180	0	41
SEP									
12...	1750	1.2	360	8.3	15.0	8	190	15	45

DATE	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	ALKA- LITY AS CACD3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)
OCT									
07...	19	19	16	.6	2.9	257	0	211	1.3
NOV									
03...	17	18	15	.5	2.5	262	0	215	5.3
DEC									
07...	22	30	22	.9	3.5	287	0	235	4.6
JAN									
05...	32	81	38	2.1	6.5	344	0	282	14
FEB									
03...	28	52	28	1.4	4.9	383	0	314	9.7
MAR									
02...	41	59	25	1.3	8.0	494	0	405	31
15...	--	--	--	--	--	--	--	--	--
APR									
12...	20	47	35	1.5	5.4	240	--	200	--
MAY									
05...	29	63	34	1.7	8.6	300	0	246	2.4
09...	--	--	--	--	--	--	--	--	--
JUN									
15...	28	53	32	1.5	6.8	280	0	230	1.1
JUL									
11...	21	30	24	.9	3.8	230	0	190	1.5
AUG									
08...	19	21	20	.7	3.1	220	0	180	1.8
SEP									
12...	18	14	14	.4	2.5	210	0	170	1.7

RED RIVER OF THE NORTH BASIN

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05056000 SHEYENNE RIVER NEAR WARWICK, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO2) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L)
OCT 07...	46	3.5	--	--	286	--	.39	.52	.06
NOV 03...	41	3.3	.1	21	296	290	.40	1.49	.07
DEC 07...	54	5.1	.2	18	335	332	.46	1.99	.14
JAN 05...	110	13	.2	18	519	493	.71	3.64	.27
FEB 03...	75	9.8	.2	25	457	450	.62	4.07	.11
MAR 02...	96	14	.2	26	574	575	.78	4.96	.20
APR 15...	--	--	--	--	--	--	--	--	--
MAY 12...	73	12	.1	10	314	327	.43	14.4	.01
JUN 05...	120	16	.2	6.1	453	446	.62	80.7	.57
JUL 09...	--	--	--	--	--	--	--	--	--
AUG 15...	91	12	.2	8.3	405	386	.55	2.62	.06
SEP 11...	58	6.5	.2	12	290	291	.39	.94	.02
SEP 08...	43	4.4	.1	12	256	252	.35	.83	.03
SEP 12...	37	3.2	.1	15	228	239	.31	.74	.01

DATE	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L)	DIS- SOLVED ALUM- INUM (AL) (UG/L)	DIS- SOLVED ARSENIC (AS) (UG/L)	DIS- SOLVED BARIUM (BA) (UG/L)	DIS- SOLVED BERYL- LIUM (BE) (UG/L)	DIS- SOLVED BORON (B) (UG/L)	DIS- SOLVED CAD- MIUM (CD) (UG/L)	DIS- SOLVED CHRO- MIUM (CR) (UG/L)	DIS- SOLVED COBALT (CO) (UG/L)	DIS- SOLVED COPPER (CU) (UG/L)
OCT 07...	.02	--	--	--	--	--	--	--	--	--
NOV 03...	.04	--	--	--	--	50	--	--	--	--
DEC 07...	.04	--	--	--	--	70	--	--	--	--
JAN 05...	.07	--	--	--	--	140	--	--	--	--
FEB 03...	.12	--	--	--	--	110	--	--	--	--
MAR 02...	.17	--	--	--	--	140	--	--	--	--
APR 12...	.03	10	3	0	0	90	0	0	2	0
MAY 05...	.05	--	--	--	--	140	--	--	--	--
JUN 15...	.05	--	--	--	--	90	--	--	--	--
JUL 11...	.02	--	--	--	--	60	--	--	--	--
AUG 08...	.02	--	--	--	--	60	--	--	--	--
SEP 12...	.03	20	0	200	0	50	3	0	1	2

DATE	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED LEAD (PB) (UG/L)	DIS- SOLVED LITHIUM (LI) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)	DIS- SOLVED MERCURY (HG) (UG/L)	DIS- SOLVED MOLYB- DENUM (MO) (UG/L)	DIS- SOLVED NICKEL (NI) (UG/L)
APR 12...	60	1	30	60	.0	0	2
SEP 12...	30	16	20	20	.0	2	2

DATE	DIS- SOLVED SELE- NIUM (SE) (UG/L)	DIS- SOLVED SILVER (AG) (UG/L)	DIS- SOLVED STRON- TIUM (SR) (UG/L)	DIS- SOLVED VANA- DIUM (V) (UG/L)	DIS- SOLVED ZINC (ZN) (UG/L)	CYANIDE (CN) (MG/L)
APR 12...	0	0	150	.3	10	.00
SEP 12...	0	0	130	.0	10	.00

RED RIVER OF THE NORTH BASIN

05056000 SHEYENNE RIVER NEAR WARWICK, ND--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	472	449	531	600	---	927	700	563	652	483	422	415
2	470	483	536	745	---	897	700	547	710	477	422	396
3	472	482	542	707	---	880	648	585	715	500	420	398
4	469	---	523	675	---	850	650	572	727	---	425	397
5	472	478	513	660	---	737	652	678	659	490	422	398
6	470	500	527	645	---	900	601	696	726	490	427	396
7	467	468	495	680	---	---	637	638	713	480	420	402
8	465	506	480	650	---	---	736	625	712	510	409	394
9	467	479	480	700	---	---	580	650	696	492	411	396
10	---	480	465	750	---	---	540	647	704	504	416	384
11	461	521	470	675	---	---	520	662	640	512	410	386
12	463	530	480	680	---	---	512	680	---	468	412	386
13	461	517	580	960	---	---	490	695	625	---	422	404
14	471	496	495	900	---	---	501	678	642	450	404	394
15	470	473	495	850	---	720	491	695	609	460	410	398
16	464	476	560	970	---	720	511	705	607	466	403	399
17	467	483	560	940	---	522	519	641	593	460	403	396
18	462	571	600	940	---	563	509	700	580	450	408	401
19	460	559	580	980	---	536	538	701	590	443	405	456
20	463	540	610	980	---	512	558	701	587	450	399	440
21	461	574	650	980	800	540	539	722	580	447	404	442
22	463	570	520	985	675	518	539	662	560	450	400	413
23	460	567	580	970	900	538	600	711	561	460	406	420
24	474	568	560	990	970	530	575	720	561	441	400	417
25	461	---	540	970	905	524	556	705	540	433	404	416
26	487	563	680	960	900	518	559	700	539	438	400	412
27	505	564	560	965	998	520	592	---	550	440	402	425
28	479	557	600	990	945	635	572	677	510	438	403	421
29	433	570	580	990	---	738	571	700	503	432	402	422
30	452	552	600	---	---	701	---	698	493	430	412	420
31	460	---	540	---	---	697	---	600	---	428	408	---
MEAN	467	522	546	844	887	662	576	665	617	463	410	408

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15.0	5.0	0.5	0.0	0.0	0.0	3.0	16.0	22.0	21.0	20.0	14.0
2	13.0	3.5	0.5	0.0	0.0	0.0	3.0	17.0	23.0	22.0	21.0	17.0
3	13.0	2.0	0.5	0.0	0.5	0.0	3.0	18.0	22.0	21.0	21.0	16.0
4	10.0	---	0.5	0.0	0.5	0.0	3.0	16.0	23.0	---	20.0	17.0
5	7.0	2.5	0.5	0.0	0.0	0.0	2.5	16.0	22.0	28.0	17.0	19.0
6	7.0	2.0	0.0	0.0	0.0	0.0	4.0	15.0	23.0	26.0	16.0	18.0
7	7.0	2.0	2.0	0.0	0.5	0.0	3.0	17.0	23.0	23.5	17.0	19.0
8	8.5	4.0	0.0	0.0	0.5	2.0	5.0	19.0	22.0	22.0	20.0	16.0
9	7.5	2.5	-0.5	0.0	0.5	2.0	9.0	19.0	20.0	21.0	22.0	16.0
10	---	1.0	0.0	0.0	1.0	2.0	7.0	22.0	23.0	22.0	17.0	15.0
11	12.0	1.5	1.0	0.0	1.0	2.0	6.0	20.0	18.0	17.0	23.0	16.0
12	10.0	2.5	0.0	0.0	0.5	0.0	7.0	24.0	---	19.0	17.0	15.0
13	9.0	2.0	1.0	0.0	0.5	1.0	11.0	26.0	19.0	---	23.0	16.0
14	7.0	2.0	1.0	0.0	1.0	2.0	7.0	25.0	19.0	21.0	17.0	17.5
15	4.0	2.0	1.0	0.0	0.0	4.0	14.0	23.0	23.0	21.0	14.0	19.0
16	4.0	1.0	0.5	0.0	1.0	4.0	13.0	22.0	22.0	24.0	18.0	18.0
17	4.0	1.0	0.5	0.0	1.0	2.0	14.0	24.0	19.0	28.5	21.0	16.0
18	4.0	2.0	0.0	0.0	0.0	3.0	12.0	23.0	20.0	29.0	17.0	14.0
19	3.0	2.5	0.0	0.0	0.5	3.0	11.0	24.0	20.0	25.0	15.0	13.0
20	4.0	2.0	1.0	0.0	3.0	2.0	12.0	18.0	20.0	24.0	17.0	16.0
21	2.0	1.0	1.0	0.0	2.0	4.0	13.0	23.0	20.0	24.0	16.0	16.0
22	2.5	1.0	1.0	0.0	1.0	3.0	14.0	18.0	19.0	24.0	17.0	14.0
23	2.0	1.0	1.0	0.0	0.0	4.0	13.0	19.0	23.0	28.0	16.0	13.0
24	3.0	1.0	1.0	0.0	0.0	4.0	13.0	23.0	24.0	24.0	14.0	13.0
25	3.0	0.5	1.0	0.0	0.0	2.0	15.0	24.0	24.0	24.0	17.0	12.0
26	4.0	0.5	1.0	0.0	1.0	3.0	18.0	23.0	26.0	24.0	16.0	12.0
27	4.0	0.5	1.0	0.0	0.0	3.0	14.0	---	25.0	22.0	17.0	13.0
28	5.0	0.5	1.0	0.0	0.0	3.0	13.0	22.0	19.0	22.0	16.0	12.0
29	4.5	0.5	1.0	0.0	---	1.5	18.0	25.0	22.0	21.0	17.0	13.0
30	5.0	0.5	1.0	0.0	---	1.0	18.0	20.0	17.5	19.0	18.0	14.0
31	5.0	---	1.0	0.0	---	2.0	---	22.0	---	20.0	16.0	---
MEAN	6.5	1.5	0.5	0.0	0.5	2.0	10.0	21.0	21.5	23.0	18.0	15.5

05056100 MAUVAIS COULEE NEAR CANDO, ND

LOCATION.--Lat 48°26'53", long 99°06'08", in SE¼NE¼SE¼ sec.1, T.157 N., R.66 W., Towner County, Hydrologic Unit 09020201, on left bank 0.3 mi (0.5 km) upstream from highway bridge, about 4 mi (6 km) upstream from West Fork, 5.5 mi (8.8 km) southeast of Cando, and 7 mi (11 km) northeast of Maza.

DRAINAGE AREA.--387 mi² (1,000 km²), of which about 10 mi² (25 km²) is probably noncontributing.

PERIOD OF RECORD.--May 1956 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,445 ft (440.4 m), from topographic map. Prior to July 2, 1957, nonrecording gage at present site and datum.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--21 years, 18.5 ft³/s (0.524 m³/s), 13,400 acre-ft/yr (16.5 hm³/yr); median of yearly mean discharges, 13 ft³/s (0.37 m³/s), 9,400 acre-ft/yr (12 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,500 ft³/s (70.8 m³/s) Apr. 14, 1969, gage height, 11.16 ft (3.402 m); no flow at times each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 16, 1954, reached a stage of 9.83 ft (2.996 m), and flood of Apr. 20, 1956, reached a stage of 10.71 ft (3.264 m), from floodmarks set by local resident.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1.6 ft³/s (0.045 m³/s) May 4, gage height, 2.51 ft (0.765 m); maximum gage height, 2.62 ft (0.799 m) July 14, backwater from debris; no peaks above base of 25 ft³/s (0.71 m³/s), no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.09	.12	.02	.02		0	.11	1.0	.03	.01	.01	0
2	.09	.12	.02	.02		.01	.09	1.0	.03	.01	.01	0
3	.06	.08	.02	.02		.02	.08	1.5	.03	.01	.01	0
4	.03	.06	.02	.02		.03	.08	1.0	.03	.01	.01	0
5	.02	.05	.02	.02		.03	.08	.17	.03	.05	.01	0
6	.02	.05	.02	.02		.03	.08	.07	.03	.09	.01	0
7	.02	.05	.02	.02		.12	.08	.06	.03	.07	.01	0
8	.02	.05	.02	.02		.20	.08	.05	.03	.05	.01	0
9	.01	.05	.02	.01		.25	.11	.05	.03	.05	.01	.01
10	.02	.05	.02	.01		.10	.18	.05	.02	.05	.01	.01
11	.03	.04	.02	.01		.10	.12	.05	.01	.05	.01	.01
12	.03	.04	.02	.01		.08	.16	.04	.01	.05	.01	.01
13	.04	.04	.02	.01		.08	.22	.04	.02	.05	.01	.01
14	.05	.04	.02	.01		.26	.26	.03	.02	.06	0	.01
15	.03	.04	.02	0		.18	.30	.03	.03	.05	0	.01
16	.03	.04	.02	0		.16	.38	.03	.03	.04	0	.06
17	.03	.04	.02	0		.12	.36	.03	.04	.04	0	.01
18	.03	.04	.02	0		.12	.62	.03	.03	.04	0	.01
19	.04	.04	.02	0		.14	.65	.03	.04	.03	0	0
20	.06	.04	.02	0		.14	.70	.02	.04	.03	0	0
21	.06	.04	.02	0		.18	.70	.03	.03	.03	0	0
22	.06	.04	.02	0		.14	.65	.03	.02	.02	0	0
23	.06	.04	.02	0		.10	.60	.02	.02	.02	0	.01
24	.07	.04	.02	0		.18	.50	.02	.02	.02	0	.02
25	.12	.04	.02	0		.15	.55	.02	.01	.02	0	.03
26	.10	.04	.02	0		.09	.60	.02	.01	.01	0	.04
27	.10	.03	.02	0		.13	.65	.01	.01	.01	0	.03
28	.14	.02	.02	0		.14	.70	.01	.01	.01	0	.02
29	.14	.02	.02	0	---	.16	.80	.01	.01	.01	0	.02
30	.12	.02	.02	0	---	.07	.98	.03	.01	.01	0	.02
31	.12	---	.02	0	---	.08	---	.03	---	.01	0	---
TOTAL	1.84	1.41	.62	.22	0	3.59	11.67	5.51	.73	1.01	.13	.34
MEAN	.059	.047	.020	.007	0	.12	.39	.18	.024	.033	.004	.011
MAX	.14	.12	.02	.02	0	.26	.98	1.5	.05	.09	.01	.06
MIN	.01	.02	.02	0	0	0	.08	.01	.01	.01	0	0
AC-FT	3.6	2.8	1.2	.4	0	7.1	23	11	1.4	2.0	.3	.7
CAL YR 1976 TOTAL	14693.68					1100	MIN 0	AC-FT	29140			
WTR YR 1977 TOTAL	27.07					1.5	MIN 0	AC-FT	54			

RED RIVER OF THE NORTH BASIN

05056200 EDMORE COULEE NEAR EDMORE, ND

LOCATION.--Lat 48°20'14", long 98°39'33", in NW¼ sec.17, T.156 N., R.62 W., Ramsey County, Hydrologic Unit 09020201, on right bank 50 ft (15 m) upstream from bridge on county highway, 11 mi (18 km) southwest of Edmore and about 13 mi (21 km) upstream from Sweetwater Lake.

DRAINAGE AREA.--382 mi² (989 km²), of which about 100 mi² (259 km²) is probably noncontributing.

PERIOD OF RECORD.--April to June 1956, June 1957 to current year.

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Prior to June 26, 1957, nonrecording gage at same site and datum.

REMARKS.--Records good.

AVERAGE DISCHARGE.--20 years (1957-77) 13.1 ft³/s (0.371 m³/s), 9,490 acre-ft/yr (11.7 hm³/yr); median of yearly mean discharges, 9.1 ft³/s (0.26 m³/s), 6,600 acre-ft/yr (8.1 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 890 ft³ (25.2 m³/s) Apr. 17, 1974, gage height, 6.46 ft (1.969 m); maximum gage height, 6.63 ft (2.021 m) Mar. 25, 1966, backwater from ice, no flow for several months each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9.0 ft³/s (0.25 m³/s) Mar. 30, gage height, 2.50 ft (0.762 m), backwater from ice, no peak above base of 50 ft³/s (1.42 m³/s); no flow for many months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						0	5.5	.53				
2						0	4.5	.44				
3						0	3.5	.41				
4						0	2.7	1.2				
5						0	2.5	1.9				
6						0	3.0	2.1				
7						0	3.0	2.0				
8						0	2.5	1.9				
9						0	2.3	1.8				
10						0	2.4	1.7				
11						0	2.7	1.4				
12						0	2.7	1.1				
13						0	2.3	.86				
14						0	2.2	.59				
15						0	2.0	.41				
16						0	1.7	.24				
17						0	1.4	.12				
18						0	1.2	.04				
19						0	1.1	0				
20						0	1.4	0				
21						0	1.7	0				
22						0	1.9	0				
23						0	2.0	0				
24						0	1.9	0				
25						.10	1.6	0				
26						.50	1.5	0				
27						1.0	1.3	0				
28						2.0	1.1	0				
29					---	5.0	.86	0				
30					---	7.0	.71	0				
31		---			---	6.0	---	0	---			---
TOTAL	0	0	0	0	0	21.60	65.17	18.74	0	0	0	0
MEAN	0	0	0	0	0	.70	2.17	.60	0	0	0	0
MAX	0	0	0	0	0	7.0	5.5	2.1	0	0	0	0
MIN	0	0	0	0	0	0	.71	0	0	0	0	0
AC-FT	0	0	0	0	0	43	129	37	0	0	0	0
CAL YR 1976	TOTAL	3386.12	MEAN 9.25	MAX	349	MIN 0	AC-FT 6720					
WTR YR 1977	TOTAL	105.51	MEAN .29	MAX	7.0	MIN 0	AC-FT 209					

RED RIVER OF THE NORTH BASIN

67

05056390 LITTLE COULEE NEAR BRINSMADE, ND

LOCATION.--Lat 48°11'15", long 99°14'34", in SW¼ sec.2, T.154 N., R.67 W., Benson County, Hydrologic Unit 09020201, on right bank 100 ft (30 m) downstream from bridge on township road, 0.5 mi (0.8 km) downstream from Silver Lake, and 4 mi (6 km) east of Brinsmade.

DRAINAGE AREA.--350 mi² (906 km²), of which 160 mi² (414 km²) is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1975 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,435 ft (437 m), from topographic map.

REMARKS.--Records good.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 125 ft³/s (3.54 m³/s), Mar. 28, 1976, gage height, 8.50 ft (2.591 m), backwater from ice; maximum gage height, 9.04 ft (2.755 m) Mar. 26, 1976, backwater from ice; no flow for several months.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2.0 ft³/s (0.057 m³/s), Mar. 8, gage height, 6.46 ft (1.969 m), backwater from ice; maximum gage height, 6.72 ft (2.048 m) Mar. 10, backwater from ice; no flow for several months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						0						
2						0						
3						0						
4						0						
5						0						
6						0						
7						.10						
8						1.5						
9						.10						
10						.10						
11						.10						
12						.06						
13						.06						
14						.05						
15						.04						
16						0						
17						0						
18						0						
19						0						
20						0						
21						0						
22						0						
23						0						
24						0						
25						0						
26						0						
27						0						
28						0						
29					---	0						
30					---	0						
31		---			---	0	---		---			---
TOTAL	0	0	0	0	0	2.11	0	0	0	0	0	0
MEAN	0	0	0	0	0	.068	0	0	0	0	0	0
MAX	0	0	0	0	0	1.5	0	0	0	0	0	0
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	0	0	0	0	0	4.2	0	0	0	0	0	0
CAL YR 1976	TOTAL	3211.88	MEAN 8.78	MAX	120	MIN 0	AC-FT 6370					
WTR YR 1977	TOTAL	2.11	MEAN .006	MAX	1.5	MIN 0	AC-FT 4					

RED RIVER OF THE NORTH BASIN

05056400 BIG COULEE NEAR CHURCHS FERRY, ND

LOCATION.--Lat 48°10'40", long 99°13'15", in NW¼NW¼ sec.12, T.154 N., R.67 W., Benson County, Hydrologic Unit 09020201, on right bank on downstream side of bridge on U.S. Highway 281, 1 mi (1.6 km) downstream from Little Coulee and 6 mi (10 km) south of Churchs Ferry.

DRAINAGE AREA.--2,510 mi² (6,500 km²), approximately, of which about 690 mi² (1,790 km²) is probably non-contributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1950 to current year. Prior to October 1960, published as Mauvais Coulee near Churchs Ferry.

GAGE.--Water-stage recorder. Datum of gage is 1,432.65 ft (436.672 m) above mean sea level. Prior to June 21, 1950, reference marks, and June 21, 1950, to July 17, 1956, nonrecording gage at former bridge on U.S. Highway 281, 0.1 mi (0.2 km) upstream, at datum 0.70 ft (0.213 km) higher.

REMARKS.--Records good except those from Mar. 8 to Apr. 6, which are fair. Flow affected by many lakes on the mainstem and tributaries.

AVERAGE DISCHARGE.--27 years, 37.4 ft³/s (1.059 m³/s), 27,100 acre-ft/yr (33.4 hm³/yr); median of yearly mean discharges, 4.2 ft³/s (0.12 m³/s), 3,000 acre-ft/yr (3.7 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,250 ft³/s (34.8 m³/s) June 10, 1974; gage height, 7.06 ft (2.152 m); no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 60 ft³/s (1.70 m³/s) Mar. 29, gage height, 2.35 ft (0.716 m), backwater from ice; no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						0	4.5	7.3	.06	0		0
2						0	25	12	.08	0		0
3						0	30	6.4	.10	0		0
4						0	25	24	.11	0		0
5						0	25	20	.07	0		0
6						0	25	25	.03	0		0
7						0	26	23	.01	.05		0
8						.30	30	18	.01	.09		0
9						3.0	25	16	.11	.05		0
10						2.5	26	10	.11	.03		0
11						2.0	28	8.9	.06	.02		0
12						1.5	25	6.5	.05	.02		0
13						2.0	26	10	.05	.01		0
14						3.5	23	11	.06	0		0
15						5.0	23	8.5	.11	0		0
16						6.0	24	4.1	.10	0		0
17						4.0	22	1.8	.10	0		0
18						2.0	28	3.2	.14	0		0
19						1.5	24	7.2	.13	0		0
20						1.0	19	7.0	.12	0		0
21						.50	19	2.5	.12	0		0
22						.45	17	1.9	.12	0		0
23						.45	15	3.7	.12	0		0
24						.50	21	5.1	.11	0		0
25						2.0	13	2.3	.06	0		0
26						5.5	12	.73	.03	0		0
27						5.0	11	.27	.02	0		.01
28						6.0	14	.17	.01	0		.02
29					---	30	7.3	.13	0	0		.02
30					---	35	6.2	.11	0	0		.02
31					---	50	---	.09	---	0		---
TOTAL	0	0	0	0	0	169.70	659.5	246.90	2.20	.27	0	.07
MEAN	0	0	0	0	0	5.47	22.0	7.96	.073	.009	0	.002
MAX	0	0	0	0	0	50	45	25	.14	.09	0	.02
MIN	0	0	0	0	0	0	6.2	.09	0	0	0	0
AC-FT	0	0	0	0	0	337	1310	490	4.4	.5	0	.1
CAL YR 1976	TOTAL	26676.36	MEAN 72.9	MAX 577	MIN 0	AC-FT 52910						
WTR YR 1977	TOTAL	1078.64	MEAN 2.96	MAX 50	MIN 0	AC-FT 2140						

05056400 BIG COULEE NEAR CHURCHS FERRY, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1954 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS)	SPECIFIC CONDUCTANCE (MICRO- MHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	HARD- NESS (CA,MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)
MAR									
09...	1630	4.5	510	--	.5	--	--	--	--
15...	1250	5.0	1040	--	.5	--	--	--	--
22...	1030	.46	1350	7.8	1.0	50	350	33	87
28...	1645	7.2	760	--	2.0	--	--	--	--
APR									
07...	1350	27	800	8.7	6.5	25	310	100	61
19...	1530	21	850	--	8.5	--	--	--	--
MAY									
04...	1545	29	760	8.2	14.5	95	260	96	58
JUN									
14...	1600	.07	1100	8.6	--	--	--	--	--
JUL									
12...	0915	.03	1460	9.5	16.5	43	390	180	56

DATE	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	ALKA- LITY AS CAC03 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)
MAR									
09...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
22...	31	--	--	--	--	380	0	310	9.6
28...	--	--	--	--	--	--	--	--	--
APR									
07...	37	63	30	1.6	17	250	0	210	.8
19...	--	--	--	--	--	--	--	--	--
MAY									
04...	28	55	30	1.5	15	200	0	160	2.0
JUN									
14...	--	--	--	--	--	--	--	--	--
JUL									
12...	61	170	47	3.7	22	200	31	220	.1

RED RIVER OF THE NORTH BASIN

05056400 BIG COULEE NEAR CHURCHS FERRY, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED SULFATE (SO ₄) (MG/L)	DIS- SOLVED CHLOR- IDE (CL) (MG/L)	DIS- SOLVED FLUOR- IDE (F) (MG/L)	DIS- SOLVED SILICA (SiO ₂) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L)
MAR 09...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
22...	420	47	.2	23	735	--	--	--	.22
28...	--	--	--	--	--	--	--	--	--
APR 07...	210	24	.2	12	590	548	.80	43.0	.01
19...	--	--	--	--	--	--	--	--	--
MAY 04...	210	20	.2	16	511	504	.69	40.0	.77
JUN 14...	--	--	--	--	--	--	--	--	--
JUL 12...	490	61	.2	8.1	1040	999	1.41	.08	.08

DATE	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L)	DIS- SOLVED ALUM- INUM (AL) (UG/L)	DIS- SOLVED ARSENIC (AS) (UG/L)	DIS- SOLVED BARIUM (BA) (UG/L)	DIS- SOLVED BORON (B) (UG/L)	DIS- SOLVED CAD- MIUM (CD) (UG/L)	DIS- SOLVED CHRO- MIUM (CR) (UG/L)	DIS- SOLVED COBALT (CO) (UG/L)	DIS- SOLVED COPPER (CU) (UG/L)
MAR 22...	.10	--	--	--	220	--	--	--	--
APR 07...	.07	30	6	0	110	6	0	0	3
MAY 04...	.32	--	--	--	110	--	--	--	--
JUL 12...	.47	20	17	0	300	1	0	2	4

DATE	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED LEAD (PB) (UG/L)	DIS- SOLVED LITHIUM (LI) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)	DIS- SOLVED MERCURY (HG) (UG/L)	DIS- SOLVED MOLYB- DENUM (MO) (UG/L)	DIS- SOLVED NICKEL (NI) (UG/L)	DIS- SOLVED SELE- NIUM (SE) (UG/L)	DIS- SOLVED STRON- TIUM (SR) (UG/L)	DIS- SOLVED VANA- DIUM (V) (UG/L)	DIS- SOLVED ZINC (ZN) (UG/L)
APR 07...	100	50	60	30	.0	2	6	1	230	3.4	10
JUL 12...	30	5	130	8	.2	2	7	0	390	.0	0

05056500 DEVILS LAKE NEAR DEVILS LAKE, ND

LOCATION.--Lat 48°04'00", long 98°56'07", in SW¼ sec.18, T.153 N., R.64 W., Ramsey County, Hydrologic Unit 09020201, at Lakewood, on east bank of Creel Bay, 4.5 mi (7.2 km) southwest of city of Devils Lake. Creel Bay, which is 0.5 mi (0.8 km) wide, is an arm of Devils Lake and extends 2 mi (3 km) to the north of the lake.

DRAINAGE AREA.--3,130 mi² (8,110 km²), approximately, of which about 1,000 mi² (2,600 km²) is probably noncontributing.

PERIOD OF RECORD.--1867, 1879, 1883, 1887, 1890, 1896 (one gage height for each year), 1901-63 (fragmentary), 1964 to current year.

REVISED RECORDS.--WSP 1913: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,400.00 ft (426.72 m) above mean sea level; gage readings have been reduced to elevations above mean sea level. June 23, 1950, to June 6, 1963, nonrecording gage at present site and datum. See WSP 1913 for history of changes prior to June 23, 1950.

REMARKS.--Elevation at gage frequently affected by wind. Missing gage height record Oct. 1-7.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation observed, 1,438.40 ft (438.424 m) in 1867, present datum; minimum observed, 1,400.87 ft (426.985 m) Oct. 24, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD.--The lake level was about elevation 1,446 ft (441 m) about 1830 and lower thereafter, according to the tree growth noted 1885-89. Reference is Geological Survey monograph, volume XXV, The Glacial History of Lake Agassiz by Warren Upham.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, about 1,423.20 ft (433.791 m) Oct. 1, minimum, 1,421.80 ft (433.365 m) Sept. 23.

MONTHEND ELEVATION, IN FEET, AT 2400, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Oct. 31..... 1,422.88	Jan. 31..... 1,422.77	Apr. 30..... 1,422.90	July 31..... 1,422.23
Nov. 30.....*1,422.70	Feb. 28..... 1,422.83	May 31..... 1,422.77	Aug. 31..... 1,421.93
Dec. 31.....*1,422.70	Mar. 31..... 1,422.89	June 30..... 1,422.46	Sept.30..... 1,421.89

* Estimated

RED RIVER OF THE NORTH BASIN

05057000 SHEYENNE RIVER NEAR COOPERSTOWN, ND

LOCATION.--Lat 47°26'01", long 98°01'43", in NE¼NE¼SE¼ sec.27, T.146 N., R.58 W., Griggs County, Hydrologic Unit 09020203, on right bank 150 ft (46 m) downstream from county bridge and 5 mi (8 km) east of Cooperstown.

DRAINAGE AREA.--6,470 mi² (16,760 km²), approximately, of which about 5,200 mi² (13,470 km²) is probably noncontributing, includes 3,800 mi² (9,840 km²) in closed basins.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1944 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,271.04 ft (387.413 m) above mean sea level, Corps of Engineers benchmark. Prior to Aug. 3, 1950, nonrecording gage at site 150 ft (45.7 m) upstream at same datum.

REMARKS.--Records good.

AVERAGE DISCHARGE.--33 years, 102 ft³/s (2.889 m³/s) 73,900 acre-ft/yr (91.1 hm³/yr); median of yearly mean discharges, 80 ft³/s (2.27 m³/s) 58,000 acre-ft/yr (72 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,830 ft³/s (222 m³/s) Apr. 17, 1950, gage height, 18.69 ft (5.697 m); no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 136 ft³/s (3.85 m³/s) Apr. 5, gage height, 5.49 ft (1.673 m), no peak above base of 200 ft³/s (5.66 m³/s); minimum daily discharge, 0.01 ft³/s (0.0003 m³/s) Aug. 25-27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.70	3.5	3.1	3.4	3.5	3.5	55	31	23	8.2	1.5	.02
2	.76	3.5	3.1	3.4	3.5	3.1	60	29	22	12	1.4	.03
3	.52	2.9	3.1	3.4	3.5	3.0	75	26	21	12	1.8	.04
4	.58	2.4	3.1	3.2	3.5	3.0	85	31	23	11	1.3	.03
5	.40	2.4	3.1	3.0	3.5	3.0	95	35	22	16	1.2	.02
6	.22	2.2	3.1	3.0	3.5	3.0	87	36	19	11	1.0	.02
7	.58	2.4	3.0	3.0	3.5	3.0	91	43	18	10	1.0	.02
8	.58	2.6	3.0	3.0	3.5	3.0	84	49	17	9.7	.83	.02
9	.58	2.7	3.0	3.0	3.5	3.0	79	66	15	9.6	.76	.02
10	.58	2.7	3.0	3.0	3.5	4.0	87	85	13	8.5	.58	.02
11	.76	2.7	3.0	3.0	3.5	7.0	85	86	11	8.8	.34	.22
12	.90	2.4	3.0	3.0	3.5	7.5	78	82	9.7	6.8	.34	.40
13	.90	2.4	3.0	3.0	3.5	8.0	69	74	8.8	7.3	.34	1.1
14	1.2	2.4	3.0	3.0	3.5	12	59	65	7.6	30	.34	1.0
15	1.2	2.2	3.0	2.9	3.3	12	55	49	9.4	11	.69	.90
16	.58	2.2	3.0	2.8	3.3	12	52	40	9.1	7.3	4.1	.90
17	.58	2.4	3.0	2.8	3.3	15	50	35	8.2	11	2.6	1.1
18	.90	2.7	3.0	2.8	3.3	30	48	31	8.2	12	1.7	4.4
19	1.2	2.7	3.0	3.0	3.3	30	46	24	8.5	10	1.0	3.9
20	1.8	2.7	3.0	3.0	3.3	28	46	23	7.6	9.1	.58	3.5
21	1.6	2.7	3.2	3.0	3.3	26	45	30	7.1	8.8	.40	6.3
22	1.5	2.7	3.2	3.0	3.3	25	43	33	6.8	9.4	.15	3.9
23	1.5	2.7	3.2	3.0	3.3	25	42	29	6.2	9.7	.02	2.8
24	1.5	3.5	3.2	3.0	3.5	25	41	28	5.2	9.4	.02	5.7
25	2.0	4.0	3.4	3.0	4.0	40	39	29	4.1	7.6	.01	7.1
26	2.9	4.0	3.4	3.2	3.8	55	38	28	4.7	5.7	.01	7.1
27	3.5	3.5	3.4	3.2	3.8	55	37	23	4.9	6.2	.01	10
28	3.1	3.3	3.4	3.5	3.5	58	36	19	5.2	3.7	.02	14
29	3.1	3.3	3.4	3.5	---	60	35	18	4.3	2.6	.03	14
30	3.1	3.1	3.4	3.5	---	60	34	16	6.2	2.2	.02	11
31	3.5	---	3.4	3.5	---	56	---	18	---	1.8	.02	---
TOTAL	42.82	84.9	97.2	96.1	97.3	678.1	1776	1211	335.8	288.2	24.11	99.56
MEAN	1.38	2.83	3.14	3.10	3.48	21.9	59.2	39.1	11.2	9.30	.78	3.32
MAX	3.5	4.0	3.4	3.5	4.0	60	95	86	23	30	4.1	14
MIN	.22	2.2	3.0	2.8	3.3	3.0	34	16	4.1	1.8	.01	.02
AC-FT	85	168	193	191	193	1350	3520	2400	666	572	48	197
CAL YR 1976	TOTAL	30318.70	MEAN 82.8	MAX 1360	MIN .22	AC-FT 60140						
WTR YR 1977	TOTAL	4831.09	MEAN 13.2	MAX 95	MIN .01	AC-FT 9580						

05057000 SHEYENNE RIVER NEAR COOPERSTOWN, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1960, 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, 2,170 micromhos Mar. 18, 1967; minimum daily, 255 micromhos Apr. 9, 1971.

WATER TEMPERATURES: Maximum daily, 28.5°C July 18, 1977; minimum daily, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,400 micromhos Dec. 11; minimum daily, 445 micromhos Apr. 10.

WATER TEMPERATURES: Maximum daily, 28.5°C July 18; minimum daily, 0.0°C on many days during winter months.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	HARDNESS (CA, MG/L)	NON-CARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)
OCT									
05...	1140	.50	950	8.5	10.5	25	330	--	72
NOV									
01...	1315	3.2	1075	7.7	5.5	25	350	0	74
DEC									
02...	1250	3.1	1270	7.6	1.0	12	490	8	120
JAN									
04...	1650	3.4	1250	7.9	.5	12	490	0	120
31...	1600	3.6	1250	7.5	.0	12	480	8	120
FEB									
08...	1600	3.5	940	--	.0	--	--	--	--
MAR									
02...	1330	3.4	1100	7.6	.5	8	390	0	95
14...	1410	12	840	--	.5	--	--	--	--
28...	1230	56	700	--	1.5	--	--	--	--
APR									
05...	1420	94	540	8.3	.5	20	200	17	47
MAY									
02...	1530	2.7	760	8.4	15.0	7	280	13	64
JUN									
01...	1030	25	770	8.1	20.0	33	280	48	65
08...	1520	16	800	--	23.0	--	--	--	--
29...	1340	3.8	780	8.3	23.0	35	300	4	72
AUG									
01...	1535	1.4	700	8.3	23.5	23	260	12	62
30...	1425	.02	760	7.8	20.5	25	270	0	61

DATE	DISSOLVED MAGNESIUM (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CaCO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)
OCT									
05...	37	100	39	2.4	11	--	--	--	--
NOV									
01...	39	110	40	2.6	11	442	0	363	14
DEC									
02...	46	120	34	2.4	11	586	0	481	24
JAN									
04...	47	120	34	2.4	11	609	0	500	12
31...	43	99	31	2.0	8.5	572	0	469	29
FEB									
08...	--	--	--	--	--	--	--	--	--
MAR									
02...	38	93	33	2.0	7.7	505	0	414	20
14...	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--
APR									
05...	20	40	30	1.2	6.0	223	0	180	1.8
MAY									
02...	29	73	35	1.9	7.6	320	2	270	2.1
JUN									
01...	28	62	32	1.6	8.2	280	0	230	3.6
08...	--	--	--	--	--	--	--	--	--
29...	29	70	33	1.8	8.4	360	0	300	2.9
AUG									
01...	25	57	32	1.5	7.9	300	0	250	2.4
30...	28	63	33	1.7	11	340	0	290	8.6

RED RIVER OF THE NORTH BASIN

05057000 SHEYENNE RIVER NEAR COOPERSTOWN, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLOR- IDE (CL) (MG/L)	DIS- SOLVED FLUOR- IDE (F) (MG/L)	DIS- SOLVED SILICA (SiO2) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	DIS- SOLVED NITRATE PLUS NITRITE (N) (MG/L)
OCT									
05...	180	21	.2	24	616	592	.84	.83	.10
NOV									
01...	200	21	.3	18	681	695	.93	5.94	.01
DEC									
02...	240	25	.3	18	861	871	1.17	7.21	.27
JAN									
04...	220	26	.3	28	843	873	1.15	7.85	.13
31...	220	20	.3	28	830	821	1.13	8.22	.01
FEB									
08...	--	--	--	--	--	--	--	--	--
MAR									
02...	170	24	.2	25	709	702	.96	6.51	.01
14...	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--
APR									
05...	94	10	.2	11	342	339	.47	86.8	.01
MAY									
02...	140	15	.2	4.8	491	493	.67	3.58	.01
JUN									
01...	150	12	.2	22	510	486	.69	34.4	.04
08...	--	--	--	--	--	--	--	--	--
29...	130	15	.2	24	520	526	.71	5.34	.06
AUG									
01...	120	9.5	.2	29	477	459	.65	1.89	.11
30...	120	14	.2	25	499	490	.68	.03	.08

DATE	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L)	DIS- SOLVED ALUM- INUM (AL) (UG/L)	DIS- SOLVED ARSENIC (AS) (UG/L)	DIS- SOLVED BARIUM (BA) (UG/L)	DIS- SOLVED BERYL- LIUM (BE) (UG/L)	DIS- SOLVED BORON (B) (UG/L)	DIS- SOLVED CAD- MIUM (CD) (UG/L)	DIS- SOLVED CHRO- MIUM (CR) (UG/L)	DIS- SOLVED COBALT (CO) (UG/L)	DIS- SOLVED COPPER (CU) (UG/L)	TOTAL COPPER IN BOTTOM MA- TERIAL (UG/G)
OCT											
05...	.14	--	--	--	--	280	--	--	--	--	--
NOV											
01...	.16	40	4	100	0	260	0	0	4	--	3
DEC											
02...	.11	--	--	--	--	280	--	--	--	--	--
JAN											
04...	.12	--	--	--	--	230	--	--	--	--	--
31...	.17	--	--	--	--	200	--	--	--	--	--
MAR											
02...	.18	--	--	--	--	180	--	--	--	--	--
APR											
05...	.06	40	0	0	0	100	2	0	0	2	--
MAY											
02...	.08	--	--	--	--	160	--	--	--	--	--
JUN											
01...	.23	--	--	--	--	160	--	--	--	--	--
29...	.21	--	--	--	--	180	--	--	--	--	--
AUG											
01...	.24	--	--	--	--	180	--	--	--	--	--
30...	.32	--	--	--	--	190	--	--	--	--	--

DATE	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED LEAD (PB) (UG/L)	DIS- SOLVED LITHIUM (LI) (UG/L)	DIS- SOLVED MANG- NESE (MN) (UG/L)	DIS- SOLVED MERCURY (HG) (UG/L)	DIS- SOLVED MOLYB- DENUM (MO) (UG/L)	DIS- SOLVED NICKEL (NI) (UG/L)
NOV							
21...	20	1	80	1300	.0	3	9
APR							
05...	40	6	30	190	.0	1	4

DATE	DIS- SOLVED SELE- NIUM (SE) (UG/L)	DIS- SOLVED SILVER (AG) (UG/L)	DIS- SOLVED STRON- TIUM (SR) (UG/L)	DIS- SOLVED VANA- DIUM (V) (UG/L)	DIS- SOLVED ZINC (ZN) (UG/L)	CYANIDE (CN) (MG/L)
NOV						
01...	0	0	380	.5	10	.01
APR						
05...	0	0	220	1.1	10	.00

RED RIVER OF THE NORTH BASIN

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05057000 SHEYENNE RIVER NEAR COOPERSTOWN, ND--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	959	1000	1190	1260	1140	1100	640	---	750	780	660	750
2	952	1000	1210	1260	1150	1070	625	760	750	790	670	750
3	---	990	1250	1280	1100	1060	630	750	750	760	650	800
4	978	970	1250	1280	1120	1060	580	730	790	---	680	760
5	980	990	1270	1290	1100	1030	540	745	800	700	680	790
6	983	970	1290	1290	1100	1030	520	745	800	700	680	780
7	985	995	1350	1320	1070	1050	500	740	790	725	700	780
8	987	960	1370	1350	1130	1060	470	770	800	730	680	775
9	986	980	1390	1370	1120	1020	460	810	800	725	700	780
10	989	970	1390	1320	1160	1060	445	790	---	715	690	820
11	990	995	1400	1260	1170	1030	495	835	840	710	700	750
12	993	1000	1350	1290	1210	1010	520	790	830	750	---	740
13	998	---	1310	1300	---	960	535	760	820	750	710	790
14	1000	1000	1350	1220	1220	845	560	760	810	720	705	---
15	1010	990	1310	1250	1200	850	585	780	800	690	705	740
16	1010	---	1310	1270	1200	800	585	750	800	680	705	740
17	1010	---	1310	1240	1160	780	610	740	---	720	700	720
18	1010	990	1320	1260	1130	770	620	740	780	720	700	710
19	1010	990	1350	---	1130	770	650	730	780	660	710	730
20	---	980	---	1200	1120	---	670	720	700	---	---	730
21	1020	990	---	1200	1100	780	660	---	750	640	700	740
22	1010	1000	1300	1160	1100	790	660	780	780	660	---	740
23	1030	1000	1300	1170	1080	880	680	750	750	690	780	---
24	---	1020	1290	1190	1100	770	700	750	760	690	790	710
25	1040	1010	1230	1200	1110	740	700	750	770	650	840	700
26	1050	1060	1240	1200	1110	700	730	770	760	650	760	710
27	1070	1110	1260	1190	1100	670	730	790	760	650	820	720
28	1070	1130	1260	1210	1100	650	755	835	780	650	---	690
29	1070	1180	1270	1220	---	620	750	835	780	650	780	680
30	1060	1200	1270	---	---	630	780	850	780	650	740	---
31	1050	---	1280	1210	---	630	---	---	---	650	750	---
MEAN	1010	1020	1300	1250	1130	873	613	770	781	698	718	745

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15.0	5.5	1.0	0.0	0.0	0.5	0.5	---	22.0	21.0	22.5	15.0
2	14.0	4.0	1.0	0.0	0.0	0.5	0.0	15.0	21.5	22.0	22.0	20.0
3	---	3.0	1.0	0.0	0.0	0.5	0.5	16.5	20.5	25.5	22.5	17.0
4	11.0	2.0	1.0	0.0	0.0	0.5	0.5	16.0	21.0	---	21.5	20.0
5	9.0	2.5	1.0	0.0	0.0	0.5	0.5	16.0	18.5	25.0	20.5	19.5
6	8.0	2.5	0.5	0.0	0.0	0.5	0.5	15.0	23.0	24.5	20.0	19.0
7	7.0	2.5	1.0	0.0	0.0	0.5	0.5	16.0	23.0	26.0	22.0	18.0
8	10.0	3.0	1.0	0.0	0.0	0.5	0.5	16.5	21.0	23.0	23.0	15.5
9	10.0	3.0	0.5	0.0	0.0	0.5	0.5	16.5	20.5	24.0	21.5	16.0
10	8.5	3.0	0.5	0.0	0.0	1.0	1.0	19.0	---	24.5	20.0	16.0
11	10.5	3.0	0.0	0.0	0.0	1.0	4.0	20.5	20.0	22.0	20.0	16.0
12	10.0	2.5	0.5	0.0	0.5	1.0	8.0	21.0	21.0	24.5	---	16.0
13	9.5	---	0.5	0.0	---	1.0	9.5	23.0	21.0	25.0	19.5	18.0
14	8.5	3.0	0.5	0.0	0.5	1.0	9.5	24.0	22.0	23.0	21.0	---
15	5.0	3.0	1.0	0.0	0.0	1.0	10.0	23.0	25.0	24.0	19.0	17.0
16	4.0	---	1.0	0.0	0.5	1.0	11.0	23.0	24.5	25.5	17.0	19.0
17	5.0	---	1.0	0.0	0.5	0.5	14.0	23.0	---	26.0	18.0	18.0
18	4.0	3.5	0.5	0.0	0.0	0.5	13.0	23.0	23.0	28.5	20.0	15.0
19	5.0	3.5	0.5	---	0.5	0.5	12.0	23.0	22.0	26.0	19.5	14.5
20	---	3.5	---	0.0	0.5	---	11.0	23.0	21.5	---	---	14.5
21	3.5	3.5	---	0.0	0.5	0.5	11.0	---	21.5	27.0	19.5	14.0
22	2.5	3.0	0.5	0.0	0.5	0.0	11.5	19.0	21.0	27.0	---	14.0
23	3.0	3.0	0.5	0.0	0.5	0.0	12.0	19.0	21.0	24.5	16.0	---
24	---	3.5	0.5	0.0	0.5	1.0	14.0	19.0	24.5	24.0	19.5	14.0
25	3.5	3.0	0.5	0.0	0.5	1.0	14.0	22.5	25.5	24.0	17.0	14.0
26	3.0	2.0	0.5	0.0	0.5	1.0	15.0	22.0	26.5	24.0	18.0	13.5
27	3.0	2.0	0.5	0.0	0.5	1.5	14.5	23.0	25.0	23.5	17.0	14.5
28	6.0	1.5	0.5	0.0	0.5	1.0	15.0	23.0	23.5	24.5	---	12.5
29	6.0	1.5	0.0	0.0	---	1.0	15.0	23.0	23.0	24.5	19.0	13.0
30	5.5	1.0	0.0	---	---	0.5	17.0	21.5	22.0	23.0	19.5	---
31	5.0	---	0.0	0.0	---	0.5	---	---	---	23.5	16.0	---
MEAN	7.0	3.0	0.5	0.0	0.5	0.5	8.0	20.0	22.5	24.5	19.5	16.0

RED RIVER OF THE NORTH BASIN

05057200 BALDHILL CREEK NEAR DAZEY, ND

LOCATION.--Lat 47°13'45", long 98°07'28", in NW¼SE¼SW¼ sec.2, T.143 N., R.59 W., Barnes County, Hydrologic Unit 09020203, on left bank 500 ft (150 km) upstream from bridge on county highway, 4.5 mi (7.2 km) northeast of Dazey, and 14 mi (23 km) upstream from mouth.

DRAINAGE AREA.--691 mi² (1,790 km²), of which about 340 mi² (880 km²) is probably noncontributing.

PERIOD OF RECORD.--March 1956 to current year.

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Prior to Nov. 9, 1956, nonrecording gage 500 ft (150 m) downstream at same datum.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--21 years, 14.1 ft³/s (0.399 m³/s) 10,200 acre-ft/yr (12.6 hm³/yr); median of yearly mean discharges, 11 ft³/s (0.31 m³/s), 8,700 acre-ft/yr (9.9 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,510 ft³/s (71.1 m³/s) Apr. 11, 1969, gage height, 10.90 ft (3.322 m) backwater from ice; maximum gage height, 11.21 ft (3.417 m) Apr. 10, 1969, backwater from ice; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 25 ft³/s (0.71 m³/s) Mar. 15, gage height 3.18 ft (0.969 m), backwater from ice, no peak above base of 60 ft³/s (1.70 m³/s); minimum daily, 0.03 ft³/s (0.001 m³/s) Jan. 28-31.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.24	2.3	1.4	.15	.10	.75	11	1.6	3.3	.55	.92	1.1
2	.26	2.2	1.4	.15	.20	.75	11	1.9	2.7	.43	.92	1.2
3	.26	2.2	1.3	.15	.20	.75	10	2.1	2.8	.40	.87	1.2
4	.28	2.2	1.2	.14	.20	.75	10	3.2	2.5	.55	.87	1.2
5	.31	2.2	1.2	.14	.20	.70	14	5.1	2.3	5.8	.82	1.0
6	.31	2.2	1.2	.14	.20	.70	8.0	7.5	1.7	5.1	.77	.97
7	.31	2.0	1.2	.14	.20	.70	8.0	6.0	1.5	3.7	.82	.87
8	.67	2.2	1.1	.12	.20	1.0	8.5	4.6	1.3	2.8	.87	.87
9	1.1	2.0	1.1	.12	.20	3.0	10	3.9	1.2	1.9	.77	.97
10	1.2	2.0	1.0	.10	.20	5.5	10	3.5	1.2	1.7	.67	.77
11	1.0	2.0	.95	.10	.20	6.0	10	3.2	1.3	2.3	.59	.80
12	.28	2.0	.90	.10	.20	6.5	9.5	3.2	1.2	2.1	.59	.80
13	.26	2.0	.85	.08	.25	7.0	10	3.0	1.2	1.6	.72	.80
14	.40	2.0	.80	.08	.30	7.5	7.5	2.3	1.2	1.5	.80	.80
15	.24	2.0	.70	.08	.30	8.0	7.2	1.8	2.0	1.3	.90	.80
16	.47	2.0	.70	.08	.30	7.5	6.9	2.2	2.0	1.5	.90	.75
17	1.2	2.0	.65	.08	.30	7.0	6.6	2.1	1.9	1.6	.90	.75
18	1.2	2.0	.60	.06	.30	6.0	6.3	2.1	2.1	1.6	.90	1.0
19	1.4	2.0	.55	.06	.30	5.8	5.1	2.1	1.7	1.6	.80	8.0
20	2.0	2.0	.50	.05	.30	5.5	5.1	2.0	1.3	1.2	.80	10
21	2.3	2.0	.50	.05	.50	5.5	4.3	1.8	1.2	1.2	.80	10
22	2.2	2.0	.45	.05	1.5	5.5	3.9	3.0	1.3	1.1	.80	8.0
23	2.4	2.0	.40	.05	1.0	6.0	3.9	3.7	1.4	1.1	.80	7.5
24	2.4	2.0	.30	.05	.90	7.5	3.3	3.9	1.2	1.0	.80	7.0
25	2.4	2.0	.30	.05	.80	8.0	3.3	3.3	.97	.82	.80	6.5
26	2.3	2.0	.25	.04	.70	9.0	3.0	2.7	1.2	.92	.90	6.0
27	2.3	2.0	.20	.04	.75	10	2.5	2.7	1.2	.92	1.0	5.5
28	2.3	1.5	.18	.03	.75	11	2.0	3.0	.82	1.2	1.0	5.0
29	2.3	1.5	.18	.03	---	12	1.8	2.8	.59	1.1	1.0	4.5
30	2.3	1.5	.18	.03	---	11	1.6	2.7	.59	1.0	1.1	4.0
31	2.3	---	.18	.03	---	11	---	3.5	---	1.0	1.2	---
TOTAL	38.89	60.0	22.42	2.57	11.55	177.90	204.3	96.5	46.87	50.59	26.40	98.65
MEAN	1.25	2.00	.72	.083	.41	5.74	6.81	3.11	1.56	1.63	.85	3.29
MAX	2.4	2.3	1.4	.15	1.5	12	14	7.5	3.3	5.8	1.2	10
MIN	.24	1.5	.18	.03	.10	.70	1.6	1.6	.59	.40	.59	.75
AC-FT	77	119	44	5.1	23	353	405	191	93	100	52	196
CAL YR 1976	TOTAL	4001.80	MEAN	10.9	MAX	240	MIN	.01	AC-FT	7940		
WTR YR 1977	TOTAL	836.64	MEAN	2.29	MAX	14	MIN	.03	AC-FT	1660		

RED RIVER OF THE NORTH BASIN

77

05057500 LAKE ASHTABULA AT BALDHILL DAM, ND

LOCATION.--Lat 47°02'00", long 98°05'00", in NW¼ sec.18, T.141 N., R.58 W., Barnes County, Hydrologic Unit 09020203, at Baldhill Dam on Sheyenne River, 8 mi (13 km) northwest of Valley City.

DRAINAGE AREA.--7,470 mi² (19,300 km²), approximately, of which about 5,560 mi² (14,400 km²) is probably noncontributing, including 3,800 mi² (9,800 km²) in closed basins.

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

REVISED RECORDS.--WSP 1238: 1950(M). WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is mean sea level.

REMARKS.--Reservoir is formed by an earth-fill dam, 1,650 ft (503 m) long; storage began on July 30, 1949; dam completed September 1949. Usable capacity, 69,100 acre-ft (85.2 hm³) between invert of outlet conduit, elevation, 1,238.0 ft (377.34 m), and normal pool level, elevation, 1,266.0 ft (385.8 m). Dead storage below elevation 1,238.0 ft (377.34 m), 1,500 acre-ft (1.85 hm³). Maximum pool elevation, 1,273.2 ft (388.07 m), capacity, 116,500 acre-ft (144 hm³). Low flows are controlled by 2 sluice gates 3 ft (0.914 m) in diameter. The spillway crest is 120 ft (36.6 m) long at elevation 1,252.0 ft (381.61 m), surmounted by 3 taintor gates, each 15 ft (4.572 m) high and 40 ft (12.192 m) long. The reservoir is operated for flood control and to increase low-water flow.

COOPERATION.--Records furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 91,400 acre-ft (113 hm³) May 14, 1950, elevation, 1,269.46 ft (386.931 m); minimum since reservoir first reached spillway level, 6,660 acre-ft (8.21 hm³) Aug. 11-14, 1950, elevation, 1,245.13 ft (379.516 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 58,020 acre-ft (71.5 hm³) Oct. 1, elevation, 1,264.07 ft (385.289 m); minimum, 52,070 acre-ft (64.2 hm³) Feb. 21-22, elevation, 1,262.46 ft (384.798 m).

MONTHEND ELEVATION AND CONTENTS AT 0800, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30-----	1,264.07*	58,020*	--
Oct. 31-----	1,263.41	55,730	-2,290
Nov. 30-----	1,263.02	54,560	-1,170
Dec. 31-----	1,262.76	53,420	-1,140
CAL YR 1976-----	--	--	-3,210
Jan. 31-----	1,262.54	52,430	-990
Feb. 28-----	1,262.53	52,380	-50
Mar. 31-----	1,263.24	55,220	+2,840
Apr. 30-----	1,263.75	56,750	+1,530
May 31-----	1,263.98	57,440	+690
June 30-----	1,263.65	56,450	-990
July 31-----	1,263.75	56,750	+300
Aug. 31-----	1,263.34	55,520	-1,230
Sept. 30-----	1,263.41	55,730	+210
WTR YR 1977-----	--	--	-2,290

* Revised

RED RIVER OF THE NORTH BASIN

05058000 SHEYENNE RIVER BELOW BALDHILL DAM, ND

LOCATION.--Lat 47°01'50", long 98°05'50", in NW¼ sec.18, T.141 N., R.58 W., Barnes County, Hydrologic Unit 09020204, on right bank 600 ft (180 m) downstream from Baldhill Dam, 8 mi (13 km) northwest of Valley City, and at mile 270.5 (kilometer 435.2).

DRAINAGE AREA.--7,470 mi² (19,350 km²), approximately, of which about 5,560 mi² (14,400 km²) is probably noncontributing, including 3,800 mi² (9,840 km²) in closed basins.

PERIOD OF RECORD.--October 1949 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,200.00 ft (365.760 m) above mean sea level.

REMARKS.--Records good. Flow completely regulated by Lake Ashtabula (station 05057500). Records 1955 to 1972 include releases at Baldhill Dam to the fish-rearing ponds of the Fish and Wildlife Service. Small diversions are still made but not published.

AVERAGE DISCHARGE (UNADJUSTED).--28 years, 116 ft³/s (3.285 m³/s), 84,040 acre-ft/yr (104 hm³/yr); median of yearly mean discharges, 88 ft³/s (2.49 m³/s), 63,800 acre-ft/yr (79 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,580 ft³/s (130 m³/s) Apr. 19, 1969, gage height, 35.47 ft (10.811 m); no flow at times in 1950, 1952-53, 1970.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 37 ft³/s (1.048 m³/s) Oct. 1, gage height, 26.16 ft (7.974 m); minimum, 2.1 ft³/s (0.059 m³/s) Aug. 2, gage height, 25.42 ft (7.748 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	31	17	16	9.2	9.5	10	5.6	7.9	8.8	6.4	4.9
2	31	31	17	16	9.2	9.5	10	8.2	7.3	9.2	4.6	4.9
3	30	30	17	17	9.2	9.5	11	13	7.3	9.5	8.3	4.9
4	30	30	17	17	9.2	9.2	11	12	6.7	9.8	6.7	4.9
5	30	30	17	17	9.2	9.2	11	12	7.0	9.5	6.9	4.9
6	31	30	17	17	9.2	9.2	11	12	6.6	9.5	7.0	4.9
7	33	30	17	17	9.2	9.2	11	12	7.2	9.5	7.0	4.9
8	34	30	17	17	9.2	9.2	11	12	6.4	9.8	7.0	4.9
9	34	30	17	17	9.2	9.2	11	11	5.4	10	7.0	7.0
10	34	31	17	17	9.2	9.2	11	11	5.1	10	7.0	10
11	33	31	17	17	9.2	9.5	10	11	4.7	11	7.0	10
12	33	31	17	17	9.2	8.9	10	10	4.9	13	7.4	10
13	34	30	17	17	9.2	9.5	10	9.6	7.8	13	7.6	10
14	33	29	17	17	9.2	9.5	10	9.4	8.2	12	7.5	10
15	32	21	17	17	9.2	9.5	10	9.6	7.0	13	7.3	9.9
16	32	16	17	17	9.2	9.7	9.8	8.6	7.7	8.5	7.2	9.8
17	32	17	17	17	9.2	9.8	9.5	7.4	9.5	6.7	7.2	9.8
18	32	17	17	17	9.2	9.8	9.3	6.3	12	5.9	7.3	9.5
19	32	17	17	17	9.2	10	8.9	6.3	12	5.4	7.3	9.5
20	32	17	17	17	9.2	10	8.4	6.3	12	5.6	7.3	9.5
21	32	17	17	17	9.2	11	7.9	6.9	11	7.6	7.3	9.5
22	32	17	17	11	9.2	11	9.7	7.8	11	7.6	6.8	9.2
23	32	17	16	9.5	9.2	11	9.7	7.9	12	8.2	6.4	8.8
24	32	17	16	9.5	9.2	11	8.0	7.9	11	7.0	6.6	8.8
25	32	17	16	9.5	9.2	11	7.2	7.9	10	6.7	6.7	8.8
26	32	17	16	9.5	9.2	11	6.7	7.9	10	6.7	6.3	8.8
27	31	17	16	9.5	9.2	11	6.0	8.2	11	6.7	6.2	8.8
28	32	17	16	9.5	9.2	11	6.2	8.5	9.8	7.0	5.9	8.8
29	32	17	16	9.5	---	11	6.4	8.5	9.2	7.0	5.6	8.8
30	31	17	16	9.5	---	10	6.5	8.2	8.2	6.7	5.0	8.2
31	31	---	16	9.5	---	10	---	8.2	---	6.7	4.6	---
TOTAL	997	699	518	451.5	257.6	308.1	278.2	281.2	255.9	267.6	208.4	242.7
MEAN	32.2	23.3	16.7	14.6	9.20	9.94	9.27	9.07	8.53	8.63	6.72	8.09
MAX	36	31	17	17	9.2	11	11	13	12	13	8.3	10
MIN	30	16	16	9.5	9.2	8.9	6.0	5.6	4.7	5.4	4.6	4.9
AC-FT	1980	1390	1030	896	511	611	552	558	508	531	413	481
CAL YR 1976	TOTAL	29635.3	MEAN 81.0	MAX 920	MIN 7.3	AC-FT 58780						
WTR YR 1977	TOTAL	4765.2	MEAN 13.1	MAX 36	MIN 4.6	AC-FT 9450						

RED RIVER OF THE NORTH BASIN

79

05058700 SHEYENNE RIVER AT LISBON, ND

LOCATION.--Lat 46°26'49", long 97°40'44", on line between secs.1 and 2, T.134 N., R.56 W., Ransom County, Hydrologic Unit 09020204, on left bank 150 ft (46 m) downstream from dam at State Fish Hatchery at north edge of city of Lisbon, 3 mi (5 km) upstream from Timber Coulee, and at mile 162.1 (kilometer 260.8).

DRAINAGE AREA.--8,190 mi² (21,210 km²), approximately, of which about 5,700 mi² (14,800 km²), is probably noncontributing, including 3,800 mi² (9,840 km²) in closed basins.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1956 to current year.

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,066.46 ft (325.057 m) above mean sea level.

REMARKS.--Records good except those for the winter period, which are fair. Flow regulated by Lake Ashtabula (station 05057500) 108.5 mi (174.6 km) upstream.

AVERAGE DISCHARGE.--21 years, 144 ft³/s (4.078 m³/s), 104,300 acre-ft/yr (129 hm³/yr); median of yearly mean discharges, 120 ft³/s (3.40 m³/s), 86,900 acre-ft/yr (107 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,270 ft³/s (149 m³/s) July 1, 1975, gage height, 19.04 ft (5.803 m); no flow Sept. 19-21, Oct. 23, 24, 1956, Aug. 16, 1961.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,230 ft³/s (34.8 m³/s) May 5, gage height, 7.35 ft (2.240 m); minimum, 4.2 ft³/s (0.12 m³/s) Aug. 12, gage height, 1.95 ft (0.594 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48	50	19	20	20	15	68	15	19	11	5.7	12
2	42	52	19	20	20	15	70	15	33	9.6	5.7	11
3	48	37	19	19	20	15	70	14	24	8.1	5.7	13
4	40	37	19	18	20	15	68	121	20	8.1	5.7	13
5	40	34	19	18	19	15	59	838	20	12	5.4	13
6	40	40	19	18	19	15	52	183	19	15	5.1	12
7	34	37	19	20	18	15	52	110	17	15	5.4	10
8	31	34	19	20	18	15	48	77	15	16	6.0	10
9	37	31	19	20	18	20	52	68	12	48	6.9	7.3
10	52	34	20	19	18	30	45	57	13	52	7.3	5.1
11	52	27	20	20	18	45	37	42	16	50	5.1	7.7
12	40	34	20	20	17	72	34	34	14	48	4.6	12
13	37	30	20	20	17	74	31	28	12	31	4.8	12
14	48	28	21	20	17	83	21	27	10	26	5.1	9.6
15	31	30	22	20	17	81	42	24	15	19	5.7	7.7
16	37	28	21	20	16	96	34	23	20	21	7.3	12
17	37	28	22	20	16	103	55	24	77	20	6.3	13
18	40	28	22	20	16	92	31	24	61	17	6.3	17
19	48	30	24	20	16	72	27	25	21	17	7.3	20
20	55	28	22	20	16	68	45	22	16	15	8.1	22
21	45	27	20	20	16	66	22	20	17	13	8.1	31
22	42	26	18	20	15	59	20	44	16	13	7.7	81
23	42	26	18	20	15	45	19	64	15	15	6.9	81
24	45	25	17	20	15	48	18	39	13	13	6.6	70
25	52	26	17	20	15	55	17	31	11	11	7.3	55
26	50	26	19	20	15	57	15	24	11	9.1	9.6	31
27	40	25	19	20	15	55	14	22	13	9.6	11	26
28	52	20	20	20	15	66	13	24	15	9.1	13	31
29	50	19	20	20	---	72	13	20	13	7.7	13	48
30	50	19	20	20	---	66	15	20	13	8.6	15	45
31	48	---	20	20	---	64	---	21	---	6.9	13	---
TOTAL	1353	916	613	612	477	1609	1107	2100	591	574.8	230.7	738.4
MEAN	43.6	30.5	19.8	19.7	17.0	51.9	36.9	67.7	19.7	18.5	7.44	24.6
MAX	55	52	24	20	20	103	70	838	77	52	15	81
MIN	31	19	17	18	15	15	13	14	10	6.9	4.6	5.1
AC-FT	2680	1820	1220	1210	946	3190	2200	4170	1170	1140	458	1460
CAL YR 1976 TOTAL	40963.6		MEAN 112	MAX 979	MIN 5.1	AC-FT 81250						
WTR YR 1977 TOTAL	10921.9		MEAN 29.9	MAX 838	MIN 4.6	AC-FT 21660						

RED RIVER OF THE NORTH BASIN

05058700 SHEYENNE RIVER AT LISBON, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1956 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: August 1956 to current year.

WATER TEMPERATURES: August 1956 to current year.

SEDIMENT CONCENTRATIONS: August 1976 to current year.

SEDIMENT LOADS: August 1976 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,450 micromhos Jan. 30, 1962; minimum daily, 243 micromhos Apr. 2, 1960.

WATER TEMPERATURES: Maximum daily, 32.0°C Aug. 23, 1959; minimum daily, 0.0°C on many days during

winter months.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,840 mg/L May 5, 1977; minimum daily mean, 6 mg/L Feb. 14,

15, 1977.

SEDIMENT LOADS: Maximum daily, 4,160 tons (3,770 megagrams) May 5, 1977; minimum daily, 0.23 tons (0.21 megagrams) Sept. 10, 1977.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,250 micromhos Jan. 5; minimum daily, 610 micromhos Apr. 2.

WATER TEMPERATURES: Maximum daily, 30.0°C July 5; minimum daily, 0.0°C on many days during winter months.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,840 mg/L May 5; minimum daily mean, 6 mg/L Feb. 14, 15.

SEDIMENT LOADS: Maximum daily, 4,160 tons (3,770 megagrams) May 5; minimum daily, 0.23 tons (0.21 megagrams) Sept. 10.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUC- TANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	HARD- NESS (CA, MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)
OCT									
15...	1025	26	805	8.2	7.0	18	250	16	57
NOV									
10...	1015	34	825	8.2	2.0	22	280	21	61
DEC									
08...	1055	18	1020	8.0	.5	9	370	58	82
JAN									
19...	1455	20	1150	7.4	.5	25	380	26	90
FEB									
07...	1555	18	1100	7.7	.5	12	350	26	79
MAR									
11...	0915	30	1000	--	1.0	--	--	--	--
18...	1600	88	790	--	.5	--	--	--	--
APR									
05...	1100	44	750	8.2	1.0	25	240	74	56
MAY									
06...	0850	180	--	--	14.0	--	--	--	--
13...	1020	29	650	8.0	22.0	25	240	96	63
JUN									
15...	0935	15	1100	8.3	22.0	25	370	110	86
JUL									
18...	1630	17	1000	8.0	25.0	20	300	50	69
AUG									
14...	1610	5.9	1000	8.1	19.5	17	280	12	62
SEP									
21...	1000	25	1025	8.4	15.5	33	310	60	68

DATE	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	ALKA- LINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)
OCT									
15...	27	79	39	2.2	11	289	0	237	2.9
NOV									
10...	30	81	38	2.1	11	311	0	255	3.1
DEC									
08...	39	120	41	2.7	13	375	0	308	6.0
JAN									
19...	37	120	40	2.7	14	428	0	351	27
FEB									
07...	36	110	40	2.6	11	390	0	320	12
MAR									
11...	--	--	--	--	--	--	--	--	--
18...	--	--	--	--	--	--	--	--	--
APR									
05...	24	61	35	1.7	8.2	201	0	160	2.0
MAY									
06...	--	--	--	--	--	--	--	--	--
13...	21	48	29	1.3	4.9	180	0	150	2.9
JUN									
15...	37	110	39	2.5	12	310	0	250	2.5
JUL									
18...	32	110	43	2.7	12	310	0	250	5.0
AUG									
14...	31	140	50	3.6	13	330	0	270	4.2
SEP									
21...	35	110	42	2.7	12	310	0	250	2.0

RED RIVER OF THE NORTH BASIN

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05058700 SHEYENNE RIVER AT LISBON, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO2) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L)
OCT 15...	150	36	.2	10	536	513	.73	38.2	.04
NOV 10...	160	33	.2	13	547	543	.74	51.1	.12
DEC 08...	230	52	.3	14	719	736	.98	34.9	.03
JAN 19...	220	58	.3	21	806	775	1.10	43.5	.74
FEB 07...	170	50	.3	23	712	676	.97	34.6	.93
MAR 11...	--	--	--	--	--	--	--	--	--
MAR 18...	--	--	--	--	--	--	--	--	--
APR 05...	160	33	.2	11	483	456	.66	57.4	.54
MAY 06...	--	--	--	--	--	--	--	--	--
MAY 13...	170	22	.2	11	439	430	.60	34.4	.28
JUN 15...	260	62	.3	14	752	734	1.02	31.3	.00
JUL 18...	210	67	.4	18	683	672	.93	31.3	.06
AUG 14...	200	80	.4	17	735	707	1.00	11.7	.08
SEP 21...	230	53	.4	17	697	680	.95	47.0	.01

DATE	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L)	DIS- SOLVED ALUM- INUM (AL) (UG/L)	DIS- SOLVED ARSENIC (AS) (UG/L)	DIS- SOLVED BARIUM (BA) (UG/L)	DIS- SOLVED BERYL- LIUM (BE) (UG/L)	DIS- SOLVED BORON (B) (UG/L)	DIS- SOLVED CAD- MIUM (CD) (UG/L)	DIS- SOLVED CHRO- MIUM (CR) (UG/L)	DIS- SOLVED COBALT (CO) (UG/L)	DIS- SOLVED COPPER (CU) (UG/L)
OCT 15...	.06	--	--	--	--	220	--	--	--	--
NOV 10...	.11	--	--	--	--	220	--	--	--	--
DEC 08...	.09	--	--	--	--	340	--	--	--	--
JAN 19...	.20	--	--	--	--	320	--	--	--	--
FEB 07...	.15	--	--	--	--	270	--	--	--	--
APR 05...	.06	0	1	0	0	160	0	0	0	4
MAY 13...	.04	--	--	--	--	150	--	--	--	--
JUN 15...	.15	--	--	--	--	310	--	--	--	--
JUL 18...	.05	--	--	--	--	330	--	--	--	--
AUG 14...	.44	--	--	--	--	400	--	--	--	--
SEP 21...	.07	20	5	0	0	340	1	10	0	4

DATE	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED LEAD (PB) (UG/L)	DIS- SOLVED LITHIUM (LI) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)	DIS- SOLVED MERCURY (HG) (UG/L)	DIS- SOLVED MOLYB- DENUM (MO) (UG/L)	DIS- SOLVED NICKEL (NI) (UG/L)
APR 05...	20	2	40	200	.0	0	6
SEP 21...	20	7	90	530	.0	4	6

DATE	DIS- SOLVED SELE- NIUM (SE) (UG/L)	DIS- SOLVED SILVER (AG) (UG/L)	DIS- SOLVED STRON- TIUM (SR) (UG/L)	DIS- SOLVED VANA- DIUM (V) (UG/L)	DIS- SOLVED ZINC (ZN) (UG/L)	CYANIDE (CN) (MG/L)
------	---	--	--	--	--	---------------------------

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1975 TO SEPTEMBER 1976

DAY	MEAN		MEAN		MEAN		MEAN		MEAN		MEAN	
	CONCEN- TRATION (MG/L)	LOADS (T/DAY)	CONCEN- TRATION (MG/L)	LOADS (T/DAY)	CONCEN- TRATION (MG/L)	LOADS (T/DAY)	CONCEN- TRATION (MG/L)	LOADS (T/DAY)	CONCEN- TRATION (MG/L)	LOADS (T/DAY)	CONCEN- TRATION (MG/L)	LOADS (T/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1									---	---	28	1.5
2									---	---	28	1.7
3									---	---	24	1.4
4									---	---	31	1.8
5									---	---	29	1.6
6									---	---	18	1.0
7									---	---	10	0.68
8									---	---	11	0.77
9									---	---	14	0.91
10									18	0.29	21	1.4
11									18	0.31	35	2.5
12									18	0.28	32	2.6
13									17	0.30	25	2.1
14									10	0.19	25	2.0
15									6	0.11	25	1.9
16									7	0.12	19	1.5
17									8	0.14	21	1.8
18									13	0.22	24	2.4
19									17	0.28	19	1.7
20									18	0.32	28	2.6
21									13	0.22	43	3.6
22									8	0.13	24	2.0
23									10	0.14	21	1.8
24									10	0.92	19	1.7
25									12	1.0	25	2.0
26									24	1.4	16	1.3
27									28	1.2	11	1.1
28									22	0.77	11	1.2
29									18	0.58	10	1.2
30									19	0.77	11	1.4
31									25	1.4	---	---
TOTAL									---	11.09	---	51.16
TOTAL LOAD FOR YEAR: 62.25 TONS.												

RED RIVER OF THE NORTH BASIN

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05058700 SHEYENNE RIVER AT LISBON, ND--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

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	27	3.5	12	1.6	17	0.87	10	0.54	14	0.76	12	0.49
2	24	2.7	21	2.9	19	0.97	10	0.54	13	0.70	12	0.49
3	28	3.6	24	2.4	17	0.87	10	0.51	10	0.54	9	0.36
4	42	4.5	27	2.7	16	0.82	10	0.49	10	0.54	9	0.36
5	36	3.9	16	1.5	13	0.67	10	0.49	9	0.46	9	0.36
6	22	2.4	15	1.6	8	0.41	10	0.49	9	0.46	8	0.32
7	10	0.92	21	2.1	8	0.41	10	0.54	10	0.49	8	0.32
8	10	0.84	15	1.4	10	0.51	10	0.54	9	0.44	8	0.32
9	18	1.8	24	2.0	7	0.36	10	0.54	8	0.39	8	0.43
10	27	3.8	21	1.9	7	0.38	9	0.46	7	0.34	8	0.65
11	31	4.4	22	1.6	7	0.38	10	0.54	7	0.34	10	1.2
12	40	4.3	18	1.7	7	0.38	12	0.65	9	0.41	22	4.3
13	46	4.6	10	0.81	8	0.43	12	0.65	8	0.37	29	5.8
14	48	6.2	10	0.76	8	0.45	12	0.65	6	0.28	35	7.8
15	46	3.9	12	0.97	8	0.48	10	0.54	6	0.28	37	8.1
16	38	3.8	21	1.6	9	0.51	10	0.54	7	0.30	44	11
17	31	3.1	20	1.5	10	0.59	12	0.65	7	0.30	35	9.7
18	30	3.2	16	1.2	9	0.53	16	0.86	10	0.43	23	5.7
19	42	5.4	12	0.97	10	0.65	9	0.49	8	0.35	25	4.9
20	31	4.6	10	0.76	10	0.59	9	0.49	7	0.30	18	3.3
21	16	1.9	12	0.87	10	0.54	8	0.43	7	0.30	18	3.2
22	16	1.8	14	0.98	9	0.44	8	0.43	7	0.28	19	3.0
23	16	1.8	15	1.1	9	0.44	8	0.43	8	0.32	16	1.9
24	14	1.7	16	1.1	8	0.37	8	0.43	7	0.28	17	2.2
25	12	1.7	16	1.1	9	0.41	8	0.43	7	0.28	17	2.5
26	14	1.9	18	1.3	10	0.51	8	0.43	8	0.32	17	2.6
27	32	3.5	18	1.2	10	0.51	7	0.38	8	0.32	14	2.1
28	32	4.5	13	0.70	10	0.54	17	0.92	10	0.41	13	2.3
29	24	3.2	8	0.41	10	0.54	20	1.1	---	---	9	1.7
30	18	2.4	8	0.41	10	0.54	15	0.81	---	---	13	2.3
31	14	1.8	---	---	10	0.54	13	0.70	---	---	15	2.6
TOTAL	---	97.66	---	41.14	---	16.64	---	17.69	---	10.99	---	92.30

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)
APRIL			MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	14	2.6	27	1.1	37	1.9	29	0.86	39	0.60	26	0.84
2	8	1.5	22	0.89	52	4.6	32	0.83	29	0.45	22	0.65
3	7	1.3	26	0.98	40	2.6	30	0.66	28	0.43	24	0.84
4	8	1.5	157	51	34	1.8	27	0.59	27	0.42	27	0.45
5	9	1.4	1840	4160	55	3.0	33	1.1	29	0.42	21	0.74
6	13	1.8	746	369	59	3.0	36	1.5	45	0.62	26	0.84
7	13	1.8	556	165	48	2.2	39	1.6	41	0.60	32	0.86
8	14	1.8	388	81	38	1.5	40	1.7	34	0.55	28	0.76
9	19	2.7	220	40	28	0.91	52	6.7	28	0.52	27	0.53
10	15	1.8	75	12	34	1.2	41	5.8	38	0.75	17	0.23
11	13	1.3	52	5.9	40	1.7	34	4.6	35	0.48	13	0.27
12	14	1.3	51	4.7	38	1.4	56	7.3	39	0.48	17	0.55
13	14	1.2	50	3.8	34	1.1	60	5.0	36	0.47	13	0.42
14	27	1.5	50	3.6	25	0.68	40	2.8	30	0.41	13	0.34
15	32	3.6	49	3.2	35	1.4	44	2.3	37	0.57	17	0.35
16	42	3.9	48	3.0	48	2.6	38	2.2	51	1.0	15	0.49
17	36	5.3	46	3.0	51	11	25	1.4	49	0.83	14	0.49
18	23	1.9	41	2.7	78	13	13	0.60	56	0.95	17	0.78
19	23	1.7	37	2.5	86	4.9	28	1.3	50	0.99	15	0.81
20	20	2.4	34	2.0	72	3.1	29	1.2	48	1.0	20	1.2
21	20	1.2	40	2.2	63	2.9	23	0.81	36	0.79	38	3.2
22	24	1.3	39	4.6	81	3.5	21	0.74	33	0.69	39	8.5
23	22	1.1	40	6.9	89	3.6	18	0.73	33	0.61	44	9.6
24	23	1.1	38	4.0	74	2.6	17	0.60	33	0.59	38	7.2
25	25	1.1	39	3.3	52	1.5	21	0.62	35	0.69	38	5.6
26	25	1.0	43	2.8	35	1.0	22	0.54	37	0.96	34	2.8
27	26	0.98	40	2.4	30	1.1	25	0.65	42	1.2	27	1.9
28	39	1.4	42	2.7	37	1.5	27	0.66	54	1.9	32	2.7
29	39	1.4	56	3.0	47	1.6	25	0.52	34	1.2	32	4.1
30	37	1.5	44	2.4	39	1.4	40	0.93	21	0.85	30	3.6
31	---	---	38	2.2	---	---	42	0.78	19	0.67	---	---
TOTAL	---	54.38	---	4951.87	---	84.29	---	57.62	---	22.69	---	62.14

TOTAL LOAD FOR YEAR: 5509.41 TONS.

RED RIVER OF THE NORTH BASIN
05058700 SHEYENNE RIVER AT LISBON, ND--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	831	---	910	1220	990	1150	620	700	900	1100	1020	1100
2	828	---	920	1200	1030	1100	610	710	950	1100	1000	1090
3	798	---	1010	1200	1050	1080	650	700	970	1100	1100	1070
4	836	---	1040	1220	1000	1150	750	710	1050	1100	1100	1090
5	841	---	850	1250	1010	1150	750	680	1010	1090	1100	1100
6	836	---	860	1200	1000	1100	750	670	1000	1070	1100	1000
7	843	---	850	1190	1000	1150	670	670	1000	1020	1100	1100
8	841	---	---	1200	975	1150	700	670	1010	1030	1110	1100
9	840	---	1250	1200	940	1000	650	660	1000	1000	1100	1000
10	831	760	1200	1190	1120	1150	675	630	1020	940	1110	980
11	847	750	1210	1210	1100	1000	675	650	1010	920	1100	1000
12	831	750	1200	1200	1100	950	650	670	1090	950	1090	1010
13	833	810	1190	1190	1000	950	690	640	1010	1120	1040	1010
14	840	840	1150	1210	1100	1000	760	650	1060	1100	1020	1000
15	842	800	1100	1200	1030	900	760	660	1070	1050	1030	1000
16	841	810	1100	1220	1000	910	750	675	1070	1100	1040	1000
17	842	860	1150	1200	1100	900	725	710	1110	1020	1020	1000
18	839	850	1180	1200	1100	875	740	770	1110	1050	1050	990
19	847	850	1090	1210	1050	890	710	760	1100	1000	1050	975
20	851	860	1100	1150	1100	875	680	790	1100	1000	1020	950
21	857	850	1150	1100	1030	850	650	770	1100	990	1060	950
22	858	875	1150	1100	1120	850	640	790	1050	1010	1050	925
23	869	840	1130	1050	1000	875	700	830	950	1000	1020	925
24	857	840	1150	1050	1000	800	675	900	980	1020	1030	975
25	845	830	1200	1150	1050	790	710	940	1010	1000	1050	920
26	847	840	1150	1030	1050	800	690	950	990	1050	1020	875
27	859	850	1200	1100	1030	800	690	910	970	1030	1030	875
28	861	900	1210	1100	1050	790	690	950	950	1050	1020	890
29	866	910	1180	1050	---	750	710	940	990	1000	1010	910
30	853	925	1180	1000	---	725	700	930	1050	1050	1030	910
31	857	---	1200	1050	---	750	---	920	---	---	1010	---
MEAN	844	838	1110	1160	1040	942	694	761	1020	1040	1050	991

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15.0								24.5	24.0	22.0	18.5
2	13.5								23.0	24.5	24.0	21.0
3	15.0								24.0	26.5	24.0	19.5
4	13.0								23.5	25.0	25.0	21.0
5	12.0								24.5	30.0	23.5	23.0
6	9.5								26.5	27.5	21.5	19.0
7	9.5								25.0	27.0	20.5	19.0
8	10.0								25.0	25.0	27.0	21.5
9	8.5								22.0	23.5	24.5	17.0
10	11.0								24.0	23.5	21.0	15.5
11	12.0								24.0	23.0	23.0	18.0
12	12.5								22.0	25.0	23.0	18.0
13	11.5								27.0	23.5	21.5	19.0
14	10.0								22.0	24.0	23.5	18.0
15	7.0								26.0	22.5	19.0	18.0
16	6.0								26.0	23.5	21.5	18.0
17	6.0								23.5	25.0	22.0	18.5
18	5.0								23.0	24.5	19.5	17.0
19	6.5								23.0	24.0	24.0	16.0
20	5.0								21.0	27.0	21.0	16.0
21	3.5								21.5	25.5	22.0	15.5
22	3.5								20.5	27.0	21.5	15.5
23	2.5								21.0	25.5	19.5	15.0
24	3.5								23.0	26.5	19.5	14.5
25	2.5								25.0	25.0	19.5	14.5
26	3.0								24.5	25.0	20.0	14.0
27	3.0								28.0	25.5	19.5	16.0
28	5.0								24.0	28.0	20.5	14.5
29	5.5								24.5	23.0	21.0	15.0
30	5.0								22.5	22.5	22.0	14.5
31	4.0								---	---	20.0	---
MEAN	7.5								24.0	25.0	22.0	17.5

RED RIVER OF THE NORTH BASIN

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05059000 SHEYENNE RIVER NEAR KINDRED, ND

LOCATION.--Lat 46°37'35", long 97°00'05", in NE¼NW¼ sec.5, T.136 N., R.50 W., Richland County, Hydrologic Unit 09020204, on right bank 25 ft (8 m) downstream from Burlington Northern Railway bridge, 1.5 mi (2.4 km) southeast of Kindred, and at mile 68.1 (kilometer 109.6).

DRAINAGE AREA.--8,800 mi² (22,800 km²), approximately, of which about 5,780 mi² (14,970 km²) is probably noncontributing, including 3,800 mi² (9,840 km²) in closed basins.

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 925.55 ft (282.108 m) above mean sea level, datum of 1929. July 1949 to Sept. 30, 1962, nonrecording gage at same site and datum.

REMARKS.--Records fair. Flow regulated to a large degree by Lake Ashtabula (station 05057500) 202 mi (325 km) upstream and several small reservoirs.

AVERAGE DISCHARGE.--28 years, 191 ft³/s (5.409 m³/s), 138,400 acre-ft/yr (171 hm³/yr); median of yearly mean discharges, 150 ft³/s (4.25 m³/s) 108,700 acre-ft/yr (130 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,690 ft³/s (133 m³/s) Apr. 15, 1969, gage height, 21.03 ft (6.410 m); maximum gage height, 21.54 ft (6.565 m) Apr. 14, 1969, backwater from ice; minimum daily discharge, 13 ft³/s (0.37 m³/s) Nov. 13, 1955, Aug. 22-24, 1959.

EXTREMES OUTSIDE PERIOD OF RECORD.--Spring flood in 1947 or 1948 reached a stage of 22.1 ft (6.74 m), from floodmarks, discharge about 3,600 ft³/s (102 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 570 ft³/s (16.1 m³/s) May 8, gage height, 6.05 ft (1.844 m), backwater from trash; minimum daily, 14 ft³/s (0.40 m³/s) Sept. 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38	46	43	38	38	43	150	54	74	43	24	33
2	38	46	43	38	38	43	155	54	69	38	20	33
3	40	46	43	38	38	43	155	53	70	38	20	34
4	40	46	43	38	38	43	150	50	71	37	20	33
5	40	46	42	38	38	43	155	121	69	37	20	31
6	40	46	42	38	38	43	120	86	64	36	20	31
7	40	40	42	38	38	43	115	236	64	36	20	30
8	44	40	42	38	38	46	134	479	60	35	20	30
9	47	46	42	38	40	48	124	240	56	33	21	30
10	41	46	42	38	42	50	115	158	56	31	23	30
11	40	46	42	38	44	60	115	128	56	35	23	30
12	40	46	42	38	45	80	115	113	56	38	23	27
13	38	46	42	38	45	85	104	101	49	44	24	25
14	38	46	42	38	43	90	102	92	45	63	26	23
15	38	46	42	38	43	100	106	86	44	65	24	19
16	37	46	42	38	43	120	102	82	56	64	26	15
17	36	46	42	38	43	170	97	78	57	62	24	14
18	35	46	42	38	43	200	90	71	55	56	24	22
19	35	46	42	38	43	190	97	70	52	48	22	25
20	35	46	42	38	43	185	95	68	44	42	18	25
21	34	46	42	38	43	170	99	65	65	38	18	30
22	34	45	41	38	43	165	94	66	77	33	19	47
23	33	45	40	38	43	175	80	70	65	45	19	55
24	33	45	40	38	43	150	74	71	54	45	19	68
25	33	45	40	38	43	150	70	70	47	36	20	75
26	33	45	40	38	43	150	69	70	48	30	22	90
27	33	45	39	38	43	145	60	69	47	28	23	93
28	40	44	38	38	43	145	59	68	48	27	26	84
29	46	44	38	38	---	145	56	64	45	26	28	78
30	46	44	38	38	---	140	54	66	45	25	30	68
31	46	---	38	38	---	140	---	68	---	24	33	---
TOTAL	1191	1356	1278	1178	1165	3400	3111	3167	1708	1238	699	1228
MEAN	38.4	45.2	41.2	38.0	41.6	110	104	102	56.9	39.9	22.5	40.9
MAX	47	46	43	38	45	200	155	479	77	65	33	93
MIN	33	40	38	38	38	43	54	50	44	24	18	14
AC-FT	2360	2690	2530	2340	2310	6740	6170	6280	3390	2460	1390	2440
CAL YR 1976	TOTAL	58095	MEAN 159	MAX 920	MIN 28	AC-FT 115200						
WTR YR 1977	TOTAL	20719	MEAN 56.8	MAX 479	MIN 14	AC-FT 41100						

RED RIVER OF THE NORTH BASIN

05059000 SHEYENNE RIVER NEAR KINDRED, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1974 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: August 1976 to current year.

WATER TEMPERATURES: November 1970 to September 1975, April 1976 to current year.

SEDIMENT CONCENTRATIONS: August 1976 to current year.

SEDIMENT LOADS: August 1976 to current year.

INSTRUMENTATION.--Water-quality monitor since September 1976.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 1,180 micromhos July 16, 1977; minimum, 505 micromhos May 10, 11, 1977.

WATER TEMPERATURES: Maximum, 30.5°C July 18, 19, 1977; minimum, 0.0°C on many days during winter months.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,970 mg/L May 5, 1977; minimum daily mean, 6 mg/L on several days in 1977.

SEDIMENT LOADS: Maximum daily, 1,640 tons (1,490 megagrams) May 8, 1977; minimum daily, 0.62 tons (0.56 megagrams) Oct. 24, 1976.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 1,180 micromhos July 16; minimum, 505 micromhos May 10, 11.

WATER TEMPERATURES: Maximum, 30.5°C July 18, 19; minimum, 0.0°C on many days during winter months.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,970 mg/L May 5; minimum daily mean, 6 mg/L on several days.

SEDIMENT LOADS: Maximum daily, 1,640 tons (1,490 megagrams) May 8; minimum daily, 0.62 tons (0.56 megagrams) Oct. 24.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)
OCT											
27...	1520	33	900	7.5	.0	12	6	12.4	88	3.9	160
NOV											
16...	1200	51	970	7.8	.5	17	9	11.4	80	1.8	62
DEC											
21...	1715	42	1110	--	.0	--	--	--	--	--	--
22...	0930	41	1020	--	.5	7	20	6.2	44	1.0	810
JAN											
06...	1240	--	1000	--	.5	--	--	--	--	--	--
20...	1035	38	1020	7.4	.0	10	8	5.0	35	1.2	60
FEB											
16...	1425	43	990	7.8	.5	18	7	5.7	41	1.7	1080
MAR											
01...	1300	40	940	7.5	.0	10	9	6.4	45	.5	--
08...	1140	40	1100	7.6	.0	12	6	6.3	45	.6	--
15...	1320	95	820	8.0	1.5	45	9	10.6	85	5.1	--
22...	1345	174	800	7.9	.5	33	10	11.4	82	3.7	620
31...	1610	134	660	7.9	.5	27	10	12.3	88	1.7	--
APR											
06...	0930	117	730	8.1	.5	24	15	12.8	92	2.6	--
12...	1120	116	800	8.4	9.5	23	20	10.6	95	4.3	--
19...	1300	110	830	8.3	11.5	13	25	9.8	90	2.9	--
26...	0825	72	840	8.1	13.5	7	20	8.8	87	2.6	140
MAY											
05...	1250	180	575	8.0	15.5	43	500	6.1	62	--	--
10...	1320	165	505	7.9	18.5	55	900	7.7	85	4.1	--
17...	1130	700	770	8.1	20.5	35	30	7.2	82	4.2	--
24...	0905	70	795	8.3	19.5	11	20	7.7	86	3.9	900
JUN											
01...	1120	70	810	8.3	20.0	28	50	7.1	80	4.1	--
07...	1130	65	870	8.3	22.5	25	55	6.4	79	4.6	--
14...	1130	50	955	8.4	22.5	25	35	6.3	75	4.3	--
21...	1155	71	890	8.4	19.0	12	35	--	--	3.8	--
28...	1000	46	945	8.2	23.5	9	40	5.8	70	2.2	1200
JUL											
06...	0845	40	920	8.2	27.5	25	35	5.0	65	2.7	--
13...	1145	39	905	8.3	23.5	10	25	6.3	76	3.4	--
20...	0915	40	1010	8.4	27.0	28	30	5.2	66	1.9	--
27...	0945	28	810	8.3	23.0	43	35	6.6	78	3.5	600
AUG											
03...	1100	28	850	8.3	22.5	9	25	6.4	76	1.5	--
09...	1110	23	800	8.3	21.5	9	25	6.9	86	4.6	--
16...	1145	25	770	8.1	18.0	8	20	7.8	85	2.5	--
23...	0930	19	795	8.2	18.5	9	19	7.4	80	1.4	640
29...	1255	28	700	8.3	18.0	18	15	8.5	92	6.2	--
SEP											
07...	1200	30	910	8.3	17.5	8	15	--	--	--	--
14...	1115	23	910	8.2	16.0	11	10	--	--	3.1	--
21...	1400	24	780	8.2	14.5	55	45	8.5	85	3.1	8160
27...	1300	93	1000	8.2	13.5	13	15	--	--	2.6	--

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

RED RIVER OF THE NORTH BASIN

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05059000 SHEYENNE RIVER NEAR KINDRED, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	FECAL COLI- FORM (COL./ 100 ML)	HARD- NESS (CA, MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)
OCT											
27...	B12	310	32	76	29	73	33	1.8	9.1	338	0
NOV											
16...	B12	360	41	89	34	82	32	1.9	10	392	0
DEC											
21...	--	--	--	--	--	--	--	--	--	--	--
22...	160	380	93	95	34	87	33	2.0	9.1	347	--
JAN											
06...	--	--	--	--	--	--	--	--	--	--	--
20...	B1	370	29	95	32	91	34	2.1	9.3	414	0
FEB											
16...	B5	350	44	89	32	81	33	1.9	8.9	378	0
MAR											
01...	--	340	45	86	30	80	33	1.9	8.0	357	0
08...	--	340	45	85	30	76	32	1.8	7.6	355	0
15...	--	260	61	66	23	50	29	1.4	8.4	242	0
22...	B50	260	61	65	24	63	33	1.7	9.4	244	0
31...	--	240	54	61	21	49	30	1.4	7.0	225	0
APR											
06...	--	250	62	64	23	52	30	1.4	6.9	235	0
12...	--	290	70	74	26	62	31	1.6	7.1	270	0
19...	--	320	85	83	28	57	27	1.4	7.3	290	0
26...	B60	320	74	82	28	59	28	1.4	7.1	300	0
MAY											
05...	--	240	86	64	20	24	17	.7	6.8	190	0
10...	--	180	61	49	15	31	26	1.0	6.4	150	0
17...	--	310	93	83	26	49	25	1.2	8.4	270	0
24...	167	330	85	88	27	51	25	1.2	3.8	300	0
JUN											
01...	--	330	88	86	27	52	25	1.3	7.8	290	0
07...	--	340	79	89	29	64	28	1.5	8.6	320	0
14...	--	370	90	95	32	71	29	1.6	8.5	340	0
21...	--	340	79	89	29	70	30	1.6	7.9	320	0
28...	440	340	73	88	30	91	36	2.1	9.0	330	0
JUL											
06...	--	330	61	85	29	75	32	1.8	8.5	330	0
13...	--	330	58	84	29	70	31	1.7	7.9	330	0
20...	--	320	63	76	31	100	40	2.4	11	310	0
27...	550	300	36	75	27	63	31	1.6	8.0	320	0
AUG											
03...	--	310	50	79	28	66	31	1.6	7.5	320	0
09...	--	320	44	80	28	58	28	1.4	7.0	330	0
16...	--	280	24	72	24	59	31	1.5	6.3	310	0
23...	380	300	35	78	25	49	26	1.2	6.6	320	0
29...	--	280	64	73	23	42	24	1.1	5.6	260	0
SEP											
07...	--	300	47	76	27	80	36	2.0	7.5	310	0
14...	--	320	48	83	27	78	34	1.9	7.7	330	0
21...	B42	300	48	78	26	55	28	1.4	6.8	310	0
27...	--	300	51	76	26	100	41	2.5	9.9	300	0

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

RED RIVER OF THE NORTH BASIN

05059000 SHEYENNE RIVER NEAR KINDRED, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	ALKALINITY AS CaCO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLORIDE (CL) (MG/L)	DIS- SOLVED FLUORIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO2) (MG/L)	DIS- SOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)
OCT										
27...	277	17	140	36	.3	17	557	548	.76	49.6
NOV										
16...	322	9.9	170	43	.3	19	665	641	.90	91.6
DEC										
21...	--	--	--	--	--	--	--	--	--	--
22...	285	--	140	34	.3	20	529	592	.72	58.6
JAN										
06...	--	--	--	--	--	--	--	--	--	--
20...	340	26	190	51	.4	22	690	697	.94	70.8
FEB										
16...	310	9.6	170	48	.3	24	630	643	.86	73.1
MAR										
01...	293	18	170	42	.3	23	615	618	.84	66.4
08...	291	14	160	42	.2	23	615	602	.84	66.4
15...	198	3.9	130	29	.4	17	457	446	.62	117
22...	200	4.9	150	37	.2	16	520	492	.71	244
31...	180	4.5	130	24	.1	15	442	441	.60	160
APR										
06...	190	3.0	150	31	.3	15	454	460	.62	143
12...	220	1.7	150	31	.2	13	524	497	.71	164
19...	240	2.3	160	26	.2	13	542	518	.74	161
26...	250	3.8	140	29	.3	15	534	509	.73	104
MAY										
05...	160	3.0	120	13	.2	12	364	356	.50	177
10...	120	3.0	99	14	.3	13	316	305	.43	141
17...	220	3.4	140	28	.3	18	503	488	.68	951
24...	250	2.4	140	26	.3	19	519	503	.71	98.1
JUN										
01...	240	2.3	150	29	.2	17	523	514	.71	98.8
07...	260	2.6	160	32	.2	20	583	561	.79	102
14...	280	2.2	170	41	.3	22	633	608	.86	85.5
21...	260	2.0	160	39	.3	18	586	571	.80	112
28...	270	3.3	180	53	.3	20	619	634	.84	76.9
JUL										
06...	270	3.3	170	45	.3	21	604	597	.82	65.2
13...	270	2.6	170	46	.3	22	576	592	.78	60.7
20...	250	2.0	200	70	.4	21	678	662	.92	73.2
27...	260	2.6	130	38	.4	48	515	547	.70	38.9
AUG										
03...	260	2.6	130	40	.3	23	536	532	.73	40.5
09...	270	2.6	110	37	.3	18	508	501	.69	31.5
16...	250	3.9	100	33	.2	18	458	466	.62	30.9
23...	260	3.2	110	36	.3	22	498	485	.68	25.5
29...	210	2.1	85	36	.3	21	424	414	.58	32.1
SEP										
07...	250	2.5	160	51	.4	21	580	576	.79	47.0
14...	270	3.3	150	48	.4	22	579	579	.79	36.0
21...	250	3.1	110	36	.3	23	489	488	.67	31.7
27...	250	3.0	200	74	.4	20	658	654	.89	165

RED RIVER OF THE NORTH BASIN

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05059000 SHEYENNE RIVER NEAR KINDRED, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL NITRATE (N) (MG/L)	DIS- SOLVED NITRATE (N) (MG/L)	DIS- SOLVED NITRATE (NO3) (MG/L)	TOTAL NITRITE (N) (MG/L)	DIS- SOLVED NITRITE (N) (MG/L)	DIS- SOLVED NITRITE (NO2) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO- GEN (N) (MG/L)	DIS- SOLVED AMMONIA NITRO- GEN (N) (MG/L)
OCT										
27...	.17	.09	.40	.00	.00	.00	.17	.09	.06	.01
NOV										
16...	.05	.01	.04	.01	.01	.03	.06	.02	.06	.00
DEC										
21...	---	---	---	---	---	---	---	---	---	---
22...	.19	.13	.58	.00	.00	.00	.19	.13	.06	.04
JAN										
06...	---	---	---	---	---	---	---	---	---	---
20...	.28	.28	1.2	.01	.00	.00	.29	.28	.22	.15
FEB										
16...	.60	.58	2.6	.01	.01	.03	.61	.59	.15	.14
MAR										
01...	.57	.57	2.5	.01	.01	.03	.58	.58	.06	.05
08...	.62	.62	2.7	.00	.00	.00	.62	.62	.08	.09
15...	.64	.61	2.7	.01	.03	.10	.65	.64	.12	.12
22...	.85	.81	3.6	.01	.01	.03	.86	.82	.22	.16
31...	.54	.53	2.3	.01	.01	.03	.55	.54	.11	.08
APR										
06...	.42	.42	1.9	.01	.00	.03	.43	.43	.03	.00
12...	.01	.01	.04	.00	.00	.00	.01	.01	.01	.02
19...	.02	.00	.00	.00	.00	.00	.02	.00	.01	.00
26...	.00	.00	.00	.00	.00	.00	.00	.00	.03	.00
MAY										
05...	.34	.30	1.3	.04	.03	.10	.38	.33	.28	.33
10...	.69	.64	2.8	.05	.05	.16	.74	.69	.24	.19
17...	.42	.39	1.7	.00	.02	.07	.42	.41	.11	.01
24...	.04	.03	.13	.00	.00	.00	.04	.03	.04	.01
JUN										
01...	.00	.01	.04	.01	.00	.00	.01	.01	.05	.00
07...	.05	.06	.27	.02	.00	.00	.07	.06	.02	.00
14...	.00	.00	.00	.01	.00	.00	.01	.00	.00	.01
21...	.01	.01	.04	.01	.00	.00	.02	.01	.02	.04
28...	.00	.01	.04	.01	.00	.00	.01	.01	.00	.01
JUL										
06...	.00	.01	.04	.01	.00	.00	.01	.01	.03	.00
13...	.00	.00	.00	.01	.00	.00	.01	.00	.00	.01
20...	.00	.00	.00	.01	.00	.00	.01	.00	.01	.00
27...	.00	.00	.00	.02	.01	.03	.02	.01	.01	.01
AUG										
03...	.00	.01	.04	.01	.01	.03	.01	.02	.01	.04
09...	.00	.03	.13	.01	.01	.03	.00	.04	.02	.02
16...	.00	.03	.13	.01	.00	.00	.01	.03	.01	.01
23...	.00	.00	.00	.01	.00	.00	.01	.00	.02	.00
29...	.01	.01	.04	.02	.00	.00	.03	.01	.05	.01
SEP										
07...	.00	.01	.04	.01	.00	.00	.01	.01	.05	.01
14...	.04	.03	.13	.02	.00	.00	.06	.03	.10	.00
21...	.00	.01	.04	.01	.00	.00	.00	.01	.02	.00
27...	.04	.01	.04	.00	.00	.00	.04	.01	.00	.00

RED RIVER OF THE NORTH BASIN

05059000 SHEYENNE RIVER NEAR KINDRED, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED AMMONIA (NH4) (MG/L)	TOTAL ORGANIC NITRO- GEN (N) (MG/L)	DIS- SOLVED ORGANIC NITRO- GEN (N) (MG/L)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L)	SUS- PENDED KJEL- NITRO- GEN (N) (MG/L)	DIS- SOLVED KJEL- NITRO- GEN (N) (MG/L)	TOTAL NITRO- GEN (N) (MG/L)	TOTAL NITRO- GEN (NO3) (MG/L)	TOTAL PHOS- PHORUS (P) (MG/L)	PHOS- PHATE (PO4) (MG/L)
OCT										
27...	.01	.55	.59	.61	.01	.60	.78	3.5	.11	.34
NOV										
16...	.00	.29	.57	.35	.00	.57	.41	1.8	.06	.18
DEC										
22...	.05	.63	.32	.69	.33	.36	.88	3.9	.06	.18
JAN										
20...	.19	.31	.38	.53	.00	.53	.82	3.6	.08	.25
FEB										
16...	.18	.52	.44	.67	.09	.58	1.3	5.7	.12	.37
MAR										
01...	.06	.43	.49	.49	.00	.54	1.1	4.7	.10	.31
08...	.12	.64	.55	.72	.08	.64	1.3	5.9	.09	.28
15...	.15	.75	.57	.87	.18	.69	1.5	6.7	.19	.58
22...	.21	1.4	1.3	1.6	.10	1.5	2.5	11	.19	.58
31...	.10	.54	.54	.65	--	.62	1.2	5.3	.13	.40
APR										
06...	.00	.75	.16	.78	--	.16	1.2	5.4	.13	.40
12...	.03	.99	.49	1.0	.49	.51	1.0	4.5	.13	.40
19...	.00	1.1	.53	1.1	.57	.53	1.1	5.0	.02	.06
26...	.00	.66	.40	.69	.29	.40	.69	3.1	.13	.40
MAY										
05...	.43	6.3	.32	6.6	6.0	.65	7.0	31	1.2	3.7
10...	.24	3.4	.36	3.6	3.1	.55	4.3	19	.10	.31
17...	.01	.89	.54	1.0	.45	.55	1.4	6.3	.19	.58
24...	.01	.48	.30	.52	.21	.31	.56	2.5	.17	.52
JUN										
01...	.00	1.2	1.8	1.2	.00	1.8	1.2	5.4	.25	.77
07...	.00	1.2	.37	1.2	.83	.37	1.3	5.6	.27	.83
14...	.01	1.1	.33	1.1	.76	.34	1.1	4.9	.25	.77
21...	.05	.77	.29	.79	.46	.33	.81	3.6	.21	.64
28...	.01	1.1	.34	1.1	.75	.35	1.1	4.9	.24	.74
JUL										
06...	.00	.65	.50	.68	.18	.50	.69	3.1	.23	.71
13...	.01	.69	.51	.69	.17	.52	.70	3.1	.22	.67
20...	.00	.99	.43	1.0	.57	.43	1.0	4.5	.18	.55
27...	.01	1.1	.69	1.1	.40	.70	1.1	5.0	.14	.43
AUG										
03...	.05	1.1	.42	1.1	.64	.46	1.1	4.9	.19	.58
09...	.03	1.2	.34	1.2	.84	.36	1.2	5.3	.17	.52
16...	.01	.82	.69	.83	.13	.70	.84	3.7	.15	.46
23...	.00	.69	.31	.71	.40	.31	.72	3.2	.17	.52
29...	.01	.30	.31	.35	.03	.32	.38	1.7	.14	.43
SEP										
07...	.01	.09	.19	.14	.00	.20	.15	.66	.13	.40
14...	.00	.35	.42	.45	.03	.42	.51	2.3	.14	.43
21...	.00	.43	.44	.45	.01	.44	.45	2.0	.13	--
27...	.00	.58	.46	.58	.12	.46	.62	2.7	.14	--

RED RIVER OF THE NORTH BASIN

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05059000 SHEYENNE RIVER NEAR KINDRED, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L)	TOTAL ORTHO- PHOS- PHORUS (P) (MG/L)	DIS- SOLVED ORTHO- PHOS- PHORUS (P) (MG/L)	DIS- SOLVED ORTHO- PHOS- PHATE (PO4) (MG/L)	DIS- HYDRO- LYZABLE PHOS- PHORUS (P) (MG/L)	TOTAL ORTHO + HYDRO- PHOS- PHORUS (P) (MG/L)	DIS- ORTHO + HYDRO- PHOS- PHORUS (P) (MG/L)	TOTAL ORGANIC PHOS- PHORUS (P) (MG/L)	DIS- SOLVED ORGANIC PHOS- PHORUS (P) (MG/L)	TOTAL ALUM- INUM (AL) (UG/L)
OCT										
27...	.06	.06	.06	.18	.00	.09	.06	.00	.00	--
NOV										
16...	.06	.06	.01	.03	.04	.05	.05	.00	.00	90
DEC										
22...	.04	.04	.04	.12	.00	.02	.01	.00	.00	--
JAN										
20...	.06	.11	.09	.28	.00	.07	.06	.00	.00	90
FEB										
16...	.07	.09	.07	.21	.00	.09	.06	.00	.00	--
MAR										
01...	.08	.05	.06	.18	.00	.05	.03	.00	.00	--
08...	.04	.10	.06	.18	.78	.87	.84	.00	.00	--
15...	.13	.11	.01	.03	.07	.10	.08	.00	.04	--
22...	.13	.13	.09	.28	.00	.11	.07	.00	.00	110
31...	.06	.08	.05	.15	.00	.10	.01	.00	.00	--
APR										
06...	.04	.05	.04	.12	--	.03	--	.05	--	--
12...	.03	.09	.02	.06	.00	.10	.02	.00	.00	--
19...	.00	.04	.02	.06	.00	.00	.00	.00	.00	--
26...	.05	.07	.02	.06	.02	.13	.04	.00	.00	--
MAY										
05...	.02	.00	.00	.00	.01	1.1	.01	.10	.01	--
10...	.07	.13	.05	.15	.02	.09	.07	.00	.00	--
17...	.09	.10	.05	.15	.03	.16	.08	.00	.00	--
24...	.06	.06	.05	.15	.00	.13	.05	.00	.00	--
JUN										
01...	.05	.11	.02	.06	.02	.18	.04	.00	.00	--
07...	.06	.19	.04	.12	.02	.20	.06	.00	.00	--
14...	.06	.10	.05	.15	.01	.20	.06	.00	.00	--
21...	.06	.12	.05	.15	.00	.16	.05	.00	.00	--
28...	.07	.11	.04	.12	.03	.19	.07	.00	.00	--
JUL										
06...	.08	.15	.06	.18	.01	.18	.07	.00	.00	--
13...	.06	.08	.07	.21	.00	.16	.07	.00	.00	--
20...	.09	.07	.09	.28	.00	.11	.05	.00	.00	--
27...	.08	.13	.07	.21	.00	.15	.07	.00	.00	770
AUG										
03...	.09	.10	.06	.18	.01	.16	.07	.00	.02	--
09...	.07	.06	.05	.15	.00	.13	.05	.00	.02	--
16...	.08	.07	.06	.18	.02	.14	.08	.00	.00	--
23...	.09	.10	.06	.18	.03	.13	.09	.00	.00	--
29...	.07	.09	.06	.18	.01	.12	.07	.00	.00	--
SEP										
07...	.08	.07	.04	.12	.03	.11	.07	.00	.01	--
14...	.07	.07	.09	.28	.00	.09	.06	.00	.01	--
21...	.08	.06	.05	.15	.02	.14	.07	.00	.01	--
27...	.08	.07	.05	.15	.02	.11	.07	.00	.01	--

DATE	TOTAL ARSENIC (AS) (UG/L)	TOTAL BARIUM (BA) (UG/L)	TOTAL BERYL- LIUM (BE) (UG/L)	TOTAL BORON (B) (UG/L)	TOTAL CAD- MIUM (CD) (UG/L)	TOTAL CHRO- MIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)
OCT								
27...	--	--	--	--	--	--	--	--
NOV								
16...	5	200	0	290	<10	10	<50	<10
DEC								
22...	--	--	--	--	--	--	--	--
JAN								
20...	5	200	0	280	<10	0	<50	<10
FEB								
16...	--	--	--	--	--	--	--	--
MAR								
01...	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--
22...	4	0	0	200	<10	0	<50	40
31...	--	--	--	--	--	--	--	--
JUL								
06...	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--
27...	12	300	0	250	<10	10	<50	10
AUG								
03...	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--

RED RIVER OF THE NORTH BASIN

05059000 SHEYENNE RIVER NEAR KINDRED, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL IRON (FE) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL LITHIUM (LI) (UG/L)	TOTAL MAN- GANESE (MN) (UG/L)	SUS- PENDE MAN- GANESE (MN) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL MOLYB- DENUM (MO) (UG/L)
OCT									
27...	290	30	--	--	200	60	140	--	--
NOV									
16...	340	20	<100	60	220	40	180	.0	3
DEC									
22...	250	20	--	--	140	0	310	--	--
JAN									
20...	1900	40	<100	80	380	30	350	.2	2
FEB									
16...	--	350	--	--	--	--	290	--	--
MAR									
01...	340	30	--	--	280	20	260	--	--
08...	330	20	--	--	320	40	280	--	--
15...	620	110	--	--	310	80	230	--	--
22...	510	140	<100	50	220	60	160	.3	3
31...	630	50	--	--	330	80	250	--	--
APR									
06...	900	50	--	--	380	180	200	--	--
12...	1400	30	--	--	490	--	150	--	--
19...	1200	10	--	--	640	370	270	--	--
26...	1000	90	--	--	590	--	280	--	--
MAY									
05...	58000	50	--	--	3700	3500	210	--	--
10...	20000	40	--	--	2600	--	20	--	--
17...	1400	70	--	--	400	320	80	--	--
24...	940	20	--	--	400	300	100	--	--
JUN									
01...	2200	1400	--	--	812	--	100	--	--
07...	1900	60	--	--	920	800	120	--	--
14...	1700	50	--	--	860	770	90	--	--
21...	1400	10	--	--	640	--	70	--	--
28...	1700	30	--	--	740	700	40	--	--
JUL									
06...	1400	20	--	--	640	--	20	--	--
13...	1700	30	--	--	670	--	20	--	--
20...	3000	20	--	--	720	700	20	--	--
27...	1700	20	<100	40	680	670	10	.0	3
AUG									
03...	1500	180	--	--	510	480	30	--	--
09...	990	30	--	--	450	410	40	--	--
16...	700	10	--	--	350	290	60	--	--

DATE	TOTAL IRON (FE) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)	TOTAL MAN- GANESE (MN) (UG/L)	SUS- PENDE MAN- GANESE (MN) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)
AUG					
23...	990	20	320	290	30
29...	640	20	250	190	60
SEP					
07...	730	30	230	160	70
14...	690	10	240	140	100
21...	590	20	250	160	90
27...	660	10	200	140	60

RED RIVER OF THE NORTH BASIN

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05059000 SHEYENNE RIVER NEAR KINDRED, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL NICKEL (NI) (UG/L)	TOTAL SELE- NIUM (SE) (UG/L)	TOTAL SILVER (AG) (UG/L)	TOTAL STRON- TIUM (SR) (UG/L)	TOTAL ZINC (ZN) (UG/L)	DIS- SOL- VED ORGANIC CARBON (C) (MG/L)	SUS- PENDED ORGANIC CARBON (C) (MG/L)	CYANIDE (CN) (MG/L)
OCT 27...	--	--	--	--	--	--	--	--
NOV 16...	<50	1	<10	370	0	9.2	.1	.00
DEC 22...	--	--	--	--	--	--	--	--
JAN 20...	<50	1	<10	420	10	7.3	.4	.00
FEB 16...	--	--	--	--	--	--	--	--
MAR 01...	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--
22...	<50	1	<10	280	20	11	1.3	3.0
31...	--	--	--	--	--	--	--	--
JUL 06...	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--
27...	<50	0	<10	280	30	5.1	1.9	--
AUG 03...	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--

DATE	TOTAL PCB (UG/L)	PCB IN BOTTOM MA- TERIAL (UG/KG)	POLY- CHLO- RINATED NAPH- THA- LENES (UG/L)	TOTAL ALDRIN (UG/L)	ALDRIN IN BOTTOM MA- TERIAL (UG/KG)	TOTAL CHLOR- DANE (UG/L)	CHLOR- DANE IN BOTTOM MA- TERIAL (UG/KG)	TOTAL DDD (UG/L)	DDD IN BOTTOM MA- TERIAL (UG/KG)	TOTAL DDE (UG/L)	DDE IN BOTTOM MA- TERIAL (UG/KG)
JUN 28...	--	0	--	--	.0	--	0	--	.1	--	.0
AUG 23...	.0	2	.00	.00	.0	.0	0	.00	.3	.00	.2

DATE	TOTAL DDT (UG/L)	DDT IN BOTTOM MA- TERIAL (UG/KG)	TOTAL DI- AZINON (UG/L)	DI- AZINON IN BOTTOM MA- TERIAL (UG/KG)	TOTAL DI- ELDRIN (UG/L)	DI- ELDRIN IN BOTTOM MA- TERIAL (UG/KG)	TOTAL ENDO- SULFAN (UG/L)	TOTAL ENDRIN (UG/L)	ENDRIN IN BOTTOM MA- TERIAL (UG/KG)	TOTAL ETHION (UG/L)	ETHION IN BOTTOM MA- TERIAL (UG/KG)
JUN 28...	--	.0	--	.0	--	.0	--	--	.0	--	.0
AUG 23...	.00	.0	.00	.0	.00	.0	.00	.00	.0	.00	.0

DATE	TOTAL HEPTA- CHLOR (UG/L)	HEPTA- CHLOR IN BOTTOM MA- TERIAL (UG/KG)	TOTAL HEPTA- CHLOR EPOXIDE (UG/L)	HEPTA- CHLOR EPOXIDE IN BOT- TOM MA- TERIAL (UG/KG)	TOTAL LINDANE (UG/L)	LINDANE IN BOTTOM MA- TERIAL (UG/KG)	TOTAL MALA- THION (UG/L)	MALA- THION IN BOTTOM MA- TERIAL (UG/KG)	TOTAL METHYL PARA- THION (UG/L)	METHYL PARA- THION IN BOT- TOM MA- TERIAL (UG/KG)	TOTAL METHYL TRI- THION (UG/L)
JUN 28...	--	.0	--	.0	--	.0	--	.0	--	.0	--
AUG 23...	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00

RED RIVER OF THE NORTH BASIN

05059000 SHEYENNE RIVER NEAR KINDRED, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	METHYL TRI- THION IN BOT- TOM MA- TERIAL (UG/KG)	TOTAL PARA- THION (UG/L)	PARA- THION IN BOTTOM MA- TERIAL (UG/KG)	TOTAL TOX- APHENE (UG/L)	TOX- APHENE IN BOT- TOM MA- TERIAL (UG/KG)	TOTAL TRI- THION (UG/L)	TRI- THION IN BOTTOM MA- TERIAL (UG/KG)	TOTAL 2,4-D (UG/L)	2,4-D IN BOTTOM MA- TERIAL (UG/KG)	TOTAL 2,4,5-T (UG/L)	2,4,5-T IN BOTTOM MA- TERIAL (UG/KG)
JUN 28...	.0	--	.0	--	0	--	.0	--	0	--	0
AUG 23...	.0	.00	.0	0	0	.00	.0	.01	1	.00	0

DATE	TOTAL SILVEX (UG/L)	SILVEX IN BOTTOM MA- TERIAL (UG/KG)	SUS- PEN- DED SEDI- MENT (MG/L)	SUS- PEN- DED SEDI- MENT DIS- CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	BED MAT. FALL DIAM. % FINER THAN .004 MM	BED MAT. FALL DIAM. % FINER THAN .062 MM	BED MAT. FALL DIAM. % FINER THAN .125 MM
MAR 22...	--	--	--	--	--	--	--	4	21	49
MAY 05...	--	--	2850	1390	57	99	100	--	--	--
10...	--	--	880	392	83	98	100	--	--	--
JUN 28...	--	0	--	--	--	--	--	--	--	--
AUG 23...	.00	0	--	--	--	--	--	--	--	--

DATE	BED MAT. FALL DIAM. % FINER THAN .250 MM	BED MAT. FALL DIAM. % FINER THAN .500 MM	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
MAR 22...	93	97	--	--	--	--	99	100	--	--
MAY 05...	--	--	17	47	79	89	96	97	99	100
10...	--	--	20	56	87	93	96	97	99	100
JUN 28...	--	--	--	--	--	--	--	--	--	--
AUG 23...	--	--	--	--	--	--	--	--	--	--

DISSOLVED OXYGEN PROFILE, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

HOURL	MG/L	HOURL	MG/L	HOURL	MG/L	HOURL	MG/L
Feb. 9, 1977		0400	4.0	July 7, 1977		1000	8.0
1200	4.2	0500	4.0	0100	7.2	1100	8.0
1300	4.1	0600	4.0	0200	6.9	1200	8.3
1400	4.0	1200	4.0	0300	6.7	1300	8.3
1500	4.0			0400	6.2	1400	8.5
1600	4.0	July 6, 1977		0500	5.9	1500	8.6
1700	4.0	1400	6.0	0600	5.4	1600	8.6
1800	4.0	1500	6.7	0700	5.4	1700	8.8
1900	4.0	1600	7.0	0800	5.2	1800	8.8
2000	4.0	1700	7.4	0900	5.0	1900	8.8
2100	4.0	1800	7.7	1000	5.0	2000	8.8
2200	4.0	1900	7.8	1100	5.0	2100	8.8
2300	4.0	2000	8.0	1200	5.0	2200	8.8
2400	4.0	2100	8.0	1300	5.4	2300	8.9
		2200	7.8			2400	9.0
Feb. 10, 1977		2300	7.7	Aug. 29, 1977		Aug. 30, 1977	
0100	4.0	2400	7.5	0800	8.0	0600	8.6
0200	4.0			0900	8.0	0700	8.6
0300	4.0						

RED RIVER OF THE NORTH BASIN

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05059000 SHEYENNE RIVER NEAR KINDRED, ND--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	887	870	829	805	1040	1030	1070	1050	1000	976	921	892
2	898	881	819	800	1040	1010	1070	1060	990	976	943	920
3	892	881	814	810	1010	997	1060	1050	983	957	966	938
4	903	881	819	805	997	983	1050	1020	976	957	989	962
5	909	892	---	---	997	983	1020	1010	970	933	1020	991
6	909	892	---	---	997	983	1010	983	951	927	1050	1030
7	903	881	---	---	1030	997	1000	983	945	927	1080	1040
8	898	865	---	---	1050	1030	1020	990	933	887	1100	1080
9	887	859	---	---	1050	1040	1020	1020	921	892	1100	1070
10	887	870	---	---	1060	1040	1020	1010	915	892	1090	1010
11	887	848	---	---	1050	1020	1020	1000	921	887	1000	910
12	865	838	---	---	1030	990	1020	1020	915	909	900	865
13	848	829	---	---	1010	976	1020	997	921	903	852	826
14	848	834	---	---	976	957	1030	1010	927	915	834	816
15	848	843	---	---	970	939	1040	1030	927	903	835	817
16	854	843	---	---	951	933	1040	1010	939	909	810	785
17	865	854	945	933	933	915	1040	1020	963	933	817	791
18	865	843	951	921	921	909	1030	1010	963	939	834	802
19	848	843	939	898	933	921	1020	997	951	915	834	813
20	843	819	915	909	951	933	1010	983	976	951	831	809
21	834	819	903	898	970	951	997	957	983	939	830	811
22	843	824	933	903	997	963	983	945	963	933	814	791
23	824	814	939	933	1010	990	957	945	951	939	787	748
24	824	819	939	915	1010	997	963	945	951	927	752	744
25	824	824	909	854	1020	1000	963	951	927	903	765	740
26	838	819	898	848	1050	1030	990	970	927	892	744	712
27	848	838	939	859	1070	1050	990	976	927	898	720	698
28	843	819	983	945	1070	1050	976	970	921	892	709	698
29	824	782	1000	983	1060	1050	976	970	---	---	705	694
30	805	782	1030	1000	1070	1050	983	957	---	---	701	679
31	824	805	---	---	1070	1050	1000	983	---	---	701	679
MONTH	909	782	1030	800	1070	909	1070	945	1000	887	1100	679

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	699	666	876	849	951	810	990	963	876	859	769	756
2	703	689	886	871	992	933	970	939	887	876	782	769
3	705	686	904	888	1010	968	970	933	892	887	796	782
4	711	699	937	905	997	973	970	957	887	859	819	791
5	713	705	947	915	997	973	976	951	881	870	848	819
6	706	682	974	941	989	965	990	963	887	876	881	854
7	725	692	976	927	1000	965	997	976	876	859	898	881
8	732	710	944	815	994	967	997	976	870	854	915	892
9	744	713	793	554	988	970	990	976	876	865	921	915
10	742	702	548	505	982	955	990	983	865	838	927	909
11	745	727	528	505	988	958	990	970	843	829	927	915
12	758	739	563	528	983	963	976	963	843	829	927	915
13	767	733	631	566	969	949	1000	983	838	819	927	921
14	766	746	681	635	955	945	1090	1000	819	805	933	921
15	759	735	715	685	986	657	1160	1090	819	814	933	921
16	770	748	753	700	684	546	1180	1130	814	796	933	927
17	763	717	782	759	635	562	1160	1140	810	791	939	933
18	779	752	847	813	667	628	1170	1160	819	810	939	909
19	808	773	846	817	717	693	1160	1130	819	805	909	854
20	826	802	848	816	756	726	1130	1080	829	814	854	824
21	838	807	835	819	795	759	1080	1020	829	819	824	814
22	832	813	821	805	870	816	1040	1010	829	824	810	774
23	846	819	809	776	960	897	1020	838	824	819	774	756
24	859	833	788	762	989	933	859	796	824	805	765	752
25	853	826	800	782	994	962	854	834	805	796	814	752
26	854	813	803	794	983	940	865	854	796	778	887	819
27	842	815	823	805	981	955	876	865	782	769	939	892
28	850	837	826	808	989	976	881	859	769	740	1000	945
29	852	825	829	802	1010	997	887	865	752	740	1010	990
30	847	827	823	805	1000	990	876	859	744	728	1020	997
31	---	---	836	807	---	---	859	848	756	740	---	---
MONTH	859	666	976	505	1010	546	1180	796	892	729	1020	752

RED RIVER OF THE NORTH BASIN

05059000 SHEYENNE RIVER NEAR KINDRED, ND--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	13.5	12.0	4.5	3.0	1.0	1.0	0.5	0.5	1.0	0.0	1.0	0.5
2	13.0	12.0	5.0	4.0	1.0	1.0	0.5	0.5	0.5	0.0	1.0	0.5
3	14.5	12.5	4.0	2.0	1.0	1.0	0.5	0.5	0.5	0.0	1.0	0.5
4	14.5	12.5	2.0	1.5	1.0	1.0	0.5	0.5	1.0	0.5	1.0	0.5
5	12.5	9.5	---	---	1.0	0.5	0.5	0.5	1.0	0.0	1.0	0.5
6	9.5	7.5	---	---	1.0	1.0	0.5	0.0	1.0	0.5	1.0	0.5
7	7.0	6.0	---	---	1.0	1.0	0.5	0.5	1.0	0.5	1.0	0.5
8	7.5	5.5	---	---	1.0	0.5	0.5	0.0	0.5	0.0	0.5	0.5
9	7.5	7.5	---	---	1.0	0.5	0.5	0.5	0.5	0.0	0.5	0.5
10	9.0	7.5	---	---	1.0	0.5	0.5	0.5	0.5	0.0	0.5	0.5
11	10.5	8.5	---	---	1.0	0.5	0.5	0.0	0.5	0.0	1.0	0.5
12	11.0	10.0	---	---	1.0	0.5	0.5	0.5	0.5	0.5	1.0	1.0
13	10.5	10.0	---	---	1.0	0.5	0.5	0.0	1.0	0.5	1.0	0.5
14	10.0	9.0	---	---	0.5	0.5	0.5	0.5	1.0	1.0	1.0	0.5
15	8.5	6.0	---	---	1.0	0.5	1.0	0.5	1.5	0.5	1.0	0.5
16	6.0	5.0	---	---	1.0	0.5	1.0	0.0	1.0	0.5	1.0	0.5
17	4.5	3.5	1.0	0.5	0.5	0.5	1.0	0.5	1.0	0.5	1.0	0.5
18	3.5	3.0	0.5	0.5	0.5	0.5	1.0	0.0	1.0	0.5	0.5	0.5
19	3.5	3.0	1.0	0.5	0.5	0.5	0.5	0.0	1.0	0.5	1.0	0.5
20	3.5	3.5	0.5	0.5	0.5	0.5	0.5	0.0	1.0	0.5	1.0	0.5
21	3.5	2.5	0.5	0.5	0.5	0.5	0.5	0.0	1.0	0.5	1.0	0.5
22	2.5	1.0	1.0	0.5	0.5	0.5	0.5	0.0	1.0	0.5	1.0	0.5
23	2.0	1.0	1.0	1.0	0.5	0.5	0.0	0.0	1.0	1.0	1.0	0.5
24	1.5	1.0	1.0	0.5	0.5	0.5	0.5	0.0	1.0	0.5	1.0	0.5
25	1.0	0.5	1.0	0.5	0.5	0.5	0.5	0.0	1.0	0.5	1.0	0.5
26	0.5	0.0	1.0	0.5	0.5	0.5	1.0	0.5	1.0	0.5	0.5	0.5
27	0.0	0.0	1.0	1.0	0.5	0.5	1.0	0.5	1.0	0.5	0.5	0.5
28	1.5	1.0	1.0	1.0	0.5	0.5	1.0	1.0	1.0	0.5	0.5	0.5
29	3.0	1.5	1.0	0.5	0.5	0.5	1.0	1.0	---	---	0.5	0.5
30	3.5	3.0	1.0	1.0	0.5	0.5	1.0	0.5	---	---	1.0	0.5
31	4.0	2.5	---	---	0.5	0.5	1.0	0.0	---	---	1.5	0.5
MONTH	14.5	0.0	5.0	0.5	1.0	0.5	1.0	0.0	1.5	0.0	1.5	0.5

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	19.5	17.5	22.5	20.0	23.0	20.0	22.5	21.0	19.0	16.5
2	---	---	18.0	15.0	22.5	20.5	24.5	22.0	23.0	21.0	18.0	16.0
3	---	---	18.0	15.5	22.5	20.5	26.5	24.0	23.0	21.5	18.0	17.0
4	---	---	18.0	17.0	23.0	20.0	26.0	25.0	23.5	21.0	18.5	17.5
5	---	---	17.5	15.0	24.5	22.0	28.5	25.5	23.0	21.5	19.0	17.5
6	2.0	0.0	17.5	15.0	24.0	21.5	29.5	27.5	22.0	19.5	19.5	18.5
7	5.0	1.5	16.5	13.0	24.5	22.5	28.0	26.0	20.5	18.5	18.5	18.0
8	6.5	3.5	17.5	15.5	24.0	22.0	25.5	23.0	22.0	19.0	19.0	17.5
9	10.0	5.5	18.5	16.0	23.5	19.5	22.5	21.0	24.0	20.5	19.0	17.5
10	12.5	9.5	20.5	17.0	20.5	18.5	23.5	21.0	23.0	21.0	18.0	16.0
11	12.0	10.0	21.5	18.5	21.5	20.5	24.5	23.0	21.0	18.0	18.5	16.5
12	10.5	9.5	22.5	20.0	22.5	21.0	24.5	21.5	21.5	18.5	18.5	17.0
13	11.5	8.0	24.5	21.5	23.5	21.5	24.5	23.0	21.0	18.5	18.5	16.5
14	11.5	10.0	24.0	22.5	23.5	22.0	25.0	24.0	21.0	18.0	18.5	16.5
15	12.0	10.0	23.0	21.5	25.0	22.5	24.5	22.5	21.0	19.0	18.5	17.0
16	14.0	11.5	22.5	20.0	25.5	24.0	26.0	23.0	18.5	18.0	18.5	17.0
17	16.5	13.5	24.0	21.5	25.5	22.5	28.5	25.5	18.5	17.5	18.5	17.5
18	16.5	12.5	25.0	22.0	23.0	21.0	30.5	27.0	20.0	17.0	18.5	17.0
19	12.5	11.5	25.0	22.5	23.0	21.5	30.5	28.5	21.5	18.5	17.0	14.5
20	11.5	10.5	25.0	22.5	21.5	20.0	28.5	25.0	21.5	19.0	15.5	14.5
21	12.5	9.5	24.0	20.5	21.5	20.0	25.5	23.0	21.0	19.0	15.0	14.5
22	14.0	10.5	20.5	19.0	21.5	20.0	26.0	24.0	21.0	19.0	15.5	15.0
23	15.0	12.5	21.0	18.0	24.0	20.0	27.0	25.0	20.5	18.0	15.0	14.5
24	14.5	12.0	24.0	20.0	25.5	23.0	27.0	25.5	18.5	16.5	15.0	14.5
25	15.0	12.0	25.0	22.5	26.0	24.0	25.0	23.5	19.0	18.0	15.5	14.5
26	17.0	13.0	25.5	23.5	27.0	25.5	24.0	23.5	20.0	19.0	15.0	14.5
27	17.0	15.0	24.5	22.5	26.5	25.0	23.0	22.5	20.0	19.0	15.0	14.0
28	16.5	14.5	25.0	22.0	25.0	23.5	25.5	22.5	19.5	18.0	15.0	14.0
29	18.0	14.5	24.5	22.5	24.0	23.0	25.0	24.0	19.5	17.5	14.5	13.5
30	19.5	16.5	23.5	21.5	23.0	21.5	25.5	23.5	21.0	18.5	14.5	13.0
31	---	---	22.0	19.5	---	---	24.0	22.0	20.5	19.0	---	---
MONTH	19.5	0.0	25.5	13.0	27.0	18.5	30.5	20.0	24.0	16.5	19.5	13.0

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SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1975 TO SEPTEMBER 1976

[illegible]

RED RIVER OF THE NORTH BASIN

05059000 SHEYENNE RIVER NEAR KINDRED, ND--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

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	11	1.1	28	3.5	8	0.93	12	1.2	12	1.2	11	1.3
2	12	1.2	34	4.2	8	0.93	12	1.2	13	1.3	11	1.3
3	19	2.1	55	6.8	8	0.93	12	1.2	10	1.0	11	1.3
4	26	2.8	41	5.1	8	0.93	12	1.2	10	1.0	11	1.3
5	28	3.0	39	4.8	6	0.68	12	1.2	10	1.0	11	1.3
6	14	1.5	41	5.1	6	0.68	16	1.6	9	0.92	11	1.3
7	10	1.1	41	4.4	6	0.68	17	1.7	8	0.82	10	1.2
8	19	2.3	42	4.5	6	0.68	18	1.8	9	0.92	10	1.2
9	35	4.4	35	4.3	6	0.68	23	2.4	6	0.65	8	1.0
10	31	3.4	34	4.2	6	0.68	23	2.4	7	0.79	9	1.2
11	28	3.0	34	4.2	6	0.68	23	2.4	8	0.95	18	2.9
12	26	2.8	34	4.2	6	0.68	23	2.4	7	0.85	14	3.0
13	26	2.7	32	4.0	6	0.68	23	2.4	7	0.85	12	2.8
14	31	3.2	32	4.0	6	0.68	23	2.4	6	0.70	12	2.9
15	24	2.5	32	4.0	6	0.68	23	2.4	8	0.93	14	3.8
16	18	1.8	13	1.6	6	0.68	23	2.4	10	1.2	16	5.2
17	26	2.5	8	0.99	6	0.68	23	2.4	10	1.2	25	11
18	12	1.1	8	0.99	6	0.68	23	2.4	11	1.3	31	17
19	8	0.76	8	0.99	6	0.68	23	2.4	12	1.4	32	16
20	12	1.1	8	0.99	6	0.68	23	2.4	12	1.4	25	12
21	8	0.73	8	0.99	6	0.68	18	1.8	12	1.4	18	8.3
22	7	0.64	7	0.85	6	0.66	18	1.8	12	1.4	18	8.0
23	8	0.71	6	0.73	9	0.97	18	1.8	11	1.3	32	15
24	7	0.62	9	1.1	12	1.3	18	1.8	11	1.3	30	12
25	12	1.1	7	0.85	12	1.3	18	1.8	11	1.3	23	9.3
26	13	1.2	12	1.5	12	1.3	18	1.8	11	1.3	25	10
27	12	1.1	10	1.2	12	1.3	18	1.8	11	1.3	27	11
28	17	1.8	9	1.1	12	1.2	16	1.6	11	1.3	32	13
29	27	3.4	9	1.1	12	1.2	14	1.4	---	---	32	13
30	29	3.4	9	1.1	12	1.2	13	1.3	---	---	30	11
31	35	4.3	---	---	12	1.2	12	1.2	---	---	30	11
TOTAL	---	63.56	---	83.38	---	26.91	---	58.0	---	30.98	---	210.6

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	48	19	61	8.9	118	24	81	9.4	71	4.6	42	3.7
2	55	23	60	8.7	114	21	85	8.7	59	3.2	32	2.9
3	51	21	60	8.6	96	18	73	7.5	68	3.7	31	2.8
4	49	20	60	8.1	107	21	76	7.6	90	4.9	32	2.9
5	47	20	1970	749	113	21	81	8.1	94	5.1	32	2.7
6	42	14	400	93	110	19	54	5.2	74	4.0	35	2.9
7	42	13	460	407	106	18	55	5.3	60	3.2	30	2.4
8	42	15	1270	1640	102	17	76	7.2	55	3.0	25	2.0
9	58	19	1590	1030	97	15	70	6.2	44	2.5	23	1.9
10	51	16	900	384	93	14	62	5.2	46	2.9	23	1.9
11	55	17	490	169	91	14	51	4.8	52	3.2	23	1.9
12	56	17	280	85	91	14	66	6.8	53	3.3	24	1.7
13	52	15	150	41	91	12	66	7.8	55	3.6	28	1.9
14	56	15	138	34	91	11	80	14	48	3.4	29	1.8
15	64	18	90	21	89	11	82	14	57	3.7	30	1.5
16	60	17	77	17	98	15	73	13	60	4.2	29	1.2
17	59	15	70	15	103	16	65	11	57	3.7	27	1.0
18	63	15	66	13	103	15	56	8.5	50	3.2	29	1.7
19	66	17	64	12	96	13	52	6.7	45	2.7	30	2.0
20	66	17	62	11	88	10	51	5.8	36	1.7	24	1.6
21	66	18	54	9.5	94	16	50	5.1	35	1.7	24	1.9
22	69	18	56	10	101	21	46	4.1	33	1.7	38	4.8
23	67	14	64	12	101	18	60	7.3	34	1.7	43	6.4
24	62	12	62	12	100	15	78	9.5	29	1.5	52	9.5
25	61	12	37	7.0	99	13	68	6.6	29	1.6	47	9.5
26	60	11	34	6.4	98	13	72	5.8	50	3.0	55	13
27	62	10	54	10	97	12	83	6.3	44	2.7	51	13
28	64	10	64	12	95	12	75	5.5	39	2.7	42	9.5
29	64	9.7	72	12	86	10	76	5.3	31	2.3	35	7.4
30	63	9.2	85	15	86	10	79	5.3	31	2.5	32	5.9
31	---	---	103	19	---	---	88	5.7	44	3.9	---	---
TOTAL	---	466.9	---	4880.2	---	459	---	229.3	---	95.1	---	123.3

TOTAL LOAD FOR YEAR: 6727.23 TONS.

RED RIVER OF THE NORTH BASIN

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05059400 SHEYENNE RIVER NEAR HORACE, ND

LOCATION.--Lat 46°48'13", long 96°54'13', in NW¼NW¼ sec. 5, T.138 N., R. 49 W., Cass County, Hydrologic Unit 09020204, at bridge on county road, 3 mi (4.8 km) north and 0.1 mi (0.2 km) east of Horace.

DRAINAGE AREA.--8,800 mi² (22,800 km²), approximately, of which about 5,780 mi (9,300 km) is probably non-contributing, including 3,800 mi (6,114.2 km) in closed basins.

PERIOD OF RECORD.--July 1976 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: September 1976 to current year.

WATER TEMPERATURES: September 1976 to current year.

INSTRUMENTATION.--Water-quality monitor since September 1976.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 1,190 micromhos Jan. 6, 7, 1977; minimum, 336 micromhos May 5, 1977.

WATER TEMPERATURES: Maximum, 31.0°C July 19, 1977; minimum, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 1,190 micromhos Jan. 6, 7; minimum, 336 micromhos May 5.

WATER TEMPERATURES: Maximum, 31.0°C July 19; minimum, 0.0°C on many days during winter months.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	DIS- SOLVED OXYGEN (MG/L)	PER- CENT SATUR- ATION	DIS- SOLVED SOLIDS (RESI- DUE AT 140 C) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L)
OCT 27...	0900	27	895	8.0	.0	13.3	94	568	.77	41.4	.08
NOV 17...	1230	22	1000	7.8	.5	10.8	75	685	.93	40.7	.04
DEC 20...	1330	8.4	998	7.4	.0	7.3	56	590	.80	13.4	.33
JAN 20...	1550	6.5	1110	7.5	.0	2.2	16	739	1.01	13.0	.29
FEB 15...	1800	15	995	7.4	1.0	3.3	26	642	.87	26.0	.56
MAR 21...	1630	157	760	7.8	.5	11.4	82	508	.69	215	.86
APR 27...	0825	80	830	8.4	14.0	9.0	89	531	.72	115	.01
MAY 24...	1400	46	800	8.4	22.0	8.3	95	528	.72	65.6	.05
JUN 28...	1330	46	1020	8.2	24.0	4.9	58	673	.92	83.6	.03
JUL 26...	1425	38	975	8.4	25.5	6.6	82	621	.84	63.7	.03
AUG 23...	1635	19	750	8.3	18.5	5.8	62	471	.64	24.2	.01
SEP 22...	0830	32	845	8.1	15.0	7.0	71	539	.73	46.6	.01

DATE	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L)
OCT 27...	.08
NOV 17...	.06
DEC 20...	.04
JAN 20...	.06
FEB 15...	.08
MAR 21...	.12
APR 27...	.03
MAY 24...	.07
JUN 28...	.08
JUL 26...	.10
AUG 23...	.09
SEP 22...	.11

RED RIVER OF THE NORTH BASIN
05059400 SHEYENNE RIVER NEAR HORACE, ND--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	976	951	854	824			---	---	1050	1020	997	951
2	983	957	843	814			---	---	1050	1020	983	951
3	970	933	854	824			---	---	1040	1010	997	983
4	983	951	876	848			---	---	1070	1050	1000	983
5	951	933	881	843			---	---	1090	1050	990	976
6	939	921	881	859			1190	1170	1120	1090	983	963
7	951	915	881	854			1190	1160	1100	1080	970	939
8	933	903	876	848			1180	1170	1100	1050	951	921
9	939	909	876	848			1170	1160	1100	1040	945	921
10	939	909	887	865			1160	1150	1070	1040	939	915
11	951	915	898	887			1150	1110	1050	945	921	903
12	951	927	915	898			1110	1100	1080	970	898	859
13	951	915	927	898			1130	1100	1110	1030	854	805
14	951	921	939	915			1140	1120	1070	1020	800	728
15	970	957	945	909			1140	1130	1060	970	744	724
16	970	945	---	---			1140	1120	1000	990	728	709
17	951	921	---	---			1130	1120	1020	983	736	724
18	927	892	---	---			1110	1090	1050	1020	744	728
19	892	876	---	---			1150	1110	1050	997	752	676
20	898	887	---	---			1160	1130	1090	1050	732	676
21	898	887	---	---			1150	1100	1090	1060	769	732
22	---	---	---	---			1180	1150	1110	1080	813	782
23	---	---	---	---			1170	1130	1110	1090	831	816
24	---	---	---	---			1130	1090	1080	1060	839	803
25	---	---	---	---			1090	1070	1080	1030	847	793
26	---	---	---	---			1110	1080	1020	983	870	865
27	865	838	---	---			1110	1090	1020	963	878	854
28	865	824	---	---			1160	1120	970	951	886	857
29	870	824	---	---			1130	1090	---	---	866	861
30	865	819	---	---			1090	1050	---	---	879	865
31	859	819	---	---			1050	1030	---	---	878	731
MONTH	983	819	945	814			1190	1030	1120	945	1000	676

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	739	658	892	865	748	676	902	869	849	821	732	712
2	669	649	903	865	756	701	906	884	836	808	724	690
3	669	655	909	887	769	748	904	882	836	824	698	676
4	665	660	909	834	765	740	918	854	831	803	676	663
5	681	654	854	336	791	740	858	820	831	803	683	656
6	---	---	457	339	819	791	851	805	826	818	694	676
7	---	---	482	363	838	814	864	831	842	762	752	694
8	---	---	748	482	838	814	873	853	849	768	778	740
9	---	---	1020	558	848	838	886	866	858	829	814	774
10	---	---	534	438	848	824	889	875	853	828	870	---
11	---	---	438	413	865	838	893	864	843	807	898	865
12	---	---	490	436	881	854	896	862	831	811	927	892
13	---	---	520	492	898	881	905	875	830	806	945	915
14	---	---	560	520	903	881	898	884	826	791	963	927
15	---	---	595	563	898	865	912	887	813	805	945	927
16	---	---	606	589	892	865	895	853	809	779	933	915
17	---	---	621	601	892	848	913	880	793	774	927	909
18	---	---	663	624	876	819	1010	922	789	756	921	915
19	---	---	705	666	892	870	1060	1020	777	746	933	921
20	810	800	724	705	881	760	1070	1040	755	732	939	927
21	824	791	740	720	824	791	1060	1020	758	748	945	865
22	834	796	752	728	829	796	1070	1050	768	757	887	876
23	859	838	778	748	838	791	1070	1030	767	744	881	870
24	865	834	800	756	834	800	1060	1030	781	750	870	760
25	854	810	782	765	865	819	1040	990	791	780	756	724
26	838	796	787	765	927	870	1010	972	790	772	728	672
27	843	810	787	744	963	933	976	943	808	796	752	676
28	848	819	765	732	970	927	943	804	814	782	921	736
29	859	819	760	712	942	906	830	796	805	772	1050	903
30	859	829	765	736	910	877	850	810	732	709	1070	---
31	---	---	765	683	---	---	849	821	732	720	---	---
MONTH	865	649	1020	336	970	676	1070	796	858	709	1070	656

RED RIVER OF THE NORTH BASIN

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05059400 SHEYENNE RIVER NEAR HORACE, ND--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	12.5	11.0	3.0	2.0			---	---	1.0	0.5	1.5	0.5
2	13.0	12.0	3.0	2.5			---	---	1.0	0.5	1.5	1.0
3	14.0	12.5	2.5	1.5			---	---	1.0	0.5	1.5	1.0
4	14.0	13.0	1.5	0.5			---	---	1.0	0.5	1.5	1.0
5	13.5	11.5	0.5	0.5			---	---	1.5	0.5	1.5	0.5
6	11.0	9.0	0.5	0.5			1.5	1.0	1.5	0.5	1.5	1.0
7	9.0	7.0	0.5	0.5			1.5	1.5	1.0	0.5	1.0	0.5
8	7.5	6.5	0.5	0.0			1.5	1.0	1.0	0.5	1.0	0.5
9	7.5	7.0	0.5	0.5			1.5	1.5	1.0	0.5	1.0	0.5
10	8.5	7.5	0.5	0.5			1.5	1.0	0.5	0.5	0.5	0.5
11	10.0	8.5	0.5	0.5			1.5	1.0	1.0	0.5	0.5	0.5
12	10.5	9.5	0.5	0.5			1.5	1.0	1.0	0.5	1.0	0.5
13	10.0	9.5	0.5	0.5			1.0	0.5	1.0	0.5	1.0	0.5
14	10.0	9.0	0.5	0.5			1.0	1.0	1.0	1.0	1.0	0.5
15	9.0	7.0	0.5	0.5			1.0	1.0	1.5	1.0	1.0	0.5
16	7.0	5.5	---	---			1.0	0.5	1.0	1.0	1.0	0.5
17	5.5	4.5	---	---			1.0	1.0	1.0	1.0	0.5	0.5
18	4.5	4.0	---	---			0.5	0.5	1.0	0.5	0.5	0.5
19	4.5	4.0	---	---			0.5	0.0	1.5	0.5	0.5	0.5
20	4.0	4.0	---	---			0.5	0.0	1.5	1.0	1.0	0.5
21	4.0	3.5	---	---			0.5	0.0	1.5	1.0	1.0	0.5
22	---	---	---	---			1.0	0.0	1.5	1.0	1.0	0.5
23	---	---	---	---			0.5	0.0	1.0	1.0	1.0	0.5
24	---	---	---	---			0.5	0.0	1.0	1.0	1.0	0.5
25	---	---	---	---			0.5	0.0	1.0	1.0	1.0	0.5
26	---	---	---	---			1.0	0.5	1.5	1.0	0.5	0.5
27	0.0	0.0	---	---			1.0	0.5	1.5	1.0	1.0	0.5
28	0.5	0.0	---	---			1.0	1.0	1.0	1.0	1.0	0.5
29	0.5	0.5	---	---			1.0	1.0	---	---	0.5	0.5
30	2.0	0.5	---	---			1.0	0.5	---	---	0.5	0.5
31	2.0	1.0	---	---			1.0	0.5	---	---	0.5	0.5
MONTH	14.0	0.0	3.0	0.0			1.5	0.0	1.5	0.5	1.5	0.5

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	0.5	0.5	18.0	17.0	22.5	21.0	22.5	21.0	23.5	22.5	18.5	17.5
2	0.5	0.5	17.0	16.0	22.5	21.0	23.0	20.5	23.0	22.0	17.5	17.0
3	0.5	0.5	17.0	15.5	21.5	21.0	24.0	22.5	23.0	22.0	17.5	16.5
4	0.5	0.5	17.0	16.5	22.0	20.5	24.5	23.5	23.0	22.0	17.5	16.5
5	0.5	0.5	17.0	16.0	23.5	21.5	26.5	24.0	23.0	21.5	18.0	16.5
6	---	---	16.5	15.5	24.0	21.5	27.5	25.5	22.0	21.0	17.5	17.5
7	---	---	15.5	14.0	24.0	22.0	27.0	26.0	21.0	20.5	18.0	17.0
8	---	---	17.5	15.5	24.0	22.5	26.5	25.0	21.0	20.0	18.5	17.5
9	---	---	17.5	16.0	23.0	21.0	25.0	23.0	22.0	20.0	18.0	16.5
10	---	---	18.5	16.5	21.0	19.5	23.5	22.0	21.5	21.0	17.0	16.0
11	---	---	20.0	17.5	21.0	19.5	23.5	22.5	21.0	20.0	17.0	16.0
12	---	---	21.0	19.5	22.0	20.5	24.0	22.0	21.0	19.5	16.5	16.0
13	---	---	22.5	21.0	23.0	21.0	24.5	22.5	20.0	19.0	17.0	16.0
14	---	---	23.5	22.5	23.0	22.0	25.0	24.0	20.5	19.0	17.0	16.0
15	---	---	23.5	22.5	24.0	22.0	25.0	24.0	20.0	19.0	17.0	16.0
16	---	---	22.5	21.5	24.5	23.0	26.0	23.5	19.5	18.5	17.0	16.5
17	---	---	23.5	21.5	24.5	23.5	28.0	25.0	19.0	18.0	17.0	16.5
18	---	---	24.5	22.5	23.5	22.0	30.5	27.5	19.0	17.5	17.0	16.0
19	---	---	25.0	23.5	22.0	21.0	31.0	29.0	20.0	18.0	16.0	15.5
20	11.5	11.0	24.5	23.5	21.5	20.5	30.0	27.5	20.0	18.0	15.5	14.5
21	11.5	10.0	24.0	22.0	21.0	20.5	27.5	26.5	20.0	19.0	14.5	14.0
22	12.0	11.0	21.5	21.0	20.5	20.5	27.0	25.5	20.0	19.5	14.0	13.5
23	13.5	12.0	21.5	20.5	22.0	20.0	27.5	26.0	19.5	18.0	14.0	13.5
24	13.0	11.5	23.5	21.0	24.0	21.5	27.5	26.5	18.5	17.5	14.5	13.5
25	13.5	11.5	25.0	23.0	25.0	22.5	27.0	26.0	18.0	17.5	14.5	14.0
26	15.0	12.5	25.0	24.0	26.0	24.0	26.0	25.0	18.0	18.0	14.0	13.5
27	15.5	14.0	24.5	23.5	25.5	24.5	25.5	24.5	18.0	18.0	14.0	13.0
28	15.5	14.5	24.5	23.5	25.0	23.5	25.5	24.0	19.0	17.5	13.5	13.5
29	16.5	15.0	25.0	23.5	23.5	23.0	25.5	24.5	18.5	17.5	13.5	13.0
30	17.5	15.5	23.5	22.5	23.0	21.5	25.5	24.5	19.5	18.0	13.0	12.0
31	---	---	22.0	21.0	---	---	25.0	23.5	19.0	18.5	---	---
MONTH	17.5	0.5	25.0	14.0	26.0	19.5	31.0	20.5	23.5	17.5	18.5	12.0

RED RIVER OF THE NORTH BASIN

05059500 SHEYENNE RIVER AT WEST FARGO, ND

LOCATION.--Lat 46°53'28", long 96°54'24", in SE¼SE¼ sec.31, T.140 N., R.49 W., Cass County, Hydrologic Unit 09020204, on right bank at downstream side of county highway bridge, 1 mi (2 km) north of West Fargo, 3 mi (5 km) upstream from Maple River, and at mile 24.5 (kilometer 39.4).

DRAINAGE AREA.--8,870 mi² (22,970 km²), approximately, of which about 5,780 mi² (14,970 km²) is probably noncontributing, includes 3,800 mi² (9,840 km²) in closed basins.

PERIOD OF RECORD.--March to November 1902 (gage heights only), April 1903 to October 1905, March to August 1919, September 1929 to current year. Published as "at or near Haggart" 1902-7, 1919. Records for March to November 1902 and November 1905 to June 1907, published in WSP 100, 171, 207, and 245, have been found to be unreliable and should not be used. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1388: 1904(M). WSP 1728: Drainage area. See also "PERIOD OF RECORD."

GAGE.--Water-stage recorder. Datum of gage is 877.19 ft (267.368 m) above mean sea level. June 27, 1933 to September 1969 on left bank about 600 ft (180 m) downstream on unimproved channel at same datum. See WSP 1728 or 1913 for history of changes prior to June 27, 1933.

REMARKS.--Records fair. Flow regulated to a large degree by Lake Ashtabula (station 05057500) 246 mi (396 km) upstream. Above 3,000 ft³/s (84.96 m³/s) overflow occurs upstream between Kindred and West Fargo. This overflow bypasses the station in the Maple River basin and drain 21 to the west and in the Wild Rice River basin to the east. This overflow is not included in the flow for this station. Some small diversions for municipal supply. Figures of daily discharge do not include diversions to the Red River of the North.

AVERAGE DISCHARGE (ADJUSTED).--50 years (water years 1904-5, 1930-77), 169 ft³/s (4.786 m³/s) 122,400 acre-ft/yr (151 hm³/yr); median of yearly mean discharges, 140 ft³/s (3.96 m³/s) 101,000 acre-ft/yr (120 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,110 ft³/s (88.1 m³/s) Apr. 4, 1966; maximum gage height, 22.25 ft (6.782 m) July 5, 1975, backwater from Red and/or Maple Rivers; minimum daily, 1.0 ft³/s (0.028 m³/s) Sept. 23, 1976, caused by diversion to Red River of the North.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 475 ft³/s (13.4 m³/s) May 9, gage height, 8.54 ft (2.603 m); minimum daily, 6.5 ft³/s (0.184 m³/s) Jan. 8-18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	25	12	7.5	12	23	115	58	56	41	25	26
2	20	25	12	7.5	12	23	103	56	47	39	25	26
3	13	24	12	7.5	12	23	116	53	55	38	25	25
4	13	22	10	7.2	13	23	126	53	50	81	24	26
5	29	20	10	7.2	13	24	149	244	46	55	22	30
6	28	20	10	7.0	13	25	145	277	38	43	22	29
7	30	20	10	7.0	13	26	145	175	34	40	22	28
8	26	19	10	6.5	13	27	140	129	29	37	22	29
9	31	18	10	6.5	13	29	140	437	31	34	22	27
10	31	19	10	6.5	13	30	140	354	29	31	23	24
11	59	19	10	6.5	14	32	135	241	26	36	22	23
12	38	18	10	6.5	14	36	130	177	25	33	22	22
13	27	18	9.5	6.5	15	42	135	143	24	31	20	21
14	29	17	9.5	6.5	15	50	129	125	22	33	20	21
15	26	17	9.0	6.5	15	58	121	112	20	40	21	19
16	24	20	8.5	6.5	17	68	115	104	20	71	23	17
17	19	20	8.5	6.5	17	76	114	95	24	63	23	17
18	19	20	8.5	6.5	16	116	113	90	26	58	22	24
19	28	20	8.5	10	16	140	109	86	29	54	21	21
20	29	20	8.5	10	16	145	104	78	26	48	20	18
21	29	18	8.5	10	18	147	101	48	45	42	20	21
22	31	18	8.2	10	21	147	98	48	49	38	19	34
23	32	18	8.0	10	23	153	96	43	69	41	18	30
24	30	18	8.0	11	23	155	89	41	75	34	18	54
25	29	18	8.0	11	23	155	81	43	62	40	18	63
26	28	16	8.0	11	23	150	75	44	54	40	22	72
27	28	16	8.0	11	23	148	70	44	51	33	25	75
28	21	15	8.0	11	23	134	66	44	49	29	26	91
29	27	15	7.5	11	---	122	61	44	48	26	24	96
30	27	14	7.5	11	---	134	61	92	46	27	24	91
31	26	---	7.5	11	---	133	---	67	---	26	25	---
TOTAL	856	567	283.7	260.4	459	2594	3322	3645	1205	1282	685	1100
MEAN	27.6	18.9	9.15	8.40	16.4	83.7	111	118	40.2	41.4	22.1	36.7
MAX	59	25	12	11	23	155	149	437	75	81	26	96
MIN	13	14	7.5	6.5	12	23	61	41	20	26	18	17
AC-FT	1700	1120	563	517	910	5150	6590	7230	2390	2540	1360	2180
(+)	1540	1490	1540	1540	1390	793	0	595	942	0	0	0
MEAN*	52.6	43.9	34.2	33.4	41.5	140	111	128	56.0	41.4	22.1	36.7
AC-FT*	3240	2620	2100	2060	2300	5940	6590	7820	3340	2540	1360	2180

OBSERVED

ADJUSTED

CAL YR 1976	TOTAL	57679.6	MEAN	158	MAX	943	MIN	1.0	AC-FT	114400	MEAN	167	AC-FT	120450
WTR YR 1977	TOTAL	16259.1	MEAN	44.5	MAX	437	MIN	6.5	AC-FT	32250	MEAN	61.7	AC-FT	42090

+ Diversion in acre-feet to Red River of the North.

* Adjusted for diversion to Red River of the North.

RED RIVER OF THE NORTH BASIN

103

05059600 MAPLE RIVER NEAR HOPE, ND

LOCATION.--Lat 47°19'30", long 97°47'25", in NW¼NW¼ sec.4, T.144 N., R.56 W., Steele County, Hydrologic Unit 09020205, 100 ft (30 m) downstream from box culvert on State Highway 38, 500 ft (152 m) east of the intersection of State Highways 32 and 38, and 3 mi (5 km) west of Hope.

DRAINAGE AREA.--20.2 mi² (52.3 km²), of which about 2.8 mi² (7.3 km²) is probably noncontributing.

PERIOD OF RECORD.--October 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,296.62 ft (395.210 m) above mean sea level.

REMARKS.--Records good.

AVERAGE DISCHARGE.--13 years, 3.00 ft³/s (0.085 m³/s), 2,170 acre-ft/yr (2.68 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 734 ft³/s (20.8 m³/s) June 10, 1968, gage height, 4.78 ft (1.457 m); maximum gage height, 5.46 ft (1.664 m) Mar. 15, 1968, backwater from ice; no flow for many months each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 0.91 ft³/s (0.026 m³/s) July 5, gage height, 1.70 ft (0.518 m), maximum gage height, 1.87 ft (0.570 m) Mar. 9, backwater from ice, no peak above base of 50 ft³/s (1.42 m³/s); no flow for many months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						0	.01	0	0	0		0
2						0	.01	0	0	0		0
3						0	.01	.01	0	0		0
4						0	.01	.02	0	0		0
5						0	.01	.02	0	.10		0
6						0	.01	.02	0	.01		0
7						0	.01	.02	0	.01		0
8						0	.01	.02	0	.01		0
9						.05	.02	.02	0	.01		0
10						.10	.03	.02	0	.01		0
11						.01	.03	.02	0	.02		0
12						.01	.03	.01	0	.02		0
13						.03	.03	.01	0	.02		0
14						.01	.03	.01	0	.02		0
15						.01	.03	.01	.01	.02		0
16						.01	.03	0	.03	.02		0
17						.02	.02	0	.02	.02		0
18						.01	.02	0	.01	.02		.01
19						.01	.02	0	0	.02		.02
20						.01	.01	0	0	.01		.01
21						.01	.01	0	0	.01		0
22						.01	.01	0	.01	0		0
23						.02	0	0	.01	0		.01
24						.01	0	0	.01	0		.02
25						.02	0	0	0	0		.04
26						.02	0	0	0	0		.02
27						.05	0	0	0	0		.01
28						.02	0	0	0	.01		.01
29						.02	0	0	0	.02		.01
30						.37	0	0	0	.01		.01
31						.21		0		0		
TOTAL	0	0	0	0	0	1.04	.40	.21	.10	.39	0	.17
MEAN	0	0	0	0	0	.034	.013	.007	.003	.013	0	.006
MAX	0	0	0	0	0	.37	.03	.02	.03	.10	0	.04
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	0	0	0	0	0	2.1	.8	.4	.2	.8	0	.3
CAL YR 1976	TOTAL	284.28	MEAN .78	MAX	90	MIN 0	AC-FT 564					
WTR YR 1977	TOTAL	2.31	MEAN .006	MAX	.37	MIN 0	AC-FT 4					

RED RIVER OF THE NORTH BASIN

05059700 MAPLE RIVER NEAR ENDERLIN, ND

LOCATION.--Lat 46°37'18", long 97°34'25", on west line sec.2, T.136 N., R.55 W., Ransom County, Hydrologic Unit 09020205, on left bank 25 ft (8 m) downstream from county highway bridge, 1 mi (1.6 km) downstream from South Branch 1.2 mi (1.9 km) east of Enderlin.

DRAINAGE AREA.--843 mi² (2,180 km²), of which about 47 mi² (122 km²) is probably noncontributing.

PERIOD OF RECORD.--May 1956 to current year.

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,056.72 ft (322.088 m) above mean sea level. Sept. 21, 1956 to June 9, 1969, recording gage on right bank at same datum. Prior to Sept. 20, 1956, nonrecording gage at site 25 ft (8 m) upstream at same datum.

REMARKS.--Records good except those for the winter period, which are fair.

AVERAGE DISCHARGE.--21 years, 33.0 ft³/s (0.935 m³/s) 23,910 acre-ft/yr (29.5 hm³/yr); median of yearly mean discharges, 23 ft³/s (0.65 m³/s) 16,700 acre-ft/yr (21 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,610 ft³/s (216 m³/s) June 30, 1975, gage height, 15.41 ft (4.697 m); minimum daily, 0.1 ft³/s (0.003 m³/s) Dec. 7-9, 1963; minimum gage height, 1.90 ft (0.579 m) Oct. 5, 1956.

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)
May 7	2400	157 4.45	4.97 1.515	July 5	1330	*208 5.89	*5.32 1.622

Minimum discharge, 0.72 ft³/s (0.020 m³/s) Sept. 21, gage height, 2.86 ft (0.872 m), caused by unusual regulation during the laying of a cable across stream upstream.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	2.4	2.8	2.5	3.0	3.0	7.1	5.9	9.5	3.2	2.4	4.8
2	2.2	2.2	2.8	2.5	3.0	3.0	6.4	5.2	8.0	3.1	2.3	4.0
3	2.4	2.2	2.8	2.5	3.0	3.0	6.2	5.0	7.0	2.8	2.3	3.8
4	2.6	2.2	2.8	2.5	3.0	3.0	6.2	5.4	6.0	7.8	2.3	3.8
5	2.5	2.9	2.8	2.5	3.0	3.0	5.4	6.2	5.0	8.4	2.3	3.8
6	2.5	2.9	2.8	2.5	3.0	3.0	5.0	6.2	4.5	5.3	2.3	3.7
7	2.4	2.9	2.6	2.5	3.0	3.0	5.4	6.1	3.9	3.3	2.3	3.6
8	2.5	3.0	2.5	2.5	3.0	5.0	6.4	12.1	3.5	1.7	2.3	3.2
9	2.6	3.0	2.5	2.5	3.0	5.7	6.9	7.1	3.0	9.6	2.3	3.2
10	2.5	3.2	2.5	2.5	3.0	5.9	6.7	5.3	3.0	8.1	2.3	3.0
11	2.4	3.0	2.5	2.5	3.0	7.8	5.9	4.3	3.0	6.7	2.3	2.8
12	2.4	3.0	2.5	2.5	3.0	6.7	5.2	3.1	3.5	5.9	2.3	2.7
13	2.4	3.0	2.5	2.5	3.0	4.6	5.2	2.5	3.8	5.4	2.3	2.7
14	2.1	3.0	2.5	2.5	3.0	4.1	6.7	2.1	4.3	5.0	2.3	2.7
15	2.1	3.0	2.5	2.5	3.0	5.7	7.5	1.5	5.5	4.1	2.3	2.7
16	2.1	3.0	2.5	2.5	3.0	6.9	8.1	1.1	3.8	3.9	2.3	2.7
17	2.2	3.0	2.5	2.5	3.0	6.4	10	10	30	3.9	2.3	3.3
18	2.4	2.8	2.5	2.5	3.0	5.9	10	10	2.5	3.5	2.3	5.5
19	2.7	2.8	2.5	2.5	3.0	5.2	12	8.8	2.1	3.2	2.3	4.3
20	2.4	2.8	2.5	2.5	3.0	6.9	13	8.5	1.4	3.1	2.3	3.2
21	2.2	2.8	2.5	2.8	3.0	6.2	9.2	9.5	9.9	2.9	2.3	2.9
22	2.4	2.8	2.5	3.0	3.0	5.2	6.9	1.1	6.8	2.7	2.3	3.4
23	2.4	2.8	2.5	3.0	3.0	4.8	5.9	1.1	6.4	2.8	2.3	3.3
24	2.4	2.8	2.5	3.0	3.0	5.0	7.5	1.1	5.1	2.8	2.3	3.6
25	2.4	2.8	2.5	3.0	3.0	5.7	9.2	1.2	4.9	2.7	2.3	3.3
26	2.4	2.8	2.5	3.0	3.0	6.2	8.8	1.2	4.5	2.7	2.3	3.1
27	2.4	2.8	2.5	3.0	3.0	6.2	8.5	1.1	3.9	2.6	2.4	3.7
28	2.4	2.8	2.5	3.0	3.0	6.4	7.5	9.5	3.8	2.5	2.4	3.6
29	2.2	2.8	2.5	3.0	---	10	6.9	9.5	3.6	2.5	2.4	3.9
30	2.2	2.8	2.5	3.0	---	11	6.2	10	3.3	2.5	2.8	3.8
31	2.2	---	2.5	3.0	---	7.1	---	10	---	2.5	3.5	---
TOTAL	73.2	84.3	79.4	82.8	84.0	171.6	221.9	639.7	253.7	295.5	73.4	104.7
MEAN	2.36	2.81	2.56	2.67	3.00	5.54	7.40	20.6	8.46	9.53	2.37	3.49
MAX	2.7	3.2	2.8	3.0	3.0	11	13	121	38	84	3.5	5.5
MIN	2.1	2.2	2.5	2.5	3.0	3.0	5.0	5.0	3.0	2.5	2.3	2.7
AC-FT	145	167	157	164	167	340	440	1270	503	586	146	208
CAL YR 1976	TOTAL	4831.0	MEAN	13.2	MAX	198	MIN	1.8	AC-FT	9580		
WTR YR 1977	TOTAL	2164.2	MEAN	5.93	MAX	121	MIN	2.1	AC-FT	4290		

RED RIVER OF THE NORTH BASIN

105

05060500 RUSH RIVER AT AMENIA, ND

LOCATION.--Lat 47°01'00", long 97°12'50", in sec.24, T.141 N., R.52 W., Cass County, Hydrologic Unit 09020204, on left bank on downstream side of bridge on State Highway 18, 0.6 mi (1.0 km) north of Amenia.

DRAINAGE AREA.--116 mi² (300 km²).

PERIOD OF RECORD.--July 1946 to current year.

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is about 943 ft (287 m) above mean sea level, from topographic map. See WSP 1913 for history of changes prior to June 10, 1961.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--31 years, 8.66 ft³/s (0.245 m³/s), 6,270 acre-ft/yr (7.73 hm³/yr); median of yearly mean discharges, 5.4 ft³/s (0.15 m³/s), 3,900 acre-ft/yr (4.8 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,550 ft³/s (72.2 m³/s) Apr. 18, 1975; maximum gage height, 12.15 ft (3.703 m) Mar. 23, 1966, backwater from ice; no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 41 ft³/s (1.16 m³/s) May 31, gage height, 5.02 ft (1.530 m); maximum gage height, 6.98 ft (2.127 m) Mar. 19, backwater from snow, no other peaks above base of 27 ft³/s (0.76 m³/s); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						0	5.0	.57	6.6			
2						0	4.3	.50	2.0			
3						0	3.6	.18	.99			
4						0	7.8	.26	.91			
5						0	4.2	7.6	.60			
6						0	3.8	9.8	.22			
7						0	3.2	3.6	.16			
8						0	2.7	4.6	.15			
9						0	2.5	6.7	.01			
10						0	2.3	3.4	0			
11						0	2.0	2.1	0			
12						0	2.0	.89	0			
13						0	2.9	.80	0			
14						0	3.2	.49	0			
15						0	2.8	.26	0			
16						0	2.3	.15	0			
17						0	2.5	.06	0			
18						0	2.9	.01	0			
19						0	4.6	0	0			
20						0	4.1	0	0			
21						.50	4.2	0	0			
22						1.0	4.1	0	0			
23						2.5	4.1	0	0			
24						3.0	3.2	0	0			
25						3.5	1.2	0	0			
26						4.0	.98	0	0			
27						4.2	.89	0	0			
28						4.6	.71	0	0			
29						7.7	.80	0	0			
30						26	1.1	.83	0			
31		---			---	16	---	30	---			---
TOTAL	0	0	0	0	0	73.00	89.98	72.80	11.64	0	0	0
MEAN	0	0	0	0	0	2.35	3.00	2.35	.39	0	0	0
MAX	0	0	0	0	0	26	7.8	30	6.6	0	0	0
MIN	0	0	0	0	0	0	.71	0	0	0	0	0
AC-FT	0	0	0	0	0	145	178	144	23	0	0	0
CAL YR 1976	TOTAL	1617.57	MEAN 4.42	MAX 140	MIN 0	AC-FT 3210						
WTR YR 1977	TOTAL	247.42	MEAN .68	MAX 30	MIN 0	AC-FT 491						

RED RIVER OF THE NORTH BASIN

05064500 RED RIVER OF THE NORTH AT HALSTAD, MN

LOCATION.--Lat 47°21'10", long 96°50'50", on line between secs.24 and 25, T.145 N., R.49 W., Traill County, Hydrologic Unit 09020107, on left bank on upstream side of highway bridge, 0.5 mi (0.8 km) west of Halstad, 2.5 mi (4.0 km) downstream from Wild Rice River and at mile 375.2 (kilometer 603.7).

DRAINAGE AREA.--21,800 mi² (56,500 km²), approximately, including 3,800 mi² (9,840 km²) in closed basins.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1936 to June 1937 (no winter records), April 1942 to September 1960 (spring and summer months only), May 1961 to current year.

REVISED RECORDS.--WSP 1388: 1936, 1950. WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 826.65 ft (251.963 m) above mean sea level. Prior to July 17, 1961, nonrecording gage at same site and datum.

REMARKS.--Records good. Some regulation by many controlled lakes and reservoirs on tributaries.

AVERAGE DISCHARGE.--16 years, 1,783 ft³/s (50.49 m³/s), 1,292,000 acre-ft/yr (1.59 km³/yr); median of yearly mean discharges, 1,640 ft³/s (46.4 m³/s), 1,190,000 acre-ft/yr (1.5 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 39,900 ft³/s (1,130 m³/s) July 10, 1975, gage height, 38.55 ft (11.750 m); minimum observed, 5.4 ft³/s (0.15 m³/s) Oct. 8, 9, 12-14, 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1897 reached a stage of about 38.5 ft (11.73 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,050 ft³/s (58.1 m³/s) May 7, gage height, 7.50 ft (2.286 m); minimum daily, 24 ft³/s (0.680 m³/s) Oct. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	107	60	40	45	60	890	370	424	453	94	109
2	30	105	60	40	45	60	940	330	496	431	90	110
3	32	114	60	40	45	65	960	290	440	357	88	110
4	38	123	60	40	45	65	1000	250	405	288	78	115
5	40	127	58	40	43	70	1240	216	370	249	62	120
6	42	113	55	35	40	70	1280	904	383	578	56	120
7	37	113	55	35	40	75	1210	1980	444	708	54	125
8	25	111	55	35	38	80	890	1520	392	532	52	130
9	24	107	55	35	35	80	798	973	308	396	46	130
10	40	105	55	30	35	85	875	652	263	302	46	135
11	48	100	55	30	35	95	890	677	209	242	44	140
12	52	100	55	25	40	145	819	610	183	204	40	140
13	46	100	55	25	40	145	705	550	163	212	37	150
14	78	95	55	25	45	180	607	500	138	212	37	174
15	78	95	52	25	45	230	572	440	132	183	40	170
16	54	90	52	25	50	270	535	390	132	188	37	156
17	38	90	50	25	50	300	509	345	116	180	34	148
18	28	85	50	25	50	340	460	305	114	224	34	163
19	28	85	50	25	50	310	437	280	111	266	58	176
20	50	85	45	25	50	300	568	255	107	214	58	200
21	62	85	45	25	50	340	691	236	105	183	40	226
22	78	80	45	25	50	410	691	221	114	165	34	202
23	90	80	45	25	50	490	694	180	152	144	32	192
24	94	75	45	25	50	560	694	156	204	118	31	260
25	96	75	45	30	50	580	635	167	212	115	42	305
26	102	70	45	35	55	610	555	185	207	112	60	402
27	113	70	45	35	55	650	506	180	192	109	74	548
28	104	65	45	40	60	770	486	165	169	106	86	572
29	107	60	45	40	---	930	447	158	195	103	105	555
30	109	60	45	45	---	980	415	169	367	100	132	558
31	113	---	45	45	---	910	---	266	---	97	125	---
TOTAL	1907	2770	1587	995	1286	10255	21999	13920	7247	7771	1846	6641
MEAN	61.5	92.3	51.2	32.1	45.9	331	733	449	242	251	59.5	221
MAX	113	127	60	45	60	980	1280	1980	496	708	132	572
MIN	24	60	45	25	35	60	415	156	105	97	31	109
AC-FT	3780	5490	3150	1970	2550	20340	43640	27610	14370	15410	3660	13170
CAL YR 1976	TOTAL	294150	MEAN 804	MAX 9850	MIN 10	AC-FT 583400						
WTR YR 1977	TOTAL	78224	MEAN 214	MAX 1980	MIN 24	AC-FT 155200						

RED RIVER OF THE NORTH BASIN

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05064500 RED RIVER OF THE NORTH AT HALSTAD, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1961, 1964-67, 1972 to current year.

REMARKS.--Some chemical data furnished by North Dakota State Water Commission.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	HARD- NESS (CA, MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)
OCT								
12...	1445	47	1350	--	12.0	--	--	--
NOV								
08...	1450	116	1000	--	.5	--	--	--
DEC								
06...	1400	58	1300	8.4	.0	--	--	--
JAN								
12...	1345	23	1650	--	.0	--	--	--
FEB								
01...	1535	46	1210	--	.0	--	--	--
10...	1430	34	1120	7.5	.0	--	--	--
MAR								
08...	1450	74	1000	--	.5	--	--	--
18...	1305	347	890	--	.5	--	--	--
28...	1400	773	680	--	.5	--	--	--
APR								
08...	1245	873	610	8.9	3.5	260	85	60
12...	1440	799	540	--	8.0	--	--	--
MAY								
10...	1520	620	600	8.0	22.0	--	--	--
JUN								
02...	1600	512	760	8.8	22.5	--	--	--
JUL								
01...	1130	460	700	8.3	21.0	--	--	--
AUG								
03...	1500	89	850	8.3	24.0	--	--	--
29...	1335	105	755	--	20.5	--	--	--

DATE	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	ALKA- LINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)
APR									
08...	27	27	18	.7	5.4	215	0	176	.4
12...	--	--	--	--	--	--	--	--	--

DATE	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SI O2) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)
APR								
08...	130	16	.1	3.8	405	375	.55	955
12...	--	--	--	--	--	--	--	--

RED RIVER OF THE NORTH BASIN

05064500 RED RIVER OF THE NORTH AT HALSTAD, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)	DIS- SOLVED BORON (B) (UG/L)
APR 08...	80	40	0

DATE	SUS- PENDE SEDI- MENT (MG/L)	SUS- PENDE SEDI- MENT DIS- CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	SUS. SED. FALL DIAM. % FINER THAN .125 MM	SUS. SED. FALL DIAM. % FINER THAN .250 MM	SUS. SED. FALL DIAM. % FINER THAN .500 MM	SUS. SED. FALL DIAM. % FINER THAN 1.00 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM
OCT 12...	91	12	--	--	--	--	--	--	--	96
NOV 08...	20	6.3	--	--	--	--	--	--	--	98
DEC 06...	6	.94	--	--	--	--	--	--	--	--
JAN 12...	6	.37	--	--	--	--	--	--	--	--
FEB 10...	7	.64	--	--	--	--	--	--	--	--
MAR 08...	24	4.8	--	--	--	--	--	--	--	--
APR 08...	170	401	--	--	--	--	--	--	--	--
12...	E141	--	65	77	83	84	86	91	97	--
MAY 10...	280	469	--	--	--	--	--	--	--	--
JUN 02...	74	102	--	--	--	--	--	--	--	--
JUL 01...	46	57	--	--	--	--	--	--	--	--
07...	131	--	--	--	--	--	--	--	--	--
AUG 29...	62	18	--	--	--	--	--	--	--	--
30...	44	--	--	--	--	--	--	--	--	--

DATE	BED MAT. SIEVE DIAM. % FINER THAN .062 MM	BED MAT. SIEVE DIAM. % FINER THAN .125 MM	BED MAT. SIEVE DIAM. % FINER THAN .250 MM	BED MAT. SIEVE DIAM. % FINER THAN .500 MM	BED MAT. SIEVE 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
OCT 12...	--	--	--	--	--	--	--	--	--	--
NOV 08...	--	--	--	--	--	--	--	--	--	--
DEC 06...	--	--	--	--	--	--	--	--	--	--
JAN 12...	--	--	--	--	--	--	--	--	--	--
FEB 10...	--	--	--	--	--	--	--	--	--	--
MAR 08...	--	--	--	--	--	--	--	--	--	--
APR 08...	41	43	45	57	69	72	82	91	100	--
12...	13	16	22	42	69	76	87	92	96	100
MAY 10...	--	--	--	--	--	--	--	--	--	--
JUN 02...	--	--	--	--	--	--	--	--	--	--
JUL 01...	--	--	--	--	--	--	--	--	--	--
07...	52	53	55	62	69	70	76	79	91	100
AUG 29...	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--

E - Estimated.

RED RIVER OF THE NORTH BASIN

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05064900 BEAVER CREEK NEAR FINLEY, ND
(Hydrologic bench-mark station)

LOCATION.--Lat 47°35'40", long 97°42'18", in NE¼ sec.31, T.148 N., R.55 W., Steele County, Hydrologic Unit 09020109, on right bank 500 ft (150 m) upstream from bridge on county highway, 7 mi (11 km) northeast of Finley.

DRAINAGE AREA.--160 mi² (410 km²), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1964 to current year.

GAGE.--Water-stage recorder and concrete broad-crested weir. Datum of gage is 1,170.08 ft (356.640 m) above mean sea level.

REMARKS.--Records good except those for the winter period, which are fair.

AVERAGE DISCHARGE.--13 years, 9.12 ft³/s (0.258 m³/s) 6,610 acre-ft/yr (8.15 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,320 ft³/s (37.4 m³/s) Apr. 9, 1969, gage height, 6.55 ft (1.996 m); maximum gage height, 9.70 ft (2.957 m) Mar. 14, 1966, backwater from ice; no flow for several months each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 29 ft³/s (0.82 m³/s) Mar. 31, gage height, 3.00 ft (0.914 m), no peak above base of 50 ft³/s (1.42 m³/s); no flow for several months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						0	2.5	0	.05	0		0
2						0	1.0	0	.02	0		0
3						0	.89	0	.01	0		0
4						0	.89	.07	0	0		0
5						0	.69	.39	0	.26		0
6						0	.69	.27	0	.07		0
7						0	.69	.21	0	.04		0
8						0	.69	.12	0	.02		0
9						0	.75	.07	0	0		0
10						.10	.59	.07	0	0		0
11						.25	.51	.05	0	0		0
12						.25	.51	.02	0	0		0
13						.25	.51	0	0	.02		0
14						.20	.55	0	0	.20		0
15						.20	.64	0	0	.18		0
16						.20	.64	0	0	.17		0
17						.20	.59	0	0	.10		0
18						.20	.39	0	0	.05		0
19						.20	.39	0	0	.03		0
20						.20	.39	0	0	.01		0
21						.20	.39	0	0	0		0
22						.25	.39	0	0	0		0
23						.30	.27	0	0	0		0
24						.35	.20	0	0	0		0
25						.40	.15	0	0	0		.05
26						.59	.10	0	0	0		.12
27						.64	.05	0	.01	0		.07
28						1.1	.03	0	.01	0		.06
29					---	.69	.02	0	0	0		.06
30					---	9.4	0	0	0	0		.05
31		---			---	9.0	---	.03	---	0		---
TOTAL	0	0	0	0	0	25.17	16.10	1.30	.10	1.15	0	.41
MEAN	0	0	0	0	0	.81	.54	.042	.003	.037	0	.014
MAX	0	0	0	0	0	9.4	2.5	.39	.05	.26	0	.12
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	0	0	0	0	0	50	32	2.6	.2	2.3	0	.8
CAL YR 1976	TOTAL	1609.58	MEAN 4.40	MAX	200	MIN 0	AC-FT 3190					
WTR YR 1977	TOTAL	44.23	MEAN .12	MAX	9.4	MIN 0	AC-FT 88					

RED RIVER OF THE NORTH BASIN

05064900 BEAVER CREEK NEAR FINLEY, ND--Continued
(Hydrologic bench-mark station)

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS)	SPECIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	DIS- SOLVED OXYGEN (MG/L)	PER- CENT SATUR- ATION	IMME- DIATE COLI- FORM (COL. PER 100 ML)	FECAL COLI- FORM .7UM-MF (COL./ 100 ML)	FECAL STREP- TOCOCI KF AGAR (COL. PER 100 ML)	HARD- NESS (CA, MG) (MG/L)
MAR											
11...	1120	E.25	410	--	.5	--	--	--	--	--	--
14...	1615	.14	530	--	1.0	--	--	--	--	--	--
25...	1125	.38	790	7.9	3.0	11.7	90	84000	50	390	290
APR											
07...	1130	.67	870	--	5.0	--	--	--	--	--	--
27...	1350	.05	1580	8.5	14.5	10.7	108	83500	812	140	670
MAY											
06...	1425	.27	1710	--	13.0	--	--	--	--	--	--
JUL											
07...	1700	.05	1500	8.7	28.0	12.7	168	8200	2900	780	550

DATE	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	ALKA- LITY AS CACO3 (MG/L)
MAR										
11...	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--
25...	200	70	27	53	28	1.4	7.9	107	0	88
APR										
07...	--	--	--	--	--	--	--	--	--	--
27...	500	150	71	120	28	2.0	12	200	1	170
MAY										
06...	--	--	--	--	--	--	--	--	--	--
JUL										
07...	430	120	60	140	35	2.6	16	140	0	110

DATE	CARBON DIOXIDE (CO2) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SIO2) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)
MAR										
11...	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--
25...	2.2	260	27	.1	8.3	546	506	.74	.56	.63
APR										
07...	--	--	--	--	--	--	--	--	--	--
27...	1.0	640	51	.2	5.8	1250	1150	1.70	.17	.01
MAY										
06...	--	--	--	--	--	--	--	--	--	--
JUL										
07...	.4	630	59	.1	15	1180	1110	1.60	.16	.00

DATE	TOTAL PHOS- PHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL BARIUM (BA) (UG/L)	TOTAL CAD- MIUM (CD) (UG/L)	TOTAL CHRO- MIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)
MAR						
25...	.32	2	0	10	0	10
APR						
27...	.09	--	--	--	--	--
JUL						
07...	.28	9	100	10	10	<10

E - Estimated.

RED RIVER OF THE NORTH BASIN

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05064900 BEAVER CREEK NEAR FINLEY, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MAN- GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL SELE- NIUM (SE) (UG/L)	TOTAL SILVER (AG) (UG/L)	TOTAL ZINC (ZN) (UG/L)	CYANIDE (CN) (MG/L)
MAR 25...	300	100	190	.0	4	<10	20	.01
JUL 07...	330	<100	830	2.6	2	<10	10	.00

DATE	TOTAL PCB (UG/L)	PCB IN BOTTOM MA- TERIAL (UG/KG)	POLY- CHLO- RINATED NAPH- THA- LENES (UG/L)	TOTAL ALDRIN (UG/L)	ALDRIN IN BOTTOM MA- TERIAL (UG/KG)	TOTAL CHLOR- DANE (UG/L)	CHLOR- DANE IN BOTTOM MA- TERIAL (UG/KG)	TOTAL DDD (UG/L)	DDD IN BOTTOM MA- TERIAL (UG/KG)	TOTAL DDE (UG/L)	DDE IN BOTTOM MA- TERIAL (UG/KG)	TOTAL DDT (UG/L)
JUL 07...	.0	0	.00	.00	.0	.0	0	.00	.0	.00	.1	.00

DATE	DDT IN BOTTOM MA- TERIAL (UG/KG)	TOTAL DI- AZINON (UG/L)	TOTAL DI- ELDRIN (UG/L)	DI- ELDRIN IN BOTTOM MA- TERIAL (UG/KG)	TOTAL ENDO- SULFAN (UG/L)	TOTAL ENDRIN (UG/L)	ENDRIN IN BOTTOM MA- TERIAL (UG/KG)	TOTAL ETHION (UG/L)	TOTAL HEPTA- CHLOR (UG/L)	HEPTA- CHLOR IN BOTTOM MA- TERIAL (UG/KG)	TOTAL HEPTA- CHLOR EPOXIDE (UG/L)	HEPTA- CHLOR EPOXIDE IN BOT- TOM MA- TERIAL (UG/KG)
JUL 07...	.0	.00	.00	.2	.00	.00	.0	.00	.00	.0	.00	.0

DATE	TOTAL LINDANE (UG/L)	LINDANE IN BOTTOM MA- TERIAL (UG/KG)	TOTAL MALA- THION (UG/L)	TOTAL METHYL PARA- THION (UG/L)	TOTAL METHYL TRI- THION (UG/L)	TOTAL PARA- THION (UG/L)	TOTAL TOX- APHENE (UG/L)	TOX- APHENE IN BOTTOM MA- TERIAL (UG/KG)	TOTAL TRI- THION (UG/L)	TOTAL 2,4-D (UG/L)	TOTAL 2,4,5-T (UG/L)
JUL 07...	.00	.0	.00	.00	.00	.00	0	0	.00	.24	.00

DATE	TOTAL SILVEX (UG/L)	SUS- PENDE SEDI- MENT (MG/L)	SUS- PENDE SEDI- MENT DIS- CHARGE (T/DAY)
MAR 25...	--	4	.00
APR 27...	--	6	.00
JUL 07...	.00	16	.00

RED RIVER OF THE NORTH BASIN

05066500 GOOSE RIVER AT HILLSBORO, ND

LOCATION.--Lat 47°24'20", long 97°03'40", in NW¼ sec.5, T.14S N., R.50 W., Traill County, Hydrologic Unit 09020109, on right bank 600 ft (180 m) upstream from Foogman Dam in Hillsboro 27.5 mi (44 km) upstream from mouth.

DRAINAGE AREA.--1,203 mi² (3,116 km²), of which 110 mi² (285 km²) is probably noncontributing.

PERIOD OF RECORD.--March 1931 to current year (no winter records 1932-34). Monthly discharge only for some periods, published in WSP 1308.

GAGE.--Water-stage recorder and masonry dam. Datum of gage is 879.52 ft (268.078 m) above mean sea level. Sept. 26, 1941, to Oct. 27, 1965, at site 600 ft (180 m) downstream at same datum. See WSP 1728 or 1913 for history of changes prior to Sept. 26, 1941.

REMARKS.--Records good.

AVERAGE DISCHARGE.--44 years (1931-32, 1934-77), 63.9 ft³/s (1.810 m³/s) 46,300 acre-ft/yr (57.1 hm³/yr); median of yearly mean discharges, 40 ft³/s (1.13 m³/s) 29,000 acre-ft/yr (36 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,420 ft³/s (267 m³/s) Apr. 19, 1950; maximum gage height, 14.94 ft (4.554 m) Apr. 19, 1950; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 86 ft³/s (2.44 m³/s) Apr. 11, gage height, 2.01 ft (0.613 m), no peak above base of 200 ft³/s (5.7 m³/s); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1			0	.30	.30	0	35	0	7.0	5.0	.94	.18
2			0	.30	.30	0	27	0	6.5	6.8	.62	.18
3			0	.30	.30	0	22	0	6.5	5.6	.38	.93
4			0	.30	.30	0	22	0	6.0	4.7	.38	1.7
5			0	.30	.30	0	14	.18	7.0	4.7	.10	.24
6			0	.30	.30	0	18	1.2	7.0	4.7	.05	.18
7			.10	.30	.30	0	22	24	7.5	4.7	.05	.18
8			.20	.30	.40	0	13	33	10	4.7	.05	.24
9			.30	.30	.60	0	7.5	27	12	6.8	.05	.83
10			.30	.30	.80	0	15	28	9.0	9.4	.05	.85
11			.30	.30	.80	0	76	25	6.8	11	.05	.62
12			.30	.30	.80	0	53	22	3.3	6.8	.05	.94
13			.30	.30	.80	0	34	14	2.5	6.8	.05	.94
14			.30	.30	.80	0	30	9.4	1.9	6.8	.05	.94
15			.30	.30	.80	0	24	9.9	3.8	6.8	.05	.94
16			.30	.30	.40	0	22	12	3.9	6.8	.05	.94
17			.30	.30	0	0	20	8.4	3.0	3.8	.05	.94
18			.30	.30	0	0	14	8.0	3.8	1.4	.05	5.8
19			.30	.30	0	0	14	5.5	5.2	1.0	.05	1.9
20			.30	.30	0	0	11	5.5	5.6	2.4	.05	.47
21			.30	.30	0	0	9.9	5.8	4.0	2.4	.05	.38
22			.30	.30	0	0	11	6.0	3.1	2.4	.05	.81
23			.30	.30	0	0	8.2	6.0	3.6	2.4	.05	2.3
24			.30	.30	0	0	4.5	6.5	4.1	1.9	.05	8.0
25			.30	.30	0	0	1.6	6.0	2.8	1.9	.02	8.0
26			.30	.30	0	0	.07	6.0	2.3	1.9	.05	5.8
27			.30	.30	0	0	0	6.0	2.1	1.4	.18	4.1
28			.30	.30	0	0	0	6.0	2.5	1.4	.18	3.2
29			.30	.30	---	20	0	6.5	3.5	1.4	.34	3.1
30			.30	.30	---	25	0	7.0	5.4	.94	.18	3.1
31		---	.30	.30	---	25	---	6.5	---	.94	.18	---
TOTAL	0	0	7.20	9.30	8.30	70	528.77	301.38	151.7	129.68	4.50	58.73
MEAN	0	0	.23	.30	.30	2.26	17.6	9.72	5.06	4.18	.15	1.96
MAX	0	0	.30	.30	.80	25	76	33	12	11	.94	8.0
MIN	0	0	0	.30	0	0	0	0	1.9	.94	.02	.18
AC-FT	0	0	14	18	16	139	1050	598	301	257	8.9	116
(+)	0	0	0	0	0	307	655	214	0	0	0	0
MEAN*	0	0	.23	.30	.30	7.26	28.6	13.2	5.06	4.18	.15	1.96
AC-FT*	0	0	14	18	16	446	1700	812	301	257	8.9	116

OBSERVED

ADJUSTED

CAL YR 1976	TOTAL	15411.32	MEAN	42.1	MAX	1200	MIN	.00	AC-FT	30570	MEAN	42.1	AC-FT	30570
WTR YR 1977	TOTAL	1269.56	MEAN	3.48	MAX	76	MIN	.00	AC-FT	2520	MEAN	5.10	AC-FT	3690

+ Diversion in acre-feet to American Crystal Sugar Company

* Adjusted for diversion to American Crystal Sugar Company

RED RIVER OF THE NORTH BASIN

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05082500 RED RIVER OF THE NORTH AT GRAND FORKS, ND

LOCATION.--Lat 47°56'34", long 97°03'10", in SW¼NE¼ sec.33, T.152 N., R.50 W., Grand Forks County, Hydrologic Unit 09020301, on left bank on second floor of old sewage plant in Grand Forks, 2.3 mi (3.7 km) downstream from Red Lake River, and at mile 295.7 (kilometer 475.8).

DRAINAGE AREA.--30,100 mi² (78,000 km²), approximately, including 3,800 mi² (9,840 km²) in closed basins.

PERIOD OF RECORD.--April 1882 to current year. Monthly discharge only prior to May 1901, published in WSP 1308.

REVISED RECORDS.--WSP 855: 1936(M). WSP 1115: 1942. WSP 1175: 1897(M). WSP 1388: 1904, 1914-15, 1917-19, 1921-22, 1927, 1950. WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 778.35 ft (237.241 m) above mean sea level. Nov. 3, 1933, to Apr. 13, 1965, water-stage recorder 0.3 mi (0.5 km) upstream at present datum. See WSP 1728 or 1913 for history of changes prior to Nov. 3, 1933.

REMARKS.--Records good.

AVERAGE DISCHARGE.--95 years, 2,502 ft³/s (70.86 m³/s) 1,813,000 acre-ft/yr (2.24 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 80,000 ft³/s (2,270 m³/s) Apr. 10, 1897, gage height, 50.2 ft (15.30 m), site and datum then in use, from rating curve extended above 54,000 ft³/s (1,530 m³/s) minimum, 1.8 ft³/s (0.051 m³/s) Sept. 2, 1977, caused by unusual regulation during repair of dam at Grand Forks.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,190 ft³/s (62.0 m³/s) Apr. 10, gage height, 8.52 ft (2.597 m); maximum gage height, 8.71 ft (2.655 m) Apr. 5, backwater from ice; minimum discharge, 1.8 ft³/s (0.051 m³/s) Sept. 2, gage height, 1.00 ft (0.3048 m), observed.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	514	400	195	215	215	235	1460	690	977	361	333	153
2	514	400	185	215	212	230	1580	660	1020	465	319	1.8
3	484	380	180	215	212	230	1590	619	1040	554	312	434
4	452	365	180	215	212	230	1620	586	999	586	305	570
5	437	350	175	215	212	230	1800	579	941	660	284	451
6	425	340	180	215	212	235	1750	538	851	875	265	432
7	418	330	180	215	212	240	1650	575	760	1070	245	461
8	405	320	180	215	212	250	1620	1410	715	1260	242	490
9	412	320	185	215	212	260	1800	1780	678	1240	232	508
10	410	320	190	215	212	270	2100	1460	619	1020	228	508
11	407	315	195	215	212	280	2150	1040	558	848	227	490
12	407	315	195	215	212	300	2040	824	508	738	220	484
13	405	310	200	215	212	390	1920	794	458	648	200	490
14	404	310	200	215	212	410	1740	730	425	605	203	501
15	413	305	200	215	210	420	1590	648	440	588	206	499
16	429	300	200	215	207	420	1360	564	423	558	208	487
17	434	290	200	215	207	450	1170	526	423	526	208	468
18	429	285	200	215	207	480	1030	516	414	508	206	482
19	407	280	200	215	210	500	911	536	406	487	209	508
20	370	275	200	215	210	530	854	526	388	494	201	499
21	362	270	200	215	210	540	833	1450	326	506	193	492
22	370	265	200	215	210	530	875	1880	284	492	193	508
23	372	260	200	215	210	480	896	1280	284	456	196	605
24	383	260	200	215	220	480	905	887	284	425	200	730
25	386	260	200	215	240	540	899	730	347	401	177	760
26	377	255	205	215	240	650	881	641	357	364	104	824
27	356	250	210	215	240	780	836	629	374	333	143	950
28	338	240	210	215	240	820	772	617	404	340	217	1180
29	336	230	210	215	---	1180	728	612	406	337	258	1400
30	360	210	210	215	---	1330	705	665	378	308	261	1450
31	390	---	215	215	---	1380	---	875	---	312	251	---
TOTAL	12606	9010	6080	6665	6032	15300	40065	25867	16477	18365	7046	17815.8
MEAN	407	300	196	215	215	494	1336	834	549	592	227	594
MAX	514	400	215	215	240	1380	2150	1880	1040	1260	333	1450
MIN	336	210	175	215	207	230	705	516	284	308	104	1.8
AC-FT	25000	17870	12060	13220	11960	30350	79470	51310	32680	36430	13980	35340
CAL YR 1976	TOTAL	731936.0	MEAN	2000	MAX	22900	MIN	175	AC-FT	1452000		
WTR YR 1977	TOTAL	181328.8	MEAN	497	MAX	2150	MIN	1.8	AC-FT	359700		

RED RIVER OF THE NORTH BASIN

05083500 RED RIVER OF THE NORTH AT OSLO, MN
(National Water-Quality Accounting Network Station)
(Pesticide Station)

LOCATION.--Lat 48°11'40", long 97°08'30", in SW¼SW¼ sec.36, T.155 N., R.51 W., in Walsh County, Hydrologic Unit 09020306, on interstate highway bridge at Oslo, and at mile 271.2 (kilometer 436.4).

DRAINAGE AREA.--31,200 mi² (80,800 km²) approximately, including 3,800 mi² (9,840 km²) in closed basins.

PERIOD OF RECORD.--Water years 1973 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1975 to current year.

WATER TEMPERATURES: October 1975 to current year.

INSTRUMENTATION.--Water-quality monitor since December 1974.

REMARKS.--Discharge obtained by hydrographic comparison of stations 05082500 Red River of the North at Grand Forks and 05092000 Red River of the North at Drayton.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 1,860 micromhos Mar. 18, 1977; minimum, 352 micromhos Aug. 11, 12, 1976.

WATER TEMPERATURES: Maximum, 26.5°C Aug. 24-26, 1976; minimum, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 1,860 micromhos Mar. 18; minimum, 373 micromhos May 23.

WATER TEMPERATURES: Maximum, 25.5°C June 20-22, 25, 26, July 30; minimum, 0.0°C on many days during winter months.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	FECAL COLIFORM (COL./100 ML)	STREPTOCOCCI (COL/100 ML)	FECAL STREPTOCOCCI (COL/100 ML)
OCT 19...	1215	400	440	8.2	5.5	--	10	11.8	103	230	62	--
NOV 30...	1200	250	1020	7.8	.0	--	7	14.1	99	--	--	203
DEC 28...	1400	200	725	7.7	.0	--	4	11.0	77	55	--	68
JAN 24...	1130	215	800	7.7	.5	--	6	6.7	48	936	--	171
FEB 14...	1045	200	670	7.8	.0	--	10	5.6	39	300	--	1100
MAR 21...	1130	450	1150	7.9	1.0	--	6	7.7	56	340	--	1860
APR 25...	1130	1500	670	8.8	12.5	--	30	11.7	109	913	--	836
MAY 24...	1100	1800	445	8.2	21.0	--	130	--	--	1000	--	1800
JUN 28...	1100	420	845	8.8	23.5	--	55	8.0	95	932	--	960
JUL 25...	1300	500	800	8.5	25.5	--	25	7.7	95	937	--	828000
AUG 30...	1500	--	745	--	25.0	25	--	--	--	--	--	--
AUG 25...	1130	200	600	8.7	19.0	--	60	8.1	89	30	--	630000
SEP 27...	1000	800	775	8.3	14.5	--	40	8.2	82	400	--	640

DATE	HARDNESS (CA, MG/L)	NON-CARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CaCO3 (MG/L)
OCT 19...	190	11	46	19	18	16	.6	4.6	222	0	182
NOV 30...	360	72	80	40	77	31	1.8	11	356	0	292
DEC 28...	370	27	86	38	42	19	.9	7.0	420	0	340
JAN 24...	340	36	82	34	44	21	1.0	6.5	376	0	308
FEB 14...	320	34	72	33	42	22	1.0	6.5	344	0	282
MAR 21...	350	90	84	33	100	38	2.3	8.2	312	0	260
APR 25...	280	100	64	29	40	23	1.0	5.9	200	7	180
MAY 24...	180	58	46	16	22	20	.7	5.0	150	0	120
JUN 28...	310	93	70	32	64	31	1.6	8.1	260	0	210
JUL 25...	270	76	60	28	66	34	1.8	7.8	230	0	190
AUG 30...	280	77	65	29	54	29	1.4	7.5	250	--	210
AUG 25...	270	70	59	29	32	20	.9	5.2	240	0	200
SEP 27...	280	63	61	30	62	32	1.6	6.7	260	0	210

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

RED RIVER OF THE NORTH BASIN

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05083500 RED RIVER OF THE NORTH AT OSLO, MN--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	CARBON DIOXIDE (CO2) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO2) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO- GEN (N) (MG/L)
OCT 19...	2.2	32	16	.2	2.2	267	247	.36	288	.09	--
NOV 30...	9.0	150	76	.4	5.5	668	615	.91	451	.10	--
DEC 28...	13	79	34	.3	9.0	524	502	.71	283	.11	--
JAN 24...	12	74	30	.4	13	507	469	.69	294	.33	--
FEB 14...	8.7	89	38	.4	14	464	465	.63	251	.30	--
MAR 21...	6.3	130	130	.3	16	679	655	.92	825	.45	--
APR 25...	.5	130	37	.2	.9	433	413	.59	1750	.01	--
MAY 24...	1.5	70	18	.2	7.9	282	259	.38	1370	.54	--
JUN 28...	.7	140	72	.3	7.5	526	522	.72	596	.01	--
JUL 25...	1.2	100	76	.3	12	490	464	.67	661	.32	--
JUL 30...	--	97	55	--	--	454	--	.62	--	--	--
AUG 25...	.8	94	31	.3	6.1	391	375	.53	211	.03	--
SEP 27...	2.1	90	74	.2	7.9	479	460	.65	1040	.12	.15

DATE	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L)	TOTAL NITRO- GEN (N) (MG/L)	TOTAL NITRO- GEN (NO3) (MG/L)	TOTAL PHOS- PHORUS (P) (MG/L)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	SUS- PENDE D ARSENIC (AS) (UG/L)	DIS- SOLVED ARSENIC (AS) (UG/L)	TOTAL CAD- MIUM (CD) (UG/L)	SUS- PENDE D CAD- MIUM (CD) (UG/L)
OCT 19...	1.2	1.3	5.7	.13	--	--	--	--	--	--
NOV 30...	2.3	2.4	11	1.5	--	--	--	--	--	--
DEC 28...	1.4	1.5	6.7	.71	--	--	--	--	--	--
JAN 24...	1.6	1.9	8.5	.59	--	3	0	3	<10	<9
FEB 14...	1.9	2.2	9.7	1.2	--	--	--	--	--	--
MAR 21...	2.6	3.1	14	.75	--	--	--	--	--	--
APR 25...	.98	.99	4.4	.18	--	3	--	3	<10	--
MAY 24...	1.3	1.8	8.1	.28	--	--	--	--	--	--
JUN 28...	1.6	1.6	7.1	.43	--	--	--	--	--	--
JUL 25...	1.3	1.6	7.2	.46	--	11	--	9	<10	<8
AUG 25...	1.6	1.6	7.2	.40	--	--	--	--	--	--
SEP 27...	--	--	--	.36	.19	--	--	--	--	--

DATE	DIS- SOLVED CAD- MIUM (CD) (UG/L)	TOTAL CHRO- MIUM (CR) (UG/L)	SUS- PENDE D CHRO- MIUM (CR) (UG/L)	DIS- SOLVED CHRO- MIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	SUS- PENDE D COBALT (CO) (UG/L)	DIS- SOLVED COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	SUS- PENDE D COPPER (CU) (UG/L)	DIS- SOLVED COPPER (CU) (UG/L)
JAN 24...	1	0	0	0	<50	<50	0	<10	<6	4
APR 25...	2	0	--	0	<50	--	0	<10	--	3
JUL 25...	2	0	--	10	<50	<50	0	10	0	14

RED RIVER OF THE NORTH BASIN

05083500 RED RIVER OF THE NORTH AT OSLO, MN--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL IRON (FE) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	SUS- PENDE LEAD (PB) (UG/L)	DIS- SOLVED LEAD (PB) (UG/L)	TOTAL MAN- GANESE (MN) (UG/L)	SUS- PENDE MAN- GANESE (MN) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)
JAN 24...	320	30	<100	<92	8	90	10	80	.1
APR 25...	1300	30	100	--	15	230	--	10	.0
JUL 25...	3070	320	<100	<91	9	250	250	0	.2

DATE	SUS- PENDE MERCURY (HG) (UG/L)	DIS- SOLVED MERCURY (HG) (UG/L)	TOTAL SELE- NIUM (SE) (UG/L)	SUS- PENDE SELE- NIUM (SE) (UG/L)	DIS- SOLVED SELE- NIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	SUS- PENDE ZINC (ZN) (UG/L)	DIS- SOLVED ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)
JAN 24...	.0	.2	0	0	0	10	0	20	15
APR 25...	--	.0	1	--	1	10	--	10	11
JUL 25...	.0	.2	1	--	0	20	10	6	11

DATE	TOTAL ALDRIN (UG/L)	ALDRIN IN BOTTOM MA- TERIAL (UG/KG)	TOTAL ATRA- ZINE (UG/L)	ATRA- ZINE IN BOTTOM MATERI- AL (UG/ KG DRY SOLIDS)	TOTAL CHLOR- DANE (UG/L)	CHLOR- DANE IN BOTTOM MA- TERIAL (UG/KG)	TOTAL DDD (UG/L)	DDD IN BOTTOM MA- TERIAL (UG/KG)	P,P' DDD IN BOTTOM MA- TERIAL (UG/KG)	TOTAL DDE (UG/L)	DDE IN BOTTOM MA- TERIAL (UG/KG)	TOTAL DDT (UG/L)
NOV 30...	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND
JAN 24...	ND	--	ND	--	ND	--	ND	--	--	ND	--	ND
APR 25...	ND	ND	ND	ND	ND	0	ND	--	.4	ND	ND	ND
JUL 25...	ND	--	--	--	ND	--	ND	--	--	ND	--	ND

DATE	DDT IN BOTTOM MA- TERIAL (UG/KG)	P,P' DDT IN BOTTOM MA- TERIAL (UG/KG)	TOTAL DI- AZINON (UG/L)	DI- AZINON IN BOTTOM MA- TERIAL (UG/KG)	TOTAL DI- ELDRIN (UG/L)	DI- ELDRIN IN BOTTOM MA- TERIAL (UG/KG)	TOTAL ENDRIN (UG/L)	ENDRIN IN BOTTOM MA- TERIAL (UG/KG)	TOTAL ETHION (UG/L)	ETHION IN BOTTOM MA- TERIAL (UG/KG)	TOTAL HEPTA- CHLOR (UG/L)	HEPTA- CHLOR IN BOTTOM MA- TERIAL (UG/KG)
NOV 30...	ND	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
JAN 24...	--	--	ND	--	ND	--	ND	--	ND	--	ND	--
APR 25...	--	.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
JUL 25...	--	--	ND	--	ND	--	ND	--	ND	--	ND	--

Whole water ND - Not detected at 0.01 µg/L level.

Bed material ND - Not detected at 0.1 µg/mg level.

RED RIVER OF THE NORTH BASIN

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05083500 RED RIVER OF THE NORTH AT OSLO, MN--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL HEPTA- CHLOR EPOXIDE (UG/L)	HEPTA- CHLOR EPOXIDE IN BOT- TOM MA- TERIAL (UG/KG)	TOTAL LINDANE (UG/L)	LINDANE IN BOTTOM MA- TERIAL (UG/KG)	TOTAL MALA- THION (UG/L)	MALA- THION IN BOTTOM MA- TERIAL (UG/KG)	TOTAL METH- OXY- CHLOR (UG/L)	METHOX- YCHLOR IN BOT- TOM MA- TERIAL (UG/KG)	TOTAL METHYL THION (UG/L)	METHYL THION IN BOT- TOM MA- TERIAL (UG/KG)	TOTAL METHYL THION (UG/L)	METHYL THION IN BOT- TOM MA- TERIAL (UG/KG)
NOV 30...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
JAN 24...	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--
APR 25...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
JUL 25...	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--

DATE	TOTAL PARA- THION (UG/L)	PARA- THION IN BOTTOM MA- TERIAL (UG/KG)	SIMA- ZINE TOTAL COUL- SON COND. (UG/L)	SIMA- ZINE IN BOTTOM MATERI- AL (UG/ KG DRY SOLIDS)	TOTAL TOX- APHENE (UG/L)	TOX- APHENE IN BOTTOM MA- TERIAL (UG/KG)	TOTAL TRI- THION (UG/L)	TRI- THION IN BOTTOM MA- TERIAL (UG/KG)	TOTAL 2,4-D (UG/L)	2,4-D IN BOTTOM MA- TERIAL (UG/KG)	TOTAL 2,4,5-T (UG/L)	2,4,5-T IN BOTTOM MA- TERIAL (UG/KG)
NOV 30...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
JAN 24...	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--
APR 25...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
JUL 25...	ND	--	--	--	ND	--	ND	--	--	--	--	--

DATE	TOTAL SILVEX (UG/L)	SILVEX IN BOTTOM MA- TERIAL (UG/KG)	SUS- PENDE SIEDI- MENT (MG/L)	SUS- PENDE SIEDI- MENT DIS- CHARGE (T/DAY)	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM
OCT 19...	--	--	32	35	87
NOV 30...	ND	ND	6	4.0	68
DEC 28...	--	--	17	9.2	90
JAN 24...	ND	--	10	5.8	77
FEB 14...	--	--	12	6.5	67
MAR 21...	--	--	8	9.7	90
APR 25...	ND	ND	62	251	98
MAY 24...	--	--	182	885	99
JUN 28...	--	--	87	99	97
JUL 25...	--	--	86	116	95
AUG 25...	--	--	76	41	98
SEP 27...	--	--	84	181	93

Whole water ND - Not detected at 0.01 µg/L level.
 Bed material ND - Not detected at 0.1 µg/mg level.

RED RIVER OF THE NORTH BASIN

05083500 RED RIVER OF THE NORTH AT OSLO, MN--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	388	380	443	429	1100	972	696	684	740	724	786	780
2	393	382	445	432	1120	1040	696	686	740	724	791	780
3	395	386	448	440	1050	988	698	691	753	740	783	772
4	399	384	448	443	1030	1019	691	681	750	722	780	772
5	413	397	447	428	1070	1030	681	677	719	696	786	777
6	420	408	455	439	1100	1070	684	674	724	696	783	772
7	429	411	---	---	1080	1030	696	681	745	727	777	767
8	420	406	---	---	1080	1050	722	693	748	740	761	727
9	429	411	---	---	1080	1010	719	707	756	745	729	722
10	427	410	---	---	1020	988	745	714	799	756	729	722
11	421	411	---	---	1020	996	759	745	849	756	727	707
12	432	416	---	---	1030	1010	759	750	767	759	761	707
13	437	418	---	---	1010	896	788	761	777	764	753	707
14	433	423	---	---	892	874	799	783	827	761	767	722
15	441	436	---	---	870	846	805	796	764	756	786	677
16	446	430	---	---	843	799	813	799	761	756	717	661
17	450	434	---	---	799	786	805	796	761	753	722	681
18	445	434	---	---	788	780	802	794	764	756	1860	724
19	453	441	1140	657	827	788	802	791	761	756	1790	1300
20	454	440	1100	672	839	824	805	799	764	759	1560	1220
21	459	443	823	722	836	830	810	807	764	759	1410	1070
22	462	448	1120	767	830	807	821	805	761	748	1260	1080
23	469	445	928	758	819	802	813	802	756	745	1090	915
24	454	444	801	759	805	788	802	783	769	756	1060	870
25	456	443	812	780	788	767	786	775	791	769	1060	902
26	456	444	963	841	769	756	775	756	802	788	925	877
27	458	433	1020	944	753	735	764	748	802	794	936	824
28	445	414	1050	946	740	722	769	753	796	783	929	821
29	448	418	1100	982	727	421	769	750	---	---	919	833
30	451	433	1090	1010	710	423	750	742	---	---	855	745
31	454	433	---	---	703	427	745	737	---	---	839	714
MONTH	469	380	1140	428	1120	421	821	674	849	696	1860	661

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	824	735	761	742	700	614	---	---	764	727	626	599
2	764	677	764	753	783	681	---	---	737	729	620	603
3	710	639	772	759	902	791	---	---	732	724	622	616
4	686	610	767	759	909	712	---	---	735	717	655	589
5	628	502	769	753	724	643	---	---	759	729	641	580
6	635	561	810	772	674	654	---	---	764	753	574	542
7	618	540	849	807	691	654	---	---	756	745	700	578
8	670	555	852	788	735	693	---	---	748	740	707	665
9	672	599	929	788	783	735	---	---	737	705	677	663
10	595	540	1050	929	833	783	---	---	717	698	698	679
11	552	519	1110	858	864	836	---	---	707	688	696	688
12	553	531	846	786	896	864	---	---	700	661	691	674
13	540	523	780	672	915	896	---	---	672	650	700	679
14	521	512	670	648	925	880	---	---	688	668	703	691
15	529	514	659	646	880	821	---	---	670	626	693	684
16	552	517	710	663	899	877	---	---	635	616	681	641
17	581	553	740	712	925	899	---	---	637	618	646	637
18	608	585	750	727	922	889	---	---	637	624	654	648
19	650	608	724	693	886	861	---	---	626	595	654	635
20	684	650	719	693	939	750	---	---	618	595	691	648
21	693	674	727	646	855	722	---	---	630	612	703	684
22	693	679	657	427	939	714	---	---	637	616	719	700
23	677	661	419	373	932	896	---	---	632	610	719	698
24	681	654	471	408	953	880	---	---	622	603	745	719
25	703	677	574	470	942	919	---	---	626	608	750	735
26	717	703	603	578	939	925	---	---	641	628	788	745
27	745	717	583	566	925	909	---	---	679	630	805	791
28	767	745	585	557	---	---	---	---	740	679	889	810
29	764	740	587	550	---	---	783	777	759	665	932	896
30	745	732	727	572	---	---	777	753	663	632	932	915
31	---	---	610	553	---	---	775	750	641	630	---	---
MONTH	824	502	1110	373	953	614	---	---	764	595	932	542

05083500 RED RIVER OF THE NORTH AT OSLO, MN--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	14.5	12.5	5.5	3.5	1.5	0.0	0.5	0.0	0.0	0.0	1.0	0.5
2	13.5	12.0	5.0	3.0	2.0	0.5	0.5	0.0	0.0	0.0	1.0	0.5
3	14.5	12.5	3.5	1.5	0.5	0.0	0.5	0.0	0.0	0.0	1.0	0.5
4	13.5	11.5	2.5	1.0	0.5	0.0	0.5	0.0	0.5	0.0	1.0	1.0
5	11.5	9.5	4.0	0.5	0.5	0.0	0.5	0.0	0.5	0.0	1.0	0.5
6	9.5	7.5	2.0	0.0	0.5	0.0	0.5	0.0	1.0	0.0	1.0	1.0
7	9.0	6.5	0.0	0.0	0.5	0.5	2.0	0.5	0.5	0.0	1.0	1.0
8	10.5	7.5	1.5	0.0	0.5	0.0	0.5	0.0	0.5	0.0	1.0	1.0
9	10.5	6.5	---	---	0.5	0.0	0.5	0.0	0.0	0.0	1.0	0.5
10	11.5	7.5	---	---	0.5	0.0	0.0	0.0	0.0	0.0	1.0	0.5
11	13.5	10.0	---	---	0.5	0.0	0.5	0.0	0.5	0.0	1.0	0.5
12	12.0	9.5	---	---	0.5	0.0	0.5	0.0	0.0	0.0	1.0	0.5
13	11.5	8.0	---	---	0.5	0.0	0.5	0.0	0.5	0.0	1.0	1.0
14	10.0	8.0	---	---	0.5	0.0	0.5	0.0	0.5	0.0	1.5	1.0
15	7.5	5.5	---	---	0.5	0.0	0.5	0.0	1.0	0.0	1.5	0.5
16	6.0	4.5	---	---	0.5	0.0	0.5	0.0	1.0	0.0	1.0	0.5
17	5.5	3.0	---	---	0.5	0.5	0.5	0.0	0.5	0.0	1.0	0.5
18	5.5	4.0	---	---	0.5	0.5	0.5	0.0	0.5	0.5	1.0	0.5
19	5.0	3.0	10.0	0.5	0.5	0.0	0.5	0.0	1.0	0.5	1.0	0.5
20	5.5	4.0	6.5	0.0	0.5	0.0	1.0	0.0	0.5	0.5	1.5	1.0
21	4.5	2.0	7.0	3.0	0.5	0.5	0.5	0.0	0.5	0.5	1.0	0.0
22	3.0	0.5	6.0	0.0	0.5	0.0	0.5	0.0	0.5	0.5	1.0	0.5
23	2.5	0.0	5.0	0.0	0.5	0.0	0.5	0.0	0.5	0.5	1.0	0.0
24	2.5	1.0	3.5	2.5	0.5	0.0	0.5	0.5	0.5	0.5	1.0	0.0
25	2.0	0.0	2.0	1.0	0.5	0.0	1.0	0.0	0.5	0.5	1.0	0.5
26	1.5	0.0	3.5	1.5	0.5	0.0	0.5	0.0	0.5	0.5	1.0	0.5
27	3.0	0.0	3.0	2.5	0.5	0.0	0.5	0.0	0.5	0.5	1.0	0.5
28	6.5	1.0	2.5	1.0	0.5	0.0	0.5	0.0	0.5	0.5	0.5	0.5
29	7.0	1.5	2.0	0.0	0.5	0.0	0.0	0.0	---	---	0.5	0.5
30	5.0	2.0	0.5	0.0	0.5	0.0	0.0	0.0	---	---	0.5	0.5
31	5.0	1.0	---	---	0.5	0.0	0.0	0.0	---	---	0.5	0.5
MONTH	14.5	0.0	10.0	0.0	2.0	0.0	2.0	0.0	1.0	0.0	1.5	0.0

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	1.0	0.5	16.5	15.0	23.0	22.0	---	---	24.5	22.0	19.0	18.0
2	1.5	0.5	16.5	14.5	22.5	21.0	---	---	24.5	22.0	23.5	17.5
3	1.0	0.0	17.5	15.5	23.0	21.0	---	---	24.0	22.5	20.5	17.5
4	1.0	0.5	17.0	16.5	23.0	19.5	---	---	24.5	22.0	20.0	18.0
5	1.0	0.5	18.0	16.0	23.0	21.0	---	---	24.0	21.5	20.5	17.5
6	1.5	0.5	17.0	16.0	23.0	21.0	---	---	22.5	21.0	20.0	17.0
7	1.5	0.5	17.5	15.0	23.5	21.5	---	---	21.5	20.0	20.0	17.0
8	3.0	0.5	18.5	16.0	23.5	21.5	---	---	22.5	19.5	19.0	17.5
9	4.5	2.0	18.5	17.0	22.0	20.5	---	---	23.5	21.0	19.0	16.5
10	5.0	3.0	19.0	17.5	21.5	19.5	---	---	22.5	20.5	19.5	16.0
11	3.5	2.5	20.0	18.0	21.0	20.0	---	---	21.5	19.0	20.5	17.0
12	3.0	1.5	21.0	18.5	21.5	19.5	---	---	21.0	20.0	20.5	16.5
13	4.5	1.5	22.0	20.0	22.0	20.0	---	---	20.5	18.5	19.5	17.0
14	7.5	4.5	22.5	21.0	22.0	20.0	---	---	20.5	19.0	19.5	17.0
15	9.0	7.0	23.5	21.5	23.0	20.5	---	---	19.5	19.0	20.0	17.5
16	10.0	8.5	23.0	21.0	23.0	21.0	---	---	20.5	19.0	19.0	17.0
17	11.5	9.0	23.5	21.5	22.5	20.5	---	---	20.5	18.0	20.5	17.0
18	11.5	10.5	24.0	22.0	23.0	19.5	---	---	21.0	18.5	17.5	16.0
19	11.0	10.0	23.5	22.0	22.0	19.5	---	---	21.0	19.5	16.5	15.5
20	12.0	10.5	24.0	21.5	25.5	19.0	---	---	21.5	19.5	17.0	15.5
21	12.5	10.5	23.5	21.5	25.5	23.0	---	---	22.0	20.0	16.5	15.5
22	12.5	11.5	23.0	21.0	25.5	21.0	---	---	21.5	20.0	19.0	15.5
23	13.0	12.0	21.5	20.0	24.0	21.5	---	---	20.5	19.0	16.0	15.5
24	13.0	11.5	22.5	20.5	25.0	21.0	---	---	20.0	19.0	15.5	15.0
25	13.5	12.0	24.0	21.5	25.5	23.0	---	---	19.0	18.5	15.5	15.5
26	14.5	12.5	23.5	22.5	25.5	23.0	---	---	19.0	19.0	15.5	14.5
27	14.0	13.5	23.5	22.0	23.0	22.0	---	---	19.0	18.0	15.5	14.0
28	15.0	13.0	23.5	22.0	---	---	---	---	19.5	17.5	15.5	14.5
29	16.0	14.0	24.0	21.5	---	---	25.0	24.5	20.0	17.5	15.5	14.0
30	17.0	15.5	23.5	21.0	---	---	25.5	24.0	20.5	19.0	17.5	14.0
31	---	---	23.5	21.5	---	---	24.5	22.5	20.5	19.0	---	---
MONTH	17.0	0.0	24.0	14.5	25.5	19.0	---	---	24.5	17.5	23.5	14.0

RED RIVER OF THE NORTH BASIN

05083500 RED RIVER OF THE NORTH AT OSLO, MN--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	NOV 30,76 1200	DEC 28,76 1400	JAN 24,77 1130	FEB 14,77 1045	MAY 24,77 1100					
TOTAL CELLS/ML	9200	2900	5000	170	4700					
DIVERSITY: DIVISION	1.1	1.1	0.9	0.8	1.5					
..CLASS	1.1	1.1	0.9	0.8	1.5					
...ORDER	1.4	1.5	1.4	1.0	2.1					
....FAMILY	1.5	2.1	1.7	1.9	2.9					
....GENUS	1.5	2.2	2.0	1.9	3.1					
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										
....OOCYSTACEAE										
....DICHOTOMOCOCCUS	--	-	--	-	95	2	--	-	--	-
...CHARACIACEAE										
...SCHROEDERIA	--	-	--	-	--	-	--	-	--	-
...COELASTRACEAE										
....COELASTRUM	--	-	--	-	--	-	--	-	--	-
...HYDRODICTYACEAE										
....PEDIASTRUM	--	-	--	-	--	-	--	-	1300#	28
...MICRACTINACEAE										
....GOLENKINIA	--	-	46	2	140	3	--	-	--	-
...MICRACTINIUM	--	-	270	9	--	-	--	-	--	-
...OOCYSTACEAE										
....ANKISTRODESMUS	--	-	170	6	95	2	--	-	290	6
....DICTYOSPHAERIUM	--	-	--	-	--	-	36#	22	--	-
....KIRCHNERIELLA	150	2	--	-	--	-	--	-	--	-
....OOCYSTIS	--	-	--	-	--	-	--	-	--	-
....QUADRIGULA	--	-	--	-	--	-	--	-	--	-
....TETRAEDRON	--	-	--	-	--	-	--	-	--	-
....TREUBARIA	--	-	--	-	--	-	--	-	290	6
...SCENEDESMACEAE										
....ACTINASTRUM	--	-	31	1	--	-	--	-	--	-
....CRUCIGENIA	890	10	--	-	--	-	--	-	--	-
...SCENEDESMUS	--	-	460#	16	720	15	91#	54	*	0
....TETRASTRUM	--	-	--	-	--	-	--	-	--	-
...TETRASPORALES										
...COCCOMYXACEAE										
....ELAKATOTHRIX	--	-	--	-	--	-	--	-	--	-
...PALMELLACEAE										
....GLOEOCYSTIS	300	3	--	-	--	-	--	-	--	-
....SPHAEROCYSTIS	--	-	31	1	--	-	--	-	--	-
...VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	*	0	36	1	--	-	--	-
...ZYGNEMATALES										
...DESMIDIACEAE										
....CLOSTERIUM	--	-	--	-	--	-	--	-	--	-
...COSMARIUM	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA										
..BACILLARIOPHYCEAE										
...PENNALES										
...NAVICULACEAE										
....ENTOMONEIS	--	-	*	0	--	-	--	-	--	-
...CENTRALES										
...CHAETOCERACEAE										
....CHAETOCEROS	--	-	*	0	--	-	--	-	--	-
...COSCINODISCACEAE										
....CYCLOTILLA	6500#	70	31	1	--	-	23	14	72	2
....MELOSIRA	--	-	--	-	--	-	--	-	650	14
...STEPHANODISCUS	--	-	--	-	--	-	--	-	*	0
...PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	--	-	--	-	--	-	--	-	140	3
...COCCONEIS	--	-	--	-	--	-	5	3	--	-
...CYMBELLACEAE										
....AMPHORA	--	-	--	-	--	-	--	-	72	2
....CYMBELLA	--	-	--	-	--	-	--	-	--	-
...DIATOMACEAE										
....DIATOMA	--	-	--	-	*	0	5	3	--	-
...FRAGILARIACEAE										
....FRAGILARIA	--	-	--	-	48	1	--	-	430	9
...SYNEDRA	150	2	15	1	--	-	--	-	--	-
...NAVICULACEAE										
....GYROSIGMA	--	-	--	-	--	-	--	-	--	-
....NAVICULA	--	-	--	-	*	0	--	-	220	5
...NITZSCHACEAE										
....NITZSCHIA	150	2	*	0	*	0	9	5	140	3

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

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

CONTINUED ...

RED RIVER OF THE NORTH BASIN

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05083500 RED RIVER OF THE NORTH AT OSLO, MN--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

(CONTINUED)

DATE TIME	NOV 30, 76 1200		DEC 28, 76 1400		JAN 24, 77 1130		FEB 14, 77 1045		MAY 24, 77 1100	
ORGANISM	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										
...CHROCCOCCALES										
...CHROCCOCCAEAE										
....ANACYSTIS	--	-	1600#	55	640	13	--	-	580	12
...HORMOGONIALES										
...NOSTOCACEAE										
....ANABAENA	--	-	--	-	--	-	--	-	--	-
....APHANIZOMENON			--	-	--	-	--	-	--	-
...OSCILLATORIA										
...LYNGBYA	1100	12	--	-	300	6	--	-	--	-
...OSCILLATORIA	--	-	230	8	2900#	58	--	-	500	11
EUGLENOPHYTA (EUGLENOIDS)										
..CRYPTOPHYCEAE										
...CRYPTOMONIDALES										
...CRYPTOCHRYSIDACEAE										
....CHROOMONAS	--	-	--	-	--	-	--	-	--	-
...CRYPTOMONODACEAE										
....CRYPTOMONAS	--	-	--	-	--	-	--	-	--	-
..EUGLENOPHYCEAE										
...EUGLENALES										
...EUGLENACEAE										
....EUGLENA	--	-	--	-	--	-	--	-	--	-
....PHACUS	--	-	--	-	--	-	--	-	--	-
....TRACHELOMONAS	--	-	--	-	--	-	--	-	*	0
PYRRHOPHYTA (FIRE ALGAE)										
..DINOPHYCEAE										
...PERIDINIALES										
...GLENODINIACEAE										
...GLENODINIUM	--	-	--	-	--	-	--	-	--	-

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

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

RED RIVER OF THE NORTH BASIN

05083500 RED RIVER OF THE NORTH AT OSLO, MN--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	JUN 28,77 1100	JUL 25,77 1300	AUG 25,77 1130	SEP 27,77 1000
TOTAL CELLS/ML	52000	18000	1500	11000
DIVERSITY: DIVISION	1.6	1.3	1.3	1.4
..CLASS	1.7	1.4	1.3	1.5
..ORDER	2.3	1.9	1.3	1.9
...FAMILY	2.6	2.7	1.4	3.0
...GENUS	3.0	2.9	2.4	3.6

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
...OOCYSTACEAE								
...DICHOTOMOCOCCUS	--	-	--	-	--	-	--	-
...CHARACIACEAE								
...SCHROEDERIA	--	-	380	2	--	-	230	2
...COELASTRACEAE								
...COELASTRUM	--	-	140	1	--	-	1100	11
...HYDRODICTYACEAE								
...PEDIATRUM	--	-	--	-	--	-	--	-
...MICRACTINIACEAE								
...GOLENKINIA	--	-	--	-	--	*	--	-
...MICRACINIUM	7200	14	--	-	--	-	160	2
...OOCYSTACEAE								
...ANKISTRODESMUS	550	1	100	1	51	3	360	3
...DICTYOSPHAERIUM	--	-	--	-	--	-	990	9
...KIRCHNERIELLA	--	-	--	-	*	0	160	2
...OOCYSTIS	--	-	--	-	--	-	200	2
...QUADRIGULA	--	-	--	-	--	-	130	1
...TETRAEDRON	--	-	*	0	--	-	*	0
...TREUBARIA	--	-	--	-	--	-	--	-
...SCENEDESMACEAE								
...ACTINASTRUM	1100	2	*	0	--	-	--	-
...CRUCIGENIA	*	0	410	2	29	2	790	7
...SCENEDESMUS	1700	3	650	4	43	3	1900#	18
...TETRASTRUM	1100	2	140	1	29	2	--	-
...TETRASPORALES								
...COCCOMYXACEAE								
...ELAKATOTHRIX	--	-	--	-	--	-	66	1
...PALMELLACEAE								
...GLOEOCYSTIS	--	-	--	-	--	-	--	-
...SPHAEROCYSTIS	--	-	--	-	--	-	--	-
...VOLVOCALES								
...CHLAMYDOMONADACEAE								
...CHLAMYDOMONAS	830	2	--	-	*	0	66	1
...ZYGNETALES								
...DESMIDIACEAE								
...CLOSTERIUM	1100	2	--	-	--	-	--	-
...COSMARIUM	--	-	310	2	--	-	--	-
CHRYSTOPHYTA								
..BACILLARIOPHYCEAE								
...PENNALES								
...NAVICULACEAE								
...ENTOMONEIS	--	-	--	-	--	-	--	-
...CENTRALES								
...CHAETOCERACEAE								
...CHAETOCEROS	--	-	--	-	--	-	--	-
...COSCINODISCEACEAE								
...CYCLOTELLA	19000#	36	--	-	58	4	330	3
...MELOSIRA	3600	7	1100	6	110	7	230	2
...STEPHANODISCUS	--	-	--	-	--	-	--	-
...PENNALES								
...ACHNANTHACEAE								
...ACHNANTHES	--	-	--	-	--	-	--	-
...COCCONEIS	--	-	--	-	--	-	--	-
...CYMBELLACEAE								
...AMPHORA	--	-	--	-	--	-	--	-
...CYMBELLA	280	1	--	-	--	-	--	-
...DIATOMACEAE								
...DIATOMA	--	-	--	-	--	-	--	-
...FRAGILARIACEAE								
...FRAGILARIA	--	-	--	-	--	-	--	-
...SYNEDRA	--	-	440	3	--	-	300	3
...NAVICULACEAE								
...GYROSIGMA	--	-	*	0	--	-	--	-
...NAVICULA	--	-	380	2	*	0	--	-
...NITZSCHACEAE								
...NITZSCHIA	1400	3	--	-	*	0	66	1

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
 * - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

CONTINUED ...

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PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

(CONTINUED)

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

PERIPHYTON							
Date	Length of exposure (days)	Biomass (mg/m ²)		Chlorophyll a	Chlorophyll b	Biomass pigment ratio	Sampling method
		Dry weight	Ash weight	(mg/m ²)	(mg/m ²)		
Oct. 19	28	8,231	6,000	.316	.085	7,060	Polyethylene strip
July 25	28	4,250	3,540	.216	.008	3,287	Polyethylene strip

RED RIVER OF THE NORTH BASIN

05083600 MIDDLE BRANCH FOREST RIVER NEAR WHITMAN, ND

LOCATION.--Lat 48°14'50", long 98°07'00", in SE¼NW¼ sec.16, T.155 N., R.58 W., Walsh County, Hydrologic Unit 09020308, 150 ft (46 m) downstream from bridge on State Highway 35, and 6 mi (10 km) north of Whitman.

DRAINAGE AREA.--47.7 mi² (123.5 km²), 8.8 mi² (22.8 km²) noncontributing.

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

GAGE.--Water-stage recorder. Altitude of gage is 1,510 ft (460.2 m) from topographic map.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--17 years, 2.78 ft³/s (0.079 m³/s), 2,010 acre-ft/yr (2.48 hm³/yr); median of yearly mean discharges, 2.0 ft³/s (0.057 m³/s) 1,400 acre-ft/yr (1.7 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 984 ft³/s (27.9 m³/s) May 19, 1974, gage height, 7.11 ft (2.167 m); no flow for many months each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 37 ft³/s (1.05 m³/s) Apr. 10, gage height, 4.10 ft (1.250 m); maximum gage height, 4.43 ft (1.350 m) Mar. 31, backwater from ice, no peak above base of 70 ft³/s (1.98 m³/s); no flow for several months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						0	9.0	0	.76			0
2						0	7.0	0	3.7			0
3						0	6.0	0	2.6			0
4						0	5.0	0	.84			0
5						0	2.0	.07	.34			0
6						0	3.0	.20	.14			0
7						0	8.6	.54	0			0
8						0	9.9	.21	0			0
9						0	24	.08	0			0
10						0	24	.03	0			0
11						.20	7.3	0	0			0
12						1.0	3.7	0	0			0
13						1.5	1.6	0	0			0
14						2.5	1.6	0	0			0
15						3.0	.65	0	0			0
16						3.0	.54	0	0			0
17						2.5	.51	0	.30			0
18						2.0	.60	0	.22			0
19						1.5	.26	0	.05			0
20						1.0	.15	0	0			0
21						.40	.09	0	0			0
22						.20	.14	0	0			0
23						3.0	.03	0	0			0
24						1.5	.02	0	0			0
25						.50	0	0	0			0
26						3.5	0	0	0			0
27						2.0	0	0	0			0
28						10	0	.03	0			0
29					---	25	0	0	0			.07
30					---	20	0	1.1	0			.05
31		---			---	25	---	9.7	---			---
TOTAL	0	0	0	0	0	109.30	115.69	11.96	8.95	0	0	.12
MEAN	0	0	0	0	0	3.53	3.86	.39	.30	0	0	.004
MAX	0	0	0	0	0	25	24	9.7	3.7	0	0	.07
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	0	0	0	0	0	217	229	24	18	0	0	.2
CAL YR 1976	TOTAL 879.33	MEAN 2.40	MAX 80	MIN 0	AC-FT 1740							
WTR YR 1977	TOTAL 246.02	MEAN .67	MAX 25	MIN 0	AC-FT 488							

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LOCATION.--Lat 48°11'50", long 97°43'49", on line between secs.32 and 33, T.15S N., R.5S W., Walsh County, Hydrologic Unit 09020308, on right bank 50 ft (15 m) upstream from highway bridge, 0.5 mi (0.8 km) downstream from South Branch, and 3 mi (5 km) southeast of Fordville.

PERIOD OF RECORD.--April 1940 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,035 ft (315 m), from topographic map. Prior to July 21, 1951, nonrecording gage at site 50 ft (15 m) downstream at same datum.

REMARKS.--Records good except those for the winter period, which are fair. Some regulation of high flows by temporary retention in several retarding basins above station. Retarding basins have a combined capacity of about 14,000 acre-ft (17.3 hm³).

AVERAGE DISCHARGE.--37 years, 37.3 ft³/s (1.056 m³/s) 27,000 acre-ft/yr (33.3 hm³/yr); median of yearly mean discharges, 36 ft³/s (1.02 m³/s), 26,100 acre-ft/yr (32 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,400 ft³/s (464 m³/s) Apr. 18, 1950, gage height 14.48 ft (4.414 m), from floodmark, from rating curve extended above 5,600 ft³/s (159 m³/s) on basis of contracted-opening and slope-area measurements of peak flow; no flow Apr. 1-13, Sept. 3, 1940.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 100 ft³/s (2.83 m³/s) July 14, gage height 2.43 ft (0.741 m), no peak above base of 200 ft³/s (5.66 m³/s); minimum, 0.28 ft³/s (0.008 m³/s), July 24.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.2	4.5	5.0	9.8	6.5	6.0	14	10	14	4.2	2.5	7.2
2	4.8	4.5	5.0	9.8	6.5	6.0	14	10	14	2.9	2.0	5.3
3	4.8	4.5	5.0	9.5	6.5	6.0	14	12	13	3.0	3.4	5.3
4	4.8	4.5	5.0	9.5	6.5	6.0	13	13	11	3.3	6.6	5.5
5	4.8	4.5	5.0	9.5	6.5	6.0	13	18	8.8	4.8	2.2	5.8
6	4.8	4.5	5.0	9.5	6.5	7.0	13	17	8.8	5.1	1.8	6.4
7	5.0	4.5	5.0	9.5	6.2	9.5	13	16	7.0	4.8	2.0	6.2
8	5.2	4.5	5.0	9.5	6.0	10	14	15	6.2	4.2	3.0	7.6
9	5.8	4.5	5.0	9.5	6.0	15	16	14	6.0	3.6	3.6	8.1
10	3.9	4.5	5.5	9.2	6.0	24	22	15	5.5	3.9	5.2	7.6
11	3.0	4.5	5.5	9.2	6.0	24	21	14	5.9	4.2	4.8	7.5
12	2.0	4.5	6.0	9.2	6.0	20	19	14	6.0	3.6	4.2	7.7
13	1.8	4.5	6.0	9.0	6.0	18	19	13	6.1	5.5	3.9	6.9
14	1.5	4.5	6.5	8.5	6.0	20	16	12	6.1	56	3.3	3.6
15	1.8	4.5	6.5	8.0	6.0	17	15	12	6.2	40	2.8	2.9
16	2.0	4.5	6.5	7.5	6.0	16	11	12	7.0	31	2.5	2.5
17	2.0	4.5	7.0	7.5	6.0	16	11	12	6.9	27	2.0	6.4
18	4.0	4.5	7.5	7.5	6.0	15	10	12	7.3	22	2.0	9.4
19	4.0	4.5	8.5	7.5	6.0	15	11	13	6.3	14	2.2	11
20	4.5	4.5	9.0	7.0	6.0	14	17	13	7.9	11	2.5	13
21	4.5	4.5	10	7.0	6.0	14	15	13	6.1	3.6	2.5	13
22	4.5	4.5	10	7.0	6.0	14	14	16	5.1	2.2	1.8	15
23	4.5	4.5	10	7.0	6.0	14	13	17	4.6	2.0	1.8	22
24	4.5	5.0	10	6.5	6.0	14	13	15	3.8	1.3	2.5	26
25	4.5	5.0	9.8	6.5	6.0	14	12	14	3.6	2.0	2.8	25
26	4.5	5.0	9.8	6.5	6.0	14	11	14	2.8	9.0	3.0	24
27	4.5	5.0	9.8	6.5	6.0	15	11	14	3.0	1.8	3.6	22
28	4.5	5.0	9.8	6.5	6.0	16	12	14	3.9	2.8	4.2	20
29	4.5	5.0	9.8	6.5	---	18	12	14	3.5	1.8	4.2	21
30	4.5	5.0	9.8	6.5	---	22	12	22	3.3	2.0	5.2	21
31	4.5	---	9.8	6.5	---	17	---	21	---	1.8	5.8	---
TOTAL	125.2	138.5	228.1	249.2	171.2	442.5	421	441	199.7	284.4	99.9	344.9
MEAN	4.04	4.62	7.36	8.04	6.11	14.3	14.0	14.2	6.66	9.17	3.22	11.5
MAX	5.8	5.0	10	9.8	6.5	24	22	22	14	56	6.6	26
MIN	1.5	4.5	5.0	6.5	6.0	6.0	10	10	2.8	1.3	1.8	2.5
AC-FT	248	275	452	494	340	878	835	875	396	564	198	684
CAL YR 1976	TOTAL	12729.1	MEAN	34.8	MAX	935	MIN 1.5	AC-FT	25250			
WTR YR 1977	TOTAL	3145.6	MEAN	8.62	MAX	56	MIN 1.3	AC-FT	6240			

RED RIVER OF THE NORTH BASIN

05085000 FOREST RIVER AT MINTO, ND

LOCATION.--Lat 48°16'10", long 97°22'10", in SE¼ sec.31, T.156 N., R.52 W., Walsh County, Hydrologic Unit 09020308, on right bank 30 ft (9 m) upstream from dam in Minto, 150 ft (45 m) upstream from Burlington Northern Railway bridge, and 900 ft (270 m) east of U.S. Highway 81.

DRAINAGE AREA.--740 mi² (1,920 km²), of which about 120 mi² (310 km²) is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1944 to current year.

REVISED RECORDS.--WSP 1438: 1948-50. WSP 1728: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 806.95 ft (245.958 m) above mean sea level. Prior to July 15, 1954, nonrecording gage at site 400 ft (120 m) upstream at same datum.

REMARKS.--Records fair. Occasionally during high stages, particularly when the channel is filled with snow, overflow occurs 0.5 mi (0.8 km) below the municipality of Forest River and bypasses the gage 3 mi (5 km) south of Minto and flows into Lake Ardoch. Bypass flow is not included in computation of discharge record for station at Minto.

AVERAGE DISCHARGE.--33 years, 49.1 ft³/s (1.391 m³/s) 35,570 acre-ft/yr (43.9 hm³/yr); median of yearly mean discharges, 43 ft³/s (1.22 m³/s), 31,200 acre-ft/yr (38 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,600 ft³/s (470 m³/s) Apr. 18, 1950, gage height, 11.80 ft (3.597 m) from floodmarks, from rating curve extended above 7,200 ft³/s (204 m³/s) on basis of contracted-opening measurement of peak flow; no flow at times each year 1945-47, 1953-55, 1959-64.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 77 ft³/s (2.18 m³/s) Apr. 10, gage height 1.58 ft (0.482 m), no peak above base of 200 ft³/s (5.66 m³/s); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.92	2.8	.80			0	25	20	19	4.7	4.0	6.0
2	.85	2.8	.80			0	24	19	26	3.2	2.4	3.2
3	.85	2.8	.75			0	28	19	24	1.9	2.0	2.5
4	.80	2.8	.75			0	35	19	20	1.2	1.2	2.0
5	.70	2.8	.75			0	18	24	18	2.5	1.2	2.0
6	.60	2.8	.75			0	28	24	16	2.0	.66	2.1
7	.50	2.8	.70			0	33	23	14	2.1	.66	2.4
8	1.0	2.8	.70			0	30	22	12	1.8	1.6	2.4
9	1.5	2.8	.70			1.0	47	21	11	2.3	2.4	4.6
10	2.0	2.8	.70			1.0	64	19	10	1.2	2.8	3.4
11	3.0	2.8	.65			1.0	59	18	8.9	2.7	1.6	3.4
12	4.0	2.8	.60			.50	54	16	8.7	4.7	.92	2.8
13	2.0	2.8	.50			5.0	46	16	8.6	5.1	.92	3.4
14	2.0	2.5	.50			15	46	15	8.4	6.0	2.4	4.6
15	2.0	2.0	.45			22	44	14	8.1	6.0	4.6	4.6
16	1.5	2.0	.45			17	42	13	9.1	9.5	4.6	4.0
17	1.0	2.0	.45			20	42	12	9.4	24	3.4	6.0
18	1.0	2.0	.45			21	37	13	9.0	20	2.8	4.6
19	1.0	2.0	.40			14	35	12	11	17	2.8	2.8
20	1.0	2.0	.40			12	29	12	10	16	3.4	2.4
21	1.0	2.0	.40			15	24	12	9.3	14	2.8	2.8
22	1.0	2.0	.35			18	28	13	8.6	12	2.4	2.4
23	1.0	2.0	.30			14	24	14	8.1	9.5	5.3	2.0
24	1.0	2.0	.30			15	22	15	8.6	9.5	5.3	2.4
25	1.0	2.0	.30			17	22	14	7.5	6.8	4.6	2.4
26	1.0	1.5	.30			17	22	13	6.6	5.3	4.6	7.7
27	1.0	1.0	.30			18	21	12	4.9	4.6	3.4	9.5
28	1.0	.80	.30			22	20	12	4.9	2.8	4.6	10
29	1.5	.80	.20			30	20	16	4.4	3.4	5.3	8.6
30	2.8	.80	.10			21	19	48	4.4	4.6	6.0	7.7
31	2.8	---	.05			26	---	28	---	4.0	6.8	---
TOTAL	43.32	65.80	15.15	0	0	342.50	988	548	328.5	210.4	97.46	124.7
MEAN	1.40	2.19	.49	0	0	11.0	32.9	17.7	11.0	6.79	3.14	4.16
MAX	4.0	2.8	.80	0	0	30	64	48	26	24	6.8	10
MIN	.50	.80	.05	0	0	0	18	12	4.4	1.2	.66	2.0
AC-FT	86	131	30	0	0	679	1960	1090	652	417	193	247
CAL YR 1976	TOTAL	17331.93	MEAN 47.4	MAX 1450	MIN .05	AC-FT 34380						
WTR YR 1977	TOTAL	2763.83	MEAN 7.57	MAX 64	MIN 0	AC-FT 5480						

RED RIVER OF THE NORTH BASIN
05085000 FOREST RIVER AT MINTO, ND--Continued

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WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969, 1972 to current year.

REMARKS.--Some chemical data furnished by North Dakota State Water Commission.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH (UNITS)	TEMPERATURE (DEG C)	HARDNESS (CA, MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	DIS-SOLVED CALCIUM (CA) (MG/L)	DIS-SOLVED MAGNESIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)
OCT 08...	0930	E1.0	895	--	8.5	--	--	--	--	--
NOV 11...	1115	2.8	890	8.0	.5	370	86	89	36	50
DEC 09...	1620	.70	1300	7.3	.0	570	150	140	54	72
28...	1530	.30	1600	--	.0	--	--	--	--	--
MAR 11...	1700	.67	2120	7.4	.5	840	270	110	140	170
15...	1640	22	580	--	.0	--	--	--	--	--
28...	1700	24	565	--	1.0	--	--	--	--	--
APR 06...	1205	26	520	8.2	.5	240	68	59	23	18
15...	1600	47	570	--	9.0	--	--	--	--	--
MAY 02...	1455	18	720	8.2	15.5	340	94	80	34	29
JUN 01...	1110	18	460	7.6	20.0	190	38	46	18	22
JUL 11...	1700	2.4	825	8.0	22.0	340	84	78	35	51
AUG 01...	1545	3.2	740	8.5	21.5	320	36	77	31	39
SEP 02...	1315	3.6	800	8.8	18.0	290	55	65	31	52

DATE	PERCENT SODIUM	SODIUM ADSORPTION RATIO	DIS-SOLVED PHOSPHATE (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CaCO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLORIDE (CL) (MG/L)
OCT 08...	--	--	--	--	--	--	--	--	--
NOV 11...	22	1.1	5.8	332	7	284	5.5	130	43
DEC 09...	21	1.3	7.2	506	2	418	41	220	71
28...	--	--	--	--	--	--	--	--	--
MAR 11...	30	2.5	9.6	691	0	567	44	290	270
15...	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--
APR 06...	14	.5	3.6	212	0	174	2.1	80	11
15...	--	--	--	--	--	--	--	--	--
MAY 02...	15	.7	4.7	277	11	246	3.0	130	18
JUN 01...	20	.7	4.9	184	0	151	7.4	57	21
JUL 11...	24	1.2	7.1	292	9	254	5.0	120	57
AUG 01...	21	.9	7.3	322	12	284	1.8	81	31
SEP 02...	27	1.3	7.3	280	3	235	.7	110	52

E - Estimated.

RED RIVER OF THE NORTH BASIN

05085000 FOREST RIVER AT MINTO, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO2) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	DIS- SOLVED BORON (B) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)
OCT									
08...	--	--	--	--	--	--	--	--	--
NOV									
11...	.1	18	569	544	.77	4.30	40	40	200
DEC									
09...	.1	26	854	844	1.16	1.61	280	80	700
28...	--	--	--	--	--	--	--	--	--
MAR									
11...	.4	26	1370	1370	1.86	2.48	140	2000	15000
15...	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--
APR									
06...	.1	13	343	313	.47	24.1	40	330	140
15...	--	--	--	--	--	--	--	--	--
MAY									
02...	.1	13	511	456	.69	24.8	70	0	60
JUN									
01...	.1	12	282	272	.38	13.9	210	160	160
JUL									
11...	.1	17	532	518	.72	3.45	70	0	--
AUG									
01...	.0	25	414	462	.56	3.58	190	120	100
SEP									
02...	.2	14	520	473	.71	5.05	240	20	140

RED RIVER OF THE NORTH BASIN

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05088500 HOMME LAKE NEAR PARK RIVER, ND

LOCATION.--Lat 48°24'20", long 97°47'10", in SE¼NW¼ sec.19, T.157 N., R.55 W., Walsh County, Hydrologic Unit 09020310, at Homme Dam on South Branch Park River, 2 mi (3 km) west of town of Park River.

DRAINAGE AREA.--226 mi² (585 km²).

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

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level.

REMARKS.--Reservoir is formed by an earth-fill dam, 865 ft (264 m) long; storage began in September 1949, dam completed in October 1950. Usable capacity between invert of outlet, elevation, 1,048.0 ft (319.43 m), and crest of spillway, elevation, 1,080.0 ft (329.18 m), is 3,550 acre-ft (4.38 hm³). Dead storage is 100 acre-ft (0.12 hm³). Low flows are controlled by two sluice gates 3 x 5 ft (0.914 x 1.524 m). The spillway, which is 150 ft (46 m) long, is uncontrolled. The records herein represent total contents. The reservoir is operated for flood control, water supply, and pollution abatement during low-flow periods.

COOPERATION.--Records furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 4,500 acre-ft (5.55 hm³) Apr. 11, 1965, elevation, 1,083.70 ft (330.312 m); minimum since first reaching spillway level, 184 acre-ft (0.23 hm³) Feb. 8, 1952, elevation, 1,051.22 ft (320.412 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents during year, 3,000 acre-ft (3.70 hm³) July 25, elevation, 1,076.50 ft (328.117 m); minimum, 1,800 acre-ft (2.22 hm³) Mar. 18, elevation, 1,069.48 ft (325.978 m).

MONTHEND ELEVATION AND CONTENTS AT 0800, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30-----	1,076.85	3,060	--
Oct. 31-----	1,076.20	2,940	-120
Nov. 30-----	1,075.10	2,730	-210
Dec. 31-----	1,073.04	2,340	-390
CAL YR 1976-----	--	--	-520
Jan. 31-----	1,071.35	2,080	-260
Feb. 28-----	1,070.22	1,910	-170
Mar. 31-----	1,069.90	1,860	-50
Apr. 30-----	1,073.00	2,330	+470
May 31-----	1,075.04	2,720	+390
June 30-----	1,076.45	2,990	+270
July 31-----	1,076.40	2,980	-10
Aug. 31-----	1,076.31	2,960	-20
Sept. 30-----	1,076.02	2,900	-60
WTR YR 1977-----	--	--	-160

RED RIVER OF THE NORTH BASIN

05089000 SOUTH BRANCH PARK RIVER BELOW HOMME DAM, ND

LOCATION.--Lat 48°24'07", long 97°46'55", in SE¼ sec.19, T.157 N., R.55 W., Walsh County, Hydrologic Unit 09020310, on right bank 0.5 mi (0.8 km) downstream from Homme Dam and 2 mi (3 km) west of town of Park River.

DRAINAGE AREA.--226 mi² (585 km²).

PERIOD OF RECORD.--October 1949 to current year. Monthly discharge only for October and November 1949, published in WSP 1308.

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,000.00 ft (304.800 m) above mean sea level.

REMARKS.--Records fair. Flow regulated by Homme Lake (station 05088500).

AVERAGE DISCHARGE.--28 years, 26.5 ft³/s (0.750 m³/s), 19,200 acre-ft/yr (23.7 hm³/yr); median of yearly mean discharges, 21 ft³/s (0.59 m³/s), 15,200 acre-ft/yr (19 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 13,000 ft³/s (368 m³/s) Apr. 24, 1950, gage height, 37.52 ft (11.436 m), from rating curve extended above 5,500 ft³/s (156 m³/s), result of failure of emergency embankment at site of Homme Dam; no flow Oct. 1 to Dec. 3, 1949, Oct. 1-4, 1969, Sept. 21, 1970, July 1, 1974.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 12.0 ft³/s (0.34 m³/s) Sept. 16-19, gage height, 23.53 ft (7.172 m); maximum gage height, 23.78 ft (7.248 m) Nov. 16-19, backwater from beaver dam; minimum daily, 0.05 ft³/s (0.001 m³/s) May 14-16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.3	2.5	9.5	7.4	5.0	6.3	1.3	.10	1.0	2.5	1.6	.50
2	1.9	2.5	9.5	7.0	5.0	6.3	1.3	.12	1.0	2.5	1.2	.64
3	1.5	2.5	9.2	6.7	5.0	6.4	1.2	.16	1.4	2.6	1.1	.64
4	1.2	2.5	9.0	6.5	5.0	6.5	1.1	.34	1.4	2.1	.79	.74
5	.97	2.5	9.0	6.3	5.0	6.5	1.0	.44	1.4	2.0	.85	.74
6	.81	2.5	9.0	6.1	5.0	6.5	.85	.16	1.6	1.3	1.2	.84
7	.75	2.5	9.0	6.0	5.0	6.5	.84	.16	1.6	.98	1.6	.94
8	.75	2.5	9.0	5.6	5.0	6.6	.74	.10	1.5	1.0	1.6	1.9
9	.75	2.5	8.9	5.6	5.0	6.6	.74	.10	1.6	.85	1.4	1.1
10	.75	2.5	8.9	5.4	5.0	6.6	.74	.10	1.9	1.1	1.2	.94
11	.75	2.6	8.8	5.3	5.0	7.0	.74	.10	1.7	1.5	1.1	1.1
12	.75	2.6	8.8	5.1	5.2	7.5	.74	.10	1.8	1.4	1.3	1.1
13	.75	2.6	8.8	5.0	5.2	8.5	.64	.10	1.7	1.0	1.5	5.5
14	.75	2.6	8.5	5.0	5.4	8.9	.54	.05	1.7	1.0	1.4	10
15	.75	2.6	8.5	5.0	5.4	9.2	.64	.05	1.6	1.0	1.4	11
16	.75	7.4	8.5	5.0	5.6	9.2	.54	.05	1.4	1.0	1.6	12
17	.75	10	8.5	5.0	5.8	9.1	.54	.10	2.1	1.0	1.5	12
18	.75	10	8.3	5.0	5.8	9.2	.54	1.5	2.0	1.0	1.5	12
19	.75	10	8.2	5.0	5.8	9.0	.44	2.1	2.2	1.0	1.5	9.7
20	.75	9.7	8.2	5.0	5.8	7.0	.34	1.6	2.0	1.0	1.2	2.0
21	.75	9.7	8.2	5.0	6.0	6.0	.35	1.5	1.3	1.0	.75	1.9
22	.75	9.7	7.9	5.0	6.1	4.5	.35	1.5	1.4	1.0	.49	1.9
23	.72	9.7	7.9	5.0	6.3	1.7	.35	1.5	1.5	2.3	.26	2.3
24	.70	9.7	7.9	5.0	6.3	1.7	.35	1.3	1.6	2.9	.29	2.4
25	.70	9.7	7.9	5.0	6.2	1.7	.35	1.3	1.6	3.2	.43	1.9
26	.80	9.7	7.9	5.0	6.1	1.7	.25	1.3	1.9	2.9	.44	1.9
27	.90	9.7	7.6	5.0	6.1	1.7	.25	1.3	1.8	2.9	.44	1.9
28	1.0	9.5	7.5	5.0	6.3	1.6	.16	1.3	1.8	2.9	.44	1.9
29	1.0	9.5	7.5	5.0	---	1.6	.16	1.2	1.7	2.5	.44	1.9
30	2.5	9.5	7.5	5.0	---	1.6	.16	1.3	2.2	2.0	.44	1.9
31	3.0	---	7.4	5.0	---	1.6	---	1.5	---	2.2	.54	---
TOTAL	32.00	181.5	261.3	168.0	154.4	174.8	18.24	22.53	49.4	53.63	31.50	105.28
MEAN	1.03	6.05	8.43	5.42	5.51	5.64	.61	.73	1.65	1.73	1.02	3.51
MAX	3.0	10	9.5	7.4	6.3	9.2	1.3	2.1	2.2	3.2	1.6	12
MIN	.70	2.5	7.4	5.0	5.0	1.6	.16	.05	1.0	.85	.26	.50
AC-FT	63	360	518	333	306	347	36	45	98	106	62	209
CAL YR 1976	TOTAL	9471.48	MEAN	25.9	MAX	826	MIN	.70	AC-FT	18790		
WTR YR 1977	TOTAL	1252.58	MEAN	3.43	MAX	12	MIN	.05	AC-FT	2480		

RED RIVER OF THE NORTH BASIN

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05089100 MIDDLE BRANCH PARK RIVER NEAR UNION, ND

LOCATION.--Lat 48°32'32", long 98°01'10", on north line of sec.5, T.158 N., R.57 W., Walsh County, Hydrologic Unit 09020310, on left bank 20 ft (6 m) downstream from bridge on county highway between Walsh and Cavalier Counties, 3.5 mi (5.6 km) southwest of Union.

DRAINAGE AREA.--15.3 mi² (39.6 km²).

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

GAGE.--Water-stage recorder. Elevation of gage is 1,495 ft (456 m), from topographic map.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--12 years, 2.20 ft³/s (0.0623 m³/s) 1,590 acre-ft/yr (1.96 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 687 ft³/s (19.5 m³/s) May 6, 1967, gage height, 7.22 ft (2.201 m), from floodmark; maximum gage height, 7.51 ft (2.289 m) May 4, 1966, from floodmark, backwater from snowdrift; no flow for several months each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge observed, 108 ft³/s (3.06 m³/s) May 19, gage height, 3.33 ft (1.015 m), only peak above base of 20 ft³/s (0.57 m³/s); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.02	.04				0	3.1	.10	.12	.07	.01	.02
2	.02	.04				0	3.0	.10	.06	.10	.02	.02
3	.02	.04				0	2.9	.12	.03	.12	.03	.01
4	.02	.04				0	2.9	.15	.04	.09	.03	.02
5	.04	.04				0	2.9	.26	.04	1.2	.02	.02
6	.09	.04				0	2.8	.15	.03	1.6	.04	.02
7	.09	.03				0	2.5	.13	.03	1.1	.07	.01
8	.09	.03				0	2.2	.15	.02	.32	.07	.09
9	.08	.03				.10	2.0	.15	.02	.15	.02	.08
10	.08	.03				.25	1.8	.15	.04	.19	.01	.04
11	.08	.02				.30	1.5	.13	.08	.37	.01	.46
12	.07	.02				.50	1.5	.13	.08	.10	.03	.69
13	.07	.02				.75	1.2	.17	.09	.06	.08	.63
14	.08	.02				1.0	1.0	.17	.07	.02	.08	.63
15	.08	.02				1.5	.90	.17	.07	.01	.07	.63
16	.07	.02				1.5	.80	.15	.04	0	.07	.63
17	.08	.02				1.5	.60	.15	.65	0	.10	.63
18	.08	.02				1.0	.40	.86	.07	0	.07	.63
19	.08	.02				1.0	.30	24	.26	0	.09	.63
20	.08	.02				.95	.26	7.3	.13	0	.03	.57
21	.08	.02				.90	.26	3.6	.09	0	.01	.57
22	.08	.02				.80	.23	2.8	.09	0	.01	.57
23	.08	.01				.80	.17	1.9	.08	0	.01	.57
24	.08	.01				.90	.13	2.4	.06	0	.01	.57
25	.08	.01				1.0	.13	.69	.06	0	.02	.57
26	.07	0				2.0	.13	.26	.06	0	.04	.57
27	.07	0				2.5	.13	.13	.07	0	.03	.63
28	.07	0				2.8	.12	.12	.06	.01	.06	.63
29	.07	0			---	3.0	.12	.12	.02	.01	.03	.63
30	.06	0			---	3.1	.12	.12	.06	.01	.04	.63
31	.04	---			---	3.2	---	.12	---	.01	.04	---
TOTAL	2.10	.63	0	0	0	31.35	36.10	46.95	2.62	5.54	1.25	12.40
MEAN	.068	.021	0	0	0	1.01	1.20	1.51	.087	.18	.040	.41
MAX	.09	.04	0	0	0	3.2	3.1	24	.65	1.6	.10	.69
MIN	.02	0	0	0	0	0	.12	.10	.02	0	.01	.01
AC-FT	4.2	1.2	0	0	0	62	72	93	5.2	11	2.5	25
CAL YR 1976	TOTAL 549.16	MEAN 1.50	MAX 90	MIN 0	AC-FT 1090							
WTR YR 1977	TOTAL 138.94	MEAN .38	MAX 24	MIN 0	AC-FT 276							

RED RIVER OF THE NORTH BASIN

05089500 CART CREEK AT MOUNTAIN, ND

LOCATION.--Lat 48°40'37", long 97°51'41", in SW¼ sec.15, T.160 N., R.56 W., Pembina County, Hydrologic Unit 09020310, on right bank 50 ft (15 m) downstream from bridge on State Highway 32 and 0.7 mi (1.1 km) south of Mountain.

DRAINAGE AREA.--16.9 mi² (43.8 km²).

PERIOD OF RECORD.--June 1954 to current year.

GAGE.--Water-stage recorder and wooden control. Datum of gage is 1,027.40 ft (313.152 m) above mean sea level.

REMARKS.--Records good.

AVERAGE DISCHARGE.--23 years, 2.70 ft³/s (0.0765 m³/s) 1,960 acre-ft/yr (2.42 hm³/yr); median of yearly mean discharges, 2.7 ft³/s (0.076 m³/s) 2,000 acre-ft/yr (2.5 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,300 ft³/s (36.8 m³/s) June 18, 1964, gage height, 9.18 ft (2.798 m); no flow at times in some years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 267 ft³/s (7.56 m³/s) May 29, gage height, 4.93 ft (1.503 m), no peak above base of 30 ft³/s (0.85 m³/s); no flow for several months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		0				0	2.2	.31	1.8	0	.04	0
2		0				0	3.8	.28	1.2	.02	.02	0
3		0				0	5.1	.34	1.2	8.6	0	0
4		0				0	3.8	.38	.78	.86	0	0
5		0				0	3.8	.64	.52	9.4	0	0
6		.01				0	5.1	.71	.38	2.6	0	0
7		.01				0	8.2	.58	.28	.64	0	0
8		.02				0	5.1	.47	.22	.08	0	0
9		.02				1.2	8.2	.47	.12	.06	0	0
10		.02				2.2	6.6	.38	.10	.04	0	0
11		.02				1.6	3.0	.38	.20	.04	0	0
12		.02				1.2	2.0	.38	.12	.04	0	0
13		.01				1.2	1.4	.38	.16	.02	0	0
14		.01				1.6	1.2	.42	.16	.02	0	0
15		.01				2.2	1.2	.34	.14	.02	0	0
16		.01				.47	1.2	.38	.08	0	0	0
17		.01				.47	1.2	.38	.13	0	0	0
18		.01				.47	1.0	.47	.42	0	0	0
19		0				.47	.95	8.6	.25	0	0	0
20		0				.47	.95	.58	.43	0	0	0
21		0				.47	.95	.22	.19	0	0	0
22		0				.52	.95	.12	.10	0	0	0
23		0				.52	1.4	.25	.02	0	0	0
24		0				.38	1.4	.19	.02	0	0	15
25		0				.16	1.2	.08	0	0	0	14
26		0				.31	1.2	.02	0	0	0	6.3
27		0				.86	.71	.04	.09	0	0	6.0
28		0				3.0	.38	.14	.01	0	0	1.8
29		0				4.1	.34	10	0	3.2	0	1.0
30		0				1.0	.34	36	0	.52	0	.86
31		---				2.2	---	5.4	---	.10	0	---
TOTAL	0	.18	0	0	0	27.07	74.87	69.33	9.12	26.26	.06	44.96
MEAN	0	.006	0	0	0	.87	2.50	2.24	.30	.85	.002	1.50
MAX	0	.02	0	0	0	4.1	8.2	36	1.8	9.4	.04	15
MIN	0	0	0	0	0	0	.34	.02	0	0	0	0
AC-FT	0	.4	0	0	0	54	149	138	18	52	.1	89
CAL YR 1976	TOTAL	566.08	MEAN	1.55	MAX	58	MIN	0	AC-FT	1120		
WTR YR 1977	TOTAL	251.85	MEAN	.69	MAX	36	MIN	0	AC-FT	500		

05090000 PARK RIVER AT GRAFTON, ND

LOCATION.--Lat 48°25'24", long 97°24'30", in NE¼ sec.13, T.157 N., R.53 W., Walsh County, Hydrologic Unit 09020310, on right bank 30 ft (9 m) upstream from Wakeman Avenue bridge in Grafton and 3.5 mi (5.6 km) downstream from South Branch.

DRAINAGE AREA.--695 mi² (1,800 km²), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1931 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 955: 1941. WSP 1438: 1932, 1933(M), 1936-37(M), 1939(M), 1944. WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 807.39 ft (246.092 m) above mean sea level. Prior to Sept. 30, 1940, nonrecording gage at site 30 ft (9 m) downstream at same datum. Oct. 1, 1940, to Sept. 17, 1946, nonrecording gage at site 2 mi (3 km) downstream above masonry dam at same datum. Sept. 18, 1946, to July 25, 1952, nonrecording gage at site 30 ft (9 m) downstream at same datum.

REMARKS.--Records fair. Flow regulated by Homme Lake (station 05088500) and several small reservoirs. Diversion by city of Grafton started in 1955. Figures of daily discharge do not include diversion by city of Grafton.

AVERAGE DISCHARGE (UNADJUSTED).--46 years (water years 1932-77), 56.1 ft³/s (1.589 m³/s) 40,640 acre-ft/yr (50.1 hm³/yr); median of yearly mean discharges, 38 ft³/s (1.08 m³/s) 27,500 acre-ft/yr (34 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,600 ft³/s (357 m³/s) Apr. 19, 1950, gage height, 20.13 ft (6.136 m) from rating curve extended above 9,000 ft³/s (255 m³/s); no flow at times in most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 40 ft³/s (1.13 m³/s) May 5, gage height, 7.57 ft (2.307 m), minimum daily discharge, 0.05 ft³/s (0.001 m³/s) Aug. 22 - Sept. 26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.20	3.2	1.5	2.5	2.0	2.0	8.0	2.0	11	.15	.10	.05
2	.20	2.0	.80	2.5	2.0	2.0	7.2	1.0	8.0	.15	.10	.05
3	.20	1.6	.50	2.5	2.0	2.0	8.0	.80	5.1	.15	.10	.05
4	.20	1.3	.50	2.5	2.0	2.0	7.2	3.2	3.2	.15	.10	.05
5	.20	.80	.50	2.5	2.0	2.0	5.8	15	3.2	.15	.10	.05
6	.15	.80	.80	2.5	2.0	2.5	5.8	5.1	.60	.15	.10	.05
7	.10	.50	1.5	2.5	2.0	2.5	4.4	3.2	.20	.15	.15	.05
8	.08	.50	2.0	2.5	2.0	4.0	5.1	4.4	.20	.15	.15	.05
9	.08	.80	2.5	2.5	2.0	4.0	8.0	4.4	.20	.15	.15	.05
10	.08	2.0	2.5	2.5	2.0	4.0	14	3.8	.20	.15	.15	.05
11	.08	2.0	2.5	2.5	2.0	4.5	15	.40	.20	.15	.15	.05
12	.08	2.0	2.5	2.5	2.0	9.5	12	.20	.20	.15	.10	.05
13	.08	2.0	2.5	2.0	2.0	10	10	.20	.20	.15	.10	.05
14	.08	2.0	2.5	2.0	2.0	11	11	.20	.20	.15	.10	.05
15	.08	2.0	2.5	2.0	2.0	12	17	4.9	.20	.15	.10	.05
16	.08	1.6	2.5	2.0	2.0	8.5	16	3.2	.20	.15	.10	.05
17	.08	1.6	2.5	2.0	2.0	8.0	15	1.0	.20	.15	.10	.05
18	.08	1.6	2.5	2.0	2.0	8.0	13	.69	.50	.10	.10	.05
19	.08	1.6	2.5	2.0	2.0	8.0	9.6	7.7	.50	.10	.10	.05
20	.08	.50	2.5	2.0	2.0	5.5	8.8	5.1	3.8	.10	.10	.05
21	.10	.50	2.5	2.0	2.0	5.0	9.6	2.6	3.8	.10	.10	.05
22	.10	2.0	2.5	2.0	2.0	5.0	8.8	7.8	2.0	.10	.05	.05
23	.10	2.5	2.5	2.0	2.0	4.5	8.8	7.2	1.0	.10	.05	.05
24	.08	2.5	2.5	2.0	2.0	4.5	7.2	5.8	.32	.10	.05	.05
25	.08	2.5	2.5	2.0	2.0	5.0	6.5	5.1	.20	.10	.05	.05
26	.08	2.5	2.5	2.0	2.0	7.5	5.8	5.1	.20	.10	.05	.05
27	.08	2.5	2.5	2.0	2.0	7.5	5.1	5.8	.15	.10	.05	.10
28	.10	2.0	2.5	2.0	2.0	10	5.1	7.0	.15	.10	.05	.10
29	.30	2.0	2.5	2.0	---	11	3.8	9.8	.15	.10	.05	.10
30	.60	1.5	2.5	2.0	---	8.0	3.2	12	.15	.10	.05	.10
31	3.2	---	2.5	2.0	---	8.0	---	16	---	.10	.05	---
TOTAL	7.11	50.90	65.60	68.0	56.0	188.0	264.8	150.69	46.22	3.95	2.85	1.70
MEAN	.23	1.70	2.12	2.19	2.00	6.06	8.83	4.86	1.54	.13	.092	.057
MAX	3.2	3.2	2.5	2.5	2.0	12	17	16	11	.15	.15	.10
MIN	.08	.50	.50	2.0	2.0	2.0	3.2	.20	.15	.10	.05	.05
AC-FT	14	101	130	135	111	373	525	299	92	7.8	5.7	3.4
(+)	55	52	52	52	50	52	53	44	54	53	53	52
MEAN*	1.12	2.57	2.96	3.03	2.90	6.91	9.72	5.57	2.44	1.00	.95	.93
AC-FT*	69	153	182	187	161	425	578	343	146	61	58	55

OBSERVED

ADJUSTED

CAL YR 1976	TOTAL	21154.26	MEAN	57.8	MAX	1700	MIN	.08	AC-FT	41960	MEAN	59.5	AC-FT	42680
WTR YR 1977	TOTAL	905.82	MEAN	2.48	MAX	17	MIN	.05	AC-FT	1800	MEAN	3.34	AC-FT	2420

+ Diversion in acre-feet by city of Grafton.

* Adjusted for diversion by city of Grafton.

RED RIVER OF THE NORTH BASIN
05090000 PARK RIVER AT GRAFTON, ND--Continued

WATER-QUALITY RECORDS

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

REMARKS.--Some chemical data furnished by North Dakota State Water Commission.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH (UNITS)	TEMPERATURE (DEG C)	HARDNESS (CA, MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	DIS-SOLVED CALCIUM (CA) (MG/L)	DIS-SOLVED MAGNESIUM (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)
OCT 08...	1125	.08	1180	--	6.0	--	--	--	--	--
NOV 11...	1235	1.9	1400	8.1	2.0	390	110	130	16	150
DEC 07...	1515	.85	1500	7.2	.0	420	120	98	43	170
JAN 11...	1440	.20	1180	7.7	.5	420	120	100	41	100
FEB 03...	1725	2.5	1280	7.8	.5	420	120	100	41	110
MAR 08...	1600	5.6	1220	7.8	4.0	400	120	96	39	100
18...	1745	8.3	750	--	.5	--	--	--	--	--
28...	1140	7.2	940	--	1.0	--	--	--	--	--
APR 07...	1445	3.8	850	8.3	5.0	270	99	66	26	75
MAY 05...	1115	11	850	8.4	14.0	280	150	58	33	80
31...	1415	11	1220	8.1	23.0	290	79	70	28	160
JUL 11...	1200	.10	1275	7.8	22.0	300	79	67	32	160
AUG 01...	1330	.06	1280	8.0	23.0	280	80	58	33	170
SEP 02...	1005	.04	1300	8.3	16.0	300	82	64	34	170

DATE	PERCENT SODIUM	SODIUM ADSORPTION RATIO	DIS-SOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CaCO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLORIDE (CL) (MG/L)
OCT 08...	--	--	--	--	--	--	--	--	--
NOV 11...	45	3.3	9.6	337	0	276	4.3	247	140
DEC 07...	46	3.6	9.6	362	4	304	37	271	160
JAN 11...	34	2.1	8.1	360	0	295	11	253	70
FEB 03...	36	2.3	7.6	360	0	295	9.1	263	87
MAR 08...	35	2.2	7.0	340	0	279	8.6	243	83
18...	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--
APR 07...	37	2.0	5.1	211	0	173	1.7	160	81
MAY 05...	38	2.1	3.8	159	0	130	1.0	191	100
31...	54	4.1	7.7	257	0	211	3.3	190	170
JUL 11...	53	4.0	7.9	268	0	220	6.8	190	170
AUG 01...	56	4.4	8.4	245	0	201	3.9	200	180
SEP 02...	54	4.3	11	265	0	217	2.1	210	190

RED RIVER OF THE NORTH BASIN

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05090000 PARK RIVER AT GRAFTON, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO2) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	DIS- SOLVED BORON (B) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)
OCT									
08...	--	--	--	--	--	--	--	--	--
NOV									
11...	.2	18	877	873	1.19	4.50	40	100	260
DEC									
07...	.2	18	975	953	1.33	2.24	460	60	550
JAN									
11...	.1	14	781	761	1.06	.42	210	100	540
FEB									
03...	.1	15	815	799	1.11	5.50	320	120	700
MAR									
08...	.5	12	790	746	1.07	12.0	40	120	620
18...	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--
APR									
07...	.1	6.9	552	525	.75	5.77	180	100	240
MAY									
05...	.2	5.6	591	549	.80	18.2	70	20	100
31...	.2	7.1	783	761	1.06	24.7	240	120	700
JUL									
11...	.2	10	805	769	1.04	.22	280	20	--
AUG									
01...	.1	9.0	736	779	1.00	.12	520	180	140
SEP									
02...	.3	9.0	811	820	1.10	.09	520	60	520

RED RIVER OF THE NORTH BASIN

05092000 RED RIVER OF THE NORTH AT DRAYTON, ND

LOCATION.--Lat 48°34'20", long 97°08'50", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.24, T.159 N., R.51 W., Pembina County, Hydrologic Unit 09020311, on downstream end of east pier of interstate highway bridge, 1.5 mi (2.4 km) northeast of Drayton and at mile 206.7 (kilometer 332.6).

DRAINAGE AREA.--34,800 mi² (90,130 km²), approximately, includes 3,800 mi² (9,840 km²) in closed basins.

PERIOD OF RECORD.--April 1936 to June 1937, April 1941 to current year (fragmentary prior to April 1949).

REVISED RECORDS.--WSP 1388: 1949-50. WSP 1728: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 755.00 ft (230.124 m) above mean sea level (Minnesota highway benchmark). Prior to Nov. 30, 1954, nonrecording gage at site 1.5 mi (2.4 km) upstream at datum 1.59 ft (0.485 m) higher.

REMARKS.--Records good except those for winter and missing gage height periods, which are fair. Some regulation by reservoirs on tributaries.

AVERAGE DISCHARGE.--28 years (1949-77) 3,742 ft³/s (106.0 m³/s) 2,711,000 acre-ft/yr (3.34 km³/yr); median of yearly mean discharges, 2,650 ft³/s (75.0 m³/s) 1,920,000 acre-ft/yr (2.4 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 86,500 ft³/s (2,450 m³/s) May 12, 1950, gage height, 41.58 ft (12.674 m), former site and datum; minimum observed, 7.7 ft³/s (0.22 m³/s) Oct. 16, 1936, gage height, 1.75 ft (0.533 m), former site and datum.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge known since 1860, that of May 12, 1950. Flood of April 1897 reached a stage of about 41 ft (12.5 m), at site and datum in use prior to Nov. 30, 1954.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,400 ft³/s (96.3 m³/s) Apr. 9; gage height, 12.12 ft (3.694 m) backwater from ice; minimum, 103 ft³/s (2.92 m³/s) Aug. 30, gage height, 8.96 ft (2.731 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	467	302	160	190	195	220	1080	830	1300	406	406	245
2	481	312	150	190	195	220	1390	770	1320	406	358	250
3	488	346	145	200	195	220	1640	743	1290	394	358	250
4	467	394	140	200	195	220	1910	689	1280	430	340	178
5	454	352	130	200	195	220	2080	670	1240	509	334	182
6	418	340	130	200	195	220	2210	660	1190	586	340	412
7	400	302	125	200	200	220	2400	648	1090	689	329	474
8	376	280	120	200	200	220	2580	600	1000	880	329	467
9	382	280	120	200	200	220	3120	672	920	1130	291	448
10	370	280	122	200	200	220	3250	1400	830	1270	245	495
11	358	270	125	200	200	220	2910	1760	752	1270	250	495
12	364	270	125	200	200	220	2780	1530	716	1140	235	509
13	370	270	125	200	200	235	2620	1260	640	990	235	488
14	340	280	130	200	200	250	2470	1030	565	910	240	495
15	334	280	130	200	200	280	2290	910	495	830	230	481
16	376	280	135	200	200	296	2000	810	442	698	204	474
17	370	280	140	200	200	340	1800	716	442	640	217	467
18	376	280	145	200	200	388	1650	624	454	586	212	460
19	394	280	150	200	200	436	1500	551	424	551	217	467
20	376	280	152	195	200	488	1300	502	418	544	212	467
21	376	280	155	195	200	551	1200	488	406	530	217	481
22	364	275	160	195	200	565	1100	593	382	502	204	481
23	334	260	165	195	200	624	1050	1270	358	502	199	481
24	329	250	170	195	200	632	1100	1910	318	488	186	586
25	324	240	175	195	210	640	1150	1530	318	481	182	624
26	334	230	175	195	220	640	1150	1170	285	454	182	743
27	334	220	180	195	220	650	1130	940	324	430	190	830
28	340	210	185	195	220	680	1060	780	340	418	150	930
29	324	195	185	195	---	870	980	734	376	394	136	1070
30	307	180	190	195	---	970	905	1020	376	382	129	1200
31	302	---	190	195	---	1110	---	1270	---	358	186	---
TOTAL	11629	8298	4629	6120	5640	13285	53805	29080	20291	19798	7543	15630
MEAN	375	277	149	197	201	429	1794	938	676	639	243	521
MAX	488	394	190	200	220	1110	3250	1910	1320	1270	406	1200
MIN	302	180	120	190	195	220	905	488	285	358	129	178
AC-FT	23070	16460	9180	12140	11190	26350	106700	57680	40250	39270	14960	31000
CAL YR 1976	TOTAL	877031	MEAN	2396	MAX	27500	MIN	120	AC-FT	1740000		
WTR YR 1977	TOTAL	195748	MEAN	536	MAX	3250	MIN	120	AC-FT	388300		

RED RIVER OF THE NORTH BASIN

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05092200 PEMBINA COUNTY DRAIN 20 NEAR GLASSTON, ND

LOCATION.--Lat 48°41'49", long 97°23'03", in NW¼ sec.8, T.160 N., R.52 W., Pembina County, Hydrologic Unit 09020311, on left bank 50 ft (15 m) downstream from bridge on county highway 3 mi (5 km) southeast of Glasston.

DRAINAGE AREA.--40.7 mi² (105 km²).

PERIOD OF RECORD.--October 1971 to current year.

GAGE.--Water-stage record^g. Altitude of gage is 808 ft (246 m) above mean sea level, from topographic map.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--6 years, 1.80 ft³/s (0.0510 m³/s), 1,300 acre-ft/yr (1.60 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 268 ft³/s (7.59 m³/s) Apr. 3, 1976, gage height, 7.10 ft (2.164 m); no flow most of time.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2.2 ft³/s (0.062 m³/s) July 2, gage height, 4.72 ft (1.439 m), no peaks above base of 25 ft³/s (0.71 m³/s); no flow most of year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1								0	.02	0		0
2								0	0	.31		0
3								0	0	.08		0
4								0	0	.01		0
5								0	0	.01		0
6								0	0	.01		0
7								0	0	0		0
8								0	0	0		.13
9								0	0	0		.46
10								0	0	0		0
11								0	0	0		0
12								0	0	0		0
13								0	0	0		0
14								0	0	0		0
15								0	0	0		0
16								0	0	0		0
17								0	0	0		0
18								0	0	0		0
19								0	0	0		0
20								0	0	0		0
21								0	0	0		0
22								0	0	0		0
23								0	0	0		0
24								0	0	0		.28
25								0	0	0		.08
26								0	0	0		.07
27								0	0	0		.07
28								0	0	0		.06
29								0	0	0		.08
30								.05	0	0		.17
31		---			---		---	.03	---	0		---
TOTAL	0	0	0	0	0	0	0	.08	.02	.42	0	1.40
MEAN	0	0	0	0	0	0	0	.003	.0007	.014	0	.047
MAX	0	0	0	0	0	0	0	.05	.02	.31	0	.46
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	0	0	0	0	0	0	0	.2	.04	.8	0	2.8
CAL YR 1976	TOTAL	737.76	MEAN 2.02	MAX	208	MIN 0	AC-FT	1460				
WTR YR 1977	TOTAL	1.92	MEAN .005	MAX	.46	MIN 0	AC-FT	3				

RED RIVER OF THE NORTH BASIN

05098700 HIDDEN ISLAND COULEE NEAR HANSBORO, ND
(International gaging station)

LOCATION.--Lat 48°57'10", long 99°25'35", in SE¼SW¼ sec.11, T.163 N., R.68 W., Towner County, Hydrologic Unit 09020313, on right bank 400 ft (122 m) downstream from bridge on county highway 2.5 mi (4.0 km) west of Hansboro.

DRAINAGE AREA.--38 mi² (98 km²), approximately.

PERIOD OF RECORD.--October 1961 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,615 ft (492 m), from topographic map. Prior to May 20, 1962, nonrecording gage 400 ft (122 m) upstream at same datum.

REMARKS.--Records good.

COOPERATION.--This station is one of the international gaging stations maintained by the United States under agreement with Canada.

AVERAGE DISCHARGE.--16 years, 3.86 ft³/s (0.109 m³/s), 2,800 acre-ft/yr (3.45 hm³/yr); median of yearly mean discharges, 3.1 ft³/s (0.088 m³/s), 2,200 acre-ft/yr (2.7 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,060 ft³/s (30.0 m³/s) Apr. 21, 1974, gage height, 8.61 ft (2.624 m); maximum gage height observed, 8.90 ft (2.713 m) Apr. 14, 1975; no flow for several months each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 0.10 ft³/s (0.003 m³/s) April 11, gage height, 5.42 ft (1.652 m), backwater from ice; maximum gage height, 5.47 ft (1.667 m) April 7, backwater from ice, no peak above base of 25 ft³/s (0.71 m³/s); no flow for most of year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1							0					
2							0					
3							0					
4							0					
5							0					
6							.03					
7							.06					
8							.08					
9							.09					
10							.09					
11							.10					
12							.09					
13							.08					
14							.08					
15							.07					
16							.06					
17							.04					
18							.02					
19							.01					
20							.01					
21							.01					
22							0					
23							0					
24							0					
25							0					
26							0					
27							0					
28							0					
29							0					
30							0					
31		---			---		---		---			---
TOTAL	0	0	0	0	0	0	.92	0	0	0	0	0
MEAN	0	0	0	0	0	0	.031	0	0	0	0	0
MAX	0	0	0	0	0	0	.10	0	0	0	0	0
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	0	0	0	0	0	0	1.8	0	0	0	0	0
CAL YR 1976	TOTAL	1885.98	MEAN 5.15	MAX	220	MIN 0	AC-FT 3740					
WTR YR 1977	TOTAL	0.92	MEAN .003	MAX	.10	MIN 0	AC-FT 1					

RED RIVER OF THE NORTH BASIN

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05098800 CYPRESS CREEK NEAR SARLES, ND
(International gaging station)

LOCATION.--Lat 48°56'35", long 98°57'05", in SW¼SE¼ sec.9, T.163 N., R.64 W., Cavalier County, Hydrologic Unit 09020313, on right bank 150 ft (46 m) downstream from twin multiplate culverts on county highway, 2.5 mi (4.0 km) east of Sarles.

DRAINAGE AREA.--71 mi² (184 km²), approximately.

PERIOD OF RECORD.--May 1961 to current year. Prior to October 1973, published as Long River near Sarles.

GAGE.--Water-stage recorder. Altitude of gage is 1,545 ft (471 m) from topographic map.

REMARKS.--Records good.

COOPERATION.--This station is one of the international gaging stations maintained by the United States under agreement with Canada.

AVERAGE DISCHARGE.--16 years, 6.68 ft³/s (0.189 m³/s), 4,840 acre-ft/yr (5.97 hm³/yr); median of yearly mean discharges, 4.9 ft³/s (0.14 m³/s), 3,600 acre-ft/yr (4.4 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,920 ft³/s (54.4 m³/s) Apr. 10, 1971, gage height, 8.56 ft (2.609 m); no flow for several months each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 50 ft³/s (1.42 m³/s) May 20, gage height, 3.42 ft (1.042 m), only peak above base of 50 ft³/s (1.42 m³/s); no flow for several months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1							0	0	1.2			
2							0	0	.61			
3							0	0	.34			
4							0	0	.18			
5							0	0	.11			
6							.15	0	.06			
7							.16	0	.02			
8							.16	0	0			
9							.81	0	0			
10							.56	0	0			
11							.24	0	0			
12							.10	0	0			
13							.04	0	0			
14							.01	0	0			
15							0	0	0			
16							0	0	0			
17							0	0	.03			
18							0	.30	.06			
19							0	11	.16			
20							0	25	.44			
21							0	45	.62			
22							0	36	.43			
23							0	26	.25			
24							0	27	.12			
25							0	30	.06			
26							0	25	.02			
27							0	16	0			
28							0	9.5	0			
29					---		0	5.6	0			
30					---		0	3.3	0			
31		---			---		---	2.0	---			---
TOTAL	0	0	0	0	0	0	2.23	261.70	4.71	0	0	0
MEAN	0	0	0	0	0	0	.074	8.44	.16	0	0	0
MAX	0	0	0	0	0	0	.81	45	1.2	0	0	0
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	0	0	0	0	0	0	4.4	519	9.3	0	0	0
CAL YR 1976	TOTAL	2644.38	MEAN 7.23	MAX 620	MIN 0	AC-FT 5250						
WTR YR 1977	TOTAL	268.64	MEAN .74	MAX 45	MIN 0	AC-FT 533						

RED RIVER OF THE NORTH BASIN

05099100 SNOWFLAKE CREEK NEAR SNOWFLAKE, MAN
(International gaging station)

LOCATION.--Lat 49°01'17", long 98°36'13", in SW¼ sec.10, T.1, R.9 W., 1st meridian, at traffic bridge, 2.5 mi (4.0 km) east and 1.5 mi (2.4 km) south of Snowflake.

DRAINAGE AREA.--348 mi² (901 km²).

PERIOD OF RECORD.--March 1961 to current year.

GAGE.--Water-stage recorder since March 1968 and nonrecording gage prior thereto. Datum of gage is 1,222.63 ft (372.658 m) above mean sea level, Geodetic Survey of Canada datum. Prior to Apr. 2, 1964, nonrecording gage at present site and datum. Apr. 2, 1964, to May 10, 1965, nonrecording gage at site 0.5 mi (0.8 km) downstream at present datum.

REMARKS.--Records good.

COOPERATION.--This station is one of the international gaging stations maintained by Canada under agreement with the United States.

AVERAGE DISCHARGE.--16 years, 16.6 ft³/s (0.470 m³/s) 12,030 acre-ft/yr (14.8 hm³/yr); median of yearly mean discharges, 12 ft³/s (0.34 m³/s) 8,700 acre-ft/yr (11 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 823 ft³/s (23.3 m³/s) May 21, 1974, gage height 5.98 ft (1.823 m); maximum gage height, 7.39 ft (2.252 m) Apr. 11, 1969; no flow for several months each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 29 ft³/s (0.82 m³/s) May 19, gage height, 3.77 ft (1.149 m); no flow for several months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.20					0	3.3	.48	.49	.02		0
2	.16					0	4.0	.48	.58	0		0
3	.12					0	4.7	.43	.48	0		0
4	.08					0	5.4	.52	.38	0		0
5	.08					0	6.2	.62	.48	.02		0
6	.08					0	4.7	.48	.35	0		0
7	.08					0	3.2	.04	.32	0		0
8	.12					0	3.3	.10	.26	0		1.1
9	.08					0	3.8	.16	.26	0		.49
10	.08					0	4.5	.23	.29	0		.17
11	.08					0	4.0	.33	.27	0		.04
12	.04					0	3.8	.40	.27	0		0
13	0					0	3.0	.46	.45	0		0
14	0					0	3.2	.50	.30	0		0
15	0					0	2.8	.55	.32	0		0
16	0					0	2.1	.57	.23	0		0
17	0					0	2.1	.55	.62	0		0
18	0					0	1.8	1.6	.37	0		0
19	0					0	1.3	16	.65	0		0
20	0					0	.71	8.5	.33	0		0
21	0					0	1.3	5.0	.19	0		0
22	0					0	1.2	3.2	.11	0		0
23	0					0	1.2	2.2	.09	0		0
24	0					0	1.2	1.6	.03	0		.12
25	0					0	1.1	1.3	0	0		.24
26	0					.20	1.1	1.1	0	0		.25
27	0					1.2	1.1	.94	.03	0		.20
28	0					1.4	.99	.80	.02	0		.11
29	0				---	1.6	.86	.74	0	0		.09
30	0				---	1.8	.75	.72	.02	0		.07
31	0	---			---	2.5	---	.59	---	0		---
TOTAL	1.20	0	0	0	0	8.70	78.71	51.19	8.19	.04	0	2.88
MEAN	.039	0	0	0	0	.28	2.62	1.65	.27	.001	0	.096
MAX	.20	0	0	0	0	2.5	6.2	16	.65	.02	0	1.1
MIN	0	0	0	0	0	0	.71	.04	0	0	0	0
AC-FT	2.4	0	0	0	0	17	156	102	16	.08	0	5.7
CAL YR 1976	TOTAL	9059.53	MEAN 24.8	MAX 344	MIN 0	AC-FT 17970						
WTR YR 1977	TOTAL	150.91	MEAN .41	MAX 16	MIN 0	AC-FT 299						

RED RIVER OF THE NORTH BASIN

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05099150 MOWBRAY CREEK NEAR MOWBRAY, MAN

LOCATION.--Lat 49°00'00", long 98°27'15", in SE¼ sec.3, T.1, R.8 W., 1st meridian, on downstream side of bridge on Municipal Road on international boundary, 1.5 mi (2.4 km) east of Mowbray.

DRAINAGE AREA.--93.9 mi² (243.2 km²).

PERIOD OF RECORD.--March to October, 1962 to current year.

GAGE.--Water-stage recorder operated March 1 to October 31 each year. Nonrecording gage prior to 1971.

COOPERATION.--Records furnished by Water Survey of Canada.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 670 ft³/s (19.0 m³/s) Apr. 21, 1974, gage height, 7.02 ft (2.140 m); maximum gage height, 7.88 ft (2.402 m) Mar. 29, 1966, backwater from ice; no flow for several months each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 29 ft³/s (0.82 m³/s) Sept. 8, gage height, 3.93 ft (1.198 m); maximum gage height unknown, probably occurred during period of Apr. 1-5, backwater from ice; no flow for several months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						0	.50	0				0
2						0	1.5	0				0
3						0	5.0	0				0
4						0	16	0				0
5						0	21	0				0
6						0	16	0				.67
7						0	11	0				9.2
8						0	4.8	0				20
9						0	3.9	0				15
10						0	1.4	0				15
11						0	.68	0				13
12						0	.36	0				9.5
13						0	.54	0				6.7
14						0	.36	0				4.9
15						0	.27	0				3.5
16						0	.21	0				2.2
17						0	.07	0				1.2
18						0	0	0				.89
19						0	0	0				.64
20						0	0	0				.40
21						0	0	0				.29
22						0	0	0				.20
23						0	0	0				.13
24						0	0	0				.79
25						0	0	.01				.62
26						0	0	.05				.62
27						0	0	0				.34
28						.08	0	0				.27
29						.16	0	.14				.23
30						.24	0	1.7				.20
31						.08	---	0	---			---
TOTAL	0	---		---		.56	83.59	1.90	0	0	0	106.49
MEAN	0	---		---		.018	2.79	.061	0	0	0	3.55
MAX	0	---		---		.24	21	1.7	0	0	0	20
MIN	0	---		---		0	0	0	0	0	0	0
AC-FT	0	---		---		1.1	166	3.8	0	0	0	211

RED RIVER OF THE NORTH BASIN

05099300 PEMBINA RIVER NEAR WINDYGATES, MAN
(International gaging station)

LOCATION.--Lat 49°01'53", long 98°16'40", in SE¼ sec.13, T.1, R.7 W., 1st meridian, on left bank 0.2 mi (0.3 km) downstream from bridge, 3 mi (5 km) northeast of Windygates.

DRAINAGE AREA.--3,020 mi² (7,820 km²).

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

GAGE.--Water-stage recorder and nonrecording gage. Datum of recording gage is 1,102.02 ft (335.896 m) above mean sea level. Datum of nonrecording gage is 1,105.00 ft (336.804 m) above mean sea level, both gages referred to Geodetic Survey of Canada datum.

REMARKS.--Records fair.

COOPERATION.--This station is one of the international gaging stations maintained by Canada under agreement with the United States.

AVERAGE DISCHARGE.--15 years, 250 ft³/s (7.080 m³/s) 181,100 acre-ft/yr (223 hm³/yr); median of yearly mean discharges, 200 ft³/s (5.66 m³/s) 145,000 acre-ft/yr (180 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,500 ft³/s (326 m³/s) Apr. 26, 1974, gage height, 19.50 ft (5.944 m); no flow in some years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 153 ft³/s (4.33 m³/s) May 21, gage height, 3.45 ft (1.052 m); maximum gage height, 3.71 ft (1.131 m) Apr. 8, backwater from ice; no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	16	2.1			0	20	9.7	22	16	.83	.22
2	21	15	1.7			0	25	8.6	21	15	.63	0
3	21	15	1.3			0	30	9.8	20	15	.76	.17
4	21	14	.90			0	35	14	17	11	.68	.41
5	21	14	.60			0	40	22	18	9.9	.43	.26
6	21	13	.30			0	45	.20	16	8.6	.37	.25
7	21	13	0			0	49	17	15	8.1	.58	.07
8	21	12	0			0	38	14	14	7.7	1.1	1.3
9	21	12	0			0	15	16	12	6.1	.83	1.9
10	21	11	0			0	18	16	12	5.2	.80	2.5
11	20	11	0			0	22	15	11	5.1	.59	2.2
12	20	10	0			0	26	14	10	6.1	.39	.53
13	20	9.7	0			0	26	14	12	4.7	.26	.29
14	20	9.2	0			0	26	14	11	4.3	.22	.20
15	20	8.7	0			0	24	13	12	4.5	.26	.07
16	20	8.2	0			0	23	9.8	8.1	4.2	.38	0
17	19	7.8	0			0	18	13	8.3	3.3	.07	0
18	19	7.4	0			0	14	15	12	2.6	0	1.0
19	19	6.9	0			0	14	60	45	2.7	0	5.0
20	19	6.5	0			0	12	91	46	2.7	0	3.2
21	19	6.1	0			0	13	138	26	2.3	0	3.4
22	18	5.7	0			0	13	131	24	1.7	0	4.4
23	18	5.3	0			0	12	92	28	1.4	0	3.4
24	18	4.9	0			0	11	63	26	.92	0	13
25	18	4.5	0			0	10	51	23	.71	0	12
26	18	4.1	0			0	10	42	23	.57	0	12
27	17	3.7	0			15	11	37	19	.47	0	9.4
28	17	3.3	0			25	10	32	19	.64	0	6.3
29	17	2.9	0		---	20	14	31	19	.67	0	7.7
30	17	2.5	0		---	15	16	29	18	.65	.02	7.8
31	16	---	0		---	15	---	24	---	.94	.46	---
TOTAL	600	263.4	6.90	0	0	90	640	1075.9	567.4	153.77	9.66	98.97
MEAN	19.4	8.78	.22	0	0	2.90	21.3	34.7	18.9	4.96	.31	3.30
MAX	22	16	2.1	0	0	25	49	138	46	16	1.1	13
MIN	16	2.5	0	0	0	0	10	8.6	8.1	.47	0	0
AC-FT	1190	522	14	0	0	179	1270	2130	1130	305	19	196
CAL YR 1976 TOTAL	140080.90			MEAN 383	MAX 4080	MIN 0	AC-FT 277900					
WTR YR 1977 TOTAL	3506.00			MEAN 9.61	MAX 138	MIN 0	AC-FT 6950					

RED RIVER OF THE NORTH BASIN

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05099380 PEMBINA RIVER NEAR VANG, ND

LOCATION.--Lat 48°54'10", long 98°13'40", in SW¼NW¼ sec.29, T.163 N., R.57 W., Cavalier County, Hydrologic Unit 09020313, at bridge on county highway, 3 mi (4.8 km) east of Vang.

DRAINAGE AREA.--3,100 mi² (8,000 km²), approximately.

PERIOD OF RECORD.--Water years 1962, 1966 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	FECAL COLIFORM (7UM-MF (COL./100 ML)
OCT 20...	1030	18	895	8.1	.5	7	9	13.1	124	.6	B2
DEC 02...	1100	5.6	855	7.6	.0	--	8	8.2	58	.9	--
31...	1200	2.5	1230	7.3	.0	6	15	3.0	28	--	B5
MAR 22...	1400	3.4	960	7.9	.5	--	3	10.1	73	5.0	<2
APR 01...	1245	40	750	7.7	1.0	25	--	12.3	90	--	--
05...	0930	18	715	8.2	.5	85	130	13.2	88	1.9	--
13...	0830	45	730	8.5	5.5	12	--	11.5	92	1.8	--
26...	0830	20	890	8.5	13.0	--	25	10.1	99	1.5	105
MAY 23...	1245	157	640	8.2	20.5	43	--	8.9	97	2.7	900
25...	1130	180	625	8.0	23.5	37	--	7.5	89	2.7	--
JUN 01...	1330	50	805	8.6	21.5	23	110	9.0	105	2.8	330
29...	0900	14	850	8.4	20.0	--	30	8.0	90	1.9	80
JUL 26...	0720	.10	930	8.0	19.5	8	15	5.0	56	1.8	170
AUG 22...	1230	.04	1000	7.9	19.5	--	6	11.4	128	--	7
SEP 29...	0900	18	910	8.4	9.0	23	50	10.0	90	2.6	150

DATE	HARDNESS (CA, MG/L)	NON-CARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CaCO3 (MG/L)
OCT 20...	370	100	81	40	56	24	1.3	9.0	321	0	263
DEC 02...	--	--	--	--	--	--	--	--	--	--	--
31...	580	210	140	55	77	22	1.4	10	450	0	369
MAR 22...	--	--	--	--	--	--	--	--	--	--	--
APR 01...	280	110	68	26	48	27	1.3	6.8	210	0	170
05...	270	94	66	26	48	27	1.3	6.7	217	0	180
13...	290	110	68	28	53	28	1.4	7.3	220	0	180
26...	--	--	--	--	--	--	--	--	--	--	--
MAY 23...	230	93	55	23	47	30	1.3	9.3	170	0	140
25...	220	84	55	19	50	32	1.5	9.4	160	0	130
JUN 01...	310	110	75	29	58	28	1.4	10	240	0	200
29...	--	--	--	--	--	--	--	--	--	--	--
JUL 26...	350	160	77	37	74	31	1.7	12	220	0	180
AUG 22...	--	--	--	--	--	--	--	--	--	--	--
SEP 29...	360	160	90	33	74	30	1.7	9.6	240	0	200

RED RIVER OF THE NORTH BASIN
05099380 PEMBINA RIVER NEAR VANG, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	CARBON DIOXIDE (CO2) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLORIDE (CL) (MG/L)	DIS- SOLVED FLUORIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO2) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS- SOLVED AMMONIA NITRO- GEN (N) (MG/L)
OCT 20...	4.1	230	14	.2	18	590	607	.80	28.7	.01	.00
DEC 02...	--	--	--	--	--	--	--	--	--	.06	.06
31...	36	340	24	.3	20	948	891	1.29	6.40	.22	.06
MAR 22...	--	--	--	--	--	--	--	--	--	.42	.10
APR 01...	6.7	200	13	.2	14	497	481	.68	53.7	.23	--
05...	2.2	190	13	.3	14	477	472	.65	23.2	.15	.04
13...	1.1	200	11	.3	15	507	491	.69	61.6	.03	--
26...	--	--	--	--	--	--	--	--	--	.02	.01
MAY 23...	1.7	170	11	.3	23	434	425	.59	184	.57	--
25...	2.6	180	8.0	.4	24	425	427	.58	207	.58	--
JUN 01...	1.0	220	12	.3	25	559	548	.76	75.5	.01	.00
29...	--	--	--	--	--	--	--	--	--	.48	.01
JUL 26...	3.5	280	18	.4	14	628	622	.85	.17	.03	.01
AUG 22...	--	--	--	--	--	--	--	--	--	.01	.02
SEP 29...	1.5	300	14	.4	22	668	662	.91	32.5	.05	.00

DATE	DIS- SOLVED AMMONIA (NH4) (MG/L)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L)	DIS- SOLVED PHOS- PHORUS (P) (MG/L)	DIS- SOLVED ORTHOPHOS- PHORUS (P) (MG/L)	DIS- SOLVED ORTHOPHOS- PHATE (PO4) (MG/L)	DIS- SOLVED BORON (B) (UG/L)
OCT 20...	.00	.46	.12	.11	.34	140
DEC 02...	.08	.67	.12	.10	.31	--
31...	.08	.82	.09	.11	.34	150
MAR 22...	.13	1.1	.10	.11	.34	--
APR 01...	--	--	.07	--	--	110
05...	.05	2.9	.06	.06	.18	110
13...	--	--	.06	--	--	130
26...	.01	.52	.06	.06	.18	--
MAY 23...	--	--	.17	--	--	150
25...	--	--	.20	--	--	160
JUN 01...	.00	1.4	.14	.12	.37	170
29...	.01	.47	.13	.09	.28	--
JUL 26...	.01	.64	.04	.05	.15	220
AUG 22...	.03	1.1	.10	.07	.21	--
SEP 29...	.00	.68	.09	.07	.21	190

DATE	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)
OCT 20...	20	130
DEC 31...	40	790
APR 01...	30	120
05...	40	150
13...	30	70
MAY 23...	50	40
25...	30	20
JUN 01...	40	20
JUL 26...	20	280
SEP 29...	70	80

RED RIVER OF THE NORTH BASIN

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05099380 PEMBINA RIVER NEAR VANG, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL PCB (UG/L)	POLY- CHLOR- INATED NAPH- THA- LENES (UG/L)	TOTAL ALDRIN (UG/L)	TOTAL CHLOR- DANE (UG/L)	TOTAL DDD (UG/L)	TOTAL DDE (UG/L)	TOTAL DDT (UG/L)	TOTAL DI- AZINON (UG/L)	TOTAL DI- ELDRIN (UG/L)	TOTAL ENDO- SULFAN (UG/L)	TOTAL ENDRIN (UG/L)	TOTAL ETHION (UG/L)
OCT 20...	.0	.00	.00	.0	.00	.00	.00	.00	.00	--	.00	.00
APR 05...	.0	.00	.00	.0	.00	.00	.00	.00	.00	.00	.00	.00
JUL 26...	.0	.00	.00	.0	.00	.00	.00	.00	.00	.00	.00	.00

DATE	TOTAL HEPTA- CHLOR (UG/L)	TOTAL HEPTA- CHLOR EPOXIDE (UG/L)	TOTAL LINDANE (UG/L)	TOTAL MALA- THION (UG/L)	TOTAL METHYL PARA- THION (UG/L)	TOTAL METHYL TRI- THION (UG/L)	TOTAL PARA- THION (UG/L)	TOTAL TOX- APHENE (UG/L)	TOTAL TRI- THION (UG/L)	TOTAL 2,4-D (UG/L)	TOTAL 2,4,5-T (UG/L)
OCT 20...	.00	.00	.00	.00	.00	.00	.00	0	.00	.00	.00
APR 05...	.00	.00	.00	.00	.00	.00	.00	0	.00	.00	.00
JUL 26...	.00	.00	.00	.00	.00	.00	.00	0	.00	.00	.00

DATE	TOTAL SILVEX (UG/L)	SUS- PENDE SEDI- MENT (MG/L)	SUS- PENDE SEDI- MENT DIS- CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	BED MAT. SIEVE DIAM. % FINER THAN .125 MM	BED MAT. SIEVE DIAM. % FINER THAN .125 MM
OCT 20...	.00	31	1.5	--	--	--	--	--	--
DEC 02...	--	47	.71	--	--	--	--	--	--
31...	--	39	.26	--	--	--	--	--	--
MAR 22...	--	4	.04	--	--	--	--	--	--
APR 01...	--	196	21	78	97	100	18	19	19
05...	.00	210	10	93	97	100	9	10	10
13...	--	260	32	89	98	100	12	12	12
26...	--	72	3.9	--	--	--	--	--	--
MAY 23...	--	764	324	80	98	100	10	10	10
25...	--	1410	685	82	98	100	13	14	14
JUN 01...	--	210	28	87	98	100	16	17	17
29...	--	61	2.3	--	--	--	--	--	--
JUL 26...	.00	38	.01	--	--	--	--	--	--
AUG 22...	--	8	.00	--	--	--	--	--	--
SEP 29...	--	94	4.6	--	--	--	14	15	15

RED RIVER OF THE NORTH BASIN

05099380 PEMBINA RIVER NEAR VANG, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	BED MAT. SIEVE DIAM. % FINER THAN .250 MM	BED MAT. SIEVE DIAM. % FINER THAN .500 MM	BED MAT. SIEVE 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
OCT 20...	--	--	--	--	--	--	--	--
DEC 02...	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--
MAR 22...	--	--	--	--	--	--	--	--
APR 01...	24	30	39	41	56	83	100	--
05...	11	15	23	26	35	47	58	86
13...	15	22	34	37	57	79	88	100
26...	--	--	--	--	--	--	--	--
MAY 23...	12	19	29	31	49	70	88	100
25...	16	26	37	40	60	85	96	100
JUN 01...	19	26	38	41	56	71	80	100
29...	--	--	--	--	--	--	--	--
JUL 26...	--	--	--	--	--	--	--	--
AUG 22...	--	--	--	--	--	--	--	--
SEP 29...	16	20	31	34	50	70	82	95

DISSOLVED OXYGEN PROFILE, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

HOURL	MG/L	HOURL	MG/L	HOURL	MG/L	HOURL	MG/L
Oct. 21, 1976		0700	12.7	2300	8.1	1600	9.8
1400	14.3	0800	12.7	2400	8.1	1700	10.2
1430	14.3	0900	12.6			1800	10.1
1500	14.0	1000	12.8	June 2, 1977		1900	10.1
1600	13.9	1020	12.9	0100	8.1	2000	10.0
1700	14.0	1100	13.0	0200	8.1	2100	9.8
1800	13.9	1200	13.2	0300	8.1	2200	9.0
1900	13.8	1300	13.4	0400	8.2	2300	8.9
1930	13.7	1400	13.9	0500	8.3	2400	8.8
2000	13.7			0600	8.4		
2100	13.5	June 1, 1977		0700	8.5	Aug. 24, 1977	
2200	13.5	1200	9.0	0800	8.4	0100	8.7
2300	13.4	1300	9.1	0900	8.5	0200	8.6
2400	13.4	1400	9.1	1000	8.6	0300	8.4
		1500	8.9	1100	8.7	0400	8.2
Oct. 22, 1976		1600	8.9	1200	8.9	0500	8.0
0030	13.4	1700	8.7			0600	7.8
0100	13.2	1800	8.6	Aug. 23, 1977		0700	7.7
0200	13.1	1900	8.6	1200	9.2	0800	7.6
0300	13.0	2000	8.3	1300	9.4	0900	7.7
0400	12.6	2100	8.3	1400	9.6	1000	8.0
0500	12.7	2200	8.2	1500	9.7	1100	8.5
0600	12.7					1200	9.1

05099400 LITTLE SOUTH PEMBINA RIVER NEAR WALHALLA, ND

LOCATION.--Lat 48°51'55", long 98°00'20", in SW¼ sec.10, T.162 N., R.57 W., Cavalier County, Hydrologic Unit 09020313, on right bank 25 ft (8 m) upstream from county bridge, 3.5 mi (5.6 km) above mouth, and 6 mi (10 km) southwest of Walhalla.

DRAINAGE AREA.--182 mi², (471 km²), of which 10 mi² (26 km²) is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1956 to current year. Prior to October 1973, published as Little Pembina River near Walhalla.

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,099.48 ft (335.122 m) above mean sea level. Prior to Sept. 10, 1956, nonrecording gage at bridge 25 ft (8 m) downstream at same datum.

REMARKS.--Records good except for the winter period, which is fair. Flow regulated since March 1971 by Mt. Carmel Reservoir, 30 mi (48 km) upstream, capacity, 4,200 acre-ft (5.18 hm³).

AVERAGE DISCHARGE.--21 years, 22.1 ft³/s (0.626 m³/s), 16,010 acre-ft/yr (19.7 hm³/yr); median of yearly mean discharges, 19 ft³/s (0.54 m³/s), 13,800 acre-ft/yr (17 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,600 ft³/s (187 m³/s) Apr. 25, 1970, gage height, 13.95 ft (4.252 m); no flow at times in some years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 368 ft³/s (10.4 m³/s) May 19, gage height, 7.57 ft (2.307 m); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.62	.40	.20	.01		0	20	2.0	7.7	1.1	1.8	.62
2	.62	.40	.15	.01		0	25	1.9	7.2	1.0	1.1	.49
3	.49	.40	.10	.01		0	30	2.4	7.0	1.0	1.0	.89
4	.23	.40	.08	.01		0	40	3.2	5.7	.88	.88	2.2
5	.23	.38	.08	.01		0	50	4.3	4.6	1.3	.88	1.9
6	.36	.35	.05	.01		0	30	3.9	3.7	1.4	.62	1.8
7	.36	.32	.05	.01		0	16	3.2	2.7	1.0	.62	1.8
8	.36	.30	.05	.01		0	15	3.1	2.3	.88	.62	7.3
9	.36	.30	.05	.01		0	16	2.6	2.2	.88	.62	11
10	.49	.30	.05	.01		.50	15	2.3	2.3	.62	.36	6.4
11	.36	.30	.05	.01		1.5	13	2.0	2.4	.75	.36	4.7
12	.49	.30	.05	0		1.5	8.7	1.8	2.4	.88	.10	3.9
13	.62	.30	.05	0		1.5	5.7	1.7	2.3	.49	.10	3.5
14	.49	.30	.05	0		1.5	4.8	1.5	1.8	.88	.10	3.1
15	.62	.30	.05	0		1.5	4.3	1.0	1.7	.75	.10	3.0
16	.49	.30	.05	0		4.0	4.3	.88	1.4	.62	.10	2.7
17	.36	.30	.05	0		4.0	5.0	.75	2.4	.49	.10	2.6
18	.36	.30	.05	0		4.0	4.6	.75	3.7	.36	.10	2.6
19	.49	.25	.05	0		3.8	4.3	145	3.5	.36	.10	2.6
20	.62	.25	.03	0		3.5	4.0	78	4.0	.36	.10	2.6
21	.49	.25	.03	0		3.5	3.7	34	3.6	.36	.10	2.6
22	.36	.20	.03	0		3.5	3.5	23	2.2	.36	.10	2.6
23	.35	.20	.03	0		3.5	3.4	18	1.9	.10	.10	2.8
24	.35	.20	.03	0		3.8	3.1	58	1.5	.10	.10	40
25	.35	.20	.03	0		4.0	3.0	58	1.3	.23	.10	36
26	.35	.20	.03	0		6.0	2.8	26	1.1	.36	.23	21
27	.35	.20	.03	0		8.0	2.6	17	1.3	.36	.36	13
28	.38	.20	.03	0		9.0	2.6	16	1.4	.75	.36	9.4
29	.40	.20	.03	0	---	10	2.4	12	1.3	3.6	.36	6.7
30	.40	.20	.02	0	---	15	2.3	10	1.3	2.7	.36	5.3
31	.40	---	.02	0	---	18	---	9.8	---	2.0	.49	---
TOTAL	13.20	8.50	1.65	.11	0	111.60	345.1	544.08	87.9	26.92	12.42	205.10
MEAN	.43	.28	.053	.004	0	3.60	11.5	17.6	2.93	.87	.40	6.84
MAX	.62	.40	.20	.01	0	18	50	145	7.7	3.6	1.8	.40
MIN	.23	.20	.02	0	0	0	2.3	.75	1.1	.10	.10	.49
AC-FT	26	17	3.3	.2	0	221	685	1080	174	53	25	407
CAL YR 1976	TOTAL	10592.90	MEAN	28.9	MAX	1340	MIN	.02	AC-FT	21010		
WTR YR 1977	TOTAL	1356.58	MEAN	3.72	MAX	145	MIN	0	AC-FT	2690		

RED RIVER OF THE NORTH BASIN

05099400 LITTLE SOUTH PEMBINA RIVER NEAR WALHALLA, ND--Continued

WATER-QUALITY RECORD

PERIOD OF RECORD.--Water years 1962 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS)	SPECIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (JTU)	DIS- SOLVED OXYGEN (MG/L)	PER- CENT SATUR- ATION	BIO- CHEM- ICAL OXYGEN DEMAND 5 DAY (MG/L)	FECAL COLI- FORM .7UM-MF (COL./ 100 ML)
OCT											
20...	1520	.56	750	8.1	4.5	3	4	13.3	107	.1	88
DEC											
01...	1015	.20	945	7.1	1.5	--	7	3.6	27	1.0	6
29...	1600	.03	900	7.5	2.0	5	2	4.0	30	--	81
MAR											
11...	1405	1.4	690	7.3	.5	8	2	--	--	--	--
15...	1500	1.5	725	--	.5	--	--	--	--	--	--
23...	1045	3.3	915	7.9	.0	--	5	12.0	86	1.6	10
APR											
01...	1510	20	700	7.9	.5	25	--	11.9	86	--	--
04...	1455	22	640	8.1	.5	53	75	12.2	88	2.9	--
12...	1210	8.5	755	8.2	9.5	10	--	11.0	100	.7	--
27...	0930	2.7	860	8.4	10.0	--	2	12.2	112	1.3	330
MAY											
24...	0850	16	715	8.3	20.0	22	--	8.8	99	1.0	8650
JUN											
02...	1425	7.5	730	8.4	24.5	--	7	8.7	108	1.3	130
29...	1615	1.2	815	8.1	20.5	--	15	7.8	89	.9	1300
JUL											
26...	1120	.08	920	7.9	22.0	6	2	6.6	78	1.0	250
AUG											
24...	0940	.13	850	7.9	13.0	--	3	7.6	75	--	71
SEP											
28...	1220	9.2	850	8.2	12.5	23	40	10.0	95	1.2	420

DATE	HARD- NESS (CA, MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	ALKA- LITY AS CACO3 (MG/L)
OCT											
20...	300	67	84	22	50	26	1.3	6.8	285	0	234
DEC											
01...	--	--	--	--	--	--	--	--	--	--	--
29...	390	110	110	28	60	25	1.3	8.5	345	0	283
MAR											
11...	310	85	86	23	41	22	1.0	6.2	274	0	225
15...	--	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--	--
APR											
01...	210	77	59	16	50	33	1.5	6.2	166	0	140
04...	210	72	58	16	54	35	1.6	6.8	169	0	140
12...	260	90	72	20	61	33	1.6	7.1	210	0	170
27...	--	--	--	--	--	--	--	--	--	--	--
MAY											
24...	230	71	66	17	64	36	1.8	9.0	200	0	160
JUN											
02...	--	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--	--
JUL											
26...	340	98	100	23	64	28	1.5	9.8	300	0	250
AUG											
24...	--	--	--	--	--	--	--	--	--	--	--
SEP											
28...	300	110	83	23	76	35	1.9	8.6	240	0	200

RED RIVER OF THE NORTH BASIN

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05099400 LITTLE SOUTH PEMBINA RIVER NEAR WALHALLA, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	CARBON DIOXIDE (CO2) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO2) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS- SOLVED AMMONIA NITRO- GEN (N) (MG/L)
OCT											
20...	3.6	160	14	.4	17	509	496	.69	.77	.23	.00
DEC											
01...	--	--	--	--	--	--	--	--	--	.36	.06
29...	17	200	16	.4	21	631	618	.86	.05	.15	.05
MAR											
11...	22	140	18	.4	18	486	474	.66	1.84	1.2	.02
15...	--	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	1.9	.03
APR											
01...	3.3	160	17	.2	16	433	409	.59	23.4	.68	--
04...	2.1	160	16	.2	16	436	415	.59	25.9	.85	.05
12...	2.1	200	14	.3	20	502	501	.68	11.5	.54	--
27...	--	--	--	--	--	--	--	--	--	.05	.00
MAY											
24...	1.6	190	15	.4	26	486	488	.66	21.0	.50	--
JUN											
02...	--	--	--	--	--	--	--	--	--	.05	.01
29...	--	--	--	--	--	--	--	--	--	.03	.01
JUL											
26...	6.0	210	18	.5	30	609	604	.83	.13	.03	.01
AUG											
24...	--	--	--	--	--	--	--	--	--	.00	.01
SEP											
28...	2.4	240	20	.4	24	599	595	.81	14.9	.20	.00

DATE	DIS- SOLVED AMMONIA (NH4) (MG/L)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L)	DIS- SOLVED ORTHO. PHOS- PHORUS (P) (MG/L)	DIS- SOLVED ORTHO PHOS- PHATE (PO4) (MG/L)	DIS- SOLVED BORON (B) (UG/L)
OCT						
20...	.00	.18	.09	.12	.37	110
DEC						
01...	.08	.00	.10	.10	.31	--
29...	.06	.35	.06	.08	.25	110
MAR						
11...	.03	--	.17	.15	.46	90
23...	.04	.75	.19	.15	.46	--
APR						
01...	--	--	.15	--	--	110
04...	.06	.61	.15	.13	.40	120
12...	--	--	.16	--	--	120
27...	.00	.34	.08	.07	.21	--
MAY						
24...	--	--	.22	--	--	170
JUN						
02...	.01	.38	.21	.17	.52	--
29...	.01	.38	.14	.13	.40	--
JUL						
26...	.01	.22	.15	.16	.49	180
AUG						
24...	.01	.31	.16	.13	.40	--
SEP						
28...	.00	.57	.17	.13	.40	190

DATE	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)
OCT		
20...	10	100
DEC		
29...	30	2400
MAR		
11...	20	110
APR		
01...	20	50
04...	100	100
12...	30	70
MAY		
24...	20	30
JUL		
26...	10	70
SEP		
28...	30	40

RED RIVER OF THE NORTH BASIN

05099400 LITTLE SOUTH PEMBINA RIVER NEAR WALHALLA, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL PCB (UG/L)	POLY- CHLO- RINATED NAPH- THA- LENES (UG/L)	TOTAL ALDRIN (UG/L)	TOTAL CHLOR- DANE (UG/L)	TOTAL DDD (UG/L)	TOTAL DDE (UG/L)	TOTAL DDT (UG/L)	TOTAL DI- AZINON (UG/L)	TOTAL DI- ELDRIN (UG/L)	TOTAL ENDO- SULFAN (UG/L)	TOTAL ENDRIN (UG/L)	TOTAL ETHION (UG/L)
OCT 20...	.0	.00	.00	.0	.00	.00	.00	.00	.00	--	.00	.00
APR 04...	.0	.00	.00	.0	.00	.00	.00	.00	.00	.00	.00	.00
JUL 26...	.0	.00	.00	.0	.00	.00	.00	.00	.00	.00	.00	.00

DATE	TOTAL HEPTA- CHLOR (UG/L)	TOTAL HEPTA- CHLOR EPOXIDE (UG/L)	TOTAL LINDANE (UG/L)	TOTAL MALA- THION (UG/L)	TOTAL METHYL PARA- THION (UG/L)	TOTAL METHYL TRI- THION (UG/L)	TOTAL PARA- THION (UG/L)	TOTAL TOX- APHERE (UG/L)	TOTAL TRI- THION (UG/L)	TOTAL 2,4-D (UG/L)	TOTAL 2,4,5-T (UG/L)
OCT 20...	.00	.00	.00	.00	.00	.00	.00	0	.00	.00	.00
APR 04...	.00	.00	.00	.00	.00	.00	.00	0	.00	.03	.00
JUL 26...	.00	.00	.00	.00	.00	.00	.00	0	.00	.00	.00

DATE	TOTAL SILVEX (UG/L)	SUS- PENDE SEDI- MENT (MG/L)	SUS- PENDE SEDI- MENT DIS- CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	SUS. SED. FALL DIAM. % FINER THAN .125 MM	SUS. SED. FALL DIAM. % FINER THAN .250 MM	SUS. SED. FALL DIAM. % FINER THAN .500 MM
OCT 20...	.00	12	.02	--	--	--	--	--	--
DEC 29...	--	10	.00	--	--	--	--	--	--
MAR 11...	--	4	.02	--	--	--	--	--	--
MAR 23...	--	10	.09	--	--	--	--	--	--
APR 01...	--	347	19	65	92	98	98	99	100
APR 04...	.00	304	18	67	89	96	97	99	100
APR 12...	--	44	1.0	--	--	--	--	--	--
APR 27...	--	6	.04	--	--	--	--	--	--
MAY 24...	--	68	2.9	--	--	--	--	--	--
JUN 02...	--	20	.40	--	--	--	--	--	--
JUN 29...	--	45	.15	--	--	--	--	--	--
JUL 26...	.00	14	.00	--	--	--	--	--	--
AUG 24...	--	4	.00	--	--	--	--	--	--
SEP 28...	--	97	2.4	--	--	--	--	--	--

RED RIVER OF THE NORTH BASIN

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05099400 LITTLE SOUTH PEMBINA RIVER NEAR WALHALLA, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	BED MAT. SIEVE DIAM. % FINER THAN .062 MM	BED MAT. SIEVE DIAM. % FINER THAN .125 MM	BED MAT. SIEVE DIAM. % FINER THAN .250 MM	BED MAT. SIEVE DIAM. % FINER THAN .500 MM	BED MAT. SIEVE 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
OCT									
20...	--	--	--	--	--	--	--	--	--
DEC									
29...	--	--	--	--	--	--	--	--	--
MAR									
11...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
APR									
01...	21	21	22	26	45	54	79	96	100
04...	18	20	26	46	66	71	88	99	100
12...	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--
MAY									
24...	21	22	24	33	59	67	87	98	100
JUN									
02...	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--
JUL									
26...	--	--	--	--	--	--	--	--	--
AUG									
24...	--	--	--	--	--	--	--	--	--
SEP									
28...	21	22	23	30	52	58	81	96	100

DISSOLVED OXYGEN PROFILE, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

HOURL	MG/L	HOURL	MG/L	HOURL	MG/L	HOURL	MG/L
Oct. 20, 1976		2300	11.9	0700	11.6	1500	8.3
1300	12.6	2400	11.7	0800	11.7	1600	8.0
1350	12.6			0900	12.0	1700	8.0
1400	12.8	Oct. 21, 1976		1000	12.4	2100	7.8
1500	13.1	0030	11.7	1100	12.7		
1600	13.3	0100	11.6	1200	13.0	June 3, 1977	
1700	13.3	0200	11.5	1300	13.3	0100	8.0
1800	13.2	0300	11.4	1315	13.5	0600	8.6
1900	12.8	0400	11.4			0900	8.9
2000	12.6	0500	11.4	June 2, 1977		1000	8.9
2100	12.4	0600	11.5	1300	8.7	1100	8.8
2200	12.1	0615	11.5	1400	8.6	1200	8.6
						1300	8.6

RED RIVER OF THE NORTH BASIN

05099600 PEMBINA RIVER AT WALHALLA, ND

LOCATION.--Lat 48°54'50", long 97°55'00", in NE¼NE¼ sec.29, T.163 N., R.56 W., Pembina County, Hydrologic Unit 09020313, on left bank at downstream side of bridge on State Highway 32, at south edge of Walhalla, and 7 mi (11 km) downstream from Little South Pembina River.

DRAINAGE AREA.--3,350 mi² (8,680 km²), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1939 to current year. Prior to October 1963, published as "near Walhalla."

REVISED RECORDS.--WSP 1388: 1943, 1950(P). WSP 1558: 1957. WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 934 ft (284.7 m), from topographic map. Prior to Nov. 10, 1943, nonrecording gage and Nov. 10, 1943, to Sept. 30, 1963, water-stage recorder at site 5.5 mi (8.8 km) upstream at different datum.

REMARKS.--Records good except those for the winter period, which are fair.

AVERAGE DISCHARGE.--38 years, 243 ft³/s (6.882 m³/s) 176,100 acre-ft/yr (217 hm³/yr); median of yearly mean discharges, 190 ft³/s (5.38 m³/s) 138,000 acre-ft/yr (170 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,400 ft³/s (578 m³/s) Apr. 18, 1950, gage height, 19.2 ft (5.85 m) former site and datum, 16.2 ft (4.938 m) present site and datum, from rating curve extended above 7,000 ft³/s (198 m³/s) on basis of contracted-opening measurement of peak flow; no flow at times in some years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 610 ft³/s (17.3 m³/s) May 19, gage height, 4.31 ft (1.314 m), only peak above base of 400 ft³/s (11.3 m³/s); maximum gage height, 4.81 ft (1.466 m) Jan. 26, backwater from ice; minimum discharge, 1.7 ft³/s (0.048 m³/s) Aug. 24, gage height, 1.23 ft (0.375 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	15	5.6	2.5	2.5	4.5	65	25	57	24	5.4	2.4
2	19	14	4.5	2.5	2.5	4.5	82	25	54	21	4.8	2.4
3	18	12	3.5	2.5	2.5	4.5	85	25	50	20	4.5	3.3
4	18	12	3.0	2.5	2.5	4.0	80	28	48	20	3.1	6.2
5	18	12	2.6	2.5	2.5	4.0	70	34	44	20	2.8	8.7
6	17	12	2.5	2.5	2.5	4.0	60	37	40	16	2.8	11
7	18	11	2.5	2.5	2.5	5.5	60	33	35	16	2.8	7.4
8	18	10	2.5	2.5	2.5	8.0	60	31	31	15	2.6	8.7
9	18	10	2.5	2.5	2.5	8.0	60	31	27	13	2.6	17
10	18	10	2.5	2.5	2.5	8.0	58	31	26	12	2.4	14
11	18	10	2.5	2.5	2.5	10	55	30	27	12	2.4	11
12	18	10	2.5	2.5	2.5	11	55	27	27	12	2.4	8.7
13	20	10	2.5	2.5	2.5	12	54	27	28	12	2.4	6.4
14	20	10	2.5	2.5	2.5	13	54	25	27	12	2.2	5.9
15	20	10	2.5	2.5	2.5	14	55	25	26	11	2.2	4.5
16	19	10	2.5	2.5	2.5	15	55	24	24	9.3	2.4	4.5
17	18	10	2.5	2.5	2.5	20	50	24	27	7.7	2.6	4.3
18	18	10	2.5	2.5	2.5	25	49	24	34	7.4	2.6	4.3
19	18	10	2.5	2.5	2.5	30	47	253	35	7.7	2.8	4.0
20	18	10	2.5	2.5	2.5	25	42	215	54	7.0	2.4	4.0
21	18	9.8	2.5	2.5	2.5	20	37	134	59	6.2	2.4	4.0
22	18	9.5	2.5	2.5	2.5	16	32	172	49	5.9	2.4	4.0
23	18	9.0	2.5	2.5	3.0	17	31	172	43	5.9	2.2	4.0
24	18	8.4	2.5	2.5	3.0	17	31	197	44	5.4	1.9	51
25	18	7.8	2.5	2.5	4.5	17	26	212	41	4.8	1.9	84
26	17	7.4	2.5	2.5	4.5	20	27	122	36	4.0	2.2	67
27	17	7.0	2.5	2.5	4.5	25	27	95	34	4.0	2.2	45
28	16	6.6	2.5	2.5	4.5	30	27	85	34	3.3	2.2	36
29	16	6.3	2.5	2.5	---	110	28	73	29	2.4	2.2	24
30	16	6.0	2.5	2.5	---	90	26	115	26	4.5	2.2	19
31	15	---	2.5	2.5	---	65	---	65	---	6.7	2.4	---
TOTAL	556	295.8	84.2	77.5	79.0	657.0	1488	2416	1116	328.2	82.4	476.7
MEAN	17.9	9.86	2.72	2.50	2.82	21.2	49.6	77.9	37.2	10.6	2.66	15.9
MAX	20	15	5.6	2.5	4.5	110	85	253	59	24	5.4	84
MIN	15	6.0	2.5	2.5	2.5	4.0	26	24	24	2.4	1.9	2.4
AC-FT	1100	587	167	154	157	1300	2950	4790	2210	651	163	946
CAL YR 1976 TOTAL	171040.0			MEAN 467		MAX 4490	MIN 2.5	AC-FT 339300				
WTR YR 1977 TOTAL	7656.8			MEAN 21.0		MAX 253	MIN 1.9	AC-FT 15190				

05099600 PEMBINA RIVER AT WALHALLA, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1962 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1962 to September 1972, October 1974 to current year.
WATER TEMPERATURES: April 1962 to September 1972, October 1974 to current year.

INSTRUMENTATION.--Water-quality monitor since August 1976.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,290 micromhos Feb. 17, 1972; minimum daily, 223 micromhos Apr. 9, 1971.
WATER TEMPERATURES: Maximum daily, 31.0°C July 24, 1963; minimum daily, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,180 micromhos Dec. 21; minimum daily, 570 micromhos May 20.
WATER TEMPERATURES: Maximum daily, 22.5°C July 23; minimum daily, 0.0°C on many days during winter months.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	FECAL COLIFORM .7UM-MF (COL./100 ML)
OCT											
19...	1535	19	895	--	3.5	--	--	--	--	--	--
20...	1030	18	880	8.0	2.0	6	10	12.2	91	1.3	B2
DEC											
01...	1420	5.6	1000	7.4	.0	8	--	9.8	69	.2	--
30...	1205	2.5	890	7.6		4	50	9.4	67	--	B1
JAN											
26...	1250	4.1	825	7.5	.5	3	60	8.6	63	.5	B5
FEB											
15...	1410	2.5	840	7.7	.0	4	90	10.3	73	.7	B1
16...	1035	3.5	--	--	.0	--	--	--	--	--	--
MAR											
15...	1300	15	700	--	1.0	--	--	--	--	--	--
22...	1000	16	815	7.9	.5	18	40	12.2	88	2.3	B13
31...	1400	43	690	--	3.5	--	85	--	--	1.7	--
APR											
05...	1445	54	680	8.0	1.5	25	85	12.8	93	2.1	--
12...	1520	56	760	8.2	10.5	--	160	10.7	100	1.5	--
26...	1225	27	890	8.2	16.5	8	40	9.9	109	1.4	B28
MAY											
23...	1630	170	650	8.2	23.0	--	240	8.0	94	3.5	B1500
25...	0900	200	540	8.0	22.0	--	1900	7.2	83	4.5	--
31...	1335	68	740	8.2	24.0	32	200	7.9	96	2.2	B980
JUN											
29...	1125	29	850	8.4	21.5	7	30	8.2	95	1.7	67
JUL											
26...	1530	3.9	820	--	28.5	--	--	--	--	--	--
27...	0840	3.9	880	8.0	17.0	6	8	7.8	83	.8	100
AUG											
23...	0950	2.5	770	7.9	13.0	6	3	10.1	99	1.4	B32
SEP											
28...	1600	36	850	8.1	14.0	45	80	9.4	93	2.6	380

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

RED RIVER OF THE NORTH BASIN

05099600 PEMBINA RIVER AT WALHALLA, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	HARD- NESS (CA, MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO ₃) (MG/L)	CAR- BONATE (CO ₃) (MG/L)	ALKA- LITY AS CACO ₃ (MG/L)
OCT 19...	--	--	--	--	--	--	--	--	--	--	--
20...	390	120	94	38	50	21	1.1	8.3	332	0	272
DEC 01...	500	130	130	43	47	17	.9	7.8	450	0	369
30...	440	93	120	35	33	14	.7	6.1	428	0	351
JAN 26...	430	97	120	31	27	12	.6	5.3	403	0	331
FEB 15...	420	98	120	29	23	11	.5	5.1	392	0	322
16...	--	--	--	--	--	--	--	--	--	--	--
MAR 15...	--	--	--	--	--	--	--	--	--	--	--
22...	350	130	94	27	48	23	1.1	7.0	269	0	221
31...	--	--	--	--	--	--	--	--	--	--	--
APR 05...	260	86	69	22	45	27	1.2	6.2	216	0	180
12...	--	--	--	--	--	--	--	--	--	--	--
26...	360	130	91	33	54	24	1.2	8.4	280	0	230
MAY 23...	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--
31...	260	100	71	21	58	31	1.6	9.9	200	0	160
JUN 29...	350	120	86	32	57	26	1.3	9.7	280	0	230
JUL 26...	--	--	--	--	--	--	--	--	--	--	--
27...	370	94	95	31	40	19	.9	7.5	330	0	270
AUG 23...	360	120	98	28	32	16	.7	6.4	290	0	240
SEP 28...	330	140	88	26	66	30	1.6	8.5	230	0	190

DATE	CARBON DIOXIDE (CO ₂) (MG/L)	DIS- SOLVED SULFATE (SO ₄) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SI0 ₂) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS- SOLVED AMMONIA NITRO- GEN (N) (MG/L)
OCT 19...	--	--	--	--	--	--	--	--	--	--	--
20...	5.3	200	13	.3	18	599	586	.81	29.1	.00	.00
DEC 01...	29	230	17	.3	22	684	719	.93	10.3	.08	--
30...	17	160	10	.3	23	608	599	.83	4.10	.15	.06
JAN 26...	20	130	10	.4	24	544	547	.74	6.02	.10	.07
FEB 15...	13	130	8.2	.4	24	531	534	.72	3.58	.11	.08
16...	--	--	--	--	--	--	--	--	--	--	--
MAR 15...	--	--	--	--	--	--	--	--	--	--	--
22...	5.4	190	15	.4	19	581	539	.79	25.1	1.2	.09
31...	--	--	--	--	--	--	--	--	--	.46	.09
APR 05...	3.5	180	14	.3	16	449	462	.61	65.5	.44	.04
12...	--	--	--	--	--	--	--	--	--	.24	.03
26...	2.8	210	13	.3	16	591	564	.80	43.1	.00	.00
MAY 23...	--	--	--	--	--	--	--	--	--	.48	.04
25...	--	--	--	--	--	--	--	--	--	.64	.01
31...	2.0	210	9.9	.5	24	515	505	.70	94.6	.33	.01
JUN 29...	1.8	200	13	.4	26	575	563	.78	45.0	.06	.01
JUL 26...	--	--	--	--	--	--	--	--	--	--	--
27...	5.3	150	9.3	.3	23	532	519	.72	5.60	.01	.01
AUG 23...	5.8	120	9.7	.4	23	504	461	.69	3.40	.00	.01
SEP 28...	2.9	250	14	.4	22	599	590	.81	58.2	.35	.00

05099600 PEMBINA RIVER AT WALHALLA, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED AMMONIA (NH4) (MG/L)	TOTAL KJEL- DAHL- NITRO- GEN (N) (MG/L)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L)	DIS- SOLVED ORTHO- PHOS- PHORUS (P) (MG/L)	DIS- SOLVED ORTHO- PHOS- PHATE (PO4) (MG/L)	DIS- SOLVED ALUM- INUM (AL) (UG/L)	DIS- SOLVED ARSENIC (AS) (UG/L)
OCT							
20...	.00	.79	.09	.08	.25	30	4
DEC							
01...	--	--	.03	--	--	--	--
30...	.08	.57	.04	.08	.25	--	--
JAN							
26...	.09	.37	.04	.06	.18	--	--
FEB							
15...	.10	.05	.04	.05	.15	--	--
MAR							
22...	.12	.31	.12	.10	.31	--	--
31...	.12	.94	.09	.09	.28	--	--
APR							
05...	.05	.91	.09	.08	.25	30	0
12...	.04	.69	.09	.07	.21	--	--
26...	.00	.57	.04	.02	.06	--	--
MAY							
23...	.05	2.1	.16	.11	.34	--	--
25...	.01	11	.18	.12	.37	--	--
31...	.01	1.7	.16	.11	.34	--	--
JUN							
29...	.01	.66	.11	.07	.21	--	--
JUL							
27...	.01	.34	.03	.04	.12	--	--
AUG							
23...	.01	.24	.04	.03	.09	--	--
SEP							
28...	.00	.56	.11	.08	.25	--	--

DATE	DIS- SOLVED BARIUM (BA) (UG/L)	DIS- SOLVED BORON (B) (UG/L)	DIS- SOLVED CAD- MIUM (CD) (UG/L)	DIS- SOLVED CHRO- MIUM (CR) (UG/L)	DIS- SOLVED COBALT (CO) (UG/L)	DIS- SOLVED COPPER (CU) (UG/L)
OCT						
20...	0	130	1	0	1	3
DEC						
01...	--	130	--	--	--	--
30...	--	90	--	--	--	--
JAN						
26...	--	90	--	--	--	--
FEB						
15...	--	80	--	--	--	--
MAR						
22...	--	110	--	--	--	--
31...	--	--	--	--	--	--
APR						
05...	0	100	1	0	0	3
12...	--	--	--	--	--	--
26...	--	130	--	--	--	--
MAY						
23...	--	--	--	--	--	--
25...	--	--	--	--	--	--
31...	--	170	--	--	--	--
JUN						
29...	--	190	--	--	--	--
JUL						
27...	--	140	--	--	--	--
AUG						
23...	--	110	--	--	--	--
SEP						
28...	--	170	--	--	--	--

DATE	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED LEAD (PB) (UG/L)	DIS- SOLVED LITHIUM (LI) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)	DIS- SOLVED MERCURY (HG) (UG/L)	DIS- SOLVED MOLYB- DENUM (MO) (UG/L)	DIS- SOLVED NICKEL (NI) (UG/L)	DIS- SOLVED SELE- NIUM (SE) (UG/L)	DIS- SOLVED STRON- TIUM (SR) (UG/L)	DIS- SOLVED VANA- DIUM (V) (UG/L)	DIS- SOLVED ZINC (ZN) (UG/L)
OCT											
20...	20	7	70	220	.0	3	5	1	440	.0	0
APR											
05...	80	5	50	120	.0	3	4	3	310	1.4	20

RED RIVER OF THE NORTH BASIN
05099600 PEMBINA RIVER AT WALHALLA, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL PCB (UG/L)	POLY-CHLORINATED NAPHTHALENES (UG/L)	TOTAL ALDRIN (UG/L)	TOTAL CHLOR-DANE (UG/L)	TOTAL DDD (UG/L)	TOTAL DDE (UG/L)	TOTAL DDT (UG/L)	TOTAL DI-AZINON (UG/L)	TOTAL DI-ELDRIN (UG/L)	TOTAL ENDO-SULFAN (UG/L)	TOTAL ENDRIN (UG/L)	TOTAL ETHION (UG/L)
OCT 20...	.0	.00	.00	.0	.00	.00	.00	.00	.00	--	.00	.00
JAN 26...	.0	.00	.00	.0	.00	.00	.00	.00	.00	.00	.00	.00
APR 05...	.0	.00	.00	.0	.00	.00	.00	.00	.00	.00	.00	.00
JUL 27...	.0	.00	.00	.0	.00	.00	.00	.00	.00	.00	.00	.00

DATE	TOTAL HEPTA-CHLOR (UG/L)	TOTAL HEPTA-CHLOR EPOXIDE (UG/L)	TOTAL LINDANE (UG/L)	TOTAL MALATHION (UG/L)	TOTAL METHYL PARA-THION (UG/L)	TOTAL METHYL TRI-THION (UG/L)	TOTAL PARA-THION (UG/L)	TOTAL TOX-APHENE (UG/L)	TOTAL TRI-THION (UG/L)	TOTAL 2,4-D (UG/L)	TOTAL 2,4,5-T (UG/L)
OCT 20...	.00	.00	.00	.00	.00	.00	.00	0	.00	.00	.00
JAN 26...	.00	.00	.00	.00	.00	.00	.00	0	.00	.00	.00
APR 05...	.00	.00	.00	.00	.00	.00	.00	0	.00	.01	.00
JUL 27...	.00	.00	.00	.00	.00	.00	.00	0	.00	.01	.00

DATE	TOTAL SILVEX (UG/L)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	SUS. SED. FALL DIAM. % FINER THAN .125 MM	SUS. SED. FALL DIAM. % FINER THAN .250 MM	SUS. SED. FALL DIAM. % FINER THAN .500 MM	SUS. SED. FALL DIAM. % FINER THAN 1.00 MM
OCT 19...	--	24	1.2	--	--	--	--	--	--	--
OCT 20...	.00	--	--	--	--	--	--	--	--	--
DEC 01...	--	72	1.1	--	--	--	--	--	--	--
DEC 30...	--	136	.92	--	--	--	--	--	--	--
JAN 26...	.00	146	1.6	--	--	--	--	--	--	--
FEB 15...	--	370	2.5	--	--	--	--	--	--	--
MAR 22...	--	279	12	--	--	--	--	--	--	--
MAR 31...	--	536	62	44	66	89	97	100	--	--
APR 05...	.00	384	56	57	71	87	94	99	100	--
APR 12...	--	306	46	87	92	95	96	99	100	--
APR 26...	--	98	7.1	--	--	--	--	--	--	--
MAY 23...	--	906	416	73	87	89	91	95	99	100
MAY 25...	--	4530	2450	80	97	97	97	99	100	--
MAY 31...	--	558	102	58	65	69	69	71	83	95
JUN 29...	--	97	7.6	--	--	--	--	--	--	--
JUL 27...	.00	17	.18	--	--	--	--	--	--	--
AUG 23...	--	4	.03	--	--	--	--	--	--	--
SEP 28...	--	165	16	--	--	--	--	--	--	--

DATE	BED MAT. SIEVE DIAM. % FINER THAN .062 MM	BED MAT. SIEVE DIAM. % FINER THAN .125 MM	BED MAT. SIEVE DIAM. % FINER THAN .250 MM	BED MAT. SIEVE DIAM. % FINER THAN .500 MM	BED MAT. SIEVE 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
MAR 22...	--	--	--	--	--	--	--	--	--	--
MAR 31...	13	15	22	36	53	57	67	82	94	96
APR 05...	14	14	19	39	67	72	83	93	97	100
APR 12...	11	12	18	38	62	66	76	86	91	100
APR 26...	--	--	--	--	--	--	--	--	--	--
MAY 23...	11	13	20	42	59	61	72	84	95	100
MAY 25...	11	12	19	40	59	62	71	81	89	100
MAY 31...	12	13	21	48	73	77	86	94	97	100
SEP 28...	14	16	21	42	69	73	83	92	98	100

RED RIVER OF THE NORTH BASIN

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05099600 PEMBINA RIVER AT WALHALLA, ND--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	850	1050	---	800	790	690	890	770	---	790	---
2	---	855	1040	---	790	790	695	900	780	---	780	---
3	---	855	970	---	840	790	690	850	800	---	800	---
4	815	870	900	870	825	800	700	850	850	---	800	---
5	---	860	920	870	890	790	700	825	845	---	790	---
6	---	875	920	860	880	800	720	880	845	---	790	740
7	---	900	740	870	850	790	740	860	860	---	780	760
8	---	975	890	890	800	800	690	870	810	---	780	675
9	---	915	850	900	790	790	680	850	860	---	780	720
10	---	940	700	860	790	770	710	860	890	810	775	750
11	---	990	725	890	820	740	750	860	875	800	780	740
12	870	975	700	890	800	700	740	840	860	800	780	720
13	865	990	700	900	790	740	800	850	850	800	780	720
14	850	1000	850	870	800	750	790	845	850	790	780	710
15	850	1020	940	860	825	720	800	840	860	790	750	720
16	860	1010	900	860	800	790	800	860	890	800	740	800
17	855	1020	930	890	800	790	800	860	850	790	750	800
18	855	1000	990	860	800	800	820	860	800	790	725	790
19	870	940	910	900	790	800	850	810	850	790	710	800
20	870	1000	1080	860	790	790	875	570	880	800	700	810
21	870	995	1180	850	790	825	850	760	800	800	700	800
22	890	1000	1030	900	790	850	850	800	625	800	690	800
23	950	990	1080	745	800	920	860	700	740	775	700	800
24	915	980	1100	830	800	950	820	650	770	790	700	660
25	870	990	950	860	770	870	845	600	840	790	700	800
26	920	950	990	820	740	880	890	625	700	800	700	810
27	850	800	1000	740	800	870	880	680	810	800	710	815
28	915	810	960	890	790	740	860	680	800	800	---	820
29	900	1080	910	860	---	640	875	660	860	790	---	840
30	875	1090	925	810	---	640	880	660	---	790	---	900
31	870	---	---	870	---	670	---	690	---	780	---	---

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	0.5	0.0	---	0.0	0.0	0.5	13.0	17.0	---	15.5	---
2	---	0.5	0.0	---	0.0	0.0	0.5	9.0	16.0	---	15.5	---
3	---	0.0	0.0	---	0.0	0.0	1.0	12.0	18.5	---	15.5	---
4	8.0	0.0	0.0	0.0	0.0	0.0	0.0	14.0	18.5	---	15.0	---
5	---	0.0	0.0	0.0	0.0	0.0	0.0	13.0	18.5	---	14.0	---
6	---	0.0	0.0	0.0	0.0	0.0	0.0	9.5	17.0	---	13.5	12.0
7	---	0.0	0.0	0.0	0.0	0.5	0.0	8.5	17.5	---	16.0	12.0
8	---	0.0	0.0	0.0	0.0	0.5	1.5	12.0	16.5	---	13.0	14.0
9	---	0.0	0.0	0.0	0.0	0.5	1.0	14.5	16.5	---	17.5	15.0
10	12.0	0.0	0.0	0.0	1.0	0.5	7.0	16.0	15.0	19.5	10.5	12.0
11	---	0.0	0.0	0.0	0.0	0.0	5.0	17.0	14.0	18.0	9.0	13.0
12	8.5	0.0	0.0	0.0	0.0	0.0	6.0	18.0	15.0	15.5	11.5	11.0
13	5.5	0.0	0.0	0.0	0.0	1.0	6.0	19.0	15.0	18.0	12.0	11.0
14	6.0	0.0	0.5	0.0	0.0	0.5	7.0	19.0	14.0	19.0	13.5	11.0
15	4.0	0.0	0.0	0.0	0.0	0.5	8.0	20.5	15.5	17.0	13.0	11.5
16	2.0	0.0	0.0	0.0	0.0	1.0	9.5	17.0	16.5	18.0	11.0	12.0
17	0.0	0.0	0.0	0.0	0.0	0.0	14.5	16.5	17.0	20.0	10.0	13.0
18	0.0	0.0	0.0	0.0	0.0	0.5	10.5	17.0	16.0	20.5	9.0	12.0
19	0.0	0.0	0.0	0.0	0.0	0.5	7.0	18.5	17.0	21.0	10.0	10.0
20	2.0	0.0	0.0	0.0	0.0	0.0	6.0	16.5	16.0	16.0	13.0	10.0
21	0.5	0.0	0.0	0.0	0.5	0.0	7.5	18.5	17.5	15.5	15.0	11.0
22	0.0	0.0	0.0	0.0	0.0	0.0	8.0	18.0	18.5	16.0	11.0	12.0
23	0.0	0.0	0.0	0.0	0.0	0.0	9.0	17.0	18.0	22.5	10.0	12.0
24	0.0	0.0	0.0	0.0	0.0	0.0	7.0	18.5	20.0	21.5	10.0	12.0
25	0.0	0.0	0.0	0.0	0.0	0.0	18.0	21.0	20.0	15.5	13.5	12.0
26	0.0	0.0	0.0	0.0	0.0	0.5	9.0	21.0	21.5	19.0	12.5	11.0
27	0.0	0.0	0.0	0.0	0.0	1.0	11.5	20.0	19.5	17.0	10.5	10.5
28	0.0	0.0	0.0	0.0	0.0	0.5	9.5	20.0	18.5	15.0	---	10.0
29	1.0	0.0	0.0	0.0	---	0.5	10.5	18.5	20.0	14.0	---	8.0
30	1.0	0.0	0.0	0.0	---	0.0	11.0	18.0	---	19.0	---	8.0
31	0.0	---	---	0.0	---	0.0	---	17.0	---	15.5	---	---

RED RIVER OF THE NORTH BASIN
05099600 PEMBINA RIVER AT WALHALLA, ND--Continued

DISSOLVED OXYGEN PROFILE, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

<u>HOURL</u>	<u>MG/L</u>	<u>HOURL</u>	<u>MG/L</u>	<u>HOURL</u>	<u>MG/L</u>	<u>HOURL</u>	<u>MG/L</u>
Oct. 19, 1976		Jan. 26, 1977		May 31, 1977		Aug. 22, 1977	
1200	12.9	1200	8.6	1100	8.2	1100	10.1
1235	12.9	1300	8.5	1200	8.2	1200	10.1
1300	13.1	1400	7.8	1300	8.0	1300	9.7
1400	13.0	1500	7.8	1400	8.0	1400	9.4
1500	13.0	1600	7.7	1500	7.9	1500	9.3
1600	12.9	1700	7.4	1600	8.0	1600	9.2
1700	12.7	1800	7.5	1700	8.0	1700	9.0
1800	12.5	1900	7.3	1800	8.0	1800	8.8
1900	12.3	2000	7.3	1900	8.0	1900	8.8
2000	12.2	2100	7.2	2000	8.0	2000	8.6
2100	12.0	2200	7.3	2100	8.0	2100	8.3
2200	11.9	2300	7.3	2200	7.9	2200	8.2
2300	12.0	2400	7.3	2300	7.9	2300	8.1
2400	12.0			2400	7.9	2400	8.3
		Jan. 27, 1977		June 1, 1977		Aug. 23, 1977	
Oct. 20, 1976		0100	7.3	0100	7.9	0100	8.5
0100	12.0	0200	7.4	0200	8.0	0200	8.6
0200	11.9	0300	7.7	0300	8.0	0300	8.8
0300	11.9	0400	7.8	0400	8.1	0400	8.9
0400	12.0	0500	7.9	0500	8.1	0420	9.0
0500	12.0	0600	7.9	0600	8.2	0500	9.0
0600	12.0	0700	7.9	0700	8.3	0600	9.1
0700	12.0	0800	8.0	0800	8.3	0700	9.1
0800	12.0	0900	8.0	0900	8.4	0800	9.3
0900	12.1	1000	8.0	1000	8.5	0900	9.8
1000	12.2	1100	8.0	1100	8.6	1000	10.0
1100	12.5	1200	8.1			1100	10.1
1200	12.6						

RED RIVER OF THE NORTH BASIN

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05100000 PEMBINA RIVER AT NECHE, ND
(International gaging station)

LOCATION.--Lat 48°59'20", long 97°33'05", in SE¼NW¼ sec.31, T.164 N., R.53 W., Pembina County, Hydrologic Unit 09020313, on right bank 0.3 mi (0.5 km) east of State Highway 18, at north edge of Neche.

DRAINAGE AREA.--3,410 mi² (8,830 km²), approximately.

PERIOD OF RECORD.--May 1903 to September 1908, June 1909 to September 1915, April 1919 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1904-8, 1910-15, 1920, 1921, 1923, 1924. WSP 1388: 1904(M), 1914, 1915(M), 1931(M), 1933, 1938(M). WSP 1728: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 809.69 ft (246.794 m) above mean sea level. Prior to May 24, 1932, nonrecording gage at Burlington Northern Railway bridge 1 mi (2 km) upstream, at same datum. May 25, 1932, to Apr. 17, 1939, nonrecording gage on bridge on State Highway 18, 500 ft (150 m) downstream from railway bridge, at same datum.

REMARKS.--Records good except those for the winter period, which are fair.

COOPERATION.--This station is one of the international gaging stations maintained by the United States under agreement with Canada.

AVERAGE DISCHARGE.--69 years (1903-8, 1909-15, 1919-77), 192 ft³/s (5.437 m³/s), 139,100 acre-ft/yr (172 hm³/yr); median of yearly mean discharges, 140 ft³/s (3.96 m³/s), 101,000 acre-ft/yr (125 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,700 ft³/s (303 m³/s) Apr. 20, 1950, gage height, 21.58 ft (6.578 m), backwater from ice; from rating curve extended above 5,300 ft³/s (150 m³/s); maximum gage height, 22.92 ft (6.986 m) Apr. 28, 1974; no flow at times each year 1932-41, 1953, 1960-62.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 261 ft³/s (7.39 m³/s) May 21, gage height, 9.26 ft (2.822 m), no peak above base of 400 ft³/s (11.3 m³/s); minimum daily discharge, 2.0 ft³/s (0.057 m³/s) Dec. 8 to Jan. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	31	7.0	2.0	2.2	3.0	70	33	109	44	6.7	5.6
2	31	28	6.0	2.0	2.2	3.0	65	33	86	41	6.7	5.6
3	30	21	5.0	2.2	2.2	3.0	60	33	75	39	10	6.7
4	28	10	4.0	2.2	2.2	3.0	65	33	62	34	12	14
5	28	20	3.0	2.2	2.2	3.0	60	34	55	33	8.3	15
6	28	14	3.0	2.2	2.2	3.0	67	37	50	33	6.7	16
7	28	14	2.5	2.2	2.2	3.0	75	41	46	33	6.7	14
8	28	16	2.0	2.2	2.2	3.0	98	46	41	28	6.7	14
9	28	15	2.0	2.2	2.2	3.0	106	46	39	26	6.2	18
10	28	15	2.0	2.2	2.2	3.0	103	44	34	25	5.6	18
11	28	15	2.0	2.2	2.2	3.0	109	39	37	21	5.1	29
12	28	15	2.0	2.2	2.2	3.0	112	37	37	21	5.1	31
13	28	14	2.0	2.2	2.2	3.0	100	34	37	23	5.1	28
14	28	14	2.0	2.2	2.2	3.0	89	33	37	26	5.1	23
15	28	14	2.0	2.2	2.2	3.0	86	30	37	17	4.6	17
16	28	14	2.0	2.2	2.2	3.0	83	28	37	14	4.6	13
17	30	14	2.0	2.2	2.2	3.0	75	28	37	13	5.1	12
18	30	14	2.0	2.2	2.2	12	70	30	37	12	5.6	12
19	30	14	2.0	2.2	2.2	21	62	39	37	12	4.6	10
20	31	14	2.0	2.2	2.2	23	60	44	37	9.4	4.6	10
21	33	14	2.0	2.2	2.2	28	60	234	41	8.3	4.6	10
22	25	13	2.0	2.2	2.2	30	55	178	55	8.3	4.1	10
23	18	13	2.0	2.2	2.2	28	48	162	73	7.2	4.1	10
24	21	13	2.0	2.2	2.2	28	48	189	57	6.7	4.1	18
25	23	13	2.0	2.2	2.5	26	46	178	48	6.2	4.1	23
26	26	12	2.0	2.2	3.0	26	46	214	46	6.2	4.1	55
27	23	11	2.0	2.2	3.0	26	44	172	46	6.2	4.1	98
28	28	10	2.0	2.2	3.0	30	41	130	46	9.4	5.1	95
29	33	9.0	2.0	2.2	---	40	39	115	46	8.3	6.7	78
30	34	8.0	2.0	2.2	---	45	34	100	46	6.7	6.2	57
31	28	---	2.0	2.2	---	60	---	86	---	6.7	5.6	---
TOTAL	869	442.0	78.5	67.8	64.3	474.0	2076	2480	1471	584.6	177.9	765.9
MEAN	28.0	14.7	2.53	2.19	2.30	15.3	69.2	80.0	49.0	18.9	5.74	25.5
MAX	34	31	7.0	2.2	3.0	60	112	234	109	44	12	98
MIN	18	8.0	2.0	2.0	2.2	3.0	34	28	34	6.2	4.1	5.6
AC-FT	1720	877	156	134	128	940	4120	4920	2920	1160	353	1520
CAL YR 1976	TOTAL	157868.5	MEAN	431	MAX	4370	MIN	2.0	AC-FT	313100		
WTR YR 1977	TOTAL	9551.0	MEAN	26.2	MAX	234	MIN	2.0	AC-FT	18940		

RED RIVER OF THE NORTH BASIN

05100500 HERZOG CREEK NEAR CONCRETE, ND

LOCATION.--Lat 48°45'13", long 97°54'22", in SE¼ sec.20, T.161 N., R.56 W., Pembina County, Hydrologic Unit 09020313, on left bank 1.7 mi (2.7 km) northeast of Concrete and 1.7 mi (2.7 km) upstream from mouth.

DRAINAGE AREA.--18.9 mi² (49.0 km²).

PERIOD OF RECORD.--June 1954 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,108.95 ft (338.008 m) above mean sea level (levels by Soil Conservation Service). Prior to Sept. 15, 1971, recording gage at site 0.5 mi (0.8 km) downstream at same datum.

REMARKS.--Records good except those for the period Mar. 8 to Apr. 9, which are fair. Flood flow affected by temporary retention in four retarding basins above station. The farthest downstream retarding basin, located 0.8 mi (1.3 km) above station, is used to regulate summer flow.

AVERAGE DISCHARGE.--23 years, 3.11 ft³/s (0.0881 m³/s) 2,250 acre-ft/yr (2.77 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 260 ft³/s (7.36 m³/s) Apr. 2, 1955, gage height, 9.74 ft (2.969 m), from floodmarks, backwater from ice; no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 36 ft³/s (1.02 m³/s) Oct. 26, gage height, 9.83 ft (2.996 m), maximum gage height, 10.21 ft (3.112 m) Mar. 9, backwater from ice; no flow for several months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	2.6				0	.20	.03	.01	0	.02	0
2	0	1.7				0	.20	.03	.01	0	.01	0
3	0	.35				0	.20	.08	.01	0	0	0
4	0	.02				0	.20	.03	.01	0	0	0
5	0	.03				0	.20	.03	.01	0	0	0
6	0	.08				0	.18	.02	.01	0	0	0
7	0	.02				0	.10	.02	.01	0	0	0
8	0	.01				.01	.10	.02	0	0	0	0
9	0	.02				.05	.10	.02	0	0	0	0
10	0	.02				.05	.08	.02	0	0	0	0
11	0	.08				.05	.08	.02	0	0	0	0
12	0	.03				.05	.08	.01	0	0	0	0
13	0	.02				.04	.08	.01	0	0	0	0
14	0	.02				.03	.08	.01	0	0	0	0
15	0	.01				.02	.08	.01	0	0	0	0
16	0	0				.02	.03	.01	0	0	0	0
17	0	0				.02	.03	.01	0	0	0	0
18	0	0				.02	.03	.01	0	0	0	0
19	0	0				.02	.02	.01	0	0	0	0
20	0	0				.02	.03	.01	0	0	0	0
21	0	0				.02	.08	.01	0	0	0	0
22	0	0				.01	.08	.01	0	0	0	0
23	0	0				.01	.08	.01	0	0	0	0
24	0	0				.01	.08	.01	0	0	0	0
25	0	0				.01	.08	.01	0	0	0	0
26	14	0				.01	.08	.01	0	-0	0	0
27	16	0				.02	.08	.01	0	0	0	0
28	7.7	0				.25	.08	.01	0	0	0	0
29	6.1	0			---	.20	.08	.01	0	.03	0	0
30	8.1	0			---	.20	.03	.01	0	.02	0	8.6
31	4.4	---			---	.20	---	.01	---	.02	0	---
TOTAL	56.3	5.01	0	0	0	1.34	2.85	.52	.07	.07	.03	8.6
MEAN	1.82	.17	0	0	0	.043	.095	.017	.002	.002	.001	.29
MAX	16	2.6	0	0	0	.25	.20	.08	.01	.03	.02	8.6
MIN	0	0	0	0	0	0	.02	.01	0	0	0	0
AC-FT	112	9.9	0	0	0	2.7	5.7	1.0	.1	.1	.06	17
CAL YR 1976	TOTAL	904.37	MEAN	2.47	MAX	35	MIN	0	AC-FT	1790		
WTR YR 1977	TOTAL	74.79	MEAN	.20	MAX	16	MIN	0	AC-FT	148		

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LOCATION.--Lat 48°46'42", long 97°44'43", in SW¼ sec.10, T.161 N., R.55 W., Pembina County, Hydrologic Unit 09020313, on left bank 300 ft (90 m) downstream from Renwick Dam, 0.9 mi (1.4 km) northwest of Akra, and 6 mi (10 km) west of Cavalier. Prior to Dec. 19, 1973, at site 2.7 mi (4.3 km) downstream.

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 930.00 ft (283.464 m) above mean sea level. Prior to July 10, 1954, nonrecording gage 1.2 mi (1.9 km) downstream at datum 30.00 ft (9.144 m) lower. July 23, 1954 to Dec. 19, 1973, water stage recorder 2.7 mi (4.3 km) downstream at datum 9.10 ft (2.774 m) lower.

REMARKS.--Records fair. Flow regulated by temporary retention in ten retarding basins beginning 300 ft (90 m) above station, four of which have slow release outlet structures to regulate the flow. Retarding basins were completed during the period 1955 to 1961 and have a combined capacity of 19,245 acre-ft (23.7 hm³).

AVERAGE DISCHARGE.--26 years (1951-77) 21.1 ft³/s (0.598 m³/s), 15,290 acre-ft/yr (18.9 hm³/yr); median of yearly mean discharges, 18 ft³/s (0.51 m³/s) 13,000 acre-ft/yr (16 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,800 ft³/s (334 m³/s) Apr. 18, 1950, gage height, 48.7 ft (14.844 m), from floodmarks, site and datum then in use, from rating curve extended above 1,500 ft³/s (42.5 m³/s) on basis of contracted-opening measurement of peak flow; no flow Dec. 1-27, 1952, Aug. 13, 14, 1961.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 18, 1950, is the highest known, since settlement of the region (about 1860).

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 64 ft³/s (1.81 m³/s) July 18, gage height, 10.40 ft (3.170 m); maximum gage height observed, 10.58 ft (3.22 m) Mar. 9, backwater from ice; minimum daily discharge, 1.0 ft³/s (0.028 m³/s) for several days.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.5	1.5	2.2	1.6	2.0	1.0	2.0	2.4	12	9.1	1.9	1.2
2	1.5	1.5	2.2	1.6	2.0	1.0	2.0	2.2	12	7.1	1.9	1.2
3	1.5	1.5	2.2	1.6	2.0	1.0	2.0	2.2	9.5	6.7	1.9	1.2
4	1.5	1.5	2.2	1.6	2.0	1.2	1.9	2.2	7.1	5.4	1.8	1.2
5	1.5	1.5	2.2	1.6	2.0	1.2	1.9	3.4	5.0	5.5	1.8	1.2
6	1.5	1.5	2.2	1.6	2.0	1.5	1.9	3.9	4.2	5.5	1.8	1.2
7	1.2	1.5	2.2	1.6	2.0	2.0	1.9	4.0	3.6	5.7	1.7	1.2
8	1.2	1.5	2.2	1.6	2.0	5.0	1.8	4.0	3.2	6.0	1.7	1.2
9	1.2	1.5	2.2	1.6	2.0	30	1.8	3.8	2.7	5.6	1.6	1.2
10	1.2	2.0	2.2	1.6	2.0	24	1.8	3.4	2.4	5.2	1.6	1.2
11	1.2	2.5	2.2	1.6	2.0	17	2.5	2.8	2.5	5.4	1.6	1.2
12	1.2	3.0	2.1	1.6	2.0	15	5.2	2.4	2.4	16	1.6	1.2
13	1.2	3.0	2.0	1.6	2.0	13	8.2	2.2	2.7	16	1.6	1.2
14	1.2	3.0	2.0	1.6	2.0	11	8.8	2.0	2.8	12	1.6	1.2
15	1.2	3.0	2.0	1.6	2.0	11	8.5	2.0	2.8	8.6	1.6	1.2
16	1.2	3.0	1.9	1.6	2.0	11	8.0	1.7	2.9	6.4	1.6	1.2
17	1.2	2.5	1.8	1.6	1.8	10	7.2	1.7	3.2	5.2	1.6	1.2
18	1.0	2.5	1.8	1.6	1.5	9.5	6.5	2.0	3.7	35	1.6	1.2
19	1.0	2.5	1.8	1.6	1.2	8.5	6.0	4.0	3.9	30	1.6	1.2
20	1.0	2.5	1.8	1.6	1.2	8.0	5.5	5.6	3.9	16	1.6	1.2
21	1.0	2.4	1.8	1.6	1.2	7.5	4.7	8.0	3.9	6.0	1.5	1.2
22	1.0	2.4	1.8	1.8	1.2	7.1	4.3	9.0	3.7	2.0	1.5	1.2
23	1.0	2.4	1.8	2.0	1.2	4.8	4.2	10	3.6	2.0	1.5	1.2
24	1.0	2.4	1.8	2.0	1.2	3.1	3.9	9.3	3.3	2.0	1.5	1.2
25	1.0	2.4	1.8	2.0	1.0	2.7	3.6	7.1	2.8	1.9	1.5	1.2
26	1.0	2.4	1.8	2.0	1.0	2.5	3.4	5.6	2.5	1.9	1.5	4.0
27	1.0	2.4	1.7	2.0	1.0	2.2	3.1	4.7	2.4	1.9	1.5	6.6
28	1.2	2.4	1.7	2.0	1.0	2.1	2.8	4.5	2.5	1.9	1.5	8.2
29	1.5	2.4	1.6	2.0	---	2.0	2.7	4.3	2.4	1.9	1.4	7.6
30	1.5	2.2	1.6	2.0	---	2.0	2.7	4.5	9.4	1.9	1.2	6.1
31	1.5	---	1.6	2.0	---	2.0	---	7.1	---	1.9	1.2	---
TOTAL	37.9	66.8	60.4	53.4	46.5	219.9	120.8	132.0	129.0	237.7	49.5	62.5
MEAN	1.22	2.23	1.95	1.72	1.66	7.09	4.03	4.26	4.30	7.67	1.60	2.08
MAX	1.5	3.0	2.2	2.0	2.0	30	8.8	10	12	35	1.9	8.2
MIN	1.0	1.5	1.6	1.6	1.0	1.0	1.8	1.7	2.4	1.9	1.2	1.2
AC-FT	75	132	120	106	92	436	240	262	256	471	98	124
CAL YR 1976	TOTAL	6081.69	MEAN	16.6	MAX	312	MIN	1.0	AC-FT	12060		
WTR YR 1977	TOTAL	1216.40	MEAN	3.33	MAX	35	MIN	1.0	AC-			

RED RIVER OF THE NORTH BASIN

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05113360 LONG CREEK AT WESTERN CROSSING OF INTERNATIONAL BOUNDARY, SASK.
(International gaging station)

LOCATION.--Lat 49°00'01", long 103°21'08", in SE¼ sec.1, T.1, R.11 W., 2d meridian, Hydrologic Unit 09010001, on right bank 10 mi (16 km) south of Outram, Saskatchewan.

DRAINAGE AREA.--1,320 mi² (3,420 km²).

PERIOD OF RECORD.--March 1959 to current year.

GAGE.--Water-stage recorder and artificial control. Datum of gage is 1,894.00 ft (577.291 m) above mean sea level, international boundary survey.

REMARKS.--Records good. Discharge affected by storage in upstream reservoirs.

COOPERATION.--This station is one of the international gaging stations maintained by Canada under agreement with the United States.

AVERAGE DISCHARGE.--18 years, 39.0 ft³/s (1.104 m³/s) 28,260 acre-ft/yr (34.8 hm³/yr); median of yearly mean discharges, 28 ft³/s (0.79 m³/s) 20,300 acre-ft/yr (25 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,690 ft³/s (133 m³/s) Apr. 1, 1976, gage height, 12.05 ft (3.673 m); maximum gage height, 12.70 ft (3.871 m) Mar. 31, 1976 backwater from ice; no flow for several months each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 74 ft³/s (2.10 m³/s) May 22, gage height, 2.30 ft (0.701 m); no flow for several months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.03				0	.11	2.5	1.6	11	.04		
2	.02				0	.38	2.8	1.3	8.1	.03		
3	.01				0	.41	3.0	1.1	5.5	.03		
4	0				0	.37	3.4	1.1	4.4	.02		
5	0				0	.26	3.7	1.2	3.2	.02		
6	0				0	.53	3.8	1.1	2.2	.01		
7	0				0	.98	4.1	.91	1.4	.01		
8	0				.01	1.4	3.9	.83	.97	.01		
9	0				.01	1.6	3.7	1.0	.84	0		
10	0				.03	2.4	5.2	.91	.82	0		
11	0				.03	2.6	5.4	.73	.52	0		
12	0				.03	2.5	5.5	.54	.56	0		
13	0				.03	2.7	5.6	.38	.72	0		
14	0				.03	2.8	5.5	.31	.69	0		
15	0				.03	2.6	5.1	.16	.81	0		
16	0				.05	2.7	5.4	.27	.67	0		
17	0				.05	3.2	5.2	.37	.89	0		
18	0				.05	4.3	4.9	.56	.95	0		
19	0				.05	4.4	4.7	1.9	.98	0		
20	0				.05	4.1	4.4	6.7	.59	0		
21	0				.07	3.6	3.9	26	.53	0		
22	0				.07	3.3	3.0	69	.55	0		
23	0				.08	2.9	2.4	44	.50	0		
24	0				.09	2.7	1.8	27	.31	0		
25	0				.09	2.6	1.4	19	.24	0		
26	0				.10	2.4	1.4	52	.10	0		
27	0				.10	2.5	1.6	47	.09	0		
28	0				.10	2.6	1.8	34	.09	0		
29	0				---	2.5	1.9	21	.09	0		
30	0				---	2.5	2.0	18	.07	0		
31	0	---			---	3.0	---	15	---	0		---
TOTAL	.06	0	0	0	1.15	70.94	109.0	394.97	48.38	.17	0	0
MEAN	.002	0	0	0	.041	2.29	3.63	12.7	1.61	.006	0	0
MAX	.03	0	0	0	.10	4.4	5.6	69	11	.04	0	0
MIN	0	0	0	0	0	.11	1.4	.16	.07	0	0	0
AC-FT	.1	0	0	0	2.3	141	216	783	96	.3	0	0
CAL YR 1976	TOTAL	54960.44	MEAN 150	MAX 4350	MIN 0	AC-FT 109000						
WTR YR 1977	TOTAL	624.67	MEAN 1.71	MAX 69	MIN 0	AC-FT 1240						

RED RIVER OF THE NORTH BASIN

05113600 LONG CREEK NEAR NOONAN, ND
[International gaging station]

LOCATION.--Lat 48°58'52" long 103°04'34", near north line of NE¼ sec.1, T.163 N., R.96 W., Divide County, Hydrologic Unit 09010001, on right bank 150 ft (46 m) upstream from county highway bridge, 1.5 mi (2.4 km) upstream from international boundary, and 7 mi (11 km) northwest of Noonan.

DRAINAGE AREA.--1,790 mi² (4,640 km²), approximately, of which about 1,160 mi² (3,000 km²) is probably non-contributing.

PERIOD OF RECORD.--October 1959 to current year.

REVISED RECORDS.--WSP 2113: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 1,840 ft (561 m), from topographic map. Prior to Aug. 18, 1960, nonrecording gage at same site and datum.

REMARKS.--Records fair.

COOPERATION.--This station is one of the international gaging stations maintained by the United States under agreement with Canada.

AVERAGE DISCHARGE.--18 years, 50.3 ft³/s (1.424 m³/s), 36,440 acre-ft/yr (44.9 hm³/yr); median of yearly mean discharges, 34 ft³/s (0.96 m³/s), 24,600 acre-ft/yr (30 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,310 ft³/s (179 m³/s) Mar. 31, 1976, gage height, 17.61 ft (5.367 m); no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 70 ft³/s (1.98 m³/s), about May 23, gage height unknown, no peak above base of 200 ft³/s (5.66 m³/s); no flow from July 18 to Sept. 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.59	.90	.44	.40	.10	.63	6.1	1.9	16	.30		0
2	.59	.90	.44	.40	.15	.60	5.6	1.9	13	.26		0
3	.59	.90	.44	.40	.15	.60	6.1	2.0	10	.26		0
4	.63	.90	.44	.40	.20	.60	6.0	2.0	8.6	.18		0
5	.59	.95	.44	.40	.20	.70	5.6	1.9	7.1	.13		0
6	.62	.95	.44	.40	.20	1.0	6.0	1.8	5.2	.05		0
7	.60	.95	.44	.40	.20	1.3	6.0	1.7	4.0	.01		0
8	1.5	1.1	.44	.35	.20	1.6	5.6	1.6	3.1	.01		0
9	1.3	.95	.44	.35	.25	1.5	5.5	1.5	2.5	.02		0
10	1.3	.85	.44	.35	.30	1.6	5.0	1.4	2.5	.02		0
11	1.2	.80	.44	.30	.35	2.1	4.8	1.3	1.9	.02		0
12	1.2	.70	.44	.30	.40	7.7	4.6	1.2	1.8	.02		0
13	1.1	.70	.44	.30	.40	7.1	4.6	1.1	1.8	.02		0
14	1.1	.75	.44	.30	.40	6.2	4.5	1.0	1.6	.02		0
15	1.0	.75	.44	.30	.40	5.5	4.4	1.0	1.4	.02		0
16	1.0	.75	.44	.25	.40	4.7	4.2	1.0	1.0	.02		0
17	1.0	.75	.44	.25	.45	4.7	3.8	1.5	1.0	.01		0
18	1.0	.75	.44	.20	.50	5.5	3.6	2.0	1.1	0		0
19	1.0	.75	.44	.20	.50	5.6	3.1	3.0	1.1	0		0
20	1.1	.75	.44	.20	.55	5.7	2.9	7.0	1.1	0		0
21	1.1	.75	.44	.20	.60	5.8	2.8	15	.88	0		0
22	1.1	.75	.44	.20	.60	6.4	3.1	30	1.0	0		0
23	1.0	.75	.44	.20	.60	6.4	2.9	60	.88	0		0
24	1.0	.75	.44	.20	.60	6.7	2.8	50	.63	0		0
25	.95	.70	.44	.20	.60	6.7	2.8	35	.51	0		.02
26	.95	.70	.44	.20	.60	6.3	2.5	30	.43	0		.02
27	.95	.65	.44	.20	.60	6.5	2.2	50	.37	0		.01
28	.95	.60	.44	.15	.60	7.2	2.2	40	.33	0		.01
29	.95	.55	.44	.15	---	6.9	2.2	30	.30	0		.01
30	.95	.50	.40	.10	---	6.4	2.2	22	.30	0		.01
31	.95	---	.40	.10	---	6.2	---	18	---	0		---
TOTAL	29.86	23.50	13.56	8.35	11.10	136.43	123.7	417.8	91.43	1.37	0	.08
MEAN	.96	.78	.44	.27	.40	4.40	4.12	13.5	3.05	.044	0	.003
MAX	1.5	1.1	.44	.40	.60	7.7	6.1	60	16	.30	0	.02
MIN	.59	.50	.40	.10	.10	.60	2.2	1.0	.30	0	0	0
AC-FT	59	47	27	17	22	271	245	829	181	2.7	0	.2
CAL YR 1976	TOTAL	72604.50	MEAN 198	MAX 5710	MIN 0	AC-FT 144000						
WTR YR 1977	TOTAL	857.18	MEAN 2.35	MAX 60	MIN 0	AC-FT 1700						

05113750 EAST BRANCH SHORT CREEK RESERVOIR NEAR COLUMBUS, ND

LOCATION.--Lat 48°59'26", long 102°47'07", in SW¼NW¼ sec.32, T.164 N., R.93 W., Burke County, Hydrologic Unit 09010001, on left bank of reservoir on East Branch Short Creek, 0.5 mi (0.8 km) south of international boundary, and 6.0 mi (9.7 km) north of Columbus.

DRAINAGE AREA.--280 mi² (725 km²), of which 175 mi² (453 km²) is noncontributing.

PERIOD OF RECORD.--April 1963 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,860.00 ft (566.928 m) above mean sea level.

REMARKS.--Reservoir is formed by earth-fill dam; storage began April 1963. Outlet of lake is a fixed-crest concrete dam; average crest elevation, 1,886.90 ft (575.127 m) above mean sea level. Reservoir capacity at crest elevation, 1,200 acre-ft (1.48 hm³). The reservoir is operated for water supply and recreation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,850 acre-ft (2.28 hm³) Mar. 28, 1976, elevation, 32.13 ft (9.793 m); minimum, 910 acre-ft (1.12 hm³) Sept. 21, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,210 acre-ft (1.49 hm³) Jan. 21, elevation, 27.06 ft (8.248 m); minimum, 910 acre-ft (1.12 hm³) Sept. 21, elevation 24.14 ft (7.358 m).

MONTHEND GAGE HEIGHT AND CONTENTS AT 2400, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Gage height (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30-----	26.26	1,120	--
Oct. 31-----	*26.10	1,100	-20
Nov. 30-----	*26.10	1,100	0
Dec. 31-----	*26.00	1,090	-10
CAL YR 1976-----	--	--	-190
Jan. 31-----	25.97	1,090	0
Feb. 28-----	26.03	1,090	0
Mar. 31-----	26.07	1,100	+10
Apr. 30-----	25.79	1,070	-40
May 31-----	25.57	1,050	-20
June 30-----	25.26	1,020	-30
July 31-----	24.68	960	-60
Aug. 31-----	24.27	920	-40
Sept. 30-----	24.28	930	+10
WTR YR 1977-----	--	--	-170

* - Estimated

RED RIVER OF THE NORTH BASIN

05113800 SHORT CREEK BELOW INTERNATIONAL BOUNDARY NEAR ROCHE PERCEE, SASK.
(International gaging station)

LOCATION.--Lat 49°01'42", long 102°51'00", in SW¼ sec.14, T.1, R.7 W., 2d meridian, Hydrologic Unit 09010001, 4 mi (6 km) southwest of Roche Percee, Saskatchewan and 5 mi (8 km) upstream from mouth.

DRAINAGE AREA.--480 mi² (1,240 km²).

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

GAGE.--Water-stage recorder.

REMARKS.--Records good except those for the winter period, which are poor.

COOPERATION.--This station is one of the international gaging stations maintained by Canada under agreement with the United States.

AVERAGE DISCHARGE.--17 years, 13.9 ft³/s (0.394 m³/s) 10,070 acre-ft/yr (12.4 hm³/yr); median of yearly mean discharges, 4.8 ft³/s (0.14 m³/s) 3,500 acre-ft/yr (4.3 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,700 ft³/s (48.1 m³/s) Apr. 7, 1969, gage height, 14.33 ft (4.368 m); maximum gage height, 14.39 ft (4.386 m) Mar. 28, 1960; no flow on many days each year.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 2.8 ft³/s (0.079 m³/s) Apr. 12, gage height, unknown; no flow for several months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						0	1.0	.12	.33	.01		0
2						0	1.2	.11	.19	.01		0
3						0	1.4	.06	.07	.01		0
4						0	1.6	.05	.17	.01		0
5						0	1.8	.12	.20	0		0
6						.01	2.1	.14	.13	0		0
7						.01	2.2	.12	.09	0		0
8						.01	2.4	.10	.03	0		0
9						.01	2.5	.09	.01	0		0
10						.01	2.6	.01	.01	0		0
11						.01	2.7	0	.01	0		0
12						.02	2.8	0	.04	0		0
13						.02	2.5	0	.04	0		0
14						.02	2.2	0	.03	0		0
15						.02	1.9	0	.01	0		0
16						.03	1.6	0	.01	0		0
17						.03	1.2	.01	0	0		0
18						.04	.95	.04	0	0		0
19						.04	.74	.06	0	0		0
20						.05	.56	.01	0	0		0
21						.06	.54	.01	0	0		0
22						.07	.44	0	0	0		0
23						.08	.46	.01	0	0		0
24						.09	.35	.01	0	0		0
25						.10	.30	1.6	0	0		0
26						.12	.22	1.6	0	0		0
27						.18	.13	1.3	0	0		0
28						.25	.08	1.1	0	0		0
29					---	.40	.14	.75	.01	0		0
30					---	.60	.11	.64	.01	0		.01
31		---			---	.80	---	.43	---	0		---
TOTAL	0	0	0	0	0	3.08	38.72	8.49	1.39	.04	0	.01
MEAN	0	0	0	0	0	.099	1.29	.27	.046	.001	0	.0003
MAX	0	0	0	0	0	.80	2.8	1.6	.33	.01	0	.01
MIN	0	0	0	0	0	0	.08	0	0	0	0	0
AC-FT	0	0	0	0	0	6.1	77	17	2.8	.08	0	.02
CAL YR 1976	TOTAL	18432.51	MEAN	50.4	MAX	1300	MIN	0	AC-FT	36560		
WTR YR 1977	TOTAL	51.73	MEAN	.14	MAX	2.8	MIN	0	AC-FT	103		

05114000 SOURIS (MOUSE) RIVER NEAR SHERWOOD, ND
(International gaging station)

LOCATION.--Lat 48°59'24", long 101°57'28", in NW¼SE¼NE¼ sec.33, T.164 N., R.87 W., Renville County, Hydrologic Unit 09010001, on right bank 0.8 mi (1.3 km) downstream from international boundary and 16 mi (26 km) northwest of Sherwood and at mile 511.4 (kilometer 822.8).

DRAINAGE AREA.--8,940 mi² (23,150 km²), approximately, of which about 5,900 mi² (15,300 km²) is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1930 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1934, 1945. WSP 2113: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,603.73 ft (488.817 m) above mean sea level. Prior to Apr. 8, 1935, nonrecording gage at same site and datum.

REMARKS.--Records good except those for the winter period, which are fair. Some regulation at low flows by reservoirs in Canada. Some small diversions for irrigation and municipal supply.

COOPERATION.--This station is one of the international gaging stations maintained by the United States under agreement with Canada.

AVERAGE DISCHARGE.--47 years, 137 ft³/s (3.880 m³/s), 99,260 acre-ft/yr (122 hm³/yr); median of yearly mean discharges, 78 ft³/s (2.21 m³/s), 56,500 acre-ft/yr (70 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,800 ft³/s (419 m³/s) Apr. 10, 1976, gage height, 25.15 ft (7.666 m); no flow at times in some years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1927 reached a stage of about 22 ft (6.7 m) and flood in 1904 reached a stage of about 25.8 ft (7.86 m) from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 76 ft³/s (2.15 m³/s) Apr. 17, gage height, 2.76 ft (0.841 m); minimum daily, 0.40 ft³/s (0.011 m³/s) Sept. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	27	10	8.0	7.0	6.0	25	30	42	7.6	3.0	.85
2	28	31	9.0	8.0	7.0	6.0	23	29	37	7.3	2.9	.85
3	25	30	9.0	8.0	7.0	6.0	25	28	32	6.8	2.8	.90
4	22	24	10	8.0	7.0	6.0	23	28	29	6.8	2.7	1.5
5	22	25	10	8.0	7.0	7.0	23	36	27	6.2	2.4	1.3
6	21	27	11	8.0	6.5	7.0	23	34	24	5.7	2.3	1.2
7	20	22	11	8.0	6.0	8.0	24	35	22	5.4	2.2	1.0
8	20	21	11	8.0	6.0	9.0	25	44	20	5.1	2.4	.90
9	18	21	11	7.5	6.0	10	28	41	19	5.0	2.2	.90
10	18	20	11	7.5	6.0	11	31	37	18	5.1	1.7	.90
11	18	16	11	7.5	6.0	11	30	34	20	5.4	1.6	.90
12	18	17	11	7.5	6.0	11	28	31	19	5.2	1.4	.80
13	17	18	11	8.0	6.0	12	43	28	22	5.2	1.2	.80
14	16	20	11	8.0	6.0	12	51	27	21	5.6	1.1	.80
15	16	20	12	8.0	5.5	14	57	27	23	5.8	1.0	.70
16	16	18	12	8.0	5.5	16	70	25	22	6.2	1.1	.60
17	15	18	12	8.0	5.5	17	75	26	21	6.0	1.0	.50
18	16	19	12	8.5	5.5	17	73	27	22	5.6	.95	.50
19	15	18	12	8.5	6.0	17	68	31	20	5.2	.90	.50
20	15	18	11	8.5	7.0	18	62	34	18	5.0	.85	.45
21	15	17	11	8.5	7.0	18	55	35	17	4.7	.80	.40
22	16	16	11	8.5	7.0	18	50	38	16	4.4	.76	.68
23	15	16	11	8.5	7.0	20	47	38	15	4.2	.74	.68
24	16	15	11	8.5	7.0	20	43	46	13	3.8	.72	1.1
25	15	16	11	8.5	7.0	22	40	56	12	3.5	.72	2.0
26	15	15	11	8.5	6.5	20	36	51	11	3.1	.70	1.7
27	16	14	11	8.0	6.5	20	35	45	10	3.4	.70	1.3
28	16	13	10	7.5	6.5	22	34	42	9.7	3.6	.72	1.3
29	18	12	10	7.0	---	23	32	43	8.8	3.4	.76	1.5
30	27	11	9.0	7.0	---	19	31	45	8.1	2.9	.80	1.3
31	25	---	8.0	7.0	---	26	---	43	---	2.9	.80	---
TOTAL	581	575	332.0	247.0	179.0	449.0	1210	1114	598.6	156.1	43.92	28.81
MEAN	18.7	19.2	10.7	7.97	6.39	14.5	40.3	35.9	20.0	5.04	1.42	.96
MAX	31	31	12	8.5	7.0	26	75	56	42	7.6	3.0	2.0
MIN	15	11	8.0	7.0	5.5	6.0	23	25	8.1	2.9	.70	.40
AC-FT	1150	1140	659	490	355	891	2400	2210	1190	310	87	57
CAL YR 1976	TOTAL	317183.00	MEAN	867	MAX	13700	MIN	8.0	AC-FT	629100		
WTR YR 1977	TOTAL	5514.43	MEAN	15.1	MAX	75	MIN	.40	AC-FT	10940		

RED RIVER OF THE NORTH BASIN

0S114000 SOURIS (MOUSE) RIVER NEAR SHERWOOD, ND--Continued
(International gaging station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1973 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 1974 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 2,050 micromhos Dec. 19, 1975; minimum, 343 micromhos Apr. 14, 1976.

WATER TEMPERATURES: Maximum, 23.5°C July 5, 1977; minimum, 0.0°C on many days during winter months.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 306 mg/L May 22, 1975; minimum daily mean, 6 mg/L Feb. 10, 11, 1976.

SEDIMENT LOADS: Maximum daily, 2,810 tons (2,550 metric tons) Apr. 9, 1976; minimum daily, 0.01 ton (0.01 metric ton) Sept. 20, 21, 1977.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 2,000 micromhos Feb. 14-20; minimum, 810 micromhos Apr. 27.

WATER TEMPERATURES: Maximum, 23.5°C July 5; minimum, 0.0°C on many days during winter months.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 60 mg/L May 25; minimum daily, 8 mg/L Feb. 10-19.

SEDIMENT LOADS: Maximum daily, 9.1 tons (8.3 metric tons) May 25; minimum daily, 0.01 ton (0.01 metric ton) Sept. 20, 21.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	CHEMICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)
OCT												
05...	1245	E15	975	8.2	6.0	--	7	8.6	73	29	720	42
20...	1230	15	1060	8.1	2.0	17	5	11.7	89	49	815800	82970
NOV												
02...	1200	E40	1200	8.2	1.5	--	4	12.6	93	21	8200	856
17...	1320	.18	1260	8.2	.0	18	5	15.6	113	37	853	89
DEC												
01...	1330	E10	1480	7.8	.0	--	5	11.2	81	41	846	82
15...	1410	12	1600	7.7	.0	20	8	2.5	18	36	835	81
JAN												
04...	0945	E8.0	1680	7.6	.0	--	4	.2	0	43	826	E1
18...	1700	8.0	1620	7.5	.0	45	5	.4	2	34	87	E1
FEB												
01...	1705	E8.0	1650	7.6	.0	--	6	.0	0	48	--	8542
16...	1050	5.0	1990	7.6	.0	35	7	.0	0	35	829	E1
MAR												
01...	0945	E4.0	1890	7.6	.0	--	4	1.3	0	34	84	81
23...	1130	19	1680	8.2	.0	33	4	13.0	94	39	82000	84
APR												
06...	0950	E18	1180	8.7	.0	--	8	15.5	113	34	826	85
20...	1205	59	850	8.5	11.5	12	2	10.1	97	35	583	810
MAY												
03...	1330	E25	1160	8.3	14.0	--	2	9.9	101	40	1450	45
18...	1100	26	1160	8.0	16.5	45	6	4.4	48	48	11000	225
JUN												
01...	1045	E50	1310	8.3	18.5	--	9	6.5	73	48	810000	115
21...	1455	17	1340	8.1	19.0	25	7	--	--	48	88500	78
JUL												
06...	1225	E3.0	1310	8.0	23.0	--	30	4.1	50	51	22000	345
20...	1430	E5.0	1220	8.3	23.5	55	30	8.9	110	80	100000	--
AUG												
02...	1535	2.8	128	--	21.0	--	--	--	--	--	--	--
10...	1825	E.20	1300	8.4	16.0	--	9	9.1	97	40	2500	120
24...	1945	.70	1300	8.2	18.0	45	10	8.2	8	40	14500	175
SEP												
07...	1415	1.0	1240	8.1	15.0	--	4	6.3	65	47	87330	63
21...	1535	.40	1220	7.8	12.5	43	6	3.4	34	46	3890	827

B - Results based on colony count outside the acceptable range (non-ideal colony count).
E - Estimated.

RED RIVER OF THE NORTH BASIN

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05114000 SOURIS (MOUSE) RIVER NEAR SHERWOOD, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	FECAL STREP- TOCOC KF AGAR (COL. PER 100 ML)	HARD- NESS (CA, MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	ALKA- LITY AS CAC03 (MG/L)
OCT												
05...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	390	46	92	39	93	33	2.0	9.4	421	0	345
NOV												
02...	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	430	36	94	47	130	39	2.7	12	478	0	392
DEC												
01...	--	--	--	--	--	--	--	--	--	--	--	--
15...	--	580	72	130	63	150	35	2.7	12	624	0	512
JAN												
04...	--	--	--	--	--	--	--	--	--	--	--	--
18...	--	600	54	140	60	160	36	2.9	11	661	0	542
FEB												
01...	--	--	--	--	--	--	--	--	--	--	--	--
16...	--	610	0	140	64	260	47	4.6	12	804	0	659
MAR												
01...	--	--	--	--	--	--	--	--	--	--	--	--
23...	--	470	0	98	55	230	51	4.6	11	590	0	480
APR												
06...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	270	41	49	36	87	40	2.3	7.5	280	0	230
MAY												
03...	--	--	--	--	--	--	--	--	--	--	--	--
18...	--	420	110	79	54	100	33	2.1	14	380	0	310
JUN												
01...	--	--	--	--	--	--	--	--	--	--	--	--
21...	--	490	150	88	65	140	38	2.8	11	410	0	340
JUL												
06...	B480	--	--	--	--	--	--	--	--	--	--	--
20...	--	450	95	82	59	120	36	2.5	11	430	0	350
AUG												
02...	--	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--	--
24...	--	460	64	86	59	130	38	2.6	10	480	0	390
SEP												
07...	--	--	--	--	--	--	--	--	--	--	--	--
21...	--	460	74	90	57	100	32	2.0	10	470	0	390

DATE	CARBON DIOXIDE (CO2) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO2) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO- GEN (N) (MG/L)
OCT												
05...	--	--	--	--	--	641	--	.87	--	.03	--	.04
20...	5.4	170	54	.2	6.7	694	673	.94	28.1	.13	.11	.05
NOV												
02...	--	--	--	--	--	788	--	1.07	--	.11	--	.01
17...	4.8	250	55	.2	2.5	863	827	1.17	.42	.00	.00	.00
DEC												
01...	--	--	--	--	--	1030	--	1.40	--	.01	--	.00
15...	20	320	78	.3	7.6	1090	1070	1.48	35.3	.31	.31	.21
JAN												
04...	--	--	--	--	--	1260	--	1.71	--	.20	--	.67
18...	33	310	79	.3	18	1110	1110	1.51	24.0	.13	.15	1.2
FEB												
01...	--	--	--	--	--	1000	--	1.36	--	.21	--	.51
16...	32	420	75	.3	18	1390	1390	1.89	18.8	.04	.06	1.7
MAR												
01...	--	--	--	--	--	1330	--	1.81	--	.18	--	1.8
23...	6.0	400	57	.2	5.8	1190	1150	1.62	61.0	.47	.45	.56
APR												
06...	--	--	--	--	--	784	--	1.07	--	.00	--	.01
20...	1.4	190	21	.1	.5	567	530	.77	90.3	.01	.01	.01
MAY												
03...	--	--	--	--	--	789	--	1.07	--	.04	--	.04
18...	6.1	290	31	.2	6.9	793	763	1.08	55.7	.02	.02	.05
JUN												
01...	--	--	--	--	--	927	--	1.26	--	.07	--	.11
21...	5.2	360	44	.2	9.8	944	921	1.28	43.3	.07	.07	.08
JUL												
06...	--	--	--	--	--	926	--	1.26	--	.12	--	.22
20...	3.4	310	45	.2	14	870	853	1.18	--	.05	.06	.01
AUG												
02...	--	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	885	--	1.20	--	.01	--	.01
24...	4.8	250	61	.2	14	878	847	1.19	1.66	.08	.09	.04
SEP												
07...	--	--	--	--	--	823	--	1.12	2.22	.05	--	.08
21...	12	220	62	.2	12	812	785	1.10	.88	.07	.05	.09

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

RED RIVER OF THE NORTH BASIN

05114000 SOURIS (MOUSE) RIVER NEAR SHERWOOD, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL ORGANIC NITRO- GEN (N) (MG/L)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L)	TOTAL NITRO- GEN (N) (MG/L)	TOTAL NITRO- GEN (NO3) (MG/L)	TOTAL PHOS- PHORUS (P) (MG/L)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L)	TOTAL ORTHO PHOS- PHORUS (P) (MG/L)	TOTAL HYDRO- LYZABLE PHOS- PHORUS (P) (MG/L)	TOTAL ORTHO + HYDRO- PHOS- PHORUS (P) (MG/L)	TOTAL ORGANIC PHOS- PHORUS (P) (MG/L)
OCT										
05...	1.1	1.1	1.1	5.0	.09	--	--	--	--	--
20...	.82	.87	1.0	4.4	.06	.02	.00	.03	.03	.03
NOV										
02...	.56	.57	.68	3.0	.04	--	--	--	--	--
17...	.88	.88	.88	3.9	.04	.03	.00	.01	.01	.03
DEC										
01...	1.1	1.1	1.1	4.9	.05	--	--	--	--	--
15...	.99	1.2	1.5	6.7	.07	.03	.02	.02	.04	.01
JAN										
04...	.73	1.4	1.6	7.1	.06	--	--	--	--	--
18...	.80	2.0	2.1	9.4	.07	.06	.05	.00	.05	.00
FEB										
01...	.01	.52	.73	3.2	.17	--	--	--	--	--
16...	.30	2.0	2.0	9.0	.06	.04	.05	.00	.03	.00
MAR										
01...	.10	1.9	2.1	9.2	.08	--	--	--	--	--
23...	.84	1.4	1.9	8.3	.07	.03	.04	.00	.04	.00
APR										
06...	.80	.81	.81	3.6	.07	--	--	--	--	--
20...	.64	.65	.66	2.9	.03	.01	.03	.00	.00	.00
MAY										
03...	.78	.82	.86	3.8	.10	--	--	--	--	--
18...	1.6	1.6	1.6	7.2	.24	.19	.13	.06	.19	.00
JUN										
01...	1.9	2.0	2.1	9.2	.17	--	--	--	--	--
21...	.90	.98	1.1	4.6	.12	.08	.04	.05	.09	.00
JUL										
06...	.98	1.2	1.3	5.8	.26	--	--	--	--	--
20...	1.9	1.9	2.0	8.6	.22	.11	.06	.05	.11	.05
AUG										
10...	1.9	1.9	1.9	8.5	.31	--	--	--	--	--
24...	2.4	2.4	2.5	11	.27	.18	.14	.07	.21	.00
SEP										
07...	.79	.87	.92	4.1	.21	--	--	--	--	--
21...	1.0	1.1	1.2	5.2	.28	.19	.15	.08	.23	.00

DATE	DIS- SOLVED ALUM- INUM (AL) (UG/L)	DIS- SOLVED ARSENIC (AS) (UG/L)	DIS- SOLVED BARIUM (BA) (UG/L)	DIS- SOLVED BERYL- LIUM (BE) (UG/L)	DIS- SOLVED BORON (B) (UG/L)	DIS- SOLVED CAD- MIUM (CD) (UG/L)	DIS- SOLVED CHRO- MIUM (CR) (UG/L)	DIS- SOLVED COBALT (CO) (UG/L)	DIS- SOLVED COPPER (CU) (UG/L)
OCT									
05...	--	--	--	--	--	--	--	--	--
20...	20	1	100	0	180	0	0	1	1
NOV									
02...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	250	--	--	--	--
DEC									
01...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	270	--	--	--	--
JAN									
04...	--	--	--	--	--	--	--	--	--
18...	--	--	--	--	280	--	--	--	--
FEB									
01...	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	290	--	--	--	--
MAR									
01...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	390	--	--	--	--
APR									
06...	--	--	--	--	--	--	--	--	--
20...	10	2	100	0	140	0	0	0	0
MAY									
03...	--	--	--	--	--	--	--	--	--
18...	--	--	--	--	160	--	--	--	--
JUN									
01...	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	200	--	--	--	--
JUL									
06...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	200	--	--	--	--
AUG									
10...	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	200	--	--	--	--
SEP									
07...	--	--	--	--	--	--	--	--	--
21...	0	8	100	0	200	1	0	0	0

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WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED LITHIUM (LI) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	DIS-SOLVED SOLYB-DENUM (MO) (UG/L)	DIS-SOLVED NICKEL (NI) (UG/L)	DIS-SOLVED SELENIUM (SE) (UG/L)
OCT 05...	--	--	--	--	--	--	--	--
20...	0	0	50	250	.0	1	4	1
APR 06...	--	--	--	--	--	--	--	--
20...	50	0	50	80	.0	1	2	0
SEP 07...	--	--	--	--	--	--	--	--
21...	50	5	70	960	.0	1	3	--

DATE	DIS-SOLVED SILVER (AG) (UG/L)	DIS-SOLVED STRONTIUM (SR) (UG/L)	DIS-SOLVED VANADIUM (V) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	CYANIDE (CN) (MG/L)	PHENOLS (UG/L)
OCT 05...	--	--	--	--	13	--	--
20...	0	430	.7	10	9.1	.00	2
NOV 02...	--	--	--	--	9.1	--	--
17...	--	--	--	--	11	--	0
DEC 01...	--	--	--	--	13	--	--
15...	--	--	--	--	9.3	--	1
JAN 04...	--	--	--	--	10	--	--
18...	--	--	--	--	--	--	1
FEB 01...	--	--	--	--	15	--	--
16...	--	--	--	--	11	--	1
MAR 01...	--	--	--	--	10	--	--
23...	--	--	--	--	13	--	0
APR 06...	--	--	--	--	10	--	--
20...	0	300	1.4	0	9.6	.00	3
MAY 18...	--	--	--	--	16	--	1
JUN 01...	--	--	--	--	16	--	--
21...	--	--	--	--	15	--	1
JUL 06...	--	--	--	--	14	--	--
20...	--	--	--	--	22	--	2
AUG 10...	--	--	--	--	15	--	--
24...	--	--	--	--	13	--	3
SEP 07...	--	--	--	--	13	--	--
21...	0	410	.0	10	12	.00	4

[illegible]

RED RIVER OF THE NORTH BASIN

05114000 SOURIS (MOUSE) RIVER NEAR SHERWOOD, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL HEPTA- CHLOR (UG/L)	TOTAL HEPTA- CHLOR EPOXIDE (UG/L)	TOTAL LINDANE (UG/L)	TOTAL MALA- THION (UG/L)	TOTAL METHYL PARA- THION (UG/L)	TOTAL METHYL TRI- THION (UG/L)	TOTAL PARA- THION (UG/L)	TOTAL TOX- APHENE (UG/L)	TOTAL TRI- THION (UG/L)	TOTAL 2,4-D (UG/L)	TOTAL 2,4,5-T (UG/L)
OCT 20...	.00	.00	.00	.00	.00	.00	.00	0	.00	.20	.00
JAN 18...	.00	.00	.00	.00	.00	.00	.00	0	.00	.00	.00
MAY 18...	.00	.00	.00	.00	.00	.00	.00	0	.00	.00	.00
JUL 20...	.00	.00	.00	.00	.00	.00	.00	0	.00	.04	.00
SEP 21...	.00	.00	.00	.00	.00	.00	.00	0	.00	.01	.00

DATE	TOTAL SILVEX (UG/L)	SUS- PENDE SEDI- MENT (MG/L)	SUS- PENDE SEDI- MENT DIS- CHARGE (T/DAY)	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
OCT 20...	.00	18	.73	--	--	--	--
NOV 17...	--	37	.02	--	--	--	--
DEC 15...	--	23	.75	--	--	--	--
JAN 18...	.00	12	.26	--	--	--	--
FEB 16...	--	40	.54	--	--	--	--
MAR 23...	--	12	.62	--	--	--	--
APR 20...	--	11	1.8	7	11	41	59
MAY 18...	.00	24	1.7	--	--	--	--
JUN 21...	--	38	1.7	--	--	--	--
JUL 20...	.00	120	--	12	19	42	74
AUG 24...	--	46	.09	--	--	--	--
SEP 21...	.00	12	.01	6	8	50	83

DATE	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
APR 20...	62	64	68	75	83	96
MAY 18...	--	--	--	--	--	--
JUN 21...	--	--	--	--	--	--
JUL 20...	92	95	96	98	100	--
AUG 24...	--	--	--	--	--	--
SEP 21...	93	97	99	100	--	--

RED RIVER OF THE NORTH BASIN
05114000 SOURIS (MOUSE) RIVER NEAR SHERWOOD, ND--Continued

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SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	940	---	1510	1650	1630	1900	1280	1050	1280	1280	1280	1240
2	985	1100	1550	1610	1630	1900	1290	1100	1250	1280	1280	1230
3	950	990	1580	---	1630	1900	1300	1100	1250	1270	1270	1230
4	967	1250	1550	---	1650	1900	1230	1130	1240	1270	1280	1230
5	950	1280	1580	---	1680	1880	1230	1110	1280	1270	1290	1230
6	965	1280	1580	---	1750	1900	1180	1140	1280	1310	1300	1230
7	990	1280	1600	1640	1750	1900	1120	1140	1250	1250	1290	1250
8	---	1280	1600	1640	1800	1800	1060	1150	---	1250	1280	1230
9	971	1120	1600	1640	1800	1800	1050	1130	1250	1250	1300	1230
10	945	1230	1600	1650	1900	1800	1030	1300	1230	1250	1300	1230
11	985	1220	1600	1640	1900	1730	975	1120	1220	1210	1300	1230
12	940	1230	1600	1640	1930	1650	1020	1120	1220	1200	1300	1230
13	998	1250	1600	1640	1950	1550	1020	1110	1200	1200	1300	1200
14	965	1280	1650	1620	2000	1550	1080	1100	1200	1260	1290	1200
15	1010	1280	1650	1640	2000	1580	1020	1110	1100	1260	1300	1200
16	950	1290	1680	1640	2000	1600	1100	1100	1130	1230	1300	1200
17	1030	1300	1680	1640	2000	1650	950	1110	1200	1300	1300	1200
18	980	1300	1680	1620	2000	1700	1020	1130	1200	1300	1300	1220
19	1050	1300	1680	1620	2000	1700	875	1100	1230	1290	1330	1200
20	990	1350	1680	1620	2000	1650	860	1120	1250	1280	1300	1200
21	1060	1380	1680	1600	1980	1630	820	1120	1280	1250	1320	1200
22	1080	1380	1680	1600	1980	1630	820	1100	1280	1280	1260	1180
23	1090	1350	1700	1600	1980	1630	900	1110	1280	1280	1280	1190
24	1100	1390	1700	1600	1980	1600	950	1110	1300	1290	1260	1150
25	1120	1390	1700	1600	1950	1500	1000	1120	1300	1280	1260	1100
26	1140	1400	1700	1600	1930	1500	1030	1110	1250	1290	1250	1100
27	1100	1490	1700	1600	1930	1490	810	1110	1280	1300	1250	1100
28	1110	1500	1690	1590	1900	1490	1010	1120	1280	1280	1280	1120
29	1110	---	1690	1600	---	1490	1030	1110	1290	1290	1250	1120
30	1140	1500	1600	1600	---	1490	1080	1130	1240	1280	1250	1120
31	1140	---	1510	1630	---	1410	---	1220	---	1310	1250	---
MEAN	1030	1300	1640	1620	1880	1670	1040	1120	1240	1270	1280	1190

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13.5	---	0.5	0.0	0.0	0.0	0.0	13.0	16.0	16.0	19.0	14.5
2	11.0	1.5	0.0	0.0	0.0	0.5	0.0	12.0	18.0	19.0	18.0	13.0
3	12.5	0.0	0.0	---	0.0	0.0	0.0	12.5	18.0	22.0	18.0	13.5
4	8.0	0.0	1.0	---	0.0	0.0	0.0	15.5	17.5	21.0	16.5	14.0
5	5.5	0.0	0.0	---	0.0	0.0	0.0	13.0	17.5	23.5	16.5	14.5
6	5.0	0.5	0.5	---	0.0	0.0	0.0	14.0	18.0	22.0	16.0	14.0
7	6.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0	20.0	19.0	16.5	15.0
8	---	0.0	0.0	0.0	0.0	0.5	0.0	14.0	---	18.5	16.5	16.5
9	5.5	0.0	0.0	0.0	0.0	0.5	1.0	17.0	20.5	16.0	18.0	13.0
10	5.5	0.0	0.0	0.0	0.0	0.0	5.5	18.0	20.0	19.5	15.5	12.0
11	8.0	0.0	0.0	0.0	0.0	0.0	3.0	18.5	20.0	19.5	14.0	14.0
12	7.5	0.0	0.0	0.0	0.0	0.0	10.0	17.5	17.0	17.5	16.0	14.0
13	6.5	0.0	0.0	0.0	0.0	0.0	11.0	19.5	14.5	18.0	13.5	12.5
14	7.0	0.0	0.0	0.0	0.0	0.0	8.5	20.0	15.0	19.5	14.0	14.0
15	4.0	0.0	0.0	0.0	0.0	0.0	9.5	20.0	15.0	19.5	15.5	14.5
16	4.0	0.0	0.0	0.0	0.0	0.0	11.0	18.5	16.5	19.5	15.5	15.5
17	0.0	0.0	0.0	0.0	0.0	0.0	10.0	18.0	18.5	21.0	13.5	14.5
18	2.0	0.0	0.0	0.0	0.0	0.0	11.0	17.5	17.5	22.0	13.5	13.0
19	3.0	0.0	0.0	0.0	0.0	0.0	11.5	16.5	17.5	22.5	15.5	11.5
20	2.5	0.0	0.0	0.0	0.0	0.0	10.0	16.0	18.0	20.5	16.0	12.0
21	0.0	0.0	0.0	0.0	0.0	0.0	9.5	15.5	18.5	19.0	15.0	13.5
22	0.5	0.0	0.0	0.0	0.0	0.0	10.5	17.0	19.0	20.0	15.5	13.0
23	0.0	0.0	0.0	0.0	0.0	0.0	11.0	17.0	20.5	22.0	15.0	13.0
24	0.0	0.0	0.0	0.0	0.0	0.0	10.5	18.0	20.5	23.0	14.0	13.0
25	0.5	0.0	0.0	0.0	0.0	0.0	12.0	21.0	21.0	21.0	17.5	12.0
26	0.5	0.0	0.0	0.0	0.0	0.0	16.5	21.5	22.0	20.0	17.0	12.0
27	3.0	0.0	0.0	0.0	0.0	0.0	14.0	20.5	21.0	21.0	14.0	11.0
28	1.5	0.0	0.0	0.0	0.0	0.0	12.5	19.0	19.0	22.0	14.0	10.5
29	1.5	0.0	0.0	0.0	---	0.0	15.5	17.0	20.0	22.0	14.5	10.0
30	2.0	0.0	0.0	0.0	---	0.0	14.0	16.5	18.0	21.5	13.0	10.0
31	0.0	---	0.0	0.0	---	0.0	---	17.0	---	18.0	16.0	---
MEAN	4.0	0.0	0.0	0.0	0.0	0.0	7.5	17.0	18.5	20.0	15.5	13.0

RED RIVER OF THE NORTH BASIN

05114000 SOURIS (MOUSE) RIVER NEAR SHERWOOD, ND--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

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	12	1.0	36	2.6	28	0.76	16	0.35	10	0.19	10	0.16
2	12	0.91	44	3.7	28	0.68	16	0.35	10	0.19	10	0.16
3	14	0.94	40	3.2	26	0.63	14	0.30	10	0.19	10	0.16
4	14	0.83	38	2.5	26	0.70	14	0.30	10	0.19	10	0.16
5	14	0.83	36	2.4	26	0.70	14	0.30	10	0.19	10	0.19
6	16	0.91	36	2.6	26	0.77	14	0.30	10	0.18	10	0.19
7	16	0.86	36	2.1	26	0.77	14	0.30	10	0.16	10	0.22
8	16	0.86	36	2.0	26	0.77	14	0.30	10	0.16	10	0.24
9	16	0.78	36	2.0	26	0.77	14	0.28	10	0.16	10	0.27
10	16	0.78	34	1.8	24	0.71	14	0.28	8	0.13	10	0.30
11	16	0.78	34	1.5	24	0.71	14	0.28	8	0.13	10	0.30
12	16	0.78	34	1.6	24	0.71	14	0.28	8	0.13	10	0.30
13	18	0.83	34	1.7	24	0.71	12	0.26	8	0.13	10	0.32
14	18	0.78	36	1.9	24	0.71	12	0.26	8	0.13	10	0.32
15	18	0.78	36	1.9	22	0.71	12	0.26	8	0.12	10	0.38
16	18	0.78	36	1.7	22	0.71	12	0.26	8	0.12	12	0.52
17	18	0.73	36	1.7	22	0.71	12	0.26	8	0.12	12	0.55
18	18	0.78	36	1.8	22	0.71	12	0.28	8	0.12	12	0.55
19	18	0.73	36	1.7	22	0.71	12	0.28	8	0.13	12	0.55
20	18	0.73	36	1.7	22	0.65	12	0.28	10	0.19	12	0.58
21	18	0.73	34	1.6	22	0.65	12	0.28	10	0.19	12	0.58
22	20	0.86	34	1.5	20	0.59	12	0.28	10	0.19	12	0.58
23	20	0.81	34	1.5	20	0.59	12	0.28	10	0.19	12	0.65
24	20	0.86	32	1.3	20	0.59	10	0.23	10	0.19	12	0.65
25	20	0.81	32	1.4	20	0.59	10	0.23	10	0.19	12	0.71
26	20	0.81	32	1.3	18	0.53	10	0.23	10	0.18	12	0.65
27	20	0.86	32	1.2	18	0.53	10	0.22	10	0.18	12	0.65
28	20	0.86	30	1.1	18	0.49	10	0.20	10	0.18	12	0.71
29	24	1.2	30	0.97	18	0.49	10	0.19	---	---	12	0.75
30	30	2.2	28	0.83	16	0.39	10	0.19	---	---	12	0.62
31	34	2.3	---	---	16	0.35	10	0.19	---	---	12	0.84
TOTAL	---	28.70	---	54.80	---	20.09	---	8.28	---	4.55	---	13.81

	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)
DAY												
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	12	0.81	10	0.81	28	3.2	46	0.94	36	0.29	28	0.06
2	12	0.75	10	0.78	28	2.8	46	0.91	34	0.27	30	0.07
3	12	0.81	10	0.76	26	2.2	48	0.88	32	0.24	30	0.07
4	12	0.75	10	0.76	26	2.0	48	0.88	30	0.22	32	0.13
5	12	0.75	26	2.5	24	1.7	50	0.84	30	0.19	30	0.11
6	12	0.75	36	3.3	24	1.6	52	0.80	28	0.17	28	0.09
7	12	0.78	32	3.0	24	1.4	56	0.82	26	0.15	28	0.08
8	12	0.81	38	4.5	22	1.2	56	0.77	24	0.16	26	0.06
9	12	0.91	36	4.0	22	1.1	56	0.76	20	0.12	24	0.06
10	14	1.2	34	3.4	20	0.97	56	0.77	18	0.08	22	0.05
11	14	1.1	32	2.9	20	1.1	56	0.82	18	0.08	20	0.05
12	14	1.1	30	2.5	20	1.0	56	0.79	18	0.07	18	0.04
13	16	1.9	28	2.1	28	1.7	56	0.79	16	0.05	16	0.03
14	18	2.5	28	2.0	30	1.7	56	0.85	16	0.05	14	0.03
15	18	2.8	28	2.0	36	2.2	56	0.88	16	0.04	14	0.03
16	20	3.8	26	1.8	38	2.3	56	0.94	16	0.05	14	0.02
17	20	4.1	26	1.8	38	2.2	56	0.91	16	0.04	12	0.02
18	16	3.2	24	1.7	38	2.3	56	0.85	16	0.04	12	0.02
19	14	2.6	28	2.3	38	2.1	56	0.79	18	0.04	12	0.02
20	12	2.0	32	2.9	38	1.8	56	0.76	18	0.04	12	0.01
21	12	1.8	32	3.0	38	1.7	58	0.74	20	0.04	12	0.01
22	10	1.4	34	3.5	38	1.6	58	0.69	20	0.04	12	0.02
23	10	1.3	32	3.3	38	1.5	58	0.66	22	0.04	12	0.02
24	10	1.2	48	6.0	40	1.4	56	0.57	22	0.04	20	0.06
25	10	1.1	60	9.1	40	1.3	56	0.53	24	0.05	24	0.13
26	10	0.97	48	6.6	42	1.2	54	0.45	24	0.05	20	0.09
27	10	0.94	40	4.9	42	1.1	52	0.48	26	0.05	16	0.06
28	10	0.92	36	4.1	44	1.2	48	0.47	26	0.05	14	0.05
29	10	0.86	34	3.9	44	1.0	44	0.40	26	0.05	12	0.05
30	10	0.84	32	3.9	44	0.96	40	0.31	28	0.06	10	0.04
31	---	---	30	3.5	---	---	38	0.30	28	0.06	---	---
TOTAL	---	44.75	---	97.61	---	49.53	---	22.35	---	2.92	---	1.58

TOTAL LOAD FOR YEAR: 348.97 TONS.

05115500 LAKE DARLING NEAR FOXHOLM, ND

LOCATION.--Lat 48°27'27", long 101°35'14", in NE¼NE¼ sec.1, T.157 N., R.85 W., Ward County, Hydrologic Unit 09010001, on control structure of Lake Darling Dam, reservoir of Fish and Wildlife Service, on Souris River about 6 mi (10 km) north of Foxholm, and at mile 430.0 (kilometer 691.9).

DRAINAGE AREA.--9,450 mi² (24,480 km²), approximately, of which about 6,200 mi² (16,100 km²) is probably noncontributing.

PERIOD OF RECORD.--April 1936 to current year (no winter records 1936-39).

REVISED RECORDS.--WSP 1338: 1942. WSP 2113: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,577.00 ft (480.670 m) above mean sea level. April 1936 to Aug. 8, 1963, nonrecording gages at same site and datum.

REMARKS.--Gage heights frequently affected by wind. Reservoir is formed by earth dam; storage began in April 1936; dam completed in July 1936. Usable capacity, 108,500 acre-ft (134 hm³) between gage heights 0.0 ft, sill of control gages, and 21.0 ft (6.40 m), crest of spillway. Dead storage, 3,500 acre-ft (4.32 hm³). Figures given herein represent total contents based on capacity table dated June 7, 1943. Water is used during periods of low flow at wildlife refuge downstream.

COOPERATION.--Supplementary gage readings furnished by Fish and Wildlife Service.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 145,400 acre-ft (179 hm³) Apr. 17, 1976, gage height, 24.24 ft (7.388 m); minimum observed since April 1943 when reservoir was first filled to spillway level, 31,200 acre-ft (38.5 hm³) Feb. 18, 25, 1963, gage height, 10.04 ft (3.060 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 72,800 acre-ft (89.8 hm³) Oct. 1, gage height, 16.68 ft (5.084 m); minimum, 50,400 acre-ft (62.1 hm³) Sept. 19, gage height, 13.74 ft (4.188 m).

MONTHEND GAGE HEIGHT AND CONTENTS AT 2400, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Gage height (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30-----	16.68	72,800	--
Oct. 31-----	16.44	70,700	-2,100
Nov. 30-----	16.02	67,200	-3,500
Dec. 31-----	15.70	64,600	-2,600
CAL YR 1976-----	--	--	-17,000
Jan. 31-----	15.54	63,300	-1,300
Feb. 28-----	15.59	63,700	+400
Mar. 31-----	15.45	62,600	-1,100
Apr. 30-----	14.95	58,600	-4,000
May 31-----	14.81	57,700	-900
June 30-----	14.94	58,600	+900
July 31-----	14.39	54,700	-3,900
Aug. 31-----	13.89	51,300	-3,400
Sept. 30-----	13.81	50,900	-400
WTR YR 1977-----	--	--	-21,900

RED RIVER OF THE NORTH BASIN

05116000 SOURIS (MOUSE) RIVER NEAR FOXHOLM, ND

LOCATION.--Lat 48°22'20", long 101°30'18", in SW¼SE¼ sec.34, T.157 N., R.84 W., Ward County, Hydrologic Unit 09010001, on left bank 30 ft (9 m) upstream from county highway bridge, 3 mi (5 km) east of Foxholm, 19 mi (31 km) upstream from Des Lacs River, and at mile 414.5 (kilometer 666.9).

DRAINAGE AREA.--9,470 mi² (24,530 km²), approximately, of which about 6,200 mi² (16,100 km²) is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1904 to November 1905, March to July 1906 (gage heights only), October 1936 to current year. Monthly discharge only for some periods, published in WSP 1308. Published as Mouse River near Foxholm, 1904-6.

REVISED RECORDS.--WSP 1308: 1905. WSP 2113: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,560.73 ft (475.711 m) above mean sea level. June 23, 1904, to July 31, 1906, nonrecording gage at site 3.2 mi (5.1 km) upstream at different datum. Apr. 1, 1937, to Mar. 25, 1938, nonrecording gage at site 600 ft (180 m) downstream at datum about 0.5 ft (0.15 m) higher.

REMARKS.--Records good. Flow almost completely regulated since 1936 by Lake Darling (station 05115500) 15 mi (24 km) upstream and several small reservoirs, combined capacity, about 184,000 acre-ft (227 hm³). Some small diversions for irrigation and municipal supply.

AVERAGE DISCHARGE.--42 years, 145 ft³/s (4.106 m³/s), 105,100 acre-ft/yr (130 hm³/yr); median of yearly mean discharges, 63 ft³/s (1.78 m³/s), 45,600 acre-ft/yr (56 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,600 ft³/s (244 m³/s) Apr. 17, 1976, gage height, 17.17 ft (5.233 m); maximum reverse flow, 25 ft³/s (0.71 m³/s) Apr. 4, 1949 caused by backwater from the Des Lacs River; no flow at times in many years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 336 ft³/s (9.52 m³/s) Apr. 29, gage height, 6.53 ft (1.990 m); minimum, 0.60 ft³/s (0.017 m³/s) Aug. 2, 3, 5 and 6, gage height, 4.68 ft (1.426 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43	46	62	33	33	13	6.1	334	5.4	5.4	1.1	1.3
2	43	46	60	33	33	13	6.4	334	5.4	5.4	.72	1.3
3	43	46	58	33	33	13	6.4	227	5.1	5.4	.60	1.2
4	43	46	58	33	28	13	6.4	7.8	4.5	5.4	.72	1.2
5	43	46	58	32	16	13	6.4	6.9	4.1	5.4	.60	1.4
6	43	45	62	33	16	13	6.1	7.8	3.8	5.4	.72	1.4
7	44	45	64	31	16	13	4.5	8.7	3.8	5.4	1.3	1.4
8	50	45	60	30	15	13	4.2	8.7	3.8	5.4	1.4	1.3
9	50	46	62	30	12	13	3.5	7.8	3.8	5.4	1.4	1.3
10	50	48	62	30	12	13	2.3	5.1	3.8	5.8	1.1	1.3
11	50	50	60	28	12	11	2.6	4.5	3.5	6.1	.98	1.2
12	50	51	58	28	11	7.8	3.8	4.5	3.5	4.5	1.0	1.2
13	50	51	58	28	11	7.8	3.8	4.5	3.0	4.2	1.0	1.5
14	51	52	57	29	11	7.8	3.8	4.2	3.0	4.5	1.0	1.5
15	51	52	57	29	11	7.8	3.5	4.2	2.6	4.5	1.0	1.5
16	51	54	56	30	11	7.8	3.5	4.5	2.0	4.2	1.0	1.5
17	51	54	56	30	11	8.2	3.5	4.5	2.6	3.8	1.0	2.0
18	51	54	54	31	12	8.7	3.5	4.8	2.8	3.5	1.0	2.2
19	51	54	54	32	12	8.7	3.0	5.1	3.0	3.5	1.0	2.0
20	51	54	54	32	13	7.8	2.8	4.8	3.2	3.5	1.0	1.8
21	51	54	56	31	13	6.1	92	4.8	3.5	3.8	1.0	2.0
22	51	60	54	31	13	6.1	300	5.1	3.8	4.2	1.0	4.2
23	51	74	42	31	13	6.4	264	5.1	4.2	4.2	1.0	5.1
24	51	74	30	31	13	6.9	258	5.4	3.8	4.5	1.0	16
25	50	72	28	31	13	6.4	286	5.1	3.8	3.8	1.0	16
26	50	70	28	33	13	6.4	328	4.8	3.8	3.8	1.5	15
27	48	70	28	33	13	6.4	330	4.5	4.2	3.0	2.3	12
28	48	70	29	33	13	7.3	332	4.2	3.8	2.1	2.0	10
29	48	68	31	34	---	7.8	336	4.8	4.2	2.1	1.6	10
30	48	68	32	34	---	6.4	334	5.1	5.4	2.3	1.6	10
31	48	---	33	33	---	6.1	---	4.8	---	1.6	1.4	---
TOTAL	1503	1665	1561	970	433	285.7	2946.1	1047.1	113.2	132.1	35.04	129.8
MEAN	48.5	55.5	50.4	31.3	15.5	9.22	98.2	33.8	3.77	4.26	1.13	4.33
MAX	51	74	64	34	33	13	336	334	5.4	6.1	2.3	16
MIN	43	45	28	28	11	6.1	2.3	4.2	2.0	1.6	.60	1.2
AC-FT	2980	3300	3100	1920	859	567	5840	2080	225	262	70	257
CAL YR 1976 TOTAL	341661.30			MEAN 934		MAX 8500	MIN 3.0	AC-FT 677700				
WTR YR 1977 TOTAL	10821.04			MEAN 29.6		MAX 336	MIN .60	AC-FT 21460				

05116000 SOURIS (MOUSE) RIVER NEAR FOXHOLM, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1973 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1972 to current year.
WATER TEMPERATURE: October 1972 to current year.

INSTRUMENTATION.--Water-quality monitor since October 1973.

REMARKS.--All extremes for current year except minimum temperature (0.0°C) probably occurred during periods of missing record.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE (water years 1973-76): Maximum, 1,320 micromhos Jan. 4, 5, 1974; minimum, 234 micromhos June 26, 1974.

WATER TEMPERATURE (water years 1973-76): Maximum, 28.0°C on several days during July 1974 and June 16, 1975; minimum, 0.0°C on many days during winter months.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	CHEMICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)
OCT												
08...	0935	--	670	--	7.0	--	--	--	--	--	--	--
21...	1430	49	710	8.9	2.0	25	15	14.0	107	62	8.2	8217
NOV												
04...	1435	--	710	--	1.5	--	--	--	--	--	--	--
18...	1130	55	720	8.6	1.5	16	10	13.6	102	46	4.7	8117
DEC												
02...	1325	--	765	--	.0	--	--	--	--	--	--	--
16...	1115	59	745	8.8	.0	22	9	15.7	114	30	2.4	--
JAN												
06...	1115	--	840	--	.0	--	--	--	--	--	--	--
20...	1545	32	860	8.2	.0	18	8	10.4	75	53	1.3	89
31...	1940	--	865	--	.0	--	--	--	--	--	--	--
FEB												
08...	1020	E.20	1520	--	.0	--	--	--	--	--	--	--
17...	1020	11	870	8.2	.5	35	10	10.6	94	50	2.1	847
MAR												
03...	0925	--	885	--	1.0	--	--	--	--	--	--	--
25...	0945	6.5	855	8.6	3.5	18	10	16.0	126	61	8.7	88
APR												
06...	1710	--	880	--	7.0	--	--	--	--	--	--	--
21...	1030	3.0	960	8.5	13.5	23	15	9.1	90	54	6.9	8202
22...	1110	321	890	--	11.5	--	--	--	--	--	--	--
MAY												
19...	1045	5.0	780	8.1	18.0	37	20	4.6	51	60	4.6	81900
JUN												
01...	1440	5.4	800	--	23.0	--	--	--	--	--	--	--
23...	1345	4.0	765	9.0	23.0	25	20	7.6	92	54	2.6	--
JUL												
08...	1325	--	760	--	22.0	--	--	--	--	--	--	--
21...	1500	4.0	775	9.3	23.0	38	15	5.9	78	69	2.8	9140
AUG												
02...	1050	.67	820	--	21.5	--	--	--	--	--	--	--
26...	1215	1.0	915	8.9	19.0	45	10	7.0	80	51	2.1	--
SEP												
22...	1630	4.0	950	8.6	17.0	33	6	9.2	90	50	3.0	7600

B - Results based on colony count outside the acceptable range (non-ideal colony count).
E - Estimated.

RED RIVER OF THE NORTH BASIN

05116000 SOURIS (MOUSE) RIVER NEAR FOXHOLM, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	FECAL COLI- FORM 7UM-MF (COL./ 100 ML)	HARD- NESS (CA, MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	ALKA- LITY AS CACO3 (MG/L)
OCT 08...	--	--	--	--	--	--	--	--	--	--	--	--
21...	B10	250	34	52	30	64	34	1.8	11	267	0	220
NOV 04...	--	--	--	--	--	--	--	--	--	--	--	--
18...	B3	250	25	52	29	62	34	1.7	11	273	0	224
DEC 02...	--	--	--	--	--	--	--	--	--	--	--	--
16...	B1	270	29	56	31	65	33	1.7	11	285	3	239
JAN 06...	--	--	--	--	--	--	--	--	--	--	--	--
20...	E1	300	32	64	33	73	34	1.8	13	322	0	260
31...	--	--	--	--	--	--	--	--	--	--	--	--
FEB 08...	--	--	--	--	--	--	--	--	--	--	--	--
17...	B2	320	42	67	36	76	33	1.9	13	334	0	270
MAR 03...	--	--	--	--	--	--	--	--	--	--	--	--
25...	B3	320	65	67	36	73	32	1.8	12	306	0	250
APR 06...	--	--	--	--	--	--	--	--	--	--	--	--
21...	B2	330	84	68	40	83	34	2.0	14	300	0	250
22...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 19...	243	270	44	55	33	71	35	1.9	12	280	0	230
JUN 01...	--	--	--	--	--	--	--	--	--	--	--	--
23...	--	260	40	45	35	79	39	2.1	9.6	240	12	220
JUL 08...	--	--	--	--	--	--	--	--	--	--	--	--
21...	B4	260	0	44	36	89	42	2.4	10	240	38	260
AUG 02...	--	--	--	--	--	--	--	--	--	--	--	--
26...	E1500	310	2	53	42	100	40	2.5	14	370	0	300
SEP 22...	B24	300	0	53	41	92	39	2.3	14	380	11	330

DATE	CARBON DIOXIDE (CO2) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SIO2) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L)	TOTAL NITRITE PLUS NITRATE IN BOT. MAT. (MG/KG)	TOTAL AMMONIA NITRO- GEN (N) (MG/L)
OCT 08...	--	--	--	--	--	--	--	--	--	--	--
21...	.5	170	14	.2	11	484	.66	64.0	.00	36	.55
NOV 04...	--	--	--	--	--	--	--	--	--	--	--
18...	1.1	160	13	.2	13	476	.65	70.7	.23	--	.04
DEC 02...	--	--	--	--	--	--	--	--	--	--	--
16...	.7	170	13	.3	13	503	.68	80.1	.06	--	.00
JAN 06...	--	--	--	--	--	--	--	--	--	--	--
20...	3.3	190	17	.2	15	565	.77	48.8	.14	--	.25
31...	--	--	--	--	--	--	--	--	--	--	--
FEB 08...	--	--	--	--	--	--	--	--	--	--	--
17...	3.4	180	18	.2	16	572	.78	17.0	.16	--	.20
MAR 03...	--	--	--	--	--	--	--	--	--	--	--
25...	1.2	200	18	.2	14	574	.78	10.1	.48	--	.09
APR 06...	--	--	--	--	--	--	--	--	--	--	--
21...	1.5	260	17	.2	11	641	.87	5.19	.01	--	.00
22...	--	--	--	--	--	--	--	--	--	--	--
MAY 19...	3.6	180	18	.1	6.7	515	.70	6.95	.06	--	.26
JUN 01...	--	--	--	--	--	--	--	--	--	--	--
23...	.4	190	21	.1	8.4	520	.71	5.62	.11	--	.13
JUL 08...	--	--	--	--	--	--	--	--	--	--	--
21...	.3	200	21	.2	4.1	562	.76	6.07	.08	--	.02
AUG 02...	--	--	--	--	--	--	--	--	--	--	--
26...	.7	180	25	.2	3.2	601	.82	1.62	.03	--	.06
SEP 22...	1.6	160	15	.2	4.5	579	.79	6.25	.01	10	.03

B - Results based on colony count outside the acceptable range (non-ideal colony count).
 E - Estimated.

05116000 SOURIS (MOUSE) RIVER NEAR FOXHOLM, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL ORGANIC NITRO- GEN (N) (MG/L)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L)	TOTAL KJEL. NITRO- GEN IN BOTTOM MAT. (MG/KG)	TOTAL PHOS- PHORUS (P) (MG/L)	DIS- SOLVED ORTHO- PHOS- PHORUS (P) (MG/L)	DIS- SOLVED ORTHO- PHOS- PHATE (PO4) (MG/L)	TOTAL PHOS- PHORUS IN BOT- TOM MA- TERIAL (MG/KG)	TOTAL ALUM- INUM (AL) (UG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL ARSENIC IN BOTTOM MA- TERIAL (UG/G)	TOTAL BARIUM (BA) (UG/L)
OCT 21...	1.2	1.7	1130	.19	.01	.03	230	490	8	2	100
NOV 18...	1.3	1.3	--	.13	.04	.12	--	--	--	--	--
DEC 16...	1.0	1.0	--	.08	.00	.00	--	--	--	--	--
JAN 20...	.95	1.2	--	.08	.06	.18	--	260	7	--	200
FEB 17...	.33	.53	--	.12	.04	.12	--	--	--	--	--
MAR 25...	1.3	1.4	--	.12	.05	.15	--	--	--	--	--
APR 21...	1.5	1.5	--	.06	.01	.03	--	270	4	--	0
MAY 19...	1.3	1.6	--	.15	.03	.09	--	--	--	--	--
JUN 23...	1.2	1.3	--	.41	.21	.64	--	--	--	--	--
JUL 21...	1.4	1.4	--	.35	.33	1.0	--	460	19	--	0
AUG 26...	1.9	2.0	--	.55	.36	1.1	--	--	--	--	--
SEP 22...	1.6	1.6	1900	.35	.17	.52	380	140	13	13	300

DATE	TOTAL BERYL- LIUM (BE) (UG/L)	TOTAL BORON (B) (UG/L)	TOTAL CAD- MIUM (CD) (UG/L)	TOTAL CADMIUM IN BOTTOM MA- TERIAL (UG/G)	TOTAL CHRO- MIUM (CR) (UG/L)	TOTAL CHRO- MIUM IN BOTTOM MA- TERIAL (UG/G)	TOTAL COBALT (CO) (UG/L)	TOTAL COBALT IN BOTTOM MA- TERIAL (UG/G)	TOTAL COPPER (CU) (UG/L)	TOTAL COPPER IN BOTTOM MA- TERIAL (UG/G)
OCT 21...	0	120	<10	<1	0	5	<50	15	10	9
NOV 18...	--	--	--	--	--	--	--	--	--	--
DEC 16...	--	--	--	--	--	--	--	--	--	--
JAN 20...	0	150	<10	--	0	--	<50	--	<10	--
FEB 17...	--	--	--	--	--	--	--	--	--	--
MAR 25...	--	--	--	--	--	--	--	--	--	--
APR 21...	10	120	<10	--	<10	--	<50	--	<10	--
MAY 19...	--	--	--	--	--	--	--	--	--	--
JUN 23...	--	--	--	--	--	--	--	--	--	--
JUL 21...	0	200	10	--	0	--	<50	--	<10	--
AUG 26...	--	--	--	--	--	--	--	--	--	--
SEP 22...	10	190	10	1	0	7	<50	15	10	21

RED RIVER OF THE NORTH BASIN

05116000 SOURIS (MOUSE) RIVER NEAR FOXHOLM, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL IRON (FE) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)	TOTAL IRON IN BOT- TOM MA- TERIAL (UG/G)	TOTAL LEAD (PB) (UG/L)	TOTAL LEAD IN BOT- TOM MA- TERIAL (UG/G)	TOTAL LITHIUM (LI) (UG/L)	TOTAL MAN- GANESE (MN) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)	TOTAL MANGA- NESE IN BOT- TOM MA- TERIAL (UG/G)	TOTAL MERCURY (HG) (UG/L)	TOTAL MERCURY IN BOT- TOM MA- TERIAL (UG/G)
OCT 21...	800	20	7900	<100	<10	40	230	110	600	.1	.2
NOV 18...	--	40	--	--	--	--	--	60	--	--	--
DEC 16...	--	30	--	--	--	--	--	30	--	--	--
JAN 20...	760	30	--	<100	--	50	140	80	--	.1	--
FEB 17...	--	0	--	--	--	--	--	90	--	--	--
MAR 25...	--	40	--	--	--	--	--	120	--	--	--
APR 21...	680	30	--	100	--	50	290	30	--	.0	--
MAY 19...	--	20	--	--	--	--	--	650	--	--	--
JUN 23...	--	50	--	--	--	--	--	60	--	--	--
JUL 21...	860	20	--	100	--	50	110	0	--	.0	--
AUG 26...	--	20	--	--	--	--	--	10	--	--	--
SEP 22...	220	30	11000	<100	20	80	80	40	900	.0	.0

DATE	TOTAL MOLYB- DENUM (MO) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELE- NIUM (SE) (UG/L)	TOTAL SELE- NIUM IN BOT- TOM MA- TERIAL (UG/G)	TOTAL SILVER (AG) (UG/L)	TOTAL STRON- TIUM (SR) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ZINC IN BOT- TOM MA- TERIAL (UG/G)	TOTAL ORGANIC CARBON (C) (MG/L)	ORGANIC CARBON IN BOT- TOM MA- TERIAL (C) (G/KG)	CYANIDE (CN) (MG/L)
OCT 21...	2	<50	1	0	<10	230	10	28	19	6.5	.00
NOV 18...	--	--	--	--	--	--	--	--	--	--	--
DEC 16...	--	--	--	--	--	--	--	--	--	--	--
JAN 20...	2	<50	0	--	<10	280	10	--	13	--	.00
FEB 17...	--	--	--	--	--	--	--	--	--	--	--
MAR 25...	--	--	--	--	--	--	--	--	--	--	--
APR 21...	5	<50	0	--	<10	280	10	--	17	--	.00
MAY 19...	--	--	--	--	--	--	--	--	--	--	--
JUN 23...	--	--	--	--	--	--	--	--	--	--	--
JUL 21...	2	<50	2	--	<10	100	10	--	17	--	.01
AUG 26...	--	--	--	--	--	--	--	--	--	--	--
SEP 22...	2	<50	0	0	<10	490	0	51	16	18	.01

RED RIVER OF THE NORTH BASIN

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05116000 SOURIS (MOUSE) RIVER NEAR FOXHOLM, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	METHY- LENE BLUE ACTIVE SUB- STANCE (MG/L)	TOTAL PCB (UG/L)	PCB IN BOTTOM MA- TERIAL (UG/KG)	POLY- CHLO- RINATED NAPH- THA- LENES (UG/L)	TOTAL ALDRIN (UG/L)	ALDRIN IN BOTTOM MA- TERIAL (UG/KG)	TOTAL CHLOR- DANE (UG/L)	CHLOR- DANE IN BOTTOM MA- TERIAL (UG/KG)	TOTAL DDD (UG/L)	DDD IN BOTTOM MA- TERIAL (UG/KG)	TOTAL DDE (UG/L)	DDE IN BOTTOM MA- TERIAL (UG/KG)
OCT 21...	.00	.0	0	.00	.00	.0	.0	0	.00	.0	.00	.0
NOV 18...	.00	--	--	--	--	--	--	--	--	--	--	--
DEC 16...	.00	--	--	--	--	--	--	--	--	--	--	--
JAN 20...	.10	--	--	--	--	--	--	--	--	--	--	--
FEB 17...	.10	--	--	--	--	--	--	--	--	--	--	--
MAR 25...	.10	--	--	--	--	--	--	--	--	--	--	--
APR 21...	.20	--	--	--	--	--	--	--	--	--	--	--
MAY 19...	.00	.0	--	.00	.00	--	.0	--	.00	--	.00	--
JUN 23...	.00	--	--	--	--	--	--	--	--	--	--	--
JUL 21...	.10	--	--	--	--	--	--	--	--	--	--	--
AUG 26...	.10	--	--	--	--	--	--	--	--	--	--	--
SEP 22...	.10	.0	0	.00	.00	.0	.0	0	.00	.0	.00	.0

DATE	TOTAL DDT (UG/L)	DDT IN BOTTOM MA- TERIAL (UG/KG)	TOTAL DI- AZINON (UG/L)	DI- AZINON IN BOTTOM MA- TERIAL (UG/KG)	TOTAL DI- ELDRIN (UG/L)	DI- ELDRIN IN BOTTOM MA- TERIAL (UG/KG)	TOTAL ENDO- SULFAN (UG/L)	TOTAL ENDRIN (UG/L)	ENDRIN IN BOTTOM MA- TERIAL (UG/KG)	TOTAL ETHION (UG/L)	ETHION IN BOTTOM MA- TERIAL (UG/KG)
OCT 21...	.00	.0	.00	.0	.00	.0	--	.00	.0	.00	.0
MAY 19...	.00	--	.00	--	.00	--	.00	.00	--	.00	--
JUN 23...	--	--	--	--	--	--	--	--	--	--	--
JUL 21...	--	--	--	--	--	--	--	--	--	--	--
AUG 26...	--	--	--	--	--	--	--	--	--	--	--
SEP 22...	.00	.0	.00	.0	.00	.0	.00	.00	.0	.00	.0

DATE	TOTAL HEPTA- CHLOR (UG/L)	HEPTA- CHLOR IN BOTTOM MA- TERIAL (UG/KG)	TOTAL HEPTA- CHLOR EPOXIDE (UG/L)	HEPTA- CHLOR EPOXIDE IN BOT- TOM MA- TERIAL (UG/KG)	TOTAL LINDANE (UG/L)	LINDANE IN BOTTOM MA- TERIAL (UG/KG)	TOTAL MALA- THION (UG/L)	MALA- THION IN BOTTOM MA- TERIAL (UG/KG)	TOTAL METHYL PARA- THION (UG/L)	METHYL PARA- THION IN BOT- TOM MA- TERIAL (UG/KG)	TOTAL METHYL TRI- THION (UG/L)
OCT 21...	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00
MAY 19...	.00	--	.00	--	.01	--	.00	--	.00	--	.00
JUN 23...	--	--	--	--	--	--	--	--	--	--	--
JUL 21...	--	--	--	--	--	--	--	--	--	--	--
AUG 26...	--	--	--	--	--	--	--	--	--	--	--
SEP 22...	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00

RED RIVER OF THE NORTH BASIN

05116000 SOURIS (MOUSE) RIVER NEAR FOXHOLM, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	METHYL TRI- THION IN BOT- TOM MA- TERIAL (UG/KG)	TOTAL PARA- THION (UG/L)	PARA- THION IN BOTTOM MA- TERIAL (UG/KG)	TOTAL TOX- APHENE (UG/L)	BOTTOM TOX- MA- TERIAL (UG/KG)	TOTAL TRI- THION (UG/L)	BOTTOM TRI- MA- TERIAL (UG/KG)	TOTAL 2,4-D (UG/L)	BOTTOM 2,4-D MA- TERIAL (UG/KG)	TOTAL 2,4,5-T (UG/L)	BOTTOM 2,4,5-T MA- TERIAL (UG/KG)
OCT 21...	.0	.00	.0	0	0	.00	.0	.01	0	.00	0
MAY 19...	--	.00	--	0	--	.00	--	.05	--	.00	--
JUN 23...	--	--	--	--	--	--	--	--	--	--	--
JUL 21...	--	--	--	--	--	--	--	--	--	--	--
AUG 26...	--	--	--	--	--	--	--	--	--	--	--
SEP 22...	.0	.00	.0	0	0	.00	.0	.02	0	.00	0

DATE	TOTAL SILVEX (UG/L)	SILVEX IN BOTTOM MA- TERIAL (UG/KG)	SUS- PENDE SEDI- MENT (MG/L)	SUS- PENDE SEDI- MENT DIS- CHARGE (T/DAY)	BED MAT. FALL DIAM. % FINER THAN .062 MM	BED MAT. FALL DIAM. % FINER THAN .125 MM	BED MAT. FALL DIAM. % FINER THAN .250 MM
OCT 21...	.00	0	23	3.0	--	--	--
NOV 18...	--	--	80	12	--	--	--
DEC 16...	--	--	10	1.6	--	--	--
JAN 20...	--	--	18	1.6	--	--	--
FEB 17...	--	--	20	.59	--	--	--
MAR 25...	--	--	10	.18	--	--	--
APR 21...	--	--	39	.32	13	16	21
MAY 19...	.00	--	58	.78	--	--	--
JUN 23...	--	--	20	.22	--	--	--
JUL 21...	--	--	18	.19	--	--	--
AUG 26...	--	--	12	.03	--	--	--
SEP 22...	.00	0	10	.11	63	66	68

DATE	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
APR 21...	34	46	55	65	73	84	100
MAY 19...	--	--	--	--	--	--	--
JUN 23...	--	--	--	--	--	--	--
JUL 21...	--	--	--	--	--	--	--
AUG 26...	--	--	--	--	--	--	--
SEP 22...	75	79	95	100	--	--	--

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	672	659	714	695	---	---	859	823	---	---	---	---
2	676	659	709	702	---	---	863	817	---	---	---	---
3	688	674	712	703	---	---	851	813	---	---	900	852
4	718	684	712	698	754	725	857	814	---	---	920	899
5	718	687	718	708	759	747	---	---	---	---	939	923
6	703	666	716	709	768	752	874	828	---	---	958	937
7	691	661	717	708	766	747	878	851	---	---	971	956
8	677	670	718	711	761	738	876	846	---	---	981	966
9	693	674	719	650	762	750	880	858	907	880	988	971
10	697	681	717	670	762	748	873	838	904	868	1000	979
11	700	690	728	696	762	722	864	837	897	863	1010	963
12	702	695	724	694	753	725	870	832	891	827	1010	968
13	704	692	725	687	758	718	---	---	888	832	1030	995
14	697	691	737	703	767	725	---	---	888	868	1040	1020
15	719	699	---	---	770	737	888	869	879	854	1050	1030
16	711	668	---	---	765	732	890	854	890	859	1050	1040
17	691	673	---	---	769	753	885	863	901	837	1070	1060
18	695	667	---	---	773	761	884	864	910	878	1080	1070
19	711	656	742	707	777	765	880	822	897	886	1090	1070
20	718	697	718	681	783	754	867	826	902	855	1120	1100
21	720	697	710	664	775	760	868	841	904	876	---	---
22	711	700	708	664	783	757	866	857	895	881	---	---
23	716	707	---	---	800	775	860	847	900	874	---	---
24	716	700	---	---	804	797	869	836	899	874	---	---
25	707	698	---	---	808	790	858	844	905	854	---	---
26	707	678	---	---	810	794	866	850	---	---	---	---
27	724	681	---	---	811	806	869	842	---	---	---	---
28	731	681	---	---	826	810	870	831	---	---	---	---
29	729	718	---	---	841	817	878	859	---	---	---	---
30	725	716	---	---	850	802	878	851	---	---	---	---
31	716	709	---	---	852	802	865	824	---	---	---	---
MONTH	731	656	---	---	852	718	890	813	---	---	---	---

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1			---	---	809	800					---	---
2			---	---	815	801					---	---
3			---	---	819	805					---	---
4			---	---	821	815					---	---
5			---	---	827	819					---	---
6			---	---	831	820					---	---
7			---	---	841	830					---	---
8			---	---	848	839					---	---
9			---	---	852	841					---	---
10			---	---	847	828					---	---
11			---	---	849	824					---	---
12			---	---	836	776					---	---
13			---	---	802	773					---	---
14			---	---	806	694					---	---
15			---	---	754	672					---	---
16			788	744	713	676					---	---
17			790	758	717	704					---	---
18			785	755	730	712					942	928
19			790	772	744	727					942	938
20			798	774	757	748					946	938
21			800	768	764	754					942	924
22			802	777	770	753					932	934
23			798	760	---	---					939	914
24			811	765	---	---					921	873
25			820	795	---	---					889	869
26			828	808	---	---					---	---
27			818	799	---	---					---	---
28			814	800	---	---					---	---
29			813	802	---	---					---	---
30			812	804	---	---					---	---
31			815	800	---	---					---	---
MONTH			---	---	---	---					---	---

RED RIVER OF THE NORTH BASIN

05116000 SOURIS (MOUSE) RIVER NEAR FOXHOLM, ND--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	15.0	14.0	5.5	3.5	0.5	0.0	0.0	0.0	0.0	0.0	1.5	1.0
2	15.0	13.0	4.5	3.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.0
3	14.5	13.0	3.0	1.5	0.5	0.0	0.0	0.0	0.0	0.0	1.5	0.5
4	13.0	8.5	2.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.5
5	8.0	6.5	2.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.0
6	7.0	6.0	2.5	1.5	0.5	0.0	0.0	0.0	0.0	0.0	1.5	1.0
7	7.5	5.5	2.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.0
8	9.0	7.0	2.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	1.5
9	9.5	7.5	2.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	2.0
10	10.5	9.0	2.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	3.0	2.5
11	11.0	9.0	1.5	0.0	0.5	0.0	0.0	0.0	0.5	0.5	3.0	2.5
12	10.5	9.5	1.5	0.0	0.5	0.0	0.0	0.0	1.0	0.5	3.0	2.0
13	10.5	9.0	1.5	0.0	1.0	0.0	0.0	0.0	1.0	0.5	3.0	2.0
14	10.0	6.5	2.0	0.5	1.0	0.0	0.0	0.0	1.0	0.5	3.0	2.0
15	7.5	4.5	2.0	0.5	0.0	0.0	0.0	0.0	1.0	0.5	3.0	2.0
16	6.0	4.0	2.0	1.5	0.0	0.0	0.0	0.0	1.0	0.5	3.5	2.5
17	4.5	3.5	2.0	1.0	0.0	0.0	0.0	0.0	1.0	0.5	4.0	3.0
18	5.0	3.5	2.0	1.5	0.0	0.0	0.0	0.0	1.0	0.5	4.0	3.0
19	4.5	3.5	1.5	0.0	0.0	0.0	0.0	0.0	0.5	0.5	3.5	3.0
20	4.0	3.5	1.5	0.5	0.0	0.0	0.0	0.0	1.5	0.5	4.0	3.0
21	3.0	2.0	1.0	0.0	0.0	0.0	0.0	0.0	1.5	1.0	4.0	3.0
22	2.5	1.5	1.5	0.0	0.0	0.0	0.0	0.0	1.5	1.0	4.0	3.5
23	3.0	2.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	4.5	3.5
24	3.0	2.5	1.5	1.0	0.0	0.0	0.0	0.0	1.5	1.0	4.0	3.5
25	3.0	2.0	1.5	0.5	0.0	0.0	0.0	0.0	1.5	1.0	4.0	3.5
26	2.0	2.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	3.5	3.5
27	3.0	1.5	0.5	0.0	0.0	0.0	0.0	0.0	1.0	0.5	4.5	3.5
28	4.0	2.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	5.5	3.5
29	4.0	3.0	0.5	0.0	0.0	0.0	0.0	0.0	---	---	4.0	2.0
30	4.0	3.5	0.5	0.0	0.0	0.0	0.0	0.0	---	---	3.5	1.5
31	4.0	3.0	---	---	0.0	0.0	0.0	0.0	---	---	4.5	3.0
MONTH	15.0	1.5	5.5	0.0	1.0	0.0	0.0	0.0	1.5	0.0	5.5	0.5

DAY	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	5.5	3.5	15.0	13.0	23.5	20.0					---	---
2	5.5	3.5	14.5	13.5	22.0	20.5					---	---
3	5.5	4.0	15.5	12.5	22.5	21.0					---	---
4	5.0	3.5	15.0	14.0	22.5	21.0					---	---
5	5.5	3.5	15.0	13.0	24.0	22.0					---	---
6	7.0	3.5	15.0	13.5	23.5	21.0					---	---
7	8.5	5.5	15.0	12.5	27.5	22.5					---	---
8	9.0	5.5	18.5	14.5	23.5	22.5					---	---
9	13.5	8.5	20.0	17.5	23.0	21.5					---	---
10	13.5	11.0	20.5	18.5	25.5	22.0					---	---
11	13.5	11.0	21.0	18.5	24.5	20.5					---	---
12	13.5	11.5	20.5	19.0	20.5	19.0					---	---
13	13.0	10.5	22.5	19.5	18.0	17.5					---	---
14	13.5	11.5	21.5	19.5	17.5	16.5					---	---
15	15.0	12.0	22.5	20.0	19.0	16.0					---	---
16	14.0	12.5	22.5	19.0	20.5	16.0					---	---
17	15.0	13.0	20.5	18.5	21.5	20.5					17.5	16.0
18	15.0	12.5	18.5	18.0	22.0	19.5					16.0	14.5
19	14.0	12.0	19.5	17.5	21.5	20.0					14.5	14.5
20	14.5	11.5	19.5	17.0	21.0	19.5					14.5	13.5
21	13.5	12.0	20.5	17.0	20.5	20.0					14.0	14.0
22	14.5	11.0	20.5	18.5	23.0	20.0					14.5	14.0
23	14.5	11.5	20.0	17.5	---	---					14.5	14.0
24	14.5	12.0	21.5	19.0	---	---					14.0	13.0
25	15.5	13.0	24.0	21.0	---	---					13.0	12.5
26	16.5	13.5	24.5	22.0	---	---					---	---
27	15.5	14.5	23.5	21.5	---	---					---	---
28	16.0	13.5	22.0	20.0	---	---					---	---
29	16.5	14.0	21.5	20.0	---	---					---	---
30	17.5	15.0	20.5	19.0	---	---					---	---
31	---	---	23.0	19.5	---	---					---	---
MONTH	17.5	3.5	24.5	12.5	---	---					---	---

RED RIVER OF THE NORTH BASIN

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05116000 SOURIS (MOUSE) RIVER NEAR FOXHOLM, ND--Continued

DISSOLVED OXYGEN PROFILE, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

<u>HOUR</u>	<u>MG/L</u>	<u>HOUR</u>	<u>MG/L</u>	<u>HOUR</u>	<u>MG/L</u>	<u>HOUR</u>	<u>MG/L</u>
Oct. 21, 1976		1300	13.2	1100	10.5	July 20, 1977	
1200	12.5	1330	13.5	1200	10.5	2000	8.4
1300	13.0			1300	10.5	2100	8.2
1400	13.6	Jan. 20, 1977				2200	7.9
1500	14.1	1300	10.5	Apr. 21, 1977		2300	7.4
1600	14.6	1400	10.4	1100	9.1	2400	7.0
1700	14.9	1500	10.4	1400	10.6		
1800	15.0	1600	10.4	1500	10.6	July 21, 1977	
1900	14.8	1700	10.4	2000	11.2	0100	6.6
2000	14.5	1800	10.4	2100	10.7	0200	6.3
2100	14.4	1900	10.4	2200	10.9	0300	5.8
2200	14.4	2000	10.4	2300	10.8	0400	5.8
2300	14.4	2100	10.4	2400	10.7	0500	5.5
2400	14.3	2200	10.5			0530	5.4
Oct. 22, 1977		2300	10.5	Apr. 22, 1977		0600	5.5
0100	14.2	2400	10.4	0100	10.3	0700	5.3
0200	13.9	Jan. 21, 1977		0200	10.3	0800	5.3
0300	13.6	0100	10.4	0300	10.5	0900	5.5
0400	13.4	0200	10.4	0400	10.2	1000	5.6
0500	13.2	0300	10.3	0500	10.0	1100	5.6
0600	12.9	0400	10.4	0600	10.1	1200	5.9
0700	12.8	0500	10.3	0700	10.0	1300	6.0
0800	12.6	0600	10.4	0800	10.3	1400	6.0
0900	12.7	0700	10.4	0900	10.3	1500	5.9
1000	12.7	0800	10.4	1000	10.6	1600	6.0
1100	12.8	0900	10.4	1100	10.6	1700	6.6
1200	12.8	1000	10.5	1200	10.7	1800	7.4
				1300	10.8	1900	7.6

RED RIVER OF THE NORTH BASIN

05116000 SOURIS (MOUSE) RIVER NEAR FOXHOLM, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	OCT 21,76 1430	NOV 18,76 1130	DEC 16,76 1115	JAN 20,77 1545	FEB 17,77 1020	MAR 25,77 0945						
TOTAL CELLS/ML	31000	39000	2900	2500	2100	9100						
DIVERSITY: DIVISION	0.9	0.2	1.7	1.6	0.9	1.2						
..CLASS	0.9	0.2	1.8	1.6	1.0	1.4						
..ORDER	0.9	0.2	1.9	2.1	1.5	1.7						
...FAMILY	1.0	0.2	1.9	2.3	1.6	1.8						
....GENUS	1.0	0.2	1.9	2.4	1.7	1.8						
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												
...CHARACIACEAE												
...SCHROEDERIA	--	-	--	-	--	-	--	-	--	-		
...MICRACTINIACEAE												
...MICRACTINIUM	--	-	--	-	--	-	--	-	--	-		
...ODCYSTACEAE												
...ANKISTRODESMUS	1500	5	* 0	--	-		19	1	480	5		
...CHLORELLA	--	-	--	-	--	-	58	3	--	-		
...KIRCHNERIELLA	--	-	--	-	23	1	14	1	--	-		
...ODCYSTIS	--	-	--	-	--	-	--	-	--	-		
...SELENASTRUM	--	-	--	-	--	-	--	-	--	-		
...TETRAEDRON	--	-	--	-	--	-	--	-	--	-		
...SCENEDESMACEAE												
...SCENEDESMUS	--	-	--	-	--	-	39	2	--	-		
...TETRASTRUM	--	-	--	-	--	-	77	4	--	-		
...VOLVOCALES												
...CHLAMYDOMONADACEAE												
...CHLAMYDOMONAS	190	1	* 0	160	6		300	12	1500#	72	550	6
...CHLOROCOCCALES												
...ODCYSTACEAE												
...GLOEOACTINIUM	--	-	--	-	--	-	--	-	--	-		
CHRYSTOPHYTA												
..BACILLARIOPHYCEAE												
...CENTRALES												
...COSCINODISCACEAE												
...CYCLOTELLA	25000#	80	--	-	1700#	60	700#	28	150	7	320	3
...MELOSIRA	* 0		--	-	--	-	55	2	--	-	--	-
...STEPHANODISCUS	--	-	38000#	98	--	-	--	-	--	-	--	-
...PENNALES												
...ACHNANTHACEAE												
...COCCONEIS	--	-	--	-	--	-	41	2	--	-	79	1
...RHODOSPHENIA	--	-	--	-	--	-	14	1	--	-	--	-
...CYMBELLACEAE												
...EPITHEMIA	--	-	--	-	--	-	27	1	--	-	--	-
...FRAGILARIACEAE												
...ASTERIONELLA	--	-	--	-	--	-	--	-	19	1	630	7
...FRAGILARIA	* 0		--	-	--	-	--	-	--	-	--	-
...SYNEDRA	* 0		--	-	--	-	--	-	--	-	--	-
...GOMPHONEMACEAE												
...GOMPHONEMA	--	-	--	-	--	-	14	1	--	-	--	-
...NAVICULACEAE												
...GYROSIGMA	--	-	--	-	--	-	--	-	--	-	79	1
...NAVICULA	--	-	* 0		--	-	68	3	19	1	--	-
...PINNULARIA	--	-	--	-	23	1	--	-	--	-	--	-
...STAURONEIS	--	-	--	-	--	-	14	1	--	-	--	-
...NITZSCHACEAE												
...NITZSCHIA	--	-	* 0		--	-	14	1	--	-	79	1
...SURIPELLACEAE												
...CYMATOPLEURA	--	-	--	-	--	-	14	1	--	-	--	-
...SURIPELLA	* 0		--	-	--	-	--	-	--	-	--	-
..CHRYSTOPHYCEAE												
...CHRYSOMONADALES												
...CHROMULINACEAE												
...CHRYSOCOCCUS	--	-	--	-	--	-	--	-	97	5	--	-
...OCHROMONADACEAE												
...DINOBYRON	--	-	--	-	--	-	--	-	--	-	320	3
...OCHROMONAS	--	-	--	-	--	-	27	1	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
..CYANOPHYCEAE												
...CHROCOCCALES												
...CHROCOCCACEAE												
...AGMENELLUM	--	-	--	-	--	-	55	2	--	-	--	-
...ANACYSTIS	--	-	* 0		--	-	--	-	--	-	--	-
...HORMOGONALES												
...NOSTOCACEAE												
...ANABAENA	--	-	--	-	--	-	--	-	--	-	--	-
...OSCILLATORIACEAE												
...OSCILLATORIA	--	-	--	-	230	8	1100#	44	* 0		--	-
...PHORMIDIUM	--	-	--	-	--	-	--	-	--	-	--	-

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

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

CONTINUED ...

RED RIVER OF THE NORTH BASIN

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05116000 SOURIS (MOUSE) RIVER NEAR FOXHOLM, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

(CONTINUED)

DATE TIME	OCT 21,76 1430		NOV 18,76 1130		DEC 16,76 1115		JAN 20,77 1545		FEB 17,77 1020		MAR 25,77 0945	
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
EUGLENOPHYTA (EUGLENOIDS)												
..CRYPTOPHYCEAE												
...CRYPTOMONIDAE												
...CRYPTOCHRYSIDACEAE												
....CHROOMONAS	930	3	*	0	--	-	--	-	--	-	--	-
...CRYPTOMONODACEAE												
....CRYPTOMONAS	3700	12	360	1	460#	16	14	1	--	-	79	1
..EUGLENOPHYCEAE												
...EUGLENALES												
....EUGLENACEAE												
.....EUGLENA	*	0	--	-	23	1	--	-	--	-	--	-
.....PHACUS	--	-	--	-	--	-	--	-	--	-	--	-
.....TRACHELOMONAS	--	-	--	-	120	4	27	1	97	5	6300#	70
PYRRHOPHYTA (FIRE ALGAE)												
..DINOPHYCEAE												
...PERIDINIALES												
....GLENODINIACEAE												
.....GLENODINIUM	--	-	--	-	140	5	--	-	--	-	--	-
.....PERIDINIACEAE												
.....PERIDINIUM	--	-	--	-	--	-	14	1	19	1	160	2

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

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

RED RIVER OF THE NORTH BASIN

05116000 SOURIS (MOUSE) RIVER NEAR FOXHOLM, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	APR 21,77 1030	MAY 19,77 1045	JUN 23,77 1345	JUL 21,77 1500	AUG 26,77 1215	SEP 22,77 1630				
TOTAL CELLS/ML	76000	1300	6500	850	3100	3200				
DIVERSITY: DIVISION	0.9	0.7	1.1	0.1	1.0	1.1				
..CLASS	0.9	0.8	1.1	0.1	1.2	1.4				
...ORDER	1.0	0.8	1.2	0.1	1.4	1.4				
....FAMILY	1.2	1.1	1.8	0.6	1.4	1.4				
....GENUS	1.4	1.1	1.8	1.1	1.5	1.5				
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										
...CHARACTACEAE										
...SCHROEDERIA	--	-			92	1	--	-	--	-
...MICRACETINIACEAE					--	-			--	-
...MICRACETINIUM	1100	1	--	-	--	-			--	-
...OOCYSTACEAE										
...ANKISTRODESMUS	1600	2	14	1	--	-			--	-
...CHLORELLA	--	-	--	-	--	-			--	-
...KIRCHNERIELLA	--	-	--	-	46	1	7	1	--	-
...OOCYSTIS	--	-	--	-	--	-			--	-
...SELENASTRUM	3600	5	--	-	--	-			100	3
...TETRAEDRON	--	-	--	-	--	-			--	-
...SCENEDESMACEAE									50	2
...SCENEDESMUS	550	1	--	-	--	-			--	-
...TETRASTRUM	*	0	--	-	--	-			--	-
...VOLVOCELES										
...CHLAMYDOMONADACEAE										
...CHLAMYDOMONAS	830	1	--	-	--	-			1100#	37
...CHLOROCOCCALES										
...OOCYSTACEAE	3900	5	--	-	--	-			--	-
...GLOEOACTINIUM										
CHRYSTOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...COSCINODISCACEAE										
...CYCLOTELLA	550	1	14	1	92	1	--	-	--	-
...MELOSTRA	--	-	--	-	--	-			--	-
...STEPHANODISCUS	--	-	--	-	--	-			--	-
...PENNALES										
...ACHNANTHACEAE										
...COCCONEIS	--	-	29	2	--	-			--	-
...RHOICOSPHEA	--	-	--	-	--	-			--	-
...CYMBELLACEAE										
...EPITHEMIA	--	-	29	2	--	-			--	-
...FRAGILARIACEAE										
...ASTERTONELLA	*	0	--	-	--	-			--	-
...FRAGILARIA	--	-	--	-	--	-			--	-
...SYNEDRA	--	-	--	-	--	-			--	-
...GOMPHONEMACEAE										
...GOMPHONEMA	--	-	--	-	--	-			--	-
...NAVICULACEAE										
...GYROSIGMA	--	-	--	-	--	-			--	-
...NAVICULA	--	-	--	-	--	-			--	-
...PINNULARIA	--	-	--	-	--	-			--	-
...STAURONEIS	--	-	--	-	--	-			--	-
...NITZSCHIA	1800	2	110	9	280	4	--	-	--	-
...SURIRELLACEAE										
...CYMATOPLEURA	--	-	--	-	--	-			--	-
...SURIRELLA	--	-	--	-	--	-			--	-
CHRYSTOPHYCEAE										
...CHRYDOMONADALES										
...CHROMULINACEAE										
...CHRYSOCOCCUS	740	1	--	-	--	-			--	-
...OCHROMONADACEAE										
...DINOBYRON	--	-	--	-	--	-			--	-
...OCHROMONAS	--	-	--	-	--	-			--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROCOCCALES										
...CHROCOCCACEAE										
...AGMENELLUM	--	-	--	-	--	-			--	-
...ANACYSTIS	61000#	80	--	-	1200#	18	--	-	--	-
...HORMOGONALES										
...NOSTOCACEAE										
...ANABAENA	--	-	--	-	--	-	86	10	--	-
...OSCILLATORIA										
...OSCILLATORIA	*	0	--	-	--	-	650#	76	990#	31
...PHORMIDIUM	--	-	--	-	--	-	100	12	--	-

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

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

CONTINUED ...

RED RIVER OF THE NORTH BASIN

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05116000 SOURIS (MOUSE) RIVER NEAR FOXHOLM, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

(CONTINUED)

DATE TIME	APR 21,77 1030		MAY 19,77 1045		JUN 23,77 1345		JUL 21,77 1500		AUG 26,77 1215		SEP 22,77 1630	
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
EUGLENOPHYTA (EUGLENOIDS)												
..CRYPTOPHYCEAE												
...CRYPTOMONIDAE												
....CRYPTOCHRYSIDACEAE												
....CHROOMONAS	--	-	29	2	3700#	57	--	-	1600#	54	1900#	59
....CRYPTOMONODACEAE												
....CRYPTOMONAS	*	0	1000#	81	1100#	16	--	-	--	-	--	-
..EUGLENACEAE												
...EUGLENALES												
....EUGLENACEAE												
....EUGLENA	--	-	--	-	--	-	--	-	--	-	44	1
....PHACUS	--	-	--	-	--	-	--	-	100	3	--	-
....TRACHELOMONAS	*	0	14	1	--	-	7	1	25	1	150	5
PYRRHOPHYTA (FIRE ALGAE)												
..DINOPHYCEAE												
...PERIDINIALES												
....GLENODINIACEAE												
....GLENODINIUM	*	0	--	-	--	-	--	-	--	-	--	-
....PERIDINIACEAE												
....PERIDINIUM	--	-	--	-	--	-	--	-	--	-	--	-

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

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

RED RIVER OF THE NORTH BASIN

05116000 SOURIS (MOUSE) RIVER NEAR FOXHOLM, ND--Continued

BENTHIC INVERTEBRATE ANALYSES, OCTOBER 1976 TO MAY 1977

DATE TIME	NOV 18,76 1130	FEB 17,77 1020	MAY 19,77 1045
TOTAL COUNT	169	71	60
DIVERSITY: PHYLUM	0.0	1.1	0.0
..CLASS	0.2	0.0	0.8
...ORDER	0.2	0.0	1.6
...FAMILY	0.0	0.0	0.0
....GENUS	0.0	0.0	0.0
....GENUS-INSECTA	0.0	0.0	0.0
ORGANISM	COUNT	COUNT	COUNT
ANNELIDA			
..OLIGOCHAETA	--	25	--
ARTHROPODA (ARTHROPODS)			
..CRUSTACEA			
...AMPHIPODA	164	32	16
..INSECTA			
...DIPTERA			
....CHIRONOMIDAE	2	2	2
...EPHEMEROPTERA	2	9	34
...TRICHOPTERA	1	1	6
...ODONATA			
....COENAGRIONIDAE	--	--	2
MOLLUSCA (MOLLUSCS)			
..GASTROPODA			
...BASOMMATOPHORA			
....PHYSIDAE	--	1	--
NEMATODA (NEMATODES)	--	1	--
LENGTH OF EXPOSURE (DAYS)	27	28	29
SAMPLING METHOD	MULTIPLATE ARTIFICIAL SUBSTRATE	MULTIPLATE ARTIFICIAL SUBSTRATE	MULTIPLATE ARTIFICIAL SUBSTRATE

NOV. 18, 1976
1130 HOURS

IDENTIFICATION OF PERIPHYTON

ORGANISM NAME	COMMON NAME
CHRYSIOPHYTA	
..BACILLARIOPHYCEAE	Diatoms
...CENTRALES	CENTRIC
....COSCINOIDISCEAE	
.....COSCINOIDISCUS	
...PENNALES	Pennate
....FRAGILARIACEAE	
.....SYNEDRA	
....GOMPHONEMATACEAE	
.....GOMPHONEMA	
....NAVICULACEAE	Navicula
.....NAVICULA	
....MITZSCHIACEAE	
.....MITZSCHIA	

NOTE: E - ESTIMATED DOMINANT ORGANISM; NOT ACTUALLY COUNTED
 () - OBSERVED ORGANISM; NOT ACTUALLY COUNTED
 SAMPLING METHOD: PLASTIC SLIDES, TIMED SAMPLING INTERVAL
 ANALYSIS METHOD: SLIDE MOUNTING, 200-X MICROSCOPE

05116000 SOURIS (MOUSE) RIVER NEAR FOXHOLM, ND--Continued

FEB. 17, 1977
1020 HOURS

IDENTIFICATION OF PERIPHYTON

- - - NO ORGANISMS REPORTED - - -

NOTE: SAMPLING METHOD: PLASTIC SLIDES, TIMED SAMPLING INTERVAL
ANALYSIS METHOD: SLIDE MOUNTING, 200-X MICROSCOPEMAY 19, 1977
1045 HOURS

PERIPHYTON IDENTIFICATION

ORGANISM NAME	COMMON NAME
CHLOROPHYTA	GREEN ALGAE
..CHLOROPHYCEAE	
...OEDOGONIALES	
...OEDOGONIACEAE	
8 ...OEDOGONIUM	
...ULOTRICHAELES	
...CHAEOTOPHORACEAE	
8 ...STIGEOCLONIUM	
...ZYGNEATALES	
...DESMIDIACEAE	PLACODERM DESMIDS
...CLOSTERIUM	
CHRYSOPHYTA	
..BACILLARIOPHYCEAE	DIATOMS
...CENTRALES	CENTRIC
...COSCINODISCACEAE	
...MELOSIRA	
...PENNALES	PENNATE
...ACHNANTHACEAE	
...RHOICOSPHENIA	
...CYMBELLACEAE	
...AMPHORA	
...CYMBELLA	
...DIATOMACEAE	
8 ...DIATOMA	
8 ...FRAGILARIACEAE	
8 ...FRAGILARIA	
8 ...SYNEORA	
...GOMPHONEMATACEAE	
...GOMPHONEMA	
...NAVICULACEAE	NAVICULOID
...NAVICULA	
...NITZSCHIA	
...NITZSCHIA	
...SURIPELLACEAE	
...CYMATOPLEURA	
...SURIPELLA	
..XANTHOPHYCEAE	YELLOW-GREEN ALGAE
..HETEROTRICHAELES	
...TRIBONEMATACEAE	
...TRIBONEMA	
CYANOPHYTA	BLUE-GREEN ALGAE
..CYANOPHYCEAE	
...HORMOGONALES	FILAMENTOUS BL-GREEN
...OSCILLATORIACEAE	
8 ...LYNGBYA	

NOTE: 8 - ESTIMATED DOMINANT ORGANISM; NOT ACTUALLY COUNTED
SAMPLING METHOD: PLASTIC SLIDES, TIMED SAMPLING INTERVAL

AUG. 26, 1977
1215 HOURS

PERIPHYTON IDENTIFICATION

__ORGANISM__NAME__	__COMMON__NAME__
CHLOROPHYTA	GREEN ALGAE
..CHLOROPHYCEAE	
...CHLOROCOCCALES	
...SCENEDESMACEAE	
...SCENEDESMUS	
...DEDOGONIALES	
...DEDOGONIACEAE	
& ...DEDOGONIUM	
...ULOTRICHALES	
...CHAETOPHORACEAE	
& ...STIGEOCLONIUM	
CHRYSTOPHYTA	
..BACILLARIOPHYCEAE	DIATOMS
..PENNALES	PENNATE
...ACHNANTHACEAE	
& ...COCCONEIS	
...RHOICOSPHENIA	
...CYMBELLACEAE	
...EPITHEMIA	
...NITZSCHIA	
& ...NITZSCHIA	
CYANOPHYTA	BLUE-GREEN ALGAE
..CYANOPHYCEAE	
...HORMOGONALES	FILAMENTOUS BL-GREEN
...NOSTOCACEAE	
& ...ANABAENA	
& ...OSCILLATORIACEAE	
...RIVULARIACEAE	
...CALOTHRIX	

NOTE: & - ESTIMATED DOMINANT ORGANISM; NOT ACTUALLY COUNTED
 SAMPLING METHOD: PLASTIC SLIDES, TIMED SAMPLING INTERVAL
 ANALYSIS METHOD: GLASS CHAMBER(12MM CIRC), 200-X MICROSCOPE

RED RIVER OF THE NORTH BASIN

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05116500 DES LACS RIVER AT FOXHOLM, ND

LOCATION.--Lat 48°22'14", long 101°34'11", in NW¼NE¼NW¼ sec.2, T.156 N., R.85 W., Ward County, Hydrologic Unit 09010002, on left bank 200 ft (60 m) upstream from county highway bridge in Foxholm, and at mile 23.0 (kilometer 37.0).

DRAINAGE AREA.--939 mi² (2,432 km²), of which about 400 mi² (1,040 km²) is probably noncontributing.

PERIOD OF RECORD.--June 1904 to July 1906, October 1945 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,632.98 ft (497.732 m) above mean sea level. June 14 to Oct. 23, 1955, nonrecording gage at site 200 ft (60 m) downstream from present gage at same datum. See WSP 1728 to 1913 for history of changes prior to June 14, 1955.

REMARKS.--Records are fair. Some regulation at low flow by a series of wildlife refuge ponds, beginning about 53 mi (85 km) upstream, combined capacity about 64,000 acre-ft (79 hm³). Some small diversions for irrigation above station.

AVERAGE DISCHARGE.--34 years, 31.7 ft³/s (0.898 m³/s), 22,970 acre-ft/yr (28.3 hm³/yr); median of yearly mean discharges, 17 ft³/s (0.48 m³/s), 12,300 acre-ft/yr (15 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,660 ft³/s (103.7 m³/s) Apr. 30, 1970, gage height, 20.71 ft (6.312 m), from floodmark; no flow at times in some years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 42 ft³/s (1.19 m³/s) June 17, gage height, 4.04 ft (1.231 m); no flow, Jan. 12 to Feb. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.0	3.0	1.8	.55	0	.40	9.0	4.0	3.4	2.1	1.5	1.4
2	4.2	3.0	1.8	.50	0	.40	9.0	3.8	3.2	2.0	1.5	1.5
3	2.4	3.0	1.8	.46	0	.38	8.0	3.7	1.0	1.7	1.6	1.6
4	2.2	3.0	1.8	.42	0	.35	8.0	3.6	1.0	2.0	1.8	1.7
5	2.2	3.0	1.8	.40	0	.35	7.5	3.8	1.2	2.1	1.6	1.8
6	2.2	3.0	1.6	.38	0	.40	7.5	3.8	2.2	2.2	1.6	1.9
7	2.2	2.8	1.4	.38	0	1.5	7.0	3.6	2.8	2.1	1.3	2.0
8	2.2	2.8	1.2	.35	0	5.0	8.0	3.4	4.0	1.4	1.4	2.1
9	2.4	2.8	1.0	.25	0	8.0	8.0	3.4	4.2	1.1	1.6	2.2
10	2.6	2.8	.90	.15	.05	10	7.5	3.4	4.5	1.0	1.3	2.3
11	2.6	2.8	.90	.05	.10	12	7.0	3.2	5.2	.92	1.3	2.2
12	2.8	2.6	.90	0	.50	12	7.0	3.0	5.7	.66	1.3	2.2
13	2.8	2.6	.90	0	.40	16	7.0	3.0	6.1	.78	1.2	2.1
14	2.8	2.6	.90	0	.30	16	6.5	3.0	6.1	1.0	1.3	2.1
15	2.8	2.6	.90	0	.25	15	6.0	3.0	7.0	1.6	1.4	2.1
16	2.8	2.6	.90	0	.25	14	5.5	3.0	20	2.0	1.5	2.0
17	2.8	2.6	.90	0	.20	13	5.5	3.2	27	1.6	1.5	2.0
18	2.8	2.6	.90	0	.20	13	5.0	3.6	9.7	1.0	1.4	2.0
19	2.8	2.6	.90	0	.20	12	5.0	3.6	6.3	1.2	1.3	2.0
20	3.0	2.6	.80	0	.25	11	5.0	4.0	5.0	1.2	1.3	1.9
21	3.0	2.6	.80	0	.25	11	5.0	4.0	3.6	.85	1.3	1.9
22	3.0	2.6	.80	0	.30	11	4.5	4.0	2.4	.55	1.3	1.9
23	3.0	2.6	.80	0	.35	11	4.0	3.8	1.8	.23	1.3	1.9
24	3.0	2.6	.80	0	.60	11	4.0	3.6	1.1	.14	1.3	2.0
25	3.0	2.6	.80	0	.55	10	4.0	3.4	.92	.35	1.3	2.0
26	3.0	2.4	.80	0	.50	10	4.0	3.2	1.7	.66	1.3	1.9
27	3.0	2.2	.80	0	.45	10	4.0	3.2	2.5	.85	1.3	1.8
28	3.0	2.0	.75	0	.40	10	4.2	3.4	2.2	.92	1.3	1.8
29	3.0	1.8	.70	0	---	10	4.4	3.2	2.2	.92	1.3	1.8
30	3.0	1.8	.65	0	---	10	4.2	3.2	1.8	1.1	1.3	1.8
31	3.0	---	.60	0	---	9.0	---	3.0	---	1.4	1.4	---
TOTAL	88.6	78.6	32.30	3.89	6.10	273.78	181.3	107.1	145.82	37.63	43.1	57.9
MEAN	2.86	2.62	1.04	.13	.22	8.83	6.04	3.45	4.86	1.21	1.39	1.93
MAX	5.0	3.0	1.8	.55	.60	16	9.0	4.0	27	2.2	1.8	2.3
MIN	2.2	1.8	.60	0	0	.35	4.0	3.0	.92	.14	1.2	1.4
AC-FT	176	156	64	7.7	12	543	360	212	289	75	85	115
CAL YR 1976	TOTAL	49648.60	MEAN	136	MAX	1500	MIN	.60	AC-FT	98480		
WTR YR 1977	TOTAL	1056.12	MEAN	2.89	MAX	27	MIN	0	AC-FT	2090		

05120000 SOURIS (MOUSE) RIVER NEAR VERENDRYE, ND

LOCATION.--Lat 48°09'35", long 100°43'45", in NW¼SW¼ sec.17, T.154 N., R.78 W., McHenry County, Hydrologic Unit 09010003, on left bank 2.7 mi (4.3 km) north of Verendrye, 19 mi (31 km) upstream from mouth of Wintering River, and at mile 302.0 (kilometer 485.9).

DRAINAGE AREA.--11,300 mi² (29,300 km²), approximately, of which about 6,900 mi² (17,900 km²) is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February to June 1933 (gage heights only), April 1937 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 2113: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,464.87 ft (446.492 m) above mean sea level. February to June 1933, at site 4 mi (6 km) upstream at datum 1.65 ft (0.503 m) higher. April 1, 1937 to Mar. 3, 1938, nonrecording gage at present site, at datum 1.97 ft (0.600 m) higher.

REMARKS.--Records good except those for the winter period, which are fair. Flow regulated by reservoirs on Souris and Des Lacs Rivers, the largest of which is Lake Darling (station 05115500), 128 mi (206 km) upstream, combined capacity about 248,000 acre-ft (306 hm³). Some small diversions for irrigation and municipal supply.

AVERAGE DISCHARGE.--40 years, 215 ft³/s (6.089 m³/s), 155,800 acre-ft/yr (192 hm³/yr); median of yearly mean discharges, 120 ft³/s (3.40 m³/s), 86,900 acre-ft/yr (110 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,900 ft³/s (280 m³/s) Apr. 19, 1976, gage height, 17.84 ft (5.438 m); minimum recorded, 0.3 ft³/s (0.008 m³/s) Aug. 11-19, 1937, Oct. 10-21, 1939.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 995 ft³/s (28.2 m³/s) May 5, gage height, 10.29 ft (3.136 m); minimum daily discharge, 4.0 ft³/s (0.11 m³/s) Aug. 5, 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	103	65	54	30	30	28	39	344	24	19	4.6	23
2	86	60	58	30	30	28	39	355	23	17	4.1	23
3	69	61	60	30	31	28	43	362	23	15	4.1	23
4	47	61	60	30	32	26	38	436	22	15	4.1	20
5	39	61	60	30	32	26	35	864	21	20	4.0	19
6	51	61	60	30	32	26	35	913	20	21	4.0	17
7	72	58	60	30	32	26	35	622	19	20	4.2	15
8	77	53	60	31	32	27	35	281	19	18	4.7	12
9	72	61	63	31	32	28	35	132	17	17	4.5	12
10	65	58	68	31	32	29	34	87	17	17	4.2	9.9
11	54	55	68	31	32	30	35	67	16	24	5.8	8.9
12	48	40	68	31	32	32	34	55	17	17	6.8	8.8
13	63	62	68	31	32	40	33	48	19	14	6.1	7.9
14	70	95	68	31	32	45	32	44	21	12	5.3	7.1
15	65	88	68	31	32	50	30	39	24	9.8	4.8	5.9
16	67	92	68	31	32	50	29	35	25	9.5	5.3	6.0
17	70	92	68	31	32	45	28	34	30	9.5	6.1	6.2
18	69	85	68	31	32	45	28	32	28	8.2	9.4	8.9
19	71	72	68	32	32	44	29	33	26	7.7	9.4	8.0
20	71	62	68	32	32	44	28	34	27	6.7	7.9	7.4
21	69	55	65	32	32	41	28	44	30	5.7	7.1	6.7
22	69	55	65	32	32	40	27	49	54	5.3	6.4	6.3
23	70	55	65	32	32	40	26	44	51	4.8	8.5	6.4
24	73	55	65	32	32	39	26	37	38	5.2	11	14
25	71	55	65	32	32	39	26	33	33	5.2	11	19
26	66	55	60	32	30	39	185	29	37	5.0	9.3	24
27	61	55	55	32	30	39	263	29	35	5.1	9.6	31
28	74	52	42	31	30	41	235	28	29	4.9	24	37
29	74	52	35	30	---	46	265	29	26	5.0	18	31
30	66	52	32	30	---	41	323	29	23	5.0	18	26
31	67	---	30	30	---	36	---	27	---	5.0	21	---
TOTAL	2089	1883	1862	960	885	1138	2078	5195	794	353.6	253.3	450.4
MEAN	67.4	62.8	60.1	31.0	31.6	36.7	69.3	168	26.5	11.4	8.17	15.0
MAX	103	95	68	32	32	50	323	913	54	24	24	37
MIN	39	40	30	30	30	26	26	27	16	4.8	4.0	5.9
AC-FT	4140	3730	3690	1900	1760	2260	4120	10300	1570	701	502	893
CAL YR 1976	TOTAL	423528.0	MEAN	1157	MAX	9700	MIN	28	AC-FT	840100		
WTR YR 1977	TOTAL	17941.3	MEAN	49	MAX	913	MIN	4.0	AC-FT	35590		

RED RIVER OF THE NORTH BASIN

05120000 SOURIS (MOUSE) RIVER NEAR VERENDRYE, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1950-51, 1952 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1973 to current year.

WATER TEMPERATURES: October 1973 to current year.

INSTRUMENTATION.--Water-quality monitor since October 1973.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 2,070 micromhos Feb. 27, 1974; minimum, 435 micromhos May 3, 1976.

WATER TEMPERATURES: Maximum, 28.0°C July 19, 1974; minimum, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 1,550 micromhos Sept. 29; minimum, 571 micromhos May 5.

WATER TEMPERATURES: Maximum, 27.0°C July 18; minimum, 0.0°C on many days during winter months.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	HARDNESS (CA, MG/L)	NON-CARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG/L)
OCT										
08...	1400	--	950	--	7.0	--	--	--	--	--
18...	1640	69	930	8.1	3.0	35	330	39	71	38
NOV										
05...	0955	--	965	--	1.0	--	--	--	--	--
15...	1730	87	1050	8.2	.0	23	370	46	77	44
DEC										
03...	1145	--	1080	--	.0	--	--	--	--	--
14...	1030	68	1000	7.9	.0	16	340	35	75	38
JAN										
03...	1815	--	1050	--	.0	--	--	--	--	--
18...	1025	31	1100	7.7	.0	25	400	43	88	43
FEB										
02...	1220	--	1120	--	.0	--	--	--	--	--
08...	1615	--	1120	7.5	.0	--	430	52	92	49
14...	1650	17	1070	7.7	.0	25	380	40	83	42
MAR										
24...	1345	38	1170	7.9	1.0	23	360	52	80	39
APR										
18...	1500	30	1120	8.1	14.0	12	360	28	78	39
MAY										
06...	1455	909	650	--	14.0	--	--	--	--	--
10...	1235	86	890	--	19.5	--	--	--	--	--
16...	1750	33	1100	7.8	20.5	60	360	77	78	41
31...	2030	--	1180	--	19.0	--	--	--	--	--
JUN										
20...	1815	28	1080	7.9	20.0	35	350	9	74	39
JUL										
05...	2100	--	1060	--	23.5	--	--	--	--	--
18...	1900	8.0	915	8.4	26.5	25	300	13	64	34
AUG										
01...	1525	4.3	1080	--	22.0	--	--	--	--	--
24...	1210	11	1180	8.2	16.0	23	380	0	81	42
SEP										
19...	1815	6.5	1280	7.8	14.0	24	410	35	89	46

RED RIVER OF THE NORTH BASIN

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05120000 SOURIS (MOUSE) RIVER NEAR VERENDRYE, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	ALKA- LITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)
OCT 08...	--	--	--	--	--	--	--	--	--
18...	87	35	2.1	11	360	0	295	4.6	180
NOV 05...	--	--	--	--	--	--	--	--	--
15...	100	36	2.3	11	399	0	327	4.0	250
DEC 03...	--	--	--	--	--	--	--	--	--
14...	96	37	2.3	11	377	0	309	7.6	230
JAN 03...	--	--	--	--	--	--	--	--	--
18...	100	35	2.2	10	431	0	354	14	230
FEB 02...	--	--	--	--	--	--	--	--	--
08...	110	35	2.3	9.0	463	0	380	23	250
14...	100	36	2.2	11	415	0	340	13	230
MAR 24...	130	43	3.0	8.7	376	0	308	7.6	300
APR 18...	130	44	3.0	8.3	400	0	330	5.1	250
MAY 06...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
16...	120	41	2.7	12	350	0	290	8.9	280
31...	--	--	--	--	--	--	--	--	--
JUN 20...	120	42	2.8	8.7	410	0	340	8.3	230
JUL 05...	--	--	--	--	--	--	--	--	--
18...	100	41	2.5	7.8	350	0	290	2.2	190
AUG 01...	--	--	--	--	--	--	--	--	--
24...	140	44	3.1	8.8	460	0	380	4.6	240
SEP 19...	140	42	3.0	9.3	460	0	380	12	280

DATE	DIS- SOLVED CHLO- RIDE (CL) (MG/L)	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO2) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO- GEN (N) (MG/L)
OCT 08...	--	--	--	--	--	--	--	--	--
18...	20	.2	16	638	619	.87	119	.03	.22
NOV 05...	--	--	--	--	--	--	--	--	--
15...	26	.2	9.5	731	715	.99	172	.12	.10
DEC 03...	--	--	--	--	--	--	--	--	--
14...	21	.2	14	683	672	.93	125	.21	.21
JAN 03...	--	--	--	--	--	--	--	--	--
18...	25	.2	21	744	733	1.01	62.3	.56	.44
FEB 02...	--	--	--	--	--	--	--	--	--
08...	28	.1	20	773	787	1.05	--	--	--
14...	32	.3	19	737	725	1.00	33.8	.73	.26
MAR 24...	34	.3	14	802	802	1.09	82.3	2.4	.11
APR 18...	26	.1	6.3	765	736	1.04	62.0	.07	.03
MAY 06...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
16...	27	.3	17	760	751	1.03	67.7	.54	.76
31...	--	--	--	--	--	--	--	--	--
JUN 20...	30	.2	9.2	738	715	1.00	55.8	.29	.28
JUL 05...	--	--	--	--	--	--	--	--	--
18...	31	.2	15	616	615	.84	13.3	.02	.05
AUG 01...	--	--	--	--	--	--	--	--	--
24...	41	.2	16	803	796	1.09	23.9	.02	.07
SEP 19...	44	.4	17	885	854	1.20	15.5	.08	.09

RED RIVER OF THE NORTH BASIN

05120000 SOURIS (MOUSE) RIVER NEAR VERENDRYE, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL PHOS- PHORUS (P) (MG/L)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L)	DIS- SOLVED ORTHO- PHOS- PHORUS (P) (MG/L)	DIS- SOLVED ORTHO- PHOS- PHATE (PO4) (MG/L)	DIS- SOLVED ALUM- INUM (AL) (UG/L)	DIS- SOLVED ARSENIC (AS) (UG/L)	DIS- SOLVED BARIUM (BA) (UG/L)	DIS- SOLVED BERYL- LIUM (BE) (UG/L)	DIS- SOLVED BORON (B) (UG/L)	DIS- SOLVED CAD- MIUM (CD) (UG/L)	DIS- SOLVED CHRO- MIUM (CR) (UG/L)
OCT											
18...	.22	.13	.10	.31	10	4	100	10	160	0	0
NOV											
15...	.12	.03	.02	.06	--	--	--	--	--	--	--
DEC											
14...	.14	.08	.05	.15	--	--	--	--	--	--	--
JAN											
18...	.11	.07	.19	.58	--	--	--	--	--	--	--
FEB											
08...	--	--	--	--	--	--	--	--	180	--	--
14...	.15	.07	.09	.28	--	--	--	--	--	--	--
MAR											
24...	.13	.08	.06	.18	--	--	--	--	--	--	--
APR											
18...	.09	.05	.05	.15	10	3	100	0	180	0	0
MAY											
16...	.38	.31	.24	.74	--	--	--	--	--	--	--
JUN											
20...	.29	.17	.13	.40	--	--	--	--	--	--	--
JUL											
18...	.19	.15	.08	.25	--	--	--	--	--	--	--
AUG											
24...	.24	.16	.14	.43	--	--	--	--	--	--	--
SEP											
19...	.24	.14	.09	.28	0	7	200	10	280	0	0

DATE	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED LEAD (PB) (UG/L)	DIS- SOLVED LITHIUM (LI) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)	DIS- SOLVED MERCURY (HG) (UG/L)	DIS- SOLVED MOLYB- DENUM (MO) (UG/L)	DIS- SOLVED NICKEL (NI) (UG/L)
OCT							
18...	0	0	50	--	.0	1	4
FEB							
08...	80	--	--	700	--	--	--
APR							
18...	40	1	50	--	.0	1	3
SEP							
19...	120	2	70	--	.0	2	2

05120000 SOURIS (MOUSE) RIVER NEAR VERENDRYE, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED SELE- NIUM (SE) (UG/L)	DIS- SOLVED SILVER (AG) (UG/L)	DIS- SOLVED STRON- TIUM (SR) (UG/L)	DIS- SOLVED VANA- DIUM (V) (UG/L)	DIS- SOLVED ZINC (ZN) (UG/L)	CYANIDE (CN) (MG/L)
OCT 18...	1	0	330	1.2	0	17
FEB 08...	--	--	--	--	--	--
APR 18...	0	0	440	.9	10	.00
SEP 19...	0	0	550	.0	0	.00

DATE	SUS- PENDE SEDIM- MENT (MG/L)	SUS- PENDE SEDIM- MENT DIS- CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM
OCT 18...	12	2.2	--	--	--
NOV 15...	48	11	--	--	--
DEC 14...	12	2.2	--	--	--
JAN 18...	10	.84	--	--	--
FEB 14...	9	.41	--	--	--
MAR 24...	8	.82	--	--	--
APR 18...	43	3.5	--	--	--
MAY 06...	1150	2820	86	99	100
16...	56	5.0	--	--	--
JUN 20...	57	4.3	--	--	--
JUL 18...	23	.50	--	--	--
AUG 24...	35	1.0	--	--	--
SEP 19...	27	.47	--	--	--

RED RIVER OF THE NORTH BASIN

05120000 SOURIS (MOUSE) RIVER NEAR VERENDRYE, ND--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	984	881	955	952	1110	1100	1040	1030	1120	1120	1110	1100
2	881	873	953	950	1100	1090	1050	1030	1120	1120	1120	1110
3	885	879	951	948	1099	1060	1050	1050	1120	1100	1140	1120
4	896	882	961	949	1060	1040	1070	1050	1110	1100	1150	1130
5	924	899	965	955	1040	1020	1080	1070	1110	1110	1170	1150
6	943	924	955	949	1020	1010	1090	1080	1120	1110	1190	1170
7	943	940	949	939	1020	1000	1100	1090	1120	1120	1230	1190
8	950	943	942	939	1000	994	1110	1100	1120	1100	1270	1220
9	953	947	962	942	999	986	1110	1100	1120	1110	1270	1250
10	953	940	972	965	987	984	1110	1100	1110	1100	1240	1170
11	940	928	989	972	985	979	1110	1100	1110	1100	1170	1090
12	937	925	1010	989	987	980	1110	1100	1100	1090	1090	1020
13	947	934	1030	1010	995	988	1110	1110	1090	1070	1020	990
14	947	940	1070	1030	1000	997	1110	1100	1070	1070	1030	991
15	---	---	1070	1040	1000	1000	1100	1100	1070	1070	1180	1040
16	---	---	1030	1020	1000	1000	1110	1100	1080	1080	1360	1200
17	---	---	1360	1020	1000	989	1110	1100	1090	1080	1250	1190
18	---	---	1400	1360	986	972	1100	1100	1100	1090	1200	1170
19	938	931	1470	1400	973	967	1100	1090	1110	1100	1170	1130
20	935	932	1470	1440	971	967	1100	1100	1100	1100	1120	1070
21	946	936	1440	1400	978	971	1100	1100	1110	1100	1090	1070
22	947	943	1410	1390	982	979	1090	1090	1110	1100	1100	1080
23	951	947	1410	1360	993	986	1090	1080	1110	1090	1120	1080
24	948	945	1360	1310	994	990	1090	1090	1100	1090	1190	1130
25	943	943	1310	1200	991	987	1100	1090	1120	1100	1180	1130
26	950	944	1180	1030	998	988	1120	1100	1110	1110	1150	1110
27	967	951	1040	1030	999	999	1130	1120	1110	1100	1140	1130
28	967	958	1060	1040	1000	1000	1140	1120	1110	1100	1130	1080
29	965	959	1080	1060	1020	1000	1140	1130	---	---	1080	1010
30	963	957	1120	1080	1030	1020	1130	1120	---	---	1020	996
31	958	951	---	---	1030	1030	1120	1120	---	---	1000	974
MONTH	967	873	1470	939	1110	967	1140	1030	1120	1070	1360	974

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	972	953	1020	938	1210	1180	1100	1080	1080	1060	1240	1230
2	977	941	931	909	1200	1180	1090	1080	1090	1080	1230	1210
3	978	936	923	882	1170	1150	1080	1070	1090	1090	1240	1220
4	972	956	881	851	1150	1140	1070	1060	1100	1090	1250	1240
5	994	964	921	571	1130	1120	1070	1050	1100	1090	1250	1240
6	998	988	664	573	1140	1120	1060	983	1110	1100	1240	1210
7	1010	986	747	615	1130	1120	1000	982	1110	1100	1210	1200
8	1040	1010	835	756	1150	1130	1000	991	1110	1100	1210	1190
9	1060	1020	850	839	1170	1130	1020	997	1110	1100	1210	1200
10	1070	1020	878	849	1190	1160	1020	992	1120	1110	1210	1200
11	1040	1020	910	882	1190	1180	987	861	1130	1110	1220	1200
12	1050	1020	963	917	1210	1180	993	968	1130	1130	1220	1200
13	1090	1040	1010	967	1210	1190	970	956	1140	1130	1230	1200
14	1100	1080	1050	1010	1200	1190	958	944	1150	1140	1240	1230
15	1110	1100	1080	1050	1180	1160	949	926	1150	1140	1250	1240
16	1100	1080	1100	1090	1160	1130	924	908	1160	1150	1250	1250
17	1110	1090	1100	1090	1130	1100	926	913	1160	1150	1260	1260
18	1120	1120	1120	1100	1120	1100	921	911	1160	1150	1270	1260
19	1110	1100	1120	1110	1110	1100	922	915	1160	1160	1290	1270
20	1110	1090	1160	1120	1100	1070	936	916	1170	1160	1290	1280
21	1120	1090	1170	1160	1070	1050	957	933	1180	1170	1300	1300
22	1130	1110	1190	1160	1120	1050	978	957	1180	1170	1300	1290
23	1130	1120	1180	1150	1180	1110	996	982	1180	1170	1300	1270
24	1140	1120	1170	1160	1100	1080	1010	997	1200	1170	1290	1270
25	1160	1140	1180	1170	1120	1090	1010	1010	1220	1200	1370	1300
26	1250	1150	1180	1160	1260	1120	1030	1000	1210	1200	1350	1250
27	1240	1090	1190	1180	1320	1270	1030	1020	1220	1210	1440	1260
28	1090	1030	1180	1140	1310	1240	1050	1030	1220	1200	1540	1430
29	1120	1050	1200	1140	1240	1150	1050	1040	1230	1220	1550	1480
30	1050	1000	1190	1150	1150	1100	1060	1050	1240	1230	1470	1440
31	---	---	1180	1140	---	---	1080	1060	1240	1220	---	---
MONTH	1250	936	1200	571	1320	1050	1100	861	1240	1060	1550	1190

RED RIVER OF THE NORTH BASIN

201

05120000 SOURIS (MOUSE) RIVER NEAR VERENDRYE, ND--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	12.5	11.0	4.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	12.5	11.5	3.5	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	13.0	12.5	2.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	12.5	10.5	1.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	10.5	8.5	1.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	8.5	7.0	1.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	7.0	6.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
8	7.5	6.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
9	8.0	6.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
10	8.5	7.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
11	9.5	8.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
12	9.5	8.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
13	9.5	8.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
14	8.5	7.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
15	---	---	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
16	---	---	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
17	---	---	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
18	---	---	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
19	3.5	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
20	3.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
21	2.5	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
22	2.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
23	1.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
24	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
25	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
26	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
27	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.5
28	2.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	1.0
29	2.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	---	---	2.0	0.5
30	2.5	2.0	0.0	0.0	0.0	0.0	0.0	0.0	---	---	1.5	0.0
31	2.5	2.0	---	---	0.0	0.0	0.0	0.0	---	---	2.0	0.5
MONTH	13.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	2.5	1.0	16.5	15.5	20.0	17.5	21.0	18.0	22.5	21.0	17.0	15.5
2	2.5	1.0	15.5	15.0	20.0	17.5	21.5	19.0	23.5	20.5	17.0	15.5
3	2.0	1.0	16.5	14.5	20.0	18.0	23.0	19.5	22.0	20.5	16.5	15.5
4	1.5	0.5	16.0	16.0	20.0	18.0	23.0	20.0	22.0	20.0	17.0	16.0
5	2.0	0.5	16.0	13.0	20.5	18.5	24.0	21.5	21.5	18.5	17.5	16.5
6	4.0	1.0	14.5	13.5	21.5	18.5	24.5	22.0	21.5	19.0	17.5	16.5
7	5.0	2.0	14.5	13.5	21.5	19.0	24.5	22.5	20.0	18.5	18.5	16.5
8	6.5	3.5	16.0	14.0	21.5	19.0	23.5	21.0	22.0	18.0	18.0	16.5
9	8.0	4.5	17.5	16.0	21.0	19.0	23.0	21.0	21.5	19.5	16.5	15.5
10	9.5	6.5	19.5	17.5	22.5	20.0	23.5	21.0	19.0	17.5	16.5	15.5
11	10.5	7.5	20.0	19.0	21.5	19.0	22.0	20.5	20.0	16.5	17.0	15.5
12	11.0	8.5	21.0	19.0	19.0	18.5	22.5	19.5	18.5	17.0	16.0	15.5
13	11.5	9.0	22.0	19.5	18.5	17.5	22.0	20.5	19.0	15.5	17.5	15.0
14	13.0	10.5	22.5	20.0	17.5	16.5	22.0	20.0	18.5	16.5	16.5	15.0
15	13.5	11.0	22.5	20.5	19.0	16.5	23.5	20.0	19.0	17.0	17.5	15.5
16	13.0	11.5	21.0	20.0	19.5	17.5	26.0	21.5	20.0	17.5	18.0	16.0
17	14.0	12.5	20.5	19.0	19.5	18.5	26.5	22.0	19.5	16.0	16.5	16.0
18	14.0	12.5	20.0	19.0	20.0	18.0	27.0	23.5	18.5	16.5	15.5	14.5
19	13.5	12.5	19.0	18.5	20.5	19.0	26.5	24.0	19.5	17.0	14.5	14.0
20	13.0	11.0	19.0	17.5	20.5	18.5	24.5	23.5	18.0	17.0	14.5	13.5
21	13.0	11.0	19.0	17.0	20.0	19.0	25.0	22.5	19.5	16.5	14.0	13.5
22	14.0	11.0	18.5	17.5	20.0	18.5	25.0	23.5	18.0	17.0	14.0	13.5
23	14.0	11.5	19.0	17.0	21.5	19.0	26.5	24.0	17.5	16.0	13.5	13.0
24	14.0	11.5	21.5	17.5	22.5	20.0	26.5	24.0	17.5	15.5	13.0	12.5
25	14.5	12.0	22.5	19.5	23.5	21.0	24.5	23.0	19.5	17.5	13.0	12.5
26	15.0	13.0	21.5	20.5	24.5	22.0	24.0	23.0	18.5	17.0	12.5	11.5
27	15.0	14.5	21.5	20.0	24.0	22.5	24.0	23.0	18.0	16.5	13.0	11.5
28	15.5	14.0	20.5	19.5	23.0	21.0	25.5	23.0	17.5	16.5	12.0	11.5
29	16.0	14.5	20.0	18.5	22.0	21.0	24.5	23.0	17.5	15.5	11.5	11.0
30	17.0	15.5	19.5	18.5	20.5	19.5	24.0	22.5	18.0	16.5	11.5	11.0
31	---	---	19.5	17.5	---	---	23.5	21.0	17.5	16.5	---	---
MONTH	17.0	0.5	22.5	13.0	24.5	16.5	27.0	18.0	23.5	15.5	18.5	11.0

RED RIVER OF THE NORTH BASIN

05120200 WINTERING RIVER NEAR BERGEN, ND

LOCATION.--Lat 47°55'50", long 100°40'15", on west line of sec.4, T.151 N., R.78 W., McHenry County, Hydrologic Unit 09010003, on left bank, 6 mi (10 km) southeast of Bergen.

DRAINAGE AREA.--176 mi² (456 km²), of which about 50 mi² (130 km²) is probably noncontributing.

PERIOD OF RECORD.--October 1956 to current year.

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,587.91 ft (483.995 m).

REMARKS.--Some regulation by Fish and Wildlife Service dams on Cottonwood and Wintering Lakes; controlled capacity, about 850 acre-ft (1.05 hm³).

AVERAGE DISCHARGE.--21 years, 6.22 ft³/s (0.176 m³/s), 4,510 acre-ft/yr (5.56 hm³/yr); median of yearly mean discharges, 5.0 ft³/s (0.14 m³/s), 3,600 acre-ft/yr (4.4 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 900 ft³/s (25.5 m³/s) Apr. 10, 1969, gage height, 5.90 ft (1.798 m); no flow for several months each year.

EXTREMES FOR CURRENT YEAR.--No flow during the year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0
MEAN	0	0	0	0	0	0	0	0	0	0	0	0
MAX	0	0	0	0	0	0	0	0	0	0	0	0
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	0	0	0	0	0	0	0	0	0	0	0	0
CAL YR 1976	TOTAL	4060.16	MEAN	11.1	MAX	380	MIN	0	AC-FT	8050		
WTR YR 1977	TOTAL	0.00	MEAN	.000	MAX	.00	MIN	0	AC-FT	0		

05120500 WINTERING RIVER NEAR KARLSRUHE, ND

LOCATION.--Lat 48°10'14", long 100°32'20", on line between secs.10 and 11, T.154 N., R.77 W., McHenry County, Hydrologic Unit 09010003, on left bank 30 ft (9 m) upstream from county highway bridge, 4 mi (6 km) upstream from mouth, and 7 mi (11 km) northeast of Karlsruhe.

DRAINAGE AREA.--705 mi² (1,826 km²), of which about 420 mi² (1,090 km²) is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1937 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 1,480 ft (451 m) from river-profile map.

REMARKS.--Records fair. Some regulation by Fish and Wildlife Service dams on Cottonwood and Wintering Lakes; controlled capacity, about 850 acre-ft (1.05 hm³).

AVERAGE DISCHARGE.--40 years, 12.7 ft³/s (0.360 m³/s), 9,200 acre-ft/yr (11.3 hm³/yr); median of yearly mean discharges, 10 ft³/s (0.28 m³/s), 7,200 acre-ft/yr (8.9 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,000 ft³/s (85.0 m³/s) Apr. 7, 1949, by velocity-area studies; maximum gage height, 12.0 ft (3.66 m) Apr. 7, 1949 (channel choked by packed snow); no flow at times in many years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 15 ft³/s (0.42 m³/s) Mar. 10, gage height, 5.06 ft (1.542 m), backwater from beaver dam; maximum gage height, 5.31 ft (1.618 m) Mar. 30, backwater from beaver dam; minimum daily discharge, 0.20 ft³/s (0.006 m³/s) Aug. 5-6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.9	3.8	1.5	1.3	.90	3.6	7.3	6.6	3.0	1.1	.28	3.2
2	1.9	3.8	1.5	1.3	.90	3.5	7.3	6.6	2.8	1.1	.28	3.2
3	2.0	3.8	1.5	1.3	.90	3.5	7.3	6.6	2.4	1.1	.50	3.2
4	2.0	3.8	1.5	1.3	1.0	3.5	7.2	10	2.2	1.0	.30	3.1
5	2.1	3.8	1.5	1.3	1.0	3.4	7.2	12	2.0	1.0	.20	3.1
6	2.3	3.8	1.5	1.3	1.0	3.4	7.2	10	1.8	.95	.20	3.1
7	2.5	3.6	1.4	1.3	1.0	3.6	7.2	9.0	1.6	.90	.30	3.1
8	2.7	3.6	1.4	1.3	1.1	4.0	7.2	8.0	1.5	.85	1.4	3.1
9	2.8	3.6	1.4	1.2	1.2	8.0	7.2	7.5	1.4	.80	1.0	3.1
10	3.0	3.6	1.4	1.1	1.3	13	7.2	7.0	1.5	1.0	.60	3.2
11	3.2	3.4	1.4	1.0	1.5	12	7.1	6.5	1.5	7.0	.40	3.2
12	3.2	3.4	1.4	.90	1.7	10	7.1	6.0	1.6	5.0	.30	3.2
13	3.4	3.0	1.4	.90	1.8	9.0	7.1	5.5	2.0	4.8	1.1	3.2
14	3.6	2.6	1.4	.90	1.8	8.5	7.1	5.0	2.2	4.0	.90	3.2
15	3.6	2.4	1.4	.90	1.7	8.5	7.1	4.5	2.4	3.0	.70	3.2
16	3.8	2.2	1.4	.90	1.6	8.5	7.0	4.5	2.4	2.2	1.5	3.1
17	3.8	2.2	1.4	.90	1.7	8.5	7.0	5.0	2.4	1.5	1.3	3.1
18	3.8	2.2	1.4	.90	1.7	8.0	7.0	5.2	2.2	1.2	1.4	3.1
19	4.0	2.2	1.4	1.0	1.8	7.5	7.0	5.5	2.0	1.0	1.3	3.1
20	4.0	2.2	1.4	1.0	2.0	7.5	7.0	5.8	1.8	.90	.80	3.1
21	4.0	2.2	1.4	1.0	2.5	7.5	6.9	5.6	1.6	.80	.90	3.1
22	4.0	2.2	1.4	1.0	3.0	7.4	6.9	5.3	1.4	.70	1.0	3.1
23	4.0	2.0	1.4	1.1	3.5	7.4	6.9	5.0	1.4	.60	1.0	3.2
24	4.0	2.0	1.4	1.1	3.8	7.4	6.9	4.8	1.3	.55	1.1	4.0
25	4.0	2.0	1.4	1.1	3.8	7.4	6.8	4.5	1.3	.50	.90	5.0
26	4.0	2.0	1.4	1.1	3.7	7.4	6.8	4.2	1.2	.45	1.2	5.0
27	4.0	1.9	1.4	1.1	3.7	7.3	6.8	4.5	1.2	.40	1.5	4.4
28	4.0	1.8	1.4	1.0	3.6	7.3	6.7	5.0	1.2	.50	1.8	4.0
29	4.0	1.6	1.4	.90	---	7.3	6.7	5.2	1.1	.45	1.7	3.8
30	3.8	1.5	1.3	.90	---	7.3	6.7	4.2	1.1	.40	1.5	3.7
31	3.8	---	1.3	.90	---	7.3	---	3.4	---	.35	3.2	---
TOTAL	103.2	82.2	43.8	33.20	55.20	218.5	210.9	188.5	53.5	46.10	30.56	102.2
MEAN	3.33	2.74	1.41	1.07	1.97	7.05	7.03	6.08	1.78	1.49	.99	3.41
MAX	4.0	3.8	1.5	1.3	3.8	13	7.3	12	3.0	7.0	3.2	5.0
MIN	1.9	1.5	1.3	.90	.90	3.4	6.7	3.4	1.1	.35	.20	3.1
AC-FT	205	163	87	66	109	433	418	374	106	91	61	203
CAL YR 1976 TOTAL	10912.50			MEAN 29.8	MAX 650	MIN 1.0	AC-FT 21640					
WTR YR 1977 TOTAL	1167.86			MEAN 3.20	MAX 13	MIN .20	AC-FT 2320					

RED RIVER OF THE NORTH BASIN

05122000 SOURIS (MOUSE) RIVER NEAR BANTRY, ND

LOCATION.--Lat 48°30'20", long 100°26'04", in SE¼NW¼SE¼ sec.14, T.158 N., R.76 W., McHenry County, Hydrologic Unit 09010003, on left bank 200 ft (61 m) upstream from Nelson bridge, 8 mi (13 km) east of Bantry, 18 mi (29 km) upstream from Willow Creek, and at mile 228.0 (kilometer 366.9).

DRAINAGE AREA.--12,300 mi² (31,900 km²), approximately, of which about 7,600 mi² (19,700 km²) is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1937 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 2113: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,427.56 ft (435.120 m) above mean sea level. Prior to Mar. 16, 1938, nonrecording gage at same site at datum 0.17 ft (0.052 m) lower.

REMARKS.--Records fair. Flow regulated by reservoirs on Souris, Des Lacs, and Wintering Rivers, total capacity, about 249,000 acre-ft (307 km³). Diversions for irrigation of about 7,600 acres (30.8 km²) at Eaton Dam about 42 mi (68 km) above station and other small diversions for irrigation and municipal supply.

AVERAGE DISCHARGE.--40 years, 232 ft³/s (6.570 m³/s), 168,100 acre-ft/yr (207 hm³/yr); median of yearly mean discharges, 130 ft³/s (3.68 m³/s), 94,200 acre-ft/yr (120 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,330 ft³/s (264 m³/s) Apr. 23, 1976, gage height, 14.59 ft (4.447 m); no flow at times each year 1937-40, 1963.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 480 ft³/s (13.6 m³/s) May 22, gage height, 6.50 ft (1.981 m); minimum daily, 3.0 ft³/s (0.085 m³/s) Aug. 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	75	80	54	60	35	37	27	14	151	45	11	24
2	81	80	56	56	35	36	24	11	148	42	11	14
3	85	79	58	48	35	35	20	9.9	135	38	11	20
4	89	76	60	42	36	35	16	12	120	35	10	28
5	87	70	62	40	36	34	14	29	110	32	9.0	49
6	82	66	64	38	36	33	13	29	100	30	9.0	43
7	79	48	66	37	36	33	13	53	90	29	11	38
8	73	44	68	37	37	34	13	190	80	25	10	39
9	66	44	70	37	37	36	13	263	70	22	9.3	39
10	66	44	70	36	38	38	14	262	63	23	8.6	37
11	68	42	70	36	37	40	14	209	56	48	7.4	28
12	70	40	70	36	37	45	14	131	53	60	6.6	24
13	71	40	70	35	37	50	14	75	52	66	6.6	22
14	68	42	70	35	37	55	14	49	49	63	5.2	19
15	61	42	70	35	36	60	14	30	50	61	4.2	17
16	57	42	70	35	36	65	14	19	48	56	4.0	20
17	55	44	70	35	36	65	14	15	47	46	3.6	18
18	55	50	70	35	37	70	14	15	48	35	3.0	15
19	57	62	70	35	38	70	13	20	49	29	3.8	14
20	59	74	70	35	38	75	12	109	49	24	3.6	13
21	61	80	70	36	38	70	12	382	49	21	4.0	12
22	64	80	70	36	38	60	12	473	50	19	5.0	12
23	67	80	70	36	38	50	11	471	49	17	6.0	12
24	68	74	70	36	38	45	10	425	46	15	5.2	17
25	68	68	70	36	38	40	10	332	45	14	7.6	19
26	73	64	70	36	37	36	13	286	47	13	14	20
27	72	58	70	36	37	34	42	255	49	13	20	19
28	79	56	70	35	37	32	41	215	51	13	31	18
29	74	56	70	35	---	30	26	184	50	13	25	22
30	74	56	68	35	---	29	19	184	49	13	32	29
31	78	---	64	35	---	30	---	178	---	12	35	---
TOTAL	2182	1781	2090	1175	1031	1402	500	4929.9	2053	972	332.7	701
MEAN	70.4	59.4	67.4	37.9	36.8	45.2	16.7	159	68.4	31.4	10.7	23.4
MAX	89	80	70	60	38	75	42	473	151	66	35	49
MIN	55	40	54	35	35	29	10	9.9	45	12	3.0	12
AC-FT	4330	3530	4150	2330	2040	2780	992	9780	4070	1930	660	1390
CAL YR 1976 TOTAL	434901.0											
WTR YR 1977 TOTAL	19149.6											
MEAN				1188		9260	MIN	40	AC-FT	862600		
MAX				52		473	MIN	3.0	AC-FT	37980		

RED RIVER OF THE NORTH BASIN

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05122000 SOURIS RIVER NEAR BANTRY, ND--Continued

WATER-QUALITY RECORDS

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

REMARKS.--Some chemical data furnished by North Dakota State Water Commission.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS)	SPECIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	HARD- NESS (CA, MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)
OCT										
07...	1800	39	910	--	6.5	--	--	--	--	--
NOV										
03...	1400	75	910	8.3	1.0	350	33	74	40	85
30...	1815	56	1340	8.2	.0	450	53	97	50	150
JAN										
05...	1735	40	1010	7.5	.0	370	30	81	41	89
FEB										
10...	1035	38	1050	7.3	.0	390	17	89	41	94
MAR										
02...	1520	36	1070	7.4	.0	410	47	82	50	97
APR										
08...	1235	13	635	8.1	5.0	240	8	55	25	50
MAY										
05...	1635	32	760	8.3	18.5	280	0	61	31	67
09...	1710	272	1060	--	19.5	--	--	--	--	--
JUN										
02...	1915	150	1060	8.0	21.0	360	30	74	43	120
JUL										
07...	1830	28	990	8.2	26.0	340	0	71	40	110
AUG										
04...	1100	10	880	8.1	20.0	290	0	58	35	92
SEP										
12...	1545	24	885	8.3	16.5	310	0	62	38	89

DATE	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	ALKA- LITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)
OCT									
07...	--	--	--	--	--	--	--	--	--
NOV									
03...	34	2.0	8.5	368	9	317	3.1	180	21
30...	41	3.1	12	482	0	395	4.9	301	55
JAN									
05...	34	2.0	8.8	416	0	341	21	201	22
FEB									
10...	34	2.1	7.9	456	0	374	37	201	25
MAR									
02...	33	2.1	8.6	443	0	363	28	221	24
APR									
08...	31	1.4	4.6	283	0	232	3.6	99	17
MAY									
05...	33	1.7	7.5	343	0	281	2.8	120	21
09...	--	--	--	--	--	--	--	--	--
JUN									
02...	41	2.7	9.0	397	4	332	6.5	260	25
JUL									
07...	40	2.6	8.1	402	13	351	4.3	200	25
AUG									
04...	40	2.4	7.7	350	6	297	4.6	160	24
SEP									
12...	38	2.2	7.1	395	0	324	3.2	140	32

RED RIVER OF THE NORTH BASIN

05122000 SOURIS RIVER NEAR BANTRY, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO2) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	DIS- SOLVED BORON (B) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)
OCT 07...	--	--	--	--	--	--	--	--	--
NOV 03...	.1	13	645	614	.88	131	70	170	100
30...	.2	13	934	919	1.27	141	600	100	60
JAN 05...	.1	18	695	669	.95	75.1	780	100	620
FEB 10...	.1	22	717	706	.98	73.6	40	370	2200
MAR 02...	.2	17	718	721	.98	69.8	70	120	1300
APR 08...	.1	7.0	389	398	.53	13.7	180	80	380
MAY 05...	.1	3.5	521	481	.71	45.0	280	60	360
09...	--	--	--	--	--	--	--	--	--
JUN 02...	.2	9.6	722	741	.98	292	100	80	220
JUL 07...	.2	11	719	677	.98	54.4	210	280	--
AUG 04...	.0	14	562	569	.76	15.2	120	140	80
SEP 12...	.1	16	554	579	.75	35.9	100	120	40

RED RIVER OF THE NORTH BASIN

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05123000 LAKE METIGOSHE NEAR BOTTINEAU, ND

LOCATION.--Lat 48°59'05", long 100°20'52", in SE¼SW¼ sec.35, T.164 N., R.75 W., Bottineau County, Hydrologic Unit 09010004, 25 ft (7.6 m) east from northeast corner of bridge over Lake Metigoshe, 11.7 mi (18.8 km) northeast of Bottineau.

DRAINAGE AREA.--59 mi² (153 km²).

PERIOD OF RECORD.--June 1931 to September 1932, September 1953 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,130.00 ft (649.224 m) above mean sea level. 1931-32, non-recording gage on north abutment of bridge at datum 6.32 ft (1.93 m) lower (reduced to elevations above mean sea level). Sept. 4, 1953, to Jan. 19, 1955, nonrecording gage at present datum on east end of south abutment of bridge.

REMARKS.--Outlet of lake is a concrete dam with removable stoplogs; average crest elevation without stoplogs about 2,138.0 ft (651.66 m) above mean sea level. Lake level regulated since 1959 by dam and control works in the outlet of Sharpe Lake located on the principal tributary in Manitoba.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 9.70 ft (2.957 m) May 3, 1975; minimum, 4.28 ft (1.305 m) Sept. 17, 1932, present datum.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 7.86 ft (2.396 m) May 19; minimum gage height, 7.13 ft (2.173 m) Aug. 25.

MONTHEND GAGE HEIGHT, IN FEET, AT 2400, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Oct. 31-----	7.58	Jan. 31-----	7.62	Apr. 30-----	7.61	July 31-----	7.37
Nov. 30-----	7.51	Feb. 28-----	7.65	May 31-----	7.77	Aug. 31-----	7.17
Dec. 31-----	*7.59	Mar. 31-----	7.68	June 30-----	7.56	Sept. 30-----	7.33

* Estimated.

RED RIVER OF THE NORTH BASIN

05123100 OAK CREEK AT LAKE METIGOSHE OUTLET NEAR BOTTINEAU, ND

LOCATION.--Lat 48°57'56", long 100°21'47", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.3, T.163 N., R.75 W., Bottineau County, Hydrologic Unit 09010004, at outlet of Lake Metigoshe, 10 mi (16 km) northeast of Bottineau.

DRAINAGE AREA.--59 mi² (153 km²).

PERIOD OF RECORD.--October 1953 to current year.

GAGE.--Water-stage recorder and concrete control with stoplogs. Datum of gage is 2,130.00 ft (649.224 m) above mean sea level. Prior to Jan. 20, 1955, nonrecording gage at same site and datum. Gage is located 1.5 mi (2.4 km) northeast of outlet of lake, and is same as that used for station on Lake Metigoshe.

REMARKS.--No flow all year. Flow regulated since 1959 by dam and control works on the outlet of Sharpe Lake located on the principal tributary in Manitoba.

AVERAGE DISCHARGE.--24 years, 4.82 ft³/s (0.137 m³/s), 3,490 acre-ft/yr (4.30 hm³/yr); median of yearly mean discharges, 2.1 ft³/s (0.059 m³/s), 1,500 acre-ft/yr (1.8 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 148 ft³/s (4.19 m³/s) May 3, 1975, gage height, 9.70 ft (2.957 m); no flow at times most years.

EXTREMES FOR CURRENT YEAR.--No flow all year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0
MEAN	0	0	0	0	0	0	0	0	0	0	0	0
MAX	0	0	0	0	0	0	0	0	0	0	0	0
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	0	0	0	0	0	0	0	0	0	0	0	0
CAL YR 1976	TOTAL	5305.95	MEAN	14.5	MAX	125	MIN	0	AC-FT	10520		
WTR YR 1977	TOTAL	0.00	MEAN	.000	MAX	.00	MIN	0	AC-FT	0		

RED RIVER OF THE NORTH BASIN

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05123400 WILLOW CREEK NEAR WILLOW CITY, ND

LOCATION.--Lat 48°35'20", long 100°26'30", in NE¼NW¼ sec.23, T.159 N., R.76 W., McHenry County, Hydrologic Unit 09010004, on left bank 50 ft (15 m) downstream from bridge on county road, 1.5 mi (2.4 km) upstream from Snake Creek, and 7 mi (11 km) west of Willow City.

DRAINAGE AREA.--1,160 mi² (3,000 km²), approximately, of which about 430 mi² (1,110 km²) is probably noncontributing.

PERIOD OF RECORD.--August 1956 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,430 ft (436 m), from topographic map. Prior to Oct. 5, 1956, nonrecording gage at site 50 ft (15 m) upstream at same datum.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--21 years, 49.2 ft³/s (1.393 m³/s), 35,650 acre-ft/yr (44.0 hm³/yr); median of yearly mean discharges, 18 ft³/s (0.51 m³/s), 13,000 acre-ft/yr (16 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,900 ft³/s (167 m³/s) Apr. 12, 1969, gage height, 16.76 ft (5.108 m); no flow at times each year.

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)
May 21	1500	*115 3.26	*6.91 2.106	July 17	0900	80 2.27	6.33 1.929

No flow for several months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1								0	3.3	0	3.8	
2								0	1.8	0	2.6	
3								0	1.2	0	1.8	
4								0	.72	0	.53	
5								0	.58	0	.21	
6								0	.36	0	.17	
7								0	.17	0	.21	
8								0	.03	0	3.4	
9								0	.01	0	2.8	
10								0	.03	0	3.3	
11								0	.03	0	2.9	
12								0	.03	0	3.3	
13								0	.17	0	2.6	
14								0	.06	0	1.6	
15								0	.28	16	1.6	
16								0	.14	56	1.7	
17								0	.24	79	1.6	
18								0	.21	70	3.3	
19								0	.03	52	2.7	
20								38	.01	36	1.6	
21								108	0	26	.87	
22								91	0	21	.67	
23								49	0	17	.21	
24								34	0	14	.06	
25								29	0	10	0	
26								20	0	6.9	0	
27								11	0	5.8	0	
28								9.0	0	5.6	0	
29								11	0	4.8	0	
30								7.3	0	4.9	0	
31		---			---		---	4.4	---	4.0	0	---
TOTAL	0	0	0	0	0	0	0	411.7	9.40	429.0	43.53	0
MEAN	0	0	0	0	0	0	0	13.3	.31	13.8	1.40	0
MAX	0	0	0	0	0	0	0	108	3.3	79	3.8	0
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	0	0	0	0	0	0	0	817	19	851	86	0
CAL YR 1976	TOTAL	40964.85	MEAN 112	MAX 2460	MIN 0	AC-FT 81250						
WTR YR 1977	TOTAL	893.63	MEAN 2.45	MAX 108	MIN 0	AC-FT 1770						

RED RIVER OF THE NORTH BASIN

05123510 DEEP RIVER NEAR UPHAM, ND

LOCATION.--Lat 48°35'03", long 100°51'44", in SW¼NW¼ sec.22, T.159 N., R.79 W., McHenry County, Hydrologic Unit 09010005, 60 ft (18 m) downstream from county highway bridge, 0.8 mi (1.3 km) downstream from Little Deep River, and 6.3 mi (10.1 km) west of Upham.

DRAINAGE AREA.--975 mi² (2,525 km²), of which 605 mi² (1,567 km²) is probably noncontributing.

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

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 1,430 ft (436 m), from topographic map.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--20 years, 20.8 ft³/s (0.589 m³/s), 15,070 acre-ft/yr (18.6 hm³/yr); median of yearly mean discharges, 0.8 ft³/s (0.023 m³/s), 580 acre-ft/yr (0.72 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,760 ft³/s (191 m³/s) Apr. 12, 1969, gage height, 18.18 ft (5.541 m); no flow for part or all of each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in April 1951 reached a stage of about 16 ft (4.88 m), discharge, 2,700 ft³/s (76.5 m³/s), from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 0.50 ft³/s (0.014 m³/s) Mar. 12, gage height, 5.31 ft (1.618 m), backwater from ice and beaver dam, no peak above base of 50 ft³/s (1.42 m³/s). No flow most of year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						0	.04	.03				
2						0	.03	.02				
3						.01	.02	.01				
4						.02	.01	.01				
5						.02	.02	.01				
6						.02	.02	.01				
7						.05	.01	.01				
8						.10	.10	0				
9						.15	.07	0				
10						.20	.05	0				
11						.25	.05	0				
12						.40	.05	0				
13						.25	.05	0				
14						.20	.05	0				
15						.25	.07	0				
16						.20	.07	0				
17						.20	.10	0				
18						.20	.15	0				
19						.20	.10	.05				
20						.15	.10	.10				
21						.15	.08	.07				
22						.10	.08	.05				
23						.10	.06	.03				
24						.10	.06	.02				
25						.05	.06	.01				
26						.05	.04	0				
27						.05	.04	0				
28						.05	.04	0				
29					---	.05	.04	0				
30					---	.05	.03	0				
31		---			---	.05	---	0	---			---
TOTAL	0	0	0	0	0	3.67	1.69	.43	0	0	0	0
MEAN	0	0	0	0	0	.12	.056	.014	0	0	0	0
MAX	0	0	0	0	0	.40	.15	.10	0	0	0	0
MIN	0	0	0	0	0	0	.01	0	0	0	0	0
AC-FT	0	0	0	0	0	7.3	3.4	.9	0	0	0	0
CAL YR 1976	TOTAL	50650.81	MEAN 138	MAX	4620	MIN 0	AC-FT	100500				
WTR YR 1977	TOTAL	5.79	MEAN .016	MAX	.40	MIN 0	AC-FT	11				

RED RIVER OF THE NORTH BASIN

211

05123600 EGG CREEK NEAR GRANVILLE, ND

LOCATION.--Lat 48°21'18", long 100°49'19", on west line of sec.10, T.156 N., R.79 W., McHenry County, Hydrologic Unit 09010005, on right bank, near right downstream wingwall of bridge, 2 mi (3 km) downstream from Hay Coulee, 3.5 mi (5.6 km) upstream from North Lake, and 6 mi (10 km) northeast of Granville.

DRAINAGE AREA.--289 mi² (749 km²), of which 150 mi² (388 km²) is probably noncontributing.

PERIOD OF RECORD.--October 1956 to current year.

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,478.14 ft (450.537 m) above mean sea level (levels by Bureau of Reclamation).

AVERAGE DISCHARGE.--21 years, 6.27 ft³/s (0.178 m³/s), 4,540 acre-ft/yr (5.60 hm³/yr); median of yearly mean discharges, 3.2 ft³/s (0.091 m³/s), 2,300 acre-ft/yr (2.8 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,710 ft³/s (48.4 m³/s) Apr. 10, 1969, gage height, 7.28 ft (2.219 m); maximum gage height, 8.10 ft (2.469 m) Apr. 9, 1969, from floodmark, backwater from snow; no flow for long periods each year.

EXTREMES FOR CURRENT YEAR.--No flow during the year. No peak above base of 20 ft³/s (0.57 m³/s).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0
MEAN	0	0	0	0	0	0	0	0	0	0	0	0
MAX	0	0	0	0	0	0	0	0	0	0	0	0
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	0	0	0	0	0	0	0	0	0	0	0	0
CAL YR 1976	TOTAL	7775.57	MEAN 21.2	MAX	780	MIN 0	AC-FT	15420				
WTR YR 1977	TOTAL	0.00	MEAN .000	MAX	.00	MIN 0	AC-FT	0				

RED RIVER OF THE NORTH BASIN

05123700 CUT BANK CREEK AT NORTH LAKE OUTLET NEAR GRANVILLE, ND

LOCATION.--Lat 48°23'10", long 100°46'00", on south line of sec.29, T.157 N., R.78 W., McHenry County, Hydrologic Unit 09010005, on left bank near left downstream wingwall of bridge, 9 mi (14 km) northeast of Granville and 13.5 mi (21.7 km) east of Deering.

DRAINAGE AREA.--534 mi² (1,383 km²), of which 290 mi² (751 km²) is probably noncontributing.

PERIOD OF RECORD.--October 1956 to current year.

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,477.25 ft (450.266 m) above mean sea level (levels by Bureau of Reclamation).

REMARKS.--Natural control by North Lake.

AVERAGE DISCHARGE.--21 years, 5.81 ft³/s (0.165 m³/s), 4,210 acre-ft/yr (5.19 hm³/yr); median of yearly mean discharges, no flow.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 780 ft³/s (22.1 m³/s) Mar. 29, 1976, gage height, 4.60 ft (1.402 m); maximum gage height, 4.68 ft (1.427 m) Mar. 27, 1976, backwater from ice; no flow at times each year.

EXTREMES FOR CURRENT YEAR.--No flow during the year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0
MEAN	0	0	0	0	0	0	0	0	0	0	0	0
MAX	0	0	0	0	0	0	0	0	0	0	0	0
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	0	0	0	0	0	0	0	0	0	0	0	0
CAL YR 1976	TOTAL	14338.47	MEAN	39.2	MAX	720	MIN	0	AC-FT	28440		
WTR YR 1977	TOTAL	0.00	MEAN	.000	MAX	.00	MIN	0	AC-FT	0		

RED RIVER OF THE NORTH BASIN

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05123750 CUT BANK CREEK AT UPHAM, ND

LOCATION.--Lat 48°34'29", long 100°44'39", in SE¼SE¼SW¼ sec.21, T.159 N., R.78 W., McHenry County, Hydrologic Unit 09010005, on left bank 50 ft (15 m) downstream from county highway bridge 0.5 mi (0.8 km) southwest of Upham.

DRAINAGE AREA.--722 mi² (1,870 km²), of which about 450 mi² (1,166 km²) is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,422.77 ft (433.660 m).

REMARKS.--Records fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 820 ft³/s (23.2 m³/s), Apr. 1, 1976, gage height, 7.24 ft (2.207 m), from high water mark; no flow for several months.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4.7 ft³/s (0.13 m³/s), May 18, gage height, 1.56 ft (0.475 m); no flow for several months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						0	.06	.18	.40			
2						0	.10	.34	.31			
3						0	.12	.50	.16			
4						0	.16	.40	.16			
5						0	.20	.37	.18			
6						0	.30	.25	.08			
7						0	.70	.34	.04			
8						0	.90	.28	0			
9						0	1.0	.16	0			
10						0	.90	.10	0			
11						0	.80	.04	0			
12						0	.70	0	0			
13						0	.50	0	0			
14						0	.34	.02	0			
15						0	.28	.02	.40			
16						0	.22	.02	1.0			
17						0	.20	.02	.50			
18						0	.20	1.2	.20			
19						0	.22	2.9	.10			
20						0	.22	1.3	.06			
21						0	.34	1.1	.03			
22						0	.31	.86	.01			
23						0	.28	.81	0			
24						0	.20	.76	0			
25						0	.14	.66	0			
26						0	.28	.40	0			
27						0	.18	.81	0			
28						.01	.25	.96	0			
29					---	.02	.34	.81	0			
30					---	.04	.25	.66	0			
31		---			---	.05	---	.54	---			---
TOTAL	0	0	0	0	0	.12	10.69	16.81	3.63	0	0	0
MEAN	0	0	0	0	0	.004	.36	.54	.12	0	0	0
MAX	0	0	0	0	0	.05	1.0	2.9	1.0	0	0	0
MIN	0	0	0	0	0	0	.06	0	0	0	0	0
AC-FT	0	0	0	0	0	.2	21	33	7.2	0	0	0
CAL YR 1976	TOTAL	12181.70	MEAN	33.3	MAX	800	MIN	0	AC-FT	24160		
WTR YR 1977	TOTAL	31.25	MEAN	.086	MAX	2.9	MIN	0	AC-FT	62		

RED RIVER OF THE NORTH BASIN

05123750 CUTBANK CREEK AT UPHAM, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1954, 1956, 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	HARDNESS (CA, MG/L)	NON-CARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)
APR 07...	1500	.70	2470	9.6	12.0	55	20	1100	1000	160
MAY 05...	1140	.37	1780	--	10.5	--	--	--	--	--
26...	1225	.76	1400	--	21.5	--	--	--	--	--
JUN 03...	1235	.14	1620	--	18.5	--	--	--	--	--

DATE	DIS-SOLVED MAGNESIUM (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	DIS-SOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CaCO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)
APR 07...	180	180	25	2.3	44	170	0	140	.1

DATE	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLORIDE (CL) (MG/L)	DIS-SOLVED FLUORIDE (F) (MG/L)	DIS-SOLVED SILICA (SiO2) (MG/L)	DIS-SOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	DIS-SOLVED SOLIDS (TONS PER DAY)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)
APR 07...	1300	57	.1	2.8	2260	2010	3.07	4.27	.02

DATE	DIS-SOLVED PHOSPHORUS (P) (MG/L)	DIS-SOLVED ALUMINUM (AL) (UG/L)	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED BARIUM (BA) (UG/L)	DIS-SOLVED BORON (B) (UG/L)	DIS-SOLVED CADMIUM (CD) (UG/L)	DIS-SOLVED CHROMIUM (CR) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	DIS-SOLVED COPPER (CU) (UG/L)
APR 07...	.07	10	5	100	170	3	0	0	3

DATE	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED LITHIUM (LI) (UG/L)	DIS-SOLVED MANGANESE (MN) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	DIS-SOLVED MOLYBDENUM (MO) (UG/L)	DIS-SOLVED NICKEL (NI) (UG/L)	DIS-SOLVED SELENIUM (SE) (UG/L)	DIS-SOLVED STRONTIUM (SR) (UG/L)	DIS-SOLVED VANADIUM (V) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)	CYANIDE (CN) (MG/L)
APR 07...	50	2	140	20	.0	6	6	0	720	3.8	10	.01

RED RIVER OF THE NORTH BASIN

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05123760 DEEP RIVER BELOW CUT BANK CREEK NEAR UPHAM, ND

LOCATION.--Lat 48°36'14", long 100°47'41", in SW¼SW¼SW¼ sec.7, T.159 N., R.78 W., McHenry County, Hydrologic Unit 09010005, at bridge 0.5 mi (0.8 km) below Cut Bank Creek and about 3.5 mi (5.6 km) northwest of Upham at bridge on county highway.

DRAINAGE AREA.--1,722 mi² (4,460 km²), of which about 1,070 mi² (2,770 km²) is probably noncontributing.

PERIOD OF RECORD.--Water years 1975 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1974 to current year.

WATER TEMPERATURE: October 1974 to current year.

REMARKS.--Discharge computed from records at stations 05123510 Deep River near Upham and 05123750 Cut Bank Creek at Upham. No flow Oct. 1, 1976 to Mar. 27, 1977; June 9-14, 1977; June 23 to Sept. 30, 1977.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,100 micromhos Mar. 22, 1976; minimum daily, 278 micromhos Apr. 1, 1976.

WATER TEMPERATURE: Maximum daily, 28.0°C July 6, 1975; minimum daily, 0.0°C on many days during winter months.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	HARDNESS (CA,MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)
APR 07...	1800	E.70	1180	8.5	5.0	45	490	200	64
MAY 01...	1220	.40	1260	8.6	14.0	52	510	180	63
JUN 03...	1110	E.10	1490	8.9	18.5	100	620	320	65

DATE	DISSOLVED MAGNESIUM (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CaCO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)
APR 07...	79	83	26	1.6	16	350	0	290	1.8
MAY 01...	85	97	28	1.9	20	400	0	328	1.6
JUN 03...	110	120	29	2.1	25	340	8	290	.7

DATE	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SILICA (SiO2) (MG/L)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)
APR 07...	320	54	.1	5.2	828	794	1.13	--	.04
MAY 01...	310	65	.2	5.8	878	844	1.19	.95	.05
JUN 03...	460	73	.1	12	1100	1040	1.50	--	.00

E - Estimated.

RED RIVER OF THE NORTH BASIN

05123760 DEEP RIVER BELOW CUT BANK CREEK NEAR UPHAM, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS-SOLVED-PHOSPHORUS (P) (MG/L)	DIS-SOLVED-ALUMINUM (AL) (UG/L)	DIS-SOLVED-ARSENIC (AS) (UG/L)	DIS-SOLVED-BARIUM (BA) (UG/L)	DIS-SOLVED-BERYLLIUM (BE) (UG/L)	DIS-SOLVED-BORON (B) (UG/L)	DIS-SOLVED-CADMIUM (CD) (UG/L)	DIS-SOLVED-CHROMIUM (CR) (UG/L)	DIS-SOLVED-COBALT (CO) (UG/L)	DIS-SOLVED-COPPER (CU) (UG/L)
APR 07...	.02	--	--	--	--	110	--	--	--	--
MAY 01...	.06	0	3	100	0	140	0	10	2	1
JUN 03...	.07	--	--	--	--	170	--	--	--	--

DATE	DIS-SOLVED-IRON (FE) (UG/L)	DIS-SOLVED-LEAD (PB) (UG/L)	DIS-SOLVED-LITHIUM (LI) (UG/L)	DIS-SOLVED-MANGANESE (MN) (UG/L)	DIS-SOLVED-MERCURY (HG) (UG/L)	DIS-SOLVED-MOLYBDENUM (MO) (UG/L)	DIS-SOLVED-NICKEL (NI) (UG/L)
MAY 01...	30	1	80	0	.0	0	4

DATE	DIS-SOLVED-SELENIUM (SE) (UG/L)	DIS-SOLVED-SILVER (AG) (UG/L)	DIS-SOLVED-STRONTIUM (SR) (UG/L)	DIS-SOLVED-VANADIUM (V) (UG/L)	DIS-SOLVED-ZINC (ZN) (UG/L)	CYANIDE (CN) (MG/L)
MAY 01...	0	0	320	.0	0	.00

RED RIVER OF THE NORTH BASIN

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05123760 DEEP RIVER BELOW CUT BANK CREEK NEAR UPHAM, ND--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1							---	---	1500			
2							---	1200	1500			
3							---	1200	1490			
4							---	1200	1500			
5							---	1200	---			
6							---	1300	1500			
7							1100	1300	---			
8							1100	1200	---			
9							1100	1200	---			
10							1100	1300	---			
11							1100	---	---			
12							1100	---	---			
13							1100	---	---			
14							---	1300	---			
15							---	1300	1490			
16							---	1300	---			
17							---	1300	1430			
18							1100	---	1400			
19							1200	1300	---			
20							1200	1300	1410			
21							1200	1280	---			
22							---	1300	1410			
23							1200	1300	---			
24							---	1400	---			
25							1200	1400	---			
26							1200	1400	---			
27							1200	1400	---			
28							---	1400	---			
29							1200	---	---			
30							---	1400	---			
31							---	1500	---			
MEAN							1150	1310	1460			

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1							---	---	17.0			
2							---	14.0	17.0			
3							---	13.5	18.0			
4							---	15.5	18.0			
5							---	13.0	---			
6							---	13.0	19.0			
7							3.0	11.5	---			
8							3.0	15.0	---			
9							7.0	20.0	---			
10							10.0	18.5	---			
11							11.0	---	---			
12							9.0	---	---			
13							9.0	---	---			
14							13.5	19.0	---			
15							---	20.5	17.5			
16							---	19.0	---			
17							---	20.5	18.0			
18							10.0	---	20.0			
19							12.0	16.5	---			
20							12.0	16.0	18.0			
21							10.0	17.0	---			
22							---	17.5	19.5			
23							12.0	16.5	---			
24							---	17.0	---			
25							15.0	21.0	---			
26							18.0	19.5	---			
27							14.0	21.0	---			
28							---	19.0	---			
29							14.0	---	---			
30							---	18.0	---			
31							---	17.5	---			
MEAN							10.5	17.0	18.0			

RED RIVER OF THE NORTH BASIN

05123900 BOUNDARY CREEK NEAR LANDA, ND

LOCATION.--Lat 48°48'46", long 100°51'46", at east line sec.35, T.162 N., R.79 W., Bottineau County, Hydrologic Unit 09010003, on right bank 80 ft (24 m) downstream from bridge on county road, 5 mi (8 km) upstream from mouth and 6 mi (10 km) southeast of Landa.

DRAINAGE AREA.--230 mi² (596 km²), of which about 60 mi² (160 km²) is probably noncontributing.

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

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,420.03 ft (432.825 m) above mean sea level.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--20 years, 13.5 ft³/s (0.382 m³/s), 9,770 acre-ft/yr (12.0 hm³/yr); median of yearly mean discharges, 5.5 ft³/s (0.16 m³/s), 4,000 acre-ft/yr (4.9 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,580 ft³/s (101 m³/s) Apr. 9, 1969, gage height, 12.70 ft (3.871 m); maximum gage height, 12.90 ft (3.932 m) Apr. 1, 1976, backwater from ice and snow; no flow for several months each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1.5 ft³/s (0.042 m³/s) Apr. 3, gage height, 6.50 ft (1.981 m), backwater from beaver dam, no peak above base of 50 ft³/s (1.42 m³/s); maximum gage height, 6.65 ft (2.027 m) Apr. 22, backwater from beaver dam; no flow most of year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1							0	0				
2							.20	0				
3							1.2	0				
4							1.4	0				
5							1.4	0				
6							1.2	0				
7							1.1	0				
8							1.1	0				
9							1.0	0				
10							.90	0				
11							.80	0				
12							.70	0				
13							.60	0				
14							.50	0				
15							.42	0				
16							.34	0				
17							.28	0				
18							.22	0				
19							.16	.10				
20							.12	.30				
21							.09	.25				
22							.06	.20				
23							.04	.15				
24							.03	.10				
25							.02	.06				
26							.02	.03				
27							.01	.01				
28							.01	0				
29							.01	0				
30							0	0				
31							0	0				
TOTAL	0	0	0	0	0	0	13.93	1.20	0	0	0	0
MEAN	0	0	0	0	0	0	.46	.039	0	0	0	0
MAX	0	0	0	0	0	0	1.4	.30	0	0	0	0
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	0	0	0	0	0	0	28	2.4	0	0	0	0
CAL YR 1976	TOTAL	18870.28	MEAN 51.6	MAX	2000	MIN 0	AC-FT 37430					
WTR YR 1977	TOTAL	15.13	MEAN .042	MAX	1.4	MIN 0	AC-FT 30					

RED RIVER OF THE NORTH BASIN

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05124000 SOURIS (MOUSE) RIVER NEAR WESTHOPE, ND
(International gaging station)
(Radiochemical station)

LOCATION.--Lat 48°59'47", long 100°57'29", in SW¼SE¼ sec.30, T.164 N., R.79 W., Bottineau County, Hydrologic Unit 09010003, on left bank 1,200 ft (370 m) upstream from second crossing of international boundary, 1 mi (2 km) downstream from Fish and Wildlife Service Dam 357, 7 mi (11 km) northeast of Westhope, 11 mi (18 km) downstream from Boundary Creek, and at mile 154.5 (kilometer 248.6).

DRAINAGE AREA.--16,900 mi² (43,800 km²), approximately, of which about 10,300 mi² (26,700 km²) is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July to October 1929, April 1930 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1338: 1932. WSP 2113: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,402.52 ft (427.488 m) above mean sea level. Prior to Mar. 28, 1938, nonrecording gage at site 6.3 mi (10.1 km) upstream at datum 2.52 ft (0.768 m) higher.

REMARKS.--Records good except those for the winter period, which are fair. Flow regulated by dams on Souris River and tributaries, combined capacity, about 321,000 acre-ft (3,960 hm³). Diversion at Eaton Dam for irrigation of about 7,600 acres (30.8 km²) and other small diversions for irrigation and municipal supply above station.

COOPERATION.--This station is one of the international gaging stations maintained by the United States under agreement with Canada.

AVERAGE DISCHARGE.--47 years (1930-77), 259 ft³/s (7.335 m³/s), 187,600 acre-ft/yr (231 hm³/yr); median of yearly mean discharges, 142 ft³/s (4.02 m³/s), 103,000 acre-ft/yr (127 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,600 ft³/s (357 m³/s) Apr. 26, 1976, gage height, 19.16 ft (5.840 m); maximum daily reverse flow, 35 ft³/s (0.99 m³/s) Apr. 8, 1943, caused by backwater from downstream tributary inflow; no flow at times in some years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 135 ft³/s (3.82 m³/s) Oct. 2, gage height, 6.27 ft (1.911 m); maximum gage height, 6.62 ft (2.018 m) Dec. 31, backwater from ice; minimum daily discharge, 0.10 ft³/s (0.003 m³/s) Apr. 18 - May 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	122	22	40	52	32	38	1.8	.10	15	21	19	24
2	128	10	40	48	32	38	1.8	.10	19	21	19	22
3	117	3.4	42	46	32	40	1.7	.10	19	21	19	22
4	98	13	42	46	32	40	1.4	.15	22	21	19	22
5	80	31	40	44	32	40	1.3	.60	22	21	19	22
6	83	29	40	42	32	40	1.5	.40	22	22	19	22
7	83	26	40	40	32	40	1.6	.30	22	22	19	22
8	56	40	42	40	32	42	1.7	.22	23	22	20	22
9	56	25	42	40	32	42	1.2	.16	20	22	19	20
10	45	32	44	40	32	42	.70	.12	21	22	19	21
11	23	38	44	40	32	42	.57	.10	19	21	18	21
12	19	41	46	40	32	50	.53	.10	19	21	19	21
13	23	42	50	40	30	55	.49	.10	24	21	22	21
14	14	42	54	40	26	10	.42	.10	25	21	22	21
15	1.3	43	56	40	22	3.6	.36	.10	26	21	22	21
16	5.9	44	56	40	22	2.6	.29	.10	24	21	22	21
17	19	44	56	40	22	4.2	.21	.10	25	21	22	20
18	19	40	56	38	22	3.8	.10	.10	24	21	22	20
19	22	24	56	38	22	3.5	.10	.10	23	21	22	20
20	13	37	62	38	22	3.4	.10	.10	23	21	22	21
21	8.4	42	64	38	24	3.4	.10	.10	21	21	22	20
22	19	42	64	38	28	3.1	.10	.10	22	21	21	20
23	18	42	64	36	30	3.1	.10	.10	21	21	22	20
24	22	44	64	36	30	3.3	.10	.10	21	21	22	21
25	16	46	60	36	32	3.2	.10	.10	21	21	22	21
26	18	46	58	36	32	3.5	.10	.10	19	21	22	20
27	20	44	58	34	32	4.1	.10	.10	19	21	22	20
28	21	42	58	32	36	4.5	.10	.10	21	21	22	20
29	20	40	58	32	---	2.3	.10	.10	22	20	22	20
30	21	40	58	32	---	1.0	.10	.10	21	19	22	20
31	27	---	58	32	---	1.8	---	1.2	---	19	22	---
TOTAL	1237.6	1054.4	1612	1214	816	613.4	18.87	5.45	645	651	645	628
MEAN	39.9	35.1	52.0	39.2	29.1	19.8	.63	.18	21.5	21.0	20.8	20.9
MAX	128	46	64	52	36	55	1.8	1.2	26	22	22	24
MIN	1.3	3.4	40	32	22	1.0	.10	.10	15	19	18	20
AC-FT	2450	2090	3200	2410	1620	1220	37	11	1280	1290	1280	1250
CAL YR 1976	TOTAL	593457.00	MEAN	1621	MAX	12400	MIN	1.3	AC-FT	1177000		
WTR YR 1977	TOTAL	9140.72	MEAN	25.0	MAX	128	MIN	.10	AC-FT	18130		

RED RIVER OF THE NORTH BASIN

05124000 SOURIS (MOUSE) RIVER NEAR WESTHOPE, ND--Continued
(National Water-Quality Accounting Network Station)
(Radiochemical Station)
(Pesticide Station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1954-64, 1966 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1956 to September 1964, October 1966 to September 1968, October 1973 to current year.

WATER TEMPERATURES: October 1954 to September 1955, October 1956 to September 1959, October 1960 to September 1964, October 1966 to September 1968, October 1973 to current year.

INSTRUMENTATION.--Water-quality monitor since October 1973.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 4,750 micromhos Feb. 21, 1961; minimum recorded, 232 micromhos Apr. 18, 1957.
WATER TEMPERATURES: Maximum recorded, 28.5°C July 4, 1975; minimum recorded, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 1,880 micromhos Dec. 31, Jan. 1; minimum recorded, 599 micromhos Apr. 14.
WATER TEMPERATURES: Maximum recorded, 27.0°C July 18; minimum recorded, 0.0°C on many days during winter months.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (JTU)	DIS- SOLVED OXYGEN (MG/L)	PER- CENT SATUR- ATION	CHEM- ICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L)
OCT										
06...	1730	E70	830	8.5	4.0	--	10	11.0	87	100
19...	1120	14	900	--	1.0	--	--	--	--	--
19...	1400	E20	900	8.8	1.0	17	55	14.4	107	160
NOV										
02...	1700	E10	945	--	2.0	--	--	--	--	--
16...	1200	44	1130	8.7	.0	32	15	16.0	115	91
30...	1110	E40	1350	8.4	.0	--	9	15.6	142	68
DEC										
14...	1545	53	1510	8.0	.0	25	9	13.8	99	55
JAN										
04...	1350	E40	1740	7.6	.0	--	10	9.6	70	71
19...	1810	38	1610	7.7	.0	35	9	9.3	67	56
FEB										
01...	1245	E35	1420	7.7	.0	--	6	11.0	79	21
15...	1210	22	1130	7.9	.0	25	6	19.3	193	30
MAR										
01...	1515	E25	1140	7.8	.0	--	7	15.0	107	29
22...	1145	E1.2	1070	8.9	1.0	28	30	22.5	167	75
APR										
05...	1435	E.60	980	9.0	3.0	--	20	21.1	164	59
19...	1400	E.05	630	9.3	13.0	--	25	15.5	126	72
MAY										
04...	1745	.10	895	--	17.0	--	--	--	--	--
17...	1245	E.10	980	8.4	17.5	55	30	8.5	93	63
JUN										
02...	1000	19	1360	8.6	17.5	--	15	8.4	100	76
22...	1500	22	1200	9.2	20.5	45	25	9.4	109	110
JUL										
06...	1515	E20	1260	7.7	26.5	--	45	.0	0	210
19...	1315	22	1310	7.8	23.0	42	5	4.1	50	77
AUG										
03...	1040	19	1340	--	21.0	--	--	--	--	--
11...	1105	18	1400	8.2	14.5	--	20	6.7	67	53
25...	1420	22	1380	8.3	20.5	43	25	7.8	90	66
SEP										
08...	1705	E22	1380	8.5	18.0	--	6	7.5	86	63
20...	1730	21	1370	8.6	12.5	33	4	9.9	97	61

E - Estimated.

RED RIVER OF THE NORTH BASIN

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05124000 SOURIS (MOUSE) RIVER NEAR WESTHOPE, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	IMME- DIATE COLI- FORM (COL. PER 100 ML)	FECAL COLI- FORM (COL. PER 100 ML)	STREP- TOCOCI (COL- ONIES PER 100 ML)	FECAL STREP- TOCOCI KF AGAR (COL. PER 100 ML)	HARD- NESS (CA,MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM
OCT										
06...	2330	81480	327	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
19...	1000	520	450	--	310	58	64	37	82	35
NOV										
02...	--	--	--	--	--	--	--	--	--	--
16...	8133	855	--	819	400	84	76	50	110	37
30...	835	85	--	113	--	--	--	--	--	--
DEC										
14...	830	83	--	96	580	69	120	68	150	35
JAN										
04...	822	82	--	824	--	--	--	--	--	--
19...	816	81	--	819	610	59	130	70	160	35
FEB										
01...	--	E1	--	810	--	--	--	--	--	--
15...	820	E1	--	32	410	29	90	46	100	34
MAR										
01...	875	81	--	580	--	--	--	--	--	--
22...	829	82	--	851	400	130	79	49	94	33
APR										
05...	220	83	--	390	--	--	--	--	--	--
19...	--	812	--	88800	--	--	--	--	--	--
MAY										
04...	--	--	--	--	--	--	--	--	--	--
17...	5000	50	--	52000	350	87	69	43	91	35
JUN										
02...	817000	853	--	640	--	--	--	--	--	--
22...	37000	815	--	826	410	270	55	65	110	36
JUL										
06...	62000	267	--	--	--	--	--	--	--	--
19...	14000	E1	--	831	480	260	82	66	120	34
AUG										
03...	--	--	--	--	--	--	--	--	--	--
11...	15000	100	--	340	--	--	--	--	--	--
25...	--	900	--	280	510	270	92	68	120	33
SEP										
08...	13400	846	--	220	--	--	--	--	--	--
20...	1800	850	--	867	500	180	85	69	130	35

DATE	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	ALKA- LINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SIO2) (MG/L)
OCT										
06...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
19...	2.0	14	311	0	255	.8	200	19	.3	2.6
NOV										
02...	--	--	--	--	--	--	--	--	--	--
16...	2.4	16	380	0	312	1.2	310	28	.2	3.1
30...	--	--	--	--	--	--	--	--	--	--
DEC										
14...	2.7	18	622	0	510	10	370	35	.3	9.8
JAN										
04...	--	--	--	--	--	--	--	--	--	--
19...	2.8	17	675	0	554	22	350	42	.3	18
FEB										
01...	--	--	--	--	--	--	--	--	--	--
15...	2.1	12	470	0	386	9.5	210	29	.3	12
MAR										
01...	--	--	--	--	--	--	--	--	--	--
22...	2.0	13	330	0	270	.7	280	26	.2	5.8
APR										
05...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
MAY										
04...	--	--	--	--	--	--	--	--	--	--
17...	2.1	14	320	0	260	2.0	240	18	.2	4.6
JUN										
02...	--	--	--	--	--	--	--	--	--	--
22...	2.4	17	160	0	130	.2	490	26	.2	14
JUL										
06...	--	--	--	--	--	--	--	--	--	--
19...	2.4	17	270	0	220	6.8	480	30	.2	26
AUG										
03...	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--
25...	2.3	19	290	0	240	2.3	500	30	.2	11
SEP										
08...	--	--	--	--	--	--	--	--	--	--
20...	2.5	18	350	15	310	1.5	460	32	.2	5.5

B - Results based on colony count outside the acceptable range (non-ideal colony count).
 E - Estimated.

RED RIVER OF THE NORTH BASIN

05124000 SOURIS (MOUSE) RIVER NEAR WESTHOPE, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS-SOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	TOTAL FILTRABLE RESIDUE (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	DIS-SOLVED SOLIDS (TONS PER DAY)	TOTAL NON-FILTRABLE RESIDUE (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)
OCT									
06...	553	--	--	.75	--	--	.09	--	.65
19...	--	--	--	--	--	--	--	--	--
19...	618	650	573	.84	--	95	.24	.06	1.2
NOV									
02...	--	--	--	--	--	--	--	--	--
16...	791	--	781	1.08	94.0	--	.12	.01	.26
30...	972	--	--	1.32	--	--	.07	--	.17
DEC									
14...	1080	--	1080	1.47	155	--	.18	.13	.19
JAN									
04...	1260	--	--	1.71	--	--	.42	--	1.0
19...	1140	--	1120	1.55	117	--	.34	.32	.70
FEB									
01...	1110	--	--	1.51	--	--	.01	--	1.5
15...	761	--	732	1.04	45.2	--	.07	.08	.19
MAR									
01...	760	--	--	1.03	--	--	.05	--	.26
22...	746	--	711	1.01	--	--	.17	.19	.29
APR									
05...	680	--	--	.92	--	--	.01	--	.02
19...	422	--	--	.57	--	--	.01	--	.01
MAY									
04...	--	--	--	--	--	--	--	--	--
17...	676	730	639	.92	--	52	.13	.14	.29
JUN									
02...	1030	--	--	1.40	52.8	--	.01	--	.29
22...	910	--	856	1.24	54.1	--	.02	.01	.51
JUL									
06...	951	--	--	1.29	--	--	.04	--	1.2
19...	983	--	956	1.34	58.4	--	.05	.03	3.6
AUG									
03...	--	--	--	--	--	--	--	--	--
11...	1050	--	--	1.43	51.0	--	.59	--	1.2
25...	1040	--	985	1.41	61.8	--	.32	.35	.19
SEP									
08...	1030	--	--	1.40	--	--	.25	--	.16
20...	1010	1100	989	1.37	57.3	5	.09	.05	.18

DATE	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJEL-DAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NI TRO-GEN (NO3) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED-VED-THO-GEN (P) (MG/L)	DIS-SOLVED ORTHO-THO-GEN (P) (MG/L)	DIS-SOLVED ORTHO-THO-GEN (P) (MG/L)	DIS-SOLVED ALUM-INUM (AL) (UG/L)
OCT									
06...	1.8	2.4	2.5	11	.30	--	--	--	--
19...	3.0	4.2	4.4	20	.30	.04	.00	.00	20
NOV									
16...	1.9	2.2	2.3	10	.11	.00	.00	.00	--
30...	1.5	1.7	1.8	7.8	.17	--	--	--	--
DEC									
14...	1.5	1.8	2.0	8.8	.10	.04	.01	.03	--
JAN									
04...	1.5	2.5	2.9	13	.34	--	--	--	--
19...	1.2	1.9	2.2	9.9	.21	.13	.14	.43	--
FEB									
01...	.30	1.8	1.8	8.0	.11	--	--	--	--
15...	1.2	1.4	1.5	6.5	.15	.08	.06	.18	--
MAR									
01...	.74	1.0	1.1	4.6	.09	--	--	--	--
22...	1.3	1.6	1.8	7.8	.24	.04	.01	.03	--
APR									
05...	1.5	1.5	1.5	6.7	.20	--	--	--	--
19...	2.4	2.4	2.4	11	.07	--	--	--	--
MAY									
17...	2.4	2.7	2.8	13	.30	.10	.03	.09	0
JUN									
02...	3.2	3.5	3.5	16	.17	--	--	--	--
22...	9.5	10	10	44	.21	.03	.02	.06	--
JUL									
06...	8.2	9.4	9.4	42	.58	--	--	--	--
19...	2.1	5.7	5.8	25	.33	.34	.20	.61	--
AUG									
11...	2.3	3.5	4.1	18	.16	--	--	--	--
25...	2.5	2.7	3.0	13	.14	.08	.05	.15	--
SEP									
08...	1.6	1.8	2.1	9.1	.18	--	--	--	--
20...	1.5	1.8	1.9	8.4	.11	.08	.03	.09	10

05124000 SOURIS (MOUSE) RIVER NEAR WESTHOPE, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL ARSENIC (AS) (UG/L)	SUS- PENDED ARSENIC (AS) (UG/L)	DIS- SOLVED ARSENIC (AS) (UG/L)	DIS- SOLVED BARIUM (BA) (UG/L)	DIS- SOLVED BERYL- LIUM (BE) (UG/L)	DIS- SOLVED BORON (B) (UG/L)	TOTAL CAD- MIUM (CD) (UG/L)	SUS- PENDED CAD- MIUM (CD) (UG/L)	DIS- SOLVED CAD- MIUM (CD) (UG/L)
OCT									
06...	--	--	--	--	--	--	--	--	--
19...	4	2	2	200	0	150	<10	<10	0
NOV									
16...	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--
DEC									
14...	--	--	--	--	--	--	--	--	--
JAN									
04...	--	--	--	--	--	--	--	--	--
19...	4	1	3	--	--	--	<10	<10	0
FEB									
01...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
MAR									
01...	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--
APR									
05...	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--
MAY									
17...	--	--	5	100	0	150	--	--	0
JUN									
02...	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--
JUL									
06...	--	--	--	--	--	--	--	--	--
19...	12	--	10	--	--	--	<10	<9	1
AUG									
11...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
SEP									
08...	--	--	--	--	--	--	--	--	--
20...	6	0	7	200	10	280	<10	<9	1

DATE	TOTAL CHRO- MIUM (CR) (UG/L)	SUS- PENDED CHRO- MIUM (CR) (UG/L)	DIS- SOLVED CHRO- MIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	SUS- PENDED COBALT (CO) (UG/L)	DIS- SOLVED COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	SUS- PENDED COPPER (CU) (UG/L)	DIS- SOLVED COPPER (CU) (UG/L)
OCT									
06...	--	--	--	--	--	--	--	--	--
19...	0	0	0	<50	<50	0	<10	<9	1
NOV									
16...	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--
DEC									
14...	--	--	--	--	--	--	--	--	--
JAN									
04...	--	--	--	--	--	--	--	--	--
19...	0	0	0	<50	<50	0	<10	<10	0
FEB									
01...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
MAR									
01...	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--
APR									
05...	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--
MAY									
17...	--	--	0	--	--	--	--	--	--
JUN									
02...	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--
JUL									
06...	--	--	--	--	--	--	--	--	--
19...	0	--	0	<50	<50	0	<10	<9	1
AUG									
11...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
SEP									
08...	--	--	--	--	--	--	--	--	--
20...	0	0	0	<50	<50	0	<10	<9	1

RED RIVER OF THE NORTH BASIN

05124000 SOURIS (MOUSE) RIVER NEAR WESTHOPE, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL IRON (FE) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	SUS- PENDE D LEAD (PB) (UG/L)	DIS- SOLVED LEAD (PB) (UG/L)	DIS- SOLVED LITHIUM (LI) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	SUS- PENDE D MANGANESE (MN) (UG/L)	DIS- SOLVED MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	SUS- PENDE D MERCURY (HG) (UG/L)
OCT											
06...	--	--	--	--	--	--	--	--	--	--	--
19...	3200	20	<100	<100	0	50	370	310	60	.0	.0
NOV											
16...	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--
DEC											
14...	--	--	--	--	--	--	--	--	--	--	--
JAN											
04...	--	--	--	--	--	--	--	--	--	--	--
19...	270	20	<100	<97	3	--	670	50	620	.0	.0
FEB											
01...	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--
MAR											
01...	--	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	--	--
APR											
05...	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--
MAY											
17...	--	30	--	--	2	50	--	--	--	--	--
JUN											
02...	--	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	--	--
JUL											
06...	--	--	--	--	--	--	--	--	--	--	--
19...	220	60	<100	<92	8	--	930	20	910	.0	.0
AUG											
11...	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--
SEP											
08...	--	--	--	--	--	--	--	--	--	--	--
20...	330	30	<100	<95	5	80	80	30	50	.0	.0

DATE	DIS- SOLVED MERCURY (HG) (UG/L)	DIS- SOLVED MOLYB- DENUM (MO) (UG/L)	DIS- SOLVED NICKEL (NI) (UG/L)	TOTAL SELE- NIUM (SE) (UG/L)	SUS- PENDE D SELE- NIUM (SE) (UG/L)	DIS- SOLVED SELE- NIUM (SE) (UG/L)	DIS- SOLVED SILVER (AG) (UG/L)	DIS- SOLVED STRON- TIUM (SR) (UG/L)	DIS- SOLVED VANA- DIUM (V) (UG/L)	TOTAL ZINC (ZN) (UG/L)	SUS- PENDE D ZINC (ZN) (UG/L)
OCT											
06...	--	--	--	--	--	--	--	--	--	--	--
19...	.0	3	4	1	0	1	0	310	1.5	20	10
NOV											
16...	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--
DEC											
14...	--	--	--	--	--	--	--	--	--	--	--
JAN											
04...	--	--	--	--	--	--	--	--	--	--	--
19...	.0	--	--	1	0	1	--	--	--	10	0
FEB											
01...	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--
MAR											
01...	--	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	--	--
APR											
05...	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--
MAY											
17...	.0	1	4	--	--	0	0	320	2.4	--	--
JUN											
02...	--	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	--	--
JUL											
06...	--	--	--	--	--	--	--	--	--	--	--
19...	.0	--	--	0	--	0	--	--	--	0	0
AUG											
11...	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--
SEP											
08...	--	--	--	--	--	--	--	--	--	--	--
20...	.0	2	4	0	0	0	0	450	.0	0	0

RED RIVER OF THE NORTH BASIN

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05124000 SOURIS (MOUSE) RIVER NEAR WESTHOPE, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED ZINC (ZN) (UG/L)	DIS- SOLVED GROSS ALPHA AS U-NAT. (UG/L)	SUS- PENDED GROSS ALPHA AS U-NAT. (UG/L)	DIS- SOLVED GROSS BETA AS CS-137 (PC/L)	SUS- PENDED GROSS BETA AS CS-137 (PC/L)	DIS- SOLVED GROSS BETA AS SR90 /Y90 (PC/L)	SUS- PENDED GROSS BETA AS SR90 /Y90 (PC/L)	DIS- SOLVED RA-226 (RADON METHOD) (PC/L)	DIS- SOLVED NATURAL URANIUM (U) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	CYANIDE (CN) (MG/L)
OCT											
06...	--	--	--	--	--	--	--	--	--	35	--
19...	10	<14	6.6	23	4.3	18	3.7	.14	4.1	21	.00
NOV											
16...	--	--	--	--	--	--	--	--	--	21	--
30...	--	--	--	--	--	--	--	--	--	23	--
DEC											
14...	--	--	--	--	--	--	--	--	--	19	--
JAN											
04...	--	--	--	--	--	--	--	--	--	19	--
19...	10	--	--	--	--	--	--	--	--	17	--
FEB											
01...	--	--	--	--	--	--	--	--	--	11	--
15...	--	--	--	--	--	--	--	--	--	11	--
MAR											
01...	--	--	--	--	--	--	--	--	--	11	--
22...	--	--	--	--	--	--	--	--	--	14	--
APR											
05...	--	--	--	--	--	--	--	--	--	19	--
19...	--	--	--	--	--	--	--	--	--	15	--
MAY											
17...	10	<10	2.7	23	6.0	19	5.1	.19	4.6	15	.00
JUN											
02...	--	--	--	--	--	--	--	--	--	24	--
22...	--	--	--	--	--	--	--	--	--	30	--
JUL											
06...	--	--	--	--	--	--	--	--	--	55	--
19...	4	--	--	--	--	--	--	--	--	21	--
AUG											
11...	--	--	--	--	--	--	--	--	--	22	--
25...	--	--	--	--	--	--	--	--	--	21	--
SEP											
08...	--	--	--	--	--	--	--	--	--	17	--
20...	10	<17	<.4	38	1.1	31	1.0	.94	2.0	18	.00

DATE	TOTAL ALDRIN (UG/L)	TOTAL ATRA- ZINE (UG/L)	TOTAL CHLOR- DANE (UG/L)	TOTAL DDD (UG/L)	TOTAL DDE (UG/L)	TOTAL DDT (UG/L)	TOTAL DI- AZINON (UG/L)	TOTAL DI- ELDRIN (UG/L)	TOTAL ENDRIN (UG/L)	TOTAL ETHION (UG/L)	TOTAL HEPTA- CHLOR (UG/L)	TOTAL HEPTA- CHLOR EPOXIDE (UG/L)
OCT												
19...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
JAN												
19...	ND	ND	ND	ND	ND	ND	--	ND	ND	--	ND	ND
MAY												
17...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG												
25...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Whole water ND - Not detected at 0.01 µg/L level.
 Bed material ND - Not detected at 0.1 µg/mg level.

RED RIVER OF THE NORTH BASIN

05124000 SOURIS (MOUSE) RIVER NEAR WESTHOPE, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL LINDANE (UG/L)	TOTAL MALA- THION (UG/L)	TOTAL METH- OXY- CHLOR (UG/L)	TOTAL METHYL PARA- THION (UG/L)	TOTAL METHYL TRI- THION (UG/L)	TOTAL PARA- THION (UG/L)	SIMA- ZINE TOTAL COUL- SON COND. (UG/L)	TOTAL TOX- APHENE (UG/L)	TOTAL TRI- THION (UG/L)	TOTAL 2,4-D (UG/L)	TOTAL 2,4,5-T (UG/L)
OCT 19...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
JAN 19...	ND	--	ND	--	--	--	ND	ND	--	ND	ND
MAY 17...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 25...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

DATE	TOTAL SILVEX (UG/L)	SUS- PENDE SEDI- MENT (MG/L)	SUS- PENDE SEDI- MENT DIS- CHARGE (T/DAY)	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM
OCT 19...	ND	118	--	98
NOV 16...	--	32	3.8	55
DEC 14...	--	23	3.3	90
JAN 19...	ND	23	2.4	60
FEB 15...	--	12	.71	85
MAR 22...	--	66	--	55
APR 19...	--	68	--	96
MAY 17...	ND	59	--	99
JUN 22...	--	48	2.9	98
JUL 19...	--	8	.48	97
AUG 25...	ND	40	2.4	99
SEP 20...	--	6	.34	97

Whole water ND - Not detected at 0.01 µg/L level.
 Bed material ND - Not detected at 0.1 µg/mg level.

05124000 SOURIS (MOUSE) RIVER NEAR WESTHOPE, ND--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	777	758	952	927	1340	1320	1880	1800	1450	1390		
2	781	756	955	939	1350	1330	1860	1790	1400	1360		
3	839	787	969	952	1380	1330	1810	1780	---	---		
4	837	812	1020	966	1380	1340	1790	1740	---	---		
5	819	797	1050	1020	1390	1360	1780	1710	---	---		
6	---	---	1050	1030	1440	1390	1740	1700	---	---		
7	845	826	1060	1030	1460	1430	1730	1680	---	---		
8	854	838	1040	1020	1490	1450	1730	1670	---	---		
9	867	842	1020	1010	1490	1450	1710	1670	---	---		
10	875	854	1040	1020	1500	1460	1700	1660	---	---		
11	882	861	1080	1040	1510	1460	1720	1650	---	---		
12	887	865	1120	1070	1510	1480	1720	1660	---	---		
13	882	866	1140	1110	1500	1470	1670	1640	---	---		
14	865	850	1140	1120	1510	1480	1670	1630	---	---		
15	863	848	1140	1120	1520	1510	1660	1630	---	---		
16	877	861	1180	1110	1540	1510	1650	1600	---	---		
17	894	878	1130	1110	1530	1510	1620	1600	---	---		
18	911	886	1130	1090	1530	1510	1620	1600	---	---		
19	909	878	1160	1110	1540	1510	1620	1590	---	---		
20	887	877	1150	1110	1570	1540	1610	1560	---	---		
21	892	880	1200	1130	1610	1560	1600	1540	---	---		
22	917	892	1210	1190	1680	1610	1550	1500	---	---		
23	942	919	1210	1200	1670	1640	1500	1470	---	---		
24	968	942	1200	1200	1650	1630	1490	1450	---	---		
25	985	971	1200	1170	1680	1660	1480	1440	---	---		
26	1010	984	1240	1200	1680	1650	1480	1430	---	---		
27	1010	1000	1310	1240	1700	1650	1470	1440	---	---		
28	1010	979	1370	1310	1730	1660	1460	1420	---	---		
29	988	951	1370	1360	1790	1730	1450	1410	---	---		
30	957	947	1360	1340	1830	1790	1450	1400	---	---		
31	950	924	---	---	1880	1790	1450	1410	---	---		
MONTH	1010	756	1370	927	1880	1320	1880	1400	1450	1360		

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	874	847	1390	1020	1260	1220	1380	1350	1400	1370
2	---	---	881	863	1450	1360	1260	1220	1380	1340	1390	1360
3	---	---	900	875	1410	1370	1260	1220	1360	1340	1380	1360
4	---	---	907	888	1400	1360	1280	1220	1380	1320	1400	1370
5	---	---	906	888	1390	1360	1280	1230	1400	1320	1390	1370
6	---	---	932	890	1380	1340	1310	1270	1410	1370	1390	1350
7	---	---	955	925	1380	1330	1310	1260	1420	1390	1400	1370
8	---	---	965	935	1350	1320	1290	1250	1420	1390	1390	1370
9	---	---	982	941	1330	1310	1270	1230	1440	1410	1400	1370
10	---	---	996	964	1340	1310	1300	1240	1440	1420	1400	1360
11	---	---	1010	974	1340	1310	1310	1240	1460	1420	1400	1340
12	---	---	1020	995	1320	1280	1300	1250	1450	1450	1380	1300
13	---	---	1030	1000	1300	1260	1310	1270	1450	1400	1390	1340
14	626	599	1030	990	1280	1250	1300	1270	1440	1430	1390	1350
15	634	615	1010	994	1270	1240	1330	1260	1430	1420	1410	1330
16	636	613	1010	993	1260	1230	1330	1290	1420	1420	1400	1340
17	638	619	1010	982	1260	1220	1340	1290	1420	1420	1410	1370
18	636	617	1000	989	1250	1220	1350	1310	1410	1410	1400	1360
19	632	624	997	979	1240	1220	1350	1310	1410	1400	1410	1370
20	651	638	1000	976	1260	1220	1390	1340	1410	1400	1390	1370
21	656	639	1000	959	1240	1210	1390	1320	1410	1390	1400	1380
22	663	648	980	956	1220	1200	1400	1370	1410	1340	1420	1390
23	672	657	984	963	1260	1190	1420	1390	1410	1410	1420	1400
24	786	664	988	964	1260	1220	1410	1380	1410	1330	1410	1370
25	759	682	996	975	1330	1210	1400	1360	1390	1380	1390	1380
26	739	699	1020	989	1330	1280	1390	1350	1400	1360	1390	1380
27	774	723	1010	997	1360	1220	1410	1350	1400	1370	1390	1360
28	809	771	1020	997	1270	1200	1410	1370	1410	1370	1390	1370
29	832	801	1020	994	1230	1190	1390	1360	1400	1370	1390	1380
30	843	827	1020	987	1250	1210	1380	1350	1410	1370	1390	1360
31	---	---	1040	988	---	---	1390	1350	1400	1360	---	---
MONTH	843	599	1040	847	1450	1020	1420	1220	1460	1320	1420	1300

RED RIVER OF THE NORTH BASIN

05124000 SOURIS (MOUSE) RIVER NEAR WESTHOPE, ND--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	15.0	11.5	4.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	---	---
2	14.5	10.0	4.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	---	---
3	14.0	10.5	1.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	---	---
4	11.5	4.0	2.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0	---	---
5	4.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	---	---
6	---	---	1.0	0.0	0.0	0.0	0.0	0.0	---	---	---	---
7	4.0	1.5	1.0	0.0	0.0	0.0	0.0	0.0	---	---	---	---
8	7.0	3.5	0.5	0.0	0.0	0.0	0.0	0.0	---	---	---	---
9	8.0	6.0	1.0	0.0	0.0	0.0	0.0	0.0	---	---	---	---
10	9.0	7.0	0.5	0.0	0.0	0.0	0.0	0.0	---	---	---	---
11	11.0	8.0	0.5	0.0	0.0	0.0	0.0	0.0	---	---	---	---
12	10.0	9.0	0.5	0.0	0.0	0.0	0.0	0.0	---	---	---	---
13	8.5	6.5	0.5	0.0	0.0	0.0	0.0	0.0	---	---	---	---
14	6.5	3.5	0.5	0.0	0.0	0.0	0.0	0.0	---	---	---	---
15	3.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	---	---	---	---
16	2.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	---	---	---	---
17	1.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	---	---	---	---
18	1.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	---	---	---	---
19	1.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	---	---	---	---
20	1.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	---	---	---	---
21	2.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	---	---	---	---
22	2.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	---	---	---	---
23	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	---	---	---	---
24	0.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	---	---	---	---
25	0.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	---	---	---	---
26	1.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	---	---	---	---
27	0.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	---	---	---	---
28	1.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	---	---	---	---
29	2.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0	---	---	---	---
30	3.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	---	---	---	---
31	3.0	2.0	---	---	0.0	0.0	0.0	0.0	---	---	---	---
MONTH	15.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	---	---

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	14.5	12.0	22.0	18.5	21.0	16.5	22.0	19.5	15.5	15.0
2	---	---	14.0	11.5	21.0	17.5	21.0	17.5	23.0	20.0	17.0	13.5
3	---	---	16.5	10.5	19.5	18.0	24.0	19.5	21.5	20.0	15.5	14.5
4	---	---	17.0	14.5	20.0	17.5	25.5	20.5	21.0	19.5	17.0	15.0
5	---	---	16.0	14.0	21.0	18.5	26.5	23.5	20.5	18.0	15.5	15.0
6	---	---	14.5	12.5	23.5	18.5	26.0	23.5	20.0	18.0	17.5	14.5
7	---	---	16.5	11.5	25.0	20.0	24.0	22.0	19.0	17.5	19.0	15.5
8	---	---	19.5	13.5	23.5	20.0	23.5	20.0	20.5	17.5	18.5	16.0
9	6.0	1.5	21.5	17.0	20.5	18.0	23.0	19.5	20.0	18.5	15.5	13.5
10	6.0	2.0	23.5	19.5	21.5	18.0	23.0	19.5	18.0	15.5	16.5	13.0
11	6.0	2.0	22.0	19.0	21.0	15.5	22.5	18.5	---	---	17.5	15.0
12	6.0	3.0	23.5	19.0	15.5	14.5	22.0	17.5	---	---	16.5	15.5
13	9.5	4.0	24.5	20.0	15.0	14.0	22.5	19.0	---	---	17.5	15.0
14	12.5	7.0	25.5	20.0	15.5	14.0	22.0	20.0	---	---	17.5	15.0
15	13.0	10.0	23.5	21.0	18.0	15.0	22.5	19.5	---	---	18.5	15.5
16	15.5	10.5	21.5	18.5	20.0	16.0	24.5	20.0	---	---	17.5	15.5
17	15.0	13.0	21.0	17.5	19.5	18.0	25.5	21.5	---	---	16.5	15.0
18	14.5	11.5	18.5	16.5	20.0	17.0	27.0	23.5	---	---	15.0	13.0
19	14.0	11.0	19.5	16.0	20.0	18.0	26.0	23.5	---	---	14.0	12.0
20	12.5	10.5	19.0	16.0	21.5	18.0	24.0	21.5	---	---	12.5	11.5
21	15.0	10.0	22.0	16.5	21.0	19.0	24.5	21.0	---	---	12.5	12.0
22	14.0	11.0	20.5	18.0	21.5	19.5	24.5	21.0	---	---	14.0	12.5
23	14.0	11.0	22.0	17.0	23.5	19.5	25.5	23.0	---	---	13.0	12.5
24	13.5	10.5	23.5	17.0	24.5	21.0	25.0	23.5	---	---	12.0	12.0
25	14.5	11.0	24.0	20.5	26.0	21.0	25.0	21.5	---	---	12.0	11.5
26	17.5	12.5	23.5	20.0	24.5	23.0	25.0	21.5	19.0	18.0	12.0	11.5
27	15.5	13.0	22.0	20.5	22.5	19.5	25.0	22.0	19.0	17.0	13.5	10.5
28	15.0	11.0	21.0	19.5	22.5	19.0	25.0	22.0	18.5	16.5	12.0	11.0
29	19.0	13.0	22.5	18.0	21.0	19.0	23.5	21.5	17.0	15.0	11.5	10.0
30	17.0	14.5	21.0	18.0	19.0	17.0	21.5	20.0	17.5	14.5	11.5	11.0
31	---	---	21.0	18.0	---	---	21.0	18.0	17.0	15.5	---	---
MONTH	19.0	1.5	25.5	10.5	26.0	14.0	27.0	16.5	23.0	14.5	19.0	10.0

RED RIVER OF THE NORTH BASIN

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05124000 SOURIS (MOUSE) RIVER NEAR WESTHOPE, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	OCT 19,76 1400	NOV 16,76 1200	DEC 14,76 1545	JAN 19,77 1810	FEB 15,77 1210
TOTAL CELLS/ML	88000	1900	1900	4000	3800
DIVERSITY: DIVISION	1.1	0.7	1.6	1.6	1.6
..CLASS	1.1	0.7	2.3	1.9	1.7
...ORDER	1.2	0.7	2.7	2.8	2.5
....FAMILY	1.6	2.1	3.6	3.1	2.7
.....GENUS	1.8	2.2	3.7	3.2	2.8

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										
....CHARACIACEAE										
.....CHARACIUM	--	-	--	-	--	-	--	-	--	-
.....SCHROEDERIA	--	-	--	-	--	-	--	-	--	-
...COELASTRACEAE										
....COELASTRUM	--	-	--	-	--	-	--	-	--	-
...HYDRODICTYACEAE										
....PEDIASTRUM	--	-	--	-	--	-	--	-	--	-
...MICRACTINIACEAE										
....MICRACTINIUM	10000	12	--	-	--	-	--	-	--	-
...OOCYSTACEAE										
....ANKISTRODESMUS	5500	6	--	-	54	3	180	4	160	4
....CHODATELLA	--	-	--	-	--	-	--	-	--	-
....DICTYOSPHAERIUM	--	-	--	-	--	-	--	-	100	3
....KIRCHNERIELLA	1100	1	--	-	11	1	--	-	--	-
....OOCYSTIS	--	-	--	-	--	-	--	-	--	-
....SELENASTRUM	--	-	--	-	--	-	110	3	--	-
....TETRAEDRON	--	-	--	-	--	-	--	-	--	-
....TREUBARIA	--	-	--	-	--	-	--	-	--	-
....WESTELLA	5900	7	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....ACTINASTRUM	--	-	--	-	--	-	--	-	210	5
....CRUCIGENIA	*	0	--	-	--	-	--	-	--	-
....SCENEDESMUS	--	-	--	-	21	1	70	2	--	-
....TETRASTRUM	--	-	--	-	--	-	*	0	--	-
..TETRASPORALES										
...PALMELLACEAE										
....GLOEOCYSTIS	--	-	--	-	--	-	180	4	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	1500	2	--	-	--	-	330	8	100	3
...PHACOTACEAE										
....PTEROMONAS	--	-	--	-	--	-	--	-	--	-
..ZYGNETALES										
...DESMIDIACEAE										
....COSMARIUM	--	-	--	-	--	-	--	-	--	-
..CHLOROCOCCALES										
...OOCYSTACEAE										
....GLOEOACTINIUM	1500	2	--	-	--	-	--	-	--	-

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

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

CONTINUED ...

05124000 SOURIS (MOUSE) RIVER NEAR WESTHOPE, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

(CONTINUED)

DATE TIME	OCT 19,76 1400	NOV 16,76 1200	DEC 14,76 1545	JAN 19,77 1810	FEB 15,77 1210	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHRYSTOPHYTA						
..BACILLARIOPHYCEAE						
...CENTRALES						
...COSCINODISCACEAE						
....CYCLOTELLA	58000#	66	--	--	200	11
....MELOSIRA	--	--	--	--	190	5
....STEPHANODISCUS	--	--	--	--	1500#	39
..PENNALES						
...ACHNANTHACEAE						
....ACHNANTHES	--	--	--	--	--	--
...COCONEIS	--	--	--	--	--	--
...CYMBELLACEAE	--	--	--	--	--	--
....AMPHORA	--	--	--	--	--	--
....EPITHEMIA	--	--	--	--	--	--
...DIATOMACEAE						
....DIATOMA	--	--	310#	16	--	--
...FRAGILARIACEAE						
....FRAGILARIA	--	--	150	8	--	--
...SYNEDRA	--	--	38	2	--	--
...GOMPHONEMACEAE						
....GOMPHONEMA	--	--	230	12	--	--
...NAVICULACEAE						
....GYROSIGMA	--	--	--	--	--	--
....NAVICULA	--	--	770#	41	26	1
...NITZSCHACEAE						
....NITZSCHIA	*	0	--	--	52	1
...SURIPELLACEAE						
....SURIPELLA	--	--	75	4	570	15
...CYMATOPLEURA	--	--	--	--	--	--
...SURIPELLA	--	--	--	--	--	--
..CHRYSTOPHYCEAE						
...CHRYSSOMONADALES						
...CHROMULINACEAE						
...CHRYSSOCOCCUS	--	--	--	--	210	5
...OCHROMONADACEAE					26	1
....DINOBYRON	--	--	200	11	--	--
...OCHROMONAS	--	--	--	--	88	2
...SYNURACEAE	--	--	--	--	120	3
....SYNURA	--	--	390#	20	--	--
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...CHROCOCCALES						
...CHROCOCCACEAE						
....AGMENELLUM	--	--	--	--	--	--
....ANACYSTIS	1800	2	--	--	1200#	30
...HORMOGONALES						
....NOSTOCACEAE						
....APHANIZOMENON	--	--	--	--	--	--
...OSCILLATORIACEAE						
....OSCILLATORIA	--	--	380#	20	540	14
EUGLENOPHYTA (EUGLENIDS)						
..CRYPTOPHYCEAE						
...CRYPTOMONADALES						
....CRYPTOCHRYSIDACEAE						
....CHROOMONAS	--	--	200	11	70	2
...CRYPTOMONODACEAE						
....CRYPTOMONAS	*	0	--	--	--	--
...EUGLENOPHYCEAE						
....EUGLENALIS						
...EUGLENACEAE						
....EUGLENA	*	0	--	--	35	1
....PHACUS	--	--	--	--	*	0
....TRACHELOMONAS	*	0	--	--	--	--
....TRACHELOMONAS						
..PYRRHOPHYTA (FIRE ALGAE)						
..DINOPHYCEAE						
...GYMNODINIALES						
...GYMNODINIACEAE						
....GYMNODINIUM	--	--	11	1	--	--

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

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

RED RIVER OF THE NORTH BASIN

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05124000 SOURIS (MOUSE) RIVER NEAR WESTHOPE, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	MAY 17, 77 1245	JUN 22, 77 1500	JUL 19, 77 1315	AUG 25, 77 1420	SEP 20, 77 1730
TOTAL CELLS/ML	52000	1700000	12000	28000	2600
DIVERSITY: DIVISION	1.5	0.0	1.4	0.2	0.2
..CLASS	1.5	0.0	1.4	0.2	0.2
..ORDER	1.7	0.0	1.4	0.3	0.6
...FAMILY	2.8	0.1	1.7	0.3	1.0
....GENUS	3.4	0.1	1.7	0.3	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										
...CHARACIACEAE										
....CHARACIUM	--	-	--	-	1200	10	--	-	--	-
....SCHROEDERIA	--	-	--	-	170	1	--	-	*	0
...COELASTRACEAE										
...COELASTRUM	6700	13	--	-	--	-	--	-	--	-
...HYDRODICTYACEAE										
...PEDIASTRUM	2300	4	--	-	--	-	--	-	--	-
...MIRACTINIACEAE										
...MIRACTINIUM	2500	5	--	-	--	-	--	-	--	-
...OOCYSTACEAE										
....ANKISTRODESMUS	790	2	--	-	--	-	--	-	--	-
....CHODATELLA	*	0	--	-	--	-	--	-	--	-
....DICTYOSPHAERIUM	--	-	--	-	760	6	--	-	--	-
....KIRCHNERIELLA	630	1	--	-	--	-	160	1	*	0
...OOCYSTIS	1300	2	--	-	--	-	--	-	--	-
....SELENASTRUM	--	-	--	-	--	-	--	-	--	-
....TETRAEDRON	*	0	--	-	--	-	--	-	--	-
....TREUBARIA	*	0	--	-	--	-	--	-	--	-
....WESTELLA	1300	2	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....ACTINASTRUM	630	1	--	-	--	-	--	-	--	-
....CRUCIGENIA	1300	2	--	-	--	-	--	-	--	-
...SCENEDESMUS	7400	14	--	-	170	1	--	-	--	-
....TETRASTRUM	320	1	--	-	--	-	--	-	--	-
...TETRASPOALES										
...PALMELLACEAE										
...GLOEOCYSTIS	--	-	--	-	--	-	--	-	--	-
...VOLVOCALES										
...CHLAMYDOMONADACEAE										
...CHLAMYDOMONAS	--	-	--	-	--	-	--	-	--	-
...PHACOTACEAE										
...PTEROMONAS	--	-	--	-	--	-	--	-	*	0
...ZYGNEATALES										
...DESMIDIACEAE										
...COSMARIUM	--	-	--	-	84	1	*	0	--	-
...CHLOROCOCCALES										
...OOCYSTACEAE										
...GLOEDACTINIUM	--	-	--	-	--	-	--	-	--	-

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

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

CONTINUED ...

05124000 SOURIS (MOUSE) RIVER NEAR WESTHOPE, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

(CONTINUED)

DATE TIME	MAY 17,77 1245	JUN 22,77 1500	JUL 19,77 1315	AUG 25,77 1420	SEP 20,77 1730	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHRYSDOPHYTA						
..BACILLARIOPHYCEAE						
...CENTRALES						
...COSCINODISCACEAE						
...CYCLOTELLA	5600	11	--	--	--	--
...MELOSIRA	--	--	--	--	--	--
...STEPHANODISCUS	--	--	--	--	--	--
..PENNALES						
...ACHNANTHACEAE						
...ACHNANTHES						
...COCONEIS	* 0	--	--	--	* 0	* 0
...CYMBELLACEAE						
...AMPHORA	* 0	--	--	--	--	--
...EPITHEMIA	--	--	--	--	--	--
...DIATOMACEAE						
...DIATOMA	--	--	--	--	--	--
...FRAGILARIACEAE						
...FRAGILARIA	--	--	--	--	--	--
...SYNEDRA	--	--	--	--	--	--
...GOMPHONEMACEAE						
...GOMPHONEMA	--	--	--	--	--	--
...NAVICULACEAE						
...GYROSGMA	--	--	--	--	--	--
...NAVICULA	* 0	--	84 1	--	* 0	* 0
...NITZSCHIA	2900	6	--	--	--	--
...SURIPELLACEAE						
...CYMATOPLLEURA	* 0	--	--	--	--	--
...SURIPELLA	--	--	--	--	--	--
..CHRYSDOPHYCEAE						
...CHRYSDOMONADALES						
...CHROMULINACEAE						
...CHRYSDOCCUS	--	--	--	--	--	--
...OCHROMONADACEAE						
...DINOBYRON	--	--	--	--	--	--
...OCHROMONAS	--	--	--	--	--	--
...SYNURACEAE	--	--	--	--	--	--
...SYNURA	--	--	--	--	--	--
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...CHROCCOCCALES						
...CHROCCOCCACEAE						
...AGMENELLUM	12000# 24	--	7400# 60	--	--	--
...ANACYSTIS	5400 10	--	--	27000# 96	220 8	8
...HORMOGONALES						
...NOSTOCACEAE						
...APHANIZOMENON	--	--	1700000# 98	--	--	2100# 81
...OSCILLATORIACEAE						
...OSCILLATORIA	--	--	35000 2	--	640 2	210 8
EUGLENOPHYTA (EUGLENOIDS)						
..CRYPTOPHYCEAE						
...CRYPTOMONIDALES						
...CRYPTOCHRYSIDACEAE						
...CHROMONAS	* 0	--	--	* 0	--	--
...CRYPTOMONODACEAE						
...CRYPTOMONAS	* 0	--	2400# 20	--	--	--
..EUGLENOPHYCEAE						
...EUGLENALES						
...EUGLENACEAE						
...EUGLENA	--	--	--	* 0	* 0	* 0
...PHACUS	* 0	--	--	--	--	--
...TRACHELOMONAS	--	--	--	--	--	--
PYRRHOPHYTA (FIRE ALGAE)						
..DINOPHYCEAE						
...GYMNODINIALES						
...GYMNODINIACEAE						
...GYMNODINIUM	--	--	--	--	--	--

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

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

PERIPHYTON

Date	Length of exposure (days)	Biomass (mg/m ²)		Chlorophyll a (mg/m ²)	Chlorophyll b (mg/m ²)	Biomass pigment ratio	Sampling method
		Dry weight	Ash weight				
Nov. 16	27	1,230	923	.042	.000	7,300	Polyethylene strip
Aug. 25	41	64,300	55,300	.160	.000	56,250	Polyethylene strip

MISSOURI RIVER MAIN STEM

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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) above mean sea level, 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 500 ft (150 m) downstream at present datum.

REVISIONS.--WSP 1729: Drainage area.

REMARKS.--Water-discharge records fair. Flow partly regulated by Fort Peck Lake and many other reservoirs above station. Diversions for irrigation of about 1,030,400 acres (4,170 km²) above station.

AVERAGE DISCHARGE.--27 years (1943-51, 1958-77, after operational level at Fort Peck Lake was reached), 10,710 ft³/s (303.3 m³/s), 7,759,000 acre-ft/yr (9.57 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 (4.51 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, 16,600 ft³/s (470 m³/s) Feb. 10; maximum gage height observed, 12.76 ft (3.889 m), Dec. 2, backwater from ice; minimum daily discharge, 5,460 ft³/s (155 m³/s) Apr. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14700	13600	13000	9000	14900	13500	7380	6060	5690	7630	9130	8370
2	14700	13700	12000	9500	15000	13500	7350	6240	5890	7510	9210	8350
3	15000	13800	11000	9700	15500	13300	7350	6160	6060	7540	9210	7830
4	15100	13700	9500	9800	16000	13500	7310	6060	5750	7510	9390	7770
5	15000	13600	9000	10200	15500	13600	7190	6280	5600	7650	9660	7890
6	14700	13700	9000	10800	16000	14000	6560	6160	5690	7700	9580	7650
7	11900	13800	9000	11000	16500	14500	6970	6000	5750	7560	9260	7490
8	11500	14500	9300	10400	16500	14500	7650	6650	5500	8650	9370	7590
9	11300	15400	9500	10300	16500	14500	7310	6200	5790	9340	7890	7710
10	11100	15400	10000	10500	16600	14800	6860	5910	6100	9500	7100	7590
11	11000	15500	10300	11000	16000	15000	6930	5790	6240	9340	7540	7420
12	11000	15800	10500	11200	15800	13900	6000	5910	5850	9230	7580	7330
13	11000	15300	10600	11800	15800	13200	5690	6100	5930	9260	7440	7120
14	10500	15600	10800	12500	15800	11900	5460	5950	6240	9500	7400	7050
15	10900	15500	11000	13000	15800	11400	5480	5790	6200	9470	7650	7170
16	10200	15400	11000	12500	16000	10100	5480	5750	6410	9580	7720	7100
17	9740	15200	11200	13000	16000	10700	5870	5850	6390	9420	7630	6820
18	9680	15100	11200	13500	16000	10400	6540	5910	7540	9850	7960	6700
19	10800	15100	11500	14000	16000	9930	5850	5910	8470	9710	7440	6880
20	13000	15000	11500	15000	16000	10100	5810	5970	8550	9660	7580	6620
21	13300	15200	11800	15300	16500	9310	6780	6120	8420	9870	7770	6440
22	13400	15300	12000	15500	16000	8800	6690	6060	8270	9630	8010	6440
23	13400	15500	12000	15000	16500	8800	6540	6060	8080	8950	8250	6710
24	13600	15400	12000	15000	16500	8150	6310	5930	8010	8930	8060	6920
25	13600	15700	11800	15000	16500	7790	6350	6200	8500	9130	7980	6890
26	13700	15600	11200	15000	16000	7630	6330	6180	8400	8980	7960	6950
27	13600	15400	10000	15000	15500	6820	6120	6080	8400	8950	7860	6350
28	13500	15400	10000	14800	14500	7240	6000	5930	8650	9080	7940	6140
29	13300	15400	10000	14800	---	7470	6260	5730	8350	8770	8080	6190
30	13400	14000	10200	14800	---	7040	6040	6240	8080	8550	8080	6140
31	13400	---	9500	14800	---	7440	---	6240	---	9260	8200	---
TOTAL	391020	447600	331400	393700	446200	342820	194460	187420	208800	275710	253930	213620
MEAN	12610	14920	10690	12700	15940	11060	6482	6046	6960	8894	8191	7121
MAX	15100	15800	13000	15500	16600	15000	7650	6650	8650	9870	9660	8370
MIN	9680	13600	9000	9000	14500	6820	5460	5730	5500	7510	7100	6140
AC-FT	775600	887800	657300	780900	885000	680000	385700	371700	414200	546900	503700	423700
CAL YR 1976	TOTAL	5885430	MEAN	16080	MAX	32900	MIN	8200	AC-FT	11670000		
WTR YR 1977	TOTAL	3686680	MEAN	10100	MAX	16600	MIN	5460	AC-FT	7313000		

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.

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. Flow regulated by upstream reservoirs.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 807 micromhos May 10, 1970; 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 months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 769 micromhos Jan. 8; minimum daily, 551 micromhos Jan. 28.

WATER TEMPERATURES: Maximum daily, 20.5°C June 25, July 5; minimum daily, 0.0°C on many days during winter months.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	AIR TEMPERATURE (DEG C)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	FECAL COLIFORM (COL./100 ML)	FECAL STREPTOCOCCI (COL./100 ML)
OCT 14...	0930	10500	669	8.3	7.0	11.0	50	9.8	95	63	290
NOV 16...	1300	15400	680	8.3	8.0	4.0	25	11.6	95	9	18
DEC 13...	1300	10600	720	8.5	7.0	.0	8	12.8	94	9	6
JAN 11...	1500	11000	720	7.7	-20.0	.0	7	12.6	93	24	50
FEB 07...	1400	16500	670	8.5	1.5	.0	5	12.2	90	24	9
MAR 31...	1200	7440	700	8.5	9.5	3.0	40	12.8	102	3	540
APR 25...	1545	6350	665	8.2	26.0	13.0	20	9.4	95	<1	140
MAY 25...	0930	6200	655	7.8	24.0	19.0	25	7.8	89	29	27
JUN 30...	1000	8080	630	8.3	19.0	17.0	40	7.8	87	720	38
JUL 27...	1200	8950	665	8.3	25.0	19.5	30	8.4	98	16	31
AUG 31...	1530	8200	625	8.2	19.5	15.6	25	9.1	98	41	38
SEP 01...	1130	8600	--	--	--	16.0	--	--	--	--	--
27...	1430	6020	690	8.2	18.0	13.0	120	9.5	97	76	190

DATE	HARDNESS (CA, MG/L)	NON-CARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	DISSOLVED PHOSPHATE (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CaCO3 (MG/L)
OCT 14...	230	74	57	22	50	31	1.4	3.9	194	0	159
NOV 16...	220	66	51	22	49	32	1.4	3.8	185	0	152
DEC 13...	250	86	60	24	51	30	1.4	4.0	198	0	162
JAN 11...	240	75	58	23	50	31	1.4	3.7	200	0	164
FEB 07...	230	71	55	22	48	31	1.4	3.7	191	0	157
MAR 31...	240	73	57	23	57	34	1.6	3.9	200	0	160
APR 25...	230	67	58	21	52	32	1.5	4.2	200	0	160
MAY 25...	230	77	57	22	52	32	1.5	4.1	190	0	160
JUN 30...	230	77	57	22	48	31	1.4	3.8	190	0	160
JUL 27...	230	70	56	21	47	31	1.4	3.9	190	0	160
AUG 31...	230	79	56	23	46	30	1.3	3.5	190	0	160
SEP 01...	--	--	--	--	--	--	--	--	--	--	--
27...	230	70	54	22	58	35	1.7	3.8	190	0	160

06185500 MISSOURI RIVER NEAR CULBERTSON, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	CARBON DIOXIDE (CO2) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO2) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)
OCT										
14...	1.6	170	8.8	.6	7.7	400	416	.54	11300	.04
NOV										
16...	1.5	170	7.8	.7	7.7	392	403	.53	16300	.04
DEC										
13...	1.0	180	8.7	.7	8.0	444	434	.60	12700	.15
JAN										
11...	6.4	180	8.3	.7	7.7	430	430	.58	12800	.07
FEB										
07...	1.0	170	7.9	.6	7.7	412	409	.56	18400	.07
MAR										
31...	1.0	170	9.7	.6	7.1	441	427	.60	8860	.00
APR										
25...	2.0	170	8.8	.7	7.7	426	421	.58	7300	.01
MAY										
25...	4.8	170	9.3	.7	8.9	429	418	.58	7180	.01
JUN										
30...	1.5	160	8.1	.0	--	402	--	.55	8770	.31
JUL										
27...	1.5	150	7.6	.7	8.8	390	389	.53	9420	.05
AUG										
31...	1.9	160	7.7	.7	8.7	392	399	.53	8680	.03
SEP										
01...	--	--	--	--	--	--	--	--	--	--
27...	1.9	160	14	.7	8.8	421	415	.57	6840	.11

DATE	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L)	TOTAL NITRO- GEN (N) (MG/L)	TOTAL NITRO- GEN (NO3) (MG/L)	TOTAL PHOS- PHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	SUS- PENDED ARSENIC (AS) (UG/L)	DIS- SOLVED ARSENIC (AS) (UG/L)	TOTAL CAD- MIUM (CD) (UG/L)	SUS- PENDED CAD- MIUM (CD) (UG/L)	DIS- SOLVED CAD- MIUM (CD) (UG/L)
OCT										
14...	.43	.47	2.1	.25	--	--	--	--	--	--
NOV										
16...	.40	.44	1.9	.09	--	--	--	--	--	--
DEC										
13...	.42	.57	2.5	.03	4	0	4	<10	<10	0
JAN										
11...	.16	.23	1.0	.03	--	--	--	--	--	--
FEB										
07...	.17	.24	1.1	.04	--	--	--	--	--	--
MAR										
31...	.66	.66	2.9	.12	4	--	2	<10	<9	1
APR										
25...	.15	.16	.71	.05	--	--	--	--	--	--
MAY										
25...	.23	.24	1.1	.06	--	--	--	--	--	--
JUN										
30...	.39	.70	3.1	.07	5	--	3	<10	--	0
JUL										
27...	.33	.38	1.7	.11	--	--	--	--	--	--
AUG										
31...	.16	.19	.84	.07	--	--	--	--	--	--
SEP										
27...	.28	.39	1.7	.13	6	4	2	<10	<2	8

MISSOURI RIVER MAIN STEM

06185500 MISSOURI RIVER NEAR CULBERTSON, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL CHROMIUM (CR) (UG/L)	SUS- PENDE D CHRO- MIUM (CR) (UG/L)	DIS- SOLVED CHRO- MIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	SUS- PENDE D COBALT (CO) (UG/L)	DIS- SOLVED COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	SUS- PENDE D COPPER (CU) (UG/L)	DIS- SOLVED COPPER (CU) (UG/L)
OCT 14...	--	--	--	--	--	--	--	--	--
NOV 16...	--	--	--	--	--	--	--	--	--
DEC 13...	0	0	0	<50	<50	0	10	8	2
JAN 11...	--	--	--	--	--	--	--	--	--
FEB 07...	--	--	--	--	--	--	--	--	--
MAR 31...	0	0	0	<50	<50	0	<10	<9	1
APR 25...	--	--	--	--	--	--	--	--	--
MAY 25...	--	--	--	--	--	--	--	--	--
JUN 30...	10	--	0	<50	--	0	20	18	2
JUL 27...	--	--	--	--	--	--	--	--	--
AUG 31...	--	--	--	--	--	--	--	--	--
SEP 27...	0	0	0	50	50	0	10	8	2

DATE	TOTAL IRON (FE) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	SUS- PENDE D LEAD (PB) (UG/L)	DIS- SOLVED LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	SUS- PENDE D MANGANESE (MN) (UG/L)	DIS- SOLVED MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)
DEC 13...	280	0	<100	<98	2	10	10	0	.4
MAR 31...	420	20	<100	<96	4	180	170	10	.2
JUN 30...	4600	40	<100	--	2	80	--	4	.0
SEP 27...	6100	30	<100	<99	1	110	110	1	.0

DATE	SUS- PENDE D MERCURY (HG) (UG/L)	DIS- SOLVED MERCURY (HG) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	SUS- PENDE D SELENIUM (SE) (UG/L)	DIS- SOLVED SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	SUS- PENDE D ZINC (ZN) (UG/L)	DIS- SOLVED ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)
DEC 13...	.4	.0	1	0	1	10	0	10	5.0
MAR 31...	--	.0	1	0	1	20	20	0	4.6
JUN 30...	--	.0	2	0	2	50	--	6	4.6
SEP 27...	.0	.0	1	1	0	60	50	10	3.6

DATE	TOTAL ALDRIN (UG/L)	ALDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ATRA- ZINE (UG/L)	ATRA- ZINE IN BOTTOM MATERIAL (UG/ KG DRY SOLIDS)	TOTAL CHLOR- DANE (UG/L)	CHLOR- DANE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDD (UG/L)	DDD IN BOTTOM MATERIAL (UG/KG)	TOTAL DDE (UG/L)	DDE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDT (UG/L)	DDT IN BOTTOM MATERIAL (UG/KG)
NOV 16...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
FEB 07...	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--
MAY 25...	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--
AUG 31...	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--

Whole water ND - Not detected at 0.01 ug/L level.
 Bed material ND - Not detected at 0.1 ug/mg level.

06185500 MISSOURI RIVER NEAR CULBERTSON, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL DI- AZINON (UG/L)	DI- AZINON IN BOTTOM MA- TERIAL (UG/KG)	TOTAL DI- ELDRIN (UG/L)	DI- ELDRIN IN BOTTOM MA- TERIAL (UG/KG)	TOTAL ENDRIN (UG/L)	ENDRIN IN BOTTOM MA- TERIAL (UG/KG)	TOTAL ETHION (UG/L)	ETHION IN BOTTOM MA- TERIAL (UG/KG)	TOTAL HEPTA- CHLOR (UG/L)	HEPTA- CHLOR IN BOTTOM MA- TERIAL (UG/KG)	TOTAL HEPTA- CHLOR EPOXIDE (UG/L)	HEPTA- CHLOR EPOXIDE IN BOT- TOM MA- TERIAL (UG/KG)
NOV 16...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
FEB 07...	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--
MAY 25...	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--
AUG 31...	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--

DATE	TOTAL LINDANE (UG/L)	LINDANE IN BOTTOM MA- TERIAL (UG/KG)	TOTAL MALA- THION (UG/L)	MALA- THION IN BOTTOM MA- TERIAL (UG/KG)	TOTAL METH- OXY- CHLOR (UG/L)	METHOX- YCHLOR IN BOT- TOM MA- TERIAL (UG/KG)	TOTAL METHYL PARA- THION (UG/L)	METHYL PARA- THION IN BOT- TOM MA- TERIAL (UG/KG)	TOTAL METHYL TRI- THION (UG/L)	METHYL TRI- THION IN BOT- TOM MA- TERIAL (UG/KG)	TOTAL PARA- THION (UG/L)
NOV 16...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
FEB 07...	ND	--	ND	--	ND	--	ND	--	ND	--	ND
MAY 25...	ND	--	ND	--	ND	--	ND	--	ND	--	ND
AUG 31...	ND	--	ND	--	ND	--	ND	--	ND	--	ND

DATE	PARA- THION IN BOTTOM MA- TERIAL (UG/KG)	SIMA- ZINE TOTAL COUL- SON COND. (UG/L)	SIMA- ZINE IN TOTAL MATERI- AL (UG/ KG DRY SOLIDS)	TOTAL TOX- APHENE (UG/L)	TOX- APHENE IN BOTTOM MA- TERIAL (UG/KG)	TOTAL TRI- THION (UG/L)	TRI- THION IN BOTTOM MA- TERIAL (UG/KG)	TOTAL 2,4-D (UG/L)	2,4-D IN BOTTOM MA- TERIAL (UG/KG)	TOTAL 2,4,5-T (UG/L)	2,4,5-T IN BOTTOM MA- TERIAL (UG/KG)
NOV 16...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
FEB 07...	--	ND	--	ND	--	ND	--	ND	--	ND	--
MAY 25...	--	ND	--	ND	--	ND	--	ND	--	ND	--
AUG 31...	--	ND	--	ND	--	ND	--	ND	--	ND	--

DATE	TOTAL SILVEX (UG/L)	SILVEX IN BOTTOM MA- TERIAL (UG/KG)	SUS- PENDE SEDI- MENT (MG/L)	SUS- PENDE SEDI- MENT DIS- CHARGE (T/DAY)	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM
NOV 16...	ND	ND	--	--	--
FEB 07...	ND	--	--	--	--
MAR 31...	--	--	428	8600	33
MAY 25...	ND	--	206	3450	44
JUN 30...	--	--	365	7960	42
JUL 27...	--	--	147	3550	90
AUG 31...	ND	--	--	--	--
SEP 01...	--	--	285	6620	50
27...	--	--	232	3770	98

Whole water ND - Not detected at 0.01 µg/L level.
Bed material ND - Not detected at 0.1 µg/mg level.

MISSOURI RIVER MAIN STEM

06185500 MISSOURI RIVER NEAR CULBERTSON, MT--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	619	646	638	689	655	659	708	661	700	654	639	622
2	619	650	631	684	659	663	702	660	712	651	637	629
3	618	648	641	691	641	666	691	660	701	648	634	629
4	619	650	650	692	632	665	692	661	698	653	630	649
5	619	643	635	668	631	665	698	659	699	649	630	641
6	623	639	686	679	640	661	700	655	689	642	632	662
7	637	642	627	675	639	669	705	654	678	641	638	662
8	626	644	751	769	634	662	690	651	670	646	633	662
9	622	641	669	760	633	661	680	654	670	639	631	648
10	622	639	669	649	619	661	680	661	660	638	641	644
11	622	632	677	671	621	675	679	650	654	631	640	643
12	621	632	678	630	619	676	682	659	656	630	638	662
13	624	636	671	661	618	673	692	651	655	633	638	659
14	629	631	680	750	621	680	708	653	651	631	641	669
15	626	639	662	739	630	681	710	652	641	637	640	660
16	626	636	638	658	629	683	699	653	644	628	634	652
17	629	637	632	631	621	684	696	653	650	634	638	650
18	626	635	631	642	625	680	689	642	649	635	638	658
19	621	638	629	635	618	690	690	651	643	635	632	651
20	618	639	630	634	620	696	693	654	648	636	636	659
21	622	641	647	661	631	697	683	651	650	633	634	681
22	624	642	658	689	635	701	683	656	677	632	638	678
23	623	639	656	633	630	692	681	661	661	634	632	668
24	623	636	658	721	632	690	678	663	652	634	631	662
25	621	633	653	629	635	700	679	671	649	629	632	667
26	620	633	648	699	640	699	679	692	641	628	631	674
27	622	639	639	739	651	693	668	743	659	629	633	677
28	623	683	655	551	653	698	677	729	643	623	632	694
29	629	633	694	662	---	692	672	743	647	624	632	677
30	629	648	645	615	---	699	680	759	647	628	632	681
31	630	---	670	652	---	694	---	748	---	628	629	---
MEAN	624	641	656	673	633	681	689	671	663	636	635	659

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13.0	8.0	0.5	0.0	0.0	0.0	3.0	14.0	17.0	17.0	17.5	14.0
2	15.0	7.0	0.5	0.0	0.0	0.0	3.5	13.0	18.0	18.0	17.5	14.0
3	13.0	7.0	1.0	0.0	0.0	0.0	3.0	12.0	18.0	18.5	17.5	14.5
4	11.5	6.5	0.5	0.0	0.0	0.0	3.5	13.5	18.5	19.5	17.0	16.0
5	9.5	6.5	0.5	0.0	0.0	0.0	4.0	11.5	19.0	20.5	16.0	16.5
6	9.5	7.0	0.0	0.0	0.0	0.0	4.5	11.0	19.0	20.0	17.0	17.0
7	8.5	6.0	0.5	0.0	0.0	0.0	5.5	11.5	20.0	19.5	16.0	16.0
8	10.0	6.5	0.0	0.0	0.0	0.0	6.0	13.5	19.5	17.5	16.5	17.0
9	10.0	6.0	0.0	0.0	0.0	0.0	9.0	15.5	19.0	17.0	17.5	14.0
10	12.0	6.0	0.0	0.0	0.0	0.5	10.5	17.5	19.5	18.0	16.0	14.0
11	12.5	2.0	0.0	0.0	0.0	2.5	9.5	19.0	18.0	18.0	15.0	16.0
12	13.0	2.0	0.0	0.0	0.0	2.0	9.5	18.0	17.0	17.0	16.0	14.5
13	12.0	1.0	0.0	0.0	0.0	2.0	9.0	18.5	15.0	18.0	15.0	15.0
14	10.5	3.0	0.0	0.0	0.0	2.5	9.5	18.0	14.5	17.0	15.0	15.0
15	9.0	2.0	0.0	0.0	0.0	2.5	11.0	18.0	14.5	17.5	15.0	16.0
16	7.5	3.0	0.0	0.0	0.0	1.5	11.0	16.5	15.0	18.0	15.5	15.5
17	6.0	4.0	0.0	0.0	0.0	2.5	11.5	16.0	16.5	19.5	15.0	14.0
18	6.0	5.0	0.0	0.0	0.0	2.5	11.0	14.5	16.0	20.0	16.5	13.0
19	6.0	5.0	0.0	0.0	0.0	2.5	10.0	13.0	16.5	20.0	17.0	12.0
20	6.5	4.0	0.0	0.0	0.0	1.0	9.0	11.5	17.5	19.0	17.5	11.5
21	6.5	3.5	0.0	0.0	0.0	1.0	8.0	12.5	17.0	18.5	17.0	13.0
22	6.5	2.0	0.0	0.0	0.0	2.5	8.5	13.5	18.0	17.0	17.0	13.0
23	6.0	2.0	0.0	0.0	0.0	2.0	9.0	15.0	19.0	20.0	15.0	14.0
24	6.0	2.0	0.0	0.0	0.0	3.5	9.5	17.0	19.0	20.0	14.5	13.0
25	5.5	3.0	0.0	0.0	0.0	3.5	11.0	19.0	20.5	19.5	17.0	12.0
26	4.0	2.5	0.0	0.0	0.0	4.0	12.5	18.5	20.0	18.5	17.5	12.0
27	5.0	1.0	0.0	0.0	0.0	4.0	13.5	19.0	19.5	19.0	16.0	12.5
28	6.0	0.0	0.0	0.0	0.0	5.0	13.0	17.0	18.0	18.5	15.0	12.5
29	6.5	0.5	0.0	0.0	---	4.0	13.0	16.0	19.0	19.0	15.5	12.0
30	8.5	0.5	0.0	0.0	---	4.0	15.0	16.0	17.0	18.0	14.5	10.5
31	8.0	---	0.0	0.0	---	3.0	---	16.0	---	16.0	14.5	---
MEAN	8.5	4.0	0.0	0.0	0.0	2.0	9.0	15.5	18.0	18.5	16.0	14.0

MISSOURI RIVER MAIN STEM

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06185500 MISSOURI RIVER NEAR CULBERTSON, MT--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	OCT 14,76 0930	NOV 16,76 1300	DEC 13,76 1300	JAN 11,77 1500	FEB 7,77 1400					
TOTAL CELLS/ML	4100	160	320	210	240					
DIVERSITY: DIVISION	0.2	0.0	1.5	0.4	0.0					
..CLASS	0.2	0.0	1.5	0.4	0.0					
...ORDER	0.2	0.0	1.8	0.5	0.0					
...FAMILY	1.1	1.0	1.8	0.5	0.1					
....GENUS	1.1	1.0	2.1	0.5	0.1					
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										
...CHARACIACEAE										
...SCHROEDERIA	--	--	--	--	--	--	--	--	--	--
...MICRACTINIACEAE										
...MICRACTINIUM	--	--	--	--	--	--	--	--	--	--
...OOCYSTACEAE										
...ANKISTRODESMUS	57	1	--	--	3	1	--	--	--	--
...BOHLINIA	--	--	--	--	--	--	--	--	--	--
...CHODATELLA	--	--	--	--	--	--	--	--	--	--
...CLOSTERIOPSIS	--	--	--	--	--	--	--	--	--	--
...DICTYOSPHAERIUM	--	--	--	--	--	--	--	--	--	--
...KIRCHNERIELLA	--	--	--	--	--	--	--	--	--	--
...OOCYSTIS	--	--	--	--	--	--	--	--	--	--
...SELENASTRUM	--	--	--	13	4	--	--	--	--	--
...TREUBARIA	--	--	--	--	--	--	--	--	--	--
...SCENEDESMACEAE										
...ACTINASTRUM	--	--	--	--	--	--	--	--	--	--
...CRUCIGENIA	--	--	--	--	--	--	--	--	--	--
...SCENEDESMUS	--	--	--	--	6	3	--	--	--	--
...TETRASTRUM	--	--	--	--	--	--	--	--	--	--
...TETRASPORALES										
...PALMELLACEAE										
...SPHAEROCYSTIS	--	--	--	--	--	--	--	--	--	--
...VOLVOCALES										
...CHLAMYDOMONADACEAE										
...CARTERIA	--	--	--	--	--	--	--	--	--	--
...CHLAMYDOMONAS	--	--	--	--	--	--	--	--	--	--
...POLYBLEPHARIDACEAE										
...PYRAMIMONAS	--	--	--	--	--	--	--	--	--	--
...VOLVOCAEAE										
...PANDORINA	--	--	--	--	--	--	--	--	--	--
CHRYSTOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...COSCINODISCAEAE										
...CYCLOTETLA	--	--	--	10	3	3	1	--	--	--
...MELOSIRA	--	--	--	--	--	--	--	--	--	--
...PENNALES										
...ACHNANTHACEAE										
...COCCONEIS	57	1	--	--	--	--	--	--	--	--
...RHODOSPHENIA	--	--	--	--	--	--	--	--	--	--
...DIATOMACEAE										
...DIATOMA	110	3	16	10	--	--	--	--	--	--
...FRAGILARIACEAE	--	--	--	--	--	--	--	--	--	--
...ASTERIONELLA	--	--	--	--	--	190#	93	230#	98	--
...FRAGILARIA	3400#	82	120#	80	160#	50	--	--	--	--
...SYNEDRA	--	--	--	--	--	--	--	--	--	--
...GOMPHONEMATACEAE										
...GOMPHONEMA	--	--	8	5	--	--	--	--	--	--
...NAVICULACEAE										
...NAVICULA	340	8	--	--	--	--	--	--	--	--
...NITZSCHACEAE										
...NITZSCHIA	110	3	--	--	--	--	--	4	2	--
...SURIPELLACEAE										
...SURIPELLA	--	--	8	5	--	--	--	--	--	--
...CHRYSTOPHYCEAE										
...CHRYSDOMONADALES										
...OCHROMONADACEAE										
...DINOBYRON	--	--	--	--	--	--	--	--	--	--
...OCHROMONAS	--	--	--	--	--	--	--	--	--	--

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
 * - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

CONTINUED ...

MISSOURI RIVER MAIN STEM

06185500 MISSOURI RIVER NEAR CULBERTSON, MT--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

(CONTINUED)

DATE TIME	OCT 14,76 0930		NOV 16,76 1300		DEC 13,76 1300		JAN 11,77 1500		FEB 7,77 1400	
ORGANISM	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										
...CHROCCOCCALES										
...CHROCCOCCAEAE										
....AGMENELLUM	--	-	--	-	--	-	--	-	--	-
....ANACYSTIS	--	-	--	-	13	4	--	-	--	-
...HORMOGONALES										
...NOSTOCACEAE										
....ANABAENA	--	-	--	-	--	-	--	-	--	-
....ANABAENOPSIS	--	-	--	-	--	-	--	-	--	-
....APHANIZOMENON	--	-	--	-	--	-	--	-	--	-
....CYLINDROSPERMUM	--	-	--	-	--	-	--	-	--	-
...OSCILLATORIACEAE										
....LYNGBYA	--	-	--	-	25	8	--	-	--	-
....OSCILLATORIA	--	-	--	-	75#	23	--	-	--	-
....PHORMIDIUM	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
..CRYPTOPHYCEAE										
...CRYPTOMONIDALES										
...CRYPTOCHRYSIDACEAE										
....CHROOMONAS	--	-	--	-	--	-	--	-	--	-
...CRYPTOMONODACEAE										
....CRYPTOMONAS	--	-	--	-	--	-	--	-	--	-
..EUGLENOPHYCEAE										
...EUGLENALES										
....EUGLENACEAE										
....EUGLENA	57	1	--	-	--	-	--	-	--	-
....PHACUS	--	-	--	-	--	-	--	-	--	-
....TRACHELOMONAS	--	-	--	-	25	8	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)										
..DINOPHYCEAE										
...PERIDINIALES										
...GLENODINIAEAE										
....GLENODINIUM	--	-	--	-	--	-	3	1	--	-

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

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

MISSOURI RIVER MAIN STEM

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06185500 MISSOURI RIVER NEAR CULBERTSON, MT--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	MAY 25,77 0930	JUN 30,77 1000	JUL 27,77 1200	AUG 31,77 1530	SEP 27,77 1430
TOTAL CELLS/ML	9200	3800	1400	750	1200
DIVERSITY: DIVISION	0.8	1.6	0.7	1.5	1.6
..CLASS	0.8	1.6	0.7	1.5	1.6
...ORDER	1.2	2.3	0.9	1.6	1.6
...FAMILY	1.3	2.8	1.7	2.1	2.1
...GENUS	1.3	3.9	1.7	2.5	2.5

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										
...CHARACIACEAE										
...SCHROEDERIA	100	1	--	--	62	4	--	--	200#	16
...MICRACTINACEAE										
...MICRACTINIUM	--	--	58	2	--	--	--	--	--	--
...OOCYSTACEAE										
...ANKISTRODESMUS	86	1	70	2	--	--	--	--	120	10
...BOHLINIA	--	--	350	9	--	--	--	--	--	--
...CHODATELLA	--	--	--	--	--	--	--	--	13	1
...CLOSTERIOPSIS	--	--	*	0	--	--	--	--	--	--
...DICTYOSPHAERIUM	--	--	220	6	--	--	--	--	53	4
...KIRCHNERIELLA	--	--	58	2	--	--	--	--	--	--
...OOCYSTIS	--	--	120	3	--	--	--	--	--	--
...SELENASTRUM	--	--	*	0	--	--	--	--	--	--
...TREUBARIA	--	--	--	--	--	--	--	--	13	1
...SCENEDESMACEAE										
...ACTINASTRUM	220	2	130	3	--	--	--	--	--	--
...CRUCIGENIA	--	--	140	4	--	--	--	--	--	--
...SCENEDESMUS	86	1	140	4	--	--	38	5	--	--
...TETRASTRUM	--	--	190	5	--	--	--	--	--	--
...TETRASPORALES										
...PALMELLACEAE										
...SPHAEROCYSTIS	--	--	--	--	52	4	--	--	--	--
...VOLVOCALES										
...CHLAMYDOMONADACEAE										
...CARTERIA	--	--	35	1	--	--	--	--	--	--
...CHLAMYDOMONAS	--	--	--	--	--	--	38	5	--	--
...POLYBLEPHARIDACEAE										
...PYRAMIMONAS	--	--	*	0	--	--	--	--	--	--
...VOLVOCAEAE										
...PANDORINA	--	--	--	--	62	4	--	--	--	--
CHRYSOPHYTA										
..BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCEAE										
...CYCLOTELLA	--	--	58	2	--	--	--	--	13	1
...MELOSIRA	--	--	200	5	--	--	--	--	--	--
...PENNALES										
...ACHNANTHACEAE										
...COCCONEIS	--	--	--	--	--	--	--	--	--	--
...RHODICOSPHEA	--	--	*	0	--	--	--	--	--	--
...DIATOMACEAE										
...DIATOMA	--	--	--	--	--	--	--	--	--	--
...FRAGILARIACEAE										
...ASTERIONELLA	--	--	--	--	--	--	--	--	--	--
...FRAGILARIA	--	--	--	--	--	--	--	--	--	--
...SYNEDRA	--	--	--	--	--	--	--	--	110	9
...GOMPHONEMATACEAE										
...GOMPHONEMA	--	--	--	--	--	--	--	--	--	--
...NAVICULACEAE										
...NAVICULA	--	--	23	1	21	1	--	--	67	5
...NITZSCHACEAE										
...NITZSCHIA	710	8	430	11	--	--	200#	27	--	--
...SURIARELLACEAE										
...SURIARELLA	--	--	--	--	--	--	--	--	--	--
..CHRYSOPHYCEAE										
...CHRYSDOMONADES										
...OCHROMONADACEAE										
...DINOBYRON	120	1	--	--	--	--	--	--	--	--
...OCHROMONAS	--	--	*	0	--	--	--	--	--	--

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

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

CONTINUED ...

MISSOURI RIVER MAIN STEM

06185500 MISSOURI RIVER NEAR CULBERTSON, MT--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

(CONTINUED)

DATE TIME	MAY 25, 77 0930		JUN 30, 77 1000		JUL 27, 77 1200		AUG 31, 77 1530		SEP 27, 77 1430	
ORGANISM	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										
...CHROCCOCCALES										
...CHROCCOCCACEAE										
....AGMENELLUM	--	-	370	10	--	-	--	-	--	-
....ANACYSTIS	760	8	470	12	--	-	--	-	--	-
...HORMOGONALES										
...NOSTOCACEAE										
....ANABAENA	7000#	77	--	-	460#	33	140#	19	--	-
....ANABAENOPSIS	--	-	--	-	--	-	--	-	40	3
....APHANIZOMENON	--	-	--	-	--	-	160#	22	--	-
....CYLINDROSPERMUM	--	-	--	-	--	-	--	-	560#	46
...OSCILLATORIA										
....LYNGBYA	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	620#	16	--	-	140#	19	--	-
....PHORMIDIUM	--	-	--	-	750#	53	--	-	--	-
EUGLENOPHYTA (EUGLENIDS)										
..CRYPTOPHYCEAE										
...CRYPTOMONIDAE										
...CRYPTOCHRYSIDACEAE										
....CHRODOMONAS	--	-	--	-	--	-	--	-	13	1
...CRYPTOMONODACEAE										
....CRYPTOMONAS	*	0	*	0	--	-	28	4	--	-
..EUGLENOPHYCEAE										
...EUGLENALES										
...EUGLENACEAE										
....EUGLENA	--	-	23	1	--	-	--	-	--	-
....PHACUS	--	-	*	0	--	-	--	-	--	-
....TRACHELOMONAS	--	-	*	0	--	-	--	-	13	1
PYRRHOPHYTA (FIRE ALGAE)										
..DINOPHYCEAE										
...PERIDINIALES										
...GLENODINIACEAE										
....GLENODINIUM	--	-	--	-	--	-	--	-	--	-

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

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

MISSOURI RIVER MAIN STEM

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06185600 MISSOURI RIVER STAGE GAGE NO. 4 NEAR NOHLY, MT

LOCATION.--Lat 48°02'10", long 104°09'40", in NE¼ sec.1, T.26 N., R.58 E., Richland County, Hydrologic Unit 10060005, on right bank 4.5 mi (7.2 km) northwest of Nohly at mile 1,595.7 (kilometer 2,567.5).

DRAINAGE AREA.--93,000 mi² (241,000 km²), approximately.

PERIOD OF RECORD.--March 1959 to current year (seasonal).

GAGE.--Water-stage recorder. Datum of gage is 1,860.00 ft (566.928 m) above mean sea level. Prior to Apr. 18, 1962 at datum 60.00 ft (18.288 m) lower.

REMARKS.--Records good. Stage regulated by Fort Peck Reservoir.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 21.20 ft (6.462 m) Mar. 23, 1960, present datum; minimum daily recorded, 6.87 ft (2.094 m) Apr. 18, 1963.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12.54	12.16				---	---	8.18	8.05	9.29	10.28	9.61
2	12.57	12.19				---	---	8.29	8.09	9.09	10.26	9.50
3	12.61	12.19				---	---	8.28	8.22	9.11	10.29	9.45
4	12.64	12.23				---	---	8.20	8.19	9.09	10.32	9.13
5	12.59	12.22				---	---	8.28	7.97	9.18	10.42	9.17
6	12.49	12.21				---	---	8.29	8.02	9.21	10.48	9.20
7	11.78	12.20				---	---	8.19	8.07	9.22	10.37	9.06
8	11.44	12.36				---	---	8.40	7.98	9.38	10.31	9.11
9	11.37	12.67				---	---	8.32	8.01	9.96	9.93	9.19
10	11.29	12.73				---	---	8.11	8.20	10.09	9.38	9.13
11	11.25	---				---	---	8.03	8.37	10.32	9.28	9.07
12	11.25	---				---	---	8.04	8.28	10.25	9.46	8.97
13	11.26	---				---	---	8.22	8.19	10.05	9.36	8.94
14	11.30	---				---	7.86	8.18	8.34	10.24	9.30	8.80
15	11.19	---				12.95	7.83	8.03	8.42	10.18	9.32	8.84
16	11.01	---				11.45	7.87	8.03	8.40	10.29	9.37	8.85
17	10.78	---				10.74	8.00	8.09	8.44	10.28	9.36	8.80
18	10.75	---				10.48	8.34	8.20	8.65	10.33	9.41	8.62
19	11.02	---				10.21	8.20	8.22	9.27	10.46	9.47	8.69
20	11.72	---				10.18	7.97	8.25	9.49	10.33	9.18	8.64
21	12.00	---				9.99	8.38	8.29	9.46	10.41	9.40	8.48
22	12.02	---				9.85	8.49	8.30	9.41	10.49	9.39	8.44
23	12.02	---				9.81	8.42	8.29	9.36	10.32	9.60	8.54
24	12.08	---				9.72	8.32	8.24	9.20	10.06	9.56	8.72
25	12.11	---				---	8.20	8.27	9.32	10.27	9.45	8.71
26	12.17	---				---	8.30	8.31	9.51	10.19	9.44	8.74
27	12.17	---				---	8.26	8.32	9.35	10.15	9.36	8.56
28	12.15	---				---	8.17	8.25	9.58	10.28	9.38	8.30
29	12.11	---				---	8.27	8.11	9.49	10.20	9.43	8.30
30	12.08	---				---	8.22	8.32	9.40	9.99	9.44	8.30
31	12.10	---				---	---	8.32	---	10.20	9.50	---
MEAN	11.80	---				---	---	8.22	8.69	9.96	9.66	8.86
MAX	12.64	---				---	---	8.40	9.58	10.49	10.48	9.61
MIN	10.75	---				---	---	8.03	7.97	9.09	9.18	8.30

MISSOURI RIVER MAIN STEM

06185650 MISSOURI RIVER STAGE GAGE NO. 5 AT NOHLY, MT

LOCATION.--Lat 48°00'10", long 104°05'30", in SE¼ sec.16, T.26 N., R.59 E., Richland County, Hydrologic Unit 10060005, on downstream side of bridge 0.2 mi (0.3 km) northwest of Nohly at mile 1,587.7 (kilometer 2,554.6).

DRAINAGE AREA.--93,000 mi² (241,000 km²), approximately.

PERIOD OF RECORD.--April 1959 to current year (seasonal).

GAGE.--Water-stage recorder. Datum of gage is 1,800.00 ft (548.640 m) above mean sea level.

REMARKS.--Records fair. Stage regulated by Fort Peck Reservoir.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 77.22 ft (23.537 m) Mar. 15, 1972; minimum daily recorded, 59.12 ft (18.020 m) Nov. 22, 1964.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	64.97				---	62.15	61.50	61.65	62.79	63.59	62.90
2	---	64.97				---	62.12	61.60	61.60	62.60	63.51	62.86
3	---	64.98				68.65	62.08	61.63	61.68	62.57	63.56	62.83
4	---	65.00				68.57	62.07	61.66	61.68	62.56	63.56	62.50
5	---	64.99				68.51	62.07	61.62	61.49	62.61	63.65	62.60
6	---	64.98				68.55	61.89	61.68	61.51	62.62	63.69	62.58
7	---	64.98				68.66	61.89	61.60	61.77	62.63	63.60	62.41
8	64.33	65.07				68.77	62.20	61.78	61.99	62.70	63.50	62.47
9	64.28	65.27				68.88	62.20	61.78	62.12	63.27	63.36	62.50
10	64.21	---				68.84	62.05	61.56	62.48	63.40	62.81	62.50
11	64.15	---				68.58	61.99	61.48	62.68	63.60	62.60	62.47
12	64.15	---				68.40	61.77	61.43	62.77	63.62	62.76	62.33
13	64.18	---				68.36	61.47	61.62	62.87	63.39	62.70	62.32
14	64.13	---				68.11	61.32	61.60	63.00	63.53	62.63	62.18
15	64.11	---				67.84	61.22	61.48	63.10	63.49	62.63	62.20
16	64.04	---				67.19	61.29	61.49	63.16	63.60	62.74	62.23
17	63.81	---				65.16	61.34	61.56	62.90	63.58	62.68	62.20
18	63.78	---				64.01	61.67	61.67	62.90	63.59	62.69	62.04
19	63.94	---				63.57	61.62	61.86	63.20	63.73	62.78	62.09
20	64.52	---				63.47	61.32	62.11	63.30	63.63	62.50	62.05
21	64.82	---				63.30	61.69	62.16	63.25	63.69	62.68	61.92
22	64.88	---				63.03	61.86	62.07	63.13	63.78	62.69	61.85
23	64.87	---				62.92	61.82	62.00	63.03	63.66	62.89	61.93
24	64.88	---				62.78	61.71	61.87	62.85	63.40	62.87	62.09
25	64.91	---				62.54	61.59	61.78	62.88	63.50	62.88	62.10
26	64.96	---				62.38	61.66	61.75	63.05	63.49	62.77	62.16
27	64.93	---				62.28	61.61	61.78	62.90	63.43	62.72	62.02
28	64.95	---				62.19	61.50	61.70	63.04	63.55	62.72	61.75
29	64.91	---				62.19	61.58	61.62	62.98	63.52	62.75	61.72
30	64.89	---				62.05	61.57	61.80	62.88	63.36	62.78	61.71
31	64.90	---				62.14	---	61.88	---	63.45	62.81	---
MEAN	---	---				---	61.74	61.71	62.59	63.30	62.97	62.25
MAX	---	---				---	62.20	62.16	63.30	63.78	63.69	62.90
MIN	---	---				---	61.22	61.43	61.49	62.56	62.50	61.71

YELLOWSTONE RIVER BASIN

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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) above mean sea level (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, to May 16, 1945, 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 excellent 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.

AVERAGE DISCHARGE.--65 years, 13,090 ft³/s (371.0 m³/s), 9,484,000 acre-ft/yr (11.7 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, 28,100 ft³/s (796 m³/s) June 15, gage height, 10.01 ft (3.051 m); minimum daily, 3,090 ft³/s (87.5 m³/s) Aug. 8, gage height, 4.06 ft (1.237 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9320	9080	7700	5000	7800	6400	6770	6810	11200	9380	4090	5440
2	9340	7300	7800	3800	8000	6300	6770	7850	10300	8550	3880	6430
3	9150	6850	7800	3400	8200	6100	6550	8350	9210	7440	3790	5730
4	9090	8520	7700	3200	8100	6100	6580	8610	8080	6530	3730	5600
5	8850	9200	7500	3200	8000	6100	6640	9300	7600	6290	3590	5690
6	8910	9480	7400	3400	7800	6200	6770	9790	13600	6110	3490	5680
7	9030	9730	7200	3800	7700	6200	7060	11000	18800	6090	3350	6140
8	9080	9780	7200	4000	7800	6100	7430	10400	20900	6550	3160	6560
9	9580	9780	7200	4000	7900	5900	8420	9090	22600	7280	3200	7090
10	9910	9760	7200	4000	8000	5800	9670	7830	23700	7240	3290	6030
11	9590	9700	7300	4000	7900	5800	10200	6620	23400	6640	3530	5170
12	9400	9740	7400	4100	7900	5800	9700	5620	25300	6180	3780	4930
13	9400	9860	7500	4200	7900	5800	9130	5510	25800	5720	3730	4710
14	9200	9730	7600	4600	7900	5800	8890	6200	25900	5490	4170	4670
15	9040	9920	7700	4800	7800	5800	8900	9780	27200	5160	4310	4660
16	9100	9690	7800	5100	7900	6000	8570	10600	24800	4850	4200	4570
17	9460	9150	8000	5400	8000	6100	7760	10200	23100	4560	4080	4420
18	9670	9000	7900	6000	8000	6000	7680	12900	22000	4610	3910	4420
19	9990	9340	7800	6500	8000	5900	7660	17700	19800	4450	3810	4520
20	9950	9640	7500	7000	8100	5800	7660	18700	18300	4290	3630	4400
21	9900	9690	7600	8000	7900	5900	7400	16700	17100	4110	3510	4560
22	9810	9710	7600	9000	7700	6000	7450	15100	15900	3970	3410	4970
23	9730	9600	7600	9500	7600	6100	7510	13500	14900	3890	3680	5260
24	9670	9500	7500	9800	7400	6100	6920	12200	14700	4140	3580	5290
25	9590	9400	7600	9800	7200	6250	6610	11000	14000	3690	3380	5280
26	9590	9200	7600	9700	7000	6130	6140	10100	12600	3350	3320	5240
27	9600	8400	7700	9500	6800	6190	5580	9780	11600	3540	3390	5300
28	9590	7800	7600	9000	6600	6300	5550	10100	11200	3710	3660	5270
29	9550	7700	7400	8000	---	6560	5600	11300	10400	3980	3970	5330
30	9410	7600	7000	7800	---	6700	5940	12000	9800	4150	3890	5530
31	9400	---	6000	7600	---	6740	---	11700	---	4150	4470	---
TOTAL	292900	273850	232400	187200	216900	188970	223510	326340	512890	166090	114980	158890
MEAN	9448	9128	7497	6039	7746	6096	7450	10530	17100	5358	3709	5296
MAX	9990	9920	8000	9800	8200	6740	10200	18700	27200	9380	4470	7090
MIN	8850	6850	6000	3200	6600	5800	5550	5510	7600	3350	3160	4400
AC-FT	581000	543200	461000	371300	430200	374800	443300	647300	1017000	329400	228100	315200
(†)	0	0	0	0	0	0	3790	13980	9840	14700	13000	663
CAL YR 1976 TOTAL	5346710	MEAN	14610	MAX	48600	MIN	3700	IN 2.88	AC-FT	10610000		
WTR YR 1977 TOTAL	2894920	MEAN	7931	MAX	27200	MIN	3160	IN 1.56	AC-FT	5742000		

† Diversions, in acre-feet, by Lower Yellowstone Canal, furnished by Bureau of Reclamation.

YELLOWSTONE RIVER BASIN

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.

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 months.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 26,800 mg/L May 8, 1975; minimum daily mean, 8 mg/L Jan. 9, 1973. SEDIMENT LOADS: Maximum daily, 3,030,000 tons (2,750,000 metric tons) May 8, 1975; minimum daily, 130 tons (118 metric tons) Jan. 9, 1975.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,160 micromhos Apr. 12; minimum daily, 319 micromhos June 14.

WATER TEMPERATURES: Maximum daily, 25.0°C July 17-19, 23, 24; minimum daily, 0.0°C on many days during winter months.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 4,470 mg/L May 20; minimum daily mean, 16 mg/L Jan. 6. SEDIMENT LOADS: Maximum daily, 226,000 tons (205,000 metric tons) May 20; minimum daily, 147 tons (133 metric tons) Jan. 6.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	AIR TEMPERATURE (DEG C)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	CHEMICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L)
OCT										
13...	1500	9290	710	8.5	23.0	13.0	700	9.0	92	--
27...	1000	9590	850	8.3	8.0	4.5	30	12.2	101	--
NOV										
17...	0900	9180	840	8.2	3.5	.5	10	12.2	92	17
30...	1000	7600	950	8.2	-5.0	.0	9	13.6	101	14
DEC										
14...	1000	7600	850	8.3	4.0	.0	8	13.2	98	4
28...	1600	7600	860	8.3	-19.0	.0	10	12.2	92	17
JAN										
12...	0930	4100	948	8.2	-30.0	.0	6	11.8	89	30
25...	1045	9800	800	8.0	-2.0	.0	10	11.8	87	11
FEB										
08...	0930	7800	849	8.1	-2.0	.0	8	11.4	88	0
24...	0930	7400	790	7.9	3.0	.0	40	11.0	81	2
MAR										
09...	1000	5900	762	8.4	8.0	1.5	35	11.0	85	19
30...	1000	6700	1110	8.5	7.5	3.0	80	12.2	98	19
APR										
12...	1500	9480	1190	8.3	15.5	13.5	330	9.6	99	45
26...	1100	6300	890	8.4	18.0	15.0	160	8.4	89	37
MAY										
09...	1500	8880	562	8.1	31.0	20.5	180	7.8	93	57
24...	1630	12200	695	8.0	32.0	20.5	1400	7.6	90	150
JUN										
15...	1000	26800	319	7.7	22.0	19.5	400	7.2	84	57
29...	1200	10500	510	8.5	28.0	22.5	150	7.5	93	32
JUL										
13...	0900	5620	600	8.5	23.0	20.0	130	8.0	94	38
28...	1100	3630	778	8.5	28.5	21.5	30	7.3	88	29
AUG										
11...	1200	3650	854	8.4	12.0	17.0	480	8.0	89	35
30...	1300	4000	838	8.3	20.0	18.5	300	8.0	91	30
30...	1402	4200	838	8.3	--	18.5	--	--	--	--
30...	1403	4200	838	8.3	20.0	18.5	--	8.0	91	--
SEP										
13...	1100	4640	800	8.3	22.0	17.5	180	9.0	101	23
28...	1200	5170	790	8.5	14.5	13.5	240	9.5	98	19
28...	1201	5320	790	8.5	14.5	13.5	--	9.5	98	--

YELLOWSTONE RIVER BASIN

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06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	BIO- CHEM- ICAL OXYGEN DEMAND 5 DAY (MG/L)	IMME- DIATE COLI- FORM (COL. PER 100 ML)	FECAL COLI- FORM (COL./ 100 ML)	FECAL STREP- TOCOC KF AGAR (COL. PER 100 ML)	HARD- NESS (CA, MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM
OCT										
13...	--	--	140	320	--	--	--	--	--	--
27...	--	65	--	53	260	90	61	27	65	35
NOV										
17...	--	28	14	14	--	--	--	--	--	--
30...	2.2	32	6	48	290	110	71	28	73	35
DEC										
14...	--	9	3	5	--	--	--	--	--	--
28...	.5	100	24	110	280	110	66	28	73	36
JAN										
12...	--	19	4	21	--	--	--	--	--	--
25...	.8	28	11	42	280	97	70	25	67	34
FEB										
08...	--	91	19	21	--	--	--	--	--	--
24...	.6	50	36	120	260	100	65	24	70	36
MAR										
09...	--	--	--	22	--	--	--	--	--	--
30...	1.0	55	63	226	410	210	82	49	90	32
APR										
12...	--	--	--	--	--	--	--	--	--	--
26...	2.5	32	21	140	290	110	68	29	77	36
MAY										
09...	--	250	190	310	--	--	--	--	--	--
24...	2.4	--	500	500	210	83	53	20	60	37
JUN										
15...	--	47	660	--	--	--	--	--	--	--
29...	2.4	--	14	220	170	52	42	15	42	35
JUL										
13...	--	90	82	250	--	--	--	--	--	--
28...	2.0	28	80	200	250	85	57	26	77	40
AUG										
11...	--	20	110	140	--	--	--	--	--	--
30...	2.0	--	--	--	280	100	58	32	91	41
30...	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--
SEP										
13...	--	100	--	210	--	--	--	--	--	--
28...	1.8	58	46	425	240	71	58	24	74	39
28...	--	--	--	--	--	--	--	--	--	--

DATE	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	ALKA- LINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO2) (MG/L)
OCT										
13...	--	--	--	--	150	--	--	--	--	--
27...	1.7	3.9	212	0	140	1.7	220	13	.5	9.3
NOV										
17...	--	--	--	--	140	--	--	--	--	--
30...	1.9	3.9	225	0	160	2.3	260	13	.4	8.8
DEC										
14...	--	--	--	--	160	--	--	--	--	--
28...	1.9	3.7	209	0	171	1.7	230	14	.5	9.6
JAN										
12...	--	--	--	--	195	--	--	--	--	--
25...	1.8	3.7	220	0	180	3.5	200	11	.5	13
FEB										
08...	--	--	--	--	150	--	--	--	--	--
24...	1.9	3.6	192	0	157	3.9	230	15	.3	9.2
MAR										
09...	--	--	--	--	160	--	--	--	--	--
30...	1.9	4.7	236	0	190	1.2	360	23	.5	9.2
APR										
12...	--	--	--	--	170	--	--	--	--	--
26...	2.0	4.4	220	2	180	1.4	250	18	.6	9.1
MAY										
09...	--	--	--	--	135	--	--	--	--	--
24...	1.8	3.6	160	0	131	2.6	210	10	.3	12
JUN										
15...	--	--	--	--	83	--	--	--	--	--
29...	1.4	2.9	140	0	110	.7	120	8.1	.3	10
JUL										
13...	--	--	--	--	--	--	--	--	--	--
28...	2.1	4.4	200	0	150	1.0	220	11	.5	8.9
AUG										
11...	--	--	--	--	180	--	--	--	--	--
30...	2.4	5.0	210	0	170	1.7	250	12	.5	7.9
30...	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--
SEP										
13...	--	--	--	--	--	--	--	--	--	--
28...	2.1	4.2	210	0	173	1.1	210	10	.5	8.4
28...	--	--	--	--	173	--	--	--	--	--

YELLOWSTONE RIVER BASIN

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	TOTAL NON- FILT- RABLE RESIDUE (MG/L)	SUS- PENDE SOLIDS (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO- GEN (N) (MG/L)
OCT									
13...	472	--	.64	11800	--	1060	.27	--	.01
27...	517	504	.70	13400	--	48	.20	--	.00
NOV									
17...	479	--	.65	11900	--	21	.17	--	.00
30...	579	569	.79	11900	--	13	.32	--	.12
DEC									
14...	535	--	.73	11000	--	19	.41	--	.00
28...	538	528	.73	11000	--	7	.32	--	.01
JAN									
12...	692	--	.94	7660	--	7	.53	--	.00
25...	544	499	.74	14400	--	18	.60	--	.09
FEB									
08...	519	--	.71	10900	--	1	.49	--	.13
24...	506	512	.69	10100	--	66	.43	--	.05
MAR									
09...	546	--	.74	8700	--	72	.28	--	.01
30...	794	735	1.08	14400	--	178	.30	--	.08
APR									
12...	798	--	1.09	20400	--	416	.42	--	.14
26...	580	567	.79	9870	--	246	.02	.01	.05
MAY									
09...	366	--	.50	8780	--	774	.28	--	.04
24...	462	448	.63	15200	--	2240	.41	--	.04
JUN									
15...	185	--	.25	13400	--	1160	.21	--	.06
29...	317	309	.43	8990	--	232	.09	--	.04
JUL									
13...	474	--	.64	7190	--	248	.16	--	.01
28...	513	504	.70	5030	--	115	.01	--	.01
AUG									
11...	556	--	.76	5480	--	--	.07	--	.02
30...	578	560	.79	6240	--	548	.16	--	.01
30...	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--
SEP									
13...	533	--	.72	6680	376	362	.00	--	.00
28...	511	493	.70	7130	--	432	.12	--	.05
28...	--	--	--	--	--	--	--	--	--

DATE	TOTAL ORGANIC NITRO- GEN (N) (MG/L)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L)	TOTAL NITRO- GEN (N) (MG/L)	TOTAL NITRO- GEN (NO3) (MG/L)	TOTAL PHOS- PHORUS (P) (MG/L)	TOTAL ALUM- INUM (AL) (UG/L)	DIS- SOLVED ALUM- INUM (AL) (UG/L)	TOTAL ARSENIC (AS) (UG/L)	DIS- SOLVED ARSENIC (AS) (UG/L)
OCT									
13...	1.7	1.7	2.0	8.7	.86	--	--	--	--
27...	.36	.36	.56	2.5	.04	--	--	--	--
NOV									
17...	.48	.48	.65	2.9	.03	--	--	--	--
30...	.20	.32	.64	2.8	.01	--	--	--	--
DEC									
14...	.34	.34	.75	3.3	.03	--	--	--	--
28...	.48	.49	.81	3.6	.01	190	0	6	4
JAN									
12...	.23	.23	.76	3.4	.02	--	--	--	--
25...	.19	.28	.88	3.9	.00	--	--	--	--
FEB									
08...	.19	.32	.81	3.6	.03	--	--	--	--
24...	.32	.37	.80	3.5	.07	--	--	--	--
MAR									
09...	.34	.35	.63	2.8	.07	--	--	--	--
30...	.73	.81	1.1	4.9	.13	2500	20	6	5
APR									
12...	1.6	1.7	2.1	9.4	.28	--	--	--	--
26...	.63	.68	.70	3.1	.14	--	--	--	--
MAY									
09...	.96	1.0	1.3	5.7	.02	--	--	--	--
24...	3.4	3.4	3.8	17	1.2	--	--	--	--
JUN									
15...	1.0	1.1	1.3	5.8	.49	--	--	--	--
29...	.95	.99	1.1	4.8	.15	2800	30	9	3
JUL									
13...	.59	.60	.76	3.4	.17	--	--	--	--
28...	.32	.33	.34	1.5	.06	--	--	--	--
AUG									
11...	1.1	1.1	1.2	5.2	.39	--	--	--	--
30...	.83	.84	1.0	4.4	.28	--	--	--	--
SEP									
13...	.38	.38	.38	1.7	.19	--	--	--	--
28...	.53	.58	.70	3.1	.20	9000	40	9	4

YELLOWSTONE RIVER BASIN

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06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL BERYL- LIUM (BE) (UG/L)	DIS- SOLVED BERYL- LIUM (BE) (UG/L)	DIS- SOLVED BORON (B) (UG/L)	TOTAL CAD- MIUM (CD) (UG/L)	DIS- SOLVED CAD- MIUM (CD) (UG/L)	TOTAL CHRO- MIUM (CR) (UG/L)	DIS- SOLVED CHRO- MIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)	DIS- SOLVED COPPER (CU) (UG/L)
OCT									
13...	--	--	--	--	--	--	--	--	--
27...	--	--	150	--	--	--	--	--	--
NOV									
17...	--	--	--	--	--	--	--	--	--
30...	--	--	170	--	--	--	--	--	--
DEC									
14...	--	--	--	--	--	--	--	--	--
28...	0	0	160	<10	0	0	0	<10	2
JAN									
12...	--	--	--	--	--	--	--	--	--
25...	--	--	160	--	--	--	--	--	--
FEB									
08...	--	--	--	--	--	--	--	--	--
24...	--	--	150	--	--	--	--	--	--
MAR									
09...	--	--	--	--	--	--	--	--	--
30...	0	0	340	<10	0	0	0	<10	1
APR									
12...	--	--	--	--	--	--	--	--	--
26...	--	--	180	--	--	--	--	--	--
MAY									
09...	--	--	--	--	--	--	--	--	--
24...	--	--	120	--	--	--	--	--	--
JUN									
15...	--	--	--	--	--	--	--	--	--
29...	0	0	110	<10	1	10	0	30	2
JUL									
13...	--	--	--	--	--	--	--	--	--
28...	--	--	160	--	--	--	--	--	--
AUG									
11...	--	--	--	--	--	--	--	--	--
30...	--	--	210	--	--	--	--	--	--
SEP									
13...	--	--	--	--	--	--	--	--	--
28...	0	0	190	<10	11	20	0	10	2

DATE	TOTAL IRON (FE) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	DIS- SOLVED LEAD (PB) (UG/L)	TOTAL LITHIUM (LI) (UG/L)	DIS- SOLVED LITHIUM (LI) (UG/L)	TOTAL MAN- GANESE (MN) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	DIS- SOLVED MERCURY (HG) (UG/L)	TOTAL MOLYB- DENUM (MO) (UG/L)
OCT											
13...	--	--	--	--	--	--	--	--	--	--	--
27...	--	10	--	--	--	--	--	--	--	--	--
NOV											
17...	--	--	--	--	--	--	--	--	--	--	--
30...	--	0	--	--	--	--	--	--	--	--	--
DEC											
14...	--	--	--	--	--	--	--	--	--	--	--
28...	320	10	<100	0	50	40	10	10	.0	.0	1
JAN											
12...	--	--	--	--	--	--	--	--	--	--	--
25...	--	0	--	--	--	--	--	--	--	--	--
FEB											
08...	--	--	--	--	--	--	--	--	--	--	--
24...	--	20	--	--	--	--	--	--	--	--	--
MAR											
09...	--	--	--	--	--	--	--	--	--	--	--
30...	4400	10	<100	1	60	50	130	30	.0	.0	2
APR											
12...	--	--	--	--	--	--	--	--	--	--	--
26...	--	20	--	--	--	--	--	--	--	--	--
MAY											
09...	--	--	--	--	--	--	--	--	--	--	--
24...	--	20	--	--	--	--	--	--	--	--	--
JUN											
15...	--	--	--	--	--	--	--	--	--	--	--
29...	6300	20	<100	3	30	30	150	0	.0	.0	<100
JUL											
13...	--	--	--	--	--	--	--	--	--	--	--
28...	--	20	--	--	--	--	--	--	--	--	--
AUG											
11...	--	--	--	--	--	--	--	--	--	--	--
30...	--	20	--	--	--	--	--	--	--	--	--
SEP											
13...	--	--	--	--	--	--	--	--	--	--	--
28...	11000	10	<100	1	60	50	180	1	.2	.0	1

YELLOWSTONE RIVER BASIN

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED MOLYB- DENUM (MO) (UG/L)	TOTAL NICKEL (NI) (UG/L)	DIS- SOLVED NICKEL (NI) (UG/L)	TOTAL SELE- NIUM (SE) (UG/L)	DIS- SOLVED SELE- NIUM (SE) (UG/L)	DIS- SOLVED VANA- DIUM (V) (UG/L)	TOTAL ZINC (ZN) (UG/L)	DIS- SOLVED ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	DIS- SOL- VED ORGANIC CARBON (C) (MG/L)	SUS- PENDED ORGANIC CARBON (C) (MG/L)
OCT											
13...	--	--	--	--	--	--	--	--	12	--	--
27...	--	--	--	--	--	--	--	--	2.3	--	--
NOV											
17...	--	--	--	--	--	--	--	--	2.7	--	--
30...	--	--	--	--	--	--	--	--	2.5	--	--
DEC											
14...	--	--	--	--	--	--	--	--	2.4	--	--
28...	1	<50	3	1	1	.4	0	10	--	2.5	.3
JAN											
12...	--	--	--	--	--	--	--	--	3.0	--	--
25...	--	--	--	--	--	--	--	--	2.1	--	--
FEB											
08...	--	--	--	--	--	--	--	--	2.3	--	--
24...	--	--	--	--	--	--	--	--	4.1	--	--
MAR											
09...	--	--	--	--	--	--	--	--	3.6	--	--
30...	2	<50	2	2	2	.2	20	10	4.5	3.9	1.9
APR											
12...	--	--	--	--	--	--	--	--	12	--	--
26...	--	--	--	--	--	--	--	--	7.6	--	--
MAY											
09...	--	--	--	--	--	--	--	--	10	--	--
24...	--	--	--	--	--	--	--	--	18	--	--
JUN											
15...	--	--	--	--	--	--	--	--	9.8	--	--
29...	2	<50	2	2	0	1.2	50	2	5.9	--	--
JUL											
13...	--	--	--	--	--	--	--	--	6.4	--	--
28...	--	--	--	--	--	--	--	--	3.9	--	--
AUG											
11...	--	--	--	--	--	--	--	--	9.6	--	--
30...	--	--	--	--	--	--	--	--	7.9	--	--
SEP											
13...	--	--	--	--	--	--	--	--	6.8	--	--
28...	1	50	0	1	0	.0	100	10	6.9	4.2	2.0

DATE	TOTAL ALDRIN (UG/L)	ALDRIN IN BOTTOM MA- TERIAL (UG/KG)	TOTAL ATRA- ZINE (UG/L)	ATRA- ZINE IN BOTTOM MATERI- AL (UG/ KG DRY SOLIDS)	TOTAL CHLOR- DANE (UG/L)	CHLOR- DANE IN BOTTOM MA- TERIAL (UG/KG)	TOTAL DDD (UG/L)	DDD IN BOTTOM MA- TERIAL (UG/KG)	TOTAL DDE (UG/L)	DDE IN BOTTOM MA- TERIAL (UG/KG)	TOTAL DDT (UG/L)	DDT IN BOTTOM MA- TERIAL (UG/KG)
NOV												
17...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAY												
10...	ND	ND	--	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG												
11...	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--

Whole water ND - Not detected at 0.01 ug/L level.
 Bed material ND - Not detected at 0.1 ug/mg level.

YELLOWSTONE RIVER BASIN

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06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL DI- AZINON (UG/L)	DI- AZINON IN BOTTOM MA- TERIAL (UG/KG)	TOTAL DI- ELDRIN (UG/L)	DI- ELDRIN IN BOTTOM MA- TERIAL (UG/KG)	TOTAL ENDRIN (UG/L)	ENDRIN IN BOTTOM MA- TERIAL (UG/KG)	TOTAL ETHION (UG/L)	ETHION IN BOTTOM MA- TERIAL (UG/KG)	TOTAL HEPTA- CHLOR (UG/L)	HEPTA- CHLOR IN BOTTOM MA- TERIAL (UG/KG)	TOTAL HEPTA- CHLOR EPOXIDE (UG/L)	HEPTA- CHLOR EPOXIDE IN BOT- TOM MA- TERIAL (UG/KG)
NOV 17...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAY 10...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 11...	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--

DATE	TOTAL LINDANE (UG/L)	LINDANE IN BOTTOM MA- TERIAL (UG/KG)	TOTAL MALA- THION (UG/L)	MALA- THION IN BOTTOM MA- TERIAL (UG/KG)	TOTAL METH- OXY- CHLOR (UG/L)	METHOX- YCHLOR IN BOT- TOM MA- TERIAL (UG/KG)	TOTAL METHYL PARA- THION (UG/L)	METHYL PARA- THION IN BOT- TOM MA- TERIAL (UG/KG)	TOTAL METHYL TRI- THION (UG/L)	METHYL TRI- THION IN BOT- TOM MA- TERIAL (UG/KG)	TOTAL PARA- THION (UG/L)
NOV 17...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAY 10...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 11...	ND	--	ND	--	ND	--	ND	--	ND	--	ND

DATE	PARA- THION IN BOTTOM MA- TERIAL (UG/KG)	SIMA- ZINE TOTAL COUL- SON COND. (UG/L)	SIMA- ZINE IN BOTTOM MATERI- AL (UG/ KG DRY SOLIDS)	TOTAL TOX- APHENE (UG/L)	TOX- APHENE IN BOTTOM MA- TERIAL (UG/KG)	TOTAL TRI- THION (UG/L)	TRI- THION IN BOTTOM MA- TERIAL (UG/KG)	TOTAL 2,4-D (UG/L)	2,4-D IN BOTTOM MA- TERIAL (UG/KG)	TOTAL 2,4,5-T (UG/L)	2,4,5-T IN BOTTOM MA- TERIAL (UG/KG)
NOV 17...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAY 10...	ND	--	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 11...	--	ND	--	ND	--	ND	--	--	--	--	--

Whole water ND - Not detected at 0.01 ug/L level.
 Bed material ND - Not detected at 0.1 ug/mg level.

YELLOWSTONE RIVER BASIN

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL SILVEX (UG/L)	SILVEX IN BOTTOM MA- TERIAL (UG/KG)	SUS- PENDE- SEDIM- MENT (MG/L)	SUS- PENDE- SEDIM- MENT DIS- CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM
OCT							
13...	--	--	1450	36400	79	96	99
27...	--	--	96	2490	--	--	--
NOV							
17...	ND	ND	109	2700	--	--	--
DEC							
14...	--	--	50	1030	--	--	--
JAN							
25...	--	--	31	820	--	--	--
FEB							
24...	--	--	88	1760	--	--	--
MAR							
30...	--	--	244	4410	--	--	--
APR							
26...	--	--	288	4900	--	--	--
MAY							
09...	--	--	--	--	--	--	--
10...	ND	ND	--	--	--	--	--
24...	--	--	2270	74800	--	--	--
JUN							
15...	--	--	1280	92600	40	60	86
29...	--	--	--	--	--	--	--
JUL							
13...	--	--	250	3790	68	88	95
AUG							
11...	--	--	641	6320	--	--	--
SEP							
13...	--	--	400	5010	--	--	--
28...	--	--	487	6800	--	--	--

DATE	SUS. SED. FALL DIAM. % FINER THAN .125 MM	SUS. SED. FALL DIAM. % FINER THAN .250 MM	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM	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
OCT							
13...	99	100	--	--	--	--	--
27...	--	--	75	--	--	94	100
NOV							
17...	--	--	33	--	--	--	--
DEC							
14...	--	--	91	--	--	--	--
JAN							
25...	--	--	92	--	--	--	--
FEB							
24...	--	--	98	--	--	--	--
MAR							
30...	--	--	91	2	37	99	100
APR							
26...	--	--	94	--	65	96	100
MAY							
09...	--	--	--	1	9	97	100
10...	--	--	--	--	--	--	--
24...	--	--	97	--	--	--	--
JUN							
15...	94	100	--	--	--	--	--
29...	--	--	--	--	15	96	100
JUL							
13...	97	100	--	1	32	97	100
AUG							
11...	--	--	100	12	27	94	100
SEP							
13...	--	--	98	--	--	--	--
28...	--	--	99	64	97	100	--

Whole water ND - Not detected at 0.01 µg/L level.
 Bed material ND - Not detected at 0.1 µg/mg level.

YELLOWSTONE RIVER BASIN

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06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	554	729	805	804	776	794	939	911	618	556	750	859
2	549	728	803	817	787	802	942	882	602	609	732	860
3	545	741	785	829	798	812	941	881	596	589	732	890
4	552	---	773	829	810	817	966	849	598	590	813	858
5	566	645	781	829	822	819	956	815	611	603	920	817
6	585	722	780	833	827	824	930	760	627	600	890	800
7	602	730	779	838	819	830	952	712	609	599	889	785
8	602	729	792	842	794	821	960	680	458	621	911	754
9	601	738	796	871	780	808	971	641	404	632	892	781
10	619	746	793	921	771	801	988	649	376	633	872	771
11	755	740	790	948	769	809	1080	661	334	610	872	791
12	765	744	782	948	772	800	1160	666	341	603	862	770
13	720	747	787	941	778	828	1150	689	339	609	875	778
14	687	754	795	951	786	850	1100	720	319	628	870	790
15	672	752	789	950	789	849	1060	764	373	635	881	781
16	665	722	761	950	778	825	1030	782	460	648	959	786
17	653	760	751	921	769	824	971	721	441	662	930	788
18	645	723	742	882	762	840	975	608	481	666	915	784
19	657	726	743	853	759	859	960	598	473	679	889	782
20	669	760	743	831	776	888	979	650	448	691	880	790
21	679	767	752	827	780	903	959	708	491	709	---	810
22	688	762	763	811	768	911	880	728	520	730	869	806
23	691	782	779	791	772	900	875	745	491	741	853	804
24	691	754	791	773	779	888	891	720	490	749	850	810
25	694	730	791	759	782	927	855	722	488	758	870	819
26	702	772	790	742	778	923	868	707	489	760	864	805
27	708	774	797	723	791	920	874	708	500	770	868	799
28	722	823	800	711	791	923	887	691	487	790	870	807
29	722	887	809	704	---	924	909	709	511	777	862	801
30	721	824	811	699	---	923	899	662	531	751	869	779
31	726	---	839	707	---	920	---	645	---	749	861	---
MEAN	658	752	784	833	784	857	964	722	484	669	866	802

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14.0	7.0	0.0	0.0	0.0	0.0	4.0	16.0	20.0	20.0	20.0	17.0
2	15.0	6.5	0.0	0.0	0.0	0.0	4.0	16.0	20.0	22.0	21.0	16.0
3	16.0	5.5	0.0	0.0	0.0	0.0	4.0	16.0	20.0	21.5	20.0	17.0
4	13.0	---	0.0	0.0	0.0	0.0	4.0	17.0	21.0	22.0	20.0	18.0
5	12.0	6.5	0.0	0.0	0.0	0.0	5.0	15.0	22.0	23.0	19.0	19.0
6	11.0	6.0	0.0	0.0	0.0	0.0	5.0	13.0	21.0	24.0	20.0	20.0
7	10.0	5.0	0.0	0.0	0.0	0.5	8.0	13.0	22.0	22.5	20.0	20.0
8	10.0	5.0	0.0	0.0	0.0	0.5	10.0	15.0	23.0	21.0	20.0	21.0
9	10.5	5.0	0.0	0.0	0.0	0.5	12.0	18.0	22.0	22.0	21.0	17.0
10	11.5	5.0	0.0	0.0	0.0	0.5	13.0	20.0	23.0	23.0	19.0	16.5
11	13.0	3.0	0.0	0.0	0.0	0.5	12.0	20.0	21.0	21.0	17.0	17.0
12	12.5	0.0	0.0	0.0	0.0	0.5	12.0	20.0	20.0	20.0	19.0	17.0
13	11.5	0.0	0.0	0.0	0.0	0.5	12.0	20.0	19.5	21.5	18.0	17.0
14	12.0	0.0	0.0	0.0	0.0	0.5	12.0	20.0	19.0	21.0	17.5	17.0
15	9.0	0.0	0.0	0.0	0.0	0.0	12.0	20.0	19.0	22.0	17.5	18.0
16	7.0	0.0	0.0	0.0	0.0	0.0	12.0	18.0	19.0	23.0	18.0	17.0
17	7.0	1.0	0.0	0.0	0.0	0.0	14.0	17.5	21.0	25.0	18.0	17.0
18	7.0	2.0	0.0	0.0	0.0	0.0	13.0	17.0	20.0	25.0	19.0	16.0
19	6.0	2.0	0.0	0.0	0.0	0.0	12.0	15.0	20.0	25.0	20.0	14.0
20	5.0	1.5	0.0	0.0	0.0	0.0	10.0	15.0	20.0	24.0	20.0	15.0
21	4.5	1.0	0.0	0.0	0.0	0.0	10.0	14.0	20.0	23.0	---	16.0
22	4.0	1.0	0.0	0.0	0.0	0.5	11.0	15.0	20.0	24.0	20.0	15.0
23	4.0	0.0	0.0	0.0	0.0	0.5	12.0	15.0	21.0	25.0	18.0	16.0
24	4.0	0.5	0.0	0.0	0.0	0.5	12.0	18.0	22.0	25.0	18.0	15.0
25	4.0	0.5	0.0	0.0	0.0	0.0	13.0	21.0	24.0	24.0	21.0	14.0
26	4.0	0.0	0.0	0.0	0.0	5.0	14.0	20.0	24.0	22.0	21.0	14.0
27	4.0	0.0	0.0	0.0	0.0	5.0	16.0	20.5	24.0	23.0	18.0	13.5
28	5.0	0.0	0.0	0.0	0.0	7.0	15.0	19.0	22.0	23.0	17.0	14.0
29	5.5	0.0	0.0	0.0	---	7.0	15.0	18.0	22.5	24.0	19.0	14.0
30	6.0	0.0	0.0	0.0	---	3.0	17.0	18.5	20.0	22.5	18.0	13.0
31	5.5	---	0.0	0.0	---	3.0	---	18.0	---	19.0	17.0	---
MEAN	8.5	2.0	0.0	0.0	0.0	1.5	11.0	17.5	21.0	22.5	19.0	16.5

YELLOWSTONE RIVER BASIN

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

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	102	2570	74	1810	40	832	49	661	101	2130	101	1750
2	68	1710	64	1260	41	863	40	410	96	2070	90	1530
3	40	988	62	1150	46	969	31	285	91	2010	83	1370
4	38	933	84	1930	61	1270	24	207	85	1860	81	1330
5	40	956	90	2240	68	1380	19	164	77	1660	92	1520
6	45	1080	82	2100	65	1300	16	147	69	1450	107	1790
7	64	1560	78	2050	60	1170	17	174	61	1270	123	2060
8	101	2480	75	1980	53	1030	21	227	60	1260	146	2400
9	273	7060	74	1950	47	914	31	335	65	1390	191	3040
10	459	12300	74	1950	42	816	44	475	72	1560	268	4200
11	394	10200	77	2020	39	769	59	637	80	1710	298	4670
12	449	11400	81	2130	39	779	74	819	87	1860	307	4810
13	1020	25900	85	2260	43	871	81	919	93	1980	301	4710
14	980	24300	104	2730	51	1050	83	1030	97	2070	287	4490
15	831	20300	109	2920	65	1350	83	1080	99	2080	270	4230
16	754	18500	107	2800	74	1560	81	1120	99	2110	268	4340
17	621	15900	94	2320	77	1660	79	1150	97	2100	281	4630
18	460	12000	45	1090	74	1580	75	1220	96	2070	292	4730
19	285	7690	44	1110	67	1410	69	1210	96	2070	290	4620
20	185	4970	47	1220	58	1170	60	1130	97	2120	282	4420
21	142	3800	44	1150	47	964	50	1080	101	2150	270	4300
22	124	3280	37	970	35	718	41	996	108	2250	330	5350
23	113	2970	45	1170	32	657	35	898	118	2420	423	6970
24	111	2900	39	1000	39	790	31	820	134	2680	468	7710
25	112	2900	36	914	50	1030	39	1030	138	2680	433	7310
26	114	2950	39	969	63	1290	151	3950	133	2510	298	4930
27	107	2770	44	998	74	1540	163	4180	123	2260	195	3260
28	101	2620	78	1640	77	1580	142	3450	113	2010	173	2940
29	100	2580	59	1230	74	1480	128	2760	---	---	230	4070
30	97	2460	46	944	68	1290	117	2460	---	---	244	4410
31	88	2230	---	---	59	956	108	2220	---	---	238	4330
TOTAL	---	214257	---	50005	---	35038	---	37244	---	55790	---	122220

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	246	4500	270	4960	630	19100	234	5930	126	1390	1150	16900
2	277	5060	298	6320	452	12600	225	5190	138	1450	1440	25000
3	316	5590	373	8410	340	8450	220	4420	148	1510	1120	17300
4	360	6400	516	12000	265		215	3790	158	1590	722	10900
5	392	7030	685	17200	210	4310	207	3520	173	1680	430	6610
6	405	7400	871	23000	710	27600	192	3170	198	1870	439	6730
7	411	7830	957	28400	1210	61400	180	2960	302	2730	885	14700
8	412	8270	947	26600	1440	77800	186	3290	868	7410	1980	35100
9	441	10000	906	22200	1550	94600	217	4270	1000	8640	3200	61300
10	554	14500	856	18100	1360	87000	199	3890	781	6940	2810	45700
11	704	19400	791	14100	960	60700	160	2870	652	6210	1840	25700
12	868	22700	704	10700	1090	74500	162	2700	600	6120	980	13000
13	937	23100	601	8940	959	66800	238	3680	707	7120	370	4710
14	882	21200	495	8290	820	57300	162	2400	1120	12600	209	2640
15	795	19100	1250	33000	1320	96900	118	1640	1570	18300	166	2090
16	690	16000	1310	37500	1220	81700	117	1530	1510	17100	130	1600
17	607	12700	1200	33000	1650	103000	109	1340	1200	13200	112	1340
18	557	11500	1490	52100	2060	122000	97	1210	951	10000	125	1490
19	520	10800	3860	184000	1520	81300	82	985	791	8140	137	1670
20	491	10200	4470	226000	945	46700	68	788	760	7450	144	1710
21	467	9330	4060	183000	750	34600	60	666	819	7760	143	1760
22	435	8750	3780	154000	725	31100	62	665	934	8600	148	1990
23	393	7970	3280	120000	665	26800	72	756	1080	10700	248	3520
24	322	6020	2430	80000	515	20400	83	928	1240	12000	390	5570
25	276	4930	1730	51400	409	15500	85	847	1210	11000	458	6530
26	285	4720	1110	30300	388	13200	83	751	859	7700	499	7060
27	286	4310	780	20600	385	12100	79	755	490	4480	510	7300
28	264	3960	773	21100	350	10600	80	801	222	2190	483	6870
29	243	3670	810	24700	293	8020	86	924	130	1390	418	6020
30	249	3990	865	28000	253	6690	96	1080	208	2180	349	5210
31	---	---	808	25500	---	---	111	1240	595	7180	---	---
TOTAL	---	300930	---	1513420	---	1368760	---	68986	---	216630	---	348020
TOTAL LOAD FOR YEAR:		4331300	TONS.									

YELLOWSTONE RIVER BASIN

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06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	OCT 27,76 1000	NOV 30,76 1000	DEC 28,76 1600	JAN 25,77 1045	FEB 24,77 0930	
TOTAL CELLS/ML	2000	460	230	230	1000	
DIVERSITY: DIVISION	0.7	1.1	0.9	1.2	0.6	
..CLASS	0.7	1.1	0.9	1.2	0.6	
...ORDER	0.9	1.3	1.5	1.6	0.6	
....FAMILY	2.8	1.8	3.1	2.3	0.8	
.....GENUS	3.1	2.0	3.2	2.3	0.0	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)						
..CHLOROPHYCEAE						
...CHLOROCOCCALES						
....CHARACIACEAE						
.....SCHROEDERIA	--	-	--	-	--	-
....COELASTRACEAE						
.....COELASTRUM	--	-	--	-	--	-
....MICRACTINIACEAE						
.....GOLENKINIA	--	-	--	-	--	-
....MICRACTINIUM	--	-	--	14	6	--
....ODCYSACEAE						
.....ANKISTRODESMUS	46	2	--	-	--	-
....CHODATELLA	--	-	--	14	6	--
....ODCYSTIS	--	-	--	-	--	-
....TETRAEDRON	--	-	--	-	--	-
....TREUBARIA	--	-	--	-	--	-
....WESTELLA	--	-	--	14	6	--
....SCENEDESMACEAE						
.....ACTINASTRUM	93	5	--	-	10	4
....SCENEDESMUS	230	11	9	2	14	6
....TETRASTRUM	--	-	--	-	--	-
....TETRASPORALES						
....PALMELLACEAE						
....SPHAEROCYSTIS	--	-	--	-	--	-
..VOLVOCALES						
....CHLAMYDOMONADACEAE						
.....CARTERIA	--	-	--	-	--	-
....CHLAMYDOMONAS	--	-	6	1	--	18
....PHACOTACEAE	--	-	--	-	--	-
.....PHACOTUS	--	-	--	-	--	-
....ZYGNEMATALES						
....DESMIDIACEAE						
....CLOSTERIUM	23	1	--	-	--	-
....COSMARIUM	--	-	--	-	--	-
CHRYSTOPHYTA						
..BACILLARIOPHYCEAE						
...CENTRALES						
....COSCINODISCAEAE						
.....CYCLOTELLA	46	2	22	5	44#	19
....MELOSIRA	--	-	--	-	--	-
....STEPHANODISCUS	--	-	3	1	--	-
...PENNALES						
....ACHNANTHACEAE						
.....ACHNANTHES	46	2	3	1	--	-
....COCCONEIS	46	2	--	-	--	-
....RHOICOSPHEA	23	1	--	-	--	-
....CYMBELLACEAE						
.....AMPHORA	23	1	--	-	3	1
....CYMBELLA	230	11	--	-	--	-
....EPITHEMIA	--	-	--	7	3	3
....DIATOMACEAE						
.....DIATOMA	93	5	6	1	14	6
....FRAGILARIACEAE						
.....ASTERIONELLA	--	-	6	1	--	-
....SYNEDRA	46	2	47	10	44#	19
....GOMPHONEMATACEAE						
.....GOMPHONEMA	23	1	6	1	34	15
....NAVICULACEAE						
.....CALONEIS	--	-	--	-	7	3
....GYROSIGMA	23	1	3	1	--	-
....NAVICULA	600#	30	9	2	3	1
....NITZSCHIAEAE						
.....CYLINDROTHECA	--	-	3	1	--	-
....NITZSCHIA	440#	22	32	7	3	1
....SURIRELLACEAE						
.....SURIRELLA	--	-	--	-	10	4
					--	-
					9	1

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
 * - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

CONTINUED ...

YELLOWSTONE RIVER BASIN

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

(CONTINUED)

DATE TIME	OCT 27,76 1000		NOV 30,76 1000		DEC 28,76 1600		JAN 25,77 1045		FEB 24,77 0930	
ORGANISM	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										
...CHROCCOCCALES										
...CHROCCOCCAEAE										
...ANACYSTIS	--	-	--	-	--	-	24	10	--	-
..HORMOGONALES										
...NOSTOCACEAE										
...ANABAENOPSIS	--	-	--	-	--	-	--	-	--	-
...OSCILLATORIACEAE	--	-	--	-	--	-	--	-	900#	89
....LYNGBYA	--	-	300#	66	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	--	-	120#	52	--	-
EUGLENOPHYTA (EUGLENIDS)										
..CRYPTOPHYCEAE										
...CRYPTOMONIDALES										
...CRYPTOMONADACEAE										
...CRYPTOMONAS	--	-	--	-	--	-	--	-	--	-
..EUGLENOPHYCEAE										
...EUGLENALES										
...EUGLENACEAE										
....TRACHELOMONAS	--	-	--	-	3	1	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)										
..DINOPHYCEAE										
...PERIDINIALES										
...GLENODINIACEAE										
....GLENODINIUM	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
 * - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

YELLOWSTONE RIVER BASIN

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06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	MAY 24,77 1630	JUN 29,77 1200	JUL 28,77 1100	AUG 30,77 1300	SEP 28,77 1200					
TOTAL CELLS/ML	0	9400	12000	560	1900					
DIVERSITY: DIVISION	0.0	1.4	1.2	1.0	1.6					
..CLASS	0.0	1.4	1.2	1.0	1.6					
...ORDER	0.0	2.2	1.6	1.9	2.0					
....FAMILY	0.0	3.0	2.3	2.8	2.3					
.....GENUS	0.0	3.5	3.2	2.9	2.3					
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										
...CHARACIACEAE										
...SCHROEDERIA	--	--	110	1	130	1	--	--	--	--
...COELASTRACEAE										
...COELASTRUM	--	--	230	2	--	--	--	--	--	--
...MICRACTINIACEAE										
...GOLENKINIA	--	--	*	0	--	--	--	--	--	--
...MICRACTINIUM	--	--	370	4	200	2	--	--	--	--
...OOCYSTACEAE										
...ANKISTRODESMUS	--	--	260	3	3200#	27	14	2	--	--
...CHODATELLA	--	--	--	--	--	--	--	--	--	--
...OOCYSTIS	--	--	110	1	1100	9	--	--	--	--
...TETRAEDRON	--	--	--	--	66	1	--	--	--	--
...TREUBARIA	--	--	--	--	66	1	41	7	--	--
...WESTELLA	--	--	--	--	--	--	--	--	--	--
...SCENEDESMACEAE										
...ACTINASTRUM	--	--	400	4	1600	13	--	--	--	--
...SCENEDESMUS	--	--	1600#	17	920	8	160#	29	560#	29
...TETRASTRUM	--	--	110	1	--	--	--	--	--	--
..TETRASPORALES										
...PALMELLACEAE										
...SPHAEROCYSTIS	--	--	--	--	--	--	160#	29	--	--
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
...CARTERIA	--	--	--	--	--	--	14	2	--	--
...CHLAMYDOMONAS	--	--	370	4	130	1	--	--	40	2
...PHACOTACEAE										
...PHACOTUS	--	--	--	--	66	1	--	--	--	--
..ZYGNEMATALES										
...DESMIDIACEAE										
...CLOSTERIUM	--	--	--	--	66	1	--	--	--	--
...COSMARIUM	--	--	--	--	--	--	--	--	10	1
CHRYSTOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...COSCINODISCACEAE										
...CYCLOTELLA	--	--	2000#	21	1600	14	14	2	110	6
...MELOSIRA	--	--	660	7	1600	13	--	--	--	--
...STEPHANODISCUS	--	--	--	--	--	--	--	--	--	--
..PENNALES										
...ACHNANTHACEAE										
...ACHNANTHES	--	--	--	--	--	--	27	5	--	--
...COCCONEIS	--	--	*	0	--	--	--	--	--	--
...RHOICOSPHEA	--	--	*	0	--	--	--	--	--	--
...CYMBELLACEAE										
...AMPHORA	--	--	--	--	--	--	--	--	--	--
...CYMBELLA	--	--	--	--	--	--	--	--	10	1
...EPITHEMIA	--	--	--	--	--	--	--	--	--	--
...DIATOMACEAE										
...DIATOMA	--	--	*	0	--	--	14	2	--	--
...FRAGILARIACEAE										
...ASTERIONELLA	--	--	290	3	--	--	--	--	--	--
...SYNEDRA	--	--	*	0	66	1	27	5	--	--
...GOMPHONEMACEAE										
...GOMPHONEMA	--	--	--	--	--	--	--	--	--	--
...NAVICULACEAE										
...CALONEIS	--	--	*	0	--	--	--	--	--	--
...GYROSIGMA	--	--	--	--	--	--	14	2	--	--
...NAVICULA	--	--	86	1	--	--	27	5	230	12
...NITZSCHIA										
...CYLINDROTHECA	--	--	--	--	--	--	--	--	--	--
...NITZSCHIA	--	--	1200	13	460	4	27	5	240	13
...SURIRELLACEAE										
...SURIRELLA	--	--	*	0	--	--	--	--	--	--

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

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

CONTINUED ...

YELLOWSTONE RIVER BASIN

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

(CONTINUED)

DATE TIME	MAY 24,77 1630		JUN 29,77 1200		JUL 28,77 1100		AUG 30,77 1300		SEP 28,77 1200	
ORGANISM	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										
...CHROCCOCCALES										
...CHROCCOCCAEAE										
...ANACYSTIS	--	-	200	2	660	5	--	-	--	-
...HORMOGONALES										
...NOSTOCACEAE										
...ANABAENOPSIS	--	-	*	0	--	-	--	-	--	-
...OSCILLATORIACEAE	--	-	--	-	--	-	--	-	--	-
...LYNGBYA	--	-	--	-	--	-	--	-	--	-
...OSCILLATORIA	--	-	1100	12	--	-	--	-	700#	36
EUGLENOPHYTA (EUGLENOIDS)										
..CRYPTOPHYCEAE										
...CRYPTOMONIDALES										
...CRYPTOMONODACEAE										
...CRYPTOMONAS	--	-	*	0	--	-	--	-	20	1
..EUGLENOPHYCEAE										
...EUGLENALES										
...EUGLENACEAE	--	-	--	-	66	1	--	-	--	-
...TRACHELOMONAS	--	-	--	-						
PYRRHOPHYTA (FIRE ALGAE)										
..DINOPHYCEAE										
...PERIDINIALES										
...GLENODINIACEAE										
...GLENODINIUM	--	-	--	-	--	-	14	2	--	-

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

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

BENTHIC INVERTEBRATE ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	SEP 28,77 1201
TOTAL COUNT	65
DIVERSITY: PHYLUM	0.0
..CLASS	0.0
...ORDER	1.3
...FAMILY	0.0
...GENUS	0.0
...GENUS-INSECTA	0.0
ORGANISM	COUNT
ARTHROPODA (ARTHROPODS)	
..INSECTA	
...DIPTERA	
...CHIRONOMIDAE	10
...SIMULIIDAE	1
...EPHEMEROPTERA	45
...PLECOPTERA	1
...TRICHOPTERA	8

YELLOWSTONE RIVER BASIN

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06329590 YELLOWSTONE RIVER STAGE GAGE NO. 1 NEAR FAIRVIEW, MT

LOCATION.--Lat 47°48'34", long 104°02'36", on east line sec.29, T.24 N., R.60 E., Richland County, Hydrologic Unit 10100004, on left bank 3 mi (4.8 km) south of Fairview at mile 15.2 (kilometer 24.5).

DRAINAGE AREA.--70,000 mi² (181,000 km²), approximately.

PERIOD OF RECORD.--March 1959 to current year (seasonal).

GAGE.--Water-stage recorder. Datum of gage is 1,860.00 ft (566.928 m) above mean sea level. Prior to Feb. 19, 1962 at datum 60.00 ft (18.288 m) lower.

REMARKS.--Records fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 23.78 ft (7.248 m) Mar. 21, 1960, present datum; minimum daily recorded, 9.10 ft (2.774 m) May 16-17, Aug. 12-13, 1961, present datum.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11.84	11.75				---	---	11.15	12.53	11.47	9.77	10.10
2	11.85	11.20				---	---	11.54	12.14	11.18	9.61	10.61
3	11.73	10.86				14.25	---	11.75	11.77	11.16	9.58	10.51
4	11.67	11.27				14.22	---	11.78	11.44	11.13	9.55	10.32
5	11.64	11.66				14.18	---	11.99	11.25	10.97	9.48	---
6	11.67	11.75				14.19	---	12.18	12.30	10.81	9.43	---
7	11.72	11.91				---	11.33	12.59	14.28	10.64	9.38	---
8	11.71	11.93				---	11.40	12.50	14.75	10.57	9.25	---
9	11.84	11.91				---	11.60	12.20	15.44	10.66	9.18	---
10	12.03	11.91				---	12.06	11.77	15.82	10.74	9.22	---
11	11.92	---				---	12.33	11.32	15.62	10.70	9.29	---
12	11.84	---				---	12.27	10.92	---	10.40	9.48	---
13	11.84	---				---	12.08	10.87	---	10.26	9.42	---
14	11.72	---				---	12.00	11.03	16.31	10.37	9.61	---
15	11.74	---				---	11.92	12.01	16.63	10.33	9.79	9.85
16	11.73	---				---	11.96	12.63	16.30	10.18	9.69	9.77
17	11.87	---				---	11.60	12.45	15.79	10.01	9.64	9.76
18	11.94	---				---	11.57	13.03	15.56	10.01	9.54	9.71
19	12.03	---				---	11.52	14.52	15.06	9.93	9.47	9.78
20	12.03	---				---	11.55	15.15	14.70	9.84	9.40	9.70
21	12.03	---				---	11.54	14.77	14.31	9.77	9.31	9.73
22	11.97	---				---	11.45	14.28	13.99	9.69	9.29	9.93
23	11.95	---				---	11.54	13.69	13.62	9.63	9.38	10.07
24	11.93	---				---	11.33	13.20	13.54	9.74	9.40	10.09
25	11.92	---				---	11.25	12.84	13.46	9.59	9.23	10.11
26	11.92	---				---	11.11	12.51	12.98	9.38	9.22	10.09
27	11.93	---				---	10.88	12.40	12.64	9.41	9.25	10.05
28	11.89	---				---	10.84	12.33	12.47	9.50	9.37	10.03
29	11.87	---				---	10.82	12.57	12.15	9.69	9.55	10.08
30	11.83	---				---	10.87	12.59	11.76	9.71	9.60	10.16
31	11.80	---				---	---	12.63	---	9.79	9.74	---
MEAN	11.85	---	---	---	---	---	---	12.49	---	10.23	9.46	---
MAX	12.03	---	---	---	---	---	---	15.15	---	11.47	9.79	---
MIN	11.64	---	---	---	---	---	---	10.87	---	9.38	9.18	---

YELLOWSTONE RIVER BASIN

06329597 CHARBONNEAU CREEK NEAR CHARBONNEAU, ND

LOCATION.--Lat 47°51'10", long 103°47'40", in SW¼ sec.31, T.151 N., R.102 W., McKenzie County, Hydrologic Unit 10100004, Little Missouri National Grassland on right bank, 45 ft (14 m) downstream from county highway bridge, 1.5 mi (2.4 km) west of Charbonneau.

DRAINAGE AREA.--149 mi² (386 km²).

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

GAGE.--Water-stage recorder.

REMARKS.--Records good except those for the winter period, which are fair.

AVERAGE DISCHARGE.--11 years, 14.4 ft³/s (0.408 m³/s) 10,430 acre-ft/yr (12.9 hm³/yr); median of yearly mean discharges, 12 ft³/s (0.34 m³/s), 8,700 acre-ft/yr (11 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,000 ft³/s (142 m³/s) Mar. 17, 1976, gage height, 11.02 ft (3.359 m), backwater from ice; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 86 ft³/s (2.44 m³/s) July 16, gage height, 3.87 ft (1.180 m); maximum gage height, 5.81 ft (1.771 m) Mar. 8, backwater from ice, no peaks above base of 100 ft³/s (2.83 m³/s); no flow July 9 and 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.16	.60	.50	.65	.20	1.0	2.1	.23	.27	.14	.08	.60
2	.16	.56	.60	.60	.20	1.0	1.9	.23	.23	.11	.06	.56
3	.20	.56	.60	.60	.20	1.1	1.9	.22	.23	.11	.05	.50
4	.25	.56	.55	.55	.20	1.1	1.7	.23	.24	.10	.06	.46
5	.23	.56	.50	.55	.20	1.3	1.3	.24	.24	.09	.06	.46
6	.22	.51	.45	.55	.20	6.0	1.3	.20	.20	.07	.07	.50
7	.22	.50	.40	.55	.20	15	1.2	.22	.19	.05	.09	.56
8	.25	.46	.40	.55	.20	40	1.3	.21	.13	.01	.10	2.8
9	.23	.46	.35	.50	.30	28	1.0	.25	.18	0	.08	5.2
10	.23	.38	.35	.45	.50	16	.84	.27	.14	0	.08	4.9
11	.23	.36	.35	.40	.70	10	.83	.25	.08	.05	.06	3.7
12	.23	.35	.35	.40	.90	8.0	.87	.24	.14	.20	.04	4.1
13	.24	.36	.35	.40	1.0	7.0	.70	.25	.15	.15	.03	4.5
14	.28	.38	.50	.40	.90	6.0	.72	.23	.22	.15	.02	3.2
15	.25	.38	.60	.35	.80	5.0	.71	.28	1.5	18	.02	2.8
16	.31	.41	.70	.30	.80	4.2	.62	.50	5.4	49	.02	2.4
17	.33	.42	.80	.30	.90	3.5	.57	.53	9.6	19	.02	2.9
18	.35	.46	.80	.30	1.0	3.5	.56	.49	28	14	.03	14
19	.38	.47	.75	.30	1.2	3.4	.49	1.5	17	4.0	.03	9.3
20	.40	.42	.70	.30	1.3	2.8	.42	1.1	12	1.3	.07	5.1
21	.42	.42	.60	.30	1.5	3.1	.50	1.0	9.7	.56	.11	5.5
22	.42	.42	.60	.30	1.7	3.4	.49	.83	7.0	.42	.10	5.6
23	.42	.40	.60	.30	1.5	4.6	.42	.66	4.1	.32	.12	7.0
24	.43	.43	.60	.30	1.4	5.6	.38	.50	2.6	.20	.20	13
25	.46	.44	.60	.30	1.3	5.2	.33	.43	1.4	.16	.12	9.6
26	.55	.40	.70	.30	1.3	5.5	.30	.32	.85	.10	.07	5.2
27	.58	.35	.80	.25	1.2	3.7	.28	.32	.68	.06	.08	1.9
28	.61	.35	.75	.20	1.1	3.1	.28	.29	.63	.06	.15	.72
29	.56	.35	.75	.20	---	2.7	.28	.40	.43	.17	.11	.72
30	.65	.40	.70	.20	---	2.1	.27	.39	.18	.05	.13	.86
31	.66	---	.70	.20	---	2.5	---	.33	---	.03	.56	---
TOTAL	10.91	13.12	18.00	11.85	22.90	205.4	24.56	13.14	103.71	108.66	2.82	118.64
MEAN	.35	.44	.58	.38	.82	6.63	.82	.42	3.46	3.51	.091	3.95
MAX	.66	.60	.80	.65	1.7	40	2.1	1.5	28	49	.56	14
MIN	.16	.35	.35	.20	.20	1.0	.27	.20	.08	0	.02	.46
AC-FT	22	26	36	24	45	407	49	26	206	216	5.6	235

CAL YR 1976 TOTAL 14221.37 MEAN 38.9 MAX 2700 MIN .01 AC-FT 28210
WTR YR 1977 TOTAL 653.71 MEAN 1.79 MAX 49 MIN 0 AC-FT 1300

YELLOWSTONE RIVER BASIN

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06329610 YELLOWSTONE RIVER STAGE GAGE NO. 2 NEAR CARTWRIGHT, ND

LOCATION.--Lat 47°51'50", long 103°58'06", on south line sec.26, T.151 N., R.104 W., McKenzie County, Hydrologic Unit 10100004, on bridge on State Highway 23, 2 mi (3.2 km) west of Cartwright at mile 8.6 (kilometer 13.8).

DRAINAGE AREA.--70,000 mi² (181,000 km²), approximately.

PERIOD OF RECORD.--April 1959 to current year (seasonal).

GAGE.--Water-stage recorder. Datum of gage is 1,800.00 ft (548.640 m) above mean sea level.

REMARKS.--Records fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 82.70 ft (25.207 m) Mar. 15, 1972; minimum daily recorded, 58.58 ft (17.855 m) July 26, 1974.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	66.49					---	65.62	65.57	67.29	66.77	64.81	65.14
2	66.47					---	65.62	65.88	67.09	66.54	64.67	65.63
3	66.39					---	---	66.13	66.81	66.28	64.62	65.59
4	66.35					68.48	---	66.20	66.50	65.90	64.61	65.39
5	66.30					68.42	---	66.33	66.24	65.78	---	65.43
6	66.28					68.41	---	66.48	67.09	65.73	---	65.43
7	66.35					68.49	65.70	66.80	69.00	65.64	---	65.47
8	66.33					68.56	65.81	66.97	69.28	65.74	---	65.73
9	66.42					68.64	66.00	66.83	69.80	66.02	---	65.81
10	66.61					68.68	66.38	66.31	70.20	66.13	---	65.78
11	66.53					68.61	66.61	65.84	70.15	65.94	---	65.29
12	66.47					68.55	66.66	65.50	70.37	65.73	64.59	65.12
13	66.46					68.44	66.42	65.32	70.68	65.54	64.57	65.03
14	66.47					68.43	66.37	65.43	70.65	65.40	64.64	65.00
15	66.40					68.32	66.30	66.11	70.85	65.31	64.84	64.97
16	66.35					68.35	66.35	66.91	70.70	65.16	64.77	64.97
17	66.45					68.30	66.07	66.92	70.20	65.03	64.73	64.90
18	66.56					68.29	65.98	67.21	70.15	65.01	64.66	64.89
19	66.61					68.22	65.96	68.35	69.59	64.97	---	64.92
20	66.66					68.08	65.97	68.98	69.23	64.87	---	64.84
21	66.62					67.91	65.92	68.78	68.99	64.76	---	64.88
22	66.60					67.79	65.88	68.33	68.70	64.71	---	65.05
23	66.59					67.26	65.94	67.92	68.40	64.66	---	65.19
24	66.56					65.95	65.80	67.70	68.22	64.75	---	65.22
25	66.56					65.51	65.68	67.43	68.15	64.66	---	65.23
26	66.56					65.42	65.58	67.12	67.79	---	---	65.21
27	66.54					65.44	65.32	66.95	67.46	---	---	65.21
28	---					65.49	65.30	66.93	67.29	---	---	65.16
29	---					65.60	65.29	67.17	67.04	64.68	64.67	65.12
30	---					65.61	65.34	67.37	66.87	64.78	64.69	65.18
31	---					65.60	---	67.41	---	64.83	64.82	---
MEAN	---					---	---	66.88	68.69	---	---	65.23
MAX	---					---	---	68.98	70.85	---	---	65.81
MIN	---					---	---	65.32	66.24	---	---	64.84

LOCATION.--Lat 47°56'16", long 103°57'52", in SW¼ sec.35, T.152 N., R.104 W., McKenzie County, Hydrologic Unit 10100004, on left bank 4 mi (6.4 km) south of Buford at mile 3.3 (kilometer 5.3).

PERIOD OF RECORD.--April 1959 to current year (seasonal).

GAGE.--Water-stage recorder. Datum of gage is 1,850.00 ft (563.880 m) above mean sea level. Prior to Apr. 19, 1962, at datum 50.00 ft (15.240 m) lower.

REMARKS.--Records fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 29.55 ft (9.007 m) Mar. 15, 1972;
minimum daily recorded, 6.18 ft (1.884 m) Aug. 24, 1961, present datum.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

[illegible]

MISSOURI RIVER MAIN STEM

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06329640 MISSOURI RIVER STAGE GAGE NO. 5A AT BUFORD, ND

LOCATION.--Lat 47°59'06", long 103°59'05", in SE¼ sec.15, T.152 N., R.104 W., Williams County, Hydrologic Unit 10110101, on left bank 1.5 mi (2.4 km) southwest of Buford at mile 1,580.7 (kilometer 2,543.3).

DRAINAGE AREA.--164,000 mi² (425,000 km²), approximately.

PERIOD OF RECORD.--April 1960 to current year (seasonal).

GAGE.--Water-stage recorder. Datum of gage is 1,850.00 ft (563.880 m) above mean sea level. Prior to Mar. 8, 1962 at datum 50.00 ft (15.240 m) lower.

REMARKS.--Records poor. Stage regulated by upstream reservoirs.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 18.35 ft (5.593 m) July 6, 1975; minimum daily recorded, 2.63 ft (0.802 m) Aug. 15-16, 1966.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.50	8.34					---	---	7.62	7.78	6.39	6.53
2	8.52	8.28					---	5.77	7.39	7.45	6.27	6.96
3	8.42	---					---	6.08	7.20	7.17	6.29	7.13
4	8.38	---					---	6.15	6.91	6.78	6.30	6.66
5	8.37	8.34					---	6.31	6.49	6.64	6.34	6.67
6	8.34	8.42					---	6.52	6.84	6.58	6.42	6.69
7	8.10	8.56					---	6.73	8.89	6.50	6.34	6.61
8	7.70	8.65					---	7.02	9.53	6.56	6.23	6.84
9	7.73	8.81					---	6.94	10.05	7.11	6.03	6.94
10	7.83	8.90					---	---	10.63	7.35	5.60	7.11
11	7.80	8.91					---	---	10.77	7.36	5.47	6.57
12	7.75	---					---	---	10.92	7.25	5.78	6.26
13	7.71	---					---	---	11.27	6.92	5.76	6.13
14	7.78	---					6.38	---	11.35	6.84	5.79	5.93
15	8.00	---					6.29	---	11.53	6.78	5.98	5.92
16	7.79	---					6.38	---	11.57	6.76	6.00	5.93
17	7.77	---					6.14	6.98	11.02	6.64	5.95	5.86
18	7.71	---					6.20	7.34	10.81	6.58	5.89	5.75
19	7.87	---					6.20	8.39	10.67	6.65	5.88	5.76
20	8.38	---					6.00	9.32	10.40	6.49	5.67	5.73
21	8.81	---					6.17	9.27	10.12	6.43	5.71	5.63
22	8.72	---					6.21	8.91	9.81	6.45	5.70	5.66
23	8.62	---					6.30	8.47	9.50	6.32	5.82	5.85
24	8.55	---					6.17	8.07	9.22	6.22	5.97	6.03
25	8.48	---					5.90	7.72	9.17	6.25	5.78	6.05
26	8.40	---					5.79	7.37	8.92	6.03	5.71	6.09
27	8.40	---					5.60	7.23	8.52	5.97	5.71	5.98
28	8.48	---					5.40	7.13	8.40	6.11	5.77	5.73
29	8.41	---					5.41	7.30	8.21	6.21	5.94	5.73
30	8.39	---					5.47	7.63	7.92	6.15	6.02	5.76
31	8.37	---					---	7.83	---	6.23	6.21	---
MEAN	8.20	---					---	---	9.39	6.66	5.96	6.22
MAX	8.81	---					---	---	11.57	7.78	6.42	7.13
MIN	7.70	---					---	---	6.49	5.97	5.47	5.63

MISSOURI RIVER MAIN STEM

06329650 MISSOURI RIVER STAGE GAGE NO. 6 NEAR BUFORD, ND

LOCATION.--Lat 47°57'18", long 103°54'36", in SE¼ sec.30, T.152 N., R.103 W., Williams County, Hydrologic Unit 10110101, on right bank 5 mi (8 km) southeast of Buford at mile 1,576.0 (kilometer 2,535.8).

DRAINAGE AREA.--164,000 mi² (425,000 km²), approximately.

PERIOD OF RECORD.--1959 to current year (seasonal).

GAGE.--Water-stage recorder. Datum of gage is 1,840.00 ft (560.832 m) above mean sea level. Prior to Apr. 17, 1962, at datum 40.00 ft (12.192 m) lower.

REMARKS.--Records fair. Stage regulated by upstream reservoirs.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 24.15 ft (7.361 m) June 29, 1975; minimum daily recorded, 8.23 ft (2.509 m) Aug. 15 and 22, 1963.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15.63	15.41					---	12.60	14.38	14.59	13.31	13.07
2	15.62	15.23					---	12.88	14.15	14.32	13.20	13.48
3	15.58	14.90					---	13.20	14.02	14.04	13.17	13.65
4	15.51	14.94					---	13.30	13.74	13.67	13.18	13.25
5	15.51	15.29					---	13.40	13.39	13.55	13.17	13.22
6	15.51	15.41					---	13.60	13.52	13.51	13.21	13.29
7	15.30	15.49					---	13.70	15.35	13.43	13.16	13.21
8	14.93	15.56					---	---	16.08	13.44	13.01	13.40
9	14.90	15.73					---	---	16.53	13.91	12.86	13.48
10	14.96	15.85					---	---	17.13	14.21	12.42	13.66
11	14.92	---					---	---	17.35	14.25	12.22	13.18
12	14.90	---					---	---	17.46	14.18	12.44	12.87
13	14.89	---					---	---	17.88	13.87	12.46	12.77
14	14.86	---					---	---	17.95	13.78	12.45	12.60
15	14.83	---					13.21	---	18.15	13.74	12.63	12.60
16	14.78	---					13.28	---	18.25	13.73	12.67	12.60
17	14.68	---					13.12	13.78	17.67	13.62	12.64	12.57
18	14.69	---					13.10	14.10	17.43	13.55	12.58	12.46
19	14.76	---					13.11	15.08	17.29	13.62	12.55	12.43
20	15.16	---					12.97	16.08	17.01	13.50	12.36	12.42
21	15.40	---					13.03	16.18	16.75	13.41	12.39	12.33
22	15.48	---					13.09	15.74	16.48	13.40	12.40	12.38
23	15.48	---					13.15	15.33	16.18	13.32	12.47	12.55
24	15.45	---					13.04	14.85	15.90	13.20	12.60	12.74
25	15.49	---					12.80	14.52	15.83	13.20	12.48	12.76
26	15.51	---					12.70	14.23	15.67	13.03	12.40	12.79
27	15.48	---					12.52	14.10	15.30	12.92	12.39	12.71
28	15.45	---					12.34	13.97	15.12	13.05	12.41	12.51
29	15.44	---					12.30	14.10	15.00	13.16	12.55	12.48
30	15.42	---					12.40	14.38	14.70	13.12	12.68	12.51
31	15.39	---					---	14.54	---	13.13	12.80	---
MEAN	15.22	---	---	---	---	---	---	---	16.06	13.60	12.69	12.87
MAX	15.63	---	---	---	---	---	---	---	18.25	14.59	13.31	13.66
MIN	14.68	---	---	---	---	---	---	---	13.39	12.92	12.22	12.33

MISSOURI RIVER MAIN STEM

265

06329660 MISSOURI RIVER STAGE GAGE NO. 7 NEAR TRENTON, ND

LOCATION.--Lat 47°59'21", long 103°47'57", in NE¼ sec.13, T.152 N., R.103 W., McKenzie County, Hydrologic Unit 10110101, on right bank 5 mi (8 km) south of Trenton and at mile 1,566.7 (kilometer 2,520.8).

DRAINAGE AREA.--164,000 mi² (425,000 km²), approximately.

PERIOD OF RECORD.--March 1959 to current year (seasonal).

GAGE.--Water-stage recorder. Datum of gage is 1,840.00 ft (560.832 m) above mean sea level. Prior to Aug. 7, 1962, at site 0.8 mi (1.3 km) upstream. Prior to May 29, 1963, at datum 40.00 ft (12.192 m) lower.

REMARKS.--Records fair. Stage regulated by upstream reservoirs.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 21.56 ft (6.572 m) July 10, 1975; minimum daily recorded, 4.34 ft (1.323 m) Aug. 19, 22, 1963.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12.65	12.36				---	---	9.55	11.05	11.25	10.08	9.88
2	12.65	12.22				---	---	9.77	10.87	11.00	9.99	10.20
3	12.60	11.90				---	---	10.08	10.67	10.77	9.94	10.38
4	12.55	11.90				---	---	10.17	10.44	10.45	9.95	10.07
5	12.54	12.15				---	---	10.29	10.11	10.30	9.93	9.99
6	12.53	12.26				---	---	10.51	10.10	10.28	9.96	10.03
7	12.33	12.36				---	---	10.82	11.64	10.19	9.92	9.98
8	12.00	12.46				---	---	11.05	12.42	10.16	9.80	10.12
9	11.93	12.60				---	---	10.69	12.86	10.55	---	10.22
10	11.99	---				---	---	10.30	13.47	10.84	---	10.36
11	11.98	---				---	---	9.90	13.75	10.91	---	10.02
12	11.93	---				---	---	.00	13.86	10.86	---	9.74
13	11.92	---				---	---	.33	14.26	10.63	---	9.62
14	11.95	---				---	---	---	14.42	10.48	---	9.49
15	11.98	---				12.81	10.22	---	14.58	10.42	---	9.44
16	11.80	---				12.72	10.23	---	14.70	10.40	---	9.49
17	11.72	---				12.65	10.15	10.72	14.28	10.31	---	9.44
18	11.71	---				12.60	10.09	10.86	13.98	10.22	---	9.39
19	11.77	---				12.52	10.11	11.61	13.82	10.28	9.48	9.32
20	12.10	---				12.45	9.99	12.65	13.57	10.19	9.32	9.31
21	12.30	---				12.16	10.04	12.70	13.30	10.11	9.31	9.22
22	12.40	---				---	10.08	12.40	13.05	10.11	9.33	9.22
23	12.41	---				---	10.12	11.98	12.71	10.06	9.38	9.39
24	12.41	---				---	10.05	11.57	12.42	9.95	9.49	9.55
25	12.41	---				---	9.86	11.20	12.31	9.94	9.41	9.59
26	12.44	---				---	9.78	10.87	12.19	9.84	9.32	9.60
27	12.41	---				---	9.61	10.75	11.90	9.74	9.31	9.53
28	12.40	---				---	9.42	10.65	11.69	9.82	9.33	9.39
29	12.39	---				---	9.40	10.75	11.62	9.93	9.43	9.31
30	12.38	---				---	9.46	10.98	11.39	9.92	9.53	9.35
31	12.34	---				---	---	11.18	---	9.90	9.68	---
MEAN	12.22	---				---	---	---	12.58	10.32	---	9.69
MAX	12.65	---				---	---	---	14.70	11.25	---	10.38
MIN	11.71	---				---	---	---	10.10	9.74	---	9.22

MISSOURI RIVER MAIN STEM

06329680 MISSOURI RIVER STAGE GAGE NO. 8 NEAR TRENTON, ND

LOCATION.--Lat 48°03'10", long 103°42'54", in NE¼ sec.30, T.153 N., R.101 W., McKenzie County, Hydrologic Unit 10110101, on right bank 5.5 mi (8.8 km) southeast of Trenton at mile 1,557.2 (kilometer 2,505.5).

DRAINAGE AREA.--164,000 mi² (425,000 km²), approximately.

PERIOD OF RECORD.--March 1959 to current year (seasonal).

GAGE.--Water-stage recorder. Datum of gage is 1,830.00 ft (557.784 m) above mean sea level. Prior to Jan. 4, 1962 at datum 30.00 ft (9.144 m) lower.

REMARKS.--Records fair. Stage regulated by upstream reservoirs and backwater from Lake Sakakawea.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 27.15 ft (8.275 m) July 14, 1975; minimum daily recorded, 4.96 ft (1.512 m) Aug. 20, 1961, present datum.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19.19	18.87				---	---	16.51	17.67	17.67	16.68	16.36
2	19.22	18.78				---	---	16.79	17.53	17.51	16.63	16.64
3	19.20	18.52				21.89	---	16.98	17.35	17.24	16.57	16.84
4	19.11	18.51				21.82	---	17.02	17.17	16.98	16.60	---
5	19.10	18.75				21.74	---	17.08	16.85	16.88	16.54	---
6	19.09	18.87				21.71	---	17.28	16.76	16.77	---	---
7	---	18.91				21.78	16.86	17.41	17.89	16.69	---	---
8	---	18.98				21.88	17.03	17.53	18.64	16.67	---	---
9	18.65	19.02				22.00	17.16	17.43	18.88	17.03	16.41	16.70
10	18.70	---				22.07	17.31	17.14	19.27	17.32	16.28	16.82
11	18.69	---				22.07	17.44	16.77	19.56	17.37	16.03	16.57
12	18.62	---				21.94	17.51	16.44	19.72	17.37	16.01	16.30
13	18.58	---				21.85	17.33	16.29	19.95	17.20	16.03	16.17
14	18.59	---				21.78	17.16	16.34	20.14	16.99	16.02	16.10
15	18.51	---				21.61	17.05	16.53	20.26	16.98	16.06	16.01
16	---	---				21.44	17.04	17.13	20.40	16.97	16.17	16.02
17	---	---				21.30	16.98	17.36	20.17	16.88	16.18	16.01
18	---	---				21.27	16.90	17.45	19.91	16.79	16.08	15.99
19	---	---				21.17	16.92	17.96	19.77	16.84	16.03	15.88
20	---	---				21.04	16.80	18.70	19.61	16.79	15.95	15.92
21	---	---				21.00	16.90	18.88	19.43	16.72	15.89	15.83
22	---	---				20.68	16.92	18.74	19.23	16.72	15.91	15.80
23	---	---				19.73	16.94	18.46	18.97	16.68	15.96	15.94
24	---	---				18.68	16.80	18.18	18.74	16.57	16.11	16.10
25	---	---				---	16.64	17.86	18.63	16.57	16.04	16.11
26	---	---				---	16.67	17.56	18.52	16.49	15.91	16.11
27	---	---				---	16.42	17.39	18.30	16.37	15.90	16.10
28	---	---				---	16.31	17.32	18.08	16.41	15.91	15.91
29	---	---				---	16.31	17.38	18.02	16.52	16.00	15.84
30	18.91	---				---	16.34	17.58	17.82	16.53	16.09	15.90
31	18.88	---				---	---	17.75	---	16.49	16.21	---
MEAN	---	---				---	---	17.39	18.77	16.87	---	---
MAX	---	---				---	---	18.88	20.40	17.67	---	---
MIN	---	---				---	---	16.29	16.76	16.37	---	---

MISSOURI RIVER MAIN STEM

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06330000 MISSOURI RIVER NEAR WILLISTON, ND

LOCATION.--Lat 48°06'40", long 103°43'00", in SE¼ sec.31, T.154 N., R.101 W., McKenzie County, Hydrologic Unit 10110101, on downstream end of right pier of Lewis and Clark Highway bridge 5 mi (8 km) southwest of Williston, 29.3 mi (47.1 km) downstream from Yellowstone River, and at mile 1,552.7 (kilometer 2,498.3).

DRAINAGE AREA.--164,500 mi² (426,000 km²), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1966 to current year. Operated as a stage-discharge station October 1897 to July 1965.

GAGE.--Water-stage recorder. Datum of gage is 1,830.20 ft (557.845 m) above mean sea level. See WSP 1917 for history of changes prior to April 1966.

REMARKS.--Records good. Stage regulated by upstream reservoirs and backwater from Lake Sakakawea.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 24.77 ft (7.550 m) July 21, 1975; minimum daily recorded, 7.80 ft (2.377 m) Nov. 2, 1966.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17.81	17.63	19.35	---	20.05	20.39	15.98	15.45	16.41	---	15.40	15.19
2	17.88	17.53	19.67	---	19.95	20.26	16.00	15.66	16.30	---	15.39	15.40
3	17.79	17.36	19.97	---	19.98	20.22	15.95	15.83	16.16	---	15.33	15.59
4	17.62	17.34	20.06	---	20.05	20.00	15.90	15.90	16.00	---	15.33	15.42
5	17.70	17.50	19.95	---	20.15	19.94	15.89	15.89	15.74	---	15.32	15.31
6	17.72	17.59	19.92	18.27	20.29	19.90	15.88	16.09	15.67	---	15.37	15.33
7	17.68	17.64	19.82	18.11	20.40	19.94	15.89	16.22	16.45	---	15.36	15.34
8	17.43	17.66	19.59	18.25	20.42	20.03	16.00	16.30	17.21	15.49	15.30	15.36
9	17.36	17.70	19.30	18.49	20.39	20.12	16.08	16.32	17.38	15.78	15.19	15.45
10	17.40	17.79	19.22	18.70	20.35	20.19	16.18	16.13	17.64	15.99	14.92	15.57
11	17.40	17.79	19.22	18.92	20.34	20.15	16.30	15.83	17.85	15.98	14.76	15.39
12	17.36	17.80	19.22	18.98	20.30	20.08	16.35	15.54	17.97	16.10	14.82	15.08
13	17.34	17.81	19.25	18.90	20.30	20.01	16.25	15.36	18.10	15.90	14.90	15.03
14	17.19	17.82	19.36	18.89	20.30	19.95	16.10	15.38	18.25	15.72	14.89	14.97
15	17.31	17.81	19.62	18.97	20.30	19.84	15.98	15.52	18.29	15.73	14.97	14.89
16	17.36	17.80	---	19.19	20.31	19.70	15.98	15.93	18.33	15.72	15.00	14.90
17	17.38	17.80	---	19.40	20.35	19.61	15.88	16.18	18.20	15.68	15.01	14.90
18	17.30	17.69	---	19.64	20.36	19.59	15.83	16.24	18.00	15.59	14.95	14.88
19	17.28	17.70	---	19.72	20.41	19.50	15.87	16.60	17.92	15.60	14.92	14.81
20	17.41	17.71	---	19.70	20.45	19.41	15.76	17.18	17.86	15.57	14.87	14.86
21	17.60	17.72	---	---	20.48	19.39	15.78	17.37	17.73	15.56	14.80	14.75
22	17.67	17.79	---	---	20.44	19.34	15.83	17.29	17.56	15.52	14.82	14.72
23	17.70	17.78	---	---	20.42	19.13	15.86	17.11	17.35	15.47	14.85	14.83
24	17.68	17.78	---	---	20.42	18.29	15.84	16.88	17.20	15.37	15.03	14.95
25	17.75	17.81	---	20.34	20.48	17.01	15.70	16.64	---	15.38	14.94	14.96
26	17.78	17.82	---	20.50	20.50	16.31	15.61	16.35	---	15.34	14.83	14.98
27	17.71	19.05	---	20.51	20.51	16.04	15.56	16.23	---	15.21	14.82	14.97
28	17.68	19.47	---	20.51	20.49	15.96	15.46	16.15	---	15.22	14.83	14.85
29	17.68	19.21	---	20.49	---	16.11	15.40	16.20	---	15.35	14.89	14.80
30	17.67	19.20	---	20.31	---	16.04	15.41	16.32	---	15.24	14.94	14.84
31	17.64	---	---	20.05	---	15.97	---	16.46	---	15.25	15.05	---
MEAN	17.56	17.90	---	---	20.33	18.98	15.88	16.21	---	---	15.03	15.08
MAX	17.88	19.47	---	---	20.51	20.39	16.35	17.37	---	---	15.40	15.59
MIN	17.19	17.34	---	---	19.95	15.96	15.40	15.36	---	---	14.76	14.72

MISSOURI RIVER MAIN STEM

06330000 MISSOURI RIVER NEAR WILLISTON, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1951-65, 1969-70, 1974 to current year.

REMARKS.--Discharge data computed by adding the discharges of station 06329500 Yellowstone River near Sidney, Mont. to that of station 06185500 Missouri River near Culbertson, Mont.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	TURBIDITY (NTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	CHEMICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L)
OCT										
05...	0930	24200	585	8.6	11.0	30	32	10.0	96	10
NOV										
02...	0930	22700	690	8.7	6.0	25	--	11.0	94	--
DEC										
07...	1100	16400	700	8.5	.0	7	--	11.0	80	--
JAN										
11...	1130	14500	700	8.8	.5	30	--	11.8	88	--
FEB										
08...	1130	24200	660	8.6	.0	15	--	10.8	79	--
MAR										
09...	1000	20600	745	8.5	2.0	30	--	11.8	91	--
APR										
13...	0935	15700	900	8.7	11.0	150	160	11.6	112	37
MAY										
10...	0900	15300	610	8.3	18.0	190	190	8.8	99	44
JUN										
08...	0915	24600	620	8.4	21.0	120	110	7.4	88	23
JUL										
13...	0835	15400	600	8.4	18.5	70	65	8.4	9	34
AUG										
10...	0830	11100	680	7.9	16.5	160	100	8.6	97	23
SEP										
13...	0900	12300	690	8.3	15.0	390	390	7.8	82	30

DATE	BIO-CHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	HARDNESS (CA, MG/L)	NON-CARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	DISSOLVED PHOSPHATE (K) (MG/L)	BICARBONATE (HCO3) (MG/L)
OCT										
05...	2.0	210	60	52	20	50	33	1.5	3.6	186
NOV										
02...	1.0	240	86	58	23	59	34	1.7	4.4	187
DEC										
07...	1.5	260	94	64	25	69	36	1.9	4.0	206
JAN										
11...	.3	260	86	63	26	67	35	1.8	4.3	218
FEB										
08...	.3	250	88	62	24	57	32	1.6	3.8	202
MAR										
09...	.8	240	79	60	23	65	36	1.8	4.6	196
APR										
13...	2.6	290	110	69	29	94	41	2.4	4.6	220
MAY										
10...	1.6	230	85	52	25	52	32	1.5	4.0	180
JUN										
08...	2.2	220	71	54	20	53	34	1.6	3.7	180
JUL										
13...	1.8	210	65	52	20	46	32	1.4	3.8	180
AUG										
10...	.8	250	86	58	25	61	34	1.7	4.4	200
SEP										
13...	2.4	220	65	52	22	74	42	2.2	4.9	190

06330000 MISSOURI RIVER NEAR WILLISTON, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	CAR- BONATE (CO3) (MG/L)	ALKA- LITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)	TOTAL FLUO- RIDE (F) (MG/L)	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SIO2) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)
OCT 05...	0	153	.7	150	8.1	.8	.6	8.3	405
NOV 02...	0	153	.6	200	13	--	.6	7.8	440
DEC 07...	0	169	1.0	220	13	--	.6	8.8	492
JAN 11...	0	179	.6	220	13	--	.6	9.4	506
FEB 08...	0	166	.8	190	9.8	--	.6	9.6	467
MAR 09...	0	161	1.0	210	13	--	.6	7.1	486
APR 13...	0	180	.7	280	15	1.4	.6	8.9	645
MAY 10...	0	150	1.4	190	11	.7	.6	7.5	414
JUN 08...	--	150	1.1	160	9.6	.9	.5	7.9	397
JUL 13...	0	150	1.1	150	8.5	.5	.6	8.3	393
AUG 10...	0	164	4.0	190	12	.7	.6	7.0	458
SEP 13...	0	160	1.5	200	11	1.1	.6	8.6	469

DATE	TOTAL FILT- RABLE RESIDUE (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	TOTAL NON- FILT- RABLE RESIDUE (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL NITRATE PLUS NITRITE (N) (MG/L)	TOTAL AMMONIA NITRO- GEN (N) (MG/L)
OCT 05...	390	384	.55	26500	96	.00	.00	.00	.00
NOV 02...	--	458	.60	27000	--	--	--	.17	.17
DEC 07...	--	506	.67	21800	--	--	--	.23	.00
JAN 11...	--	511	.69	19800	--	--	--	.21	.00
FEB 08...	--	457	.64	30500	--	--	--	.27	.06
MAR 09...	--	480	.66	27000	--	--	--	.18	.09
APR 13...	--	610	.88	27300	--	.23	.05	.28	.24
MAY 10...	--	431	.56	17100	--	.15	.04	.19	.07
JUN 08...	--	397	.54	26400	--	.00	.04	.01	.05
JUL 13...	--	378	.53	16300	--	.03	.01	.04	.01
AUG 10...	--	457	.62	13700	--	.07	.01	.08	.02
SEP 13...	--	467	.64	15600	--	.17	.02	.19	.03

MISSOURI RIVER MAIN STEM

06330000 MISSOURI RIVER NEAR WILLISTON, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL ORGANIC NITRO- GEN (N) (MG/L)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L)	TOTAL NITRO- GEN (N) (MG/L)	TOTAL NITRO- GEN (NO3) (MG/L)	TOTAL PHOS- PHORUS (P) (MG/L)	TOTAL ALUM- INUM (AL) (UG/L)	SUS- PENDE ALUM- INUM (AL) (UG/L)	DIS- SOLVED ALUM- INUM (AL) (UG/L)	TOTAL ARSENIC (AS) (UG/L)
OCT 05...	.63	.63	.63	2.8	.12	1800	--	--	6
NOV 02...	.46	.63	.80	3.5	.06	980	960	20	3
DEC 07...	.20	.20	.43	1.9	.02	--	--	--	--
JAN 11...	.42	.42	.63	2.8	.03	--	--	--	--
FEB 08...	.20	.26	.53	2.3	.04	520	520	0	3
MAR 09...	.66	.75	.93	4.1	.07	--	--	--	--
APR 13...	.51	.75	1.0	4.6	.15	400	--	--	7
MAY 10...	.72	.79	.98	4.3	.32	4900	4900	30	5
JUN 08...	1.6	1.6	1.6	7.1	.18	3300	--	--	6
JUL 13...	.53	.54	.58	2.6	.16	2000	--	--	4
AUG 10...	.59	.61	.69	3.1	.15	1700	1700	1	6
SEP 13...	.23	.26	.45	2.0	.27	10000	--	--	7

DATE	SUS- PENDE ARSENIC (AS) (UG/L)	DIS- SOLVED ARSENIC (AS) (UG/L)	TOTAL BARIUM (BA) (UG/L)	TOTAL BERYL- LIUM (BE) (UG/L)	SUS- PENDE BERYL- LIUM (BE) (UG/L)	DIS- SOLVED BERYL- LIUM (BE) (UG/L)	TOTAL BORON (B) (UG/L)	DIS- SOLVED BORON (B) (UG/L)	TOTAL CAD- MIUM (CD) (UG/L)
OCT 05...	--	--	0	0	--	--	160	--	<10
NOV 02...	2	1	--	10	10	0	--	120	<10
DEC 07...	--	--	--	--	--	--	--	130	--
JAN 11...	--	--	--	--	--	--	--	120	--
FEB 08...	1	2	--	0	0	0	--	120	<10
MAR 09...	--	--	--	--	--	--	--	120	--
APR 13...	--	--	0	0	--	--	190	160	<10
MAY 10...	--	2	--	0	0	0	--	110	<10
JUN 08...	--	--	100	10	--	--	170	120	<10
JUL 13...	--	--	0	0	--	--	150	110	<10
AUG 10...	3	3	--	0	0	5	--	120	<10
SEP 13...	--	--	0	10	--	--	190	150	10

06330000 MISSOURI RIVER NEAR WILLISTON, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	SUS- PENDE CAD- MIUM (CD) (UG/L)	DIS- SOLVED CAD- MIUM (CD) (UG/L)	TOTAL CHRO- MIUM (CR) (UG/L)	SUS- PENDE CHRO- MIUM (CR) (UG/L)	DIS- SOLVED CHRO- MIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	SUS- PENDE COPPER (CU) (UG/L)	DIS- SOLVED COPPER (CU) (UG/L)
OCT									
05...	--	--	0	--	--	<50	20	--	--
NOV									
02...	<10	0	0	0	0	--	20	14	6
FEB									
08...	<9	1	0	0	0	--	<10	<5	5
MAR									
09...	--	--	--	--	--	--	--	--	--
APR									
13...	--	--	10	--	--	<50	<10	--	--
MAY									
10...	<10	0	30	20	10	--	30	29	1
JUN									
08...	--	--	10	--	--	<50	<10	--	--
JUL									
13...	--	--	0	--	--	<50	10	--	--
AUG									
10...	<10	0	0	0	0	--	10	7	3
SEP									
13...	--	--	20	--	--	<50	10	--	--

DATE	TOTAL IRON (FE) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	SUS- PENDE LEAD (PB) (UG/L)	DIS- SOLVED LEAD (PB) (UG/L)	TOTAL LITHIUM (LI) (UG/L)	SUS- PENDE LITHIUM (LI) (UG/L)	DIS- SOLVED LITHIUM (LI) (UG/L)	TOTAL MAN- GANESE (MN) (UG/L)	SUS- PENDE MAN- GANESE (MN) (UG/L)
OCT										
05...	2700	--	<100	--	--	240	--	--	60	--
NOV										
02...	1800	30	100	98	2	50	0	50	40	30
FEB										
08...	1300	170	<100	<97	3	50	0	50	30	30
MAR										
09...	--	--	--	--	--	--	--	--	--	--
APR										
13...	7800	--	<100	--	--	70	--	--	170	--
MAY										
10...	11000	20	100	100	0	30	0	40	320	320
JUN										
08...	5600	--	<100	--	--	40	--	--	120	--
JUL										
13...	3200	--	<100	--	--	40	--	--	80	--
AUG										
10...	2900	20	<100	<99	1	50	0	50	100	100
SEP										
13...	88000	--	<100	--	--	50	--	--	220	--

DATE	DIS- SOLVED MAN- GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	SUS- PENDE MERCURY (HG) (UG/L)	DIS- SOLVED MERCURY (HG) (UG/L)	TOTAL MOLYB- DENUM (MO) (UG/L)	SUS- PENDE MOLYB- DENUM (MO) (UG/L)	DIS- SOLVED MOLYB- DENUM (MO) (UG/L)	TOTAL NICKEL (NI) (UG/L)	SUS- PENDE NICKEL (NI) (UG/L)
OCT									
05...	--	.0	--	--	2	--	--	<50	--
NOV									
02...	10	.0	.0	.0	3	0	3	<50	<47
FEB									
08...	0	.3	.3	.0	2	0	2	<50	<48
MAR									
09...	--	--	--	--	--	--	--	--	--
APR									
13...	--	.5	--	--	2	--	--	<50	--
MAY									
10...	0	.1	.1	.0	0	0	1	<50	<48
JUN									
08...	--	.3	--	--	0	--	--	<50	--
JUL									
13...	--	.9	--	--	2	--	--	<50	--
AUG									
10...	0	.1	.1	.0	1	0	1	<50	<48
SEP									
13...	--	.0	--	--	2	--	--	50	--

MISSOURI RIVER MAIN STEM

06330000 MISSOURI RIVER NEAR WILLISTON, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED NICKEL (NI) (UG/L)	TOTAL SELE- NIUM (SE) (UG/L)	SUS- PENDE- SELE- NIUM (SE) (UG/L)	DIS- SOLVED SELE- NIUM (SE) (UG/L)	TOTAL SILVER (AG) (UG/L)	DIS- SOLVED VANA- DIUM (V) (UG/L)	TOTAL ZINC (ZN) (UG/L)	SUS- PENDE- ZINC (ZN) (UG/L)	DIS- SOLVED ZINC (ZN) (UG/L)
OCT 05...	--	1	--	--	<10	--	20	--	--
NOV 02...	3	1	0	1	--	1.0	40	30	10
DEC 07...	--	--	--	--	--	--	--	--	--
JAN 11...	--	--	--	--	--	--	--	--	--
FEB 08...	2	1	0	1	--	.2	20	0	20
MAR 09...	--	--	--	--	--	--	--	--	--
APR 13...	--	2	--	--	<10	--	40	--	--
MAY 10...	2	1	1	0	--	.7	160	160	0
JUN 08...	--	1	--	--	<10	--	220	--	--
JUL 13...	--	1	--	--	<10	--	30	--	--
AUG 10...	2	1	0	1	--	.0	30	30	0
SEP 13...	--	1	--	--	<10	--	60	--	--

[illegible]

MISSOURI RIVER MAIN STEM

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06330000 MISSOURI RIVER NEAR WILLISTON, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	SUS- PENED SEDI- MENT (MG/L)	SUS- PENED SEDI- MENT DIS- CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	SUS. SED. 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
OCT 05...	110	7190	--	--	--	--	--	--	--	--
NOV 02...	132	8090	--	--	--	87	9	52	96	100
FEB 08...	31	2030	--	--	--	--	--	--	--	--
APR 13...	495	21000	--	--	--	--	--	--	--	--
MAY 10...	502	20700	65	78	100	--	20	63	98	100
JUN 08...	404	26800	--	--	--	--	--	--	--	--
JUL 13...	196	8150	--	--	--	--	--	--	--	--
AUG 10...	254	7610	78	94	100	--	16	73	98	100
SEP 13...	753	25000	--	--	--	--	--	--	--	--

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

PERIPHYTON

Date	Length of exposure (days)	Biomass (mg/m ²)		Chlorophyll a	Chlorophyll b	Biomass pigment ratio	Sampling method
		Dry weight	Ash weight	(mg/m ²)	(mg/m ²)		
Nov. 2	16	2,308	1,231	--	--	--	Polyethylene strip
July 13	91	7,550	6,520	.018	.127	8,110	Polyethylene strip
Sept.13	29	38,700	35,700	2.43	.145	1,235	Polyethylene strip

MISSOURI RIVER MAIN STEM

06330000 MISSOURI RIVER NEAR WILLISTON, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	OCT 5,76 0930	NOV 2,76 0930	DEC 7,76 1100	JAN 11,77 1130	FEB 8,77 1130	MAR 9,77 1000
TOTAL CELLS/ML	3200	1300	570	430	210	570
DIVERSITY: DIVISION	1.0	0.7	0.9	1.0	0.5	0.8
..CLASS	1.0	0.7	0.9	1.0	0.5	0.8
...ORDER	1.7	1.3	1.5	1.1	0.5	1.0
....FAMILY	2.3	3.0	1.6	1.4	0.8	1.8
.....GENUS	2.6	3.4	1.7	1.5	1.1	1.8
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)						
..CHLOROPHYCEAE						
...CHLOROCOCCALES						
....CHARACTACEAE						
.....SCHROEDERIA						
.....OOCYSTACEAE						
.....ANKISTRODESUS	29 1	-- --	* 0	-- --	-- --	-- --
.....DICTYOSPHAERIUM	120 4	-- --	-- --	-- --	-- --	-- --
.....TETRAEDRON	-- --	-- --	-- --	-- --	-- --	-- --
.....SCENEDESMACEAE						
.....ACTINASTRUM	-- --	-- --	-- --	-- --	-- --	-- --
.....CRUCIGENIA	-- --	-- --	19 3	-- --	-- --	-- --
.....SCENEDESMUS	-- --	29 2	-- --	-- --	23 11	-- --
...VOLVOCALES						
..CHLAMYDOMONADACEAE						
....CHLAMYDOMONAS	-- --	-- --	-- --	-- --	-- --	42 7
CHRYSTOPHYTA						
..BACILLARIOPHYCEAE						
...CENTRALES						
....COSCINODISCACEAE						
.....CYCLOTELLA	610# 19	100 8	-- --	5 1	-- --	19 3
....MELOSIRA	260 8	110 9	-- --	-- --	-- --	-- --
....STEPHANODISCUS	-- --	-- --	380# 66	-- --	-- --	-- --
...PENNALES						
....ACHNANTHACEAE						
.....ACHNANTHES	-- --	14 1	5 1	-- --	-- --	-- --
....COCONEIS	-- --	14 1	-- --	2 1	-- --	-- --
....RHODICOSPHEA	-- --	-- --	-- --	5 1	-- --	-- --
....CYMBELLACEAE						
.....CYMBELLA	58 2	220# 17	5 1	-- --	12 6	-- --
.....EPITHEMIA	29 1	14 1	-- --	-- --	-- --	-- --
....DIATOMACEAE						
.....DIATOMA	29 1	43 3	-- --	2 1	-- --	61 11
....FRAGILARIACEAE						
.....ASTERIONELLA	150 5	110 9	70 12	130# 30	160# 78	370# 66
....SYNEDRA	-- --	57 5	5 1	2 1	12 6	-- --
....GOMPHONEMACEAE						
.....GOMPHONEMA	29 1	57 5	-- --	-- --	-- --	-- --
....NAVICULACEAE						
.....CALONEIS	-- --	-- --	-- --	-- --	-- --	-- --
....FRUSTULIA	-- --	-- --	-- --	-- --	-- --	-- --
....GYROSTIGMA	-- --	-- --	-- --	-- --	-- --	-- --
....NAVICULA	87 3	130 10	* 0	10 2	-- --	14 2
....NITZSCHACEAE						
.....NITZSCHIA	1100# 34	220# 17	5 1	7 2	-- --	9 2
....SURTIRELLACEAE						
.....SURTIRELLA	-- --	-- --	-- --	-- --	-- --	-- --
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...CHROCOCCOCCALES						
....CHROCOCCOCCAEAE						
.....ANACYSTIS	-- --	-- --	-- --	-- --	-- --	-- --
....HORMOGONIALES						
.....NOSTOCACEAE						
.....ANABAENA	730# 23	-- --	-- --	-- --	-- --	-- --
....OSCILLATORIACEAE						
.....OSCILLATORIA	-- --	140 11	-- --	260# 61	-- --	37 7
EUGLENOPHYTA (EUGLENOIDS)						
..CRYPTOPHYCEAE						
...CRYPTOMONIDALES						
....CRYPTOCHRYSIDACEAE						
.....CHROMONAS	-- --	-- --	70 12	-- --	-- --	-- --
....CRYPTOMONODACEAE						
.....CRYPTOMONAS	-- --	-- --	-- --	-- --	-- --	9 2
..EUGLENOPHYCEAE						
...EUGLENALES						
....EUGLENACEAE						
.....EUGLENA	-- --	-- --	-- --	-- --	-- --	-- --
....TRACHELOMONAS	-- --	-- --	9 2	-- --	-- --	-- --
PYRRHOPHYTA (FIRE ALGAE)						
..DINOPHYCEAE						
...PERIDINIALES						
....GLENODINIACEAE						
.....GLENODINIUM	-- --	-- --	5 1	2 1	-- --	-- --

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

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

MISSOURI RIVER MAIN STEM

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06330000 MISSOURI RIVER NEAR WILLISTON, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	APR 13,77 0935	MAY 10,77 0900	JUN 8,77 0915	JUL 13,77 0835	AUG 10,77 0830	SEP 13,77 0900				
TOTAL CELLS/ML	1100	2300	30000	14000	1900	570				
DIVERSITY: DIVISION	0.9	0.7	1.3	0.4	1.5	0.0				
..CLASS	0.9	0.7	1.3	0.4	1.5	0.0				
...ORDER	0.9	1.1	1.5	0.9	1.7	0.0				
...FAMILY	2.3	2.7	1.7	1.0	2.1	0.0				
....GENUS	2.3	2.9	1.7	1.2	2.2	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										
...CHLOROCOCCALES										
...CHARACIACEAE										
...SCHROEDERIA	--	-	--	-	--	-	51	3	--	-
...OOCYSTACEAE										
...ANKISTRODESMUS	--	-	--	-	700	2	400	3	310#	16
...DICTYOSPHAERIUM	--	-	--	-	--	-	--	-	--	-
...TETRAEDRON	--	-	--	-	--	-	81	1	--	-
...SCENEDESMACEAE										
...ACTINASTRUM	--	-	--	-	18000#	60	--	-	--	-
...CRUCIGENIA	--	-	--	-	--	-	--	-	--	-
...SCENEDESMUS	--	-	340	15	--	-	650	5	--	-
...VOLVOCALES										
...CHLAMYDOMONADACEAE										
...CHLAMYDOMONAS	--	-	--	-	--	-	81	1	--	-
CHRYSOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...COSCINODISCACEAE										
...CYCLOTELLA	--	-	210	9	2600	9	320	2	100	5
...MELOSIRA	--	-	--	-	--	-	11000#	79	--	-
...STEPHANODISCUS	--	-	21	1	--	-	--	-	51	3
...PENNALES										
...ACHNANTHACEAE										
...ACHNANTHES	--	-	--	-	--	-	--	-	--	-
...COCCONEIS	80	7	85	4	--	-	--	-	--	-
...RHODOSPHENIA	*	0	43	2	--	-	--	-	--	-
...CYMBELLACEAE										
...CYMBELLA	80	7	130	6	--	-	--	-	--	-
...EPITHEMIA	--	-	--	-	--	-	--	-	--	-
...DIATOMACEAE										
...DIATOMA	--	-	130	6	--	-	--	-	*	0
...FRAGILARIACEAE										
...ASTERIONELLA	--	-	260	11	--	-	--	-	--	-
...SYNEDRA	--	-	21	1	700	2	--	-	200	11
...GOMPHONEMATACEAE										
...GOMPHONEMA	400#	36	43	2	--	-	--	-	--	-
...NAVICULACEAE										
...CALONEIS	--	-	21	1	--	-	--	-	--	-
...FRUSTULIA	--	-	--	-	--	-	160	1	--	-
...GYROSTIGMA	--	-	--	-	--	-	--	-	51	3
...NAVICULA	80	7	--	-	350	1	--	-	--	-
...NITZSCHIA										
...NITZSCHIA	160	14	900#	39	1100	3	1200	9	150	8
...SURIRELLACEAE										
...SURIRELLA	--	-	64	3	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROCCOCCALES										
...CHROCCOCCAEAE										
...ANACYSTIS	--	-	--	-	6500#	22	--	-	--	-
...HORMOGONALES										
...NOSTOCACEAE										
...ANABAENA	--	-	--	-	--	-	--	-	1000#	53
...OSCILLATORIACEAE										
...OSCILLATORIA	320#	29	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
..CRYPTOPHYCEAE										
...CRYPTOMONIDALES										
...CRYPTOCHRYSIDACEAE										
...CHROOMONAS	--	-	--	-	--	-	--	-	--	-
...CRYPTOMONODACEAE										
...CRYPTOMONAS	--	-	--	-	--	-	--	-	--	-
..EUGLENOPHYCEAE										
...EUGLENALES										
...EUGLENACEAE										
...EUGLENA	--	-	21	1	--	-	--	-	--	-
...TRACHELOMONAS	--	-	--	-	--	-	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)										
..DINOPHYCEAE										
...PERIDINIALES										
...GLENODINIACEAE										
...GLENODINIUM	--	-	--	-	--	-	--	-	--	-

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

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

MISSOURI RIVER MAIN STEM

06330110 MISSOURI RIVER STAGE GAGE NO. 9 AT WILLISTON, ND

LOCATION.--Lat 48°08'13", long 103°36'16", in NE¼NE¼ sec.25, T.154 N., R.101 W., Williams County, Hydrologic Unit 10110101, on left bank levee at southeast edge of Williston 0.5 mi (0.8 km) upstream from Little Muddy Creek and at mile 1,546.2 (kilometer 2,487.8).

DRAINAGE AREA.--164,500 mi² (426,000 km²), approximately.

PERIOD OF RECORD.--April 1959 to current year (seasonal).

GAGE.--Water-stage recorder. Datum of gage is 1,820.00 ft (554.736 m) above mean sea level. Prior to May 13, 1969, at site 900 ft (270 m) downstream. At datum 20.00 ft (6.096 m) lower prior to Apr. 7, 1962.

REMARKS.--Records good. Stage regulated by upstream reservoirs and backwater from Lake Sakakawea.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 34.22 ft (10.430 m) July 25, 28, 1975; minimum daily recorded, 5.44 ft (1.658 m) Aug. 20, 1961, present datum.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	25.38	25.60	26.28	---	27.42	24.58	24.32	24.69	24.49	24.06	23.90
2	---	25.35	25.82	26.12	27.23	27.38	24.58	24.50	24.65	24.50	24.07	24.02
3	---	25.25	26.10	26.10	27.28	27.28	24.57	24.56	24.64	24.37	24.03	24.15
4	---	25.27	26.21	26.13	27.31	27.20	24.51	24.62	24.53	24.30	24.04	24.08
5	---	25.32	26.20	26.16	27.34	27.15	24.55	24.58	24.36	24.20	24.05	24.00
6	---	25.34	26.20	26.12	27.41	27.11	24.58	24.63	24.33	24.13	24.05	24.00
7	---	25.40	26.25	26.08	27.50	27.15	24.64	24.72	---	24.12	24.04	24.00
8	25.38	25.41	26.10	26.09	27.52	27.15	24.67	24.73	---	24.11	24.03	23.99
9	25.36	25.35	25.95	26.19	27.51	27.20	24.69	24.75	---	24.33	23.95	24.00
10	25.40	25.30	25.88	---	27.51	27.21	24.68	24.73	25.32	24.36	23.82	24.08
11	25.38	25.32	25.85	---	27.47	27.20	24.77	24.60	25.30	24.29	23.76	24.01
12	25.34	25.34	25.89	---	27.42	27.15	24.77	24.43	25.47	24.40	23.75	23.90
13	25.34	25.37	26.00	---	27.41	27.10	24.78	24.34	25.54	24.32	23.81	23.82
14	25.10	25.37	26.08	---	27.40	27.01	24.75	24.32	25.66	24.24	23.80	23.78
15	25.17	25.36	26.20	---	27.40	26.98	24.62	24.40	25.63	24.27	23.81	23.71
16	25.30	25.35	26.39	---	27.45	26.92	24.68	24.52	25.63	24.25	23.85	23.68
17	25.52	25.35	26.49	---	27.46	26.83	24.61	24.59	25.53	24.25	23.86	23.70
18	25.24	25.28	26.53	---	27.42	26.74	24.60	24.62	25.38	24.18	23.81	23.69
19	25.23	25.29	26.60	---	27.47	26.65	24.62	24.74	25.30	24.17	23.79	23.68
20	25.23	25.25	26.70	---	27.49	26.60	24.56	25.00	25.30	24.16	23.77	23.70
21	25.36	25.28	26.70	---	27.50	26.53	24.59	25.11	25.27	24.20	23.72	23.60
22	25.39	25.33	26.68	---	27.47	26.43	24.61	25.07	25.12	24.18	23.73	23.61
23	25.43	25.35	26.57	---	27.45	26.41	24.60	2.50	24.99	24.12	23.74	23.69
24	25.41	25.34	26.38	---	27.45	26.21	24.60	24.99	24.94	24.01	23.89	23.71
25	25.57	25.37	26.33	---	27.48	25.59	24.57	24.84	24.86	24.08	23.80	23.77
26	25.57	25.40	26.37	---	27.49	25.14	24.51	24.64	24.78	24.07	23.72	23.77
27	25.48	26.20	26.44	---	27.49	24.81	24.41	24.60	24.70	23.99	23.75	23.78
28	25.44	26.09	26.49	---	27.47	24.68	24.39	24.53	24.64	23.98	23.76	23.71
29	25.42	25.65	26.50	---	---	24.39	24.36	24.58	24.58	24.08	23.80	---
30	25.41	25.55	26.53	---	---	24.54	24.32	24.64	24.44	23.99	23.80	---
31	25.42	---	26.49	---	---	24.60	---	24.69	---	23.98	23.88	---
MEAN	---	25.41	26.27	---	---	26.48	24.59	23.93	---	24.20	23.86	---
MAX	---	26.20	26.70	---	---	27.42	24.78	25.11	---	24.50	24.07	---
MIN	---	25.25	25.60	---	---	24.39	24.32	2.50	---	23.98	23.72	---

06331000 LITTLE MUDDY RIVER BELOW COW CREEK NEAR WILLISTON, ND

LOCATION.--Lat 48°17'04", long 103°34'21", in NE¼NW¼ sec.5, T.155 N., R.100 W., Williams County, Hydrologic Unit 10110102, on left bank 37 ft (11 m) downstream from centerline of highway, 1 mi (2 km) downstream from Cow Creek, 4 mi (6 km) upstream from Camp Creek, 10 mi (16 km) northeast of Williston, and 13 mi (21 km) upstream from mouth.

DRAINAGE AREA.--875 mi² (2,266 km²), approximately, of which about 100 mi² (260 km²) is probably noncontributing.

PERIOD OF RECORD.--May 1954 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,863.18 ft (567.897 m) above mean sea level.

REMARKS.--Records good. Some small diversions for irrigation. Some regulation by Lake Zahl, Fish and Wildlife Service reservoir 22 mi (35 km) upstream.

AVERAGE DISCHARGE.--23 years, 36.5 ft³/s (1.034 m³/s), 26,440 acre-ft/yr (32.6 hm³/yr); median of yearly mean discharges, 28 ft³/s (0.79 m³/s), 20,300 acre-ft/yr (25 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,910 ft³/s (196 m³/s) Mar. 27, 1960, gage height, 13.57 ft (4.136 m); minimum, 0.2 ft³/s (0.006 m³/s) Nov. 27, 1960, Feb. 5, 1963, and June 4, 1968; minimum gage height, 2.26 ft (0.689 m) July 26, 1954.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 64 ft³/s (1.812 m³/s) Mar. 30, gage height, 6.49 ft (1.978 m), no peak above base of 250 ft³/s (7.08 m³/s); minimum, 4.4 ft³/s (0.125 m³/s) Aug. 19-20; minimum gage height, 5.64 ft (1.719 m) July 22, 24-27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.9	12	10	8.3	5.7	13	26	9.0	11	6.0	5.1	6.1
2	9.7	12	11	7.9	5.4	13	24	9.0	11	6.1	5.2	6.0
3	9.6	11	11	8.0	5.6	13	23	8.6	10	6.0	5.4	5.8
4	10	11	11	7.8	5.7	14	22	9.0	9.6	5.9	5.8	5.6
5	9.6	11	11	7.8	5.7	14	22	8.9	9.1	5.9	5.3	5.7
6	9.8	11	10	7.6	5.9	16	22	8.6	8.2	6.0	5.2	5.6
7	10	11	11	9.2	5.9	19	23	9.1	7.8	6.2	5.6	5.8
8	10	12	12	8.4	6.0	23	24	8.9	7.1	5.6	5.7	7.4
9	10	11	12	8.9	6.2	25	24	8.8	7.4	5.7	5.7	6.6
10	9.6	11	11	7.1	6.5	30	23	8.3	8.2	5.9	5.1	6.3
11	9.8	12	10	6.9	7.0	33	24	7.8	8.0	6.5	4.9	6.0
12	9.8	11	10	6.6	7.4	35	22	7.6	9.1	6.3	5.0	6.6
13	9.8	11	11	6.4	8.6	33	21	7.5	9.3	6.1	5.1	6.3
14	11	11	11	6.4	9.2	30	20	7.6	9.5	6.0	5.1	6.0
15	8.8	11	11	6.4	8.6	27	18	8.9	12	5.7	5.2	6.0
16	9.8	11	11	6.3	8.6	26	17	8.9	12	5.9	5.1	6.0
17	10	12	12	5.6	8.9	26	16	9.4	11	5.7	4.8	6.1
18	11	13	12	5.8	9.3	26	15	11	11	5.4	4.9	7.9
19	10	12	12	5.8	9.7	24	14	29	11	5.1	4.6	7.6
20	11	12	11	5.2	10	23	14	35	11	5.1	4.8	7.1
21	11	12	11	5.4	12	22	14	48	11	4.9	5.5	7.2
22	11	11	11	5.8	13	23	13	36	10	4.8	5.2	7.5
23	11	11	11	6.4	13	23	12	27	9.4	4.8	5.4	8.1
24	11	11	11	6.3	13	24	12	21	8.5	4.8	5.3	9.1
25	11	13	11	6.5	13	25	12	17	8.3	4.6	5.3	10
26	11	12	11	6.4	12	25	11	14	7.2	4.6	5.0	9.8
27	12	11	11	7.1	14	26	11	13	6.9	5.0	5.2	10
28	13	10	11	6.7	13	28	11	12	6.5	5.4	5.3	10
29	12	10	10	6.7	---	27	10	12	6.5	5.1	5.1	9.8
30	12	10	8.1	6.7	---	30	10	13	6.4	5.6	4.9	9.9
31	12	---	8.1	6.4	---	27	---	12	---	4.9	6.5	---
TOTAL	325.2	340	335.2	212.8	248.9	743	530	445.9	274.0	171.6	162.3	217.9
MEAN	10.5	11.3	10.8	6.86	8.89	24.0	17.7	14.4	9.13	5.54	5.24	7.26
MAX	13	13	12	9.2	14	35	26	48	12	6.5	6.5	10
MIN	8.8	10	8.1	5.2	5.4	13	10	7.5	6.4	4.6	4.6	5.6
AC-FT	645	674	665	422	494	1470	1050	884	543	340	322	432
CAL YR 1976	TOTAL	39872.2	MEAN	109	MAX	4690	MIN	6.7	AC-FT	79090		
WTR YR 1977	TOTAL	4006.8	MEAN	11.0	MAX	48	MIN	4.6	AC-FT	7950		

MISSOURI RIVER MAIN STEM

06331650 MISSOURI RIVER STAGE GAGE NO. 11 NEAR WILLISTON, ND

LOCATION.--Lat 48°01'55", long 103°31'23", in SE¼ sec.34, T.153 N., R.100 W., Williams County, Hydrologic Unit 10110101, on left bank 10 mi (16 km) southeast of Williston at mile 1,534.4 (kilometer 2,468.8).

DRAINAGE AREA.--165,000 mi² (427,000 km²), approximately.

PERIOD OF RECORD.--May 1959 to current year (seasonal).

GAGE.--Water-stage recorder. Datum of gage is 1,810.00 ft (551.688 m) above mean sea level. Prior to Apr. 25, 1962, at datum 10.00 ft (3.048 m) lower.

REMARKS.--Records fair. Stage regulated by upstream reservoirs and Lake Sakakawea.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 43.93 ft (13.390 m) July 22, 1975; minimum daily recorded, 5.49 ft (1.673 m) Apr. 29, 1960, present datum.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34.41	32.84				---	---	---	28.31	28.55	27.86	---
2	34.54	32.43				---	---	---	28.26	28.57	27.89	---
3	34.04	32.71				---	---	---	28.15	28.39	27.87	27.90
4	33.35	32.87				---	---	---	28.07	28.40	27.83	27.84
5	33.85	32.65				---	---	---	27.92	28.22	27.83	27.73
6	34.14	32.50				---	---	---	27.82	28.19	27.85	27.74
7	34.08	32.72				---	---	---	28.16	28.00	27.86	27.76
8	33.84	32.30				---	---	---	28.71	28.18	27.83	27.72
9	33.86	32.04				---	---	---	28.93	28.45	27.73	27.73
10	34.02	---				---	---	---	29.04	28.38	27.54	27.80
11	33.86	---				---	---	---	29.16	28.16	27.42	27.80
12	33.81	---				---	---	---	29.30	28.44	27.44	27.67
13	33.89	---				---	---	---	29.35	28.37	27.52	27.56
14	32.16	---				---	28.57	---	29.44	28.13	27.51	27.49
15	33.46	---				31.87	28.47	---	29.48	28.32	27.54	27.44
16	33.75	---				31.79	28.45	---	29.50	28.24	27.54	27.37
17	34.02	---				13.71	28.37	---	29.48	28.27	27.55	27.42
18	33.45	---				31.66	28.30	28.26	29.32	28.16	27.53	27.45
19	33.25	---				31.61	28.30	28.44	29.29	28.14	27.50	27.33
20	33.03	---				31.54	28.26	28.77	29.28	28.08	27.46	27.37
21	33.28	---				31.50	28.25	28.96	29.29	28.16	27.39	27.27
22	33.42	---				31.50	28.28	28.91	29.17	28.14	27.41	27.26
23	33.38	---				31.38	28.28	28.81	29.02	28.06	27.46	27.35
24	33.29	---				31.30	28.28	28.73	28.96	28.03	27.56	27.36
25	33.70	---				31.15	28.18	28.58	28.89	28.03	27.51	27.38
26	33.49	---				---	28.10	28.37	28.88	28.04	27.42	27.41
27	33.15	---				---	28.00	28.26	28.74	27.89	27.39	27.43
28	32.98	---				---	27.93	28.15	28.67	27.84	27.37	27.36
29	33.00	---				---	---	28.16	28.60	28.13	---	27.33
30	33.00	---				---	---	28.22	28.36	27.73	---	27.40
31	33.05	---				---	---	28.31	---	27.74	---	---
MEAN	33.57	---				---	---	---	28.85	28.18	---	---
MAX	34.54	---				---	---	---	29.50	28.57	---	---
MIN	32.16	---				---	---	---	27.82	27.73	---	---

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LOCATION.--Lat 47°59'33", long 103°09'57". McKenzie County, Hydrologic Unit 10110101, in SE¼SW¼ sec. 12, T. 152 N., R. 98 W., on the left bank of creek and on the downstream side of bridge which is 3 mi (4.8 km) east of Watford City main north-south street along Highway 23, 13.4 mi (21.6 km) north of Tobacco Garden Road, and 1.5 mi (2.4 km) east to gage.

WATER-DISCHARGE RECORDS

GAGE.--Water stage recorder. Datum of gage is 1,930.00 ft (588.264 m) above mean sea level.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 316 ft³/s (8.95 m³/s) June 15, gage height, 12.04 ft (3.670 m); minimum

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 316 ft³/s (8.95 m³/s) June 15, gage height, 12.04 ft. (3.670 m), only peak above base of 100 ft/s (2.83 m/s); minimum discharge, 0.02 ft³/s (0.001 m³/s) Aug. 27, gage height, 7.35 ft (2.240 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.95	.95	.60	.60	.38	.57	4.1	.79	4.8	.36	.22	1.1
2	.95	.95	.62	.55	.55	.55	3.7	.81	3.1	.37	.26	1.5
3	.95	.90	.73	.55	.57	.55	3.5	.86	2.2	.29	.30	1.4
4	.90	.90	.74	.50	.48	.64	3.3	.90	1.6	.32	.37	1.2
5	.90	.90	.70	.50	.42	.80	2.7	.98	1.2	.36	.29	.73
6	.90	.85	.64	.50	.48	2.3	2.5	.71	.79	.32	.31	.54
7	.90	.85	.61	.53	.50	3.0	2.6	.68	.64	.33	.35	.42
8	.90	.85	.66	.50	.52	4.3	3.4	.69	.54	.28	.34	.68
9	.85	.85	.71	.46	.67	18	4.0	.69	.57	.26	.30	1.2
10	.85	.85	.73	.42	.72	26	3.6	.64	.56	.30	.32	1.4
11	.85	.85	.67	.46	.73	47	4.1	.56	.47	.25	.25	1.7
12	.85	.85	.72	.41	.74	44	3.0	.46	.64	.23	.29	1.4
13	.85	.85	.69	.38	.60	29	2.2	.42	.83	.24	.34	1.1
14	.85	.85	.73	.44	.69	17	1.8	.46	.86	.24	.38	.92
15	.85	.85	.75	.56	.64	10	1.5	.44	180	.27	.36	.74
16	.85	.85	.71	.49	.54	9.1	1.2	.54	101	.42	.26	.63
17	.85	.85	.77	.36	.54	7.9	1.1	.61	47	21	.26	.71
18	.85	.80	.78	.33	.68	7.9	.95	.67	43	15	.26	7.1
19	.85	.80	.81	.50	.80	8.1	.91	27	16	7.2	.26	44
20	.85	.75	.76	.33	.93	7.2	.88	34	8.6	3.8	.22	14
21	.85	.75	.74	.28	.80	5.5	.91	17	5.5	2.1	.23	7.1
22	.85	.70	.81	.31	.74	4.6	.90	8.3	3.7	1.4	.22	25
23	.85	.54	.71	.36	.72	4.1	.84	4.8	2.1	.82	.27	24
24	.90	.57	.76	.38	.71	5.3	.85	3.1	1.5	.46	.24	31
25	1.0	.67	.73	.31	.66	6.3	.90	1.8	1.1	.31	.22	33
26	1.1	.72	.75	.37	.57	7.4	.84	1.3	.86	.27	.19	13
27	1.2	.62	.80	.31	.54	5.7	.91	1.2	.66	.27	.15	8.3
28	1.2	.54	.76	.35	.58	6.0	.90	1.1	.57	.33	.20	5.8
29	1.1	.54	.72	.27	---	7.2	.82	1.3	.51	.26	.21	4.0
30	1.0	.59	.70	.30	---	4.5	.89	3.1	.45	.27	.21	5.1
31	.95	---	.65	.34	---	4.7	---	4.6	---	.25	.51	---
TOTAL	28.55	23.39	22.26	12.95	17.50	305.21	59.80	120.51	431.35	58.58	8.54	238.77
MEAN	.92	.78	.72	.42	.63	9.85	1.99	3.89	14.4	1.89	.28	7.96
MAX	1.2	.95	.81	.60	.93	47	4.1	34	180	21	.51	.44
MIN	.85	.54	.60	.27	.38	.55	.82	.42	.45	.23	.15	.42
AC-FT	57	46	44	26	35	605	119	239	856	116	17	674
WTR YR 1977	TOTAL	1327.41	MEAN	3.64	MAX	180	MIN	.15	AC-FT	2630		

TOBACCO GARDEN CREEK BASIN

06331680 TOBACCO GARDEN CREEK NEAR WATFORD CITY, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1976 to September 1977.

REMARKS.--Some chemical data furnished by North Dakota State Water Commission.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS)	SPECIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	HARD- NESS (CA, MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)
OCT										
28...	1535	1.2	4500	8.8	4.0	310	0	110	8.5	890
NOV										
17...	1510	.83	4190	--	3.0	--	--	--	--	--
23...	1135	.68	4380	8.3	1.5	270	0	41	41	920
DEC										
03...	1205	.62	3450	8.4	1.0	250	0	39	37	880
JAN										
10...	1545	.38	2900	8.4	.5	210	0	36	29	720
FEB										
04...	1225	.37	2700	8.6	.5	180	0	35	22	700
MAR										
04...	1335	.45	2950	8.1	2.0	260	0	42	38	700
08...	1710	4.3	2510	--	1.0	--	--	--	--	--
14...	1800	15	925	8.6	2.0	92	0	17	12	200
28...	1335	6.2	1,600	--	3.0	--	--	--	--	--
APR										
13...	1750	2.1	1930	8.8	10.0	150	0	26	21	480
MAY										
05...	1210	.95	3100	8.6	12.5	210	0	36	29	550
19...	1045	16	2730	--	15.0	250	0	33	41	570
JUN										
03...	1315	1.8	1910	8.4	21.0	150	0	37	14	440
16...	1425	87	500	7.4	21.0	66	0	18	5.1	86
17...	1430	42	650	--	19.0	--	--	--	--	--
JUL										
08...	1540	.31	2290	8.4	23.0	150	0	32	17	520
AUG										
04...	1455	.35	2200	8.4	21.0	130	0	24	17	520
SEP										
02...	0905	1.5	2150	8.4	13.5	130	0	24	17	540

DATE	PERCENT SODIUM	SODIUM AN- ION- RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	ALKA- LITY AS CaCO3 (MG/L)	CARBON- DIOXIDE (CO2) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLOR- IDE (CL) (MG/L)
OCT									
28...	86	22	8.5	1090	31	946	2.9	1200	6.2
NOV									
17...	--	--	--	--	--	--	--	--	--
23...	88	24	9.4	1440	35	1240	12	1000	8.9
DEC									
03...	88	24	8.5	1400	28	1200	9.3	950	7.1
JAN									
10...	88	22	6.7	1190	0	976	7.6	800	5.7
FEB									
04...	89	23	6.1	1120	0	919	4.5	790	5.4
MAR									
04...	85	19	8.8	1060	0	869	13	940	5.9
08...	--	--	--	--	--	--	--	--	--
14...	81	9.1	6.6	332	0	272	1.3	260	4.3
28...	--	--	--	--	--	--	--	--	--
APR									
13...	84	13	6.0	677	9	570	1.8	400	5.0
MAY									
05...	85	17	7.2	873	27	761	3.7	640	5.0
19...	83	15	8.6	889	27	774	.0	710	4.4
JUN									
03...	86	15	9.3	731	9	615	4.8	480	7.0
16...	71	4.6	7.0	201	0	165	13	100	1.4
17...	--	--	--	--	--	--	--	--	--
JUL									
08...	88	13	8.0	772	39	698	5.4	570	3.4
AUG									
04...	89	20	7.3	814	18	698	5.4	590	3.5
SEP									
02...	89	21	9.3	822	19	706	5.5	570	5.1

TOBACCO GARDEN CREEK BASIN

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06331680 TOBACCO GARDEN CREEK NEAR WATFORD CITY, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO2) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	DIS- SOLVED SOLIDS (TONS PER HOUR)	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED MANGANESE (MN) (UG/L)
OCT 28...	.2	11	2860	2810	3.89	9.27	40	100	20
NOV 17...	--	--	--	--	--	--	--	--	--
23...	.6	16	2800	2790	3.81	5.14	780	310	80
DEC 03...	.4	19	2660	2660	3.62	4.45	710	170	100
JAN 10...	.3	23	2220	2210	3.02	2.28	350	380	320
FEB 04...	.2	23	2090	2140	2.84	2.09	460	150	360
MAR 04...	.8	17	2200	2280	2.99	2.67	40	120	460
08...	--	--	--	--	--	--	--	--	--
14...	.1	9.9	720	675	.98	29.2	350	940	60
28...	--	--	--	--	--	--	--	--	--
APR 13...	.3	13	1240	1190	1.69	7.03	280	190	20
MAY 05...	.4	17	1830	1740	2.49	4.69	460	710	90
19...	.4	7.9	1800	1840	2.45	77.8	590	240	20
JUN 03...	.1	17	1410	1380	1.92	6.85	970	340	20
16...	.0	7.1	347	324	.47	81.5	210	140	10
17...	--	--	--	--	--	--	--	--	--
JUL 08...	.2	15	1570	1590	2.14	1.31	310	60	--
AUG 04...	.2	20	1560	1600	2.12	1.47	350	200	0
SEP 02...	.3	15	1660	1610	2.26	6.72	330	120	20

WHITE EARTH RIVER BASIN

06332000 WHITE EARTH RIVER AT WHITE EARTH, ND

LOCATION.--Lat 48°22'35", long 102°46'00", in SE¼SW¼ sec.36, T.157 N., R.94 W., Mountrail County, Hydrologic Unit 10110101, 35 ft (11 m) upstream from bridge on county highway, 0.2 mi (0.3 km) east of White Earth.

DRAINAGE AREA.--780 mi² (2,020 km²), approximately, of which about 290 mi² (750 km²) is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1954 to current year.

REVISED RECORDS.--WSP 2117: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,070.00 ft (630.936 m) above mean sea level. Prior to Oct. 25, 1959, nonrecording gages at site 0.2 mi (0.3 km) upstream at datum 1.64 ft (0.500 m) higher.

REMARKS.--Records good except those for the winter period, which is fair. Flow regulated by White Earth Reservoir 12 mi (19 km) upstream beginning August 1970, capacity, 1,600 acre-ft (1.97 hm³).

AVERAGE DISCHARGE.--23 years, 27.7 ft³/s (0.784 m³/s), 20,070 acre-ft/yr (24.7 hm³/yr); median of yearly mean discharges, 15 ft³/s (0.42 m³/s), 10,900 acre-ft/yr (13 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,370 ft³/s (67.1 m³/s) Mar. 16, 1972, gage height, 18.19 ft (5.544 m); no flow at times in some years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1929 reached a stage of 21.8 ft (6.64 m) former site and datum, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 103 ft³/s (2.92 m³/s) May 19, gage height, 4.08 ft (1.244 m), minimum discharge, 0.09 ft³/s (0.002 m³/s) July 25, gage height, 0.27 ft (0.082 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.4	6.1	1.8	2.5	.90	2.6	17	4.6	5.3	3.8	1.7	4.1
2	3.2	4.7	1.8	2.5	.90	2.6	16	4.3	4.4	3.3	1.2	3.3
3	3.0	4.1	1.8	2.4	1.0	2.7	15	3.9	4.0	2.8	1.3	2.6
4	3.0	3.8	1.7	2.4	1.0	2.8	16	3.9	3.8	2.7	1.9	2.3
5	3.4	3.7	1.6	2.4	.90	3.0	15	4.1	3.3	2.6	2.1	2.3
6	3.2	3.6	1.5	2.4	.80	3.7	14	4.0	3.1	1.9	1.7	2.5
7	3.0	3.5	1.4	2.3	.80	8.0	17	3.4	2.7	2.0	1.7	2.6
8	3.2	3.4	1.4	2.1	.90	16	17	3.2	2.1	2.3	1.9	3.3
9	3.4	3.8	1.4	1.9	1.1	18	17	3.3	2.0	1.8	2.1	6.1
10	3.2	3.5	1.4	1.6	1.5	22	17	3.3	2.1	1.8	1.7	4.3
11	3.2	3.3	1.4	1.6	2.0	23	16	2.9	2.4	2.1	1.8	3.2
12	3.2	3.0	1.5	1.6	2.3	23	15	2.6	3.4	2.3	1.4	2.5
13	3.2	2.8	1.7	1.6	2.3	16	15	3.9	7.0	2.3	1.6	2.6
14	3.1	2.9	1.8	1.5	2.1	10	14	4.2	6.4	2.2	1.7	3.0
15	3.2	2.8	1.8	1.4	2.0	9.2	15	3.9	8.7	1.8	1.5	2.4
16	3.1	3.0	2.2	1.3	2.1	9.0	17	4.8	9.7	1.9	1.5	2.2
17	3.0	3.0	2.8	1.3	2.4	10	16	5.8	12	1.5	1.3	2.1
18	3.0	3.4	2.9	1.3	2.7	19	13	54	12	1.8	1.3	4.4
19	3.2	3.4	2.8	1.3	2.7	27	11	72	12	.98	1.3	6.1
20	3.4	3.0	2.6	1.4	2.9	25	9.0	44	11	.50	1.5	4.1
21	3.5	2.9	2.6	1.4	3.3	22	8.9	18	9.5	.73	2.2	3.8
22	3.5	2.7	2.5	1.5	3.2	19	8.1	14	9.0	.51	2.6	11
23	3.5	2.8	2.5	1.5	3.0	28	7.5	12	9.2	.44	2.7	6.8
24	3.5	3.0	2.5	1.4	2.9	20	7.8	10	9.3	.27	2.6	8.5
25	3.9	2.8	2.6	1.4	2.8	19	6.0	8.9	8.2	.12	2.7	15
26	6.5	2.6	2.8	1.3	2.8	16	5.9	8.1	6.8	.23	2.3	9.1
27	3.5	2.4	2.8	1.2	2.7	18	5.5	7.7	5.5	.69	2.3	6.4
28	6.8	2.2	2.7	1.0	2.6	19	5.4	8.2	4.9	1.1	2.2	7.5
29	10	2.0	2.7	1.0	---	18	5.0	7.3	4.4	1.1	2.3	11
30	10	1.8	2.6	.90	---	17	4.8	7.2	3.8	2.2	1.9	11
31	8.9	---	2.6	.90	---	18	---	6.3	---	1.8	2.6	---
TOTAL	127.2	96.0	66.2	50.30	56.60	466.6	366.9	343.8	188.0	51.57	58.6	156.1
MEAN	4.10	3.20	2.14	1.62	2.02	15.1	12.2	11.1	6.27	1.66	1.89	5.20
MAX	10	6.1	2.9	2.5	3.3	28	17	72	12	3.8	2.7	15
MIN	3.0	1.8	1.4	.90	.80	2.6	4.8	2.6	2.0	.12	1.2	2.1
AC-FT	252	190	131	100	112	926	728	682	373	102	116	310
CAL YR 1976 TOTAL	26631.90			MEAN 72.8	MAX 1630	MIN 1.4	AC-FT 52820					
WTR YR 1977 TOTAL	2027.87			MEAN 5.56	MAX 72	MIN .12	AC-FT 4020					

06332000 WHITE EARTH RIVER AT WHITE EARTH, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1970, 1972 to current year.

REMARKS.--Some chemical data furnished by North Dakota State Water Commission.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS)	SPECIFIC CON- DUCT- ANCE (MICRO- MHMS)	PH (UNITS)	TEMPER- ATURE (DEG C)	HARD- NESS (CA, MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)
OCT										
07...	1240	3.0	2010	8.8	5.0	230	0	41	31	450
NOV										
04...	1225	3.7	2300	8.8	2.5	370	0	120	17	480
DEC										
02...	1410	1.8	2450	8.4	.0	300	0	57	38	600
JAN										
06...	1035	2.4	1950	8.5	.0	270	0	49	36	450
FEB										
02...	1055	.87	2150	--	.0	240	0	43	32	510
MAR										
02...	1155	2.6	2000	8.2	.0	250	0	41	36	450
10...	1555	25	1540	--	1.0	--	--	--	--	--
16...	1145	9.0	1550	--	.0	--	--	--	--	--
APR										
04...	1855	14	1830	--	.5	350	0	45	58	270
MAY										
04...	1055	3.8	2500	8.5	14.0	310	0	47	47	370
18...	1310	64	1400	--	12.0	--	--	--	--	--
JUN										
02...	1120	4.3	1760	8.4	18.0	330	0	71	37	340
JUL										
06...	1605	1.7	2060	8.4	22.0	300	0	40	49	390
AUG										
04...	1035	1.7	1900	8.5	17.5	210	0	31	32	430
31...	0855	2.6	1900	8.5	15.0	180	0	29	26	450

DATE	PERCENT SODIUM	SODIUM AND SULF- TATION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	ALKA- LITY AS CACO3 (MG/L)	CARRON DIUTIDE (CO2) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)
OCT									
07...	80	13	6.8	800	44	729	2.3	440	34
NOV									
04...	73	11	9.9	791	15	674	2.1	500	150
DEC									
02...	81	15	6.4	1110	25	952	7.4	580	36
JAN									
06...	78	12	4.5	953	11	800	4.9	420	22
FEB									
02...	82	14	4.5	1020	7	848	--	470	21
MAR									
02...	79	12	5.7	871	12	734	9.0	420	47
10...	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--
APR									
04...	62	6.3	8.3	543	20	479	--	390	45
MAY									
04...	72	9.1	6.8	720	31	642	4.0	430	47
18...	--	--	--	--	--	--	--	--	--
JUN									
02...	49	8.1	8.0	666	27	591	4.6	441	31
JUL									
06...	73	9.8	7.8	706	37	641	5.0	451	37
AUG									
04...	81	13	6.2	823	28	722	4.5	391	29
31...	84	15	9.1	835	26	728	4.5	380	30

WHITE EARTH RIVER BASIN

06332000 WHITE EARTH RIVER AT WHITE EARTH, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED FLUOR- IDE (F) (MG/L)	DIS- SOLVED SILICA (SiO2) (UG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	DIS- SOLVED BORON (B) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED MANGANESE (MN) (UG/L)
OCT									
07...	.4	17	1450	1460	1.97	11.7	530	370	20
NOV									
04...	.2	19	1680	1710	2.28	16.8	70	290	60
DEC									
02...	.3	21	1890	1920	2.57	9.19	960	380	160
JAN									
06...	.3	25	1530	1490	2.08	9.91	670	520	240
FEB									
02...	.3	26	1630	1620	2.22	3.83	600	520	200
MAR									
02...	.5	18	1540	1460	2.09	10.8	180	290	140
10...	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--
APR									
04...	.1	7.8	1150	1110	1.56	43.5	320	80	80
MAY									
04...	.2	7.8	1390	1340	1.89	14.3	390	120	80
18...	--	--	--	--	--	--	--	--	--
JUN									
02...	.2	10	1330	1290	1.81	15.4	940	410	140
JUL									
06...	.2	7.6	1350	1370	1.84	6.20	420	380	--
AUG									
04...	.2	13	1390	1370	1.87	6.38	420	40	80
31...	.3	10	1360	1370	1.85	9.55	570	60	40

BEAR DEN CREEK BASIN

285

06332515 BEAR DEN CREEK NEAR MANDAREE, ND
(Hydrologic bench-mark station)

LOCATION.--Lat 47°47'14", long 102°46'05", in NW¼ sec.30, T.150 N., R.94 W., McKenzie County, Hydrologic Unit 10110101, on right bank 0.5 mi (0.8 km) upstream from county highway culvert and 5.5 mi (8.8 km) northwest of Mandaree.

DRAINAGE AREA.--74 mi² (192 km²).

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,947.58 ft (593.622 m) above mean sea level.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--11 years, 9.37 ft³/s (0.265 m³/s), 6,790 acre-ft/yr (8.37 hm³/yr); median of yearly mean discharges, 8.6 ft³/s (0.24 m³/s) 6,200 acre-ft/yr (7.6 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,840 ft³/s (80.4 m³/s) Mar. 13, 1972, gage height, 9.02 ft (2.749 m); maximum gage height, 10.03 ft (3.057 m) Apr. 6, 1969; no flow at times most years.

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)
June 16	0045	*230 6.51	*4.26 1.298	July 16	0515	130 3.68	3.87 1.180

No flow Dec. 30 to Feb. 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.17	.23	.14		0	.20	1.0	.34	.19	.48	.16	.65
2	.17	.18	.16		0	.25	.90	.31	.15	.51	.13	.56
3	.19	.21	.21		0	.25	.80	.28	.15	.54	.15	.57
4	.17	.21	.18		0	.20	.60	.26	.15	.48	.17	.57
5	.18	.21	.16		0	.20	.65	.25	.15	.43	.15	.57
6	.14	.20	.13		0	.35	.81	.25	.13	.44	.14	.55
7	.13	.17	.14		.01	1.0	.83	.23	.13	.42	.13	.56
8	.17	.15	.12		.02	4.8	1.3	.19	.11	.41	.15	.80
9	.15	.15	.09		.19	10	1.3	.21	.13	.44	.16	.86
10	.15	.15	.07		.12	17	1.2	.21	.21	.53	.17	.86
11	.15	.15	.07		.50	13	1.3	.17	.29	.61	.15	.92
12	.16	.15	.08		.49	6.5	1.2	.15	1.2	.37	.13	.81
13	.15	.13	.05		.36	5.8	1.1	.15	5.4	.37	.13	.62
14	.17	.14	.05		.31	3.4	1.0	.15	8.1	.40	.11	.57
15	.15	.15	.05		.25	2.5	.98	.15	24	.57	.11	.53
16	.14	.17	.05		.26	2.3	.92	.23	94	20	.11	.49
17	.17	.19	.05		.28	2.1	.86	.19	32	1.8	.11	.61
18	.16	.19	.05		.38	1.8	.80	.15	8.1	.40	.11	1.3
19	.17	.19	.05		.35	1.4	.80	1.3	2.6	.19	.13	.86
20	.17	.17	.04		.39	.90	.75	.98	2.3	.15	.17	.83
21	.17	.17	.03		.83	.80	.75	.46	2.1	.13	.21	2.6
22	.16	.15	.03		.86	.80	.70	.28	3.8	.15	.23	1.7
23	.15	.15	.03		.55	.90	.61	.21	2.3	.15	.23	1.4
24	.17	.15	.02		.38	1.3	.57	.13	1.8	.11	.28	2.1
25	.18	.17	.02		.34	1.8	.49	.13	1.1	.14	.25	1.6
26	.19	.17	.02		.27	1.1	.40	.11	.86	.12	.25	1.1
27	.20	.17	.02		.20	1.0	.40	.13	.75	.12	.31	.86
28	.20	.15	.01		.20	1.8	.43	.13	.65	.14	.34	.65
29	.19	.13	.01		---	2.1	.40	.25	.57	.14	.31	.86
30	.21	.13	0		---	1.3	.37	.28	.52	.12	.37	.57
31	.20	---	0		---	1.2	---	.25	---	.15	.75	---
TOTAL	5.23	5.03	2.13	0	7.54	88.05	24.22	8.51	193.94	31.01	6.30	27.58
MEAN	.17	.17	.069	0	.27	2.84	.81	.27	6.46	1.00	.20	.92
MAX	.21	.23	.21	0	.86	17	1.3	1.3	94	20	.75	2.6
MIN	.13	.13	0	0	0	.20	.37	.11	.11	.11	.11	.49
AC-FT	10	10.0	4.2	0	15	175	48	17	385	62	12	55

CAL YR 1976	TOTAL	3099.68	MEAN 8.47	MAX 619	MIN 0	AC-FT 6150
WTR YR 1977	TOTAL	399.54	MEAN 1.09	MAX 94	MIN 0	AC-FT 792

BEAR DEN CREEK BASIN

06332515 BEAR DEN CREEK NEAR MANDAREE, ND--Continued
(Hydrologic bench-mark station)

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: August 1969 to September 1970.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS)	SPECIFIC CONDUCTANCE (MICRO- MHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DIS- SOLVED OXYGEN (MG/L)	PER- CENT SATUR- ATION	IMME- DIATE COLI- FORM (COL. PER 100 ML)	FECAL COLI- FORM (COL./ 100 ML)	FECAL STREP- TOCOC- KI AGAR (COL. PER 100 ML)	HARD- NESS (CA, MG) (MG/L)
OCT											
04...	1230	.19	2720	8.7	10.0	8.8	84	--	--	--	180
NOV											
01...	1245	.21	2650	8.8	5.0	11.2	94	B28	B37	35	200
DEC											
06...	1340	.13	3000	8.6	.5	11.2	83	B18	B17	B13	270
MAR											
07...	1325	.91	2700	8.2	.0	11.5	91	B86	B25	B300	200
14...	1325	3.2	1690	--	.0	--	--	--	--	--	--
28...	1145	1.2	1970	--	.0	--	--	--	--	--	--
APR											
11...	1440	1.3	1800	8.5	10.5	11.4	92	B5	B5	B37	160
MAY											
09...	1215	.20	2650	8.5	22.0	8.2	100	B15	B13	B23	220
JUN											
06...	1325	.13	2560	8.2	25.5	7.1	92	B34	--	B56	190
16...	1345	.66	615	--	19.0	--	--	--	--	--	--
JUL											
11...	1355	.59	1700	8.5	17.5	6.8	76	B920	B720	600	130
AUG											
08...	1300	.14	2020	8.2	23.5	7.4	92	B33	B27	B30	180
SEP											
12...	1210	.94	2300	8.6	14.0	7.6	76	360	B60	300	160

DATE	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	ALKA- LITY AS CACO3 (MG/L)
OCT										
04...	0	27	28	690	89	22	7.4	956	68	897
NOV										
01...	0	35	27	610	87	19	6.7	461	277	839
DEC										
06...	0	53	33	770	86	20	6.5	1290	0	1060
MAR										
07...	0	42	23	580	86	18	5.5	943	0	773
14...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
APR										
11...	0	32	20	400	84	14	6.0	610	6	510
MAY										
09...	0	42	27	640	86	19	6.9	890	29	780
JUN										
06...	0	34	26	600	87	19	8.2	820	0	670
16...	--	--	--	--	--	--	--	--	--	--
JUL										
11...	0	29	14	390	86	15	7.3	560	15	480
AUG										
08...	0	36	21	450	84	15	7.4	780	0	640
SEP										
12...	0	31	20	540	87	19	7.9	820	23	710

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

06332515 BEAR DEN CREEK NEAR MANDAREE, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	CARBON DIOXIDE (CO2) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO2) (MG/L)	DIS- SOLVED (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	TOTAL PLUS NITRATE (N) (MG/L)
OCT 04...	3.5	740	4.0	.4	8.1	2090	2040	2.84	1.07	.00
NOV 01...	2.6	710	3.7	.4	10	1930	1910	2.62	1.09	.01
DEC 06...	5.2	870	3.4	.4	15	2350	2390	3.20	.82	.02
MAR 07...	9.5	660	3.9	.2	14	1820	1790	2.48	4.47	.09
14...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
APR 11...	3.1	500	4.1	.4	7.8	1330	1280	1.81	4.67	.03
MAY 09...	4.8	760	3.8	.5	5.7	1990	1950	2.71	1.07	.01
JUN 06...	8.3	790	3.5	.5	4.5	1890	1870	2.57	.66	.01
16...	--	--	--	--	--	--	--	--	--	--
JUL 11...	3.0	480	4.5	.4	8.1	1250	1220	1.70	1.99	.22
AUG 08...	7.9	560	3.0	.5	8.5	1460	1470	1.99	.55	.02
SEP 12...	3.5	640	5.3	.4	9.0	1680	1680	2.28	4.26	.01

DATE	TOTAL PHOS- PHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL BARIUM (BA) (UG/L)	TOTAL CAD- MIUM (CD) (UG/L)	TOTAL CHRO- MIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)
OCT 04...	.05	--	--	--	--	--
NOV 01...	.03	3	0	<10	0	<10
DEC 06...	.02	--	--	--	--	--
MAR 07...	.07	--	--	--	--	--
APR 11...	.07	1	0	<10	0	<10
MAY 09...	.04	--	--	--	--	--
JUN 06...	.06	--	--	--	--	--
JUL 11...	.14	--	--	--	--	--
AUG 08...	.07	--	--	--	--	--
SEP 12...	.07	--	--	--	--	--

DATE	TOTAL IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MAN- GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL SELE- NIUM (SE) (UG/L)	TOTAL SILVER (AG) (UG/L)	TOTAL ZINC (ZN) (UG/L)	DIS- SOLVED GROSS ALPHA AS U-NAT. (UG/L)
OCT 04...	--	--	--	--	--	--	--	<29
NOV 01...	1100	<100	80	.0	0	<10	20	--
APR 11...	2300	<100	140	.1	1	<10	10	--

DATE	SUS- PEN- DED GROSS ALPHA AS U-NAT. (UG/L)	DIS- SOLVED GROSS BETA AS CS-137 (PC/L)	SUS- PEN- DED GROSS BETA AS CS-137 (PC/L)	DIS- SOLVED GROSS BETA AS SR90 /Y90 (PC/L)	SUS- PEN- DED GROSS BETA AS SR90 /Y90 (PC/L)	DIS- SOLVED GROSS RA-226 (RADON METHOD) (PC/L)	DIS- SOLVED GROSS CYANIDE (CN) (MG/L)
OCT 04...	2.8	6.1	4.0	5.4	3.2	1.0	--
NOV 01...	--	--	--	--	--	--	.01
APR 11...	--	--	--	--	--	--	.00

BEAR DEN CREEK BASIN

06332515 BEAR DEN CREEK NEAR MANDAREE, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL PCB (UG/L)	PCB IN BOTTOM MA- TERIAL (UG/KG)	POLY- CHLO- RINATE) NAPH- THA- LENES (UG/L)	TOTAL ALDRIN (UG/L)	ALDRIN IN BOTTOM MA- TERIAL (UG/KG)	TOTAL CHLOR- DANE (UG/L)	CHLOR- DANE IN BOTTOM MA- TERIAL (UG/KG)	TOTAL DDD (UG/L)	DDD IN BOTTOM MA- TERIAL (UG/KG)	TOTAL DDE (UG/L)	DDE IN BOTTOM MA- TERIAL (UG/KG)	TOTAL DDT (UG/L)
OCT 04...	.0	0	.00	.00	.0	.0	0	.00	.0	.00	.0	.00
AUG 08...	.0	0	.00	.00	.0	.0	0	.00	.0	.00	.0	.00

DATE	DDT IN BOTTOM MA- TERIAL (UG/KG)	TOTAL DI- AZINON (UG/L)	TOTAL DI- ELDRIN (UG/L)	DI- ELDRIN IN BOTTOM MA- TERIAL (UG/KG)	TOTAL ENDO- SULFAN (UG/L)	TOTAL ENDRIN (UG/L)	ENDRIN IN BOTTOM MA- TERIAL (UG/KG)	TOTAL ETHION (UG/L)	TOTAL HEPTA- CHLOR (UG/L)	HEPTA- CHLOR IN BOTTOM MA- TERIAL (UG/KG)	TOTAL HEPTA- CHLOR EPOXIDE (UG/L)	HEPTA- CHLOR EPOXIDE IN BOT- TOM MA- TERIAL (UG/KG)
OCT 04...	.0	.00	.00	.0	--	.00	.0	.00	.00	.0	.00	.0
AUG 08...	.0	.00	.00	.2	.00	.00	.0	.00	.00	.0	.00	.0

DATE	TOTAL LINDANE (UG/L)	LINDANE IN BOTTOM MA- TERIAL (UG/KG)	TOTAL MALA- THION (UG/L)	TOTAL METHYL PARA- THION (UG/L)	TOTAL METHYL TRI- THION (UG/L)	TOTAL PARA- THION (UG/L)	TOTAL TOX- APHENE (UG/L)	TOX- APHENE IN BOTTOM MA- TERIAL (UG/KG)	TOTAL TRI- THION (UG/L)	TOTAL 2,4-D (UG/L)	TOTAL 2,4,3-T (UG/L)
OCT 04...	.00	.0	.00	.00	.00	.00	0	0	.00	.00	.00
AUG 08...	.00	.0	.00	.00	.00	.00	0	0	.00	.06	.00

DATE	TOTAL SILTEX (UG/L)	SUS- PENDE SEDI- MENT (MG/L)	SUS- PENDE SEDI- MENT DIS- CHARGE (T/DAY)	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
OCT 04...	.00	105	.05	--	--	--	--
NOV 01...	--	66	.04	8	23	52	61
DEC 06...	--	72	.03	--	--	--	--
MAR 07...	--	116	.29	--	--	--	--
APR 11...	--	86	.30	--	--	--	--
MAY 09...	--	69	.04	--	--	--	--
JUN 06...	--	113	.04	--	--	--	--
JUL 11...	--	135	.22	--	--	--	--
AUG 08...	.00	117	.04	4	8	19	28
SEP 12...	--	90	.23	--	--	--	--

DATE	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
NOV 01...	67	72	79	86	90	100
AUG 08...	36	43	54	64	70	100

SHELL CREEK BASIN

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06332520 SHELL CREEK NEAR PARSHALL, ND

LOCATION.--Lat 48°03'11", long 102°08'10", in SE¼NE¼ sec.29, T.153 N., R.89 W., Mountrail County, Hydrologic Unit 10110101, on left bank 800 ft (240 m) downstream from bridge on county highway 6 mi (10 km) northwest of Parshall.

DRAINAGE AREA.--465 mi² (1,204 km²).

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

GAGE.--Water-stage recorder.

REMARKS.--Records good except those for the winter period, which are fair.

AVERAGE DISCHARGE.--12 years, 14.0 ft³/s (0.396 m³/s), 10,140 acre-ft/yr (12.5 hm³/yr); median of yearly mean discharges, 10 ft³/s (0.28 m³/s) 7,240 acre-ft/yr (8.9 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,270 ft³/s (64.3 m³/s) Apr. 6, 1969, gage height, 7.60 ft (2.316 m); no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 69 ft³/s (1.95 m³/s) June 14, gage height, 3.47 ft (1.058 m), no peak above base of 150 ft³/s (4.25 m³/s); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	2.3	.40			0	7.0	2.2	2.1	4.4	.61	2.2
2	1.5	2.2	.40			0	5.9	2.1	1.9	4.2	.62	2.2
3	1.5	2.1	.50			0	5.3	2.1	1.6	4.0	.59	2.0
4	1.7	1.9	.50			0	4.0	9.8	1.4	4.5	.90	1.9
5	1.6	2.1	.40			0	3.6	7.6	1.3	4.2	.68	1.6
6	1.7	2.0	.30			.50	6.6	5.4	1.1	4.0	.57	1.4
7	1.7	1.8	.20			1.0	5.6	4.4	1.0	3.4	.58	1.5
8	1.8	1.9	.10			5.0	5.4	3.7	.85	3.3	.65	1.8
9	1.8	1.8	.10			5.5	4.9	3.0	.70	3.0	.60	1.8
10	1.8	1.6	.10			6.0	4.2	2.5	.91	2.7	.54	1.6
11	1.8	1.5	.10			8.0	3.8	2.2	1.3	2.9	.48	1.6
12	1.8	1.3	.20			14	3.6	2.0	3.5	2.9	.44	1.6
13	1.8	1.1	.20			12	3.0	2.0	4.5	2.4	.71	1.6
14	1.9	.94	.20			5.8	3.0	2.1	17	2.3	.59	1.4
15	1.7	.88	.30			3.7	2.8	2.1	38	2.2	.57	1.3
16	1.6	.82	.30			4.1	2.7	2.4	28	2.3	.57	1.3
17	1.7	.88	.40			7.0	2.7	3.5	24	1.9	.47	1.3
18	1.7	1.2	.50			8.0	2.4	3.7	13	1.5	.48	4.1
19	1.7	1.1	.50			7.5	2.2	4.5	8.0	1.3	.45	2.9
20	1.9	1.1	.40			7.0	2.2	3.9	7.0	1.1	.52	2.8
21	1.6	1.0	.30			6.8	2.3	3.4	6.0	.97	.73	2.9
22	1.8	.80	.30			6.8	2.1	2.9	8.0	.78	.58	5.7
23	1.8	.70	.20			7.7	1.9	2.4	10	.70	.80	4.4
24	1.9	.60	.10			7.2	1.9	2.0	8.0	.61	.97	8.8
25	1.7	.60	.10			7.2	1.9	1.5	7.0	.51	.88	7.5
26	1.8	.55	.10			6.1	2.2	1.7	6.0	.49	.81	5.4
27	2.0	.50	.20			8.9	1.7	1.9	5.5	.78	.93	4.1
28	2.5	.45	.20			8.3	1.7	2.2	5.0	.92	1.2	3.2
29	2.3	.40	.10		---	6.1	2.1	2.3	4.8	.70	.95	2.7
30	2.3	.40	.05		---	5.9	2.5	2.8	4.6	.68	.93	2.7
31	2.3	---	.02		---	7.6	---	2.2	---	.62	2.1	---
TOTAL	56.3	36.52	7.77	0	0	173.70	101.2	96.5	222.06	66.26	22.50	85.3
MEAN	1.82	1.22	.25	0	0	5.60	3.37	3.11	7.40	2.14	.73	2.84
MAX	2.5	2.3	.50	0	0	14	7.0	9.8	38	4.5	2.1	8.8
MIN	1.5	.40	.02	0	0	0	1.7	1.5	.70	.49	.44	1.3
AC-FT	112	72	15	0	0	345	201	191	440	131	45	169
CAL YR 1976	TOTAL	7551.22	MEAN 20.6	MAX 970	MIN .02	AC-FT	14980					
WTR YR 1977	TOTAL	868.11	MEAN 2.38	MAX 38	MIN 0	AC-FT	1720					

LITTLE MISSOURI RIVER BASIN

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.

PERIOD OF RECORD.--April 1938 to current year.

REVISED RECORDS (WATER YEARS).--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) above mean sea level. 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.--39 years, 42.7 ft³/s (1,209 m³/s), 30,940 acre-ft/yr (38.1 hm³/yr), median of yearly mean discharges, 28 ft³/s (0.79 m³/s), 20,300 acre-ft/yr (25 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,700 ft³/s (360 m³/s) Apr. 6, 1952, gage height, 13.9 ft (4.24 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.--Maximum discharge, 575 ft³/s (16.3 m³/s) June 12, gage height, 12.54 ft (3.822 m), no peak above base of 2,000 ft³/s (56.6 m³/s); no flow Aug. 1-11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.54	3.1	1.2	2.1	1.3	8.3	18	5.8	4.9	2.0	0	3.0
2	.54	2.8	1.3	2.0	1.4	6.6	51	5.9	4.0	2.1	0	17
3	.61	2.9	1.6	1.9	1.4	5.1	57	4.2	3.8	2.0	0	6.5
4	.61	2.9	1.7	1.8	1.3	4.8	51	4.2	3.2	1.4	0	3.1
5	.47	2.9	2.2	1.7	1.2	5.1	63	4.6	2.6	1.9	0	1.9
6	.57	2.7	2.3	1.6	1.1	5.1	197	3.4	2.4	.89	0	1.7
7	.83	2.5	2.5	1.5	1.2	6.6	154	4.3	2.2	.47	0	1.6
8	1.1	2.5	2.5	1.6	1.4	16	118	4.3	1.6	7.6	0	1.1
9	1.2	2.9	2.6	1.5	1.5	59	101	5.4	3.1	3.2	0	1.7
10	1.1	2.7	2.5	1.2	1.5	79	89	5.0	112	3.6	0	2.5
11	1.5	2.4	2.6	1.2	1.6	74	71	3.2	55	2.9	0	3.1
12	1.1	2.4	2.6	1.2	1.6	36	58	4.1	169	2.0	.06	2.4
13	1.1	2.4	2.6	1.2	1.7	39	50	2.6	127	1.6	.25	3.0
14	1.3	2.4	2.6	1.2	1.7	62	45	2.9	201	1.5	.27	3.9
15	1.3	2.4	2.7	1.2	1.5	49	38	4.0	135	.86	63	5.2
16	1.3	2.5	2.8	1.2	1.4	33	29	5.3	56	.51	57	5.8
17	1.7	2.9	2.9	1.2	1.8	25	25	4.9	39	.37	8.7	5.2
18	1.9	3.3	3.0	1.2	2.0	30	21	5.0	31	.28	2.4	8.7
19	1.9	2.5	3.1	1.3	2.1	32	19	6.1	26	.25	1.3	15
20	2.0	1.9	3.0	1.4	2.0	35	18	6.0	19	.23	1.5	15
21	2.0	1.7	2.9	1.4	2.2	59	16	6.0	13	.51	1.1	14
22	2.0	1.6	2.9	1.4	2.5	28	15	5.1	24	.33	.99	51
23	2.2	1.7	2.9	1.4	2.8	32	14	4.1	9.8	.18	1.3	23
24	2.3	1.9	2.9	1.5	3.0	46	13	3.0	5.9	.10	2.6	57
25	2.4	2.2	2.9	1.4	3.8	46	12	4.0	4.5	.03	2.8	35
26	2.9	2.0	2.9	1.3	7.5	33	11	3.7	3.1	.06	2.8	12
27	2.8	1.7	3.0	1.2	13	26	7.7	3.7	2.6	.12	2.0	5.7
28	2.8	1.4	3.0	1.0	12	34	6.8	4.3	2.5	.77	3.7	4.0
29	2.9	1.0	3.2	.90	---	33	7.1	6.5	2.3	.33	5.1	4.3
30	2.9	1.0	2.6	.80	---	17	5.9	6.2	2.0	.10	3.2	29
31	2.9	---	2.2	1.0	---	17	---	5.0	---	.01	3.2	---
TOTAL	50.77	69.2	79.7	42.40	77.5	981.6	1381.5	142.8	1067.5	172.84	163.27	342.4
MEAN	1.64	2.31	2.57	1.37	2.77	31.7	46.1	4.61	35.6	5.58	5.27	11.4
MAX	2.9	3.3	3.2	2.1	13	79	197	6.5	201	89	63	57
MIN	.47	1.0	1.2	.80	1.1	4.8	5.9	2.6	1.6	.01	0	1.1
AC-FT	101	137	158	84	154	1950	2740	283	2120	343	324	679
CAL YR 1976 TOTAL	8983.53			MEAN 24.5	MAX 681	MIN .01	AC-FT 17820					
WTR YR 1977 TOTAL	4571.48			MEAN 12.5	MAX 201	MIN 0	AC-FT 9070					

LITTLE MISSOURI RIVER BASIN

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06335500 LITTLE MISSOURI RIVER AT MARMARTH, ND

LOCATION.--Lat 46°17'44", long 103°55'06", in SW¼ sec.30, T.133 N., R.105 W., Slope County, Hydrologic Unit 10110203, on left bank 90 ft (27 m) downstream from bridge on U.S. Highway 12 in Marmarth and 1.5 mi (2.4 km) downstream from Little Beaver Creek.

DRAINAGE AREA.--4,640 mi² (12,020 km²), approximately.

PERIOD OF RECORD.--March 1938 to current year.

REVISED RECORDS (WATER YEARS).--WSP 896: 1938-39. WSP 1086: 1943-44. WSP 1279: 1943(M), 1945-46, 1948. WSP 1439: 1950 (calendar year figures).

GAGE.--Water-stage recorder. Datum of gage is 2,686.32 ft (818.790 m) above mean sea level. Prior to June 23, 1950, various nonrecording gages on former highway bridge at present site and datum. June 23, 1950, to Sept. 2, 1957, nonrecording gage at site 90 ft (27 m) upstream at present datum.

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

AVERAGE DISCHARGE.--39 years, 333 ft³/s (9.431 m³/s), 241,300 acre-ft/yr (297 hm³/yr); median of yearly mean discharges, 275 ft³/s (7.79 m³/s), 199,000 acre-ft/yr (245 hm³/yr):

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,000 ft³/s (1,270 m³/s) Mar. 23, 1947, gage height, 21.7 ft (6.61 m); maximum gage height, 23.4 ft (7.13 m) Mar. 31, 1952, backwater from ice; no flow for part of most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--According to local residents, the greatest known flood prior to 1953 occurred in June 1907 (stage unknown). Other major floods occurred in March 1913, May 1929, and March 1920 and reached stages of about 21.5 ft (6.55 m), 20.2 ft (6.16 m), and 19.7 ft (6.00 m), respectively. These stages are not comparable to stages during period of record, owing to construction of levees.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,720 ft³/s (134 m³/s) June 15, gage height, 7.42 ft (2.262 m), only peak above base of 3,000 ft³/s (85.0 m³/s); minimum daily, 0.50 ft³/s (0.014 m³/s) Aug. 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	22	7.0	4.5	1.5	43	179	88	31	42	1.8	30
2	17	20	7.0	4.0	1.5	42	209	79	25	35	.62	47
3	10	20	7.0	3.5	1.5	40	263	70	21	33	.94	48
4	8.0	20	7.0	3.5	1.5	40	242	60	19	30	1.4	31
5	9.2	18	7.0	3.0	1.5	40	186	54	17	39	2.9	20
6	6.9	18	6.5	3.0	1.5	45	435	53	15	211	7.3	21
7	12	19	6.0	2.6	1.5	60	651	56	14	90	6.2	16
8	16	20	5.4	2.2	1.5	100	483	52	11	37	4.3	14
9	16	20	5.0	2.5	1.5	350	731	48	18	26	7.9	20
10	19	19	5.0	2.6	1.5	380	1430	44	831	26	2.4	15
11	18	18	6.0	2.2	2.0	350	2550	39	546	33	.78	12
12	17	18	6.0	2.2	2.0	300	2690	37	939	26	.50	11
13	16	14	6.0	2.2	4.0	250	2380	34	901	21	.68	10
14	10	14	6.0	2.2	5.0	180	2210	31	1770	19	.76	9.9
15	14	14	6.0	2.0	6.0	150	1630	36	3460	17	67	9.0
16	18	14	7.0	2.0	7.0	250	1100	48	1820	16	205	8.2
17	13	16	7.0	2.0	8.0	190	797	26	874	7.8	44	8.6
18	17	16	7.0	2.0	9.0	120	598	25	735	6.8	24	14
19	18	14	7.0	1.8	10	65	479	41	381	5.1	18	17
20	19	15	7.0	1.8	13	150	429	34	266	4.6	16	17
21	17	15	6.0	1.8	22	140	380	30	199	3.5	15	24
22	23	14	6.0	1.8	30	171	326	28	217	3.0	19	48
23	26	13	6.0	1.8	60	159	270	24	151	8.5	21	55
24	31	12	6.0	1.8	58	171	217	21	106	15	18	84
25	37	12	6.0	1.8	55	166	189	18	84	13	14	76
26	35	12	6.0	1.8	52	137	182	16	68	18	13	41
27	35	11	6.0	1.8	50	121	161	15	57	17	18	25
28	34	10	6.0	1.8	47	118	140	36	58	8.2	24	52
29	35	9.0	6.0	1.6	---	138	121	72	56	6.4	27	102
30	32	8.0	5.5	1.6	---	80	104	41	47	3.8	27	140
31	27	---	5.0	1.5	---	85	---	35	---	3.0	20	---
TOTAL	625.1	465.0	192.4	70.9	455.0	4631	21762	1291	13737	824.7	628.48	1025.7
MEAN	20.2	15.5	6.21	2.29	16.3	149	725	41.6	458	26.6	20.3	34.2
MAX	37	22	7.0	4.5	60	380	2690	88	3460	211	205	140
MIN	6.9	8.0	5.0	1.5	1.5	40	104	15	11	3.0	.50	8.2
AC-FT	1240	922	382	141	902	9190	43160	2560	27250	1640	1250	2030
CAL YR 1976 TOTAL		92687.60	MEAN 253	MAX 5700	MIN 1.6	AC-FT 183800						
WTR YR 1977 TOTAL		45708.28	MEAN 125	MAX 3460	MIN .50	AC-FT 90660						

LITTLE MISSOURI RIVER BASIN

06337000 LITTLE MISSOURI RIVER NEAR WATFORD CITY, ND

LOCATION.--Lat 47°35'25", long 103°15'05", in NW¼SE¼SE¼ sec.35, T.148 N., R.99 W., McKenzie County, Hydrologic Unit 10110205, at bridge on U.S. Highway 85, 17 mi (27 km) upstream from Cherry Creek, and 17.5 mi (28.2 km) south of Watford City.

DRAINAGE AREA.--8,310 mi² (21,520 km²), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1934 to current year.

REVISED RECORDS (WATER YEARS).--WSP 926: 1935. WSP 1270: 1943.

GAGE.--Water-stage recorder and supplemental nonrecording gage. Datum of gage is 1,929.03 ft (587.968 m) above mean sea level. Oct. 2, 1959, to June 17, 1963, water-stage recorder at present site and datum. June 18, 1963, to Nov. 28, 1964, at site 700 ft (210 m) upstream at present datum. See WSP 1729 or 1917 for history of changes prior to Oct. 2, 1959.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--43 years, 592 ft³/s (16.77 m³/s), 428,900 acre-ft/yr (529 hm³/yr); median of yearly mean discharges, 465 ft³/s (13.2 m³/s), 336,900 acre-ft/yr (415 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 110,000 ft³/s (3,120 m³/s) Mar. 25, 1947, gage height, 24.0 ft (7.32 m) from floodmark, site then in use; no flow at times in most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,430 ft³/s (182 m³/s) June 17, gage height, 5.40 ft (1.646 m), no peak above base of 8,000 ft³/s (227 m³/s); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	24	1.0		0	10	290	230	320	128	18	145
2	21	23	.60		0	10	280	238	169	113	16	181
3	17	30	.40		0	10	300	230	131	94	16	139
4	16	31	.20		0	10	350	213	109	101	15	97
5	14	28	.10		0	50	330	178	99	76	14	78
6	14	28	0		0	80	345	192	85	76	13	60
7	14	28	0		0	360	410	185	62	66	12	51
8	13	29	0		0	400	425	159	78	46	12	109
9	12	28	0		0	550	430	145	54	46	12	256
10	12	27	0		0	830	390	139	36	45	12	505
11	12	25	0		.50	1020	636	118	34	50	11	545
12	12	22	0		2.0	1230	690	111	285	72	11	360
13	12	20	0		2.5	1120	624	99	690	76	11	199
14	11	18	0		2.0	1050	1680	99	1270	76	11	145
15	10	16	0		1.5	972	2030	104	1610	101	10	111
16	12	15	0		1.0	865	2130	85	3120	128	10	74
17	14	14	0		2.0	760	2170	70	5140	48	9.4	62
18	12	13	0		3.0	678	1960	62	3220	364	8.8	203
19	12	12	0		5.0	582	1480	166	2630	131	7.6	203
20	11	12	0		10	500	1280	121	1780	64	7.0	101
21	12	11	0		10	450	956	96	1210	45	7.0	195
22	12	11	0		20	420	830	81	1040	34	7.0	690
23	13	11	0		20	400	732	97	795	24	7.0	1040
24	14	10	0		25	365	618	99	654	20	6.5	1130
25	18	10	0		30	330	558	88	546	18	7.0	879
26	33	9.0	0		25	315	460	83	505	18	15	690
27	24	8.0	0		20	320	425	90	455	54	38	485
28	27	6.0	0		15	310	400	90	325	78	42	320
29	33	4.0	0		---	315	295	267	251	56	33	275
30	23	2.0	0		---	330	230	540	147	24	45	238
31	23	---	0		---	305	---	440	---	18	142	---
TOTAL	503	525.0	2.30	0	194.50	14947	23734	4915	26850	2290	586.3	9566
MEAN	16.2	17.5	.074	0	6.95	482	791	159	895	73.9	18.9	319
MAX	33	31	1.0	0	30	1230	2170	540	5140	364	142	1130
MIN	10	2.0	0	0	0	10	230	62	34	18	6.5	51
AC-FT	998	1040	4.6	0	386	29650	47080	9750	53260	4540	1160	18970
CAL YR 1976	TOTAL	156814.80	MEAN 428	MAX 6820	MIN 0	AC-FT 311000						
WTR YR 1977	TOTAL	84113.10	MEAN 230	MAX 5140	MIN 0	AC-FT 166800						

LITTLE MISSOURI RIVER BASIN

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06337000 LITTLE MISSOURI RIVER NEAR WATFORD CITY, ND--Continued
(National Water-Quality Accounting Network Station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1949 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: July 1972 to March 1974 (weekly), April 1974 to current year.
WATER TEMPERATURES: July 1972 to March 1974 (weekly), April 1974 to current year.
SEDIMENT RECORDS: October 1948 to September 1976 (daily).

REMARKS.--Minimum daily temperatures for current year estimated.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 4,400 micromhos Jan. 7-9, 1975; minimum daily, 465 micromhos, Feb. 26, 1976.
WATER TEMPERATURES: Maximum daily, 30.0°C June 5, 1975; minimum daily, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum daily, 25.0°C June 26, July 15; minimum daily, 0.0°C on many days during winter months.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	TURBIDITY (NTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	CHEMICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L)
OCT 11...	1410	13	1950	8.7	13.5	40	40	9.6	96	39
NOV 08...	1435	28	2200	8.8	5.0	45	--	12.0	100	--
MAR 08...	1330	332	1400	8.6	6.0	700	--	11.8	101	--
14...	1600	1073	1000	--	2.0	--	--	--	--	--
28...	1745	291	1670	--	6.0	--	--	--	--	--
APR 12...	1045	692	1400	8.6	11.5	2200	2200	10.4	100	170
MAY 11...	0900	108	1600	8.5	18.0	35	34	9.0	102	19
JUN 07...	1045	64	1960	8.2	24.5	340	340	8.2	105	77
16...	2010	3710	1090	--	19.0	--	--	--	--	--
JUL 12...	1035	93	1500	8.5	16.0	5800	5800	9.0	97	230
AUG 09...	0855	12	2050	8.6	18.5	35	31	8.2	93	28
SEP 14...	0945	154	1180	8.3	14.0	10000	10000	8.2	85	420

DATE	FECAL COLIFORMS (COL./100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	FECAL STREPTOCOCCI (COL. PER 100 ML)	HARDNESS (CA, MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM
OCT 11...	B23	B18	--	430	67	95	47	330	62
NOV 08...	B23	--	B10	420	80	92	47	380	65
MAR 08...	B110	--	B510	190	0	40	23	260	73
14...	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--
APR 12...	B225	--	B306	240	38	53	27	240	67
MAY 11...	B26	--	B36	380	100	89	39	260	59
JUN 07...	B355	--	B182	290	15	70	29	370	72
16...	--	--	--	--	--	--	--	--	--
JUL 12...	110	--	76	180	0	45	16	300	77
AUG 09...	B25	--	B13	370	0	81	40	390	69
SEP 14...	B220	--	B180	120	0	31	11	220	78

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

LITTLE MISSOURI RIVER BASIN

06337000 LITTLE MISSOURI RIVER NEAR WATFORD CITY, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	ALKA- LITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)	TOTAL FLUO- RIDE (F) (MG/L)
OCT									
11...	6.9	12	444	0	364	1.4	750	10	.3
NOV									
08...	8.0	11	404	7	343	1.1	880	17	--
MAR									
08...	8.1	9.0	259	0	212	1.0	500	8.1	--
14...	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--
APR									
12...	6.7	8.2	250	0	210	1.0	530	9.3	1.7
MAY									
11...	5.8	10	320	11	280	1.7	630	10	.5
JUN									
07...	9.4	12	340	0	280	3.4	800	9.5	1.0
16...	--	--	--	--	--	--	--	--	--
JUL									
12...	9.8	10	280	0	230	1.4	570	16	4.8
AUG									
09...	8.9	13	450	11	390	1.9	820	10	.4
SEP									
14...	8.6	7.5	230	0	190	1.8	410	8.8	5.2

DATE	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO2) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)
OCT									
11...	.4	10	1460	1470	1.99	51.2	.07	.00	.07
NOV									
08...	.3	7.2	1670	1640	2.27	126	--	--	.03
MAR									
08...	.3	5.3	1010	973	1.37	905	--	--	.60
14...	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--
APR									
12...	.5	6.7	1010	998	1.37	1890	.93	.04	.97
MAY									
11...	.5	10	1230	1220	1.67	359	.00	.01	.01
JUN									
07...	.5	7.6	1480	1470	2.01	256	.02	.01	.03
16...	--	--	--	--	--	--	--	--	--
JUL									
12...	.5	10	1140	1110	1.55	286	.87	.02	.89
AUG									
09...	.4	11	1580	1600	2.15	51.2	.00	.01	.01
SEP									
14...	.5	8.2	814	810	1.11	338	1.6	.02	1.6

DATE	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L)	TOTAL NITRO- GEN (N) (MG/L)	TOTAL NITRO- GEN (NO3) (MG/L)	TOTAL PHOS- PHORUS (P) (MG/L)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L)	TOTAL ALUM- INUM (AL) (UG/L)	TOTAL ARSENIC (AS) (UG/L)	SUS- PENDEd ARSENIC (AS) (UG/L)	DIS- SOLVED ARSENIC (AS) (UG/L)	TOTAL BARIUM (BA) (UG/L)	TOTAL BERYL- LIUM (BE) (UG/L)	TOTAL BORON (B) (UG/L)
OCT												
11...	.70	.77	3.4	.06	--	700	2	--	--	0	0	270
NOV												
08...	.59	.62	2.7	.09	--	--	5	0	5	--	--	--
MAR												
08...	2.0	2.6	12	.83	--	--	--	--	--	--	--	--
APR												
12...	2.4	3.4	15	1.3	--	48000	55	--	--	800	10	310
MAY												
11...	.31	.32	1.4	.04	--	660	1	--	2	0	0	350
JUN												
07...	2.2	2.2	9.9	.43	--	9000	9	--	--	200	10	400
JUL												
12...	7.3	8.2	36	3.4	--	110000	160	--	--	1200	10	280
AUG												
09...	1.2	1.2	5.4	.05	--	560	3	2	1	400	0	390
SEP												
14...	.08	1.7	7.4	17	.04	220000	160	--	--	1400	0	510

LITTLE MISSOURI RIVER BASIN

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WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL CADMIUM (CD) (UG/L)	SUSPENDED CADMIUM (CD) (UG/L)	DISSOLVED CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	SUSPENDED CHROMIUM (CR) (UG/L)	DISSOLVED CHROMIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	SUSPENDED COBALT (CO) (UG/L)	DISSOLVED COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	SUSPENDED COPPER (CU) (UG/L)	DISSOLVED COPPER (CU) (UG/L)
OCT 11...	<10	--	--	10	--	--	<50	--	--	10	--	--
NOV 08...	<10	<10	0	0	0	0	<50	<50	0	<10	<9	1
MAR 08...	--	--	--	--	--	--	--	--	--	--	--	--
APR 12...	<10	--	--	90	--	--	100	--	--	160	--	--
MAY 11...	<10	<9	1	--	--	0	<50	--	0	10	6	4
JUN 07...	10	--	--	20	--	--	<50	--	--	40	--	--
JUL 12...	10	--	--	240	--	--	200	--	--	420	--	--
AUG 09...	10	7	3	0	0	0	<50	<49	1	10	4	6
SEP 14...	20	--	--	330	--	--	300	--	--	540	--	--

DATE	TOTAL IRON (FE) (UG/L)	DISSOLVED IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	SUSPENDED LEAD (PB) (UG/L)	DISSOLVED LEAD (PB) (UG/L)	TOTAL LITHIUM (LI) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	SUSPENDED MANGANESE (MN) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	SUSPENDED MERCURY (HG) (UG/L)
OCT 11...	1400	--	<100	--	--	70	60	--	--	.0	--
NOV 08...	2300	50	100	100	0	--	80	60	20	.2	.0
APR 12...	110000	--	200	--	--	140	2200	--	--	.4	--
MAY 11...	1400	30	100	99	1	70	50	--	0	.0	--
JUN 07...	19000	--	<100	--	--	70	490	--	--	.3	--
JUL 12...	27000	--	300	--	--	190	6100	--	--	1.0	--
AUG 09...	1400	50	<100	<94	6	80	60	60	0	.0	.0
SEP 14...	83000	--	400	--	--	320	7200	--	--	1.2	--

DATE	DISSOLVED MERCURY (HG) (UG/L)	TOTAL MOLYBDENUM (MO) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	SUSPENDED SELENIUM (SE) (UG/L)	DISSOLVED SELENIUM (SE) (UG/L)	TOTAL SILVER (AG) (UG/L)	TOTAL ZINC (ZN) (UG/L)	SUSPENDED ZINC (ZN) (UG/L)	DISSOLVED ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)
OCT 11...	--	4	<50	1	--	--	<10	10	--	--	11
NOV 08...	.2	--	--	0	0	0	--	10	0	10	8.3
APR 12...	--	0	200	4	--	--	<10	430	--	--	47
MAY 11...	.0	2	50	1	0	1	<10	110	--	100	7.5
JUN 07...	--	4	50	2	--	--	<10	80	--	--	21
JUL 12...	--	2	500	6	--	--	<10	1200	--	--	62
AUG 09...	.0	5	50	11	10	1	<10	8	2	6	13
SEP 14...	--	1	650	7	--	--	10	1600	--	--	125

DATE	TOTAL ALDRIN (UG/L)	ALDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ATRAZINE (UG/L)	ATRAZINE IN BOTTOM MATERIAL (UG/KG DRY SOLIDS)	TOTAL CHLORDANE (UG/L)	CHLORDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDD (UG/L)	DDD IN BOTTOM MATERIAL (UG/KG)	TOTAL DDE (UG/L)	DDE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDT (UG/L)	DDT IN BOTTOM MATERIAL (UG/KG)
NOV 08...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAY 11...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 09...	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--

Whole water ND - Not detected at 0.01 µg/L level.
 Bed material ND - NOT detected at 0.1 µg/mg level.

LITTLE MISSOURI RIVER BASIN

06337000 LITTLE MISSOURI RIVER NEAR WATFORD CITY, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL DI- AZINON (UG/L)	DI- AZINON IN BOTTOM MA- TERIAL (UG/KG)	TOTAL DI- ELDRIN (UG/L)	DI- ELDRIN IN BOTTOM MA- TERIAL (UG/KG)	TOTAL ENDRIN (UG/L)	ENDRIN IN BOTTOM MA- TERIAL (UG/KG)	TOTAL ETHION (UG/L)	ETHION IN BOTTOM MA- TERIAL (UG/KG)	TOTAL HEPTA- CHLOR (UG/L)	HEPTA- CHLOR IN BOTTOM MA- TERIAL (UG/KG)	TOTAL HEPTA- CHLOR EPOXIDE (UG/L)	HEPTA- CHLOR EPOXIDE IN BOT- TOM MA- TERIAL (UG/KG)
NOV 08...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAY 11...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 09...	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--

DATE	TOTAL LINDANE (UG/L)	LINDANE IN BOTTOM MA- TERIAL (UG/KG)	TOTAL MALA- THION (UG/L)	MALA- THION IN BOTTOM MA- TERIAL (UG/KG)	TOTAL METHO- XY- CHLOR (UG/L)	METHOXY- CHLOR IN BOT- TOM MA- TERIAL (UG/KG)	TOTAL METHYL PARA- THION (UG/L)	METHYL PARA- THION IN BOT- TOM MA- TERIAL (UG/KG)	TOTAL METHYL TRI- THION (UG/L)	METHYL TRI- THION IN BOT- TOM MA- TERIAL (UG/KG)	TOTAL PARA- THION (UG/L)
NOV 08...	.01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAY 11...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 09...	.01	--	ND	--	ND	--	ND	--	ND	--	ND

DATE	PARA- THION IN BOTTOM MA- TERIAL (UG/KG)	SIMA- ZINE TOTAL COUL- SON COND. (UG/L)	SIMA- ZINE IN BOTTOM MATERI- AL (UG/ KG DRY SOLIDS)	TOTAL TOX- APHENE (UG/L)	TOX- APHENE IN BOTTOM MA- TERIAL (UG/KG)	TOTAL TRI- THION (UG/L)	TRI- THION IN BOTTOM MA- TERIAL (UG/KG)	TOTAL 2,4-D (UG/L)	2,4-D IN BOTTOM MA- TERIAL (UG/KG)	TOTAL 2,4,5-T (UG/L)	2,4,5-T IN BOTTOM MA- TERIAL (UG/KG)
NOV 08...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAY 11...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 09...	--	ND	--	ND	--	ND	--	ND	--	ND	--

DATE	TOTAL SILVEX (UG/L)	SILVEX IN BOTTOM MA- TERIAL (UG/KG)	SUS- PEN- DED SEDI- MENT (MG/L)	SUS- PEN- DED SEDI- MENT DIS- CHARGE (T/DAY)	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM	BED MAT. FALL DIAM. % FINER THAN .062 MM	BED MAT. FALL DIAM. % FINER THAN .125 MM	BED MAT. FALL DIAM. % FINER THAN .250 MM
OCT 11...	--	--	117	4.1	97	2	6	46
NOV 08...	ND	ND	164	12	98	--	--	--
MAR 08...	--	--	1820	1630	98	--	--	--
APR 12...	--	--	4910	9170	97	--	--	--
MAY 11...	ND	ND	84	24	94	--	--	--
JUN 07...	--	--	522	90	99	--	--	--
JUL 12...	--	--	14100	3540	100	--	--	--
AUG 09...	ND	--	134	4.3	99	--	--	--
SEP 14...	--	--	5590	2320	99	--	--	--

DATE	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
OCT 11...	64	71	76	82	90	95	100

Whole water ND - Not detected at 0.01 µg/L level.
Bed material ND - Not detected at 0.1 µg/mg level.

LITTLE MISSOURI RIVER BASIN

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06337000 LITTLE MISSOURI RIVER NEAR WATFORD CITY, ND--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1700										---	1300
2	1850										---	1200
3	1770										---	1400
4	1820										---	1500
5	1820										---	1500
6	1870										---	1400
7	1870										---	1000
8	1900										---	1400
9	1900										---	1200
10	1870										---	1100
11	1920										---	1200
12	1950										---	1150
13	2000										---	1190
14	2050										---	1100
15	2030										---	990
16	2200										2050	1130
17	1950										1950	1100
18	1900										2100	1100
19	2050										1800	1200
20	2120										2100	1050
21	2170										2050	1200
22	2050										1980	850
23	2120										---	1200
24	2100										2000	1050
25	2100										2050	990
26	---										2180	1000
27	2000										2800	1050
28	2150										2210	1090
29	---										2000	1100
30	---										1950	1200
31	---										---	---

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15.0	---	3.0			---	4.0	13.0	16.0	15.0	20.0	12.0
2	15.0	4.0	3.0			---	4.0	12.0	18.0	20.0	16.0	12.0
3	15.0	3.5	2.5			---	5.0	14.0	17.0	20.0	17.0	10.0
4	7.0	4.0	4.5			---	5.0	17.0	17.0	22.0	15.0	15.0
5	4.0	3.5	4.0			---	4.0	11.0	18.0	24.0	14.0	17.0
6	7.0	4.0	---			---	5.0	10.0	17.0	22.0	21.0	18.0
7	4.0	4.0	---			---	5.0	10.0	19.0	19.0	17.0	17.0
8	5.0	5.5	---			---	10.0	19.0	17.0	15.0	19.0	14.0
9	5.0	3.5	---			3.0	11.0	19.0	16.0	23.0	20.0	12.0
10	5.0	3.5	---			4.0	13.0	20.0	22.0	21.0	14.0	12.0
11	5.0	4.0	---			3.0	11.5	18.0	16.0	23.0	12.0	13.0
12	8.0	3.0	---			3.0	12.0	17.0	16.0	16.0	17.0	16.0
13	7.0	2.5	---			3.0	11.5	19.0	15.0	21.0	17.0	13.0
14	7.0	3.5	---			3.0	11.0	17.0	15.0	17.0	12.0	15.0
15	4.5	3.5	---			3.0	10.0	19.0	17.0	25.0	16.0	16.0
16	2.0	4.0	---			2.0	10.0	18.0	19.0	20.0	16.0	15.0
17	2.0	4.5	---			4.0	9.5	16.0	19.0	23.0	17.0	16.0
18	4.0	3.5	---			4.5	10.0	16.5	19.0	22.0	15.0	12.0
19	4.0	3.0	---			1.0	11.0	14.0	20.5	22.0	16.0	10.0
20	3.0	2.0	---			1.0	10.0	17.0	19.0	19.0	15.0	12.0
21	4.0	2.0	---			2.0	9.0	18.0	18.0	20.0	14.0	13.0
22	4.0	4.0	---			4.0	12.0	16.0	20.0	19.0	17.0	11.0
23	2.0	2.0	---			2.0	12.5	17.0	23.0	20.0	21.0	13.0
24	5.0	2.0	---			4.0	12.0	21.0	20.0	22.0	15.0	11.0
25	4.0	2.5	---			4.0	13.5	24.0	24.0	17.0	21.0	12.0
26	---	4.0	---			3.0	13.5	24.0	25.0	18.0	18.0	13.0
27	2.5	2.0	---			3.0	17.0	19.0	22.0	20.0	15.0	9.0
28	3.5	4.0	---			2.0	12.0	15.0	20.0	19.0	13.0	12.0
29	---	2.0	---			4.0	12.5	13.0	21.0	19.0	15.0	11.0
30	---	3.5	---			2.0	18.0	15.0	15.0	20.0	15.0	9.0
31	---	---	---			4.0	---	13.0	---	14.0	18.0	---

06337000 LITTLE MISSOURI RIVER NEAR WATFORD CITY, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	OCT 11,76 1410	MAR 8,77 1330	MAY 11,77 0900	JUN 7,77 1045
TOTAL CELLS/ML	25000	28	23000	59000
DIVERSITY: DIVISION	1.1	0.0	0.8	1.5
..CLASS	1.1	0.0	0.8	1.5
...ORDER	1.1	0.0	1.0	1.8
...FAMILY	2.0	1.0	1.3	2.1
....GENUS	2.4	1.0	1.5	2.4

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
...CHARACIACEAE								
...SCHROEDERIA	--	-	--	-	--	-	8300	14
...COELASTRACEAE								
...COELASTRUM	--	-	--	-	--	-	--	-
...MICRACETINIAEAE								
...MICRACETINIUM	620	2	--	-	--	-	--	-
...OOCYSTACEAE								
...ANKISTRODESMUS	1000	4	--	-	17000#	73	350	1
...CHODATELLA	1100	5	--	-	--	-	350	1
...DICTYOSPHAERIUM	3100	12	--	-	--	-	2100	4
...FRANCIA	--	-	--	-	--	-	--	-
...KIRCHNERIELLA	210	1	--	-	--	-	--	-
...OOCYSTIS	410	2	--	-	--	-	--	-
...SELENASTRUM	--	-	--	-	--	-	--	-
...TREUBARIA	*	0	--	-	--	-	*	0
...SCENEDESMACEAE								
...ACTINASTRUM	830	3	--	-	1100	5	--	-
...CRUCIGENIA	--	-	--	-	270	1	--	-
...SCENEDESMUS	--	-	--	-	--	-	3900	7
...VOLVOCALES								
...CHLAMYDOMONADACEAE								
...CHLAMYDOMONAS	210	1	--	-	--	-	--	-
CHRYSDOPHYTA								
..BACILLARIOPHYCEAE								
..CENTRALES								
..COSCINODISCAEAE								
...CYCLOTELLA	--	-	--	-	--	-	--	-
..PENNALES								
...NAVICULACEAE								
...NAVICULA	410	2	14#	50	--	-	--	-
...NITZSCHIAEAE								
...NITZSCHIA	410	2	14#	50	130	1	26000#	44
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROCOCCALES								
...CHROCOCCAEAE								
...AGMENELLUM	--	-	--	-	1100	5	11000#	18
...ANACYSTIS	--	-	--	-	1800	8	4200	7
...HORMOGONIALES								
...NOSTOCACEAE								
...ANABAENA	--	-	--	-	--	-	--	-
...ANABAENOPSIS	--	-	--	-	--	-	--	-
...CYLINDROSPERMUM	--	-	--	-	--	-	--	-
...OSCILLATORIAEAE								
...OSCILLATORIA	4100#	17	--	-	1700	7	3200	5
...RIVULARIAEAE								
...RAPHIIDOPSIS	12000#	50	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENIIDS)								
..EUGLENOPHYCEAE								
..EUGLENALES								
...EUGLENACEAE								
...EUGLENA	--	-	--	-	*	0	--	-
...PHACUS	--	-	--	-	*	0	--	-
PYRRHOPHYTA (FIRE ALGAE)								
..DINOPHYCEAE								
..PERIDINIALES								
...PERIDINIAEAE								
...PERIDINIUM	--	-	--	-	--	-	--	-

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

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

06337000 LITTLE MISSOURI RIVER NEAR WATFORD CITY, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	JUL 12,77 1935	AUG 9,77 0855	SEP 14,77 0945
TOTAL CELLS/ML	76000	3600	89000
DIVERSITY: DIVISION	0.3	1.2	0.5
..CLASS	0.3	1.2	0.5
...ORDER	0.3	1.9	0.5
...FAMILY	1.3	2.0	1.1
....GENUS	1.3	2.1	1.1

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)						
..CHLOROPHYCEAE						
...CHLOROCOCCALES						
...CHARACIACEAE						
...SCHROEDERIA	--	--	--	--	--	--
...COELASTRACEAE						
...COELASTRUM	2700	4	--	--	--	--
...MICRACTINIACEAE						
...MICRACTINIUM	--	--	--	--	--	--
...OOCYSTACEAE						
...ANKISTRODESMUS	--	--	630#	18	--	--
...CHODATELLA	--	--	--	--	--	--
...DICTYOSPHAERIUM	--	--	--	--	--	--
...FRANCEIA	--	--	39	1	--	--
...KIRCHNERIELLA	--	--	--	--	--	--
...OOCYSTIS	--	--	--	--	--	--
...SELENASTRUM	--	--	--	--	--	--
...TREUBARIA	--	--	--	--	--	--
...SCENEDESMACEAE						
...ACTINASTRUM	--	--	--	--	--	--
...CRUCIGENIA	--	--	--	--	--	--
...SCENEDESMUS	--	--	39	1	--	--
...VOLVOCALES						
...CHLAMYDOMONADACEAE						
...CHLAMYDOMONAS	--	--	--	--	--	--
CHRYSTOPHYTA						
..BACILLARIOPHYCEAE						
..CENTRALES						
...COSCINODISCACEAE						
...CYCLOTELLA	--	--	39	1	--	--
..PENNALES						
...NAVICULACEAE						
...NAVICULA	--	--	--	--	2900	3
...NITZSCHACEAE						
...NITZSCHIA	1400	2	260	7	5700	6
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...CHROCOCCALES						
...CHROCOCCACEAE						
...AGMENELLUM	--	--	--	--	--	--
...ANACYSTIS	--	--	1600#	43	--	--
...HORMOGONALES						
...NOSTOCACEAE						
...ANABAENA	--	--	--	--	11000	13
...ANABAENOPSIS	42000#	55	--	--	--	--
...CYLINDROSPERMUM	--	--	970#	27	--	--
...OSCILLATORIA						
...OSCILLATORIA	30000#	40	--	--	69000#	77
...RIVULARIACEAE						
...RAPHIDIOPSIS	--	--	--	--	--	--
EUGLENOPHYTA (EUGLENOIDS)						
..EUGLENOPHYCEAE						
...EUGLENALES						
...EUGLENACEAE						
...EUGLENA	--	--	--	--	--	--
...PHACUS	--	--	--	--	--	--
PYRRHOPHYTA (FIRE ALGAE)						
..DINOPHYCEAE						
...PERIDINIALES						
...PERIDINIACEAE						
...PERIDINIUM	--	--	59	2	--	--

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

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

PERIPHYTON

Date	Length of exposure (days)	Biomass (mg/m ²)		Chlorophyll a (mg/m ²)	Chlorophyll b (mg/m ²)	Biomass pigment ratio	Sampling method
		Dry weight	Ash weight				
Nov. 8	40	6,385	5,692	.184	.018	3,766	Polyethylene strip
July 12	62	2,710	2,060	.061	.008	2,060	Polyethylene strip
Sept. 14	30	551	551	.000	.000	--	Polyethylene strip

MISSOURI RIVER MAIN STEM

06338000 LAKE SAKAKAWEA NEAR RIVERDALE, ND

LOCATION.--Lat 47°30'10", long 101°25'50", in S½ sec.31, T.147 N., R.84 W., Mercer County, Hydrologic Unit 10110101, in control structure of Garrison Dam, 2.5 mi (4.0 km) west of Riverdale and 14 mi (23 km) upstream from Knife River at mile 1,389.9 (kilometer 2,236.3).

DRAINAGE AREA.--181,400 mi² (469,800 km²), approximately.

PERIOD OF RECORD.--October 1953 to current year. Prior to October 1966, published as Garrison Reservoir near Riverdale.

REVISED RECORDS.--WSP 1559: 1957(M).

GAGE.--Water-stage recorder. Datum of gage is at mean sea level.

REMARKS.--Reservoir is formed by earth-fill dam; storage began in November 1953. Maximum capacity, 24,200,000 acre-ft (29.8 km³) below elevation 1,854.0 ft (565.10 m), top of 29-ft (8.84 m) gates. Normal maximum, 22,700,000 acre-ft (28.0 km³) below elevation 1,850.0 ft (563.88 m), of which about 4,300,000 acre-ft (5.30 km³) is designated for flood control. Elevation of crest of spillway, 1,825.0 ft (556.26 m), surmounted by radial gates. Inactive storage, 5,000,000 acre-ft (6.16 km³) below elevation 1,775.0 ft (541.02 m). Dead storage, zero at elevation 1,672.0 ft (509.63 m). Snake Creek arm of the reservoir has connecting gate to main reservoir, with sill at elevation, 1,810 ft (551.69 m). Figures herein represent total contents.

COOPERATION.--Elevation and contents furnished by Corps of Engineers from capacity table dated July 1971. Elevations are those observed; contents are adjusted for wind effect.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 24,368,000 acre-ft (30.0 km³) July 25, 1975, elevation, 1,854.6 ft (565.28 m); minimum since first reaching spillway level, 12,527,000 acre-ft (15.4 km³) March 17, 1963, elevation, 1,816.4 ft (553.64 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 20,809,000 acre-ft (25.7 km³) Oct. 1, elevation, 1,844.9 ft (562.33 m); minimum, 17,644,000 acre-ft (21.8 km³) Sept. 30, elevation, 1,835.2 ft (559.37 m).

MONTHEND ELEVATION AND CONTENTS, AT 2400, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30-----	1845.1	20,829,000	--
Oct. 31-----	1843.5	20,310,000	-519,000
Nov. 30-----	1841.7	19,642,000	-668,000
Dec. 31-----	1840.0	19,142,000	-500,000
CAL YR 1976-----	--	--	-654,000
Jan. 31-----	1837.3	18,292,000	-850,000
Feb. 28-----	1836.2	17,925,000	-367,000
Mar. 31-----	1836.1	17,921,000	-4,000
Apr. 30-----	1835.8	17,780,000	-141,000
May 31-----	1836.0	17,873,000	+93,000
June 30-----	1837.7	18,446,000	+573,000
July 31-----	1836.9	18,164,000	-282,000
Aug. 31-----	1835.6	17,733,000	-431,000
Sept. 30-----	1835.2	17,644,000	-89,000
WTR YR 1977-----	--	--	-3,185,000

MISSOURI RIVER MAIN STEM

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06338490 MISSOURI RIVER AT GARRISON DAM, ND

LOCATION.--Lat 47°30'08", long 101°25'50", in S½ sec.31, T.147 N., R.84 W., Mercer County, Hydrologic Unit 10130101, downstream from dam at National Fish Hatchery's supply line from penstocks 4 and 5, in control structure of Garrison Dam, 2.5 mi (4.0 km) west of Riverdale and 14 mi (23 km) upstream from Knife River at mile 1,389.9 (kilometer 2,236.3).

DRAINAGE AREA.--181,400 mi² (469,800 km²), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1969 to current year.

GAGE.--Flow meter and gate readings.

REMARKS.--Records good. Many diversions above station. Flow regulated by Lake Sakakawea (station 06338000). Prior to October 1969 records were obtained at a site 9.1 mi (14.6 km) downstream. Discharges at the downstream site were generally about 7 percent greater than those furnished by the Corps of Engineers for the present site.

COOPERATION.--Records furnished by the Corps of Engineers.

AVERAGE DISCHARGE.--8 years, 26,730 ft³/s (757 m³/s), 19,370,000 acre-ft/yr (23.9 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 65,200 ft³/s (1,850 m³/s) July 25, 1975; minimum daily, 6,000 ft³/s (170 m³/s) Sept. 29, 1974.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 33,800 ft³/s (957 m³/s) Dec. 4, 6; minimum daily, 13,400 ft³/s (379 m³/s) Oct. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25700	24800	32900	26100	31000	24700	15800	16400	15100	16000	17200	14600
2	27300	25300	33200	26600	30800	24900	15900	16600	14700	16200	17300	15100
3	21200	25900	33100	27800	30400	24400	14000	16400	15000	16700	16900	14100
4	26600	27600	33800	28200	32000	24600	16700	17200	15500	16300	15900	15200
5	24900	28400	33400	28300	32400	25100	16000	16300	15200	17300	16900	15000
6	25700	28100	33800	29600	31700	24800	16200	15900	14900	17800	15900	14900
7	25700	29500	33400	28900	32200	24500	16100	16400	14800	16900	16900	14700
8	26500	29600	27900	28600	30700	23100	16100	16600	14700	17000	15800	15100
9	24400	29400	19900	29000	30500	23000	13800	16000	15100	15900	15900	14800
10	13400	29400	16800	29000	29500	22900	13900	16100	15600	17400	15800	14900
11	25300	29300	20000	29700	29100	21600	14200	16400	15500	18900	16000	14900
12	25500	29000	18200	29500	28700	21400	16100	16500	15000	18800	15900	15000
13	28300	29800	17600	29500	27900	20600	14100	16200	14900	18600	15900	15000
14	26400	29700	17700	29500	28500	21900	16100	16500	14700	18000	16000	14900
15	26400	29800	17500	29300	26700	19900	16100	16400	15800	17400	16000	14800
16	25800	28300	18600	29500	27100	20000	15200	16200	15800	18000	15700	15500
17	26200	28400	18400	30000	27300	20700	16200	15200	15700	18200	16100	14700
18	27200	29400	19900	29800	27400	20400	16300	15100	15900	18900	16200	14100
19	25800	29100	19800	29600	24600	18300	16000	15500	16000	19600	16200	14100
20	24100	29800	20100	29200	25300	18300	15900	15200	15700	17900	16200	14400
21	25000	29700	20500	29200	24500	19000	18500	14600	15600	17100	16200	14100
22	24900	29700	21300	29200	24900	18300	18400	15200	15600	17200	16100	14700
23	25100	31300	21200	28600	24900	18500	17900	15300	16100	16700	16100	14100
24	25500	33300	22500	29500	24800	17300	16400	15200	16100	16800	16100	13800
25	25500	32500	22100	29100	24900	16900	18300	15200	16000	16500	16300	14100
26	26000	32400	23500	29700	24900	17000	18000	15100	15700	17200	17100	14200
27	26200	33500	23400	30000	25100	15800	16000	15000	15600	15900	16500	14000
28	25700	32600	24300	31400	24900	16800	16000	15200	15700	15900	16600	14000
29	25400	28600	24400	32600	---	16100	16000	15000	15900	18700	16300	13700
30	25400	33500	24600	30800	---	15600	16100	15000	15900	18300	16700	14000
31	22800	---	24500	31000	---	15800	---	15400	---	17000	14800	---
TOTAL	779900	887700	738300	908800	782700	632200	482300	489300	463800	539100	503500	436500
MEAN	25160	29590	23820	29320	27950	20390	16080	15780	15460	17390	16240	14550
MAX	28300	33500	33800	32600	32400	25100	18500	17200	16100	19600	17300	15500
MIN	13400	24800	16800	26100	24500	15600	13800	14600	14700	15900	14800	13700
AC-FT	1547000	1761000	1464000	1803000	1552000	1254000	956600	970500	919900	1069000	998700	865800
CAL YR 1976	TOTAL	11000800	MEAN	30060	MAX	39100	MIN	13400	AC-FT	21820000		
WTR YR 1977	TOTAL	7644100	MEAN	20940	MAX	33800	MIN	13400	AC-FT	15160000		

MISSOURI RIVER MAIN STEM

06338490 MISSOURI RIVER AT GARRISON DAM, ND--Continued
(National Water-Quality Accounting Network Station)

WATER-QUALITY RECORDS

LOCATION.--Samples collected at National Fish Hatchery's supply line from penstocks 4 and 5, in control structure of Garrison Dam.

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

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1971 to current year.

WATER TEMPERATURES: October 1971 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 830 micromhos Mar. 5-8, 1974; minimum daily, 553 micromhos Dec. 24, 1975.

WATER TEMPERATURES: Maximum daily, 16.0°C Sept. 19, 1975; minimum daily, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 655 micromhos Mar. 31, Apr. 12, 14, 21 Sept. 6; minimum daily, 590 micromhos June 26.

WATER TEMPERATURES: Maximum daily, 15.0°C Sept. 9-16, 23, Oct. 1; minimum daily, 0.5°C on many days during winter months.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	AIR TEMPERATURE (DEG C)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	TURBIDITY (NTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION
NOV 01...	1730	24800	640	8.5	14.0	10.0	4	2	1.8	9.8	93
DEC 01...	1430	32900	650	8.6	--	4.0	7	3	--	11.6	94
30...	1215	24600	640	8.4	--	.0	4	1	--	13.0	95
JAN 19...	1300	29600	650	8.1	--	.0	8	1	--	12.8	94
MAR 01...	1200	24700	660	8.2	--	1.0	9	8	--	12.4	93
30...	1100	15600	685	8.3	--	1.5	5	2	1.7	11.6	88
APR 22...	1135	18400	640	8.6	--	2.5	3	0	.45	13.7	107
MAY 31...	1235	15400	645	8.4	--	6.5	6	1	.50	11.6	100
JUN 21...	1400	15600	640	8.3	--	9.0	7	2	2.2	10.2	94
JUL 26...	1230	26700	620	8.2	18.0	12.0	4	1	.80	8.5	84
SEP 01...	1000	14600	650	8.2	--	15.0	6	2	2.5	7.4	75
22...	1415	14700	635	8.3	--	15.0	6	2	1.8	7.7	81

DATE	CHEMICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L)	BIO-CHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	FECAL STREPTOCOCCI (100 ML)	HARDNESS (CA, MG)	NON-CARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	DISSOLVED PHOSPHATE (K) (MG/L)
NOV 01...	8	.4	B14	210	68	53	20	57	36	1.7	4.0
DEC 01...	--	.5	--	220	70	52	21	56	36	1.7	4.0
30...	--	.4	B1	240	92	51	28	55	33	1.5	4.1
JAN 19...	--	.3	<1	230	82	51	24	57	35	1.7	4.1
MAR 01...	--	.3	<1	210	62	52	20	58	37	1.7	4.0
30...	4	.6	<1	220	69	55	21	57	35	1.7	4.0
APR 22...	16	1.3	B7	210	60	51	20	56	36	1.7	3.9
MAY 31...	19	1.7	<1	220	74	54	21	57	35	1.7	3.8
JUN 21...	12	1.3	<1	220	69	55	21	58	36	1.7	3.7
JUL 26...	11	.9	B1	230	70	56	21	57	35	1.6	3.8
SEP 01...	21	--	B9	220	63	53	21	56	35	1.6	3.8
22...	15	.8	B1	220	74	54	21	55	35	1.6	3.9

06338490 MISSOURI RIVER AT GARRISON DAM, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	BICARBONATE (HCO ₃) (MG/L)	CARBONATE (CO ₃) (MG/L)	ALKALINITY AS CaCO ₃ (MG/L)	CARBON DIOXIDE (CO ₂) (MG/L)	DIS- SOLVED SULFATE (SO ₄) (MG/L)	DIS- SOLVED CHLORIDE (CL) (MG/L)	TOTAL FLUORIDE (F) (MG/L)	DIS- SOLVED FLUORIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO ₂) (MG/L)	DIS- SOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)
NOV 01...	179	0	147	.9	190	8.9	.7	.5	6.6	428
DEC 01...	179	0	147	.7	180	8.6	--	.5	6.2	411
30...	184	0	151	1.2	180	8.8	--	.5	7.6	410
JAN 19...	176	0	144	2.2	170	8.7	--	.5	7.1	417
MAR 01...	183	0	150	1.8	170	8.6	--	.5	7.5	413
30...	190	0	160	1.5	170	8.9	.7	.5	7.9	434
APR 22...	180	1	150	.7	160	8.5	1.0	.6	7.9	412
MAY 31...	180	0	150	1.1	190	8.8	.3	.0	.6	414
JUN 21...	190	0	160	1.5	170	8.4	.6	.5	9.6	421
JUL 26...	190	0	160	1.9	170	8.8	.5	.5	8.1	408
SEP 01...	190	0	160	1.9	180	8.8	.5	.5	7.2	417
22...	180	0	150	1.4	180	9.0	.5	.6	8.8	418

DATE	TOTAL FILT- RABLE RESIDUE (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	TOTAL NON- FILT- RABLE RESIDUE (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO- GEN (N) (MG/L)
NOV 01...	--	429	.58	28700	--	.14	.01	.15	.15	.00
DEC 01...	--	418	.56	36500	--	--	--	.22	.25	.00
30...	--	427	.56	27200	--	--	--	.15	.15	.00
JAN 19...	--	410	.57	33300	--	--	--	.15	.15	.01
MAR 01...	--	412	.56	27500	--	--	--	.15	.15	.01
30...	--	420	.59	18300	--	.10	.01	.11	.10	.02
APR 22...	--	398	.56	20500	--	.07	.00	.07	.08	.01
MAY 31...	--	424	.56	17200	--	.09	.00	.09	.08	.03
JUN 21...	--	421	.57	17700	--	.11	.00	.11	.09	.02
JUL 26...	--	420	.55	29400	--	.08	.01	.09	.15	.00
SEP 01...	--	425	.57	16400	--	.10	.01	.11	.12	.00
22...	440	421	.57	16600	1	.15	.01	.16	--	.00

DATE	TOTAL ORGANIC NITRO- GEN (N) (MG/L)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L)	TOTAL NITRO- GEN (N) (MG/L)	TOTAL NITRO- GEN (NO ₃) (MG/L)	TOTAL PHOS- PHORUS (P) (MG/L)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L)	TOTAL ORTHOPHOS- PHORUS (P) (MG/L)	DIS- SOLVED ORTHOPHOS- PHORUS (P) (MG/L)	DIS- SOLVED ORTHOPHOS- PHATE (PO ₄) (MG/L)	TOTAL HYDRO- LYZABLE PHOS- PHORUS (P) (MG/L)
NOV 01...	.13	.13	.28	1.2	.00	.00	--	--	--	--
DEC 01...	.20	.20	.42	1.9	.01	.01	--	--	--	--
30...	.21	.21	.36	1.6	.00	.00	--	--	--	--
JAN 19...	.02	.03	.18	.80	.00	.00	--	--	--	--
MAR 01...	.14	.15	.30	1.3	.02	.02	--	--	--	--
30...	.19	.21	.32	1.4	.03	.00	--	--	--	--
APR 22...	.17	.18	.25	1.1	.02	.02	--	--	--	--
MAY 31...	.00	.00	.09	.40	.01	.00	--	--	--	--
JUN 21...	.00	.00	.11	.49	.00	.00	--	--	--	--
JUL 26...	.20	.20	.29	1.3	.01	.01	--	.02	.06	--
SEP 01...	.12	.12	.23	1.0	.00	.00	--	--	--	--
22...	.24	.24	.40	1.8	.01	.00	.00	--	--	.01

MISSOURI RIVER MAIN STEM

06338490 MISSOURI RIVER AT GARRISON DAM, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL ORTHO + HYDRO- PHOS- PHORUS (P) (MG/L)	TOTAL ORGANIC PHOS- PHORUS (P) (MG/L)	TOTAL ALUM- INUM (AL) (UG/L)	SUS- PENDE ALUM- INUM (AL) (UG/L)	DIS- SOLVED ALUM- INUM (AL) (UG/L)	TOTAL ARSENIC (AS) (UG/L)	SUS- PENDE ARSENIC (AS) (UG/L)	DIS- SOLVED ARSENIC (AS) (UG/L)	TOTAL BARIUM (BA) (UG/L)	SUS- PENDE BARIUM (BA) (UG/L)
NOV 01...	--	--	70	--	--	1	--	1	0	--
DEC 01...	--	--	--	--	--	--	--	1	--	--
30...	--	--	40	40	0	2	0	2	0	0
JAN 19...	--	--	--	--	--	--	--	3	--	--
MAR 01...	--	--	--	--	--	--	--	2	--	--
30...	--	--	90	90	0	2	0	3	0	0
APR 22...	--	--	50	--	--	2	--	3	0	--
MAY 31...	--	--	30	--	--	2	--	2	--	--
JUN 21...	--	--	30	10	20	2	0	2	500	500
JUL 26...	--	--	100	--	--	2	--	--	100	--
SEP 01...	--	--	0	--	--	1	--	1	300	--
22...	.01	.00	80	60	20	2	0	2	--	--

DATE	DIS- SOLVED BARIUM (BA) (UG/L)	TOTAL BERYL- LIUM (BE) (UG/L)	SUS- PENDE BERYL- LIUM (BE) (UG/L)	DIS- SOLVED BERYL- LIUM (BE) (UG/L)	TOTAL BORON (B) (UG/L)	DIS- SOLVED BORON (B) (UG/L)	TOTAL CAD- MIUM (CD) (UG/L)	SUS- PENDE CAD- MIUM (CD) (UG/L)	DIS- SOLVED CAD- MIUM (CD) (UG/L)
NOV 01...	--	0	--	--	170	100	<10	--	0
DEC 01...	--	--	--	--	--	110	--	--	1
30...	0	10	10	0	170	100	<10	<10	0
JAN 19...	--	--	--	--	--	110	--	--	0
MAR 01...	--	--	--	--	--	110	--	--	0
30...	0	0	0	0	140	120	<10	<10	0
APR 22...	--	0	--	--	120	110	<10	--	0
MAY 31...	--	0	--	--	200	110	<10	--	0
JUN 21...	0	0	0	0	120	110	<10	<10	0
JUL 26...	--	0	--	--	150	110	<10	--	--
SEP 01...	--	0	--	--	150	120	<10	--	1
22...	--	10	10	0	180	110	10	10	0

DATE	TOTAL CHRO- MIUM (CR) (UG/L)	SUS- PENDE CHRO- MIUM (CR) (UG/L)	DIS- SOLVED CHRO- MIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	SUS- PENDE COBALT (CO) (UG/L)	DIS- SOLVED COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	SUS- PENDE COPPER (CU) (UG/L)	DIS- SOLVED COPPER (CU) (UG/L)
NOV 01...	0	--	--	<50	--	--	<10	--	--
DEC 01...	--	--	--	--	--	--	--	--	--
30...	0	0	0	<50	<48	2	<10	<9	1
JAN 19...	--	--	--	--	--	--	--	--	--
MAR 01...	--	--	--	--	--	--	--	--	--
30...	0	0	0	<50	--	1	<10	<8	2
APR 22...	<10	--	--	<50	--	--	<10	--	--
MAY 31...	0	--	--	<50	--	--	<10	--	--
JUN 21...	10	10	0	<50	<50	0	<10	<10	0
JUL 26...	0	--	--	<50	--	--	<10	--	--
SEP 01...	10	--	--	<50	--	--	<10	--	--
22...	20	20	0	<50	<50	0	<10	<9	1

MISSOURI RIVER MAIN STEM

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WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL IRON (FE) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	SUS- PENDED LEAD (PB) (UG/L)	DIS- SOLVED LEAD (PB) (UG/L)	TOTAL LITHIUM (LI) (UG/L)	SUS- PENDED LITHIUM (LI) (UG/L)	DIS- SOLVED LITHIUM (LI) (UG/L)	TOTAL MAN- GANESE (MN) (UG/L)	SUS- PENDED MAN- GANESE (MN) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)
NOV 01...	70	30	<100	--	--	40	--	--	0	--	--
DEC 01...	--	20	--	--	--	--	--	--	--	--	--
30...	30	20	<100	<100	0	50	10	40	20	20	0
JAN 19...	--	--	--	--	3	--	--	--	--	--	--
MAR 01...	--	20	--	--	--	--	--	--	--	--	--
30...	160	10	<100	<99	1	50	0	50	20	20	0
APR 22...	80	10	<100	--	--	50	--	--	10	--	--
MAY 31...	50	10	<100	--	--	40	--	--	0	--	--
JUN 21...	50	20	<100	<97	3	40	0	40	0	0	0
JUL 26...	90	0	<100	--	--	40	--	--	0	--	--
SEP 01...	60	10	<100	--	--	50	--	--	10	--	--
22...	190	10	<100	<100	0	40	0	50	0	0	0

DATE	TOTAL MERCURY (HG) (UG/L)	SUS- PENDED MERCURY (HG) (UG/L)	DIS- SOLVED MERCURY (HG) (UG/L)	TOTAL MOLYB- DENUM (MO) (UG/L)	SUS- PENDED MOLYB- DENUM (MO) (UG/L)	DIS- SOLVED MOLYB- DENUM (MO) (UG/L)	TOTAL NICKEL (NI) (UG/L)	SUS- PENDED NICKEL (NI) (UG/L)	DIS- SOLVED NICKEL (NI) (UG/L)	TOTAL SELE- NIUM (SE) (UG/L)	SUS- PENDED SELE- NIUM (SE) (UG/L)
NOV 01...	.0	--	--	3	--	--	<50	--	--	1	--
DEC 01...	--	--	--	--	--	--	--	--	--	--	--
30...	.0	.0	.0	2	1	1	<50	<42	8	1	0
JAN 19...	--	--	--	--	--	--	--	--	--	--	--
MAR 01...	--	--	--	--	--	--	--	--	--	--	--
30...	.2	.2	.0	2	0	2	<50	<46	4	1	0
APR 22...	.0	--	--	0	--	--	<50	--	--	1	--
MAY 31...	.1	--	--	2	--	--	<50	--	--	1	--
JUN 21...	.0	.0	.0	2	0	2	<50	<48	2	0	0
JUL 26...	.1	--	--	1	--	--	<50	--	--	1	--
SEP 01...	.0	--	--	0	--	--	<50	--	--	0	--
22...	.0	.0	.0	3	1	2	<50	<50	0	0	0

DATE	DIS- SOLVED SELE- NIUM (SE) (UG/L)	TOTAL SILVER (AG) (UG/L)	TOTAL STRON- TIUM (SR) (UG/L)	SUS- PENDED STRON- TIUM (SR) (UG/L)	DIS- SOLVED STRON- TIUM (SR) (UG/L)	DIS- SOLVED VANA- DIUM (V) (UG/L)	TOTAL ZINC (ZN) (UG/L)	SUS- PENDED ZINC (ZN) (UG/L)	DIS- SOLVED ZINC (ZN) (UG/L)	DIS- SOLVED GROSS ALPHA AS U-NAT. (UG/L)
NOV 01...	--	<10	--	--	--	--	0	--	--	--
DEC 01...	--	--	--	--	--	--	--	--	--	--
30...	1	<10	470	0	510	.0	10	0	10	--
JAN 19...	--	--	--	--	--	--	--	--	--	--
MAR 01...	--	--	--	--	--	--	--	--	--	--
30...	1	<10	440	0	500	.9	10	10	0	--
APR 22...	--	<10	--	--	--	--	10	--	--	--
MAY 31...	--	<10	--	--	--	--	10	--	--	--
JUN 21...	0	<10	480	0	530	.0	0	0	0	--
JUL 26...	--	<10	--	--	--	--	10	--	--	--
SEP 01...	--	<10	--	--	--	--	10	--	--	--
22...	1	<10	--	--	--	.0	30	20	10	7.4

MISSOURI RIVER MAIN STEM

06338490 MISSOURI RIVER AT GARRISON DAM, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	SUS- PENDE D GROSS ALPHA AS U-NAT. (UG/L)	DIS- SOLVED GROSS BETA AS CS-137 (PC/L)	SUS- PENDE D GROSS BETA AS CS-137 (PC/L)	DIS- SOLVED GROSS BETA AS SR90 (PC/L)	SUS- PENDE D GROSS BETA AS SR90 (PC/L)	DIS- SOLVED RA-226 (RADON METHOD) (PC/L)	DIS- SOLVED NATURAL URANIUM (U) (UG/L)	DIS- SOLVED ORGANIC CARBON (C) (MG/L)	SUS- PENDE D GROSS ORGANIC CARBON (C) (MG/L)	CYANIDE (CN) (MG/L)
NOV 01...	--	--	--	--	--	--	--	2.8	.1	--
DEC 01...	--	--	--	--	--	--	--	4.4	.1	--
30...	--	--	--	--	--	--	--	3.3	.2	.00
JAN 19...	--	--	--	--	--	--	--	4.0	.0	--
MAR 01...	--	--	--	--	--	--	--	2.8	.1	--
30...	--	--	--	--	--	--	--	4.8	.2	1.0
APR 22...	--	--	--	--	--	--	--	2.9	.3	--
MAY 31...	--	--	--	--	--	--	--	2.8	.0	--
JUN 21...	--	--	--	--	--	--	--	4.1	--	.00
JUL 26...	--	--	--	--	--	--	--	2.3	.1	--
SEP 01...	--	--	--	--	--	--	--	3.0	.1	--
22...	<.4	6.8	.6	5.5	.6	.16	2.6	2.6	--	.00

DISSOLVED OXYGEN PROFILE, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

HOURL	MG/L	HOURL	MG/L	HOURL	MG/L	HOURL	MG/L
Aug. 31, 1977		2100	6.9	0200	6.6	0900	7.0
1500	7.4	2200	6.9	0300	6.6	1000	7.1
1600	7.4	2300	6.9	0400	6.6	1100	7.1
1700	7.5	2400	6.8	0500	6.6	1200	7.2
1800	7.6			0600	6.6	1300	7.4
1900	7.6	Sept. 1, 1977		0700	6.7	1400	7.6
2000	7.4	0100	6.6	0800	6.7	1500	7.8

MISSOURI RIVER MAIN STEM

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SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	635	653	625	---	605	615	645	---	610	640	630	650
2	640	630	620	---	605	610	---	615	610	640	620	645
3	640	630	610	610	605	645	---	625	610	640	620	645
4	640	630	---	610	605	635	620	625	610	640	615	650
5	638	620	---	610	---	---	645	625	615	645	615	650
6	639	---	610	610	---	---	645	---	615	640	620	655
7	641	---	615	610	610	630	645	---	615	645	620	645
8	639	620	610	---	610	630	650	---	615	640	625	650
9	637	620	615	---	615	630	---	615	630	640	625	650
10	638	630	610	610	615	615	---	615	620	645	620	650
11	638	630	---	610	625	650	650	630	620	640	620	645
12	640	630	---	610	---	---	655	620	620	645	625	645
13	638	---	610	610	---	---	650	615	620	645	620	645
14	640	---	610	610	630	640	655	615	625	640	625	645
15	643	610	605	---	615	650	650	615	635	640	620	645
16	645	610	610	---	615	---	---	610	640	645	620	650
17	644	620	610	610	630	650	---	615	640	640	620	650
18	647	620	---	610	625	650	620	615	635	645	620	645
19	640	620	---	610	---	---	630	615	640	640	625	645
20	638	630	600	610	---	---	640	615	640	630	620	645
21	637	620	610	610	---	645	655	615	640	630	620	645
22	638	630	610	---	620	645	615	620	640	620	620	645
23	639	605	610	---	605	650	---	620	640	620	645	645
24	640	620	---	610	640	645	---	620	640	640	645	645
25	636	---	---	610	615	645	630	620	610	620	645	645
26	636	630	---	610	---	---	---	615	590	620	645	645
27	637	---	600	610	---	---	625	615	630	620	645	640
28	639	---	610	610	640	645	610	615	640	615	645	645
29	640	605	610	---	---	645	625	620	640	615	645	645
30	643	620	605	---	---	645	---	615	640	615	645	640
31	640	---	605	610	---	655	---	610	---	620	640	---
MEAN	640	623	610	610	617	640	638	617	626	634	628	646

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15.0	9.5	4.0	---	0.5	1.0	2.0	---	6.5	8.0	13.0	14.0
2	14.0	10.0	4.0	---	0.5	2.0	---	4.0	7.0	9.0	10.5	14.0
3	12.0	10.0	4.0	0.5	0.5	2.0	---	4.0	7.0	9.0	13.0	12.0
4	14.0	10.0	---	0.5	0.5	1.5	2.0	4.5	6.5	9.0	13.0	13.0
5	14.0	10.0	---	0.5	---	---	2.0	4.5	7.0	9.0	10.5	12.0
6	14.0	---	3.0	0.5	---	---	2.0	---	7.0	9.0	10.0	13.0
7	14.0	---	3.0	0.5	0.5	1.5	2.0	---	7.0	9.0	9.0	13.0
8	14.0	9.5	3.0	---	0.5	1.5	2.0	---	7.0	9.0	12.0	13.0
9	14.0	9.0	3.0	---	1.0	1.5	---	5.0	7.0	9.0	10.5	15.0
10	14.0	9.0	2.0	0.5	1.0	1.5	---	5.0	7.0	9.0	10.5	15.0
11	14.0	8.5	---	0.5	1.0	1.5	2.0	5.0	7.0	9.5	10.0	15.0
12	14.0	8.0	---	0.5	---	---	2.0	5.0	7.0	12.0	13.0	15.0
13	14.0	---	2.0	0.5	---	---	2.0	5.5	7.0	9.0	10.0	15.0
14	13.0	---	2.0	0.5	1.0	1.5	2.0	6.0	7.0	9.0	13.0	15.0
15	13.0	8.0	2.0	---	1.0	1.5	2.0	5.5	8.0	9.5	11.5	15.0
16	13.0	7.5	1.5	---	1.0	---	---	5.0	7.0	9.0	11.5	15.0
17	13.0	7.5	1.5	0.5	1.0	1.5	---	6.5	7.0	9.0	11.5	12.0
18	12.0	7.5	---	0.5	1.0	1.5	2.0	6.0	7.0	9.5	11.5	11.0
19	12.0	7.5	---	0.5	---	---	2.5	6.0	7.0	10.0	11.0	14.0
20	12.0	7.0	1.0	0.5	---	---	2.0	5.5	8.0	10.0	11.0	12.5
21	12.0	7.0	1.0	0.5	---	1.5	2.0	6.0	8.0	10.0	11.0	14.0
22	12.0	6.5	1.0	---	1.0	2.0	2.5	6.0	8.0	10.0	11.0	14.0
23	11.0	7.0	1.0	---	1.0	2.0	---	6.0	8.5	10.0	13.5	15.0
24	11.0	6.5	---	0.5	1.0	2.0	---	6.0	8.0	9.5	11.0	14.0
25	11.0	---	---	0.5	1.0	2.0	3.0	6.0	8.0	10.0	11.5	14.0
26	11.0	6.0	---	0.5	---	---	---	6.5	7.5	10.0	11.5	12.5
27	10.0	---	1.0	0.5	---	---	3.0	7.0	8.0	10.0	13.0	13.0
28	10.0	---	1.0	0.5	1.5	2.0	4.0	7.0	8.5	10.0	11.5	13.0
29	9.0	4.5	1.0	---	---	2.0	3.0	7.0	8.0	10.0	11.5	12.0
30	10.0	4.5	0.5	---	---	2.0	---	7.0	8.0	10.0	14.0	14.0
31	9.0	---	0.5	0.5	---	2.0	---	6.5	---	10.0	11.5	---
MEAN	12.5	8.0	2.0	0.5	1.0	1.5	2.5	5.5	7.5	9.5	11.5	13.5

MISSOURI RIVER MAIN STEM

06338490 MISSOURI RIVER AT GARRISON DAM, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	NOV 1,76 1730	DEC 1,76 1430	DEC 30,76 1215	JAN 19,77 1300	MAR 1,77 1200							
TOTAL CELLS/ML	9	110	30	8	17							
DIVERSITY: DIVISION	0.0	2.0	0.5	0.0	1.4							
..CLASS	0.0	2.0	0.5	0.0	1.9							
...ORDER	1.0	2.0	0.9	0.0	2.3							
...FAMILY	1.0	2.0	1.6	0.0	2.3							
....GENUS	1.0	2.0	1.6	0.0	2.3							
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												
....OOCYSTACEAE												
....CHLORELLA	--	-	25# 24	--	-	--	-	--	-	--	-	
...SCENEDESMACEAE												
....CRUCIGENIA	--	-	--	-	--	-	--	-	--	-		
CHRYSOPHYTA												
..BACILLARIOPHYCEAE												
...PENNALES												
...NAVICULACEAE												
...ENTOMONEIS	--	-	--	-	6# 20	--	-	--	-	--	-	
...CENTRALES												
...COSCINODISCAEAE												
...CYCLOTELLA	4# 50	--	-	--	-	--	-	--	-	--	-	
...MELOSIRA	--	-	--	-	--	-	--	-	3# 20	--	-	
...STEPHANODISCUS	--	-	27# 26	--	-	3 10	*	0	--	-	--	-
...PENNALES												
...DIATOMACEAE												
...DIATOMA	--	-	--	-	--	-	--	-	--	-	--	-
...FRAGILARIACEAE												
...ASTERIONELLA	--	-	--	-	18# 60	--	-	8# 100	3# 20	--	-	
...SYNEDRA	--	-	--	-	--	-	--	-	--	-	--	-
...NAVICULACEAE												
...NAVICULA	4# 50	--	-	--	-	--	-	--	-	--	-	
...NITZSCHIAEAE												
...NITZSCHIA	--	-	--	-	--	-	--	-	--	-	--	-
..CHRYSOPHYCEAE												
...CHRYSOMONADALES												
...OCHROMONADAEE												
...OCHROMONAS	--	-	--	-	--	-	--	-	3# 20	--	-	
CYANOPHYTA (BLUE-GREEN ALGAE)												
..CYANOPHYCEAE												
...HORMOGONALES												
...OSCILLATORIACEAE												
...OSCILLATORIA	--	-	32# 30	--	-	--	-	--	-	--	-	
EUGLENOPHYTA (EUGLENOIDS)												
..CRYPTOPHYCEAE												
...CRYPTOMONIDALES												
...CRYPTOCHRYSIDACEAE												
...CHROOMONAS	--	-	--	-	--	-	--	-	--	-	--	-
...CRYPTOMONODACEAE												
...CRYPTOMONAS	--	-	--	-	3 10	--	-	--	-	3# 20	--	-
..EUGLENOPHYCEAE												
...EUGLENALES												
...EUGLENACEAE												
...EUGLENA	--	-	--	-	--	-	--	-	--	-	--	-
...PHACUS	--	-	21# 20	--	-	--	-	--	-	--	-	
PYRRHOPHYTA (FIRE ALGAE)												
..DINOPHYCEAE												
...GYMNODINIALES												
...GYMNODINIACEAE												
...GYMNODINIUM	--	-	--	-	--	-	--	-	--	-	--	-
...PERIDINIALES												
...CERATIACEAE												
...CERATIUM	--	-	--	-	--	-	--	-	--	-	--	-
...PERIDINIACEAE												
...PERIDINIUM	--	-	--	-	--	-	--	-	3# 20	--	-	

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

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

MISSOURI RIVER MAIN STEM

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06338490 MISSOURI RIVER AT GARRISON DAM, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	MAY 31,77 1235	JUN 21,77 1400	JUL 26,77 1230	SEP 1,77 1000	SEP 22,77 1415	
TOTAL CELLS/ML	3	180	53	42	100	
DIVERSITY: DIVISION	0.0	0.0	0.4	1.2	1.2	
..CLASS	0.0	0.0	0.4	1.2	1.2	
...ORDER	0.0	0.8	0.4	1.4	1.2	
...FAMILY	0.0	0.8	0.4	1.4	1.8	
...GENUS	0.0	0.8	0.4	1.4	1.8	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)						
..CHLOROPHYCEAE						
...CHLOROCOCCALES						
...OOCYSTACEAE						
...CHLORELLA	--	-	--	-	--	-
...SCENEDESMACEAE						
...CRUCIGENIA	--	-	--	-	--	27# 27
CHRYSOPHYTA						
..BACILLARIOPHYCEAE						
...PENNALES						
...NAVICULACEAE						
...ENTOMONEIS	--	-	--	-	--	-
...CENTRALES						
...COSCINODISACEAE						
...CYCLOTELLA	--	-	50# 27	--	-	--
...MELOSIRA	--	-	--	-	--	-
...STEPHANODISCUS	--	-	--	-	5 11	--
...PENNALES			5 9	5 11		
...DIATOMACEAE						
...DIATOMA	3# 100	--	-	--	-	--
...FRAGILARIACEAE						
...ASTERIONELLA	--	-	130# 73	--	-	--
...SYNEDRA	--	-	* 0	--	-	--
...NAVICULACEAE						
...NAVICULA	--	-	--	-	5 11	--
...NITZSCHIAEAE						
...NITZSCHIA	--	-	--	-	--	7 7
..CHRYSOPHYCEAE						
...CHRYSDOMONADALES						
...OCHROMONADACEAE						
...OCHROMONAS	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...HORMOGONALES						
...OSCILLATORIACEAE						
...OSCILLATORIA	--	-	--	-	48# 91	--
EUGLENOPHYTA (EUGLENOIDS)						
..CRYPTOPHYCEAE						
...CRYPTOMONIDALES						
...CRYPTOCHRYSIDACEAE						
...CHROOMONAS	--	-	--	-	--	41# 40
...CRYPTOMONODACEAE						
...CRYPTOMONAS	--	-	--	-	28# 67	27# 27
..EUGLENOPHYCEAE						
...EUGLENALES						
...EUGLENACEAE						
...EUGLENA	* 0	--	-	--	-	--
...PHACUS	--	-	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)						
..DINOPHYCEAE						
...GYMNODINIALES						
...GYMNODINIACEAE						
...GYMNODINIUM	* 0	--	-	--	-	--
...PERIDINIALES						
...CERATIAEAE						
...CERATIUM	--	-	--	-	5 11	--
...PERIDINIACEAE						
...PERIDINIUM	--	-	--	-	--	-

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

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

PERIPHYTON

Date	Length of exposure (days)	Biomass (mg/m ²)		Chlorophyll a (mg/m ²)	Chlorophyll b (mg/m ²)	Biomass pigment ratio	Sampling method
June 21	23	Dry weight	Ash weight				
		78.0	78.0	.000	--	--	Polyethylene strip

MISSOURI RIVER BASIN

06339010 MISSOURI RIVER ABOVE STANTON, ND

LOCATION.--Lat 47°21'54", long 101°21'28", E½ sec.22, T.14S N., R.84 W., Mercer County, Hydrologic Unit 10130101, temperature recorder at gaging station on left bank, 9 mi (14 km) south of Riverdale and at mile 1,378 (kilometer 2,233).

DRAINAGE AREA.--181,400 mi² (469,800 km²), approximately.

WATER-STAGE RECORDS

PERIOD OF RECORD.--October 1976 to September 1977.

GAGE.--Water-stage recorder. Datum of gage is 1600.00 ft (487.680 m) above mean sea level.

REMARKS.--Stage regulated by Lake Sakakawea (station 06338000).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 72.24 ft (22.019 m) Jan. 29, 1977; minimum daily recorded, 65.16 ft (19.861 m) Oct. 10, 1976.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	69.55	---	71.72	---	---	---	66.16	66.54	66.51	65.79
2	---	---	69.72	---	71.57	---	66.62	---	66.08	66.48	66.43	65.95
3	---	---	69.59	---	71.45	---	66.00	---	66.04	66.70	66.35	65.95
4	---	---	69.63	---	71.56	---	66.08	---	66.15	66.36	66.29	65.70
5	---	---	69.68	---	71.73	---	66.45	---	66.07	66.76	66.27	66.14
6	---	---	69.67	---	71.41	---	66.37	---	66.04	---	66.32	65.98
7	---	---	69.64	---	71.24	---	66.46	---	66.28	---	66.29	65.89
8	---	---	---	---	71.11	---	66.29	---	65.85	---	66.26	65.96
9	68.85	---	---	---	70.70	---	65.87	---	66.35	---	66.18	65.99
10	65.16	---	---	---	70.24	---	66.08	---	66.06	---	66.12	65.97
11	68.45	---	---	---	---	---	66.34	---	66.09	---	66.17	65.91
12	68.33	---	---	---	---	---	66.06	---	66.21	---	66.18	66.01
13	68.76	---	---	---	---	---	66.23	66.44	66.03	---	66.16	65.97
14	68.67	---	---	---	---	---	66.30	66.33	66.03	---	66.23	65.98
15	68.50	---	---	---	---	---	66.42	66.37	66.22	---	66.17	65.96
16	68.54	---	---	---	---	---	66.27	66.48	66.18	---	66.03	66.29
17	68.55	---	---	---	---	---	66.50	65.96	66.57	---	66.31	65.83
18	68.72	---	---	---	---	---	66.42	66.09	66.20	---	66.22	66.00
19	68.66	---	---	---	---	---	66.40	66.14	66.25	66.78	66.21	65.71
20	68.03	---	---	72.14	---	---	66.44	66.06	66.42	66.58	66.93	65.95
21	68.43	---	---	71.91	---	---	66.50	65.73	66.36	66.49	66.16	65.83
22	68.28	---	---	71.90	---	---	67.23	65.99	66.17	66.44	66.19	66.01
23	68.29	---	---	71.54	---	---	67.00	66.47	66.47	66.30	66.07	65.82
24	68.42	69.59	---	71.49	---	---	66.75	66.06	66.64	66.54	66.17	65.74
25	68.38	69.58	---	71.42	---	---	66.80	66.19	66.34	66.28	66.30	65.74
26	68.54	69.44	---	71.35	---	---	66.90	66.17	66.42	66.49	66.41	65.85
27	68.31	69.54	---	71.26	---	---	66.45	66.01	66.45	66.24	66.28	65.79
28	---	69.55	---	71.69	---	---	66.67	66.10	66.69	66.18	66.23	65.79
29	---	69.90	---	72.24	---	---	66.63	66.13	66.42	66.57	66.25	65.76
30	---	69.66	---	71.73	---	---	---	65.97	66.50	66.74	66.32	65.82
31	---	---	---	71.81	---	---	---	66.27	---	66.58	66.07	---
MEAN	---	---	---	---	---	---	---	---	66.26	---	66.23	65.90
MAX	---	---	---	---	---	---	---	---	66.69	---	66.51	66.29
MIN	---	---	---	---	---	---	---	---	65.85	---	65.93	65.70

06339010 MISSOURI RIVER ABOVE STANTON, ND--Continued

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: June 1973 to September 1977 (discontinued).

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum recorded, 19.5°C Aug. 28, 1976; minimum, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum recorded, 17.0°C Oct. 4, Sept. 10; minimum, 0.0°C on many days during winter months.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH		
1	---	---	11.0	11.0	4.0	4.0	0.5	0.5	1.0	1.0	1.0	1.0
2	---	---	11.0	10.5	4.0	3.5	0.5	0.5	1.0	1.0	1.0	1.0
3	---	---	10.5	10.0	3.5	3.5	0.5	0.5	1.0	1.0	1.5	1.0
4	17.0	16.0	10.0	10.0	3.5	3.5	0.5	0.5	1.0	1.0	1.5	1.5
5	16.0	15.0	10.0	10.0	3.5	3.5	0.5	0.5	1.0	1.0	1.5	1.5
6	16.0	16.0	10.0	10.0	3.5	3.5	0.5	0.5	1.0	1.0	1.5	1.5
7	16.0	15.5	10.0	10.0	3.5	3.5	0.5	0.5	1.0	1.0	1.5	1.5
8	16.0	15.5	10.0	10.0	3.5	2.5	0.5	0.5	1.0	1.0	1.5	1.5
9	16.0	16.0	10.0	9.0	2.5	2.5	0.0	0.0	1.0	1.0	---	---
10	16.5	16.0	9.0	9.0	2.5	2.0	---	---	1.0	1.0	---	---
11	16.5	16.0	9.0	9.0	2.0	2.0	---	---	1.0	1.0	---	---
12	16.0	15.5	9.0	8.5	2.0	1.5	---	---	1.0	1.0	---	---
13	16.0	15.0	9.0	8.5	1.5	1.0	---	---	1.0	1.0	---	---
14	16.0	14.0	8.5	8.5	1.0	1.0	---	---	1.0	1.0	---	---
15	14.0	12.5	8.5	8.5	1.0	1.0	---	---	1.0	1.0	---	---
16	14.0	13.5	8.5	8.0	1.0	1.0	---	---	1.0	1.0	---	---
17	14.0	13.0	8.0	8.0	1.0	1.0	---	---	1.0	1.0	---	---
18	14.0	13.0	8.0	8.0	1.0	1.0	---	---	1.0	1.0	---	---
19	14.0	13.5	8.0	8.0	1.0	1.0	---	---	1.0	1.0	---	---
20	13.5	12.5	8.0	7.0	1.0	1.0	0.5	0.5	1.0	1.0	---	---
21	12.5	12.5	7.0	7.0	1.0	1.0	1.0	0.5	1.0	1.0	---	---
22	12.5	12.5	7.0	7.0	1.0	1.0	1.0	1.0	1.0	1.0	---	---
23	12.5	12.5	7.0	7.0	1.0	1.0	1.0	1.0	1.0	1.0	---	---
24	12.5	12.0	7.0	7.0	1.0	1.0	1.0	1.0	1.0	1.0	---	---
25	12.0	12.0	7.0	6.5	1.0	1.0	1.0	1.0	1.0	1.0	---	---
26	12.0	11.5	6.5	5.0	1.0	1.0	1.0	1.0	1.0	1.0	---	---
27	11.5	11.0	5.0	4.5	1.0	1.0	1.0	1.0	1.0	1.0	---	---
28	11.0	11.0	4.5	4.5	1.0	1.0	1.0	1.0	1.0	1.0	---	---
29	11.0	11.0	4.5	4.0	1.0	0.5	1.0	1.0	---	---	---	---
30	11.0	11.0	4.0	4.0	0.5	0.5	1.0	1.0	---	---	---	---
31	11.0	11.0	---	---	0.5	0.5	1.0	1.0	---	---	---	---
MONTH	17.0	11.0	11.0	4.0	4.0	0.5	1.0	0.0	1.0	1.0	1.5	1.0

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

KNIFE RIVER BASIN

06339100 KNIFE RIVER AT MANNING, ND

LOCATION.--Lat 47°14'10", long 102°46'10", in SE¼NW¼ sec.6, T.143 N., R.95 W., Dunn County, Hydrologic Unit 10130201, on left bank 50 ft (15 m) downstream from bridge on State Highway 22, 0.4 mi (0.6 km) north of Manning.

DRAINAGE AREA.--205 mi² (531 km²), approximately.

PERIOD OF RECORD.--July 1967 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,156.55 ft (657.316 m) above mean sea level.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--10 years, 23.8 ft³/s (0.674 m³/s) 17,240 acre-ft/yr (21.3 hm³/yr); median of yearly mean discharges, 24 ft³/s (0.68 m³/s), 17,400 acre-ft per year (21 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge 2,940 ft³/s (83.3 m³/s) June 15, 1970, gage height, 16.20 ft (4.938 m); no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 300 ft³/s (8.50 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 15	0400	722 20.4	12.29 3.746	June 15	2330	*802 22.7	*12.96 3.950

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.04	.77	.65	.85	.96	1.8	17	4.8	12	.77	.20	.37
2	.04	.77	.65	.85	.86	1.8	21	5.5	6.1	.55	.20	.43
3	.04	.77	.65	.85	.91	1.8	16	5.0	3.2	.55	.18	.50
4	.04	.73	.60	.80	.91	1.7	18	4.5	2.3	.58	.18	.46
5	.04	.73	.60	.80	1.1	1.8	15	4.0	1.8	.73	.16	.43
6	.04	.73	.60	.80	1.1	2.0	14	3.5	1.6	.91	.16	.43
7	.04	.58	.60	.80	1.2	3.7	16	3.0	1.2	.81	.14	.46
8	.05	.49	.55	.75	1.2	8.6	16	3.0	1.2	.52	.12	.46
9	.05	.49	.55	.75	1.3	8.2	14	3.0	1.2	.52	.10	.46
10	.06	.65	.55	.75	1.5	9.4	17	2.5	3.0	.65	.08	.49
11	.08	.58	.55	.75	1.8	20	15	2.5	1.6	.24	.06	.49
12	.08	.58	.65	.75	2.1	22	13	2.5	.96	9.4	.04	.52
13	.10	.61	.90	.75	2.5	36	12	2.0	1.3	2.1	.02	.52
14	.08	.61	.95	.75	2.3	39	9.7	2.0	3.0	1.2	.01	.52
15	.08	.61	.95	.75	2.4	34	7.8	1.5	440	.81	.01	.52
16	.12	.61	.95	.75	1.9	28	6.7	1.5	450	.73	.01	.55
17	.14	.61	1.0	.75	2.1	29	5.3	1.5	130	.69	.01	.55
18	.16	.69	1.2	.75	2.2	26	4.8	1.5	50	.58	.02	.81
19	.28	.77	1.4	.75	2.3	24	4.3	2.7	36	.96	.03	1.2
20	.31	.73	1.2	.73	2.4	23	3.9	3.1	14	1.3	.06	1.3
21	.37	.69	1.0	.77	2.6	22	3.3	2.2	5.3	.69	.08	1.5
22	.46	.73	1.0	.96	4.3	19	3.1	1.8	3.5	.37	.10	2.7
23	.46	.81	1.0	.91	3.5	16	2.9	1.7	3.1	.37	.16	3.3
24	.46	.77	1.0	.91	2.9	20	2.5	1.6	4.1	.37	.19	9.7
25	.61	.77	1.0	.91	2.2	20	2.2	1.7	2.5	.35	.14	7.0
26	.65	.77	1.0	.96	2.1	23	2.1	1.6	1.8	.32	.14	5.0
27	.65	.73	1.0	.91	2.0	21	3.3	1.6	1.5	.30	.22	3.1
28	.73	.70	1.0	.96	1.8	21	3.9	3.0	1.2	.28	.28	2.7
29	.69	.70	.95	.96	---	19	4.3	39	.96	.26	.31	2.5
30	.69	.70	.90	.96	---	18	4.5	29	.86	.24	.31	2.5
31	.73	---	.90	.96	---	17	---	25	---	.22	.34	---
TOTAL	8.37	20.48	26.50	25.65	54.44	537.8	278.6	167.8	1185.28	52.13	4.06	51.47
MEAN	.27	.68	.85	.83	1.94	17.3	9.29	5.41	39.5	1.68	.13	1.72
MAX	.73	.81	1.4	.96	4.3	39	21	39	450	24	.34	9.7
MIN	.04	.49	.55	.73	.86	1.7	2.1	1.5	.86	.22	.01	.37
AC-FT	17	41	53	51	108	1070	553	333	2350	103	8.1	102
CAL YR 1976	TOTAL	4384.11	MEAN 12.0	MAX 610	MIN 0	AC-FT 8700						
WTR YR 1977	TOTAL	2412.58	MEAN 6.61	MAX 450	MIN .01	AC-FT 4790						

KNIFE RIVER BASIN

313

06339300 KNIFE RIVER AT MARSHALL, ND

LOCATION.--Lat 47°08'17", long 102°20'00", NW¼ sec.10, T.142 N., R.92 W., Dunn County, Hydrologic Unit 10130201, on right bank 250 ft (75 m) downstream from bridge on State Highway 8 in Marshall.

DRAINAGE AREA.--722 mi² (1,870 km²).

PERIOD OF RECORD.--October 1970 to current year.

GAGE.--Water-stage recorder.

REMARKS.--Records good except for the winter period, which is fair.

AVERAGE DISCHARGE.--7 years, 71.6 ft³/s (2.028 m³/s) 51,870 acre-ft/yr (64.0 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,080 ft³/s (257 m³/s) Mar. 14, 1972, gage height, 19.37 ft (5.904 m); minimum, 0.18 ft³/s (0.005 m³/s) July 19, 20, 1973, gage height, 2.48 ft (0.756 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of March 1943 reached a stage of at least 18.5 ft (5.639 m) prior to dike construction and is believed to be highest stage experienced since 1915.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,300 ft³/s (36.8 m³/s) June 17, gage height, 9.96 ft (3.036 m), only peak above base of 750 ft³/s (21.2 m³/s); minimum daily, 1.0 ft³/s (0.028 m³/s) Jan. 31 - Feb. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.2	4.4	3.2	2.5	1.0	40	42	8.5	61	14	6.9	2.5
2	3.2	4.3	3.3	2.5	1.0	20	45	8.4	56	14	6.7	2.7
3	4.4	4.0	3.3	2.5	1.0	15	53	8.4	38	13	6.7	2.6
4	3.8	3.7	3.3	2.5	1.0	15	51	8.2	28	13	5.9	2.7
5	3.1	3.6	3.2	2.5	1.0	15	52	8.0	24	13	5.3	2.6
6	2.9	3.6	3.2	2.5	1.0	20	45	7.8	16	13	5.4	2.2
7	3.0	3.6	3.2	2.5	1.0	30	47	7.6	13	13	6.4	1.9
8	3.2	3.8	3.1	2.5	1.0	50	50	7.6	11	12	6.0	2.9
9	3.0	3.8	3.1	2.5	1.0	150	54	7.6	9.7	12	5.5	2.9
10	3.1	3.5	3.1	2.0	1.5	250	53	7.6	10	12	4.7	2.2
11	3.1	3.5	3.5	2.0	4.0	150	42	7.9	12	11	4.3	2.7
12	3.2	3.4	4.0	2.0	6.0	160	38	7.9	19	14	3.9	2.6
13	3.1	3.3	4.5	2.0	8.0	120	34	8.2	21	30	3.5	2.4
14	3.2	3.4	4.5	2.0	12	115	29	8.6	22	34	3.0	2.3
15	2.8	3.5	4.8	2.0	30	95	25	68	61	20	2.7	2.3
16	2.6	3.4	5.0	2.0	28	90	23	32	592	14	2.2	2.5
17	2.6	3.5	5.2	2.0	25	84	20	17	1040	9.5	2.0	2.3
18	2.8	3.6	5.1	2.0	20	68	18	15	734	7.5	1.5	3.0
19	3.1	3.7	5.0	2.0	20	69	16	15	300	6.4	1.7	2.5
20	3.9	3.7	4.5	2.0	20	64	15	14	120	5.0	1.8	2.7
21	4.3	3.7	4.0	2.0	40	60	12	15	88	4.3	1.5	4.9
22	3.7	3.6	3.9	2.0	58	51	10	15	67	4.8	1.5	8.8
23	3.4	3.5	3.7	2.0	143	51	10	15	143	5.6	1.7	23
24	3.8	3.6	3.6	2.0	132	42	10	14	95	6.3	1.7	30
25	3.6	3.7	3.5	2.0	120	39	9.6	12	50	6.5	2.1	91
26	3.9	3.8	3.5	2.0	80	39	9.3	11	36	6.4	2.2	75
27	4.0	3.7	3.5	2.0	95	42	9.3	10	28	6.9	2.5	51
28	4.4	3.3	3.5	1.5	70	45	9.1	10	21	7.4	3.0	31
29	4.8	3.2	3.0	1.5	---	50	8.9	11	18	7.6	2.9	23
30	4.8	3.2	3.0	1.5	---	55	8.6	26	16	7.9	2.5	18
31	4.6	---	2.5	1.0	---	43	---	34	---	7.3	2.4	---
TOTAL	108.6	108.6	115.8	64.0	921.5	2137	848.8	446.3	3749.7	351.4	110.1	406.2
MEAN	3.50	3.62	3.74	2.06	32.9	68.9	28.3	14.4	125	11.3	3.55	13.5
MAX	4.8	4.4	5.2	2.5	143	250	54	68	1040	34	6.9	91
MIN	2.6	3.2	2.5	1.0	1.0	15	8.6	7.6	9.7	4.3	1.5	1.9
AC-FT	215	215	230	127	1830	4240	1680	885	7440	697	218	806
CAL YR 1976	TOTAL	13407.4	MEAN 36.6	MAX 1180	MIN 1.5	AC-FT 26590						
WTR YR 1977	TOTAL	9368.0	MEAN 25.7	MAX 1040	MIN 1.0	AC-FT 18580						

KNIFE RIVER BASIN

06339490 ELM CREEK NEAR GOLDEN VALLEY, ND

LOCATION.--Lat 47°06'25", long 102°03'05", in SE¼NW¼ sec.23, T.142 N., R.90 W., Mercer County, Hydrologic Unit 10130201, on right bank 60 ft (18 m) upstream from highway bridge 13.5 mi (21.7 km) south of Golden Valley.

DRAINAGE AREA.--82 mi² (212 km²), approximately.

PERIOD OF RECORD.--August 1967 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,915.17 ft (583.744 m) above mean sea level.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--10 years, 8.14 ft³/s (0.231 m³/s), 5,900 acre-ft/yr (7.27 hm³/yr); median of yearly mean discharges, 6.1 ft³/s (0.17 m³/s), 4,400 acre-ft/yr (5.4 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,000 ft³/s (283 m³/s) May 8, 1970, gage height, 23.55 ft (7.178 m); no flow for several months each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 187 ft³/s (5.30 m³/s) Mar. 9, gage height, 6.50 ft (1.981 m), backwater from ice, only peak above base of 100 ft³/s (2.83 m³/s); maximum gage height, 8.49 ft (2.588 m), caused by construction road across channel; no flow for several months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						0	3.3	.05	1.1	.03		0
2						0	4.6	.04	1.0	.02		0
3						0	4.3	.05	.90	.01		0
4						0	4.6	.02	.80	0		0
5						0	4.4	.03	.90	0		0
6						0	3.8	.02	.80	0		0
7						0	13	.01	.70	0		0
8						39	19	.01	.60	0		0
9						135	14	0	.50	0		0
10						109	7.8	0	.40	0		0
11						88	5.4	0	.50	0		0
12						52	3.5	0	.80	0		0
13						19	2.5	0	1.0	0		0
14						17	1.7	0	1.5	0		0
15						10	1.5	0	2.5	0		0
16						8.0	1.0	0	11	0		0
17						5.4	.50	0	13	0		0
18						3.5	.26	0	2.7	0		0
19						4.2	.21	0	1.2	0		0
20						3.4	.19	0	.70	0		0
21						2.8	.13	0	.65	0		0
22						2.4	.26	0	.60	0		.04
23						2.7	.19	0	.55	0		4.4
24						1.9	.15	0	.33	0		30
25						1.6	.13	0	.19	0		49
26						1.6	.08	0	.15	0		36
27						1.4	.07	0	.09	0		26
28						1.1	.05	0	.09	0		6.9
29					---	1.3	.04	0	.07	0		1.9
30					---	3.9	.05	0	.04	0		.65
31		---			---	2.6	---	.07	---	0		---
TOTAL	0	0	0	0	0	516.8	96.71	.30	45.36	.06	0	154.89
MEAN	0	0	0	0	0	16.7	3.22	.010	1.51	.002	0	5.16
MAX	0	0	0	0	0	135	19	.07	13	.03	0	49
MIN	0	0	0	0	0	0	.04	0	.04	0	0	0
AC-FT	0	0	0	0	0	1030	192	.6	90	.1	0	307
CAL YR 1976	TOTAL	1090.61	MEAN 2.98	MAX 230	MIN 0	AC-FT 2160						
WTR YR 1977	TOTAL	814.12	MEAN 2.23	MAX 135	MIN 0	AC-FT 1610						

KNIFE RIVER BASIN

315

06339500 KNIFE RIVER NEAR GOLDEN VALLEY, ND

LOCATION.--Lat 47°09'40", long 102°03'39", in SE¼ sec.34, T.143 N., R.90 W., Mercer County, Hydrologic Unit 10130201, on left bank 6 ft (2 m) downstream from highway bridge, 4.5 mi (7.2 km) downstream from Elm Creek, and 9 mi (14 km) south of Golden Valley.

DRAINAGE AREA.--1,230 mi² (3,190 km²), approximately.

PERIOD OF RECORD.--May 1903 to November 1906, April 1907 to November 1915, April 1916 to October 1919, and October 1921 to September 1924 (published as "at Broncho" or "near Broncho"), and April 1943 to current year. Monthly discharge only for some periods published in WSP 1309.

REVISED RECORDS (WATER YEARS).--WSP 1006: Drainage area. WSP 1279: 1904, 1914-19(M), 1922-24(M), 1944.

GAGE.--Water-stage recorder. Datum of gage is 1,847.13 ft (563.005 m) above mean sea level. See WSP 1729 or 1917 for history of changes prior to May 1, 1946.

REMARKS.--Records good except those for the winter period, which are poor.

AVERAGE DISCHARGE.--51 years, 95.7 ft³/s (2.710 m³/s), 69,330 acre-ft/yr (85.5 hm³/yr); median of yearly mean discharges, 81 ft³/s (2.29 m³/s), 58,700 acre-ft/yr (72 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,200 ft³/s (317 m³/s) May 9, 1970, gage height, 25.84 ft (7.876 m); maximum gage height, 26.7 ft (8.14 m) Mar. 26, 27, 1943, from floodmark; no flow at times in some years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 26, 27, 1943 reached a stage of 26.7 ft (8.14 m), from floodmark, 11,500 ft³/s (326 m³/s). The 1943 flood was the highest since 1903 according to information from local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,230 ft³/s (34.8 m³/s) June 18, gage height, 11.37 ft (3.466 m), no peaks above base of 1,500 ft³/s (42.5 m³/s); minimum daily discharge, 1.9 ft³/s (0.053 m³/s) Aug. 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.8	6.8	6.0	6.0	2.0	110	60	18	115	16	5.0	6.0
2	11	7.0	6.0	6.0	2.0	70	90	18	150	14	3.0	6.5
3	10	6.8	6.5	5.5	2.0	60	130	18	130	12	3.0	6.0
4	9.0	6.7	6.5	5.5	2.5	55	165	16	75	12	3.0	5.0
5	9.8	6.5	6.5	5.5	2.5	50	160	16	60	12	3.0	5.0
6	7.9	6.6	6.0	5.5	2.5	50	165	14	45	12	3.0	4.5
7	8.9	6.2	5.5	5.0	2.5	60	175	14	30	11	2.0	5.5
8	7.8	5.9	5.5	5.0	2.5	150	230	14	18	17	2.5	4.5
9	7.1	6.0	5.5	5.0	3.0	460	215	14	16	35	2.5	8.5
10	6.0	6.2	5.5	4.5	3.0	700	215	12	16	20	3.0	8.0
11	6.3	5.6	6.0	4.5	4.0	640	185	12	45	20	3.5	7.0
12	6.5	5.8	6.5	4.5	5.0	420	130	10	280	19	3.0	7.0
13	6.3	5.6	7.0	4.0	10	300	105	10	60	18	3.5	5.5
14	5.7	6.0	7.5	4.0	20	210	80	10	65	65	3.5	6.0
15	6.7	6.0	8.0	3.5	60	190	65	12	70	65	3.5	6.0
16	6.2	6.2	9.0	3.5	45	160	55	45	720	45	4.0	5.0
17	5.2	6.5	10	3.0	80	250	40	55	1020	30	3.5	5.0
18	5.8	7.1	12	3.0	90	200	35	30	1140	20	3.0	19
19	5.2	6.6	12	3.0	85	100	30	20	730	16	2.5	16
20	5.0	6.5	10	3.0	80	150	25	20	340	14	3.0	15
21	4.7	6.5	8.0	3.0	100	180	20	18	210	10	3.0	18
22	4.7	6.5	8.0	3.0	130	230	25	18	140	10	3.5	30
23	6.0	6.5	7.0	3.0	370	200	30	18	70	9.0	4.0	85
24	5.7	6.5	7.0	3.0	430	120	30	18	200	7.0	2.0	230
25	5.6	7.5	7.0	3.0	330	60	30	16	110	5.5	3.0	360
26	5.7	7.5	7.0	2.5	220	60	25	18	130	5.0	4.5	340
27	6.3	7.0	7.0	2.5	150	55	25	14	35	4.0	5.0	270
28	6.1	6.5	7.0	2.5	140	65	25	25	25	3.0	7.0	120
29	6.2	6.0	6.5	2.0	---	60	20	80	20	4.0	5.0	55
30	6.3	6.0	6.5	2.0	---	100	20	105	18	5.0	5.0	40
31	6.9	---	6.0	2.0	---	140	---	100	---	4.0	5.5	---
TOTAL	210.4	193.1	224.5	118.0	2373.5	5655	2605	808	6083	539.5	110.5	1699.0
MEAN	6.79	6.44	7.24	3.81	84.8	182	86.8	26.1	203	17.4	3.56	56.6
MAX	11	7.5	12	6.0	430	700	230	105	1140	65	7.0	360
MIN	4.7	5.6	5.5	2.0	2.0	50	20	10	16	3.0	2.0	4.5
AC-FT	417	383	445	234	4710	11220	5170	1600	12070	1070	219	3370
CAL YR 1976	TOTAL	21235.5	MEAN 58.0	MAX 1060	MIN 2.1	AC-FT 42120						
WTR YR 1977	TOTAL	20619.5	MEAN 56.5	MAX 1140	MIN 2.0	AC-FT 40900						

KNIFE RIVER BASIN

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06339560 BRUSH CREEK NEAR BEULAH, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	HARDNESS (CA+MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)
OCT												
21...	1010	.23	2000	8.1	1.0	3	10.8	82	.1	530	0	88
NOV												
24...	1045	.24	1820	6.3	.0	--	9.8	72	--	520	0	89
DEC												
23...	1015	.14	1800	7.6	.0	--	--	--	1.0	460	0	91
MAR												
07...	1244	3.4	1240	--	--	--	--	--	--	--	--	--
09...	1154	26	500	--	--	--	--	--	--	--	--	--
11...	1100	4.5	625	--	.5	--	--	--	--	--	--	--
17...	1045	2.0	1100	--	1.0	--	--	--	--	--	--	--
24...	1050	1.2	1360	8.0	3.0	--	10.9	87	5.4	380	52	74
APR												
20...	1120	.73	1510	8.0	11.0	--	9.6	91	1.5	410	0	73
MAY												
27...	0915	.22	1750	7.8	17.0	--	5.0	54	1.4	410	0	63
JUN												
29...	1045	.04	1850	8.0	21.0	--	5.7	68	.2	390	0	62
JUL												
21...	1140	E.03	1780	8.0	18.5	--	--	--	.3	380	0	65
28...	0935	.06	1200	--	18.0	--	--	--	--	--	--	--
SEP												
20...	1000	.81	1950	8.0	12.5	--	6.7	75	.8	460	0	78
27...	1335	.67	1500	--	13.5	--	--	--	--	--	--	--

DATE	DISSOLVED MAGNESIUM (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	DISSOLVED POTASSIUM (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CaCO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
OCT											
21...	76	290	54	5.5	11	699	0	573	8.9	560	6.8
NOV											
24...	72	290	54	5.5	9.9	715	0	586	573	520	6.0
DEC											
23...	55	280	57	5.7	8.5	734	0	602	29	480	6.0
MAR											
07...	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
24...	48	150	45	3.3	7.6	405	0	330	6.5	360	4.8
APR											
20...	55	220	53	4.7	8.4	530	0	430	8.5	410	6.0
MAY											
27...	62	280	59	6.0	6.8	570	0	468	14	490	3.0
JUN											
29...	56	320	64	7.1	7.8	670	0	550	11	490	5.1
JUL											
21...	52	300	63	6.7	8.2	690	0	570	11	440	5.4
28...	--	--	--	--	--	--	--	--	--	--	--
SEP											
20...	65	310	59	6.3	10	650	0	530	10	550	7.6
27...	--	--	--	--	--	--	--	--	--	--	--

E - Estimated.

KNIFE RIVER BASIN

06339560 BRUSH CREEK NEAR BEULAH, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED FLUO- RIDE (F) (MG/L)	BROMIDE (BR) (MG/L)	DIS- SOLVED SILICA (SIO2) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	TOTAL FILT- RABLE RESIDUE (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	TOTAL NON- FILT- RABLE RESIDUE (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L)
OCT											
21...	.3	.0	9.4	1390	--	1390	1.89	.86	--	.07	--
NOV											
24...	.3	--	8.5	1360	--	1350	1.85	.88	--	.02	.04
DEC											
23...	.3	--	16	1310	--	1300	1.78	.50	--	.26	.07
MAR											
07...	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
24...	.1	--	11	901	--	857	1.23	2.92	--	.05	.04
APR											
20...	.2	--	5.1	1060	--	1040	1.44	2.09	--	.01	.01
MAY											
27...	.3	--	9.4	1240	--	1200	1.69	.74	--	.03	.38
JUN											
29...	.3	--	8.8	1290	--	1280	1.75	.14	--	.01	.00
JUL											
21...	.3	--	10	1200	--	1220	1.63	--	--	.01	.03
28...	--	--	--	--	--	--	--	--	--	--	--
SEP											
20...	.3	--	9.5	1360	1400	1350	1.85	297	1	.04	.03
27...	--	--	--	--	--	--	--	--	--	--	--

DATE	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L)	DIS- SOLVED KJEL- NITRO- GEN (N) (MG/L)	TOTAL NITRO- GEN (N) (MG/L)	TOTAL NITRO- GEN (NO3) (MG/L)	TOTAL PHOS- PHORUS (P) (MG/L)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L)	DIS- SOLVED ORTHO- PHOS- PHORUS (P) (MG/L)	DIS- SOLVED ORTHO PHOS- PHATE (PO4) (MG/L)
OCT								
21...	.58	--	.65	2.9	.02	--	.00	.00
NOV								
24...	.30	.26	.32	1.4	.06	.00	--	--
DEC								
23...	.65	.69	.91	4.0	.03	.00	--	--
MAR								
24...	2.4	.45	2.5	11	.16	.04	--	--
APR								
20...	.44	.40	.45	2.0	.02	.01	--	--
MAY								
27...	.38	.06	.41	1.8	.06	.05	--	--
JUN								
29...	.61	.48	.62	2.7	.02	.03	--	--
JUL								
21...	.43	.33	.44	1.9	.05	.01	--	--
SEP								
20...	.52	.46	.56	2.5	.02	.04	--	--

DATE	DIS- SOLVED ALUM- INUM (AL) (UG/L)	DIS- SOLVED ARSENIC (AS) (UG/L)	DIS- SOLVED BARIUM (BA) (UG/L)	DIS- SOLVED BERYL- LIUM (BE) (UG/L)	DIS- SOLVED BORON (B) (UG/L)	DIS- SOLVED CAD- MIUM (CD) (UG/L)	DIS- SOLVED CHRO- MIUM (CR) (UG/L)	DIS- SOLVED COPPER (CU) (UG/L)
OCT								
21...	--	--	--	--	340	--	--	--
NOV								
24...	--	--	--	--	--	--	--	--
DEC								
23...	10	0	0	--	310	1	0	0
MAR								
24...	0	1	100	0	--	1	0	1
APR								
20...	--	--	--	--	--	--	--	--
MAY								
27...	--	--	--	--	--	--	--	--
JUN								
29...	10	2	0	--	420	0	0	0
JUL								
21...	--	--	--	--	--	--	--	--
SEP								
20...	10	1	200	--	400	0	0	0

KNIFE RIVER BASIN

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06339560 BRUSH CREEK NEAR BEULAH, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED LITHIUM (LI) (UG/L)	DIS-SOLVED MANGANESE (MN) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	DIS-SOLVED MOLYB- DENUM (MO) (UG/L)	DIS-SOLVED SELE- NIUM (SE) (UG/L)	DIS-SOLVED SILVER (AG) (UG/L)	DIS-SOLVED STRON- TIUM (SR) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
OCT 21...	--	--	--	--	--	--	--	--	--	--
NOV 24...	--	--	--	--	--	--	--	--	--	--
DEC 23...	100	2	90	400	.0	0	0	--	2100	10
MAR 24...	110	5	50	110	.0	0	0	0	1300	10
APR 20...	--	--	--	--	--	--	--	--	--	--
MAY 27...	--	--	--	--	--	--	--	--	--	--
JUN 29...	60	2	80	70	.0	0	0	--	1500	0
JUL 21...	--	--	--	--	--	--	--	--	--	--
SEP 20...	50	2	90	20	.0	0	0	--	2000	10

DATE	DIS-SOLVED GROSS ALPHA AS U-NAT. (UG/L)	SUS-PENDED GROSS ALPHA AS U-NAT. (UG/L)	DIS-SOLVED GROSS BETA AS CS-137 (PC/L)	SUS-PENDED GROSS BETA AS CS-137 (PC/L)	DIS-SOLVED GROSS BETA AS SR90 /Y90 (PC/L)	SUS-PENDED GROSS BETA AS SR90 /Y90 (PC/L)	DIS-SOLVED RA-226 (RADON METHOD) (PC/L)	DIS-SOLVED NATURAL URANIUM (U) (UG/L)	DIS-SOLVED ORGANIC CARBON (C) (MG/L)	SUS-PENDED ORGANIC CARBON (C) (MG/L)
OCT 21...	--	--	--	--	--	--	--	--	9.0	.1
NOV 24...	--	--	--	--	--	--	--	--	9.6	.5
DEC 23...	--	--	--	--	--	--	--	--	5.0	.2
MAR 24...	--	--	--	--	--	--	--	--	12	3.6
APR 20...	--	--	--	--	--	--	--	--	8.9	.4
MAY 27...	--	--	--	--	--	--	--	--	9.9	.1
JUN 29...	--	--	--	--	--	--	--	--	10	--
JUL 21...	--	--	--	--	--	--	--	--	7.4	.1
SEP 20...	<22	<.4	19	<.4	15	<.4	.08	.6	7.8	.3

DATE	SUS-PENDED SEDIMENT (MG/L)	SUS-PENDED SEDIMENT DIS- CHARGE (T/DAY)	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 21...	7	.00	--	--	--	--	--	--	--	--	--	--
NOV 24...	6	.00	--	--	--	--	--	--	--	--	--	--
DEC 23...	19	.01	--	--	--	--	--	--	--	--	--	--
MAR 24...	28	.09	--	--	--	--	--	--	--	--	--	--
APR 20...	32	.06	13	14	47	68	76	82	90	97	100	--
MAY 27...	59	.04	--	--	--	--	--	--	--	--	--	--
JUN 29...	19	.00	0	1	13	25	30	37	56	76	86	100

PERIPHYTON

Date	Length of exposure (days)	Biomass (mg/m ²)		Chlorophyll a (mg/m ²)	Chlorophyll b (mg/m ²)	Biomass pigment ratio	Sampling method
Oct. 29	30	Dry weight	Ash weight	--	--	--	Polyethylene strip
Aug. 22	34	6,690	5,670	.000	.052	19,620	Polyethylene strip

KNIFE RIVER BASIN

06340000 SPRING CREEK AT ZAP, ND

LOCATION.--Lat 47°17'10", long 101°55'31", in SW¼ sec.14, T.144 N., R.89 W., Mercer County, Hydrologic Unit 10130201, on right bank 250 ft (76 m) downstream from Burlington Northern Railway bridge in Zap and 9 mi (14 km) upstream from mouth.

DRAINAGE AREA.--549 mi² (1,422 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March to September 1924, October 1945 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,819.39 ft (554.550 m) above mean sea level. Mar. 4 to Sept. 30, 1924, nonrecording gage at site 250 ft (76 m) upstream at different datum. Oct. 1, 1945, to Sept. 30, 1947, nonrecording gage 250 ft (76 m) upstream at datum 1.12 ft (0.341 m) higher.

REMARKS.--Records fair. Flow slightly regulated by Lake Ilo 56 mi (90 km) upstream, capacity, 7,130 acre-ft (8.79 hm³).

AVERAGE DISCHARGE.--32 years, 42.9 ft³/s (1.215 m³/s), 31,080 acre-ft/yr (38.3 hm³/yr); median of yearly mean discharges, 38 ft³/s (1.08 m³/s), 27,500 acre-ft/yr (34 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,130 ft³/s (174 m³/s) Apr. 7, 1952, gage height, 20.03 ft (6.105 m); maximum gage height, 20.70 ft (6.309 m) Mar. 15, 1972; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known occurred in about 1902, from ice jam. Floods of February 1913 and March 1943 reached a stage of about 20 ft (6.10 m) and 19.5 ft (5.94 m), respectively, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,150 ft³/s (32.6 m³/s) June 15, gage height, 11.43 ft (3.484 m), only peak above base of 1,000 ft³/s (28.3 m³/s); minimum daily discharge 1.7 ft³/s (0.048 m³/s) Aug. 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.1	9.4	4.2	5.6	5.6	8.0	22	8.2	10	7.1	2.7	6.8
2	6.4	9.4	4.0	5.6	5.6	7.0	22	7.8	10	7.1	2.8	7.4
3	6.8	8.6	4.0	5.6	5.6	7.0	20	8.2	10	6.1	3.0	6.8
4	6.4	8.2	4.0	5.6	5.6	7.0	20	7.8	9.0	7.8	2.8	6.8
5	6.8	7.8	4.0	5.6	5.6	7.0	22	7.8	7.0	8.6	2.8	6.8
6	7.1	7.4	4.0	5.6	5.6	10	25	8.6	6.0	8.6	2.0	5.8
7	7.4	7.8	4.0	5.6	5.6	28	27	8.2	5.5	9.4	2.2	5.8
8	7.4	7.8	4.0	5.6	6.5	50	27	8.2	5.0	8.6	2.2	5.8
9	7.8	7.8	4.0	5.6	8.0	80	28	7.8	5.0	7.4	2.0	7.1
10	8.2	6.8	4.2	5.6	10	130	26	7.4	5.0	7.8	2.2	5.8
11	7.8	6.4	4.2	5.6	12	110	24	6.8	6.0	7.8	1.8	5.6
12	10	6.4	4.2	5.6	14	100	21	6.1	7.0	7.8	1.9	5.4
13	8.2	6.1	4.4	5.6	12	100	20	5.8	7.0	7.8	2.2	5.6
14	8.2	6.1	5.0	5.6	10	90	19	6.4	16	7.1	2.2	5.4
15	8.6	6.1	5.6	5.6	9.0	50	17	9.0	330	7.8	2.4	4.8
16	9.0	6.1	6.2	5.4	9.0	45	16	11	504	28	2.4	4.8
17	9.0	6.1	6.8	5.4	10	40	16	12	131	16	2.8	5.4
18	9.0	6.4	7.8	5.4	10	38	15	13	75	12	2.7	9.0
19	9.0	6.4	7.6	5.6	10	36	13	12	70	15	2.4	11
20	9.4	6.4	7.4	5.6	11	30	13	11	35	14	1.7	12
21	9.4	6.4	7.4	5.6	16	28	13	10	34	10	2.2	12
22	9.4	6.4	7.2	5.6	20	26	12	9.0	27	6.8	3.2	18
23	9.4	6.4	6.8	5.6	18	25	12	9.0	20	5.4	3.0	19
24	9.4	6.4	6.8	5.6	16	25	11	9.0	15	4.6	3.0	35
25	9.4	6.1	6.6	5.6	14	25	11	7.8	15	4.0	3.6	30
26	9.9	6.1	6.6	5.6	10	25	10	7.1	13	3.8	3.6	25
27	9.9	5.4	7.0	5.6	9.0	26	9.4	7.8	12	4.0	3.8	22
28	9.9	5.1	6.4	5.6	9.0	26	9.0	9.4	11	3.8	4.6	17
29	9.9	4.8	6.0	5.6	---	22	9.0	10	9.4	3.6	5.6	14
30	9.9	4.4	5.8	5.6	---	20	9.0	11	7.8	4.4	5.4	12
31	9.9	---	5.6	5.6	---	20	---	10	---	2.8	5.6	---
TOTAL	265.0	201.0	171.8	173.0	282.7	1241.0	518.4	273.2	1417.7	255.0	90.8	337.9
MEAN	8.55	6.70	5.54	5.58	10.1	40.0	17.3	8.81	47.3	8.23	2.93	11.3
MAX	10	9.4	7.8	5.6	20	130	28	13	504	28	5.6	35
MIN	6.1	4.4	4.0	5.4	5.6	7.0	9.0	5.8	5.0	2.8	1.7	4.8
AC-FT	526	399	341	343	561	2460	1030	542	2810	506	180	670

CAL YR 1976 TOTAL 13782.6 MEAN 37.7 MAX 1200 MIN 4.0 AC-FT 27340
WTR YR 1977 TOTAL 5227.5 MEAN 14.3 MAX 504 MIN 1.7 AC-FT 10370

KNIFE RIVER BASIN

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06340000 SPRING CREEK AT ZAP, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969-70, 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	DIS- SOLVED OXYGEN (MG/L)	PER- CENT SATUR- ATION	BIO- CHEM- ICAL OXYGEN DEMAND 5 DAY (MG/L)	HARD- NESS (CA, MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)
OCT											
29...	1220	10	1700	8.5	2.5	9	12.3	96	1.1	430	0
NOV											
29...	1320	5.0	2200	8.2	.0	8	--	--	1.0	560	0
DEC											
22...	1310	5.0	2000	8.6	.0	9	10.4	76	.4	530	0
JAN											
17...	1220	5.4	2090	--	.0	7	8.6	62	1.4	540	0
FEB											
14...	1230	10	2050	--	.0	8	10.8	79	1.6	500	0
MAR											
11...	1230	113	1140	--	--	--	--	--	--	--	--
15...	1630	48	980	--	.0	--	--	--	--	--	--
21...	1110	28	1080	7.6	.5	15	11.7	87	3.1	260	51
APR											
18...	1145	14	1500	8.3	12.0	15	10.3	102	2.1	390	33
MAY											
23...	1320	9.2	1800	8.4	19.0	20	8.4	96	2.3	450	31
JUN											
16...	1307	539	630	--	18.0	--	--	--	--	--	--
20...	1230	36	1290	8.0	21.0	120	7.2	121	2.2	360	100
JUL											
19...	1210	15	1540	8.3	24.5	40	6.8	71	2.7	390	0
AUG											
22...	1150	3.1	1580	8.4	16.0	28	7.6	82	6.2	370	0
SEP											
28...	1300	16	1350	8.4	12.0	--	9.0	90	1.9	340	12

DATE	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	ALKA- LINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)
OCT										
29...	78	57	270	57	5.7	8.8	536	0	440	2.7
NOV										
29...	110	69	350	57	6.4	10	723	0	593	7.3
DEC										
22...	110	63	310	55	5.8	8.8	675	0	554	2.7
JAN										
17...	110	65	320	56	6.0	8.7	695	--	570	--
FEB										
14...	100	61	290	55	5.6	9.6	611	--	501	--
MAR										
11...	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--
21...	53	32	130	51	3.5	8.7	260	0	210	10
APR										
18...	77	47	200	52	4.4	8.1	430	0	350	3.4
MAY										
23...	86	57	260	55	5.3	9.6	510	0	420	3.2
JUN										
16...	--	--	--	--	--	--	--	--	--	--
20...	70	44	160	49	3.7	8.4	310	0	250	5.0
JUL										
19...	76	49	230	55	5.1	9.5	480	0	390	3.8
AUG										
22...	74	46	250	58	5.6	9.4	540	1	440	3.5
SEP										
28...	62	45	190	54	4.5	8.2	400	0	330	2.5

E - Estimated.

KNIFE RIVER BASIN

06340000 SPRING CREEK AT ZAP, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED SULFATE (SO ₄) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO ₂) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO- GEN (N) (MG/L)
OCT										
29...	550	7.4	.4	7.4	1210	1240	1.65	32.7	.01	.00
NOV										
29...	720	11	.5	9.3	1660	1640	2.26	22.4	.03	.02
DEC										
22...	660	9.0	.5	14	1520	1510	2.07	--	.12	.19
JAN										
17...	640	8.6	.6	20	1540	1520	2.09	22.5	.32	.33
FEB										
14...	590	8.5	.5	19	1390	1380	1.89	37.5	.58	.12
MAR										
11...	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--
21...	310	4.8	.3	8.6	715	676	.97	54.1	.30	.10
APR										
18...	430	5.8	.3	6.3	1010	987	1.37	38.2	.03	.05
MAY										
23...	570	8.2	.6	9.4	1300	1250	1.77	32.3	.08	.04
JUN										
16...	--	--	--	--	--	--	--	--	--	--
20...	430	4.7	.4	11	925	882	1.26	89.9	.11	.09
JUL										
19...	490	6.3	.4	10	1130	1110	1.54	45.8	.01	.01
AUG										
22...	440	7.0	.5	11	1090	1110	1.48	9.12	1.2	.01
SEP										
28...	410	5.9	.4	8.8	951	928	1.29	41.1	.06	.02

DATE	TOTAL ORGANIC NITRO- GEN (N) (MG/L)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L)	TOTAL NITRO- GEN (N) (MG/L)	TOTAL NITRO- GEN (NO ₃) (MG/L)	TOTAL PHOS- PHORUS (P) (MG/L)	TOTAL ALUM- INUM (AL) (UG/L)	SUS- PENDE ALUM- INUM (AL) (UG/L)	DIS- SOLVED ALUM- INUM (AL) (UG/L)	TOTAL ARSENIC (AS) (UG/L)	SUS- PENDE ARSENIC (AS) (UG/L)	DIS- SOLVED ARSENIC (AS) (UG/L)	TOTAL BERYL- LIUM (BE) (UG/L)
OCT												
29...	.40	.40	.41	1.8	.03	--	--	--	--	--	--	--
NOV												
29...	.30	.32	.35	1.6	.02	--	--	--	--	--	--	--
DEC												
22...	.47	.66	.78	3.5	.02	110	100	10	0	0	0	0
JAN												
17...	.55	.88	1.2	5.3	.01	--	--	--	--	--	--	--
FEB												
14...	.62	.74	1.3	5.8	.09	--	--	--	--	--	--	--
MAR												
21...	.75	.85	1.2	5.1	.17	350	340	10	2	--	1	0
APR												
18...	.53	.58	.61	2.7	.04	--	--	--	--	--	--	--
MAY												
23...	.26	.30	.38	1.7	.09	--	--	--	--	--	--	--
JUN												
20...	1.0	1.1	1.2	5.4	.21	2500	--	30	4	--	2	0
JUL												
19...	.77	.78	.79	3.5	.04	--	--	--	--	--	--	--
AUG												
22...	.76	.77	2.0	8.7	.08	--	--	--	--	--	--	--
SEP												
28...	.60	.62	.68	3.0	.07	1200	1200	20	2	1	1	0

KNIFE RIVER BASIN

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06340000 SPRING CREEK AT ZAP, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	SUS- PENDE BERYL- LIUM (BE) (UG/L)	DIS- SOLVED BERYL- LIUM (BE) (UG/L)	DIS- SOLVED BORON (B) (UG/L)	TOTAL CAD- MIUM (CD) (UG/L)	SUS- PENDE CAD- MIUM (CD) (UG/L)	DIS- SOLVED CAD- MIUM (CD) (UG/L)	TOTAL CHRO- MIUM (CR) (UG/L)	SUS- PENDE CHRO- MIUM (CR) (UG/L)	DIS- SOLVED CHRO- MIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)	SUS- PENDE COPPER (CU) (UG/L)	DIS- SOLVED COPPER (CU) (UG/L)
OCT 29...	--	--	460	--	--	--	--	--	--	--	--	--
NOV 29...	--	--	570	--	--	--	--	--	--	--	--	--
DEC 22...	0	0	550	<10	<10	0	0	0	0	0	0	1
JAN 17...	--	--	530	--	--	--	--	--	--	--	--	--
FEB 14...	--	--	500	--	--	--	--	--	--	--	--	--
MAR 21...	0	0	240	<10	<9	1	0	--	0	<10	<9	1
APR 18...	--	--	360	--	--	--	--	--	--	--	--	--
MAY 23...	--	--	520	--	--	--	--	--	--	--	--	--
JUN 20...	--	0	430	<10	--	0	20	--	0	10	--	2
JUL 19...	--	--	470	--	--	--	--	--	--	--	--	--
AUG 22...	--	--	440	--	--	--	--	--	--	--	--	--
SEP 28...	0	10	370	<10	<10	0	10	10	0	<10	<10	0

DATE	TOTAL IRON (FE) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	SUS- PENDE LEAD (PB) (UG/L)	DIS- SOLVED LEAD (PB) (UG/L)	TOTAL LITHIUM (LI) (UG/L)	SUS- PENDE LITHIUM (LI) (UG/L)	DIS- SOLVED LITHIUM (LI) (UG/L)	TOTAL MAN- GANESE (MN) (UG/L)	SUS- PENDE MAN- GANESE (MN) (UG/L)
DEC 22...	500	30	<100	<99	1	80	0	90	70	0
JAN 17...	--	--	--	--	--	--	--	--	--	--
FEB 14...	--	--	--	--	--	--	--	--	--	--
MAR 21...	1100	100	<100	<98	2	40	0	40	100	30
APR 18...	--	--	--	--	--	--	--	--	--	--
MAY 23...	--	--	--	--	--	--	--	--	--	--
JUN 20...	4800	50	<100	--	3	50	--	40	300	--
JUL 19...	--	--	--	--	--	--	--	--	--	--
AUG 22...	--	--	--	--	--	--	--	--	--	--
SEP 28...	2000	20	<100	<99	1	50	0	60	120	110

DATE	DIS- SOLVED MAN- GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	SUS- PENDE MERCURY (HG) (UG/L)	DIS- SOLVED MERCURY (HG) (UG/L)	TOTAL MOLYB- DENUM (MO) (UG/L)	SUS- PENDE MOLYB- DENUM (MO) (UG/L)	DIS- SOLVED MOLYB- DENUM (MO) (UG/L)	TOTAL NICKEL (NI) (UG/L)	SUS- PENDE NICKEL (NI) (UG/L)	DIS- SOLVED NICKEL (NI) (UG/L)
DEC 22...	90	.6	.3	.3	1	0	1	<50	<46	4
JAN 17...	--	--	--	--	--	--	--	--	--	--
FEB 14...	--	--	--	--	--	--	--	--	--	--
MAR 21...	70	.9	--	.0	2	2	0	<50	<44	6
APR 18...	--	--	--	--	--	--	--	--	--	--
MAY 23...	--	--	--	--	--	--	--	--	--	--
JUN 20...	20	.1	--	.0	1	--	1	<50	--	6
JUL 19...	--	--	--	--	--	--	--	--	--	--
AUG 22...	--	--	--	--	--	--	--	--	--	--
SEP 28...	10	.1	.1	.0	1	1	0	<50	<49	1

KNIFE RIVER BASIN

06340000 SPRING CREEK AT ZAP, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL SELE- NIUM (SE) (UG/L)	SUS- PENDE SELE- NIUM (SE) (UG/L)	DIS- SOLVED SELE- NIUM (SE) (UG/L)	DIS- SOLVED VANA- DIUM (V) (UG/L)	TOTAL ZINC (ZN) (UG/L)	SUS- PENDE ZINC (ZN) (UG/L)	DIS- SOLVED ZINC (ZN) (UG/L)	DIS- SOL- VED ORGANIC CARBON (C) (MG/L)	SUS- PENDE ORGANIC CARBON (C) (MG/L)
OCT 29...	--	--	--	--	--	--	--	8.3	.1
NOV 29...	--	--	--	--	--	--	--	11	.4
DEC 22...	0	0	0	.0	0	0	10	7.5	.2
JAN 17...	--	--	--	--	--	--	--	6.8	.1
FEB 14...	--	--	--	--	--	--	--	9.3	.3
MAR 21...	0	0	0	.9	190	180	10	14	.6
APR 18...	--	--	--	--	--	--	--	9.5	1.2
MAY 23...	--	--	--	--	--	--	--	11	2.1
JUN 20...	0	0	0	.4	30	--	10	12	4.8
JUL 19...	--	--	--	--	--	--	--	12	1.8
AUG 22...	--	--	--	--	--	--	--	8.9	1.2
SEP 28...	0	0	0	.0	20	10	10	7.1	1.5

DATE	SUS- PENDE SEDI- MENT (MG/L)	SUS- PENDE SEDI- MENT DIS- CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	BED MAT. FALL DIAM. % FINER THAN .062 MM	BED MAT. FALL DIAM. % FINER THAN .125 MM	BED MAT. FALL DIAM. % FINER THAN .250 MM
OCT 29...	12	.32	--	--	--	--	--	--
NOV 29...	16	.22	--	--	--	--	--	--
DEC 22...	24	--	--	--	--	--	--	--
FEB 14...	13	.35	--	--	--	--	--	--
MAR 21...	24	1.8	--	--	--	--	--	--
APR 18...	75	2.8	--	--	--	--	--	--
MAY 23...	55	1.4	--	--	--	--	--	--
JUN 20...	172	17	88	94	100	--	--	--
JUL 19...	--	--	--	--	--	2	4	10
AUG 22...	71	.59	--	--	--	--	--	--
SEP 28...	55	2.4	87	96	100	8	11	24

DATE	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
JUL 19...	35	44	51	66	81	90	100
AUG 22...	--	--	--	--	--	--	--
SEP 28...	53	62	67	76	85	97	100

KNIFE RIVER BASIN

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06340000 SPRING CREEK AT ZAP, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	NOV 29,76 1320	DEC 22,76 1310	JAN 17,77 1220	FEB 14,77 1230	MAR 21,77 1110	APR 18,77 1145						
TOTAL CELLS/ML	1300	800	360	80	48000	9400						
DIVERSITY: DIVISION	1.4	1.3	1.5	0.0	0.1	1.0						
...CLASS	1.4	1.3	1.5	0.0	0.1	1.5						
...ORDER	1.4	1.6	2.1	0.0	0.1	1.8						
...FAMILY	1.8	2.5	2.6	0.0	0.2	2.1						
...GENUS	1.9	2.8	2.6	0.0	0.2	2.1						
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												
....COELASTRACEAE												
.....COELASTRUM	--	--	--	--	--	--	--	--	--	--		
.....OOCYSTACEAE												
.....ANKISTRODESMUS	500#	38	360#	44	12	3	80#	100	*	0	1000	11
.....DICTYOSPHAERIUM	--	--	--	--	--	--	--	--	--	--	--	--
.....KIRCHNERIELLA	--	--	6	1	--	--	--	--	--	--	--	--
.....TETRAEDRON	--	--	13	2	--	--	--	--	--	--	--	--
.....SCENEDESMACEAE												
.....CRUCIGENIA	--	--	--	--	--	--	--	--	--	--	--	--
.....SCENEDESMUS	57	4	91	11	--	--	--	--	*	0	2600#	28
.....TETRASTRUM	38	3	26	3	--	--	--	--	--	--	--	--
...VOLVOCALES												
....CHLAMYDOMONADACEAE												
.....CARTERIA	--	--	--	--	--	--	--	--	--	--	--	--
....CHLAMYDOMONAS	19	1	45	6	3	1	--	--	*	0	75	1
...ZYGNETALES												
....DESMIDIACEAE												
.....STAUSTRUM	--	--	--	--	--	--	--	--	--	--	--	--
CHRYSOPHYTA												
..BACILLARIOPHYCEAE												
...CENTRALES												
....COSCINOIDISCEAE												
.....CYCLOTELLA	--	--	--	--	60#	17	--	--	*	0	1100	12
...PENNALES												
....ACHNANTHACEAE												
.....ACHNANTHES	--	--	--	--	--	--	--	--	--	--	--	--
....COCCONEIS	--	--	*	0	--	--	*	0	--	--	--	--
....RHOICOSPHEA	--	--	*	0	--	--	--	--	--	--	--	--
....CYMBELLACEAE	--	--	--	--	--	--	--	--	--	--	--	--
....EPITHEMIA	--	--	--	--	6	2	--	--	--	--	--	--
...DIATOMACEAE												
....DIATOMA	--	--	6	1	--	--	--	--	*	0	--	--
....FRAGILARIACEAE	--	--	--	--	--	--	--	--	--	--	--	--
....SYNEDRA	--	--	19	2	--	--	--	--	--	--	--	--
....GOMPHONEMACEAE												
.....GOMPHONEMA	10	1	26	3	3	1	--	--	--	--	--	--
....MERIDIACEAE												
.....MERIDION	--	--	--	--	3	1	--	--	--	--	--	--
...NAVICULACEAE												
....GYROSIGMA	--	--	--	--	--	--	--	--	--	--	--	--
....NAVICULA	10	1	13	2	48	14	--	--	*	0	75	1
....PINNULARIA	--	--	--	--	--	--	--	--	--	--	--	--
....STAURONEIS	--	--	--	--	3	1	--	--	--	--	--	--
...NITZSCHACEAE												
.....NITZSCHIA	110	8	120	15	66#	19	--	--	*	0	450	5
....SURIRELLACEAE												
.....SURIRELLA	--	--	6	1	--	--	--	--	--	--	--	--
..CHRYSOPHYCEAE												
...CHRYSDOMONADACEAE												
....CHROMULINACEAE	--	--	--	--	--	--	--	--	--	--	--	--
....CHRYSOCOCCUS	--	--	--	--	--	--	--	--	--	--	4000#	42
....OCHROMONADACEAE												
.....DINORBYON	--	--	6	1	--	--	--	--	--	--	--	--
CYANOPHYTA (BLUE-GREEN ALGAE)												
..CYANOPHYCEAE												
...CHROCOCCALES												
....CHROCOCCACEAE												
.....ANACYSTIS	--	--	--	--	--	--	--	--	--	--	*	0
....HORMOGONIALES												
.....OSCILLATORIA	--	--	--	--	120#	34	--	--	46000#	97	--	--
....RIVULARIACEAE	--	--	--	--	--	--	--	--	710	1	--	--
....RAPHIDIOPSIS	--	--	--	--	--	--	--	--	--	--	--	--
....OSCILLATORIA	--	--	--	--	--	--	--	--	--	--	--	--
....PHORMIDIUM	--	--	--	--	--	--	--	--	--	--	--	--

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
 * - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

CONTINUED ...

KNIFE RIVER BASIN

06340000 SPRING CREEK AT ZAP, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

(CONTINUED)

DATE TIME	NOV 29,76 1320		DEC 22,76 1310		JAN 17,77 1220		FEB 14,77 1230		MAR 21,77 1110		APR 18,77 1145	
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
EUGLENOPHYTA (EUGLENOIDS)												
..CRYPTOPHYCEAE												
...CRYPTOMONIDAE												
....CRYPTOMONADACEAE												
.....CRYPTOMONAS	--	-	52	6	3	1	--	-	--	-	--	-
..EUGLENOPHYCEAE												
...EUGLENALES												
....EUGLENAEAE												
.....EUGLENA	--	-			--	-	--	-	--	-	75	1
....TRACHELOMONAS	580#	44	--	-	27	8	--	-	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)												
..DINOPHYCEAE												
...GYMNODINIALES												
....GYMNODINIACEAE												
.....GYMNODINIUM	--	-	19	2	--	-	--	-	--	-	--	-
...PERIDINIALES												
....GLENODINIACEAE												
.....GLENODINIUM	--	-	--	-	--	-	--	-	*	0	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
 * - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

KNIFE RIVER BASIN

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06340000 SPRING CREEK AT ZAP, ND--Continued
PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	MAY 23,77 1320	JUN 30,77 1230	JUL 19,77 1210	AUG 22,77 1150	SEP 28,77 1300
TOTAL CELLS/ML	14000	1600	6200	5500	1400
DIVERSITY: DIVISION	0.9	1.2	1.6	1.9	1.5
..CLASS	1.1	1.2	1.6	1.9	1.6
..ORDER	1.3	1.7	2.2	2.3	1.8
...FAMILY	0.0	2.0	2.5	2.7	2.4
....GENUS	0.0	2.2	2.9	2.7	2.7

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										
...COELASTRACEAE										
...COELASTRUM	--	-	--	-	140	2	--	-	--	-
...ODCYSTACEAE										
...ANKISTRODESMUS	7200#	50	57	4	240	4	690	13	210	14
...DICTYOSPHAERIUM	--	-	110	7	200	3	--	-	--	-
...KIRCHNERIELLA	--	-	--	-	--	-	--	-	--	-
...TETRAEDRON	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
...CRUCIGENIA	470	3	38	2	430	7	--	-	290#	21
...SCENEDESMUS	2400#	17	270#	17	850	14	1200#	21	240#	16
...TETRASTRUM	--	-	--	-	--	-	--	-	--	-
...VOLVOCALES										
...CHLAMYDOMONADACEAE										
...CARTERIA	--	-	--	-	--	-	120	2	--	-
...CHLAMYDOMONAS	--	-	9	1	--	-	--	-	52	4
...ZYGNEMALES										
...DESMIDIACEAE										
...STAUSTRUM	--	-	--	-	68	1	--	-	--	-
CHRYSTOPHYTA										
..BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
...CYCLOTELLA	1500	11	9	1	170	3	--	-	15	1
..PENNALES										
...ACHNANTHACEAE										
...ACHNANTHES	120	1	--	-	--	-	--	-	--	-
...COCCONEIS	--	-	--	-	*	0	--	-	--	-
...RHODOSPHENTIA	--	-	--	-	--	-	--	-	--	-
...CYMBELLACEAE										
...EPITHEMIA	--	-	--	-	--	-	--	-	--	-
...DIATOMACEAE										
...DIATOMA	--	-	--	-	--	-	--	-	--	-
...FRAGILARIACEAE										
...SYNEDRA	--	-	--	-	120	2	--	-	7	1
...GOMPHONEMATACEAE										
...GOMPHONEMA	--	-	--	-	--	-	--	-	--	-
...MERIDIONACEAE										
...MERIDION	--	-	--	-	--	-	--	-	--	-
...NAVICULACEAE										
...GYROSTIGMA	--	-	--	-	*	0	--	-	--	-
...NAVICULA	--	-	9	1	51	1	120	2	29	2
...PINNULARIA	--	-	--	-	--	-	--	-	7	1
...STAURONEIS	--	-	--	-	--	-	--	-	--	-
...NITZSCHIA	1800	12	19	1	--	-	1000#	19	81	6
...SURIPELLACEAE										
...SURIPELLA	--	-	--	-	--	-	--	-	--	-
..CHRYSTOPHYCEAE										
...CHRYSONOMADALES	830	6	--	-	--	-	--	-	--	-
...CHROMULINACEAE										
...CHRYSOCCUS	--	-	--	-	--	-	--	-	--	-
...OCHROMONADACEAE										
...DINOBYRON	--	-	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROCOCCALES										
...CHROCOCCACEAE										
...ANACYSTIS	--	-	180	11	1000#	17	460	8	440#	31
...HORMOGONALES										
...OSCILLATORIACEAE										
...OSCILLATORIA	--	-	840#	54	--	-	1300#	23	--	-
...RIVULARIACEAE										
...RAPHIIDIOPSIS	--	-	--	-	--	-	--	-	--	-
...OSCILLATORIACEAE										
...PHORMIDIUM	--	-	--	-	2300#	38	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
 * - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

CONTINUED ...

06340000 SPRING CREEK AT ZAP, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

(CONTINUED)

DATE TIME	MAY 23,77 1320		JUN 30,77 1230		JUL 19,77 1210		AUG 22,77 1150		SEP 28,77 1300	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
EUGLENOPHYTA (EUGLENOIDS)										
..CRYPTOPHYCEAE										
...CRYPTOMONIDALES										
...CRYPTOMONODACEAE										
....CRYPTOMONAS	--	-	--	-	--	-	--	-	37	3
..EUGLENOPHYCEAE										
...EUGLENALES										
...EUGLENACEAE										
....EUGLENA	--	-	19	1	140	2	--	-	15	1
....TRACHELOMONAS	--	-	9	1	430	7	690	13	--	-
PYRRHOPHYTA (FIRE ALGAE)										
..DINOPHYCEAE										
...GYMNODINIALES										
...GYMNODINIACEAE										
....GYMNODINIUM	--	-	--	-	--	-	--	-	7	1
...PERIDINIALES										
...GLENODINIACEAE										
....GLENODINIUM	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

PERIPHYTON

Date	Length of exposure (days)	Biomass (mg/m ²)		Chlorophyll	Chlorophyll	Biomass pigment ratio	Sampling method
		Dry weight	Ash weight	a (mg/m ²)	b (mg/m ²)		
Oct. 29	30	80,770	61,690	--	--	--	Polyethylene strip
Aug. 22	34	6,690	5,670	.000	.052	19,620	Polyethylene strip

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LOCATION.--Lat 47°08'05", long 101°39'35", in NW¼NW¼SW¼ sec.12, T.142 N., R.87 W., Oliver County, Hydrologic Unit 10130201, on right bank 10 mi (16 km) southeast of Beulah.

REMARKS.--Records poor.

AVERAGE DISCHARGE.--12 years, 3.24 ft³/s (0.918 m³/s), 2,350 acre-ft/yr (2.90 hm³/yr); median of yearly mean discharges, 2.8 ft³/s (0.079 m³/s), 2,030 acre-ft/yr (2.5 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,700 ft³/s (671 m³/s) June 24, 1966, gage height, 17.2 ft (5.243 m), from floodmark; from rating curve extended above 77 ft³/s (2.18 m³/s) on basis of slope-area measurement of peak flow; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 50 ft³/s (1.42 m³/s) Mar. 9, gage height, 4.49 ft (1.369 m), backwater from ice, no peak above base of 100 ft³/s (2.83 m³/s); no flow for several days.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	0	.01	.05	.05	.08	1.8	.04	.12	0		0
2	0	0	.01	.05	.05	.10	1.6	.03	.10	.01		0
3		0	.02	.05	.07	.20	1.6	.02	.06	.02		0
4	.01	0	.02	.05	.08	.30	1.6	.02	.10	.04		0
5	.02	0	.02	.05	.07	.50	1.7	.30	.14	.06		0
6	.02	0	.02	.05	.06	.90	1.8	.40	.12	.04		0
7	.01	0	.02	.05	.07	2.5	2.0	.30	.08	0		0
8	.01	0	.02	.05	.10	8.0	2.2	.30	.06	0		0
9	.01	0	.02	.05	.20	33	2.4	.25	.04	0		0
10	.01	0	.02	.05	.25	16	2.6	.20	.08	0		0
11	.01	0	.02	.05	.20	7.0	2.4	.18	.04	.08		0
12	.01	0	.02	.05	.10	6.0	2.0	.16	.04	.04		0
13	.01	0	.05	.05	.08	5.0	1.6	.14	.04	4.6		0
14	.01	0	.05	.05	.07	4.0	1.0	.14	.01	4.4		0
15	.01	0	.05	.04	.06	3.0	.90	.12	.06	.60		0
16	.01	0	.10	.03	.07	2.0	.80	.12	.30	.25		0
17	.01	0	.10	.03	.08	1.2	.60	.12	.53	.22		0
18	.01	0	.10	.05	.08	1.0	.40	.10	.16	.10		0
19	.01	.01	.08	.07	.09	.90	.15	.10	.10	.01		0
20	.01	.01	.04	.08	.10	.90	.07	.12	.04	0		.04
21	.01	.01	.04	.09	.20	.90	.06	.10	.08	0		.06
22	.01	.01	.03	.10	.15	.90	.05	.12	.08	0		.22
23	.01	.01	.01	.09	.10	1.0	.05	.14	.08	0		.47
24	.01	.01	.03	.09	.10	1.0	.04	.14	.04	0		1.8
25	.02	.01	.05	.09	.09	1.0	.04	.14	.04	0		13
26	.01	.01	.10	.07	.07	1.0	.04	.12	.02	0		5.6
27	.01	.01	.35	.06	.07	1.2	.04	.12	.02	0		2.4
28	.01	.01	.30	.05	.07	1.4	.04	.12	.01	0		1.3
29	.01	.01	.10	.05	---	1.6	.04	.10	0	0		.85
30	0	.01	.08	.05	---	1.8	.04	.16	0	0		.85
31	0	---	.06	.05	---	2.0	---	.12	---	0		---
TOTAL	.29	.12	1.94	1.79	2.78	106.38	29.66	4.54	2.59	10.47	0	26.59
MEAN	.009	.004	.063	.058	.099	3.43	.99	.15	.086	.34	0	.89
MAX	.02	.01	.35	.10	.25	33	2.6	.40	.53	4.6	0	13
MIN	0	0	.01	.03	.05	.08	.04	.02	0	0	0	0
AC-FT	.6	.2	3.8	3.6	5.5	211	59	9.0	5.1	21	0	53
CAL YR 1976	TOTAL 594.26		MEAN 1.62	MAX 79	MIN 0	AC-FT 1180						
WTR YR 1977	TOTAL 187.15		MEAN .51	MAX 33	MIN 0	AC-FT 371						

KNIFE RIVER BASIN

06340500 KNIFE RIVER AT HAZEN, ND

LOCATION.--Lat 47°17'06", long 101°37'26", in SE¼ sec.18, T.144 N., R.86 W., Mercer County, Hydrologic Unit 10130201, on right bank at upstream side of highway bridge, 0.5 mi (0.8 km) south of Hazen and 3 mi (5 km) upstream from Antelope Creek.

DRAINAGE AREA.--2,240 mi² (5,800 km²), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October to November 1928, March 1929 to September 1933, August 1937 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1146: 1943. WSP 1279: 1930-31, 1932-33(M). WSP 1917: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,712.35 ft (521.924 m) above mean sea level. Prior to Sept. 25, 1947, nonrecording gages at same site and datum.

REMARKS.--Records good except those for the winter period, which are fair. Small diversions above station. Slight regulation by Lake Ilo 81 mi (130 km) upstream, capacity, 7,130 acre-ft (8.79 hm³).

AVERAGE DISCHARGE.--44 years (1929-33, 1937-77), 177 ft³/s (5.013 m³/s), 128,200 acre-ft/yr (158 hm³/yr); median of yearly mean discharges, 150 ft³/s (4.25 m³/s), 109,000 acre-ft/yr (130 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,300 ft³/s (1,000 m³/s) June 24, 1966, gage height, 27.01 ft (8.233 m); no flow at times in 1933, 1959, 1962.

EXTREMES OUTSIDE PERIOD OF RECORD.--According to local residents, the floods of 1943 and 1950 were not exceeded during the period 1884 to 1942.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,200 ft³/s (34.0 m³/s) June 19, gage height, 9.75 ft (2.972 m), maximum gage height, 11.69 ft (3.563 m) Mar. 11, backwater from ice, no peak above base of 1,500 ft³/s (42.5 m³/s); minimum daily, 12 ft³/s (0.34 m³/s) several days during year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	26	18	13	13	19	150	30	96	47	18	14
2	21	26	18	12	15	19	141	29	98	42	17	15
3	18	26	19	12	16	20	148	28	112	41	16	15
4	20	26	18	12	16	20	165	31	103	49	17	16
5	20	24	18	12	15	20	165	125	86	46	16	15
6	20	24	16	12	15	30	160	53	70	39	16	15
7	20	24	16	12	16	50	169	48	68	38	16	15
8	20	24	16	12	18	150	190	33	53	37	15	16
9	20	24	16	12	20	400	224	29	41	34	14	16
10	20	24	16	12	22	700	223	28	39	58	13	16
11	19	22	18	12	22	1100	200	26	36	59	12	16
12	18	20	18	12	22	950	164	24	35	44	13	18
13	18	20	18	12	22	750	133	28	236	56	13	17
14	18	20	19	12	21	450	109	22	151	67	13	16
15	18	20	19	12	21	300	99	22	254	75	15	15
16	18	21	19	12	22	270	89	22	892	128	15	14
17	18	21	19	12	22	260	81	70	934	103	14	14
18	22	22	19	13	22	230	73	59	976	69	14	22
19	21	22	18	14	22	140	66	46	1020	53	13	28
20	20	21	18	14	23	100	60	43	714	45	13	45
21	20	21	18	14	25	150	55	41	396	39	14	33
22	20	20	18	15	24	170	50	40	256	33	13	39
23	21	20	18	15	22	154	46	33	178	29	13	76
24	22	20	18	15	21	144	42	30	127	25	12	249
25	23	20	18	15	21	153	42	30	190	23	12	405
26	26	19	20	14	19	143	39	30	139	21	12	464
27	26	17	20	13	19	133	37	31	93	20	13	404
28	25	17	16	12	19	132	35	39	76	20	13	258
29	26	17	14	12	---	139	33	43	67	20	13	169
30	26	17	14	12	---	128	32	81	57	20	14	112
31	26	---	14	13	---	122	---	117	---	19	14	---
TOTAL	652	645	544	396	555	7546	3220	1311	7593	1399	436	2567
MEAN	21.0	21.5	17.5	12.8	19.8	243	107	42.3	253	45.1	14.1	85.6
MAX	26	26	20	15	25	1100	224	125	1020	128	18	464
MIN	18	17	14	12	13	19	32	22	35	19	12	14
AC-FT	1290	1280	1080	785	1100	14970	6390	2600	15060	2770	865	5090
CAL YR 1976 TOTAL	38863		MEAN 106	MAX 2400	MIN 12	AC-FT 77080						
WTR YR 1977 TOTAL	26864		MEAN 73.6	MAX 1100	MIN 12	AC-FT 53280						

06340500 KNIFE RIVER AT HAZEN, ND--Continued
(National Stream-Quality Accounting Network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1946-51, 1970-71, 1973 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, 2,800 micromhos Feb. 20, 1977; minimum daily, 303 micromhos Apr. 23, 1975.

WATER TEMPERATURES: Maximum daily, 30.0°C July 18, 1977; minimum daily, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,800 micromhos Feb. 20; minimum daily, 520 micromhos June 20.

WATER TEMPERATURES: Maximum daily, 30.0°C Jul. 18; minimum daily, 0.0°C on many days during winter months.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	AIR TEMPERATURE (DEG C)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	TURBIDITY (NTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	CHEMICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L)
OCT 20...	1100	20	1420	8.4	--	3.0	7	--	11.6	91	--
NOV 30...	1240	18	1875	8.1	--	.0	8	--	11.0	80	28
DEC 21...	1310	18	2000	7.9	--	.0	8	--	10.6	77	--
JAN 18...	1220	14	2260	7.7	--	.0	7	--	8.0	58	--
FEB 15...	1220	21	2120	7.8	--	.0	6	--	11.0	80	--
MAR 15...	1405	283	635	--	--	.5	--	--	--	--	--
APR 22...	1250	170	880	8.1	2.0	.5	75	60	12.3	98	53
MAY 19...	1200	68	1510	8.5	--	11.5	30	30	9.8	95	42
JUN 25...	1245	31	1700	--	--	24.0	20	20	8.7	109	87
JUL 23...	1200	175	790	8.2	--	22.0	280	280	7.4	90	46
AUG 20...	1300	45	1170	8.5	--	24.5	40	45	9.3	118	52
SEP 23...	1135	12	1380	8.3	--	15.5	30	31	9.2	97	19
SEP 22...	1020	39	1500	8.3	--	13.0	60	60	9.2	93	33

DATE	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	FECAL COLIFORMS (COL./100 ML)	FECAL STREPTOCOCCI (COL./100 ML)	HARDNESS (CA+MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (MG/L)	DISSOLVED MAGNESIUM (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	DISSOLVED PHOSPHATE (MG/L)
OCT 20...	.7	B100	B150	--	--	--	--	--	--	--	--
NOV 30...	1.5	60	190	430	0	90	49	310	61	6.5	9.4
DEC 21...	1.1	340	290	450	0	97	49	340	62	7.0	9.1
JAN 18...	2.0	E11000	E9600	450	0	98	51	330	61	6.7	8.6
FEB 15...	.9	--	620	470	0	100	54	320	59	6.4	9.1
MAR 15...	--	--	--	--	--	--	--	--	--	--	--
APR 22...	1.4	>2000	460	170	0	34	20	120	60	4.0	7.8
MAY 19...	2.9	B150	--	310	0	60	38	260	64	6.5	8.3
JUN 25...	2.0	570	600	340	0	67	43	310	65	7.3	9.9
JUL 23...	1.9	1250	1970	160	0	37	17	120	60	4.1	7.9
AUG 20...	4.4	--	--	240	0	50	27	200	64	5.7	9.1
SEP 23...	2.4	<1	B400	320	0	69	37	220	59	5.3	9.0
SEP 22...	2.0	B330	1130	330	0	65	41	240	60	5.7	8.4

B - Results based on colony count outside the acceptable range (non-ideal colony count).
E - Estimated.

KNIFE RIVER BASIN

06340500 KNIFE RIVER AT HAZEN, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	BICARBONATE (HCO ₃) (MG/L)	CARBONATE (CO ₃) (MG/L)	ALKALINITY AS CaCO ₃ (MG/L)	CARBON DIOXIDE (CO ₂) (MG/L)	DIS- SOLVED SULFATE (SO ₄) (MG/L)	DIS- SOLVED CHLORIDE (CL) (MG/L)	TOTAL FLUORIDE (F) (MG/L)	DIS- SOLVED FLUORIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO ₂) (MG/L)	DIS- SOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)
OCT 20...	--	--	--	--	--	--	--	.4	11	--
NOV 30...	715	0	586	9.1	520	6.9	--	.4	11	1410
DEC 21...	776	0	636	16	570	8.0	--	.5	14	1510
JAN 18...	778	0	638	25	530	8.4	--	.5	20	1440
FEB 15...	751	0	616	19	550	6.1	--	.5	19	1430
MAR 15...	--	--	--	--	--	--	--	--	--	--
22...	231	0	190	2.9	220	3.7	1.1	.2	7.3	581
APR 19...	430	0	350	2.2	470	3.6	.7	.8	7.0	1090
MAY 25...	540	--	440	--	500	6.6	.9	.5	11	1240
JUN 23...	220	0	180	2.2	220	3.0	.5	.3	8.1	525
JUL 20...	390	0	320	2.0	330	5.7	.4	.4	9.6	812
AUG 23...	520	0	430	4.2	340	6.4	.4	.4	14	952
SEP 22...	490	0	400	3.9	410	5.6	--	.5	12	1040

DATE	TOTAL FILT- RABLE RESIDUE (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	TOTAL NON- FILT- RABLE RESIDUE (MG/L)	SUS- PENDED SOLIDS (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL NITRATE PLUS NITRITE (N) (MG/L)	TOTAL AMMONIA NITRO- GEN (N) (MG/L)
OCT 20...	--	--	--	--	--	3	--	--	.01	.03
NOV 30...	--	1350	1.92	68.5	--	--	--	--	.08	.04
DEC 21...	--	1470	2.05	73.4	--	--	--	--	.15	.18
JAN 18...	--	1430	1.96	54.4	--	--	--	--	.39	.62
FEB 15...	--	1430	1.94	81.1	--	--	--	--	.53	.15
MAR 15...	--	--	--	--	--	--	--	--	--	--
22...	--	528	.79	267	--	--	.29	.01	.30	.24
APR 19...	--	1060	1.48	200	--	--	.00	.01	.01	.02
MAY 25...	--	1210	1.69	104	--	--	.01	.00	.01	.01
JUN 23...	--	523	.71	248	--	--	.37	.04	.41	.11
JUL 20...	--	824	1.10	98.7	--	--	.00	.01	.00	.01
AUG 23...	--	952	1.29	30.8	--	--	.00	.01	.01	.01
SEP 22...	1000	1020	1.41	110	65	--	.03	.01	.04	.04

KNIFE RIVER BASIN

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06340500 KNIFE RIVER AT HAZEN, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL ORGANIC NITRO- GEN (N) (MG/L)	TOTAL KJEL- DAHL- NITRO- GEN (N) (MG/L)	TOTAL NITRO- GEN (N) (MG/L)	TOTAL NITRO- GEN (NO3) (MG/L)	TOTAL PHOS- PHORUS (P) (MG/L)	TOTAL ORTHO PHOS- PHORUS (P) (MG/L)	TOTAL HYDRO- LYZABLE PHOS- PHORUS (P) (MG/L)	TOTAL ORTHO + HYDRO- PHOS- PHORUS (P) (MG/L)	TOTAL ORGANIC PHOS- PHORUS (P) (MG/L)	TOTAL ALUM- INUM (AL) (UG/L)	SUS- PENDE ALUM- INUM (AL) (UG/L)	DIS- SOLVED ALUM- INUM (AL) (UG/L)
OCT												
20...	.56	.59	.60	2.7	.04	--	--	--	--	--	--	--
NOV												
30...	.52	.56	.64	2.8	.05	--	--	--	--	--	--	--
DEC												
21...	.50	.68	.83	3.7	.01	--	--	--	--	110	90	20
JAN												
18...	.68	1.3	1.7	7.5	.07	--	--	--	--	--	--	--
FEB												
15...	.54	.69	1.2	5.4	.04	--	--	--	--	--	--	--
MAR												
22...	1.2	1.4	1.7	7.5	.21	--	--	--	--	1600	--	30
APR												
19...	.99	.91	.92	4.1	.03	--	--	--	--	710	--	--
MAY												
25...	.99	1.0	1.0	4.5	.12	--	--	--	--	700	--	--
JUN												
23...	1.3	1.4	1.8	8.0	.29	--	--	--	--	6900	6900	40
JUL												
20...	.82	.83	.83	3.7	.08	--	--	--	--	1100	--	--
AUG												
23...	1.4	1.4	1.4	6.2	.10	--	--	--	--	--	--	--
SEP												
22...	.72	.76	.80	3.5	.10	.01	.09	.10	.00	1100	1100	20

DATE	TOTAL ARSENIC (AS) (UG/L)	SUS- PENDE ARSENIC (AS) (UG/L)	DIS- SOLVED ARSENIC (AS) (UG/L)	TOTAL BARIUM (BA) (UG/L)	SUS- PENDE BARIUM (BA) (UG/L)	DIS- SOLVED BARIUM (BA) (UG/L)	TOTAL BERYL- LIUM (BE) (UG/L)	SUS- PENDE BERYL- LIUM (BE) (UG/L)	DIS- SOLVED BERYL- LIUM (BE) (UG/L)	TOTAL BORON (B) (UG/L)	DIS- SOLVED BORON (B) (UG/L)	TOTAL CAD- MIUM (CD) (UG/L)
OCT												
20...	--	--	--	--	--	--	--	--	--	--	300	--
NOV												
30...	--	--	--	--	--	--	--	--	--	--	350	--
DEC												
21...	0	0	0	0	0	0	0	0	0	410	380	<10
JAN												
18...	--	--	--	--	--	--	--	--	--	--	360	--
FEB												
15...	--	--	--	--	--	--	--	--	--	--	350	--
MAR												
22...	3	--	2	0	0	100	0	--	0	160	170	<10
APR												
19...	2	--	--	0	--	--	10	--	--	240	210	10
MAY												
25...	1	--	--	200	--	--	0	--	--	380	360	<10
JUN												
23...	5	--	2	200	--	100	0	--	0	220	190	<10
JUL												
20...	3	--	--	200	--	--	0	--	--	310	270	10
AUG												
23...	--	--	--	--	--	--	--	--	--	--	300	--
SEP												
22...	2	0	2	--	--	--	10	0	10	360	--	<10

DATE	SUS- PENDE CHRO- MIUM (CR) (UG/L)	DIS- SOLVED CHRO- MIUM (CR) (UG/L)	TOTAL CHRO- MIUM (CR) (UG/L)	SUS- PENDE CHRO- MIUM (CR) (UG/L)	DIS- SOLVED CHRO- MIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	SUS- PENDE COBALT (CO) (UG/L)	DIS- SOLVED COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	SUS- PENDE COPPER (CU) (UG/L)	DIS- SOLVED COPPER (CU) (UG/L)
DEC											
21...	<9	1	0	0	0	<50	<48	2	0	0	2
MAR											
22...	<10	0	0	--	0	<50	<50	0	20	16	4
APR											
19...	--	--	<10	--	--	<50	--	--	20	--	--
MAY											
25...	--	--	0	--	--	<50	--	--	<10	--	--
JUN											
23...	<10	0	10	--	0	<50	<50	0	20	15	5
JUL											
20...	--	--	0	--	--	<50	--	--	<10	--	--
AUG											
23...	--	--	--	--	--	--	--	--	--	--	--
SEP											
22...	<10	0	10	10	0	<50	<50	0	<10	<9	1

KNIFE RIVER BASIN

06340500 KNIFE RIVER AT HAZEN, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL IRON (FE) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	SUS- PENDE D LEAD (PB) (UG/L)	DIS- SOLVED LEAD (PB) (UG/L)	TOTAL LITHIUM (LI) (UG/L)	SUS- PENDE D LITHIUM (LI) (UG/L)	DIS- SOLVED LITHIUM (LI) (UG/L)	TOTAL MAN- GANESE (MN) (UG/L)	SUS- PENDE D MAN- GANESE (MN) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)
OCT											
20...	--	--	--	--	--	--	--	--	--	--	--
NOV											
30...	--	30	--	--	--	--	--	--	--	--	--
DEC											
21...	640	30	<100	<97	3	60	0	70	160	0	170
JAN											
18...	--	50	--	--	--	--	--	--	--	--	--
FEB											
15...	--	30	--	--	--	--	--	--	--	--	--
MAR											
22...	3500	180	<100	<96	4	20	0	20	130	80	50
APR											
19...	1600	60	<100	--	--	40	--	--	240	--	--
MAY											
25...	1500	30	<100	--	--	50	--	--	220	--	--
JUN											
23...	13000	100	<100	<98	2	20	--	20	340	--	8
JUL											
20...	2200	50	<100	--	--	30	--	--	180	--	--
AUG											
23...	--	30	--	--	--	--	--	--	--	--	--
SEP											
22...	2100	20	<100	<100	0	40	0	50	220	210	10

DATE	TOTAL MERCURY (HG) (UG/L)	SUS- PENDE D MERCURY (HG) (UG/L)	DIS- SOLVED MERCURY (HG) (UG/L)	TOTAL MOLYB- DENUM (MO) (UG/L)	SUS- PENDE D MOLYB- DENUM (MO) (UG/L)	DIS- SOLVED MOLYB- DENUM (MO) (UG/L)	TOTAL NICKEL (NI) (UG/L)	SUS- PENDE D NICKEL (NI) (UG/L)	DIS- SOLVED NICKEL (NI) (UG/L)	TOTAL SELE- NIUM (SE) (UG/L)	SUS- PENDE D SELE- NIUM (SE) (UG/L)
DEC											
21...	.8	.0	.8	2	1	1	<50	<44	6	1	1
MAR											
22...	.2	--	.0	2	2	0	50	43	7	1	0
APR											
19...	.0	--	--	1	--	--	<50	--	--	0	--
MAY											
25...	.0	--	--	2	--	--	<50	--	--	0	--
JUN											
23...	.0	--	.0	2	0	2	<50	--	4	2	2
JUL											
20...	.0	--	--	3	--	--	<50	--	--	2	--
AUG											
23...	--	--	--	--	--	--	--	--	--	--	--
SEP											
22...	.1	.1	.0	2	0	2	<50	<49	1	0	0

DATE	DIS- SOLVED SELE- NIUM (SE) (UG/L)	TOTAL SILVER (AG) (UG/L)	TOTAL STRON- TIUM (SR) (UG/L)	SUS- PENDE D STRON- TIUM (SR) (UG/L)	DIS- SOLVED STRON- TIUM (SR) (UG/L)	DIS- SOLVED VANA- DIUM (V) (UG/L)	TOTAL ZINC (ZN) (UG/L)	SUS- PENDE D ZINC (ZN) (UG/L)	DIS- SOLVED ZINC (ZN) (UG/L)	DIS- SOLVED GROSS ALPHA AS U-NAT. (UG/L)
DEC										
21...	0	<10	1400	0	1500	.0	10	0	10	--
MAR										
22...	1	<10	440	0	470	1.8	40	30	10	--
APR										
19...	--	<10	--	--	--	--	10	--	--	--
MAY										
25...	--	<10	--	--	--	--	10	--	--	--
JUN										
23...	0	<10	400	--	440	.7	50	40	6	--
JUL										
20...	--	10	--	--	--	--	8	--	--	--
AUG										
23...	--	--	--	--	--	--	--	--	--	--
SEP										
22...	0	<10	--	--	--	.0	10	0	10	<13

KNIFE RIVER BASIN

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06340500 KNIFE RIVER AT HAZEN, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	SUS- PENDE D GROSS ALPHA AS U-NAT. (UG/L)	DIS- SOLVED GROSS BETA AS CS-137 (PC/L)	SUS- PENDE D GROSS BETA AS CS-137 (PC/L)	DIS- SOLVED GROSS BETA AS SR90 /Y90 (PC/L)	SUS- PENDE D GROSS BETA AS SR90 /Y90 (PC/L)	DIS- SOLVED RA-226 (RADON METHOD) (PC/L)	DIS- SOLVED NATURAL URANIUM (U) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	DIS- SOL- VED ORGANIC CARBON (C) (MG/L)	SUS- PENDE D GROSS ALPHA AS U-NAT. (UG/L)
OCT 20...	--	--	--	--	--	--	--	--	8.5	.4
NOV 30...	--	--	--	--	--	--	--	--	9.5	.3
DEC 21...	--	--	--	--	--	--	--	8.5	--	--
JAN 18...	--	--	--	--	--	--	--	12	7.8	.1
FEB 15...	--	--	--	--	--	--	--	--	8.5	.2
MAR 22...	--	--	--	--	--	--	--	--	--	1.9
APR 19...	--	--	--	--	--	--	--	12	12	1.6
MAY 25...	--	--	--	--	--	--	--	--	12	2.4
JUN 23...	--	--	--	--	--	--	--	--	8.7	4.0
JUL 20...	--	--	--	--	--	--	--	--	10	2.2
AUG 23...	--	--	--	--	--	--	--	--	8.0	1.6
SEP 22...	4.3	17	6.2	14	5.2	.13	3.0	--	7.9	1.5

DATE	SUS- PENDE D SEDI- MENT (MG/L)	SUS- PENDE D SEDI- MENT DIS- CHARGE (T/DAY)	SUS- SED- SIEVE DIAM. % FINER THAN .062 MM
OCT 20...	36	1.9	57
NOV 30...	8	.39	85
DEC 21...	42	2.0	87
JAN 18...	80	3.0	88
FEB 15...	12	.68	78
MAR 22...	100	46	86
APR 19...	104	19	93
MAY 25...	122	10	98
JUN 23...	437	206	--
JUL 20...	83	10	98
AUG 23...	68	2.2	89
SEP 22...	105	11	97

KNIFE RIVER BASIN

06340500 KNIFE RIVER AT HAZEN, ND--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	945	1450	1800	2000	2100	700	---	1550	1630	1100	1250	1330
2	947	---	1750	1950	2000	775	975	1550	1530	1130	1080	1350
3	1010	1450	1600	1980	2030	750	900	1200	1700	1200	1380	1330
4	1040	1490	1850	1930	1980	950	1180	1180	1380	1130	1400	1350
5	1100	1480	1830	2000	1980	1000	1200	1350	1450	1150	1400	1430
6	1140	1400	1900	1830	2000	975	1000	800	1580	1130	1350	1300
7	1200	1450	1900	2100	2000	975	1010	925	1700	1100	1380	1330
8	1200	1550	2000	1930	1900	950	1100	1000	1600	1100	1350	1250
9	1200	1500	1950	1850	1680	875	1380	1200	1500	1130	1350	1350
10	1210	1500	1900	2130	1880	625	1400	1480	1530	1130	1250	1400
11	1190	1550	1900	1880	1850	575	1500	1550	1680	1080	1300	1180
12	1180	1600	1900	1850	1880	600	1200	1550	1500	1080	1350	1380
13	1270	1700	1930	1800	1680	600	1230	1500	1230	1130	1330	1480
14	1340	1800	1930	2200	1780	575	1200	1530	1280	1200	1330	1350
15	1330	1700	1980	1700	1800	625	1200	1500	725	1200	1280	1430
16	1310	1800	2000	2250	1830	675	1180	1400	600	1130	1300	1400
17	1380	1830	2000	2280	1900	700	1250	1550	825	1850	1300	1400
18	1380	1730	1980	2260	1950	750	1550	1250	800	1200	1300	1300
19	1390	1850	1950	2000	2100	750	1500	1430	600	1150	1400	1180
20	1430	1880	1880	1980	2800	775	1500	1500	520	1180	1330	1180
21	1400	1900	1700	1980	1750	825	1480	1530	575	1200	1330	1200
22	1400	1950	1850	1900	1600	825	1480	1580	785	1500	1350	1200
23	1420	2000	1900	1980	2000	875	1450	1680	785	1300	1350	1400
24	1500	1980	1830	1930	1500	900	1500	1700	750	1200	1330	1350
25	2000	1900	1980	2050	750	925	1500	1700	900	1200	1350	1080
26	2200	2100	1880	1980	650	925	1450	1680	975	1330	1330	1150
27	1800	1900	1850	2100	800	950	1500	1750	1090	1230	1330	975
28	1450	1900	1780	2080	700	950	1530	1650	1000	1400	1350	950
29	2180	1880	1900	2100	---	---	1530	1650	1080	1400	1330	1450
30	1690	1850	1900	2180	---	---	1550	1450	1130	1100	1350	1450
31	1550	---	1950	2030	---	---	---	1400	---	1130	1350	---

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18.0	4.5	0.0	0.0	0.0	0.0	---	13.0	19.0	18.0	22.0	16.0
2	13.0	---	0.0	0.0	0.0	0.0	4.0	16.0	19.0	24.0	24.0	20.5
3	18.0	3.0	0.0	0.0	0.0	0.5	4.0	19.5	19.0	26.5	20.5	15.0
4	10.0	4.0	0.0	0.0	0.0	0.5	2.5	17.0	24.0	21.5	22.0	16.0
5	10.0	4.5	0.0	0.0	0.0	0.5	4.5	16.5	24.0	26.0	24.0	24.0
6	7.0	4.5	0.0	0.0	0.0	1.0	9.0	13.0	25.0	26.0	24.0	17.5
7	4.0	2.0	0.0	0.0	0.0	0.5	10.0	12.0	26.0	25.0	18.0	22.0
8	12.0	4.0	0.0	0.0	0.0	1.5	12.0	18.0	24.0	22.0	26.0	16.5
9	8.0	3.0	0.0	0.0	0.0	1.5	9.0	22.5	22.0	22.0	23.5	15.5
10	12.5	1.0	0.0	0.0	0.0	2.0	12.0	24.0	26.0	22.5	20.5	14.0
11	14.0	0.0	0.0	0.0	0.0	1.5	14.5	24.5	22.0	19.0	22.5	14.5
12	11.5	0.0	0.0	0.0	0.0	1.0	13.0	25.0	20.0	24.0	19.0	15.5
13	12.0	0.0	0.0	0.0	0.0	2.0	12.0	25.0	22.0	24.0	15.0	17.0
14	8.0	0.0	0.0	0.0	0.0	1.5	14.0	19.0	21.0	19.5	17.0	18.0
15	7.5	0.0	0.0	0.0	0.0	2.0	14.0	20.0	18.0	25.0	20.0	17.0
16	2.0	0.0	0.0	0.0	0.0	2.0	13.5	21.5	17.5	23.5	22.0	18.0
17	7.0	0.0	0.0	0.0	0.0	2.0	16.0	23.0	20.0	26.0	23.0	14.5
18	6.5	0.0	0.0	---	0.0	2.0	15.0	19.0	20.0	30.0	24.0	14.0
19	6.0	0.0	0.0	0.0	0.0	2.5	13.5	21.0	21.0	26.0	22.5	14.0
20	5.0	0.0	0.0	0.0	0.0	2.0	15.0	18.0	19.0	24.5	16.0	14.0
21	4.0	0.0	0.0	0.0	0.0	3.0	15.5	16.0	19.0	25.5	17.0	13.5
22	5.0	0.0	0.0	0.0	0.0	3.0	15.5	19.0	20.0	27.0	18.0	15.5
23	3.5	0.0	0.0	0.0	0.0	3.5	12.0	22.5	22.0	24.5	16.5	14.0
24	3.0	0.0	0.0	0.0	0.0	4.0	15.0	26.0	21.0	24.5	23.0	12.5
25	2.5	0.0	0.0	0.0	0.0	1.5	18.0	24.0	23.0	24.0	23.5	12.5
26	1.5	0.0	0.0	0.0	0.0	2.0	20.0	25.5	25.0	22.0	18.0	14.0
27	4.0	0.0	0.0	0.0	0.0	6.0	16.0	21.0	23.0	24.0	16.0	14.0
28	7.0	0.0	0.0	0.0	0.0	6.5	20.0	19.0	22.0	26.0	17.0	13.5
29	5.5	0.0	0.0	0.0	---	---	20.5	22.0	20.0	26.5	22.5	12.5
30	6.5	0.0	0.0	0.0	---	---	15.5	16.0	17.0	20.0	21.0	11.0
31	4.0	---	0.0	0.0	---	---	---	18.0	---	17.0	17.5	---

KNIFE RIVER BASIN

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PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	OCT 20,76 1100	NOV 30,76 1240	DEC 21,76 1310	JAN 18,77 1220	FEB 15,77 1220					
TOTAL CELLS/ML	20000	16000	540	200	160					
DIVERSITY: DIVISION	1.5	1.2	1.7	1.7	1.3					
..CLASS	1.5	1.2	1.8	1.7	1.5					
...ORDER	1.9	1.6	2.3	1.7	1.6					
....FAMILY	2.1	1.6	3.0	3.0	2.5					
.....GENUS	2.2	1.6	3.0	3.0	2.5					
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										
...CHARACIACEAE										
...SCHROEDERIA	--	-	--	-	--	-	--	-	--	-
...COELASTRACEAE										
...COELASTRUM	--	-	--	-	--	-	--	-	--	-
...HYDRODICTYACEAE										
...PEDIASTRUM	--	-	--	-	--	-	--	-	--	-
...MICRACTINIACEAE										
...GOLENKINIA	--	-	--	-	--	-	--	-	--	-
...MICRACTINIUM	--	-	--	-	--	-	--	-	--	-
...OOCYSTACEAE										
...ANKISTRODESMUS	1900	10	* 0	160# 30	43# 22		36# 22			
...CHODATELLA		* 0	--	-	--	-	--	-	--	-
...DICTYOSPHAERIUM	540	3	--	-	--	-	--	-	--	-
...KIRCHNERIELLA	--	-	* 0	5 1	--	-	--	-	--	-
...OOCYSTIS	--	-	--	-	--	-	--	-	--	-
...TETRAEDRON	--	-	--	-	--	-	--	-	--	-
...TREUBARIA	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
...ACTINASTRUM		* 0	--	-	--	-	--	-	--	-
...CRUCIGENIA	590	3	--	-	--	-	--	-	--	-
...SCENEDESMUS	320	2	220 1	37 7	6 3		27# 17			
...TETRASTRUM	--	-	--	-	--	-	--	-	--	-
...TETRASPORALES										
...PALMELLACEAE										
...SPHAEROCYSTIS	--	-	--	-	--	-	--	-	--	-
...VOLVOCALES										
...CHLAMYDOMONADACEAE										
...CARTERIA	--	-	--	-	--	-	--	-	--	-
...CHLAMYDOMONAS	110	1	--	-	14 3		--	-	4 3	
...PHACOTACEAE										
...PHACOTUS	--	-	720 5	--	--	-	--	-	--	-
...ZYGNEMATALES										
...DESMIDIACEAE										
...COSMARIMUM	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...COSCINODISCACEAE										
...CYCLOTELLA	5200# 26	3500# 22	69 13	--	--	-	--	-	--	-
...MELOSIRA	110	1	--	-	--	-	--	-	--	-
...PENNALES										
...CYMBELLACEAE										
...AMPHORA	--	-	--	-	--	-	3 2		--	-
...FRAGILARIACEAE										
...SYNEDRA	--	-	--	-	--	-	6 3		* 0	
...GOMPHONEMACEAE										
...GOMPHONEMA	--	-	--	-	37 7		31# 15		58# 36	
...NAVICULACEAE										
...DIPLOEIS	--	-	--	-	--	-	--	-	--	-
...NAVICULA	--	-	* 0	5 1	15 8		--	-	--	-
...NITZSCHIA	650	3	450 3	87# 16	37# 18		13 8			
...SURIPELLACEAE										
...SURIPELLA	* 0	--	--	-	28 5		12 6		4 3	
..CHRYSOPHYCEAE										
...CHRYSONOMADALES										
...CHROMULINACEAE										
...CHRYSOCOCCLUS	--	-	--	-	--	-	--	-	4 3	
..XANTHOPHYCEAE										
...HETEROCOCCALES										
...CHLOROTHECIACEAE										
...OPHTOCYTUM	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
 * - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

CONTINUED ...

06340500 KNIFE RIVER AT HAZEN, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

(CONTINUED)

DATE TIME	OCT 20, 76 1100		NOV 30, 76 1240		DEC 21, 76 1310		JAN 18, 77 1220		FEB 15, 77 1220	
ORGANISM	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										
...CHROCCOCCALES										
...CHROCCOCCAEAE										
...AGMENELLUM	--	-	--	-	--	-	--	-	--	-
...ANACYSTIS	540	3	330	2	50	9	--	-	--	-
...HORMODONALES										
...NOSTOCACEAE										
...ANABAENA	--	-	--	-	--	-	--	-	--	-
...CYLINDROSPERMUM	--	-	--	-	--	-	--	-	--	-
...OSCILLATORIACEAE										
...OSCILLATORIA	9400#	48	10000#	64	--	-	37#	18	--	-
EUGLENOPHYTA (EUGLENOIDS)										
..CRYPTOPHYCEAE										
...CRYPTOMONIDALES										
...CRYPTOCHRYSIDACEAE										
...CHROOMONAS	--	-	--	-	--	-	--	-	--	-
...CRYPTOMONODACEAE										
...CRYPTOMONAS	160	1	--	-	9	2	--	-	--	-
..EUGLENOPHYCEAE										
...EUGLENALES										
...EUGLENACEAE										
...EUGLENA	--	-	--	-	--	-	--	-	--	-
...PHACUS	--	-	--	-	--	-	--	-	--	-
...TRACHELOMONAS	*	0	220	1	41	8	6	3	--	-
PYRRHOPHYTA (FIRE ALGAE)										
..DINOPHYCEAE										
...GYMNODINIALES										
...GYMNODINIACEAE										
...GYMNODINIUM	--	-	--	-	--	-	--	-	13	8
...PERIDINIALES										
...PERIDINIACEAE										
...PERIDINIUM	--	-	--	-	--	-	3	2	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
 * - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

KNIFE RIVER BASIN

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06340500 KNIFE RIVER AT HAZEN, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	MAY 25,77 1245	JUN 23,77 1200	JUL 20,77 1300	AUG 23,77 1135	SEP 22,77 1020					
TOTAL CELLS/ML	660000	7900	14000	16000	230000					
DIVERSITY: DIVISION	0.6	1.1	1.2	1.2	0.3					
..CLASS	0.6	1.1	1.2	1.3	0.3					
...ORDER	1.1	1.3	1.5	2.0	0.4					
....FAMILY	1.2	1.5	2.7	2.3	0.5					
.....GENUS	1.4	1.5	3.2	2.4	0.6					
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										
....CHARACIACEAE										
....SCHROEDERIA	--	-	--	-	--	-			1800	1
....COELASTRACEAE										
....COELASTRUM	--	-	--	-	810	6	--	-	--	-
....HYDRODICTYACEAE										
....PEDIASTRUM	*	0	--	-	1600	11	--	-	--	-
....MICRACTINIACEAE										
....GOLENKINTIA	*	0	--	-	--	-	--	-	--	-
....MICRACTINIUM	--	-	--	-	160	1	--	-	--	-
....OOCYSTACEAE										
....ANKISTRODESMUS	7200	1	140	2	230	2	150	1	2600	1
....CHODATELLA	*	0	--	-	--	-	--	-	--	-
....DICTYOSPHAERIUM	28000	4	--	-	2500#	18	--	-	--	-
....KIRCHNERIELLA	*	0	--	-	230	2	*	0	*	0
....OOCYSTIS	*	0	560	7	--	-	480	3	*	0
....TETRAEDRON	*	0	--	-	--	-	--	-	--	-
....TREUBARIA	--	-	--	-	97	1	--	-	--	-
....SCENEDESMACEAE										
....ACTINASTRUM	15000	2	--	-	490	3	--	-	--	-
....CRUCIGENIA	*	0	--	-	260	2	450	3	*	0
....SCENEDESMUS	11000	2	1100	14	2700#	20	740	5	3400	1
....TETRATRUM	*	0	--	-	--	-	--	-	--	-
..TETRASPORALES										
...PALMELLACEAE										
....SPHAEROCYSTIS	--	-	--	-	--	-	--	-	*	0
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CARTERIA	--	-	--	-	--	-	--	-	*	0
....CHLAMYDOMONAS	--	-	140	2	--	-	190	1	*	0
....PHACOTACEAE										
....PHACOTUS	--	-	--	-	--	-	--	-	--	-
..ZYGNEMATALES										
...DESMIDIACEAE										
....COSMARIVUM	--	-	--	-	450	3	*	0	--	-
CHRYSOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...COSCINODISCAEAE										
....CYCLOTELLA	*	0	140	2	--	-	--	-	--	-
....MELOSIRA	--	-	--	-	--	-	--	-	--	-
...PENNALES										
...CYMBELLACEAE										
....AMPHORA	--	-	140	2	--	-	--	-	--	-
....FRAGILARIACEAE										
....SYNEDRA	--	-	--	-	230	2	*	0	--	-
...GOMPHONEMATAEAE										
....GOMPHONEMA	--	-	--	-	--	-	--	-	--	-
...NAVICULACEAE										
....DIPLONEIS	*	0	--	-	--	-	--	-	--	-
....NAVICULA	*	0	--	-	--	-	--	-	--	-
...NITZSCHIACEAE										
....NITZSCHIA	5900	1	--	-	--	-	--	-	*	0
....SURIPELLACEAE										
....SURIRELLA	*	0	--	-	--	-	--	-	--	-
..CHRYSOPHYCEAE										
...CHRYSOMONADALES										
...CHROMULINACEAE										
...CHRYSOCOCCUS	--	-	--	-	--	-	--	-	--	-
..XANTHOPHYCEAE										
...HETEROCOCCALES										
...CHLOROTHECIACEAE										
....OPHIOCYTIUM	*	0	--	-	--	-	--	-	--	-

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

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

CONTINUED ...

KNIFE RIVER BASIN

06340500 KNIFE RIVER AT HAZEN, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

(CONTINUED)

DATE TIME	MAY 25, 77 1245		JUN 23, 77 1200		JUL 20, 77 1300		AUG 23, 77 1135		SEP 22, 77 1020	
ORGANISM	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										
...CHROCOCCOCEAE										
...CHROCOCCOCEAE										
...AGMENELLUM	25000	4	--	--	--	--	--	--	--	--
...ANACYSTIS	48000	7	--	--	3100#	22	8100#	52	2600	1
...HORMOGONALES										
...NOSTOCACEAE										
...ANABAENA	--	--	--	--	320	2	--	--	--	--
...CYLINDROSPERMUM	--	--	--	--	--	--	2300#	15	--	--
...OSCILLATORIA										
...OSCILLATORIA	510000#	77	5600#	70	--	--	740	5	210000#	93
EUGLENOPHYTA (EUGLENOIDS)										
..CRYPTOPHYCEAE										
...CRYPTOMONIDAE										
...CRYPTOCHRYSIDACEAE										
...CHROOMONAS	--	--	--	--	--	--	480	3	--	--
...CRYPTOMONODACEAE										
...CRYPTOMONAS	*	0	--	--	--	--	--	--	--	--
..EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
...EUGLENA	*	0	140	2	490	3	150	1	--	--
...PHACUS	--	--	--	--	--	--	*	0	--	--
...TRACHELOMONAS	*	0	--	--	290	2	1600	10	1600	1
PYRRHOPHYTA (FIRE ALGAE)										
..DINOPHYCEAE										
...GYMNODINIALES										
...GYMNODINIAEAE										
...GYMNODINIUM	--	--	--	--	--	--	--	--	--	--
...PERIDINIALES										
...PERIDINIAEAE										
...PERIDINIUM	--	--	--	--	--	--	*	0	--	--

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

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

PERIPHYTON

Date	Length of exposure (days)	Biomass (mg/m ²)		Chlorophyll a (mg/m ²)	Chlorophyll b (mg/m ²)	Biomass pigment ratio	Sampling method
		Dry weight	Ash weight				
Nov. 30	41	4,692	3,000	2.93	2.00	577	Polyethylene strip
Aug. 23	34	2,050	1,500	.000	.001	550,000	Polyethylene strip
Sept. 22	32	10,200	8,740	.046	1.11	1,351	Polyethylene strip

MISSOURI RIVER MAIN STEM

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06340700 MISSOURI RIVER NEAR STANTON, ND

LOCATION.--Lat 47°17'14", long 101°20'25", in SW¼ sec.16, T.144 N., R.84 W., McLean County, Hydrologic Unit 10130101, on right bank 3 mi (5 km) southeast of Stanton, 0.1 mi (0.2 km) below Ft. Clark irrigation pumping station, 0.4 mi (0.6 km) above the United Power Association power plant at mile 1,372 (kilometer 2,208).

DRAINAGE AREA.--182,000 mi² (471,400 km²), approximately.

PERIOD OF RECORD.--October 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,650.00 ft (502.920 m) above mean sea level (levels by Corps of Engineers). Prior to Sept. 30, 1964, at datum 50.00 ft (15.240 m) lower.

REMARKS.--Stage regulated by Lake Sakakawea (station 06338000).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 24.56 ft (7.486 m) Feb. 22, 1965; minimum daily recorded, 11.22 ft (3.420 m) Sept. 29, 1974.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	14.37	15.95	18.59	19.15	15.20	12.68	12.64	12.30	12.29	12.60	---
2	---	14.59	16.15	18.73	18.93	15.15	12.62	12.71	12.24	12.42	12.53	---
3	---	14.76	15.97	18.86	18.78	14.95	12.31	12.73	12.18	12.60	12.43	---
4	15.21	14.90	15.98	18.65	18.77	14.88	12.36	12.83	12.30	12.25	12.27	---
5	14.53	15.13	16.11	18.59	19.08	14.87	12.75	12.80	12.29	12.76	12.29	---
6	14.68	15.12	16.06	18.73	18.87	14.98	12.64	12.48	12.17	12.83	12.37	---
7	14.81	15.38	16.10	18.73	18.72	14.85	12.70	12.59	12.50	12.50	12.36	---
8	14.84	15.42	15.28	18.51	18.75	14.74	12.48	12.75	11.98	12.51	12.43	---
9	15.43	15.38	14.12	18.48	18.45	14.57	12.20	12.79	12.51	12.41	12.28	---
10	11.52	15.43	13.43	18.67	18.11	14.48	12.12	12.64	12.12	12.76	12.03	---
11	14.61	15.34	13.01	18.59	17.93	14.44	12.62	12.54	12.14	12.97	12.14	---
12	14.59	15.23	13.80	18.75	17.73	14.18	12.16	12.61	12.35	13.02	12.41	---
13	15.00	15.39	12.53	18.73	17.54	14.13	12.75	12.71	12.03	12.84	12.32	---
14	15.01	15.41	13.43	18.67	17.57	14.16	12.44	12.60	12.11	12.62	12.21	---
15	14.72	15.42	12.65	18.69	17.57	13.99	12.69	12.64	12.32	12.76	12.29	---
16	14.76	15.13	13.30	18.64	16.92	13.82	12.60	12.78	12.41	12.67	12.12	---
17	14.85	15.14	13.06	18.76	17.16	13.87	12.67	12.16	12.77	12.58	12.41	---
18	14.95	15.31	13.47	18.80	17.07	13.98	12.74	12.46	12.32	13.00	12.25	---
19	15.03	15.25	13.27	18.77	16.65	13.57	12.63	12.34	12.35	13.16	12.33	---
20	14.13	15.37	13.64	18.72	16.34	13.26	12.58	12.16	12.61	12.94	12.49	12.08
21	14.71	15.37	13.93	18.60	16.29	13.25	12.64	11.87	12.39	12.75	12.51	11.92
22	14.48	15.38	13.70	18.49	15.86	13.29	13.39	12.14	12.17	12.54	12.47	12.04
23	14.44	15.48	14.00	18.32	15.59	13.24	13.19	12.69	12.52	12.76	12.49	11.79
24	14.60	15.97	14.12	18.37	15.42	12.98	13.04	12.12	12.59	12.74	12.46	11.71
25	14.66	16.01	13.93	18.30	15.43	12.72	13.89	12.25	12.27	11.99	12.52	11.75
26	14.83	15.79	14.35	18.26	15.39	12.91	13.05	12.27	12.26	12.48	12.63	12.08
27	14.55	15.99	14.18	18.22	15.41	12.02	12.70	12.08	12.25	12.11	12.96	11.77
28	14.53	15.95	14.57	19.09	15.29	13.23	12.59	12.23	12.41	12.10	12.58	11.73
29	14.77	15.21	15.72	20.01	---	12.75	12.54	12.28	12.35	12.73	12.58	11.65
30	14.39	16.06	18.43	19.13	---	12.52	12.58	12.06	12.45	12.95	---	11.69
31	14.47	---	18.64	19.34	---	12.55	---	12.43	---	12.69	---	---
MEAN	---	15.36	14.61	18.70	17.31	13.86	12.68	12.46	12.32	12.64	---	---
MAX	---	16.06	18.64	20.01	19.15	15.20	13.89	12.83	12.77	13.16	---	---
MIN	---	14.37	12.53	18.22	15.29	12.02	12.12	11.87	11.98	11.99	---	---

LOCATION.--Lat 47°16'45", long 101°11'03", in SW¼ sec.22, T.144 N., R.83 W., McLean County, Hydrologic Unit 10130101, on left bank about 7.5 mi (12.0 km) west of Washburn at mile 1,362 (kilometer 2,191).

WATER-DISCHARGE RECORDS

GAGE.--Water-stage recorder. Datum of gage is 1,640.00 ft (499.872 m) above mean sea level (levels by Corps of Engineers). Prior to Sept. 30, 1964, at datum 40 ft (12.192 m) lower.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 27.77 ft (8.464 m) Mar. 20, 1965; minimum daily recorded, 15.52 ft (4.730 m) May 10, 1966.

[illegible]

06340900 MISSOURI RIVER NEAR HENSLER, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD---

WATER TEMPERATURES: April 1967 to September 1974, April 1975 to current year.

INSTRUMENTATION.--Temperature recorder since April 1967.

EXTREMES FOR PERIOD OF DAILY RECORD---

WATER TEMPERATURES: Maximum daily, 20.0°C July 17, 1977; minimum daily, 0.0°C on many days during winter months.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	---	---	10.5	10.5	4.0	4.0	---	---	---	---	1.0	1.0
2	---	---	10.5	10.0	4.0	3.5	---	---	---	---	1.0	1.0
3	---	---	10.0	9.5	3.5	3.5	---	---	---	---	1.0	1.0
4	---	---	9.5	9.5	3.5	3.5	---	---	---	---	1.0	1.0
5	---	---	9.5	9.5	3.5	3.5	---	---	---	---	1.0	1.0
6	---	---	9.5	9.5	3.5	3.0	---	---	---	---	1.0	0.5
7	---	---	9.5	9.0	3.0	3.0	---	---	---	---	0.5	0.5
8	---	---	9.0	9.0	3.0	3.0	---	---	---	---	0.5	0.5
9	---	---	9.0	8.5	2.5	2.0	---	---	---	---	0.5	0.5
10	---	---	8.5	8.5	2.5	2.0	---	---	---	---	0.5	0.5
11	---	---	8.5	7.5	2.0	1.5	---	---	---	---	0.5	0.5
12	---	---	7.5	7.0	1.5	1.0	---	---	---	---	0.5	0.5
13	---	---	7.0	7.0	2.0	1.5	---	---	---	---	0.5	0.5
14	---	---	7.0	7.0	2.0	2.0	---	---	---	---	1.0	0.5
15	---	---	7.0	7.0	2.0	1.0	---	---	---	---	1.0	1.0
16	---	---	7.0	7.0	1.0	1.0	---	---	---	---	1.0	1.0
17	---	---	7.5	7.0	2.0	1.0	---	---	0.5	0.5	1.0	1.0
18	---	---	7.5	7.5	2.0	1.5	---	---	0.5	0.0	1.0	1.0
19	---	---	7.5	7.5	---	---	0.5	0.5	0.0	0.0	---	---
20	---	---	7.5	7.5	---	---	0.5	0.5	0.0	0.0	---	---
21	---	---	7.5	7.0	---	---	0.5	0.5	0.0	0.0	---	---
22	---	---	7.0	7.0	1.5	1.5	0.5	0.5	0.0	0.0	---	---
23	11.5	11.5	7.0	7.0	1.5	1.0	0.5	0.5	0.0	0.0	---	---
24	11.5	11.5	7.0	7.0	1.0	1.0	0.5	0.5	0.0	0.0	---	---
25	11.5	11.0	7.0	6.5	1.0	1.0	0.5	0.5	0.0	0.0	---	---
26	11.0	11.0	6.5	5.0	1.0	1.0	---	---	0.0	0.0	---	---
27	11.0	11.0	5.0	4.0	1.0	1.0	---	---	0.0	0.0	---	---
28	11.0	11.0	4.0	4.0	1.0	1.0	---	---	0.5	0.0	---	---
29	11.0	10.5	4.0	4.0	---	---	---	---	---	---	---	---
30	10.5	10.5	4.0	4.0	---	---	---	---	---	---	---	---
31	10.5	10.5	---	---	---	---	---	---	---	---	---	---
MONTH	11.5	10.5	10.5	4.0	4.0	1.0	0.5	0.5	0.5	0.0	1.0	0.5

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

MISSOURI RIVER MAIN STEM

06341000 MISSOURI RIVER AT WASHBURN, ND

LOCATION.--Lat 47°17'20", long 101°02'15", in SE¼SW¼ sec.14, T.144 N., R.82 W., McLean County, Hydrologic Unit 10130101, on left bank near municipal water plant in Washburn at mile 1,355 (kilometer 2,180).

DRAINAGE AREA.--184,000 mi² (476,600 km²), approximately.

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

GAGE.--Water-stage recorder. Datum of gage is 1,640.00 ft (499.872 m) above mean sea level. Prior to Sept. 30, 1964, at datum 40 ft (12.192 m) lower.

REMARKS.--Stage regulated by Lake Sakakawea (station 06338000).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 22.76 ft (6.937 m) Jan. 11, 1964; minimum daily recorded, 10.62 ft (3.237 m) Mar. 26, 1968.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14.01	13.39	15.18	20.12		---	11.87	11.72	11.63	11.68	12.09	11.73
2	14.33	13.88	15.44	20.25		---	11.81	11.82	11.52	11.88	12.03	11.64
3	12.67	14.05	15.16	20.37		---	11.62	11.85	11.46	12.11	11.94	11.73
4	---	14.07	15.18	20.33		---	11.41	11.70	11.53	11.85	12.05	11.47
5	---	14.28	15.33	20.26		---	11.90	12.09	11.64	11.88	11.82	11.80
6	---	14.35	15.25	20.31		---	11.77	11.76	11.56	12.17	11.99	11.77
7	---	14.51	15.34	20.37		---	12.87	11.67	11.68	12.14	11.85	11.63
8	13.88	14.61	14.62	20.13		---	11.63	11.81	11.54	11.95	12.07	11.69
9	14.42	14.56	13.88	19.91		---	11.59	11.96	11.65	11.92	11.83	11.72
10	11.61	14.58	13.07	20.05		---	11.23	11.87	11.59	12.02	11.75	11.68
11	13.04	14.55	12.69	19.96		---	11.63	11.80	11.57	12.27	11.77	11.65
12	13.71	14.49	13.21	---		---	11.30	11.98	11.82	12.43	11.89	11.70
13	13.93	14.60	12.33	---		---	11.78	11.94	11.44	12.43	11.85	11.72
14	14.13	14.66	12.67	---		---	11.40	11.88	11.52	12.24	11.94	11.68
15	13.88	14.67	12.24	---		---	11.72	11.74	11.70	12.34	11.90	11.68
16	14.01	14.49	12.57	---		---	11.75	12.00	11.78	12.21	11.84	11.96
17	14.02	14.44	12.48	---		---	11.61	11.46	12.20	12.16	11.89	11.55
18	13.96	14.62	12.64	---		---	11.81	11.55	11.82	12.23	11.95	11.85
19	14.39	14.53	12.69	---		---	11.85	11.57	11.90	12.48	11.97	11.38
20	13.53	14.66	12.99	---		---	11.66	11.55	11.96	12.47	11.95	11.57
21	13.95	14.67	12.60	---		---	11.77	11.28	12.00	12.29	11.92	11.61
22	13.80	14.67	13.81	---		12.52	12.35	11.37	11.76	12.04	12.03	11.67
23	13.65	14.64	14.43	---		12.50	12.36	11.96	11.87	12.06	12.01	11.55
24	13.80	15.08	14.97	---		12.43	12.20	11.52	11.96	12.14	11.96	11.59
25	13.89	15.21	14.93	---		12.11	11.96	11.60	11.84	11.93	12.04	11.47
26	14.06	15.08	15.25	---		12.31	12.19	11.67	11.84	12.01	12.10	11.63
27	13.88	15.16	15.10	---		11.56	12.09	11.50	11.80	12.09	12.21	11.59
28	13.80	15.22	16.40	---		12.14	11.78	11.58	11.71	11.85	12.05	11.57
29	14.03	14.58	19.12	---		12.14	11.74	11.61	11.79	11.94	12.10	11.51
30	13.71	15.15	19.54	---		11.75	11.70	11.49	11.81	12.47	12.07	11.57
31	14.05	---	20.02	---		11.78	---	11.70	---	12.29	12.14	---
MEAN	---	14.58	14.55	---	---	---	11.81	11.71	11.73	12.13	11.97	11.65
MAX	---	15.22	20.02	---	---	---	12.87	12.09	12.20	12.48	12.21	11.96
MIN	---	13.39	12.24	---	---	---	11.23	11.28	11.44	11.68	11.75	11.38

PAINTED WOODS CREEK BASIN

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06341800 PAINTED WOODS CREEK NEAR WILTON, ND

LOCATION.--Lat 47°16'30", long 100°47'30", in SW¼SW¼ sec.23, T.144 N., R.80 W., McLean County, Hydrologic Unit 10130101, on right bank 600 ft (180 m) upstream from county highway bridge, 7 mi (11 km) upstream from Yanktonai Creek, and 8 mi (13 km) north of Wilton.

DRAINAGE AREA.--427 mi² (1,110 km²), approximately, of which about 310 mi² (800 km²) is probably noncontributing.

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

GAGE.--Water-stage recorder. Altitude of gage is 1,760 ft (536 m), from topographic map.

REMARKS.--Records good.

AVERAGE DISCHARGE.--20 years, 7.26 ft³/s (0.206 m³/s), 5,260 acre-ft/yr (6.48 hm³/yr); median of yearly mean discharges, 6.7 ft³/s (0.19 m³/s), 4,900 acre-ft/yr (6.0 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,800 ft³/s (51.0 m³/s) Apr. 9, 1969, gage height, 8.12 ft (2.475 m), backwater from ice; maximum gage height, 8.67 ft (2.643 m) Mar. 15, 1966, backwater from ice; no flow for many days most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 17.0 ft³/s (0.48 m³/s) Sept. 24, gage height, 4.63 ft (1.411 m), no peak above base of 30 ft³/s (0.85 m³/s); no flow for several months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.04	.15	.11			0	1.3	.09	.08	.07	.06	.27
2	.05	.13	.12			0	2.1	.10	.06	.06	.05	.27
3	.03	.12	.13			0	1.4	.10	.04	.05	.04	.22
4	.03	.13	.13			0	1.0	.19	.03	.10	.06	.20
5	.02	.15	.12			0	.98	.21	.04	.26	.05	.18
6	.04	.20	.10			0	.85	.21	.03	1.2	.06	.16
7	.06	.19	.08			.50	.61	.18	.03	.49	.07	.18
8	.06	.19	.08			2.0	.52	.14	.01	.26	.06	.18
9	.07	.15	.08			3.8	.82	.13	.01	.18	.05	.16
10	.08	.13	.08			3.4	.81	.12	.02	.40	.03	.14
11	.08	.15	.10			7.6	.68	.10	.02	2.4	.01	.14
12	.10	.20	.10			2.5	.63	.09	.02	1.7	.01	.14
13	.11	.19	.11			1.2	.58	.07	.03	.55	.01	.14
14	.11	.17	.10			1.9	.54	.06	.05	.33	.01	.13
15	.11	.19	.11			1.0	.54	.04	.16	.26	.04	.11
16	.12	.19	.10			1.4	.65	.02	.30	.40	.05	.11
17	.15	.15	.10			2.6	.47	.04	7.3	.28	.04	.10
18	.16	.14	.10			2.4	.38	.04	6.9	.24	.03	.24
19	.18	.14	.09			1.7	.34	.03	5.5	.21	.02	.27
20	.17	.15	.09			1.4	.27	.03	7.5	.15	.01	.30
21	.17	.19	.08			1.4	.22	.04	4.8	.13	.01	.27
22	.17	.17	.08			1.4	.23	.05	3.1	.12	.02	.40
23	.20	.16	.08			1.1	.21	.07	1.8	.10	.04	1.7
24	.30	.14	.08			1.3	.14	.07	.95	.10	.03	13
25	.24	.14	.08			1.4	.14	.05	.54	.08	.03	13
26	.21	.13	.11			1.5	.14	.04	.30	.09	.05	7.2
27	.24	.11	.11			1.1	.12	.04	.19	.09	.08	5.0
28	.20	.11	.08			1.2	.10	.14	.11	.08	.10	5.6
29	.18	.11	.05		---	1.4	.09	.11	.10	.08	.18	7.3
30	.18	.11	.03		---	4.5	.09	.11	.08	.07	.14	6.2
31	.17	---	.01		---	1.3	---	.10	---	.06	.20	---
TOTAL	4.03	4.58	2.82	0	0	51.00	16.95	2.81	40.10	10.59	1.64	63.31
MEAN	.13	.15	.091	0	0	1.65	.57	.091	1.34	.34	.053	2.11
MAX	.30	.20	.13	0	0	7.6	2.1	.21	7.5	2.4	.20	13
MIN	.02	.11	.01	0	0	0	.09	.02	.01	.05	.01	.10
AC-FT	8.0	9.1	5.6	0	0	101	34	5.6	80	21	3.3	126
CAL YR 1976	TOTAL	2770.84	MEAN	7.57	MAX	300	MIN	0	AC-FT	5500		
WTR YR 1977	TOTAL	197.83	MEAN	.54	MAX	13	MIN	0	AC-FT	392		

MISSOURI RIVER MAIN STEM

06342020 MISSOURI RIVER AT PRICE, ND

LOCATION.--Lat 47°04'47", long 100°55'55", in NW¼ sec.34, T.142 N., R.81 W., Oliver County, Hydrologic Unit 10130101, on right bank 0.5 mi (0.8 km) south of Price at mile 1,338 (kilometer 2,153).

DRAINAGE AREA.--185,000 mi² (479,200 km²), approximately.

PERIOD OF RECORD.--November 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,620.00 ft (493.776 m) above mean sea level (levels by Corps of Engineers). Prior to Sept. 30, 1964, at datum 20 ft (6.096 m) lower.

REMARKS.--Stage regulated by Lake Sakakawea (station 06338000).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 30.12 ft (9.181 m) Jan. 22, 1967; minimum daily recorded, 17.76 ft (5.413 m) Mar. 31, 1968.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21.85	21.27	23.14	27.05	---	25.25						---
2	21.95	21.65	23.30	27.31	---	25.19						---
3	21.39	21.80	23.13	27.51	---	25.20						---
4	21.50	21.88	23.08	27.68	---	25.08						---
5	21.74	22.12	23.20	27.66	---	25.10						---
6	21.58	22.27	23.17	27.68	---	25.24						---
7	21.70	22.36	23.39	27.80	---	25.18						---
8	21.72	22.57	23.08	27.66	---	24.16						---
9	22.06	22.56	22.57	27.42	---	22.79						---
10	21.10	22.53	21.79	27.48	---	21.81						---
11	20.16	22.56	21.58	27.50	---	21.42						---
12	21.51	22.49	22.25	27.55	---	21.15						---
13	21.67	22.50	22.64	27.55	---	20.98						---
14	21.98	22.59	21.99	27.49	---	20.86						---
15	21.77	22.61	21.59	27.44	---	20.86						---
16	21.86	22.51	21.15	27.34	25.92	20.60						---
17	21.85	22.36	21.04	27.41	25.81	20.51						---
18	21.83	22.46	20.75	---	25.92	20.60						---
19	22.21	22.47	20.83	---	25.84	20.52						---
20	21.72	22.52	21.20	---	25.52	20.15						19.51
21	21.64	22.58	24.02	---	25.47	20.06						19.62
22	21.71	22.58	25.43	---	25.46	20.06						19.65
23	21.56	22.56	26.90	---	25.42	19.99						19.63
24	21.63	22.82	27.68	---	25.33	19.99						19.69
25	21.75	23.10	27.55	---	25.27	19.69						19.53
26	21.87	23.05	27.33	---	25.28	19.74						19.59
27	21.81	23.04	27.60	---	25.30	19.47						19.62
28	21.73	23.16	26.64	---	25.36	19.40						19.56
29	21.83	22.70	25.66	---	---	---						19.54
30	21.70	22.83	25.73	---	---	---						19.52
31	21.89	---	26.59	---	---	---						---
MEAN	21.69	22.48	23.74	---	---	---						---
MAX	22.21	23.16	27.68	---	---	---						---
MIN	20.16	21.27	20.75	---	---	---						---

SQUARE BUTTE CREEK BASIN

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06342260 SQUARE BUTTE CREEK BELOW CENTER, ND

LOCATION.--Lat 47°03'25", long 101°11'35", in SE¼ sec.4, T.141 N., R.83 W., Oliver County, Hydrologic Unit 10130101, on right bank at southeast corner of farmyard, 6 mi (10 km) southeast of Center.

DRAINAGE AREA.--146 mi² (378 km²).

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder.

REMARKS.--Records fair. Flow regulated by Nelson Lake 1.5 mi (2.4 km) upstream beginning Aug. 24, 1967, capacity, 5,000 acre-ft (6.16 hm³). The capacity of Nelson Lake was increased to 10,000 acre-ft (12.3 hm³) in August 1975.

AVERAGE DISCHARGE.--12 years, 10.8 ft³/s (0.306 m³/s), 7,820 acre-ft/yr (9.64 hm³/yr); median of yearly mean discharges, 11 ft³/s (0.31 m³/s), 7,970 acre-ft/yr (9.8 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,700 ft³/s (275 m³/s) June 24, 1966, gage height, 14.35 ft (4.374 m); no flow Feb. 14-26, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 30 ft³/s (0.85 m³/s) Mar. 30, gage height, 2.67 ft (0.814 m); minimum daily, 0.90 ft³/s (0.025 m³/s) Feb. 27 to Mar. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.9	1.6	1.2	1.0	1.2	.90	2.3	1.2	1.8	1.6	2.1	1.6
2	1.6	1.5	1.2	1.0	1.2	.90	2.1	1.2	2.1	1.5	2.1	1.4
3	1.6	1.5	1.4	1.0	1.4	.90	1.9	1.0	2.0	1.5	1.9	1.0
4	1.6	1.7	1.2	1.0	1.4	.90	1.8	3.7	1.9	2.3	2.1	1.2
5	1.6	1.7	1.2	1.0	1.2	.90	1.9	3.0	2.1	2.0	1.9	1.2
6	1.6	1.7	1.0	1.0	1.2	.97	2.0	2.3	2.0	1.7	1.7	1.0
7	1.6	1.5	1.0	1.0	1.2	1.3	2.1	2.3	1.9	1.8	2.1	1.0
8	2.6	1.6	1.0	1.0	1.4	1.4	2.1	2.3	1.7	1.9	2.3	1.0
9	2.1	1.5	1.0	1.0	1.5	1.1	2.3	2.1	1.6	1.8	2.1	1.0
10	2.3	1.5	1.0	1.0	2.0	1.0	2.5	1.9	1.8	2.5	2.1	3.2
11	2.2	1.4	1.0	1.0	2.0	1.1	2.3	2.1	1.7	2.5	1.7	1.7
12	2.1	1.4	1.0	1.0	1.8	1.1	2.2	2.1	1.8	1.9	1.7	1.5
13	2.3	1.4	1.0	1.0	1.6	1.1	2.2	2.1	1.8	1.9	1.7	1.4
14	2.1	1.4	1.2	1.0	1.6	1.1	2.2	2.1	1.6	2.0	1.7	1.3
15	1.7	1.6	1.2	1.0	1.6	1.0	1.9	1.9	1.8	2.0	1.7	1.3
16	1.7	1.5	1.4	1.0	1.7	1.1	1.9	1.9	1.7	2.6	1.6	1.2
17	1.6	1.5	1.6	1.0	1.7	1.2	1.9	2.3	1.6	2.1	1.6	1.2
18	1.6	1.6	1.5	1.2	1.6	1.5	1.4	2.1	1.6	2.1	1.6	2.2
19	1.7	1.7	1.4	1.4	1.4	1.5	1.4	2.2	1.3	2.3	1.2	1.9
20	1.7	1.5	1.4	1.4	1.5	1.5	1.2	2.1	1.1	2.3	1.6	1.7
21	1.7	1.4	1.6	1.4	1.6	1.5	1.1	1.9	1.6	2.3	.90	1.5
22	1.6	1.4	1.6	1.4	1.4	1.8	1.1	1.6	1.4	2.3	1.2	1.5
23	1.7	1.3	1.6	1.4	1.2	1.8	1.0	1.8	1.1	1.9	1.4	2.6
24	1.7	1.3	1.6	1.4	1.4	1.9	1.3	1.6	1.0	1.7	1.2	2.4
25	1.6	1.4	1.6	1.4	1.1	1.7	1.3	1.6	1.2	2.1	1.2	2.0
26	1.5	1.3	1.8	1.2	1.0	1.6	1.3	1.8	1.3	2.1	.90	1.6
27	1.5	1.1	1.8	1.2	.90	1.7	1.3	2.0	1.3	2.1	1.2	1.4
28	1.6	1.0	1.2	1.0	.90	1.7	1.4	2.2	1.5	2.3	1.0	1.0
29	1.7	1.0	1.2	1.0	---	2.0	1.4	2.2	1.7	2.1	1.2	1.0
30	1.7	1.0	1.2	1.0	---	7.4	1.4	2.4	1.6	2.3	1.2	1.4
31	1.6	---	1.0	1.2	---	2.6	---	2.0	---	1.9	1.6	---
TOTAL	55.1	43.0	40.1	34.6	39.70	48.17	52.2	63.0	48.6	63.4	49.50	45.4
MEAN	1.78	1.43	1.29	1.12	1.42	1.55	1.74	2.03	1.62	2.05	1.60	1.51
MAX	2.6	1.7	1.8	1.4	2.0	7.4	2.5	3.7	2.1	2.6	2.3	3.2
MIN	1.5	1.0	1.0	1.0	.90	.90	1.0	1.0	1.0	1.5	.90	1.0
AC-FT	109	85	80	69	79	96	104	125	96	126	98	90

CAL YR 1976 TOTAL 622.65 MEAN 1.70 MAX 8.8 MIN .50 AC-FT 1240
WTR YR 1977 TOTAL 582.77 MEAN 1.60 MAX 7.4 MIN .90 AC-FT 1160

SQUARE BUTTE CREEK BASIN

06342260 SQUARE BUTTE CREEK BELOW CENTER, ND--Continued

WATER-QUALITY RECORDS

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

REMARKS.--Some chemical data furnished by the North Dakota State Water Commission.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS)	SPECIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	HARD- NESS (CA,MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NESIUM (MG)	DIS- SOLVED SODIUM (NA) (MG/L)
OCT 19...	1000	1.6	950	7.9	4.0	280	0	88	15	140
NOV 18...	1200	1.5	1000	7.8	4.0	290	0	70	28	140
DEC 21...	1020	1.6	1150	8.2	1.0	310	0	74	30	150
JAN 18...	1100	1.2	1050	7.2	1.0	310	0	72	32	150
FEB 15...	1040	1.3	1020	7.6	2.0	300	0	70	30	140
MAR 17...	1410	1.1	1100	--	6.0	--	--	--	--	--
APR 20...	1050	1.1	1150	8.1	12.0	310	0	71	32	150
MAY 17...	1145	2.2	1080	--	22.0	--	--	--	--	--
MAY 24...	1125	1.5	1100	8.3	20.5	290	0	68	29	150
JUN 22...	1050	1.6	1120	8.2	18.5	310	0	69	33	150
JUL 19...	1200	2.0	990	8.1	24.0	300	0	65	33	150
AUG 19...	1400	1.6	1080	8.0	19.0	310	0	70	33	160
SEP 19...	1400	1.8	1080	8.0	13.0	290	0	67	30	150

DATE	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	ALKA- LITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)
OCT 19...	51	3.6	4.7	465	13	403	9.9	180	8.6
NOV 18...	51	3.6	4.7	480	15	419	13	180	8.7
DEC 21...	51	3.7	4.9	516	5	432	5.3	200	3
JAN 18...	51	3.7	5.2	513	0	421	52	200	8.1
FEB 15...	50	3.5	4.9	482	7	407	20	190	8.6
MAR 17...	--	--	--	--	--	--	--	--	--
APR 20...	51	3.7	4.7	479	12	413	6.4	220	8.3
MAY 17...	--	--	--	--	--	--	--	--	--
MAY 24...	53	3.8	4.0	459	8	390	3.8	220	6.7
JUN 22...	51	3.7	4.2	466	10	399	4.9	220	6.3
JUL 19...	52	3.8	4.9	444	11	382	5.9	220	8.2
AUG 19...	52	4.0	5.4	474	7	400	7.8	240	9.2
SEP 19...	52	3.8	5.1	463	0	380	7.4	230	12

SQUARE BUTTE CREEK BASIN

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06342260 SQUARE BUTTE CREEK BELOW CENTER, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED FLUORIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO2) (MG/L)	DIS- SOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	DIS- SOLVED BORON (B) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED MANGANESE (MN) (UG/L)
OCT 19...	.2	17	689	697	.94	3.11	40	100	80
NOV 18...	.2	18	732	705	1.00	2.98	280	350	160
DEC 21...	.2	19	752	739	1.02	3.25	320	40	1000
JAN 18...	.1	21	725	744	.99	2.53	0	100	380
FEB 15...	.1	20	700	709	.95	2.48	280	100	220
MAR 17...	--	--	--	--	--	--	--	--	--
APR 20...	.1	15	800	750	1.09	2.46	180	80	400
MAY 17...	--	--	--	--	--	--	--	--	--
JUN 24...	.1	12	736	724	1.00	3.14	100	0	90
JUN 22...	.1	9.7	738	732	1.00	3.19	350	120	70
JUL 19...	.1	11	767	722	1.04	4.14	170	120	70
AUG 19...	.2	11	788	770	1.07	3.40	240	120	80
SEP 19...	.1	19	698	742	.95	3.51	140	40	60

BURNT CREEK BASIN

06342450 BURNT CREEK NEAR BISMARCK, ND

LOCATION.--Lat 46°54'54", long 100°48'48", in SW¼NW¼SW¼ sec.29, T.140 N., R.80 W., Burleigh County, Hydrologic Unit 10130101, on left bank on upstream side of county highway bridge, 7 mi (11 km) northwest of Bismarck.

DRAINAGE AREA.--108 mi² (280 km²).

PERIOD OF RECORD.--October 1967 to current year.

GAGE.--Water-stage recorder.

REMARKS.--Records good.

AVERAGE DISCHARGE.--10 years, 7.12 ft³/s (0.202 m³/s), 5,160 acre-ft/yr (6.36 hm³/yr); median of yearly mean discharge, 4.6 ft³/s (0.13 m³/s), 3,300 acre-ft/yr (4.1 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,000 ft³/s (85.0 m³/s) Apr. 8, 1969, gage height, 14.80 ft (4.511 m); no flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 40 ft³/s (1.13 m³/s) Sept. 25, gage height, 4.31 ft (1.314 m), no peak above base of 100 ft³/s (2.83 m³/s) revised; no flow for several months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						0	1.3	.16				0
2						0	1.2	.14				0
3						0	1.1	.14				0
4						0	2.4	.15				0
5						0	2.2	.14				0
6						0	1.8	.06				0
7						0	1.2	0				0
8						1.9	.92	0				0
9						1.5	.96	0				0
10						20	1.0	0				0
11						14	1.1	0				0
12						10	1.4	0				0
13						7.2	1.6	0				0
14						6.7	1.0	0				0
15						6.0	.84	0				0
16						5.2	.92	0				0
17						4.9	.92	0				0
18						4.2	.72	0				0
19						4.9	.80	0				0
20						5.3	.84	0				0
21						4.4	.72	0				0
22						2.6	.60	0				0
23						3.0	.37	0				.08
24						2.0	.32	0				.35
25						1.2	.30	0				25
26						1.2	.28	0				16
27						2.2	.26	0				6.3
28						1.9	.25	0				3.5
29					---	2.4	.23	0				1.7
30					---	2.5	.19	0				1.2
31		---			---	2.5	---	0	---			---
TOTAL	0	0	0	0	0	117.7	28.34	.79	0	0	0	54.13
MEAN	0	0	0	0	0	3.80	.94	.026	0	0	0	1.80
MAX	0	0	0	0	0	20	2.4	.16	0	0	0	25
MIN	0	0	0	0	0	0	.19	0	0	0	0	0
AC-FT	0	0	0	0	0	233	56	1.6	0	0	0	107
CAL YR 1976	TOTAL	1581.38	MEAN 4.32	MAX 320	MIN 0	AC-FT 3140						
WTR YR 1977	TOTAL	200.96	MEAN .55	MAX 25	MIN 0	AC-FT 399						

MISSOURI RIVER MAIN STEM

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06342500 MISSOURI RIVER AT BISMARCK, ND

LOCATION.--Lat 46°48'51", long 100°49'12", in SE¼NW¼SE¼ sec.31, T.139 N., R.80 W., Burleigh County, Hydrologic Unit 10130101, on left bank 40 ft (12 m) upstream from Bismarck city waterplant, 2,100 ft (640 m) downstream from Burlington Northern Railway bridge, 1.6 mi (2.6 km) northwest of Bismarck Post Office, 3.5 mi (5.6 km) upstream from Heart River and at mile 1,314.5 (kilometer 2,115.0).

DRAINAGE AREA.--186,400 mi² (482,800 km²), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October to November 1927, April 1928 to current year. See WSP 1729 or 1917 for history of data prior to April 1928.

GAGE.--Water-stage recorder. Datum of gage is 1,618.38 ft (493.282 m) above mean sea level. See WSP 1729 or 1917 for history of changes prior to Sept. 30, 1937.

REMARKS.--Records good. Many diversions from tributaries. Flow regulated by Lake Sakakawea (station 06338000) 75.4 mi (121.3 km) upstream since November 1953.

AVERAGE DISCHARGE.--49 years (1928-77), 22,360 ft³/s (633.2 m³/s), 16,200,000 acre-ft/yr (20.0 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 500,000 ft³/s (14,200 m³/s) Apr. 6, 1952, gage height, 27.90 ft (8.504 m). Maximum discharge since construction of Garrison Dam in 1953, 68,900 ft³/s (1,950 m³/s) July 13, 1975, gage height, 14.24 ft (4.340 m). Minimum discharge, about 1,800 ft³/s (51.0 m³/s) Jan. 3, 1940; minimum gage height, 1.35 ft (0.411 m) Sept. 4, 1934, present site and datum.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known, 31.6 ft (9.632 m) Mar. 31, 1881 (ice jam), present site and datum.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 37,100 ft³/s (1,050 m³/s) Dec. 2, 3, gage height, 9.60 ft (2.926 m); maximum gage height, 13.48 ft (4.109 m) Dec. 13, backwater from ice; minimum discharge, 13,100 ft³/s (371 m³/s) Oct. 11, gage height, 4.07 ft (1.241 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29100	27800	35600	26500	32000	27500	18200	17300	16900	17200	19500	17900
2	29100	27000	36100	27500	32500	27000	18400	17400	16600	16800	18700	16000
3	30400	28600	36700	27500	32500	27000	18300	17900	16300	17500	18300	15900
4	23800	29400	35900	28500	32500	27000	17000	17900	15900	18500	18100	16300
5	29900	30100	36300	28500	34000	27000	17300	18300	16300	17500	18000	15300
6	28000	31200	36000	29000	34000	27500	18400	18800	16400	18200	17500	16700
7	28400	31500	36000	29000	34000	27500	18100	17600	16100	19300	18000	16500
8	28900	32700	35500	29000	33500	27000	18200	17400	16700	18400	17700	16000
9	29200	33100	31000	29000	33000	25500	17500	17800	15700	17900	18100	16300
10	30000	32900	28000	29000	32500	25000	16400	18200	16900	17700	17300	16300
11	17300	33000	22000	29000	32000	25000	15500	17800	16300	19300	16800	16200
12	26400	32800	21000	29000	31500	24000	17000	17400	16300	20400	17000	15900
13	27800	32400	20500	29000	31000	24000	16200	17900	17200	20600	17400	16300
14	30100	33000	20500	29000	30500	23500	17400	18200	16000	20400	17200	16300
15	30100	33100	20000	29000	31000	25000	16700	17800	17100	19500	17700	16100
16	29100	33000	20000	29000	30000	24000	17600	17600	17900	20000	17400	16100
17	29300	31900	20500	29000	30000	23500	17500	18300	18200	19600	16800	17400
18	29500	31900	21000	29000	30500	23500	17400	16200	19800	19300	17500	16300
19	30100	32400	21500	29000	31000	23500	18000	16500	18400	20000	17600	16800
20	30500	32400	21500	29000	29000	22000	18000	16600	18400	20800	17600	14800
21	27200	32900	22000	29000	28000	22100	17500	16400	18900	20200	17600	15700
22	28800	32900	22500	29000	28000	22400	18200	15100	18800	19300	17400	16000
23	28000	32900	23000	29000	28000	21800	20500	15600	17600	18500	17800	16400
24	27800	33400	23500	29000	28000	21800	20500	17800	18100	18300	17700	17100
25	28400	35400	24000	29000	28000	21000	19500	16300	18300	18800	17400	16500
26	28800	35900	24000	29000	27500	19900	19100	16500	17600	17800	17900	15900
27	29500	35500	24500	29500	27500	20400	19900	16900	17500	18300	18500	16500
28	28600	36300	25000	30000	27500	17700	18800	16500	17300	18100	18800	16100
29	28400	35600	25500	31000	---	20500	17800	16500	16900	17100	17900	15800
30	29000	32900	26000	32000	---	19200	17600	16700	17200	18600	18100	15500
31	28100	---	26000	32000	---	18100	---	16100	---	20300	18300	---
TOTAL	879600	973900	821600	902000	859500	730900	538500	533300	517600	584200	551600	486900
MEAN	28370	32460	26500	29100	30700	23580	17950	17200	17250	18850	17790	16230
MAX	30500	36300	36700	32000	34000	27500	20500	18800	19800	20800	19500	17900
MIN	17300	27000	20000	26500	27500	17700	15500	15100	15700	16800	16800	14800
AC-FT	1745000	1932000	1630000	1789000	1705000	1450000	1068000	1058000	1027000	1159000	1094000	965800
CAL YR 1976	TOTAL	12109500	MEAN	33090	MAX	42500	MIN	17300	AC-FT	24020000		
WTR YR 1977	TOTAL	8379600	MEAN	22960	MAX	36700	MIN	14800	AC-FT	16620000		

MISSOURI RIVER MAIN STEM

06342500 MISSOURI RIVER AT BISMARCK, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SEDIMENT RECORDS.--June 1946 to current year.

REMARKS.--Sediment records from June 1946 to September 1971 are available from Corps of Engineers, Omaha, Neb.
Sediment concentration data from Oct. 1, 1971 to June 30, 1972 were furnished by the Corps of Engineers.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATIONS (July 1972 to current year): Maximum daily mean, 303 mg/L Mar. 21, 1976; minimum daily mean, 25 mg/L Dec. 30, 31, 1973, Jan. 1, 1974.

SEDIMENT LOADS (July 1972 to current year): Maximum daily, 41,400 tons (37,600 megagrams) July 13, 15, 1975; minimum daily, 1,210 tons (1,100 megagrams) Dec. 31, 1973.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATIONS: Maximum daily mean, 200 mg/L Mar. 12, minimum daily mean, 40 mg/L Dec. 13-20.

SEDIMENT LOADS: Maximum daily, 15,100 tons (13,700 megagrams) Dec. 3; minimum daily, 2,160 tons (1,960 megagrams) Dec. 15, 16.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	AIR TEMPERATURE (DEG C)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	TURBIDITY (NTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	CHEMICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L)
OCT											
13...	1545	28000	650	8.5	--	13.0	9	8.4	9.4	94	16
27...	1400	29700	650	8.5	--	7.0	10	--	10.9	95	9
NOV											
09...	1445	32900	640	8.5	--	6.5	8	7.5	11.0	94	21
22...	1530	32900	640	8.4	--	3.5	8	--	11.8	93	14
DEC											
15...	1415	20000	640	8.4	--	.0	9	--	13.0	94	--
30...	1415	26000	655	8.4	--	.0	5	4.0	13.4	97	20
JAN											
12...	1500	29000	640	8.5	--	.0	3	--	13.3	97	27
26...	1500	29000	640	8.4	--	.0	5	4.6	12.8	93	46
FEB											
07...	1430	34000	620	8.3	--	.0	3	--	13.2	96	6
MAR											
02...	1300	27000	660	8.1	--	.0	6	6.3	13.4	97	6
16...	1415	24000	630	8.3	--	2.0	10	--	12.7	96	20
APR											
01...	0945	17900	645	8.3	--	2.5	10	11	12.4	96	18
12...	1400	17400	640	8.3	--	5.0	8	--	12.4	103	32
26...	1530	19900	640	8.4	--	8.5	5	5.1	12.4	111	14
MAY											
11...	1415	17900	660	8.4	--	13.0	6	--	9.9	99	11
26...	1115	15600	635	8.3	--	16.5	10	11	9.0	97	76
JUN											
07...	1345	15600	630	8.2	--	15.0	4	--	10.0	104	17
28...	1530	17300	640	8.3	--	16.0	8	8.0	9.4	100	15
JUL											
12...	1445	20700	620	8.3	--	16.0	20	--	9.2	99	22
27...	1000	17300	730	8.3	23.0	15.5	6	4.1	9.0	97	19
AUG											
09...	1330	18100	640	8.3	30.0	18.0	8	--	8.6	96	8
30...	1430	17600	650	8.2	--	16.5	6	6.4	8.7	94	7
SEP											
14...	1300	16300	650	8.4	--	16.0	5	--	8.9	95	19
29...	1130	15000	650	8.4	--	14.0	--	17	9.5	97	12

MISSOURI RIVER MAIN STEM

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06342500 MISSOURI RIVER AT BISMARCK, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	IMME- DIATE COLI- FORM (COL. PER 100 ML)	FECAL COLI- FORM (COL. 7UM-MF (COL./ 100 ML)	FECAL STREP- TOCOCI KF AGAR (COL. PER 100 ML)	HARD- NESS (CA, MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO
OCT										
13...	88	81	--	220	64	54	20	58	36	1.7
27...	320	89	--	--	--	--	--	--	--	--
NOV										
09...	B160	E1	--	210	64	52	20	58	37	1.7
22...	B15	<1	--	--	--	--	--	--	--	--
DEC										
15...	70	60	--	210	63	51	20	55	36	1.7
30...	E6000	38	--	220	61	54	21	58	36	1.7
JAN										
12...	130	B16	--	--	--	--	--	--	--	--
26...	155	B13	--	220	72	55	20	56	35	1.6
FEB										
07...	110	85	--	--	--	--	--	--	--	--
MAR										
02...	--	160	55	210	62	51	20	57	37	1.7
16...	310	E1	--	--	--	--	--	--	--	--
APR										
01...	B21	E1	--	220	61	54	20	58	36	1.7
12...	B12900	E1	--	--	--	--	--	--	--	--
26...	>40000	--	--	220	64	53	20	56	36	1.7
MAY										
11...	B100	<10	<20	--	--	--	--	--	--	--
26...	205	B3	B17	220	70	54	20	55	35	1.6
JUN										
07...	B16	<1	--	--	--	--	--	--	--	--
28...	B367	B11	--	220	65	54	21	59	36	1.7
JUL										
12...	2700	E340	--	--	--	--	--	--	--	--
27...	888	B33	--	220	65	54	21	56	35	1.6
AUG										
09...	4000	E5	--	--	--	--	--	--	--	--
30...	--	--	--	220	64	55	20	54	34	1.6
SEP										
14...	B100	B2	--	--	--	--	--	--	--	--
29...	450	35	--	240	81	57	23	60	35	1.7

DATE	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	ALKA- LINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)	TOTAL FLUO- RIDE (F) (MG/L)	DIS- SOLVED FLUO- RIDE (F) (MG/L)	BROMIDE (BR) (MG/L)
OCT										
13...	4.2	174	6	153	.9	160	11	--	.5	--
27...	--	--	--	--	--	--	--	--	--	--
NOV										
09...	4.1	172	4	148	.9	180	8.8	--	.5	--
22...	--	--	--	--	--	--	--	--	--	--
DEC										
15...	4.0	162	8	146	1.1	180	8.7	--	.5	.0
30...	4.3	196	0	161	1.2	170	9.0	--	.5	--
JAN										
12...	--	--	--	--	--	--	--	--	--	--
26...	3.8	174	3	148	1.1	160	9.0	--	.5	--
FEB										
07...	--	--	--	--	--	--	--	--	--	--
MAR										
02...	4.0	180	0	148	2.3	180	8.4	--	.6	--
16...	--	--	--	--	--	--	--	--	--	--
APR										
01...	3.9	190	0	156	1.5	170	8.7	--	.5	--
12...	--	--	--	--	--	--	--	--	--	--
26...	4.0	180	2	150	1.2	160	8.5	--	.5	--
MAY										
11...	--	--	--	--	--	--	--	--	--	--
26...	4.0	180	0	150	1.4	170	8.8	--	.6	--
JUN										
07...	--	--	--	--	--	--	--	--	--	--
28...	3.9	190	0	160	1.5	170	8.8	--	.6	--
JUL										
12...	--	--	--	--	--	--	--	--	--	--
27...	3.9	190	0	160	1.5	160	8.8	--	.3	--
AUG										
09...	--	--	--	--	--	--	--	--	--	--
30...	4.0	190	0	160	1.9	180	9.0	--	.6	--
SEP										
14...	--	--	--	--	--	--	--	--	--	--
29...	3.8	190	0	160	1.2	170	8.9	.5	.6	--

E - Estimated.

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

MISSOURI RIVER MAIN STEM

06342500 MISSOURI RIVER AT BISMARCK, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED SILICA (SIO ₂) (MG/L)	DIS- SOLVED SOLIDS (RESID- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	SUS- PENDE SOLIDS (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO- GEN (N) (MG/L)
OCT										
13...	6.5	426	406	.58	32200	--	.13	.00	.13	.00
27...	--	421	--	.57	33800	31	--	--	.25	.01
NOV										
09...	6.5	433	419	.59	38500	--	.15	.00	.15	.00
22...	--	428	--	.58	38000	13	--	--	.12	.00
DEC										
15...	7.1	420	414	.57	22700	--	--	--	.14	.00
30...	7.7	431	421	.59	30300	--	.15	.00	.15	.00
JAN										
12...	--	431	--	.59	33700	--	--	--	.22	.00
26...	7.4	413	401	.56	32300	--	.15	.00	.15	.00
FEB										
07...	--	401	--	.55	36800	--	--	--	.14	.00
MAR										
02...	7.5	413	417	.56	30100	--	.19	.00	.19	.01
16...	--	409	--	.56	26500	--	--	--	.14	.02
APR										
01...	7.9	434	417	.59	21000	--	.13	.01	.14	.03
12...	--	434	--	.59	20400	--	--	--	.08	.01
26...	7.8	419	401	.57	22500	--	.04	.00	.04	.01
MAY										
11...	--	408	--	.55	19700	--	--	--	.05	.01
26...	8.6	424	410	.58	17900	--	.09	.00	.09	.01
JUN										
07...	--	413	--	.56	17400	2	--	--	.05	.01
28...	7.4	412	418	.56	19200	--	.06	.01	.07	.00
JUL										
12...	--	414	--	.56	23100	--	--	--	.08	.01
27...	21	416	419	.57	19400	--	.07	.02	.09	.00
AUG										
09...	--	419	--	.57	20500	--	--	--	.09	.00
30...	8.7	427	425	.58	20300	--	.08	.01	.09	.01
SEP										
14...	--	426	--	.58	18700	--	--	--	.10	.00
29...	8.6	421	426	.57	17100	--	.09	.01	.10	.01

DATE	TOTAL ORGANIC NITRO- GEN (N) (MG/L)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L)	TOTAL NITRO- GEN (N) (MG/L)	TOTAL NITRO- GEN (NO ₃) (MG/L)	TOTAL PHOS- PHORUS (P) (MG/L)	DIS- SOLVED ORTHO. PHOS- PHORUS (P) (MG/L)	DIS- SOLVED ORTHO. PHOS- PHATE (PO ₄) (MG/L)	TOTAL ALUM- INUM (AL) (UG/L)	TOTAL ARSENIC (AS) (UG/L)
OCT									
13...	.38	.38	.51	2.3	.04	--	--	530	2
27...	.16	.17	.42	1.9	.02	--	--	--	--
NOV									
09...	.23	.23	.38	1.7	.03	--	--	--	--
22...	.21	.21	.33	1.5	.02	--	--	--	--
DEC									
15...	.50	.50	.64	2.8	.02	.00	.00	--	--
30...	.34	.34	.49	2.2	.01	--	--	--	--
JAN									
12...	.41	.41	.63	2.8	.02	--	--	--	--
26...	.16	.16	.31	1.4	.02	--	--	--	--
FEB									
07...	.27	.27	.41	1.8	.01	--	--	--	--
MAR									
02...	.17	.18	.37	1.6	.00	--	--	--	--
16...	.17	.19	.33	1.5	.03	--	--	--	--
APR									
01...	.36	.39	.53	2.3	.06	--	--	860	1
12...	.18	.19	.27	1.2	.01	--	--	--	--
26...	.18	.19	.23	1.0	.03	--	--	730	3
MAY									
11...	.36	.37	.42	1.9	.01	--	--	--	--
26...	.34	.35	.44	1.9	.03	--	--	760	2
JUN									
07...	.11	.12	.17	.75	.03	--	--	--	--
28...	.19	.19	.26	1.2	.01	--	--	770	2
JUL									
12...	.17	.18	.26	1.2	.07	--	--	--	--
27...	.19	.19	.28	1.2	.00	--	--	570	3
AUG									
09...	.24	.24	.33	1.5	.01	--	--	--	--
30...	.19	.20	.29	1.3	.03	--	--	540	2
SEP									
14...	.15	.15	.25	1.1	.01	--	--	--	--
29...	.07	.08	.18	.80	.03	--	--	680	4

06342500 MISSOURI RIVER AT BISMARCK, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL BARIUM (BA) (UG/L)	DIS- SOLVED BARIUM (BA) (UG/L)	TOTAL BERYL- LIUM (BE) (UG/L)	TOTAL BORON (B) (UG/L)	DIS- SOLVED BORON (B) (UG/L)	TOTAL CAD- MIUM (CD) (UG/L)	TOTAL CHRO- MIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)
OCT									
13...	--	0	0	150	120	<10	10	<50	10
27...	--	--	--	--	--	--	--	--	--
NOV									
09...	--	--	--	--	120	--	--	--	--
22...	--	--	--	--	--	--	--	--	--
DEC									
15...	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	110	--	--	--	--
JAN									
12...	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	110	--	--	--	--
FEB									
07...	--	--	--	--	--	--	--	--	--
MAR									
02...	--	--	--	--	110	--	--	--	--
16...	--	--	--	--	--	--	--	--	--
APR									
01...	0	--	0	140	120	<10	0	<50	<10
12...	--	--	--	--	--	--	--	--	--
26...	100	--	0	130	110	<10	0	<50	10
MAY									
11...	--	--	--	--	--	--	--	--	--
26...	100	--	0	140	110	<10	0	<50	10
JUN									
07...	--	--	--	--	--	--	--	--	--
28...	0	--	0	160	120	<10	0	<50	<10
JUL									
12...	--	--	--	--	--	--	--	--	--
27...	200	--	0	180	110	<10	0	<50	<10
AUG									
09...	--	--	--	--	--	--	--	--	--
30...	300	--	0	140	120	<10	0	<50	<10
SEP									
14...	--	--	--	--	--	--	--	--	--
29...	100	--	0	150	120	<10	0	<50	<10

DATE	TOTAL IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL LITHIUM (LI) (UG/L)	TOTAL MAN- GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL MOLYB- DENUM (MO) (UG/L)	TOTAL NICKEL (NI) (UG/L)
OCT							
13...	980	<100	50	10	.0	2	<50
27...	--	--	--	--	--	--	--
NOV							
09...	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--
DEC							
15...	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--
JAN							
12...	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--
FEB							
07...	--	--	--	--	--	--	--
MAR							
02...	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--
APR							
01...	2300	<100	50	50	.1	2	<50
12...	--	--	--	--	--	--	--
26...	1800	100	50	40	.5	0	<50
MAY							
11...	--	--	--	--	--	--	--
26...	1500	<100	40	40	.0	2	<50
JUN							
28...	1800	<100	40	30	.0	2	<50
JUL							
12...	--	--	--	--	--	--	--
27...	1300	<100	40	30	.0	2	<50
AUG							
09...	--	--	--	--	--	--	--
30...	1200	<100	50	40	.0	0	<50
SEP							
14...	--	--	--	--	--	--	--
29...	1700	<100	50	40	.1	2	<50

MISSOURI RIVER MAIN STEM

06342500 MISSOURI RIVER AT BISMARCK, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL SELE- NIUM (SE) (UG/L)	TOTAL SILVER (AG) (UG/L)	TOTAL STRON- TIUM (SR) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	DIS- SOL- VED ORGANIC CARBON (C) (MG/L)	SUS- PENDED ORGANIC CARBON (C) (MG/L)
OCT							
13...	1	<10	450	0	--	2.4	.1
27...	--	--	--	--	3.3	--	--
NOV							
09...	--	--	--	--	--	2.7	.1
22...	--	--	--	--	2.8	--	--
DEC							
15...	--	--	--	--	--	2.6	.2
30...	--	--	--	--	--	2.5	.2
JAN							
12...	--	--	--	--	3.1	--	--
26...	--	--	--	--	--	4.1	.2
FEB							
07...	--	--	--	--	2.9	--	--
MAR							
02...	--	--	--	--	--	--	.2
16...	--	--	--	--	4.2	--	--
APR							
01...	1	<10	--	20	--	3.2	1.4
12...	--	--	--	--	3.5	--	--
26...	1	<10	--	10	--	3.6	1.0
MAY							
11...	--	--	--	--	3.0	--	--
26...	1	<10	--	20	--	3.0	.5
JUN							
28...	2	<10	--	10	--	2.8	.5
JUL							
12...	--	--	--	--	3.6	--	--
27...	1	<10	--	20	--	2.4	.2
AUG							
09...	--	--	--	--	2.9	--	--
30...	1	<10	--	20	--	--	.6
SEP							
14...	--	--	--	--	2.8	--	--
29...	1	<10	--	20	--	3.2	.5

DATE	SUS- PENDED SEDIM- ENT (MG/L)	SUS- PENDED SEDIM- ENT DIS- CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .062 MM	SUS. SED. FALL DIAM. % FINER THAN .125 MM	SUS. SED. FALL DIAM. % FINER THAN .250 MM	SUS. SED. FALL DIAM. % FINER THAN .500 MM	BED MAT. FALL DIAM. % FINER THAN .062 MM	BED MAT. FALL DIAM. % FINER THAN .125 MM
OCT								
13...	130	9830	--	--	--	--	--	--
27...	89	714Q	30	63	100	--	0	3
NOV								
09...	156	13900	--	--	--	--	--	--
22...	142	12600	16	53	100	--	--	--
DEC								
15...	38	2050	--	--	--	--	--	--
JAN								
12...	78	6110	--	--	--	--	--	--
26...	60	4700	--	--	--	--	--	--
MAR								
02...	46	3350	--	--	--	--	--	--
16...	171	11100	--	--	--	--	--	--
APR								
01...	158	7640	32	61	94	100	0	2
12...	93	4370	--	--	--	--	--	--
26...	116	6230	26	73	99	100	1	6
MAY								
11...	80	3870	--	--	--	--	--	--
26...	98	4130	--	--	--	--	0	2
JUN								
07...	66	2780	--	--	--	--	--	--
28...	114	5330	29	72	100	--	0	4
JUL								
12...	168	9390	--	--	--	--	--	--
27...	103	4810	20	61	100	--	0	3
AUG								
30...	112	5320	23	66	98	100	0	2
SEP								
29...	88	3560	44	68	100	--	0	3

06342500 MISSOURI RIVER AT BISMARCK, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	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
OCT							
13...	--	--	--	--	--	--	--
27...	66	95	99	99	100	--	--
NOV							
09...	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--
DEC							
15...	--	--	--	--	--	--	--
JAN							
12...	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--
MAR							
02...	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--
APR							
01...	50	92	98	99	100	--	--
12...	--	--	--	--	--	--	--
26...	60	92	97	99	99	100	--
MAY							
11...	--	--	--	--	--	--	--
26...	64	92	98	98	99	100	--
JUN							
07...	--	--	--	--	--	--	--
28...	72	94	98	98	99	99	100
JUL							
12...	--	--	--	--	--	--	--
27...	70	91	95	96	97	99	100
AUG							
30...	31	75	98	99	100	--	--
SEP							
29...	74	92	96	97	98	99	100

06342500 MISSOURI RIVER AT BISMARCK. ND--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

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	128	10100	129	9680	150	14400	70	5010	60	5180	50	3710
2	128	10100	128	9330	151	14700	70	5200	60	5260	50	3650
3	130	10700	131	10100	152	15100	70	5200	60	5260	50	3650
4	118	7580	134	10600	150	14500	80	6160	60	5260	50	3650
5	130	10500	135	11000	151	14800	80	6160	60	5510	50	3650
6	127	9600	137	11500	140	13600	80	6260	60	5510	50	3710
7	128	9820	138	11700	130	12600	80	6260	60	5510	50	3710
8	128	9990	140	12400	120	11500	80	6260	60	5430	70	5100
9	129	10200	141	12600	100	8370	80	6260	60	5350	100	6880
10	130	10500	141	12500	80	6050	80	6260	60	5260	140	9450
11	104	4860	141	12600	60	3560	80	6260	60	5180	180	12200
12	123	8770	141	12500	50	2840	80	6260	60	5100	200	13000
13	126	9460	141	12300	40	2210	80	6260	60	5020	180	11700
14	131	10600	142	12700	40	2210	80	6260	60	4940	180	11400
15	133	10800	142	12700	40	2160	80	6260	60	5020	170	11500
16	131	10300	142	12700	40	2160	70	5480	60	4860	170	11000
17	131	10400	140	12100	40	2210	70	5480	60	4860	170	10800
18	132	10500	140	12100	40	2270	70	5480	60	4940	170	10800
19	134	10900	141	12300	40	2320	70	5480	60	5020	170	10800
20	134	11000	141	12300	40	2320	70	5480	50	3920	170	10100
21	128	9400	142	12600	50	2970	70	5480	50	3780	170	10100
22	131	10200	142	12600	50	3040	70	5480	50	3780	170	10300
23	129	9750	142	12600	50	3110	60	4700	50	3780	160	9420
24	129	9680	143	12900	50	3170	60	4700	50	3780	160	9420
25	130	9970	147	14100	50	3240	60	4700	50	3780	160	9070
26	132	10300	148	14300	50	3240	60	4700	50	3710	160	8600
27	133	10600	148	14200	60	3970	60	4780	50	3710	160	8810
28	131	10100	151	14800	60	4050	60	4860	50	3710	160	7650
29	130	9970	150	14400	60	4130	60	5020	---	---	160	8860
30	132	10300	145	12900	60	4210	60	5180	---	---	160	8290
31	130	9860	---	---	60	4210	60	5180	---	---	150	7330
TOTAL	---	306810	---	371110	---	189220	---	172510	---	132420	---	258310

DAY	MEAN CONCENTRATION	LOADS	MEAN CONCENTRATION	LOADS	MEAN CONCENTRATION	LOADS	MEAN CONCENTRATION	LOADS	MEAN CONCENTRATION	LOADS	MEAN CONCENTRATION	LOADS
	(MG/L)	(T/DAY)	(MG/L)	(T/DAY)	(MG/L)	(T/DAY)	(MG/L)	(T/DAY)	(MG/L)	(T/DAY)	(MG/L)	(T/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	150	7370	108	5040	102	4650	102	4740	106	5580	104	5030
2	140	6950	109	5120	102	4570	101	4580	105	5300	100	4320
3	130	6420	110	5320	101	4450	103	4870	104	5140	100	4290
4	120	5510	109	5270	100	4290	104	5190	104	5080	101	4450
5	120	5610	110	5440	101	4450	103	4870	103	5010	99	4090
6	114	5660	111	5630	100	4430	104	5110	103	4870	102	4600
7	113	5520	109	5180	100	4350	106	5520	103	5010	101	4500
8	113	5550	109	5120	101	4550	104	5170	103	4920	100	4320
9	111	5240	109	5240	100	4240	103	4980	104	5080	101	4450
10	109	4830	110	5410	102	4650	103	4920	102	4760	101	4450
11	106	4440	108	5190	101	4450	106	5520	101	4580	101	4420
12	109	5000	107	5030	101	4450	108	5950	102	4680	100	4290
13	106	4640	108	5220	103	4780	109	6060	102	4790	102	4490
14	109	5120	109	5360	101	4360	108	5950	102	4740	102	4490
15	108	4870	108	5190	102	4710	106	5580	103	4920	102	4430
16	110	5230	107	5080	104	5030	107	5780	102	4790	102	4430
17	110	5200	109	5390	104	5110	107	5660	101	4580	104	4890
18	110	5170	105	4590	108	5770	106	5520	103	4870	102	4490
19	111	5390	105	4680	105	5220	107	5780	103	4890	103	4670
20	111	5390	105	4710	105	5220	109	6120	103	4890	99	3960
21	110	5200	105	4650	106	5410	108	5890	103	4890	101	4280
22	112	5500	103	4200	106	5380	106	5520	102	4790	101	4360
23	116	6420	103	4340	103	4890	104	5190	103	4950	102	4520
24	116	6420	105	5050	104	5080	104	5140	103	4920	103	4760
25	113	5950	103	4530	104	5140	105	5330	102	4790	103	4590
26	112	5780	100	4450	103	4890	103	4950	103	4980	102	4380
27	113	6070	101	4610	103	4870	104	5140	104	5190	103	4590
28	111	5630	102	4540	102	4760	104	5080	106	5380	103	4480
29	109	5240	102	4540	101	4610	102	4710	103	4980	102	4350
30	109	5180	103	4640	102	4740	105	5270	104	5080	101	4230
31	---	---	102	4430	---	---	108	5920	105	5190	---	---
TOTAL	---	166510	---	153190	---	143500	---	166010	---	153620	---	133600
TOTAL LOAD FOR YEAR:	2346810		TONS.									

MISSOURI RIVER MAIN STEM

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06342500 MISSOURI RIVER AT BISMARCK, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	OCT 13,76 1545	NOV 9,76 1445	DEC 15,76 1415	DEC 30,76 1415	JAN 26,77 0000					
TOTAL CELLS/ML	160	190	57	48	40					
DIVERSITY: DIVISION	1.3	1.4	0.3	1.6	0.8					
..CLASS	1.3	1.4	0.3	1.6	0.8					
...ORDER	1.8	2.0	0.6	1.9	1.0					
...FAMILY	2.6	2.9	1.8	2.1	1.1					
....GENUS	2.6	2.9	2.1	2.1	1.1					
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										
...CHARACIACEAE										
...SCHROEDERIA	--	-	--	-	--	-	--	-	--	-
...MICRACTINIACEAE										
...MICRACTINIUM	--	-	--	-	--	-	--	-	--	-
...OOCYSTACEAE										
...ANKISTRODESMUS	--	-	--	-	--	-	--	-	--	-
...CHODATELLA	--	-	--	-	--	-	--	-	--	-
...KIRCHNERIELLA	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
...ACTINASTRUM	--	-	--	-	--	-	--	-	--	-
...SCENEDESMUS	--	-	33#	17	--	-	--	-	--	-
...VOLVOCALES										
...CHLAMYDOMONADACEAE										
...CHLAMYDOMONAS	--	-	8	4	--	-	--	-	--	-
CHRYCOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...COSCINODISCACEAE										
...CYCLOTELLA	28#	17	33#	17	3	6	--	-	--	-
...MELOSIRA	--	-	--	-	--	-	--	-	--	-
...STEPHANODISCUS	--	-	--	-	--	-	4	8	3	8
...PENNALES										
...ACHNANTHACEAE										
...ACHNANTHES	--	-	--	-	--	-	--	-	--	-
...RHOICOSPHENIA	--	-	--	-	--	-	--	-	--	-
...CYMBELLACEAE										
...CYMBELLA	--	-	--	-	3	6	--	-	--	-
...DIATOMACEAE										
...DIATOMA	14	9	8	4	3	6	8#	17	*	0
...FRAGILARIACEAE										
...ASTERIONELLA	--	-	--	-	35#	61	4	8	3	8
...FRAGILARIA	28#	17	--	-	--	-	--	-	--	-
...SYNEDRA	--	-	--	-	3	6	--	-	--	-
...GOMPHONEMATACEAE										
...GOMPHONEMA	--	-	8	4	--	-	--	-	--	-
...NAVICULACEAE										
...GYROSIGMA	--	-	--	-	--	-	--	-	--	-
...NAVICULA	14	9	25	13	3	6	--	-	--	-
...NITZSCHIACEAE										
...NITZSCHIA	14	9	33#	17	3	6	--	-	3	8
...SURIPELLACEAE										
...SURIPELLA	--	-	8	4	--	-	*	0	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROCCOCCALES										
...CHROCCOCCACEAE										
...ANACYSTIS	48#	30	--	-	--	-	--	-	--	-
...HORMOGONALES										
...NOSTOCACEAE										
...ANABAENA	--	-	--	-	--	-	--	-	--	-
...CYLINDROSPERMUM	--	-	--	-	--	-	--	-	31#	77
...OSCILLATORIACEAE										
...OSCILLATORIA	--	-	--	-	--	-	--	-	--	-
...CHROCCOCCALES										
...CHROCCOCCAEAE										
...GOMPHOSPHAERIA	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
..CRYPTOPHYCEAE										
...CRYPTOMONIDALES										
...CRYPTOCHRYSIDACEAE										
...CHROOMONAS	--	-	--	-	--	-	--	-	--	-
...CRYPTOMONODACEAE										
...CRYPTOMONAS	--	-	33#	17	3	6	16#	33	--	-
..EUGLENOPHYCEAE										
...EUGLENALES										
...EUGLENACEAE										
...EUGLENA	--	-	--	-	--	-	--	-	--	-
...TRACHELOMONAS	14	9	--	-	--	-	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)										
..DINOPHYCEAE										
...PERIDINIALES										
...GLENODINIACEAE										
...GLENODINIUM	--	-	--	-	--	-	16#	33	--	-

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

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

MISSOURI RIVER MAIN STEM

06342500 MISSOURI RIVER AT BISMARCK, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	MAR 2,77 1300	APR 1,77 0945	APR 26,77 1530	MAY 26,77 1115				
TOTAL CELLS/ML	37	1600	7900	790				
DIVERSITY: DIVISION	0.4	0.1	0.0	0.1				
..CLASS	0.4	0.1	0.0	0.1				
..ORDER	0.4	0.6	0.0	0.9				
...FAMILY	1.5	0.8	0.0	1.3				
....GENUS	1.5	0.9	0.0	1.3				
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
...CHARACIACEAE								
...SCHROEDERIA	--	-	--	-	--	-	--	-
...MICRACETINIAEAE								
...MICRACETINIUM	--	-	--	-	--	-	--	-
...OOCYSTACEAE								
...ANKISTRODESMUS	--	-	11	1	--	-	7	1
...CHODATELLA	--	-	11	1	--	-	--	-
...KIRCHNERIELLA	--	-	--	-	--	-	--	-
...SCENEDESMACEAE								
...ACTINASTRUM	--	-	--	-	--	-	--	-
...SCENEDESMUS	--	-	--	-	--	-	--	-
..VOLVOCALES								
...CHLAMYDOMONADACEAE								
...CHLAMYDOMONAS	--	-	--	-	--	-	--	-
CHRYSDOPHYTA								
..BACILLARIOPHYCEAE								
..CENTRALES								
..COSCINODISCEAE								
...CYCLOTELLA	--	-	1400# 87		7900#100		590# 75	
...MELOSIRA	--	-	23	1	--	-	--	-
...STEPHANODISCUS	--	-	--	-	--	-	--	-
..PENNALES								
...ACHNANTHACEAE								
...ACHNANTHES	--	-	--	-	--	-	--	-
...RHOICOSPHEA	3	8	--	-	--	-	7	1
...CYMBELLACEAE								
...CYMBELLA	--	-	--	-	--	-	--	-
...DIATOMACEAE								
...DIATOMA	23# 62		68	4	--	-	97	12
...FRAGILARIACEAE								
...ASTERIONELLA	--	-	34	2	--	-	--	-
...FRAGILARIA	--	-	--	-	--	-	--	-
...SYNEDRA	*	0	--	-	--	-	--	-
...GOMPHONEMACEAE								
...GOMPHONEMA	--	-	11	1	--	-	22	3
...NAVICULACEAE								
...GYROSIGMA	--	-	--	-	--	-	--	-
...NAVICULA	--	-	11	1	--	-	--	-
...NITZSCHIAEAE								
...NITZSCHIA	8# 23		34	2	* 0		60	8
...SURIRELLACEAE								
...SURIRELLA	--	-	--	-	--	-	7	1
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROCOCCOCCALES								
...CHROCOCCOCCAEAE								
...ANACYSTIS	--	-	--	-	--	-	--	-
...HORMOGONALES								
...NOSTOCACEAE								
...ANABAENA	--	-	--	-	--	-	--	-
...CYLINDROSPERMUM	--	-	--	-	--	-	--	-
...OSCILLATORIAEAE								
...OSCILLATORIA	--	-	--	-	--	-	--	-
...CHROCOCCOCCALES								
...CHROCOCCOCCAEAE								
...GOMPHOSPHAERIA	3	8	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)								
..CRYPTOPHYCEAE								
...CRYPTOMONIDAE								
...CRYPTOCHRYSIDACEAE								
...CHROOMONAS	--	-	--	-	--	-	--	-
...CRYPTOMONODACEAE								
...CRYPTOMONAS	--	-	--	-	--	-	--	-
..EUGLENOPHYCEAE								
...EUGLENALES								
...EUGLENACEAE								
...EUGLENA	--	-	--	-	--	-	--	-
...TRACHELOMONAS	--	-	--	-	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)								
..DINOPHYCEAE								
...PERIDINIALES								
...GLENODINIACEAE								
...GLENODINIUM	--	-	--	-	--	-	--	-

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

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

MISSOURI RIVER MAIN STEM

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06342500 MISSOURI RIVER AT BISMARCK, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	JUN 28,77 1530	JUL 27,77 1000	AUG 30,77 1430	SEP 29,77 1130				
TOTAL CELLS/ML	270	78	62	2700				
DIVERSITY: DIVISION	1.0	1.1	1.3	0.4				
..CLASS	1.0	1.1	1.3	0.4				
...ORDER	1.3	1.7	1.3	0.4				
....FAMILY	2.6	2.0	2.9	0.4				
....GENUS	3.0	2.1	2.9	0.4				
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
....CHARACIACEAE								
....SCHROEDERIA	--	-	--	-	5	8	--	-
...MICRACTINIACEAE								
....MICRACTINIUM	12	4	--	-	--	-	--	-
...OOCYSTACEAE								
....ANKISTRODESMUS	--	-	--	-	5	8	14	1
....CHODATELLA	--	-	--	-	--	-	--	-
....KIRCHNERIELLA	6	2	--	-	--	-	--	-
...SCENEDESMACEAE								
....ACTINASTRUM	27	10	--	-	--	-	--	-
....SCENEDESMUS	12	4	16#	20	--	-	--	-
...VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	--	-	--	-	--	-	--	-
CHRYSOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
...COSCINODISCAEAE								
....CYCLOTELLA	6	2	--	-	--	-	--	-
....MELOSIRA	9	3	10	13	--	-	--	-
....STEPHANODISCUS	--	-	5	7	--	-	--	-
...PENNALES								
....ACHNANTHACEAE								
....ACHNANTHES	--	-	--	-	5	8	--	-
....RHODICOSPHEA	--	-	* 0		--	-	--	-
...CYMBELLACEAE								
....CYMBELLA	9	3	--	-	--	-	--	-
...DIATOMACEAE								
....DIATOMA	78#	29	* 0		--	-	--	-
...FRAGILARIACEAE								
....ASTERIONELLA	72#	27	--	-	--	-	--	-
...FRAGILARIA	--	-	--	-	--	-	--	-
...SYNEDRA	15	6	--	-	10#	17	--	-
...GOMPHONEMACEAE								
....GOMPHONEMA	--	-	5	7	5	8	--	-
...NAVICULACEAE								
....GYROSIGMA	3	1	--	-	--	-	--	-
....NAVICULA	--	-	* 0		10#	17	69	3
...NITZSCHACEAE								
....NITZSCHIA	9	3	36#	47	10#	17	28	1
...SURIPELLACEAE								
....SURIPELLA	--	-	* 0		--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROCOCCOCCALES								
....CHROCOCCOCCAEAE								
....ANACYSTIS	--	-	--	-	--	-	--	-
...HORMOGONALES								
...NOSTOCACEAE								
....ANABAENA	12	4	--	-	--	-	--	-
...CYLINDROSPERMUM	--	-	--	-	--	-	--	-
...OSCIILLATORIACEAE								
....OSCIILLATORIA	--	-	--	-	--	-	2500#	94
...CHROCOCCOCCALES								
....CHROCOCCOCCAEAE								
....GOMPHOSPHAERIA	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENIDS)								
..CRYPTOPHYCEAE								
...CRYPTOMONIDALES								
....CRYPTOCHRYSIDACEAE								
....CHRODOMONAS	--	-	5	7	10#	17	--	-
...CRYPTOMONODACEAE								
....CRYPTOMONAS	--	-	--	-	--	-	34	1
...EUGLENOPHYCEAE								
....EUGLENALES								
....EUGLENACEAE								
....EUGLENA	--	-	--	-	--	-	14	1
...TRACHELOMONAS	--	-	--	-	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)								
..DINOPHYCEAE								
...PERIDINIALES								
...GLENODINIACEAE								
....GLENODINIUM	--	-	--	-	--	-	--	-

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

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

HEART RIVER BASIN

06343500 EDWARD ARTHUR PATTERSON LAKE NEAR DICKINSON, ND

LOCATION.--Lat 46°52'11", long 102°49'37", in NE¼NW¼SW¼ sec.8, T.139 N., R.96 W., Stark County, Hydrologic Unit 10130202, at left edge of spillway, 2 mi (3 km) southwest of Dickinson.

DRAINAGE AREA.--400 mi² (1,040 km²), approximately.

PERIOD OF RECORD.--May 1950 to current year. Prior to October 1958, published as Dickinson Reservoir near Dickinson.

GAGE.--Water-stage recorder. Datum of gage is 2,400.00 ft (731.520 m) above mean sea level (levels by Bureau of Reclamation); gage readings have been reduced to elevations above mean sea level. Prior to Jan. 4, 1961, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by earthfill dam; storage began May 23, 1950; dam completed Aug. 9, 1950. Total capacity is 24,600 acre-ft (30.3 hm³) at maximum pool, elevation, 2,428.9 ft (740.329 m). Dead storage is 1,000 acre-ft (1.23 hm³) below lowest point of outlet, elevation, 2,404.0 ft (732.739 m). Conservation storage is 5,600 acre-ft (6.90 hm³) between elevation, 2,404.0 ft (732.739 m) and 2,416.5 ft (736.549 m), crest of spillway. Figures given herein represent total contents based on capacity table dated Jan. 1, 1965. The reservoir is for flood control, irrigation and municipal supply.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 11,180 acre-ft (13.8 hm³) May 9, 1970, elevation, 2,420.81 ft (737.863 m); minimum since initial filling of reservoir, 2,950 acre-ft (3.64 hm³) Mar. 16, 1962, elevation, 2,410.41 ft (734.693 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 7,610 acre-ft (9.38 hm³) June 11, elevation, 2,417.57 ft (736.875 m); minimum, 4,110 acre-ft (5.07 hm³) Feb. 11, elevation 2,412.64 ft (735.373 m).

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30-----	2,413.44	4,560	--
Oct. 31-----	2,413.16	4,400	-160
Nov. 30-----	2,413.00	4,300	-100
Dec. 31-----	2,412.94	4,270	-30
CAL YR 1976-----	--	--	-780
Jan. 31-----	2,412.71	4,150	-120
Feb. 28-----	2,412.84	4,220	+70
Mar. 31-----	2,414.67	5,330	+1,110
Apr. 30-----	2,415.26	5,730	+400
May 31-----	2,416.91	7,010	+1,280
June 30-----	2,416.43	6,620	-390
July 31-----	2,415.69	6,040	-580
Aug. 31-----	2,414.89	5,470	-570
Sept. 30-----	2,416.63	6,780	+1,310
WTR YR 1977-----	--	--	+2,220

HEART RIVER BASIN

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06344600 GREEN RIVER NEAR NEW HRADEC, ND

LOCATION.--Lat 47°01'40", long 103°03'10", Billings County, Hydrologic Unit 10130202, on left bank below county highway bridge on line between secs.13 and 14, T.141 N., R.98 W., 8 mi (13 km) west of New Hradec.

DRAINAGE AREA.--152 mi² (394 km²), approximately.

PERIOD OF RECORD.--February 1964 to current year.

GAGE.--Water-stage recorder.

REMARKS.--Records poor.

AVERAGE DISCHARGE.--13 years, 17.2 ft³/s (0.487 m³/s), 12,460 acre-ft/yr (15.4 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,120 ft³/s (117 m³/s) May 9, 1970, gage height, 16.88 ft (5.145 m); maximum gage height, 16.93 ft (5.160 m) July 5, 1964; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 470 ft³/s (13.3 m³/s) occurred sometime during period May 29 - June 17, gage height, 9.00 ft (2.743 m) from floodmark, only peak above base of 100 ft³/s (2.83 m³/s); minimum daily, 0.04 ft³/s (0.001 m³/s) Aug. 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.33	1.2	.50	.95	.60	1.4	8.0	1.6	20	1.1	.38	.90
2	.36	1.2	.50	.95	.60	1.4	7.0	1.6	15	1.0	.15	1.0
3	.39	1.2	.50	.95	.60	1.3	6.0	1.5	10	.93	.36	1.2
4	.47	1.2	.50	.95	.60	1.3	6.0	1.5	7.0	.93	.40	1.1
5	.51	1.0	.45	.95	.60	1.4	8.0	1.6	6.0	.93	.45	1.1
6	.52	.91	.45	.95	.60	5.0	10	1.5	5.0	1.2	.42	1.0
7	.55	.90	.40	.95	.60	8.0	15	1.5	4.0	2.7	.25	1.1
8	.56	.94	.40	.95	.70	10	20	1.5	3.5	4.0	.17	1.2
9	.58	.94	.35	.95	.80	14	20	1.4	3.0	1.9	.37	1.2
10	.63	.94	.35	.95	1.0	20	15	1.4	5.0	.89	.13	1.3
11	.70	.90	.40	.95	1.2	30	15	1.4	4.0	1.0	.13	1.3
12	.60	.88	.45	.95	1.2	60	12	1.4	4.0	1.1	.04	1.4
13	.67	.86	.50	.95	1.2	45	12	1.4	10	1.0	.06	1.3
14	.76	.84	.60	.95	1.0	36	10	1.5	50	3.3	.12	1.3
15	.88	.82	.70	.95	1.0	32	8.0	1.6	200	.58	.27	1.2
16	.93	.80	.75	.95	1.1	30	6.0	1.7	190	.54	.28	1.2
17	.93	.87	.80	.95	1.6	25	5.0	1.6	110	.45	.26	1.1
18	.98	1.0	.90	.95	3.0	25	4.0	1.7	80	.40	.23	1.2
19	.95	.94	.90	1.0	5.0	25	3.5	1.7	50	.29	.19	1.2
20	.93	.92	.85	1.1	3.0	20	3.1	1.7	20	.24	.11	1.3
21	.86	.93	.85	1.2	1.6	18	3.1	1.7	40	.22	.20	1.4
22	.88	.93	.85	1.2	2.2	16	2.5	1.7	10	.21	.30	1.5
23	.88	.71	.85	1.2	3.3	18	2.4	1.7	4.0	.23	.45	9.1
24	.88	.70	.85	1.2	4.4	16	2.0	2.1	3.5	.23	.37	23
25	.88	.70	.90	1.2	1.9	16	2.0	2.2	3.0	.23	.46	23
26	.88	.65	.95	1.2	1.7	14	1.9	1.7	2.5	.23	.48	17
27	.93	.60	1.0	1.1	1.7	14	1.9	1.8	1.9	.29	.60	11
28	1.0	.55	1.0	.80	1.6	12	1.8	1.8	1.7	.40	.75	6.2
29	1.1	.50	.95	.70	---	12	1.7	45	1.4	.43	.80	3.9
30	1.2	.50	.95	.70	---	10	1.7	40	1.2	.48	.80	3.3
31	1.2	---	.95	.60	---	8.0	---	25	---	.43	.85	---
TOTAL	23.92	26.03	21.35	30.30	44.40	545.8	214.6	155.5	865.7	27.86	10.83	123.00
MEAN	.77	.87	.69	.98	1.59	17.6	7.15	5.02	28.9	.90	.35	4.10
MAX	1.2	1.2	1.0	1.2	5.0	60	20	45	200	4.0	.85	23
MIN	.33	.50	.35	.60	.60	1.3	1.7	1.4	1.2	.21	.04	.90
AC-FT	47	52	42	60	88	1080	426	308	1720	55	21	244
CAL YR 1976	TOTAL	2413.09	MEAN 6.59	MAX 230	MIN .04	AC-FT 4790						
WTR YR 1977	TOTAL	2089.29	MEAN 5.72	MAX 200	MIN .04	AC-FT 4140						

HEART RIVER BASIN

06345500 HEART RIVER NEAR RICHARDTON, ND

LOCATION.--Lat 46°44'46", long 102°18'27", in NE¼ sec.29, T.138 N., R.92 W., Stark County, Hydrologic Unit 10130202, on right bank 5 ft (2 m) upstream from bridge on State Highway 8, 0.5 mi (0.8 km) downstream from Plum Creek, and 9.5 mi (15.3 km) south of Richardton.

DRAINAGE AREA.--1,240 mi² (3,210 km²), approximately.

PERIOD OF RECORD.--May 1903 to September 1922, April 1943 to current year. Monthly discharge only for some periods, published in WSP 1509.

REVISED RECORDS (WATER YEARS)--WSP 1209: Drainage area. WSP 1239: 1906, 1918(M), 1947(M).

GAGE.--Water-stage recorder. Datum of gage is 2,153.67 ft (656.439 m) above mean sea level. May 18, 1903, to Sept. 30, 1922, nonrecording gage at 3 sites in 1 mi (2 km) reach below present site at different datums. Apr. 14, 1943, to July 7, 1947, nonrecording gage at present site and datum.

REMARKS.--Records fair. Flow regulated by Edward Arthur Patterson Lake (station 06343500) 59 mi (95 km) upstream.

AVERAGE DISCHARGE.--53 years, 103 ft³/s (2.917 m³/s), 74,620 acre-ft/yr (92.0 hm³/yr); median of yearly mean discharges, 94 ft³/s (2.66 m³/s), 68,100 acre-ft/yr (84 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,400 ft³/s (663 m³/s) Apr. 16, 1950, gage height, 28.05 ft (8.550 m), from high-water mark in gage well; no flow at times in some years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 5, 1938, reached a stage of about 26 ft (7.9 m), from information by local residents, discharge, 16,000 ft³/s (453 m³/s); flood of Mar. 25, 1943, reached a stage of 24.2 ft (7.38 m) from floodmarks, discharge, 11,700 ft³/s (331 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,820 ft³/s (79.9 m³/s) June 16, gage height, 13.60 ft (4.145 m); minimum daily discharge, 2.5 ft³/s (0.071 m³/s) Feb. 6-10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.0	11	4.7	5.3	3.0	40	69	32	194	60	4.9	11
2	7.1	11	5.0	5.3	3.0	34	70	30	255	58	4.9	11
3	6.9	11	5.0	5.3	3.0	29	70	29	170	56	4.5	10
4	7.8	11	5.0	5.3	3.0	23	63	28	114	56	4.7	11
5	7.8	10	5.5	5.3	3.0	20	57	27	87	174	4.9	11
6	7.8	10	5.5	5.1	2.5	20	66	26	47	75	5.8	11
7	7.6	10	5.5	5.0	2.5	59	101	26	74	80	5.8	11
8	7.6	11	5.5	5.0	2.5	264	108	28	83	55	5.8	13
9	9.4	10	5.5	5.0	2.5	308	103	30	82	50	5.6	13
10	9.2	10	5.0	4.5	2.5	366	176	29	295	51	4.9	12
11	9.2	8.9	5.0	4.5	3.0	400	102	28	1660	449	4.7	12
12	9.9	9.7	5.0	4.5	3.0	294	88	28	1680	127	4.3	14
13	10	8.7	5.5	4.5	3.5	224	74	28	1180	71	4.3	12
14	11	8.9	5.5	4.5	3.5	164	60	26	1150	37	4.7	8.7
15	10	9.2	5.5	4.5	4.0	146	58	28	1540	24	5.8	7.1
16	9.4	9.2	5.5	4.0	4.0	143	54	36	2120	18	6.2	6.7
17	9.4	9.4	5.5	4.0	5.0	130	51	60	1770	15	6.7	5.8
18	10	9.4	5.5	4.0	7.0	105	47	49	859	14	6.7	62
19	10	8.9	5.5	4.0	6.0	89	45	45	502	15	6.9	19
20	11	8.0	5.5	4.0	5.5	88	43	42	318	12	8.5	24
21	11	7.8	5.5	4.0	7.0	84	41	39	221	10	8.3	28
22	10	7.6	5.5	3.5	25	84	39	40	315	9.4	8.3	77
23	11	7.8	5.5	3.5	60	84	39	39	760	8.0	8.5	113
24	11	7.8	5.5	3.5	55	80	38	35	330	7.3	8.3	443
25	10	8.0	5.5	3.5	50	73	38	33	186	6.0	8.3	550
26	10	5.6	5.5	3.5	55	67	37	35	127	6.0	9.4	192
27	11	5.8	5.5	3.5	45	68	37	32	105	5.8	11	81
28	10	4.9	5.5	3.5	45	57	36	160	87	6.9	11	52
29	10	4.5	5.5	3.5	---	68	36	344	75	6.7	10	33
30	10	4.5	5.5	3.0	---	55	36	637	68	5.8	10	32
31	10	---	5.5	3.0	---	54	---	168	---	5.1	10	---
TOTAL	293.1	259.6	166.7	131.6	414.0	3720	1812	2217	16474	1574.0	213.7	1886.3
MEAN	9.45	8.55	5.38	4.25	14.8	120	60.4	71.5	549	50.8	6.89	62.9
MAX	11	11	5.5	5.3	60	400	108	637	2120	449	11	550
MIN	6.9	4.5	4.7	3.0	2.5	20	36	26	47	5.1	4.3	5.8
AC-FT	581	515	331	261	821	7380	3590	4400	32680	3120	424	3740
CAL YR 1976	TOTAL	16001.15	MEAN	43.7	MAX	490	MIN	.20	AC-FT	31740		
WTR YR 1977	TOTAL	29162.00	MEAN	79.9	MAX	2120	MIN	2.5	AC-FT	57840		

HEART RIVER BASIN

365

06346000 LAKE TSCHIDA NEAR GLEN ULLIN, ND

LOCATION.--Lat 46°35'48", long 101°48'34", in SW¼NE¼ sec.13, T.136 N., R.89 W., Grant County, 10 mi (16 km) upstream from Heart Butte Creek, 14 mi (23 km) north of Elgin.

DRAINAGE AREA.--1,710 mi² (4,430 km²), approximately.

PERIOD OF RECORD.--August 1949 to current year. Prior to October 1957, published as Heart Butte Reservoir near Glen Ullin.

GAGE.--Nonrecording gage. Datum of gage is at mean sea level, levels by Bureau of Reclamation.

REMARKS.--Reservoir is formed by earthfill dam; storage began Sept. 29, 1949; dam completed Dec. 9, 1949. Total capacity is 430,000 acre-ft (530 hm³) at maximum pool, elevation, 2,118.2 ft (645.627 m). Dead storage is 6,750 acre-ft (8.32 hm³) below lowest point of outlet, elevation, 2,030.0 ft (618.744 m). Active conservation storage is 69,030 acre-ft (85.1 hm³) between elevation 2,030.0 ft (618.744 m) and 2,064.5 ft (629.260 m), crest of spillway. Figures given herein represent total contents. Controlled releases are through 4 by 5 ft (1.219 by 1.524 m) slide gate. The spillway is uncontrolled "glory hole" type and discharges through a conduit 14 ft (4.27 m) in diameter. The reservoir is for flood control, irrigation, and incidental water supply.

COOPERATION.--Record of elevations and contents furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 174,000 acre-ft (215 hm³) Apr. 9, 1952, elevation, 2,086.23 ft (635.883 m); minimum since first reaching spillway level, 40,840 acre-ft (50.4 hm³) Mar. 6, 1962, elevation, 2,052.5 ft (625.60 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 88,100 acre-ft (107 hm³) June 18, elevation, 2,068.00 ft (630.326 m); minimum, 53,500 acre-ft (66.0 hm³) Feb. 7, elevation, 2,057.40 ft (627.096 m).

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30-----	2,058.10	55,500	--
Oct. 31-----	2,057.84	54,800	-700
Nov. 30-----	2,057.98	55,200	+400
Dec. 31-----	2,057.76	54,600	-600
CAL YR 1976-----	--	--	-8,600
Jan. 31-----	2,057.52	53,900	-700
Feb. 28-----	2,057.82	54,700	+800
Mar. 31-----	2,061.85	67,000	+12,300
Apr. 30-----	2,063.14	71,200	+4,200
May 31-----	2,063.05	70,900	-300
June 30-----	2,065.50	79,200	+8,300
July 31-----	2,064.15	74,600	-4,600
Aug. 31-----	2,062.38	68,700	-5,900
Sept. 30-----	2,064.62	76,200	+7,500
WTR YR 1977-----	--	--	+20,700

HEART RIVER BASIN

06348000 HEART RIVER NEAR LARK, ND

LOCATION.--Lat 46°36'37", long 101°22'54", in NW¼NW¼SW¼ sec.9, T.136 N., R.85 W., Grant County, Hydrologic Unit 10130203, on right bank 20 ft (6 m) downstream from county highway bridge, 0.6 mi (1.0 km) downstream from Big Muddy Creek, and 10 mi (16 km) north of Lark.

DRAINAGE AREA.--2,750 mi² (7,120 km²), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1946 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,802.83 ft (549.503 m) above mean sea level (levels by Corps of Engineers). Prior to Nov. 16, 1948, nonrecording gage at same site and datum.

REMARKS.--Records good except those for the winter period, which are fair. Flow regulated by Lake Tschida 45 mi (72 km) upstream (station 06346000).

AVERAGE DISCHARGE.--31 years, 211 ft³/s (5.976 m³/s), 153,000 acre-ft/yr (189 hm³/yr); median of yearly mean discharges, 170 ft³/s (4.81 m³/s), 123,000 acre-ft/yr (150 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,200 ft³/s (827 m³/s) Apr. 17, 1950, gage height, 20.70 ft (6.309 m), from rating curve extended above 11,000 ft³/s (312 m³/s) on basis of contracted-opening measurement of peak flow; no flow Jan. 16 to Mar. 4, 1950, Jan. 17-26, 1962.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,790 ft³/s (79.0 m³/s) June 14, gage height, 9.61 ft (2.929 m); minimum daily discharge, 8.0 ft³/s (0.23 m³/s) for several days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	16	10	11	9.0	17	91	21	213	247	69	65
2	32	15	11	10	11	17	84	27	154	177	58	64
3	29	14	11	10	14	18	87	28	91	142	59	62
4	23	14	11	10	14	18	75	66	69	123	56	57
5	21	14	10	10	13	19	69	84	59	118	59	55
6	20	13	9.0	10	12	20	76	78	48	105	64	53
7	19	13	8.0	10	13	30	92	67	39	94	70	57
8	17	13	8.0	9.0	19	50	130	67	36	93	73	61
9	18	13	8.0	8.0	23	200	190	66	49	160	79	69
10	17	13	8.0	8.0	26	600	216	66	252	152	70	48
11	15	19	13	8.0	26	670	175	60	1090	140	64	36
12	13	17	18	8.0	24	570	130	63	426	127	65	34
13	14	18	23	9.0	23	460	91	59	1280	124	66	33
14	18	17	26	8.0	22	300	76	50	2260	267	59	32
15	18	17	27	8.0	21	200	63	59	2030	193	71	31
16	19	16	29	8.0	22	160	57	60	1650	137	74	29
17	15	15	30	8.0	22	150	48	58	1670	111	67	30
18	14	13	29	9.0	22	145	42	51	1500	93	70	71
19	16	13	28	10	23	130	39	50	1270	88	67	111
20	17	14	27	10	25	110	34	40	1110	71	72	64
21	18	14	27	10	24	120	30	39	1030	57	76	53
22	18	14	26	10	23	130	27	34	975	40	81	76
23	17	14	24	10	23	140	23	29	771	28	83	106
24	16	14	24	10	23	130	22	28	668	33	85	571
25	15	13	24	10	23	120	20	25	623	53	84	787
26	15	12	26	10	21	110	19	36	567	44	87	662
27	16	10	26	9.0	18	100	18	36	490	40	87	380
28	16	10	21	8.0	17	90	17	40	411	38	76	207
29	16	10	17	8.0	---	150	17	76	344	39	77	132
30	16	10	14	8.0	---	175	24	113	287	60	74	101
31	16	---	12	8.0	---	105	---	252	---	63	68	---
TOTAL	566	418	585.0	283.0	556.0	5254	2082	1828	21462	3257	2210	4137
MEAN	18.3	13.9	18.9	9.13	19.9	169	69.4	59.0	715	105	71.3	138
MAX	32	19	30	11	26	670	216	252	2260	267	87	787
MIN	13	10	8.0	8.0	9.0	17	17	21	36	28	56	29
AC-FT	1120	829	1160	561	1100	10420	4130	3630	42570	6460	4380	8210
CAL YR 1976	TOTAL	31817.0	MEAN	86.9	MAX	555	MIN	8.0	AC-FT	63110		
WTR YR 1977	TOTAL	42638.0	MEAN	117	MAX	2260	MIN	8.0	AC-FT	84570		

HEART RIVER BASIN

367

06348490 SWEETBRIAR RESERVOIR NEAR JUDSON, ND

LOCATION.--Lat 46°51'55", long 101°15'35", in SE¼SE¼ sec.10, T.139 N., R.84 W., Morton County, Hydrologic Unit 10130203, on south shore of reservoir 700 ft (210 m) west of spillway and 2.5 mi (4.0 km) northeast of Judson.

DRAINAGE AREA.--152 mi² (394 km²).

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

GAGE.--Water-stage recorder. Datum of gage is 1,900.00 ft (579.120 m) above mean sea level; gage readings have been reduced to elevations above mean sea level.

REMARKS.--Reservoir is formed by an earth-fill dam on Interstate 94; storage began April 1964. Capacity at spillway elevation, 1,940.00 ft (591.312 m) is 3,320 acre-ft (4.09 hm³). Controlled releases are through a 12-inch (0.305 m) pipe. The spillway is an uncontrolled drop-inlet type. Figures herein represent total contents based on capacity table dated June 13, 1967. The reservoir is for recreation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 5,220 acre-ft (6.46 hm³) Apr. 7, 1969, elevation, 1,944.97 ft (592.827 m); minimum since initial filling of reservoir, 2,500 acre-ft (3.08 hm³) Dec. 8, 1974, elevation, 1,936.93 ft (590.376 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 3,610 acre-ft (4.45 hm³) Sept. 24, 25, elevation, 1,940.96 ft (591.605 m); minimum, 2,800 acre-ft (3.45 hm³) Nov. 12-24, elevation, 1,938.09 ft (590.730 m).

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30-----	1,938.38	2,880	--
Oct. 31-----	1,938.15	2,820	-60
Nov. 30-----	1,938.10	2,810	-10
Dec. 31-----	1,938.15	2,820	+10
CAL YR 1976-----	--	--	-230
Jan. 31-----	1,938.21	2,830	+10
Feb. 28-----	1,938.46	2,900	+70
Mar. 31-----	1,939.80	3,260	+360
Apr. 30-----	1,939.91	3,290	+30
May 31-----	*1,939.80	3,260	-30
June 30-----	1,939.62	3,210	-50
July 31-----	*1,939.65	3,220	+10
Aug. 31-----	*1,939.20	3,100	-120
Sept. 30-----	*1,940.25	3,400	+300
WTR YR 1977-----	--	--	+520

* Estimated

06348500 SWEETBRIAR CREEK NEAR JUDSON, ND

LOCATION.--Lat 46°51'06", long 101°15'10", in SW¼ sec.14, T.139 N., R.84 W., Morton County, Hydrologic Unit 10130203, on right bank 80 ft (24 m) downstream from bridge on county highway, 2 mi (3 km) northeast of Judson, and 16 mi (26 km) upstream from mouth.

DRAINAGE AREA.--157 mi² (407 km²).

PERIOD OF RECORD.--July 1951 to current year.

REVISED RECORDS.--WSP 1439: 1955(M).

GAGE.--Water-stage recorder. Datum of gage is 1,886.42 ft (574.981 m) above mean sea level. Prior to July 20, 1955, nonrecording gage 80 ft (24 m) upstream at same datum.

REMARKS.--Records good except those for the winter period, which are fair. Flow regulated by Sweetbriar Reservoir (station 06348490) 2 mi (3 km) upstream since April 1964.

AVERAGE DISCHARGE.--26 years, 10.3 ft³/s (0.292 m³/s), 7,460 acre-ft/yr (9.20 hm³/yr); median of yearly mean discharges, 8.2 ft³/s (0.23 m³/s), 5,900 acre-ft/yr (7.3 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,200 ft³/s (119 m³/s) Apr. 7, 1969, gage height, 11.28 ft (3.438 m); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known, 12.5 ft (3.81 m) Apr. 17, 1950, from floodmarks at present site, discharge, 5,910 ft³/s (167 m³/s) from rating curve extended above 2,000 ft³/s (56.6 m³/s) on basis of contracted-opening measurement of peak flow.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 292 ft³/s (8.27 m³/s) Sept. 25, gage height, 4.31 ft (1.314 m); minimum daily, 0.20 ft³/s (0.006 m³/s) Dec. 29 to Jan. 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.38	.38	.35	.20	.25	.25	.66	.91	.33	.73	.43	.51
2	.38	.38	.35	.20	.25	.25	.54	.46	.34	.51	.38	.44
3	.42	.34	.35	.20	.30	.25	.42	.35	.40	.45	.38	.39
4	.38	.34	.30	.20	.30	.25	.42	.68	.38	.49	.39	.39
5	.38	.34	.30	.20	.25	.25	.42	1.1	.34	.82	.37	.38
6	.42	.38	.25	.20	.25	1.5	.76	.56	.41	.91	.35	.39
7	.46	.38	.25	.20	.25	2.5	1.7	.37	.38	1.1	.35	.41
8	.46	.42	.25	.20	.30	2.0	4.5	.35	.31	.73	.33	.46
9	.42	.42	.25	.20	.40	1.0	12	.31	.36	.68	.31	.42
10	.42	.42	.25	.20	.50	.70	15	.30	1.5	24	.28	.35
11	.42	.34	.25	.20	.50	.56	12	.28	2.0	68	.26	.31
12	.38	.38	.25	.20	.50	.51	10	.24	.57	16	.27	.31
13	.42	.38	.30	.20	.40	.34	7.5	.23	.46	6.8	.26	.30
14	.46	.38	.30	.20	.35	.43	6.5	.26	.38	4.7	.25	.26
15	.38	.38	.30	.20	.30	.43	6.1	.24	.40	2.0	.38	.22
16	.42	.38	.30	.20	.30	.46	5.2	.25	.41	1.4	.32	.23
17	.46	.38	.30	.20	.35	.51	6.5	.27	.36	.83	.23	.31
18	.60	.38	.30	.25	.35	.50	3.5	.26	.31	.62	.21	1.4
19	.46	.34	.30	.30	.35	.48	2.3	.30	.32	1.0	.23	.40
20	.42	.34	.25	.30	.35	.42	2.3	.29	.35	.83	.24	.27
21	.46	.38	.25	.30	.40	.42	2.2	.30	1.0	.44	.27	1.1
22	.46	.38	.30	.35	.35	.52	1.4	.34	.56	.35	.29	.96
23	.46	.38	.30	.35	.30	.38	1.8	.33	.39	.31	.31	5.6
24	.46	.38	.30	.35	.30	.38	.95	.30	.33	.29	.30	133
25	.46	.38	.30	.35	.30	.34	.56	.30	.32	.30	.34	224
26	.42	.35	.35	.35	.25	.30	.72	.38	.35	.34	.35	96
27	.34	.35	.35	.30	.25	.34	.85	.87	.38	.35	.46	48
28	.34	.30	.25	.25	.25	.34	.53	.76	.53	.35	.49	27
29	.34	.30	.20	.25	---	3.7	.34	.47	.46	.35	.39	15
30	.38	.30	.20	.25	---	8.2	.33	.50	.41	.60	.30	13
31	.34	---	.20	.25	---	.68	---	.37	---	.97	.54	---
TOTAL	13.00	10.98	8.75	7.60	9.20	29.19	108.00	12.93	15.04	137.25	10.26	571.81
MEAN	.42	.37	.28	.25	.33	.94	3.60	.42	.50	4.43	.33	19.1
MAX	.60	.42	.35	.35	.50	8.2	15	1.1	2.0	68	.54	224
MIN	.34	.30	.20	.20	.25	.25	.33	.23	.31	.29	.21	.22
AC-FT	26	22	17	15	18	58	214	26	30	272	20	1130
CAL YR 1976	TOTAL	1457.02	MEAN 3.98	MAX 260	MIN .20	AC-FT 2890						
WTR YR 1977	TOTAL	934.01	MEAN 2.56	MAX 224	MIN .20	AC-FT 1850						

LOCATION.--Lat 46°50'02", long 100°58'27", in NW¼NE¼ sec.25, T.139 N., R.82 W., Morton County, Hydrologic Unit 10130203, on left bank near downstream wingwall of bridge on county highway, 3 mi (5 km) west of Mandan and 4 mi (6 km) downstream from Sweetbriar Creek.

PERIOD OF RECORD.--April to September 1924, March 1928 to June 1933, August 1937 to current year. Published as "at Sunny" 1924, 1928-33.

GAGE.--Water-stage recorder. Datum of gage is 1,638.70 ft (499.476 m) above mean sea level, and 1,623.03 ft (494.700 m) above Burlington Northern Railway datum. See WSP 1729 to 1917 for history of changes prior to June 30, 1958.

AVERAGE DISCHARGE.--44 years (1928-32, 1937-77), 250 ft³/s (7,080 m³/s), 181,100 acre-ft/yr (223 hm³/yr); median of yearly mean discharges, 190 ft³/s (5.38 m³/s), 138,000 acre-ft/yr (170 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 30,500 ft³/s (864 m³/s) Apr. 19, 1950, gage height, 23.64 ft (7.205 m); maximum gage height, 25.75 ft (7.849 m) Apr. 4, 1952, ice jam; no flow for many days in some years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,650 ft³/s (75.0 m³/s) June 15, gage height, 8.83 ft (2.691 m); minimum daily, 3.1 ft³/s (0.088 m³/s) Jan. 21 to Feb. 8.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	50	10	7.0	6.6	3.1	3.1	160	37	94	312	44	86
2	47	10	7.0	6.5	3.1	3.1	135	34	208	276	44	82
3	46	10	6.9	6.4	3.1	3.1	118	34	192	222	50	73
4	44	10	6.9	6.3	3.1	3.1	118	32	148	197	44	71
5	44	10	6.8	6.2	3.1	4.0	120	34	99	182	44	67
6	43	10	6.7	6.0	3.1	20	110	35	70	168	43	63
7	40	10	6.6	5.8	3.1	60	108	61	57	142	45	63
8	37	10	6.6	5.6	3.1	80	105	64	50	125	44	64
9	37	10	6.6	5.4	3.2	110	110	54	46	125	48	63
10	35	10	6.6	5.2	3.3	108	170	44	43	280	51	64
11	32	9.5	6.6	5.0	3.3	85	245	42	55	280	48	67
12	32	9.0	6.6	4.8	3.3	200	270	39	803	240	48	61
13	32	9.0	6.6	4.6	3.3	740	225	37	684	212	45	53
14	29	9.0	6.6	4.4	3.3	580	185	36	1030	180	49	50
15	29	9.0	6.6	4.2	3.3	440	145	34	2260	182	52	47
16	25	9.0	6.7	4.0	3.3	410	120	34	2160	228	56	45
17	22	9.0	6.8	3.8	3.3	350	101	31	2070	178	61	44
18	20	9.0	6.9	3.6	3.3	230	86	36	1950	142	64	67
19	18	9.0	6.9	3.4	3.3	220	78	37	2030	120	58	73
20	16	9.0	6.8	3.2	3.3	210	70	35	1860	103	61	76
21	14	9.0	6.7	3.1	3.3	200	67	35	1660	94	61	110
22	12	9.0	6.7	3.1	3.3	195	62	35	1560	71	62	103
23	10	9.0	6.6	3.1	3.4	190	56	35	1390	61	61	139
24	10	9.0	6.6	3.1	3.5	185	51	35	1040	52	74	679
25	10	9.0	6.6	3.1	3.4	180	49	35	950	44	78	904
26	10	8.5	6.6	3.1	3.3	177	45	65	930	39	81	1050
27	10	8.0	6.6	3.1	3.3	170	44	84	810	46	88	1030
28	10	7.5	6.6	3.1	3.3	170	44	48	680	49	103	568
29	10	7.0	6.6	3.1	---	168	39	48	560	44	99	327
30	10	7.0	6.6	3.1	---	155	39	51	433	43	81	232
31	10	---	6.6	3.1	---	112	---	54	---	44	84	---
TOTAL	794	273.5	207.6	135.1	91.1	5761.4	3275	1315	25922	4481	1871	6421
MEAN	25.6	9.12	6.70	4.36	3.25	186	109	42.4	864	145	60.4	214
MAX	50	10	7.0	6.6	3.5	740	270	84	2260	312	103	1050
MIN	10	7.0	6.6	3.1	3.1	3.1	39	31	43	39	43	44
AC-FT	1570	542	412	268	181	11430	6500	2610	51420	8890	3710	12740
CAL YR 1976	TOTAL	38868.1	MEAN 106	MAX 1100	MIN 6.6	AC-FT 77090						
YR 1977	TOTAL	50547.7	MEAN 138	MAX 2260	MIN 3.1	AC-FT 100300						

MISSOURI RIVER MAIN STEM

06349070 MISSOURI RIVER BELOW MANDAN, ND

LOCATION.--Lat 46°44'32", long 100°49'54", at midsection of west half sec.30, T.138 N., R.80 W., Morton County, Hydrologic Unit 10130102, on right bank 1 mi (2 km) south of Fort Lincoln State Park and 6 mi (10 km) south-east of Mandan at mile 1,309 (kilometer 2,106).

DRAINAGE AREA.--189,800 mi² (491,600 km²), approximately.

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

GAGE.--Water-stage recorder. Datum of gage is 1,600.00 ft (487.680 m) above mean sea level (Corps of Engineers bench mark).

REMARKS.--Stage regulated by Lake Sakakawea (station 06338000).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 29.71 ft (9.056 m) Mar. 17, 1972; minimum daily recorded, 17.40 ft (5.304 m) Apr. 1, 1968.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23.15	22.91	24.55	---	27.01	26.66	20.74	20.50	20.40	20.56	20.99	---
2	23.15	22.64	24.61	---	27.17	26.51	20.78	20.51	20.36	20.44	20.81	---
3	23.38	22.96	24.75	---	27.16	26.52	20.75	20.61	20.32	20.60	20.73	---
4	22.08	23.12	24.61	---	27.13	26.46	20.50	20.63	20.23	20.81	20.68	---
5	23.20	23.25	24.63	---	27.10	26.39	20.48	20.67	20.30	20.63	20.67	---
6	22.90	23.44	24.74	---	27.41	26.45	20.77	20.86	20.33	20.71	20.53	---
7	22.94	23.53	25.11	---	27.32	26.69	20.73	20.58	20.24	20.93	20.67	---
8	23.07	23.74	25.85	---	27.23	26.78	20.73	20.52	20.38	20.81	20.57	---
9	23.07	23.83	27.39	---	27.27	26.54	20.58	20.63	20.18	20.66	20.69	---
10	23.36	23.83	28.24	---	27.18	26.25	20.39	20.74	20.38	20.61	20.51	---
11	20.94	23.84	27.21	---	27.10	26.17	20.13	20.67	20.31	20.91	20.41	---
12	22.28	23.81	27.40	---	27.09	25.47	20.45	20.57	20.31	21.24	---	---
13	22.76	23.73	27.82	---	27.05	24.42	20.24	20.68	20.61	21.28	---	---
14	23.08	23.82	27.65	---	27.00	23.69	20.54	20.76	20.29	21.20	---	---
15	23.29	23.87	27.71	---	27.08	23.12	20.32	20.70	20.67	21.05	---	20.20
16	23.05	23.86	27.41	---	27.12	22.69	20.53	20.62	20.88	21.14	---	20.21
17	23.12	23.68	27.35	---	26.80	22.36	20.53	20.81	20.95	21.05	---	20.49
18	23.14	23.65	27.33	---	26.97	22.25	20.49	20.34	21.28	20.99	---	20.22
19	23.22	23.77	27.38	---	27.08	22.22	20.63	20.36	21.02	21.11	---	---
20	23.38	23.74	26.64	27.16	26.94	21.92	20.65	20.40	20.99	21.28	---	---
21	22.73	23.85	25.64	27.14	26.71	21.69	20.51	20.37	21.03	21.20	---	---
22	23.03	23.88	26.12	27.10	26.80	21.64	20.64	20.12	21.01	20.99	---	---
23	22.89	23.90	26.40	27.04	26.81	21.55	21.17	20.17	20.77	20.80	---	---
24	22.82	23.97	26.26	26.94	26.76	21.53	21.23	20.60	20.79	20.77	---	---
25	22.95	24.33	26.87	26.90	26.67	21.39	21.03	20.29	20.82	20.84	---	---
26	23.03	24.46	26.95	26.92	26.65	21.17	20.88	20.35	20.68	20.64	---	---
27	23.16	24.40	27.14	26.92	26.64	21.26	21.06	20.45	20.66	20.72	---	---
28	23.01	24.72	27.16	26.89	26.68	20.70	20.87	20.35	20.61	20.70	---	---
29	22.96	24.64	26.19	26.89	---	21.33	20.62	20.36	20.52	20.50	---	---
30	23.08	24.09	---	27.32	---	21.04	20.54	20.38	20.56	20.70	---	---
31	22.91	---	---	26.98	---	20.69	---	20.26	---	21.13	---	---
MEAN	22.94	23.78	---	---	27.00	23.66	20.65	20.51	20.60	20.87	---	---
MAX	23.38	24.72	---	---	27.41	26.78	21.23	20.86	21.28	21.28	---	---
MIN	20.94	22.64	---	---	26.64	20.69	20.13	20.12	20.18	20.44	---	---

APPLE CREEK BASIN

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06349500 APPLE CREEK NEAR MENOKEN, ND

LOCATION.--Lat 46°47'40", long 100°39'25", in NW¼NE¼ sec.9, T.138 N., R.79 W., Burleigh County, Hydrologic Unit 10130103, on left bank 75 ft (23 m) downstream from bridge on county highway, 4 mi (6 km) upstream from Hay Creek, 6.3 mi (10.1 km) west of Menoken, and 6.4 mi (10.3 km) east of Bismarck.

DRAINAGE AREA.--1,680 mi² (4,350 km²), approximately, of which about 500 mi² (1,300 km²) is probably non-contributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March to June 1905, October 1945 to current year. Published as "near Bismarck" 1905.

REVISED RECORDS.--WSP 1209: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,638.61 ft (499.448 m) above mean sea level. See WSP 1729 or 1917 for history of changes prior to Sept. 30, 1953.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--32 years, 32.8 ft³/s (0.929 m³/s), 23,760 acre-ft/yr (29.3 hm³/yr); median of yearly mean discharges, 17 ft³/s (0.48 m³/s), 12,300 acre-ft/yr (15 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,750 ft³/s (191 m³/s) Apr. 18, 1950, gage height, 17.07 ft (5.203 m); no flow at times in some years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 19 ft³/s (0.54 m³/s) Sept. 30, gage height, 4.81 ft (1.466 m), no peak above base of 200 ft³/s (5.66 m³/s); no flow for several days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.04	.10	.06	.04	.04	.35	2.0	.74	.16	.02	0	.16
2	.04	.10	.06	.04	.04	.35	1.8	.61	.11	.01	0	.19
3	.06	.10	.06	.04	.06	.35	1.8	.45	.11	0	0	.26
4	.06	.12	.06	.04	.06	.35	1.8	.48	.11	0	0	.29
5	.06	.12	.06	.04	.04	.35	1.8	.42	.16	.05	0	.31
6	.06	.12	.06	.04	.04	.40	1.9	.36	.18	.05	.02	.51
7	.06	.12	.06	.04	.06	.70	1.8	.28	.03	.05	.08	.70
8	.06	.12	.06	.04	.08	1.1	1.6	.23	.01	.05	.09	1.0
9	.06	.12	.06	.04	.10	1.0	1.1	.25	.01	.05	.12	1.1
10	.08	.10	.06	.04	.14	.90	.50	.25	.05	.08	.14	1.2
11	.08	.08	.08	.04	.30	.86	1.0	.20	.06	.12	.12	1.3
12	.08	.06	.08	.04	.35	.84	.90	.23	.06	.11	.11	1.3
13	.08	.06	.08	.04	.20	.80	.90	.20	.06	.07	.12	1.4
14	.10	.08	.10	.04	.15	.80	1.0	.20	.06	.06	.08	1.5
15	.10	.08	.10	.04	.15	.80	.90	.20	.16	.04	.13	1.5
16	.10	.08	.12	.04	.20	.80	.80	.16	.05	.02	.13	1.4
17	.10	.10	.12	.04	.20	.85	.70	.16	.10	.01	.13	1.4
18	.14	.12	.10	.04	.40	.85	.50	.12	.12	0	.12	2.6
19	.14	.10	.10	.04	.40	.85	.60	.08	.05	0	.10	3.3
20	.12	.10	.10	.04	.50	.85	.50	.10	.03	0	.06	2.9
21	.12	.08	.10	.04	.60	.90	.60	.09	.05	0	.05	3.0
22	.12	.06	.10	.04	.65	1.0	.70	.11	.03	0	.02	3.0
23	.12	.08	.10	.04	.55	1.1	.50	.11	.02	0	.02	5.3
24	.12	.08	.10	.04	.45	1.2	.60	.11	.02	0	.03	14
25	.12	.08	.10	.04	.40	1.3	.70	.09	.02	0	.02	13
26	.12	.06	.10	.04	.40	1.4	.90	.09	.02	0	.03	18
27	.14	.06	.12	.04	.40	1.6	.30	.10	.02	0	.08	13
28	.14	.06	.12	.04	.35	1.9	.14	.19	0	0	.17	5.1
29	.12	.06	.10	.04	---	1.9	.82	.18	0	0	.13	8.0
30	.12	.06	.06	.04	---	1.9	.82	.19	.12	0	.07	19
31	.10	---	.04	.04	---	2.2	---	.19	---	0	.12	---
TOTAL	2.96	2.66	2.62	1.24	7.31	30.55	29.98	7.17	1.98	.79	2.29	125.72
MEAN	.096	.089	.085	.040	.26	.99	1.00	.23	.066	.026	.074	4.19
MAX	.14	.12	.12	.04	.65	2.2	2.0	.74	.18	.12	.17	19
MIN	.04	.06	.04	.04	.04	.35	.14	.08	0	0	0	.16
AC-FT	5.9	5.3	5.2	2.5	14	61	59	14	3.9	1.6	4.5	249
CAL YR 1976	TOTAL	6679.53	MEAN	18.3	MAX	720	MIN	.04	AC-FT	13250		
WTR YR 1977	TOTAL	215.27	MEAN	.59	MAX	19	MIN	0	AC-FT	427		

APPLE CREEK BASIN

06349500 APPLE CREEK NEAR MENOKEN, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1974 to current year.

REMARKS.--Some chemical data furnished by North Dakota State Water Commission.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	HARDNESS (CA, MG/L)	NON-CARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG/L)
OCT 18...	1045	.12	1600	8.4	2.5	--	--	--	330	0	60	44
DEC 23...	0930	.11	2200	7.1	.0	--	--	--	320	0	79	30
FEB 18...	0745	E.50	2570	8.0	.0	55	7	--	470	0	83	64
MAR 07...	1350	.70	1720	--	.5	--	--	--	--	--	--	--
10...	1430	.65	1560	8.0	.0	45	10	--	350	0	68	44
15...	1440	.80	1250	--	2.0	--	--	--	--	--	--	--
28...	1020	1.9	1200	8.4	6.0	25	8	12.1	220	0	45	26
APR 21...	1510	.55	1080	8.5	15.0	12	4	--	210	0	41	26
MAY 20...	1035	.04	1400	--	20.5	--	--	--	--	--	--	--
JUN 01...	0945	.15	1500	8.2	19.0	80	8	5.0	240	0	48	29
30...	1000	.13	1600	8.5	19.5	80	5	5.7	240	0	49	29
JUL 06...	0840	.07	1550	--	23.5	--	--	--	--	--	--	--
12...	1430	.12	1350	--	23.0	--	--	--	--	--	--	--
AUG 29...	1115	.40	1720	8.4	17.0	120	20	5.7	220	0	47	25
SEP 27...	1315	8.6	1120	8.2	13.0	120	10	5.8	170	0	30	23

DATE	DISSOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CaCO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SILICA (SiO2) (MG/L)
OCT 18...	320	67	7.7	8.7	765	27	672	5.2	300	53	.3	15
DEC 23...	430	74	10	8.9	1090	0	894	139	380	1.7	.6	23
FEB 18...	450	67	9.0	10	1050	15	886	17	400	77	.4	23
MAR 07...	--	--	--	--	--	--	--	--	--	--	--	--
10...	300	64	7.0	7.6	823	0	675	13	260	50	.4	18
15...	--	--	--	--	--	--	--	--	--	--	--	--
28...	200	66	5.9	4.8	521	8	441	3.4	180	33	.2	11
APR 21...	170	63	5.1	5.0	447	14	390	2.4	140	36	.1	7.1
MAY 20...	--	--	--	--	--	--	--	--	--	--	--	--
JUN 01...	280	71	7.9	7.1	715	17	615	7.6	180	45	.2	16
30...	310	73	8.7	7.1	742	35	667	4.1	200	52	.5	18
JUL 06...	--	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 29...	350	77	10	10	860	4	712	5.5	190	60	.6	22
SEP 27...	210	72	7.0	6.1	477	0	391	4.8	170	30	.2	8.8

E - Estimated.

APPLE CREEK BASIN

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06349500 APPLE CREEK NEAR MENOKEN, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS-SOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	DIS-SOLVED SOLIDS (TONS PER DAY)	DIS-SOLVED NITRATE (N) (MG/L)	DIS-SOLVED NITRATE (NO3) (MG/L)	DIS-SOLVED NITRITE (N) (MG/L)	DIS-SOLVED NITRITE (NO2) (MG/L)	TOTAL NITRITE PLUS NITRATE (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (MG/L)	DIS-SOLVED AMMONIA NITROGEN (N) (MG/L)
OCT 18...	1200	1210	1.63	.39	--	--	--	--	--	--	--
DEC 23...	1600	1490	2.18	.48	--	--	--	--	--	--	--
FEB 18...	1730	1640	2.35	--	--	--	--	--	.11	.10	--
MAR 07...	--	--	--	--	--	--	--	--	--	--	--
10...	1090	1160	1.48	1.91	--	--	--	--	.13	.09	--
15...	--	--	--	--	--	--	--	--	--	--	--
28...	766	767	1.04	3.93	--	--	.00	.00	.01	.01	--
APR 21...	717	660	.98	1.06	--	--	--	--	.05	.06	--
MAY 20...	--	--	--	--	--	--	--	--	--	--	--
JUN 01...	970	977	1.32	.39	--	--	--	--	.00	.00	--
30...	1080	1070	1.47	.38	.01	.04	.00	.00	.01	.01	.01
JUL 06...	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--
AUG 29...	1190	1140	1.62	1.29	.01	.04	.00	.00	.02	.01	.01
SEP 27...	779	717	1.06	18.1	.24	1.1	.02	.07	.37	.26	.11

DATE	DIS-SOLVED AMMONIA (NH4) (MG/L)	TOTAL KJEL-DAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DIS-SOLVED PHOSPHORUS (P) (MG/L)	DIS-SOLVED ORTHO PHOSPHORUS (P) (MG/L)	DIS-SOLVED ORTHO PHOSPHATE (PO4) (MG/L)
FEB 18...	--	1.9	2.0	8.9	.78	.65	--	--
MAR 10...	--	.71	.84	3.7	.49	.53	--	--
28...	--	.91	.92	4.1	.22	.12	.10	.31
APR 21...	--	.75	.80	3.5	.15	.13	--	--
JUN 01...	--	1.1	1.1	4.9	1.3	1.1	--	--
30...	.01	1.6	1.6	7.1	1.3	1.1	1.1	3.4
AUG 29...	.01	2.0	2.0	8.9	2.0	1.8	1.2	3.7
SEP 27...	.14	1.6	2.0	8.7	.67	.58	.44	1.4

DATE	DIS-SOLVED ALUMINUM (AL) (UG/L)	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED BARIUM (BA) (UG/L)	DIS-SOLVED BORDON (B) (UG/L)	DIS-SOLVED CADMIUM (CD) (UG/L)	DIS-SOLVED CHROMIUM (CR) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	DIS-SOLVED COPPER (CU) (UG/L)
OCT 18...	--	--	--	70	--	--	--	--
DEC 23...	--	--	--	1600	--	--	--	--
FEB 18...	--	--	--	1300	--	--	--	--
MAR 10...	--	--	--	1100	--	--	--	--
28...	30	3	100	820	1	0	0	0
APR 21...	--	--	--	570	--	--	--	--
JUN 01...	10	15	100	1100	1	0	0	1
30...	--	--	--	630	--	--	--	--
AUG 29...	--	--	--	1700	--	--	--	--
SEP 27...	30	10	0	950	0	0	0	1

APPLE CREEK BASIN

06349500 APPLE CREEK NEAR MENOKEN, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED LITHIUM (LI) (UG/L)	DIS-SOLVED MANGANESE (MN) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	DIS-SOLVED MOLYBDENUM (MO) (UG/L)	DIS-SOLVED NICKEL (NI) (UG/L)
OCT 18...	40	--	--	70	--	--	--
DEC 23...	100	--	--	320	--	--	--
FEB 18...	150	--	--	810	--	--	--
MAR 10...	150	--	--	860	--	--	--
28...	100	6	80	120	0	0	4
APR 21...	0	--	--	20	--	--	--
JUN 01...	180	0	100	140	.0	1	0
30...	530	--	--	40	--	--	--
AUG 29...	80	--	--	40	--	--	--
SEP 27...	220	3	80	30	.0	1	2

DATE	DIS-SOLVED SELENIUM (SE) (UG/L)	DIS-SOLVED STRONTIUM (SR) (UG/L)	DIS-SOLVED VANADIUM (V) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)	DIS-SOLVED ORGANIC CARBON (C) (MG/L)	SUSPENDED ORGANIC CARBON (C) (MG/L)	CYANIDE (CN) (MG/L)
MAR 10...	--	--	--	--	--	--	--
28...	0	360	.4	10	7.3	1.5	.00
APR 21...	--	--	--	--	--	--	--
JUN 01...	0	440	.3	10	11	1.4	.00
30...	--	--	--	--	--	--	--
AUG 29...	--	--	--	--	13	4.1	--
SEP 27...	0	260	.0	10	12	1.5	.00

DISSOLVED OXYGEN PROFILE, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

HOURLY	MG/L	HOURLY	MG/L	HOURLY	MG/L	HOURLY	MG/L
May 27, 1977							
0900	3.5	0500	3.6	July 1, 1977			
1000	3.7	0600	3.6	0100	6.7	2000	5.6
1100	4.3	0700	3.6	0200	6.4	2100	5.6
1200	4.5	0800	3.8	0300	6.1	2200	5.5
1300	5.4	June 30, 1977				2300	5.3
1400	5.8	0940	5.7	0400	5.8	2400	5.3
1500	6.5	1000	5.7	0500	5.5	Sept. 28, 1977	
1600	6.8	1100	5.9	0600	5.2	0100	5.2
1700	7.7	1200	6.3	0700	5.1	0200	5.2
1800	7.5	1300	6.8	0800	5.0	0300	5.1
1900	7.5	1400	7.2	0900	5.1	0400	5.0
2000	7.8	1500	7.4	1000	6.1	0500	5.0
2100	7.7	1600	7.6	1100	7.0	0600	5.0
2200	7.0	1700	8.0	Sept. 27, 1977			
2300	7.0	1800	8.1	1200	5.7	0700	5.0
2400	6.6	1900	8.4	1300	5.8	0800	5.0
May 28, 1977		2000	8.4	1400	5.8	0900	5.0
0100	6.0	2100	8.4	1500	5.9	1000	5.2
0200	5.2	2200	7.6	1600	6.0	1100	5.4
0300	4.2	2300	7.2	1700	6.2	1200	5.5
0400	3.7	2400	7.0	1800	6.2	1300	5.8
				1900	5.9	1400	6.2

06349500 APPLE CREEK NEAR MENOKEN, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	FEB 18, 77 0745	MAR 10, 77 1430	MAR 28, 77 1020	JUN 1, 77 0945				
TOTAL CELLS/ML	34000	9700	11000	51000				
DIVERSITY: DIVISION	1.1	1.9	1.9	0.4				
..CLASS	1.2	2.2	2.2	0.5				
...ORDER	1.5	2.7	2.8	0.5				
...FAMILY	1.5	2.8	3.0	0.9				
...GENUS	1.6	2.8	3.0	1.7				
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
...COELASTRACEAE								
...COELASTRUM	--	-	--	-	--	-	--	-
...HYDRODICTYACEAE								
...PEDIASTRUM	--	-	--	-	--	-	720	1
...MICRACTINIACEAE								
...MICRACTINIUM	--	-	--	-	--	-	--	-
...OOCYSTACEAE								
...ANKISTRODESMUS	220	1	380	4	1100	10	1100	2
...CHODATELLA	--	-	--	-	--	-	--	-
...DICTYOSPHAERIUM								
...KIRCHNERIELLA	*	0	--	-	--	-	*	0
...NEPHROCYTIUM								
...OOCYSTIS	--	-	--	-	--	-	2000	4
...SELENASTRUM	--	-	--	-	--	-	--	-
...TETRAEDRON	--	-	--	-	--	-	--	-
...SCENEDESMACEAE								
...CRUCIGENIA	1700	5	--	-	--	-	35000#	69
...SCENEDESMUS	*	0	450	5	680	6	6000	12
...TETRADESMUS	--	-	--	-	170	2	--	-
...TETRASTRUM	*	0	--	-	--	-	2500	5
...VOLVOCALES								
...CHLAMYDOMONADACEAE								
...CHLAMYDOMONAS	24000#	69	830	9	2700#	26	--	-
...ZYGNEMATALES								
...DESMIDIACEAE								
...CLOSTERIUM	--	-	--	-	--	-	--	-
...STAUSTRUM	--	-	--	-	--	-	--	-
CHRYSTOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
...COSCINODISCEACEAE								
...CYCLOTELLA	--	-	230	2	--	-	*	0
...PENNALES								
...ACHNANTHACEAE								
...COCCONEIS	--	-	--	-	--	-	--	-
...CYMBELLACEAE								
...AMPHORA	--	-	--	-	--	-	--	-
...NAVICULACEAE								
...NAVICULA	--	-	--	-	*	0	--	-
...NITZSCHIIACEAE								
...NITZSCHIA	*	0	1900#	19	940	9	--	-
..CHRYSTOPHYCEAE								
...CHRYSONOMADALES								
...CHROMULINACEAE								
...CHRYSOCOCCUS	--	-	--	-	2000#	19	--	-
..XANTHOPHYCEAE								
...HETEROCOCCALES								
...CENTRITRACTACEAE								
...CENTRITRACTUS	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROCOCCOCCALES								
...CHROCOCCACEAE								
...AGMENELLUM	--	-	--	-	--	-	--	-
...ANACYSTIS	--	-	1100	11	1000	10	1000	2
...HORMOGONALES								
...OSCILLATORIA								
...OSCILLATORIA	3200	9	1100	12	430	4	--	-
EUGLENOPHYTA (EUGLENOIDS)								
..CRYPTOPHYCEAE								
...CRYPTOMONIDALES								
...CRYPTOMONADACEAE								
...CRYPTOMONAS	980	3	600	6	170	2	720	1
..EUGLENOPHYCEAE								
...EUGLENALES								
...EUGLENACEAE								
...EUGLENA	--	-	--	-	*	0	*	0
...PHACUS	--	-	--	-	--	-	*	0
...TRACHELOMONAS	4000	12	3200#	33	1100	10	1400	3
PYRRHOPHYTA (FIRE ALGAE)								
..DINOPHYCEAE								
...PERIDINIALES								
...GLENODINIACEAE								
...GLENODINIUM	*	0	--	-	--	-	--	-
...PERIDINIACEAE								
...PERIDINIUM	--	-	--	-	260	2	--	-

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

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

06349500 APPLE CREEK NEAR MENOKEN, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	JUN 30, 77 1000	AUG 29, 77 1115	SEP 27, 77 1315
TOTAL CELLS/ML	260000	410000	24000
DIVERSITY: DIVISION	1.1	1.1	1.2
..CLASS	1.1	1.1	1.2
...ORDER	1.1	1.1	1.2
...FAMILY	1.5	1.4	1.4
...GENUS	2.4	1.6	1.8

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)						
..CHLOROPHYCEAE						
...CHLOROCOCCALES						
...COELASTRACEAE						
....COELASTRUM	* 0		--	-	--	-
...HYDRODICTYACEAE						
....PEDIASTRUM	* 0		--	-	--	-
...MICRACTINIACEAE						
....MICRACTINIUM	--	-	2700	1	--	-
...OOCYSTACEAE						
...ANKISTRODESMUS	7900	3	--	-	1100	5
....CHODATELLA	* 0		--	-	--	-
...DICTYOSPHAERIUM	--	-	15000	4	--	-
....KIRCHNERIELLA	12000	5	* 0		250	1
...NEPHROCOTYLIUM	4000	2	--	-	--	-
...OOCYSTIS	1300	1	--	-	--	-
...SELENASTRUM	2600	1	4000	1	--	-
...TETRAEDRON	* 0		--	-	--	-
...SCENEDESMACEAE						
....CRUCIGENIA	42000#	16	210000#	53	2000	8
...SCENEDESMUS	36000	14	12000	3	1400	6
...TETRADESMUS	--	-	--	-	--	-
...TETRASTRUM	2600	1	--	-	1500	6
...VOLVOCALES						
...CHLAMYDOMONADACEAE						
...CHLAMYDOMONAS	2000	1	--	-	--	-
...ZYGNEMATALES						
...DESMIDIACEAE						
...CLOSTERIUM	* 0		--	-	--	-
...STAUSTRUM	* 0		--	-	120	1
CHRYSOPHYTA						
..BACILLARIOPHYCEAE						
...CENTRALES						
...COSCINODISCAEAE						
...CYCLOTELLA	--	-	3400	1	1000	4
...PENNALES						
...ACHNANTHACEAE						
...COCCONEIS	--	-	--	-	* 0	
...CYMBELLACEAE						
...AMPHORA	* 0		--	-	--	-
...NAVICULACEAE						
...NAVICULA	--	-	--	-	--	-
...NITZSCHIAEAE						
...NITZSCHIA	* 0		--	-	--	-
..CHRYSOPHYCEAE						
...CHRYSOMONADALES						
...CHROMULINACEAE						
...CHRYSOCOCUS	--	-	--	-	--	-
..XANTHOPHYCEAE						
...HETEROCOCCALES						
...CENTRITRACTACEAE						
...CENTRITRACTUS	* 0		--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...CHROCOCCALES						
...CHROCOCCACEAE						
....AGMENELLUM	15000	6	--	-	--	-
...ANACYSTIS	130000#	51	150000#	37	16000#	68
...HORMOGONIALES						
...OSCILLATORIACEAE						
...OSCILLATORIA	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENIDS)						
..CRYPTOPHYCEAE						
...CRYPTOMONIDALES						
...CRYPTOMONODACEAE						
...CRYPTOMONAS	--	-	--	-	* 0	
..EUGLENOPHYCEAE						
...EUGLENALES						
...EUGLENACEAE						
....EUGLENA	* 0		--	-	* 0	
...PHACUS	--	-	--	-	--	-
...TRACHELOMONAS	* 0		3400	1	250	1
PYRRHOPHYTA (FIRE ALGAE)						
..DINOPHYCEAE						
...PERIDINIALES						
...GLENODINIACEAE						
...GLENODINIUM	--	-	--	-	--	-
...PERIDINIACEAE						
...PERIDINIUM	--	-	--	-	--	-

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

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

MISSOURI RIVER MAIN STEM

377

06349700 MISSOURI RIVER NEAR SCHMIDT, ND

LOCATION.--Lat 46°39'22", long 100°44'18", in SW¼NE¼ sec.26, T.137 N., R.80 W., Morton County, Hydrologic Unit 10130102, on right bank 2 mi (3 km) southeast of abandoned townsite of Schmidt and 13 mi (21 km) southeast of Mandan at mile 1,298 (kilometer 2,088).

DRAINAGE AREA.--191,700 mi² (496,500 km²), approximately.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,600.00 ft (487.680 km) above mean sea level.

REMARKS.--Stage regulated by Lake Sakakawea (station 06338000).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 23.56 ft (7.181 m) Dec. 9, 1976; minimum daily recorded, 7.92 ft (2.414 m) May 30, 1967.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16.07	15.81	18.07	20.36	20.79	19.93	13.72	13.37	13.09	13.17	13.71	13.32
2	16.07	15.35	18.07	20.84	20.75	19.81	13.72	13.40	13.13	13.06	13.46	12.88
3	16.33	15.73	18.17	21.09	20.72	19.80	13.69	13.54	13.07	13.16	13.32	12.65
4	15.04	15.93	17.95	21.36	20.79	19.76	13.49	13.57	12.93	13.39	13.12	12.77
5	16.02	16.03	17.73	21.44	20.95	19.66	13.33	13.42	12.97	13.29	13.27	12.50
6	15.95	16.25	17.88	21.45	20.78	19.68	13.71	13.68	13.05	13.20	13.07	12.77
7	15.87	16.36	18.90	21.53	20.73	19.85	13.46	13.47	12.99	13.52	13.24	12.84
8	16.01	16.54	21.90	21.39	20.68	20.03	13.69	13.35	13.06	13.53	13.12	12.68
9	15.99	16.68	23.56	21.21	20.56	20.01	13.54	13.43	13.03	13.29	13.29	12.73
10	16.36	16.67	22.62	21.18	20.44	19.89	13.39	13.55	13.10	13.24	13.06	12.79
11	13.97	16.66	21.51	21.18	20.32	19.92	13.06	13.51	13.12	13.41	12.97	12.74
12	14.91	16.64	21.19	21.18	20.25	19.74	13.38	13.33	13.07	13.90	12.96	12.67
13	15.66	16.55	21.53	21.09	20.19	19.40	13.25	13.43	13.42	13.98	13.05	12.73
14	15.98	16.59	21.57	20.93	20.34	19.32	13.54	13.50	13.14	13.91	13.05	12.75
15	16.31	16.64	21.47	20.92	20.21	18.25	13.30	13.49	13.44	13.77	13.16	12.66
16	16.04	16.65	21.38	20.91	---	16.89	13.50	13.34	13.73	13.79	13.12	12.63
17	16.08	16.49	21.16	20.91	19.96	15.82	13.55	13.53	13.70	13.70	12.97	12.95
18	16.10	16.38	21.16	---	20.06	15.34	13.44	13.12	13.94	13.64	13.00	12.92
19	16.09	16.51	21.13	---	20.19	15.28	13.56	13.03	13.79	13.71	13.09	12.95
20	16.34	16.50	20.83	20.84	20.12	14.99	13.64	13.03	13.72	13.93	13.13	12.50
21	15.69	16.61	19.79	20.83	19.90	14.72	13.50	13.00	13.75	13.96	13.11	12.56
22	15.86	16.65	19.67	20.81	19.91	14.66	13.60	---	13.83	13.71	13.09	12.72
23	15.80	16.66	20.21	20.75	19.93	14.58	14.01	---	13.56	13.42	13.15	12.87
24	15.65	16.69	20.02	20.67	19.91	14.53	14.13	---	13.45	13.37	13.16	13.40
25	15.77	17.03	20.47	20.58	19.83	14.42	14.00	13.00	13.50	13.40	13.07	13.42
26	15.86	17.23	20.73	20.61	19.80	14.14	13.79	13.04	13.35	13.26	13.15	12.97
27	15.99	17.19	20.82	20.57	19.83	14.23	13.94	13.08	13.27	13.25	13.29	13.00
28	15.87	17.41	20.99	20.49	19.89	13.72	13.80	13.02	13.22	13.34	13.49	12.93
29	15.75	17.86	20.33	20.90	---	14.18	13.56	13.00	13.09	13.06	13.29	12.77
30	15.88	17.79	19.36	20.63	---	13.98	13.50	13.10	13.09	13.10	13.23	12.71
31	15.69	---	19.41	20.74	---	13.75	---	13.02	---	13.76	13.26	---
MEAN	15.84	16.60	20.31	---	---	17.11	13.60	---	13.32	13.49	13.18	12.83
MAX	16.36	17.86	23.56	---	---	20.03	14.13	---	13.94	13.98	13.71	13.42
MIN	13.97	15.35	17.73	---	---	13.72	13.06	---	12.93	13.06	12.96	12.50

MISSOURI RIVER MAIN STEM
06349700 MISSOURI RIVER NEAR SCHMIDT, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS CHARGE (CFS)	SPECIFIC CONDUCTANCE (MICRO- MHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	CHEMICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL STREPTOCOCCI (COL. PER 100 ML)	HARDNESS (CA, MG)
OCT												
13...	1030	27800	650	8.5	13.5	10	9.2	98	15	650	--	220
27...	--	29500	650	8.5	6.5	10	11.0	91	9	5800	--	--
NOV												
09...	1100	33100	640	8.5	4.0	8	11.0	93	14	5200	--	210
22...	1130	32900	640	8.4	3.0	8	11.8	91	17	240	--	--
DEC												
30...	1030	26000	655	8.5	.0	5	13.2	96	23	920	--	220
JAN												
12...	1200	29000	640	8.5	.0	3	13.0	94	23	440	--	--
26...	1140	29000	640	8.5	.0	6	12.7	92	6	2200	--	210
FEB												
07...	1115	34000	625	8.3	.0	6	13.2	96	26	540	--	--
MAR												
02...	1000	27000	660	8.0	.0	7	13.0	94	2	--	55	210
16...	1045	24000	630	8.4	1.5	10	12.5	98	16	3600	--	--
31...	1015	18100	645	8.3	1.5	18	13.1	99	12	--	--	220
APR												
12...	1045	17000	665	8.5	6.5	8	11.8	100	14	20000	--	--
26...	1040	19100	660	8.5	8.0	6	12.2	109	9	>80000	--	220
MAY												
11...	1100	17800	670	8.4	13.5	10	9.8	108	10	7900	1800	--
25...	1100	16500	640	8.3	17.0	10	8.9	97	17	4400	8688	220
JUN												
07...	1030	16100	650	8.3	15.5	9	9.6	101	22	883	--	--
28...	1130	17300	650	8.3	16.5	15	9.2	100	12	81100	--	220
JUL												
12...	1045	20400	620	8.3	15.5	45	8.9	94	36	25000	--	--
27...	1300	18300	750	8.2	16.5	6	9.1	110	16	81900	--	220
AUG												
09...	1100	18100	640	8.3	17.5	9	8.5	94	9	260000	--	--
30...	1045	18100	650	8.1	16.5	9	8.7	94	7	--	--	220
SEP												
14...	1015	16300	650	8.3	15.0	8	8.8	91	10	3000	--	--
29...	1615	15800	670	8.4	14.5	--	9.3	96	11	2900	--	200

DATE	NON-CARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG)	DISSOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	DISSOLVED PHOSPHATE (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)
OCT											
13...	66	52	21	57	36	1.7	4.1	183	0	150	.9
27...	--	--	--	--	--	--	--	--	--	--	--
NOV											
09...	56	52	20	58	37	1.7	4.2	184	3	156	1.0
22...	--	--	--	--	--	--	--	--	--	--	--
DEC											
30...	58	52	21	58	36	1.7	4.2	193	0	158	1.0
JAN											
12...	--	--	--	--	--	--	--	--	--	--	--
26...	64	50	20	54	36	1.6	3.8	175	0	144	.9
FEB											
07...	--	--	--	--	--	--	--	--	--	--	--
MAR											
02...	57	50	20	57	37	1.7	4.0	183	0	150	2.9
16...	--	--	--	--	--	--	--	--	--	--	--
31...	63	53	21	58	36	1.7	3.9	190	0	160	1.5
APR											
12...	--	--	--	--	--	--	--	--	--	--	--
26...	59	53	20	58	36	1.7	4.1	190	0	160	1.0
MAY											
11...	--	--	--	--	--	--	--	--	--	--	--
25...	61	54	20	59	37	1.7	4.4	190	0	160	1.5
JUN											
07...	--	--	--	--	--	--	--	--	--	--	--
28...	68	55	21	61	37	1.8	4.2	190	0	160	1.5
JUL											
12...	--	--	--	--	--	--	--	--	--	--	--
27...	68	55	21	58	36	1.7	3.9	190	0	160	1.9
AUG											
09...	--	--	--	--	--	--	--	--	--	--	--
30...	65	54	21	55	35	1.6	4.0	190	0	160	2.4
SEP											
14...	--	--	--	--	--	--	--	--	--	--	--
29...	42	43	22	63	40	1.9	3.9	190	0	160	1.2

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

MISSOURI RIVER MAIN STEM

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06349700 MISSOURI RIVER NEAR SCHMIDT, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED SULFATE (SO ₄) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO ₂) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	SUS- PENDED SOLIDS (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO- GEN (N) (MG/L)
OCT											
13...	180	11	.5	6.5	425	422	.58 31900		42	.14	.01
27...	--	--	--	--	429	--	.58 34200		47	.11	.00
NOV											
09...	180	8.7	.5	6.6	438	424	.60 39100		81	.16	.01
22...	--	--	--	--	433	--	.59 38500		37	.21	.00
DEC											
30...	180	9.1	.5	7.6	434	428	.59 30500		6	.15	.01
JAN											
12...	--	--	--	--	429	--	.58 33600		5	.16	.00
26...	160	8.7	.5	7.3	412	391	.56 32300		15	.15	.01
FEB											
07...	--	--	--	--	405	--	.55 37200		12	.14	.01
MAR											
02...	180	8.4	.6	7.3	416	418	.57 30300		10	.14	.01
16...	--	--	--	--	409	--	.56 24500		26	.18	.05
31...	170	8.7	.5	7.9	433	417	.59 21200		43	.11	.02
APR											
12...	--	--	--	--	446	--	.61 20500		21	.10	.02
26...	160	8.8	.7	7.7	417	406	.57 21500		16	.06	.00
MAY											
11...	--	--	--	--	414	--	.56 19900		25	.08	.05
25...	180	8.8	.6	7.6	416	428	.57 18500		38	.09	.00
JUN											
07...	--	--	--	--	421	--	.57 18300		7	.06	.01
28...	180	8.7	.6	7.2	422	431	.57 19700		44	.08	.00
JUL											
12...	--	--	--	--	402	--	.55 22100		148	.12	.01
27...	170	8.9	.5	7.9	422	419	.57 20900		93	.09	.00
AUG											
09...	--	--	--	--	428	--	.58 20900		51	.09	.00
30...	170	9.0	.6	8.6	434	416	.59 21200		15	.12	.01
SEP											
14...	--	--	--	--	430	--	.58 18900		20	.09	.00
29...	180	8.8	.6	8.4	425	423	.58 18100		70	.09	.04

DATE	TOTAL ORGANIC NITRO- GEN (N) (MG/L)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L)	TOTAL NITRO- GEN (N) (MG/L)	TOTAL NITRO- GEN (NO ₃) (MG/L)	TOTAL PHOS- PHORUS (P) (MG/L)	DIS- SOLVED ORTHO. PHOS- PHORUS (P) (MG/L)	DIS- SOLVED ORTHO. PHOS- PHATE (PO ₄) (MG/L)	DIS- SOLVED BORON (B) (UG/L)
OCT								
13...	.32	.33	.47	2.1	.06	--	--	120
27...	.39	.39	.50	2.2	.08	--	--	--
NOV								
09...	.21	.22	.38	1.7	.04	--	--	120
22...	.14	.14	.35	1.6	.04	--	--	--
DEC								
30...	.40	.41	.56	2.5	.01	--	--	110
JAN								
12...	.20	.20	.36	1.6	.02	--	--	--
26...	.17	.18	.33	1.5	.03	.01	.03	110
FEB								
07...	.25	.26	.40	1.8	.02	--	--	--
MAR								
02...	.13	.14	.28	1.2	.00	--	--	120
16...	.19	.24	.42	1.9	.05	--	--	--
31...	.34	.36	.47	2.1	.07	--	--	120
APR								
12...	.29	.31	.41	1.8	.00	--	--	--
26...	.24	.24	.30	1.3	.04	--	--	110
MAY								
11...	.30	.35	.43	1.9	.01	--	--	--
25...	.01	.01	.10	.44	.04	--	--	110
JUN								
07...	.48	.49	.55	2.4	.03	--	--	--
28...	.17	.17	.25	1.1	.06	--	--	130
JUL								
12...	.42	.43	.55	2.4	.13	--	--	--
27...	.14	.14	.23	1.0	.01	--	--	110
AUG								
09...	.25	.25	.34	1.5	.02	--	--	--
30...	.46	.47	.59	2.6	.04	--	--	120
SEP								
14...	.13	.13	.22	.97	.02	--	--	--
29...	.46	.50	.59	2.6	.05	--	--	120

06349700 MISSOURI RIVER NEAR SCHMIDT, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL ORGANIC CARBON (C) (MG/L)	DIS- SOL- VED ORGANIC CARBON (C) (MG/L)	SUS- PENDED ORGANIC CARBON (C) (MG/L)
OCT			
13...	--	7.6	.2
27...	3.2	--	--
NOV			
09...	--	2.5	.2
22...	3.4	--	--
DEC			
30...	--	2.5	.3
JAN			
12...	3.3	--	--
26...	--	3.1	.2
FEB			
07...	2.8	--	--
MAR			
02...	--	--	.1
16...	4.1	--	--
31...	--	3.3	1.3
APR			
12...	3.6	--	--
26...	--	3.7	1.5
MAY			
11...	3.8	--	--
25...	--	3.4	.4
JUN			
07...	3.2	--	--
28...	--	2.9	.6
JUL			
12...	5.4	--	--
27...	--	3.0	.3
AUG			
09...	2.8	--	--
30...	--	2.6	.8
SEP			
14...	2.8	--	--
29...	--	5.4	1.0

MISSOURI RIVER MAIN STEM

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06349700 MISSOURI RIVER NEAR SCHMIDT, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	OCT 13,76 1030	NOV 9,76 1100	DEC 30,76 1030	JAN 26,77 1140	MAR 2,77 1000	MAR 31,77 1015						
TOTAL CELLS/ML	66	180	160	120	220	88						
DIVERSITY: DIVISION	0.7	0.0	1.0	1.2	0.9	0.0						
..CLASS	0.7	0.0	1.0	1.2	0.9	0.0						
..ORDER	1.4	0.0	1.1	2.0	1.1	0.7						
...FAMILY	2.2	2.0	1.2	3.1	1.6	2.4						
....GENUS	2.5	2.6	1.2	3.1	1.6	2.4						
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												
...CHARACIACEAE												
...SCHROEDERIA	--	-	--	-	--	-	--	-	--	-		
...MICRACTINIACEAE												
...MICRACTINIUM	--	-	--	-	--	-	--	-	--	-		
...OOCYSTACEAE												
...ANKISTRODESMUS	--	-	--	-	--	-	--	-	--	-		
...CHODATELLA	--	-	--	-	--	-	--	-	--	-		
...DICTYOSPHAERIUM	--	-	--	-	--	-	--	-	--	-		
...OOCYSTIS	--	-	--	-	--	-	--	-	--	-		
...SCENEDESMACEAE												
...ACTINASTRUM	--	-	--	-	--	-	--	-	--	-		
...CRUCIGENIA	--	-	--	-	6	4	--	-	--	-		
...SCENEDESMUS	--	-	--	-	--	-	--	-	--	-		
...VOLVOCALES												
...CHLAMYDOMONADACEAE												
...CHLAMYDOMONAS	--	-	--	-	6	5	--	-	--	-		
...CHLOROGONIUM	--	-	--	-	3	2	--	-	--	-		
CHRYSOPHYTA												
..BACILLARIOPHYCEAE												
...CENTRALES												
...COSCINODISCAEAE												
...CYCLOTELLA	18#	27	--	-	3	2	6	5	13	6	15#	17
...MELOSIRA	--	-	--	-	--	-	--	-	--	-	--	-
...STEPHANODISCUS	--	-	--	-	--	-	3	2	--	-	--	-
...PENNALES												
...ACHNANTHACEAE												
...ACHNANTHES	--	-	--	-	--	-	--	-	--	-	--	-
...COCCONEIS	--	-	--	-	--	-	--	-	--	-	--	-
...RHODICOSPHEA	6	9	--	-	--	-	--	-	--	-	4	4
...CYMBELLACEAE												
...AMPHORA	--	-	7	4	--	-	--	-	--	-	--	-
...EPITHEMIA	--	-	7	4	--	-	3	2	--	-	--	-
...DIATOMACEAE												
...DIATOMA	--	-	20	12	--	-	--	-	16	7	38#	43
...FRAGILARIACEAE												
...ASTERIONELLA	--	-	7	4	--	-	--	-	6	3	--	-
...FRAGILARIA	--	-	--	-	3	2	--	-	--	-	--	-
...SYNEDRA	--	-	7	4	--	-	3	2	--	-	--	-
...GOMPHONEMACEAE												
...GOMPHONEMA	--	-	--	-	--	-	6	5	3	1	4	4
...MERIDIONACEAE												
...MERIDION	--	-	--	-	--	-	3	2	--	-	--	-
...NAVICULACEAE												
...GYROSIGMA	--	-	--	-	--	-	--	-	--	-	--	-
...NAVICULA	12#	18	48#	27	6	4	3	2	--	-	8	9
...PINNULARIA	--	-	7	4	--	-	--	-	--	-	--	-
...NITZSCHIAEAE												
...HANTZSCHIA	6	9	14	8	--	-	--	-	--	-	--	-
...NITZSCHIA	12#	18	61#	35	--	-	19#	16	16	7	11	13
...SURIPELLACEAE												
...SURIPELLA	--	-	--	-	--	-	3	2	3	1	8	9
CHRYSOPHYCEAE												
...CHRYSOMONADALES												
...OCHROMONADACEAE												
...OCHROMONAS	--	-	--	-	--	-	--	-	3	1	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
..CYANOPHYCEAE												
...CHROCCOCCALES												
...CHROCCOCCAEAE												
...ANACYSTIS	--	-	--	-	--	-	22#	19	--	-	--	-
...HORMOGONALES												
...NOSTOCACEAE												
...ANABAENA	--	-	--	-	--	-	30#	26	--	-	--	-
...OSCILLATORIACEAE												
...LYNGBYA	--	-	--	-	--	-	14	12	--	-	--	-
...OSCILLATORIA	--	-	--	-	130#	82	--	-	160#	72	--	-

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

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

CONTINUED ...

MISSOURI RIVER MAIN STEM

06349700 MISSOURI RIVER NEAR SCHMIDT, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

(CONTINUED)

DATE TIME	OCT 13,76 1030		NOV 9,76 1100		DEC 30,76 1030		JAN 26,77 1140		MAR 2,77 1000		MAR 31,77 1015	
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
EUGLENOPHYTA (EUGLENOIDS)												
..CRYPTOPHYCEAE												
...CRYPTOMONIDAE												
...CRYPTOCHRYSIDACEAE												
...CHROOMONAS												
...CRYPTOMONODACEAE												
...CRYPTOMONAS	12#	18			3	2						
..EUGLENACEAE												
...EUGLENALES												
...EUGLENA												
...EUGLENA												
...EUGLENA												
...TRACHELOMONAS					6	4						
PYRRHOPHYTA (FIRE ALGAE)												
..DINOPHYCEAE												
...GYMNODINIALES												
...GYMNODINIACEAE												
...GYMNODINIUM												

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

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

MISSOURI RIVER MAIN STEM

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06349700 MISSOURI RIVER NEAR SCHMIDT, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	APR 26,77 1040		MAY 25,77 1100		JUN 28,77 1130		JUL 27,77 1300		AUG 30,77 1045		SEP 29,77 1615	
TOTAL CELLS/ML	8000		2000		3300		410		110		2500	
DIVERSITY: DIVISION	0.1		1.1		1.0		1.6		1.1		0.6	
..CLASS	0.1		1.1		1.0		1.6		1.1		0.7	
...ORDER	0.3		1.8		1.9		2.2		1.1		0.7	
...FAMILY	0.3		2.6		2.3		2.9		2.0		0.7	
....GENUS	0.3		2.8		2.6		3.2		2.0		0.7	
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												
....CHARACIACEAE												
....SCHROEDERIA	--	-	17	1	--	-	--	-	30#	26	--	-
....MICRACTINIACEAE												
....MICRACTINIUM	59	1	--	-	--	-	--	-	--	-	--	-
....ODCYSTACEAE												
....ANKISTRODESMUS	--	-	50	2	47	1	45	11	--	-	34	1
....CHODATELLA	--	-	33	2	--	-	--	-	--	-	--	-
....DICTYOSPHAERIUM	--	-	--	-	--	-	25	6	--	-	--	-
....ODCYSTIS	--	-	--	-	--	-	6	2	--	-	--	-
....SCENEDESMACEAE												
....ACTINASTRUM	--	-	84	4	--	-	--	-	--	-	--	-
....CRUCIGENIA	--	-	--	-	--	-	--	-	--	-	--	-
....SCENEDESMUS	--	-	170	8	160	5	13	3	--	-	--	-
..VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	*	0	--	-	--	-	--	-	--	-	--	-
....CHLOROGONIUM	--	-	--	-	--	-	--	-	--	-	--	-
CHRYSDOPHYTA												
..BACILLARIOPHYCEAE												
...CENTRALES												
...COSCINODISCAEAE												
....CYCLOTELLA	7700#	96	840#	42	170	5	32	8	--	-	--	-
....MELOSIRA	--	-	--	-	1600#	49	--	-	--	-	--	-
....STEPHANODISCUS	--	-	--	-	--	-	6	2	--	-	--	-
..PENNALES												
...ACHNANTHACEAE												
....ACHNANTHES	--	-	--	-	*	0	--	-	--	-	--	-
....COCCONEIS	--	-	--	-	--	-	*	0	--	-	--	-
....RHOICOSPHEINIA	--	-	17	1	--	-	*	0	--	-	--	-
....CYMBELLACEAE												
....AMPHORA	--	-	17	1	--	-	--	-	--	-	--	-
....EPITHEMIA	--	-	--	-	--	-	--	-	--	-	--	-
....DIATOMACEAE												
....DIATOMA	--	-	50	2	130	4	13	3	54#	47	--	-
....FRAGILARIACEAE												
....ASTERIONELLA	*	0	100	5	220	7	--	-	--	-	--	-
....FRAGILARIA	--	-	--	-	--	-	--	-	--	-	--	-
....SYNEDRA	--	-	84	4	*	0	25	6	6	5	--	-
....GOMPHONEMACEAE												
....GOMPHONEMA	--	-	--	-	--	-	--	-	--	-	--	-
....MERIDIONACEAE												
....MERIDION	--	-	--	-	--	-	--	-	--	-	--	-
....NAVICULACEAE												
....GYROSIGMA	--	-	--	-	--	-	*	0	--	-	--	-
....NAVICULA	59	1	17	1	*	0	13	3	--	-	17	1
....PINNULARIA	--	-	--	-	--	-	--	-	--	-	--	-
....NITZSCHIAEAE												
....NITZSCHIA	--	-	--	-	--	-	--	-	--	-	--	-
....NITZSCHIA	120	1	350#	17	360	11	100#	25	12	11	210	8
....SURIPELLACEAE												
....SURIPELLA	--	-	--	-	--	-	--	-	6	5	--	-
CHRYSDOPHYCEAE												
...CHRYSDOMONADALES												
....OCHROMONADACEAE												
....OCHROMONAS	--	-	--	-	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
..CYANOPHYCEAE												
...CHROCOCCOCCALES												
....CHROCOCCOCCAEAE												
....ANACYSTIS	--	-	170	8	250	8	89#	22	--	-	--	-
...HORMOGONALES												
....NOSTOCACEAE												
....ANABAENA	--	-	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIACEAE												
....LYNGBYA	--	-	--	-	--	-	38	9	--	-	--	-
....OSCILLATORIA	--	-	--	-	310	9	--	-	--	-	2200#	88

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

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

CONTINUED ...

MISSOURI RIVER MAIN STEM

06349700 MISSOURI RIVER NEAR SCHMIDT, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

(CONTINUED)

DATE TIME	APR 26,77 1040		MAY 25,77 1100		JUN 28,77 1130		JUL 27,77 1300		AUG 30,77 1045		SEP 29,77 1615	
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
EUGLENOPHYTA (EUGLENOIDS)												
..CRYPTOPHYCEAE												
...CRYPTOMONIDAE												
...CRYPTOCHRYSIDACEAE												
...CHROOMONAS	--	-	--	-	--	-	6	2	6	5	--	-
...CRYPTOMONODACEAE												
...CRYPTOMONAS	--	-	17	1	--	-	--	-	--	-	25	1
..EUGLENOPHYCEAE												
...EUGLENALES												
...EUGLENACEAE												
...EUGLENA	59	1	--	-	--	-	--	-	--	-	*	0
...TRACHELOMONAS	--	-	--	-	--	-	--	-	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)												
..DINOPHYCEAE												
...GYMNODINIALES												
...GYMNODINIACEAE												
...GYMNODINIUM	--	-	--	-	*	0	--	-	--	-	--	-

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

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

CANNONBALL RIVER BASIN

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06349930 COAL BANK CREEK NEAR HAVELOCK, ND

LOCATION.--Lat 46°27'50", long 102°44'20", in NW¼SW¼ sec.34, T.135 N., R.96 W., Hettinger County, Hydrologic Unit 10130204, one mile south of Havelock at county highway bridge.

DRAINAGE AREA.--70.0 mi² (181.3 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 2,505 ft (764 m), from topographic map.

REMARKS.--Records fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,400 ft³/s (39.5 m³/s) May 9, 1975, gage height, 10.15 ft (3.094 m), no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 25 ft³/s (0.71 m³/s) June 14, gage height, 5.75 ft (1.753 m); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.14	.09	.10	.15	0	.15	.50	.10	.12			0
2	.11	.10	.10	.10	0	.15	.59	.06	.12			0
3	.09	.12	.15	.05	0	.15	.57	.06	.12			0
4	.10	.16	.15	.05	0	.15	.79	.07	.10			0
5	.08	.18	.15	.05	0	.15	.86	.06	.10			0
6	.08	.20	.15	.05	0	.25	.81	.06	.08			.07
7	.07	.20	.10	.05	0	.75	.75	.07	.07			.17
8	.04	.25	.10	.05	0	.80	.68	.08	.05			.19
9	.03	.25	.10	.05	0	1.0	.81	.08	.05			.15
10	.03	.30	.10	0	0	1.3	.72	.08	.31			.10
11	.05	.30	.10	0	.05	1.5	.62	.05	.71			.10
12	.05	.25	.10	0	.05	1.0	.64	.05	1.1			.08
13	.05	.20	.10	0	.10	.80	.75	.06	1.6			.06
14	.05	.20	.15	0	.10	.60	.72	.07	6.5			.06
15	.03	.20	.15	0	.10	.43	.68	.08	14			.07
16	.03	.20	.20	0	.10	.43	.65	.07	14			.08
17	.04	.25	.20	0	.10	.47	.63	.06	8.1			.09
18	.06	.30	.25	0	.10	.44	.60	.07	5.2			.15
19	.07	.30	.30	0	.10	.39	.53	.11	3.5			.15
20	.06	.30	.25	0	.10	.36	.49	.11	2.4			.16
21	.05	.30	.25	0	.10	.38	.44	.10	1.7			.18
22	.05	.25	.25	0	.10	.40	.43	.12	1.3			.17
23	.05	.25	.25	0	.15	.46	.41	.13	1.0			.20
24	.05	.25	.25	0	.15	.45	.36	.11	.82			.18
25	.07	.25	.25	0	.15	.47	.32	.09	.64			.16
26	.08	.25	.25	0	.15	.48	.27	.08	.48			.15
27	.07	.20	.25	0	.15	.42	.23	.10	.34			.14
28	.07	.15	.25	0	.15	.40	.18	.12	.31			.14
29	.07	.10	.20	0	---	.60	.17	.13	.20			.14
30	.09	.10	.20	0	---	.74	.14	.14	.05			.16
31	.10	---	.15	0	---	.50	---	.12	---			---
TOTAL	2.01	6.45	5.55	.60	2.00	16.32	16.34	2.69	65.07	0	0	3.30
MEAN	.065	.22	.18	.019	.071	.53	.54	.087	2.17	0	0	.11
MAX	.14	.30	.30	.15	.15	1.5	.86	.14	14	0	0	.20
MIN	.03	.09	.10	0	0	.15	.14	.05	.05	0	0	0
AC-FT	4.0	13	11	1.2	4.0	32	32	5.3	129	0	0	6.5
CAL YR 1976	TOTAL	306.80	MEAN .84	MAX 15	MIN .01	AC-FT 609						
WTR YR 1977	TOTAL	120.33	MEAN .33	MAX 14	MIN 0	AC-FT 239						

CANNONBALL RIVER BASIN

06349930 COAL BANK CREEK NEAR HAVELOCK, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1975 to current year.

REMARKS.--Some chemical data furnished by North Dakota State Water Commission.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	DIS- SOLVED OXYGEN (MG/L)	PER- CENT SATUR- ATION	BIO- CHEM- ICAL OXYGEN DEMAND 5 DAY (MG/L)	HARD- NESS (CA,MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)
OCT										
04...	1530	.10	2000	8.5	10.0	11.8	110	1.9	570	220
04...	1535	.10	2000	8.5	10.0	--	--	--	580	230
NOV										
01...	1420	.09	1900	8.5	8.0	12.8	118	1.4	610	260
DEC										
06...	1515	.13	2100	7.6	.0	12.4	93	--	700	190
JAN										
04...	1605	.06	2450	7.2	.0	8.8	66	6.8	1000	460
FEB										
28...	1620	.13	1700	7.3	.0	4.0	30	1.6	580	210
MAR										
08...	1345	.83	1320	--	1.0	--	--	--	--	--
14...	1355	.58	1000	--	1.0	--	--	--	--	--
23...	1630	.52	1090	--	2.5	--	--	--	--	--
APR										
04...	1455	.86	1290	7.6	1.0	6.4	49	1.6	310	23
MAY										
02...	1620	.06	1500	8.4	16.0	12.6	139	1.6	400	74
31...	1340	.12	1680	10.1	18.0	12.3	142	.1	470	280
JUN										
16...	1220	14	830	--	21.0	--	--	--	--	--
SEP										
06...	1200	.03	1790	7.9	18.0	5.7	66	2.6	360	11

DATE	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	ALKA- LITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)
OCT										
04...	99	78	310	54	5.7	11	410	5	345	2.1
04...	190	26	310	53	5.6	9.2	375	28	354	2.2
NOV										
01...	120	75	250	47	4.4	7.9	396	16	351	2.2
DEC										
06...	150	79	290	47	4.8	8.7	630	0	517	25
JAN										
04...	230	110	250	34	3.4	10	694	0	569	70
FEB										
28...	120	68	200	42	3.6	7.6	450	0	369	36
MAR										
08...	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--
APR										
04...	69	34	180	55	4.4	5.8	353	0	290	14
MAY										
02...	87	44	210	53	4.6	5.8	390	3	320	2.5
31...	77	68	200	48	4.0	4.6	210	11	190	.0
JUN										
16...	--	--	--	--	--	--	--	--	--	--
SEP										
06...	69	46	290	63	6.6	11	430	0	350	8.7

CANNONBALL RIVER BASIN

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06349930 COAL BANK CREEK NEAR HAVELOCK, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED SULFATE (SO ₄) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO ₂) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L)
OCT										
04...	850	13	.3	2.6	1640	1570	2.23	.44	.00	.00
04...	880	12	.2	3.1	1620	1650	2.20	.44	--	--
NOV										
01...	760	9.7	.3	2.0	1420	1440	1.93	.35	.04	.08
DEC										
06...	790	9.8	.3	6.0	1680	1650	2.28	.59	.01	.07
JAN										
04...	980	13	.3	14	2080	1950	2.83	.34	.01	.01
FEB										
28...	610	8.4	.2	11	1300	1250	1.77	.46	.20	.20
MAR										
08...	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--
APR										
04...	390	6.0	.3	6.3	896	866	1.22	2.08	.06	.05
MAY										
02...	500	7.0	.3	2.0	1060	1050	1.44	.17	.00	.00
31...	670	7.5	.6	7.5	1210	1150	1.65	.39	.03	.04
JUN										
16...	--	--	--	--	--	--	--	--	--	--
SEP										
06...	590	16	.3	5.9	1240	1240	1.69	.10	.01	.01

DATE	TOTAL KJEL- DAHL NI TRO- GEN (N) (MG/L)	DIS- SOLVED KJEL- NI TRO- GEN (N) (MG/L)	TOTAL NI TRO- GEN (N) (MG/L)	TOTAL NI TRO- GEN (NO ₃) (MG/L)	TOTAL PHOS- PHORUS (P) (MG/L)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L)	DIS- SOLVED ALUM- INUM (AL) (UG/L)
OCT							
04...	.37	.37	.37	1.6	.06	.02	--
04...	--	--	--	--	--	--	--
NOV							
01...	.50	.62	.54	2.4	.02	.00	--
DEC							
06...	.45	.36	.46	2.0	.04	.00	0
JAN							
04...	1.1	.45	1.1	4.9	.08	.01	--
FEB							
28...	1.2	1.2	1.4	6.2	.04	.03	30
APR							
04...	.62	.34	.68	3.0	.04	.02	--
MAY							
02...	.41	.32	.41	1.8	.01	.00	--
31...	.34	.26	.37	1.6	.04	.02	0
SEP							
06...	.49	.48	.50	2.2	.06	.04	20

DATE	DIS- SOLVED ARSENIC (AS) (UG/L)	DIS- SOLVED BARIUM (BA) (UG/L)	DIS- SOLVED BERYL- LIUM (BE) (UG/L)	DIS- SOLVED BORON (B) (UG/L)	DIS- SOLVED CAD- MIUM (CD) (UG/L)	DIS- SOLVED CHRO- MIUM (CR) (UG/L)	DIS- SOLVED COPPER (CU) (UG/L)
OCT							
04...	--	--	--	--	--	--	--
04...	--	--	--	1200	--	--	--
NOV							
01...	--	--	--	--	--	--	--
DEC							
06...	2	0	0	1300	0	0	2
JAN							
04...	--	--	--	--	--	--	--
FEB							
28...	1	0	--	870	1	0	2
APR							
04...	--	--	--	--	--	--	--
MAY							
02...	--	--	--	--	--	--	--
31...	1	0	--	1100	0	0	2
SEP							
06...	2	200	--	1400	1	80	3

CANNONBALL RIVER BASIN

06349930 COAL BANK CREEK NEAR HAVELOCK, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED LEAD (PB) (UG/L)	DIS- SOLVED LITHIUM (LI) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)	DIS- SOLVED MERCURY (HG) (UG/L)	DIS- SOLVED MOLYB- DENUM (MO) (UG/L)	DIS- SOLVED SELE- NIUM (SE) (UG/L)	DIS- SOLVED SILVER (AG) (UG/L)	DIS- SOLVED STRON- TIUM (SR) (UG/L)	DIS- SOLVED ZINC (ZN) (UG/L)
OCT										
04...	--	--	--	--	--	--	--	--	--	--
04...	80	--	--	40	--	--	--	--	--	--
NOV										
01...	--	--	--	--	--	--	--	--	--	--
DEC										
06...	100	1	60	70	.0	0	2	0	3600	10
JAN										
04...	--	--	--	--	--	--	--	--	--	--
FEB										
28...	150	0	40	1500	.0	0	1	--	2400	10
APR										
04...	--	--	--	--	--	--	--	--	--	--
MAY										
02...	--	--	--	--	--	--	--	--	--	--
31...	30	2	40	20	.0	0	1	--	2100	10
SEP										
06...	80	3	60	120	.0	1	1	--	1800	10

DATE	DIS- SOLVED GROSS ALPHA AS U-NAT. (UG/L)	SUS- PENED GROSS ALPHA AS U-NAT. (UG/L)	DIS- SOLVED GROSS BETA AS CS-137 (PC/L)	SUS- PENED GROSS BETA AS CS-137 (PC/L)	DIS- SOLVED GROSS BETA AS SR90 /Y90 (PC/L)	SUS- PENED GROSS BETA AS SR90 /Y90 (PC/L)	DIS- SOLVED RA-226 (RADON METHOD) (PC/L)	DIS- SOL- VED ORGANIC CARBON (C) (MG/L)	SUS- PENED ORGANIC CARBON (C) (MG/L)
OCT									
04...	<20	<.4	13	.4	11	<.4	.09	23	--
04...	--	--	--	--	--	--	--	--	--
NOV									
01...	--	--	--	--	--	--	--	11	.2
DEC									
06...	--	--	--	--	--	--	--	13	1.1
JAN									
04...	--	--	--	--	--	--	--	17	2.4
FEB									
28...	--	--	--	--	--	--	--	13	1.0
APR									
04...	--	--	--	--	--	--	--	8.3	.9
MAY									
02...	--	--	--	--	--	--	--	9.7	.5
31...	--	--	--	--	--	--	--	14	.3
SEP									
06...	--	--	--	--	--	--	--	12	.3

DATE	SUS- PENED SEDI- MENT DIS- CHARGE (MG/L)	SUS- PENED SEDI- MENT CHARGE (T/DAY)	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							
04...	10	.00	--	--	--	--	--
NOV							
01...	6	.00	--	--	--	--	--
DEC							
06...	56	.02	27	53	92	99	100
JAN							
04...	65	.01	--	--	--	--	--
FEB							
28...	64	.02	--	--	--	--	--
APR							
04...	36	.08	--	--	--	--	--
MAY							
02...	12	.00	--	--	--	--	--
31...	4	.00	--	--	--	--	--
JUN							
16...	149	5.6	--	--	--	--	--
SEP							
06...	8	.00	--	--	--	--	--

CANNONBALL RIVER BASIN

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06350000 CANNONBALL RIVER AT REGENT, ND

LOCATION.--Lat 46°25'36", long 102°33'05", in NE¼NE¼ sec.13, T.134 N., R.95 W., Hettinger County, Hydrologic Unit 10130204, on right bank 400 ft (120 m) upstream from bridge on county highway 0.3 mi (0.5 km) north of Regent.

DRAINAGE AREA.--580 mi² (1,500 km²), approximately.

PERIOD OF RECORD.--September 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,422.90 ft (738.500 m) above mean sea level.

REMARKS.--Records good except those for the winter period, which are fair.

AVERAGE DISCHARGE.--27 years, 43.5 ft³/s (1.232 m³/s), 31,520 acre-ft/yr (38.9 hm³/yr); median of yearly mean discharges, 25 ft³/s (0.71 m³/s), 18,100 acre-ft/yr (22 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,430 ft³/s (210 m³/s) Mar. 12, 1972, gage height, 19.49 ft (5.941 m), from floodmark, backwater from ice; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known since 1914, 26.1 ft (7.96 m) Apr. 16, 1950, from floodmarks, discharge, 20,300 ft³/s (575 m³/s), on basis of slope-area measurement at site 4 mi (6 km) downstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 400 ft³/s (11.3 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)
June 10	1430	*963 27.3	*7.51 2.289	June 22	0500	462 13.1	5.71 1.740
15	1300	502 14.2	5.87 1.789				

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.7	4.4	3.3	2.4	1.5	5.9	30	6.6	8.0	4.7	2.0	5.5
2	3.0	4.4	3.7	2.0	1.5	5.2	27	6.4	8.3	5.5	1.5	6.2
3	3.0	4.4	4.3	1.6	1.4	5.0	23	6.2	7.0	4.9	1.3	5.7
4	3.5	4.4	4.4	1.2	1.8	4.7	24	5.8	6.1	4.0	1.9	5.4
5	3.4	4.4	4.5	1.2	2.0	4.8	24	5.2	5.5	5.3	2.4	5.5
6	3.5	4.4	4.5	1.1	2.0	5.9	28	4.8	5.0	3.7	4.0	5.1
7	3.4	4.4	4.2	1.5	2.0	8.0	32	4.7	5.1	3.7	4.4	7.4
8	2.9	4.4	3.9	1.9	2.1	11	43	4.7	5.5	3.4	4.6	7.8
9	3.2	4.4	3.8	1.7	2.3	16	49	6.9	7.8	4.0	4.7	7.4
10	3.4	4.2	3.6	1.7	2.7	20	44	6.8	532	6.0	3.8	10
11	3.8	4.2	3.5	1.5	3.8	32	40	6.3	276	4.4	3.7	10
12	4.1	4.1	3.9	.90	4.1	27	39	6.0	145	4.8	3.9	7.2
13	3.3	4.1	4.0	.24	4.7	21	34	7.8	105	3.8	4.2	5.1
14	3.7	4.1	4.1	.41	4.0	23	29	8.1	84	3.9	3.7	3.8
15	3.1	4.0	4.4	.58	4.1	25	25	7.6	360	4.2	4.2	3.5
16	3.2	4.2	4.4	.58	4.1	21	22	7.2	416	6.2	4.8	4.0
17	3.4	4.4	4.5	.41	4.2	19	20	7.3	291	12	5.0	3.4
18	3.6	4.9	4.7	.73	4.5	23	17	8.1	171	8.6	4.8	6.4
19	3.8	4.9	5.0	.73	4.8	34	16	8.3	114	9.9	5.5	6.4
20	4.1	4.6	4.5	.90	5.0	36	15	10	80	5.7	5.9	7.7
21	4.3	4.3	4.3	1.2	5.2	30	13	9.7	79	3.9	5.8	8.0
22	4.4	4.2	4.5	1.5	5.7	26	12	7.6	337	2.8	7.1	11
23	4.4	4.2	4.0	1.6	6.4	27	11	6.5	126	2.3	7.4	17
24	4.5	4.4	4.2	2.0	7.0	23	9.9	6.0	48	1.6	6.6	38
25	4.5	4.6	4.3	2.5	6.7	20	9.4	5.9	30	1.6	5.9	108
26	4.5	3.9	4.2	2.5	6.8	20	9.0	6.2	21	1.8	5.2	54
27	4.5	4.0	4.5	2.5	6.0	17	8.6	5.6	14	2.0	5.7	34
28	4.5	3.4	4.4	2.0	6.0	20	8.2	6.9	8.9	2.0	6.4	25
29	4.5	3.1	4.5	2.0	---	21	7.8	7.1	6.9	1.5	5.6	21
30	4.5	3.0	3.4	2.0	---	15	7.2	7.5	5.5	1.5	5.1	24
31	4.5	---	2.7	1.5	---	16	---	7.3	---	1.5	5.8	---
TOTAL	117.2	126.4	128.2	44.58	112.4	582.5	677.1	211.1	3308.6	131.2	142.9	463.5
MEAN	3.78	4.21	4.14	1.44	4.01	18.8	22.6	6.81	110	4.23	4.61	15.5
MAX	4.5	4.9	5.0	2.5	7.0	36	49	10	532	12	7.4	108
MIN	2.7	3.0	2.7	.24	1.4	4.7	7.2	4.7	5.0	1.5	1.3	3.4
AC-FT	232	251	254	88	223	1160	1340	419	6560	260	283	919
CAL YR 1976	TOTAL	6204.50	MEAN	17.0	MAX	276	MIN	.90	AC-FT	12310		
WTR YR 1977	TOTAL	6045.68	MEAN	16.6	MAX	532	MIN	.24	AC-FT	11990		

CANNONBALL RIVER BASIN

06351000 CANNONBALL RIVER BELOW BENTLEY, ND

LOCATION.--Lat 46°21'30", long 102°02'30", in SW¼SW¼ sec.6, T.133 N., R.90 W., Grant County, Hydrologic Unit 10130204, on left bank 0.25 mi (0.4 km) downstream from Thirty Mile Creek, 2 mi (3 km) northeast of Bentley.

DRAINAGE AREA.--1,140 mi² (2,950 km²), approximately.

PERIOD OF RECORD.--April 1943 to current year. Published as "near New Leipzig" 1943 to June 1952. Records published for both sites October 1951 to June 1952.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder at present site and datum since Oct. 1, 1951. Datum of gage is 2,252.09 ft (686.437 m) above mean sea level. Prior to Nov. 7, 1947, nonrecording gage and Nov. 7, 1947, to June 16, 1952, water-stage recorder, at site 8 mi (13 km) downstream at different datum.

REMARKS.--Records good except those for the winter period, which are fair. Some diversions and some storage in small lakes above the station.

AVERAGE DISCHARGE.--34 years, 86.8 ft³/s (2.458 m³/s), 62,890 acre-ft/yr (77.5 hm³/yr); median of yearly mean discharges, 69 ft³/s (1.95 m³/s), 50,000 acre-ft/yr (62 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 51,800 ft³/s (1,467 m³/s) Apr. 17, 1950, gage height, 34.0 ft (10.363 m), from floodmark in well, site and datum then in use, from rating curve extended above 12,000 ft³/s (340 m³/s) on basis of slope-area measurement at gage height 26.9 ft (8.199 m) and slope-area and contracted-opening measurements at gage height 34.0 ft (10.363 m); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known since at least 1889 that of Apr. 17, 1950. Flood of Mar. 25 and 26, 1943, reached a stage of 26.9 ft (8.199 m), site and datum then in use, discharge 15,000 ft³/s (425 m³/s) by slope-area measurement.

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)
June 13	0715	*5,670 161	*15.78 4.810	Sept. 24	0745	545 15.4	5.78 1.762
June 22	1015	2,070 58.5	9.21 2.807				

Minimum discharge, 3.2 ft³/s (0.091 m³/s) Oct. 4, minimum gage height, 1.54 ft (0.469 m) May 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.0	10	6.5	6.5	4.0	30	35	13	47	46	12	13
2	4.0	10	7.0	6.0	4.0	25	35	13	79	40	10	14
3	3.7	9.9	7.5	5.5	4.0	20	34	12	61	35	8.5	14
4	3.5	9.8	7.5	5.0	4.0	15	40	14	43	34	7.6	13
5	3.7	9.9	7.0	5.0	4.0	10	33	13	39	33	7.1	13
6	4.3	9.8	7.0	5.0	4.0	10	34	13	34	30	7.2	13
7	5.8	9.6	6.5	5.0	4.0	30	58	12	26	49	7.9	14
8	11	9.5	6.5	5.0	4.5	210	139	14	28	38	8.1	15
9	19	9.5	6.5	5.0	5.0	250	143	13	43	28	7.5	15
10	11	9.2	6.0	5.0	6.0	260	172	12	38	25	6.7	14
11	9.6	11	5.5	5.0	6.0	310	127	11	499	31	6.1	14
12	8.9	9.9	5.5	4.5	20	250	95	10	969	30	6.3	14
13	9.0	9.4	6.0	4.5	35	170	74	9.5	4200	25	6.7	14
14	8.3	9.2	6.5	4.5	40	110	63	9.3	1780	21	6.7	19
15	7.7	9.3	7.0	4.5	35	80	53	8.6	1140	19	8.1	17
16	8.1	9.6	8.0	4.5	35	85	46	8.2	766	25	7.9	15
17	8.6	9.7	9.0	4.5	35	80	40	8.5	878	24	7.3	17
18	9.2	9.6	10	4.5	35	70	34	8.6	619	18	6.8	51
19	8.9	9.4	8.0	4.5	30	70	30	9.6	411	15	6.8	62
20	8.7	9.3	7.0	5.0	30	65	27	9.6	295	17	7.6	31
21	8.6	9.2	7.0	5.0	40	60	24	10	446	19	7.3	37
22	8.7	9.5	7.0	5.0	50	60	24	9.1	1620	20	7.4	46
23	8.8	9.4	7.0	5.0	60	55	22	7.9	1090	18	8.6	91
24	9.1	9.6	7.0	5.0	90	60	20	6.7	534	15	9.3	447
25	9.4	9.8	8.0	5.0	80	50	18	7.1	302	13	9.2	383
26	10	8.5	9.0	5.0	60	50	17	8.7	231	12	9.6	339
27	11	7.0	10	5.0	50	55	16	9.1	150	12	10	260
28	11	6.5	9.0	4.5	40	50	16	10	101	12	12	175
29	11	6.0	8.0	4.5	---	40	15	11	74	11	12	110
30	11	6.0	7.0	4.0	---	60	14	12	56	21	11	72
31	10	---	7.0	4.0	---	50	---	9.7	---	14	12	---
TOTAL	265.6	275.1	226.5	151.0	814.5	2740	1498	323.2	16599	750	261.3	2352
MEAN	8.57	9.17	7.31	4.87	29.1	88.4	49.9	10.4	553	24.2	8.43	78.4
MAX	19	11	10	6.5	90	310	172	14	4200	49	12	447
MIN	3.5	6.0	5.5	4.0	4.0	10	14	6.7	26	11	6.1	13
AC-FT	527	546	449	300	1620	5430	2970	641	32920	1490	518	4670
CAL YR 1976	TOTAL	16335.6	MEAN	44.6	MAX	613	MIN	1.4	AC-FT	32400		
WTR YR 1977	TOTAL	26256.2	MEAN	71.9	MAX	4200	MIN	3.5	AC-FT	52080		

CANNONBALL RIVER BASIN

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06351680 WHITE BUTTE FORK CEDAR CREEK NEAR SCRANTON, ND

LOCATION.--Lat 46°19'20", long 102°59'45", in NW¼ sec.21, T.133 N., R.98 W., Slope County, Hydrologic Unit 10130205, on left bank 1,200 ft (366 m) downstream from county highway bridge and 13 mi (21 km) northeast of Scranton.

DRAINAGE AREA.--42.9 mi² (111 km²).

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

GAGE.--Water-stage recorder.

REMARKS.--Records good except those for the winter period, which are fair.

AVERAGE DISCHARGE.--12 years, 4.51 ft³/s (0.128 m³/s), 3,270 acre-ft/yr (4.03 hm³/yr), median of yearly mean discharges, 4.8 ft³/s (0.136 m³/s), 3,480 acre-ft/yr (4.3 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 645 ft³/s (18.3 m³/s) May 8, 1970, gage height, 7.20 ft (2.19 m); maximum gage height, 7.76 ft (2.365 m) May 8, 1967; no flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 100 ft³/s (2.83 m³/s) Apr. 6, gage height, 4.4 ft (1.34 m), from estimated gage-height graph, only peak above base of 50 ft³/s (1.42 m³/s); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	.27				0	2.8	.21	.07			0
2	0	.05				0	2.8	.12	.02			0
3	0	.31				0	2.9	.09	.01			0
4	0	.12				0	3.1	.07	0			0
5	0	.05				0	3.9	.07	0			0
6	0	.05				0	45	.05	0			0
7	0	.04				0	22	.07	0			0
8	0	.04				.50	3.4	.09	0			0
9	0	.05				2.0	3.1	.15	0			0
10	0	.05				2.5	3.1	.09	.01			0
11	0	.07				3.0	2.9	.09	.39			0
12	0	.05				2.5	2.4	.04	.75			0
13	0	.05				2.0	1.8	.03	.39			0
14	0	.05				1.5	1.4	.03	.43			0
15	0	.05				1.2	1.2	.05	.43			0
16	0	.10				1.2	1.2	.05	.70			0
17	0	.10				1.1	1.0	.07	.47			0
18	0	.10				1.1	.75	.12	5.5			0
19	0	.10				1.0	.60	.24	5.9			0
20	0	.10				.95	.60	.35	2.3			0
21	0	.10				.90	.55	.31	1.3			0
22	0	.05				.70	.47	.21	1.0			0
23	0	.05				.98	.39	.18	.70			.01
24	0	.05				.98	.31	.09	.43			.80
25	0	.05				.98	.31	.02	.31			.39
26	0	.05				.60	.24	.01	.18			.09
27	0	0				.65	.27	.01	.07			.03
28	0	0				.70	.21	.05	.01			.01
29	0	0			---	.43	.09	.15	0			.01
30	.12	0			---	2.1	.12	.21	0			.02
31	.55	---			---	2.6	---	.15	---			---
TOTAL	.67	2.15	0	0	0	32.17	108.91	3.47	21.37	0	0	1.36
MEAN	.022	.072	0	0	0	1.04	3.63	.11	.71	0	0	.045
MAX	.55	.31	0	0	0	3.0	4.5	.35	5.9	0	0	.80
MIN	0	0	0	0	0	0	.09	.01	0	0	0	0
AC-FT	1.3	4.3	0	0	0	64	216	6.9	42	0	0	2.7
CAL YR 1976	TOTAL 476.57	MEAN 1.30	MAX 50	MIN 0	AC-FT 945							
WTR YR 1977	TOTAL 170.10	MEAN .47	MAX 45	MIN 0	AC-FT 337							

CANNONBALL RIVER BASIN

06352000 CEDAR CREEK NEAR HAYNES, ND

LOCATION.--Lat 46°09'15", long 102°28'25", in W $\frac{1}{2}$ sec.20, T.131 N., R.94 W., Adams County, Hydrologic Unit 10130205, on left bank 30 ft (9 m) downstream from bridge on State Highway 8 and 12.5 mi (20 km) north of Haynes.

DRAINAGE AREA.--553 mi² (1,430 km²).

PERIOD OF RECORD.--October 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,472.90 ft (753.740 m) above mean sea level, North Dakota Highway Department benchmark. Prior to May 20, 1951, nonrecording gage on former bridge 400 ft (120 m) upstream at same datum.

REMARKS.--Records good.

AVERAGE DISCHARGE.--27 years, 32.7 ft³/s (0.926 m³/s), 23,690 acre-ft/yr (29.2 hm³/yr); median of yearly mean discharges, 27 ft³/s (0.76 m³/s), 19,600 acre-ft/yr (24 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,870 ft³/s (223 m³/s) Apr. 7, 1952, gage height, 21.25 ft (6.477 m); no flow at times in some years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 17, 1950 reached a stage of about 23 ft (7.0 m), discharge, 26,900 ft³/s (762 m³/s), by slope-area measurement at site 9 mi (14 km) upstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 146 ft³/s (4.13 m³/s) Sept. 26, gage height, 5.91 ft (1.801 m), no peak above base of 400 ft³/s (11.3 m³/s); minimum daily, 0.59 ft³/s (0.017 m³/s) July 23-25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	2.1	1.9	2.1	1.3	8.6	12	6.1	1.5	4.2	.96	1.5
2	1.2	2.1	1.9	2.1	1.3	6.9	13	5.3	1.5	3.4	.97	1.7
3	1.2	2.1	2.0	2.1	1.3	5.7	15	4.6	2.1	2.9	.92	2.0
4	1.2	2.0	2.2	2.1	1.3	5.0	14	4.2	1.9	2.5	.90	2.2
5	1.2	1.9	2.1	2.1	1.2	5.4	14	4.1	1.9	2.3	.79	2.3
6	1.2	2.1	2.1	2.1	1.2	6.6	16	4.1	1.8	2.2	.79	2.3
7	1.2	2.1	2.0	2.1	1.2	9.2	20	4.0	1.8	1.9	.76	1.9
8	1.1	2.1	2.0	2.1	1.6	11	26	3.6	1.7	1.9	.65	1.9
9	1.0	2.1	2.5	2.1	2.6	10	38	3.3	2.7	1.7	.69	1.9
10	1.1	2.1	2.5	2.1	3.9	11	45	2.9	5.5	1.7	.73	2.4
11	1.3	2.1	2.6	2.0	4.0	14	36	2.6	32	1.7	.70	2.9
12	1.3	2.1	2.7	2.0	5.0	17	52	2.4	47	1.5	.72	2.6
13	1.3	2.1	2.7	1.8	5.5	15	55	2.4	98	1.4	.66	2.7
14	1.2	2.4	2.7	1.8	6.0	16	48	2.4	67	1.1	.66	3.0
15	1.1	2.6	2.7	1.8	6.5	17	41	2.4	64	.88	.73	2.8
16	1.1	2.6	2.6	1.6	7.0	18	34	2.3	56	.81	1.0	2.3
17	1.2	2.6	2.7	1.6	7.5	14	30	2.1	32	.94	2.4	2.3
18	1.2	2.6	2.8	1.6	8.0	13	25	2.1	34	.87	2.2	33
19	1.4	2.6	2.9	1.4	8.5	16	23	2.1	25	.73	1.5	26
20	1.5	2.6	2.9	1.4	9.0	13	22	2.1	16	.75	1.2	6.2
21	1.6	2.5	2.6	1.4	10	13	20	1.9	13	.69	.97	17
22	1.6	2.4	2.7	1.4	12	9.0	19	1.9	20	.65	.86	24
23	1.6	2.4	2.8	1.4	14	9.0	17	1.9	25	.59	.90	19
24	1.7	2.4	2.7	1.4	14	8.2	15	1.8	22	.59	.95	85
25	1.7	2.4	2.8	1.4	14	8.3	13	1.8	17	.59	.99	96
26	1.8	2.2	2.9	1.4	14	8.5	11	1.7	15	.62	1.0	121
27	1.8	2.1	2.9	1.4	12	8.4	9.5	1.7	13	.71	1.0	63
28	1.9	2.0	2.8	1.3	9.9	8.0	8.6	1.7	8.6	.82	1.2	34
29	1.9	2.0	2.5	1.3	---	9.1	7.8	1.7	6.9	.86	1.3	21
30	1.9	1.9	2.2	1.3	---	10	6.9	1.7	5.4	.86	1.4	15
31	2.1	---	2.2	1.3	---	11	---	1.6	---	.86	1.5	---
TOTAL	43.8	67.3	77.6	53.0	183.8	334.9	706.8	84.5	639.3	43.22	32.00	598.9
MEAN	1.41	2.24	2.50	1.71	6.56	10.8	23.6	2.73	21.3	1.39	1.03	20.0
MAX	2.1	2.6	2.9	2.1	14	18	55	6.1	98	4.2	2.4	121
MIN	1.0	1.9	1.9	1.3	1.2	5.0	6.9	1.6	1.5	.59	.65	1.5
AC-FT	87	133	154	105	365	664	1400	168	1270	86	63	1190
CAL YR 1976	TOTAL	4265.56	MEAN	11.7	MAX	90	MIN	.06	AC-FT	8460		
WTR YR 1977	TOTAL	2865.12	MEAN	7.85	MAX	121	MIN	.59	AC-FT	5680		

CANNONBALL RIVER BASIN

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06353000 CEDAR CREEK NEAR RALEIGH, ND

LOCATION.--Lat 46°05'30", long 101°20'00", in NE¼SE¼ sec.8, T.130 N., R.85 W., Grant County, Hydrologic Unit 10130205, on left bank at upstream side of bridge on N.D. Highway 31, 6 mi (10 km) upstream from mouth, and 19 mi (30 km) south of Raleigh.

DRAINAGE AREA.--1,750 mi² (4,530 km²), approximately.

PERIOD OF RECORD.--April to September 1939, March 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,881.23 ft (573.399 m) above mean sea level. Prior to June 6, 1962, nonrecording gage at same site and datum, and June 6, 1962, to Sept. 7, 1972, at site 1 mi (2 km) upstream at datum 9.58 ft (2.920 m) higher.

REMARKS.--Records good except those for the winter period, which are fair.

AVERAGE DISCHARGE.--15 years (1962-77) 90.2 ft³/s (2.554 m³/s), 65,350 acre-ft/yr (80.6 hm³/yr); median of yearly mean discharges, 79 ft³/s (2.24 m³/s), 57,200 acre-ft/yr (71 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,000 ft³/s (170 m³/s) Mar. 15, 1966, gage height, 12.32 ft (3.755 m), backwater from ice; no flow at times in most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known since 1950, about 18 ft (5.486 m) Apr. 18, 1950, discharge 45,000 ft³/s (1,270 m³/s), on basis of slope-area measurement 5 mi (8 km) upstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 816 ft³/s (23.1 m³/s) Sept. 24, gage height, 5.21 ft (1.588 m), no peak above base of 700 ft³/s (19.8 m³/s); no flow Oct. 1 - Feb. 8, and Aug. 16-26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1					0	1.0	38	10	.70	24	.70	.38
2					0	1.0	32	9.7	.52	20	.52	.45
3					0	.80	32	9.1	.70	18	.45	.70
4					0	.80	32	7.9	1.2	15	.38	.52
5					0	.80	30	7.4	1.2	55	.32	.32
6					0	1.0	50	6.2	.70	344	.18	.18
7					0	4.0	64	5.7	.52	216	.32	.26
8					0	7.9	62	5.2	.26	119	.32	.32
9					.10	13	59	4.8	.22	77	.26	.45
10					.50	21	58	4.4	.92	56	.14	.45
11					1.0	22	48	4.0	4.4	60	.14	.32
12					1.0	18	50	3.2	2.5	38	.05	.18
13					.90	22	49	2.8	5.5	22	.03	.14
14					.90	25	48	2.8	227	17	.03	.11
15					.80	27	48	2.5	131	16	.01	.11
16					1.0	33	46	2.2	218	21	0	.07
17					1.0	26	40	2.2	276	16	0	.09
18					1.0	30	38	2.2	195	12	0	.27
19					1.0	25	39	2.2	260	9.7	0	.10
20					1.5	22	38	2.0	191	7.4	0	.9.7
21					2.0	27	32	2.0	133	5.7	0	5.2
22					4.0	34	28	2.0	95	4.8	0	6.8
23					3.0	28	24	1.8	71	3.6	0	199
24					2.5	24	22	1.2	90	3.2	0	494
25					2.5	25	19	1.0	186	2.2	0	366
26					2.5	24	17	1.0	104	2.0	0	168
27					1.0	23	16	1.2	64	2.2	.01	129
28					1.0	22	14	1.0	50	1.4	.26	119
29					---	34	13	.81	37	1.0	.11	133
30					---	85	12	.81	30	1.8	.05	104
31		---			---	42	---	.92	---	1.2	.14	---
TOTAL	0	0	0	0	29.20	669.30	1098	110.24	2377.34	1192.2	4.42	1775.75
MEAN	0	0	0	0	1.04	21.6	36.6	3.56	79.2	38.5	.14	59.2
MAX	0	0	0	0	4.0	85	64	10	276	344	.70	494
MIN	0	0	0	0	0	.80	12	.81	.22	1.0	0	.07
AC-FT	0	0	0	0	58	1330	2180	219	4720	2360	8.8	3520
CAL YR 1976	TOTAL	5550.80	MEAN 15.2	MAX 185	MIN 0	AC-FT 11010						
WTR YR 1977	TOTAL	7256.45	MEAN 19.9	MAX 494	MIN 0	AC-FT 14390						

CANNONBALL RIVER BASIN

06354000 CANNONBALL RIVER AT BREIEN, ND

LOCATION.--Lat 46°22'33", long 100°56'03", in sec.36, T.134 N., R.82 W., Morton County, Hydrologic Unit 10130206, on left bank at downstream side of bridge on State Highway 6, 1,500 ft (460 m) downstream from Louise Creek and 0.6 mi (1.0 km) southeast of Breien. Prior to June 12, 1973, at site 600 ft (180 m) upstream on right bank.

DRAINAGE AREA.--4,100 mi² (10,600 km²), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1934 to current year.

REVISED RECORDS.--WSP 786: 1934. WSP 1146: 1943. WSP 1279: 1936-37(M), 1947(M). WSP 1509: 1955(M).

GAGE.--Water-stage recorder. Datum of gage is 1,675.54 ft (510.705 m) above mean sea level. Prior to June 12, 1973, at site 600 ft (180 m) upstream at datum 1 ft (0.3048 m) higher.

REMARKS.--Records good except those for the winter period, which are fair. Some storage in several small lakes above station.

AVERAGE DISCHARGE.--43 years, 238 ft³/s (6.740 m³/s), 172,400 acre-ft/yr (213 hm³/yr); median of yearly mean discharges, 170 ft³/s (4.81 m³/s), 123,000 acre-ft/yr (150 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 94,800 ft³/s (2,680 m³/s) Apr. 19, 1950, gage height, 22.30 ft (6.797 m), from floodmarks, from rating curve extended above 16,000 ft³/s (453 m³/s) on basis of slope-area and contracted-opening of peak flow, site and datum then in use; no flow at times in some years.

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)
June 15	0900	*4,060 115	7.56 2.304	Sept. 24	0500	2,220 62.9	5.37 1.637
June 24	1600	1,870 53.0	4.82 1.469				

Minimum daily discharge, 0.08 ft³/s (0.002 m³/s) Jan. 29-31.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.45	2.0	7.0	2.8	.10	3.0	117	53	11	180	22	15
2	.50	2.3	6.8	2.4	.12	2.5	109	49	10	142	19	17
3	.50	2.6	6.6	2.0	.15	2.0	131	45	7.8	122	17	22
4	.45	3.0	6.4	1.7	.20	2.0	135	48	7.1	105	15	20
5	.50	3.4	6.4	1.4	.20	5.0	111	90	6.2	334	12	17
6	.55	3.8	6.0	1.2	.15	15	111	54	7.1	213	13	17
7	.60	4.2	5.6	1.0	.15	25	162	50	5.9	426	23	21
8	.60	4.6	5.2	.90	.20	35	186	44	33	344	16	24
9	.60	5.0	4.8	.80	.30	45	210	34	37	213	13	27
10	.60	5.4	4.6	.70	.40	60	201	33	53	160	8.5	25
11	.66	5.8	4.6	.65	.50	75	219	31	115	281	7.1	19
12	.66	6.2	4.6	.60	.60	80	246	28	112	228	6.2	17
13	.72	6.6	4.6	.55	.70	90	250	26	74	124	4.9	16
14	.72	7.0	4.6	.50	.75	110	222	25	857	83	4.3	15
15	.72	7.3	4.6	.45	.75	130	189	23	3560	68	4.7	15
16	.80	7.6	4.6	.40	.70	150	168	22	2260	59	10	12
17	.88	7.9	4.6	.35	.75	160	150	18	1780	60	6.5	12
18	.96	8.2	4.6	.30	.80	150	133	18	1130	56	4.5	124
19	1.0	8.4	4.6	.25	.90	150	119	17	1120	50	4.0	147
20	1.1	8.6	4.4	.20	1.0	140	115	17	1010	43	3.5	71
21	1.1	8.8	4.4	.18	1.2	130	109	14	832	38	3.1	117
22	1.1	9.0	4.4	.16	2.0	160	103	14	580	34	3.5	215
23	1.1	9.2	4.4	.14	4.0	150	95	13	470	34	4.5	470
24	.88	9.4	4.4	.12	8.0	128	90	12	1580	31	4.3	2080
25	.88	9.4	4.4	.12	6.0	119	84	8.5	1340	27	3.1	1300
26	.96	9.0	4.4	.10	5.0	135	79	7.1	952	24	3.7	910
27	1.0	8.6	4.4	.10	4.0	122	73	7.8	530	23	6.9	730
28	1.2	8.2	4.2	.10	3.5	105	68	17	390	23	13	610
29	1.4	7.8	4.0	.08	---	119	63	15	307	26	13	505
30	1.6	7.4	3.6	.08	---	135	59	16	228	27	14	430
31	1.8	---	3.2	.08	---	135	---	15	---	22	17	---
TOTAL	26.59	196.7	151.0	20.41	43.12	2867.5	4107	864.4	19405.1	3600	300.3	8020
MEAN	.86	6.56	4.87	.66	1.54	92.5	137	27.9	647	116	9.69	267
MAX	1.8	9.4	7.0	2.8	8.0	160	250	90	3560	426	23	2080
MIN	.45	2.0	3.2	.08	.10	2.0	59	7.1	5.9	22	3.1	12
AC-FT	53	390	300	40	86	5690	8150	1710	38490	7140	596	15910

CAL YR 1976 TOTAL 28152.94 MEAN 76.9 MAX 679 MIN .00 AC-FT 55840
WTR YR 1977 TOTAL 39602.12 MEAN 108 MAX 3560 MIN .08 AC-FT 78550

CANNONBALL RIVER BASIN

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06354000 CANNONBALL RIVER AT BREIEN, ND--Continued
(National Water-Quality Accounting Network Station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1946-50 (partial-record station), 1970-72, 1974 to current year (monthly).

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: July 1972 to September 1974 (weekly); October 1974 to current year.

WATER TEMPERATURES: July 1972 to September 1974 (weekly); October 1974 to current year.

REMARKS.--Sediment records from May 1948 to September 1951, July 1959 to September 1971 are available from U.S. Corps of Engineers, Omaha, Neb.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 4,500 micromhos Jan. 12, 1977; minimum daily, 300 micromhos Sept. 23, 1977.

WATER TEMPERATURES: Maximum daily, 30.0°C on July 23, 1977; minimum daily, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 4,500 micromhos Jan. 12; minimum daily, 300 micromhos Sept. 23.

WATER TEMPERATURES: Maximum daily, 30.0°C July 23; minimum daily, 0.0°C on many days during winter months.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS-CHARGE (CFS)	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH (UNITS)	AIR TEMPERATURE (DEG C)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	TURBIDITY (NTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION
OCT										
26...	1215	.94	2000	8.5	--	1.0	10	--	11.5	86
NOV										
23...	1140	9.3	2750	8.3	--	.5	9	--	10.0	74
DEC										
20...	1330	4.4	2900	8.1	--	.0	5	--	11.4	83
JAN										
25...	1145	.12	3050	7.8	--	.0	6	--	--	--
FEB										
16...	1300	7.2	1220	7.7	--	.0	55	--	8.4	61
MAR										
23...	1200	143	1030	8.2	5.5	.5	75	75	12.4	92
APR										
25...	1300	85	1900	8.5	--	14.5	8	7.5	10.0	103
MAY										
24...	1315	12	2200	8.5	--	25.0	15	13	8.6	109
JUN										
15...	1730	3460	610	--	--	20.5	--	--	--	--
17...	1310	1840	990	--	--	22.0	--	--	--	--
27...	1400	530	830	8.1	--	25.5	650	650	6.9	88
JUL										
08...	1210	366	850	--	--	22.5	--	--	--	--
12...	1145	231	570	--	--	20.5	--	--	--	--
25...	1405	27	1280	8.6	30.0	24.5	20	17	8.6	106
AUG										
25...	1300	3.0	1620	8.6	--	23.5	20	18	9.2	113
SEP										
26...	1510	990	730	8.0	--	14.0	650	650	8.6	88

DATE	CHEMICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L)	FECAL COLIFORMS (7UM-MF) (COL./100 ML)	FECAL STREPTOCOCCI (COL. PER 100 ML)	HARDNESS (CA, MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM
OCT									
26...	--	B14	310	260	0	39	40	390	76
NOV									
23...	40	B10	68	620	100	95	94	460	61
DEC									
20...	--	B5	818	690	38	110	100	510	61
JAN									
25...	--	B8	838	620	0	110	84	510	64
FEB									
16...	--	--	B9700	190	0	37	23	210	70
MAR									
23...	46	>2400	770	290	95	50	39	160	54
APR									
25...	32	--	B20	490	210	87	67	270	54
MAY									
24...	190	600	600	450	110	70	68	350	62
JUN									
15...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
27...	190	>6000	1700	210	75	43	26	100	49
JUL									
08...	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--
25...	21	--	B25	360	86	67	46	190	53
AUG									
25...	18	--	260	330	47	55	47	270	63
SEP									
26...	89	4200	28000	180	44	42	19	100	53

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

CANNONBALL RIVER BASIN

06354000 CANNONBALL RIVER AT BREIEN, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	ALKA- LINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)	TOTAL FLUO- RIDE (F) (MG/L)
OCT 26...	10	8.8	673	47	630	3.9	440	33	--
NOV 23...	8.0	14	639	0	524	5.1	1100	24	--
DEC 20...	8.5	13	791	0	649	10	1000	30	--
JAN 25...	8.9	11	919	0	754	23	960	34	--
FEB 16...	6.7	6.8	434	0	356	14	260	19	--
MAR 23...	4.1	8.1	232	0	190	2.3	420	7.4	1.4
APR 25...	5.3	10	340	5	290	1.8	740	10	.8
MAY 24...	7.1	12	420	0	340	2.1	840	17	1.4
JUN 15...	--	--	--	--	--	--	--	--	--
JUN 17...	--	--	--	--	--	--	--	--	--
JUN 27...	3.0	8.5	170	0	140	2.2	280	4.0	1.8
JUL 08...	--	--	--	--	--	--	--	--	--
JUL 12...	--	--	--	--	--	--	--	--	--
JUL 25...	4.4	12	330	0	270	1.3	480	9.1	.5
AUG 25...	6.5	12	340	3	280	1.4	580	13	.4
SEP 26...	3.2	6.7	170	0	140	2.7	240	4.4	.9

DATE	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO2) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)
OCT 26...	1.1	6.5	1350	1340	1.84	3.43	--	--	.03
NOV 23...	.5	4.3	2190	2110	2.98	55.0	--	--	.02
DEC 20...	.7	7.3	2420	2160	3.29	28.8	--	--	.29
JAN 25...	.8	11	2130	2170	2.90	.69	--	--	.02
FEB 16...	.5	8.6	779	779	1.06	15.1	--	--	.56
MAR 23...	.2	4.5	837	804	1.14	323	.23	.01	.24
APR 25...	.5	2.1	1410	1360	1.92	324	.00	.00	.00
MAY 24...	.5	2.5	1600	1570	2.18	51.8	.02	.00	.02
JUN 15...	--	--	--	--	--	--	--	--	--
JUN 17...	--	--	--	--	--	--	--	--	--
JUN 27...	.3	7.5	560	553	.76	801	--	--	--
JUL 08...	--	--	--	--	--	--	--	--	--
JUL 12...	--	--	--	--	--	--	--	--	--
JUL 25...	.4	10	983	977	1.34	71.7	.01	.01	.02
AUG 25...	.5	5.4	1180	1150	1.60	9.56	.02	.00	.02
SEP 26...	.2	6.2	500	502	.68	1340	.24	.00	.24

CANNONBALL RIVER BASIN

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06354000 CANNONBALL RIVER AT BREIEN, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L)	TOTAL NITRO- GEN (N) (MG/L)	TOTAL NITRO- GEN (NO3) (MG/L)	TOTAL PHOS- PHORUS (P) (MG/L)	TOTAL ALUM- INUM (AL) (UG/L)	TOTAL ARSENIC (AS) (UG/L)	SUS- PENDE ARSENIC (AS) (UG/L)	DIS- SOLVED ARSENIC (AS) (UG/L)	TOTAL BARIUM (BA) (UG/L)	TOTAL BERYL- LIUM (BE) (UG/L)	TOTAL BORON (B) (UG/L)	TOTAL CAD- MIUM (CD) (UG/L)
OCT 26...	.53	.66	2.9	.03	--	--	--	--	--	--	--	--
NOV 23...	.71	.73	3.2	.04	--	--	--	--	--	--	--	--
DEC 20...	1.3	1.6	7.0	.03	--	0	0	0	--	--	--	<10
JAN 25...	.57	.69	3.1	.06	--	--	--	--	--	--	--	--
FEB 16...	1.4	2.0	8.7	.14	--	--	--	--	--	--	--	--
MAR 23...	1.6	1.8	8.1	.20	2800	3	--	3	0	0	270	10
APR 25...	.55	.55	2.4	.04	160	1	--	--	100	0	480	<10
MAY 24...	.35	.37	1.6	.05	220	0	--	--	0	0	950	<10
JUN 27...	--	--	--	.55	--	15	14	1	--	--	--	<10
JUL 25...	.60	.62	2.7	.05	400	1	--	--	0	0	520	<10
AUG 25...	.61	.63	2.8	.02	330	1	--	--	300	0	700	<10
SEP 26...	3.1	3.3	15	.57	28000	19	18	1	500	0	320	10

DATE	SUS- PENDE CAD- MIUM (CD) (UG/L)	DIS- SOLVED CAD- MIUM (CD) (UG/L)	TOTAL CHRO- MIUM (CR) (UG/L)	SUS- PENDE CHRO- MIUM (CR) (UG/L)	DIS- SOLVED CHRO- MIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	SUS- PENDE COBALT (CO) (UG/L)	DIS- SOLVED COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	SUS- PENDE COPPER (CU) (UG/L)	DIS- SOLVED COPPER (CU) (UG/L)
OCT 26...	--	--	--	--	--	--	--	--	--	--	--
NOV 23...	--	--	--	--	--	--	--	--	--	--	--
DEC 20...	<10	0	0	0	0	<50	<49	1	<10	<4	6
JAN 25...	--	--	--	--	--	--	--	--	--	--	--
FEB 16...	--	--	--	--	--	--	--	--	--	--	--
MAR 23...	9	1	0	--	0	<50	<50	0	<10	<8	2
APR 25...	--	--	0	--	--	<50	--	--	10	--	--
MAY 24...	--	--	0	--	--	<50	--	--	<10	--	--
JUN 27...	<9	1	40	40	0	<50	<50	0	40	36	4
JUL 25...	--	--	0	--	--	<50	--	--	10	--	--
AUG 25...	--	--	0	--	--	<50	--	--	30	--	--
SEP 26...	10	0	50	50	0	50	50	0	50	47	3

CANNONBALL RIVER BASIN

06354000 CANNONBALL RIVER AT BREIEN, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL IRON (FE) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	SUS- PENDEO LEAD (PB) (UG/L)	DIS- SOLVED LEAD (PB) (UG/L)	TOTAL LITHIUM (LI) (UG/L)	TOTAL MAN- GANESE (MN) (UG/L)	SUS- PENDEO MAN- GANESE (MN) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	SUS- PENDEO MERCURY (HG) (UG/L)
NOV 23...	--	--	--	--	--	--	--	--	--	--	--
DEC 20...	150	30	<100	<97	3	--	80	10	70	.2	.2
MAR 23...	4700	60	<100	<96	4	40	200	180	20	5.0	--
APR 25...	450	--	100	--	--	60	90	--	--	.4	--
MAY 24...	380	--	<100	--	--	80	120	--	--	.0	--
JUN 27...	31000	60	<100	<97	3	--	960	960	0	.0	.0
JUL 25...	540	--	<100	--	--	50	90	--	--	.1	--
AUG 25...	760	--	<100	--	--	60	70	--	--	.0	--
SEP 26...	37000	10	100	96	4	50	830	830	0	.2	.2

DATE	DIS- SOLVED MERCURY (HG) (UG/L)	TOTAL MOLYB- DENUM (MO) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELE- NIUM (SE) (UG/L)	SUS- PENDEO SELE- NIUM (SE) (UG/L)	DIS- SOLVED SELE- NIUM (SE) (UG/L)	TOTAL SILVER (AG) (UG/L)	TOTAL ZINC (ZN) (UG/L)	SUS- PENDEO ZINC (ZN) (UG/L)	DIS- SOLVED ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)
NOV 23...	--	--	--	--	--	--	--	--	--	--	14
DEC 20...	.0	--	--	1	0	1	--	10	0	10	14
MAR 23...	.0	2	<50	1	0	1	<10	40	30	10	15
APR 25...	--	0	<50	2	--	--	<10	10	--	--	10
MAY 24...	--	0	<50	0	--	--	<10	30	--	--	5.0
JUN 27...	.0	--	--	3	2	1	--	120	120	4	29
JUL 25...	--	6	<50	2	--	--	<10	20	--	--	8.3
AUG 25...	--	0	<50	0	--	--	<10	20	--	--	7.9
SEP 26...	.0	2	100	1	1	0	<10	180	170	10	35

DATE	SUS- PENDEO SEDI- MENT (MG/L)	SUS- PENDEO SEDI- MENT DIS- CHARGE (T/DAY)	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM
JAN 25...	32	.01	86
FEB 16...	130	2.5	99
MAR 23...	184	71	98
APR 25...	62	14	95
MAY 24...	37	1.2	100
JUN 27...	1100	1570	98
JUL 25...	68	5.0	97
AUG 25...	42	.34	92
SEP 26...	1520	4060	95

CANNONBALL RIVER BASIN

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06354000 CANNONBALL RIVER AT BREIEN, ND--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1890	2000	3500	3650	2700	1900	1200	1800	2000	1100	1400	1400
2	1870	2100	3300	3800	2600	1700	1250	2000	1900	1100	1350	1500
3	1890	2200	3500	4000	2200	2500	1200	2000	1950	1200	1250	1500
4	1900	2300	3400	3800	2300	2200	1100	2100	1900	1200	1300	1500
5	1900	2400	3500	4000	2300	2100	900	1600	1850	700	1400	1600
6	1900	2400	3400	4000	2300	2800	1150	1700	2100	800	1350	1500
7	1860	2500	3400	4000	2200	3000	900	1750	2100	1000	1400	1500
8	1840	2500	3500	3500	2200	2900	1100	1900	2300	850	1300	1300
9	1850	2700	3400	3000	2200	2600	850	2000	2300	700	1300	1300
10	1860	2600	3400	3200	2200	1700	950	2000	1900	750	1350	1200
11	1860	2800	3500	3600	2000	1300	900	2100	1800	650	1400	1300
12	1880	3000	3500	4500	1900	1200	900	2200	1500	600	1400	1400
13	1890	3400	3500	3900	1800	1600	925	2100	900	590	1500	1500
14	1900	3500	3400	3500	1500	1550	1300	2200	1400	800	1500	1500
15	1920	3500	3300	3900	1200	1600	1500	2200	900	900	1500	1500
16	1960	3500	3400	3300	1400	1400	1500	2200	800	1000	1500	1500
17	1960	3600	3200	3800	2200	1100	1600	2100	700	1000	1530	1550
18	1900	3000	3300	3800	2000	1000	1500	2100	700	1000	1500	1100
19	1940	2900	3100	3900	2200	1100	1600	2200	950	1100	1600	800
20	1890	3000	3100	3800	2400	1150	1700	2000	950	1200	1600	750
21	1950	2800	3100	3700	2600	1150	1700	2200	1000	1250	1550	650
22	1950	2700	3000	3500	1700	1200	1750	2100	1100	1300	1600	400
23	1870	2900	3300	3000	2000	1100	1800	2200	1100	1300	1600	300
24	1870	2900	3500	3000	1900	1200	1800	1900	800	1330	1650	700
25	1850	2750	3500	3100	2000	1300	1900	2000	1100	1400	1700	600
26	1880	2900	3400	3000	2000	1200	2000	2000	900	1350	1630	500
27	1740	3000	3600	2800	1800	1250	1900	2100	800	1350	1600	850
28	3230	2900	3500	2600	2000	1230	1900	2200	900	1300	1500	850
29	3120	3000	3500	2600	---	1200	2100	2100	950	1300	1600	950
30	2460	3500	3600	2800	---	1100	2000	2100	1050	1350	1500	1100
31	2300	---	3500	2800	---	1200	---	2000	---	1400	1500	---
MEAN	2000	2840	3390	3480	2060	1600	1430	2040	1350	1060	1480	1140

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10.5	2.0	0.0	0.0	0.0	0.0	2.5	16.5	16.5	17.0	21.5	13.5
2	16.0	5.0	0.0	0.0	0.0	0.0	2.5	13.5	18.5	20.0	21.5	19.0
3	15.0	2.0	0.0	0.0	0.0	0.0	3.5	16.5	22.5	21.5	22.0	17.5
4	12.5	1.0	0.0	0.0	0.0	0.0	2.5	17.5	21.5	25.5	24.5	21.5
5	10.0	0.0	0.0	0.0	0.0	0.0	5.5	17.0	22.0	21.5	24.5	25.0
6	5.0	0.0	0.0	0.0	0.0	0.0	4.5	12.5	18.5	23.5	19.0	18.5
7	10.0	0.0	0.0	0.0	0.0	0.0	9.5	16.5	22.5	22.5	19.5	15.0
8	12.0	0.0	0.0	0.0	0.0	0.0	8.5	15.5	19.5	22.0	18.0	18.5
9	10.0	0.0	0.0	0.0	0.0	0.0	16.5	25.5	17.5	20.0	20.0	13.5
10	10.0	0.0	0.0	0.0	0.0	0.0	10.5	18.5	25.5	19.5	16.5	20.0
11	15.0	0.0	0.0	0.0	0.0	1.0	11.5	16.5	21.0	20.5	18.0	20.5
12	11.5	0.0	0.0	0.0	0.0	0.0	10.5	21.5	20.0	17.5	17.5	17.5
13	9.0	0.0	0.0	0.0	0.0	0.0	10.0	22.5	17.5	20.5	18.5	19.5
14	10.0	0.0	0.0	0.0	0.0	1.0	16.5	21.5	22.5	20.5	15.0	21.5
15	5.0	0.0	0.0	0.0	0.0	1.5	15.5	19.5	20.5	21.0	19.5	22.0
16	3.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0	19.5	21.5	21.5	20.5
17	2.0	0.0	0.0	0.0	0.0	1.5	15.5	25.0	21.0	23.5	14.5	19.5
18	1.5	0.0	0.0	0.0	0.0	0.0	11.5	18.5	20.5	28.5	16.5	13.0
19	2.5	0.0	0.0	0.0	0.0	1.0	10.0	19.5	20.0	25.5	17.5	12.5
20	1.5	0.0	0.0	0.0	0.0	0.0	9.5	19.0	19.5	21.5	16.5	12.5
21	4.0	0.0	0.0	0.0	0.0	1.0	11.5	18.5	18.5	24.5	19.0	14.0
22	3.5	0.0	0.0	0.0	0.0	2.5	14.5	17.5	19.0	23.5	19.5	13.5
23	1.5	0.0	0.0	0.0	0.0	0.0	15.0	21.5	22.5	30.0	18.0	12.5
24	2.0	0.5	0.0	0.0	0.0	2.5	17.5	20.0	22.5	26.5	14.5	11.5
25	2.5	0.0	0.0	0.0	0.0	3.5	15.0	20.0	22.0	23.0	25.0	12.0
26	1.0	0.0	0.0	0.0	0.0	2.5	15.0	21.5	23.5	20.0	20.0	11.0
27	0.0	0.0	0.0	0.0	0.0	5.0	15.5	20.0	19.0	18.5	17.5	11.0
28	5.0	0.0	0.0	0.0	0.0	6.5	13.5	21.5	20.0	17.5	21.5	12.0
29	7.0	0.0	0.0	0.0	---	2.5	17.5	18.5	21.0	23.5	23.5	12.0
30	5.0	0.0	0.0	0.0	---	0.0	18.5	15.5	17.0	18.0	21.0	10.0
31	2.0	---	0.0	0.0	---	3.5	---	15.0	---	16.5	16.5	---
MEAN	6.5	0.5	0.0	0.0	0.0	1.0	11.5	18.5	20.5	22.0	19.5	16.0

CANNONBALL RIVER BASIN

06354000 CANNONBALL RIVER AT BREIEN, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	OCT 26,76 1215	NOV 23,76 1140	DEC 20,76 1330	JAN 25,77 1145	FEB 16,77 1300					
TOTAL CELLS/ML	380	920	1600	930	33000					
DIVERSITY: DIVISION	0.9	0.3	1.6	1.1	0.1					
..CLASS	1.1	0.3	1.9	1.1	0.1					
...ORDER	1.1	0.3	2.1	1.2	0.1					
....FAMILY	1.7	0.3	2.3	1.4	0.1					
....GENUS	1.7	0.9	2.3	1.5	0.1					
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										
....CHARACIACEAE	--	--	--	--	--	--	--	--	--	--
....SCHROEDERIA	--	--	--	--	--	--	--	--	--	--
...COELASTRACEAE										
....COELASTRUM	--	--	--	--	--	--	--	--	--	--
...DOCCYSTACEAE										
....ANKISTRODESMUS	230#	62	--	--	410#	25	77	8	--	--
....CHLORELLA	--	--	--	--	--	--	35	4	--	--
....CHODATELLA	--	--	--	--	--	--	--	--	--	--
...DICTYOSPHAERIUM	--	--	--	--	--	--	--	--	--	--
....FRANCEIA	--	--	--	--	--	--	8	1	--	--
....KIRCHNERIELLA	--	--	--	--	--	--	--	--	--	--
...NEPHROCYTIUM	--	--	--	--	--	--	--	--	--	--
...DOCCYSTIS	--	--	--	--	--	--	--	--	--	--
...SELENASTRUM	--	--	--	--	--	--	--	--	--	--
...TETRAEDRON	--	--	--	--	--	--	--	--	--	--
...TREUBARIA	--	--	--	--	--	--	--	--	--	--
...SCENEDESMACEAE										
....ACTINASTRUM	--	--	--	--	--	--	--	--	--	--
....CRUCIGENIA	--	--	--	--	--	--	--	--	--	--
...SCENEDESMUS	30	8	--	--	--	--	--	--	190	1
...ULOTRICHALES										
...ULOTRICHACEAE										
...HORMIDIUM	--	--	--	--	--	--	--	--	--	--
...VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	--	5	1	--	--	35	4	--	--
...PHACOTACEAE										
....PHACOTUS	--	--	--	--	--	--	--	--	--	--
CHRYSOPHYTA										
..BACILLARIOPHYCEAE										
...PENNALES										
...NAVICULACEAE										
...ENTOMONEIS	--	--	--	--	22	1	--	--	--	--
...CENTRALES										
...COSCINODISCACEAE										
...CYCLOTELLA	--	--	27	3	32	2	--	--	--	--
...PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	--	--	--	--	11	1	--	--	--	--
...CYMBELLACEAE										
....CYMBELLA	10	3	--	--	--	--	*	0	--	--
....EPITHEMIA	--	--	--	--	--	--	--	--	--	--
...FRAGILARIACEAE										
....ASTERIONELLA	--	--	--	--	--	--	--	--	--	--
....FRAGILARIA	--	--	--	--	--	--	--	--	--	--
....SYNEDRA	--	--	--	--	--	--	*	0	--	--
...GOMPHONEMACEAE										
....GOMPHONEMA	--	--	--	--	--	--	*	0	--	--
...NAVICULACEAE										
....CALONEIS	--	--	--	--	--	--	--	--	--	--
....DIPLONEIS	--	--	--	--	11	1	--	--	--	--
...NAVICULA	20	5	--	--	32	2	12	1	--	--
...NITZSCHACEAE										
....NITZSCHIA	61#	16	11	1	22	1	8	1	--	--
...SURIRELLACEAE										
....SURIRELLA	--	--	--	--	--	--	*	0	--	--
..CHRYSOPHYCEAE										
...CHRYSOMONADALES										
....CHROMULINACEAE										
....CHRYSOCOCCUS	20	5	--	--	600#	37	--	--	*	0
...OCHROMONADACEAE										
....DINOBYRON	--	--	--	--	22	1	--	--	--	--

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
 * - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

CONTINUED ...

CANNONBALL RIVER BASIN

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06354000 CANNONBALL RIVER AT BREIEN, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

(CONTINUED)

DATE TIME	OCT 26,76 1215		NOV 23,76 1140		DEC 20,76 1330		JAN 25,77 1145		FEB 16,77 1300	
ORGANISM	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										
..CHROCCOCCALES										
..CHROCCOCCAEAE										
....AGMENELLUM	--	-	--	-			--	-	--	-
....ANACYSTIS	--	-	--	-	43	3	--	-	--	-
..HORMOGONALES										
..NOSTOCACEAE										
....ANABAENA	--	-	--	-	--	-	--	-	--	-
....ANABAENOPSIS	--	-	--	-	--	-	--	-	--	-
....CYLINDROSPERMUM	--	-	--	-	--	-	--	-	--	-
..OSCILLATORIACEAE										
....LYNGBYA	--	-	740# 80		--	-	--	-	--	-
....OSCILLATORIA	--	-	140# 15		390# 24		700# 76		33000# 99	
..RIVULARIACEAE										
....RAPHIDIOPSIS	--	-	--	-	--	-	*	0	--	-
..CHROCCOCCALES										
..CHROCCOCCAEAE										
....GOMPHOSPHAERIA	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
..CRYPTOPHYCEAE										
..CRYPTOMONIDALES										
..CRYPTOCHRYSIDACEAE										
....CHROOMONAS	--	-	--	-	11	1	--	-	--	-
..CRYPTOMONODACEAE										
....CRYPTOMONAS	--	-	--	-	11	1	--	-	--	-
..EUGLENOPHYCEAE										
..EUGLENALES										
....EUGLENACEAE										
....EUGLENA	--	-	--	-	--	-	--	-	--	-
....TRACHELOMONAS	--	-	--	-	--	-	15	2	--	-
PYRRHOPHYTA (FIRE ALGAE)										
..DINOPHYCEAE										
..GYMNODINIALES										
..GYMNODINIACEAE										
....GYMNODINIUM	--	-	--	-	--	-	15	2	--	-
..PERIDINIALES										
..GLENODINIACEAE										
....GLENODINIUM	--	-	--	-	--	-	--	-	--	-
..PERIDINIACEAE										
....PERIDINIUM	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
 * - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

CANNONBALL RIVER BASIN

06354000 CANNONBALL RIVER AT BREIEN, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	MAY 24,77 1315	JUN 27,77 1400	JUL 25,77 1405	AUG 25,77 1300	SEP 26,77 1510
TOTAL CELLS/ML	74000	27000	20000	29000	2500
DIVERSITY: DIVISION	1.7	1.0	1.2	0.7	0.9
..CLASS	1.7	1.0	1.2	0.7	0.9
...ORDER	2.2	1.1	1.3	1.2	0.9
....FAMILY	2.6	1.2	1.9	1.3	0.9
.....GENUS	3.3	1.3	2.5	2.2	0.9

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										
...CHLOROCOCCALES										
....CHARACIACEAE										
....SCHROEDERIA							*	0		
....COELASTRACEAE										
....COELASTRUM					390	2				
....DOCYSTACEAE										
....ANKISTRODES MUS	6700	9	280	1	6200	30	1200	4	720	29
....CHLORELLA										
....CHODATELLA	*	0								
....DICTYOSPHAERIUM	18000	24			390	2	1900	6		
....FRANCEIA	460	1								
....KIRCHNERIELLA					290	1	*	0		
....NEPHROCYTIUM	680	1								
....DOCYSTIS	1400	2	1100	4	780	4	420	1		
....SELENASTRUM					*	0				
....TETRAEDRON	*	0					*	0		
....TREUBARIA							*	0		
....SCENEDESMACEAE										
....ACTINASTRUM	*	0			780	4				
....CRUCIGENIA	2500	3	1100	4	780	4	210	1		
....SCENEDESMUS	2300	3	2000	7	1700	8	530	2		
....ULOTRICHACEAE										
....ULOTRICHACEAE										
....HORMIDIUM			560	2						
....VOLVOCALES										
....CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS										
....PHACOTACEAE										
....PHACOTUS	*	0								
CHRYSTOPHYTA										
..BACILLARIOPHYCEAE										
...PENNALES										
....NAVICULACEAE										
....ENTOMONEIS										
...CENTRALES										
....COSCIINODISCACEAE										
....CYCLOTELLA	2100	3			290	1				
...PENNALES										
....ACHNANTHACEAE										
....ACHNANTHES	*	0								
....CYMBELLACEAE										
....CYMBELLA										
....EPITHEMIA							*	0		
....FRAGILARIACEAE										
....ASTERIONELLA	4000	5								
....FRAGILARIA	570	1								
....SYNEDRA	800	1								
....GOMPHONEMACEAE										
....GOMPHONEMA										
....NAVICULACEAE										
....CALONEIS	*	0								
....DIPLONEIS										
....NAVICULA	1500	2								
....NITZSCHACEAE										
....NITZSCHIA	3100	4	840	3	690	3			1800	71
....SURIPELLACEAE										
....SURIPELLA										
..CHRYSTOPHYCEAE										
...CHRYSONOMADALES										
....CHROMULINACEAE										
....CHRYSOCCUS										
....OCHROMONADACEAE										
....DINOBYRON										

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
 * - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

CONTINUED ...

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(CONTINUED)

(CONTINUED)

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

Date	Length of exposure (days)	Biomass (mg/m ²)		Chlorophyll	Chlorophyll	Biomass pigment ratio	Sampling method
		Dry weight	Ash weight	a (mg/m ²)	b (mg/m ²)		
Aug. 25	30	1,810	1,570	--	--	--	Polyethylene strip

BEAVER CREEK BASIN

06354500 BEAVER CREEK AT LINTON, ND

LOCATION.--Lat 46°15'27", long 100°13'58", on line between secs.17 and 18, T.132 N., R.76 W., Emmons County, Hydrologic Unit 10130104, on left bank 60 ft (18 m) downstream from bridge on U.S. Highway 83, 0.7 mi (1.1 km) south of railway station in Linton, and 1 mi (2 km) upstream from Spring Creek.

DRAINAGE AREA.--717 mi² (1,857 km²), of which about 100 mi² (260 km²) is probably noncontributing.

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1209: Drainage area. WSP 1239: 1950(M).

GAGE.--Water-stage recorder. Datum of gage is 1,690.55 ft (515.280 m) above mean sea level. Prior to June 18, 1958, nonrecording gage at site 60 ft (18 m) upstream at same datum.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--28 years, 39.8 ft³/s (1.127 m³/s), 28,840 acre-ft/yr (35.6 hm³/yr); median of yearly mean discharges, 27 ft³/s (0.76 m³/s), 19,600 acre-ft/yr (24 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,800 ft³/s (278 m³/s) Apr. 8, 1952, gage height, 17.50 ft (5.334 m); no flow at times in some years.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 200 ft³/s (5.66 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 15	0930	480 13.6	9.50 2.896	July 5	1600	*1,530 43.3	*13.77 4.197

No flow for several months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						0	15	3.0	1.0	1.2	6.9	2.1
2						0	14	2.6	.50	.85	6.2	1.9
3						0	14	2.4	.30	.56	4.7	2.1
4						0	15	2.8	.19	.46	4.2	2.6
5						0	14	2.8	.19	867	3.4	2.0
6						0	13	20	.12	794	3.6	2.2
7						0	10	8.8	.10	955	3.6	2.5
8						0	8.0	4.3	.02	559	3.3	1.8
9						0	6.2	3.2	0	294	4.0	1.3
10						.50	4.0	2.3	.26	158	3.7	1.1
11						1.0	3.4	2.6	1.4	106	3.0	.99
12						1.5	3.3	4.3	.19	102	2.7	.92
13						2.0	3.0	4.2	.06	77	2.6	1.5
14						2.0	3.1	4.0	.60	59	2.4	1.8
15						2.3	2.8	3.8	320	45	2.3	1.1
16						3.0	3.1	3.5	355	39	2.3	.99
17						5.0	3.4	4.0	187	34	2.1	.85
18						8.0	4.0	10	183	30	2.1	1.6
19						11	4.2	5.0	116	26	2.0	.72
20						10	4.0	3.0	70	24	1.7	.66
21						10	4.9	2.5	38	22	1.6	1.1
22						12	5.1	3.5	26	20	1.4	1.3
23						13	4.9	3.0	20	19	1.4	8.7
24						15	4.9	2.5	16	18	1.3	31
25						16	4.9	2.0	12	16	1.2	23
26						14	4.7	1.6	11	15	1.3	15
27						12	4.2	1.4	4.9	14	1.4	12
28						13	3.6	1.2	3.2	13	1.5	9.4
29						14	3.3	1.0	2.1	11	1.5	10
30						15	3.3	3.0	1.7	12	1.9	11
31						14		2.0		7.2	2.3	
TOTAL	0	0	0	0	0	194.30	191.3	120.3	1370.83	4339.27	83.6	153.23
MEAN	0	0	0	0	0	6.27	6.38	3.88	45.7	140	2.70	5.11
MAX	0	0	0	0	0	16	15	20	355	955	6.9	31
MIN	0	0	0	0	0	0	2.8	1.0	0	.46	1.2	.66
AC-FT	0	0	0	0	0	385	379	239	2720	8610	166	304
CAL YR 1976	TOTAL	3519.29	MEAN	9.62	MAX	320	MIN	0	AC-FT	6980		
WTR YR 1977	TOTAL	6452.83	MEAN	17.7	MAX	955	MIN	0	AC-FT	12800		

BEAVER CREEK BASIN
06354500 BEAVER CREEK AT LINTON, ND--Continued
WATER-QUALITY RECORDS

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

REMARKS.--Some chemical data furnished by North Dakota State Water Commision.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH (UNITS)	TEMPERATURE (DEG C)	HARDNESS (CA, MG/L)	NON-CARBONATE HARDNESS (MG/L)	DIS-SOLVED CALCIUM (CA) (MG/L)	DIS-SOLVED MAGNESIUM (MG)	DIS-SOLVED SODIUM (NA) (MG/L)
MAR 15...	1000	2.2	1000	7.9	3.0	420	90	100	41	89
MAR 28...	0935	13	650	--	4.5	--	--	--	--	--
APR 04...	0930	14	680	8.6	2.5	220	24	47	25	76
MAY 05...	1200	2.4	780	--	13.5	--	--	--	--	--
MAY 13...	0930	4.2	1060	8.0	20.0	370	25	76	44	130
JUN 06...	1330	.11	780	8.4	24.0	300	16	70	30	88
JUN 23...	1220	19	480	7.6	21.5	140	0	33	14	54
JUL 05...	1330	1260	170	7.5	21.0	57	0	15	4.7	9.7
JUL 05...	1725	1490	140	--	22.0	--	--	--	--	--
AUG 03...	1600	4.5	810	8.3	23.0	320	10	72	34	75
SEP 01...	1400	2.1	700	8.2	16.5	310	2	74	30	83
SEP 28...	1640	8.8	800	8.1	14.0	280	37	62	30	77

DATE	PERCENT SODIUM	SODIUM AD-SORPTION RATIO	DIS-SOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CaCO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLORIDE (CL) (MG/L)
MAR 15...	31	1.9	13	401	0	329	8.1	290	11
MAR 28...	--	--	--	--	--	--	--	--	--
APR 04...	42	2.2	8.5	229	5	196	1.0	190	6.9
MAY 05...	--	--	--	--	--	--	--	--	--
MAY 13...	42	2.9	13	413	4	345	6.7	280	9.9
JUN 06...	38	2.2	12	297	23	282	2.2	200	11
JUN 23...	44	2.0	9.7	223	0	183	9.0	82	3.9
JUL 05...	24	.6	7.4	73	0	60	3.7	26	4.1
JUL 05...	--	--	--	--	--	--	--	--	--
AUG 03...	33	1.8	12	345	16	310	3.0	160	9.0
SEP 01...	35	2.1	16	374	0	307	3.8	190	8.5
SEP 28...	36	2.0	15	294	0	241	3.7	200	5.8

DATE	DIS-SOLVED FLUORIDE (F) (MG/L)	DIS-SOLVED SILICA (SiO2) (MG/L)	DIS-SOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS-SOLVED SOLIDS PER AC-FT	DIS-SOLVED SOLIDS PER DAY	DIS-SOLVED IRON (Fe) (UG/L)	DIS-SOLVED MANGANESE (Mn) (UG/L)
MAR 15...	.3	19	797	763	1.08	4.84	70	1700
MAR 28...	--	--	--	--	--	--	--	--
APR 04...	.2	17	527	489	.72	21.1	250	90
MAY 05...	--	--	--	--	--	--	--	--
MAY 13...	.1	9.9	834	771	1.13	9.48	280	200
JUN 06...	.1	9.2	603	589	.82	1.8	660	20
JUN 23...	.1	12	319	319	.43	16.8	210	160
JUL 05...	.1	4.2	119	107	.16	405	0	80
JUL 05...	--	--	--	--	--	--	--	--
AUG 03...	.1	24	584	573	.79	7.10	240	60
SEP 01...	.2	15	616	602	.84	3.56	290	0
SEP 28...	.1	11	563	546	.77	13.4	0	60

GRAND RIVER BASIN

06354988 BOWMAN-HALEY LAKE NEAR HALEY, ND

LOCATION.--Lat 45°59'06", long 103°14'43", in NE¼ sec.24, T.129 N., R.101 W., Bowman County, at dam on North Fork Grand River 6 mi (10 km) west of Haley.

DRAINAGE AREA.--446 mi² (1,155 km²), approximately.

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

GAGE.--Water-stage recorder. Datum of gage is at mean sea level.

REMARKS.--Reservoir is formed by a rolled earth-fill dam; storage began Aug. 22, 1966; dam completed April 1967. Total capacity is 93,000 acre-ft (115 hm³) at maximum pool, elevation, 2,777.0 ft (846.430 m). Dead storage is 4,280 acre-ft (5.28 hm³) below lowest point of outlet, elevation, 2,740.0 ft (835.152 m). Normal operating storage is 20,100 acre-ft (24.8 hm³) at elevation 2,755.0 ft (839.724 m), crest of spillway. Figures given herein represent total contents. Controlled releases are through a 30-inch (0.762 m) or 8-inch (0.203 m) gate valve. The spillway is uncontrolled "glory hole" type and discharges through a conduit 9 ft (2.743 m) in diameter. The reservoir is for flood control, water supply, and recreation.

COOPERATION.--Records of elevations and contents furnished by Corps of Engineers from capacity table dated August 1966. Elevations affected by wind.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 27,130 acre-ft (33.5 hm³) Mar. 13, 1972, elevation, 2,758.50 ft (840.791 m); minimum since first reaching spillway level, 16,500 acre-ft (20.3 hm³) Mar. 8-10, 1975, elevation, 2,752.78 ft (839.047 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 20,300 acre-ft (25.0 hm³) June 20, elevation, 2,755.10 ft (839.754 m); minimum, 16,890 acre-ft (20.8 hm³) Dec. 30 to Jan. 1, elevation, 2,753.04 ft (839.127 m).

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30-----	2,753.45	17,540	--
Oct. 31-----	2,753.18	17,110	-430
Nov. 30-----	2,753.07	16,930	-180
Dec. 31-----	2,753.04	16,890	-40
CAL YR 1976-----	--	--	-710
Jan. 31-----	2,753.10*	16,980	+90
Feb. 28-----	2,753.14*	17,050	+70
Mar. 31-----	2,753.55	17,700	+650
Apr. 30-----	2,753.84	18,160	+460
May 31-----	2,753.57	17,730	-430
June 30-----	2,754.84	19,850	+2,120
July 31-----	2,754.24	18,820	-1,030
Aug. 31-----	2,753.53	17,670	-1,150
Sept. 30-----	2,753.48	17,590	-80
WTR YR 1977-----	--	--	+50

* Estimated.

GRAND RIVER BASIN

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06355000 NORTH FORK GRAND RIVER AT HALEY, ND

LOCATION.--Lat 45°57'39", long 103°07'09", at southwest corner of sec.30, T.129 N., R.99 W., Bowman County, Hydrologic Unit 10130301, on left bank 10 ft (3 m) downstream from county highway bridge, 300 ft (91 m) south of post office at Haley, and 1 mi (1.6 km) north of South Dakota state line.

DRAINAGE AREA.--509 mi² (1,318 km²).

PERIOD OF RECORD.--May 1908 to September 1917, October 1945 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS (WATER YEARS).--WSP 1239: 1908-10, 1913-15(M), 1917(M).

GAGE.--Water-stage recorder. Datum of gage is 2,658.60 ft (810.341 m) above mean sea level. Oct. 23, 1945, to June 18, 1951, nonrecording gage on downstream side of bridge near left abutment at present datum. See WSP 1729 or 1917 for history of changes prior to Oct. 23, 1945.

REMARKS.--Records good except those for the winter period, which are fair. Flow regulated since August 1966 by Bowman-Haley Lake (station 06354988) 8 mi (13 km) upstream.

AVERAGE DISCHARGE.--41 years, 28.0 ft³/s (0.793 m³/s), 20,290 acre-ft/yr (25.0 hm³/yr); median of yearly mean discharges, 22 ft³/s (0.62 m³/s), 15,900 acre-ft/yr (20 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,100 ft³/s (399 m³/s) Apr. 7, 1952, gage height, 17.03 ft (5.191 m), from rating curve extended above 4,500 ft³/s (127 m³/s) on basis of discharge measurement at gage height, 15.09 ft (4.599 m), half of which was indirect measurement of flow over roadway outside of main channel; maximum gage height, 17.10 ft (5.212 m) Apr. 15, 1950; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 30 ft³/s (0.850 m³/s) Aug. 4, gage height, 5.04 ft (1.536 m); minimum daily, 0.03 ft³/s (0.001 m³/s) Jan. 29 to Feb. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.52	1.0	1.4	1.0	.03	1.6	2.6	1.0	1.1	7.8	3.0	2.3
2	.51	.98	1.4	1.0	.03	1.6	2.8	1.0	.83	3.6	3.0	2.3
3	.47	.92	1.5	.90	.03	1.6	2.8	1.1	.76	2.4	2.9	2.1
4	.73	.98	1.4	.80	.70	1.6	2.8	1.3	.67	2.1	12	1.9
5	.70	.95	1.4	.90	.70	1.6	2.8	1.0	.64	2.2	22	1.6
6	.82	1.0	1.4	.90	.70	1.6	2.8	1.1	.60	2.3	17	1.5
7	.88	1.1	1.3	1.1	.80	1.9	2.7	1.3	.58	2.2	7.0	1.6
8	.84	1.0	1.4	1.1	.90	1.9	2.7	1.3	.50	2.2	12	1.6
9	.86	1.1	1.5	.70	1.0	2.2	2.6	1.3	5.4	2.4	17	1.6
10	.83	1.2	1.3	.60	1.0	2.5	2.2	1.1	4.9	2.6	16	1.4
11	.64	1.2	1.3	.60	1.0	2.6	2.0	.86	12	2.1	16	1.4
12	.74	1.2	1.5	.50	1.1	2.7	1.8	.86	4.8	4.3	16	1.4
13	.72	1.3	1.5	.50	1.1	2.7	1.6	.78	3.7	3.3	16	1.4
14	.83	1.4	1.5	.40	1.1	2.7	1.3	.78	2.4	2.3	16	1.3
15	.99	1.4	1.5	.40	1.1	2.7	1.3	.78	6.2	2.0	17	1.2
16	.97	1.3	1.5	.30	1.2	2.7	1.3	.78	2.7	1.9	16	1.1
17	1.5	1.4	1.5	.30	1.4	2.6	1.2	.71	2.0	1.8	16	1.2
18	1.7	1.4	1.5	.20	1.4	2.6	1.2	.86	3.1	1.8	15	1.3
19	1.6	1.4	1.4	.20	1.5	2.3	1.2	2.0	7.0	1.8	12	1.4
20	1.4	1.4	1.2	.10	1.5	2.2	1.3	1.8	8.6	1.9	8.0	1.4
21	1.5	1.3	1.2	.10	1.6	2.2	1.2	1.4	9.6	1.9	7.7	1.8
22	1.3	1.3	1.2	.05	1.6	2.6	1.2	1.1	10	1.8	7.6	2.0
23	1.5	1.3	1.1	.05	1.6	2.6	1.2	.95	10	1.8	6.9	2.1
24	1.3	1.4	1.2	.05	1.6	2.7	1.2	.71	8.7	1.7	4.0	2.2
25	1.2	1.5	1.3	.05	1.6	2.6	1.2	.50	7.6	1.8	2.8	1.9
26	1.3	1.3	1.3	.05	1.6	2.4	1.2	.43	6.8	2.0	2.6	1.7
27	1.3	1.2	1.3	.05	1.6	2.4	1.1	.72	6.5	2.3	2.7	1.4
28	1.3	1.1	1.2	.05	1.6	2.4	1.3	1.4	6.3	2.2	2.6	1.2
29	1.4	1.1	1.1	.03	---	2.0	1.2	1.9	4.7	2.2	2.4	1.2
30	1.1	1.3	1.0	.03	---	2.0	1.2	1.6	4.5	2.2	2.2	1.7
31	.97	---	.90	.03	---	2.2	---	1.5	---	2.2	2.1	---
TOTAL	32.42	36.43	41.20	13.04	31.09	70.0	53.0	33.92	143.18	75.1	303.5	48.2
MEAN	1.05	1.21	1.33	.42	1.11	2.26	1.77	1.09	4.77	2.42	9.79	1.61
MAX	1.7	1.5	1.5	1.1	1.6	2.7	2.8	2.0	12	7.8	22	2.3
MIN	.47	.92	.90	.03	.03	1.6	1.1	.43	.50	1.7	2.1	1.1
AC-FT	64	72	82	26	62	139	105	67	284	149	602	96

CAL YR 1976 TOTAL 895.71 MEAN 2.45 MAX 15 MIN .26 AC-FT 1780
WTR YR 1977 TOTAL 881.08 MEAN 2.41 MAX 22 MIN .03 AC-FT 1750

GRAND RIVER BASIN

06355310 BUFFALO CREEK TRIBUTARY NEAR GASCOYNE, ND

LOCATION.--Lat 46°06'40", long 103°02'20", in SE¼NE¼ sec. 3, T.130 N., R.99 W., Bowman County, on left bank 46 ft (14 m) downstream from Chicago, Milwaukee, St. Paul, Pacific Railway bridge, 1.8 mi (2.9 km) east of Gascoyne.

DRAINAGE AREA.--15.7 mi² (40.7 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1974 to current year.

REVISSED RECORDS.--WDR ND-76-1: 1975.

GAGE.--Water-stage recorder. Altitude of gage is 2,725 ft (831 m), from topographic map.

REMARKS.--Records fair. Some regulation by strip mine above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 100 ft³/s (2.83 m³/s) May 9, 1975, gage height, 8.41 ft (2.563 m), no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 20 ft³/s (0.57 m³/s) June 10, gage height, 5.41 ft (1.649 m); maximum gage height, 6.54 ft (1.993 m) Mar. 8, backwater from ice; no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.60	.63			0	.15	7.0	.02	1.1	.25	.24	.47
2	.56	.22			0	.15	5.0	.06	.55	.36	.11	.89
3	.75	.23			0	.15	2.4	.06	.29	.24	.09	.19
4	1.0	.23			0	.15	.95	.07	.27	.36	.14	.09
5	1.1	.28			0	.20	1.2	.03	.26	.24	.15	.03
6	.71	.30			0	.50	3.1	.02	.22	.19	.20	.03
7	.80	.27			0	1.0	2.7	.03	.17	.25	.34	.12
8	.71	.36			0	1.5	1.5	.12	.13	.23	.30	.28
9	.59	.30			0	2.0	.68	.20	.40	.16	.16	.14
10	.60	.27			0	3.0	.63	.11	8.1	.46	.10	.04
11	.62	.25			0	.93	.43	.04	18	.25	.19	.01
12	.78	.25			.50	1.2	.36	.03	4.6	.22	.13	.05
13	.76	.25			1.0	3.0	.15	.02	3.2	.20	.06	.06
14	.57	.25			1.5	1.6	.29	.01	7.4	.13	.32	0
15	.43	.25			2.0	1.3	.52	.04	7.8	.06	4.0	0
16	.34	.25			2.5	1.4	.27	.24	3.1	.07	2.4	0
17	.79	.25			3.0	1.9	.28	.21	2.0	.25	.61	.19
18	1.1	.25			3.5	.93	.26	.16	1.2	.18	3.3	8.6
19	.83	.25			4.0	.61	.18	3.2	.48	.15	2.0	3.7
20	.51	.25			4.5	.87	.19	3.4	.52	.11	.29	2.0
21	.52	.20			5.0	.53	.19	1.1	.84	.03	.15	2.2
22	.66	.20			5.0	1.5	.13	.47	.81	.09	.20	5.2
23	.75	.15			4.0	1.6	.09	.44	.62	.13	.30	4.3
24	.60	.15			3.0	1.3	.12	.26	.32	.24	.22	8.4
25	.62	.10			2.0	.98	.14	.15	.44	.16	.11	5.0
26	.57	.05			1.0	.52	.08	.12	.22	.05	.12	1.1
27	.43	0			.50	.84	.04	.19	.17	.40	.17	.52
28	.48	0			.25	.96	.05	1.2	.19	.25	.25	.28
29	.45	0			---	3.9	.04	.91	.27	.10	.12	.31
30	.45	0			---	5.0	.03	1.9	.30	.26	.05	3.5
31	.34	---			---	5.5	---	2.2	---	.21	.08	---
TOTAL	20.02	6.44	0	0	43.25	45.17	29.00	17.01	63.97	6.28	16.90	47.70
MEAN	.65	.21	0	0	1.54	1.46	.97	.55	2.13	.20	.55	1.59
MAX	1.1	.63	0	0	5.0	5.5	7.0	3.4	.18	.46	4.0	8.6
MIN	.34	0	0	0	0	.15	.03	.01	.13	.03	.05	0
AC-FT	40	13	0	0	86	90	58	34	127	12	34	95
CAL YR 1976	TOTAL	364.13	MEAN	.99	MAX 35	MIN 0	AC-FT 722					
WTR YR 1977	TOTAL	295.74	MEAN	.81	MAX 18	MIN 0	AC-FT 587					

GRAND RIVER BASIN

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06355310 BUFFALO CREEK TRIBUTARY NEAR GASCOYNE, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--November 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	DIS- SOLVED OXYGEN (MG/L)	PER- CENT SATUR- ATION	BIO- CHEM- ICAL OXYGEN DEMAND 5 DAY (MG/L)	HARD- NESS (CA, MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)
OCT											
05...	1105	.68	5000	8.4	5.0	8.2	71	3.3	700	110	120
05...	1110	.68	5000	8.4	5.0	--	--	--	620	14	150
NOV											
02...	1115	.22	4200	8.4	4.0	10.2	85	1.5	730	150	130
MAR											
01...	1150	.16	6300	8.2	.0	8.8	67	4.5	1200	580	160
10...	0955	2.0	4000	--	.5	--	--	--	--	--	--
15...	1735	3.8	2500	--	.5	--	--	--	--	--	--
22...	1215	2.3	3700	--	1.0	--	--	--	--	--	--
APR											
05...	1110	.55	5100	8.2	1.0	8.6	68	3.1	940	460	130
MAY											
03...	1050	.05	5400	8.3	16.0	7.6	85	3.0	930	130	140
JUN											
01...	1215	1.1	5800	9.6	22.0	4.6	58	1.3	1200	950	150
16...	1505	2.7	2590	--	26.0	--	--	--	--	--	--
JUL											
05...	1655	.18	3600	8.4	29.5	10.8	155	1.8	700	220	120
AUG											
08...	1435	.26	3850	8.3	23.0	10.2	130	2.2	710	170	120
SEP											
07...	0825	.06	5190	8.0	15.0	4.8	52	3.6	1100	590	130

DATE	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	ALKA- LINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)
OCT											
05...	96	930	74	15	15	601	57	588	4.6	2000	16
05...	60	920	76	16	13	678	31	608	4.7	1900	16
NOV											
02...	99	850	71	14	12	540	83	581	4.5	1900	14
MAR											
01...	200	1300	69	16	18	788	0	646	8.0	3300	19
10...	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	--	--
APR											
05...	150	850	66	12	12	584	0	480	5.9	2300	15
MAY											
03...	140	1200	73	17	15	970	0	800	7.8	2700	18
JUN											
01...	190	1000	65	13	14	250	1	210	.1	2900	9.1
16...	--	--	--	--	--	--	--	--	--	--	--
JUL											
05...	98	710	68	12	11	590	1	490	3.8	1800	8.9
AUG											
08...	100	800	71	13	12	660	0	540	5.3	1800	11
SEP											
07...	180	950	66	13	16	590	0	480	9.4	2600	14

GRAND RIVER BASIN

06355310 BUFFALO CREEK TRIBUTARY NEAR GASCOYNE, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS-SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SIO2) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	TOTAL FILT- RABLE RESIDUE (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	TOTAL NON- FILT- RABLE RESIDUE (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L)
OCT										
05...	.8	6.8	3620	3600	3540	4.92	6.65	190	.41	.39
05...	.4	8.5	3670	--	3440	4.99	6.74	--	--	--
NOV										
02...	.8	6.5	3390	--	3370	4.61	2.01	--	1.2	.93
MAR										
01...	.9	11	5680	--	5410	7.72	2.45	--	.18	.39
10...	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	--
APR										
05...	.7	7.4	4110	--	3750	5.59	6.10	--	.12	.10
MAY										
03...	1.4	8.9	4760	--	4700	6.47	.64	--	.03	.03
JUN										
01...	.9	5.7	4710	--	4400	6.41	14.0	--	--	.05
16...	--	--	--	--	--	--	--	--	--	--
JUL										
05...	.7	1.9	3000	--	3040	4.08	1.46	--	.05	.06
AUG										
08...	.8	1.7	3160	--	3170	4.30	2.22	--	.02	.02
SEP										
07...	.9	6.7	4270	--	4200	5.81	.69	--	.29	.20

DATE	TOTAL KJEL- DAHL- NITRO- GEN (N) (MG/L)	DIS- SOLVED KJEL- NITRO- GEN (N) (MG/L)	TOTAL NITRO- GEN (N) (MG/L)	TOTAL NITRO- GEN (NO3) (MG/L)	TOTAL PHOS- PHORUS (P) (MG/L)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L)	DIS- SOLVED ALUM- INUM (AL) (UG/L)
OCT							
05...	1.7	.95	2.1	9.3	.17	.02	--
05...	--	--	--	--	--	--	--
NOV							
02...	1.0	.99	2.2	9.7	.06	.01	--
MAR							
01...	1.5	1.3	1.7	7.4	.12	.04	40
APR							
05...	1.1	.83	1.2	5.4	.07	.01	--
MAY							
03...	1.2	1.2	1.2	5.4	.12	.04	--
JUN							
01...	2.4	1.4	--	--	.08	.05	50
JUL							
05...	.47	.49	.52	2.3	.10	.04	--
AUG							
08...	.81	.81	.83	3.7	.05	.02	--
SEP							
07...	1.2	1.2	1.5	6.6	.25	.12	40

DATE	DIS- SOLVED ARSENIC (AS) (UG/L)	DIS- SOLVED BARIUM (BA) (UG/L)	DIS- SOLVED BORDON (B) (UG/L)	DIS- SOLVED CAD- MIUM (CD) (UG/L)	DIS- SOLVED CHRO- MIUM (CR) (UG/L)	DIS- SOLVED COPPER (CU) (UG/L)
OCT						
05...	--	--	--	--	--	--
05...	--	--	1900	--	--	--
NOV						
02...	--	--	--	--	--	--
MAR						
01...	3	0	2300	1	10	4
APR						
05...	--	--	--	--	--	--
MAY						
03...	--	--	--	--	--	--
JUN						
01...	2	200	3000	0	0	2
JUL						
05...	--	--	--	--	--	--
AUG						
08...	--	--	--	--	--	--
SEP						
07...	4	800	2800	0	0	3

06355310 BUFFALO CREEK TRIBUTARY NEAR GASCOYNE, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED LEAD (PB) (UG/L)	DIS- SOLVED LITHIUM (LI) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)	DIS- SOLVED MERCURY (HG) (UG/L)	DIS- SOLVED MOLYB- DENUM (MO) (UG/L)	DIS- SOLVED SELE- NIUM (SE) (UG/L)	DIS- SOLVED STRON- TIUM (SR) (UG/L)	DIS- SOLVED ZINC (ZN) (UG/L)
OCT									
05...	--	--	--	--	--	--	--	--	--
05...	80	--	--	120	--	--	--	--	--
NOV									
02...	--	--	--	--	--	--	--	--	--
MAR									
01...	380	0	110	400	.0	3	1	3400	20
APR									
05...	--	--	--	--	--	--	--	--	--
MAY									
03...	--	--	--	--	--	--	--	--	--
JUN									
01...	170	2	110	50	.0	2	0	3200	20
JUL									
05...	--	--	--	--	--	--	--	--	--
AUG									
08...	--	--	--	--	--	--	--	--	--
SEP									
07...	120	3	100	400	.0	3	0	2800	10

DATE	DIS- SOLVED GROSS ALPHA AS U-NAT. (UG/L)	SUS- PENDED GROSS ALPHA AS U-NAT. (UG/L)	DIS- SOLVED GROSS BETA AS CS-137 (PC/L)	SUS- PENDED GROSS BETA AS CS-137 (PC/L)	DIS- SOLVED GROSS BETA AS AS SR90 /Y90 (PC/L)	SUS- PENDED GROSS BETA AS AS SR90 /Y90 (PC/L)	DIS- SOLVED RA-226 (RADON METHOD) (PC/L)	DIS- SOL- VED ORGANIC CARBON (C) (MG/L)	SUS- PENDED ORGANIC CARBON (C) (MG/L)
OCT									
05...	<43	11	15	9.1	12	7.9	.28	23	--
05...	--	--	--	--	--	--	--	--	--
NOV									
02...	--	--	--	--	--	--	--	19	3.0
MAR									
01...	--	--	--	--	--	--	--	38	1.2
APR									
05...	--	--	--	--	--	--	--	24	2.2
MAY									
03...	--	--	--	--	--	--	--	35	1.7
JUN									
01...	--	--	--	--	--	--	--	32	.6
JUL									
05...	--	--	--	--	--	--	--	23	.7
AUG									
08...	--	--	--	--	--	--	--	25	.7
SEP									
07...	--	--	--	--	--	--	--	23	2.8

DATE	SUS- PENDED SEDI- MENT (MG/L)	SUS- PENDED SEDI- MENT DIS- CHARGE (T/DAY)
OCT		
05...	368	.68
NOV		
02...	132	.08
MAR		
01...	109	.05
APR		
05...	122	.18
MAY		
03...	38	.01
JUN		
01...	41	.12
JUL		
05...	17	.01
AUG		
08...	63	.04
SEP		
07...	146	.02

MISSOURI RIVER MAIN STEM

06439980 LAKE OAHE NEAR PIERRE, SD

LOCATION.--Lat 44°27'30", long 100°23'29", in NE¼ sec.1, T.111 N., R.80 W., 5th principal meridian, Hughes County, Hydrologic Unit 10130105, in Pier A of Control Tower No. 1 of powerhouse intake structure of dam on Missouri River, 6.0 mi (9.7 km) northwest of Pierre, 7.1 mi (11.4 km) upstream from Bad River, and at mile 1,072.3 (1,725.3 km).

DRAINAGE AREA.--243,500 mi² (630,700 km²), approximately.

PERIOD OF RECORD.--August 1958 to current year (monthend contents only). Prior to October 1967, published as Oahe Reservoir near Pierre.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level. Prior to Jan. 14, 1959, nonrecording gages at various locations upstream from outlet works, Jan. 14, 1959, to Sept. 30, 1962, recorder in Tower No. 1 of outlet works, all at same datum.

REMARKS.--Reservoir is formed by an earthfill dam; storage began in August 1958. Maximum capacity, 23,630,000 acre-ft (29,100 hm³) below elevation 1,620.0 ft (493.78 m), top of spillway gates. Normal maximum, 22,530,000 acre-ft (27,800 hm³) below 1,617.0 ft (492.86 m), of which about 2,390,000 acre-ft (2,950 hm³) is designated for flood control. Inactive storage, 5,538,000 acre-ft (6,830 hm³) below elevation 1,540.0 ft (469.39 m). Dead storage, 2,000 acre-ft (2.47 hm³) below elevation 1,425.0 ft (434.34 m), invert of lowest outlet tunnel. Figures given herein represent elevations at powerhouse intake structure and total contents adjusted for wind effect.
The spillway consists of a gated chute with flat crest at elevation 1,596.5 ft (486.61 m), 8 gates, 50 by 23.5 ft (15.2 x 7.2 m) each; design capacity, 300,000 ft³/s (8,500 m³/s). The outlet works consist of 7 turbines with a generating capacity of 85,000 kilowatts each. Water is used for flood control, navigation, power, and incidental uses.

COOPERATION.--Elevation and contents furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 22,681,000 acre-ft (28,000 hm³) Aug. 22, 1975, elevation, 1,617.9 ft (493.14 m), affected by wind; minimum since initial filling, 16,131,000 acre-ft (19,900 hm³) Sept. 30, 1977, elevation, 1,596.9 ft (486.74 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 19,497,000 acre-ft (24,000 hm³) Mar. 13, elevation, 1,608.3 ft (490.21 m); maximum elevation, 1,608.6 ft (499.30 m) Mar. 29; minimum contents, 16,131,000 acre-ft (19,900 hm³) Sept. 30, elevation, 1,596.9 ft (486.74 m).

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30-----	1,603.9	18,122,000	--
Oct. 31-----	1,603.5	18,013,000	-109,000
Nov. 30-----	1,604.0	18,139,000	+126,000
Dec. 31-----	1,603.9	18,110,000	-29,000
CAL YR 1976-----	--	--	-364,000
Jan. 31-----	1,604.6	18,349,000	+239,000
Feb. 28-----	1,607.4	19,214,000	+865,000
Mar. 31-----	1,608.2	19,450,000	+236,000
Apr. 30-----	1,607.5	19,266,000	-184,000
May 31-----	1,606.3	18,826,000	-440,000
June 30-----	1,605.5	18,528,000	-298,000
July 31-----	1,602.6	17,770,000	-758,000
Aug. 31-----	1,599.0	16,682,000	-1,088,000
Sept. 30-----	1,596.9	16,131,000	-551,000
WTR YR 1977-----	--	--	-1,991,000

JAMES RIVER BASIN

413

06467600 JAMES RIVER NEAR MANFRED, ND

LOCATION.--Lat 47°38'40", long 99°49'40", near midpoint of north line sec.15, T.148 N., R.72 W., Wells County, Hydrologic Unit 10160001, on right upstream wingwall of bridge on county highway, 5 mi (8 km) southwest of Manfred.

DRAINAGE AREA.--253 mi² (655 km²), of which about 197 mi² (510 km²) is probably noncontributing.

PERIOD OF RECORD.--October 1954 to August 1957 (annual maximum only), September 1957 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,605.73 ft (489.427 m) above mean sea level. Prior to Sept. 16, 1957, crest-stage gage only on downstream side of bridge at same datum.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--20 years (1957-77), 2.76 ft³/s (0.0782 m³/s), 2,000 acre-ft/yr (2.57 hm³/yr); median of yearly mean discharges, 2.2 ft³/s (0.062 m³/s), 1,600 acre-ft/yr (2.0 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 900 ft³/s (25.5 m³/s) Apr. 10, 1969, gage height, 7.70 ft (2.347 m); no flow for long periods each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, about 28 ft³/s (0.79 m³/s) July 13, gage height, 3.44 ft (1.048 m), no peak above base of 30 ft³/s (0.85 m³/s); no flow for several months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1										0		0
2										0		0
3										0		0
4										0		0
5										0		0
6										0		0
7										0		0
8										0		0
9										0		0
10										0		0
11										0		0
12										0		0
13										12		0
14										22		0
15										18		0
16										12		0
17										9.0		0
18										6.0		0
19										4.0		0
20										3.0		0
21										2.0		0
22										1.2		0
23										.70		0
24										.30		.20
25										.10		6.0
26										.05		4.0
27										0		2.2
28										0		1.5
29										0		2.0
30										0		2.0
31		---			---		---		---	0		---
TOTAL	0	0	0	0	0	0	0	0	0	90.35	0	17.90
MEAN	0	0	0	0	0	0	0	0	0	2.91	0	.60
MAX	0	0	0	0	0	0	0	0	0	22	0	6.0
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	0	0	0	0	0	0	0	0	0	179	0	36
CAL YR 1976	TOTAL	1388.18	MEAN	3.79	MAX	150	MIN	0	AC-FT	2750		
WTR YR 1977	TOTAL	108.25	MEAN	.30	MAX	22	MIN	0	AC-FT	215		

JAMES RIVER BASIN

06468170 JAMES RIVER NEAR GRACE CITY, ND

LOCATION.--Lat 47°33'29", long 98°51'45", in NW¼NW¼NW¼ sec.17, T.147 N., R.64 W., Foster County, Hydrologic Unit 10160001, on left bank on downstream side of county highway bridge and 2.5 mi (4.0 km) northwest of Grace City.

DRAINAGE AREA.--1,060 mi² (2,750 km²), approximately, of which about 650 mi² (1,680 km²) is probably non-contributing.

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

GAGE.--Water-stage recorder. Datum of gage is 1,457.60 ft (444.276 m), above mean sea level.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--9 years, 26.6 ft³/s (0.753 m³/s), 19,270 acre-ft/yr (23.8 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,100 ft³/s (87.8 m³/s) Apr. 13, 1969, gage height, 12.00 ft (3.658 m); no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8.0 ft³/s (0.23 m³/s) May 5, gage height, 4.69 ft (1.430 m), maximum gage height, 5.08 ft (1.548 m) March 16, no peak above base of 200 ft³/s (5.66 m³/s); no flow for several months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						0	1.0	0	.24	.08	.01	.04
2						0	.90	0	.21	.15	.01	.04
3						0	.80	0	.21	.47	.02	.04
4						0	.70	0	.21	.47	.04	.04
5						.01	.60	6.3	.15	.90	.04	.02
6						.02	.60	3.2	.12	.72	.03	.02
7						.03	.55	1.8	.12	.62	.02	.02
8						.05	.50	1.3	.12	.42	.03	.06
9						.06	.50	1.1	.10	.34	.02	.06
10						.10	.40	.84	.12	.30	.02	.02
11						.15	.35	.67	.12	.38	.02	.02
12						.30	.30	.57	.15	.30	.02	.02
13						.40	.30	.47	.18	.24	.02	.04
14						.50	.25	.38	.21	.21	.02	.04
15						.60	.25	.30	.34	.18	.02	.04
16						1.6	.20	.34	.24	.34	.02	.04
17						1.5	.20	.30	.27	.24	.02	.02
18						1.4	.10	.30	.24	.18	.02	.04
19						1.4	.10	.30	.18	.15	.02	.06
20						1.8	.08	.24	.15	.10	.03	.06
21						1.8	.05	.21	.12	.08	.03	.06
22						1.4	.04	.24	.12	.08	.02	.10
23						1.0	.02	.24	.15	.06	.02	.12
24						1.0	0	.21	.12	.06	.02	.25
25						1.0	0	.21	.10	.04	.02	.18
26						.90	0	.21	.10	.04	.03	.20
27						1.0	0	.21	.10	.04	.04	.22
28						1.0	0	.27	.10	.04	.06	.20
29					---	1.2	0	.21	.08	.04	.06	.18
30					---	1.3	0	.21	.10	.04	.06	.18
31		---			---	1.2	---	.21	---	.02	.06	---
TOTAL	0	0	0	0	0	22.72	8.79	20.84	4.77	7.33	.88	2.43
MEAN	0	0	0	0	0	.73	.29	.67	.16	.24	.028	.081
MAX	0	0	0	0	0	1.8	1.0	6.3	.34	.90	.06	.25
MIN	0	0	0	0	0	0	0	0	.08	.02	.01	.02
AC-FT	0	0	0	0	0	45	17	41	9.5	15	1.7	4.8
CAL YR 1976	TOTAL	4870.72	MEAN	13.3	MAX	230	MIN	0	AC-FT	9660		
WTR YR 1977	TOTAL	67.76	MEAN	.19	MAX	6.3	MIN	0	AC-FT	134		

JAMES RIVER BASIN

415

06469000 JAMESTOWN RESERVOIR NEAR JAMESTOWN, ND

LOCATION.--Lat 46°55'50", long 98°42'23", in SE¼NW¼ sec.24, T.140 N., R.64 W., Stutsman County, Hydrologic Unit 10160001, on left bank in control house below Jamestown Dam on James River, 1.7 mi (2.7 km) north of Jamestown Post Office, and 3.3 mi (5.3 km) upstream from Pipestem Creek.

DRAINAGE AREA.--1,760 mi² (4,560 km²), approximately, of which about 1,010 mi² (2,620 km²) is probably noncontributing.

PERIOD OF RECORD.--November 1953 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,400.00 ft (426.720 m) above mean sea level; gage readings have been reduced to elevations above mean sea level. June 22, 1959 to June 3, 1971 at site 0.2 mi (0.3 km) upstream at same datum. Prior to June 22, 1959, nonrecording gages at different locations.

REMARKS.--Reservoir is formed by earth-fill dam, completed Oct. 1, 1953. Closure made May 7, 1953, and filling of dead storage started. Gates initially closed Feb. 8, 1954. Usable capacity, 229,470 acre-ft (283 hm³) between elevations 1,400 ft (426.720 m), sill of outlet and 1,454 ft (443.179 m), crest of spillway. Dead storage below elevation 1,400 ft (426.720 m), 820 acre-ft (1.01 hm³). Maximum design pool, 389,000 acre-ft (480 hm³), elevation, 1,464.6 ft (446.410 m). Figures given herein represent total contents based on capacity table dated Oct. 1, 1965. Reservoir is used for flood control and municipal supply. Monthend elevations are adjusted for wind effect.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 103,100 acre-ft (127 hm³) May 1, 1969, elevation, 1,443.60 ft (440.009 m); minimum since initial filling of reservoir, 18,220 acre-ft (22.5 hm³) Mar. 4, 5, 1965, elevation, 1,423.66 ft (433.932 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 29,030 acre-ft (35.8 hm³) Oct. 1, elevation, 1,429.86 ft (435.821 m); minimum, 26,350 acre-ft (32.5 hm³) Sept. 15, elevation, 1,428.52 ft (435.413 m).

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30-----	1,429.85	29,010	-
Oct. 31-----	1,429.39	28,070	-940
Nov. 30-----	1,429.20	27,680	-390
Dec. 31-----	1,429.09	27,460	-220
CAL YR 1976-----	--	--	-510
Jan. 31-----	1,429.11	27,500	+40
Feb. 28-----	1,429.13	27,540	+40
Mar. 31-----	1,429.30*	27,890	+350
Apr. 30-----	1,429.29	27,870	-20
May 31-----	1,429.11	27,500	-370
June 30-----	1,428.80	26,890	-610
July 31-----	1,428.99	27,260	+370
Aug. 31-----	1,428.63	26,560	-700
Sept. 30-----	1,428.77	26,830	+270
WTR YR 1977-----	--	--	-2,180

* Estimated

JAMES RIVER BASIN

06469400 PIPESTEM CREEK NEAR PINGREE, ND

LOCATION.--Lat 47°10'03", long 98°58'07", in NE&NE&NW& sec.31, T.143 N., R.65 W., Stutsman County, Hydrologic Unit 10160002, on right bank on downstream side of State Highway 36 bridge, 3 mi (5 km) west of Pingree.

DRAINAGE AREA.--700 mi² (1,810 km²), of which about 440 mi² (1,140 km²) is probably noncontributing.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,500.63 ft (457.392 m) above mean sea level.

REMARKS.--Records good.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,400 ft³/s (68.0 m³/s) Apr. 19, 1975, gage height, 11.47 ft (3.496 m), backwater from ice; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 0.46 ft³/s (0.013 m³/s) Apr. 9, gage height, 3.94 ft (1.201 m), no peak above base of 100 ft³/s (2.83 m³/s); maximum gage height, 4.03 ft (1.228 m); no flow for several months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						0	.18	0	.06	0	0	.02
2						0	.16	0	.08	0	0	.02
3						0	.16	0	.06	0	0	.02
4						0	.16	.04	.06	0	0	.02
5						0	.16	.10	.04	.08	0	.01
6						0	.27	.04	.01	.08	0	.01
7						0	.27	.04	.02	.12	0	.01
8						0	.30	.06	0	.12	0	.01
9						.05	.42	.06	0	.08	0	0
10						.08	.38	.06	0	.08	0	0
11						.08	.30	.02	0	.14	0	0
12						.08	.30	.04	0	.21	0	0
13						.10	.27	.02	0	.16	0	0
14						.15	.27	.02	0	.14	0	0
15						.15	.24	.02	.04	.10	0	0
16						.15	.18	.04	.08	.08	0	0
17						.15	.21	.04	.06	.06	0	0
18						.15	.10	.02	0	.08	0	0
19						.15	.08	.02	0	.08	0	0
20						.13	.08	0	0	.08	0	0
21						.18	.08	0	0	.06	0	0
22						.18	.08	.06	0	.06	0	0
23						.21	.02	.06	0	.06	0	0
24						.21	.02	.04	0	.04	0	0
25						.18	.04	0	0	.04	0	0
26						.21	.04	0	0	.04	0	0
27						.27	.02	0	0	.02	0	0
28						.18	0	.12	0	.02	0	0
29					---	.34	0	.08	0	.02	.01	0
30					---	.27	0	.08	0	.01	.03	0
31		---			---	.21	---	.10	---	.01	.03	---
TOTAL	0	0	0	0	0	3.86	4.79	1.18	.51	2.07	.07	.12
MEAN	0	0	0	0	0	.12	.16	.038	.017	.067	.002	.004
MAX	0	0	0	0	0	.34	.42	.12	.08	.21	.03	.02
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	0	0	0	0	0	7.7	9.5	2.3	1.0	4.1	.1	.2
CAL YR 1976	TOTAL	4624.47	MEAN 12.6	MAX	331	MIN 0	AC-FT 9170					
WTR YR 1977	TOTAL	12.60	MEAN .035	MAX	.42	MIN 0	AC-FT 25					

06469400 PIPESTEM CREEK NEAR PINGREE, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1965, 1974 to current year.

REMARKS.--Some chemical data furnished by North Dakota State Water Commission.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS-CHARGE (CFS)	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH (UNITS)	TEMPERATURE (DEG C)	HARDNESS (CA, MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	DIS-SOLVED CALCIUM (CA) (MG/L)	DIS-SOLVED MAGNESIUM (MG)	DIS-SOLVED SODIUM (NA) (MG/L)
MAR 21...	1340	.18	800	--	.5	--	--	--	--	--
APR 05...	1715	E.08	770	8.0	3.5	280	43	62	30	71
MAY 05...	1500	E.11	970	8.5	18.0	370	46	74	45	110
JUN 01...	0840	E.02	890	8.6	18.0	290	46	82	21	100
JUL 06...	1420	E.06	810	9.5	28.5	230	54	32	36	95

DATE	PERCENT SODIUM	SODIUM AND SULFATE RATIO	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CaCO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLORIDE (CL) (MG/L)
MAR 21...	--	--	--	--	--	--	--	--	--
APR 05...	35	1.9	5.9	287	0	235	4.6	190	12
MAY 05...	39	2.5	7.5	355	20	324	2.0	260	17
JUN 01...	42	2.6	6.1	269	15	246	1.2	240	16
JUL 06...	47	2.7	6.4	115	48	174	.1	240	16

DATE	DIS-SOLVED FLUORIDE (F) (MG/L)	DIS-SOLVED SILICA (SiO2) (MG/L)	DIS-SOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	DIS-SOLVED SOLIDS (TONS PER DAY)	DIS-SOLVED BORON (B) (UG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED MANGANESE (MN) (UG/L)
MAR 21...	--	--	--	--	--	--	--	--	--
APR 05...	.1	10	559	524	.76	.12	140	330	980
MAY 05...	.1	18	762	727	1.04	37.0	780	40	80
JUN 01...	.2	3.0	613	617	.83	.03	870	0	70
JUL 06...	.1	1.9	532	532	.72	.09	30	0	--

E - Estimated.

LOCATION.--Lat 46°53'22", long 98°40'58", in NW¼NE¼ sec.6, T.139 N., R.63 W., Stutsman County, Hydrologic Unit 10160003, on left bank 200 ft (60 m) upstream from Interstate 94 bridge at southeast corner of Jamestown and 3 mi (5 km) downstream from Pipestem Creek.

PERIOD OF RECORD.--June 1928 to September 1934, March to May 1935, August 1937 to September 1939, March 1943 to current year. Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Water-stage recorder. Datum of gage is 1,373.27 ft (418.573 m) above mean sea level. Oct. 1, 1949 to Sept. 30, 1965, at former bridge 0.5 mi (0.8 km) upstream at datum 2.00 ft (0.610 m) higher. See WSP 1729 or 1917 for history of changes prior to Oct. 1, 1949.

REMARKS.--Records fair. Flow regulated by Arrowwood, Jim, and Pipestem Lakes, and Jamestown Reservoir, combined capacity, 393,000 acre-ft (485 hm³). Regulation by Jamestown Reservoir (station 06469000) 6 mi (10 km) upstream since 1953 and by Pipestem Lake, capacity 147,000 acre-ft (181 hm³), since 1973.

AVERAGE DISCHARGE.--42 years (water years 1929-34, 1938-39, 1944-77) 57.0 ft³/s (1.614 m³/s), 41,300 acre-ft/yr (50.9 hm³/yr); median of yearly mean discharges, 25 ft³/s (0.71 m³/s), 18,100 acre-ft/yr (22 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,390 ft³/s (181 m³/s), May 13, 1950, gage height, 15.82 ft (4.822 m), site and datum then in use; no flow at times in 1933.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 137 ft³/s (3.88 m³/s) July 5, gage height, 4.04 ft (1.231 m); minimum daily, 1.4 ft³/s (0.040 m³/s) Oct. 13.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	2.4	2.9	4.0	2.2	4.2	4.9	4.0	2.4	1.8	1.8	4.6
2	8.0	2.3	3.0	4.0	2.3	4.2	4.9	4.5	2.3	1.6	1.8	3.9
3	6.0	2.3	3.0	4.0	2.3	4.2	4.8	4.0	2.4	1.6	1.8	4.0
4	4.0	2.3	3.1	4.0	2.3	4.2	4.7	5.1	2.2	3.1	2.0	4.5
5	1.8	2.5	3.2	4.0	2.3	4.3	4.8	7.6	2.1	53	1.9	5.8
6	1.7	2.6	3.3	4.0	2.3	4.3	5.0	4.5	2.1	16	2.0	7.3
7	1.6	2.5	3.4	3.6	2.4	5.5	4.8	3.6	2.1	10	2.0	8.2
8	1.6	2.5	3.5	3.2	2.5	6.2	5.0	3.6	2.1	5.8	2.0	13
9	1.6	2.5	3.7	3.1	2.8	6.4	5.1	3.4	2.1	4.2	2.3	21
10	1.6	2.5	3.9	3.1	3.5	6.5	5.1	3.3	2.5	4.3	2.2	8.2
11	1.8	2.5	4.0	3.1	4.5	5.5	5.0	3.2	2.4	16	2.2	5.1
12	1.6	2.5	4.2	3.1	4.6	5.1	4.8	2.9	2.3	7.9	2.3	4.2
13	1.4	2.5	4.2	3.1	4.5	5.0	4.8	2.6	2.2	5.5	2.5	3.1
14	1.7	2.5	4.2	3.0	4.4	5.4	5.5	2.3	2.0	4.8	2.4	2.5
15	2.1	2.5	4.4	2.6	4.3	5.6	4.3	2.5	4.8	5.0	3.3	2.2
16	2.5	2.5	4.3	2.2	4.1	5.6	4.5	3.0	3.1	22	3.2	2.3
17	2.0	2.7	4.3	2.2	4.0	5.7	4.0	3.2	3.2	8.2	2.8	2.7
18	2.8	2.7	4.3	2.2	4.0	5.6	3.7	2.5	3.3	4.5	2.6	24
19	2.9	2.7	4.3	2.3	4.0	5.6	3.5	2.4	2.5	3.4	2.6	4.3
20	5.1	2.6	4.3	2.4	4.0	5.6	3.5	2.3	2.3	3.0	2.5	1.8
21	6.5	2.6	4.3	2.4	4.6	5.5	3.4	2.3	2.2	2.5	2.5	1.8
22	3.1	2.7	3.8	2.5	4.8	5.5	24	3.4	2.2	1.8	2.5	2.1
23	2.6	2.7	4.3	2.4	4.7	5.5	9.0	2.8	2.2	1.8	5.1	4.3
24	2.6	2.7	4.2	2.4	4.7	5.6	5.5	2.5	2.1	1.8	22	6.8
25	2.5	2.8	4.2	2.4	4.7	5.4	5.3	2.3	2.1	1.6	5.5	4.5
26	2.5	2.9	4.2	2.3	4.5	5.3	5.3	2.6	2.2	1.8	6.5	3.6
27	2.4	2.8	4.1	2.1	4.4	5.3	5.1	2.9	2.4	2.2	4.8	2.0
28	2.4	2.8	4.0	2.0	4.2	5.0	4.5	2.5	2.0	1.9	3.2	2.2
29	2.2	2.8	3.9	2.0	---	5.0	3.9	2.5	1.8	1.9	3.0	2.8
30	2.3	2.9	4.0	2.0	---	4.9	4.0	2.7	1.8	2.1	3.1	3.9
31	2.3	---	4.0	2.1	---	4.9	---	2.9	---	1.8	3.7	---
TOTAL	93.2	77.8	120.5	87.8	103.9	162.6	162.7	99.9	71.4	202.9	108.1	166.7
MEAN	3.01	2.59	3.89	2.83	3.71	5.25	5.42	3.22	2.38	6.55	3.49	5.56
MAX	10	2.9	4.4	4.0	4.8	6.5	24	7.6	4.8	53	22	24
MIN	1.4	2.3	2.9	2.0	2.2	4.2	3.4	2.3	1.8	1.6	1.8	1.8
AC-FT	185	154	239	174	206	323	323	198	142	402	214	331
CAL YR 1976	TOTAL	15441.2	MEAN	42.2	MAX	363	MIN	1.4	AC-FT	30630		
WTR YR 1977	TOTAL	1457.5	MEAN	3.99	MAX	53	MIN	1.4	AC-FT	2890		

JAMES RIVER BASIN

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06470500 JAMES RIVER AT LA MOURE, ND

LOCATION.--Lat 46°21'20", long 98°18'15", in NE¼NE¼ sec.11, T.133 N., R.61 W., LaMoure County, Hydrologic Unit 10160003, on left bank 80 ft (24 m) downstream from bridge on State Highway 13, 0.5 mi (0.8 km) west of LaMoure, and 12 mi (19 km) upstream from Cottonwood Creek.

DRAINAGE AREA.--4,390 mi² (11,370 km²), approximately, of which about 2,600 mi² (6,730 km²) is probably non-contributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April to July 1903 (gage-height record only), April 1950 to current year. Gage-height records for 1902-11 are contained in reports of the U.S. Weather Bureau.

REVISED RECORDS.--WSP 1917: Drainage area.

GAGE.--Water-stage recorder and rubble-masonry control. Datum of gage is 1,290.00 ft (393.192 m) above mean sea level. See WSP 1729 or 1917 for history of changes prior to Apr. 19, 1950.

REMARKS.--Records good. Flow regulated by Arrowwood, Jim, and Pipestem Lakes, and Jamestown Reservoir, combined capacity, 393,000 acre-ft (485 hm³). Regulation by Jamestown Reservoir (station 06469000) 85 mi (137 km) upstream since 1953 and by Pipestem Lake, capacity 147,000 acre-ft (181 hm³), since 1973.

AVERAGE DISCHARGE.--27 years (water years 1951-77), 86.6 ft³/s (2.452 m³/s), 62,700 acre-ft/yr (77.3 hm³/yr); median of yearly mean discharges, 59 ft³/s (1.67 m³/s), 42,700 acre-ft/yr (53 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,800 ft³/s (193 m³/s) Apr. 14, 1969, gage height, 16.17 ft (4.929 m); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Prior to flood of Apr. 14, 1969, a long-time resident said that the flood of May 16, 1950 was the highest since 1881, with stage in either 1942 or 1943 being almost as high owing to large ice jam.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 172 ft³/s (4.87 m³/s) July 13, gage height, 7.65 ft (2.332 m); no flow for part of Sept. 15 due to wind effect, gage height, 6.79 ft (2.070 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	16	11	8.2	8.0	12	36	20	10	11	6.3	11
2	12	23	11	8.0	8.3	12	38	9.6	7.4	6.5	7.4	13
3	18	13	10	8.3	8.6	12	40	7.7	11	12	7.8	10
4	22	6.5	10	8.2	9.5	12	39	17	9.1	11	8.6	12
5	19	11	10	8.4	9.0	12	30	24	16	15	9.0	8.6
6	17	13	10	8.6	8.9	12	26	19	6.1	16	6.9	9.9
7	14	11	10	9.0	8.8	12	24	17	7.0	55	13	7.6
8	21	13	10	8.6	8.8	12	23	16	7.4	69	12	15
9	17	15	10	7.8	9.6	13	22	12	4.5	115	12	12
10	17	12	10	8.0	11	14	31	12	8.8	103	13	3.3
11	17	10	10	8.0	12	23	21	13	9.3	113	8.9	6.6
12	14	11	10	8.0	13	30	20	16	5.5	88	11	7.0
13	12	11	10	8.0	12	27	19	11	8.2	76	10	8.4
14	34	11	11	8.0	12	31	23	9.2	7.5	74	8.3	5.4
15	15	11	12	8.0	12	42	22	7.4	16	46	9.6	4.4
16	3.3	11	11	8.0	12	47	22	13	14	42	11	8.1
17	6.0	12	12	8.0	12	46	26	10	51	28	10	12
18	13	13	12	8.0	12	57	22	9.3	137	23	9.9	19
19	13	12	12	8.0	12	69	20	11	75	25	9.7	10
20	22	13	11	8.0	12	62	19	10	40	16	11	9.3
21	12	13	10	8.0	12	49	19	8.8	35	17	10	18
22	10	12	11	8.0	13	44	15	13	35	15	10	30
23	11	12	10	8.0	14	38	22	8.1	31	15	8.9	27
24	11	12	10	8.0	14	38	14	6.8	23	17	5.4	30
25	16	13	11	8.0	12	39	13	8.1	15	12	8.2	25
26	19	13	11	8.0	12	37	15	11	19	9.3	16	29
27	16	12	11	8.0	12	37	18	13	30	10	12	29
28	16	11	10	8.0	12	39	12	15	25	9.5	11	35
29	16	11	9.7	8.0	---	41	14	11	16	8.6	9.5	34
30	15	11	8.8	8.0	---	37	12	12	22	13	21	35
31	13	---	8.5	8.1	---	33	---	13	---	12	15	---
TOTAL	476.3	368.5	324.0	251.2	312.5	989	677	384.0	701.8	1082.9	322.4	484.6
MEAN	15.4	12.3	10.5	8.10	11.2	31.9	22.6	12.4	23.4	34.9	10.4	16.2
MAX	34	23	12	9.0	14	69	40	24	137	115	21	35
MIN	3.3	6.5	8.5	7.8	8.0	12	12	6.8	4.5	6.5	5.4	3.3
AC-FT	945	731	643	498	620	1960	1340	762	1390	2150	639	961
CAL YR 1976	TOTAL	25122.2	MEAN	68.6	MAX	476	MIN	3.3	AC-FT	49830		
WTR YR 1977	TOTAL	6374.2	MEAN	17.5	MAX	137	MIN	3.3	AC-FT	12640		

JAMES RIVER BASIN

06470500 JAMES RIVER AT LA MOURE, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1957 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: June 1953 to September 1975, October 1976 to current year.

SPECIFIC CONDUCTANCE: October 1976 to current year.

INSTRUMENTATION.--Temperature recorder from June 1953 to September 1975, November 1976 to current year.

REMARKS.--In addition to continuous temperature recorder, samples were collected by a local observer on an approximate daily basis.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 33.0°C July 12, 13, 1957; July 23, 1977; minimum, 0.0°C on many days during winter months.

SPECIFIC CONDUCTANCE: Maximum daily, 1,790 micromhos Dec. 16, 1976; minimum daily, 530 micromhos July 18, 1977.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 33.0°C July 23; minimum, 0.0°C on many days during winter months.

SPECIFIC CONDUCTANCE: Maximum daily, 1,790 micromhos Dec. 16; minimum daily, 530 micromhos July 18.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	DISSOLVED OXYGEN (MG/L)	HARDNESS (CA, MG)	NON-CARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)
OCT 05...	1530	28	950	8.6	10.0	25	--	340	--	77
NOV 02...	1430	45	970	8.4	5.5	18	12.6	320	6	70
DEC 07...	1230	8.0	1350	8.0	.0	12	14.6	500	42	120
JAN 04...	1800	9.6	1700	7.8	.0	35	--	590	2	140
31...	1400	7.7	1650	7.4	.0	25	10.4	630	43	150
FEB 28...	1400	17	1100	7.8	.0	22	--	390	41	94
APR 05...	1045	36	600	8.6	3.0	23	13.5	230	76	55
MAY 02...	1530	9.6	860	8.8	18.0	14	12.0	320	78	72
JUN 01...	1710	13	840	8.8	24.5	38	12.2	310	47	68
JUL 13...	1100	71	1130	8.2	26.0	34	--	290	22	66
AUG 02...	1600	7.4	630	8.7	26.5	65	12.5	220	10	53
30...	1630	25	780	10.8	23.0	35	10.6	270	21	64

DATE	DISSOLVED MAGNESIUM (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CaCO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)
OCT 05...	36	91	36	2.1	11	388	--	--	1.6
NOV 02...	36	85	36	2.1	10	386	0	317	2.5
DEC 07...	49	140	37	2.7	14	560	0	459	9.0
JAN 04...	59	160	36	2.9	14	721	0	591	18
31...	62	170	36	2.9	12	716	0	587	46
FEB 28...	37	110	38	2.4	8.0	422	0	346	11
APR 05...	23	52	32	1.5	6.2	190	0	160	.8
MAY 02...	33	85	36	2.1	9.1	290	0	238	.7
JUN 01...	34	99	40	2.4	10	320	0	260	.8
JUL 13...	31	100	41	2.5	12	330	0	270	3.3
AUG 02...	22	59	35	1.7	11	260	0	210	.8
30...	26	76	37	2.0	11	300	0	250	.0

JAMES RIVER BASIN

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06470500 JAMES RIVER AT LA MOURE, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLORIDE (CL) (MG/L)	DIS- SOLVED FLUORIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO2) (MG/L)	DIS- SOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L)
OCT 05...	160	38	.3	21	626	627	.85	47.7	.15
NOV 02...	170	35	.2	18	611	615	.83	74.2	.03
DEC 07...	270	71	.4	22	940	964	1.28	20.3	.15
JAN 04...	290	79	.4	29	1160	1130	1.58	30.1	.10
31...	310	92	.4	29	1200	1180	1.63	24.9	.35
FEB 28...	200	58	.2	9.2	723	726	.98	33.4	.20
APR 05...	160	27	.1	7.0	431	424	.59	42.5	.08
MAY 02...	210	50	1.0	9.1	558	620	.76	14.5	1.4
JUN 01...	180	53	.2	14	616	616	.84	23.2	.01
JUL 13...	170	47	.4	20	628	609	.85	120	.03
AUG 02...	97	30	.3	16	418	417	.57	8.35	.03
30...	150	42	.2	18	527	535	.72	36.4	.00

DATE	DIS- SOLVED- PHOSPHORUS (P) (MG/L)	DIS- SOLVED ALUMINUM (AL) (UG/L)	DIS- SOLVED ARSENIC (AS) (UG/L)	DIS- SOLVED BARIUM (BA) (UG/L)	DIS- SOLVED BERYLLIUM (BE) (UG/L)	DIS- SOLVED BORON (B) (UG/L)	DIS- SOLVED CADMIUM (CD) (UG/L)	DIS- SOLVED CHROMIUM (CR) (UG/L)	DIS- SOLVED COBALT (CO) (UG/L)	DIS- SOLVED COPPER (CU) (UG/L)
OCT 05...	.18	--	--	--	--	300	--	--	--	--
NOV 02...	.15	--	--	--	--	270	--	--	--	--
DEC 07...	.13	--	--	--	--	450	--	--	--	--
JAN 04...	.06	20	3	100	0	500	0	0	0	2
31...	.35	--	--	--	--	540	--	--	--	--
FEB 28...	.05	--	--	--	--	340	--	--	--	--
APR 05...	.06	--	--	--	--	160	--	--	--	--
MAY 02...	.03	20	1	100	0	280	1	0	0	1
JUN 01...	.07	--	--	--	--	350	--	--	--	--
JUL 13...	.16	--	--	--	--	370	--	--	--	--
AUG 02...	.19	--	--	--	--	260	--	--	--	--
30...	.16	--	--	--	--	320	--	--	--	--

DATE	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED LEAD (PB) (UG/L)	DIS- SOLVED LITHIUM (LI) (UG/L)	DIS- SOLVED MANGANESE (MN) (UG/L)	DIS- SOLVED MERCURY (HG) (UG/L)	DIS- SOLVED MOLYBDENUM (MO) (UG/L)	DIS- SOLVED NICKEL (NI) (UG/L)
OCT 05...	10	--	--	100	--	--	--
JAN 04...	60	2	120	370	.1	1	4
MAY 02...	30	1	70	1300	.0	2	3

JAMES RIVER BASIN

06470500 JAMES RIVER AT LA MOURE, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED SELE- NIUM (SE) (UG/L)	DIS- SOLVED SILVER (AG) (UG/L)	DIS- SOLVED STRON- TIUM (SR) (UG/L)	DIS- SOLVED VANA- DIUM (V) (UG/L)	DIS- SOLVED ZINC (ZN) (UG/L)	CYANIDE (CN) (MG/L)
OCT 05...	--	--	--	--	--	--
JAN 04...	0	0	780	.0	40	.00
MAY 02...	0	0	360	1.2	0	.00

DATE	SUS- PENDE SEDI- MENT (MG/L)	SUS- PENDE SEDI- MENT (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	BED MAT. FALL DIAM. % FINER THAN .062 MM	BED MAT. FALL DIAM. % FINER THAN .125 MM	BED MAT. FALL DIAM. % FINER THAN .250 MM
OCT 05...	84	6.4	--	--	--	--	--	--
NOV 02...	77	9.4	--	--	--	--	--	--
JAN 04...	59	1.5	--	--	--	--	--	--
APR 05...	28	2.8	--	--	--	--	--	--
MAY 02...	209	5.4	70	90	100	2	3	10
JUN 01...	114	4.3	--	--	--	--	--	--
JUL 13...	117	22	69	94	100	6	10	15
AUG 02...	133	2.7	--	--	--	--	--	--
30...	126	8.7	--	--	--	--	--	--

DATE	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
MAY 02...	18	26	30	35	47	61	86
JUN 01...	--	--	--	--	--	--	--
JUL 13...	27	51	61	68	77	85	100

DISSOLVED OXYGEN PROFILE, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

HOURL	MG/L	HOURL	MG/L	HOURL	MG/L	HOURL	MG/L
Jan. 4, 1977		1000	12.0	0200	9.0	1700	7.3
1100	13.0	1100	12.2	0300	9.0	1800	6.9
1800	14.2			0400	8.7	1900	5.8
1900	14.0	May 2, 1977		0500	8.4	2000	5.9
2000	14.1	1200	10.4	0600	7.5	2100	5.9
2100	14.1	1300	10.9	0700	7.4	2200	5.6
2200	14.0	1400	11.4	0800	7.8	2300	5.1
2300	13.8	1500	12.0	0900	8.4	2400	4.7
2400	13.4	1600	12.5	1000	10.2		
		1700	12.6	1100	10.9		
Jan. 5, 1977		1800	12.6			July 14, 1977	
0100	12.8	1900	12.5	Jul 13, 1977		0100	4.6
0200	12.5	2000	11.8	0900	5.1	0200	4.4
0300	12.3	2100	11.1	1000	5.4	0300	4.0
0400	12.2	2200	10.3	1100	6.2	0400	3.7
0500	12.0	2300	9.8	1200	6.6	0500	3.5
0600	11.8	2400	9.4	1300	6.0	0600	3.5
0700	11.8			1400	6.2	0700	3.3
0800	11.8	May 3, 1977		1500	6.5	0800	3.5
0900	12.0	0100	9.3	1600	6.9	0900	3.7

JAMES RIVER BASIN

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06470500 JAMES RIVER AT LA MOURE, ND--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	920	1280	1600	1550	1450	560	880	950	750	570	800
2	---	900	1300	1650	1530	1400	565	890	1000	800	590	800
3	---	935	1320	1650	1530	1350	570	890	1000	770	620	800
4	---	950	1350	1650	1530	1300	570	890	1000	750	630	825
5	---	940	1400	1700	1500	1200	600	890	1000	700	630	825
6	---	950	1400	1700	1480	1200	640	890	975	650	630	830
7	---	955	1500	1700	1450	1180	580	900	975	700	630	830
8	---	975	1580	1700	1430	1180	575	900	950	650	630	840
9	---	980	1600	1700	1400	1150	575	900	950	650	660	840
10	---	985	1650	1650	1380	1100	570	900	1000	675	660	850
11	---	950	1650	1650	1350	1000	565	910	1000	700	690	850
12	---	990	1700	1690	1330	900	570	930	1000	700	690	850
13	---	1040	1780	1690	1300	800	600	950	1000	710	700	850
14	---	990	1750	1680	1300	820	620	975	1000	740	700	850
15	---	1000	1750	1680	1250	820	675	975	1000	730	720	860
16	---	1050	1790	1680	1200	700	700	980	990	700	720	880
17	---	1050	1710	1680	1150	660	700	980	1010	600	730	890
18	840	1060	1650	1630	1180	620	725	980	1000	530	730	900
19	910	1080	1630	1630	1180	600	760	975	950	540	750	900
20	900	1080	1650	1630	1150	580	750	975	940	540	750	900
21	910	1080	1650	1680	1150	570	750	990	940	560	750	890
22	935	1080	1610	1650	1150	600	750	990	920	575	750	900
23	900	1080	1550	1680	1130	600	750	990	920	580	750	900
24	940	1080	1500	1700	1130	600	775	950	920	590	775	920
25	940	1090	1500	1650	1100	540	775	950	910	600	775	920
26	920	1090	1500	1650	1100	535	800	950	675	600	775	930
27	940	1090	1500	1650	1100	560	800	950	675	550	780	950
28	940	1100	1500	1650	1100	555	850	950	600	570	790	960
29	925	1200	1530	1600	---	550	875	950	600	580	800	960
30	925	1230	1550	1550	---	550	875	950	590	580	800	960
31	900	---	1600	1500	---	550	---	950	---	580	800	---

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	8.5	1.0	0.5	0.5	1.5	1.5	16.0	22.0	24.0	24.0	19.0
2	---	6.0	1.5	0.5	0.5	1.5	2.0	16.0	22.5	25.0	25.0	18.0
3	---	4.5	1.5	0.5	1.0	1.5	2.0	16.5	23.0	26.0	23.0	18.0
4	---	2.0	2.0	1.0	1.0	1.5	1.5	17.0	23.0	29.0	25.0	19.0
5	---	2.5	1.5	0.5	1.0	1.5	2.0	17.0	23.0	29.0	25.0	20.0
6	---	4.0	1.5	0.5	1.0	2.0	4.0	18.0	23.0	31.0	25.0	20.0
7	---	2.0	2.0	0.5	1.0	2.0	4.0	19.0	24.0	32.0	25.0	20.0
8	---	4.5	2.0	0.5	1.0	2.0	6.0	19.0	24.0	28.0	25.0	20.0
9	---	4.0	2.0	0.5	1.0	2.0	9.0	20.0	23.0	27.0	25.0	20.0
10	---	4.0	1.5	0.5	1.0	1.5	11.0	20.0	23.0	28.0	24.5	20.0
11	---	2.0	3.0	0.5	1.0	1.0	8.0	20.0	23.0	26.0	24.5	20.0
12	---	3.0	2.0	0.5	1.0	0.5	10.0	22.0	21.0	24.0	24.5	19.0
13	---	4.0	1.5	0.5	1.0	1.0	10.0	22.0	20.0	24.0	23.0	19.0
14	---	5.0	2.0	0.5	1.0	1.0	11.0	22.0	20.0	22.0	21.0	19.0
15	---	4.5	2.0	0.5	1.0	1.0	11.0	22.0	22.0	24.0	20.0	19.5
16	---	5.0	2.0	0.5	1.0	1.0	11.0	22.0	25.0	27.0	19.0	20.0
17	---	4.5	1.5	0.5	1.0	0.5	13.0	22.0	24.5	27.0	19.0	21.0
18	5.0	4.5	2.0	0.5	1.5	1.0	13.0	22.0	24.0	29.0	20.0	19.0
19	5.0	5.5	2.0	0.5	1.5	0.5	13.0	22.0	23.0	27.5	20.0	17.0
20	5.0	6.0	2.0	0.5	1.5	1.0	14.0	22.0	22.0	27.0	20.0	16.5
21	2.0	4.0	2.0	1.0	2.0	1.0	14.0	21.0	22.0	27.0	20.0	17.0
22	1.5	4.0	1.5	1.0	1.5	1.0	15.0	21.0	21.0	28.0	20.0	17.0
23	4.0	3.0	1.0	1.0	1.5	1.5	15.0	21.0	26.0	27.0	20.0	16.0
24	4.5	4.5	2.0	1.0	1.5	2.0	16.0	21.0	26.0	28.0	20.0	15.0
25	4.5	4.0	1.0	0.5	1.5	1.5	16.0	21.0	27.0	29.0	20.0	15.0
26	4.5	2.5	1.0	0.5	1.0	1.0	17.0	21.0	27.0	29.0	20.0	14.5
27	5.0	2.0	1.0	0.5	1.0	2.0	17.0	21.0	27.0	24.0	20.0	14.5
28	6.0	2.0	0.0	0.0	1.0	1.5	16.0	21.0	26.0	24.0	20.5	14.5
29	7.0	2.5	0.5	0.0	---	1.0	16.0	21.0	24.0	24.0	20.0	14.0
30	6.5	1.5	0.5	0.5	---	2.0	16.0	21.0	22.0	24.0	20.0	13.5
31	6.5	---	0.5	0.5	---	2.0	---	21.0	---	24.0	18.0	---

JAMES RIVER BASIN

06470500 JAMES RIVER AT LA MOURE, ND--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1			---	---	1.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0
2			---	---	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
3			---	---	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
4			---	---	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
5			1.5	1.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
6			1.5	1.5	2.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
7			2.0	1.5	2.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0
8			2.5	2.0	1.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0
9			2.5	2.5	1.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0
10			2.5	2.0	1.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0
11			3.0	1.5	1.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0
12			2.5	2.5	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
13			2.5	2.0	1.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
14			3.0	2.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15			4.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16			4.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17			4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18			4.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19			3.5	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20			3.5	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21			3.5	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22			3.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23			3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24			3.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25			3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26			3.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27			1.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28			1.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29			1.5	1.5	0.0	0.0	0.0	0.0	---	---	0.0	0.0
30			1.5	1.5	0.0	0.0	0.0	0.0	---	---	0.0	0.0
31			---	---	0.0	0.0	0.0	0.0	---	---	0.5	0.0
MONTH			4.0	1.0	2.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	2.0	0.5	18.5	16.0	22.0	19.5	22.5	19.5	23.5	21.0	20.5	18.5
2	2.0	1.0	16.5	15.0	22.0	20.5	24.0	21.0	24.0	21.5	21.5	18.0
3	1.5	1.5	18.0	15.0	22.0	21.0	27.5	23.0	24.0	22.0	20.5	19.0
4	1.5	1.0	18.0	17.0	23.0	20.5	26.5	24.5	25.5	22.0	20.0	18.5
5	1.0	0.5	18.5	16.0	23.5	21.5	29.0	25.0	23.5	21.5	22.0	19.0
6	2.0	1.0	17.5	15.5	27.5	21.0	29.0	26.5	22.0	20.0	21.5	20.0
7	4.0	2.0	17.0	14.0	27.0	22.0	---	---	21.0	19.5	20.5	19.5
8	5.5	3.5	19.0	16.0	24.5	22.0	25.5	24.0	21.0	19.5	21.5	19.5
9	9.0	4.5	19.5	17.5	23.0	20.0	23.5	21.5	23.0	20.0	19.5	16.5
10	11.0	8.5	20.5	18.5	24.0	19.5	23.5	20.5	22.5	20.5	17.5	16.0
11	11.0	9.0	20.5	19.0	23.0	21.0	23.5	22.0	21.5	19.0	18.5	16.0
12	10.0	10.0	22.0	19.5	21.0	19.5	24.5	20.5	24.0	20.0	18.5	17.5
13	12.0	9.0	23.0	21.0	22.0	20.0	---	---	21.5	20.0	19.0	17.5
14	11.5	10.5	23.5	22.0	23.5	21.5	---	---	24.5	19.0	18.5	16.5
15	14.0	11.5	23.0	21.0	24.0	21.5	24.0	22.5	22.0	19.5	18.5	16.5
16	15.0	13.0	21.0	19.0	26.0	23.0	26.0	22.5	21.0	19.0	18.0	16.5
17	17.5	14.0	22.0	19.5	25.0	23.0	27.5	25.0	21.0	19.0	19.0	17.0
18	16.0	13.5	23.5	21.5	23.0	21.5	29.0	26.5	21.0	19.5	18.5	15.0
19	13.5	12.0	24.0	22.0	22.5	21.5	29.0	27.5	22.0	20.5	15.0	14.0
20	12.0	10.5	24.5	21.5	22.0	20.5	28.0	26.0	21.0	20.0	14.5	13.0
21	13.0	10.5	23.0	20.0	21.5	20.0	29.0	24.0	23.0	20.0	14.5	13.5
22	14.0	11.5	20.0	18.0	20.5	20.0	27.0	25.0	21.5	20.0	14.5	13.5
23	14.0	12.5	18.5	17.0	---	---	33.0	25.5	20.5	19.0	14.5	14.0
24	14.0	11.5	22.0	18.0	---	---	30.0	25.5	20.5	18.0	14.0	13.5
25	18.0	12.0	---	---	25.0	22.5	27.0	23.5	21.5	19.5	13.5	13.0
26	17.5	14.0	23.0	22.0	27.0	24.0	25.5	24.0	21.0	20.5	13.0	12.0
27	17.0	15.5	22.5	21.5	25.5	23.5	26.5	22.5	20.5	19.5	14.5	12.0
28	16.5	14.5	22.5	21.0	24.0	22.0	27.5	22.5	20.5	18.5	13.5	12.5
29	17.5	15.0	26.5	20.5	24.0	22.0	25.5	23.5	20.5	19.0	12.5	11.5
30	18.5	16.5	23.5	19.5	23.0	20.5	24.0	22.5	21.5	19.5	12.5	12.0
31	---	---	21.0	18.5	---	---	22.5	20.5	21.0	20.5	---	---
MONTH	18.5	0.5	26.5	14.0	27.5	19.5	33.0	19.5	25.5	18.0	22.0	11.5

JAMES RIVER BASIN

425

06470800 BEAR CREEK NEAR OAKES, ND

LOCATION.--Lat 46°13'31", long 98°04'17", in NE¼NE¼ sec.28, T.132 N., R.59 W., Dickey County, Hydrologic Unit 10160003, on right bank 80 ft downstream from bridge on ND Highway 13, 6 mi (10 km) north and 1 mi (2 km) east of Oakes.

DRAINAGE AREA.--About 437 mi² (1,132 km²) contributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1976 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,291.30 ft (393.588 m) above mean sea level.

REMARKS.--Record fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 1.6 ft³/s (0.045 m³/s) Mar. 28, 1977; no flow for long periods each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 1, 1975, reached a stage of 15.00 ft (4.572 m) present datum, from floodmarks, discharge, 4,590 ft³/s (130 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, about 1.6 ft³/s (0.045 m³/s) Mar. 28, 1977, no peak above base of 50 ft³/s (1.42 m³/s); no flow for several months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						0	.50	.06	.02			
2						0	.50	.06	0			
3						0	.40	.06	0			
4						0	.40	.08	0			
5						0	.40	.10	0			
6						0	.40	.07	0			
7						0	.30	.05	0			
8						0	.30	.06	0			
9						0	.20	.03	0			
10						0	1.0	.02	0			
11						0	.50	.01	0			
12						0	.30	.01	0			
13						0	.20	.01	0			
14						0	.15	0	0			
15						0	.10	0	0			
16						0	.10	0	.02			
17						0	.10	0	.03			
18						0	.10	0	.03			
19						.01	.08	0	.03			
20						.02	.08	0	.02			
21						.04	.08	0	0			
22						.06	.08	.01	0			
23						.10	.08	.01	0			
24						.80	.08	.01	0			
25						1.0	.08	0	0			
26						.80	.08	0	0			
27						1.0	.06	0	0			
28						1.3	.06	0	0			
29					---	1.0	.06	0	0			
30					---	.80	.06	0	0			
31		---			---	.60	---	.03	---			---
TOTAL	0	0	0	0	0	7.53	6.83	.68	.15	0	0	0
MEAN	0	0	0	0	0	.24	.23	.022	.005	0	0	0
MAX	0	0	0	0	0	1.3	1.0	.10	.03	0	0	0
MIN	0	0	0	0	0	0	.06	0	0	0	0	0
AC-FT	0	0	0	0	0	15	14	1.3	.3	0	0	0
WTR YR 1977	TOTAL 15.19	MEAN .042	MAX 1.3	MIN 0	AC-FT 30							

JAMES RIVER BASIN

06470800 BEAR CREEK NEAR OAKES, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1976 to September 1977.

REMARKS.--Some chemical data furnished by North Dakota State Water Commission.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MMOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	HARD- NESS (CA, MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)
MAR 28...	1415	1.4	800	--	4.5	--	--	--	--	--
APR 05...	0900	.29	840	8.3	1.0	490	340	110	52	76
MAY 03...	0945	.06	1920	8.3	16.0	930	670	190	110	150

DATE	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	ALKA- LINITAS CAC03 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)
MAR 28...	--	--	--	--	--	--	--	--	--
APR 05...	25	1.5	9.5	183	2	153	1.3	460	37
MAY 03...	26	2.1	17	315	0	258	2.5	900	76

DATE	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO2) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	DIS- SOLVED BORON (B) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)
MAR 28...	--	--	--	--	--	--	--	--	--
APR 05...	.1	8.3	898	846	1.22	.70	250	230	400
MAY 03...	.1	3.2	1680	1600	2.28	.27	170	0	220

JAMES RIVER BASIN

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06470833 PILOT DRAIN AT OAKES, ND

LOCATION.--Lat 46°07'30", long 98°05'49", in SW¼SE¼ sec.29, T.131 N., R.59 W., Dickey County, Hydrologic Unit 10160003, on left bank 1 mi (2 km) southwest of Oakes.

DRAINAGE AREA.--5.1 mi² (13.2 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1971 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,294.94 ft (394.698 m) above mean sea level (levels by Bureau of Reclamation).

REMARKS.--Records good. The flow is primarily due to ground water.

AVERAGE DISCHARGE.--6 years, 1.23 ft³/s (0.0348 m³/s), 891 acre-ft/yr (1.10 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 8.0 ft³/s (0.23 m³/s), June 29, 1975, gage height, 2.20 ft (0.671 m), estimated; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1.3 ft³/s (0.037 m³/s), Apr. 10, gage height, 1.73 ft (0.527 m), no flow for several months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						0	.07	.58	.44	0		
2						0	.07	.54	.38	0		
3						0	.07	.56	.32	0		
4						0	.07	.58	.32	0		
5						0	.07	.65	.32	.01		
6						0	.07	.58	.26	.01		
7						0	.07	.58	.32	0		
8						0	.07	.58	.32	0		
9						0	.07	.58	.26	0		
10						0	.51	.58	.26	0		
11						0	1.1	.58	.26	0		
12						0	.76	.58	.21	0		
13						0	.77	.58	.21	0		
14						0	.81	.58	.16	0		
15						0	.81	.58	.21	0		
16						0	.81	.58	.16	0		
17						0	.84	.58	.11	0		
18						0	.84	.58	.11	0		
19						0	.76	.58	.11	0		
20						0	.73	.58	.07	0		
21						0	.74	.58	.04	0		
22						0	.76	.58	.04	0		
23						0	.73	.58	.04	0		
24						0	.73	.51	.01	0		
25						.01	.72	.51	.01	0		
26						.02	.73	.51	.01	0		
27						.03	.65	.51	.01	0		
28						.04	.60	.51	.01	0		
29					---	.04	.58	.44	.01	0		
30					---	.06	.58	.44	.01	0		
31		---			---	.05	---	.44	---	0		---
TOTAL	0	0	0	0	0	.25	16.19	17.22	5.00	.02	0	0
MEAN	0	0	0	0	0	.008	.54	.56	.17	.0006	0	0
MAX	0	0	0	0	0	.06	1.1	.65	.44	.01	0	0
MIN	0	0	0	0	0	0	.07	.44	.01	0	0	0
AC-FT	0	0	0	0	0	.5	32	34	9.9	.04	0	0
CAL YR 1976	TOTAL	388.56	MEAN	1.06	MAX	3.3	MIN	0	AC-FT	771		
WTR YR 1977	TOTAL	38.68	MEAN	.11	MAX	1.1	MIN	0	AC-FT	77		

06470833 PILOT DRAIN AT OAKES, ND--Continued

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1971 to current year.

WATER TEMPERATURES: October 1971 to current year.

INSTRUMENTATION.--Temperature recorder since November 1976.

REMARKS.--Extremes for current year are not given due to missing record. No flow Oct. 1, 1976 to Mar. 24, 1977; July 1-4, 1977; and July 7 to Sept. 30, 1977. In addition to continuous temperature recorder, samples were collected by a local observer on an approximate daily basis.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 830 micromhos Apr. 5, 10, and 12, 1973; minimum daily, 320 micromhos

Mar. 16, 1972.

WATER TEMPERATURES: Maximum daily, 26.5°C Aug. 18, 1972; minimum daily, 0.0°C on many days during winter months.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	HARD- NESS (CA,MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)
MAR 28...	1325	.04	580	--	6.5	--	--	--	--
APR 05...	0755	.07	540	--	2.0	--	--	--	--
MAY 04...	1300	.60	640	8.1	17.0	4	360	94	90
JUN 02...	1330	.35	670	8.3	21.0	4	350	93	83
JUL 12...	1345	<.01	610	7.6	20.5	5	290	70	69

DATE	DIS- SOLVED MAG- NE- SIUM (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	ALKA- LITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)
MAR 28...	--	--	--	--	--	--	--	--	--
APR 05...	--	--	--	--	--	--	--	--	--
MAY 04...	32	17	9	.4	6.0	320	0	262	4.1
JUN 02...	34	18	10	.4	6.1	310	0	250	2.5
JUL 12...	29	15	10	.4	4.3	270	0	220	11

DATE	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SI02) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L)
MAR 28...	--	--	--	--	--	--	--	--	--
APR 05...	--	--	--	--	--	--	--	--	--
MAY 04...	120	13	.3	21	448	460	.61	.73	.47
JUN 02...	110	14	.2	19	444	440	.60	.42	.54
JUL 12...	77	12	.2	27	375	379	.51	.01	2.7

06470833 PILOT DRAIN AT OAKES, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L)	DIS- SOLVED ALUM- INUM (AL) (UG/L)	DIS- SOLVED ARSENIC (AS) (UG/L)	DIS- SOLVED BARIUM (BA) (UG/L)	DIS- SOLVED BERYL- LIUM (BE) (UG/L)	DIS- SOLVED BORON (B) (UG/L)	DIS- SOLVED CAD- MIUM (CD) (UG/L)	DIS- SOLVED CHRO- MIUM (CR) (UG/L)	DIS- SOLVED COBALT (CO) (UG/L)	DIS- SOLVED COPPER (CU) (UG/L)
MAY 04....	.01	0	9	0	0	60	0	0	0	1
JUN 02....	.01	--	--	--	--	70	--	--	--	--
JUL 12....	.01	--	--	--	--	80	--	--	--	--

DATE	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED LEAD (PB) (UG/L)	DIS- SOLVED LITHIUM (LI) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)	DIS- SOLVED MERCURY (HG) (UG/L)	DIS- SOLVED MOLYB- DENUM (MO) (UG/L)	DIS- SOLVED NICKEL (NI) (UG/L)
MAY 04....	20	3	30	210	.0	2	3

DATE	DIS- SOLVED SELE- NIUM (SE) (UG/L)	DIS- SOLVED SILVER (AG) (UG/L)	DIS- SOLVED STRON- TIUM (SR) (UG/L)	DIS- SOLVED VANA- DIUM (V) (UG/L)	DIS- SOLVED ZINC (ZN) (UG/L)	CYANIDE (CN) (MG/L)
MAY 04....	0	0	300	.0	0	.00

JAMES RIVER BASIN

06470833 PILOT DRAIN AT OAKES, ND--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1							---	---	680	---		
2							---	660	680	---		
3							---	670	690	---		
4							---	675	---	---		
5							---	660	---	610		
6							---	660	700	610		
7							---	---	700	---		
8							---	---	710	---		
9							---	690	710	---		
10							---	690	700	---		
11							---	690	---	---		
12							540	690	---	---		
13							570	700	690	---		
14							610	---	660	---		
15							650	---	620	---		
16							---	700	630	---		
17							---	680	640	---		
18							600	670	---	---		
19							625	680	---	---		
20							640	700	650	---		
21							640	---	630	---		
22							650	---	650	---		
23							---	680	640	---		
24							---	680	640	---		
25							650	680	---	---		
26							650	680	---	---		
27							650	690	640	---		
28							660	---	625	---		
29							640	---	630	---		
30							---	---	630	---		
31							---	690	---	---		
MEAN							627	682	661	---		

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1							---	---	17.0	---		
2							---	9.5	15.0	---		
3							---	11.0	17.0	---		
4							---	14.5	---	---		
5							---	11.5	---	19.0		
6							---	11.5	15.5	19.0		
7							---	---	16.5	---		
8							---	---	16.5	---		
9							---	14.5	15.5	---		
10							---	15.0	14.5	---		
11							---	14.0	---	---		
12							6.5	17.5	---	---		
13							6.5	17.0	15.5	---		
14							9.0	---	16.5	---		
15							9.5	---	17.0	---		
16							---	14.5	17.0	---		
17							---	17.5	15.0	---		
18							10.5	19.0	---	---		
19							7.0	18.0	---	---		
20							7.5	15.5	12.0	---		
21							6.0	---	12.0	---		
22							9.0	---	12.5	---		
23							---	12.5	13.5	---		
24							---	16.5	14.0	---		
25							8.0	19.0	---	---		
26							9.5	18.5	---	---		
27							11.0	17.0	15.0	---		
28							10.0	---	14.0	---		
29							14.0	---	14.0	---		
30							---	---	13.5	---		
31							---	13.5	---	---		
MEAN							9.0	15.0	15.0	---		

JAMES RIVER BASIN

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06470833 PILOT DRAIN AT OAKES, ND--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1											---	---
2											---	---
3											---	---
4											---	---
5											---	---
6											---	---
7											---	---
8											---	---
9											---	---
10											---	---
11											---	---
12											---	---
13											---	---
14											---	---
15											---	---
16											---	---
17											---	---
18											---	---
19											---	---
20											---	---
21											---	---
22											---	---
23											---	---
24											---	---
25											5.0	3.0
26											5.0	5.0
27											10.0	5.0
28											8.5	6.5
29											6.5	4.5
30											4.5	2.5
31											7.0	3.0
MONTH											10.0	2.5

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	10.0	4.0	17.5	13.5	22.0	15.5						
2	9.0	5.0	16.0	11.0	22.0	15.5						
3	7.5	4.0	18.0	12.0	22.0	17.0						
4	4.0	2.5	17.5	15.5	21.0	16.5						
5	5.0	2.5	17.5	12.5	22.0	16.5						
6	8.5	3.5	14.5	12.5	22.0	15.5						
7	10.5	5.5	16.5	10.0	---	---						
8	11.5	5.5	19.5	12.5	---	---						
9	13.5	7.5	19.5	14.0	---	---						
10	15.5	5.0	21.0	14.5	---	---						
11	6.5	3.5	20.5	14.0	---	---						
12	6.0	5.5	22.5	16.0	---	---						
13	10.5	4.5	23.0	17.0	---	---						
14	10.0	8.5	22.0	17.0	---	---						
15	11.5	9.0	20.5	17.0	---	---						
16	13.5	11.0	20.5	14.0	---	---						
17	15.5	12.0	23.0	16.0	---	---						
18	13.5	9.0	24.0	19.0	---	---						
19	9.5	7.0	23.0	18.5	---	---						
20	8.5	8.0	23.0	16.0	---	---						
21	12.0	6.0	19.0	15.0	---	---						
22	15.0	9.0	15.0	14.0	---	---						
23	14.5	10.5	19.5	13.0	---	---						
24	14.5	9.0	24.5	16.5	---	---						
25	15.0	9.0	24.0	19.0	---	---						
26	16.5	10.5	22.0	19.0	---	---						
27	15.5	12.0	20.0	18.0	---	---						
28	16.0	10.5	20.0	16.5	---	---						
29	17.0	12.0	22.5	15.5	---	---						
30	19.0	13.0	18.5	16.0	---	---						
31	---	---	21.0	14.5	---	---						
MONTH	19.0	2.5	24.5	10.0	22.0	15.5						

JAMES RIVER BASIN

06470878 JAMES RIVER AT NORTH DAKOTA-SOUTH DAKOTA STATE LINE

LOCATION.--Lat 45°56'10", long 98°10'26", in SE4SE4 sec.34, T.129 N., R. 60 W., Dickey County, Hydrologic Unit 10160003, at bridge on North Dakota-South Dakota State line road 6.5 mi (9.8 km) south and 1 mi (1.6 km) west from Ludden, ND.

DRAINAGE AREA.--6,650 mi² (17,200 km²), approximately, of which about 2,800 mi² (7,300 km²) is probably noncontributing.

PERIOD OF RECORD.--Water years 1974 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1974 to current year.

WATER TEMPERATURES: October 1974 to current year.

REMARKS.--No flow Feb. 11 to Mar. 31, 1977.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily recorded, 3,040 micromhos Feb. 5, 6, 9, 10, 1977; minimum daily recorded, 242 micromhos Apr. 25, 1975.

WATER TEMPERATURES: Maximum daily recorded, 28.5°C June 12, 1976, July 5, 1977; minimum daily recorded, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily recorded, 3,040 micromhos Feb. 5, 6, 9, 10; minimum daily recorded, 420 micromhos Apr. 6.

WATER TEMPERATURES: Maximum daily recorded, 28.5°C July 5; minimum daily recorded, 0.0°C on many days during winter months.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	DIS- SOLVED OXYGEN (MG/L)	HARD- NESS (CA, MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)
OCT									
06...	1045	1300	9.2	3.5	140	--	310	35	55
NOV									
02...	0845	1220	9.3	2.0	45	11.8	320	42	55
DEC									
06...	1500	1650	8.4	.0	100	20.0	460	53	73
JAN									
05...	1400	2000	8.7	.0	140	--	620	62	100
31...	1615	3000	8.0	.0	90	1.2	910	49	150
APR									
04...	1405	510	9.3	3.5	25	14.5	180	54	38
MAY									
03...	1500	730	9.1	17.5	35	10.3	230	37	49
JUN									
02...	0915	940	8.1	19.5	32	1.8	300	57	62
JUL									
11...	1530	1050	8.9	22.5	45	7.8	330	40	65
AUG									
03...	1100	1100	9.3	21.5	47	7.5	310	1	58
31...	1200	1140	9.2	19.5	45	9.7	320	0	62

DATE	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	ALKA- LITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)
OCT									
06...	41	160	52	4.0	15	290	20	271	.3
NOV									
02...	44	170	52	4.1	15	337	0	276	.3
DEC									
06...	67	240	52	4.9	19	472	11	405	3.1
JAN									
05...	89	320	52	5.6	24	676	0	554	2.2
31...	130	420	49	6.1	28	1050	0	861	17
APR									
04...	20	49	37	1.6	5.6	150	0	120	.1
MAY									
03...	27	80	41	2.3	11	240	0	197	.3
JUN									
02...	36	98	40	2.5	14	300	0	250	3.8
JUL									
11...	40	120	43	2.9	15	350	0	290	.7
AUG									
03...	40	150	50	3.7	16	280	47	310	.3
31...	40	160	51	3.9	17	410	5	340	.4

JAMES RIVER BASIN

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06470878 JAMES RIVER AT NORTH DAKOTA-SOUTH DAKOTA STATE LINE

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLORIDE (CL) (MG/L)	DIS-SOLVED FLUORIDE (F) (MG/L)	DIS-SOLVED SILICA (SiO2) (MG/L)	DIS-SOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)
OCT								
06...	250	80	.4	21	821	790	1.12	.84
NOV								
02...	280	84	.3	11	820	826	1.12	.06
DEC								
06...	420	140	.4	14	1240	1220	1.69	.00
JAN								
05...	530	170	.5	22	1710	1590	2.33	.10
31...	730	210	.5	38	2300	2230	3.13	.01
APR								
04...	110	47	.2	3.8	338	348	.46	.05
MAY								
03...	160	36	.3	2.0	492	484	.67	.02
JUN								
02...	220	48	.3	24	667	651	.91	.15
JUL								
11...	230	60	.3	25	754	728	1.03	.04
AUG								
03...	230	74	.3	16	803	770	1.09	.03
31...	240	78	.3	20	816	825	1.11	.00

DATE	DIS-SOLVED PHOSPHORUS (P) (MG/L)	DIS-SOLVED ALUMINUM (AL) (UG/L)	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED BARIUM (BA) (UG/L)	DIS-SOLVED BERYL-LIUM (BE) (UG/L)	DIS-SOLVED BORON (B) (UG/L)	DIS-SOLVED CADMIUM (CD) (UG/L)	DIS-SOLVED CHROMIUM (CR) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	DIS-SOLVED COPPER (CU) (UG/L)
OCT										
06...	.48	--	--	--	--	460	--	--	--	--
NOV										
02...	.39	--	--	--	--	450	--	--	--	--
DEC										
06...	.70	--	--	--	--	590	--	--	--	--
JAN										
05...	.90	0	11	0	0	720	0	0	0	2
31...	3.0	--	--	--	--	1000	--	--	--	--
APR										
04...	.01	--	--	--	--	150	--	--	--	--
MAY										
03...	.20	0	5	100	0	280	1	0	0	0
JUN										
02...	.31	--	--	--	--	400	--	--	--	--
JUL										
11...	.73	--	--	--	--	460	--	--	--	--
AUG										
03...	.71	--	--	--	--	530	--	--	--	--
31...	.81	--	--	--	--	570	--	--	--	--

JAMES RIVER BASIN

06470878 JAMES RIVER AT NORTH DAKOTA-SOUTH DAKOTA STATE LINE

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED LITHIUM (LI) (UG/L)	DIS-SOLVED MANGANESE (MN) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	DIS-SOLVED MOLYB- DENUM (MO) (UG/L)	DIS-SOLVED NICKEL (NI) (UG/L)
JAN 05...	30	2	200	910	.0	2	7
MAY 03...	20	6	60	0	.0	0	3

DATE	DIS-SOLVED SELE- NIUM (SE) (UG/L)	DIS-SOLVED SILVER (AG) (UG/L)	DIS-SOLVED STRON- TIUM (SR) (UG/L)	DIS-SOLVED VANA- DIUM (V) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)	CYANIDE (CN) (MG/L)
JAN 05...	0	0	650	.3	10	.01
MAY 03...	0	0	260	.9	0	.00

DISSOLVED OXYGEN PROFILE, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

HOURL	MG/L	HOURL	MG/L	HOURL	MG/L	HOURL	MG/L
Jan. 5, 1977		May 3, 1977		0600	7.4	2300	6.9
1330	14.2	1400	10.2	0700	7.4	2400	6.2
1500	14.2	1500	10.3	0800	7.2		
2100	14.2	1600	10.5	0900	7.2	July 12, 1977	
2200	14.4	1700	10.6	1000	7.3	0100	5.8
2300	15.1	1800	10.0	1100	8.1	0200	5.8
2400	15.2	1900	9.9	1200	8.7	0300	5.7
		2000	9.5	1300	9.0	0400	5.6
Jan. 6, 1977		2100	8.7	1400	9.1	0500	5.7
0100	14.9	2200	8.9			0600	5.4
0200	14.4	2300	8.3	July 11, 1977		0700	4.5
0300	13.2	2400	7.7	1500	8.6	0800	4.8
0900	12.4			1600	8.9	0900	6.6
1000	12.2	May 4, 1977		1700	8.8	1000	7.2
1100	12.5	0100	7.6	1800	8.5	1100	7.8
1200	12.3	0200	7.7	1900	8.6	1200	8.0
1300	12.4	0300	7.7	2000	8.5	1300	9.0
		0400	7.6	2100	7.5	1400	10.1
		0500	7.5	2200	7.4	1500	11.1

JAMES RIVER BASIN

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06470878 JAMES RIVER AT NORTH DAKOTA-SOUTH DAKOTA STATE LINE

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1250	1120	1690	2180	3000		562	750	960	---	1090	1160
2	1240	1250	1780	2200	3010		560	740	980	---	1090	1140
3	1250	1310	1800	2220	3020		520	750	970	1080	1110	1180
4	1240	1320	1780	2210	3030		552	750	990	1090	1110	1150
5	1240	1310	1700	2210	3040		530	780	1000	1090	1130	1170
6	1230	1280	1750	2220	3040		420	790	1000	1060	1090	1150
7	1230	1300	1780	2130	3030		530	810	990	1090	1010	1130
8	1240	1310	1780	2130	3030		530	810	1020	1100	1080	1130
9	1240	1220	1800	2140	3040		540	810	1020	1110	1100	1120
10	1240	1250	1800	2260	3040		530	820	1040	1110	1100	1100
11	1240	1320	1920	2260	---		510	840	1010	1110	1110	1120
12	1250	1420	1920	2280	---		510	860	900	1090	1120	1130
13	1260	1410	1960	2250	---		540	860	1000	1090	1120	1140
14	1270	1410	2000	2260	---		550	870	1020	1130	1130	1130
15	1270	1420	1980	2270	---		540	900	1010	1190	1090	1160
16	1290	1420	2000	2280	---		570	910	950	1190	1080	1180
17	1300	1480	1780	2290	---		590	920	---	1190	1090	1200
18	1220	1320	1750	2300	---		590	930	1020	1180	1090	1180
19	1300	1380	1880	2300	---		600	940	1030	1200	1090	1180
20	1250	1380	1890	2310	---		610	890	1030	1180	1100	1170
21	1350	1320	1900	2300	---		540	890	1010	1200	1100	1170
22	1050	1450	1920	2310	---		640	940	980	1190	1100	1100
23	1190	1490	1930	2320	---		650	910	1030	1220	1140	1090
24	1240	1420	1750	2310	---		650	940	1030	1240	1160	1050
25	1000	1450	2050	2320	---		660	940	980	1280	1190	1050
26	1050	1480	2000	2330	---		670	960	1040	1300	1180	1080
27	1350	1650	2050	2340	---		700	960	1080	1300	1160	1080
28	1300	1850	2050	2350	---		690	980	1080	1300	1150	1080
29	1300	1640	2060	2350	---		740	950	1070	1100	1120	1050
30	1220	1780	2070	---	---		730	930	---	1050	1160	1030
31	1020	---	2080	3000	---		---	900	---	1050	1140	---
MEAN	1230	1410	1890	2290	3030		585	872	1010	1160	1110	1130

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13.5	9.0	1.0	0.0	0.0		1.5	14.5	19.0	---	23.0	13.5
2	12.0	4.0	0.5	0.0	0.0		1.5	17.0	21.0	---	22.5	17.5
3	15.0	1.0	0.5	0.0	0.5		1.5	15.5	21.0	27.5	23.5	17.5
4	12.0	1.5	1.0	0.0	0.0		1.5	18.0	21.0	27.5	22.0	16.0
5	8.0	3.0	0.5	0.0	0.0		1.0	18.0	21.5	28.5	20.5	26.0
6	6.5	2.5	0.0	0.0	0.0		1.5	15.0	21.0	26.5	22.0	18.0
7	10.0	2.5	0.5	0.0	0.0		2.0	12.0	21.5	25.0	22.5	17.0
8	9.5	3.0	0.0	0.0	0.0		5.0	15.0	21.5	21.5	20.5	21.5
9	10.0	2.5	0.0	0.0	0.5		11.0	18.0	18.5	23.5	19.5	19.0
10	13.5	1.0	0.0	0.0	0.0		11.5	20.5	18.0	23.0	18.5	18.0
11	13.0	2.0	0.0	0.0	---		11.5	19.5	20.0	22.0	17.5	14.5
12	14.5	2.0	0.0	0.0	---		10.0	20.0	19.0	21.5	18.0	16.5
13	10.0	2.5	0.0	0.0	---		11.5	20.0	21.5	24.0	19.0	16.0
14	10.5	2.0	0.5	0.0	---		11.0	20.0	21.5	23.0	17.5	16.5
15	7.0	2.5	0.5	0.0	---		11.5	19.0	24.0	23.5	17.0	20.5
16	4.5	3.0	0.5	0.0	---		15.5	18.0	22.0	24.5	24.0	16.5
17	5.5	2.5	0.0	0.0	---		15.5	19.5	---	27.0	20.0	18.0
18	3.0	3.0	0.5	0.0	---		14.5	22.0	21.0	27.0	19.0	12.0
19	3.0	3.0	0.0	0.0	---		11.5	24.0	22.5	27.0	23.5	13.0
20	2.0	2.0	0.0	0.0	---		11.5	21.0	19.5	24.0	22.0	13.5
21	0.0	1.5	0.0	0.0	---		11.5	20.5	19.5	27.0	24.0	14.0
22	2.5	1.5	0.0	0.0	---		12.5	17.0	19.5	24.5	20.0	15.0
23	1.0	2.5	0.5	0.0	---		12.5	14.5	22.5	24.0	17.0	13.5
24	1.5	2.5	0.0	0.0	---		12.0	19.5	24.0	27.0	18.5	14.5
25	1.0	2.5	0.5	0.0	---		12.5	24.0	22.0	23.5	19.0	14.0
26	1.0	1.0	0.5	0.0	---		14.0	22.0	24.0	22.5	27.5	13.5
27	2.0	0.5	0.5	0.0	---		16.0	20.5	23.5	21.0	18.0	14.0
28	2.0	0.5	0.0	0.0	---		14.0	20.0	23.0	23.0	19.0	14.5
29	4.0	0.0	0.0	0.0	---		15.0	19.5	20.5	24.0	18.5	13.0
30	7.0	0.5	0.0	---	---		16.5	18.5	---	22.5	21.0	12.0
31	2.0	---	0.0	0.0	---		---	23.0	---	22.5	19.5	---
MEAN	6.5	2.5	0.5	0.0	0.0		10.0	19.0	21.0	24.5	20.5	16.0

06471200 MAPLE RIVER AT NORTH DAKOTA-SOUTH DAKOTA STATE LINE

LOCATION.--Lat 45°56'20", long 98°27'08", in SW¼Sec. 33, T.129 N., R.62 W., Dickey County, N. Dak., Hydrologic Unit 10160004, on left bank 0.4 mi (0.6 km) upstream from State line, 7.8 mi (12.6 km) northeast of Frederick, SD and 15.7 mi (25.3 km) upstream from mouth.

DRAINAGE AREA.--750 mi² (1,940 km²), approximately, of which about 270 mi² (699 km²) is probably noncontributing.

PERIOD OF RECORD.--June 1956 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,365 ft (416 m), from topographic map. Prior to June 14, 1962, nonrecording gage at site 0.4 mi (0.6 km) downstream at datum 0.94 ft (0.287 m) lower.

REMARKS.--Records good. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--21 years, 18.1 ft³/s (0.513 m³/s), 13,110 acre-ft/yr (16.2 hm³/yr); median of yearly mean discharges, 10 ft³/s (0.28 m³/s), 7,240 acre-ft/yr (8.9 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,930 ft³/s (168 m³/s) Apr. 11, 1969, gage height, 15.22 ft (4.639 m); maximum gage height, 16.05 ft (4.892 m) Apr. 11, 1969, backwater from ice; no flow for long periods each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 37 ft³/s (1.05 m³/s) Mar. 13, gage height, 4.30 ft (1.311 m); maximum gage height, 5.10 ft (1.554 m) Mar. 20, backwater from ice, no peak above base of 50 ft³/s (1.42 m³/s); no flow most of year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						0	6.1					
2						0	6.7					
3						0	5.1					
4						0	5.3					
5						0	3.5					
6						0	3.5					
7						0	3.3					
8						0	2.1					
9						0	1.4					
10						0	1.6					
11						0	1.4					
12						0	.99					
13						13	.82					
14						19	.67					
15						5.6	.67					
16						1.3	.60					
17						.67	.47					
18						.37	.47					
19						.25	.29					
20						1.0	.25					
21						10	.19					
22						20	.05					
23						25	.09					
24						22	.06					
25						20	.04					
26						17	.02					
27						13	.02					
28						11	0					
29					---	10	0					
30					---	9.9	0					
31		---			---	6.4	---		---			---
TOTAL	0	0	0	0	0	205.49	45.70	0	0	0	0	0
MEAN	0	0	0	0	0	6.63	1.52	0	0	0	0	0
MAX	0	0	0	0	0	25	6.7	0	0	0	0	0
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	0	0	0	0	0	408	91	0	0	0	0	0
CAL YR 1976	TOTAL	3387.43	MEAN 9.26	MAX 458	MIN 0	AC-FT 6720						
WTR YR 1977	TOTAL	251.19	MEAN .69	MAX 25	MIN 0	AC-FT 498						

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. 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.

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements Date	Discharge (ft ³ /s)
Red River of the North basin						
Edmore Coulee	Red River of the North	Lat 48°15'12", long 98°42'30", in SW $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.12, T.155 N., R. 63 W., Ramsey County, 8 miles southeast of Webster.	--	--	3-28-77 4- 1-77 4-19-77	4.13 9.41 0.69
Starkweather Coulee	Red River of the North	Lat 48°20'32", long 98°40'21", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.9, T.156 N., R.64 W., Ramsey County, $\frac{1}{2}$ mile south of Garske.	--	--	3-28-77 4- 1-77	12.3 10.1
Sheyenne River Diversion	Red River of the North	Lat 46°48'13", long 96°54'13", in NW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec.5, T.138 N., R.49 W., Cass County, 3 miles north of Horace.	--	1976	10-26-76 11- 8-76 11- 9-76 11-11-76 11-17-76 12- 8-76 12-20-76 1-13-77 1-18-77 2-15-77 3-16-77 3-21-77 5-24-77 6-28-77	21.4 25.3 25.2 24.7 28.3 30.7 28.0 25.9 26.6 26.5 21.0 0 24.6 0
Pembina River	Red River of the North	Lat 48°54'10", long 98°13'40", in SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec.29, T.163 N., R.57 W., Cavalier County, at bridge on county highway, 3 miles east of Vang.	--	1962, 1966,70, 1972,75	1-27-77 3-22-77 4- 5-77 4-13-77 4-26-77 5-23-77 6-29-77 7-26-77 8-22-77 9-29-77	0 3.13 18.5 a45 a15 156 a14 0.11 a0.04 a18
Bonnes Coulee	Souris River	Lat 48°03'30", long 100°57'00", in NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec.21, T.153 N., R.80 W., McHenry County, at culvert on U.S. Highway 52, 0.5 mile west of Velva.	53	1962, 1965, 1971-73, 1976	5- 6-77	a34.0
Souris River	Red River of the North	Lat 48°03'50", long 100°55'42", in NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.22, T.153 N., R.80 W., McHenry County, at bridge on State Highway 41 in Velva.	--	1966-76	2- 8-77	30.9
Souris River	Red River of the North	Lat 48°05'44", long 100°46'40", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.2, T.153 N., R.79 W., McHenry County, at bridge on county highway 3 miles southwest of Verendrye.	--	--	2- 8-77	29.3
Souris River	Red River of the North	Lat 48°07'28", long 100°45'01", in SE $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.30, T.154 N., R.78 W., McHenry County, at bridge on county highway 1 mile north of Verendrye.	--	--	2- 8-77	31.4
Souris River	Red River of the North	Lat 48°10'44", long 100°40'00", in SW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec.11, T.154 N., R.78 W., McHenry County, 6 miles northeast of Verendrye.	--	--	2- 9-77	28.5
Wintering River	Souris River	Lat 48°11'30", long 100°34'31", in NW $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec.4, T.154 N., R.77 W., McHenry County, at bridge on county highway, 9 miles northeast of Verendrye.	--	--	2- 9-77	0.74
Souris River	Red River of the North	Lat 48°13'34", long 100°31'46", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec.23, T.155 N., R.77 W., McHenry County, 10 miles southwest of Townner.	--	--	2- 9-77	32.5
Souris River	Red River of the North	Lat 48°10'51", long 100°38'04", in NW $\frac{1}{4}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec.12, T.154 N., R.78 W., McHenry County, 7 miles southwest of Townner.	--	--	2- 9-77	37.1
Souris River	Red River of the North	Lat 48°18'47", long 100°28'03", in SW $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec.20, T.156 N., R.76 W., McHenry County at bridge on U.S. Highway 2 near Townner.	--	--	2- 9-77 5- 9-77	35.2 253
Souris River	Red River of the North	Lat 48°24'23", long 100°23'38", in NW $\frac{1}{4}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec.19, T.157 N., R.75 W., McHenry County, at bridge on county highway, 4 miles north of Townner.	--	--	2-10-77	36.3

a - Estimated

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
Little Missouri River basin						
Little Missouri River	Missouri River	Lat 46°36'42", long 103°29'03", in SE½NW½NW½ sec.10, T.136 N., R.102 W., Slope County, near Amidon.	--	--	8-26-76 11-11-76	8.98 10.6
Little Missouri River	Missouri River	Lat 46°55'10", long 103°31'40", in NE½ sec.27, T.140 N., R.102 W., Billings County, on left bank 600 ft downstream from bridge on county highway and 1 mile upstream from Andrews Creek and bridge on I-94.	6,190	1903-9, 1922-24, 1928-34, 1945-75	11-12-75 12-16-75 8-26-76 11-11-76	38.7 6.79 12.5 12.4
Little Missouri River	Missouri River	Lat 46°56'36", long 103°32'04", in SW½SW½NE½ sec.15, T.140 N., R.102 W., Billings County at Cottonwood Camp Grounds near Medora.	--	--	8-27-76 11-11-76	13.1 19.3
Little Missouri River	Missouri River	Lat 46°57'30", long 103°30'58", in SE½SE½NW½ sec.11, T.140 N., R.102 W., Billings County, at Peaceful Valley Junction.	--	--	8-27-76 11-11-76	13.5 12.5
Little Missouri River	Missouri River	Lat 46°58'24", long 103°29'33", in SW½SW½NE½ sec.1, T.140 N., R.102 W., Billings County, 4 miles north of Medora.	--	--	8-27-76	15.3
Little Missouri River	Missouri River	Lat 47°03'31", long 103°31'12", in NE½NE½SE½ sec.6, T.141 N., R.101 W., Billings County, 10 miles north of Medora.	--	--	8-27-76	11.2
Little Missouri River	Missouri River	Lat 47°07'32", long 103°33'17", in SW½SE½SW½ sec.12, T.142 N., R.102 W., Billings County, near Ash Coulee.	--	--	8-27-76	10.6
Little Missouri River	Missouri River	Lat 47°19'03", long 103°38'19", in NW½SW½SW½ sec.5, T.144 N., R.102 W., Billings County, 13 miles east of Trotters.	--	--	8-27-76	17.1
Little Missouri River	Missouri River	Lat 47°18'30", long 103°37'40", in SW½SW½NE½ sec.8, T.144 N., R.102 W., Billings County, 28 miles north of Medora.	--	--	11-12-75	26.0
Heart River basin						
Antelope Creek	Heart River	Lat 46°31'50", long 101°38'25", in NW½NE½ sec.8, T.135 N., R.87 W., Grant County, on right bank 800 ft upstream from county highway bridge, 4 miles upstream from mouth and 8 miles northwest of Carson.	221	1948-75	6-15-77	^a 250
Heart River	Missouri River	Lat 46°36'15", long 101°28'49", in SE½SW½ sec.10, T.136 N., R.86 W., Grant County, 9 miles south of Almont.	--	--	10-17-76	12.6
Heart River	Missouri River	Lat 46°34'09", long 101°16'27", in SW½NW½ sec.29, T.136 N., R.84 W., Morton County, 8 miles north of Flasher.	--	--	10-17-76	28.7
Heart River	Missouri River	Lat 46°35'53", long 101°15'58", in SW½NE½ sec.17, T.136 N., R.84 W., Grant County, 10 miles north of Flasher.	--	--	10-17-76	27.0
Grand River basin						
Alkali Creek	North Fork Grand River	Lat 46°00'00", long 103°22'05", on west line sec.18, T.129 N., R.101 W., Bowman County, on right bank on downstream side of county highway bridge 12 miles south of Bowman.	58.1	1965-73	11- 4-76 4- 7-77 5-17-77 7- 7-77 8- 9-77	0.17 2.73 0.07 0.04 0.03

a - Estimated

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	STAGE (FT ABOVE DATUM)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	HARD- NESS (CA, MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM
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PART 5. HUDSON BAY BASIN

RED RIVER OF THE NORTH BASIN

05056220 - SWEETWATER LAKE AT SWEETWATER, ND (LAT 48 12 37 LONG 098 52 15)

OCT , 1976												
13...	1250	a59.05	770	8.7	9.5	45	240	43	33	38	77	38
JAN , 1977												
12...	1130	a58.67	1230	8.4	.0	45	380	70	54	59	120	38
APR												
26...	1300	a59.03	850	8.8	14.5	27	260	42	38	41	78	37
JUL												
13...	1230	a58.58	800	9.3	22.5	85	220	30	23	39	81	41

05056250 - LAKE ALICE NR CHURCHS FERRY, ND (LAT 48 21 07 LONG 099 05 42)

OCT , 1976												
13...	1000	a42.68	1080	7.9	7.0	90	390	52	77	49	81	29
APR , 1977												
26...	0945	a41.25	1020	8.4	8.0	47	380	82	70	49	82	31
JUL												
13...	1045	a40.94	1400	8.6	22.0	140	510	150	91	69	120	32

05056260 - LAKE IRVINE NR CHURCHS FERRY, ND (LAT 48 16 57 LONG 099 10 25)

OCT , 1976												
13...	0900	a39.74	1180	8.8	2.0	100	510	120	110	57	83	25
APR , 1977												
26...	1045	--	920	8.4	13.5	100	360	100	73	44	65	27
JUL												
13...	0900	a39.94	1300	8.7	17.5	65	490	130	98	60	100	29

05056500 - DEVILS LAKE NR DEVILS LAKE, ND (LAT 48 04 00 LONG 098 56 07)

OCT , 1976												
14...	0830	a23.12	4000	8.8	10.0	17	760	350	73	140	610	61
JAN , 1977												
12...	1650	a22.74	4000	8.7	.0	23	860	400	79	160	690	61
APR												
27...	0815	a22.85	3600	8.7	9.5	8	790	360	70	150	580	59
JUL												
14...	0800	a22.48	4100	8.8	20.0	22	780	320	81	140	650	62

05056505 - NARROWS OF DEVILS LAKE NR DEVILS LAKE, ND (LAT 48 01 36 LONG 098 53 44)

OCT , 1976												
14...	0850	a23.12	4000	8.7	10.0	18	750	300	70	140	600	60
JAN , 1977												
12...	1710	a22.74	4400	8.7	.0	25	860	400	81	160	710	61
APR												
27...	0855	a22.85	3700	8.7	7.5	25	750	320	70	140	580	60
JUL												
14...	0845	a22.48	4800	8.9	20.0	17	780	320	80	140	650	62

05056506 - MISSION BAY OF DEVILS LAKE NR DEVILS LAKE, ND (LAT 48 01 36 LONG 098 53 43)

OCT , 1976												
13...	1630	a22.89	4300	8.5	10.5	22	790	380	68	150	650	61
JAN , 1977												
12...	1330	a22.66	5080	8.7	.0	45	1000	460	87	190	820	61
APR												
26...	1500	a22.76	4000	8.7	18.5	25	830	380	70	160	660	60
JUL												
12...	1500	a22.36	5000	8.9	21.5	23	850	360	75	160	780	64

a - Add 1,400 ft to convert to mean sea level.

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD WATER-QUALITY LAKE STATIONS

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO ₃) (MG/L)	CAR- BONATE (CO ₃) (MG/L)	ALKA- LINITY AS CACO ₃ (MG/L)	CARBON DIOXIDE (CO ₂) (MG/L)	DIS- SOLVED SULFATE (SO ₄) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO ₂) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)
PART 5. HUDSON BAY BASIN											
RED RIVER OF THE NORTH BASIN											
05056220 - SWEETWATER LAKE AT SWEETWATER, ND (LAT 48 12 37 LONG 098 52 15)											
OCT , 1976											
13...	2.2	24	211	14	196	.8	190	31	.1	20	542
JAN , 1977											
12...	2.7	33	278	48	308	2.4	290	45	.2	31	859
APR											
26...	2.1	24	270	0	220	.7	190	25	.3	22	575
JUL											
13...	2.4	24	230	0	190	.2	190	29	.1	25	541
05056250 - LAKE ALICE NR CHURCHS FERRY, ND (LAT 48 21 07 LONG 099 05 42)											
OCT , 1976											
13...	1.8	27	417	0	342	8.4	210	33	.2	30	752
APR , 1977											
26...	1.8	22	360	0	300	2.3	220	32	.3	8.8	716
JUL											
13...	2.3	37	440	0	360	1.8	370	49	.2	22	1060
05056260 - LAKE IRVINE NR CHURCHS FERRY, ND (LAT 48 16 57 LONG 099 10 25)											
OCT , 1976											
13...	1.6	31	477	0	391	1.2	300	40	.2	35	937
APR , 1977											
26...	1.5	19	320	1	260	2.1	210	25	.2	19	642
JUL											
13...	2.0	32	420	8	360	1.4	330	40	.3	22	951
05056500 - DEVILS LAKE NR DEVILS LAKE, ND (LAT 48 04 00 LONG 098 56 07)											
OCT , 1976											
14...	9.6	82	456	20	407	1.3	1300	310	.1	10	2850
JAN , 1977											
12...	10	86	494	29	453	1.8	1500	300	.2	15	3180
APR											
27...	9.0	76	480	25	440	1.7	1300	260	.1	13	2670
JUL											
14...	10	78	500	27	460	1.4	1300	290	.2	2.9	2890
05056505 - NARROWS OF DEVILS LAKE NR DEVILS LAKE, ND (LAT 48 01 36 LONG 098 53 44)											
OCT , 1976											
14...	9.5	82	493	31	456	1.8	1300	310	.2	11	2840
JAN , 1977											
12...	11	87	385	88	462	1.8	1500	310	.2	15	3170
APR											
27...	9.2	76	470	25	430	1.7	1300	260	.2	13	2640
JUL											
14...	10	78	510	23	460	1.1	1400	300	.1	3.2	2910
05056506 - MISSION BAY OF DEVILS LAKE NR DEVILS LAKE, ND (LAT 48 01 36 LONG 098 53 43)											
OCT , 1976											
13...	10	87	434	33	411	2.5	1400	340	.1	8.3	3000
JAN , 1977											
12...	11	100	572	41	537	2.1	1900	370	.2	13	3740
APR											
26...	9.9	86	500	25	450	1.8	1500	300	.1	11	3010
JUL											
12...	12	97	490	54	490	1.2	1700	360	.1	16	3470

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS-SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED PHOS- PHORUS (P) (MG/L)	DIS-SOLVED ALUM- INUM (AL) (UG/L)	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED BARIUM (BA) (UG/L)	DIS-SOLVED BORON (B) (UG/L)	DIS-SOLVED CAD- MIUM (CD) (UG/L)	DIS-SOLVED CHRO- MIUM (CR) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)
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PART 5. HUDSON BAY BASIN

RED RIVER OF THE NORTH BASIN

05056220 - SWEETWATER LAKE AT SWEETWATER, ND (LAT 48 12 37 LONG 098 52 15)

OCT , 1976											
13...	532	.74	.12	.03	160	1	0	170	1	0	0
JAN , 1977											
12...	818	1.17	.07	.03	10	10	0	170	0	0	0
APR											
26...	552	.78	.04	.03	20	5	0	130	1	0	0
JUL											
13...	525	.74	.03	.03	20	7	0	150	1	0	0

05056250 - LAKE ALICE NR CHURCHS FERRY, ND (LAT 48 21 07 LONG 099 05 42)

OCT , 1976											
13...	725	1.02	2.5	.23	90	10	0	250	1	0	2
APR , 1977											
26...	662	.97	.03	.13	20	6	100	180	1	10	0
JUL											
13...	977	1.44	.26	.20	20	15	100	280	3	0	2

05056260 - LAKE IRVINE NR CHURCHS FERRY, ND (LAT 48 16 57 LONG 099 10 25)

OCT , 1976											
13...	896	1.27	.90	.67	120	24	100	200	0	0	0
APR , 1977											
26...	615	.87	.03	.18	20	6	200	130	0	0	0
JUL											
13...	898	1.29	.00	.41	20	6	0	180	1	0	0

05056500 - DEVILS LAKE NR DEVILS LAKE, ND (LAT 48 04 00 LONG 098 56 07)

OCT , 1976											
14...	2770	3.88	.01	.41	70	20	0	600	0	0	0
JAN , 1977											
12...	3100	4.32	.05	.47	20	24	0	630	0	0	0
APR											
27...	2710	3.63	.00	.43	30	16	0	560	1	0	0
JUL											
14...	2820	3.93	.02	.52	10	21	0	590	3	0	0

05056505 - NARROWS OF DEVILS LAKE NR DEVILS LAKE, ND (LAT 48 01 36 LONG 098 53 44)

OCT , 1976											
14...	2790	3.86	.01	.42	60	20	0	600	0	0	0
JAN , 1977											
12...	3140	4.31	.06	.45	0	28	0	630	0	0	0
APR											
27...	2700	3.59	.00	.43	30	21	0	550	1	0	0
JUL											
14...	2930	3.96	.01	.53	10	18	0	600	3	0	0

05056506 - MISSION BAY OF DEVILS LAKE NR DEVILS LAKE, ND (LAT 48 01 36 LONG 098 53 43)

OCT , 1976											
13...	2950	4.08	.02	.32	100	22	0	630	0	0	2
JAN , 1977											
12...	3810	5.09	.11	.40	10	30	0	730	0	0	0
APR											
26...	3060	4.09	.16	.35	20	23	0	540	1	0	0
JUL											
12...	3490	4.72	.02	.39	20	19	0	700	3	0	0

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD WATER-QUALITY LAKE STATIONS

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED COPPER (CU) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED LEAD (PB) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)	DIS- SOLVED MERCURY (HG) (UG/L)	DIS- SOLVED MOLYB- DENUM (MO) (UG/L)	DIS- SOLVED NICKEL (NI) (UG/L)	DIS- SOLVED SELE- NIUM (SE) (UG/L)	DIS- SOLVED STRON- TIUM (SR) (UG/L)	DIS- SOLVED VANA- DIUM (V) (UG/L)	DIS- SOLVED ZINC (ZN) (UG/L)
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PART 5. HUDSON BAY BASIN

RED RIVER OF THE NORTH BASIN

05056220 - SWEETWATER LAKE AT SWEETWATER, ND (LAT 48 12 37 LONG 098 52 15)

OCT , 1976											
13...	4	0	9	0	.0	0	2	0	210	3.3	0
JAN , 1977											
12...	2	20	3	0	.0	4	-4	--	330	.0	20
APR											
26...	1	20	3	0	.0	0	2	0	220	.6	10
JUL											
13...	2	30	10	0	.0	2	6	0	210	.0	0

05056250 - LAKE ALICE NR CHURCHS FERRY, ND (LAT 48 21 07 LONG 099 05 42)

OCT , 1976											
13...	6	0	7	10	.0	4	4	0	300	7.1	10
APR , 1977											
26...	2	40	5	30	.0	0	6	1	290	2.5	10
JUL											
13...	6	50	10	20	.0	7	9	1	410	1.3	4

05056260 - LAKE IRVINE NR CHURCHS FERRY, ND (LAT 48 16 57 LONG 099 10 25)

OCT , 1976											
13...	9	30	5	0	.0	3	4	1	400	9.8	10
APR , 1977											
26...	5	30	3	0	.2	0	6	1	290	2.9	10
JUL											
13...	6	20	8	4	.0	4	9	1	480	1.6	2

05056500 - DEVILS LAKE NR DEVILS LAKE, ND (LAT 48 04 00 LONG 098 56 07)

OCT , 1976											
14...	5	40	4	20	.5	0	2	0	360	3.9	20
JAN , 1977											
12...	2	40	3	40	.0	2	2	0	420	.7	10
APR											
27...	1	30	1	50	.0	1	2	0	340	1.5	10
JUL											
14...	1	30	20	4	.5	1	4	1	380	.0	0

05056505 - NARROWS OF DEVILS LAKE NR DEVILS LAKE, ND (LAT 48 01 36 LONG 098 53 44)

OCT , 1976											
14...	2	40	8	20	.0	0	2	0	360	2.5	10
JAN , 1977											
12...	2	60	3	10	.0	1	4	0	430	.4	10
APR											
27...	2	30	1	30	.0	2	3	0	350	1.5	10
JUL											
14...	1	40	26	4	.0	1	3	1	360	.0	0

05056506 - MISSION BAY OF DEVILS LAKE NR DEVILS LAKE, ND (LAT 48 01 36 LONG 098 53 43)

OCT , 1976											
13...	3	30	3	0	.0	0	2	0	370	2.9	10
JAN , 1977											
12...	3	50	2	10	.0	2	4	0	480	.8	10
APR											
26...	1	30	1	30	.0	1	2	0	370	2.1	20
JUL											
12...	4	30	14	20	.0	2	6	0	470	1.0	8

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD WATER-QUALITY LAKE STATIONS
CHEMICAL ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

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DATE	TIME	STAGE (FT ABOVE DATUM)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	HARD- NESS (CA, MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM
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PART 5. HUDSON BAY BASIN
RED RIVER OF THE NORTH BASIN

05056565 - EAST BAY OUTLET OF DEVILS LAKE NR CRARY, ND (LAT 48 00 13 LONG 098 41 50)

OCT , 1976												
14...	1100	a23.52	9900	8.6	9.0	35	1500	950	78	320	1600	66
JAN , 1977												
11...	1540	a22.54	11200	8.4	.0	42	2000	1200	120	420	2300	68
APR												
25...	1615	a22.73	7360	8.9	18.0	35	1400	820	82	290	1500	67
JUL												
12...	1615	a22.34	9300	8.8	28.0	45	1600	980	93	330	1700	67

05056570 - EAST DEVILS LAKE NR HAMAR, ND (LAT 47 57 02 LONG 098 36 34)

OCT , 1976												
12...	1600	a4.05	23000	8.8	12.5	180	5000	3900	14	1200	6800	72
JAN , 1977												
13...	1100	a4.27	32400	8.7	.0	35	6600	5300	14	1600	8600	71
APR												
25...	1500	a4.63	17600	9.1	15.5	45	2900	2200	42	670	3800	71
JUL												
12...	1515	a4.52	30000	8.9	25.0	70	5000	3700	40	1200	6800	72

05056630 - EASTERN STUMP LAKE NR LAKOTA, ND (LAT 47 52 04 LONG 098 21 33)

OCT , 1976												
12...	1230	b82.91	110000	8.3	12.5	180	36000	35000	42	8700	29000	62
JAN , 1977												
11...	1400	b82.69	67000	7.7	-5.0	250	72000	70000	830	17000	14000	28
APR												
25...	1115	b83.92	80000	8.7	13.0	--	29000	28000	98	7000	21000	60
JUL												
12...	1215	b82.60	130000	8.4	21.0	200	50000	49000	130	12000	44000	65

05056670 - WESTERN STUMP LAKE NR LAKOTA, ND (LAT 47 54 48 LONG 098 23 26)

OCT , 1976												
12...	1345	b97.48	17300	8.6	12.0	35	3500	3000	110	780	3500	68
JAN , 1977												
11...	1450	b98.21	31100	8.1	-2.0	65	16000	14000	480	3600	13000	52
APR												
25...	1215	b97.37	16800	8.7	13.0	45	3200	2700	110	710	3300	68
JUL												
12...	1315	b97.02	22000	9.0	21.0	42	4200	3700	85	970	4600	69

a - Add 1,400 ft to convert to mean sea level.

b - Add 1,300 ft to convert to mean sea level.

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD WATER-QUALITY LAKE STATIONS

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	RICAR- BONATE (HCO ₃) (MG/L)	CAR- BONATE (CO ₃) (MG/L)	ALKA- LINITY AS CACO ₃ (MG/L)	CARBON DIOXIDE (CO ₂) (MG/L)	DIS- SOLVED SULFATE (SO ₄) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO ₂) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)
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PART 5. HUDSON BAY BASIN
RED RIVER OF THE NORTH BASIN

05056565 - EAST BAY OUTLET OF DEVILS LAKE NR CRARY, ND (LAT 48 00 13 LONG 098 41 50)

OCT , 1976											
14...	18	200	687	0	563	2.8	3700	360	.1	.7	7240
JAN , 1977											
11...	22	250	936	23	806	6.3	5000	1100	.1	8.6	9970
APR											
25...	17	170	620	44	580	1.4	3100	700	.1	3.6	6370
JUL											
12...	19	190	630	57	610	1.9	3600	840	.1	17	7270

05056570 - EAST DEVILS LAKE NR HAMAR, ND (LAT 47 57 02 LONG 098 36 34)

OCT , 1976											
12...	42	630	977	171	1090	3.4	15000	2500	.2	.7	29100
JAN , 1977											
13...	46	690	926	339	1320	5.2	19000	3300	.3	8.7	35000
APR											
25...	31	350	720	68	700	1.1	8500	1500	.4	6.1	15600
JUL											
12...	42	570	840	390	1340	3.3	15000	2600	.2	11	27700

05056630 - EASTERN STUMP LAKE NR LAKOTA, ND (LAT 47 52 04 LONG 098 21 33)

OCT , 1976											
12...	67	2100	1290	0	1060	10	78000	19000	.1	9.5	143000
JAN , 1977											
11...	23	3500	2900	0	2380	93	63000	33000	.1	23	147000
APR											
25...	54	1600	1010	89	977	3.8	55000	13000	.6	9.9	112000
JUL											
12...	86	1900	1140	14	960	7.4	110000	16000	.2	12	191000

05056670 - WESTERN STUMP LAKE NR LAKOTA, ND (LAT 47 54 48 LONG 098 23 26)

OCT , 1976											
12...	26	24	489	31	453	2.2	7800	2100	.1	3.7	15700
JAN , 1977											
11...	45	800	2100	0	1720	27	34000	7900	.4	13	63800
APR											
25...	25	190	510	45	490	1.9	7300	1500	.2	5.9	14400
JUL											
12...	31	260	480	56	490	.9	10000	2200	.0	9.6	19500

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD WATER-QUALITY LAKE STATIONS

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CHEMICAL ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS-SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED PHOSPHORUS (P) (MG/L)	DIS-SOLVED ALUMINUM (AL) (UG/L)	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED BARIUM (BA) (UG/L)	DIS-SOLVED BORON (B) (UG/L)	DIS-SOLVED CADMIUM (CD) (UG/L)	DIS-SOLVED CHROMIUM (CR) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)
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PART 5. HUDSON BAY BASIN

RED RIVER OF THE NORTH BASIN

05056565 - EAST BAY OUTLET OF DEVILS LAKE NR GRARY, ND (LAT 48 00 13 LONG 098 41 50)

OCT , 1976											
14...	6600	9.85	.10	.06	100	20	0	1500	0	0	0
JAN , 1977											
11...	9690	13.6	.10	.29	20	48	0	1900	1	0	1
APR											
25...	6200	8.66	.04	.10	20	21	100	1300	0	20	0
JUL											
12...	7140	9.89	.14	.21	70	26	0	1500	1	10	0

05056570 - EAST DEVILS LAKE NR HAMAR, ND (LAT 47 57 02 LONG 098 36 34)

OCT , 1976											
12...	26800	39.6	.07	.08	190	16	0	3800	1	20	2
JAN , 1977											
13...	34000	47.6	.01	.25	40	130	200	4500	2	50	0
APR											
25...	15300	21.2	.06	.05	10	36	100	2000	0	20	0
JUL											
12...	27000	37.7	.04	.09	30	110	200	360	2	40	2

05056630 - EASTERN STUMP LAKE NR LAKOTA, ND (LAT 47 52 04 LONG 098 21 33)

OCT , 1976											
12...	138000	194	.01	.51	60	350	200	16000	1	110	0
JAN , 1977											
11...	133000	200	.04	1.4	0	450	200	32000	0	190	0
APR											
25...	98300	152	.05	.36	0	170	100	13000	1	100	2
JUL											
12...	185000	260	.01	.34	20	190	400	16000	2	210	0

05056670 - WESTERN STUMP LAKE NR LAKOTA, ND (LAT 47 54 48 LONG 098 23 26)

OCT , 1976											
12...	14600	21.4	.04	.07	60	20	0	2600	0	20	0
JAN , 1977											
11...	60800	86.8	.02	.21	0	46	100	9400	1	80	2
APR											
25...	13400	19.6	.07	.10	30	21	0	1900	0	10	0
JUL											
12...	18400	26.5	.26	.08	20	46	0	2900	1	20	0

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD WATER-QUALITY LAKE STATIONS

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED COPPER (CU) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED LEAD (PB) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)	DIS- SOLVED MERCURY (HG) (UG/L)	DIS- SOLVED MOLYB- DENUM (MO) (UG/L)	DIS- SOLVED NICKEL (NI) (UG/L)	DIS- SOLVED SELE- NIUM (SE) (UG/L)	DIS- SOLVED STRON- TIUM (SR) (UG/L)	DIS- SOLVED VANA- DIUM (V) (UG/L)	DIS- SOLVED ZINC (ZN) (UG/L)
PART 5. HUDSON BAY BASIN											
RED RIVER OF THE NORTH BASIN											
05056565 - EAST BAY OUTLET OF DEVILS LAKE NR GRARY, ND (LAT 48 00 13 LONG 098 41 50)											
OCT , 1976											
14...	3	60	0	10	.3	4	3	0	420	10	20
JAN , 1977											
11...	2	60	3	90	.0	4	7	0	440	3.0	20
APR											
25...	1	30	6	30	.0	0	4	1	370	2.0	10
JUL											
12...	2	20	7	10	.1	4	6	0	500	10	20
05056570 - EAST DEVILS LAKE NR HAMAR, ND (LAT 47 57 02 LONG 098 36 34)											
OCT , 1976											
12...	6	110	10	40	.0	3	2	0	240	.0	50
JAN , 1977											
13...	5	90	9	160	.0	5	6	0	210	15	50
APR											
25...	1	40	3	70	.0	0	2	0	140	7.0	30
JUL											
12...	4	50	10	40	.0	6	6	0	220	--	50
05056630 - EASTERN STUMP LAKE NR LAKOTA, ND (LAT 47 52 04 LONG 098 21 33)											
OCT , 1976											
12...	4	160	3	210	.0	9	5	0	610	.0	150
JAN , 1977											
11...	0	590	0	660	.1	5	9	2	1300	110	110
APR											
25...	0	150	3	250	.0	4	2	1	80	380	120
JUL											
12...	1	150	13	220	.0	10	4	0	120	--	190
05056670 - WESTERN STUMP LAKE NR LAKOTA, ND (LAT 47 54 48 LONG 098 23 26)											
OCT , 1976											
12...	2	40	0	20	.0	16	8	1	580	.0	30
JAN , 1977											
11...	4	270	4	80	.0	18	16	1	1300	96	90
APR											
25...	1	40	3	20	.5	10	11	1	540	18	30
JUL											
12...	1	30	7	30	.0	16	9	0	680	14	40

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD WATER-QUALITY LAKE STATIONS

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CHEMICAL ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	STAGE (FT ABOVE DATUM)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- CORALT UNITS)	TUR- BID- IDY (JTU)	DIS- SOLVED OXYGEN (MG/L)	HARD- NESS (CA, MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)
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PART 6. MISSOURI RIVER BASIN

JAMES RIVER BASIN

06469000 - JAMESTOWN RESERVOIR NR JAMESTOWN, ND (LAT 46 56 03 LONG 098 42 38)

OCT , 1976										
05...	1100	b29.74	580	8.5	12.0	17	--	--	210	0
JAN , 1977										
04...	1500	b29.10	670	8.7	.0	12	--	--	230	0
MAY										
05...	1330	b29.34	610	8.5	14.5	13	--	--	240	0
JUL										
06...	1115	b29.24	550	9.0	24.5	43	--	--	210	0

06470880 - HYATT SLOUGH NR LUDDEN, ND (LAT 45 56 18 LONG 098 09 03)

OCT , 1976										
05...	1145	--	1800	8.8	5.0	100	20	8.8	530	130
MAY , 1977										
04...	1000	--	1+00	7.8	16.5	130	10	1.0	450	200
JUL										
12...	1115	--	2550	8.9	20.5	90	20	9.7	750	170

DATE	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	RICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	ALKA- LINITY AS CAC03 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)
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PART 6. MISSOURI RIVER BASIN

JAMES RIVER BASIN

06469000 - JAMESTOWN RESERVOIR NR JAMESTOWN, ND (LAT 46 56 03 LONG 098 42 38)

OCT , 1976										
05...	45	24	45	30	1.3	11	210	28	219	1.4
JAN , 1977										
04...	48	27	51	31	1.5	13	280	15	255	1.0
MAY										
05...	51	26	49	30	1.4	12	280	5	238	1.5
JUL										
06...	43	25	48	32	1.4	12	260	0	210	.4

06470880 - HYATT SLOUGH NR LUDDEN, ND (LAT 45 56 18 LONG 098 09 03)

OCT , 1976										
06...	81	79	190	41	3.6	61	480	0	394	1.2
MAY , 1977										
04...	76	63	140	37	2.9	48	310	0	254	7.9
JUL										
12...	120	110	300	43	4.8	86	640	34	580	1.4

a - Add 1,400 ft to convert to mean sea level.

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD WATER-QUALITY LAKE STATIONS

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLOR- RIDE (CL) (MG/L)	DIS- SOLVED FLUOR- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SIO2) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 130 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS- SOLVED PHOS- PHORUS (P) (MG/L)	DIS- SOLVED ALUM- INUM (AL) (UG/L)
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PART 6. MISSOURI RIVER BASIN

JAMES RIVER BASIN

06469000 - JAMESTOWN RESERVOIR NR JAMESTOWN, ND (LAT 46 56 03 LONG 098 42 38)

OCT , 1976										
05...	87	9.1	.2	13	361	367	.49	.28	.08	--
JAN , 1977										
04...	99	11	.2	4.0	424	407	.58	.02	.02	30
MAY										
05...	88	11	.2	4.9	391	386	.53	.02	.06	0
JUL										
06...	93	10	.1	1.7	339	362	.46	.00	.04	--

06470880 - HYATT SLOUGH NR LUDDEN, ND (LAT 45 56 18 LONG 098 09 03)

OCT , 1976										
06...	450	98	.2	18	1280	1220	1.74	.46	.27	--
MAY , 1977										
04...	400	88	.2	29	1080	1000	1.47	.01	.98	0
JUL										
12...	690	170	.2	31	1930	1860	2.62	.06	1.1	--

DATE	DIS- SOLVED ARSENIC (AS) (UG/L)	DIS- SOLVED BARIUM (BA) (UG/L)	DIS- SOLVED BERYL- LIUM (BE) (UG/L)	DIS- SOLVED BORON (B) (UG/L)	DIS- SOLVED CAD- MIUM (CD) (UG/L)	DIS- SOLVED CHRO- MIUM (CR) (UG/L)	DIS- SOLVED CORAL (CO) (UG/L)	DIS- SOLVED COPPER (CU) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED LEAD (PB) (UG/L)
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PART 6. MISSOURI RIVER BASIN

JAMES RIVER BASIN

06469000 - JAMESTOWN RESERVOIR NR JAMESTOWN, ND (LAT 46 56 03 LONG 098 42 38)

OCT , 1976										
05...	--	--	--	130	--	--	--	--	30	--
JAN , 1977										
04...	3	0	0	140	2	0	0	3	20	3
MAY										
05...	3	0	0	130	0	0	0	0	10	1
JUL										
06...	--	--	--	150	--	--	--	--	20	--

06470880 - HYATT SLOUGH NR LUDDEN, ND (LAT 45 56 18 LONG 098 09 03)

OCT , 1976										
06...	--	--	--	520	--	--	--	3	80	5
MAY , 1977										
04...	19	200	--	380	1	0	0	1	90	3
JUL										
12...	--	--	--	690	--	--	--	3	130	42

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ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD WATER-QUALITY STREAM STATIONS

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	SP- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	HARD- NESS (CA, MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)
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PART 5. HUDSON BAY BASIN

RED RIVER OF THE NORTH BASIN

05056405 - BIG COWLEE AT GRAHAM IS INLET NR FT TOTTEN, ND (LAT 48 02 25 LONG 099 02 50)

OCT , 1976										
13...	1530	3300	8.6	11.0	32	700	290	83	120	500
JAN , 1977										
12...	1245	4900	8.7	.0	45	950	350	100	170	760
APR										
26...	1605	1000	8.5	14.5	27	560	210	60	100	440
JUL										
13...	1355	4000	8.9	21.0	38	720	260	75	130	610

DATE	PERCENT SODIUM	SODIUM AN- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	RICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	ALKA- LINITY AS CACN3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)	DIS- SOLVED FLUO- RIDE (F) (MG/L)
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05056405 - BIG COWLEE AT GRAHAM IS INLET NR FT TOTTEN, ND (LAT 48 02 25 LONG 099 02 50)

OCT , 1976										
13...	58	8.2	69	468	15	409	2.0	1100	260	.2
JAN , 1977										
12...	61	11	100	669	29	597	2.3	1600	340	.2
APR										
26...	63	9.1	58	410	10	350	2.2	1000	190	.1
JUL										
13...	62	9.9	79	480	41	460	1.1	1300	280	.2

DATE	DIS- SOLVED SILICA (SiO2) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTIT- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L)	DIS- SOLVED BORON (B) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)
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05056405 - BIG COWLEE AT GRAHAM IS INLET NR FT TOTTEN, ND (LAT 48 02 25 LONG 099 02 50)

OCT , 1976									
13...	12	2380	2390	3.24	.01	.42	510	0	30
JAN , 1977									
12...	19	3590	3450	4.88	.13	.57	690	40	190
APR									
26...	10	2050	2070	2.79	.00	.28	430	30	10
JUL									
13...	9.6	2820	2760	3.84	.03	.47	570	50	10

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS WATER-QUALITY LAKE SITES 451
 CHEMICAL ANALYSES, WATER YEAR OCTOBER 1975 TO SEPTEMBER 1976

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	HARD- NESS (CA, MG) (MG/L)	BUNATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NESI- UM (MAG) (MG/L)	DIS- SOLVED SODIUM (SOD) (MG/L)
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PART 5. HUDSON BAY BASIN
 RED RIVER OF THE NORTH BASIN

470601097250501 - BREWER LAKE NR ERIE, ND (LAT 47 06 31 LONG 097 25 05.01)

OCT , 1975									
28...	1230	460	8.4	7.0	220	11	47	25	11

471121097132001 - HUNTER RESERVOIR NR HUNTER, ND (LAT 47 11 21 LONG 097 13 20.01)

OCT , 1975									
28...	1100	480	8.7	5.0	250	35	60	24	11

482421097481601 - HOMME LAKE NR PARK RIVER, ND (LAT 48 24 21 LONG 097 48 16.01)

OCT , 1975									
06...	1400	650	7.5	14.0	250	82	66	21	37

485250099252501 - AMOURE LAKE NR AMOURE, ND (LAT 48 52 50 LONG 099 25 25.01)

OCT , 1975									
05...	1800	650	7.5	10.5	320	130	65	38	27

485540098192801 - MOUNT CARMEL RESERVOIR NR MOUNT CARMEL, ND (LAT 48 55 40 LONG 098 19 28.01)

OCT , 1975									
06...	1130	600	7.6	11.0	230	34	59	20	34

PART 6. MISSOURI RIVER BASIN
 JAMES RIVER BASIN

461748098170501 - LAKE LA MOURE NR LA MOURE, ND (LAT 46 17 48 LONG 098 17 05.01)

OCT , 1975									
28...	1500	470	8.2	7.0	200	6	45	21	17

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS WATER-QUALITY LAKE SITES
 CHEMICAL ANALYSES, WATER YEAR OCTOBER 1975 TO SEPTEMBER 1976

DATE	PERCENT SODIUM	SODIUM AD- TINM RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO ₃) (MG/L)	CAR- BONATE (CO ₃) (MG/L)	ALKA- LINITY AS CaCO ₃ (MG/L)	CARBON DIOXIDE (CO ₂) (MG/L)	DIS- SOLVED SULFATE (SO ₄) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)
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PART 5. HUDSON BAY BASIN
 RED RIVER OF THE NORTH BASIN

470601097250501 - BREWER LAKE NR ERIE, ND (LAT 47 06 01 LONG 097 25 05.01)

OCT , 1975 28...	9	.3	6.6	255	0	209	1.6	34	2.5
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471121097132001 - HUNTER RESERVOIR NR HUNTER, ND (LAT 47 11 21 LONG 097 13 20.01)

OCT , 1975 28...	8	.3	4.3	261	0	214	.8	63	4.3
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482421097481601 - HOMME LAKE NR PARK RIVER, ND (LAT 48 24 21 LONG 097 48 16.01)

OCT , 1975 06...	24	1.0	6.0	206	0	169	10	15	15
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485250099252501 - AMOURDALE RESERVOIR NR AMOURDALE, ND (LAT 48 52 50 LONG 099 25 25.01)

OCT , 1975 05...	15	.7	8.1	233	0	191	12	18	6.0
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485540098192801 - MOUNT CARMEL RESERVOIR NR MOUNT CARMEL, ND (LAT 48 55 40 LONG 098 19 23.01)

OCT , 1975 06...	26	1.1	6.6	239	0	196	9.6	110	9.3
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PART 6. MISSOURI RIVER BASIN
 JAMES RIVER BASIN

461748098170501 - LAKE LA MOURE NR LA MOURE, ND (LAT 46 17 48 LONG 098 17 05.01)

OCT , 1975 28...	15	.5	9.6	235	0	193	2.4	42	15
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ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS WATER-QUALITY LAKE SITES
 CHEMICAL ANALYSES, WATER YEAR OCTOBER 1975 TO SEPTEMBER 1976

DATE	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SI02) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED BORON (B) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)
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PART 5. HUDSON BAY BASIN
 RED RIVER OF THE NORTH BASIN

470601097250501 - BREWER LAKE NR ERIE, ND (LAT 47 06 01 LONG 097 25 05.01)

OCT , 1975 28...	.1	1.9	268	263	.36	0	60	320
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471121097132001 - HUNTER RESERVOIR NR HUNTER, ND (LAT 47 11 21 LONG 097 13 20.01)

OCT , 1975 28...	.1	13	344	317	.47	0	20	40
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482421097481601 - HOWME LAKE NR PARK RIVER, ND (LAT 48 24 21 LONG 097 48 16.01)

OCT , 1975 06...	.1	16	419	418	.57	0	100	1300
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485250099252501 - AMOURDALE RESERVOIR NR AMOURDALE, ND (LAT 48 52 50 LONG 099 25 25.01)

OCT , 1975 05...	.0	1.3	466	445	.63	0	60	300
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485540098192801 - MOUNT CARMEL RESERVOIR NR MOUNT CARMEL, ND (LAT 48 55 40 LONG 098 19 28.01)

OCT , 1975 06...	.1	12	376	378	.51	0	0	150
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PART 6. MISSOURI RIVER BASIN
 JAMES RIVER BASIN

461748098170501 - LAKE LA MOURE NR LA MOURE, ND (LAT 46 17 48 LONG 098 17 05.01)

OCT , 1975 28...	.0	15	317	284	.43	40	120	250
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ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SURFACE-WATER QUALITY SITES
 CHEMICAL ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	HARD- NESS (CA, MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)
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PART 5. HUDSON BAY BASIN
 RED RIVER OF THE NORTH BASIN

05051500 - RED RIVER OF THE NORTH AT WAHPETON, ND (LAT 46 15 55 LONG 096 35 40)

APR , 1977										
01...	1335	114	525	8.2	5.0	250	110	54	27	18
SEP										
20...	1100	115	550	8.3	14.5	260	25	50	33	17

05051700 - WILD RICE RIVER NR CAYUGA, ND (LAT 46 07 30 LONG 097 21 40)

APR , 1977										
13...	1000	.01	1520	9.4	10.0	330	180	78	33	200

05054000 - RED RIVER OF THE NORTH AT FARGO, ND (LAT 46 51 40 LONG 096 47 00)

SEP , 1977										
20...	1700	94	540	8.8	17.0	270	47	43	39	19

05056100 - MAUVAIS COULEE NR CANDU, ND (LAT 48 26 53 LONG 099 06 08)

APR , 1977										
06...	1500	.09	550	7.5	4.5	230	100	56	22	24
SEP										
14...	1055	.01	1300	7.9	15.0	490	290	70	77	110

05056200 - EDMORE COULEE NR EDMORE, ND (LAT 48 20 14 LONG 098 39 33)

APR , 1977										
06...	1330	3.2	710	7.7	2.0	270	150	68	24	43

05057200 - BALDHILL CREEK NR DAZEY, ND (LAT 47 13 45 LONG 098 07 28)

APR , 1977										
05...	1220	17	640	8.0	1.0	270	61	64	27	43

05058000 - SHEYENNE RIVER BELOW BALDHILL DAM, ND (LAT 47 01 50 LONG 098 05 50)

APR , 1977										
11...	1500	10	840	--	7.5	270	0	54	33	92

05059500 - SHEYENNE RIVER AT WEST FARGO, ND (LAT 46 53 28 LONG 096 54 24)

APR , 1977										
05...	1140	168	630	7.9	.5	230	47	58	21	47
SEP										
22...	1035	32	860	8.1	14.5	290	45	73	26	77

05059600 - MAPLE RIVER NR HOPE, ND (LAT 47 19 30 LONG 097 47 25)

APR , 1977										
11...	1240	.03	800	--	6.0	300	190	64	34	61

05059700 - MAPLE RIVER NR ENDERLIN, ND (LAT 46 37 18 LONG 097 34 25)

APR , 1977										
05...	0900	5.5	1650	7.6	4.0	640	360	160	58	120
SEP										
22...	1100	1.5	1050	7.5	13.0	640	300	170	52	77

05060500 - RUSH RIVER AT AMENIA, ND (LAT 47 01 00 LONG 097 12 50)

APR , 1977										
04...	1420	6.7	1250	7.8	4.5	520	340	130	47	72
MAY										
11...	1045	1.8	1700	8.0	18.0	770	490	180	78	130

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SURFACE-WATER QUALITY SITES
 CHEMICAL ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO ₃) (MG/L)	CAR- BONATE (CO ₃) (MG/L)	ALKA- LINIT AS CACO ₃ (MG/L)	CARBON DIOXIDE (CO ₂) (MG/L)	DIS- SOLVED SULFATE (SO ₄) (MG/L)	DIS- SOLVED CHLOR- IDE (CL) (MG/L)
PART 5. HUDSON BAY BASIN									
RED RIVER OF THE NORTH BASIN									
05051500 - RED RIVER OF THE NORTH AT WAMPETON, ND (LAT 46 15 55 LONG 096 35 40)									
APR , 1977									
01...	13	.5	4.4	170	0	139	1.7	130	12
SEP									
20...	12	.5	5.5	287	0	235	2.3	52	14
05051700 - WILD RICE RIVER NR CAYUGA, ND (LAT 46 07 30 LONG 097 21 40)									
APR , 1977									
13...	56	4.8	13	136	22	148	.1	510	90
05054000 - RED RIVER OF THE NORTH AT FARGO, ND (LAT 46 51 40 LONG 096 47 00)									
SEP , 1977									
20...	13	.5	5.5	253	8	221	.7	67	17
05056100 - MAUVAIS COULEE NR CANDU, ND (LAT 48 26 53 LONG 099 06 08)									
APR , 1977									
06...	18	.7	4.9	155	0	127	7.8	140	14
SEP									
14...	32	2.2	15	251	0	206	5.1	460	55
05056200 - EDMORE COULEE NR EDMORE, ND (LAT 48 20 14 LONG 098 39 33)									
APR , 1977									
06...	25	1.1	13	140	0	115	4.5	220	22
05057200 - BALDHILL CREEK NR DAZEY, ND (LAT 47 13 45 LONG 098 07 28)									
APR , 1977									
05...	25	1.1	4.8	256	0	210	4.1	140	15
05058000 - SHEYENNE RIVER BELOW BALDHILL DAM, ND (LAT 47 01 50 LONG 098 05 50)									
APR , 1977									
11...	41	2.4	9.4	373	0	306	--	150	15
05059500 - SHEYENNE RIVER AT WEST FARGO, ND (LAT 46 53 28 LONG 096 54 24)									
APR , 1977									
05...	30	1.3	5.7	225	0	185	4.5	120	24
SEP									
22...	36	2.0	7.7	298	0	244	3.8	140	57
05059600 - MAPLE RIVER NR HOPE, ND (LAT 47 19 30 LONG 097 47 25)									
APR , 1977									
11...	30	1.5	4.5	133	0	109	--	310	13
05059700 - MAPLE RIVER NR ENDERLIN, ND (LAT 46 37 18 LONG 097 34 25)									
APR , 1977									
05...	29	2.1	9.5	340	0	279	14	510	81
SEP									
22...	20	1.3	9.4	415	0	340	21	400	53
05060500 - RUSH RIVER AT AMENIA, ND (LAT 47 01 00 LONG 097 12 50)									
APR , 1977									
04...	23	1.4	16	213	0	175	5.4	470	35
MAY									
11...	26	2.0	15	334	3	279	5.4	670	64

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SURFACE-WATER QUALITY SITES
 CHEMICAL ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED FLUOR- IDE (F) (MG/L)	DIS- SOLVED SILICA (SiO ₂) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	DIS- SOLVED BORON (B) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)
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PART 5. HUDSON BAY BASIN
 RED RIVER OF THE NORTH BASIN

05051500 - RED RIVER OF THE NORTH AT WAHPETON, ND (LAT 46 15 55 LONG 096 35 40)

APR , 1977									
01...	.1	7.5	341	337	.46	105	280	120	60
SEP									
20...	.1	3.5	306	317	.42	95.0	50	220	40

05051700 - WILD RICE RIVER NR CAYUGA, ND (LAT 46 07 30 LONG 097 21 40)

APR , 1977									
13...	1.0	7.9	1040	1020	1.41	.03	460	80	20

05054000 - RED RIVER OF THE NORTH AT FARGO, ND (LAT 46 51 40 LONG 096 47 00)

SEP , 1977									
20...	.1	7.0	284	330	.39	72.1	50	80	0

05056100 - MAUVAIS COULEE NR CANDU, ND (LAT 48 26 53 LONG 099 06 08)

APR , 1977									
06...	.0	8.0	364	346	.50	.09	40	40	1100
SEP									
14...	.4	11	901	923	1.23	.02	330	260	180

05056200 - EDMORE COULEE NR EDMORE, ND (LAT 48 20 14 LONG 098 39 33)

APR , 1977									
06...	.1	12	532	471	.72	4.60	40	120	80

05057200 - BALDHILL CREEK NR DAZEY, ND (LAT 47 13 45 LONG 098 07 28)

APR , 1977									
05...	.1	12	423	433	.58	19.4	110	60	400

05058000 - SHEYENNE RIVER BELOW BALDHILL DAM, ND (LAT 47 01 50 LONG 098 05 50)

APR , 1977									
11...	.2	20	573	559	.78	15.5	280	40	1500

05059500 - SHEYENNE RIVER AT WEST FARGO, ND (LAT 46 53 28 LONG 096 54 24)

APR , 1977									
05...	.1	11	419	398	.57	190	180	420	240
SEP									
22...	.1	19	522	547	.71	45.1	190	80	90

05059600 - MAPLE RIVER NR HOPE, ND (LAT 47 19 30 LONG 097 47 25)

APR , 1977									
11...	.1	10	581	563	.79	.05	180	120	320

05059700 - MAPLE RIVER NR ENDERLIN, ND (LAT 46 37 18 LONG 097 34 25)

APR , 1977									
05...	.2	17	1180	1130	1.60	17.5	390	120	970
SEP									
22...	.1	25	1030	992	1.40	4.17	290	260	40

05060500 - RUSH RIVER AT AMENIA, ND (LAT 47 01 00 LONG 097 12 50)

APR , 1977									
04...	.1	15	812	891	1.10	14.7	350	150	380
MAY									
11...	.2	14	1430	1320	1.94	6.95	320	80	240

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SURFACE-WATER QUALITY SITES
CHEMICAL ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	HARD- NESS (CA, MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)
PART 5. HUDSON BAY BASIN										
RED RIVER OF THE NORTH BASIN										
05066500 - GOOSE RIVER AT HILLSBORO, ND (LAT 47 24 20 LONG 097 03 40)										
APR , 1977										
06...	1600	18	950	7.8	2.0	330	170	80	32	66
05082500 - RED RIVER OF THE NORTH AT GRAND FORKS, ND (LAT 47 56 34 LONG 097 03 10)										
APR , 1977										
08...	0930	1640	550	8.5	1.0	220	64	50	23	22
SEP										
26...	1300	858	570	8.3	14.0	240	32	54	26	32
05083600 - MIDDLE BRANCH FOREST RIVER NR WHITMAN, ND (LAT 48 14 50 LONG 098 07 00)										
APR , 1977										
04...	1000	5.4	460	7.7	1.0	150	87	36	15	42
05084000 - FOREST RIVER NR FORDVILLE, ND (LAT 48 11 50 LONG 097 43 49)										
APR , 1977										
04...	1450	14	500	8.3	5.5	240	55	64	20	15
05089000 - SOUTH BRANCH PARK RIVER BELOW HOMME DAM, ND (LAT 48 24 07 LONG 097 46 55)										
APR , 1977										
06...	0930	.86	810	8.1	3.5	380	150	96	34	35
05089100 - MIDDLE BRANCH PARK RIVER NR UNION, ND (LAT 48 32 32 LONG 098 01 10)										
APR , 1977										
05...	1000	2.8	340	7.4	.5	100	12	24	10	32
05089500 - CART CREEK AT MOUNTAIN, ND (LAT 48 40 37 LONG 097 51 41)										
APR , 1977										
05...	1300	3.7	560	8.4	1.0	220	83	58	18	39
05092000 - RED RIVER OF THE NORTH AT DRAYTON, ND (LAT 48 34 20 LONG 097 08 50)										
APR , 1977										
07...	1150	2370	990	8.1	.5	250	86	59	25	96
JUL										
30...	1330	120	1100	--	24.0	290	100	66	31	120
483635097085200 - RED RIVER OF THE NORTH 2 MI BL DRAYTON DAM, ND (LAT 48 36 35 LONG 097 08 52)										
JUL , 1977										
30...	1230	--	1100	--	23.5	300	110	66	32	120
05092200 - PEMBINA COUNTY DRAIN 20 NR GLASSTON, ND (LAT 48 41 49 LONG 097 23 03)										
MAY , 1977										
31...	1240	.03	900	7.9	26.5	450	350	96	51	25
05098700 - HIDDEN ISLAND COULEE NR HANSBORD, ND (LAT 48 57 10 LONG 099 25 35)										
APR , 1977										
06...	1210	.02	700	7.5	4.0	380	190	90	38	19
05098800 - CYPRESS CREEK NR SARLES, ND (LAT 48 56 35 LONG 098 57 05)										
APR , 1977										
06...	1015	.11	650	7.8	2.5	240	79	63	20	36

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SURFACE-WATER QUALITY SITES
 CHEMICAL ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO ₃) (MG/L)	CAR- BONATE (CO ₃) (MG/L)	ALKA- LINITY AS CACO ₃ (MG/L)	CARBON DIOXIDE (CO ₂) (MG/L)	DIS- SOLVED SULFATE (SO ₄) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)
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PART 5. HUDSON BAY BASIN
 RED RIVER OF THE NORTH BASIN

05066500 - GOOSE RIVER AT HILLSBORO, ND (LAT 47 24 20 LONG 097 03 40)

APR , 1977 06...	29	1.6	9.6	193	0	158	4.9	240	58
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05082500 - RED RIVER OF THE NORTH AT GRAND FORKS, ND (LAT 47 56 34 LONG 097 03 10)

APR , 1977 08...	18	.6	4.7	190	0	156	1.0	98	14
SEP 26...	22	.9	4.5	256	0	210	2.1	62	34

05083600 - MIDDLE BRANCH FOREST RIVER NR WHITMAN, ND (LAT 48 14 50 LONG 098 07 00)

APR , 1977 04...	37	1.5	1.9	79	0	65	2.5	160	12
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05084000 - FOREST RIVER NR FORDVILLE, ND (LAT 48 11 50 LONG 097 43 49)

APR , 1977 04...	12	.4	3.5	220	4	187	1.8	84	7.0
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05089000 - SOUTH BRANCH PARK RIVER BELOW HOMME DAM, ND (LAT 48 24 07 LONG 097 46 55)

APR , 1977 06...	16	.8	5.7	268	4	226	3.5	220	11
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05089100 - MIDDLE BRANCH PARK RIVER NR UNION, ND (LAT 48 32 32 LONG 098 01 10)

APR , 1977 05...	40	1.4	4.3	109	0	89	6.9	55	14
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05089500 - CART CREEK AT MOUNTAIN, ND (LAT 48 40 37 LONG 097 51 41)

APR , 1977 05...	28	1.1	3.8	166	0	136	1.1	150	16
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05092000 - RED RIVER OF THE NORTH AT DRAYTON, ND (LAT 48 34 20 LONG 097 08 50)

APR , 1977 07...	45	2.6	7.3	200	0	164	2.5	110	140
JUL 30...	46	3.1	8.3	230	--	190	--	120	160

483635097085200 - RED RIVER OF THE NORTH 2 MI BL DRAYTON DAM, ND (LAT 48 36 35 LONG 097 08 52)

JUL , 1977 30...	46	3.0	8.0	230	--	190	--	120	160
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05092200 - PEMBINA COUNTY DRAIN 20 NR GLASSTON, ND (LAT 48 41 49 LONG 097 23 03)

MAY , 1977 31...	10	.5	14	126	0	103	2.5	380	27
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05098700 - HIDDEN ISLAND COULEE NR HANSBORD, ND (LAT 48 57 10 LONG 099 25 35)

APR , 1977 06...	10	.4	10	237	0	194	12	210	14
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05098800 - CYPRESS CREEK NR SARLES, ND (LAT 48 56 35 LONG 098 57 05)

APR , 1977 06...	24	1.0	10	196	0	161	5.0	150	19
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ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SURFACE-WATER QUALITY SITES
 CHEMICAL ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO2) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	DIS- SOLVED BORON (B) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)
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PART 5. HUDSON BAY BASIN
 RED RIVER OF THE NORTH BASIN

05066500 - GOOSE RIVER AT HILLSBORO, ND (LAT 47 24 20 LONG 097 03 40)

APR , 1977 06...	.1	12	662	594	.90	32.2	140	80	820
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05082500 - RED RIVER OF THE NORTH AT GRAND FORKS, ND (LAT 47 56 34 LONG 097 03 10)

APR , 1977 08...	.2	5.9	321	312	.44	1420	110	80	20
SEP 26...	.1	7.7	370	348	.50	857	380	160	820

05083600 - MIDDLE BRANCH FOREST RIVER NR WHITMAN, ND (LAT 48 14 50 LONG 098 07 00)

APR , 1977 04...	.1	7.4	353	314	.48	5.15	70	310	40
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05084000 - FOREST RIVER NR FORDVILLE, ND (LAT 48 11 50 LONG 097 43 49)

APR , 1977 04...	.1	15	378	321	.51	14.4	110	190	180
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05089000 - SOUTH BRANCH PARK RIVER BELOW HOMME DAM, ND (LAT 48 24 07 LONG 097 46 55)

APR , 1977 06...	.1	7.6	588	546	.80	1.37	110	330	590
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05089100 - MIDDLE BRANCH PARK RIVER NR UNION, ND (LAT 48 32 32 LONG 098 01 10)

APR , 1977 05...	.1	13	248	210	.34	1.93	140	3300	220
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05089500 - CART CREEK AT MOUNTAIN, ND (LAT 48 40 37 LONG 097 51 41)

APR , 1977 05...	.3	18	404	385	.55	4.10	40	80	60
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05092000 - RED RIVER OF THE NORTH AT DRAYTON, ND (LAT 48 34 20 LONG 097 08 50)

APR , 1977 07...	.1	8.3	567	545	.77	3630	210	80	90
JUL 30...	--	--	651	--	.89	211	--	--	--

483635097085200 - RED RIVER OF THE NORTH 2 MI BL DRAYTON DAM, ND (LAT 48 36 35 LONG 097 08 52)

JUL , 1977 30...	--	--	641	--	.87	--	--	--	--
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05092200 - PEMBINA COUNTY DRAIN 20 NR GLASSTON, ND (LAT 48 41 49 LONG 097 23 03)

MAY , 1977 31...	.0	5.5	691	661	.94	.06	280	280	100
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05098700 - HIDDEN ISLAND COULEE NR HANSBORN, ND (LAT 48 57 10 LONG 099 25 35)

APR , 1977 06...	.1	17	526	515	.72	.03	40	120	160
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05098800 - CYPRESS CREEK NR SARLES, ND (LAT 48 56 35 LONG 098 57 05)

APR , 1977 06...	.1	17	443	412	.60	.13	40	120	70
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ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SURFACE-WATER QUALITY SITES
 CHEMICAL ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	HARD- NESS (CA, MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)
PART 5. HUDSON BAY BASIN										
RED RIVER OF THE NORTH BASIN										
05100000 - PEMBINA RIVER AT NECHE, ND (LAT 48 59 20 LONG 097 33 05)										
APR , 1977 07...	1035	71	580	7.8	2.0	280	98	69	26	36
05100500 - HERZOG CREEK NR CONCRETE, ND (LAT 48 45 13 LONG 097 54 22)										
APR , 1977 05...	1500	.20	520	7.5	1.0	260	60	71	20	30
05101000 - TONGUE RIVER NR AKRA, ND (LAT 48 46 40 LONG 097 42 55)										
APR , 1977 06...	1640	1.8	650	7.3	5.5	290	35	80	22	28
05102500 - RED RIVER AT EMERSON, MANITOBA (LAT 49 00 30 LONG 097 12 40)										
JUL , 1977 30...	1000	--	1300	--	23.0	360	150	82	37	140
05113600 - LONG CREEK NR NOONAN, ND (LAT 48 58 52 LONG 103 04 34)										
OCT , 1976 06...	1210	.62	1125	8.6	7.0	410	84	80	51	120
APR , 1977 06...	1345	6.0	1450	9.3	3.0	500	310	81	72	110
05116500 - DES LACS RIVER AT FOXHOLM, ND (LAT 48 22 14 LONG 101 34 11)										
OCT , 1976 06...	1345	2.3	1500	8.4	5.5	490	74	100	58	180
APR , 1977 06...	1605	7.5	1340	8.5	1.5	390	75	77	48	170
SEP 09...	1305	2.2	1620	8.7	14.5	440	110	62	69	220
05117500 - SOURIS RIVER ABOVE MINOT, ND (LAT 48 14 45 LONG 101 22 15)										
APR , 1977 06...	1825	14	950	8.5	4.0	330	69	68	39	95
SEP 09...	1015	3.9	1260	8.2	15.0	390	37	71	52	140
05120500 - WINTERING RIVER NR KARLSRUHE, ND (LAT 48 10 14 LONG 100 32 20)										
APR , 1977 08...	1430	7.0	485	8.1	7.5	200	0	51	18	31
SEP 06...	1830	3.1	575	7.8	17.0	230	0	47	27	43
05123400 - WILLOW CREEK NR WILLOW CITY, ND (LAT 48 35 20 LONG 100 26 30)										
JUN , 1977 02...	1700	1.8	1830	8.7	23.5	520	230	93	70	230
05123900 - BOUNDARY CREEK NR LANDA, ND (LAT 48 48 46 LONG 100 51 46)										
APR , 1977 05...	1000	1.4	1740	8.9	.5	680	520	130	86	150

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SURFACE-WATER QUALITY SITES
CHEMICAL ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO ₃) (MG/L)	CAR- BONATE (CO ₃) (MG/L)	ALKA- LINITY AS CACO ₃ (MG/L)	CARBON DIOXIDE (CO ₂) (MG/L)	DIS- SOLVED SULFATE (SO ₄) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)
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PART 5. HUDSON BAY BASIN

RED RIVER OF THE NORTH BASIN

05100000 - PEMBINA RIVER AT NECHE, ND (LAT 48 59 20 LONG 097 33 05)

APR , 1977 07...	22	.9	4.9	211	5	181	5.6	160	16
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05100500 - HERZOG CREEK NR CONCRETE, ND (LAT 48 45 13 LONG 097 54 22)

APR , 1977 05...	20	.8	5.3	243	0	199	12	120	11
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05101000 - TONGUE RIVER NR AKRA, ND (LAT 48 46 40 LONG 097 42 55)

APR , 1977 06...	17	.7	5.9	311	0	255	25	91	9.9
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05102500 - RED RIVER AT EMERSON, MANITOBA (LAT 49 00 30 LONG 097 12 40)

JUL , 1977 30...	45	3.2	8.8	250	--	210	--	150	210
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05113600 - LONG CREEK NR NOONAN, ND (LAT 48 58 52 LONG 103 04 34)

OCT , 1976 06...	38	2.6	11	354	21	325	1.6	320	18
APR , 1977 06...	32	2.1	7.6	233	0	191	.2	500	18

05116500 - DES LACS RIVER AT FOXHOLM, ND (LAT 48 22 14 LONG 101 34 11)

OCT , 1976 06...	44	3.5	13	505	0	414	3.2	440	25
APR , 1977 06...	48	3.7	4.1	376	4	315	1.9	420	24
SEP 09...	52	4.6	9.2	403	0	331	1.3	540	34

05117500 - SOURIS RIVER ABOVE MINOT, ND (LAT 48 14 45 LONG 101 22 15)

APR , 1977 06...	38	2.3	6.2	319	0	262	1.6	260	20
SEP 09...	43	3.1	15	412	10	355	4.4	300	49

05120500 - WINTERING RIVER NR KARLSRUHE, ND (LAT 48 10 14 LONG 100 32 20)

APR , 1977 08...	25	1.0	2.4	266	0	218	3.4	44	8.0
SEP 06...	29	1.2	3.4	344	0	282	8.7	33	9.1

05123400 - WILLOW CREEK NR WILLOW CITY, ND (LAT 48 35 20 LONG 100 26 30)

JUN , 1977 02...	48	4.4	15	299	28	292	1.1	580	120
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05123900 - BOUNDARY CREEK NR LANDA, ND (LAT 48 48 46 LONG 100 51 46)

APR , 1977 05...	31	2.5	27	194	0	159	.4	820	36
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ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SURFACE-WATER QUALITY SITES
 CHEMICAL ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO ₂) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	DIS- SOLVED BORON (B) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)
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PART 5. HUDSON BAY BASIN
 RED RIVER OF THE NORTH BASIN

05100000 - PEMBINA RIVER AT NECHE, ND (LAT 48 59 20 LONG 097 33 05)

APR , 1977 07...	.2	14	438	435	.60	84.2	0	80	140
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05100500 - HERZOG CREEK NR CONCRETE, ND (LAT 48 45 13 LONG 097 54 22)

APR , 1977 05...	.1	13	411	393	.56	.22	110	130	2500
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05101000 - TONGUE RIVER NR AKRA, ND (LAT 48 46 40 LONG 097 42 55)

APR , 1977 06...	.2	12	410	405	.56	2.09	40	60	2200
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05102500 - RED RIVER AT EMERSON, MANITOBA (LAT 49 00 30 LONG 097 12 40)

JUL , 1977 30...	--	--	796	--	1.08	--	--	--	--
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05113600 - LONG CREEK NR NOONAN, ND (LAT 48 58 52 LONG 103 04 34)

OCT , 1976 06...	.2	8.7	803	805	1.09	1.34	110	130	40
APR , 1977 06...	.1	3.0	909	907	1.24	14.7	210	40	100

05116500 - DES LACS RIVER AT FOXHOLM, ND (LAT 48 22 14 LONG 101 34 11)

OCT , 1976 06...	.1	18	1120	1090	1.52	6.96	190	100	140
APR , 1977 06...	.2	6.3	920	939	1.25	18.6	180	40	320
SEP 09...	.3	7.7	1180	1140	1.60	7.01	190	20	0

05117500 - SOURIS RIVER ABOVE MINOT, ND (LAT 48 14 45 LONG 101 22 15)

APR , 1977 06...	.1	6.7	640	653	.87	24.2	210	40	160
SEP 09...	.1	6.4	879	847	1.20	9.26	190	60	480

05120500 - WINTERING RIVER NR KARLSRUHE, ND (LAT 48 10 14 LONG 100 32 20)

APR , 1977 08...	.1	12	313	298	.43	5.92	180	100	160
SEP 06...	.1	8.1	386	341	.52	3.23	140	160	80

05123400 - WILLOW CREEK NR WILLOW CITY, ND (LAT 48 35 20 LONG 100 26 30)

JUN , 1977 02...	.1	15	1350	1300	1.84	6.56	170	80	60
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05123900 - BOUNDARY CREEK NR LANDA, ND (LAT 48 48 46 LONG 100 51 46)

APR , 1977 05...	.1	11	1420	1360	1.93	5.37	180	230	300
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ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SURFACE-WATER QUALITY SITES
CHEMICAL ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN- TANEMUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG.C)	HARD- NESS (CA, MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)
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PART 6. MISSOURI RIVER BASIN

YELLOWSTONE RIVER BASIN

06329597 - CHARBONNEAU CREEK NR CHARBONNEAU, ND (LAT 47 51 10 LONG 103 47 40)

OCT , 1976										
08...	1315	.25	3100	8.8	10.5	170	0	23	27	800
APR , 1977										
07...	1810	1.3	1870	8.9	11.0	150	0	30	18	360
AUG										
03...	1440	.05	2600	8.4	19.0	200	0	32	29	640

LITTLE MUDDY CREEK BASIN

06331000 - LITTLE MUDDY RIVER BL COW CREEK NR WILLISTON, ND (LAT 48 17 04 LONG 103 34 21)

OCT , 1976										
07...	0950	10	1990	8.6	6.0	390	0	59	59	360
MAR , 1977										
11...	1335	29	1750	8.4	2.0	390	0	47	66	270
APR										
06...	1845	24	1740	8.7	6.0	390	0	75	49	250
AUG										
04...	0755	5.9	1950	8.5	17.5	380	0	45	65	370

SHELL CREEK BASIN

06332520 - SHELL CREEK NR PARSHALL, ND (LAT 48 03 11 LONG 102 08 10)

OCT , 1976										
07...	1615	1.8	2650	8.7	6.5	310	0	51	44	610
MAR , 1977										
10...	1330	6.4	1640	8.5	2.0	160	0	25	24	380
AUG										
01...	1440	.62	2750	8.8	21.0	240	0	21	46	650

LITTLE MISSOURI RIVER BASIN

06335000 - LITTLE BEAVER CREEK NR MARMARTH, ND (LAT 46 16 29 LONG 103 58 33)

OCT , 1976										
06...	1135	.64	2500	8.8	9.0	350	0	57	50	500
APR , 1977										
12...	0930	59	945	8.5	10.0	220	9	44	27	120
SEP										
08...	1000	.96	1160	8.5	19.0	150	0	31	18	220

06335500 - LITTLE MISSOURI RIVER AT MARMARTH, ND (LAT 46 17 44 LONG 103 55 06)

OCT , 1976										
06...	1445	7.5	2000	8.8	9.0	200	0	39	25	430
NOV										
11...	0950	17	2200	8.6	.0	250	0	43	35	460
APR , 1977										
12...	1225	2700	690	8.5	10.0	170	74	44	15	71
AUG										
02...	1140	.76	2250	8.5	25.5	260	0	50	33	450

KNIFE RIVER BASIN

06339100 - KNIFE RIVER AT MANNING, ND (LAT 47 14 10 LONG 102 46 10)

OCT , 1976										
19...	1620	.28	2500	8.3	4.5	310	0	62	38	550
AUG , 1977										
17...	1600	.01	1000	8.0	17.0	180	0	38	21	170

06339300 - KNIFE RIVER AT MARSHALL, ND (LAT 47 08 17 LONG 102 20 00)

OCT , 1976										
27...	1040	4.0	1800	8.5	2.0	240	0	52	27	380
MAR , 1977										
11...	1735	200	705	7.8	.0	120	0	24	15	110
AUG										
18...	1800	1.5	2090	8.4	21.0	250	0	47	32	390

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SURFACE-WATER QUALITY SITES
 CHEMICAL ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO ₃) (MG/L)	CAR- BONATE (CO ₃) (MG/L)	ALKA- LINITY AS CACO ₃ (MG/L)	CARBON DIOXIDE (CO ₂) (MG/L)	DIS- SOLVED SULFATE (SO ₄) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)
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PART 6. MISSOURI RIVER BASIN

YELLOWSTONE RIVER BASIN

06329597 - CHARBONNEAU CREEK NR CHARBONNEAU, ND (LAT 47 51 10 LONG 103 47 40)

OCT , 1976									
08...	91	27	10	970	61	897	2.8	970	7.5
APR , 1977									
07...	83	13	5.2	466	5	391	1.0	540	6.9
AUG									
03...	87	20	7.7	912	28	795	6.2	780	5.4

LITTLE MUDDY CREEK BASIN

06331000 - LITTLE MUDDY RIVER BL COW CREEK NR WILLISTON, ND (LAT 48 17 04 LONG 103 34 21)

OCT , 1976									
07...	66	7.9	9.8	627	29	563	2.8	580	9.8
MAR , 1977									
11...	60	6.0	6.9	576	12	492	3.8	490	7.0
APR									
06...	58	5.5	5.9	552	18	483	1.9	440	6.9
AUG									
04...	67	8.3	8.8	672	27	596	3.7	610	8.5

SHELL CREEK BASIN

06332520 - SHELL CREEK NR PARSHALL, ND (LAT 48 03 11 LONG 102 08 10)

OCT , 1976									
07...	81	15	9.9	907	40	811	3.2	810	12
MAR , 1977									
10...	83	13	6.6	544	5	455	2.8	500	10
AUG									
01...	85	18	7.4	749	73	736	2.3	910	8.8

LITTLE MISSOURI RIVER BASIN

06335000 - LITTLE BEAVER CREEK NR MARMARTH, ND (LAT 46 16 29 LONG 103 58 33)

OCT , 1976									
06...	75	12	10	443	22	400	1.2	1000	13
APR , 1977									
12...	54	3.5	4.7	255	2	212	1.3	270	4.0
SEP									
08...	75	7.8	6.0	267	0	219	1.4	370	12

06335500 - LITTLE MISSOURI RIVER AT MARMARTH, ND (LAT 46 17 44 LONG 103 55 06)

OCT , 1976									
06...	81	13	12	414	27	385	1.2	720	16
NOV									
11...	79	13	8.5	558	24	498	2.4	730	14
APR , 1977									
12...	46	2.4	4.9	119	0	98	.6	230	2.9
AUG									
02...	78	12	13	317	18	290	1.8	950	18

KNIFE RIVER BASIN

06339100 - KNIFE RIVER AT MANNING, ND (LAT 47 14 10 LONG 102 46 10)

OCT , 1976									
19...	79	14	10	854	12	720	7.0	770	6.0
AUG , 1977									
17...	66	5.5	7.2	377	0	309	6.0	240	3.6

06339300 - KNIFE RIVER AT MARSHALL, ND (LAT 47 08 17 LONG 102 20 00)

OCT , 1976									
27...	77	11	8.0	582	19	509	3.1	540	4.4
MAR , 1977									
11...	64	4.3	8.0	175	0	144	4.4	210	4.7
AUG									
18...	76	11	10	625	14	536	4.2	560	4.5

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SURFACE-WATER QUALITY SITES
CHEMICAL ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO2) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	DIS- SOLVED BORON (B) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)
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PART 6. MISSOURI RIVER BASIN

YELLOWSTONE RIVER BASIN

06329597 - CHARBONNEAU CREEK NR CHARBONNEAU, ND (LAT 47 51 10 LONG 103 47 40)

OCT , 1976									
08...	.6	8.4	2370	2390	3.22	1.60	190	170	20
APR , 1977									
07...	.2	5.9	1230	1200	1.67	4.42	140	80	40
AUG									
03...	.5	12	1970	1980	2.68	.27	170	80	80

LITTLE MUDDY CREEK BASIN

06331000 - LITTLE MUDDY RIVER BL COW CREEK NR WILLISTON, ND (LAT 48 17 04 LONG 103 34 21)

OCT , 1976									
07...	.2	14	1400	1430	1.90	37.8	0	80	20
MAR , 1977									
11...	.4	12	1220	1200	1.66	95.5	210	100	80
APR									
06...	.2	12	1160	1130	1.58	75.2	140	210	100
AUG									
04...	.2	10	1300	1480	1.77	20.7	280	50	0

SHELL CREEK BASIN

06332520 - SHELL CREEK NR PARSHALL, ND (LAT 48 03 11 LONG 102 08 10)

OCT , 1976									
07...	.4	19	2130	2050	2.90	10.4	640	150	60
MAR , 1977									
10...	.5	9.4	1240	1230	1.69	21.4	180	500	200
AUG									
01...	.2	6.8	2110	2090	2.87	3.53	380	120	0

LITTLE MISSOURI RIVER BASIN

06335000 - LITTLE BEAVER CREEK NR MARMARTH, ND (LAT 46 16 29 LONG 103 58 33)

OCT , 1976									
06...	.3	1.5	1880	1880	2.56	3.25	340	60	20
APR , 1977									
12...	.1	9.5	595	607	.81	94.8	250	100	10
SEP									
08...	.4	6.9	811	796	1.10	2.10	290	100	20

06335500 - LITTLE MISSOURI RIVER AT MARMARTH, ND (LAT 46 17 44 LONG 103 55 04)

OCT , 1976									
06...	.1	1.9	1490	1480	2.03	30.2	420	60	10
NOV									
11...	.2	4.7	1590	1600	2.16	73.0	570	80	10
APR , 1977									
12...	.1	6.5	435	434	.59	3170	210	270	0
AUG									
02...	.3	3.0	1680	1690	2.28	3.45	210	140	10

KNIFE RIVER BASIN

06339100 - KNIFE RIVER AT MANNING, ND (LAT 47 14 10 LONG 102 46 10)

OCT , 1976									
19...	.5	9.7	1920	1880	2.61	1.45	40	210	220
AUG , 1977									
17...	.2	3.6	700	670	.95	.02	140	120	80

06339300 - KNIFE RIVER AT MARSHALL, ND (LAT 47 08 17 LONG 102 20 00)

OCT , 1976									
27...	.2	7.2	1310	1330	1.78	14.1	380	100	80
MAR , 1977									
11...	.1	6.4	496	465	.67	268	320	370	90
AUG									
18...	.3	6.1	1440	1370	1.96	5.83	240	160	0

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SURFACE-WATER QUALITY SITES

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	HARD- NESS (CA, MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)
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PART 6. MISSOURI RIVER BASIN

KNIFE RIVER BASIN

06339490 - ELM CREEK NR GOLDEN VALLEY, ND (LAT 47 06 25 LONG 102 03 05)

MAR , 1977										
11...	1145	95	475	7.7	.5	80	0	17	9.1	67

06339500 - KNIFE RIVER NR GOLDEN VALLEY, ND (LAT 47 09 40 LONG 102 03 39)

OCT , 1976										
22...	1755	4.8	1600	8.4	3.5	270	0	55	32	310
MAR , 1977										
11...	1520	647	535	7.8	.5	100	0	22	11	74
AUG										
18...	1400	2.4	1680	8.3	23.0	250	0	46	33	340

06340200 - WEST BRANCH OTTER CREEK NR BEULAH, ND (LAT 47 08 05 LONG 101 39 35)

APR , 1977										
04...	1230	1.5	1350	8.1	4.0	270	13	53	33	210

PAINTED WOODS CREEK BASIN

06341800 - PAINTED WOODS CREEK NR WILTON, ND (LAT 47 16 3) LONG 100 47 30)

OCT , 1976										
19...	1330	.14	2230	8.7	5.5	370	0	44	63	420
MAR , 1977										
30...	1620	3.0	1000	8.5	2.0	210	0	38	28	140
SEP										
22...	1530	.40	1760	9.2	17.0	260	0	24	49	340

BURNT CREEK BASIN

06342450 - BURNT CREEK NR BISMARCK, ND (LAT 46 54 54 LONG 100 48 48)

MAR , 1977										
30...	1500	1.7	850	8.2	4.0	250	23	45	33	72
SEP										
28...	1030	3.4	860	8.3	12.0	270	0	38	42	100

HEART RIVER BASIN

06344600 - GREEN RIVER NR NEW HRADEC, ND (LAT 47 01 40 LONG 103 03 10)

OCT , 1976										
19...	1415	.84	1035	8.7	3.5	220	0	44	27	160
AUG , 1977										
17...	1240	.29	1140	8.2	20.0	250	0	52	29	190

06345500 - HEART RIVER NR RICHARDTON, ND (LAT 46 44 46 LONG 102 18 27)

OCT , 1976										
01...	1525	7.3	1040	8.6	17.0	420	85	83	52	330
MAR , 1977										
15...	1045	130	675	7.6	.0	170	52	34	21	71
AUG										
03...	1655	4.4	1310	8.3	24.0	360	85	74	43	180
SEP										
06...	1425	10	1630	8.2	19.5	390	99	73	50	240

06348000 - HEART RIVER NR LARK, ND (LAT 46 36 37 LONG 101 22 54)

APR , 1977										
05...	1220	91	860	8.6	3.0	220	0	45	26	100
JUN										
15...	1255	1920	1070	8.1	21.0	280	63	55	35	140
SEP										
20...	1330	63	1050	8.6	15.5	270	0	51	35	150

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SURFACE-WATER QUALITY SITES

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO ₃) (MG/L)	CAR- BONATE (CO ₃) (MG/L)	ALKA- LINITY AS CACO ₃ (MG/L)	CARBON DIOXIDE (CO ₂) (MG/L)	DIS- SOLVED SULFATE (SO ₄) (MG/L)	DIS- SOLVED CHLOR- IDE (CL) (MG/L)
PART 6. MISSOURI RIVER BASIN									
KNIFE RIVER BASIN									
06339490 - ELM CREEK NR GOLDEN VALLEY, ND (LAT 47 06 25 LONG 102 03 05)									
MAR , 1977 11...	62	3.3	8.5	110	0	90	3.5	140	2.5
06339500 - KNIFE RIVER NR GOLDEN VALLEY, ND (LAT 47 09 40 LONG 102 03 39)									
OCT , 1976 22...	71	8.2	8.5	553	16	480	3.7	460	6.1
MAR , 1977 11...	59	3.2	8.4	143	0	117	3.6	150	4.4
AUG 18...	74	9.3	11	560	12	479	4.7	510	4.5
06340200 - WEST BRANCH OTTER CREEK NR BEULAH, ND (LAT 47 08 05 LONG 101 39 35)									
APR , 1977 04...	62	5.6	6.8	305	3	255	4.0	460	3.4
PAINTED WOODS CREEK BASIN									
06341800 - PAINTED WOODS CREEK NR WILTON, ND (LAT 47 16 30 LONG 100 47 30)									
OCT , 1976 19...	70	9.5	17	761	12	644	2.5	600	25
MAR , 1977 30...	58	4.2	6.1	308	0	253	1.6	260	7.3
SEP 22...	73	9.1	12	499	48	489	.6	460	18
BURNT CREEK BASIN									
06342450 - BURNT CREEK NR BISMARCK, ND (LAT 46 54 54 LONG 100 48 48)									
MAR , 1977 30...	38	2.0	6.9	274	0	225	2.8	190	4.5
SEP 28...	44	2.7	7.9	347	0	285	2.8	190	4.1
HEART RIVER BASIN									
06344600 - GREEN RIVER NR NEW HRADEC, ND (LAT 47 01 40 LONG 103 03 10)									
OCT , 1976 19...	60	4.7	6.3	375	16	334	1.3	220	5.9
AUG , 1977 17...	62	5.2	6.8	413	13	360	4.4	300	6.3
06345500 - HEART RIVER NR RICHARDTON, ND (LAT 46 44 46 LONG 102 18 27)									
OCT , 1976 01...	62	7.0	11	377	16	336	1.6	770	27
MAR , 1977 15...	46	2.4	7.9	146	0	120	5.9	200	5.2
AUG 03...	51	4.1	9.3	321	8	277	2.7	460	11
SEP 06...	57	5.3	9.9	353	0	290	3.6	610	23
06348000 - HEART RIVER NR LARK, ND (LAT 46 36 37 LONG 101 22 54)									
APR , 1977 05...	49	2.9	4.6	250	17	233	1.1	210	4.0
JUN 15...	51	3.6	7.4	266	0	218	3.4	360	7.0
SEP 20...	54	4.0	7.5	328	5	277	1.4	300	8.5

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SURFACE-WATER QUALITY SITES

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO2) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	DIS- SOLVED BORON (B) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)
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PART 6. MISSOURI RIVER BASIN

KNIFE RIVER BASIN

06339490 - ELM CREEK NR GOLDEN VALLEY, ND (LAT 47 06 25 LONG 102 03 05)

MAR , 1977									
11...	.0	5.4	310	304	.42	79.5	210	540	60

06339500 - KNIFE RIVER NR GOLDEN VALLEY, ND (LAT 47 09 40 LONG 102 03 39)

OCT , 1976									
22...	.2	8.2	1180	1170	1.60	15.3	40	40	10
MAR , 1977									
11...	.1	5.7	399	347	.54	697	280	440	80
AUG									
18...	.3	7.7	1290	1240	1.75	8.36	140	340	10

06340200 - WEST BRANCH OTTER CREEK NR BEULAH, ND (LAT 47 08 05 LONG 101 39 35)

APR , 1977									
04...	.1	5.8	938	926	1.28	3.95	500	190	40

PAINTED WOODS CREEK BASIN

06341800 - PAINTED WOODS CREEK NR WILTON, ND (LAT 47 16 30 LONG 100 47 30)

OCT , 1976									
19...	.2	3.6	1570	1560	2.14	.59	570	50	10
MAR , 1977									
30...	.0	8.8	629	641	.86	5.13	390	190	140
SEP									
22...	.1	1.3	1240	1200	1.69	1.34	570	60	20

BURNT CREEK BASIN

06342450 - BURNT CREEK NR BISMARCK, ND (LAT 46 54 54 LONG 100 48 48)

MAR , 1977									
30...	.2	8.3	517	495	.70	2.43	140	290	20
SEP									
28...	.1	9.8	615	563	.84	5.76	240	400	10

HEART RIVER BASIN

06344600 - GREEN RIVER NR NEW HRADEC, ND (LAT 47 01 40 LONG 103 03 10)

OCT , 1976									
19...	.1	3.9	705	669	.96	1.60	530	0	0
AUG , 1977									
17...	.3	2.9	840	804	1.14	.66	290	120	20

06345500 - HEART RIVER NR RICHARDTON, ND (LAT 46 44 46 LONG 102 18 27)

OCT , 1976									
01...	.3	4.3	1460	1480	1.99	28.8	420	100	40
MAR , 1977									
15...	.1	4.7	456	420	.62	160	210	230	60
AUG									
03...	.2	6.2	968	950	1.32	11.5	210	60	40
SEP									
06...	.4	4.6	1230	1190	1.67	33.2	100	0	10

06348000 - HEART RIVER NR LARK, ND (LAT 46 36 37 LONG 101 22 54)

APR , 1977									
05...	.1	4.3	540	535	.73	133	210	120	40
JUN									
15...	.1	2.7	738	739	1.00	3830	210	450	10
SEP									
20...	.2	5.1	729	724	.99	124	330	0	20

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SURFACE-WATER QUALITY SITES
CHEMICAL ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	HARD- NESS (CA, MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NESI- UM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)
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PART 6. MISSOURI RIVER BASIN

HEART RIVER BASIN

06348500 - SWEETBRIAR CREEK NR JUDSON, ND (LAT 46 51 06 LONG 101 15 10)

OCT , 1976										
20...	1530	.40	1500	8.6	6.0	290	0	40	46	300
APR , 1977										
20...	0920	2.3	900	8.5	10.5	170	0	32	22	170
SEP										
27...	1050	46	850	8.9	14.5	120	0	19	18	160

06349000 - HEART RIVER NR MANDAN, ND (LAT 46 50 12 LONG 100 58 27)

MAR , 1977										
25...	1010	208	700	8.2	.0	160	0	33	19	88

CANNONBALL RIVER BASIN

06350000 - CANNONBALL RIVER AT REGENT, ND (LAT 46 25 36 LONG 102 33 05)

OCT , 1976										
28...	1400	3.2	1800	8.4	11.0	350	0	63	47	290
APR , 1977										
11...	1420	40	2060	8.7	12.5	450	180	81	60	270
AUG										
03...	1150	1.6	1480	8.2	22.5	420	110	82	52	130

06351000 - CANNONBALL RIVER BELOW BENTLEY, ND (LAT 46 21 30 LONG 102 02 30)

OCT , 1976										
28...	1030	5.7	2000	8.5	8.0	460	88	71	69	330
APR , 1977										
11...	1620	121	1820	8.8	12.0	460	240	84	61	220
AUG										
03...	1445	8.4	1390	8.4	22.0	400	87	78	50	130

06351680 - WHITE BUTTE FORK CEDAR CREEK NR SCRANTON, ND (LAT 46 19 20 LONG 102 59 45)

NOV , 1976										
01...	1640	.08	5500	8.3	8.0	2100	1700	750	55	810
APR , 1977										
12...	1645	2.1	2590	8.3	10.0	900	670	190	100	250

06352000 - CEDAR CREEK NR HAYNES, ND (LAT 46 09 15 LONG 102 28 25)

OCT , 1976										
07...	1450	1.2	2150	8.6	9.5	500	76	61	85	380
APR , 1977										
11...	1830	33	1890	8.5	10.0	510	260	87	71	220
AUG										
02...	1740	.92	2550	8.3	21.5	690	320	94	110	390

06353000 - CEDAR CREEK NR RALEIGH, ND (LAT 46 05 00 LONG 101 20 00)

APR , 1977										
18...	1115	38	1750	8.3	13.0	420	150	72	58	250
JUN										
14...	1230	185	2730	8.4	21.0	590	240	85	92	470
SEP										
20...	0945	9.7	440	8.0	13.0	32	0	8.0	2.9	88

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SURFACE-WATER QUALITY SITES
 CHEMICAL ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO ₃) (MG/L)	CAR- BONATE (CO ₃) (MG/L)	ALKA- LINITY AS CACO ₃ (MG/L)	CARBON DIOXIDE (CO ₂) (MG/L)	DIS- SOLVED SULFATE (SO ₄) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)
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PART 6. MISSOURI RIVER BASIN

HEART RIVER BASIN

06348500 - SWEETBRIAR CREEK NR JUDSON, ND (LAT 46 51 06 LONG 101 15 10)

OCT , 1976									
20...	69	7.7	5.1	570	30	517	2.5	380	6.5
APR , 1977									
20...	67	5.7	6.8	389	9	334	2.1	210	4.9
SEP									
27...	73	6.3	7.3	354	0	290	.7	170	3.5

06349000 - HEART RIVER NR MANDAN, ND (LAT 46 50 12 LONG 100 58 27)

MAR , 1977									
25...	53	3.0	5.5	224	0	184	2.3	170	4.4

CANNONBALL RIVER BASIN

06350000 - CANNONBALL RIVER AT REGENT, ND (LAT 46 25 36 LONG 102 33 05)

OCT , 1976									
08...	64	6.7	6.5	443	18	393	3.1	590	9.7
APR , 1977									
11...	56	5.5	6.6	318	3	266	1.0	770	13
AUG									
03...	49	4.0	9.0	357	9	308	3.8	520	7.4

06351000 - CANNONBALL RIVER BELOW BENTLEY, ND (LAT 46 21 30 LONG 102 02 30)

OCT , 1976									
08...	60	6.7	9.8	427	14	374	2.3	810	9.7
APR , 1977									
11...	50	4.5	7.0	266	4	225	.7	710	7.9
AUG									
03...	50	4.1	7.7	360	11	314	2.4	500	6.7

06351680 - WHITE BUTTE FORK CEDAR CREEK NR SCRANTON, ND (LAT 46 19 20 LONG 102 59 45)

NOV , 1976									
01...	45	7.7	19	423	5	355	3.5	3400	34
APR , 1977									
12...	38	3.7	6.4	283	0	232	2.3	1200	17

06352000 - CEDAR CREEK NR HAYNES, ND (LAT 46 09 15 LONG 102 28 25)

OCT , 1976									
07...	62	7.4	11	477	21	426	2.1	880	12
APR , 1977									
11...	48	4.2	6.3	299	4	252	1.6	720	8.9
AUG									
02...	55	6.5	11	410	18	364	3.6	1100	14

06353000 - CEDAR CREEK NR RALEIGH, ND (LAT 46 05 00 LONG 101 20 00)

APR , 1977									
18...	56	5.3	6.8	296	16	269	2.6	690	9.5
JUN									
14...	63	8.4	12	410	8	350	2.7	1200	16
SEP									
20...	82	6.8	8.1	139	0	114	2.2	110	6.1

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SURFACE-WATER QUALITY SITES
CHEMICAL ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO ₂) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	DIS- SOLVED BORON (B) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)
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PART 6. MISSOURI RIVER BASIN

HEART RIVER BASIN

06348500 - SWEETBRIAR CREEK NR JUDSON, ND (LAT 46 51 06 LONG 101 15 10)

OCT , 1976									
20...	.5	4.8	1090	1100	1.48	1.18	40	40	10
APR , 1977									
20...	.1	.9	712	648	.97	4.46	250	100	20
SEP									
27...	.1	2.2	571	555	.78	71.2	330	120	0

06349000 - HEART RIVER NR MANDAN, ND (LAT 46 50 12 LONG 100 58 27)

MAR , 1977									
25...	.1	5.6	431	436	.59	242	210	190	20

CANNONBALL RIVER BASIN

06350000 - CANNONBALL RIVER AT REGENT, ND (LAT 46 25 36 LONG 102 33 05)

OCT , 1976									
08...	.3	3.5	1270	1250	1.73	11.0	530	0	10
APR , 1977									
11...	.2	3.8	1430	1370	1.94	154	350	60	70
AUG									
03...	.2	8.1	1030	1050	1.40	4.45	280	100	140

06351000 - CANNONBALL RIVER BELOW BENTLEY, ND (LAT 46 21 30 LONG 102 02 30)

OCT , 1976									
08...	.1	3.5	1560	1530	2.12	24.0	720	20	10
APR , 1977									
11...	.1	3.7	1220	1230	1.66	399	280	630	60
AUG									
03...	.1	7.3	953	1030	1.30	21.6	310	220	10

06351680 - WHITE BUTTE FORK CEDAR CREEK NR SCRANTON, ND (LAT 46 19 20 LONG 102 59 45)

NOV , 1976									
01...	.1	4.2	5200	5290	7.07	1.12	40	60	160
APR , 1977									
12...	.2	6.2	2070	1910	2.82	11.7	390	170	650

06352000 - CEDAR CREEK NR HAYNES, ND (LAT 46 09 15 LONG 102 28 25)

OCT , 1976									
07...	.2	4.0	1700	1690	2.31	5.51	830	100	0
APR , 1977									
11...	.1	2.6	1270	1270	1.73	113	530	40	80
AUG									
02...	.2	3.9	1980	1940	2.69	4.92	590	160	80

06353000 - CEDAR CREEK NR RALEIGH, ND (LAT 46 05 00 LONG 101 20 00)

APR , 1977									
18...	.2	.9	1280	1250	1.74	132	320	60	0
JUN									
14...	.2	3.3	2100	2090	2.86	1050	690	160	10
SEP									
20...	.1	15	327	307	.44	8.56	240	140	10

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SURFACE-WATER QUALITY SITES

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	HARD- NESS (CA, MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)
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PART 6. MISSOURI RIVER BASIN

GRAND RIVER BASIN

06355000 - NORTH FORK GRAND RIVER AT HALEY, ND (LAT 45 57 39 LONG 103 07 09)

OCT , 1976										
07...	1105	.90	2550	8.8	8.0	310	0	51	44	520
APR , 1977										
06...	1200	2.7	1610	8.3	4.5	230	0	43	30	280

JAMES RIVER BASIN

06468170 - JAMES RIVER NR GRACE CITY, ND (LAT 47 33 29 LONG 098 51 45)

APR , 1977										
06...	0900	.52	1250	8.8	1.0	180	0	34	23	250

06470000 - JAMES RIVER AT JAMESTOWN, ND (LAT 46 53 22 LONG 098 40 58)

MAY , 1977										
05...	1025	5.6	--	--	--	270	37	66	26	71

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SURFACE-WATER QUALITY SITES
 CHEMICAL ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO ₃) (MG/L)	CAR- BONATE (CO ₃) (MG/L)	ALKA- LINITY AS CACO ₃ (MG/L)	CARBON DIOXIDE (CO ₂) (MG/L)	DIS- SOLVED SULFATE (SO ₄) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)
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PART 6. MISSOURI RIVER BASIN

GRAND RIVER BASIN

06355000 - NORTH FORK GRAND RIVER AT HALEY, ND (LAT 45 57 39 LONG 103 07 09)

OCT , 1976									
07...	78	13	9.9	512	23	458	1.4	970	8.4
APR , 1977									
06...	72	8.0	3.6	326	9	282	2.8	540	7.1

JAMES RIVER BASIN

06468170 - JAMES RIVER NR GRACE CITY, ND (LAT 47 33 29 LONG 098 51 45)

APR , 1977									
06...	74	8.1	8.4	435	20	390	1.2	210	7.9

06470000 - JAMES RIVER AT JAMESTOWN, ND (LAT 46 53 22 LONG 098 40 58)

MAY , 1977									
05...	36	1.9	5.8	286	0	235	--	150	27

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SURFACE-WATER QUALITY SITES

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED FLUOR- IDE (F) (MG/L)	DIS- SOLVED SILICA (SiO ₂) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	DIS- SOLVED BORON (B) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)
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PART 6. MISSOURI RIVER BASIN

GRAND RIVER BASIN

06355000 - NORTH FORK GRAND RIVER AT HALEY, ND (LAT 45 57 39 LONG 103 07 09)

OCT , 1976									
07...	.3	5.2	1890	1880	2.57	4.59	110	20	20
APR , 1977									
06...	.1	2.8	1130	1080	1.54	8.24	570	20	80

JAMES RIVER BASIN

06468170 - JAMES RIVER NR GRACE CITY, ND (LAT 47 33 29 LONG 098 51 45)

APR , 1977									
06...	.1	8.3	865	846	1.18	1.21	210	100	40

06470000 - JAMES RIVER AT JAMESTOWN, ND (LAT 46 53 22 LONG 098 40 58)

MAY , 1977									
05...	.1	13	550	502	.75	8.32	180	190	1500

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)
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PART 5. HUDSON BAY BASIN

RED RIVER OF THE NORTH BASIN

05051500 - RED RIVER OF THE NORTH AT WAHPEFON, ND (LAT 46 15 55 LONG 096 35 40)

OCT , 1976					APR , 1977				
14...	1240	4.2	700	12.0	01...	1335	114	525	5.0
19...	1405	8.8	710	5.5	MAY				
NOV					12...	1000	19	700	20.0
11...	1030	7.6	740	2.0	JUN				
DEC					14...	1020	14	650	27.0
07...	1330	4.6	975	1.0	JUL				
JAN , 1977					19...	1500	59	470	30.0
14...	1130	7.8	1050	.0	AUG				
FEB					16...	1430	39	440	21.0
08...	1650	14	1050	.5	SEP				
MAR					20...	1100	115	550	14.5
09...	1815	56	800	.5					
18...	1315	81	645	.5					

05051700 - WILD RICE RIVER NR CAYUGA, ND (LAT 46 07 30 LONG 097 21 40)

APR , 1977					APR , 1977				
01...	0930	.14	1200	5.0	20...	1050	.03	1550	11.0
13...	1000	.01	1520	10.0					

05054000 - RED RIVER OF THE NORTH AT FARGO, ND (LAT 46 51 40 LONG 096 47 00)

OCT , 1976					MAR , 1977				
26...	1440	9.1	960	4.0	21...	1225	138	1120	.5
NOV					APR				
18...	0930	12	1020	.5	05...	1455	197	620	1.0
DEC					MAY				
21...	1020	11	1100	.0	23...	1155	30	490	21.0
JAN , 1977					JUL				
19...	0950	20	1150	.0	25...	1530	38	530	25.5
FEB					SEP				
15...	0935	19	1020	.5	20...	1700	94	540	17.0
MAR									
16...	0850	64	1110	1.5					

05056100 - MAUVAIS COULEE NR CANDON, ND (LAT 48 26 53 LONG 099 06 08)

OCT , 1976					APR , 1977				
08...	1310	.02	1200	9.0	06...	1500	.09	550	4.5
NOV					MAY				
04...	1340	.07	1300	4.0	04...	1245	1.3	910	14.5
DEC					JUN				
08...	1100	.02	2150	.5	09...	1525	.03	1400	19.0
JAN , 1977					JUL				
06...	1630	.02	2800	.5	12...	1700	.05	1310	23.5
MAR					SEP				
04...	1805	.03	2900	.0	27...	1150	.01	1250	20.0
09...	1410	.26	1390	1.0	14...	1055	.01	1300	15.0
22...	1415	.09	950	.5					
28...	1500	.14	660	2.0					

05056200 - EDMORE COULEE NR EDWARDS, ND (LAT 48 20 14 LONG 098 39 33)

MAR , 1977					MAY , 1977				
28...	1220	1.6	360	1.5	05...	1830	2.1	925	15.0
APR									
01...	1300	5.3	590	1.5					
06...	1330	3.2	710	2.0					

05056390 - LITTLE COULEE NR BRINSMADE, ND (LAT 48 11 18 LONG 099 14 36)

MAR , 1977					MAR , 1977				
09...	1535	.11	695	2.5	15...	1210	.04	1200	4.0

05057200 - BALDHILL CREEK NR DAZEY, ND (LAT 47 13 45 LONG 099 07 28)

NOV , 1976					APR , 1977				
01...	1720	2.3	1000	5.0	05...	1220	17	640	1.0
DEC					MAY				
02...	1610	1.4	1350	.5	03...	1230	2.2	975	14.5
JAN , 1977					JUN				
04...	1410	.14	1550	.5	01...	1530	3.1	780	21.5
FEB					AUG				
01...	1415	.19	1600	3.0	29...	1025	1.1	850	19.0
MAR					SEP				
01...	1440	.75	950	1.0	12...	1230	.92	750	20.5
14...	1225	4.7	680	.5	31...	1110	1.6	850	17.5
28...	1500	11	650	1.5					

E - Estimated.

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS
WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)
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PART 5. HUDSON BAY BASIN
RED RIVER OF THE NORTH BASIN

05058000 - SHEYENNE RIVER BELOW BALD HILL DAM, ND (LAT 47 01 50 LONG 098 05 50)

OCT , 1976					APR , 1977				
07...	1400	33	620	12.5	11...	1500	10	840	7.5
NOV					MAY				
02...	1645	30	620	4.5	03...	1000	13	740	12.0
DEC					JUN				
03...	1030	17	670	2.0	02...	1010	7.2	750	20.0
JAN , 1977					24...	1725	4.4	750	23.0
04...	1100	16	800	.5	AUG				
FEB					02...	0945	2.1	800	23.0
01...	1200	14	950	3.0	31...	0900	4.5	710	18.0
MAR									
03...	1100	9.4	1090	3.0					

05059500 - SHEYENNE RIVER AT WEST FARGO, ND (LAT 46 53 28 LONG 095 54 24)

OCT , 1976					APR , 1977				
26...	1620	27	910	1.0	25...	1825	79	850	13.0
DEC					MAY				
20...	1215	8.4	1200	.0	25...	1335	42	850	24.0
JAN , 1977					JUN				
18...	1235	6.4	1230	.0	28...	1455	46	1020	25.0
FEB					JUL				
15...	1540	15	1110	1.0	26...	1645	39	1090	25.5
MAR					AUG				
17...	1415	70	690	.5	22...	1700	19	850	20.0
APR					SEP				
05...	1140	168	630	.5	22...	1035	32	850	14.5
12...	1705	128	770	9.0					

05059600 - MAPLE RIVER NR HOPE, ND (LAT 47 19 30 LONG 097 47 25)

MAR , 1977					APR , 1977				
11...	1220	±.02	375	.5	11...	1240	.03	800	6.0
14...	1515	.06	390	1.0	JUL				
28...	1710	.03	520	6.0	26...	1100	±.01	1600	23.0

05059700 - MAPLE RIVER NR EIDERLIN, ND (LAT 46 37 18 LONG 097 34 25)

OCT , 1976					APR , 1977				
15...	1615	2.2	1520	6.0	05...	0900	5.5	1650	4.0
NOV					MAY				
10...	1535	3.3	1500	2.0	11...	1515	40	750	22.0
DEC					JUN				
07...	1700	2.6	1525	2.0	14...	1650	4.3	1200	25.0
JAN , 1977					JUL				
20...	1025	2.5	1525	.5	18...	1340	3.2	1200	22.5
FEB					AUG				
08...	1015	3.1	1550	2.0	15...	1330	2.3	1400	17.0
MAR					SEP				
11...	1430	6.6	1350	2.5	22...	1100	1.5	1050	13.0
23...	1525	4.6	1320	2.0					

05060500 - RUSH RIVER AT AMENIA, ND (LAT 47 01 00 LONG 097 12 50)

MAR , 1977					MAY , 1977				
25...	1320	3.2	950	2.5	11...	1045	1.8	1700	18.0
28...	1705	3.8	1740	6.0					
APR									
04...	1420	6.7	1250	4.5					

05066500 - GOOSE RIVER AT HILLSBORO, ND (LAT 47 24 20 LONG 097 03 40)

DEC , 1976					MAY , 1977				
09...	1055	.34	1950	.5	11...	1045	30	1350	16.0
JAN , 1977					JUN				
11...	1250	.25	2200	.0	09...	1140	8.0	660	21.5
FEB					30...	1515	5.2	975	21.5
10...	1020	.85	2480	1.5	AUG				
APR					03...	1100	.56	1300	21.5
06...	1600	18	950	2.0	29...	1110	.22	1260	18.5
12...	1130	50	875	1.5					

E - Estimated.

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS
WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)
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PART 5. HUDSON BAY BASIN
RED RIVER OF THE NORTH BASIN

050R2500 - RED RIVER OF THE NORTH AT GRAND FORKS, ND (LAT 47 56 34 LONG 097 03 10)

OCT , 1976					APR , 1977				
21...	1130	366	490	5.0	27...	1545	829	640	15.0
NOV					MAY				
23...	1200	263	750	.5	23...	1240	1130	440	21.0
DEC					JUN				
14...	1125	198	700	.0	24...	1005	270	680	23.0
JAN , 1977					JUL				
05...	1555	216	660	.0	13...	1130	605	565	23.0
24...	1700	215	860	.0	18...	1645	506	640	27.0
FEB					25...	1130	416	540	25.5
16...	1330	207	650	.0	AUG				
MAR					08...	1225	251	570	23.0
14...	1210	415	310	1.0	18...	1300	200	560	19.5
22...	1400	510	600	.0	24...	1235	201	560	19.0
31...	1245	1380	600	1.0	26...	1415	76	580	19.0
APR					SEP				
07...	1610	1644	550	1.0	01...	1800	9.9	600	18.0
08...	0930	1640	550	1.0	02...	1015	1.9	600	16.5
12...	1600	2070	670	4.0	26...	1300	858	570	14.0
25...	1230	860	640	13.0					

050R3600 - MIDDLE BRANCH FOREST RIVER NR WHITMAN, ND (LAT 48 14 50 LONG 098 07 00)

MAR , 1977					APR , 1977				
14...	1555	2.4	690	1.0	04...	1000	5.4	480	1.0
21...	1630	.39	1000	1.5	18...	1415	.39	1300	11.5
28...	1125	11	660	4.0					

050R4000 - FOREST RIVER NR FORDVILLE, ND (LAT 48 11 50 LONG 097 43 49)

OCT , 1976					APR , 1977				
07...	1140	4.5	605	4.5	04...	1450	14	500	5.5
NOV					MAY				
09...	1255	4.6	640	1.5	02...	1145	9.9	620	12.0
DEC					JUN				
10...	1245	5.4	790	.0	01...	1625	13	510	23.0
JAN , 1977					JUL				
12...	1340	9.2	490	.0	07...	1750	4.0	575	26.0
FEB					AUG				
02...	1530	6.6	710	.5	02...	1155	2.2	560	20.0
MAR					SEP				
07...	1345	8.8	660	1.0	01...	1430	5.4	600	--
10...	1625	24	490	.5					
21...	1400	14	590	1.5					

050R9000 - SOUTH BRANCH PARK RIVER BELOW HOMME DAM, ND (LAT 48 24 07 LONG 097 46 55)

OCT , 1976					APR , 1977				
07...	1440	.79	580	9.0	06...	0930	.86	810	3.5
NOV					21...	1600	.27	800	15.5
11...	1505	2.5	620	1.0	MAY				
DEC					02...	1615	.15	850	19.0
09...	1500	8.9	700	.0	JUN				
JAN , 1977					01...	1325	1.1	650	23.0
12...	1600	5.1	800	.0	JUL				
FEB					07...	1520	.80	660	26.0
03...	1335	5.1	810	.5	AUG				
MAR					02...	1700	1.3	580	24.0
08...	1700	6.6	840	4.0	SEP				
23...	1620	1.7	850	4.0	01...	1100	.37	700	15.0

050R9100 - MIDDLE BRANCH PARK RIVER NR UNION, ND (LAT 48 32 32 LONG 098 01 10)

NOV , 1976					MAY , 1977				
09...	1540	E.03	740	1.5	03...	0945	.12	650	10.0
MAR , 1977					JUN				
10...	1740	.24	675	.0	02...	1820	.06	580	21.5
16...	1220	1.6	425	1.0	JUL				
28...	1430	2.8	300	1.5	06...	1740	2.4	395	23.0
APR					AUG				
05...	1000	2.8	340	.5	02...	1345	E.02	600	22.0
20...	1540	.23	550	12.0	31...	1050	.04	600	15.0

E - Estimated.

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)
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PART 5. HUDSON BAY BASIN

RED RIVER OF THE NORTH BASIN

05089500 - CART CREEK AT MOUNTAIN, ND (LAT 48 40 37 LONG 097 51 41)

NOV , 1976					MAY , 1977				
09...	1625	E.02	1040	1.0	03...	1055	.28	925	12.0
MAR , 1977					JUN				
10...	1650	1.8	670	.0	03...	0855	1.2	850	16.0
16...	1110	.59	895	.5	JUL				
22...	1715	.24	950	.0	06...	1515	2.5	535	23.5
28...	1550	9.0	600	1.0	AUG				
31...	1120	1.5	700	1.0	02...	1445	.02	900	20.0
APR					SEP				
05...	1300	3.7	560	1.0	28...	1030	1.7	740	11.0
13...	1615	1.4	760	11.0					
20...	1420	.75	860	10.5					

05092000 - RED RIVER OF THE NORTH AT DRAYTON, ND (LAT 48 34 20 LONG 097 08 50)

OCT , 1976					MAY , 1977				
08...	1415	350	455	9.0	02...	1235	805	860	16.0
DEC					JUN				
07...	1240	120	1590	.0	02...	1240	1290	680	21.0
JAN , 1977					JUL				
04...	1225	200	900	.0	05...	1420	517	1100	25.0
MAR					30...	1230	120	1100	23.5
11...	1220	219	860	.0	30...	1330	120	1100	24.0
18...	1400	393	580	.5	AUG				
APR					01...	1210	374	1080	22.5
07...	1150	2370	990	.5	12...	1020	240	960	19.5
15...	1325	2240	690	7.0	29...	1130	134	950	17.0

05092200 - PEMBINA COUNTY DRAIN 20 NR GLASSTON, ND (LAT 48 41 49 LONG 097 23 03)

MAY , 1977					JUL , 1977				
31...	1240	.03	900	26.5	05...	1630	.06	860	31.5

05098700 - HIDDEN ISLAND COULEE NR HANSBORD, ND (LAT 48 57 10 LONG 099 25 35)

APR , 1977					APR , 1977				
06...	1210	.02	700	4.0	21...	1220	E.01	900	10.0

05098900 - CYPRESS CREEK NR SABLES, ND (LAT 48 56 35 LONG 098 57 05)

APR , 1977					JUN , 1977				
06...	1015	.11	650	2.5	03...	1245	.34	670	19.5
19...	1215	1.1	840	9.0					
MAY									
04...	1005	.01	1900	14.0					

05099100 - SNOWFLAKE CREEK NEAR SNOWFLAKE, MANITOBA (LAT 49 01 17 LONG 098 36 13)

APR , 1977				
13...	1305	2.7	520	10.0

05100000 - PEMBINA RIVER AT NECHE, ND (LAT 48 59 20 LONG 097 33 05)

OCT , 1976					APR , 1977				
04...	1300	27	845	12.5	07...	1035	71	580	2.0
NOV					MAY				
16...	1215	13	1110	.5	04...	1700	32	900	14.0
DEC					JUN				
08...	1425	2.2	1300	.0	12...	1440	82	740	21.0
FEB , 1977					JUL				
21...	1400	2.5	1250	.5	06...	0925	33	830	24.5
MAR					AUG				
10...	1300	2.8	1000	1.0	13...	1210	12	850	20.5
23...	1310	29	700	.0	30...	1015	5.6	800	18.0

05100500 - HERZOG CREEK NR CONCRETE, ND (LAT 48 45 13 LONG 097 54 22)

MAR , 1977					MAY , 1977				
09...	1540	E.02	500	.0	03...	1310	.08	650	12.0
11...	1605	.06	740	.0	JUN				
28...	1740	.25	690	.5	02...	1700	E.01	740	23.0
APR					AUG				
05...	1500	.20	520	1.0	02...	1510	E.01	720	23.5
13...	1510	.19	680	6.5					

E - Estimated.

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS
WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)
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PART 5. HUDSON BAY BASIN
RED RIVER OF THE NORTH BASIN

05101000 - TONGUE RIVER NR AKRA, ND (LAT 48 46 40 LONG 097 42 55)

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)
OCT , 1976					APR , 1977				
04...	1445	1.5	530	11.5	06...	1640	1.8	650	5.5
NOV					MAY				
16...	1655	2.9	600	.0	03...	1515	2.2	500	14.5
DEC					JUN				
29...	1050	2.2	645	.0	03...	1045	9.6	520	20.5
JAN , 1977					JUL				
06...	1450	1.6	660	3.0	06...	1205	5.3	560	24.0
FEB					AUG				
21...	1645	2.0	625	3.0	03...	1345	1.9	540	22.0
MAR					29...	1515	1.3	550	18.0
10...	1530	22	725	3.0					
16...	0905	11	660	3.0					
22...	1510	7.0	580	3.0					

05102500 - RED RIVER AT EMERSON, MANITOBA (LAT 49 00 30 LONG 097 12 40)

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)
JAN , 1977					SEP , 1977				
04...	1725	170	1180	.0	08...	1200	439	850	16.0
JUL									
30...	1000	--	1300	23.0					

05113600 - LONG CREEK NR NUONAN, ND (LAT 48 58 52 LONG 103 04 34)

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)
OCT , 1976					MAR , 1977				
06...	1210	.62	1125	7.0	16...	1425	5.2	1400	1.0
14...	1240	1.2	1000	7.0	APR				
NOV					06...	1345	6.0	1450	3.0
03...	1130	.91	1050	3.0	MAY				
DEC					03...	1510	2.0	1090	13.5
01...	1415	.44	1220	.5	JUN				
JAN , 1977					01...	1445	16	1820	21.0
04...	1205	.40	1620	.5	JUL				
FEB					06...	1155	5.06	2150	19.0
01...	1335	.12	1800	.0					
MAR									
01...	1505	.60	1260	.5					
11...	1000	1.8	1160	1.5					

05116500 - DES LACS RIVER AT FOXHOLM, ND (LAT 48 22 14 LONG 101 34 11)

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)
OCT , 1976					MAY , 1977				
06...	1345	2.3	1500	5.5	03...	1855	3.7	1830	17.5
NOV					JUN				
04...	1315	3.0	1720	1.0	01...	1655	3.2	2250	22.5
DEC					16...	1135	17	2150	19.5
02...	1300	1.9	2320	.0	JUL				
JAN , 1977					08...	1255	1.2	1400	22.0
06...	1335	.38	2450	.0	AUG				
MAR					02...	1125	1.5	1720	21.5
03...	1105	.38	1860	.0	SEP				
APR					09...	1305	2.2	1620	14.5
06...	1605	7.5	1340	1.5					

05117500 - SOURIS RIVER ABOVE MINOT, ND (LAT 48 14 45 LONG 101 22 15)

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)
OCT , 1976					MAY , 1977				
06...	1035	47	765	7.5	02...	1630	321	780	14.5
NOV					JUN				
04...	1030	43	815	1.5	01...	1250	8.0	1150	19.5
DEC					JUL				
02...	1015	66	830	.0	08...	1045	6.3	1460	21.5
JAN , 1977					AUG				
06...	1540	30	975	.0	02...	0935	4.8	1170	21.0
31...	1700	27	920	.0	SEP				
MAR					09...	1015	3.9	1260	15.0
03...	1040	15	1080	.0					
APR									
06...	1825	14	950	4.0					

E - Estimated.

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS
WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)
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PART 5. HUDSON BAY BASIN
RED RIVER OF THE NORTH BASIN

05120500 - WINTERING RIVER NR KARLSRUHE, ND (LAT 48 10 14 LONG 100 32 20)

OCT , 1976					APR , 1977				
05...	2015	2.1	650	9.0	08...	1430	7.0	485	7.5
NOV					MAY				
05...	1640	3.8	670	2.0	05...	1935	11	635	15.5
29...	1815	1.6	840	.0	31...	1935	3.0	605	21.0
JAN , 1977					JUL				
03...	1720	1.3	750	.0	05...	1935	.98	580	26.0
FEB					AUG				
02...	1330	.90	660	.0	01...	1330	.28	600	22.5
MAR					SEP				
04...	1045	3.5	685	.0	06...	1830	3.1	575	17.0
11...	1410	12	400	.0					
24...	1230	7.5	560	.5					

05123400 - WILLOW CREEK NR WILLOW CITY, ND (LAT 48 35 20 LONG 100 26 30)

MAY , 1977					AUG , 1977				
26...	1405	18	1500	25.0	04...	1000	.52	800	20.0
JUN									
02...	1700	1.8	1830	23.5					

05123510 - DEEP RIVER NR UPHAM, ND (LAT 48 35 03 LONG 100 51 44)

MAY , 1977				
05...	1030	6.01	1250	13.5

05123900 - BOUNDARY CREEK NR LANDA, ND (LAT 48 48 46 LONG 100 51 46)

APR , 1977				
05...	1000	1.4	1740	.5

PART 6. MISSOURI RIVER BASIN
YELLOWSTONE RIVER BASIN

06329597 - CHARBONNEAU CREEK NR CHARBONNEAU, ND (LAT 47 51 10 LONG 103 47 40)

OCT , 1976					APR , 1977				
08...	1315	.25	3100	10.5	07...	1810	1.3	1870	11.0
JAN , 1977					MAY				
07...	0940	.55	3250	.0	05...	1030	.23	3250	11.0
FEB					JUN				
03...	1345	.14	3500	5.0	03...	1045	.24	2700	19.0
MAR					AUG				
03...	1015	1.1	2250	.0	03...	1440	.05	2600	19.0
09...	1415	33	550	.0	31...	1605	.62	2800	18.0
15...	0900	5.5	1950	.5					
28...	1520	3.0	1880	2.0					

LITTLE MUDDY RIVER BASIN

06331000 - LITTLE MUDDY RIVER BL COW CREEK NR WILLISTON, ND (LAT 48 17 04 LONG 103 34 21)

OCT , 1976					APR , 1977				
07...	0950	10	1990	6.0	06...	1845	24	1740	6.0
NOV					MAY				
04...	0930	3.7	2300	2.6	04...	0825	8.7	2650	15.0
DEC					JUN				
02...	1645	10	2250	1.0	02...	0835	11	2000	18.0
JAN , 1977					JUL				
06...	1305	7.4	2220	.0	07...	0955	6.4	1890	20.0
FEB					AUG				
02...	1405	5.2	2100	.5	04...	0755	5.9	1950	17.5
MAR					SEP				
02...	0930	13	1900	.0	01...	0800	6.1	1850	15.0
11...	1335	29	1750	2.0					
16...	0920	25	1500	1.0					

E - Estimated.

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS
WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)
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PART 6. MISSOURI RIVER BASIN

SHELL CREEK BASIN

06332520 - SHELL CREEK NR PARSHALL, ND (LAT 48 03 11 LONG 102 08 10)

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)
OCT , 1976					MAY , 1977				
07...	1615	1.8	2650	6.5	02...	1635	2.0	2750	13.0
NOV					31...	1535	2.4	2300	21.0
04...	1520	2.0	2450	3.0	JUL				
29...	1455	.42	3450	.0	05...	1500	4.2	3500	28.0
MAR , 1977					AUG				
10...	1330	6.4	1640	2.0	01...	1440	.62	2750	21.0
17...	1100	7.5	2000	.5	29...	1345	1.0	2780	18.0
28...	2005	10	1840	.5					
APR									
04...	1635	3.0	2300	3.0					

LITTLE MISSOURI RIVER BASIN

06335000 - LITTLE BEAVER CREEK NR MARMARTH, ND (LAT 46 16 29 LONG 103 58 33)

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)
OCT , 1976					MAR , 1977				
06...	1135	.64	2500	9.0	22...	1525	27	1230	3.0
NOV					APR				
05...	1310	2.8	1600	4.0	12...	0930	59	945	10.0
DEC					MAY				
08...	1045	2.4	2050	.5	04...	1105	7.4	1540	16.0
JAN , 1977					JUN				
06...	1315	1.6	2100	.0	02...	1030	3.8	—	20.0
FEB					JUL				
01...	1150	1.4	2200	.5	12...	1020	1.6	950	18.0
MAR					SEP				
02...	1045	6.0	980	.5	08...	1000	.96	1160	19.0
09...	0950	57	1070	.5					
15...	1050	41	1290	.5					

06335500 - LITTLE MISSOURI RIVER AT MARMARTH, ND (LAT 46 17 44 LONG 103 55 06)

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)
OCT , 1976					APR , 1977				
06...	1445	7.5	2000	9.0	12...	1225	2700	690	10.0
NOV					MAY				
05...	1435	18	1900	7.0	04...	1340	61	1400	18.0
11...	0950	17	2200	.0	JUN				
DEC					02...	1235	25	2000	26.0
08...	1425	5.3	3000	.5	16...	1805	1440	600	23.0
JAN , 1977					JUL				
06...	1645	2.8	3150	.0	12...	1150	24	1690	22.0
FEB					AUG				
01...	1515	17	2750	.0	02...	1140	.76	2250	25.5
MAR					SEP				
02...	1350	40	1370	.5	08...	1200	14	1430	16.0
09...	1225	363	1110	1.0					
15...	1410	158	1190	1.0					
22...	1640	143	1320	5.0					

KNIFE RIVER BASIN

06339100 - KNIFE RIVER AT MANNING, ND (LAT 47 14 10 LONG 102 46 10)

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)
OCT , 1976					APR , 1977				
19...	1620	.28	2500	4.5	19...	1615	4.4	1410	12.0
NOV					MAY				
17...	1520	.63	3000	1.5	18...	0935	1.6	1000	18.0
DEC					JUN				
14...	1620	.94	3400	.5	16...	1120	384	395	16.0
JAN , 1977					24...	1605	3.8	1200	24.0
20...	1205	.75	2800	.5	JUL				
FEB					20...	1130	1.3	650	22.0
17...	1415	2.2	2000	1.0	AUG				
MAR					17...	1600	.01	1000	17.0
03...	1515	1.7	1660	.0	SEP				
14...	1155	41	830	.0	26...	1200	6.0	1900	11.0
25...	1555	22	1010	.0					

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS
WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)
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PART 6. MISSOURI RIVER BASIN
KNIFE RIVER BASIN

06339300 - KNIFE RIVER AT MARSHALL, ND (LAT 47 08 17 LONG 102 20 00)

OCT , 1976					APR , 1977				
27... 1040	4.0	1800	2.0		19... 1240	16	1680	12.0	
NOV					MAY				
17... 1310	3.5	2000	2.0		17... 1020	18	1510	19.0	
DEC					JUN				
14... 1410	4.4	2000	.5		17... 1430	1050	455	19.0	
JAN , 1977					22... 1555	62	925	23.0	
18... 1635	2.1	3000	.5		JUL				
FEB					19... 1040	6.7	1100	25.0	
16... 1330	30	1650	.5		AUG				
MAR					18... 1800	1.5	2090	21.0	
02... 1405	21	1140	.0		SEP				
11... 1735	200	705	.0		29... 1215	24	1490	12.0	
16... 1145	90	835	.5						
25... 1415	35	1080	.0						

06339490 - ELM CREEK NR GOLDEN VALLEY, ND (LAT 47 06 25 LONG 102 03 05)

MAR , 1977					JUN , 1977				
11... 1145	95	475	.5		17... 1905	6.0	1590	20.0	
15... 1545	15	650	.0		23... 1140	.43	1110	20.0	
25... 1215	3.0	1020	.0		SEP				
APR					28... 1415	6.8	770	12.0	
18... 1510	.25	1770	15.0						

06339500 - KNIFE RIVER NR GOLDEN VALLEY, ND (LAT 47 09 40 LONG 102 03 39)

OCT , 1976					APR , 1977				
22... 1755	4.8	1600	3.5		18... 1635	36	1710	15.0	
NOV					MAY				
16... 1555	6.1	2200	1.0		17... 1250	49	1820	21.0	
DEC					JUN				
13... 1640	7.0	2800	.0		17... 1715	1150	825	20.0	
JAN , 1977					23... 1615	76	1020	23.0	
17... 1455	2.8	3000	.0		JUL				
FEB					19... 1410	16	1320	26.0	
15... 1530	60	3000	.0		AUG				
MAR					18... 1400	2.4	1680	23.0	
02... 1225	69	840	.0		SEP				
11... 1520	647	535	.5		28... 1535	109	1280	13.0	
15... 1655	171	720	.0						
25... 1255	29	1100	.5						

06340200 - WEST BRANCH OTTER CREEK NR BEULAH, ND (LAT 47 08 05 LONG 101 39 35)

JAN , 1977					APR , 1977				
20... 1330	8.24	1560	2.0		04... 1230	1.5	1350	4.0	
MAR					SEP				
17... 1155	1.2	800	2.0		27... 1230	2.3	1400	13.5	

PAINTED WOODS CREEK BASIN

06341800 - PAINTED WOODS CREEK NR WILTON, ND (LAT 47 16 30 LONG 100 47 30)

OCT , 1976					MAY , 1977				
19... 1330	.14	2230	5.5		18... 1340	.05	1450	--	
NOV					JUN				
24... 1005	.15	2400	2.0		16... 1030	.35	1810	20.5	
DEC					23... 1450	1.4	1500	18.0	
22... 1410	.09	2800	1.0		JUL				
MAR , 1977					11... 1110	2.7	1200	21.0	
08... 0911	1.3	1410	.0		18... 1125	.28	1090	27.0	
09... 1000	2.6	700	1.0		AUG				
30... 1620	3.0	1000	2.0		23... 0955	.03	1510	13.0	
APR					SEP				
21... 1340	.23	1600	15.5		22... 1530	.40	1760	17.0	

BURNT CREEK BASIN

06342450 - BURNT CREEK NR BISMARCK, ND (LAT 46 54 54 LONG 100 48 48)

MAR , 1977					APR , 1977				
09... 1130	1.8	360	.5		21... 1000	.71	1080	9.0	
15... 1550	7.1	610	.5		SEP				
30... 1500	1.7	850	4.0		28... 1030	3.4	860	12.0	

E - Estimated.

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS
WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)
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PART 6. MISSOURI RIVER BASIN

HEART RIVER BASIN

06344600 - GREEN RIVER NR NEW HRADEC, ND (LAT 47 01 40 LONG 103 03 10)

OCT , 1976					APR , 1977				
19...	1415	.84	1035	3.5	20...	1525	3.0	840	11.0
NOV					MAY				
17...	1655	.91	1030	2.0	16...	1245	1.8	900	19.0
DEC					JUN				
15...	1345	.61	1150	.5	17...	1545	106	520	21.0
JAN , 1977					27...	1435	20	680	25.0
19...	1410	.97	950	.0	JUL				
FEB					18...	1450	.37	940	31.0
17...	1610	1.4	850	.5	AUG				
MAR					17...	1240	.29	1140	20.0
03...	1030	1.4	830	.0	SEP				
09...	1615	14	415	.0	22...	1410	2.0	900	12.0
14...	1325	36	490	1.0					
25...	1755	16	640	.0					

06345500 - HEART RIVER NR RICHARDTON, ND (LAT 46 44 46 LONG 102 18 27)

OCT , 1976					MAR , 1977				
01...	1525	7.3	1040	17.0	25...	1020	63	940	.0
NOV					APR				
02...	1510	11	2300	5.0	01...	1655	80	1140	5.0
DEC					29...	1450	36	1750	18.0
02...	1255	5.2	2840	.0	JUN				
JAN , 1977					01...	1055	107	1300	18.0
04...	1335	5.3	2980	.0	JUL				
FEB					07...	1130	100	790	22.0
03...	1040	3.0	3120	.0	AUG				
03...	1230	9.2	1500	.0	03...	1655	4.4	1310	24.0
MAR					SEP				
02...	1540	35	1410	.0	06...	1425	10	1630	19.5
15...	1045	130	675	.0					

06348000 - HEART RIVER NR LARK, ND (LAT 46 36 37 LONG 101 22 54)

OCT , 1976					MAY , 1977				
17...	1030	16	1340	2.5	16...	1400	59	1300	22.5
NOV					JUN				
18...	1205	13	1520	3.5	15...	1255	1920	1070	21.0
DEC					20...	1445	1200	1200	22.0
20...	1330	27	1600	.5	JUL				
JAN , 1977					11...	1425	131	950	20.0
17...	1350	8.0	1700	.0	21...	1345	54	1000	26.0
FEB					AUG				
14...	1340	22	1600	.0	17...	1400	69	1000	22.0
MAR					SEP				
10...	1325	660	660	.5	20...	1330	63	1050	15.5
18...	1135	153	650	1.0					
APR									
05...	1220	91	860	3.0					

06348500 - SWEETBRIAR CREEK NR JUDSON, ND (LAT 46 51 06 LONG 101 15 10)

OCT , 1976					MAY , 1977				
20...	1530	.40	1500	6.0	19...	1505	.30	1400	21.5
NOV					JUN				
18...	1355	.33	1700	3.0	22...	1305	.56	1050	23.0
DEC					JUL				
20...	1510	.26	1650	.0	11...	1235	62	910	20.0
JAN , 1977					13...	1140	6.5	900	24.0
20...	1205	.29	1850	.5	19...	1100	.47	880	26.0
FEB					AUG				
15...	1350	.32	1400	.0	18...	1000	.19	1360	18.5
MAR					SEP				
18...	1320	.47	1050	2.0	27...	1050	46	850	14.5
APR									
20...	0920	2.3	900	10.5					

06349000 - HEART RIVER NR MANDAN, ND (LAT 46 50 12 LONG 100 58 27)

OCT , 1976					JUN , 1977				
22...	1015	11	1550	.0	16...	1500	2070	860	22.5
FEB , 1977					JUL				
18...	1010	3.3	1800	.0	13...	1105	234	530	23.0
MAR					18...	1555	131	1120	31.0
10...	1224	108	1040	.0	AUG				
18...	1530	231	480	1.0	29...	1630	104	1030	23.5
25...	1010	208	700	.0	SEP				
MAY					20...	1330	81	1050	16.0
27...	1410	84	1050	21.5	28...	1525	496	720	14.5

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS
WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)
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PART 6. MISSOURI RIVER BASIN

CANNONBALL RIVER BASIN

06350000 - CANNONBALL RIVER AT REGENT, ND (LAT 46 25 36 LONG 102 33 05)

OCT , 1976					APR , 1977				
08...	1400	3.2	1800	11.0	11...	1420	40	2060	12.5
NOV					MAY				
08...	1500	4.8	1800	5.0	06...	1710	5.0	2010	14.0
DEC					JUN				
09...	1640	3.9	2350	.0	03...	1720	6.4	1930	21.0
JAN , 1977					22...	1615	450	1450	22.0
10...	1320	1.7	2000	.0	JUL				
FEB					11...	1555	5.0	1610	20.0
03...	1720	.50	2000	1.5	AUG				
MAR					03...	1150	1.6	1480	22.5
04...	1025	4.7	1510	.5	SEP				
08...	1500	11	1400	2.0	09...	1550	6.8	1470	17.0
14...	1545	23	1190	1.0					
23...	1520	25	2130	1.0					

06351000 - CANNONBALL RIVER BELOW BENTLEY, ND (LAT 46 21 30 LONG 102 02 30)

OCT , 1976					APR , 1977				
08...	1030	5.7	2000	8.0	11...	1620	121	1820	12.0
NOV					MAY				
09...	1005	9.2	1900	2.0	06...	1440	1.3	1810	13.0
DEC					JUN				
09...	1345	6.6	2350	.0	03...	1435	59	2030	21.0
JAN , 1977					14...	1305	1700	441	18.0
10...	1650	5.0	2600	.0	22...	2000	1840	640	24.0
FEB					JUL				
03...	1445	4.1	2210	.5	11...	1815	33	1395	21.0
MAR					AUG				
03...	1705	21	1600	.0	03...	1445	8.4	1390	22.0
14...	1805	90	975	.5	SEP				
23...	1155	75	985	.0	09...	1345	16	1580	16.0

06351680 - WHITE BUTTE FORK CEDAR CREEK NR SCRANTON, ND (LAT 46 19 20 LONG 102 59 45)

NOV , 1976					APR , 1977				
01...	1640	.08	5500	8.0	12...	1645	2.1	2590	10.0
MAR , 1977					MAY				
10...	1215	2.5	2190	.5	06...	1840	.60	3750	13.0
14...	1800	1.3	2000	.5	31...	1520	.16	4200	24.0
22...	1055	.78	2990	.5					

06352000 - CEDAR CREEK NR HAYNES, ND (LAT 46 09 15 LONG 102 28 25)

OCT , 1976					APR , 1977				
07...	1450	1.2	2150	9.5	11...	1830	33	1890	10.0
NOV					MAY				
09...	1455	2.0	1750	3.0	06...	1025	4.0	2550	13.0
DEC					JUN				
09...	1150	2.3	2000	.0	03...	1030	2.1	2550	20.0
JAN , 1977					JUL				
10...	1500	2.1	3500	.0	11...	2005	1.5	2310	20.0
FEB					AUG				
03...	1105	1.3	2900	.5	02...	1740	.92	2550	21.5
MAR					SEP				
03...	1355	5.3	2000	.0	09...	1015	1.9	1870	14.0
08...	1745	11	2010	.5					
14...	1545	19	1950	1.0					
23...	1005	4.0	1730	1.0					

06353000 - CEDAR CREEK NR RALEIGH, ND (LAT 46 05 00 LONG 101 20 00)

FEB , 1977					JUN , 1977				
14...	1025	.90	1000	.0	14...	1230	185	2730	21.0
MAR					20...	1150	193	1600	22.0
23...	1350	30	2020	5.5	JUL				
APR					21...	1050	6.3	1240	23.0
18...	1115	38	1750	13.0	SEP				
MAY					20...	0945	9.7	440	13.0
25...	1245	.97	2700	26.0					

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS
WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)
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PART 6. MISSOURI RIVER BASIN

GRAND RIVER BASIN

06355000 - NORTH FORK GRAND RIVER AT HALEY, ND (LAT 45 57 39 LONG 103 07 09)

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)
OCT , 1976					APR , 1977				
07...	1105	.90	2550	8.0	06...	1200	2.7	1610	4.5
NOV					MAY				
04...	1535	.93	2600	4.0	05...	1320	1.1	2480	16.0
DEC					JUN				
07...	1340	1.3	3500	.5	02...	1600	.87	3050	28.0
JAN , 1977					JUL				
07...	1050	1.1	3200	.0	07...	1445	2.3	2400	25.0
FEB					AUG				
02...	1725	.00	2750	.0	09...	1240	17	2450	22.0
MAR					SEP				
01...	1700	17	2650	.5	07...	1230	1.7	2260	21.0
16...	1200	2.8	1725	2.0					

JAMES RIVER BASIN

06468170 - JAMES RIVER NR GRACE CITY, ND (LAT 47 33 29 LONG 098 51 45)

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)
MAR , 1977					JUL , 1977				
16...	1325	1.5	1300	.5	06...	1830	.68	1560	28.5
21...	1645	1.8	850	.5	AUG				
APR					01...	1545	.01	1790	21.5
06...	0900	.52	1250	1.0	29...	1515	.05	2000	21.0
MAY									
31...	1650	.22	1640	24.0					

06470000 - JAMES RIVER AT JAMESTOWN, ND (LAT 46 53 22 LONG 098 40 58)

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)
OCT , 1976					MAY , 1977				
05...	1215	1.8	850	6.5	05...	1025	5.6	--	--
NOV					JUN				
03...	1135	2.3	1100	.5	01...	1215	2.4	900	20.0
JAN , 1977					JUL				
04...	1355	4.0	1150	.0	06...	1020	16	720	24.0
MAR					AUG				
01...	1320	4.2	1200	.0	02...	1200	1.9	910	19.5
09...	0915	6.5	780	.0	30...	1025	3.2	840	16.5
21...	1215	5.5	860	2.0					
APR									
05...	1515	4.8	820	5.5					

BENSON COUNTY

480230098484001. Local number, 153-063-30CBC.

LOCATION.--Lat 48°02'30", long 098°48'40", Hydrologic Unit 09020201.

Owner: North Dakota State Water Commission.

AQUIFER.--Spiritwood.

WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in (0.032 m), depth 200 ft (61 m), cased to 137 ft (41.8 m), plastic pipe, No. 18 slot screen set 137 to 143 ft (41.8 to 43.6 m) below land-surface datum.

DATUM.--Altitude of land-surface datum is 1,445 ft (440 m). Measuring point: Top of casing 2.00 ft (0.61 m) above land-surface datum.

REMARKS.--Measurement frequency has been changed from annual to quarterly as of Jan. 31, 1977.

PERIOD OF RECORD.--June 1970 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 18.00 ft (5.49 m) below land-surface datum, Dec. 1, 1975; lowest measured, 25.05 ft (7.64 m) below land-surface datum, Mar. 4, 1971.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 3	18.68	JUL 27	19.52	AUG 31	19.63	SEPT 14	19.48
MAR 9	18.79	AUG 5	19.52	SEPT 14	19.64	SEPT 28	19.58
JUN 15	19.22	AUG 19	19.63				

BENSON COUNTY

480958099154801. Local number, 154-067-15BBB.

LOCATION.--Lat 48°09'58", long 099°15'48", Hydrologic Unit 09020201.

Owner: North Dakota State Water Commission.

AQUIFER.--Spiritwood.

WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in (0.032 m), depth 180 ft (54.9 m), cased to 147 ft (44.8 m), plastic pipe, No. 18 slot screen set 147 to 153 ft (44.8 to 46.6 m) below land-surface datum.

DATUM.--Altitude of land-surface datum is 1,475 ft (450 m). Measuring point: Top of casing 2.00 ft (0.61 m) above land-surface datum.

REMARKS.--Measurement frequency has been changed from annual to quarterly as of Jan. 31, 1977.

PERIOD OF RECORD.--June 1970 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 32.50 ft (9.91 m) below land-surface datum, Dec. 2, 1975; lowest measured, 33.76 ft (10.29 m) below land-surface datum, Dec. 6, 1973.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 2	33.00	JUL 27	32.64	AUG 30	33.68	SEPT 14	33.67
MAR 4	33.15	AUG 5	33.63	SEPT 14	33.73	SEPT 28	33.73
JUN 14	33.37	AUG 19	33.70				

BENSON COUNTY

481041099442701. Local number, 154-071-11AAD1.

LOCATION.--Lat 48°10'41", long 099°44'27", Hydrologic Unit 09020202.

Owner: North Dakota State Water Commission.

AQUIFER.--Fox Hills.

WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in (0.032 m), depth 100 ft (30.5 m), cased to 42 ft (12.8 m), plastic pipe, No. 12 slot screen set 42 to 45 ft (12.8 to 13.7 m) below land-surface datum.

DATUM.--Altitude of land-surface datum is 1,590 ft (485 m). Measuring point: Top of casing 2.00 ft (0.61 m) above land-surface datum.

REMARKS.--Measurement frequency has been changed from annual to quarterly as of Jan. 31, 1977.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.84 ft (2.08 m) below land-surface datum, Apr. 23, 1969; lowest measured, 8.84 ft (2.73 m) below land-surface datum, June 13, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 1	8.50	MAR 4	8.70	JUN 13	8.84	SEPT 13	8.48

BOWMAN COUNTY

461534103491701. Local number, 132-105-16BDB.
 LOCATION.--Lat 46°15'34", long 103°49'17", Hydrologic Unit 10110203.
 Owner: North Dakota State Water Commission.
 AQUIFER.--Hell Creek-Fox Hills.
 WELL CHARACTERISTICS.--Drilled observation well, diameter 2 in (0.05 m), depth 475 ft (145 m), cased to 441 ft (134 m), steel pipe, No. 12 slot screen set 441 to 459 ft (134 to 140 m) below land-surface datum.
 DATUM.--Altitude of land-surface datum is 3,010 ft (917 m). Measuring point: Top of casing 3.40 ft (1.04 m) above land-surface datum.
 REMARKS.--Measurement frequency has been changed from annual to quarterly as of Jan. 31, 1977.
 PERIOD OF RECORD.--September 1971 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 270.15 ft (82.34 m) below land-surface datum, Feb. 25, 1973; lowest measured, 271.73 ft (82.82 m) below land-surface datum, Jan. 11, 1972.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 30	271.19	MAR 2	271.00	JUN 2	271.10	SEPT 8	270.45

BURLEIGH COUNTY

464943100305801. Local number, 139-078-27CBB.
 LOCATION.--Lat 46°49'43", long 100°30'58", Hydrologic Unit 10130103.
 Owner: North Dakota State Water Commission.
 AQUIFER.--McKenzie.
 WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in (0.032 m), depth 255 ft (77.7 m), cased to 200 ft (61 m), plastic pipe, slotted 200 to 220 ft (61 to 67 m) below land-surface datum, gravel packed.
 DATUM.--Altitude of land-surface datum is 1,713 (522 m). Measuring point: Top of casing 1.90 ft (0.58 m) above land-surface datum.
 PERIOD OF RECORD.--August 1962 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 22.30 ft (6.80 m) below land-surface datum, June 17, 1970; lowest measured, 32.44 ft (9.89 m) below land-surface datum, Aug. 26, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 1	27.17	JAN 2	25.44	MAR 25	25.01	JUN 27	31.29
OCT 29	26.28	JAN 31	25.00	APR 28	26.73	JUL 28	31.99
DEC 3	25.76	FEB 25	25.10	MAY 27	30.60	AUG 26	32.44

CASS COUNTY

464359096541301. Local number, 138-049-29CCC.
 LOCATION.--Lat 46°43'59", long 096°54'13", Hydrologic Unit 09020105.
 Owner: North Dakota State Water Commission.
 AQUIFER.--West Fargo.
 WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in (0.032 m), depth 317 ft (96.6 m), cased to 278 ft (84.7 m), plastic pipe, screens set at 278 to 280 ft (84.7 to 85.3 m) below land-surface datum.
 DATUM.--Altitude of land-surface datum is 912 ft (278 m). Measuring point: Top of casing 1.80 ft (0.55 m) above land-surface datum.
 REMARKS.--Well was pumped and painted on May 3, 1977.
 PERIOD OF RECORD.--August 1964 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 32.17 ft (9.81 m) below land-surface datum, Aug. 1, 1964; lowest measured, 42.01 ft (12.80 m) below land-surface datum, Sept. 19, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 30	41.60	MAR 9	40.87	JUN 13	41.68	SEPT 19	42.01

DIVIDE COUNTY

485708103151701. Local number, 163-097-15ABB.

LOCATION.--Lat 48°57'08", long 103°15'17", Hydrologic Unit 09010001.

Owner: North Dakota State Water Commission.

AQUIFER.--Yellowstone.

WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in (0.032 m), depth 540 ft (165 m), cased to 240 ft (73 m), plastic pipe, No. 12 slot screen set 240 to 246 ft (73 to 75 m) below land-surface datum.

DATUM.--Altitude of land-surface datum is 1,910 ft (582 m). Measuring point: Top of casing 2.00 ft (0.61 m) above land-surface datum.

REMARKS.--Measurement frequency has been changed from annual to quarterly as of Jan. 31, 1977.

PERIOD OF RECORD.--June 1972 to July 1977 (discontinued).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 9.72 ft (2.96 m) below land-surface datum, June 22, 1976; lowest measured, 10.99 ft (3.35 m) below land-surface datum, Jan. 30, 1975.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO JULY 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 1	10.61						

DIVIDE COUNTY

485649103155701. Local number, 163-97-15BCC.

LOCATION.--Lat 48°56'49", long 103°15'57", Hydrologic Unit 09010001.

Owner: North Dakota State Water Commission.

AQUIFER.--Yellowstone.

WELL CHARACTERISTICS.--Drilled observation well, diameter 2 in (0.05 m), depth 575 ft (175 m), cased to 546 ft (166 m), steel pipe, No. 12 slot screen set 546 to 558 ft (166 to 170 m) below land-surface datum.

DATUM.--Altitude of land-surface datum is 1,915 ft (584 m). Measuring point: top of casing 1.50 ft (0.46 m) above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 10.90 ft (0.33 m) below land-surface datum, June 22, 1976; lowest measured, 14.48 ft (4.41 m) below land-surface datum, Aug. 9, 1972.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 1	11.02						

DUNN COUNTY

471323102290101. Local number, 143-093-09BCB.

LOCATION.--Lat 47°13'23", long 102°29'01", Hydrologic Unit 10130201.

Owner: North Dakota State Water Commission.

AQUIFER.--Sentinel Butte.

WELL CHARACTERISTICS.--Drilled observation well, diameter 2 in (0.05 m), depth 965 ft (294 m), cased to 378 ft (115 m), steel pipe, No. 12 slot screen set 378 to 396 ft (115 to 121 m) below land-surface datum.

DATUM.--Altitude of land-surface datum is 2,133 ft (650 m). Measuring point: Top of casing 2.10 ft (0.64 m) above land-surface datum.

REMARKS.--Measurement frequency has been changed from annual to quarterly as of Jan. 31, 1977.

PERIOD OF RECORD.--February 1974 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 93.00 ft (28.35 m) below land-surface datum, Feb. 12, 1974 and Sept. 29, 1977; lowest measured, 93.37 ft (28.46 m) below land-surface datum, July 24, 1974.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 30	93.20	MAR 16	93.05	SEPT 29	93.00		

EDDY COUNTY

473720098592401. Local number, 148-065-19DAA.

LOCATION.--Lat 47°37'20", long 098°59'24", Hydrologic Unit 10160001.

Owner: North Dakota State Water Commission.

AQUIFER.--New Rockford.

WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in (0.032 m), depth 242 ft (74 m), cased to 220 ft (67 m), plastic pipe, slotted from 210 to 220 ft (64 to 67 m) below land-surface datum.

DATUM.--Altitude of land-surface datum is 1,526 ft (465 m). Measuring point: Top of casing 1.90 ft (0.58 m) above land-surface datum.

PERIOD OF RECORD.--September 1964 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 43.51 ft (13.26 m) below land-surface datum, June 28, 1966; lowest measured, 47.71 ft (14.54 m) below land-surface datum, Aug. 29, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 30	46.36	MAR 2	45.72	MAY 31	45.90	AUG 1	47.60
JAN 3	46.15	APR 6	45.76	JUL 6	46.39	AUG 29	47.71
FEB 2	45.70	MAY 6	45.52				

EMMONS COUNTY

463632100171901. Local number, 136-076-07CBC.

LOCATION.--Lat 46°36'32", long 100°17'19", Hydrologic Unit 10130103.

Owner: North Dakota State Water Commission.

AQUIFER.--Long Lake.

WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in (0.032 m), depth 150 ft (45.7 m), cased to 117 ft (35.7 m), plastic pipe, No. 12 slot screen set at 117 to 123 ft (35.7 to 37.5 m) below land-surface datum.

DATUM.--Altitude of land-surface datum is 1,735 ft (529 m). Measuring point: Top of casing 2.00 ft (0.61 m) above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 3.60 ft (1.10 m) below land-surface datum, Apr. 10, 1973; lowest measured, 8.32 ft (2.54 m) below land-surface datum, Sept. 1, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 28	6.83	FEB 22	7.00	JUNE 3	7.91	SEPT 1	8.32

GRAND FORKS COUNTY

474957097343501. Local number, 150-054-04CCD.

LOCATION.--Lat 47°49'57", long 097°34'35", Hydrologic Unit 09020307.

Owner: North Dakota State Water Commission.

AQUIFER.--Elk Valley.

WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in (0.032 m), depth 126 ft (38.4 m), cased to 40 ft (12.2 m), plastic pipe, No. 12 slot screen set 40 to 43 ft (12.2 to 13.1 m) below land-surface datum.

DATUM.--Altitude of land-surface datum is 1,127 ft (344 m). Measuring point: Top of casing 1.80 ft (0.55 m) above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.48 ft (0.76 m) below land-surface datum, May 6, 1966; lowest measured, 7.96 ft (2.43 m) below land-surface datum, Mar. 7, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 30	7.22	MAR 7	7.96	JUN 1	5.82	AUG 31	4.72

GRANT COUNTY

460159101500401. Local number, 130-089-32DDA.

LOCATION.--Lat 46°01'59", long 101°50'04", Hydrologic Unit 10130205.

Owner: North Dakota State Water Commission.

AQUIFER.--Fox Hills.

WELL CHARACTERISTICS.--Drilled observation well, diameter 2 in (0.05 m), depth 860 ft (262 m), cased to 525 ft (160 m), steel pipe, No. 12 slot screen set 525 to 543 ft (160 to 166 m) below land-surface datum.

DATUM.--Altitude of land-surface datum is 2,165 ft (660 m). Measuring point: Top of casing 4.00 ft (1.22 m) above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 55.49 ft (16.91 m) below land-surface datum,

Apr. 10, 1973; lowest measured, 57.00 ft (17.37 m) below land-surface datum, Nov. 7, 1972.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 1	56.48	MAR 3	56.35	JUN 3	56.59	SEPT 9	56.69

GRIGGS COUNTY

471612098113101. Local number, 144-059-20CCC.

LOCATION.--Lat 47°16'12", long 098°11'31", Hydrologic Unit 09020203.

Owner: North Dakota State Water Commission.

AQUIFER.--Spiritwood.

WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in (0.032 m), depth 240 ft (73 m), cased to 158 ft (48 m), plastic pipe, No. 25 slot screen set 158 to 161 ft (48 to 49 m) below land-surface datum.

DATUM.--Altitude of land-surface datum is 1,430 ft (436 m). Measuring point: Top of casing 2.0 ft (0.61 m) above land-surface datum.

PERIOD OF RECORD.--September 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 45.84 ft (13.97 m) below land-surface datum,

Apr. 5, 1977; lowest measured, 86.99 ft (26.51 m) below land-surface datum, Aug. 10, 1976.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 5	66.40	FEB 28	46.74	JUN 21	64.50	AUG 18	68.09
NOV 3	59.24	APR 5	45.84	JUL 5	70.73	29	67.06
DEC 7	52.40	MAY 2	49.79	18	67.29	SEPT 13	61.84
JAN 5	49.39	JUN 8	54.20	AUG 4	67.55	27	58.39
FEB 7	47.50						

GRIGGS COUNTY

473425098232901. Local number, 147-061-01CCC.

LOCATION.--Lat 47°34'25", long 098°23'29", Hydrologic Unit 09020203.

Owner: North Dakota State Water Commission.

AQUIFER.--Spiritwood.

WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in (0.032 m), depth 340 ft (104 m), cased to 237 ft (72 m), plastic pipe, No. 25 slot screen set 237 to 240 ft (72 to 73 m) below land-surface datum.

DATUM.--Altitude of land-surface datum is 1,525 ft (464 m). Measuring point: Top of casing 2.00 ft (0.60 m) above land-surface datum.

PERIOD OF RECORD.--September 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 26.82 ft (8.17 m) below land-surface datum,

May 19, 1976; lowest measured, 96.10 ft (29.3 m) below land-surface datum, Aug. 12, 1975.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 12	51.07	MAR 2	29.86	JUN 23	64.22	AUG 19	62.75
NOV 4	52.72	APR 5	29.44	JUL 6	68.30	30	59.72
DEC 8	33.81	MAY 4	29.88	20	56.52	SEPT 13	43.70
JAN 6	31.26	JUN 8	44.76	AUG 5	71.60	27	37.72
FEB 8	30.13						

GRIGGS COUNTY

473600098065901. Local number, 148-059-36AAB.

LOCATION.--Lat 47°36'00", long 098°06'59", Hydrologic Unit 09020203.

Owner: North Dakota State Water Commission.

AQUIFER.--McVille.

WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in (0.032 m), depth 180 ft (54.9 m), cased to 137 ft (41.8 m), plastic pipe, No. 12 slot screen set 137 to 143 ft (41.8 to 43.6 m) below land-surface datum.

DATUM.--Altitude of land-surface datum is 1,320 ft (402 m). Measuring point: Top of casing 2.00 ft (0.61 m) above land-surface datum.

REMARKS.--Measurement frequency has been changed from annual to quarterly as of Jan. 31, 1977.

PERIOD OF RECORD.--October 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 7.07 ft (2.15 m) below land-surface datum, June 5, 1971; lowest measured, 11.93 ft (3.64 m) below land-surface datum, June 8, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 6	11.23	MAY 4	10.94	JUL 19	10.34	AUG 29	11.37
FEB 8	10.84	JUN 8	11.93	AUG 4	11.63	SEPT 13	11.57
MAR 2	10.98	23	11.47	18	11.64	27	10.90
APR 5	10.65	JUL 6	10.68				

HETTINGER COUNTY

463153102521001. Local number, 135-097-04DCA.

LOCATION.--Lat 46°31'53", long 102°52'10", Hydrologic Unit 10130204.

Owner: North Dakota State Water Commission.

AQUIFER.--Fox Hills.

WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in (0.10 m), depth 1,790 ft (546 m), cased to 1,320 ft (402 m), steel pipe, open hole.

DATUM.--Altitude of land-surface datum is 2,567 ft (782 m). Measuring point: Top of casing 0.70 ft (0.21 m) above land-surface datum.

REMARKS.--Measurement frequency has been changed from annual to quarterly as of Jan. 31, 1977.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 141.87 ft (43.24 m) below land-surface datum, Dec. 31, 1968; lowest measured, 144.20 ft (43.95 m) below land-surface datum, Nov. 26, 1969.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 29	143.00	MAY 31	142.94	SEPT 6	144.09		

KIDDER COUNTY

470638099324301. Local number, 142-070-16DDD.

LOCATION.--Lat 47°06'38", long 099°32'43", Hydrologic Unit 10130103.

Owner: North Dakota State Water Commission.

AQUIFER.--Long Lake.

WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in (0.032 m), depth 84 ft (25.6 m), cased to 70 ft (21.3 m), plastic pipe, No. 18 slot screen set 70 to 73 ft (21.3 to 22.3 m) below land-surface datum.

DATUM.--Altitude of land-surface datum is 1,810 ft (552 m). Measuring point: Top of casing 1.90 ft (0.58 m) above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 19.94 ft (6.08 m) below land-surface datum, Dec. 4, 1976; lowest measured, 25.44 ft (7.75 m) below land-surface datum, Aug. 27, 1973.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 2	21.66	FEB 4	21.55	APR 27	21.40	JUL 29	23.49
OCT 30	21.38	FEB 26	21.54	MAY 24	24.10	AUG 25	22.22
DEC 4	19.94	MAR 27	21.26	JUN 28	22.60	SEPT 29	21.89
DEC 31	21.49						

MC LEAN COUNTY

473752101055301. Local number, 148-082-23BBB.

LOCATION.--Lat 47°37'52", long 101°05'53", Hydrologic Unit 10130101.

Owner: North Dakota State Water Commission.

AQUIFER.--Lake Nettie.

WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in (0.032 m), depth 300 ft (91 m), cased to 198 ft (60 m), plastic pipe, No. 24 slot screen set 198 to 204 ft (60 to 62 m) below land-surface datum.

DATUM.--Altitude of land-surface datum is 1,880 ft (573 m). Measuring point: Top of casing 2.30 ft (0.70 m) above land-surface datum.

REMARKS.--Measurement frequency has been changed from annual to quarterly as of Jan. 31, 1977.

PERIOD OF RECORD.--December 1970 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 38.48 ft (11.73 m) below land-surface datum, Sept. 31, 1976; lowest measured, 42.30 ft (12.89 m) below land-surface datum, Dec. 2, 1970.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 2	38.85	MAY 26	38.93	JUL 11	38.83	JUL 26	39.30
MAR 1	39.00	JUN 29	39.09				

OLIVER COUNTY

470642101162701. Local number, 142-084-24BBA.

LOCATION.--Lat 47°06'42", long 101°16'27", Hydrologic Unit 10130101.

Owner: North Dakota State Water Commission.

AQUIFER.--Fox Hills.

WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in (0.10 m), depth 1,295 ft (395 m), cased to 966 ft (294 m), steel pipe, open ended.

DATUM.--Altitude of land-surface datum is 2,006 ft (611 m). Measuring point: Top of casing 2.00 ft (0.61 m) above land-surface datum.

REMARKS.--Measurement frequency has been changed from annual to quarterly as of Jan. 31, 1977.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 197.04 ft (60.06 m) below land-surface datum, Dec. 8, 1972; lowest measured, 208.70 ft (63.61 m) below land-surface datum, Nov. 24, 1971.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 4	198.47	FEB 21	197.71	MAY 31	197.89	AUG 19	199.46

PEMBINA COUNTY

485239097501702. Local number, 162-056-01CCC2.

LOCATION.--Lat 48°52'39", long 097°50'17", Hydrologic Unit 09020313.

Owner: North Dakota State Water Commission.

AQUIFER.--Icelandic.

WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in (0.032 m), depth 40 ft (12 m), cased to 37 ft (11.3 m), plastic pipe, No. 12 slot screen set 37 to 40 ft (11.3 to 12.2 m) below land-surface datum.

DATUM.--Altitude of land-surface datum is 988 ft (301 m). Measuring point: Top of casing 1.8 ft (0.55 m) above land-surface datum.

REMARKS.--Measurement frequency has been changed from annual to quarterly as of Jan. 31, 1977.

PERIOD OF RECORD.--October 1969 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 4.65 ft (1.42 m) below land-surface datum, May 8, 1970; lowest measured, 8.06 ft (2.46 m) below land-surface datum, Dec. 4, 1972.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 1	8.02	MAR 15	7.55	JUN 2	7.09	AUG 30	7.90

PIERCE COUNTY

475323100092101. Local number, 151-074-20AAA.

LOCATION.--Lat 47°53'23", long 100°09'21", Hydrologic Unit 09020202.

Owner: North Dakota State Water Commission.

AQUIFER.--New Rockford.

WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in (0.032 m), depth 320 ft (98 m), cased to 256 ft (78 m), plastic pipe, No. 18 slot screen set 256 to 259 ft (78 to 79 m) below land-surface datum.

DATUM.--Altitude of land-surface datum is 1,605 ft (489 m). Measuring point: Top of casing 2.00 ft (0.61 m) above land-surface datum.

REMARKS.--Measurement frequency has been changed from annual to quarterly as of Jan. 31, 1977.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 28.08 ft (8.56 m) below land-surface datum, Nov. 29, 1976; lowest measured, 31.73 ft (9.67 m) below land-surface datum, Dec. 10, 1968.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 29	28.08	MAR 2	28.16	MAY 31	28.42	AUG 29	28.74

RICHLAND COUNTY

462633097163402. Local number, 134-052-06CCD2.

LOCATION.--Lat 46°26'33", long 097°16'34", Hydrologic Unit 09020204.

Owner: North Dakota State Water Commission.

AQUIFER.--Sheyenne Delta.

WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in (0.10 m), depth 40 ft (12 m), cased to 30 ft (9.1 m), plastic pipe, slotted 30 to 40 ft (9.1 to 12.2 m) below land-surface datum.

DATUM.--Altitude of land-surface datum is 1,067 ft (325 m). Measuring point: Top of casing 0.65 ft (0.20 m) above land-surface datum.

REMARKS.--Well pumped, repainted and identification installed on Sept. 17, 1969.

PERIOD OF RECORD.--September 1963 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 0.78 ft (0.24 m) below land-surface datum, May 13, 1972; lowest recorded, 8.73 ft (2.66 m) below land-surface datum, Feb. 8, 1977. May have been lower during period of missing record, Jan. 17 - Feb. 7, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MINIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	8.42	8.38	8.40	8.51	---	8.49	6.95	5.71	5.82	7.17	7.92	8.25
10	8.42	8.37	8.42	8.55	8.72	8.42	6.79	5.87	6.28	7.33	8.00	8.30
15	8.45	8.37	8.43	8.55	8.67	---	6.52	6.30	6.59	7.47	8.10	8.36
20	8.42	8.36	8.44	---	8.58	---	6.22	6.40	6.65	7.61	8.15	8.34
25	8.42	8.36	8.45	---	8.53	---	6.27	6.34	6.79	7.72	8.25	7.37
EQM	8.39	8.39	8.48	---	8.52	---	6.38	5.66	6.96	7.82	8.24	7.04
MIN	8.39	8.35	8.39	8.49	8.52	7.72	6.22	5.66	5.58	7.01	7.84	7.04
WTR YR 1977	MEAN	7.71	HIGH	5.58	JUN 1	LOW	8.73	FEB 8				

STARK COUNTY

403755102410701. Local number, 140-095-08AAA.

LOCATION.--Lat 46°57'55", long 102°41'07", Hydrologic Unit 10130204.

Owner: North Dakota State Water Commission.

AQUIFER.--Sentinel Butte.

WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in (0.10 m), depth 160 ft (49 m), cased to 80 ft (24.4 m), plastic pipe, open ended.

DATUM.--Altitude of land-surface datum is 2,419 ft (737 m). Measuring point: Top of casing 1.70 ft (0.52 m) above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 15.61 ft (4.76 m) below land-surface datum, June 19, 1970; lowest measured, 27.23 ft (8.30 m) below land-surface datum, Dec. 10, 1968.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 20	19.19	JAN 19	19.42	APR 20	18.41	JUL 18	17.92
NOV 22	19.31	FEB 17	19.45	MAY 18	18.72	AUG 17	18.57
NOV 30	19.30	MAR 16	18.64	JUN 21	17.61	SEPT 22	18.85

STEELE COUNTY

471516097360301. Local number, 144-055-26BBB.

LOCATION.--Lat 47°15'16", long 097°36'03", Hydrologic Unit 09020109.

Owner: North Dakota State Water Commission.

AQUIFER.--Galesburg.

WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in (0.032 m), depth 300 ft (91 m), cased to 53 ft (16.2 m), plastic pipe, slotted 53 to 68 ft (16.1 to 20.7 m) below land-surface datum.

DATUM.--Altitude of land-surface datum is 1,160 ft (354 m). Measuring point: Top of casing 2.00 ft (0.61 m) above land-surface datum.

REMARKS.--Measurement frequency has been changed from annual to quarterly as of Jan. 31, 1977.

PERIOD OF RECORD.--June 1970 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 17.43 ft (5.31 m) below land-surface datum,

June 27, 1970; lowest measured, 21.87 ft (6.67 m) below land-surface datum, Aug. 30, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 24	21.25	MAR 1	21.17	MAY 31	20.35	AUG 30	21.87

STUTSMAN COUNTY

463846098274101. Local number, 137-062-26DDD.

LOCATION.--Lat 46°38'46", long 098°27'41", Hydrologic Unit 10160003.

Owner: North Dakota State Water Commission.

AQUIFER.--Spiritwood.

WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in (0.032 m), depth 240 ft (73 m), cased to 157 ft (48 m), plastic pipe, No. 12 slot screen set 157-163 ft (48 to 50 m) below land-surface datum.

DATUM.--Altitude of land-surface datum is 1,455 ft (443 m). Measuring point: Top of casing 1.80 ft (0.55 m) above land-surface datum.

PERIOD OF RECORD.--September 1970 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 15.90 ft (4.85 m) below land-surface datum,

Dec. 4, 1975; lowest measured, 20.67 ft (6.30 m) below land-surface datum, May 28, 1973.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 1	17.12	MAR 1	17.74	JUN 1	17.83	AUG 30	17.72

TRAILL COUNTY

473228097091501. Local number, 147-051-22BBB.

LOCATION.--Lat 47°32'28", long 097°09'15", Hydrologic Unit 09020301.

Owner: North Dakota State Water Commission.

AQUIFER.--Hillsboro.

WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in (0.032 m), depth 103 ft (31.4 m), cased to 97 ft (29.6 m), plastic pipe, No. 18 slot screen set 97 to 100 ft (29.6 m to 30.5 m) below land-surface datum.

DATUM.--Altitude of land-surface datum is 925 ft (282 m). Measuring point: Top of casing 2.40 ft (0.73 m) above land-surface datum.

REMARKS.--Measurement frequency has been changed from annual to quarterly as of Jan. 31, 1977.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, +0.73 ft (+0.22 m) above land-surface datum,

July 6, 1970; lowest measured, 7.27 ft (2.22 m) below land-surface datum, Aug. 17, 1965.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 29	3.08	MAR 2	3.50	MAY 31	2.10	AUG 29	3.62

WALSH COUNTY

481657097473601. Local number, 156-056-36CCC1.

LOCATION.--Lat 48°16'57", long 097°47'36", Hydrologic Unit 09020308.

Owner: North Dakota State Water Commission.

AQUIFER.--Fordville.

WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in (0.032 m), depth 280 ft (85.3 m), cased to 27 ft (8.23 m), plastic pipe, No. 18 slot screen set 27 to 30 ft (8.23 to 9.14 m) below land-surface datum.

DATUM.--Altitude of land-surface datum is 1,145 ft (349 m). Measuring point: Top of casing 1.85 ft (0.56 m) above land-surface datum.

REMARKS.--Measurement frequency has been changed from annual to quarterly as of Jan. 31, 1977.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.15 ft (1.57 m) below land-surface datum, Mar. 5, 1971; lowest measured, 6.95 ft (2.12 m) below land-surface datum, June 13, 1973.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
MAR 14	6.74	JUN 1	6.30	AUG 31	6.28		

WALSH COUNTY

482408097443201. Local number, 157-055-21DBC.

LOCATION.--Lat 48°24'08", long 097°44'32", Hydrologic Unit 09020301.

Owner: North Dakota State Water Commission.

AQUIFER.--Dakota Formation.

WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in (0.10 m), depth 496 ft (151 m), cased to 491 ft (150 m), steel pipe, screen set 491 to 496 ft (150 to 151 m) below land-surface datum.

DATUM.--Altitude of land-surface datum is 975 ft (297 m). Measuring point: Top of casing at land-surface datum.

REMARKS.--Measurement frequency has been changed from annual to quarterly as of Jan. 31, 1977.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 91.10 ft (27.77 m) below land-surface datum, Oct. 7, 1968; lowest measured, 92.75 ft (28.27 m) below land-surface datum, Sept. 17, 1974.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 1	91.24	MAR 8	91.81	JUN 1	91.96	SEPT 1	91.81
MAR 8	92.62						

WALSH COUNTY

482449098095801. Local number, 157-058-18DDD.

LOCATION.--Lat 48°24'49", long 098°09'58", Hydrologic Unit 09020308.

Owner: North Dakota State Water Commission.

AQUIFER.--Pierre Shale.

WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in (0.10 m), depth 140 ft (42.7 m), cased to 80 ft (24.4 m), plastic pipe, slotted screen set 80 to 100 ft (24.4 to 30.5 m) below land-surface datum.

DATUM.--Altitude of land-surface datum is 1,580 ft (482 m). Measuring point: Top of casing 1.00 ft (0.30 m) above land-surface datum.

REMARKS.--Measurement frequency has been changed from annual to quarterly as of Jan. 31, 1977.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, +0.89 ft (+0.27 m) above land-surface datum, Dec. 5, 1972; lowest measured, 9.15 ft (2.79 m) below land-surface datum, Mar. 14, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 2	5.00	MAR 14	9.15	JUN 1	5.27	AUG 31	7.25
MAR 14	8.00	MAR 14	8.90				

WARD COUNTY

480912101090301. Local number, 154-082-24ABA.

LOCATION.--Lat 48°09'12", long 101°09'03", Hydrologic Unit 09010001.

Owner: North Dakota State Water Commission.

AQUIFER.--Lower Souris.

WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in (0.032 m), depth 115 ft (35.1 m), cased to 10 ft (3.0 m), plastic pipe, slotted screen set 10 to 40 ft (3.0 to 12.2 m) below land-surface datum.

DATUM.--Altitude of land-surface datum is 1,850 ft (564 m). Measuring point: Top of casing 1.70 ft (0.52 m) above land-surface datum.

REMARKS.--Measurement frequency has been changed from annual to quarterly as of Jan. 31, 1977.

PERIOD OF RECORD.--January 1964 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.33 ft (1.93 m) below land-surface datum, July 30, 1969; lowest measured, 13.69 ft (4.17 m) below land-surface datum, Mar. 4, 1964.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 1	9.59	MAR 3	10.72	MAY 31	11.14	SEPT 13	12.29

WELLS COUNTY

474419099371201. Local number, 149-070-09DAA1.

LOCATION.--Lat 47°44'19", long 099°37'12", Hydrologic Unit 10160001.

Owner: North Dakota State Water Commission.

AQUIFER.--New Rockford.

WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in (0.032 m), depth 283 ft (86 m), cased to 177 ft (54 m), plastic pipe, slotted 177 to 197 ft (54 to 60 m) below land-surface datum.

DATUM.--Altitude of land-surface datum is 1,610 ft (491 m). Measuring point: Top of casing 1.80 ft (0.55 m) above land-surface datum.

REMARKS.--Measurement frequency has been changed from annual to quarterly as of Jan. 31, 1977.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 65.30 ft (19.90 m) below land-surface datum, Aug. 29, 1977; lowest measured, 66.65 ft (20.31 m) below land-surface datum, Mar. 15, 1967.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 30	65.41	APR 6	65.47	MAY 31	65.47	AUG 29	65.30
MAR 2	66.50						

WILLIAMS COUNTY

483048103373101. Local number, 158-100-17ADA.

LOCATION.--Lat 48°30'48", long 103°37'31", Hydrologic Unit 10110102.

Owner: North Dakota State Water Commission.

AQUIFER.--Little Muddy.

WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in (0.032 m), depth 52 ft (15.8 m), cased to 35 ft (10.7 m), plastic pipe, slotted 35 to 43 ft (10.7 to 13.1 m) below land-surface datum.

DATUM.--Altitude of land-surface datum is 1,987 ft (606 m). Measuring point: Top of casing 2.00 ft (0.61 m) above land-surface datum.

REMARKS.--Measurement frequency has been changed from annual to quarterly as of Jan. 31, 1977.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 18.70 ft (5.70 m) below land-surface datum, Dec. 5, 1972 and Dec. 2, 1975; lowest measured, 20.32 ft (6.19 m) below land-surface datum, July 18, 1968.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 30	18.80	MAR 1	18.83	JUN 1	18.96	AUG 30	19.60

QUALITY OF GROUND WATER

497

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

STATION NUMBER	LOCAL IDENTIFIER	GEOLOGIC UNIT	TOTAL DEPTH OF WELL (FT)	DATE OF SAMPLE	TIME	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	HARDNESS (CA, MG) (MG/L)
BOTTINEAU COUNTY									
483701101060401	159-081-1188B	112TILL	20	77-02-03	1400	540	7.9	4.8	270
		112TILL	20	77-05-05	1415	540	8.4	9.0	280
		112TILL	20	77-08-12	1410	520	7.7	9.0	--
DICKEY COUNTY									
460630098014703	130-059-02AAA3	112OKES	18	76-11-01	1548	570	7.5	11.0	290
		112OKES	18	77-02-01	1000	680	7.3	7.4	330
		112OKES	18	77-05-03	0815	670	7.4	8.0	330
		112OKES	18	77-07-07	1040	540	6.9	13.0	280
		112OKES	18	77-07-07	1120	700	6.9	8.0	370
460401098012503	130-059-13CCC3	112OKES	18	77-08-03	1615	600	7.2	9.0	300
		112OKES	18	76-11-02	1010	440	7.5	11.0	230
		112OKES	18	77-01-31	1624	662	7.3	8.4	320
		112OKES	18	77-05-02	1515	630	7.4	8.0	330
		112OKES	18	77-08-03	1440	540	7.4	9.5	300
460448098041502	130-059-16AAA2	112OKES	18	76-11-01	1205	470	7.5	10.0	230
		112OKES	18	77-02-01	0904	520	7.4	7.0	240
		112OKES	18	77-05-02	1635	520	7.6	8.0	250
		112OKES	18	77-08-03	1540	520	7.3	9.0	250
460403098041503	130-059-16DD03	112OKES	18	76-11-02	0900	600	7.5	10.0	340
		112OKES	18	77-01-31	1700	641	7.4	7.2	320
460818098040202	131-059-2788B2	112OKES	18	77-05-02	1555	560	7.5	7.0	290
		112OKES	18	77-08-03	1515	630	7.5	9.0	290
		112OKES	23	76-11-02	1438	1100	7.7	11.0	660
		112OKES	23	77-02-01	1330	1700	7.4	8.0	590
		112OKES	23	77-05-03	1445	1460	7.2	8.0	760
		112OKES	23	77-08-04	1300	1350	7.3	9.0	740
		112OKES	18	76-11-02	1345	410	7.6	11.0	220
460732098032402	131-059-270CC2	112OKES	18	77-02-01	1135	500	7.1	7.4	240
		112OKES	18	77-05-03	1315	430	7.3	7.5	210
		112OKES	18	77-07-07	1225	420	6.9	11.0	200
		112OKES	18	77-07-07	1500	440	7.0	8.5	220
		112OKES	18	77-08-04	1145	415	7.3	9.5	200
460732098032402	131-059-270CC2	112OKES	18	76-11-02	1400	590	7.6	11.0	300
		112OKES	18	77-02-01	1235	580	7.6	7.8	270
		112OKES	18	77-05-03	1415	610	7.5	7.5	290
		112OKES	18	77-08-04	1225	580	7.6	10.0	290
		112OKES	23	76-10-06	0930	670	7.3	9.5	340
460706098041102	131-059-33ADD2	112OKES	23	76-11-02	1252	650	7.3	11.0	340
		112OKES	23	76-12-07	1630	670	7.3	8.0	360
		112OKES	23	77-01-05	1630	700	7.2	8.0	330
		112OKES	23	77-02-01	1030	690	7.3	8.2	330
		112OKES	23	77-02-28	1600	650	--	7.5	340
		112OKES	23	77-04-04	1545	750	7.5	8.5	340
		112OKES	23	77-05-03	0920	690	7.2	8.0	340
		112OKES	23	77-06-02	1105	710	7.4	7.8	340
		112OKES	23	77-07-07	1615	670	7.0	9.0	360
		112OKES	23	77-08-04	1040	650	7.2	9.0	340
460719098040202	131-059-3488C2	112OKES	23	77-08-31	1030	670	7.3	10.0	330
		112OKES	19	76-11-02	1320	560	7.6	11.0	290
		112OKES	19	77-02-01	1100	610	7.5	8.4	270
		112OKES	19	77-05-03	1100	610	7.4	8.0	290
		112OKES	19	77-08-04	1115	580	7.6	9.5	290

Geological unit (aquifer):

112TILL - Till deposits, Pleistocene age.
 112OKES - Oakes aquifer, Pleistocene age.

QUALITY OF GROUND WATER

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

STATION NUMBER	DATE OF SAMPLE	NON-CARBONATE HARDNESS (MG/L)	DIS-SOLVED CALCIUM (CA) (MG/L)	DIS-SOLVED MAGNESIUM (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	DIS-SOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CaCO3 (MG/L)
BOTTINEAU COUNTY											
483701101060401	77-02-03	11	59	29	14	10	.4	1.8	312	0	256
	77-05-05	22	63	29	13	9	.3	1.7	310	0	254
	77-08-12	--	--	29	--	--	--	1.7	310	0	250
DICKEY COUNTY											
460630098014703	76-11-01	29	75	24	13	9	.3	10	313	0	257
	77-02-01	29	86	28	13	8	.3	10	368	0	302
	77-05-03	43	86	28	13	8	.3	10	350	0	290
	77-07-07	20	72	23	14	10	.4	9.6	310	0	250
	77-07-07	37	95	31	13	7	.3	11	400	0	330
460401098012503	77-08-03	27	78	25	13	8	.3	9.5	330	0	270
	76-11-02	9	59	20	7.9	7	.2	3.4	270	0	221
	77-01-31	40	86	26	6.7	4	.2	2.7	344	0	282
	77-05-02	52	88	27	6.9	4	.2	2.8	340	0	280
	77-08-03	34	81	23	6.4	4	.2	2.4	320	0	260
460448098041502	76-11-01	0	62	18	17	14	.5	3.9	290	0	238
	77-02-01	0	63	19	17	13	.5	3.5	314	0	258
	77-05-02	0	68	20	17	13	.5	3.6	320	0	260
	77-08-03	0	67	20	19	14	.5	3.7	330	0	270
460403098041503	76-11-02	48	75	37	9.0	5	.2	7.7	356	0	292
	77-01-31	50	79	30	9.0	6	.2	6.3	330	0	271
	77-05-02	32	67	29	8.7	6	.2	6.4	310	0	250
	77-08-03	32	70	27	11	8	.3	6.3	310	0	250
460818098040202	76-11-02	280	170	58	21	6	.4	6.3	464	0	381
	77-02-01	170	150	53	19	6	.3	5.2	517	0	424
	77-05-03	330	190	69	24	6	.4	5.9	520	0	430
	77-08-04	330	190	65	25	7	.4	5.9	500	0	410
460732098032402	76-11-02	26	62	15	1.9	2	.1	8.6	232	0	190
	77-02-01	31	67	18	1.6	1	.0	7.4	256	0	210
	77-05-03	39	60	15	1.3	1	.0	7.2	210	0	170
	77-07-07	15	57	15	1.7	2	.1	7.3	230	0	190
	77-07-07	23	60	17	1.7	2	.0	7.6	240	0	200
460732098032402	77-08-04	15	57	15	1.6	2	.0	6.8	230	0	190
460739098041102	76-11-02	43	67	31	18	12	.5	4.1	307	0	252
	77-02-01	12	63	28	16	11	.4	3.5	318	0	261
	77-05-03	39	68	30	17	11	.4	3.6	310	0	250
	77-08-04	31	68	28	20	13	.5	4.0	310	0	250
460706098041102	76-10-06	27	92	26	22	12	.5	5.0	381	0	312
	76-11-02	27	88	29	21	12	.5	5.2	380	0	312
	76-12-07	43	99	27	21	11	.5	5.1	384	0	315
	77-01-05	7	89	27	21	12	.5	5.0	398	0	326
	77-02-01	10	89	27	20	11	.5	4.8	394	0	323
	77-02-28	68	90	27	21	12	.5	5.1	331	0	271
	77-04-04	20	90	28	20	11	.5	4.8	390	0	320
	77-05-03	27	91	27	21	12	.5	4.8	380	0	310
	77-06-02	29	92	27	22	12	.5	5.0	380	0	310
	77-07-07	12	95	29	22	12	.5	4.8	420	0	340
460719098040202	77-08-04	21	92	27	22	12	.5	4.9	390	0	320
	77-08-31	6	91	24	23	13	.6	4.9	390	0	320
	76-11-02	13	52	38	23	15	.6	5.6	333	0	273
	77-02-01	0	51	35	22	15	.6	5.3	333	0	273
	77-05-03	8	54	37	22	14	.6	5.3	340	0	280
	77-08-04	2	53	38	23	14	.6	5.3	350	0	290

QUALITY OF GROUND WATER

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WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

STATION	NUMBER	DATE OF SAMPLE	CARBON DIOXIDE (CO ₂) (MG/L)	DIS- SOLVED SULFATE (SO ₄) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO ₂) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED NITRATE PLUS NITRATE (N) (MG/L)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L)	DIS- SOLVED ORTHO- PHOS- PHORUS (P) (MG/L)
BOTTINEAU COUNTY												
483701101060401		77-02-03	6.3	52	1.4	.3	18	332	.45	.20	.03	.01
		77-05-05	2.0	54	.9	.3	15	332	--	.13	.02	.04
		77-08-12	9.9	45	1.0	.3	20	--	--	.64	.03	.04
DICKEY COUNTY												
460630098014703		76-11-01	16	57	2.9	.2	27	365	.50	.04	.01	.00
		77-02-01	30	67	3.1	.2	28	418	.57	.02	.02	.05
		77-05-03	22	71	3.1	.2	26	413	.56	.00	.02	.04
		77-07-07	62	59	3.1	.1	26	364	--	.61	.01	.00
		77-07-07	81	75	3.4	.1	26	455	--	.00	.03	.00
		77-08-03	33	59	3.0	.2	24	377	.51	.00	.03	.02
460401098012503		76-11-02	14	13	1.2	.6	28	249	.37	.02	.12	.02
		77-01-31	28	55	2.0	.5	30	383	.52	.04	.08	.05
		77-05-02	22	54	2.2	.5	28	381	.52	.00	.02	.05
		77-08-03	18	44	1.7	.4	25	346	.47	.00	.03	.02
460448098041502		76-11-01	15	15	2.5	.2	28	291	.40	.21	.05	.03
		77-02-01	20	17	3.0	.2	29	307	.42	.02	.04	.07
		77-05-02	13	19	2.6	.2	26	315	.43	.00	.03	.05
		77-08-03	26	20	2.9	.2	32	329	.45	.05	.04	.05
460403098041503		76-11-02	18	47	8.3	.2	24	387	.53	.13	.05	.02
		77-01-31	21	57	13	.2	26	386	.53	.01	.08	.08
		77-05-02	16	35	5.6	.1	23	331	.45	.00	.12	.07
		77-08-03	14	44	8.0	.1	22	345	.47	.01	.05	.02
460818098040202		76-11-02	15	180	89	.4	25	808	1.10	6.5	.10	.08
		77-02-01	33	120	68	.4	27	703	.96	1.2	.11	.11
		77-05-03	52	210	100	.4	19	908	1.23	7.5	.02	.06
		77-08-04	39	220	90	.3	24	922	1.25	12	.12	.11
460732098032402		76-11-02	9.3	37	1.6	.2	23	272	.37	.04	.08	.00
		77-02-01	33	49	1.7	.1	24	305	.41	.06	.08	.01
		77-05-03	17	39	1.8	.1	22	260	.35	.11	.04	.05
		77-07-07	46	35	1.4	.1	21	261	.00	.00	.01	.01
		77-07-07	38	40	1.5	.1	23	282	.00	.01	.14	.01
460732098032402		77-08-04	18	36	1.3	.1	20	260	.35	.01	.07	.02
460739098041102		76-11-02	12	27	2.4	.4	29	397	.54	15	.03	.02
		77-02-01	13	31	3.1	.4	27	353	.48	5.3	.04	.05
		77-05-03	16	29	3.7	.4	26	369	.50	8.5	.02	.07
		77-08-04	12	32	3.3	.4	25	379	.52	10	.04	.04
460706098041102		76-10-06	31	.0	4.4	.4	27	365	.59	.08	.02	.04
		76-11-02	30	60	5.2	.0	28	425	.58	.03	.02	.01
		76-12-07	31	63	5.3	.3	28	439	.60	.04	.02	.02
		77-01-05	40	62	5.3	.4	30	436	.59	.01	.03	.04
		77-02-01	32	61	5.2	.3	28	431	.59	.01	.05	.04
		77-02-28	--	68	5.0	.3	28	408	.00	.01	.04	.06
		77-04-04	20	65	5.8	.4	29	436	.59	.06	.01	.06
		77-05-03	38	60	5.2	.3	28	425	.58	.01	.02	.06
		77-06-02	24	58	5.1	.3	27	425	.58	.05	.03	.03
		77-07-07	67	55	4.5	.2	26	445	--	.00	.05	.02
		77-08-04	39	61	4.7	.2	23	428	.58	.00	.02	.02
		77-08-31	31	61	4.7	.3	29	431	.59	.00	.03	.04
460719098040202		76-11-02	13	44	4.4	.3	24	365	.50	2.1	.04	.01
		77-02-01	17	48	4.9	.3	25	357	.49	.24	.04	.03
		77-05-03	22	47	4.8	.3	24	363	.49	.19	.03	.06
		77-08-04	14	50	4.3	.3	22	373	.51	.84	.04	.04

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

STATION NUMBER	DATE OF SAMPLE	DIS-SOLVED ORTHO PHOS-PHATE (PO4) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)
BOTTINEAU COUNTY				
483701101060401	77-02-03	.03	370	1100
	77-05-05	.12	290	910
	77-08-12	.12	270	1100
DICKEY COUNTY				
460630098014703	76-11-01	.00	790	950
	77-02-01	.15	460	910
	77-05-03	.12	1800	840
	77-07-07	.00	1300	690
	77-07-07	.00	2300	960
	77-08-03	.06	1700	890
460401098012503	76-11-02	.06	1400	760
	77-01-31	.15	3000	1000
	77-05-02	.15	2700	930
	77-08-03	.06	2800	1000
460448098041502	76-11-01	.09	50	680
	77-02-01	.21	90	540
	77-05-02	.15	80	610
	77-08-03	.15	150	790
460403098041503	76-11-02	.06	310	1900
	77-01-31	.25	730	1600
	77-05-02	.21	1100	1700
	77-08-03	.06	1400	1880
460818098040202	76-11-02	.25	30	100
	77-02-01	.34	40	210
	77-05-03	.18	10	340
	77-08-04	.34	330	1600
460732098032402	76-11-02	.00	5200	3200
	77-02-01	.03	6400	3200
	77-05-03	.15	6400	3200
	77-07-07	.03	5600	3300
	77-07-07	.03	9100	3700
460732098032402	77-08-04	.06	5900	3100
460739098041102	76-11-02	.06	20	730
	77-02-01	.15	70	590
	77-05-03	.21	10	570
	77-08-04	.12	30	960
460706098041102	76-10-06	.12	60	220
	76-11-02	.03	80	290
	76-12-07	.06	60	240
	77-01-05	.12	120	270
	77-02-01	.12	650	370
	77-02-28	.18	250	280
	77-04-04	.18	240	250
	77-05-03	.18	230	260
	77-06-02	.09	340	410
	77-07-07	.06	720	890
	77-08-04	.06	350	520
	77-08-31	.12	190	390
460719098040202	76-11-02	.03	20	300
	77-02-01	.09	80	150
	77-05-03	.18	10	170
	77-08-04	.12	20	380

QUALITY OF GROUND WATER

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WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

STATION	NUMBER	LOCAL IDENT- IFIER	GEO- LOGIC UNIT	DATE OF SAMPLE	TIME	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	HARD- NESS (CA, MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)
BOWMAN COUNTY										
460856103024401	131-099-22DCC		125TRVL	76-12-20	1440	3600	7.1	7.5	1400	940
460804103010101	131-099-26DDD		125TRVL	76-12-21	1140	1420	8.4	8.5	18	0
460804103021601	131-099-27DDD1		125TRVL	76-12-21	1035	1400	8.7	9.0	28	0

STATION	NUMBER	DATE OF SAMPLE	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	ALKA- LITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)
460856103024401	76-12-20	270	180	450	41	5.2	11	588	0	482	75	
460804103010101	76-12-21	4.2	1.7	330	97	34	2.5	517	5	432	3.4	
460804103021601	76-12-21	7.6	2.2	360	96	30	2.0	753	11	636	2.5	

STATION	NUMBER	DATE OF SAMPLE	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)	DIS- SOLVED FLUO- RIDE (F) (MG/L)	BROMIDE (BR) (MG/L)	DIS- SOLVED SILICA DUE AT (SiO2) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	TOTAL FILT- RABLE RESIDUE (MG/L)	DIS- SOLVED (SUM OF CONSTIT- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS AC-FT)	TOTAL NON- FILT- RABLE RESIDUE (MG/L)
460856103024401	76-12-20	1800	29	.4	.2	6.7	3310	3300	3040	4.50	5	
460804103010101	76-12-21	310	6.3	2.6	.1	7.9	964	980	926	1.31	<1	
460804103021601	76-12-21	130	80	4.2	--	8.1	1190	1200	941	1.62	18	

STATION	NUMBER	DATE OF SAMPLE	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS- SOLVED KJEL. NITRO- GEN (N) (MG/L)	DIS- SOLVED PHOS- PHORUS (P) (MG/L)	DIS- SOLVED ALUM- INUM (AL) (UG/L)	DIS- SOLVED ARSENIC (AS) (UG/L)	DIS- SOLVED BARIUM (BA) (UG/L)	DIS- SOLVED BROMINE (BR) (UG/L)	DIS- SOLVED CAD- MIUM (CD) (UG/L)	DIS- SOLVED CHRO- MIUM (CR) (UG/L)	DIS- SOLVED COPPER (CU) (UG/L)
460856103024401	76-12-20	.15	.74	.01	10	2	0	500	0	0	1	
460804103010101	76-12-21	.04	.49	.07	10	6	0	970	0	0	2	
460804103021601	76-12-21	.20	3.0	.33	130	50	200	2500	0	0	3	

STATION	NUMBER	DATE OF SAMPLE	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED LEAD (PB) (UG/L)	DIS- SOLVED LITHIUM (LI) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)	DIS- SOLVED MERCURY (HG) (UG/L)	DIS- SOLVED MOLYB- DENUM (MO) (UG/L)	DIS- SOLVED SELE- NIUM (SE) (UG/L)	DIS- SOLVED STRON- TIUM (SR) (UG/L)	DIS- SOLVED ZINC (ZN) (UG/L)	DIS- SOLVED ALPHA AS II-NAT. (UG/L)
460856103024401	76-12-20	40	0	110	520	.0	3	1	4000	20	59	
460804103010101	76-12-21	70	1	20	10	.2	0	0	140	10	<11	
460804103021601	76-12-21	570	5	20	80	.2	0	0	230	10	430	

STATION	NUMBER	DATE OF SAMPLE	SUS- PENDED GROSS ALPHA AS II-NAT. (UG/L)	DIS- SOLVED BETA AS CS-137 (PC/L)	SUS- PENDED GROSS BETA AS CS-137 (PC/L)	DIS- SOLVED GROSS BETA AS S290 /Y90 (PC/L)	SUS- PENDED GROSS BETA AS S290 /Y90 (PC/L)	DIS- SOLVED RA-226 (RADON METHOD) (PC/L)	DIS- SOLVED URANIUM (U) (UG/L)	DIS- SOLVED ORGANIC CARBON (C) (MG/L)
460856103024401	76-12-20	1.1	14	5.4	11	4.9	.40	--	4.4	
460804103010101	76-12-21	1.2	7.2	.6	5.8	.5	.10	<.01	.3	
460804103021601	76-12-21	16	40	4.5	33	3.8	.34	--	146	

Geologic unit (aquifer):

125TRVL - Tongue River-Ludlow Members of Fort Union Formation, Paleocene age.

QUALITY OF GROUND WATER

WATER QUALITY DATA, AUGUST 1976 TO SEPTEMBER 1977

STATION NUMBER	LOCAL IDENTIFIER	GEOLOGIC UNIT	TOTAL DEPTH OF WELL (FT)	DATE OF SAMPLE	TIME	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)
BURLEIGH COUNTY									
464718100470401	138-080-09BDA0	112BMCK	30	76-08-24	1600	2600	7.6	8.4	12
		112BMCK	30	76-08-24 ^{1/}	1603	2600	7.6	8.5	--
		112BMCK	30	76-08-24	1610	2600	7.6	8.4	8
		112BMCK	30	77-07-14	1801	2600	7.2	10.5	13
		112BMCK	30	77-07-14	1802	2600	7.2	10.5	11
		112BMCK	30	77-07-14	1803	2600	7.2	10.5	12
		112BMCK	30	77-07-14	1804	2600	7.2	10.5	23
		112BMCK	30	77-07-14	1805	2600	7.2	10.5	8
		112BMCK	30	77-07-14 ^{1/}	1806	2600	7.2	10.5	--
		112BMCK	30	77-07-14 ^{1/}	1807	2600	7.2	10.5	--

STATION NUMBER	DATE OF SAMPLE	TURBIDITY (JTU)	HARDNESS (CA, MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	DIS-SOLVED CALCIUM (CA) (MG/L)	DIS-SOLVED MAGNESIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	DIS-SOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)
464718100470401	76-08-24	35	810	100	200	76	350	48	5.3	10	870
	76-08-24	--	840	94	200	83	350	47	5.3	8.7	911
	76-08-24	--	820	66	200	78	360	48	5.5	10	920
	77-07-14	60	780	76	190	74	340	48	5.3	9.3	860
	77-07-14	55	790	100	190	75	360	50	5.6	9.3	830
	77-07-14	--	790	82	190	76	350	49	5.4	9.3	850
	77-07-14	--	800	110	200	74	340	48	5.2	9.3	850
	77-07-14	--	780	82	190	74	350	49	5.5	9.3	850
	77-07-14	--	790	52	190	77	340	48	5.3	8.0	901
	77-07-14	--	790	48	190	77	330	47	5.1	8.1	906

STATION NUMBER	DATE OF SAMPLE	CARBONATE (CO3) (MG/L)	ALKALINITY AS CaCO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLORIDE (CL) (MG/L)	DIS-SOLVED FLUORIDE (F) (MG/L)	DIS-SOLVED SILICA (SiO2) (MG/L)	DIS-SOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)
464718100470401	76-08-24	0	714	32	740	46	.3	18	1840	1880	2.50
	76-08-24	0	747	33	780	44	.2	18	1940	1940	--
	76-08-24	0	755	34	770	47	.3	17	1840	1950	2.50
	77-07-14	0	710	87	750	40	.3	18	1850	1860	2.52
	77-07-14	0	680	84	750	42	.4	18	1840	1870	2.50
	77-07-14	0	710	87	750	40	.4	17	1850	1870	2.52
	77-07-14	0	700	86	740	39	.4	18	1840	1850	2.50
	77-07-14	0	697	86	730	40	.4	18	1840	1840	2.50
	77-07-14	0	739	91	740	44	.2	22	1870	1880	--
	77-07-14	0	743	91	730	47	.2	20	1830	1860	--

Geological unit (aquifer):

112BMCK - Bismarck aquifer, Pleistocene age.

^{1/} Analyses by North Dakota State Water Commission Laboratory.

QUALITY OF GROUND WATER

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WATER QUALITY DATA, AUGUST 1976 TO SEPTEMBER 1977

STATION NUMBER	DATE OF SAMPLE	DIS-SOLVED NITRATE (N) (MG/L)	DIS-SOLVED AMMONIA GEN (N) (MG/L)	DIS-SOLVED AMMONIA (NH4) (MG/L)	DIS-SOLVED ORGANIC NITRO-GEN (N) (MG/L)	DIS-SOLVED NITRO-GEN (N) (MG/L)	DIS-SOLVED PHOS-PHORUS (P) (MG/L)	DIS-SOLVED PHOS-PHORUS (P) (MG/L)	DIS-SOLVED PHOS-PHATE (PO4) (MG/L)	DIS-SOLVED ORTHO-PHOS-PHORUS (MG/L)	DIS-SOLVED HYDRO-LYZABLE PHOS-PHORUS (MG/L)	DIS-SOLVED ORTHO + HYDRO-PHOS-PHORUS (MG/L)
BURLEIGH COUNTY												
444718100477401	76-08-24	.01	2.5	3.2	.00	2.3	.02	.07	.21	.00	--	--
	76-08-24	--	--	--	--	--	--	--	--	--	--	--
	76-08-24	1.4	--	--	--	--	.02	--	--	--	--	--
	77-07-14	.01	1.9	2.4	.70	2.6	.07	.02	.06	.04	.06	.06
	77-07-14	.02	2.0	2.6	.10	2.1	.03	.03	.09	.01	--	.04
	77-07-14	.02	--	--	--	--	.07	--	--	--	--	--
	77-07-14	.01	--	--	--	--	.01	--	--	--	--	--
	77-07-14	.03	--	--	--	--	.06	--	--	--	--	--
	77-07-14	--	--	--	--	--	--	--	--	--	--	--
	77-07-14	--	--	--	--	--	--	--	--	--	--	--

STATION NUMBER	DATE OF SAMPLE	DIS-SOLVED ORGANIC PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ALUMINUM (AL) (UG/L)	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED BARIUM (BA) (UG/L)	DIS-SOLVED BERYLLIUM (BE) (UG/L)	DIS-SOLVED BORON (B) (UG/L)	DIS-SOLVED CADMIUM (CD) (UG/L)	DIS-SOLVED CHROMIUM (CR) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	DIS-SOLVED COPPER (CU) (UG/L)
444718100470401	76-08-24	--	0	12	0	0	300	2	0	0	0
	76-08-24	--	--	--	--	--	450	--	--	--	--
	76-08-24	--	--	--	--	--	300	--	--	--	--
	77-07-14	.00	20	10	0	0	270	1	0	0	0
	77-07-14	.00	10	11	0	0	280	0	10	2	0
	77-07-14	--	--	--	--	--	280	--	--	--	--
	77-07-14	--	--	--	--	--	270	--	--	--	--
	77-07-14	--	--	--	--	--	270	--	--	--	--
	77-07-14	--	--	--	--	--	170	--	--	--	--
	77-07-14	--	--	--	--	--	0	--	--	--	--

STATION NUMBER	DATE OF SAMPLE	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED LITHIUM (LI) (UG/L)	DIS-SOLVED MANGANESE (MN) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	DIS-SOLVED MOLYBDENUM (MO) (UG/L)	DIS-SOLVED NICKEL (NI) (UG/L)	DIS-SOLVED SELENIUM (SE) (UG/L)	DIS-SOLVED STRONTIUM (SR) (UG/L)	DIS-SOLVED VANADIUM (V) (UG/L)
444718100477401	76-08-24	3100	10	80	2900	.0	2	2	0	1800	.0
	76-08-24	1100	--	--	2600	--	--	--	--	--	--
	76-08-24	1800	--	--	3000	--	--	--	--	--	--
	77-07-14	7300	7	80	2600	.0	2	2	0	1700	.0
	77-07-14	7600	5	80	2600	.4	2	2	1	1800	.0
	77-07-14	6600	--	--	2600	--	--	--	--	--	--
	77-07-14	7600	--	--	2600	--	--	--	--	--	--
	77-07-14	7200	--	--	2000	--	--	--	--	--	--
	77-07-14	7100	--	--	2700	--	--	--	--	--	--
	77-07-14	7600	--	--	2700	--	--	--	--	--	--

STATION NUMBER	DATE OF SAMPLE	DIS-SOLVED ZINC (ZN) (UG/L)	DIS-SOLVED ORGANIC CARBON (C) (MG/L)	DIS-SOLVED INORGANIC CARBON (C) (MG/L)
444718100470401	76-08-24	130	10	138
	77-07-14	120	7.4	174
	77-07-14	120	6.8	180

QUALITY OF GROUND WATER

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

STATION NUMBER	LOCAL IDENTIFIER	GEOLOGIC UNIT	TOTAL DEPTH OF WELL (FT)	DATE OF SAMPLE	TIME	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH (UNITS)	TEMPERATURE (DEG C)	HARDNESS (CA, MG) (MG/L)
MC HENRY COUNTY									
482028100475601	156-079-14888	112TILL	12	76-11-03	1300	800	7.6	10.0	350
		112TILL	12	77-02-02	1310	720	7.6	4.8	320
		112TILL	12	77-05-04	1449	730	7.6	9.0	340
		112TILL	12	77-08-10	1525	650	7.4	10.5	310
482028100503201	156-079-16888	112TILL	19	76-11-03	1200	750	7.7	10.0	400
		112TILL	19	77-02-03	0940	800	7.5	5.3	380
		112TILL	19	77-05-04	1335	690	7.9	9.0	340
		112TILL	19	77-08-10	1600	720	7.5	11.0	350
482405100474601	157-078-19CCC	112TILL	20	76-11-03	1330	1350	8.2	10.0	600
		112TILL	20	77-02-03	1020	1320	7.5	5.7	700
		112TILL	20	77-05-04	1410	780	7.8	9.0	400
		112TILL	20	77-06-21	1105	1000	7.6	7.5	550
		112TILL	20	77-08-10	1655	1000	7.5	11.0	540
482357100502302	157-079-268882	112TILL	12	76-10-08	1115	775	7.6	12.0	410
		112TILL	12	76-11-03	1410	780	7.8	10.0	450
		112TILL	12	76-12-03	0945	662	7.7	7.5	400
		112TILL	12	77-01-07	1110	770	7.7	5.0	390
		112TILL	12	77-02-02	1430	820	7.6	5.2	400
		112TILL	12	77-03-02	1815	770	7.6	4.5	400
		112TILL	12	77-04-08	0945	770	7.7	5.0	400
		112TILL	12	77-05-04	1455	1120	7.7	9.0	600
		112TILL	12	77-06-03	1355	765	7.6	6.5	400
		112TILL	12	77-07-14	1130	830	7.5	12.0	440
		112TILL	12	77-08-10	1620	850	7.3	11.0	470
		112TILL	12	77-09-12	1820	840	7.6	10.0	450
483240100503201	158-079-03AAA	112TILL	12	76-11-03	1545	8000	7.4	9.0	5700
		112TILL	12	77-08-12	1110	8000	7.1	9.0	5400
483003100503201	158-079-22AAA	112TILL	20	76-11-03	1440	480	8.1	10.0	240
		112TILL	20	77-02-02	1630	590	7.6	6.3	300
		112TILL	20	77-05-05	1036	560	8.2	8.0	290
		112TILL	20	77-08-11	1420	600	7.7	12.0	320
483003100480401	158-079-24AAB	112TILL	16	76-11-03	1525	450	8.5	10.0	240
		112TILL	16	77-02-02	1545	600	7.5	6.9	310
483003100480401	158-079-24AAB	112TILL	16	77-05-05	1115	590	8.0	7.0	320
		112TILL	16	77-08-11	1530	580	7.4	9.0	300
482825100565502	158-080-25CCC2	112TILL	12	76-11-03	1106	2000	7.8	9.0	740
		112TILL	12	77-02-03	1620	1590	8.0	4.9	740
		112TILL	12	77-05-04	1545	1900	7.6	9.0	730
		112TILL	12	77-08-11	1250	1800	7.5	--	740
482825101100202	158-080-29DND2	112TILL	12	76-11-03	1045	750	7.5	10.0	370
		112TILL	12	77-02-03	1525	810	7.6	5.6	350
		112TILL	12	77-05-05	1630	840	7.5	7.0	420
		112TILL	12	77-08-11	1120	740	7.2	9.5	350
483418100475501	159-079-25AAD	112TILL	12	76-11-03	1616	5000	7.3	9.5	3000
		112TILL	12	77-05-05	1155	2250	7.9	6.5	1100
		112TILL	12	77-08-12	1150	1900	7.5	10.0	890
483247100593201	159-080-34CCC	112TILL	12	77-05-05	1330	2400	7.6	8.0	1600

Geological unit (aquifer):

112TILL - Till deposits, Pleistocene age.

QUALITY OF GROUND WATER

505

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

STATION NUMBER	DATE OF SAMPLE	NON-CARBONATE HARDNESS (MG/L)	DIS-SOLVED CALCIUM (CA) (MG/L)	DIS-SOLVED MAGNESIUM (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	DIS-SOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CaCO3 (MG/L)
MC HENRY COUNTY											
482028100475601	76-11-03	0	78	39	44	21	1.0	4.9	464	0	381
	77-02-02	0	74	33	38	20	.9	3.9	413	0	339
	77-05-04	0	75	38	33	17	.8	3.7	420	0	344
	77-08-10	0	73	31	29	17	.7	3.7	380	0	310
482028100503201	76-11-03	41	100	37	24	11	.5	4.8	440	0	361
	77-02-03	24	92	37	24	12	.5	4.4	436	0	358
	77-05-04	20	75	37	25	14	.6	4.0	390	0	320
	77-08-10	8	85	36	25	13	.6	4.7	430	0	350
482405100474601	76-11-03	220	130	68	40	12	.7	5.2	466	0	382
	77-02-03	230	170	67	33	9	.5	4.4	574	0	471
	77-05-04	180	100	36	9.2	5	.2	2.3	270	0	221
	77-06-21	130	140	49	27	10	.5	3.9	510	0	420
	77-08-10	100	130	52	28	10	.5	4.2	530	0	430
482357100502302	76-10-08	140	100	38	9.1	5	.2	2.9	327	0	268
	76-11-03	180	120	38	9.8	4	.2	3.0	331	0	271
	76-12-03	150	99	36	9.3	5	.2	2.6	303	0	249
	77-01-07	150	100	35	10	5	.2	2.5	295	0	242
	77-02-02	150	100	36	11	6	.2	2.7	308	0	253
	77-03-02	160	100	36	10	5	.2	2.5	295	0	242
	77-04-08	160	100	37	10	5	.2	2.4	300	0	250
	77-05-04	190	150	55	28	9	.5	3.7	500	0	410
	77-06-03	170	100	37	10	5	.2	2.6	280	0	230
	77-07-14	--	110	39	12	6	.3	2.9	--	0	--
	77-08-10	190	120	42	12	5	.2	3.4	350	0	290
	77-09-12	170	120	38	13	6	.3	3.8	350	0	290
483240100503201	76-11-03	5200	470	1100	510	16	2.9	12	635	0	521
	77-08-12	4900	520	990	510	17	3.0	13	570	0	470
483003100503201	76-11-03	18	44	31	12	10	.3	3.4	268	0	220
	77-02-02	14	70	31	11	7	.3	3.0	352	0	289
	77-05-05	14	63	33	11	7	.3	2.8	340	0	279
	77-08-11	12	77	32	12	7	.3	2.9	380	0	310
483003100480401	76-11-03	3	55	24	7.4	6	.2	2.8	284	0	233
	77-02-02	25	88	22	6.6	4	.2	2.0	348	0	285
483003100480401	77-05-05	40	93	21	6.4	4	.2	1.8	340	0	279
	77-08-11	18	89	20	6.6	4	.2	2.0	350	0	290
482825100565502	76-11-03	320	130	100	190	36	3.0	5.3	507	--	416
	77-02-03	330	130	100	170	33	2.7	4.7	495	0	406
	77-05-04	330	130	99	170	33	2.7	4.3	490	0	402
	77-08-11	320	130	100	170	33	2.7	4.7	510	0	420
482825101100202	76-11-03	70	82	39	28	14	.6	12	360	0	295
	77-02-03	55	79	39	28	14	.6	11	369	0	303
	77-05-05	110	94	46	29	13	.6	11	380	0	312
	77-08-11	67	79	38	28	14	.6	11	350	0	290
483418100475501	76-11-03	2400	510	410	260	16	2.1	14	633	0	519
	77-05-05	470	150	170	150	23	2.0	6.5	740	0	607
	77-08-12	270	110	150	150	27	2.2	6.9	760	0	620
483247100593201	77-05-05	1300	370	160	31	4	.3	8.9	380	0	312

QUALITY OF GROUND WATER

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

STATION NUMBER	DATE OF SAMPLE	CARBON DIOXIDE (CO ₂) (MG/L)	DIS-SOLVED SULFATE (SO ₄) (MG/L)	DIS-SOLVED CHLORIDE (CL) (MG/L)	DIS-SOLVED FLUORIDE (F) (MG/L)	DIS-SOLVED SILICA (SiO ₂) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED NITRATE (N) (MG/L)	DIS-SOLVED NITRATE (NO ₃) (MG/L)
MC HENRY COUNTY											
482028100475601	76-11-03	19	85	1.3	.2	21	503	.68	.14	--	--
	77-02-02	17	64	1.8	.2	21	440	.60	.07	--	--
	77-05-04	17	64	1.8	.1	19	444	.60	.48	--	--
	77-08-10	24	72	2.2	.2	25	424	.58	.01	--	--
482028100503201	76-11-03	14	68	5.5	.2	17	475	.65	.04	--	--
	77-02-03	22	76	5.7	.2	23	479	.65	.04	--	--
	77-05-04	7.9	57	4.8	.2	20	416	--	.02	--	--
	77-08-10	22	74	5.1	.3	25	468	.64	.01	--	--
482405100474601	76-11-03	4.7	270	30	.2	11	788	1.07	.58	--	--
	77-02-03	29	260	31	.1	20	871	1.18	.01	--	--
	77-05-04	6.8	110	2.0	.3	15	501	--	.21	--	--
	77-06-21	20	160	8.7	.2	20	662	.90	.03	.02	.10
482357100502302	77-08-10	27	160	9.0	.2	20	667	.91	.03	--	--
	76-10-08	13	110	3.0	.4	19	510	.69	.15	--	--
	76-11-03	8.4	130	1.9	.4	19	543	.74	.13	--	--
	76-12-03	9.7	130	1.6	.3	16	515	.70	.16	--	--
	77-01-07	9.4	130	1.7	.3	18	501	.68	.13	--	--
	77-02-02	12	140	2.2	.3	18	515	.70	.12	--	--
	77-03-02	12	140	2.1	.2	16	510	.69	.13	--	--
	77-04-08	9.6	140	2.2	.3	16	513	--	.13	--	--
	77-05-04	16	220	15	.2	17	738	--	.04	--	--
	77-06-03	11	140	2.0	.2	17	518	.70	.16	--	--
	77-07-14	--	150	2.4	.3	18	530	--	.13	--	--
	77-08-10	28	150	2.2	.3	20	576	.78	.12	--	--
	77-09-12	14	160	2.4	.3	21	580	.77	.11	--	--
	76-11-03	40	5900	44	.2	24	8420	11.5	.11	--	--
	77-08-12	72	5700	37	.2	25	8180	11.1	.23	--	--
483003100503201	76-11-03	3.4	45	2.2	.1	14	284	.39	.09	--	--
	77-02-02	14	45	2.0	.2	24	361	.49	.01	--	--
	77-05-05	3.4	37	2.1	.1	22	339	--	.06	--	--
483003100480401	77-08-11	12	42	2.5	.2	25	382	.52	.00	--	--
	76-11-03	1.4	24	1.6	.2	15	270	.37	.03	--	--
	77-02-02	18	45	1.4	.2	24	363	.49	.02	--	--
483003100480401	77-05-05	5.4	41	1.3	.2	23	359	--	.07	--	--
	77-08-11	22	38	1.4	.2	25	359	.49	.00	--	--
	76-11-03	13	680	13	.4	23	1440	1.96	.11	--	--
482825100565502	77-02-03	7.9	600	13	.4	22	1380	1.88	.21	--	--
	77-05-04	20	570	10	.4	20	1360	--	.26	--	--
	77-08-11	26	550	9.9	.4	24	1280	1.74	8.9	--	--
482825101100202	76-11-03	18	150	3.5	.2	23	520	.71	.81	--	--
	77-02-03	15	140	4.1	.1	23	508	.69	.01	--	--
	77-05-05	19	170	3.5	.1	21	564	--	.02	--	--
	77-08-11	35	130	3.8	.1	24	488	.66	.00	--	--
483418100475501	76-11-03	51	2700	48	.4	26	4280	5.82	.02	--	--
	77-05-05	15	730	12	1.0	21	1610	--	.08	--	--
	77-08-12	38	600	10	1.0	26	1430	1.94	.08	--	--
483247100593201	77-05-05	15	1300	4.7	.2	24	2090	--	.45	--	--

QUALITY OF GROUND WATER

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WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

STATION	NUMBER	DATE OF SAMPLE	DIS- SOLVED NITRITE (N) (MG/L)	DIS- SOLVED NITRITE (NO2) (MG/L)	DIS- SOLVED AMMONIA NITRO- GEN (N) (MG/L)	DIS- SOLVED AMMONIA NITRO- GEN (NH4) (MG/L)	DIS- SOLVED ORGANIC NITRO- GEN (N) (MG/L)	DIS- SOLVED KJEL. NITRO- GEN (N) (MG/L)	NITRO- GEN DIS- SOLVED AS N (MG/L)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L)	DIS- SOLVED ORTHO. PHOS- PHORUS (P) (MG/L)	DIS- SOLVED ORTHO PHOS- PHATE (PO4) (MG/L)
MC HENRY COUNTY												
482028100475601		76-11-03	--	--	--	--	--	--	--	.00	.01	.03
		77-02-02	--	--	--	--	--	--	--	.00	.01	.03
		77-05-04	--	--	--	--	--	--	--	.01	.04	.12
		77-08-10	--	--	--	--	--	--	--	.00	.02	.06
482028100503201		76-11-03	--	--	--	--	--	--	--	.00	.01	.03
		77-02-03	--	--	--	--	--	--	--	.01	.01	.03
		77-05-04	--	--	--	--	--	--	--	.02	.05	.15
		77-08-10	--	--	--	--	--	--	--	.00	.02	.06
482405100474601		76-11-03	--	--	--	--	--	--	--	.00	.01	.03
		77-02-03	--	--	--	--	--	--	--	.01	.01	.03
		77-05-04	--	--	--	--	--	--	--	.00	.03	.09
		77-06-21	.01	.03	.25	.32	.28	.53	--	.01	.02	.06
		77-08-10	--	--	--	--	--	--	--	.00	.02	.06
482357100502302		76-10-08	--	--	--	--	--	--	--	.01	.01	.03
		76-11-03	--	--	--	--	--	--	--	.00	.01	.03
		76-12-03	--	--	--	--	--	--	--	.00	.03	.09
		77-01-07	--	--	--	--	--	--	--	.00	.01	.03
		77-02-02	--	--	--	--	--	--	--	.01	.01	.03
		77-03-02	--	--	--	--	--	--	--	.00	.02	.06
		77-04-08	--	--	--	--	--	--	--	.00	.03	.09
		77-05-04	--	--	--	--	--	--	--	.00	.04	.12
		77-06-03	--	--	--	--	--	--	--	.00	.00	.00
		77-07-14	--	--	--	--	--	--	--	.00	.01	.03
		77-08-10	--	--	--	--	--	--	--	.00	.03	.09
		77-09-12	--	--	--	--	--	--	--	.00	--	--
483240100503201		76-11-03	--	--	--	--	--	--	--	.02	.03	.09
		77-08-12	--	--	--	--	--	--	--	.00	.04	.12
483003100503201		76-11-03	--	--	--	--	--	--	--	.00	.01	.03
		77-02-02	--	--	--	--	--	--	--	.02	.07	.21
		77-05-05	--	--	--	--	--	--	--	.01	.04	.12
		77-08-11	--	--	--	--	--	--	--	.02	.04	.12
483003100480401		76-11-03	--	--	--	--	--	--	--	.01	.01	.03
		77-02-02	--	--	--	--	--	--	--	.07	.02	.06
483003100480401		77-05-05	--	--	--	--	--	--	--	.01	.05	.15
		77-08-11	--	--	--	--	--	--	--	.03	.03	.09
482825100565502		76-11-03	--	--	--	--	--	--	--	.03	.01	.03
		77-02-03	--	--	--	--	--	--	--	.03	.01	.03
		77-05-04	--	--	--	--	--	--	--	.00	.04	.12
		77-08-11	--	--	--	--	--	--	--	.00	.02	.06
482825101100202		76-11-03	--	--	--	--	--	--	--	.05	.02	.06
		77-02-03	--	--	.31	.40	.31	.62	.63	.03	.07	.21
		77-05-05	--	--	--	--	--	--	--	.02	.04	.12
		77-08-11	--	--	--	--	--	--	--	.04	.04	.12
483418100475501		76-11-03	--	--	--	--	--	--	--	.00	.01	.03
		77-05-05	--	--	--	--	--	--	--	.01	.05	.15
		77-08-12	--	--	--	--	--	--	--	.00	.03	.09
483247100593201		77-05-05	--	--	--	--	--	--	--	.01	.04	.12

QUALITY OF GROUND WATER

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

STATION	NUMBER	DATE OF SAMPLE	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)	DIS- SOL- VED ORGANIC CARBON (C) (MG/L)
MC HENRY COUNTY					
4R2028100475601		76-11-03	40	240	--
		77-02-02	50	180	--
		77-05-04	150	180	--
		77-08-10	210	360	--
4R2028100503201		76-11-03	780	450	--
		77-02-03	1300	510	--
		77-05-04	600	450	--
		77-08-10	740	520	--
4R2405100474601		76-11-03	10	890	--
		77-02-03	620	1900	--
		77-05-04	30	0	--
		77-06-21	540	1200	--
		77-08-10	940	1200	--
4R2357100502302		76-10-08	20	40	--
		76-11-03	70	30	--
		76-12-03	10	10	--
		77-01-07	10	0	--
		77-02-02	0	10	--
		77-03-02	30	0	--
		77-04-08	0	10	--
		77-05-04	1300	1400	--
		77-06-03	20	5	--
		77-07-14	10	0	--
		77-08-10	10	8	--
		77-09-12	--	--	--
4R3240100503201		76-11-03	30	40	--
		77-08-12	30	30	--
4R3003100503201		76-11-03	20	140	--
		77-02-02	280	360	--
		77-05-05	230	290	--
		77-08-11	580	540	--
4R3003100480401		76-11-03	20	90	--
		77-02-02	2100	450	--
4R3003100480401		77-05-05	2400	460	--
		77-08-11	3300	520	--
4R2825100565502		76-11-03	30	280	--
		77-02-03	20	20	--
		77-05-04	20	20	--
		77-08-11	10	20	--
4R2825101100202		76-11-03	980	630	--
		77-02-03	460	700	7.0
		77-05-05	1300*	680	--
		77-08-11	840	540	--
4R3418100475501		76-11-03	2000	1600	--
		77-05-05	10	40	--
		77-08-12	20	20	--
4R3247100593201		77-05-05	10	40	--

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FACTORS FOR CONVERTING U.S. CUSTOMARY UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

The following factors may be used to convert the U.S. customary units published herein to the International System of Units (SI). Subsequent reports will contain both the U.S. customary and SI unit equivalents in the station manuscript descriptions until such time that all data will be published in SI units.

Multiply U.S. customary 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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