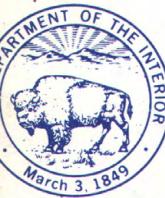
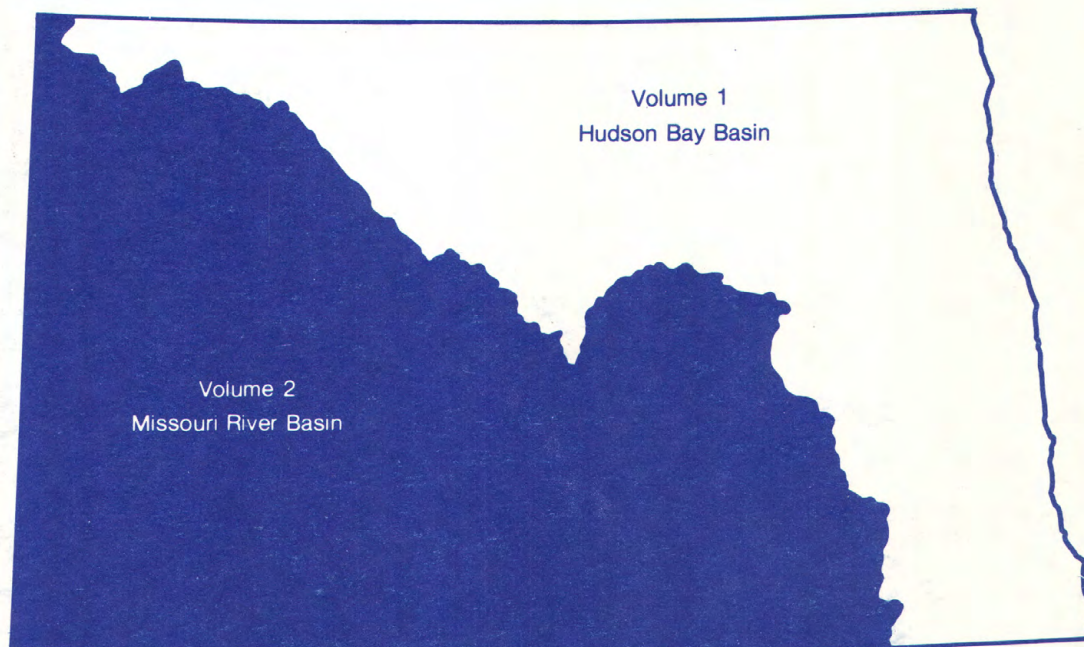
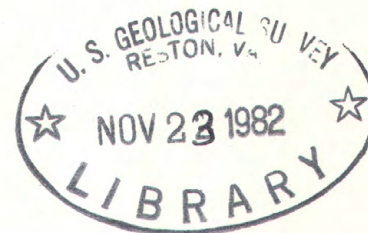


R
(200)
Gra3
North Dakota
1981
V-2



Water Resources Data North Dakota Water Year 1981

Volume 2. Missouri River Basin



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT ND-81-2
Prepared in cooperation with the State of North Dakota
and with other agencies

CALENDAR FOR WATER YEAR 1981

1980

OCTOBER

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

NOVEMBER

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

DECEMBER

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

1981

JANUARY

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

FEBRUARY

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

MARCH

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

APRIL

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

MAY

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

JUNE

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

JULY

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

AUGUST

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

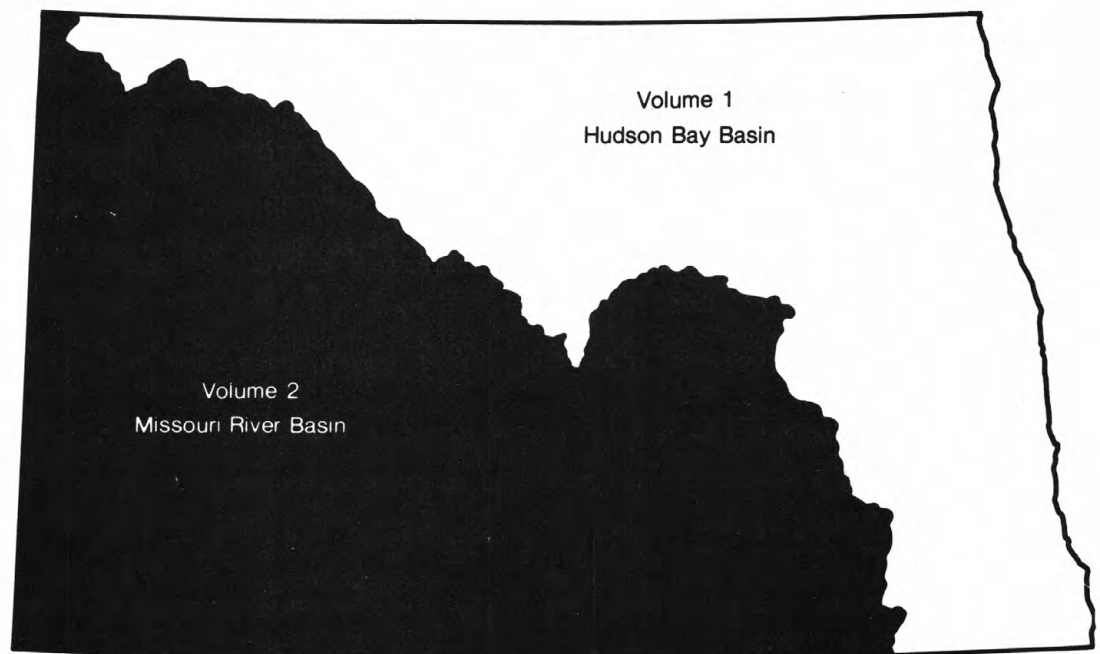
SEPTEMBER

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			



Water Resources Data North Dakota Water Year 1981

Volume 2. Missouri River Basin



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT ND-81-2
Prepared in cooperation with the State of North Dakota
and with other agencies

UNITED STATES DEPARTMENT OF THE INTERIOR

JAMES G. WATT, Secretary

GEOLOGICAL SURVEY

Dallas L. Peck, Director

For information on the water program in North Dakota write to
District Chief, Water Resources Division
U.S. Geological Survey
821 East Interstate Avenue
Bismarck, North Dakota 58501-1199

PREFACE

This report was prepared by personnel of the North Dakota District of the Water Resources Division of the U.S. Geological Survey under the supervision of L. Grady Moore, District Chief, and Alfred Clebsch, Jr., Regional Hydrologist, Central Region. It was done in cooperation with the State of North Dakota and with other agencies.

This report is one of a series issued by State. General direction for the series is by Philip Cohen, Chief Hydrologist, U.S. Geological Survey, and Robert J. Dingman, Assistant Chief Hydrologist for Scientific Publications and Data Management.

Data for North Dakota area in two volumes as follows:

Volume 1. Hudson Bay Basin

Volume 2. Missouri River Basin

REPORT DOCUMENTATION PAGE	1. REPORT NO. USGS/WRD/HD-82-011	2.	3. Recipient's Accession No.
4. Title and Subtitle Water Resources Data, North Dakota, Water Year 1981 Volume 2. Missouri River Basin		5. Report Date September 1982	
7. Author(s)		6.	
9. Performing Organization Name and Address U.S. Geological Survey, Water Resources Division 821 East Interstate Avenue Bismarck, North Dakota 58501-1199		8. Performing Organization Rept. No. USGS-WDR-ND-81-2	
		10. Project/Task/Work Unit No.	
		11. Contract(C) or Grant(G) No. (C) (G)	
12. Sponsoring Organization Name and Address U.S. Geological Survey, Water Resources Division 821 East Interstate Avenue Bismarck, North Dakota 58501-1199		13. Type of Report & Period Covered Annual - Oct. 1, 1980 to Sept. 30, 1981	
		14.	
15. Supplementary Notes Prepared in cooperation with the State of North Dakota and with other agencies.			
16. Abstract (Limit: 200 words) Water resources data for the 1981 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. Volume 2 of this report contains 78 gaging stations; stage only records for 17 gaging stations; stage and contents for 7 lakes and reservoirs; water quality for 55 gaging stations; 14 partial-record stations, 12 lakes, 63 wells, and water levels for 14 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.			
17. Document Analysis. a. Descriptors *North Dakota, *Hydrologic data, *Surface water, *Ground water, *Water quality, Flow rate, Gaging stations, Lakes, Reservoirs, Chemical analyses, Sediments, Water temperatures, Sampling sites, Water levels, Water analyses. b. Identifiers/Open-Ended Terms c. COSATI Field/Group			
18. Availability Statement No restriction on distribution. This report may be purchased from: National Technical Information Service Springfield, VA 22161		19. Security Class (This Report) Unclassified	21. No. of Pages 492
		20. Security Class (This Page) Unclassified	22. Price

CONTENTS

	Page
Preface.....	III
List of gaging stations, in downstream order, for which records are published.....	VI
Introduction.....	1
Cooperation.....	1
Acknowledgment.....	2
Hydrologic conditions.....	2
Definition of terms.....	2
Downstream order and station number.....	9
Numbering system for wells and miscellaneous sites.....	10
Special networks and programs.....	10
Explanation of stage and water-discharge records.....	10
Collection and computation of data.....	10
Accuracy of field data and computed results.....	13
Other data available.....	14
Records of discharge collected by agencies other than the Geological Survey.....	14
Explanation of water-quality records.....	14
Collection and examination of data.....	14
Water analysis.....	14
Water temperature.....	14
Sediment.....	15
Parameter codes.....	15
Explanation of ground-water level records.....	15
Collection of the data.....	15
Publications on techniques of water-resources investigations.....	16
Gaging station records.....	21
Discharge at miscellaneous sites.....	412
Analyses of samples collected at partial-record water-quality lake stations.....	414
partial-record surface-water quality sites.....	449
Analyses of samples collected at miscellaneous surface-water quality sites.....	451
miscellaneous temperature measurements and field determinations.....	461
Ground-water records.....	467
Ground-water level records.....	467
Quality of ground-water records.....	472
Index.....	489

ILLUSTRATIONS

	Page
Figure 1. System for numbering wells and miscellaneous sites (latitude and longitude)..	11
2. System for numbering wells and miscellaneous sites (township and range).....	11
3. Discharge during 1981 water year compared with median discharge for 1951-80 water years for a representative gaging station.....	17
4. Monthly ground-water levels during 1981 water year compared with mean of monthly water-level measurements for 1963-80 water years for a representative ground-water well.....	17
5. Map showing location of lake and stream gaging stations.....	18
6. Map showing location of water-quality stations.....	19
7. Map showing location of ground-water observation wells.....	20

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

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

MISSOURI RIVER BASIN	Page
Missouri River near Culbertson, MT (dcbms).....	21
Missouri River Stage Gage No. 4 near Nohly, MT (d).....	31
Missouri River Stage Gage No. 5 at Nohly, MT (d).....	32
YELLOWSTONE RIVER BASIN	
Yellowstone River near Sidney, MT (dcbmt).....	33
Yellowstone River Stage Gage No. 1 near Fairview, MT (d).....	44
Charbonneau Creek near Charbonneau (dc).....	45
Yellowstone River Stage Gage No. 2 near Cartwright (d).....	47
Yellowstone River Stage Gage No. 3 near Buford (d).....	48
Missouri River Stage Gage No. 5A at Buford (d).....	49
Missouri River Stage Gage No. 6 near Buford (d).....	50
Missouri River Stage Gage No. 7 near Trenton (d).....	51
Missouri River near Williston (dcms).....	52
Missouri River Stage Gage No. 9 at Williston (d).....	56
LITTLE MUDDY RIVER BASIN	
Little Muddy River below Cow Creek near Williston (d).....	57
STONY CREEK BASIN	
Stony Creek near Williston (dcbs).....	58
TOBACCO GARDEN CREEK BASIN	
Tobacco Garden Creek near Watford City (d).....	64
BEAVER CREEK BASIN	
Beaver Creek near Ray (dcbs).....	65
WHITE EARTH RIVER BASIN	
White Earth River at White Earth (d).....	73
BEAR DEN CREEK BASIN	
Bear Den Creek near Mandaree (dcms).....	74
SHELL CREEK BASIN	
Shell Creek near Parshall (d).....	80
LITTLE MISSOURI RIVER BASIN	
Little Missouri River at Marmarth (d).....	81
Deep Creek near Amidon (dcbs).....	82
Duck Creek near Wibaux, MT (d).....	89
Beaver Creek at Wibaux, MT (dcs).....	90
Hay Creek No. 2 near Wibaux, MT (ds).....	94
Hay Creek near Wibaux, MT (dcs).....	95
Little Beaver Creek near Wibaux, MT (d).....	98
Beaver Creek near Trotters (dcbs).....	99
Little Missouri River near Watford City (dcbmts).....	106
Lake Sakakawea near Riverdale (d).....	115
Missouri River at Garrison Dam (dcbmt).....	116
Missouri River above Stanton (d).....	125
KNIFE RIVER BASIN	
Knife River at Manning (dcbs).....	126
Stray Creek near Manning (dcbs).....	134
Knife River at Marshall (dcbs).....	139
Elm Creek near Golden Valley (dcs).....	149
Knife River near Golden Valley (d).....	153
Coyote Creek near Zap (dcbs).....	154
Brush Creek near Beulah (dcbs).....	166
Spring Creek below Lake Ilo at Dunn Center (dcbs).....	174
Spring Creek near Halliday (dcbs).....	183
Spring Creek at Zap (dcs).....	193
West Branch Otter Creek near Beulah (d).....	197
Knife River at Hazen (dcbmts).....	198
Antelope Creek above Hazen (dcbs).....	209
West Branch Antelope Creek No. 5 near Zap (dcs).....	213
West Branch Antelope Creek No. 4 near Zap (dcs).....	215
West Branch Antelope Creek near Hazen (dcbs).....	218
Coal Creek near Stanton (dcbs).....	222
Missouri River near Stanton (d).....	227
ALDERIN CREEK BASIN	
Alderin Creek near Fort Clark (dcbs).....	228
Missouri River Tributary No. 2 near Hensler (dcbs).....	238
Missouri River near Hensler (d).....	242
COAL LAKE COULEE BASIN	
Coal Lake Coulee near Hensler (dcbs).....	243

GAGING STATIONS, IN DOWNSTREAM ORDER--Continued

VII

MISSOURI RIVER BASIN--Continued

Page

<u>BUFFALO CREEK BASIN</u>	
Buffalo Creek near Washburn (dcbs).....	247
Missouri River at Washburn (d).....	254
<u>PAINTED WOODS CREEK BASIN</u>	
Painted Woods Creek near Wilton (d).....	255
Missouri River at Price (d).....	256
<u>SQUARE BUTTE CREEK BASIN</u>	
Square Butte Creek near Hannover (dcbs).....	257
Square Butte Creek above Nelson Lake near Center (dcbs).....	262
Hagel Creek near Center (dcbs).....	273
Square Butte Creek below Center (d).....	280
<u>BURNT CREEK BASIN</u>	
Burnt Creek near Bismarck (d).....	281
Missouri River at Bismarck (dcs).....	282
<u>HEART RIVER BASIN</u>	
Norwegian Creek near Belfield (dcbs).....	286
South Branch Heart River near South Heart (dcbs).....	289
North Creek near South Heart (dcbs).....	294
Heart River near South Heart (dcbs).....	299
Edward Arthur Patterson Lake near Dickinson (d).....	308
Green River near New Hradec (dcbs).....	309
Green River Tributary near New Hradec (dc).....	317
Heart River near Richardton (d).....	319
Lake Tschida near Glen Ullin (d).....	320
Heart River near Lark (d).....	321
Sweetbriar Reservoir near Judson (d).....	322
Heart River near Mandan (dcbmts).....	323
Missouri River below Mandan (d).....	329
<u>APPLE CREEK BASIN</u>	
Apple Creek near Menoken (dcs).....	330
Missouri River near Schmidt (dcm).....	334
<u>CANNONBALL RIVER BASIN</u>	
Cannonball River at New England (dcbs).....	337
Coal Bank Creek near Havelock (dcbs).....	346
Cannonball River at Regent (dcbs).....	353
Cannonball River below Bentley (d).....	363
Cedar Creek:	
White Butte Fork Cedar Creek near Scranton (d).....	364
Cedar Creek near Haynes (d).....	365
Timber Creek near Bentley (dcbs).....	366
Cedar Creek near Raleigh (d).....	375
Cannonball River at Breien (dcbmts).....	376
<u>BEAVER CREEK BASIN</u>	
Beaver Creek at Linton (d).....	384
<u>GRAND RIVER BASIN</u>	
Bowman-Haley Lake near Haley (d).....	385
North Fork Grand River at Haley (d).....	386
Buffalo Creek Tributary near Gascoyne (dcbs).....	387
Lake Oahe near Pierre, SD (d).....	394
<u>JAMES RIVER BASIN</u>	
James River near Manfred (d).....	395
James River near Grace City (d).....	396
James River near Pingree (c).....	397
Jamestown Reservoir near Jamestown (d).....	398
Pipestem Creek near Pingree (d).....	399
James River at Jamestown (d).....	400
James River at LaMoure (dets).....	401
Bear Creek near Oakes (d).....	405
Pilot Drain at Oakes (dc).....	406
James River at ND-SD State Line (ct).....	408
Elm River:	
Maple River at ND-SD State line (d).....	411

WATER RESOURCES DATA FOR NORTH DAKOTA, 1981

Volume 2: Missouri River Basin

INTRODUCTION

Water-resources data for the 1981 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 wells. This volume contains discharge records for 78 gaging stations; stage only records for 17 gaging stations; stage and contents for 7 lakes and reservoirs; water quality for 55 gaging stations, 4 partial record stations, 12 lakes, 63 wells, and water levels for 14 observation wells. Additional water data were collected at various sites not involved in the systematic data-collection program and are published as miscellaneous measurements and analyses. These data together with the data in Volume 1 represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State, local and Federal agencies in North Dakota.

Records of discharge and stage of streams, and contents or stage of lakes and reservoirs were first published in a series of U.S. Geological Survey water-supply papers entitled, "Surface Water Supply of the United States." Through September 30, 1960, these water-supply papers were in an annual series and then in a 5-year series for 1961-65 and 1966-70. Records of chemical quality, water temperatures, and suspended sediment were published from 1941 to 1970 in an annual series of water-supply papers entitled, "Quality of Surface Waters of the United States." Records of ground-water levels were published from 1935 to 1974 in a series of water-supply papers entitled, "Ground-Water Levels in the United States." Water-supply papers may be consulted in the libraries of the principal cities in the United States or may be purchased from the Branch of Distribution, U.S. Geological Survey, 604 South Pickett Street, Arlington, VA 22304.

For water years 1961 through 1970, streamflow data were released by the Geological Survey in annual reports on a State-boundary basis. Water-quality records for water years 1964 through 1970 were similarly released either in separate reports or in conjunction with streamflow records.

Beginning with the 1971 water year, water data for streamflow, water quality, and ground water are published in official Survey reports on a State-boundary basis. These official Survey reports carry an identification number consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example, this volume is identified as "U.S. Geological Survey Water-Data Report ND-81-1". These water-data reports are for sale, in paper copy or in microfiche by the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161.

Additional information, including current prices, for ordering specific reports may be obtained from the District Chief at the address given on the back of the title page or by telephone (701) 255-4011, ext. 601.

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

North Dakota State Health Department, M. A. K. Lommen, M.D., State Health Officer

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

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

Bureau of Reclamation, U.S. Department of the Interior

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."

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

ACKNOWLEDGMENT

North Dakota district personnel who contributed significantly to the collection and/or preparation of water-resources data for publication in this report were:

Bismarck District Office

Russell E. Harkness, Chief, Hydrologic Records and Information Section

Gilbert L. Berg
Morris S. Brostrom
Katherine L. Cox
Douglas G. Emerson
Robert W. Gauger

Thomas A. Gleich
Norman D. Haffield
James D. Heidt
Carolyn S. Helgesen
Robert L. Houghton

Ronald L. Kuzniar
Steven W. Norbeck
Michael J. Voigt
Jeannette E. Wagner
Edwin A. Wesolowski

Grand Forks Field Headquarters

Gerald L. Ryan,
Hydrologist-in-Charge

Michael J. Burr
Glenn A. Fladmark
Yvonne R. Haugland

Rodney G. Kyar
Randolph L. Prosocki
Wayne R. Westensee

Dickinson Field Headquarters

Roger A. Pewe,
Hydrologist-in-Charge

Kelvin L. Boespflug
Douglas L. Ellenbecker
George J. Klug
Sharon L. Schwartz

HYDROLOGIC CONDITIONS

Prior to the beginning of the water year, streamflow was less than normal in the North Dakota part of the Missouri River basin. Heavy rains in mid-October, particularly in the western part of the basin, increased streamflow to the normal or above normal range for the month. Precipitation and streamflow remained near normal for November and December. Streamflow in the mainstem of the Missouri River downstream from Garrison Dam was above normal, primarily due to releases from storage in Lake Sakakawea.

During the first half of the 1981 calendar year, precipitation was generally below normal throughout the basin. Unseasonably warm temperatures in mid-February were sufficient to melt the snow on the ground, except in sheltered areas. However, the thaw was not rapid and did not result in peak discharges of significance, except for some isolated small streams. During the remainder of the winter, there were only minor accumulations of snow in the basin.

Figure 3 compares the monthly mean discharges for the 1981 water year with the median monthly discharges for the 1951-80 water year reference period for the Cannonball River at Breien index station. The figure graphically illustrates the magnitude of the difference between the normal snowmelt runoff, generally beginning in March, and the runoff for the spring of 1981.

Thunderstorms in July ended the dry conditions which had prevailed for the first half of the calendar year. However, the rains were not general over the entire basin; and some isolated areas remained dry. Severe thunderstorms and associated high winds and hail occurred in the southwestern part of the State in August. The upper reaches of the Cannonball River and nearby streams reached bankfull stages. Figure 3 illustrates how the rainfall in July increased streamflow in the Cannonball River from well below normal in the preceding four months to near normal; additional precipitation in August increased streamflows to above normal. Although precipitation was not above normal in September, the earlier rains were sufficient to hold streamflows in the normal range for the month.

Flow in the mainstem of the Missouri River downstream from Garrison Dam was above normal for the year. However, after adjustment for releases from storage in Lake Sakakawea, the annual mean discharge approximated the average discharge for the period of record.

The James River in the eastern part of the Missouri River basin had above average discharge for the first quarter of the water year and normal discharge for the second quarter. Due to the dry weather conditions, a significant amount of the inflow to Jamestown Reservoir was stored during March and April reducing the streamflow at downstream mainstem stations on the James River by about 50 percent. The monthly mean discharges for the remainder of the year were significantly below normal although augmented by releases from storage in Jamestown Reservoir.

Most small lakes and prairie potholes in the basin were observed to have lower water levels than they have had for several years. In fact, many of the smaller prairie potholes dried up completely.

Shallow ground-water aquifer levels in the basin generally were below normal throughout the year. Monthly water levels compared with mean monthly water levels for the period of record (1968-80 water years) at a representative ground-water well in the Sentinel Butte aquifer, Stark County (fig. 4) support this generalization.

The measured monthly water level in the index well declined steadily from December through July. Below normal precipitation from January through June and the February snowmelt while the ground was still frozen prevented the normal recovery of the water level in the spring. A new record low for the period of record was set for each month from May through August. Increased precipitation in July and August was accompanied by a slight rise in water levels in August and September (see fig. 4); however, the water level in the index well at the end of the year was still over one-half foot below normal.

DEFINITION OF TERMS

Terms related to streamflow, water quality, and other hydrologic data, as used in this report, are defined below. See also the table for converting inch-pound units to International System 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 multicelled plants, containing chlorophyll and lacking roots, stems, and leaves.

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

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

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

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

Fecal coliform bacteria are bacteria that are present in the intestine 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 $44.5^{\circ}\text{C} \pm 0.2^{\circ}\text{C}$ 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 $35^{\circ}\text{C} \pm 1.0^{\circ}\text{C}$ on M-enterococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

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 with a golden-green metallic sheen within 24 hours when incubated at $35^{\circ}\text{C} \pm 1.0^{\circ}\text{C}$ on M-Endo 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.

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

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

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

Dry mass refers to the weight 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.

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

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.

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.

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

Contents is the volume of water in a reservoir, 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 more conditions as listed:

1. When gage-height record for a river or canal is recorded or collected by an observer on a regular basis during periods of flow. Daily discharge and/or gage-height record may be published.
2. When ground-water level below land-surface datum is recorded or measured 10 or more months during the water year.
3. When chemical samples are collected daily or monthly for 10 or more months during the water year.
4. When water temperature records include observations taken once or more times daily.
5. 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.

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

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

Dissolved refers to the amount of substance present in the 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 for "dissolved" constituents are performed on subsamples of the filtrate.

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

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

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 a specified location is that area, measured in a horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the 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.

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.

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

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

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 distributions used in this report are based on recommended classifications made by the American Geophysical Union Subcommittee on Sediment Terminology.

The classifications are 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.

Percent saturation is a comparison of the actual oxygen content of water to the saturation content of oxygen, expressed in terms of percent.

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). 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.

Chlorophyta (green algae) have chlorophyll pigments similar in color to those of higher green plants. Some forms produce algal mats of floating "moss" in lakes.

Chrysophyta (yellow-green algae, yellow-brown algae, and diatoms) have pigments in which yellow-green to golden-brown are predominate. The cell wall of these organisms, especially diatoms, often consists of two overlapping halves which are highly silicified.

Cryptophyta (cryptomonads) have pigments that are usually brown but also occur as red, blue or grass green. The cells are motile with two flagella and occur in freshwaters sometimes rich in organic and in nitrogenous materials.

Cyanophyta (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.

Euglenophyta (euglenoids) are motile cells usually with one flagella and have a dominant grass-green pigment. They often occur in small pools rich in organic matter and are frequently present in sufficient amounts to color the water or the damp mud along river banks.

Pyrrhophyta (fire algae) have greenish tan to golden brown pigments. The cells are motile usually with two flagella. The freshwater forms are most abundant in pools, ditches, and small lakes with considerable vegetation.

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

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

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

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

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

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

Bedload is that sediment carried by a river in rolling and saltation on or near the streambed.

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.

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

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

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

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

Suspended (as used in tables of chemical analyses) refers to the amount (concentration) of the total concentration in a water-sediment mixture. The water-sediment mixture is associated with (or sorbed on) that material retained on a 0.45 micrometer filter.

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

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

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

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

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

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

Total in bottom material is the total amount of a given constituent in a representative sample of bottom material. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total in bottom material."

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

Water year in Geological Survey reports dealing with surface-water supply is the 12-month period, October 1 through September 30. The water year is designated by the calendar year in which it ends and includes 9 of the 12 months of that calendar year plus the last 3 months of the previous calendar year. Thus, the year ending September 30, 1981, is called the "1981 water year."

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

As an added means of identification, each hydrologic station and partial-record station has been assigned a station number. These are in the same downstream order used in this report. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number 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.

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 man-made changes in other basins which have been developed and in which the physiography, climate, and geology are similar to those in the undeveloped bench-mark basin.

National stream-quality accounting network (NASQAN) is a data-collection network designed by the U.S. Geological Survey to meet many of the information demands of agencies or groups involved in national or regional water-quality planning and management. Both accounting and broad-scale monitoring objectives have been incorporated into the network design. 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 textbooks, in Water-Supply Paper 888, and in U.S. Geological Survey Techniques of Water Resources Investigations, book 3, chapter A6.

For stream-gaging stations, rating tables giving the discharge for any stage are prepared from stage-discharge relation curves. If extensions to the rating curves are necessary to express discharge greater than measured, they are made on the basis of indirect measurements of peak discharge (such as slope-area or contracted-opening measurements, computation of flow over dams or weirs), step-backwater techniques, velocity-area studies, and logarithmic plotting. The daily mean discharge is computed from gage heights and rating tables, then the monthly and yearly mean 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.

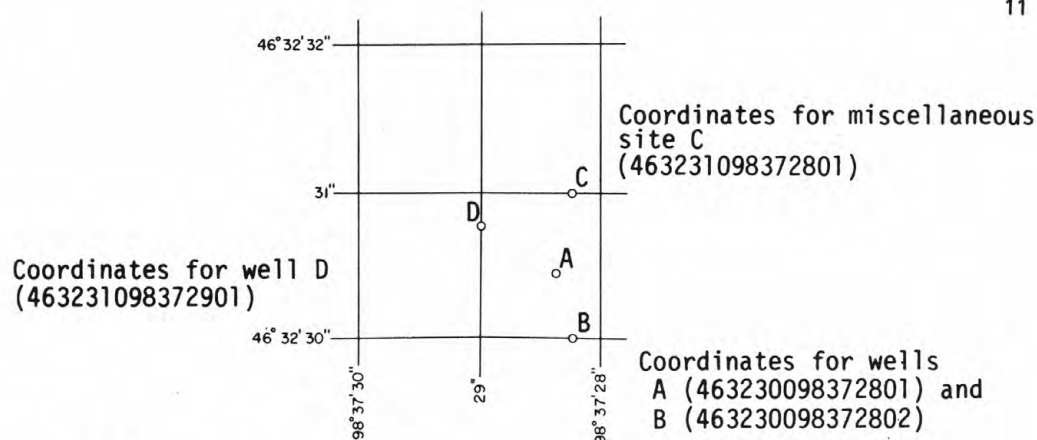


FIGURE 1--System for numbering wells and miscellaneous sites
(latitude and longitude)

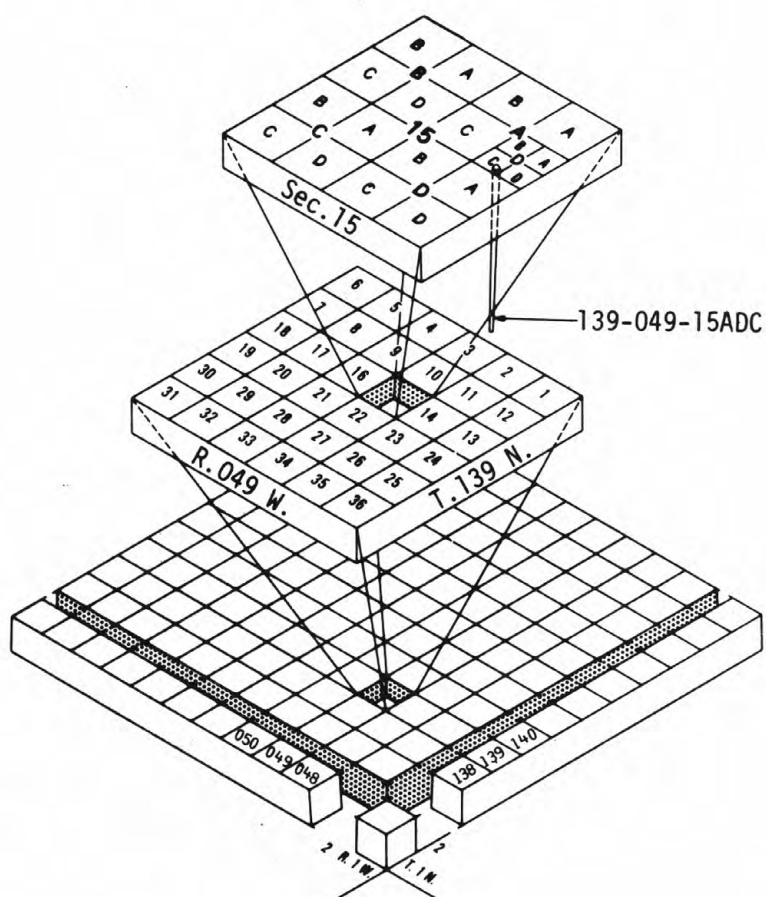


FIGURE 2--System for numbering wells and miscellaneous sites
(township and range)

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 hydrographic comparison with 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, 1981 stands for the water year October 1, 1980, to September 30, 1981. If no daily, monthly, or annual figures of discharge are affected by the revision, the fact is brought out by notations after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the revised figure was first published is given. It should be noted that for all stations for which cubic feet per second per square mile and runoff in inches are published, a revision of the drainage area necessitates corresponding revision of all figures based on the drainage area. Revised figures of cubic feet per second per square mile and runoff in inches resulting from a revision of the drainage area only are usually not published in the annual series of reports.

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

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 ft³/s; to tenths between 1.0 and 10 ft³/s; to whole numbers between 10 and 1,000 ft³/s; and to 3 significant figures above 1,000 ft³/s. 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 rare case where an apparent inconsistency exists between a reported pH value and the relative abundance of carbon dioxide species (carbonate and bicarbonate), the inconsistency is the result of a slight uptake of carbon dioxide from the air by the sample between measurement of pH in the field and determination of carbonate and bicarbonate in the laboratory.

For chemical-quality stations equipped with digital monitors, the records consist of daily maximum 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, either mean temperatures or 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.

Parameter codes

In most of the column headings of this report the names of the constituents or properties for which data are given are followed by five-digit codes which appear in parentheses. These codes, called parameter codes, are identical to those introduced or approved by the U.S. Environmental Protection Agency and are widely used by Federal and State agencies. The codes indicate, to one having a key, more precisely than the verbal column headings can the constituents or properties being reported. Data listed under a given code in this report should be comparable to those listed under the same code by other agencies.

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 land-surface datum (1sd). NGVD of 1929 is the datum plane on which the national network of precise levels is based; land-surface datum is a datum plane that is approximately at land surface of each well. If known, the altitude of the land-surface datum in NGVD of 1929 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).

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

- 1-D1. *Water temperature--influential factors, field measurement, and data presentation*, by H. H. Stevens, Jr., J. F. Ficke, and G. F. Smoot: USGS--TWRI Book 1, Chapter D1. 1975. 65 pages.
- 1-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.
- 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.
- 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.
- 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.
- 3-A2. *Measurement of peak discharge by the slope-area method*, by Tate Dalrymple and M. A. Benson: USGS--TWRI Book 3, Chapter A2. 1967. 12 pages.
- 3-A3. *Measurement of peak discharge at culverts by indirect methods*, by G. L. Bodhaine: USGS--TWRI Book 3, Chapter A3. 1968. 60 pages.
- 3-A4. *Measurement of peak discharge at width contractions by indirect methods*, by H. F. Matthai: USGS--TWRI Book 3, Chapter A4. 1967. 44 pages.
- 3-A5. *Measurement of peak discharge at dams by indirect methods*, by Harry Hulsing: USGS--TWRI Book 3, Chapter A5. 1967. 29 pages.
- 3-A6. *General procedure for gaging streams*, by R. W. Carter and Jacob Davidian: USGS--TWRI Book 3, Chapter A6. 1968. 13 pages.
- 3-A7. *Stage measurements at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A7. 1968. 28 pages.
- 3-A8. *Discharge measurements at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A8. 1969. 65 pages.
- 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.
- 3-B1. *Aquifer-test design, observation, and data analysis*, by R. W. Stallman: USGS--TWRI Book 3, Chapter B1. 1971. 26 pages.
- 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.
- 3-C1. *Fluvial sediment concepts*, by H. P. Guy: USGS--TWRI Book 3, Chapter C1. 1970. 55 pages.
- 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.
- 3-C3. *Computation of fluvial-sediment discharge*, by George Porterfield: USGS--TWRI Book 3, Chapter C3. 1972. 66 pages.
- 4-A1. *Some statistical tools in hydrology*, by H. C. Riggs: USGS--TWRI Book 4, Chapter A1. 1968. 39 pages.
- 4-A2. *Frequency curves*, by H. C. Riggs: USGS--TWRI Book 4, Chapter A2. 1968. 15 pages.
- 4-B1. *Low-flow investigations*, by H. C. Riggs: USGS--TWRI Book 4, Chapter B1. 1972. 18 pages.
- 4-B2. *Storage analyses for water supply*, by H. C. Riggs and C. H. Hardison: USGS--TWRI Book 4, Chapter B2. 1973. 20 pages.
- 4-B3. *Regional analyses of streamflow characteristics*, by H. C. Riggs: USGS--TWRI Book 4, Chapter B3. 1973. 15 pages.
- 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.
- 5-A1. *Methods for determination of inorganic substances in water and fluvial sediments*, by M. W. Skougstad and others, editors: USGS--TWRI Book 5, Chapter A1. 1979. 626 pages.
- 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.
- 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.
- 5-A4. *Methods for collection and analysis of aquatic biological and microbiological samples*, edited by P. E. Greenson, T. A. Ehlike, G. A. Irwin, B. W. Lium, and K. V. Slack: USGS--TWRI Book 5, Chapter A4. 1977. 332 pages.
- 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.
- 5-C1. *Laboratory theory and methods for sediment analysis*, by H. P. Guy: USGS--TWRI Book 5, Chapter C1. 1969. 58 pages.
- 7-C1. *Finite difference model for aquifer simulation in two dimensions with results of numerical experiments*, by P. C. Trescott, G. F. Pinder, and S. P. Larson: USGS--TWRI Book 7, Chapter C1. 1976. 116 pages.
- 7-C2. *Computer model of two-dimensional solute transport and dispersion in ground water*, by L. F. Konikow and J. D. Bredehoeft: USGS--TWRI Book 7, Chapter C2. 1978. 90 pages.
- 8-A1. *Methods of measuring water levels in deep wells*, by M. S. Garber and F. C. Koopman: USGS--TWRI Book 8, Chapter A1. 1968. 23 pages.
- 8-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.

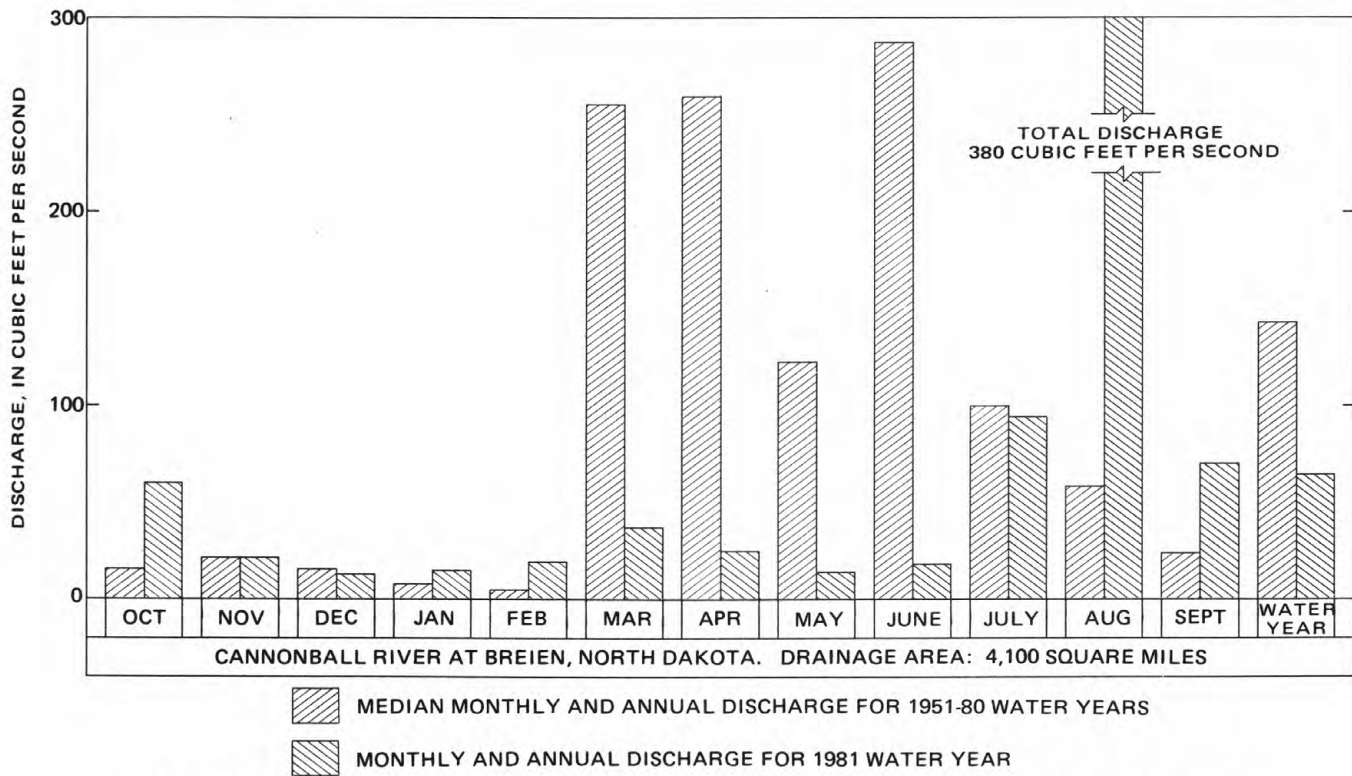


FIGURE 3.—Discharge during 1981 water year compared with median discharge for 1951-80 water years for a representative gaging station.

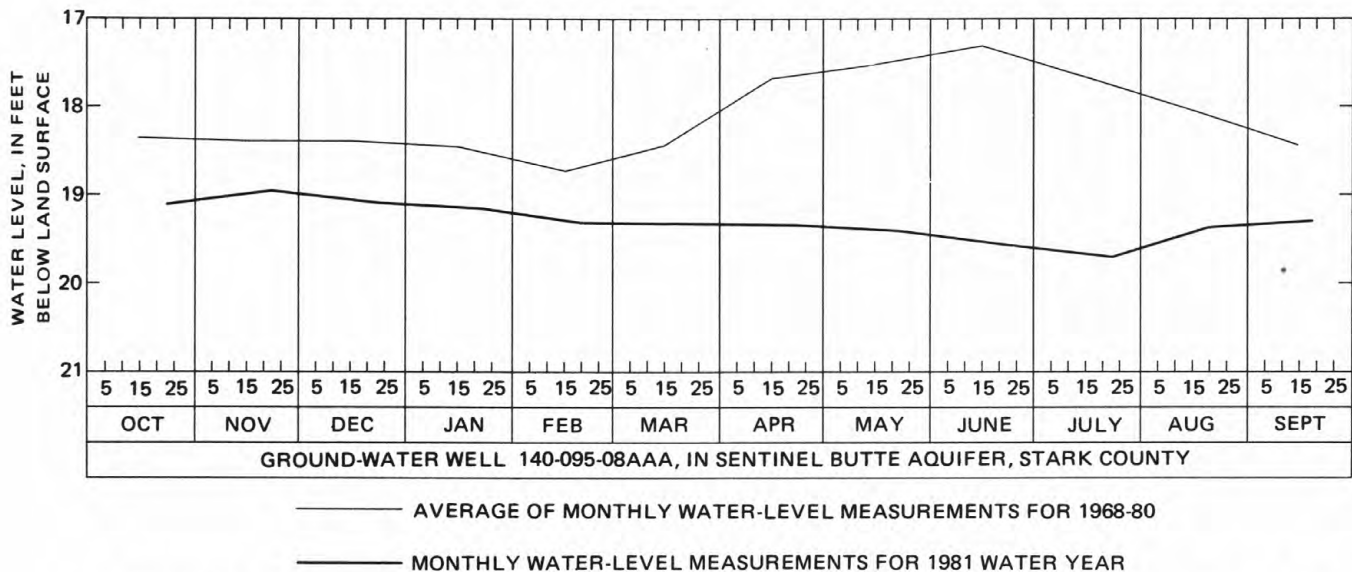


FIGURE 4.—Monthly ground-water levels during 1981 water year compared with mean of monthly water-level measurements for 1968-80 water years for a representative ground-water well.

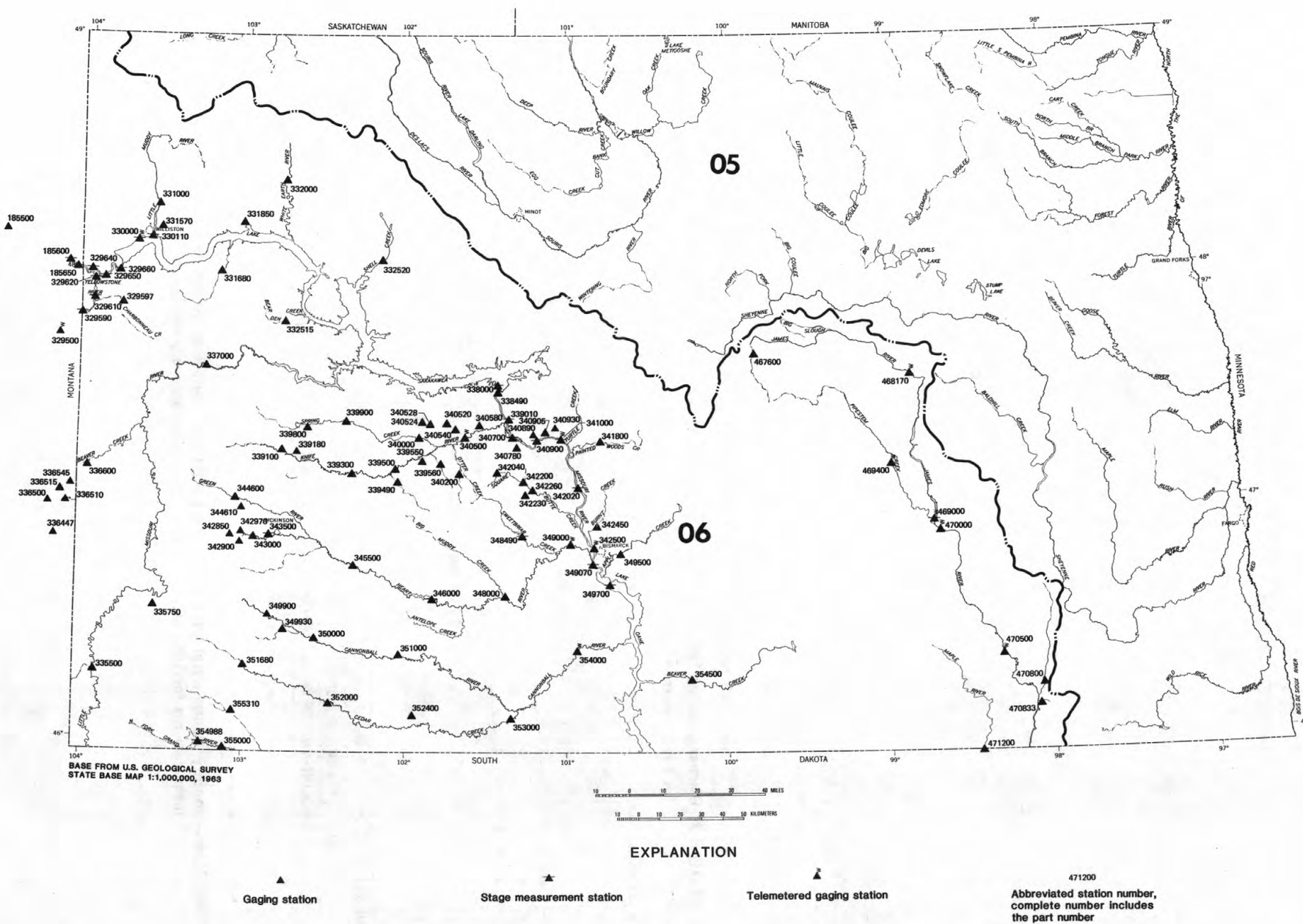


FIGURE 5--Locations of lake, crest-stage and stream-gaging stations.

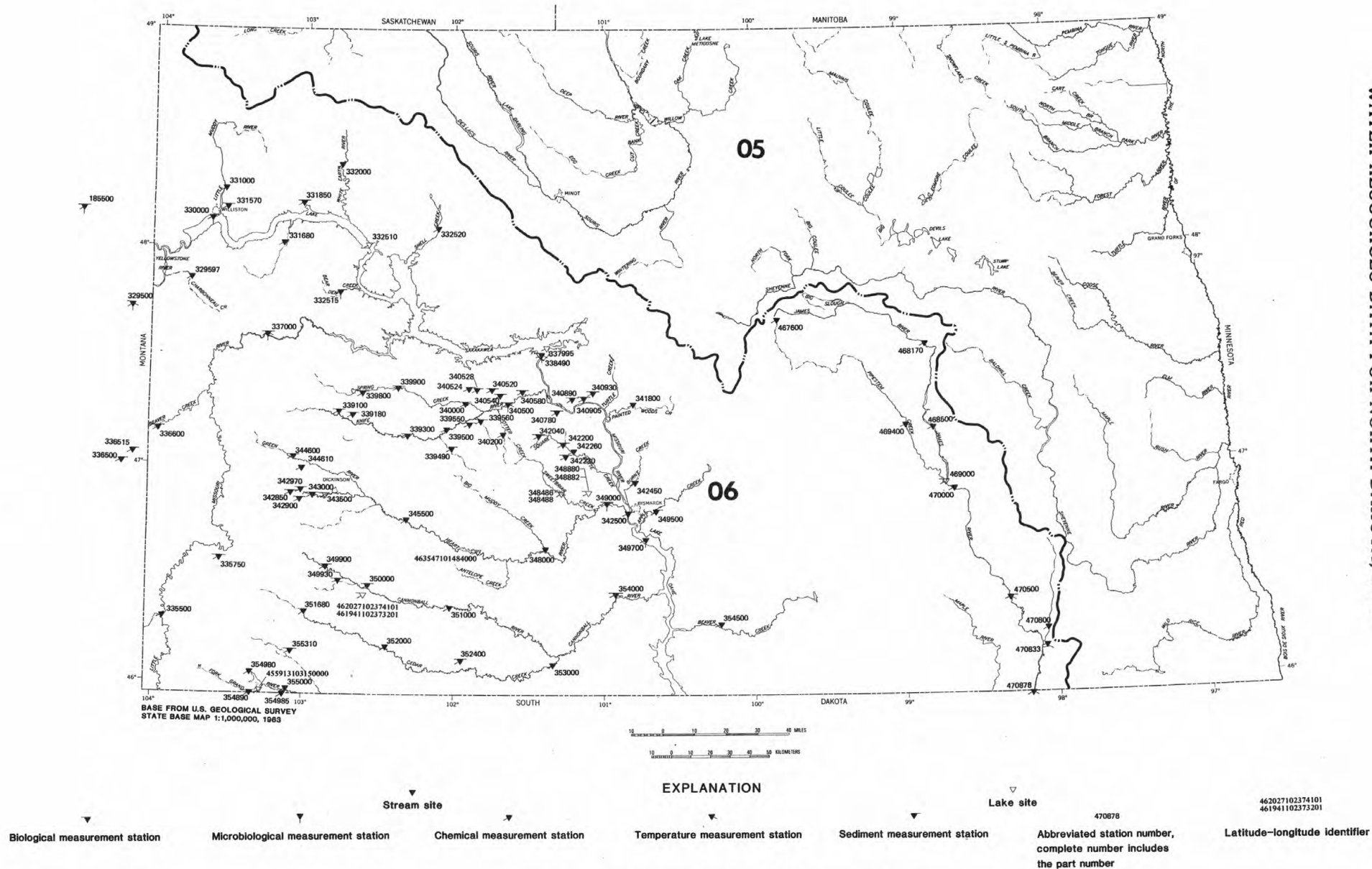


FIGURE 6--Locations of water-quality stations.



MISSOURI RIVER MAIN STEM

21

06185500 MISSOURI RIVER NEAR CULBERTSON, MT

LOCATION.—Lat 48°07'20", long 104°28'31", in SE&NW¼ 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.

REVISED RECORDS.—WSP 1729: Drainage area.

GAGE.—Water-stage recorder. Datum of gage is 1,883.4 ft (574.06 m) National Geodetic Vertical Datum of 1929, (Corps of Engineers bench mark). July 1 to Nov. 6, 1941, water-stage recorder at site 400 ft (120 m) upstream at datum 0.11 ft (0.034 m) higher. Nov. 7, 1941, to Aug. 17, 1950, water-stage recorder at site 580 ft (177 m) downstream at present datum. Aug. 18, 1950, to Dec. 31, 1951, nonrecording gage on bridge at present datum. Apr. 1, 1958, to Nov. 1, 1967, water-stage recorder at site 580 ft (177 m) downstream at present datum.

REMARKS.—Water-discharge records good except those for winter periods, which are fair. Flow partly regulated by Fort Peck Lake (station number 06131500) and many other reservoirs above station. Diversions for irrigation of about 1,030,400 acres (4,170 km²) above station.

AVERAGE DISCHARGE.—31 years (1943-51, 1958-81, after operational level at Fort Peck Lake was reached), 10,960 ft³/s (310.4 m³/s), 7,941,000 acre-ft/yr (9.79 km³/yr).

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 78,200 ft³/s (2,210 m³/s) Mar. 26, 1943, gage height, 14.80 ft (4.511 m), from rating curve extended above 30,000 ft³/s (850 m³/s); maximum gage height observed, 19.66 ft (5.992 m) Apr. 14, 1979, backwater from ice jam; minimum daily discharge, 575 ft³/s (16.3 m³/s) Nov. 22, 1941.

EXTREMES FOR CURRENT YEAR.—Maximum discharge, 16,600 ft³/s (470 m³/s) July 16, gage height, 8.45 ft (2.576 m), from graph based on gage readings; maximum gage height, 11.50 ft (3.505 m) Dec. 15, backwater from ice; minimum daily discharge, 7,500 ft³/s (212 m³/s) Dec 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12100	8840	8500	10100	12100	10700	8860	9720	14700	13700	14600	14500
2	12100	8840	8400	10300	12100	10300	8270	9860	15300	13900	14200	14300
3	11900	8640	7500	10600	12100	10000	8170	10200	15200	14500	13300	14100
4	12000	8790	10000	10400	12300	10100	7860	9930	14700	14400	13200	14600
5	11900	9140	11100	10400	12300	10800	8100	9920	14800	14400	12800	14600
6	11500	9090	10500	10400	13500	11500	8220	9850	14100	14100	14100	14400
7	10200	9010	10400	10500	13200	12900	8070	10600	14600	13900	14900	14100
8	9800	8940	11400	11100	13400	11600	7890	10600	13900	14100	15100	14100
9	9990	8990	10900	11400	13400	13100	7930	10600	14100	14000	14800	13600
10	9560	9010	9800	12300	13400	13400	7840	10500	13900	13400	14300	13900
11	9770	9190	10300	12800	13300	13900	7980	10100	12200	14000	14300	14000
12	10000	9350	10200	13300	13500	14700	7890	9170	12300	13900	14300	14000
13	9590	9530	10500	13800	13500	14700	7780	9420	13700	13900	14100	14000
14	9120	9560	10500	12900	13500	14400	7790	9730	14700	14400	13900	13700
15	9120	9770	10400	13300	13500	14600	7810	9650	14400	14900	14000	13600
16	9220	9720	9800	13600	13900	14200	7670	9270	14000	16000	14300	14000
17	8960	9750	9800	13100	14200	13100	7600	10200	13600	14600	14700	14200
18	9120	9770	10000	13600	13900	13200	7670	10900	14000	14300	14400	14000
19	9120	9750	10300	13300	14700	12000	7980	10400	13800	14700	14300	14000
20	8860	9640	10400	13000	14300	10300	7700	10100	13900	14700	12700	14300
21	9040	9480	10100	12500	14100	9200	7650	10100	13800	14700	13300	14300
22	9640	9510	10200	13900	12900	10200	7860	10100	13100	14600	14300	14100
23	9670	9350	8700	13400	10300	9600	7840	10500	12900	14300	14500	13700
24	9430	9270	9800	13500	10700	9600	8030	10600	11400	14100	14800	14000
25	9400	9320	10200	13100	10300	9720	8070	9970	12900	14400	14400	14000
26	9610	9450	10400	12900	10300	9910	7980	10000	13900	14200	14500	14500
27	9170	9640	10600	13000	10300	9400	7890	10300	14100	14600	14400	14500
28	8910	9750	10400	13000	10600	9480	8050	10400	14200	14400	14600	14100
29	8810	9750	10400	13100	---	10000	8430	12400	13800	14300	14600	13800
30	8810	9270	10400	13300	---	10300	9110	14500	13300	14400	15100	14400
31	8810	---	10200	12400	---	9720	---	14300	---	14000	14100	---
TOTAL	305230	280110	312100	384300	355600	356630	239990	323890	415300	443800	440900	423400
MEAN	9846	9337	10070	12400	12700	11500	8000	10450	13840	14320	14220	14110
MAX	12100	9770	11400	13900	14700	14700	9110	14500	15300	16000	15100	14600
MIN	8810	8640	7500	10100	10300	9200	7600	9170	11400	13400	12700	13600
AC-FT	605400	555600	619100	762300	705300	707400	476000	642400	823700	880300	874500	839800
CAL YR 1980 TOTAL	3931180			MEAN 10740		MAX 14700	MIN 6180	AC-FT 7797000				
WTR YR 1981 TOTAL	4281250			MEAN 11730		MAX 16000	MIN 7500	AC-FT 8492000				

MISSOURI RIVER MAIN STEM

06185500 MISSOURI RIVER NEAR CULBERTSON, MT--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1946, 1965 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: July 1965 to September 1981 (discontinued).

REMARKS.--Once-daily water temperatures are available in the Montana District office.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 941 micromhos Jan. 10, 1980; minimum daily, 338 micromhos Mar. 30, 1967.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum observed, 860 micromhos Dec. 29; minimum daily, 662 micromhos July 13, Sept. 23.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	WEATHER (WMO CODE NUMBER) (00041)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
OCT												
28...	1430	8970	800	8.3	7.0	6.5	.90	1	10.9	91	K9	K11
NOV												
24...	1400	9300	790	8.5	.0	3.5	21	1	11.3	88	<1	<1
DEC												
29...	1330	9380	860	8.4	5.0	.0	6.8	1	12.8	91	K2	K19
JAN												
26...	1400	12700	800	8.4	-4.0	.0	16	3	11.2	80	<1	<1
MAR												
02...	1230	10300	820	8.5	1.0	.0	20	0	9.4	67	<1	52
18...	1200	12700	800	8.4	4.0	4.0	32	71	11.2	88	<1	K2
APR												
29...	1330	8430	762	8.4	11.0	12.0	21	2	8.8	85	K8	K26
MAY												
26...	1330	10300	800	8.6	20.0	14.5	16	3	8.6	88	K9	K8
JUN												
22...	1400	13000	732	8.6	20.0	17.0	24	0	8.8	95	K23	K21
JUL												
27...	1430	14200	760	8.6	26.0	18.0	29	1	8.8	100	K15	K17
AUG												
24...	1300	14400	694	8.5	28.0	18.5	28	1	7.6	85	40	62
SEP												
23...	1400	13600	700	8.6	15.5	13.5	16	1	7.4	75	33	63

DATE	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CACO3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY FIELD (MG/L AS CACO3) (00410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)
OCT												
28...	254	104	59	26	65	35	1.8	4.1	150	220	9.7	.8
NOV												
24...	257	97	60	26	64	35	1.8	4.4	160	190	8.9	.7
DEC												
29...	265	105	60	28	72	37	2.0	4.0	160	220	9.7	.7
JAN												
26...	265	115	60	28	72	37	2.0	3.6	150	240	8.9	.6
MAR												
02...	264	104	61	27	74	38	2.0	3.9	160	240	10	.6
18...	259	89	59	27	72	37	2.0	4.0	170	220	8.9	.6
APR												
29...	259	109	61	26	60	33	1.7	3.9	150	220	11	.7
MAY												
26...	269	139	63	27	67	35	1.8	4.6	130	230	11	.6
JUN												
22...	244	134	58	24	56	33	1.6	3.6	110	200	8.9	.6
JUL												
27...	234	104	54	24	55	33	1.6	3.5	130	190	8.9	.6
AUG												
24...	244	84	58	24	55	32	1.6	4.0	160	200	9.1	.2
SEP												
23...	250	90	59	25	55	32	1.6	4.1	160	200	9.2	.7

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

MISSOURI RIVER MAIN STEM

23

06185500 MISSOURI RIVER NEAR CULBERTSON, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00630)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, ORGANIC DIS- SOLVED (MG/L AS N) (00605)	NITRO- GEN, ORGANIC DIS- SOLVED (MG/L AS N) (00607)
OCT 28...	--	6.5	516	481	.70	12500	.00	.00	.000	.000	.83	.39
NOV 24...	--	6.3	509	456	.69	12800	.01	.01	.020	.040	.49	.41
DEC 29...	--	6.4	532	497	.72	13500	.05	.06	--	.080	--	.48
JAN 26...	8.9	6.4	510	519	.69	17500	.04	.03	.120	.140	.44	.56
MAR 02...	--	6.4	519	519	.71	14400	.02	.04	.110	.110	.99	.68
MAR 18...	--	6.2	500	500	.68	17100	.00	.04	--	.110	--	.65
APR 29...	--	6.7	500	479	.68	11400	.01	.01	.090	.100	.84	.52
MAY 26...	--	6.6	500	488	.68	13900	.03	.00	.070	.060	.58	.69
JUN 22...	--	7.0	463	424	.63	16300	.04	.00	.070	.030	.53	.46
JUL 27...	--	7.0	460	421	.63	17600	.05	.06	.240	.160	.58	.76
AUG 24...	--	7.5	453	454	.62	17600	.15	.05	.150	.080	.62	.32
SEP 23...	--	8.2	449	458	.61	16500	.19	.08	--	.380	--	.47

DATE	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N) (00623)	NITRO- GEN, NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	NITRO- GEN, DIS- SOLVED (MG/L AS N) (00602)	NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	NITRO- GEN, TOTAL (MG/L AS NO3) (71887)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS TOTAL (MG/L AS PO4) (71886)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	ARSENIC TOTAL (UG/L AS AS) (01002)
OCT 28...	.83	.39	.44	.83	.39	.00	.00	3.7	.070	.21	.010	--
NOV 24...	.51	.45	.06	.52	.46	.02	.05	2.3	.040	.12	.020	4
DEC 29...	--	.56	--	--	.62	.01	.10	--	.030	.09	.040	--
JAN 26...	.56	.70	.00	.60	.73	--	.18	2.7	.040	.12	.070	--
MAR 02...	1.10	.79	.31	1.1	.83	--	.14	5.0	.080	.25	.020	3
MAR 18...	.98	.76	.22	.98	.80	--	.14	4.3	.070	.21	.020	--
APR 29...	.93	.62	.31	.94	.63	--	.13	4.2	.080	.25	.020	--
MAY 26...	.65	.75	.00	.68	.75	--	.08	3.0	.050	.15	.010	3
JUN 22...	.60	.49	.11	.64	.49	--	.04	2.8	.050	.15	.020	--
JUL 27...	.82	.92	.00	.87	.98	--	.21	3.9	.070	.21	.020	--
AUG 24...	.77	.40	.37	.92	.45	--	.10	4.1	.050	.15	.010	3
SEP 23...	.99	.85	.14	1.2	.93	--	.49	5.2	.030	.09	.010	--

MISSOURI RIVER MAIN STEM

06185500 MISSOURI RIVER NEAR CULBERTSON, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

[illegible][illegible][illegible]

06185500 MISSOURI RIVER NEAR CULBERTSON, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG) (01077)	SILVER, SUS- PENDE RECQV- ERABLE (UG/L AS AG) (01076)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, SUS- PENDE RECQV- ERABLE (UG/L AS ZN) (01091)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
OCT 28...	--	--	--	--	--	--	9.7
NOV 24...	0	0	0	20	--	<3	--
DEC 29...	--	--	--	--	--	--	--
JAN 26...	--	--	--	--	--	--	8.9
MAR 02...	0	0	0	140	130	10	--
18...	--	--	--	--	--	--	9.0
APR 29...	--	--	--	--	--	--	4.8
MAY 26...	0	0	0	0	--	<3	--
JUN 22...	--	--	--	--	--	--	3.5
JUL 27...	--	--	--	--	--	--	2.1
AUG 24...	0	0	0	120	110	13	--
SEP 23...	--	--	--	--	--	--	3.3

DATE	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	PHYTO- PLANK- TON, TOTAL (CELLS PER ML) (60050)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. X FINER THAN .062 MM (70331)
OCT 28...	--	--	--	169	4090	56
NOV 24...	5.1	--	860	53	1330	98
DEC 29...	--	--	--	52	1320	79
JAN 26...	--	--	--	49	1680	95
MAR 02...	4.6	.8	--	34	946	89
18...	--	--	1900	206	7060	59
APR 29...	--	--	--	108	2460	78
MAY 26...	5.0	.8	3300	141	3920	84
JUN 22...	--	--	5000	246	8630	67
JUL 27...	--	--	2600	249	9550	46
AUG 24...	4.5	.4	420	288	11200	38
SEP 23...	--	--	170	250	9180	36

MISSOURI RIVER MAIN STEM

06185500 MISSOURI RIVER NEAR CULBERTSON, MT--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	740	739	740	760	799	800	771	740	738	692	698	686
2	740	730	770	740	773	809	773	742	724	695	698	682
3	739	739	798	740	773	810	778	740	741	693	695	680
4	736	738	780	731	780	801	780	740	737	687	690	675
5	738	735	770	741	781	752	780	740	742	684	684	667
6	740	730	755	731	770	729	773	742	741	696	728	665
7	740	730	755	780	760	742	778	741	736	694	710	666
8	739	730	759	740	780	758	778	738	735	684	734	673
9	739	730	771	729	762	732	777	732	749	684	695	677
10	738	730	753	718	840	741	777	731	739	688	693	671
11	740	735	753	720	760	740	773	731	739	685	691	666
12	740	740	758	730	800	750	770	731	740	671	691	669
13	745	738	760	740	800	760	771	732	728	662	694	679
14	749	738	776	751	788	769	776	732	715	666	694	675
15	743	738	753	752	770	770	771	730	711	666	694	677
16	737	739	770	730	760	760	768	732	716	663	693	679
17	731	741	711	722	741	753	771	730	714	670	687	675
18	730	739	730	720	731	753	771	720	719	676	686	667
19	730	740	725	721	732	752	768	723	727	676	689	664
20	740	739	743	740	730	758	770	731	715	664	691	670
21	749	740	790	750	740	770	772	729	714	666	690	670
22	740	740	781	742	724	770	770	723	710	681	686	665
23	740	740	800	727	714	760	768	722	698	683	685	662
24	738	740	769	730	722	762	768	728	709	679	682	670
25	740	740	758	723	728	762	767	738	723	669	684	671
26	745	740	758	721	728	766	770	740	711	668	680	664
27	750	740	748	721	741	768	763	732	714	670	682	663
28	751	739	750	742	750	770	761	740	711	678	688	671
29	751	739	745	760	---	770	761	732	710	676	690	679
30	750	732	740	760	---	762	753	730	710	674	688	670
31	749	---	731	792	---	748	---	733	---	677	685	---
MEAN	741	737	758	739	760	763	771	733	724	678	693	672

MISSOURI RIVER MAIN STEM

06185500 MISSOURI RIVER NEAR CULBERTSON, MT--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	NOV 24,80 1400	MAR 18,81 1200	MAY 26,81 1330	JUN 22,81 1400
TOTAL CELLS/ML	860	1900	3300	5000
DIVERSITY: DIVISION	1.2	0.3	1.6	1.3
..CLASS	1.2	0.3	1.6	1.3
..ORDER	1.9	1.1	2.2	1.5
...FAMILY	2.0	1.1	2.6	1.8
....GENUS	2.4	1.2	3.0	2.0

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
BACILLARIOPHYTA (DIATOMS)								
..BACILLARIOPHYCEAE								
...ACHNANTHALES								
....ACHNANTHACEAE								
....ACHNANTHES	--	-	--	-	* 0	--	-	
....COCCONEIS	--	-	--	-	--	-	--	-
....RHOICOSPHENIA	--	-	--	-	--	-	--	-
..BACILLARIALES								
...NITZSCHIA	13	1	32	2	180	6	120	2
...EUNOTIALES								
....EUNOTIACEAE								
....EUNOTIA	--	-	--	-	--	-	--	-
...EUPODISCALES								
....COSCINODISCACEAE								
....CYCLOTELLA	26	3	1500# 79		110	3	--	-
....MELOSIRA	120	13	--	-	70	2	150	3
....STEPHANODISCUS	--	-	--	-	* 0	--	-	
..FRAGILARIALES								
...FRAGILARIACEAE								
....ASTERIONELLA	450# 52		210	11	220	7	--	-
....DIATOMA	13	1	48	3	--	-	--	-
....FRAGILARIA	--	-	--	-	--	-	77	2
....SYNEDRA	13	1	--	-	* 0	--	* 0	
..NAVICULALES								
...CYMBELLACEAE								
....CYMBELLA	--	-	16	1	--	-	--	-
...GOMPHONEMACEAE								
....GOMPHONEMA	--	-	16	1	--	-	--	-
...NAVICULACEAE								
....NAVICULA	--	-	--	-	28	1	--	-
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
....COCCOMYXACEAE								
....ELAKATOTHRIX	--	-	--	-	56	2	--	-
...DICTYOSPHAERIA								
....DICTYOSPHAERIUM	--	-	--	-	56	2	1300# 26	
...MICRACTINIACEAE								
....MICRACTINIUM	--	-	--	-	--	-	--	-
...OOCYSTACEAE								

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

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

CONTINUED ...

06185500 MISSOURI RIVER NEAR CULBERTSON, MT--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

(CONTINUED)

DATE TIME	NOV 24,80 1400		MAR 18,81 1200		MAY 26,81 1330		JUN 22,81 1400	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
....ANKISTRODESMUS	13	1	48	3	530#	16	52	1
....CHODATELLA	--	-	--	-	*	0	--	-
....OOCYSTIS	--	-	--	-	56	2	52	1
....SELENASTRUM	13	1	--	-	--	-	--	-
...SCENEDESMACEAE								
....ACTINASTRUM	--	-	--	-	56	2	100	2
....CRUCIGENIA	--	-	--	-	56	2	--	-
....SCENEDESMUS	51	6	--	-	170	5	130	3
....TETRASTRUM	--	-	--	-	--	-	100	2
..VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	13	1	32	2	42	1	39	1
....VOLVOCACEAE								
....PANDORINA	--	-	--	-	110	3	--	-
CRYPTOPHYTA (CRYPTOMONADS)								
..CRYPTOPHYCEAE								
...CRYPTOMONADALES								
....CRYPTOCHRYSIDACEAE								
....CHROOMONAS	26	3	--	-	--	-	--	-
....CRYPTOMONADACEAE								
....CRYPTOMONAS	--	-	--	-	--	-	*	0
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROCOCCALES								
....CHROCOCCACEAE								
....ANACYSTIS	13	1	--	-	*	0	26	1
....GOMPHOSPHERIA	100	12	--	-	--	-	--	-
...OSCILLATORIALES								
....OSCILLATORIA	--	-	--	-	1400#	44	2800#	56
EUGLENOPHYTA (EUGLENOIDS)								
..EUGLENOPHYCEAE								
...EUGLENALES								
....EUGLENACEAE								
....EUGLENA	--	-	--	-	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)								
..DINOPHYCEAE								
...DINOKONTAE								
....PERIDINIACEAE								
....PERIDINIUM	--	-	--	-	*	0	--	-
RHODOPHYTA (RED ALGAE)								
..RHODOPHYCEAE								
...NEMALIONALES								
....CHANTRANSIACEAE								
....RHODOCHORTON	--	-	--	-	--	-	--	-

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

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

MISSOURI RIVER MAIN STEM

29

06185500 MISSOURI RIVER NEAR CULBERTSON, MT--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	JUL 27,81 1430	AUG 24,81 1300	SEP 23,81 1400
TOTAL CELLS/ML	2600	420	170
DIVERSITY: DIVISION	1.5	1.3	0.0
..CLASS	1.5	1.3	0.0
..ORDER	2.4	1.3	1.5
...FAMILY	2.7	1.3	1.5
....GENUS	3.2	1.3	1.9

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
BACILLARIOPHYTA (DIATOMS)						
..BACILLARIOPHYCEAE						
...ACHNANTHALES						
....ACHNANTHACEAE						
....ACHNANTHES	--	-	--	-	--	-
....COCCONEIS	28	1	--	-	--	-
....RHOICOSPHENIA	14	1	--	-	--	-
..BACILLARIALES						
...NITZSCHIA						
....NITZSCHIA	200	7	170#	40	73#	42
..EUNOTIALES						
...EUNOTIACEAE						
....EUNOTIA	14	1	--	-	--	-
..EUPODISCALES						
...COSCINODISCAEAE						
....CYCLOTELLA	480#	18	--	-	29#	17
....MELOSIRA	450#	17	--	-	44#	25
....STEPHANODISCUS	--	-	--	-	--	-
..FRAGILARIALES						
...FRAGILARIACEAE						
....ASTERIONELLA	--	-	--	-	--	-
....DIATOMA	28	1	--	-	--	-
....FRAGILARIA	--	-	--	-	--	-
....SYNEDRA	--	-	--	-	--	-
..NAVICULALES						
...CYMBELLACEAE						
....CYMBELLA	14	1	--	-	--	-
...GOMPHONEMACEAE						
....GOMPHONEMA	14	1	--	-	--	-
...NAVICULACEAE						
....NAVICULA	--	-	--	-	29#	17
CHLOROPHYTA (GREEN ALGAE)						
..CHLOROPHYCEAE						
...CHLOROCOCCALES						
....COCCOMYXACEAE						
....ELAKATOTHRIX	--	-	--	-	--	-
...DICTYOSPHAERIAEAE						
....DICTYOSPHAERIUM	130	5	--	-	--	-
...MICRACTINIACEAE						
....MICRACTINIUM	14	1	--	-	--	-
...OOCYSTACEAE						

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 1980 TO SEPTEMBER 1981

(CONTINUED)

DATE TIME	JUL 27,81 1430		AUG 24,81 1300		SEP 23,81 1400	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
....ANKISTRODESMUS	70	3	--	-	--	-
....CHODATELLA	--	-	--	-	--	-
....OOCYSTIS	--	-	--	-	--	-
....SELENASTRUM	--	-	--	-	--	-
....SCENEDESMACEAE	--	-	--	-	--	-
....ACTINASTRUM	56	2	--	-	--	-
....CRUCIGENIA	--	-	--	-	--	-
....SCENEDESMUS	--	-	--	-	--	-
....TETRASTRUM	170	6	--	-	--	-
....VOLVOCALES	--	-	--	-	--	-
....CHLAMYDOMONADACEAE	--	-	--	-	--	-
....CHLAMYDOMONAS	130	5	--	-	--	-
....VOLVOCAEAE	--	-	--	-	--	-
....PANDORINA	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)						
..CRYPTOPHYCEAE						
..CRYPTOMONADALES						
..CRYPTOCHRYSIDACEAE						
..CHROMONAS	--	-	--	-	--	-
..CRYPTOMONADACEAE	--	-	--	-	--	-
..CRYPTOMONAS	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
..CHROOCOCCALES						
..CHROOCOCCACEAE						
..ANACYSTIS	700#	27	--	-	--	-
..GOMPHOSPHERIA	--	-	--	-	--	-
..OSCILLATORIALES						
..OSCILLATORIAEAE						
..OSCILLATORIA	130	5	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)						
..EUGLENOPHYCEAE						
..EUGLENALES						
..EUGLENACEAE						
..EUGLENA	--	-	28	7	--	-
PYRRHOPHYTA (FIRE ALGAE)						
..DINOPHYCEAE						
..DINOKONTAE						
..PERIDINIACEAE						
..PERIDINIUM	--	-	--	-	--	-
RHODOPHYTA (RED ALGAE)						
..RHODOPHYCEAE						
..NEMALIONALES						
..CHANTRANSIACEAE						
..RHODOCHORTON	--	-	220#	53	--	-

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

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

MISSOURI RIVER MAIN STEM

31

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, and at mile 1,595.7 (2,567.5 km).

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) National Geodetic Vertical Datum of 1929. Prior to Apr. 18, 1962 at datum 60.00 ft (18.288 m) lower.

REMARKS.--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 (FEET ABOVE DATUM), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12.90	11.56				---	11.67	11.45	13.40	13.22	13.42	13.33
2	12.89	11.56				---	---	11.52	13.61	13.30	13.28	13.31
3	12.87	11.52				---	---	11.66	13.59	13.40	13.06	13.20
4	12.88	11.47				---	---	11.65	13.54	13.50	13.04	13.26
5	12.89	11.61				---	---	11.55	13.42	13.54	12.90	13.33
6	12.80	11.67				---	---	11.51	13.37	13.43	13.02	13.31
7	12.43	---				---	---	11.69	13.28	13.38	13.54	13.23
8	12.07	---				---	---	11.93	13.34	13.39	13.57	13.16
9	12.09	---				---	---	11.86	13.19	13.52	13.56	13.11
10	12.02	---				---	---	11.87	13.25	13.35	13.43	13.10
11	11.99	---				---	---	11.77	12.89	13.38	13.33	13.12
12	12.07	---				---	---	11.64	12.57	13.40	13.41	13.13
13	11.96	---				---	---	11.50	12.96	13.39	13.34	13.16
14	11.76	---				---	---	11.48	13.34	13.50	13.26	13.06
15	11.74	---				---	10.70	11.62	13.44	13.60	13.24	13.01
16	11.85	---				---	10.72	11.42	13.31	13.88	13.33	13.09
17	11.72	---				---	10.60	11.58	13.23	13.89	13.40	13.15
18	11.75	---				---	10.60	12.00	13.22	13.50	13.46	13.12
19	11.78	---				---	10.70	12.04	13.28	13.60	13.35	13.11
20	11.65	---				12.34	10.69	11.82	13.25	13.63	13.07	13.14
21	11.66	---				12.05	10.58	11.83	13.32	13.65	12.84	13.16
22	11.81	---				12.01	10.70	11.82	13.12	13.61	13.27	13.13
23	11.94	---				12.15	10.69	11.96	13.15	13.54	13.36	12.98
24	11.89	---				11.85	10.73	12.10	12.65	13.46	13.43	12.95
25	11.83	---				11.92	10.78	11.96	12.77	13.61	13.41	13.04
26	11.95	---				11.92	10.74	11.74	13.15	13.41	13.32	13.11
27	11.83	---				11.89	10.73	11.94	13.38	13.48	13.35	13.13
28	11.68	---				11.77	10.69	11.97	13.38	13.54	13.33	13.13
29	11.61	---				11.89	10.86	12.32	13.39	13.48	13.34	13.03
30	11.59	---				12.08	11.07	13.16	13.29	13.52	13.47	12.98
31	11.57	---				12.08	---	13.39	---	13.48	13.46	---
TOTAL	373.47	---				---	---	367.75	397.08	418.58	412.59	394.07
MEAN	12.05	---				---	---	11.86	13.24	13.50	13.31	13.14
MAX	12.90	---				---	---	13.39	13.61	13.89	13.57	13.33
MIN	11.57	---				---	---	11.42	12.57	13.22	12.84	12.95

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, at downstream side of bridge, 0.2 mi (0.3 km) northwest of Nohly, and at mile 1,587.7 (2,554.6 km).

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) National Geodetic Vertical Datum of 1929.

REMARKS.--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 (FEET ABOVE DATUM), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	63.92				---	63.93	63.75	67.21	66.23	---	---
2	---	63.92				---	---	63.88	67.17	66.28	---	---
3	---	63.89				---	---	64.00	67.12	66.22	---	---
4	---	63.88				---	---	64.04	67.22	66.22	---	---
5	---	64.02				---	---	63.93	---	66.21	---	---
6	---	64.10				---	---	63.90	---	66.11	---	65.70
7	---	---				---	---	64.00	---	65.99	---	65.65
8	---	---				---	---	64.23	---	65.92	---	65.58
9	64.19	---				---	---	---	---	66.00	---	65.56
10	64.21	---				---	---	---	---	65.80	---	---
11	64.18	---				---	---	---	66.98	65.80	---	---
12	64.29	---				---	---	---	67.00	65.79	---	---
13	64.22	---				---	---	---	67.50	65.74	---	---
14	64.01	---				---	---	---	67.49	65.78	65.61	---
15	63.97	---				---	---	64.11	67.13	---	65.58	---
16	64.10	---				---	63.19	64.03	66.83	---	65.67	---
17	63.98	---				---	63.08	64.05	66.62	---	65.70	---
18	64.00	---				---	63.08	64.39	66.51	66.06	65.75	65.58
19	64.07	---				64.92	63.09	64.47	66.46	65.69	---	65.54
20	63.97	---				64.60	63.12	64.36	66.30	---	---	65.56
21	63.98	---				64.18	63.04	64.56	66.28	---	---	65.61
22	64.14	---				64.11	63.11	64.53	66.04	---	---	65.61
23	64.27	---				64.23	63.04	64.58	65.95	65.74	---	65.52
24	64.25	---				63.97	63.07	64.77	65.81	65.62	---	65.45
25	64.20	---				64.03	63.20	64.92	65.77	65.81	---	65.53
26	64.29	---				64.06	63.20	65.22	66.13	65.66	65.68	65.60
27	64.20	---				64.09	63.20	65.64	66.40	65.70	65.74	---
28	64.02	---				63.98	63.17	65.70	66.44	65.79	---	---
29	63.98	---				64.03	63.28	65.93	66.39	65.74	---	---
30	63.95	---				64.15	63.41	66.71	66.29	65.77	65.81	---
31	63.95	---				64.18	---	67.20	---	---	---	---
TOTAL	---	---				---	---	---	---	---	---	---
MEAN	---	---				---	---	---	---	---	---	---
MAX	---	---				---	---	---	---	---	---	---
MIN	---	---				---	---	---	---	---	---	---

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT

LOCATION.--Lat 47°40'42", long 104°09'22", in SW¼NW¼ 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 at mile 29.2 (47.0 km).

DRAINAGE AREA.--69,103 mi² (178,977 km²). Area at site 4.5 mi (7.2 km) upstream, 68,812 mi² (178,223 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1910 to September 1931 (published as "at Intake"), October 1933 to current year. If monthly figures of diversions to Lower Yellowstone Canal at Intake are added to records at this site, records equivalent to those published as Yellowstone River at Glendive (1898-1910, 1931-34) can be obtained. Monthly discharge only for some periods, published in WSP 1309. Monthly figures of diversions into Lower Yellowstone Canal prior to 1951 published in WSP 1309, 1951-60 published in WSP 1729, 1961-65 published in WSP 1916, 1966-70 published in WSP 2116, and 1971 to current year are published in annual reports.

GAGE.--Water-stage recorder. Datum of gage is 1,881.3 ft (573.42 m) National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Jan. 1, 1911, to Sept. 30, 1931, nonrecording gage at site 32 mi (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 good except those for the winter periods, 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.--69 years, 13,070 ft³/s (370.1 m³/s), 9,469,000 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, 56,800 ft³/s (1,610 m³/s) June 13, gage height, 14.48 ft (4.414 m); minimum daily, 2,840 ft³/s (80.4 m³/s) Apr. 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10700	9610	7000	10500	6800	8000	5400	4670	44700	32400	8720	3200
2	10600	9470	6800	9700	6800	7700	5250	5510	44400	29900	9870	3310
3	10300	9140	6600	9600	6700	7600	5140	5540	45700	26800	8930	3310
4	10200	9110	6400	9300	6600	7500	5030	4970	48700	25200	9980	3460
5	9980	9220	6200	9200	6400	7200	4780	4950	44200	24800	9360	3550
6	9870	9180	6000	9000	6400	7000	4330	7890	39100	23800	9800	3500
7	9720	9040	5800	8900	6400	6900	4650	10900	38000	22300	7760	3480
8	9580	8960	5700	8700	6400	6700	4890	10100	36400	20300	6560	3550
9	9360	9000	5400	8500	6300	6400	4860	8720	38700	18700	6070	3620
10	9180	8930	5000	8400	6200	6250	4780	9720	43700	17900	5770	3600
11	9140	8790	5200	8200	6000	6160	4700	10100	45900	17300	5570	3650
12	9000	8890	5400	8100	5600	6100	4700	9720	52500	15700	5000	3740
13	9000	9400	6000	8100	5000	5980	4620	9800	55000	13900	4730	3700
14	9040	9760	7000	8100	4220	5690	4460	11900	48800	13100	4510	3600
15	9140	9500	8000	8000	4250	5340	4380	14500	43100	12600	4150	3650
16	9870	9400	9200	7800	6000	5170	4380	14000	41300	12400	3990	3600
17	10900	9400	9800	7800	7800	5060	4300	13000	39500	11900	4040	3480
18	11200	9140	9400	7700	10000	5000	4170	12300	36600	11100	3740	3430
19	11900	8680	8900	7500	11000	4970	4100	13200	33300	10300	3740	3570
20	11900	8330	8400	7400	12000	5000	3650	19800	31100	9720	3620	3600
21	11500	8200	8400	7400	11500	5110	3430	21100	29800	8750	3530	3650
22	12400	8090	8400	7400	10500	5140	3570	19500	27100	8440	3380	3720
23	13600	8270	8000	7500	9800	5110	3620	19900	29100	8130	3150	3700
24	13500	8130	7600	7600	9200	5080	3740	21900	31700	7930	2970	3790
25	13100	8000	6800	7800	8800	5060	3820	26400	30700	7460	3060	3870
26	12400	8000	6300	7600	8600	5000	3770	32400	31800	7300	3060	4200
27	11100	7700	6000	7300	8400	4920	3600	33800	33800	7100	3150	4590
28	8750	7600	5800	7200	8200	4920	3130	34700	32500	7260	3080	4620
29	9720	7400	7000	7200	---	4950	2840	38700	30600	7990	2930	4730
30	9840	7200	10000	7100	---	4950	2930	43200	31600	8890	2860	4950
31	9720	---	11000	7000	---	5080	---	45700	---	8890	2910	---
TOTAL	326210	261540	223500	251600	211870	181040	127020	538590	1159400	458260	159990	112420
MEAN	10520	8718	7210	8116	7567	5840	4234	17370	38650	14780	5161	3747
MAX	13600	9760	11000	10500	12000	8000	5400	45700	55000	32400	9980	4950
MIN	8750	7200	5000	7000	4220	4920	2840	4670	27100	7100	2860	3200
AC-FT	647000	518800	443300	499000	420200	359100	251900	1068000	2300000	909000	317300	223000
CAL YR 1980 TOTAL	3960410			10820		35000		2300		7855000		
WTR YR 1981 TOTAL	4011440			10990		55000		2840		7957000		

YELLOWSTONE RIVER BASIN

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1948 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1951 to September 1981 (discontinued).

WATER TEMPERATURES: January 1951 to current year.

SUSPENDED SEDIMENT DISCHARGE: October 1971 September 1981 (discontinued).

INSTRUMENTATION.--Temperature recorder April to November 1974, May to September 1975, and July 1977 to current year.

REMARKS.--Prior to July 1972, sediment sampling and record computation under supervision of U.S. Army Corps of Engineers. Flow affected by ice during most of winter months.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,780 micromhos Jan. 14, 1951; minimum daily, 193 micromhos Aug. 15, 1964.

WATER TEMPERATURES: Maximum daily, 29.0°C July 23, 1960; minimum daily, 0.0°C on many days during winter periods.

SEDIMENT CONCENTRATIONS: Maximum daily, 26,800 mg/L May 8, 1975; minimum daily, 8 mg/L Jan. 9, 1973.

SEDIMENT LOADS: Maximum daily, 3,030,000 tons (2,750,000 megagrams) May 8, 1975; minimum daily, 112 tons (102 megagrams) Jan. 12, 1980.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum observed, 1,110 micromhos Nov. 25; minimum daily, 335 micromhos June 11.

WATER TEMPERATURES: Maximum recorded, 26.0°C Aug. 17, 18; minimum, 0.0°C on many days during December to March.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 5,190 mg/L Aug. 6; minimum daily mean, 31 mg/L Dec. 8.

SEDIMENT LOADS: Maximum daily, 275,000 tons (249,000 megagrams) June 13; minimum daily, 380 tons (345 megagrams) Sept. 18.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLU- INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCTI- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	WEATHER (WMO CODE NUMBER) (00041)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	COLI- FORM, FECAL, UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
OCT												
29...	1100	9780	830	8.2	7.0	5.0	1.8	0	11.4	93	K18	160
NOV												
25...	0930	6380	1110	8.3	-2.0	.0	21	0	12.6	88	>600	44
DEC												
30...	1000	9780	930	8.2	5.0	.0	1.0	0	10.6	75	K3	100
JAN												
27...	1200	8630	810	8.5	-1.0	.0	2.0	3	11.4	81	K17	K6
MAR												
03...	1100	6920	870	8.4	2.0	.0	70	0	10.8	77	K4	K11
19...	0830	5160	960	8.3	.0	5.5	19	0	11.0	89	K2	K2
APR												
30...	1100	2900	842	8.6	12.0	13.0	6.4	1	9.2	89	K5	50
MAY												
27...	1115	34400	500	8.2	15.5	16.4	760	3	7.2	77	K930	96
JUN												
23...	1100	28300	493	8.3	19.5	18.0	90	0	70.0	7690	K20	K34
JUL												
28...	1130	7320	614	8.7	27.0	20.0	20	0	8.0	96	K12	310
AUG												
25...	1000	3000	776	8.7	25.0	22.1	24	3	6.0	70	K13	>200
SEP												
24...	1030	3760	782	8.7	11.0	15.2	18	3	7.7	76	K17	300

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

YELLOWSTONE RIVER BASIN

35

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	HARD- NESS (MG/L AS CAC03) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CAC03) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY FIELD (MG/L AS CACU3) (00410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)
OCT 29...	259	109	61	26	75	38	2.1	4.5	150	220	16	.5
NOV 25...	404	224	66	58	76	29	1.7	4.3	180	370	12	.4
DEC 30...	283	123	67	28	84	39	2.2	4.2	160	260	17	.4
JAN 27...	273	113	65	27	76	37	2.1	3.8	160	250	14	.4
MAR 03...	269	99	63	27	83	40	2.3	3.7	170	250	24	.4
19...	298	108	70	30	90	39	2.3	4.0	190	270	22	.5
APR 30...	265	115	60	28	83	40	2.3	4.3	150	250	13	.6
MAY 27...	157	47	38	15	42	36	1.5	2.9	110	130	8.1	.2
JUN 23...	155	35	39	14	38	34	1.4	2.6	120	120	6.9	.3
JUL 28...	186	66	45	18	53	38	1.7	3.5	120	160	8.2	.3
AUG 25...	234	44	54	24	77	41	2.3	4.6	190	210	11	.4
SEP 24...	235	85	53	25	72	39	2.1	4.2	150	220	11	.4

DATE	SILICA, DIS- SOLVED (MG/L AS SI02) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN, ORGANIC DIS- SOLVED (MG/L AS N) (00607)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)
OCT 29...	11	455	504	.62	12000	.37	.39	.020	.040	1.1	1.1	1.10
NOV 25...	11	756	706	1.0	13000	.37	.37	.010	.020	.66	.41	.67
DEC 30...	10	612	567	.83	16200	.42	.42	.030	.120	.42	.55	.45
JAN 27...	8.4	539	541	.73	12600	.29	.44	.070	.150	.77	.46	.84
MAR 03...	7.4	557	561	.76	10400	.21	.16	.080	.120	.72	.69	.80
19...	7.0	603	608	.82	8400	.14	.17	.090	.220	.52	.74	.61
APR 30...	6.3	563	535	.77	4410	.00	.01	.040	.060	1.7	.48	1.70
MAY 27...	11	311	313	.42	28900	.39	.39	.070	.070	2.6	1.7	2.70
JUN 23...	12	305	305	.41	23300	.24	.26	.090	.080	1.2	.73	1.30
JUL 28...	7.8	372	368	.51	7350	.09	.09	.250	.210	.57	.64	.82
AUG 25...	10	495	505	.67	4010	.00	.00	.320	.030	.98	.42	1.30
SEP 24...	7.6	502	484	.68	5100	.10	.10	.250	.350	.66	.42	.91

YELLOWSTONE RIVER BASIN

06329500 YELLOWSTONE RIVER NEAR SIDNEY. MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	NITRO- GEN,AM- MUNIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO- GEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	NITRO- GEN DIS- SOLVED (MG/L AS N) (00602)	NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	NITRO- GEN, TOTAL (MG/L AS NO3) (71887)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS TOTAL (MG/L AS PO4) (71886)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC SUS- PENDED TOTAL (UG/L AS AS) (01001)
OCT 29...	1.1	.00	1.5	1.5	.02	.05	6.5	.130	.40	.010	--	--
NOV 25...	.43	.24	1.0	.80	.01	.03	4.6	.060	.18	.050	6	0
DEC 30...	.67	.00	.87	1.1	.04	.15	3.9	.110	.34	.030	--	--
JAN 27...	.61	.23	1.1	1.1	--	.19	5.0	.110	.34	.030	--	--
MAR 03...	.81	.00	1.0	.97	--	.15	4.5	.120	.37	.060	4	1
19...	.96	.00	.75	1.1	--	.28	3.3	.040	.12	.020	--	--
APR 30...	.54	1.2	1.7	.55	--	.08	7.5	.040	.12	.020	--	--
MAY 27...	1.8	.90	3.1	2.2	--	.09	14	.830	2.5	.010	20	17
JUN 23...	.81	.49	1.5	1.1	--	.10	6.8	.150	.46	.030	--	--
JUL 28...	.85	.00	.91	.94	--	.27	4.0	.030	.09	.010	--	--
AUG 25...	.45	.85	1.3	.45	--	.04	5.8	.040	.12	.010	6	0
SEP 24...	.77	.14	--	--	--	.45	--	.070	.21	.050	--	--

[illegible][illegible]

YELLOWSTONE RIVER BASIN

37

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	MANGANESE, SUSPENDED RECOVER. (UG/L AS MN) (01054)	MANGANESE, DISSOLVED SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOVERABLE (UG/L AS HG) (71900)	MERCURY SUSPENDED RECOVERABLE (UG/L AS HG) (71895)	MERCURY DISSOLVED SOLVED (UG/L AS HG) (71890)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI) (01067)	NICKEL, SUSPENDED RECOVERABLE (UG/L AS NI) (01066)	NICKEL, DISSOLVED SOLVED (UG/L AS NI) (01065)	SELENIUM, TOTAL (UG/L AS SE) (01147)	SELENIUM, SUSPENDED TOTAL (UG/L AS SE) (01146)	SELENIUM, DISSOLVED SOLVED (UG/L AS SE) (01145)
OCT 29...	--	--	--	--	--	--	--	--	--	--	--
NOV 25...	20	30	.1	.1	.0	4	4	0	1	0	1
DEC 30...	--	--	--	--	--	--	--	--	--	--	--
JAN 27...	--	--	--	--	--	--	--	--	--	--	--
MAR 03...	60	6	.1	.0	.1	5	5	0	1	0	1
APR 19...	--	--	--	--	--	--	--	--	--	--	--
MAY 30...	--	--	--	--	--	--	--	--	--	--	--
JUN 27...	870	10	.3	.2	.1	25	24	1	2	2	0
JUL 23...	--	--	--	--	--	--	--	--	--	--	--
AUG 28...	--	--	--	--	--	--	--	--	--	--	--
SEP 25...	30	18	.9	.6	.3	4	2	2	1	0	1
SEP 24...	--	--	--	--	--	--	--	--	--	--	--

DATE	SILVER, TOTAL RECOVERABLE (UG/L AS AG) (01077)	SILVER, SUSPENDED RECOVERABLE (UG/L AS AG) (01076)	SILVER, DISSOLVED SOLVED (UG/L AS AG) (01075)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	ZINC, SUSPENDED RECOVERABLE (UG/L AS ZN) (01091)	ZINC, DISSOLVED SOLVED (UG/L AS ZN) (01090)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CARBON, ORGANIC DISSOLVED SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C) (00689)	PHYTOPLANKTON, TOTAL (CELLS PER ML) (60050)
OCT 29...	--	--	--	--	--	--	9.3	--	--	--
NOV 25...	0	0	0	10	0	20	--	7.5	--	310
DEC 30...	--	--	--	--	--	--	12	--	--	--
JAN 27...	--	--	--	--	--	--	7.1	--	--	--
MAR 03...	0	0	0	20	10	6	--	5.5	1.1	--
APR 19...	--	--	--	--	--	--	4.9	--	--	1400
MAY 30...	--	--	--	--	--	--	8.8	--	--	--
JUN 27...	0	0	0	130	120	10	--	5.9	7.0	8600
JUL 23...	--	--	--	--	--	--	6.9	--	--	2400
AUG 28...	--	--	--	--	--	--	10	--	--	19000
SEP 25...	0	0	0	70	50	18	--	4.1	1.1	5500
SEP 24...	--	--	--	--	--	--	4.1	--	--	13000

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	634	765	738	850	840	900	910	821	414	375	681	829
2	639	767	780	818	840	835	890	793	399	364	719	820
3	650	768	822	793	841	831	880	782	375	370	743	806
4	653	770	810	792	854	840	881	699	364	392	793	800
5	658	767	790	780	870	842	883	660	345	411	792	790
6	660	758	775	762	881	850	901	620	368	421	771	773
7	667	758	783	772	908	878	928	630	375	419	784	791
8	670	760	778	790	938	880	941	540	363	422	763	787
9	678	760	791	795	938	870	907	448	373	430	731	763
10	690	760	810	799	939	888	867	448	363	433	745	757
11	696	769	850	812	941	897	905	450	335	441	748	751
12	702	769	879	828	941	903	898	497	341	445	739	749
13	709	770	870	820	950	909	903	552	359	418	758	756
14	719	765	850	818	960	918	898	580	393	441	760	768
15	720	751	850	821	961	911	881	629	456	466	761	765
16	709	739	820	840	965	910	853	659	459	487	744	760
17	724	732	790	834	964	908	840	738	453	495	750	755
18	750	735	759	825	889	901	860	755	470	496	751	755
19	739	738	749	824	892	890	863	731	501	507	760	756
20	755	748	755	842	850	897	863	688	535	511	779	754
21	742	759	765	839	780	902	869	712	535	527	776	763
22	739	776	761	829	738	900	878	591	494	537	771	764
23	739	788	779	821	709	888	898	562	464	561	775	756
24	742	790	799	842	700	882	930	515	450	551	775	759
25	729	779	812	839	720	876	890	510	407	548	772	754
26	739	779	821	810	729	890	871	521	400	549	778	749
27	749	770	821	782	738	909	853	510	393	559	776	750
28	756	760	831	790	769	931	842	470	366	572	786	760
29	765	755	850	805	---	921	837	432	363	581	795	751
30	753	740	880	818	---	922	831	401	379	613	802	745
31	745	---	848	830	---	936	---	416	---	660	808	---
MEAN	710	762	807	814	859	891	882	592	410	484	764	760

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1												
2							.0	.0	.0	.0	.0	.0
3							.0	.0	.0	.0	.0	.0
4							.0	.0	.0	.0	.0	.0
5							.0	.0	.0	.0	.0	.0
6							.0	.0	.0	.0	.0	.0
7							.0	.0	.0	.0	.0	.0
8							.0	.0	.0	.0	.0	.0
9							.0	.0	.0	.0	.0	.0
10							.0	.0	.0	.0	.0	.0
11							.0	.0	.0	.0	.0	.0
12							.0	.0	.0	.0	.0	.0
13							.0	.0	.0	.0	.0	.0
14							.0	.0	.0	.0	.0	.0
15							.0	.0	.0	.0	.0	.0
16							.0	.0	.0	.0	.0	.0
17							.0	.0	.0	.0	.0	.0
18							.0	.0	.0	.0	.0	.0
19							.0	.0	.0	.0	.0	.0
20							.0	.0	.0	.0	.0	.0
21							.0	.0	.0	.0	.0	.0
22							.0	.0	.0	.0	.0	.0
23							.0	.0	.0	.0	.0	.0
24							.0	.0	.0	.0	.0	.0
25							.0	.0	.0	.0	.0	.0
26							.0	.0	.0	.0	.0	.0
27							.0	.0	.0	.0	.0	.0
28							.0	.0	.0	.0	.0	.0
29							.0	.0	.0	.0	.0	.0
30							.0	.0	.0	.0	.0	.0
31							.0	.0	.0	.0	.0	.0
MONTH							.0	.0	.0	.0	.0	.0

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	.5	.5	.5	.5	.0	.5	10.5	8.0	9.5	15.5	12.5	14.0
2	.5	.5	.5	.5	.0	.5	11.0	9.5	10.5	17.0	14.0	15.5
3	.5	.5	.5	.5	.0	.5	11.0	9.0	10.0	18.0	16.0	17.0
4	.5	.5	.5	.5	.0	.5	10.0	8.5	9.5	17.0	15.0	16.0
5	.5	.5	.5	.5	.0	.5	10.0	8.0	9.0	14.5	13.0	14.0
6	.5	.5	.5	.5	.0	.5	10.5	8.5	9.5	13.0	10.5	11.5
7	.5	.5	.5	.5	.0	.5	10.0	8.0	9.0	12.0	10.0	11.0
8	.5	.5	.5	1.0	.0	.5	9.5	7.5	8.5	12.0	11.0	11.5
9	.5	.0	.5	3.0	.5	1.5	9.5	7.5	8.5	11.0	10.0	10.5
10	.5	.0	.0	5.0	3.0	4.0	10.0	7.5	9.0	10.0	9.0	9.5
11	.5	.0	.0	6.0	4.0	5.0	9.5	8.5	9.0	10.5	9.0	10.0
12	.5	.0	.0	6.5	4.5	5.5	10.5	8.5	9.5	12.5	10.5	11.5
13	.5	.0	.5	6.5	4.5	6.0	10.0	9.0	9.5	14.0	11.5	12.5
14	.5	.5	.5	7.5	5.5	6.5	11.0	8.0	10.0	15.0	13.0	14.0
15	.5	.5	.5	8.0	6.0	7.0	13.5	9.5	11.5	14.5	12.5	13.5
16	.5	.5	.5	8.5	6.5	7.5	14.0	11.5	13.0	12.5	12.0	12.5
17	.5	.0	.5	8.5	7.0	7.5	---	---	---	13.5	12.5	13.0
18	.5	.0	.0	7.0	6.5	6.5	---	---	---	15.5	13.0	14.5
19	.5	.0	.5	7.5	5.5	6.5	---	---	---	15.5	15.0	15.0
20	.5	.0	.5	7.0	5.5	6.5	---	---	---	15.5	15.0	15.0
21	.5	.0	.5	7.0	5.5	6.0	13.0	12.0	12.5	15.5	14.5	15.0
22	.5	.0	.5	7.5	5.0	6.5	13.5	11.0	12.5	17.0	14.0	15.5
23	.5	.0	.5	8.0	6.0	7.0	15.5	12.5	14.0	16.0	15.5	16.0
24	.5	.0	.0	8.5	6.5	7.5	17.0	14.5	16.0	16.5	15.0	16.0
25	.5	.0	.0	9.0	7.0	8.0	16.5	15.5	16.0	17.5	15.0	16.5
26	.5	.0	.5	9.0	7.0	8.0	15.5	15.0	15.0	19.0	16.0	17.5
27	.5	.0	.0	8.5	7.5	8.0	15.0	14.0	14.5	18.5	17.5	18.0
28	.5	.0	.0	8.5	7.5	8.0	14.5	13.5	14.0	18.0	17.5	17.5
29	---	---	---	10.0	7.0	8.5	15.5	12.5	13.0	18.0	16.5	17.0
30	---	---	---	9.5	8.5	9.0	14.0	12.0	13.0	18.0	17.0	17.5
31	---	---	---	10.0	8.0	9.0	---	---	---	18.0	17.0	17.5
MONTH	.5	.0	.5	10.0	.0	5.0	17.0	7.5	11.5	19.0	9.0	14.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	18.0	17.5	17.5	23.5	21.5	22.5	24.0	22.0	23.0	19.0	17.5	18.5
2	18.5	17.0	17.5	23.0	21.5	22.5	23.5	21.0	22.0	19.0	17.5	18.5
3	18.0	17.0	17.5	23.0	21.0	22.0	23.5	20.0	21.5	18.0	17.0	17.5
4	17.5	16.5	17.0	24.5	22.0	23.0	24.0	22.0	23.0	18.5	16.5	17.5
5	18.0	16.5	17.0	25.0	23.0	24.0	24.0	21.0	22.5	20.0	18.0	19.0
6	18.0	17.0	17.5	25.5	23.5	24.5	23.5	22.0	23.0	20.0	19.0	19.5
7	18.5	17.5	18.0	25.5	24.0	24.5	24.0	21.5	23.0	20.0	18.5	19.5
8	19.0	18.0	18.5	24.0	22.0	22.5	24.0	22.0	23.0	20.5	18.5	19.5
9	19.0	18.5	18.5	23.0	21.0	22.0	24.0	22.0	23.0	21.5	19.0	20.0
10	18.5	17.5	18.0	23.0	21.5	22.5	24.0	22.0	23.0	20.5	19.5	20.0
11	18.0	17.0	17.5	23.5	22.0	22.5	24.5	22.0	23.5	20.5	18.5	19.5
12	17.0	16.5	17.0	25.0	22.5	23.5	25.5	22.5	24.0	21.0	19.0	20.0
13	16.5	16.0	16.5	24.5	23.5	24.0	---	---	---	20.5	19.0	20.0
14	17.0	16.0	16.5	25.0	23.0	24.0	---	---	---	20.0	18.5	19.0
15	16.5	15.5	16.0	24.5	23.0	24.0	25.5	23.5	24.5	18.5	17.0	18.0
16	16.5	15.0	15.5	24.5	23.5	24.0	25.5	23.0	24.5	18.0	16.0	17.0
17	16.0	15.0	15.5	24.0	22.5	23.5	26.0	23.5	25.0	17.5	15.5	17.0
18	15.0	14.5	15.0	24.0	22.5	23.0	26.0	24.0	25.0	17.5	15.5	16.5
19	15.5	14.5	15.0	23.5	22.5	23.0	25.5	24.0	25.0	17.5	16.0	17.0
20	16.0	15.5	15.5	25.0	22.5	23.5	25.5	23.5	24.5	17.5	16.5	17.0
21	17.5	16.0	16.5	25.0	23.5	24.0	24.5	23.0	24.0	17.5	16.0	17.0
22	18.0	17.0	17.5	25.0	22.5	23.5	25.0	23.0	24.0	17.0	15.5	16.5
23	18.5	18.0	18.0	24.0	23.5	24.0	24.0	22.5	23.5	17.0	16.0	16.5
24	19.5	18.0	19.0	23.5	21.5	22.5	24.0	22.5	23.0	16.0	15.0	15.5
25	20.5	18.5	19.5	23.0	21.5	22.0	23.5	22.0	23.0	15.0	14.5	14.5
26	21.5	19.0	20.0	21.5	20.0	21.0	24.0	21.5	23.0	14.5	12.5	13.5
27	22.5	21.0	21.5	21.0	19.5	20.0	24.0	22.0	23.0	12.5	11.5	12.0
28	21.5	20.5	21.0	22.5	19.5	21.0	23.0	21.5	22.0	13.5	12.0	12.5
29	21.0	19.5	20.5	24.5	21.5	23.0	23.5	21.0	22.0	13.0	12.5	12.5
30	22.0	20.0	21.0	25.0	20.5	23.0	23.5	21.5	22.5	13.0	12.5	12.5
31	---	---	---	24.5	22.5	23.5	21.5	18.5	20.0	---	---	---
MONTH	22.5	14.5	17.5	25.5	19.5	23.0	26.0	18.5	23.0	21.5	11.5	17.0

YELLOWSTONE RIVER BASIN

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	NOV 25,80 0930	MAR 19,81 0830	MAY 27,81 1115	JUN 23,81 1100
TOTAL CELLS/ML	310	1400	8600	2400
DIVERSITY: DIVISION	0.2	0.7	0.0	0.8
..CLASS	0.2	0.7	0.0	0.8
..ORDER	1.9	1.9	1.9	2.3
...FAMILY	2.5	2.1	2.6	2.6
....GENUS	2.5	2.5	3.2	3.2

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
BACILLARIOPHYTA (DIATOMS)								
..BACILLARIOPHYCEAE								
...ACHNANTHALES								
....ACHNANTHACEAE								
.....ACHNANTHES	--	-	--	-	--	-	14	1
.....COCCONEIS	--	-	--	-	310	4	14	1
.....RHOICOSPHENIA	13	4	--	-	540	6	28	1
..BACILLARIALES								
...NITZSCHIAEAE								
.....NITZSCHIA	26	8	77	6	150	2	350	15
...EPITHEMIALES								
....EPITHEMIAEAE								
.....EPITHEMIA	--	-	--	-	230	3	--	-
...EUPODISCALES								
....COSCINODISCACEAE								
.....CYCLOTELLA	52#	17	140	10	77	1	300	13
.....MELOSIRA	--	-	--	-	--	-	41	2
.....STEPHANODISCUS	--	-	700#	50	--	-	41	2
..FRAGILARIALES								
...FRAGILARIAEAE								
.....ASTERIONELLA	--	-	--	-	--	-	800#	34
.....DIATOMA	--	-	13	1	1500#	18	97	4
.....FRAGILARIA	--	-	39	3	230	3	28	1
.....SYNEDRA	13	4	26	2	840	10	14	1
..NAVICULALES								
...CYMBELLACEAE								
.....CYMBELLA	52#	17	26	2	1500#	18	28	1
...GOMPHONEMACEAE								
.....GOMPHONEIS	--	-	--	-	77	1	--	-
.....GOMPHONEMA	--	-	13	1	690	8	14	1
...NAVICULACEAE								
.....CALONEIS	--	-	--	-	77	1	--	-
.....NAVICULA	130#	42	170	12	1900#	22	69	3
..SURIRELLALES								
...SURIRELLACEAE								
.....CYMATOPLEURA	--	-	--	-	--	-	--	-
.....SURIRELLA	13	4	--	-	460	5	14	1
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
....CHLOROCOCCACEAE								

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

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

CONTINUED ...

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

(CONTINUED)

DATE TIME	NOV 25,80 0930		MAR 19,81 0830		MAY 27,81 1115		JUN 23,81 1100	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
....SCHROEDERIA	--	-	--	-	--	-	14	1
....TETRAEDRON	--	-	--	-	--	-	--	-
....DICTYOSPHAERIACEAE	--	-	--	-	--	-	--	-
....DICTYOSPHAERIUM	--	-	52	4	--	-	170	7
....OOCYSTACEAE	--	-	--	-	--	-	--	-
....ANKISTRODESMUS	--	-	13	1	--	-	--	-
....CHODATELLA	--	-	--	-	--	-	14	1
....OOCYSTIS	--	-	--	-	--	-	--	-
....SELENASTRUM	--	-	--	-	--	-	--	-
....TREUBARIA	--	-	--	-	--	-	--	-
....SCENEDESMACEAE	--	-	--	-	--	-	--	-
....ACTINASTRUM	--	-	--	-	--	-	--	-
....SCENEDESMUS	--	-	--	-	--	-	220	9
....TETRASTRUM	--	-	--	-	--	-	55	2
..VOLVOCALES	--	-	--	-	--	-	--	-
....CHLAMYDOMONADACEAE	--	-	--	-	--	-	--	-
....CHLAMYDOMONAS	--	-	130	9	--	-	55	2
CHRYSTOPHYTA								
..CHRYSTOPHYCEAE								
..OCHROMONADALES								
....OCHROMONADACEAE								
....OCHROMONAS	--	-	--	-	--	-	--	-
....SYNURACEAE	--	-	--	-	--	-	--	-
....SYNURA	--	-	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)								
..CRYPTOPHYCEAE								
..CRYPTOMONADALES								
....CRYPTOCHRYSIDACEAE								
....CHROOMONAS	13	4	--	-	--	-	--	-
....CRYPTOMONADACEAE	--	-	--	-	--	-	--	-
....CRYPTOMONAS	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
..CHROOCOCCALES								
....CHROOCOCCACEAE								
....AGMENELLUM	--	-	--	-	--	-	--	-
....ANACYSTIS	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)								
..EUGLENOPHYCEAE								
..EUGLENALES								
....EUGLENACEAE								
....EUGLENA	--	-	--	-	--	-	--	-
....TRACHELOMONAS	--	-	13	1	--	-	--	-

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

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

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	JUL 28,81 1130	AUG 25,81 1000	SEP 24,81 1030
TOTAL CELLS/ML	19000	5500	13000
DIVERSITY: DIVISION	1.3	0.8	1.2
..CLASS	1.3	0.8	1.2
..ORDER	1.6	1.2	1.7
...FAMILY	1.8	2.0	2.8
....GENUS	1.9	2.3	2.8

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
BACILLARIOPHYTA (DIATOMS)						
..BACILLARIOPHYCEAE						
...ACHNANTHALES						
....ACHNANTHACEAE						
.....ACHNANTHES	--	-	--	-	--	-
....COCCONEIS	*	0	--	-	--	-
...RHOICOSPHENIA	--	-	--	-	--	-
..BACILLARIALES						
...NITZSCHIAEAE						
....NITZSCHIA	690	4	680	13	210	2
..EPITHEMIALES						
...EPITHEMIAEAE						
....EPITHEMIA	--	-	--	-	--	-
..EUPODISCALES						
...COSCINODISCAEAE						
....CYCLOTELLA	1400	8	320	6	620	5
....MELOSIRA	*	0	--	-	--	-
...STEPHANODISCUS	--	-	--	-	--	-
..FRAGILARIALES						
...FRAGILARIAEAE						
....ASTERIONELLA	--	-	--	-	--	-
....DIATOMA	--	-	--	-	--	-
....FRAGILARIA	--	-	--	-	--	-
....SYNEDRA	*	0	220	4	1400	11
..NAVICULALES						
...CYMBELLACEAE						
....CYMBELLA	*	0	--	-	--	-
...GOMPHONEMACEAE						
....GOMPHONEIS	--	-	--	-	--	-
....GOMPHONEMA	--	-	--	-	--	-
...NAVICULACEAE						
....CALONEIS	--	-	--	-	--	-
....NAVICULA	*	0	140	3	--	-
..SURIRELLALES						
...SURIRELLACEAE						
....CYMATOPLEURA	*	0	--	-	--	-
....SURIRELLA	--	-	--	-	--	-
CHLOROPHYTA (GREEN ALGAE)						
..CHLOROPHYCEAE						
...CHLOROCOCCALES						
....CHLOROCOCCACEAE						

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

CONTINUED ...

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

(CONTINUED)

DATE TIME	JUL 28,81 1130		AUG 25,81 1000		SEP 24,81 1030	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
....SCHROEDERIA	*	0	--	-	--	-
....TETRAEDRON	--	-	36	1	--	-
...DICTYOSPHAERIACEAE						
....DICTYOSPHAERIUM	--	-	--	-	2500#	20
...OOCYSTACEAE						
....ANKISTRODESMUS	690	4	2600#	47	2700#	21
....CHODATELLA	--	-	--	-	69	1
....OOCYSTIS	270	1	--	-	--	-
....SELENASTRUM	*	0	--	-	--	-
....TREUBARIA	--	-	--	-	69	1
...SCENEDESMACEAE						
....ACTINASTRUM	550	3	720	13	--	-
...SCENEDESMUS	1600	8	790	14	3400#	26
....TETRASTRUM	--	-	--	-	--	-
..VOLVOCALES						
...CHLAMYDOMONADACEAE						
....CHLAMYDOMONAS	320	2	--	-	820	6
CHRYSTOPHYTA						
..CHRYSTOPHYCEAE						
...OCHROMONADALES						
...OCHROMONADACEAE						
....OCHROMONAS	*	0	--	-	--	-
...SYNURACEAE						
....SYNURA	--	-	--	-	140	1
CRYPTOPHYTA (CRYPTOMONADS)						
..CRYPTOPHYCEAE						
...CRYPTOMONADALES						
...CRYPTOCHRYSIDACEAE						
....CHROOMONAS	--	-	--	-	140	1
...CRYPTOMONADACEAE						
....CRYPTOMONAS	*	0	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...CHROOCOCCALES						
...CHROOCOCCACEAE						
....AGMENELLUM	12000#	67	--	-	--	-
....ANACYSTIS	--	-	--	-	750	6
EUGLENOPHYTA (EUGLENOIDS)						
..EUGLENOPHYCEAE						
...EUGLENALES						
...EUGLENACEAE						
....EUGLENA	--	-	--	-	69	1
....TRACHELOMONAS	*	0	--	-	--	-

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

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

YELLOWSTONE RIVER BASIN

06329590 YELLOWSTONE RIVER STAGE GAGE NO. 1 NEAR FAIRVIEW, MT

LOCATION.--Lat 47°48'34", long 104°02'36", sec. 18, T.150 N., R.104 W., McKenzie County, Hydrologic Unit 10100004, on left bank 3 mi (4.8 km) south of Fairview, and at mile 15.2 (24.5 km).

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) National Geodetic Vertical Datum of 1929. Prior to Feb. 19, 1962 at datum 60.00 ft (18.288 m) lower.

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 (FEET ABOVE DATUM), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13.40	12.74					---	---	19.88	17.75	12.40	---
2	13.35	12.67					---	---	19.81	17.39	12.65	---
3	13.30	12.54					---	---	20.01	16.79	12.60	---
4	13.26	12.53					---	---	20.30	16.40	12.79	---
5	13.20	12.51					---	---	19.88	16.26	12.59	---
6	13.14	12.49					---	---	19.16	16.05	12.99	---
7	13.09	---					---	---	18.93	15.78	12.31	---
8	13.03	---					---	---	18.73	15.36	11.87	---
9	12.92	---					---	---	18.98	15.00	11.67	---
10	12.82	---					---	---	19.65	14.77	11.52	---
11	12.82	---					---	---	20.04	14.67	11.44	---
12	12.78	---					---	---	20.70	14.31	---	---
13	12.77	---					---	---	21.08	13.83	---	---
14	12.77	---					---	---	20.33	13.56	---	---
15	12.78	---					10.96	14.39	19.58	13.38	---	---
16	12.96	---					10.93	14.43	19.31	13.31	---	---
17	13.30	---					10.94	14.11	19.05	13.28	---	10.48
18	13.45	---					10.88	13.82	18.72	13.04	---	10.43
19	13.60	---					10.95	13.81	18.21	12.82	---	10.58
20	13.66	---					10.75	15.48	17.81	12.72	---	10.63
21	13.52	---					10.52	16.29	17.63	12.40	---	10.70
22	13.58	---					10.60	15.82	17.11	12.28	---	10.78
23	14.09	---					10.61	15.87	17.29	12.18	---	10.75
24	14.06	---					10.63	16.32	17.84	12.16	---	10.55
25	14.03	---					10.71	17.29	17.70	12.03	---	---
26	13.83	---					10.72	18.42	17.74	11.95	---	---
27	13.47	---					10.71	18.69	18.08	11.89	---	---
28	12.72	---					10.51	18.68	17.93	11.87	---	---
29	12.67	---					10.35	19.11	17.57	12.05	---	---
30	12.82	---					10.26	19.71	17.61	12.38	---	---
31	12.77	---					---	19.97	---	12.44	---	---
TOTAL	409.96	---					---	---	566.66	430.10	---	---
MEAN	13.22	---					---	---	18.89	13.87	---	---
MAX	14.09	---					---	---	21.08	17.75	---	---
MIN	12.67	---					---	---	17.11	11.87	---	---

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, and 1.5 mi (2.4 km) west of Charbonneau.

DRAINAGE AREA.--149 mi² (386 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1966 to September 1981 (discontinued).

GAGE.--Water-stage recorder.

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

AVERAGE DISCHARGE.--15 years, 14.7 ft³/s (0.416 m³/s), 10,650 acre-ft/yr (13.1 hm³/yr); median of yearly mean discharges, 12 ft³/s (0.34 m³/s), 8,700 acre-ft/yr (10.7 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,300 ft³/s (178 m³/s) Apr. 17, 1979, gage height, 8.32 ft (2.536 m); maximum gage height, 11.02 ft (3.359 m) Mar. 17, 1976, backwater from ice; 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)
Dec. 28	0430	157	4.45	Aug. 4	2400	301	8.52
Aug. 2	0115	*956	27.1				5.16 1.573
			6.23 1.899				

No flow July 10, 11.

a - backwater from ice.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.04	.42	.65	6.9	.60	2.2	.47	.54	6.4	.20	69	.09
2	.04	.50	.60	3.1	.50	1.7	.36	.54	4.6	.13	484	.11
3	.04	.53	.55	1.9	.45	1.7	.45	.37	3.9	.05	79	.08
4	.04	.42	.55	1.1	.40	1.7	.42	.29	2.6	.04	39	.07
5	.02	.42	.50	1.0	.30	1.6	.41	.19	1.5	.02	124	.05
6	.01	.42	.45	1.0	.30	1.5	.70	.13	1.1	.02	30	.05
7	.02	.42	.45	.90	.25	1.3	.50	.11	.85	.03	13	.05
8	.02	.48	.40	.85	.20	1.1	.35	.17	.49	.02	5.2	.07
9	.03	.50	.35	.80	.15	1.1	.32	.22	.42	.02	2.3	.06
10	.03	.50	.35	.80	.10	.99	.36	.22	.40	.00	1.3	.06
11	.04	.50	.30	.80	.10	.93	.33	.16	.37	.00	.67	.06
12	.05	.59	.30	.80	.10	.98	.47	.14	.30	1.1	.51	.06
13	.05	.78	.30	.80	.20	.89	.34	.15	.45	12	.29	.06
14	.08	.68	.30	.70	.50	.88	.26	.19	.50	1.0	.29	.05
15	.14	.68	.35	.68	25	.71	.22	.17	.41	.86	.20	.05
16	1.1	.68	.50	.65	50	.73	.24	.14	.50	.38	.15	.05
17	1.8	.68	.60	.65	48	.72	.21	.19	1.2	.31	.12	.05
18	1.3	.65	.55	.65	26	.68	.15	.25	.85	1.6	.11	.05
19	1.1	.60	.50	.70	16	.64	.10	.15	.71	.86	.32	.05
20	.79	.78	.40	.70	14	.68	.09	.09	.72	.54	.24	.06
21	.70	.78	.35	.70	12	.65	.14	.07	.89	.87	.47	.07
22	1.1	.68	.35	.75	11	.60	.22	.60	.63	.50	.50	.08
23	1.2	.68	.30	1.2	10	.61	.27	7.6	.82	.38	.40	.08
24	.90	.65	.20	1.5	8.3	.70	.25	5.1	.79	.41	.34	.08
25	.87	.65	.15	1.4	12	.72	.21	3.2	.50	.24	.26	.08
26	.70	.70	.15	1.0	4.0	.54	.24	1.8	.62	.51	.19	.08
27	.59	.72	12	.90	2.9	.56	.44	1.2	.54	.62	.18	.08
28	.55	.75	86	.85	2.4	.76	.60	.73	.22	.58	.14	.09
29	.50	.72	53	.80	---	.71	.68	.37	.15	.64	.09	.07
30	.50	.70	21	.70	---	.60	.65	.31	.15	2.0	.10	.21
31	.44	---	13	.70	---	.50	---	.55	---	21	.09	---
TOTAL	14.79	18.26	195.45	35.98	245.75	29.68	10.45	25.94	33.58	46.93	852.46	2.15
MEAN	.48	.61	6.30	1.16	8.78	.96	.35	.84	1.12	1.51	27.5	.072
MAX	1.8	.78	86	6.9	50	2.2	.70	7.6	6.4	21	484	.21
MIN	.01	.42	.15	.65	.10	.50	.09	.07	.15	.00	.09	.05
AC-FT	29	36	388	71	487	59	21	51	67	93	1690	4.3

CAL YR 1980 TOTAL 428.83 MEAN 1.17 MAX 86 MIN .00 AC-FT 851
WTR YR 1981 TOTAL 1511.42 MEAN 4.14 MAX 484 MIN .00 AC-FT 3000

06329597 CHARBONNEAU CREEK NEAR CHARBONNEAU, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1972 to September 1981 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS NONCAR- BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT										
08...	1425	.02	3500	--	25.5	16.5	--	--	--	--
NOV										
05...	1000	.45	3300	--	3.5	4.5	--	--	--	--
DEC										
05...	1325	.53	3750	--	-14.5	.5	--	--	--	--
JAN										
15...	1225	.68	1500	--	-6.5	.5	--	--	--	--
FEB										
19...	1030	21	850	--	4.0	1.5	--	--	--	--
24...	1440	6.1	1100	--	3.5	1.0	--	--	--	--
MAR										
17...	1610	.74	1250	--	5.5	4.5	--	--	--	--
APR										
08...	1535	.33	1800	8.8	9.5	10.0	140	.00	26	18
16...	1520	.30	1900	--	22.0	14.0	--	--	--	--
MAY										
06...	1425	.13	2500	--	16.5	15.5	--	--	--	--
JUN										
05...	0815	1.6	2350	--	14.0	15.5	--	--	--	--
AUG										
07...	0945	14	640	8.3	24.0	21.0	110	.00	27	10
SEP										
04...	0910	.07	1350	--	15.0	14.5	--	--	--	--

[illegible][illegible]

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, and at mile 8.6 (13.8 km).

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) National Geodetic Vertical Datum of 1929.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 87.08 ft (26.542 m) Mar. 23, 1978;
minimum daily recorded, 58.58 ft (17.855 m) July 26, 1974.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---						---	64.41	---	71.62	66.08	64.14
2	---						---	64.82	---	71.30	66.20	64.21
3	---						---	65.03	---	70.74	66.40	64.18
4	---						---	65.15	---	70.36	66.40	64.26
5	---						---	65.27	---	70.25	66.23	64.33
6	---						---	65.51	---	70.11	66.52	64.32
7	---						---	66.72	---	---	65.95	64.28
8	---						---	66.99	---	---	65.53	64.31
9	---						---	66.62	---	---	65.31	64.34
10	---						---	66.72	---	---	65.16	---
11	---						---	66.90	73.56	---	65.13	---
12	---						---	66.88	74.19	---	64.97	---
13	---						---	---	74.61	---	64.85	---
14	---						---	---	73.98	---	64.73	---
15	66.21						---	---	73.26	---	64.61	---
16	66.36						64.57	---	72.95	---	64.48	---
17	66.67						64.54	---	72.78	67.00	64.51	64.30
18	66.79						64.51	---	72.39	66.71	64.45	64.26
19	66.95						64.43	---	71.88	66.49	64.39	64.35
20	67.01						64.45	---	71.46	66.41	64.38	64.35
21	66.88						64.20	---	71.28	66.13	64.32	64.34
22	66.92						64.28	---	70.74	66.00	64.31	64.36
23	67.46						64.28	---	70.87	65.86	64.22	64.38
24	67.44						64.30	---	71.50	65.82	64.15	64.40
25	67.38						64.34	---	71.40	65.67	64.17	64.41
26	67.25						64.34	---	71.45	65.58	64.18	64.44
27	66.95						64.38	---	71.90	65.55	64.19	64.54
28	66.35						64.25	---	71.78	65.55	64.21	64.65
29	66.29						64.12	---	71.40	65.79	64.18	64.61
30	66.41						64.07	---	71.41	66.04	64.15	64.68
31	---						---	---	---	66.12	64.03	---
TOTAL	---						---	---	---	---	2012.39	---
MEAN	---						---	---	---	---	64.92	---
MAX	---						---	---	---	---	66.52	---
MIN	---						---	---	---	---	64.03	---

YELLOWSTONE RIVER BASIN

06329620 YELLOWSTONE RIVER STAGE GAGE NO. 3 NEAR BUFORD, ND

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, and at mile 3.3 (5.3 km).

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 1,850.00 ft (563.880 m) National Geodetic Vertical Datum of 1929. Prior to Apr. 19, 1962, at datum 50.00 ft (15.240 m) lower.

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 (FEET ABOVE DATUM), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12.09	11.39				---	---	---	18.60	---	---	9.07
2	12.00	11.34				---	---	---	18.46	---	---	9.19
3	11.95	11.23				---	---	---	18.45	---	---	9.16
4	11.90	11.17				---	---	---	18.75	15.31	---	9.15
5	11.84	11.13				---	---	---	18.55	15.17	---	9.31
6	11.79	11.14				---	---	10.39	17.84	15.05	11.83	9.36
7	11.72	---				---	---	11.82	17.58	14.77	11.23	9.32
8	11.64	---				---	---	12.14	17.42	14.37	10.76	9.24
9	11.56	---				---	---	11.71	17.48	14.02	10.48	9.25
10	11.50	---				---	---	11.64	18.13	13.71	10.29	9.28
11	11.45	---				---	---	11.97	18.52	13.60	10.17	9.29
12	11.41	---				---	---	11.85	18.99	13.32	9.99	9.38
13	11.38	---				---	---	11.78	19.72	12.82	9.82	9.44
14	11.37	---				---	---	12.00	19.33	12.52	9.69	9.36
15	11.37	---				---	9.50	12.95	18.60	12.37	9.54	9.34
16	11.50	---				---	9.50	13.19	18.13	12.29	9.37	9.40
17	11.80	---				---	9.48	12.99	17.96	12.29	9.38	9.37
18	11.98	---				---	9.41	12.78	17.48	12.02	9.34	9.32
19	12.13	---				---	---	12.63	16.90	11.78	9.33	9.37
20	12.21	---				10.05	---	13.76	16.49	11.69	9.18	9.45
21	12.12	---				10.01	---	14.97	16.25	11.40	9.08	9.50
22	12.10	---				---	---	15.49	15.78	11.23	9.16	9.55
23	12.57	---				---	---	15.53	---	11.11	9.15	9.55
24	12.67	---				---	---	15.18	---	11.07	9.14	9.51
25	12.63	---				---	---	15.58	---	11.00	9.07	9.58
26	12.47	---				---	---	16.72	---	10.87	9.10	9.74
27	12.19	---				---	---	17.18	---	10.81	9.12	9.88
28	11.62	---				---	---	17.15	---	---	9.10	9.96
29	11.29	---				---	---	17.52	---	---	9.10	9.91
30	11.48	---				---	---	18.18	---	---	9.07	9.93
31	11.43	---				---	---	18.63	---	---	9.13	---
TOTAL	367.16	---				---	---	---	---	---	---	283.16
MEAN	11.84	---				---	---	---	---	---	---	9.44
MAX	12.67	---				---	---	---	---	---	---	9.96
MIN	11.29	---				---	---	---	---	---	---	9.07

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, and at mile 1,580.7 (2,543.3 km).

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) National Geodetic Vertical Datum of 1929. Prior to Mar. 8, 1962 at datum 50.00 ft (15.240 m) lower.

REMARKS.--Stage regulated by upstream reservoirs.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 19.37 ft (5.904 m) Mar. 23, 1978; minimum daily recorded, 2.63 ft (0.802 m) Aug. 15-16, 1966.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.72	8.31				---	---	---	15.65	13.99	9.40	8.09
2	9.68	8.27				---	---	---	15.44	13.87	9.40	8.06
3	9.58	8.16				---	---	---	15.36	13.45	9.52	8.02
4	9.52	8.07				---	---	---	15.57	13.13	9.31	8.08
5	9.49	8.13				---	---	---	15.44	12.99	9.35	8.20
6	9.37	8.18				---	---	---	14.81	12.84	9.46	8.21
7	9.14	---				---	---	---	14.62	12.51	9.49	8.20
8	8.78	---				---	---	---	14.59	12.14	9.27	8.12
9	8.61	---				---	---	---	14.55	11.91	9.10	8.12
10	8.60	---				---	---	---	15.09	11.53	8.90	8.05
11	8.48	---				---	---	---	15.60	11.38	8.70	8.16
12	8.56	---				---	---	---	15.89	11.14	8.62	8.22
13	8.48	---				---	---	---	16.39	10.73	8.48	8.30
14	8.32	---				---	---	9.16	16.04	10.46	8.35	8.22
15	8.29	---				---	---	9.95	15.38	10.37	8.19	8.17
16	8.49	---				---	6.63	10.27	14.93	10.38	8.12	8.23
17	8.66	---				---	---	10.12	14.72	10.45	8.15	8.30
18	8.85	---				---	---	10.15	14.49	10.05	8.18	8.30
19	9.01	---				8.38	---	10.09	14.19	9.90	8.01	8.35
20	9.08	---				8.15	---	10.75	13.84	9.81	7.90	8.36
21	8.97	---				7.82	---	11.97	13.73	9.58	7.58	8.47
22	9.05	---				7.74	---	11.77	13.35	9.42	7.83	8.49
23	9.52	---				7.85	---	11.59	13.27	9.33	7.93	8.41
24	9.64	---				7.65	---	11.92	13.65	9.20	7.94	8.42
25	9.63	---				7.67	---	12.59	13.66	9.24	7.97	8.50
26	9.53	---				7.69	---	13.60	13.78	9.06	7.90	8.52
27	9.24	---				7.67	---	14.20	14.17	9.02	7.96	8.76
28	8.63	---				7.58	---	14.22	14.26	9.02	7.93	8.85
29	8.24	---				7.63	---	14.45	14.01	9.06	7.98	8.78
30	8.39	---				---	---	15.26	13.86	9.33	8.00	8.69
31	8.37	---				---	---	15.69	---	9.42	8.10	---
TOTAL	277.92	---				---	---	---	440.33	334.71	263.02	249.65
MEAN	8.97	---				---	---	---	14.68	10.80	8.48	8.32
MAX	9.72	---				---	---	---	16.39	13.99	9.52	8.85
MIN	8.24	---				---	---	---	13.27	9.02	7.58	8.02

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, and at mile 1,576.0 (2,535.8 km).

DRAINAGE AREA.--164,000 mi² (425,000 km²), approximately.

PERIOD OF RECORD.--December 1959 to current year (seasonal).

GAGE.--Water-stage recorder. Datum of gage is 1,840.00 ft (560.832 m) National Geodetic Vertical Datum of 1929. Prior to Apr. 17, 1962, at datum 40.00 ft (12.192 m) lower.

REMARKS.--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 (FEET ABOVE DATUM), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16.44						---	---	---	20.87	16.35	14.64
2	16.37						---	---	---	---	16.32	14.67
3	16.30						---	---	---	---	16.48	14.62
4	16.27						---	---	---	---	16.22	14.63
5	16.23						---	---	---	---	16.28	14.79
6	16.14						---	---	---	---	16.31	14.81
7	15.94						---	---	---	---	16.37	14.75
8	15.58						---	---	---	---	16.13	14.68
9	15.42						---	---	---	18.80	15.94	14.68
10	15.39						---	---	---	18.44	15.73	14.62
11	15.26						---	---	22.44	18.29	15.54	14.68
12	15.34						---	---	22.69	18.09	15.45	14.72
13	15.29						---	---	23.20	17.63	15.28	14.78
14	15.16						---	15.53	22.89	17.38	15.16	14.71
15	15.14						13.31	---	22.34	17.27	15.00	14.64
16	15.38						13.31	---	21.84	17.29	14.89	14.68
17	---						13.28	---	21.75	17.41	14.95	14.75
18	---						13.20	---	21.52	17.05	14.97	14.77
19	---						13.19	---	21.28	16.86	14.80	14.75
20	---						13.14	---	20.98	16.78	14.70	14.81
21	---						12.91	---	20.86	16.57	14.37	14.86
22	---						---	---	20.67	16.40	14.56	---
23	---						---	---	20.28	16.30	14.67	---
24	---						---	---	20.55	16.17	14.67	---
25	---						---	---	20.75	16.23	14.66	---
26	---						---	---	20.73	16.07	14.62	---
27	---						---	---	20.91	15.97	14.64	---
28	---						---	---	21.30	16.00	14.61	---
29	---						---	---	21.28	16.03	14.62	---
30	---						---	---	20.97	16.29	14.62	---
31	---						---	---	---	16.38	14.71	---
TOTAL	---						---	---	---	---	473.62	---
MEAN	---						---	---	---	---	15.28	---
MAX	---						---	---	---	---	16.48	---
MIN	---						---	---	---	---	14.37	---

MISSOURI RIVER MAIN STEM

51

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 (2,520.8 km).

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) National Geodetic Vertical Datum of 1929. 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.--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 (FEET ABOVE DATUM), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	11.80				---	11.32	9.63	17.87	17.22	13.01	---
2	---	11.75				---	11.16	10.37	17.69	17.22	12.99	---
3	---	11.70				---	11.02	10.75	17.56	16.89	13.15	---
4	---	11.58				---	---	10.77	17.73	16.56	12.90	---
5	---	11.60				---	---	10.50	17.67	16.39	13.00	---
6	---	11.62				---	---	10.52	17.22	16.26	12.92	---
7	---	---				---	---	11.37	17.11	16.00	---	---
8	---	---				---	---	12.17	17.20	15.69	---	---
9	---	---				---	---	12.08	17.26	15.43	---	---
10	---	---				---	---	11.88	17.65	15.10	---	---
11	---	---				---	---	12.03	17.97	14.90	---	---
12	---	---				---	---	12.02	18.14	14.72	---	---
13	---	---				---	---	11.86	18.63	14.33	---	---
14	---	---				---	---	11.83	18.43	14.05	---	---
15	11.79	---				---	9.77	12.48	17.90	13.95	---	---
16	11.96	---				---	9.79	12.99	17.44	13.93	---	---
17	12.10	---				---	9.68	12.91	17.37	14.03	---	11.72
18	12.23	---				---	9.59	12.87	17.20	13.77	---	11.71
19	12.38	---				---	9.64	12.80	17.00	13.60	---	11.71
20	12.47	---				11.82	9.58	13.20	16.82	13.49	---	11.75
21	12.39	---				11.68	9.40	14.52	16.82	13.30	---	11.78
22	12.48	---				11.49	9.37	14.66	16.62	13.15	---	11.84
23	12.76	---				11.61	9.39	14.45	16.50	13.07	---	11.79
24	12.99	---				11.46	9.38	14.70	16.78	12.91	---	11.69
25	12.94	---				11.41	9.43	15.28	16.87	12.95	---	11.77
26	12.91	---				11.37	9.45	16.14	16.95	12.80	---	11.87
27	12.72	---				11.37	9.50	16.79	17.29	12.72	---	12.01
28	12.26	---				11.31	9.42	16.84	17.48	12.73	---	12.08
29	11.77	---				11.27	9.34	16.94	17.30	12.75	---	12.06
30	11.83	---				11.35	9.35	17.40	17.17	12.92	---	12.01
31	11.84	---				11.43	---	17.74	---	13.05	---	---
TOTAL	---	---				---	---	410.49	521.64	445.88	---	---
MEAN	---	---				---	---	13.24	17.39	14.38	---	---
MAX	---	---				---	---	17.74	18.63	17.22	---	---
MIN	---	---				---	---	9.63	16.50	12.72	---	---

MISSOURI RIVER MAIN STEM

06330000 MISSOURI RIVER NEAR WILLISTON, ND

LOCATION.--Lat 48°06'45", long 103°43'04", in SE¼ sec.31, T.154 N., R.101 W., McKenzie County, Hydrologic Unit 10110101, at city waterplant on left bank, 5 mi (8 km) southwest of Williston, 29.3 mi (47.1 km) downstream from Yellowstone River, and at mile 1,552.7 (2,498.3 km).

DRAINAGE AREA.--164,500 mi² (426,000 km²), approximately.

GAGE-HEIGHT 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) National Geodetic Vertical Datum of 1929. See WSP 1917 for history of changes prior to April 1966.

REMARKS.--Stage regulated by upstream reservoirs and backwater from Lake Sakakawea.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 26.46 ft (8.065 m) Mar. 26, 1978; minimum daily recorded, 7.80 ft (2.377 m) Nov. 2, 1966.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16.28	15.31	14.75	18.26	17.32	18.55	14.43	13.19		---	15.97	14.74
2	16.26	15.23	15.05	18.29	17.40	18.52	14.27	13.50		---	15.97	14.70
3	16.24	15.16	15.39	18.28	17.55	18.51	14.09	13.71		---	16.09	14.69
4	16.21	15.10	15.43	18.15	17.34	18.54	13.98	13.90		---	16.03	14.74
5	16.17	15.12	15.85	17.97	17.09	18.61	13.93	14.06		---	16.10	14.76
6	16.13	15.16	16.40	17.81	17.21	18.71	13.77	14.22		---	16.14	14.76
7	16.03	15.14	16.78	17.68	17.38	18.77	13.66	14.50		---	16.07	14.75
8	15.78	15.07	16.69	17.63	17.60	18.80	13.71	14.79		---	15.97	14.70
9	15.53	15.07	16.29	17.79	17.68	18.79	13.76	14.90		---	15.79	14.65
10	15.50	15.08	16.19	17.87	17.60	18.76	13.67	15.20		---	15.69	14.64
11	15.51	15.05	16.49	17.94	17.42	18.70	13.77	15.28		---	15.49	14.63
12	15.62	15.06	16.74	18.01	17.29	18.69	13.78	15.35		---	15.36	14.68
13	15.59	15.09	16.83	18.04	17.23	18.89	13.61	15.36		---	15.22	14.74
14	15.40	15.18	16.75	18.08	17.20	17.00	13.64	15.44		---	15.11	14.74
15	15.34	15.26	17.11	18.12	17.26	15.86	13.62	15.51		16.84	15.04	14.68
16	15.44	15.26	17.64	18.14	17.43	15.67	13.38	15.59		16.79	14.95	14.69
17	15.52	15.24	17.99	18.13	17.77	15.60	13.34	15.66		16.86	14.89	14.74
18	15.63	15.21	18.29	18.11	18.29	15.44	13.36	15.68		16.77	14.90	14.75
19	15.71	15.16	18.36	18.10	18.64	15.27	13.36	---		16.58	14.84	14.74
20	15.82	15.07	18.24	17.99	18.99	15.11	13.62	---		16.49	14.72	14.73
21	15.83	14.98	17.76	17.90	19.26	14.72	13.36	---		16.39	14.52	14.78
22	15.97	14.89	16.93	17.94	19.43	14.53	12.98	---		16.23	14.49	14.80
23	15.99	14.86	16.37	18.02	19.40	14.56	12.98	17.69		16.11	14.66	14.78
24	16.18	14.85	16.27	18.05	19.22	14.49	12.97	17.75		15.99	14.68	14.75
25	16.21	14.78	16.47	18.13	18.98	14.36	12.92	18.02		15.99	14.70	14.80
26	16.23	14.75	16.74	18.13	18.81	14.41	13.01	18.49		15.95	14.67	14.68
27	16.07	14.83	16.80	18.11	18.68	14.44	13.04	18.92		15.85	14.66	14.96
28	15.75	14.76	16.68	18.13	18.60	14.34	13.18	19.00		15.83	14.66	15.07
29	15.32	14.81	16.79	18.12	---	14.32	13.11	19.02		15.80	14.66	15.06
30	15.31	14.78	17.34	18.06	---	14.35	13.01	---		15.85	14.65	15.00
31	15.34	---	17.87	17.71	---	14.37	---	---		15.96	14.66	---
TOTAL	489.91	451.31	519.28	558.69	504.07	511.68	405.31	---		---	471.35	442.93
MEAN	15.80	15.04	16.75	18.02	18.00	16.51	13.51	---		---	15.20	14.76
MAX	16.28	15.31	18.36	18.29	19.43	18.89	14.43	---		---	16.14	15.07
MIN	15.31	14.75	14.75	17.63	17.09	14.32	12.92	---		---	14.49	14.63

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 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	CULI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS NONCAR- BONATE (MG/L AS CACO3) (95902)
OCT											
14...	0900	E18200	791	E8.3	7.5	8.0	10.8	97	K20	247	86
NOV											
12...	1000	E18200	E779	E8.2	2.0	3.5	12.0	97	K33	266	250
DEC											
09...	1000	E16300	730	8.2	-16.0	.5	12.8	93	K41	265	75
JAN											
21...	1000	E19900	800	8.0	.0	.5	12.4	91	K11	273	103
FEB											
11...	1000	E19300	750	8.0	-21.0	.0	12.4	90	K35	297	110
MAR											
10...	1000	E19700	780	9.3	6.0	1.0	12.2	90	K52	259	110
APR											
14...	0930	E12300	840	8.7	6.5	7.0	11.2	97	K67	264	100
MAY											
13...	0900	E19200	650	8.5	12.5	11.0	10.6	102	K70	205	55
JUN											
10...	0915	E57600	460	8.4	15.0	16.5	9.0	99	60	150	52
JUL											
15...	1015	E27500	570	8.6	21.0	22.5	8.2	101	K70	184	64
AUG											
12...	0930	E19300	700	8.4	23.0	21.0	8.2	98	--	232	82
SEP											
16...	0930	E17600	690	8.6	9.0	13.5	9.9	99	K30	252	92

DATE	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	BICAR- BONATE, FET-LAB (MG/L AS HCU3) (95440)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)
OCT										
14...	56	26	75	39	2.1	3.9	196	160	230	13
NOV										
12...	62	27	77	38	2.1	4.6	20	160	230	11
DEC										
09...	60	28	93	43	2.5	5.9	--	190	240	11
JAN										
21...	63	28	73	36	1.9	4.7	--	170	240	13
FEB										
11...	71	29	79	36	2.0	4.1	--	190	250	12
MAR										
10...	61	26	73	38	2.0	3.8	--	150	240	15
APR										
14...	61	27	87	41	2.3	4.0	--	160	250	13
MAY										
13...	49	20	53	36	1.6	3.6	--	150	160	8.8
JUN										
10...	37	14	34	33	1.2	2.7	--	98	120	5.9
JUL										
15...	44	18	51	37	1.6	3.5	--	120	160	7.6
AUG										
12...	55	23	61	36	1.9	4.0	--	150	200	10
SEP										
16...	58	26	65	35	2.0	4.2	--	160	200	9.4

E - Estimated, estimated pH or specific conductance indicates laboratory determination.
 K - Results based on colony count outside the acceptable range (non-ideal colony count).

MISSOURI RIVER MAIN STEM

06330000 MISSOURI RIVER NEAR WILLISTON, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIU2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)
OCT										
14...	.6	7.2	509	508	.69	--	--	.00	.000	.00
NOV										
12...	.6	7.1	512	429	.70	--	--	.00	.010	.01
DEC										
09...	.6	7.9	542	561	.74	--	--	.12	.050	.06
JAN										
21...	.6	7.2	549	532	.75	--	--	.18	.070	.08
FEB										
11...	.6	8.2	593	568	.81	.12	.010	.13	.070	.08
MAR										
10...	.0	6.5	528	516	.72	.03	.010	.04	.100	--
APR										
14...	.6	6.8	546	546	.74	.01	.000	.01	.090	--
MAY										
13...	.5	8.8	401	394	.55	.12	.010	.13	.160	--
JUN										
10...	.3	9.9	279	283	.38	.14	.020	.16	.100	--
JUL										
15...	.4	7.9	355	365	.48	--	<.010	.01	.040	--
AUG										
12...	.5	7.9	471	452	.64	.14	.030	.17	.140	--
SEP										
16...	.6	8.1	471	468	.64	.03	.010	.04	.070	--

DATE	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	NITRO- GEN, TOTAL (MG/L AS NO3) (71887)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHATE, TOTAL (MG/L AS PO4) (00650)	PHOS- PHORUS, ORTHOPHOSPHATE, TOTAL (MG/L AS P) (70507)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL) (01105)	ARSENIC TOTAL (UG/L AS AS) (01002)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)
OCT										
14...	.65	.65	.65	2.9	.070	--	--	--	4	--
NOV										
12...	.64	.65	.65	2.9	.020	--	--	20	4	0
DEC										
09...	.55	.60	.72	3.2	.050	--	--	--	4	--
JAN										
21...	.55	.62	.80	3.5	.060	--	--	--	5	--
FEB										
11...	.44	.51	.64	2.8	.040	.15	.050	--	4	--
MAR										
10...	.59	.69	.73	3.2	.110	--	.020	--	7	--
APR										
14...	2.4	2.50	2.5	11	.070	--	.020	--	4	--
MAY										
13...	.46	.62	.75	3.3	.130	--	.070	980	5	0
JUN										
10...	1.0	1.10	1.3	5.6	.280	--	.060	--	4	--
JUL										
15...	.75	.79	.80	3.5	.140	--	.010	--	7	--
AUG										
12...	.68	.82	.99	4.4	.180	--	.030	--	6	--
SEP										
16...	.86	.93	.97	4.3	.040	--	.010	--	4	--

MISSOURI RIVER MAIN STEM

06330000 MISSOURI RIVER NEAR WILLISTON, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	BORON, DIS- SOLVED (UG/L AS B) (01020)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CADMIUM DIS- SOLVED (UG/L AS CU) (01025)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	IRON, SUS- PENDE RECOV- ERABLE (UG/L AS FE) (01044)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI) (01132)
OCT 14...	140	0	--	0	10	1400	1400	10	3	--
NOV 12...	100	0	--	0	8	2300	2300	40	4	60
DEC 09...	--	--	--	--	--	--	--	--	--	--
JAN 21...	210	0	--	0	8	820	820	0	3	--
FEB 11...	110	1	--	10	6	490	480	10	7	--
MAR 10...	350	1	--	10	8	3200	--	<10	12	--
APR 14...	150	0	--	20	4	6000	6000	30	3	--
MAY 13...	100	0	--	20	7	2300	2300	30	3	50
JUN 10...	60	0	<1	20	16	10000	10000	30	23	--
JUL 15...	90	0	--	0	9	5300	5300	20	21	--
AUG 12...	110	1	--	20	14	6900	6900	10	6	--
SEP 16...	120	0	--	0	9	2600	2600	10	30	--

DATE	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MU) (01062)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE) (01147)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	SEDI- MENT, SUS- PENDE (MG/L) (80154)
OCT 14...	50	.4	--	--	--	1	30	--	7.6	.4	71
NOV 12...	50	.0	--	4	9	1	30	--	4.4	.6	95
DEC 09...	--	.0	--	--	--	1	--	--	--	--	47
JAN 21...	20	2.5	--	--	--	1	20	--	16	1.5	38
FEB 11...	20	.1	--	--	--	2	30	--	6.6	1.0	--
MAR 10...	80	.1	30	--	--	1	30	--	6.7	1.7	142
APR 14...	130	.1	--	--	--	1	50	--	7.2	.7	66
MAY 13...	70	.2	--	8	5	1	30	--	7.7	.7	118
JUN 10...	250	.1	--	--	--	1	70	--	7.6	.9	455
JUL 15...	120	.3	--	--	--	1	40	2.9	2.9	--	--
AUG 12...	130	.2	--	--	--	1	40	--	3.0	1.4	--
SEP 16...	50	.3	--	--	--	1	90	--	4.1	.6	--

DATE	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	SED. SUSP. FALL DIAM. % FINER THAN .125 MM (70343)	SED. SUSP. FALL DIAM. % FINER THAN .250 MM (70344)	BED MAT. FALL DIAM. % FINER THAN .062 MM (80158)	BED MAT. FALL DIAM. % FINER THAN .125 MM (80159)	BED MAT. FALL DIAM. % FINER THAN .250 MM (80160)	BED MAT. FALL DIAM. % FINER THAN .500 MM (80161)
APR 14...	--	--	--	--	--	7	21	99	100
MAY 13...	--	--	--	--	--	16	68	99	100
JUN 10...	38	63	89	99	100	--	--	--	--
AUG 12...	--	--	--	--	--	0	11	98	100

MISSOURI RIVER MAIN STEM

06330110 MISSOURI RIVER STAGE GAGE NO. 9 AT WILLISTON, ND

LOCATION.--Lat 48°08'13", long 103°36'16", in NE&NE& 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 (2,487.8 km).

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) National Geodetic Vertical Datum of 1929. 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.--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 (FEET ABOVE DATUM), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23.35	22.65	22.49	24.87	24.31	25.40	21.97	21.82	25.68	25.19	22.90	---
2	23.31	22.53	22.19	25.03	24.20	25.31	21.94	21.80	25.65	25.14	---	---
3	23.31	22.50	22.68	25.02	24.30	25.25	21.89	21.80	25.62	25.05	---	---
4	23.33	22.54	22.68	24.99	24.24	25.24	21.89	21.81	25.67	24.80	---	---
5	23.32	22.56	22.78	24.87	24.08	25.28	21.89	22.04	25.73	24.75	---	---
6	23.30	22.47	23.04	24.73	24.04	25.35	21.91	22.17	25.55	24.67	---	---
7	23.27	22.37	23.35	24.57	24.10	25.40	21.90	22.23	25.22	24.54	---	---
8	23.11	22.30	23.53	24.41	24.20	25.38	21.85	22.51	25.11	24.33	---	---
9	22.70	22.29	23.50	24.44	24.30	25.28	21.89	22.68	25.10	24.20	---	---
10	22.70	22.32	23.32	24.54	24.30	25.12	21.90	22.68	25.28	24.09	---	---
11	22.69	22.25	23.40	24.61	24.25	24.98	21.97	22.67	25.58	24.00	---	---
12	23.00	22.38	23.72	24.70	24.20	24.85	21.90	22.87	25.81	23.90	---	---
13	22.93	22.55	23.82	24.78	24.15	24.95	21.82	22.70	26.15	23.80	---	---
14	22.68	22.45	23.80	24.78	24.10	24.17	21.86	22.68	26.27	---	---	---
15	22.55	22.47	23.89	24.80	24.26	23.01	21.90	22.93	25.91	---	---	---
16	22.71	22.47	24.25	24.82	24.83	22.78	21.81	23.38	25.71	---	---	22.09
17	22.66	22.52	24.60	24.80	25.32	22.83	21.81	23.27	25.42	23.50	---	22.10
18	22.77	22.47	24.92	24.82	25.49	22.57	21.80	23.18	25.35	23.51	---	22.05
19	22.81	22.46	25.11	24.81	25.55	22.41	21.86	23.28	25.32	23.38	---	22.07
20	22.90	22.42	25.11	24.78	25.68	22.49	22.01	23.23	25.15	23.29	---	22.02
21	22.99	22.55	24.89	24.69	25.89	22.13	21.90	23.60	24.99	23.27	---	22.12
22	23.32	22.31	24.37	24.70	26.09	22.06	21.79	23.78	24.94	23.10	---	22.15
23	23.11	22.25	23.73	24.78	26.17	22.07	21.81	23.67	24.89	22.98	---	22.09
24	23.21	22.45	23.41	24.79	26.05	22.04	21.81	23.69	24.90	22.86	---	22.09
25	23.25	22.34	23.42	24.87	25.88	22.00	21.81	23.89	25.00	22.83	---	22.15
26	23.37	22.35	23.62	24.91	25.75	22.03	21.82	24.23	25.12	22.87	---	21.83
27	23.19	22.27	23.79	24.89	25.52	22.04	21.83	24.60	25.13	22.81	---	22.08
28	22.99	22.21	23.78	24.88	25.47	21.98	21.89	24.72	25.27	22.80	---	22.34
29	22.68	22.21	23.88	24.85	---	21.97	21.86	24.67	25.29	22.75	---	22.27
30	22.54	22.37	24.18	24.84	---	21.97	21.84	24.99	25.20	22.78	---	22.21
31	22.60	---	24.47	24.67	---	21.92	---	25.42	---	22.88	---	---
TOTAL	712.65	672.28	735.72	768.04	696.72	730.26	656.23	718.99	762.01	---	---	---
MEAN	22.99	22.41	23.73	24.78	24.88	23.56	21.87	23.19	25.40	---	---	---
MAX	23.37	22.65	25.11	25.03	26.17	25.40	22.01	25.42	26.27	---	---	---
MIN	22.54	22.21	22.19	24.41	24.04	21.92	21.79	21.80	24.89	---	---	---

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.

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

REMARKS.--Records good. Some small diversions for irrigation. Some regulation by Lake Zahl, Fish and Wildlife Service reservoir 22 mi (35 km) upstream and Blacktail Dam about 15 mi (24 km) upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,180 ft³/s (260 m³/s) Apr. 18, 1979, gage height, 12.77 ft (3.892 m); maximum gage height, 13.57 ft (4.136 m) Mar. 27, 1960; minimum discharge, 0.20 ft³/s (0.006 m³/s) Nov. 27, 1960, Feb. 5, 1963, and June 4, 1968.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.5	11	10	16	12	31	15	12	14	10	7.3	5.0
2	8.7	11	9.9	15	12	27	15	12	22	9.1	7.5	4.8
3	9.0	11	9.3	13	12	24	15	12	39	8.3	7.1	4.8
4	8.9	11	9.2	11	12	22	15	11	35	8.0	6.4	4.5
5	9.2	12	9.2	11	12	36	14	11	24	7.8	6.9	4.8
6	9.0	11	9.0	11	12	20	14	10	20	7.4	7.2	4.6
7	9.1	11	8.8	11	12	18	13	10	17	6.6	34	4.7
8	9.1	12	8.9	11	12	18	13	10	14	6.1	19	5.1
9	9.0	12	9.1	11	11	17	13	10	13	6.2	13	4.9
10	8.7	12	9.1	11	11	16	13	10	12	6.4	10	5.0
11	8.6	11	9.0	11	10	16	13	10	11	6.5	8.8	5.0
12	9.1	12	9.1	11	9.8	16	14	10	11	6.6	7.7	5.1
13	9.1	12	9.3	11	9.5	16	13	10	12	7.9	7.1	4.9
14	9.1	12	9.2	11	13	16	13	10	11	8.9	6.6	5.0
15	8.9	12	9.5	11	124	16	13	10	11	8.1	6.4	5.0
16	10	12	11	10	1000	16	13	10	11	12	6.1	5.1
17	11	12	14	10	1050	16	13	10	13	15	5.9	5.3
18	11	12	12	10	590	15	13	10	12	17	5.9	5.3
19	12	12	11	10	256	15	12	9.6	12	13	5.9	5.5
20	11	12	9.8	10	234	15	12	9.3	12	10	5.7	5.6
21	11	11	9.5	10	299	15	12	9.0	12	9.1	5.7	5.5
22	14	12	9.3	11	409	15	12	9.0	12	9.2	5.9	5.8
23	14	11	9.0	11	288	15	12	9.3	15	9.0	5.9	5.8
24	14	11	8.8	12	199	15	12	9.6	15	7.6	5.8	5.8
25	13	12	8.5	13	175	15	12	10	14	7.9	5.1	6.2
26	13	12	8.5	14	142	15	12	10	13	7.8	5.2	6.5
27	13	11	10	14	63	15	12	10	12	7.3	5.6	5.9
28	12	11	33	13	50	15	12	10	12	7.2	5.3	6.1
29	12	11	30	13	---	15	12	9.6	12	7.2	5.4	6.2
30	12	11	25	13	---	15	12	9.0	11	7.6	5.3	6.8
31	11	---	20	13	---	15	---	8.8	---	7.2	5.1	---
TOTAL	329.0	346	368.0	363	5039.3	551	389	311.2	454	268.0	244.8	160.6
MEAN	10.6	11.5	11.9	11.7	180	17.8	13.0	10.0	15.1	8.65	7.90	5.35
MAX	14	12	33	16	1050	36	15	12	39	17	34	6.8
MIN	8.6	11	8.5	10	9.5	15	12	8.8	11	6.1	5.1	4.5
AC-FT	653	686	730	720	10000	1090	772	617	901	532	486	319
CAL YR 1980	TOTAL	3774.9	MEAN	10.3	MAX	33	MIN	5.0	AC-FT	7490		
WTR YR 1981	TOTAL	8823.9	MEAN	24.2	MAX	1050	MIN	4.5	AC-FT	17500		

LOCATION.---Lat 48°09'16", long 103°34'27', in SE&SE&SW& sec.17, T.154 N., R.100 W., Williams County, Hydrologic Unit 10110101, on left bank at the Hardy Salt Company plant, 1.2 mi (1.9 km) upstream from bridge on State Highway 1804, 3.1 mi (5.0 km) upstream from mouth, and 1.4 mi (2.3 km) east of Williston.

WATER-DISCHARGE RECORDS

EXTREMES FOR CURRENT YEAR.--Maximum discharge, about 150 ft³/s (4.25 m³/s) Feb. 19, gage height, 6.36 ft (1.939 m), no peak above base of 150 ft³/s (4.25 m³/s); maximum gage height, 9.27 ft (2.826 m) Feb. 17, ice jam; no flow for many months.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.06	.31	7.0	.00	11	.40	.09	.17	.20	.00	.00
2	.00	.04	.29	5.5	.00	8.0	.39	.11	.67	.14	.16	.00
3	.00	.40	.25	4.0	.00	6.8	.34	.05	.94	.11	.09	.00
4	.00	.92	.23	1.0	.00	6.4	.30	.05	.84	.03	.02	.00
5	.00	.37	.21	.40	.00	5.9	.29	.04	.40	.00	.41	.00
6	.00	.17	.18	.25	.00	5.0	.29	.04	.25	.00	1.8	.00
7	.00	.10	.14	.22	.00	3.4	.21	.04	.29	.00	.46	.00
8	.00	.22	.10	.20	.00	2.5	.19	.04	.20	.00	.14	.00
9	.00	.32	.08	.15	.00	2.2	.18	.04	.11	.00	.05	.00
10	.00	.40	.06	.12	.00	2.0	.17	.07	.11	.00	.00	.00
11	.00	.40	.07	.10	.00	1.9	.17	.09	.25	.00	.00	.00
12	.00	.37	.10	.07	.00	2.0	.17	.14	.52	.00	.00	.00
13	.00	.34	.30	.05	.00	2.0	.14	.11	.60	.00	.00	.00
14	.00	.30	.50	.03	1.0	1.1	.14	.07	2.7	.00	.00	.00
15	.00	.26	.90	.02	10	.99	.14	.07	1.8	.00	.00	.00
16	.00	.28	1.5	.00	50	1.2	.16	.04	.67	.00	.00	.00
17	.00	.30	2.5	.00	90	.98	.13	.00	.64	.00	.00	.00
18	.25	.32	4.0	.00	100	.82	.11	.00	.58	.00	.00	.00
19	.46	.34	2.5	.00	120	.75	.09	.00	.61	.00	.00	.00
20	.34	.40	1.0	.00	85	.60	.09	.00	.52	.00	.00	.00
21	.14	.46	.60	.00	65	.55	.09	.00	.38	.00	.00	.00
22	.52	.45	.30	.00	45	.57	.09	.00	.23	.00	.00	.00
23	3.7	.39	.10	.20	35	.64	.09	.00	.47	.00	.00	.00
24	2.2	.34	.00	.10	25	.59	.11	.00	1.9	.00	.00	.00
25	1.6	.34	.00	.02	19	.44	.11	.00	1.6	.00	.00	.00
26	.67	.34	.00	.00	16	.40	.09	.00	.63	.00	.00	.00
27	.46	.34	.40	.00	13	.42	.11	.00	.47	.00	.00	.00
28	.34	.34	5.0	.00	11	.51	.11	.00	.33	.00	.00	.00
29	.20	.34	9.0	.00	---	.45	.14	.00	.25	.00	.00	.00
30	.14	.32	8.2	.00	---	.57	.11	.00	.22	.00	.00	.00
31	.09	---	7.8	.00	---	.45	---	.00	---	.00	.00	---
TOTAL	11.11	9.97	46.62	19.43	685.00	71.13	5.15	1.09	19.35	.48	3.13	.00
MEAN	.36	.33	1.50	.63	24.5	2.29	.17	.035	.65	.015	.10	.000
MAX	3.7	.92	9.0	7.0	120	11	.40	.14	2.7	.20	1.8	.00
MIN	.00	.04	.00	.00	.00	.40	.09	.00	.11	.00	.00	.00
AC-FT	22	20	92	39	1360	141	10	2.2	38	1.0	6.2	.00
CAL YR 1980	TOTAL 156.16		MEAN .43	MAX 9.0	MIN .00	AC-FT 310						
WTR YR 1981	TOTAL 872.46		MEAN 2.39	MAX 120	MIN .00	AC-FT 1730						

STONY CREEK BASIN

59

06331570 STONY CREEK NEAR WILLISTON, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1977 to September 1981 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS (MG/L AS CACU3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CACU3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT												
27...	1315	.49	2430	8.5	3.5	3.0	11.7	93	290	0	45	44
NOV												
24...	1510	.34	2730	8.6	.0	.5	13.5	101	280	0	46	40
DEC												
29...	1520	8.7	1310	8.1	5.0	.0	12.6	92	130	0	23	18
FEB												
18...	1100	70	220	8.3	12.5	.5	12.6	94	53	0	12	5.6
20...	1550	76	385	8.0	.5	5.0	10.3	78	--	--	--	--
24...	1330	17	475	8.1	5.0	.5	12.5	93	--	--	--	--
MAR												
11...	1345	1.7	948	8.2	15.5	1.0	11.4	88	140	0	27	18
24...	1315	.58	1330	8.5	13.0	7.0	12.6	110	--	--	--	--
APR												
21...	1545	.10	1980	8.6	14.5	13.0	10.7	98	240	0	41	33
JUN												
09...	1645	.10	2320	8.7	16.0	19.0	7.3	85	--	--	--	--
16...	1315	.73	2180	8.3	24.0	19.0	9.2	107	240	0	37	37

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY, CARBON- ATE FET-FLD (MG/L CACU3) (00430)	SULFATE DIS- SOLVED (MG/L AS SU4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIU2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TUNS PER AC-FT) (70303)
OCT												
27...	500	78	13	11	692	690	13	.6	11	1740	--	2.3
NOV												
24...	590	81	15	12	815	700	10	.5	8.4	1970	1900	2.6
DEC												
29...	280	81	11	9.2	340	350	50	.2	11	862	946	1.1
FEB												
18...	21	42	1.3	7.8	67	46	2.5	.1	8.2	144	138	.20
20...	--	--	--	--	95	--	--	--	--	--	--	--
24...	--	--	--	--	129	--	--	--	--	--	--	--
MAR												
11...	180	72	6.6	7.1	280	230	3.7	.2	9.4	648	644	.88
24...	--	--	--	--	398	--	--	--	--	--	--	--
APR												
21...	400	78	11	8.8	600	560	14	.4	4.8	1390	1420	1.8
JUN												
09...	--	--	--	--	688	--	--	--	--	--	--	--
16...	410	78	11	8.6	680	490	7.6	.4	4.3	1570	1400	2.1

STONY CREEK BASIN

06331570 STONY CREEK NEAR WILLISTON, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	SOLIDS, DIS- SOLVED (TUNS PER DAY) (70302)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS TOTAL (MG/L AS PU4) (71886)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC SUS- PENDED TOTAL (UG/L AS AS) (01001)	ARSENIC TOTAL IN BOT- TOM MA- TERIAL (UG/G AS AS) (01003)
OCT												
27...	2.5	--	--	--	--	--	--	--	--	--	--	--
NOV												
24...	1.8	.00	.010	.01	1.5	1.50	.100	.31	.050	--	--	--
DEC												
29...	20.2	--	--	--	--	--	--	--	--	--	--	--
FEB												
18...	27.6	--	--	--	--	--	--	--	--	3	2	--
MAR												
11...	2.9	.29	.200	--	1.3	1.50	.100	.31	.100	--	--	--
24...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
21...	.38	.01	.080	--	.56	.64	.080	.25	.060	3	0	0
JUN												
09...	--	--	--	--	--	--	--	--	--	--	--	--
16...	3.0	--	--	--	--	--	--	--	--	--	--	--

DATE	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BARIUM, SUS- PENDED RECOV- ERABLE (UG/L AS BA) (01006)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, SUS- PENDED RECOV- ERABLE (UG/L AS CR) (01031)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	CHRO- MIUM, RECOV- FM BOT- TOM MA- TERIAL (UG/G) (01029)	COBALT, RECOV- FM BOT- TOM MA- TERIAL (UG/G) AS CU) (01038)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)
OCT												
27...	10	10	0	--	--	280	--	--	--	--	--	--
NOV												
24...	--	--	--	--	--	340	--	--	--	--	--	--
DEC												
29...	--	--	--	--	--	160	--	--	--	--	--	--
FEB												
18...	--	--	--	0	<1	20	10	10	0	--	--	7
MAR												
11...	--	--	--	--	--	130	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
21...	100	40	60	0	<1	230	20	10	10	2	10	7
JUN												
09...	--	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	300	--	--	--	--	--	--

DATE	COPPER, SUS- PENDED RECOV- ERABLE (UG/L AS CU) (01041)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	COPPER, FM BOT- TOM MA- TERIAL (UG/G AS CU) (01043)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM, TOTAL RECOV- ERABLE (UG/L AS LI) (01132)	LITHIUM, SUS- PENDED RECOV- ERABLE (UG/L AS LI) (01131)	LITHIUM, DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, SUS- PENDED RECOV- ERABLE (UG/L AS MN) (01054)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)
OCT											
27...	--	--	--	50	80	0	80	80	60	20	--
NOV											
24...	--	--	--	250	--	--	--	120	90	30	--
DEC											
29...	--	--	--	320	--	--	--	80	30	50	--
FEB											
18...	7	0	--	410	--	--	--	160	120	40	.1
MAR											
11...	--	--	--	210	--	--	--	80	40	40	--
24...	--	--	--	--	--	--	--	--	--	--	--
APR											
21...	4	3	8	70	50	0	60	140	130	6	.1
JUN											
09...	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	160	--	--	--	100	70	30	--

STONY CREEK BASIN

61

06331570 STONY CREEK NEAR WILLISTON, ND---Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MERCURY SUS- PENDE RECOV- ERABLE (UG/L AS HG) (71895)	MERCURY REC OV- FM BOT- TOM MA- TERIAL (UG/G AS HG) (71921)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	NICKEL, SUS- PENDE RECOV- ERABLE (UG/L AS NI) (01066)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, SUS- PENDE TOTAL (UG/L AS SE) (01147)	SELE- NIUM, DIS- SOLVED TOTAL (UG/L AS SE) (01146)	SELE- NIUM, DIS- SOLVED TOTAL (UG/L AS SE) (01145)	SELE- NIUM, DIS- SOLVED TOTAL (UG/L AS SE) (01148)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
OCT 27...	--	--	--	--	--	--	--	--	--	--	620
NOV 24...	--	--	--	--	--	--	--	--	--	--	--
DEC 29...	--	--	--	--	--	--	--	--	--	--	--
FEB 18...	.1	.0	--	8	7	1	0	0	0	--	--
20...	--	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--	--	--
MAR 11...	--	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--	--	--
APR 21...	.2	.0	.01	3	1	2	0	0	0	0	560
JUN 09...	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--

DATE	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, SUS- PENDE RECOV- ERABLE (UG/L AS ZN) (01091)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	ZINC, REC OV- FM BOT- TOM MA- TERIAL (UG/G AS ZN) (01093)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT) (80030)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)	GROSS BETA, DIS- SOLVED (PCI/L AS SR/ YT-90) (80050)
FEB 18...	30	10	20	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--
MAR 11...	--	--	--	--	--	--	--	--	--
APR 21...	10	--	<3	4	<34	1.0	<16	2.0	<15
JUN 09...	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--

DATE	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90) (80060)	POTAS- SIUM 40 DIS- SOLVED (PCI/L AS K40) (82068)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHENOLS (UG/L) (32730)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)
OCT 27...	--	--	--	--	--	--	123	.16
NOV 24...	--	--	22	.7	--	--	161	.15
DEC 29...	--	--	--	--	--	--	44	1.0
FEB 18...	--	5.8	--	--	.00	1	145	28
20...	--	--	--	--	--	--	189	39
24...	--	--	--	--	--	--	106	4.9
MAR 11...	--	5.3	12	1.4	--	--	861	4.0
APR 21...	2.0	6.6	20	.9	.00	1	92	.02
JUN 09...	--	--	--	--	--	--	78	.02
16...	--	6.4	--	--	--	--	88	.17

STONY CREEK BASIN

06331570 STONY CREEK NEAR WILLISTON, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO JUNE 1981

DATE TIME	OCT 27,80 1315	NOV 24,80 1510	DEC 29,80 1520	FEB 18,81 1100				
TOTAL CELLS/ML	2700	19000	1200	1900				
DIVERSITY: DIVISION	1.5	0.7	1.0	0.9				
..CLASS	1.5	0.8	1.0	0.9				
..ORDER	1.8	1.0	1.8	1.0				
...FAMILY	2.3	1.0	1.9	1.3				
....GENUS	2.8	1.0	1.9	2.2				
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
....OOCYSTACEAE								
.....ANKISTRODESMUS	490#	18	720	4	55	4	55	3
.....KIRCHNERIELLA	--	--	--	--	--	--	--	--
.....OOCYSTIS	--	--	--	--	--	--	14	1
.....SELENASTRUM	190	7	--	--	--	--	--	--
.....TETRAEDRON	26	1	--	--	--	--	--	--
...SCENEDESMACEAE								
.....CRUCIGENIA	150	6	--	--	--	--	--	--
.....SCENEDESMUS	280	10	--	--	--	--	--	--
.....TETRASTRUM	52	2	--	--	--	--	--	--
..VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	150	6	1400	8	--	--	27	1
CHRYSOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
....CUSCINODISCACEAE								
.....CYCLOTELLA	280	10	16000#	83	--	--	--	--
.....STEPHANODISCUS	--	--	--	--	150	12	--	--
...PENNALES								
.....ACHNANTHACEAE								
.....ACHNANTHES	--	--	--	--	55	4	--	--
.....CYMBELLACEAE								
.....CYMBELLA	--	--	--	--	--	--	14	1
.....RHOPALODIA	--	--	--	--	--	--	14	1
...DIATOMACEAE								
.....DIATOMA	--	--	--	--	--	--	69	4
...FRAGILARIACEAE								
.....FRAGILARIA	--	--	--	--	--	--	--	--
.....SYNEDRA	--	--	--	--	--	--	14	1
...GOMPHONEMACEAE								
.....GOMPHONEMA	--	--	--	--	--	--	14	1
...NAVICULACEAE								
.....CALONEIS	--	--	--	--	--	--	--	--
.....DIPLONEIS	--	--	--	--	--	--	14	1
.....NAVICULA	--	--	--	--	--	--	82	4
...NITZSCHIACEAE								
.....NITZSCHIA	26	1	360	2	14	1	82	4
...SURIPELLACEAE								
.....SURIPELLA	--	--	--	--	--	--	--	--
..CHRYSOPHYCEAE								
...CHRYSOMONADALES								
....CHROMULINACEAE								
.....CHRYSOCOCCUS	--	--	360	2	--	--	--	--
CRYPTOPHYTA (CRYPTOMONADS)								
..CRYPTOPHYCEAE								
...CRYPTOMONADALES								
....CRYPTOCHRYSIDACEAE								
.....CHROOMONAS	--	--	180	1	--	--	--	--
....CRYPTOMONADACEAE								
.....CRYPTOMONAS	--	--	--	--	--	--	--	--
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROOCOCCALES								
....CHROOCOCCACEAE								
.....AGMENELLUM	--	--	--	--	270#	22	--	--
.....ANACYSTIS	1000#	37	--	--	--	--	--	--
...HORMOGONALES								
....OSCILLATORIACEAE								
.....LYNGBYA	--	--	--	--	--	--	760#	41
....OSCILLATORIA	--	--	--	--	670#	54	700#	38
EUGLENOPHYTA (EUGLENOIDS)								
..EUGLENOPHYCEAE								
...EUGLENALES								
....EUGLENACEAE								
.....EUGLENA	26	1	--	--	--	--	--	--
.....PHACUS	--	--	180	1	--	--	--	--
....TRACHELOMONAS	52	2	--	--	--	--	--	--
PYRRHOPHYTA (FIRE ALGAE)								
..DINOPHYCEAE								
...PERIDINIALES								
....GLENODINIACEAE								
.....GLENODINIUM	--	--	--	--	--	--	--	--
....PERIDINIACEAE								
.....PERIDINIUM	--	--	--	--	14	1	--	--

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

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

06331570 STONY CREEK NEAR WILLISTON, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO JUNE 1981

DATE TIME	MAR 11,81 1345	APR 21,81 1545	JUN 16,81 1315			
TOTAL CELLS/ML	5800	1500	3600			
DIVERSITY: DIVISION	1.4	1.5	1.2			
..CLASS	1.4	1.5	1.2			
...ORDER	1.7	2.0	1.5			
....FAMILY	1.8	2.2	2.2			
.....GENUS	1.8	2.4	3.3			
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)						
..CHLOROPHYCEAE						
...CHLOROCOCCALES						
....OOCYSTACEAE						
.....ANKISTRUDESUS	670	12	260#	17	180	5
.....KIRCHNERIELLA	48	1	--	--	440	12
....OOCYSTIS	--	--	13	1	110	3
....SELENASTRUM	--	--	39	3	300	8
....TETRAEDRON	--	--	--	--	--	--
...SCENEDESMACEAE						
....CRUCIGENIA	--	--	--	--	530	15
....SCENEDESMUS	--	--	26	2	440	12
....TETRASTRUM	--	--	--	--	240	7
..VOLVOCALES						
...CHLAMYDOMONADACEAE						
....CHLAMYDOMONAS	340	6	26	2	210	6
CHRYSTOPHYTA						
..BACILLARIOPHYCEAE						
...CENTRALES						
...COSCINODISCACEAE						
....CYCLOTELLA	790	14	--	--	--	--
....STEPHANODISCUS	--	--	710#	47	--	--
...PENNALES						
....ACHNANTHACEAE	--	--	--	--	--	--
....ACHNANTHES	--	--	--	--	--	--
....CYMBELLACEAE	--	--	--	--	--	--
....CYMBELLA	--	--	--	--	--	--
....RHOPALODIA	--	--	--	--	--	--
...DIATOMACEAE						
....DIATOMA	--	--	--	--	--	--
...FRAGILARIACEAE						
....FRAGILARIA	--	--	--	--	110	3
....SYNEDRA	--	--	39	3	45	1
...GOMPHONEMACEAE						
....GOMPHONEMA	--	--	--	--	--	--
...NAVICULACEAE						
....CALONEIS	--	--	--	--	*	0
....DIPLONEIS	--	--	--	--	--	--
....NAVICULA	*	0	13	1	*	0
...NITZSCHACEAE						
....NITZSCHIA	170	3	130	9	61	2
...SURIARELLACEAE						
....SURIARELLA	*	0	--	--	--	--
..CHRYSTOPHYCEAE						
...CHRYSOMONADALES						
...CHROMULINACEAE						
....CHRYSOCOCCUS	--	--	--	--	--	--
CRYPTOPHYTA (CRYPTOMONADS)						
..CRYPTOPHYCEAE						
...CRYPTOMONADALES						
....CRYPTOCHRYSIACEAE						
....CHRYOMONAS	--	--	--	--	--	--
...CRYPTOMONADACEAE						
....CRYPTOMONAS	*	0	--	--	--	--
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...CHROOCOCCALES						
....CHROOCOCCACEAE						
.....AGMENELLUM	--	--	--	--	--	--
.....ANACYSTIS	--	--	210	14	860#	24
...HORMOGONALES						
....OSCILLATORACEAE						
.....LYNGBYA	--	--	--	--	--	--
....OSCILLATORIA	3600#	62	--	--	--	--
EUGLENOPHYTA (EUGLENOIDS)						
..EUGLENOPHYCEAE						
...EUGLENALES						
....EUGLENACEAE						
.....EUGLENA	--	--	26	2	--	--
....PHACUS	--	--	--	--	*	0
....TRACHELOMONAS	--	--	--	--	--	--
PYRRHOPHYTA (FIRE ALGAE)						
..PYRRHOPHYCEAE						
...PERIDINIALES						
....GLENODINIACEAE						
.....GLENODINIUM	--	--	13	1	--	--
....PERIDINIACEAE						
.....PERIDINIUM	96	2	--	--	--	--

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

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

06331680 TOBACCO GARDEN CREEK NEAR WATFORD CITY, ND

LOCATION.--Lat 47°59'33", long 103°09'57", McKenzie County, Hydrologic Unit 10110101, in S&SW sec. 12, T. 152 N., R. 98 W., on left bank at downstream side of bridge on county highway, 14 mi (22 km) northeast of Watford City.

DRAINAGE AREA.--135 mi² (350 km²), approximately.

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

GAGE.--Water stage recorder. Datum of gage is 1,930.00 ft (588.264 m) National Geodetic Vertical Datum of 1929.

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

AVERAGE DISCHARGE.--5 years, 8.88 ft³/s (0.251 m³/s), 6,433 acre-ft/yr (7.93 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,380 ft³/s (67.4 m³/s) Apr. 18, 1979, gage height, 16.19 ft (4.935 m); no flow Jan. 28 to Mar. 1, 1978.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 380 ft³/s (10.8 m³/s) Feb. 17, gage height, 11.50 ft (3.505 m), from highwater mark; only peak above base of 100 ft³/s (2.83 m³/s); minimum daily discharge, 0.15 ft³/s (0.004 m³/s) Sept. 5-12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.45	1.2	.91	6.0	.90	4.0	1.4	1.1	3.9	.81	1.0	.19
2	.45	1.2	.73	4.4	.80	3.0	1.5	1.8	23	.51	1.1	.25
3	.45	1.1	.68	3.4	.70	2.6	1.3	1.6	16	.51	1.3	.21
4	.45	1.0	.68	2.5	.60	2.3	1.1	1.4	8.6	.51	.82	.18
5	.40	.95	.65	2.2	.50	2.3	1.0	.95	8.9	.51	.85	.15
6	.40	.87	.63	2.0	.50	2.5	1.0	.79	7.0	.49	1.0	.15
7	.40	.95	.62	1.8	.50	2.9	1.0	.70	4.2	.33	.94	.15
8	.40	.97	.60	1.5	.40	2.4	.95	.71	2.7	.27	1.5	.15
9	.45	.90	.58	1.2	.35	2.0	1.0	.64	1.3	.25	1.6	.15
10	.45	6.4	.58	1.0	.35	2.0	1.1	.66	1.1	.27	1.2	.15
11	.45	1.3	.58	1.0	.30	2.3	1.1	.56	.93	.27	.96	.15
12	.45	.95	.62	1.0	.30	2.6	1.1	.65	.67	.32	.64	.15
13	.45	1.2	.64	1.0	.30	3.0	1.1	.47	2.5	.34	.55	.17
14	.45	1.0	.60	.90	30	3.4	1.1	.59	2.9	.57	.51	.19
15	.38	1.2	.68	.80	80	3.3	1.1	.56	4.5	3.2	.41	.20
16	.79	1.5	1.0	.70	160	3.3	.95	.51	4.4	4.8	.38	.22
17	1.7	1.4	1.1	.65	300	3.5	.87	.51	4.0	2.9	.41	.24
18	2.0	1.1	1.2	.65	200	2.9	.93	.35	3.7	2.2	.31	.41
19	2.9	.99	1.0	.65	95	2.7	.85	.38	3.6	7.0	.34	.32
20	2.3	1.0	.91	.70	58	2.4	.78	.38	3.2	23	.35	.36
21	1.2	.93	.70	.72	48	1.8	.80	.42	2.5	8.5	.31	.34
22	1.6	.88	.70	.75	26	1.4	.68	.47	2.0	21	.29	.36
23	7.4	.87	.70	1.0	17	1.5	.56	.60	1.7	52	.28	.37
24	7.6	.95	.65	1.3	11	1.5	.55	.78	1.7	20	.32	.62
25	4.0	1.0	.60	2.0	8.7	1.6	.57	.77	1.1	7.6	.29	.78
26	2.7	1.0	.60	2.0	9.2	1.4	.57	.64	.72	3.7	.28	.68
27	2.3	.97	.80	1.5	5.9	1.8	.82	.58	.63	2.0	.24	.50
28	1.6	1.0	4.0	1.2	4.8	1.8	.80	.55	.75	1.3	.23	.45
29	1.4	.93	5.0	1.0	---	1.7	.87	.66	1.2	1.3	.24	.47
30	1.3	.98	6.0	1.0	---	1.7	.76	.65	1.0	1.2	.26	.58
31	1.2	---	5.8	1.0	---	2.1	---	.58	---	1.2	.18	---
TOTAL	48.47	36.69	40.54	47.52	1060.10	73.7	28.21	22.01	120.40	168.86	19.09	9.29
MEAN	1.56	1.22	1.31	1.53	37.9	2.38	.94	.71	4.01	5.45	.62	.31
MAX	7.6	6.4	6.0	6.0	300	4.0	1.5	1.8	23	52	1.6	.78
MIN	.38	.87	.58	.65	.30	1.4	.55	.35	.63	.25	.18	.15
AC-FT	96	73	80	94	2100	146	56	44	239	335	38	18
CAL YR 1980	TOTAL	442.93	MEAN	1.21	MAX	11	MIN	.15	AC-FT	879		
WTR YR 1981	TOTAL	1674.88	MEAN	4.59	MAX	300	MIN	.15	AC-FT	3320		

65

LOCATION.--Lat 48°10'52", long 103°01'26", in SW¹/₄SE¹/₄ sec.33, T.155 N., R.96 W., Williams County, Hydrologic Unit 10110101, on left bank 40 ft (12 m) upstream from bridge on North Dakota State Highway 1804, 12 mi (19 km) southeast of Ray, and 1.4 mi (2.3 km) upstream from mouth.

WATER-DISCHARGE RECORDS

REMARKS.--Records poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 5,000 ft³/s (142 m³/s) Apr. 18, 1979, gage height, 12.12 ft (3.694 m), ice jam; no flow Mar. 10-17, 1978.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, about 120 ft³/s (3.40 m³/s) Feb. 16, gage height, 7.60 ft (2.316 m), backwater from ice, only peak above base of 100 ft³/s (2.83 m³/s); minimum daily discharge, 0.04 ft³/s (0.001 m³/s) Aug. 29, 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.65	2.1	.80	1.5	.78	6.1	2.2	1.9	2.6	1.3	.09	.07
2	.60	2.1	.80	1.2	.77	5.7	2.1	1.5	4.5	1.1	1.0	.09
3	.70	2.1	.80	1.1	.76	6.0	2.1	1.2	4.5	1.0	1.2	.25
4	.70	2.1	.80	1.1	.75	7.5	2.0	1.1	3.4	.92	1.0	.52
5	.75	2.1	.80	1.0	.75	15	1.9	1.1	2.2	.90	1.3	.70
6	.70	2.1	.80	1.0	.74	10	1.7	1.1	2.0	.75	1.2	.65
7	.65	2.1	.80	.99	.74	6.6	1.6	1.1	1.7	.66	.60	.65
8	.70	2.0	.80	.97	.73	6.0	1.6	1.0	1.6	.66	.56	.56
9	.65	2.0	.80	.95	.73	5.7	1.5	1.0	1.7	.37	.52	.86
10	.65	1.9	.82	.93	.73	5.8	1.5	1.0	1.6	.32	.48	.35
11	.60	1.7	.90	.92	.72	5.6	1.4	1.2	1.5	.35	.46	.48
12	.65	1.6	.93	.90	.71	6.0	1.5	1.3	1.6	.32	.44	.41
13	.81	1.5	.97	.89	.72	5.7	1.5	1.3	2.4	.24	.60	.21
14	1.0	1.4	1.0	.87	.76	5.2	1.5	1.4	4.5	.18	.56	.15
15	1.1	1.4	1.1	.86	1.6	5.5	1.5	1.3	4.7	.17	.65	.15
16	1.1	1.5	1.3	.86	5.0	5.3	1.5	1.1	2.8	.15	.81	.21
17	1.4	1.5	1.2	.88	90	5.1	1.4	1.0	2.7	.18	.87	.48
18	1.8	1.5	1.1	.90	80	4.2	1.3	1.2	2.6	.30	.94	.35
19	1.9	1.4	.98	.92	73	3.4	1.2	.87	3.0	.35	1.1	.48
20	1.9	1.4	.95	.93	62	3.1	1.2	1.1	2.4	.30	.90	.41
21	1.9	1.3	.97	.94	50	4.0	1.3	1.2	2.1	.48	.60	.30
22	2.0	1.3	.98	.94	36	2.6	1.2	1.4	2.1	1.8	.56	.30
23	2.3	1.2	.96	.95	30	3.8	1.3	1.5	2.5	1.1	.60	.35
24	2.5	1.2	.84	.93	26	4.0	1.3	1.5	2.6	1.9	.65	.50
25	2.3	2.8	.95	.90	19	3.2	1.3	1.5	3.3	.60	.41	.41
26	2.3	1.1	1.8	.89	15	2.9	1.2	1.7	2.5	.06	.34	.56
27	2.1	.93	2.5	.87	13	2.5	1.5	1.8	2.1	.12	.22	.41
28	2.9	1.0	2.3	.84	6.7	2.5	1.3	1.8	1.8	.09	.09	.35
29	2.1	.95	2.2	.82	---	3.0	2.1	1.3	1.7	.09	.04	.30
30	2.1	.85	1.8	.80	---	3.1	2.1	1.2	1.6	.07	.04	.35
31	2.1	---	1.7	.79	---	2.4	---	1.2	---	.06	.05	---
TOTAL	43.61	48.13	35.45	29.34	517.69	157.5	46.8	39.87	76.3	16.89	18.88	11.86
MEAN	1.41	1.60	1.14	.95	18.5	5.08	1.56	1.29	2.54	.54	.61	.40
MAX	2.9	2.8	2.5	1.5	90	15	2.2	1.9	4.7	1.9	1.3	.86
MIN	.60	.85	.80	.79	.71	2.4	1.2	.87	1.5	.06	.04	.07
AC-FT	87	95	70	58	1030	312	93	79	151	34	37	24
CAL YR 1980	TOTAL	501.88		MEAN 1.37	MAX 10	MIN .09	AC-FT 995					
WTR YR 1981	TOTAL	1042.32		MEAN 2.86	MAX 90	MIN .04	AC-FT 2070					

BEAVER CREEK BASIN

06331850 BEAVER CREEK NEAR RAY, ND--Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.--Water years 1978 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (000061)	SPE- CIFIC CON- DUCT- ANCE (UMHUS) (000095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CACO3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
UCT												
28...	1230	2.0	2090	8.3	2.5	2.5	12.8	99	490	0	75	73
NOV												
25...	1315	1.2	2360	8.3	2.0	1.5	13.1	98	530	0	88	76
DEC												
30...	1320	1.8	2040	8.0	4.0	.0	11.5	84	460	0	76	66
JAN												
19...	1600	.92	2050	7.8	-8.0	.0	10.8	84	500	0	83	72
FEB												
10...	1320	.73	2070	8.1	-19.5	.0	11.9	87	500	0	82	71
20...	1210	65	345	8.0	6.0	.5	12.3	92	110	5	24	11
24...	1655	27	710	8.4	-5	.5	10.4	77	--	--	--	--
MAR												
12...	1445	5.6	1280	8.2	10.0	3.0	12.4	98	310	0	59	39
24...	1600	3.8	1620	8.3	14.5	7.5	12.2	107	--	--	--	--
APR												
22...	1700	1.2	1980	8.5	15.0	13.0	10.6	106	430	0	70	62
MAY												
19...	1500	.90	2100	8.5	25.5	17.0	10.9	118	470	0	70	72
JUN												
10...	1020	1.6	2050	8.5	17.0	18.5	10.8	123	--	--	--	--
17...	1230	2.7	2000	8.6	15.5	18.0	9.8	113	450	0	63	72
JUL												
09...	1245	.37	2050	8.6	28.0	21.5	9.0	107	390	0	47	66
AUG												
10...	1800	.50	1950	8.5	29.0	25.0	9.4	118	360	0	45	59
SEP												
09...	1325	.44	2090	8.5	21.5	21.5	8.2	99	410	0	55	67

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY, CARBON- ATE FET-FLD (MG/L CACO3) (00430)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
UCT												
28...	360	61	7.1	11	530	680	15	.4	13	1530	--	2.0
NOV												
25...	370	60	7.0	12	620	720	16	.3	14	1680	1670	2.2
DEC												
30...	330	60	6.7	9.0	530	620	17	.3	14	1420	1450	1.9
JAN												
19...	320	58	6.2	8.3	560	610	11	.3	15	1480	1460	2.0
FEB												
10...	340	59	6.6	8.8	570	660	11	.3	18	1490	1530	2.0
20...	31	37	1.3	8.9	100	77	4.5	.1	11	243	228	.33
24...	--	--	--	--	207	--	--	--	--	--	--	--
MAR												
12...	190	57	4.7	8.2	370	330	8.2	.2	14	886	871	1.2
24...	--	--	--	--	436	--	--	--	--	--	--	--
APR												
22...	310	60	6.5	8.6	540	580	13	.3	11	1400	1380	1.9
MAY												
19...	340	60	6.8	9.7	550	690	12	.3	10	1440	1540	1.9
JUN												
10...	--	--	--	--	514	--	--	--	--	--	--	--
17...	370	63	7.6	9.4	540	690	11	.3	5.4	1470	1550	2.0
JUL												
09...	330	64	7.3	9.6	500	590	12	.3	5.9	1440	1360	1.9
AUG												
10...	330	66	8.9	10	510	560	15	.3	8.4	1360	1330	1.8
SEP												
09...	350	64	7.5	10	540	630	22	.4	11	1460	1470	1.9

BEAVER CREEK BASIN

67

06331850 BEAVER CREEK NEAR RAY, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS TOTAL (MG/L AS PU4) (71886)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC SUS- PENDED TOTAL (UG/L AS AS) (01001)	ARSENIC TOTAL IN BOT- TOM MA- TERIAL (UG/G AS AS) (01003)
OCT 28...	8.4	--	--	--	--	--	--	--	--	--	--	--
NOV 25...	5.4	.00	.000	.00	.51	.51	.020	.06	.030	--	--	--
DEC 30...	6.9	--	--	--	--	--	--	--	--	--	--	--
JAN 19...	3.6	.00	.100	.12	.51	.61	.020	.06	.020	--	--	--
FEB 10...	2.9	--	--	--	--	--	--	--	--	--	--	--
20...	42.6	--	--	--	--	--	--	--	--	3	1	--
24...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 12...	13.4	--	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--	--	--	--
APR 22...	4.7	.01	.080	--	.46	.54	.050	.15	.020	2	0	10
MAY 19...	3.5	--	--	--	--	--	--	--	--	--	--	--
JUN 10...	--	--	--	--	--	--	--	--	--	--	--	--
17...	10.7	--	--	--	--	--	--	--	--	--	--	--
JUL 09...	1.4	.01	.040	--	.90	.94	.050	.15	.050	--	--	--
AUG 10...	1.8	--	--	--	--	--	--	--	--	--	--	--
SEP 09...	1.7	--	--	--	--	--	--	--	--	--	--	--

DATE	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BARIUM, SUS- PENDED RECOV- ERABLE (UG/L AS BA) (01006)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, SUS- PENDED RECOV. (UG/L AS CR) (01031)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	CHRO- MIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CU) (01029)	COBALT, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CU) (01038)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)
OCT 28...	100	0	100	--	--	250	--	--	--	--	--	--
NOV 25...	--	--	--	--	--	250	--	--	--	--	--	--
DEC 30...	--	--	--	--	--	240	--	--	--	--	--	--
JAN 19...	--	--	--	--	--	240	--	--	--	--	--	--
FEB 10...	--	--	--	--	--	240	--	--	--	--	--	--
20...	--	--	--	0	<1	50	10	10	0	--	--	4
24...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 12...	--	--	--	--	--	160	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--	--	--	--
APR 22...	100	60	40	0	<1	230	20	10	10	2	10	5
MAY 19...	--	--	--	--	--	240	--	--	--	--	--	--
JUN 10...	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	300	--	--	--	--	--	--
JUL 09...	--	--	--	--	--	310	--	--	--	--	--	--
AUG 10...	--	--	--	--	--	310	--	--	--	--	--	--
SEP 09...	--	--	--	--	--	290	--	--	--	--	--	--

06331850 BEAVER CREEK NEAR RAY, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	CUPPER, SUS- PENDE RECOV- ERABLE (UG/L AS CU) (01041)	CUPPER, DIS- SOLVED (UG/L AS CU) (01040)	CUPPER, FM BOT- TUM MA- TERIAL (UG/G AS CU) (01043)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI) (01132)	LITHIUM SUS- PENDE RECOV- ERABLE (UG/L AS LI) (01131)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, SUS- PENDE RECOV. (UG/L AS MN) (01054)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)
OCT 28...	--	--	--	50	100	0	100	30	10	20	--
NOV 25...	--	--	--	40	--	--	--	60	10	50	--
DEC 30...	--	--	--	50	--	--	--	90	10	80	--
JAN 19...	--	--	--	40	--	--	--	70	10	60	--
FEB 10...	--	--	--	0	--	--	--	90	10	80	--
20...	3	1	--	350	--	--	--	150	80	70	.1
24...	--	--	--	--	--	--	--	--	--	--	--
MAR 12...	--	--	--	50	--	--	--	70	20	50	--
24...	--	--	--	--	--	--	--	--	--	--	--
APR 22...	4	1	6	50	80	0	80	90	40	50	.2
MAY 19...	--	--	--	70	--	--	--	80	50	30	--
JUN 10...	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	40	--	--	--	40	10	30	--
JUL 09...	--	--	--	140	--	--	--	40	10	30	--
AUG 10...	--	--	--	32	--	--	--	20	10	9	--
SEP 09...	--	--	--	30	--	--	--	20	10	10	--

[illegible]

BEAVER CREEK BASIN

69

06331850 BEAVER CREEK NEAR RAY, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, SUS- PENDE RECOV- ERABLE (UG/L AS ZN) (01091)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	ZINC, FM BUT- TOM MA- TERIAL (UG/G AS ZN) (01093)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT) (80030)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)	GROSS BETA, DIS- SOLVED (PCI/L AS SR/ YT-90) (80050)
FEB									
10...	--	--	--	--	--	--	--	--	--
20...	40	0	50	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--
MAR									
12...	--	--	--	--	--	--	--	--	--
APR									
22...	20	10	10	3	<29	<.5	<15	.6	<14

DATE	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90) (80060)	POTAS- SIUM 40 DIS- SOLVED (PCI/L AS K40) (82068)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHENOLS (UG/L) (32730)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)
OCT								
28...	--	--	--	--	--	--	29	.16
NOV								
25...	--	--	16	.2	--	--	30	.10
DEC								
30...	--	--	--	--	--	--	69	.34
JAN								
19...	--	--	21	.3	--	--	33	.08
FEB								
10...	--	6.6	--	--	--	--	22	.04
20...	--	6.6	--	--	.00	4	76	13
24...	--	--	--	--	--	--	142	10
MAR								
12...	--	6.1	--	--	--	--	43	.65
APR								
22...	.6	6.4	8.3	.3	.00	4	53	.18
MAY								
19...	--	7.2	--	--	--	--	59	.14
JUN								
10...	--	--	--	--	--	--	39	.17
17...	--	7.0	--	--	--	--	32	.23
JUL								
09...	--	7.2	9.5	.4	--	--	30	.03
AUG								
10...	--	--	--	--	--	--	4	.01
SEP								
09...	--	--	--	--	--	--	12	.01

DATE	LENGTH OF EXPO- SURE (DAYS) (00022)	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUORUM (MG/M2) (70957)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUORUM (MG/M2) (70958)	PERI- PHYTON BIOMASS ASH WEIGHT G/SQ M (00572)	PERI- PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)
JUL					
09...	26	3.24	.740	7.95	11.7
AUG					
10...	32	4.12	1.28	3.86	5.98

BEAVER CREEK BASIN

06331850 BEAVER CREEK NEAR RAY, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	OCT 28,80 1230	NOV 25,80 1315	DEC 30,80 1320	JAN 19,81 1600	FEB 10,81 1320	
TOTAL CELLS/ML	280	400	1100	100	220	
DIVERSITY: DIVISION	1.7	0.3	1.1	0.5	1.1	
..CLASS	1.7	0.3	1.1	0.5	1.1	
..ORDER	2.3	0.4	1.3	0.5	1.3	
...FAMILY	2.3	0.4	1.6	0.5	1.6	
....GENUS	2.4	0.4	1.6	1.3	1.6	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)						
..CHLOROPHYCEAE						
...CHLOROCOCCALES						
....OOCYSTACEAE						
....ANKISTRODESMUS	--	--	14	1	--	--
....DICTYOSPHAERIUM	--	--	--	--	--	--
....SELENASTRUM	39	14	--	--	--	--
...SCENEDESMACEAE						
....CRUCIGENIA	--	--	--	--	--	--
...SCENEDESMUS	--	--	--	--	--	--
..VOLVOCALES						
...CHLAMYDOMONADACEAE						
....CHLAMYDOMONAS	100#	36	370#	94	14	1
CHRYSTOPHYTA						
..BACILLARIOPHYCEAE						
...CENTRALES						
....COSCINODISCACEAE						
....CYCLOTELLA	13	5	13	3	26#	25
....MELOSIRA	--	--	--	--	64#	63
....STEPHANODISCUS	--	--	--	55	5	--
..PENNALES						
...ACHNANTHACEAE						
....ACHNANTHES	--	--	--	--	--	--
...CYMBELLACEAE						
....AMPHORA	--	--	--	--	--	--
....CYMBELLA	--	--	--	--	--	--
....EPITHEMIA	--	--	--	--	--	--
...DIATOMACEAE						
....DIATOMA	--	--	--	120	12	--
...FRAGILARIACEAE						
....FRAGILARIA	--	--	--	--	--	--
....SYNEORA	--	--	--	27	3	13
...GOMPHONEMATACEAE						6
....GOMPHONEMA	--	--	--	14	1	13
...NAVICULACEAE						6
....GYROSIGMA	--	--	--	--	--	--
....NAVICULA	--	--	--	--	--	--
....PLEUROSIGMA	--	--	--	--	--	--
...NITZSCHIACEAE						
....NITZSCHIA	13	5	13	27	3	13
CRYPTOPHYTA (CRYPTOMONADS)						
..CRYPTOPHYCEAE						
...CRYPTOMONADALES						
....CRYPTOCHRYSIDACEAE						
...CHROOMONAS	--	--	--	--	--	13
...CRYPTOMONADACEAE						6
....CRYPTOMONAS	--	--	--	--	--	--
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...CHROOCOCCALES						
....CHROOCOCCACEAE						
....ANACYSTIS	13	5	--	--	--	--
...HORMOGONALES						
...NOSTOCACEAE						
....ANABAENA	--	--	--	--	--	150#
...OSCILLATORIA						71
....OSCILLATORIA	--	--	--	750#	71	--
EUGLENOPHYTA (EUGLENOIDS)						
..EUGLENOPHYCEAE						
...EUGLENALES						
....EUGLENACEAE						
....EUGLENA	13	5	--	--	--	--
...TRACHELOMONAS	77#	27	--	--	--	--
PYRRHOPHYTA (FIRE ALGAE)						
..DINOPHYCEAE						
...GYMNODINIALES						
....GYMNODINIACEAE						
....GYMNODINIUM	--	--	--	--	--	--
...PERIDINIALES						
....GLENODINIACEAE						
....GLENODINIUM	13	5	--	14	1	--

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

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

BEAVER CREEK BASIN

71

06331850 BEAVER CREEK NEAR RAY, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	FEB 20,81 1210	MAR 12,81 1445	APR 22,81 1700	MAY 19,81 1500				
TOTAL CELLS/ML	410	230	1700	3500				
DIVERSITY: DIVISION	1.5	1.5	1.5	1.6				
..CLASS	1.5	1.5	1.5	1.6				
...ORDER	2.1	2.1	2.1	1.8				
....FAMILY	3.1	2.4	2.2	2.0				
.....GENUS	3.2	2.4	2.3	2.0				
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
....OOCYSTACEAE								
.....ANKISTRODESMUS	70#	17	--	-	110	7	420	12
.....DICTYOSPHAERIUM	--	-	51#	22	--	-	--	-
.....SELENASTRUM	--	-	--	-	16	1	20	1
...SCENEDESMACEAE								
....CRUCIGENIA	--	-	--	-	--	-	--	-
....SCENEDESMUS	--	-	26	11	63	4	160	5
...VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	110#	28	64#	28	940#	57	60	2
CHRYSTOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
....COSCINODISCACEAE								
.....CYCLOTELLA	14	3	--	-	47	3	260	8
.....MELOSIRA	--	-	--	-	--	-	--	-
....STEPHANODISCUS	--	-	--	-	63	4	--	-
...PENNALES								
....ACHNANTHACEAE								
.....ACHNANTHES	14	3	--	-	--	-	--	-
...CYMBELLACEAE								
....AMPHORA	14	3	--	-	--	-	--	-
....CYMBELLA	--	-	--	-	--	-	--	-
....EPITHEMIA	--	-	--	-	--	-	--	-
...DIATOMACEAE								
....DIATOMA	--	-	--	-	--	-	--	-
...FRAGILARIACEAE								
....FRAGILARIA	--	-	--	-	--	-	--	-
....SYNEDRA	42	10	--	-	--	-	--	-
...GOMPHONEMACEAE								
....GOMPHONEMA	14	3	--	-	--	-	--	-
...NAVICULACEAE								
....GYROSIGMA	--	-	--	-	--	-	20	1
....NAVICULA	42	10	26	11	16	1	--	-
....PLEUROSIGMA	14	3	--	-	--	-	--	-
...NITZSCHACEAE								
....NITZSCHIA	28	7	--	-	63	4	100	3
CRYPTOPHYTA (CRYPTOMONADS)								
..CRYPTOPHYCEAE								
...CRYPTOMONADALES								
....CRYPTOCHRYSIDACEAE								
.....CHROOMONAS	--	-	--	-	31	2	--	-
....CRYPTOMONADACEAE								
.....CRYPTOMONAS	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROOCOCCALES								
....CHROOCOCCACEAE								
.....ANACYSTIS	14	3	51#	22	170	10	2000#	58
...HORMOGONALES								
....NOSTOCACEAE								
.....ANABAENA	--	-	--	-	--	-	--	-
....OSCILLATORIACEAE								
.....OSCILLATORIA	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)								
..EUGLENOPHYCEAE								
...EUGLENALES								
....EUGLENACEAE								
.....EUGLENA	--	-	--	-	--	-	--	-
....TRACHELOMONAS	14	3	13	6	130	8	400	12
PYRRHOPHYTA (FIRE ALGAE)								
..DINOPHYCEAE								
...GYMNODINIALES								
....GYMNODINIACEAE								
.....GYMNODINIUM	14	3	--	-	--	-	--	-
...PERIDINIALES								
....GLENODINIACEAE								
.....GLENODINIUM	--	-	--	-	16	1	--	-

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

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

BEAVER CREEK BASIN

06331850 BEAVER CREEK NEAR RAY, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	JUN 17,81 1230	JUL 9,81 1245	AUG 10,81 1800	SEP 9,81 1325				
TOTAL CELLS/ML	1000	1500	14	130				
DIVERSITY: DIVISION	1.4	1.4	0.0	1.0				
..CLASS	1.4	1.4	0.0	1.0				
...ORDER	1.8	1.9	0.0	1.4				
...FAMILY	2.0	2.5	0.0	2.3				
....GENUS	2.2	2.6	0.0	2.3				
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
....OOCYSTACEAE								
....ANKISTRODESMUS	39	4	26	2	--	-	--	-
....DICTYOSPHAERIUM	--	-	--	-	--	-	14	11
....SELENASTRUM	--	-	--	-	--	-	--	-
...SCENEDESMACEAE								
....CRUCIGENIA	--	-	100	7	--	-	--	-
....SCENEDESMUS	--	-	26	2	--	-	56#	44
..VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	140	14	540#	36	--	-	--	-
CHRYSOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
...COSCINODISCACEAE								
....CYCLOTELLA	26	3	--	-	--	-	--	-
....MELUSIRA	--	-	--	-	--	-	14	11
....STEPHANODISCUS	--	-	--	-	--	-	--	-
..PENNALES								
...ACHNANTHACEAE								
....ACHNANTHES	--	-	--	-	--	-	--	-
...CYMBELLACEAE								
....AMPHORA	--	-	--	-	--	-	--	-
....CYMBELLA	13	1	--	-	--	-	--	-
....EPITHEMIA	--	-	--	-	--	-	14	11
...DIATOMACEAE								
....DIATOMA	--	-	--	-	--	-	--	-
...FRAGILARIACEAE								
....FRAGILARIA	520#	51	39	3	--	-	--	-
....SYNEDRA	39	4	13	1	--	-	--	-
...GOMPHONEMACEAE								
....GOMPHONEMA	--	-	--	-	--	-	--	-
...NAVICULACEAE								
....GYROSIGMA	--	-	--	-	--	-	--	-
....NAVICULA	--	-	--	-	--	-	14	11
....PLEUROSIGMA	--	-	--	-	--	-	--	-
...NITZSCHIA	26	3	13	1	--	-	14	11
CRYPTOPHYTA (CRYPTOMONADS)								
..CRYPTOPHYCEAE								
...CRYPTOMONADALES								
....CRYPTOCHRYSIDACEAE								
...CHROMONAS	--	-	13	1	--	-	--	-
...CRYPTOMONADACEAE								
....CRYPTOMONAS	--	-	52	3	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROOCOCCALES								
....CHROOCOCCACEAE								
....ANACYSTIS	39	4	52	3	--	-	--	-
...HORMOGONALES								
....NOSTOCACEAE								
....ANABAENA	180#	18	280#	19	--	-	--	-
...OSCILLATORIA								
....OSCILLATORIA	--	-	360#	24	--	-	--	-
EUGLENOPHYTA (EUGLENIDS)								
..EUGLENOPHYCEAE								
...EUGLENALES								
....EUGLENACEAE								
....EUGLENA	--	-	--	-	14#	100	--	-
....TRACHELUMONAS	--	-	--	-	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)								
..DINOPHYCEAE								
...GYMNODINIALES								
....GYMNODINIACEAE								
....GYMNODINIUM	--	-	--	-	--	-	--	-
...PERIDINIALES								
....GLENODINIACEAE								
....GLENODINIUM	--	-	--	-	--	-	--	-

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

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

WHITE EARTH RIVER BASIN

73

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, and 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.

PERIOD OF RECORD.--August 1954 to September 1981 (discontinued).

REVISED RECORDS.--WSP 2117: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,070.00 ft (630.936 m) National Geodetic Vertical Datum of 1929. 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 are 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.--27 years, 28.2 ft³/s (0.799 m³/s), 20,430 acre-ft/yr (25.2 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, 5,200 ft³/s (147 m³/s) Apr. 18, 1979, gage height, 20.12 ft (6.133 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, 710 ft³/s (20.1 m³/s) Feb. 17, gage height, 11.25 ft (3.429 m) from high-water mark, backwater from ice; minimum daily, 0.30 ft³/s (0.008 m³/s) Sept. 11-12, 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.3	5.9	4.5	6.4	2.6	79	12	6.2	13	12	1.2	1.6
2	2.2	5.9	4.0	5.4	2.4	84	12	5.4	24	11	1.4	1.4
3	2.4	6.0	3.5	4.4	2.2	86	11	5.6	13	9.0	.82	.95
4	2.5	5.9	3.0	4.0	2.2	80	10	5.5	11	7.8	.51	.82
5	2.4	5.6	2.8	3.9	2.0	78	9.7	5.0	12	6.8	4.3	.70
6	2.4	5.5	2.6	3.9	2.0	72	9.1	4.6	9.8	6.0	10	.82
7	2.3	5.6	2.3	3.9	1.8	60	8.8	4.0	9.4	5.2	6.5	.95
8	2.2	6.5	2.2	3.9	1.6	49	8.5	4.7	8.9	4.3	4.0	.82
9	2.4	7.2	2.0	3.7	1.5	46	8.0	5.4	8.2	3.5	3.2	.70
10	2.1	6.4	1.7	3.5	1.4	43	7.7	5.4	7.3	2.8	2.5	.45
11	2.3	5.9	1.5	3.2	1.2	42	7.0	5.2	6.5	2.6	1.4	.30
12	2.0	6.1	1.4	3.2	1.0	44	7.1	6.9	6.2	2.4	.63	.30
13	2.6	6.7	1.6	2.9	1.0	40	7.5	8.1	8.7	2.0	.94	.35
14	2.0	6.4	1.6	2.8	5.0	28	7.0	6.6	15	2.1	.92	.45
15	2.6	6.0	2.0	2.4	100	29	5.9	6.8	14	2.2	1.2	.45
16	5.1	5.8	3.5	2.4	350	26	6.4	6.6	11	1.8	1.8	.35
17	7.9	5.8	5.0	2.3	600	23	6.3	6.1	12	1.7	2.7	.35
18	5.1	5.8	3.5	1.8	540	18	6.1	5.9	13	1.8	1.8	.35
19	3.9	5.9	1.5	1.8	410	15	5.4	4.9	10	1.9	1.4	.30
20	3.4	6.0	1.2	2.0	380	14	5.2	4.9	8.7	1.9	1.3	.35
21	2.6	6.2	1.2	2.8	330	13	5.2	4.4	9.9	1.8	1.2	.70
22	4.2	6.4	1.2	3.2	290	12	11	4.7	11	1.7	1.9	1.1
23	9.5	6.2	1.1	3.5	290	12	12	5.2	15	1.7	2.3	1.2
24	7.5	6.0	1.0	3.9	247	12	11	6.5	22	1.7	2.9	1.1
25	5.9	5.8	1.0	3.9	202	14	8.9	6.6	18	1.8	3.1	1.2
26	5.6	5.8	1.0	4.0	134	12	6.8	6.3	16	1.7	2.7	2.3
27	5.4	5.6	2.8	3.5	121	11	8.0	5.7	16	1.5	2.6	2.5
28	5.6	5.6	6.0	3.2	115	13	9.6	5.6	16	1.4	2.3	2.0
29	5.9	5.5	10	3.0	---	13	8.3	5.2	15	.95	2.3	1.7
30	6.4	5.0	8.8	2.9	---	12	7.4	4.8	13	1.2	2.1	2.5
31	6.4	---	7.9	2.8	---	13	---	4.4	---	.97	2.0	---
TOTAL	125.1	179.0	93.4	104.5	4136.9	1093	248.9	173.2	373.6	105.22	73.92	29.06
MEAN	4.04	5.97	3.01	3.37	148	35.3	8.30	5.59	12.5	3.39	2.38	.97
MAX	9.5	7.2	10	6.4	600	86	12	8.1	24	12	10	2.5
MIN	2.0	5.0	1.0	1.8	1.0	11	5.2	4.0	6.2	.95	.51	.30
AC-FT	248	355	185	207	8210	2170	494	344	741	209	147	58
CAL YR 1980 TOTAL	2189.57			MEAN 5.98	MAX 69	MIN .13	AC-FT 4340					
WTR YR 1981 TOTAL	6735.80			MEAN 18.5	MAX 600	MIN .30	AC-FT 13360					

BEAR DEN CREEK BASIN

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) National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--15 years, 8.32 ft³/s (0.236 m³/s), 6,030 acre-ft/yr (7.43 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.--Maximum discharge, 204 ft³/s (5.78 m³/s) Feb. 15, gage height 4.95 ft (1.509 m), only peak above base of 100 ft³/s (2.83 m³/s); no flow Feb. 7-12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.11	.24	.17	.14	.08	1.7	.45	.22	.58	1.0	.23	.18
2	.10	.24	.16	.12	.06	1.4	.49	.25	.71	6.2	.26	.17
3	.10	.22	.16	.10	.04	1.3	.45	.24	.50	1.4	.33	.13
4	.10	.22	.16	.10	.02	1.3	.41	.24	.34	.88	.24	.17
5	.15	.22	.14	.10	.02	1.2	.41	.22	.27	.70	.49	.18
6	.16	.22	.14	.10	.01	1.1	.41	.20	.24	.49	.53	.18
7	.16	.22	.14	.10	.00	.91	.41	.20	.24	.49	.39	.18
8	.16	.22	.14	.10	.00	.84	.41	.18	.24	.53	.26	.18
9	.18	.22	.14	.10	.00	.79	.37	.18	.31	.49	.19	.18
10	.18	.22	.14	.10	.00	.71	.41	.16	.30	.45	.17	.18
11	.18	.22	.15	.10	.00	.79	.31	.16	.27	.37	.14	.16
12	.18	.23	.16	.10	.00	.88	.31	.16	.28	.30	.10	.16
13	.20	.24	.16	.13	.05	.88	.31	.16	.90	.27	.09	.17
14	.22	.22	.16	.14	.25	1.0	.34	.10	.43	.24	.10	.18
15	.23	.22	.16	.14	.45	1.0	.33	.10	.28	.22	.09	.21
16	.46	.22	.20	.13	.68	.92	.37	.10	.27	.98	.09	.24
17	.31	.22	.18	.12	.64	.83	.37	.10	.27	.37	.11	.30
18	.19	.22	.16	.12	.43	.97	.37	.10	.23	.53	.11	.32
19	.16	.22	.10	.12	.35	.92	.33	.10	.20	.53	.10	.35
20	.12	.22	.07	.12	.31	.83	.33	.09	.17	.65	.09	.33
21	.11	.20	.07	.12	.21	.83	.36	.09	.29	.39	.19	.38
22	.39	.20	.07	.12	.15	.83	.37	.10	.41	.26	.60	.37
23	.34	.20	.06	.16	.11	.79	.37	.11	.41	.26	.48	.49
24	.27	.20	.05	.20	.6.5	.79	.30	.13	.43	.42	.37	.45
25	.22	.20	.05	.20	.4.6	.74	.30	.12	.37	.36	.29	.43
26	.17	.20	.05	.18	.3.8	.74	.27	.12	.30	.33	.22	.56
27	.18	.20	.15	.16	.2.8	.79	.30	.12	.31	.29	.19	.53
28	.21	.19	.25	.14	1.9	.70	.30	.15	.32	.27	.21	.45
29	.23	.19	.20	.12	---	.66	.27	.16	.34	.22	.13	.33
30	.24	.18	.20	.10	---	.66	.25	.16	.31	.22	.24	.37
31	.24	---	.16	.10	---	.57	---	.16	---	.20	.20	---
TOTAL	6.25	6.43	4.30	3.88	353.13	28.37	10.68	4.68	10.52	20.31	7.23	8.51
MEAN	.20	.21	.14	.13	12.6	.92	.36	.15	.35	.66	.23	.28
MAX	.46	.24	.25	.20	.68	1.7	.49	.25	.90	6.2	.60	.56
MIN	.10	.18	.05	.10	.00	.57	.25	.09	.17	.20	.09	.13
AC-FT	12	13	8.5	7.7	700	56	21	9.3	21	40	14	17
CAL YR 1980	TOTAL 162.31	MEAN .44	MAX 10	MIN .00	AC-FT 322							
WTR YR 1981	TOTAL 464.29	MEAN 1.27	MAX 68	MIN .00	AC-FT 921							

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.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
OCT										
13...	1000	.18	3000	8.8	4.5	6.0	10.2	89	K120	K75
NOV										
10...	1110	.22	3050	8.4	1.0	3.0	11.4	91	K120	K70
DEC										
08...	1310	.14	3700	8.2	-9.5	.5	11.0	83	K90	K55
JAN										
19...	1140	.12	2950	8.3	-2.5	.5	11.9	88	K35	K25
FEB										
20...	1040	27	490	--	--	2.0	--	--	--	--
25...	1210	4.5	965	--	4.0	1.5	--	--	--	--
MAR										
09...	1110	.78	1700	9.0	2.5	1.0	12.4	90	K130	K50
APR										
13...	1135	.29	2300	8.7	1.0	9.0	10.8	100	K160	K60
MAY										
11...	1040	.18	2900	8.7	8.5	13.0	9.6	99	K130	100
JUN										
08...	1050	.24	2850	8.8	15.5	19.0	8.4	99	230	K75
JUL										
13...	1055	.26	2500	8.8	29.0	24.5	7.6	97	K65	K95
AUG										
10...	1215	.15	2100	8.8	27.5	25.0	7.4	96	300	K150
SEP										
14...	0950	.15	2300	8.6	19.0	15.0	9.8	104	K40	K60

DATE	HARD- NESS (MG/L AS CAC03) (00900)	HARD- NESS NONCAR- BONATE (MG/L AS CAC03) (95902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CAC03) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)
OCT											
13...	160	.00	25	24	680	90	23	8.4	860	700	4.0
NOV											
10...	200	.00	38	25	640	87	22	10	780	820	4.8
DEC											
08...	300	.00	61	36	790	85	20	11	920	1100	6.0
JAN											
19...	260	.00	53	31	630	84	17	5.9	820	760	4.0
MAR											
09...	170	.00	37	19	370	82	12	7.3	450	450	4.4
APR											
13...	180	.00	36	23	450	84	14	5.2	600	650	3.3
MAY											
11...	160	.00	25	23	660	90	26	6.0	820	760	8.4
JUN											
08...	210	.00	38	28	630	86	19	7.3	580	1000	5.2
JUL											
13...	180	.00	32	24	530	86	17	8.6	590	780	3.9
AUG											
10...	220	.00	56	19	500	83	15	7.1	650	690	3.6
SEP											
14...	140	.00	20	23	570	89	21	8.1	710	700	9.7

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

BEAR DEN CREEK BASIN

06332515 BEAR DEN CREEK NEAR MANDAREE, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIU2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)
OCT										
13...	.5	5.6	2010	1960	2.7	.98	.00	.00	.000	.000
NOV										
10...	.4	9.7	2080	2020	2.8	1.2	.00	.02	.060	.030
DEC										
08...	.6	16	2580	2570	3.5	.98	.00	.00	.100	.140
JAN										
19...	.4	14	2020	1990	2.8	.65	.11	.12	.300	.280
MAR										
09...	.2	13	1200	1170	1.6	2.5	.17	.19	.300	.260
APR										
13...	.4	6.7	1570	1540	2.1	1.2	.01	.02	.060	.070
MAY										
11...	.4	2.4	1940	1980	2.6	.94	.00	.01	.170	.090
JUN										
08...	.5	4.9	1960	2060	2.7	1.3	.01	.00	.070	.040
JUL										
13...	.4	8.5	1790	1740	2.4	1.3	.02	.23	.070	<.050
AUG										
10...	.4	1.6	1580	1670	2.2	.64	.10	.12	.200	.220
SEP										
14...	.4	2.1	1790	1760	2.4	.72	<.10	<.10	.160	.090

DATE	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN, ORGANIC DIS- SOLVED (MG/L AS N) (00607)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN,NH4 + URG. SUSP. TOTAL (MG/L AS N) (00624)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	NITRO- GEN, DIS- SOLVED (MG/L AS N) (00602)	NITRO- GEN, TOTAL (MG/L AS NO3) (71887)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)
OCT										
13...	.00	1.0	.86	1.00	.14	.86	1.0	.86	4.4	.040
NOV										
10...	.04	1.0	.96	1.10	.11	.99	1.1	1.0	4.9	.110
DEC										
08...	.18	1.0	.57	1.10	.39	.71	1.1	.71	4.9	.040
JAN										
19...	.36	.59	.60	.89	.01	.88	1.0	1.0	4.4	.030
MAR										
09...	.33	1.0	1.0	1.30	.00	1.3	1.5	1.5	6.5	.060
APR										
13...	.09	1.1	1.0	1.20	.10	1.1	1.2	1.1	5.4	.070
MAY										
11...	.12	.53	.54	.70	.07	.63	.70	.64	3.1	.120
JUN										
08...	.05	1.4	1.4	1.50	.10	1.4	1.5	1.4	6.7	.060
JUL										
13...	.06	1.6	--	1.70	.40	1.3	1.7	1.5	7.6	.120
AUG										
10...	.28	.80	.74	1.00	.04	.96	1.1	1.1	4.9	.070
SEP										
14...	.12	1.2	1.4	1.40	.00	1.5	1.4	1.6	6.2	.050

BEAR DEN CREEK BASIN

77

06332515 BEAR DEN CREEK NEAR MANDAREE, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	PHOS- PHORUS TOTAL (MG/L AS P)4) (71886)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS, ORTHOPHOSPHATE TOTAL (MG/L AS P) (70507)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC SUS- PENDE TOTAL (UG/L AS AS) (01001)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BARIUM, SUS- PENDE RECOV- ERABLE (UG/L AS BA) (01006)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)
OCT										
13...	.12	.010	--	--	--	--	--	--	--	--
NOV										
10...	.34	.020	--	4	2	2	0	0	30	<1
DEC										
08...	.12	.030	--	--	--	--	--	--	--	--
JAN										
19...	.09	.020	--	--	--	--	--	--	--	--
MAR										
09...	.18	.000	--	--	--	--	--	--	--	--
APR										
13...	.21	.030	--	--	--	--	--	--	--	--
MAY										
11...	.37	.080	--	3	1	2	100	70	30	<2
JUN										
08...	.18	.020	--	--	--	--	--	--	--	--
JUL										
13...	.37	.030	--	--	--	--	--	--	--	--
AUG										
10...	.21	.000	<7.00	--	--	--	--	--	--	--
SEP										
14...	.15	.020	--	--	--	--	--	--	--	--

DATE	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CADMIUM SUS- PENDE RECOV- ERABLE (UG/L AS CD) (01026)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, SUS- PENDE RECOV- ERABLE (UG/L AS CR) (01031)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	IRON, SUS- PENDE RECOV- ERABLE (UG/L AS FE) (01044)	IRON, DIS- SOLVED (UG/L AS FE) (01046)
NOV												
10...	0	0	2	0	0	3	<3	8	<10	2800	2700	95
DEC												
08...	--	--	--	--	--	--	--	--	--	--	--	--
JAN												
19...	--	--	--	--	--	--	--	--	--	--	--	--
MAR												
09...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
13...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
11...	0	--	<2	20	20	0	<6	5	<20	590	530	64

DATE	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	LEAD, SUS- PENDE RECOV- ERABLE (UG/L AS PB) (01050)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, SUS- PENDE RECOV- ERABLE (UG/L AS MN) (01054)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	MERCURY SUS- PENDE RECOV- ERABLE (UG/L AS HG) (71895)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)
NOV											
10...	5	5	0	62	130	110	24	.0	.0	.0	14
DEC											
08...	--	--	--	--	--	--	--	--	--	--	--
JAN											
19...	--	--	--	--	--	--	--	--	--	--	--
MAR											
09...	--	--	--	--	--	--	--	--	--	--	--
APR											
13...	--	--	--	--	--	--	--	--	--	--	--
MAY											
11...	4	3	1	79	80	--	<2	.1	.1	.0	<20

BEAR DEN CREEK BASIN

06332515 BEAR DEN CREEK NEAR MANDAREE, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	SELE- NIUM, TOTAL (UG/L AS SE) (01147)	SELE- NIUM, SUS- PENDE TOTAL (UG/L AS SE) (01146)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG) (01077)	SILVER, SUS- PENDE RECOV- ERABLE (UG/L AS AG) (01076)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT) (80030)
NOV 10...	0	0	0	0	0	0	420	<6.0	20	<3	<48
MAY 11...	0	0	0	0	0	0	340	<12	40	<6	--

DATE	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)	GROSS BETA, DIS- SOLVED (PCI/L AS SR/ YT-90) (80050)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90) (80060)	RADIUM 226, DIS- SOLVED, RADON METHOD (PCI/L) (09511)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)	PCB, TOTAL (UG/L) (39516)
NOV 10...	3.7	47	4.5	45	4.2	.10	--	--	--	.01	.00
DEC 08...	--	--	--	--	--	--	38	--	--	--	--
JAN 19...	--	--	--	--	--	--	13	--	--	--	--
MAR 09...	--	--	--	--	--	--	18	--	--	--	--
APR 13...	--	--	--	--	--	--	11	--	--	--	--
MAY 11...	--	--	--	--	--	--	--	50	.6	.01	--
JUN 08...	--	--	--	--	--	--	32	--	--	--	--
JUL 13...	--	--	--	--	--	--	27	--	--	--	--
AUG 10...	--	--	--	--	--	--	16	--	--	--	--
SEP 14...	--	--	--	--	--	--	18	--	--	--	--

DATE	PCB, TOTAL IN BOT- TOM MA- TERIAL (UG/KG) (39519)	ALDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/L) (39330)	ALDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG) (39333)	CHLOR- DANE, TOTAL IN BOT- TOM MA- TERIAL (UG/L) (39350)	CHLOR- DANE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG) (39351)	DDD, TOTAL IN BOT- TOM MA- TERIAL (UG/L) (39360)	DDD, TOTAL IN BOT- TOM MA- TERIAL (UG/KG) (39363)	DDE, TOTAL IN BOT- TOM MA- TERIAL (UG/L) (39365)	DDE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG) (39368)	DDT, TOTAL IN BOT- TOM MA- TERIAL (UG/L) (39370)	DDT, TOTAL IN BOT- TOM MA- TERIAL (UG/KG) (39373)
NOV 10...	0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0

DATE	DI- AZINUN, TOTAL (UG/L) (39570)	DI- ELDRIN, TOTAL (UG/L) (39380)	DI- ELDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG) (39383)	ENDRIN, TOTAL (UG/L) (39390)	ENDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG) (39393)	ETHION, TOTAL (UG/L) (39398)	HEPTA- CHLOR, TOTAL (UG/L) (39410)	HEPTA- CHLOR, TOTAL IN BOT- TOM MA- TERIAL (UG/KG) (39413)	HEPTA- CHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/L) (39420)	HEPTA- CHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/L) (39423)	LINDANE TOTAL (UG/L) (39340)
NOV 10...	.00	.00	.0	.00	.0	.00	.00	.0	.00	.0	.00

SHELL CREEK BASIN

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, and 6 mi (10 km) northwest of Parshall.

DRAINAGE AREA.--465 mi² (1,204 km²).

PERIOD OF RECORD.--August 1965 to September 1981 (discontinued).

GAGE.--Water-stage recorder.

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

AVERAGE DISCHARGE.--16 years, 12.9 ft³/s (0.365 m³/s), 9,350 acre-ft/yr (11.5 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, 2,400 ft³/s (68.0 m³/s) Apr. 18, 1979, gage height, 8.17 ft (2.490 m); no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 162 ft³/s (4.59 m³/s) Feb. 17, gage height, 4.86 ft (1.481 m); only 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 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	2.0	1.0	.30	.12	19	5.2	1.6	5.0	1.2	.45	.08
2	1.2	2.0	.60	.22	.10	22	5.1	1.4	6.0	1.3	.45	.13
3	1.1	1.8	.55	.20	.06	20	5.1	1.4	6.7	1.1	.45	.03
4	1.1	1.5	.55	.18	.04	20	5.2	1.3	4.3	.77	.41	.01
5	1.0	1.5	.50	.16	.02	17	4.9	1.2	2.5	.56	.63	.00
6	.87	1.6	.35	.16	.01	18	4.6	1.2	1.5	.44	.89	.00
7	.85	1.7	.30	.16	.00	17	4.3	1.1	1.3	.31	1.0	.06
8	.98	1.9	.22	.15	.00	14	4.1	2.6	1.2	.24	.60	.04
9	.93	1.8	.20	.15	.00	12	3.9	1.3	1.0	.19	.44	.01
10	.95	1.7	.18	.14	.00	11	3.8	.79	1.0	.10	.36	.00
11	.84	1.7	.16	.13	.00	11	4.0	1.0	.96	.10	.34	.00
12	.87	1.9	.16	.18	.00	10	3.7	1.8	.84	.10	.26	.00
13	.91	2.1	.14	.25	.00	9.0	3.1	1.5	2.4	.08	.30	.00
14	1.0	1.8	.12	.22	.00	8.9	2.9	1.4	2.5	.20	.28	.00
15	1.2	2.0	.14	.16	9.1	8.2	2.7	1.2	2.3	.25	.17	.00
16	2.6	1.8	.18	.14	52	8.3	2.4	1.0	3.0	.20	.34	.06
17	3.4	1.7	.20	.14	121	7.1	2.3	.93	2.8	.18	.27	.06
18	3.7	1.6	.10	.14	127	5.9	1.6	.93	2.1	.16	.09	.02
19	4.3	1.8	.05	.12	106	4.8	1.7	.76	1.8	.20	.06	.13
20	3.1	2.1	.01	.10	87	5.7	1.7	.52	1.6	.50	.04	.08
21	1.9	2.2	.00	.10	58	5.6	1.8	.51	1.7	1.0	.04	.19
22	3.7	2.6	.00	.12	34	4.4	1.8	1.8	1.4	.80	.06	.10
23	4.6	1.7	.00	.14	33	5.3	1.4	.71	2.3	.75	.27	.02
24	5.2	1.9	.00	.16	36	5.7	1.5	.64	2.3	.80	.38	.01
25	5.1	1.7	.00	.18	33	5.6	1.6	.78	2.1	.80	.49	.10
26	3.7	1.6	.00	.18	26	5.1	1.5	.74	2.8	.70	.45	.59
27	2.8	1.6	.00	.16	30	5.0	2.3	.92	2.6	.60	.36	.34
28	2.3	1.8	.20	.14	16	5.5	2.6	1.1	2.0	.55	.25	.19
29	2.0	1.7	.50	.14	---	5.7	2.6	.91	1.7	.50	.08	.13
30	2.1	1.4	.45	.14	---	5.5	2.1	.55	1.4	.50	.02	.40
31	1.9	---	.40	.14	---	5.5	---	.44	---	.50	.01	---
TOTAL	67.50	54.2	7.26	5.00	768.45	307.8	91.5	34.03	71.10	15.68	10.24	2.78
MEAN	2.18	1.81	.23	.16	27.4	9.93	3.05	1.10	2.37	.51	.33	.093
MAX	5.2	2.6	1.0	.30	127	22	5.2	2.6	6.7	1.3	1.0	.59
MIN	.84	1.4	.00	.10	.00	4.4	1.4	.44	.84	.08	.01	.00
AC-FT	134	108	14	9.9	1520	611	181	67	141	31	20	5.5
CAL YR 1980	TOTAL	804.76	MEAN	2.20	MAX	35	MIN	.00	AC-FT	1600		
WTR YR 1981	TOTAL	1435.54	MEAN	3.93	MAX	127	MIN	.00	AC-FT	2850		

LITTLE MISSOURI RIVER BASIN

81

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) National Geodetic Vertical Datum of 1929. 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 good except those for the winter period, which are fair. Small diversions for irrigation above station.

AVERAGE DISCHARGE.--43 years, 333 ft³/s (9.431 m³/s), 241,300 acre-ft/yr (298 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, 962 ft³/s (27.2 m³/s) Aug. 3, gage height, 4.06 ft (1.237 m); no peak above base of 3,000 ft³/s (85.0 m³/s); minimum daily, 0.49 ft³/s (0.014 m³/s) Oct. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.9	39	6.0	40	3.5	154	15	9.6	6.4	16	258	19
2	2.7	31	5.5	38	3.0	118	13	7.4	3.2	17	227	12
3	2.7	26	5.0	35	2.5	107	12	6.4	3.9	26	536	10
4	2.8	24	4.5	32	2.5	83	10	6.3	65	38	464	9.5
5	2.3	20	4.5	28	2.0	25	10	5.4	97	19	284	12
6	2.4	19	4.0	26	2.0	14	8.5	4.1	91	8.4	440	18
7	2.5	18	3.5	24	1.5	5.5	8.5	4.1	52	3.5	259	21
8	1.9	18	3.0	24	1.5	14	7.9	6.2	37	1.1	154	27
9	1.4	15	2.5	24	1.0	9.2	7.9	8.3	24	1.1	115	23
10	1.3	14	2.2	20	1.0	12	6.6	6.7	18	.72	171	12
11	1.1	14	2.5	15	.80	16	9.2	8.4	14	.64	101	9.2
12	1.0	15	3.0	15	.80	13	7.9	12	15	36	96	8.7
13	.78	16	6.0	18	.80	15	6.6	12	89	149	91	7.8
14	.49	13	9.0	18	5.0	18	6.6	19	194	107	132	5.7
15	41	13	18	18	20	15	5.5	31	167	58	126	14
16	433	12	22	16	50	14	4.6	17	89	30	89	16
17	472	12	35	15	75	13	3.2	11	63	35	67	13
18	385	11	40	15	80	13	3.4	8.9	50	25	64	9.3
19	254	11	35	15	80	13	2.7	7.5	40	15	52	8.4
20	182	11	20	15	95	12	3.2	5.7	86	7.9	39	5.5
21	132	10	15	17	85	11	2.5	4.5	111	4.2	35	4.6
22	100	10	12	17	78	9.2	2.0	25	91	7.9	30	3.5
23	120	9.0	10	20	78	7.9	2.2	19	72	133	25	2.7
24	94	9.0	9.0	25	50	7.9	2.2	37	60	151	21	2.3
25	78	8.5	8.5	30	78	7.9	1.8	37	46	212	16	2.4
26	52	8.0	7.5	40	76	7.9	1.8	30	36	211	14	1.6
27	73	7.5	8.0	35	76	6.0	81	20	41	269	14	2.7
28	65	7.0	19	30	58	6.6	47	9.5	29	167	11	2.8
29	64	7.0	30	10	---	6.0	17	4.7	28	118	19	2.3
30	54	6.5	35	5.0	---	6.0	11	3.1	21	129	32	3.3
31	44	---	40	4.0	---	7.1	---	3.0	---	328	21	---
TOTAL	2669.27	434.5	425.2	684.0	1006.90	767.2	320.8	389.8	1739.5	2324.46	4003	289.3
MEAN	86.1	14.5	13.7	22.1	36.0	24.7	10.7	12.6	58.0	75.0	129	9.64
MAX	472	39	40	40	95	154	81	37	194	328	536	27
MIN	.49	6.5	2.2	4.0	.80	5.5	1.8	3.0	3.2	.64	11	1.6
AC-FT	5290	862	843	1360	2000	1520	636	773	3450	4610	7940	574
CAL YR 1980 TOTAL	9676.02			MEAN 26.4	MAX 472	MIN .00	AC-FT 19190					
WTR YR 1981 TOTAL	15053.93			MEAN 41.2	MAX 536	MIN .49	AC-FT 29860					

LITTLE MISSOURI RIVER BASIN

06335750 DEEP CREEK NEAR AMIDON, ND

LOCATION.--Lat 46°34'37", long 103°33'26", in SE&SW&NE& sec.24, T.136 N., R.103 W., Slope County, Hydrologic Unit 10110203, on left bank 100 ft (30 m) downstream from county bridge, 3.0 mi (4.8 km) above mouth, and 13 mi (21 km) northwest of Amidon.

DRAINAGE AREA.--250 mi² (648 km²), approximately.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Altitude of gage is 2,450 ft (747 m), from topographic map. Prior to Oct. 1, 1979 at datum 10.00 ft (3.05 m) lower.

REMARKS.--Records good October, November and poor thereafter.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,680 ft³/s (45.6 m³/s) Mar. 27, 1978, gage height, 8.28 ft (2.524 m); maximum gage height, 8.37 ft (2.551 m) Mar. 26, 1978; no flow at times in most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 13 ft³/s (0.37 m³/s) Aug. 3, no peak above base of 150 ft³/s (4.25 m³/s); maximum gage height, 15.30 ft (4.663 m) Feb. 11, backwater from ice; no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.05	.47	.35	.37	.52	2.7	.61	.00	.18	.20	.00	.00
2	.05	.47	.32	.35	.53	2.6	.61	.00	.18	.39	.08	.00
3	.05	.47	.30	.34	.54	2.5	.61	.16	.18	.20	5.8	.00
4	.05	.47	.29	.33	.53	2.4	.66	.04	.33	.16	3.3	.00
5	.05	.39	.26	.32	.52	2.1	.66	.04	.33	.13	3.7	.00
6	.05	.35	.23	.32	.51	1.9	.61	.03	.47	.09	1.7	.00
7	.05	.35	.21	.33	.49	1.7	.66	.01	.42	.07	1.2	.00
8	.04	.39	.21	.34	.46	1.5	.61	.10	.38	.04	1.2	.00
9	.05	.39	.22	.36	.43	1.3	.28	.09	.29	.02	.84	.00
10	.05	.32	.22	.39	.40	1.3	.10	.06	.24	.01	.72	.00
11	.05	.35	.22	.41	.41	1.3	.20	.13	.18	.00	.57	.00
12	.06	.43	.22	.43	.43	1.2	.23	.24	.17	.00	.32	.00
13	.06	.43	.23	.44	.48	1.2	.25	.21	.31	.00	.14	.00
14	.07	.47	.25	.46	1.7	1.2	.10	.18	.36	.03	.07	.00
15	.10	.52	.28	.48	5.8	1.2	.07	.17	.54	.00	.03	.00
16	.14	.66	.30	.50	11	1.1	.13	.16	.40	.00	.01	.00
17	1.6	.56	.29	.56	9.5	1.0	.18	.13	.56	.00	.00	.00
18	4.1	.61	.27	.60	9.0	.90	.06	.13	.83	.00	.00	.00
19	3.0	.61	.25	.65	8.4	.84	.07	.10	.77	.00	.00	.00
20	1.8	.56	.24	.68	7.7	.58	.09	.08	.68	.00	.00	.00
21	1.2	.52	.23	.72	7.3	.62	.05	.08	.64	.00	.00	.00
22	.90	.43	.22	.75	7.0	.59	.04	.14	.48	.00	.00	.00
23	.78	.47	.21	.79	6.6	.62	.04	.14	.34	.00	.00	.00
24	.66	.47	.20	.75	6.0	.66	.00	.14	.45	.00	.00	.00
25	.72	.47	.21	.72	5.0	.63	.00	.14	.33	.00	.00	.00
26	.66	.47	.28	.69	4.0	.62	.00	.18	.26	.00	.00	.00
27	.61	.47	.34	.67	3.2	.52	.00	.20	.24	.00	.00	.00
28	.52	.45	.40	.64	3.0	.49	.00	.20	.30	.00	.00	.00
29	.52	.43	.50	.60	---	.61	.00	.23	.20	.00	.00	.00
30	.52	.43	.45	.56	---	.61	.00	.20	.21	.00	.00	.00
31	.47	---	.40	.52	---	.61	---	.18	---	.00	.00	---
TOTAL	19.03	13.88	8.60	16.07	101.45	37.10	6.92	3.89	11.25	1.34	19.68	.00
MEAN	.61	.46	.28	.52	3.62	1.20	.23	.13	.38	.043	.63	.000
MAX	4.1	.66	.50	.79	11	2.7	.66	.24	.83	.39	5.8	.00
MIN	.04	.32	.20	.32	.40	.49	.00	.00	.17	.00	.00	.00
AC-FT	38	28	17	32	201	74	14	7.7	22	2.7	39	.00

CAL YR 1980 TOTAL 431.57 MEAN 1.18 MAX 20 MIN .00 AC-FT 856
WTR YR 1981 TOTAL 239.21 MEAN .66 MAX 11 MIN .00 AC-FT 474

LITTLE MISSOURI RIVER BASIN

83

06335750 DEEP CREEK NEAR AMIDON, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1978 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHQS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CACO3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT												
14...	1300	.06	3580	8.4	18.5	12.0	14.5	146	690	130	94	110
NOV												
24...	1615	.49	4350	8.1	-2.0	1.0	11.7	88	840	220	120	130
DEC												
11...	1000	.22	4500	8.0	8.0	.0	10.0	76	810	150	110	130
JAN												
26...	1515	.69	4700	8.0	-2.5	.0	10.0	96	810	0	110	130
FEB												
17...	1415	9.5	4440	8.3	11.5	.0	12.9	97	720	0	89	120
MAR												
09...	1345	1.3	900	7.8	11.0	2.0	13.5	103	790	290	100	130
26...	1645	.63	3420	8.4	11.0	8.0	11.8	109	--	--	--	--
APR												
06...	1410	.69	3410	8.5	13.5	10.5	9.0	89	650	150	96	100
20...	1515	.09	3650	8.3	22.0	15.5	8.5	94	--	--	--	--
MAY												
11...	1245	.10	3540	8.2	15.5	12.0	10.3	105	630	80	90	99
JUN												
02...	1330	.19	3530	8.5	18.0	18.5	11.8	137	--	--	--	--
23...	1130	.43	4530	8.6	21.5	22.0	12.2	151	710	220	69	130

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SURP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY, CARBON- ATE FET-FLD (MG/L CACO3) (00430)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
OCT												
14...	630	66	10	15	556	1400	9.5	.7	12	2660	2610	3.6
NOV												
24...	850	68	13	17	620	2100	15	.5	9.8	3550	--	4.8
DEC												
11...	790	67	12	22	660	1900	13	.6	11	3460	3380	4.7
JAN												
26...	960	72	15	12	830	2000	10	.5	8.2	3680	3730	5.0
FEB												
17...	870	72	14	12	930	1800	11	.4	7.0	3450	3470	4.6
MAR												
09...	740	67	12	11	500	1800	13	.3	4.7	3100	3100	4.2
26...	--	--	--	--	494	--	--	--	--	--	--	--
APR												
06...	580	65	9.9	11	500	1600	22	.4	6.0	2690	--	3.6
20...	--	--	--	--	538	--	--	--	--	--	--	--
MAY												
11...	680	70	12	13	548	1500	11	.5	8.8	2720	--	3.7
JUN												
02...	--	--	--	--	474	--	--	--	--	--	--	--
23...	880	73	14	12	490	2100	11	.4	1.3	3540	3500	4.8

LITTLE MISSOURI RIVER BASIN

06335750 DEEP CREEK NEAR AMIDON, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	SOLIDS, DIS- SOLVED (TUNS PER DAY) (70302)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS TOTAL (MG/L AS P04) (71886)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC SUS- PENDE TOTAL (UG/L AS AS) (01001)	ARSENIC TOTAL IN BOT- TOM MA- TERIAL (UG/G AS AS) (01003)
OCT												
14...	.43	--	--	--	--	--	--	--	--	--	--	--
NOV												
24...	4.7	.00	.000	.00	.88	.88	.040	.12	.030	--	--	--
DEC												
11...	2.0	--	--	--	--	--	--	--	--	--	--	--
JAN												
26...	6.8	.01	.120	--	.85	.97	.030	.09	.020	--	--	--
FEB												
17...	88.5	--	--	--	--	--	--	--	.020	2	0	--
MAR												
09...	10.9	--	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
06...	5.0	.01	.030	--	.75	.78	.050	.15	.040	2	1	20
20...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
11...	.73	--	--	--	--	--	--	--	--	--	--	--
JUN												
02...	--	--	--	--	--	--	--	--	--	--	--	--
23...	4.1	--	--	--	--	--	--	--	--	--	--	--

DATE	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BARIUM, SUS- PENDE RECOV- ERABLE (UG/L AS BA) (01006)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BERYL- LIUM, SUS- PENDE RECOV- ERABLE (UG/L AS BE) (01011)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, SUS- PENDE RECOV- ERABLE (UG/L AS CR) (01031)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	CHRO- MIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G) (01029)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)
OCT												
14...	100	100	0	--	--	--	1000	--	--	--	--	--
NOV												
24...	--	--	--	--	--	--	1400	--	--	--	--	--
DEC												
11...	--	--	--	--	--	--	1400	--	--	--	--	0
JAN												
26...	--	--	--	--	--	--	1300	--	--	--	--	--
FEB												
17...	--	--	--	0	0	0	1200	0	0	0	--	--
MAR												
09...	--	--	--	--	--	--	1100	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
06...	100	100	0	0	0	0	1100	20	10	10	2	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
11...	--	--	--	--	--	--	1200	--	--	--	--	--
JUN												
02...	--	--	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	1600	--	--	--	--	--

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

[illegible][illegible]

LITTLE MISSOURI RIVER BASIN

06335750 DEEP CREEK NEAR AMIDON, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90) (80060)	POTAS- SIUM 40 DIS- SOLVED (PCI/L AS K40) (82068)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHENOLS (UG/L) (32730)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)
OCT 14...	--	--	--	--	--	--	18	.00
NOV 24...	--	--	17	.3	--	--	59	.08
DEC 11...	--	--	--	--	--	--	41	.02
JAN 26...	--	9.0	.8	.3	--	--	63	.12
FEB 17...	--	9.0	--	--	.00	1	155	4.0
MAR 09...	--	8.2	--	--	--	--	29	.10
MAR 26...	--	--	--	--	--	--	66	.11
APR 06...	1.3	8.2	22	.1	.00	0	71	.13
APR 20...	--	--	--	--	--	--	13	.00
MAY 11...	--	9.7	--	--	--	--	13	.00
JUN 23...	--	9.0	--	--	--	--	9	.01

DATE	BED MAT. FALL DIAM. % FINER THAN .062 MM (80158)	BED MAT. FALL DIAM. % FINER THAN .125 MM (80159)	BED MAT. FALL DIAM. % FINER THAN .250 MM (80160)	BED MAT. FALL DIAM. % FINER THAN .500 MM (80161)	BED MAT. FALL DIAM. % FINER THAN 1.00 MM (80162)	BED MAT. FALL DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. FALL DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. FALL DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. FALL DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. FALL DIAM. % FINER THAN 32.0 MM (80173)
FEB 17...	30	44	69	74	74	78	85	91	97	100

DATE	LENGTH OF EXPO- SURE (DAYS) (00022)	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2) (70957)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2) (70958)	PERI- PHYTON BIOMASS TOTAL ASH WEIGHT G/SQ M (00572)	PERI- PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)
OCT 14...	26	4.48	.860	3.78	5.20
JUN 23...	43	6.50	.000	18.1	21.7

LITTLE MISSOURI RIVER BASIN

87

06335750 DEEP CREEK NEAR AMIDON, ND--Continued
 PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO JUNE 1981

DATE TIME	OCT 14,80 1300	NOV 24,80 1615	DEC 11,80 1000	JAN 26,81 1515	FEB 17,81 1415					
TOTAL CELLS/ML	65	26	280	1500	1500					
DIVERSITY: DIVISION	0.0	0.0	0.3	0.3	1.8					
..CLASS	0.0	0.0	0.3	0.3	2.0					
...ORDER	1.0	0.0	0.5	0.4	2.5					
...FAMILY	1.5	0.0	0.5	0.4	3.0					
....GENUS	1.5	0.0	0.5	0.6	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										
...UOCYSTACEAE										
....ANKISTRODESMUS	--	-	--	-	--	-	--	-	28	2
....DICTYOSPHAERIUM	--	-	--	-	--	-	--	-	42	3
....UOCYSTIS	--	-	--	-	--	-	--	-	--	-
...VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	--	-	--	-	13	1	140	10
CHRYSTOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...CHAETOCERACEAE										
....CHAETOCEROS	--	-	--	-	--	-	--	-	--	-
...COSCINODISCACEAE										
....CYCLOTELLA	26#	40	--	-	260#	91	26	2	98	7
...PENNALES										
...CYMBELLACEAE										
....CYMBELLA	--	-	--	-	--	-	--	-	14	1
...DIATOMACEAE										
....DIATOMA	--	-	--	-	--	-	26	2	180	12
...FRAGILARIACEAE										
....SYNEORA	--	-	--	-	--	-	--	-	84	6
...NAVICULACEAE										
....NAVICULA	26#	40	--	-	--	-	--	-	28	2
...NITZSCHIACEAE										
....NITZSCHIA	13#	20	26#	100	13	5	13	1	84	6
..CHRYSTOPHYCEAE										
...CHRYDOMONADALES										
...UCHROMONADACEAE										
....STENOCALYX	--	-	--	-	--	-	--	-	28	2
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROOCOCCALES										
...CHROOCOCCACEAE										
....ANACYSTIS	--	-	--	-	--	-	--	-	56	4
...HORMOGONALES										
...OSCILLATORIACEAE										
....OSCILLATORIA	--	-	--	-	--	-	--	-	490#	33
EUGLENOPHYTA (EUGLENOIDS)										
..EUGLENOPHYCEAE										
...EUGLENALES										
...EUGLENACEAE										
....EUGLENA	--	-	--	-	--	-	39	3	--	-
....TRACHELUMONAS	--	-	--	-	--	-	1400#	92	200	13
PYRRHOPHYTA (FIRE ALGAE)										
..DINOPHYCEAE										
...GYMNODINIALES										
...GYMNODINIACEAE										
....GYMNODINIUM	--	-	--	-	--	-	--	-	--	-
...PERIDINIALES										
...GLENODINIACEAE										
....GLENODINIUM	--	-	--	-	13	5	--	-	--	-

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

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

LITTLE MISSOURI RIVER BASIN

06335750 DEEP CREEK NEAR AMIDON, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO JUNE 1981

DATE TIME	MAR 9,81 1345	APR 6,81 1410	MAY 11,81 1245	JUN 23,81 1130
TOTAL CELLS/ML	1300	230	230	78
DIVERSITY: DIVISION	1.8	1.4	1.4	0.9
..CLASS	1.8	1.4	1.4	0.9
..ORDER	2.2	1.7	1.4	0.9
...FAMILY	2.3	1.8	2.0	0.9
....GENUS	2.5	1.8	2.0	0.9

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCUCCALES								
....OOCYSTACEAE								
.....ANKISTRODESMUS	84	6	52#	22	--	-	--	-
.....DICTYOSPHAERIUM	--	-	--	-	--	-	--	-
....OOCYSTIS	110	9	--	-	--	-	--	-
...VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	200#	15	26	11	--	-	26#	33
CHRYSOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
...CHAETOCERACEAE								
....CHAETOCEROS	14	1	--	-	--	-	--	-
...COSCINODISCACEAE								
....CYCLOTELLA	28	2	--	-	--	-	--	-
...PENNALES								
...CYMBELLACEAE								
....CYMBELLA	--	-	--	-	--	-	--	-
...DIATOMACEAE								
....DIATOMA	70	5	--	-	--	-	--	-
...FRAGILARIACEAE								
....SYNEDRA	--	-	13	6	13	6	--	-
...NAVICULACEAE								
....NAVICULA	--	-	--	-	13	6	--	-
...NITZSCHACEAE								
....NITZSCHIA	28	2	13	6	130#	56	52#	67
..CHRYSOPHYCEAE								
...CHRYSOMONADALES								
...OCHROMONADACEAE								
....STENOCLYX	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROOCUCCALES								
...CHROOCOCCACEAE								
....ANACYSTIS	28	2	--	-	26	11	--	-
...HORMOGONALES								
...OSCILLATORIACEAE								
....OSCILLATORIA	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)								
..EUGLENOPHYCEAE								
...EUGLENALES								
...EUGLENACEAE								
....EUGLENA	--	-	--	-	--	-	--	-
....TRACHELOMONAS	600#	46	130#	56	26	11	--	-
PYRRHOPHYTA (FIRE ALGAE)								
..DINOPHYCEAE								
...GYMNODINIALES								
...GYMNODINIACEAE								
....GYMNODINIUM	140	11	--	-	--	-	--	-
...PERIDINIALES								
...GLENODINIACEAE								
....GLENODINIUM	--	-	--	-	26	11	--	-

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

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

LOCATION.--Lat 46°52'30", long 104°09'18", in SW¼SW¼SW¼ sec.17, T.13 N., R.60 E., Wibaux County, Hydrologic Unit 10110204, on right bank, and 9.5 (15.3 km) southeast of Wibaux.

PERIOD OF RECORD.--March 1978 to September 1981 (discontinued).

GAGE.--Water-stage recorder.

REMARKS.--Records fair. Some regulation due to stock dams upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 580 ft³/s (16.4 m³/s) Mar. 21, 1978, gage height undetermined; maximum recorded gage height, 4.14 ft (1.262 m) Apr. 18, 1979, backwater from Beaver Creek; no flow for several months each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 0.10 ft³/s (0.028 m³/s) Feb. 15, gage height undetermined; no peak above base of 20 ft³/s (0.57 m³/s); no flow most of the year.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.02	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	.00	.00	.00	.00	.08	.00	.00	.00	.00	.00	.00	.00
MEAN	.0000	.0000	.0000	.0000	.003	.0000	.0000	.0000	.0000	.0000	.0000	.0000
MAX	.00	.00	.00	.00	.02	.00	.00	.00	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.2	.00	.00	.00	.00	.00	.00	.00
CAL YR 1980	TOTAL	0.09	MEAN	.0000	MAX	.01	MIN	.00	AC-FT	.2		
WTR YR 1981	TOTAL	0.08	MEAN	.0000	MAX	.02	MIN	.00	AC-FT	.2		

LITTLE MISSOURI RIVER BASIN

06336500 BEAVER CREEK AT WIBAUX, MT

LOCATION.--Lat 46°59'24", long 104°11'00", in NE¼NE¼ sec.12, T.14 N., R.59 E., Wibaux County, Hydrologic Unit 10110204, on left bank 20 ft (6.1 m) upstream from bridge on old U.S. Highway 10, at Wibaux, 12 mi (19 km) upstream from Little Beaver Creek, and at mile 62.5 (100.6 km).

DRAINAGE AREA.--351 mi² (909 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1938 to June 1969, October 1978 to current year.

REVISED RECORDS.--WSP 1309: 1943, 1947-48. WSP 1509: 1942(M), 1944-45, 1946(M).

GAGE.--Water-stage recorder. Altitude of gage is 2,650 ft (808 m), by barometer. Prior to Sept. 21, 1940, nonrecording gages at site about 500 ft (152 m) upstream at different datums.

REMARKS.--Water-discharge records good except those below 1 ft³/s (0.028 m³/s) and those for winter period, which are poor. Several known diversions for irrigation above station.

AVERAGE DISCHARGE.--33 years (1938-68, 1979-81), 21.3 ft³/s (0.603 m³/s), 15,430 acre-ft/yr (19.0 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,780 ft³/s (107 m³/s) Mar. 21, 1939, gage height, 10.8 ft (3.29 m), site and datum then in use; maximum gage height observed, 13.44 ft (4.097 m) Mar. 24, 1943, ice jam; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 7, 1929, reached a discharge of about 30,000 ft³/s (850 m³/s), from the average of three independent indirect measurements made at different sites. Flood in 1872 reported similar in magnitude. Flood in June 1921 reached a stage of about 8.6 ft (2.62 m) lower than 1929 (discharge about 10,000 ft³/s (283 m³/s), estimated on basis of cross-section and information from local residents).

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 35 ft³/s (0.99 m³/s) Feb. 17, ice jam; maximum gage height observed, 6.22 ft (1.896 m) Feb. 17, backwater from ice; no flow on several days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	1.8	1.6	1.6	1.5	2.3	2.0	1.0	1.1	.39	.06	.06
2	1.2	1.8	1.6	1.5	1.3	2.2	1.8	.93	1.0	.34	.11	.06
3	1.2	1.8	1.8	1.4	1.2	2.0	1.8	.85	.93	.34	.06	.03
4	1.2	1.6	1.8	1.4	1.0	1.9	1.9	1.0	1.2	.34	.11	.03
5	1.4	1.8	1.9	1.5	.90	1.8	1.9	.93	1.4	.29	.60	.06
6	1.2	1.8	1.9	1.4	.80	2.3	2.0	.85	1.5	.29	.39	.02
7	1.2	1.8	1.9	1.5	.70	2.0	2.2	.85	1.3	.24	13	.02
8	1.2	2.0	1.9	1.4	.60	1.5	1.9	.85	1.3	.19	9.4	.02
9	1.2	2.0	1.9	1.3	.50	1.5	1.8	1.2	1.2	.15	7.7	.03
10	1.2	1.9	2.0	1.3	.40	1.4	1.8	1.4	1.2	.15	4.6	.03
11	1.2	1.8	2.0	1.6	.30	1.3	2.0	1.5	1.2	.11	2.8	.03
12	1.4	2.0	2.0	1.7	.40	1.4	2.0	1.4	1.2	.11	1.3	.02
13	1.2	2.2	2.2	1.7	.50	1.5	1.9	1.3	1.4	.15	.85	.02
14	1.2	1.6	2.2	1.6	1.0	1.5	1.6	1.2	1.3	.15	.45	.02
15	1.6	1.6	2.3	1.5	5.0	1.5	1.8	1.0	1.4	.11	.34	.00
16	1.9	1.8	2.3	1.4	10	1.5	1.9	1.1	1.3	.11	.29	.00
17	1.6	1.8	2.3	1.5	35	1.6	1.6	1.0	1.4	.06	.34	.03
18	2.5	1.8	2.3	1.5	25	1.9	1.4	1.1	1.4	.11	.24	.03
19	4.6	1.8	2.0	1.5	12	1.8	1.8	1.2	1.5	.24	.24	.00
20	6.4	1.8	1.8	1.4	8.0	1.6	1.6	1.2	1.4	.19	.19	.02
21	5.9	1.8	1.6	1.7	6.0	1.8	1.6	1.2	1.3	.24	.19	.01
22	10	1.8	1.5	1.8	4.1	1.6	1.5	1.2	1.2	.19	.19	.01
23	5.9	1.6	1.2	1.9	3.0	1.6	1.3	2.0	1.0	.19	.11	.00
24	2.9	1.6	.90	1.9	3.0	1.8	1.2	2.2	1.2	.15	.15	.01
25	2.5	1.8	.80	1.9	2.0	1.8	1.3	1.9	.85	.06	.15	.02
26	2.5	1.8	1.0	1.8	4.3	1.9	1.5	1.6	.77	.06	.11	.02
27	2.3	1.8	1.6	1.7	3.4	2.0	1.3	1.6	.77	.11	.11	.00
28	2.3	3.0	2.0	1.7	2.6	2.0	1.3	1.5	.77	.06	.11	.00
29	2.3	1.8	1.9	1.7	---	3.2	1.5	1.3	.77	.11	.11	.00
30	2.2	1.8	1.8	1.6	---	2.0	1.2	1.2	.45	.06	.11	.00
31	2.0	---	1.7	1.6	---	2.2	---	1.2	---	.03	.06	---
TOTAL	76.6	55.3	55.70	49.0	134.50	56.4	50.4	38.76	34.71	5.32	44.47	.60
MEAN	2.47	1.84	1.80	1.58	4.80	1.82	1.68	1.25	1.16	.17	1.43	.020
MAX	10	3.0	2.3	1.9	35	3.2	2.2	2.2	1.5	.39	.13	.06
MIN	1.2	1.6	.80	1.3	.30	1.3	1.2	.85	.45	.03	.06	.00
AC-FT	152	110	110	97	267	112	100	77	69	11	88	1.2

CAL YR 1980 TOTAL 1017.90 MEAN 2.78 MAX 19 MIN .00 AC-FT 2020
WTR YR 1981 TOTAL 601.76 MEAN 1.65 MAX 35 MIN .00 AC-FT 1190

LITTLE MISSOURI RIVER BASIN

91

06336500 BEAVER CREEK AT WIBAUX, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1978 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	WEATHER (WMO CODE NUMBER) (00041)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS (MG/L AS CACU3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CACU3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)
OCT 24...	1100	2.6	2360	7.9	3.0	3.0	0	9.2	74	571	291	92
NOV 21...	1100	1.7	2830	7.9	5.0	.5	0	10.0	76	753	333	120
DEC 17...	1100	2.2	3100	8.0	3.0	.0	2	10.4	78	753	253	120
JAN 21...	1300	1.6	3320	9.2	6.0	.0	0	10.9	81	803	303	140
FEB 18...	1200	23	1490	8.1	8.0	.5	0	11.3	86	411	181	74
MAR 25...	1300	3.1	1940	8.1	14.0	7.0	0	11.0	99	506	196	89
APR 22...	1400	1.6	2250	8.0	15.0	13.0	0	9.0	94	637	207	110
MAY 20...	1200	1.2	2430	8.1	22.5	14.0	0	8.1	86	674	284	110
JUN 25...	1100	.78	2490	8.1	22.0	18.5	0	6.2	71	670	290	110
JUL 30...	1130	.12	2360	7.9	26.0	21.5	1	6.8	86	753	343	120
AUG 27...	1300	.12	2560	8.0	26.0	21.5	0	7.5	94	711	251	120

DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SURP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY FIELD (MG/L AS CACU3) (00410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIU2) (00955)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
OCT 24...	83	310	54	5.8	10	280	900	11	.2	7.2	1582	2.2
NOV 21...	110	390	53	6.3	10	420	1100	10	.3	8.1	2001	2.7
DEC 17...	110	440	56	7.1	11	500	1200	11	.2	6.8	2200	3.0
JAN 21...	110	440	54	6.9	8.0	500	1300	11	.4	7.7	2318	3.2
FEB 18...	55	210	52	4.6	12	230	640	6.8	.2	8.8	1145	1.6
MAR 25...	69	270	53	5.3	7.2	310	820	6.5	.2	4.5	1453	2.0
APR 22...	88	310	51	5.5	8.4	430	910	8.4	.3	5.6	1699	2.3
MAY 20...	97	340	52	5.8	10	390	950	8.4	.2	7.2	1757	2.4
JUN 25...	96	350	53	6.0	9.1	380	1000	9.2	.2	6.0	1809	2.5
JUL 30...	110	320	48	5.2	9.9	410	980	16	.2	7.4	1810	2.5
AUG 27...	100	360	52	6.0	11	460	1000	17	.2	9.9	1895	2.6

LITTLE MISSOURI RIVER BASIN

06336500 BEAVER CREEK AT WIBAUX, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	SOLIDS, DIS- SOLVED (TUNS PER DAY) (70302)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO- GEN, TOTAL (MG/L AS NO3) (71887)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS TOTAL (MG/L AS PO4) (71886)	ARSENIC TOTAL (UG/L AS AS) (01002)
OCT 24...	11.1	.00	.010	.54	.55	.55	.01	2.4	.130	.40	--
NOV 21...	9.3	.01	.020	.38	.40	.41	.02	1.8	.020	.06	--
DEC 17...	13.1	.00	.120	.50	.62	.62	.15	2.7	.010	.03	--
JAN 21...	10.0	.00	.090	.67	.76	.76	.11	3.4	.040	.12	--
FEB 18...	71.1	.70	.300	2.2	2.50	3.2	--	14	.230	.71	2
MAR 25...	12.2	.00	.050	.38	.43	.43	--	1.9	.030	.09	--
APR 22...	7.3	.02	.070	.52	.59	.61	--	2.7	.040	.12	--
MAY 20...	5.7	.02	.090	.67	.76	.78	--	3.5	.060	.18	--
JUN 25...	3.8	.01	.060	.79	.85	.86	--	3.8	.020	.06	--
JUL 30...	.59	.09	.310	.12	.43	.52	--	2.3	.030	.09	2
AUG 27...	.61	<.09	.100	.80	.90	--	--	--	.030	.09	--

DATE	ARSENIC SUS- PENDED TOTAL (UG/L AS AS) (01001)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BERYL- LIUM, SUS- PENDED RECOV. (UG/L AS BE) (01011)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CADMIUM SUS- PENDED RECOV- ERABLE (UG/L AS CD) (01026)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, SUS- PENDED RECOV. (UG/L AS CR) (01031)
OCT 24...	--	--	--	--	--	520	--	--	--	--	--
NOV 21...	--	--	--	--	--	670	--	--	--	--	--
DEC 17...	--	--	--	--	--	770	--	--	--	--	--
JAN 21...	--	--	--	--	--	760	--	--	--	--	--
FEB 18...	0	3	0	--	<1	390	0	--	<1	0	0
MAR 25...	--	--	--	--	--	440	--	--	--	--	--
APR 22...	--	--	--	--	--	590	--	--	--	--	--
MAY 20...	--	--	--	--	--	680	--	--	--	--	--
JUN 25...	--	--	--	--	--	750	--	--	--	--	--
JUL 30...	0	2	0	0	0	750	0	0	0	10	0
AUG 27...	--	--	--	--	--	900	--	--	--	--	--

LITTLE MISSOURI RIVER BASIN

93

06336500 BEAVER CREEK AT WIBAUX, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	CHROMIUM, DIS-SOLVED (UG/L AS CR) (01030)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	COPPER, SUS-PENDED RECOV- ERABLE (UG/L AS CU) (01041)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	IRON, SUS-PENDED RECOV- ERABLE (UG/L AS FE) (01044)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	LEAD, SUS-PENDED RECOV- ERABLE (UG/L AS PB) (01050)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGANESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)
OCT 24...	--	--	--	--	--	--	20	--	--	--	--
NOV 21...	--	--	--	--	--	--	30	--	--	--	--
DEC 17...	--	--	--	--	--	--	50	--	--	--	--
JAN 21...	--	--	--	--	--	--	50	--	--	--	--
FEB 18...	0	8	4	4	2100	2000	110	17	17	0	140
MAR 25...	--	--	--	--	--	--	20	--	--	--	--
APR 22...	--	--	--	--	--	--	30	--	--	--	--
MAY 20...	--	--	--	--	--	--	30	--	--	--	--
JUN 25...	--	--	--	--	--	--	30	--	--	--	--
JUL 30...	10	5	5	0	220	200	20	6	6	0	160
AUG 27...	--	--	--	--	--	--	40	--	--	--	--

DATE	MANGANESE, SUS-PENDED RECOV. (UG/L AS MN) (01054)	MANGANESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	MERCURY SUS-PENDED RECOV- ERABLE (UG/L AS HG) (71895)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	NICKEL, SUS-PENDED RECOV- ERABLE (UG/L AS NI) (01066)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELENIUM, TOTAL (UG/L AS SE) (01147)	SELENIUM, SUS-PENDED TOTAL (UG/L AS SE) (01146)	SELENIUM, DIS-SOLVED (UG/L AS SE) (01145)
FEB 18...	60	80	.0	.0	.1	6	3	3	1	1	0
JUL 30...	90	70	.1	.1	.0	2	2	0	0	0	1
AUG 27...	--	--	--	--	--	--	--	--	--	--	--

DATE	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, SUS-PENDED RECOV- ERABLE (UG/L AS ZN) (01091)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C) (00689)	SEDIMENT, DIS-CHARGE, SUS-PENDED (MG/L) (80154)	SEDIMENT, SIEVE DIAM. % FINER THAN .062 MM (70331)
DEC 17...	--	--	--	19	.1	64	.38
JAN 21...	--	--	--	--	--	32	.14
FEB 18...	30	20	7	29	1.6	68	4.2
MAR 25...	--	--	--	9.6	.2	14	.12
APR 22...	--	--	--	--	--	77	.33
MAY 20...	--	--	--	--	--	41	.13
JUN 25...	--	--	--	18	.0	17	.04
JUL 30...	10	0	10	4.4	.2	30	.01

LITTLE MISSOURI RIVER BASIN

06336510 HAY CREEK NO. 2 NEAR WIBAUX, MT

LOCATION.--Lat 46°59'31", long 104°06'12", in NW¼SW¼SE¼ sec.3, T.14 N., R.60 E., Wibaux County, Hydrologic Unit 10110204, on the right bank, and 4.0 mi (6.4 km) east of Wibaux.

DRAINAGE AREA.--4.1 mi² (10.6 km²).

PERIOD OF RECORD.--March 1978 to current year. Prior to October 1979, published as Upper Hay Creek Tributary near Wibaux, Mt.

GAGE.--Water-stage recorder.

REMARKS.--Records poor. Bed-material sample collected on Aug. 5. No other sediment or water-quality data collected.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 85 ft³/s (2.41 m³/s) Mar. 19, 1978, gage height undetermined; maximum recorded gage height, 6.66 ft (2.030 m) July 5, 1978; no flow most of the time.

EXTREMES FOR CURRENT PERIOD.--Maximum discharge, 12.0 ft³/s (0.34 m³/s) Feb. 15, gage height, 7.05 ft (2.148 m), from high-water mark, only peak above base of 5.0 ft³/s (0.14 m³/s); no flow most of the year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.10	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.30	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	3.5	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	2.0	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.60	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.10	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	.00	.00	.00	.00	6.60	.00	.00	.00	.00	.00	.00	.00
MEAN	.000	.000	.000	.000	.24	.000	.000	.000	.000	.000	.000	.000
MAX	.00	.00	.00	.00	3.5	.00	.00	.00	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	13	.00	.00	.00	.00	.00	.00	.00

CAL YR 1980 TOTAL 1.90 MEAN .005 MAX .75 MIN .00 AC-FT 3.8
WTR YR 1981 TOTAL 6.60 MEAN .018 MAX 3.5 MIN .00 AC-FT 13

DATE	TIME	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)
AUG 05...	1245	81	91	95	96	97	98	100

LITTLE MISSOURI RIVER BASIN

95

06336515 HAY CREEK NEAR WIBAUX, MT

LOCATION.--Lat 47°02'26", long 104°08'04", in NW¼SW¼SW¼ sec.21, T.15 N., R.60 E., Wibaux County, Hydrologic Unit 10110204, on left bank, and 5.5 mi (8.8 km) northeast of Wibaux.

DRAINAGE AREA.--11.4 mi² (29.5 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1978 to current year. Prior to October 1979, published as Lower Hay Creek Tributary near Wibaux, MT.

GAGE.--Water-stage recorder.

REMARKS.--Records fair. Some regulation due to stock dams upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 58 ft³/s (1.64 m³/s) Apr. 9, 1979, gage height, 2.04 ft (0.622 m); maximum gage height, 6.67 ft (2.033 m) Mar. 19, 1978, backwater from ice; no flow for several months most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 10 ft³/s (0.28 m³/s) and maximum (*):

Date	Time	Discharge		Gage height		Date	Time	Discharge		Gage height	
		(ft ³ /s)	(m ³ /s)	(ft)	(m)			(ft ³ /s)	(m ³ /s)	(ft)	(m)
Feb. 15	--	*37	1.05	a2.50	0.762	Aug. 1	1600	10	0.28	1.31	0.399
June 20	2145	18	0.51	1.54	0.469						

No flow many days.

a - Ice jam, maximum gage height obtained from high-water mark.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.02	.01	.00	.03	.00	.02	.00	.02	.00	.01	.92	.00
2	.03	.01	.00	.00	.00	.02	.00	.02	.00	.01	.26	.00
3	.03	.02	.00	.00	.00	.02	.00	.02	.00	.01	.04	.00
4	.03	.01	.00	.00	.00	.02	.00	.02	.02	.01	.06	.00
5	.03	.01	.00	.00	.00	.02	.00	.02	.01	.00	.50	.00
6	.03	.01	.00	.00	.00	.02	.00	.02	.01	.00	.16	.00
7	.03	.03	.00	.00	.00	.02	.00	.01	.02	.00	.02	.00
8	.02	.03	.00	.00	.00	.02	.00	.00	.02	.00	.03	.00
9	.02	.03	.00	.00	.00	.02	.00	.00	.02	.00	.02	.00
10	.01	.02	.01	.00	.00	.02	.00	.00	.02	.00	.02	.00
11	.01	.02	.03	.00	.00	.02	.00	.00	.01	.00	.01	.00
12	.02	.01	.02	.00	.02	.02	.00	.00	.01	.00	.01	.00
13	.02	.01	.06	.00	.10	.02	.00	.00	.01	.00	.01	.00
14	.02	.01	.09	.00	2.5	.02	.00	.00	.01	.01	.01	.00
15	.03	.00	.08	.00	10	.02	.00	.00	.01	.00	.01	.00
16	.04	.00	.05	.00	5.0	.02	.00	.00	.01	.00	.01	.00
17	.03	.00	.01	.01	3.0	.02	.00	.00	.01	.00	.01	.00
18	.02	.00	.00	.02	1.8	.02	.00	.00	.01	.00	.01	.00
19	.01	.00	.00	.04	1.0	.02	.00	.00	.01	.00	.01	.00
20	.01	.00	.00	.10	.35	.02	.00	.00	1.5	.00	.01	.00
21	.01	.00	.00	.20	.25	.02	.01	.00	.97	.00	.01	.00
22	.04	.00	.00	.30	.15	.02	.03	.01	.05	.00	.01	.00
23	.02	.00	.00	.35	.05	.02	.03	.01	.02	.00	.00	.00
24	.02	.02	.00	.30	.04	.02	.03	.00	.02	.00	.00	.00
25	.01	.01	.00	.20	.03	.02	.03	.00	.02	.00	.00	.00
26	.01	.00	.01	.10	.02	.01	.03	.00	.02	.00	.00	.00
27	.01	.00	.05	.05	.02	.01	.03	.00	.02	.00	.00	.02
28	.01	.00	.08	.00	.02	.01	.03	.00	.02	.00	.00	.01
29	.00	.00	.10	.00	---	.01	.02	.00	.02	.00	.00	.01
30	.00	.00	.08	.00	---	.00	.02	.00	.01	.00	.00	.01
31	.00	---	.05	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	.59	.26	.72	1.70	24.35	.54	.26	.15	2.88	.05	2.15	.05
MEAN	.019	.009	.023	.055	.87	.017	.009	.005	.096	.002	.069	.002
MAX	.04	.03	.10	.35	10	.02	.03	.02	1.5	.01	.92	.02
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	1.2	.5	1.4	3.4	48	1.1	.5	.3	5.7	.10	4.3	.10

CAL YR 1980 TOTAL 9.32 MEAN .025 MAX .50 MIN .00 AC-FT 18
WTR YR 1981 TOTAL 33.70 MEAN .092 MAX 10 MIN .00 AC-FT 67

LITTLE MISSOURI RIVER BASIN

06336515 HAY CREEK NEAR WIBAUX, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1978 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (000061)	SPE- CIFIC CON- DUCTI- VANCE (UMHUS) (000095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	HARD- NESS (MG/L AS CAC03) (00900)	HARD- NESS NONCAR- BONATE (MG/L AS CAC03) (95902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT										
02...	1320	.02	2400	--	15.0	--	--	--	--	--
NOV										
05...	1200	.01	2500	--	8.5	--	--	--	--	--
24...	1045	.02	2500	--	.0	--	--	--	--	--
24...	1215	.01	2500	--	.0	--	--	--	--	--
DEC										
29...	1340	.08	2400	--	.0	--	--	--	--	--
FEB										
17...	1235	2.8	725	--	.0	--	--	--	--	--
18...	1240	1.6	875	7.5	.0	38	350	210	66	45
20...	1225	.28	1010	--	.5	--	--	--	--	--
23...	1330	.06	1550	--	2.0	--	--	--	--	--
26...	1235	.03	1650	--	2.0	--	--	--	--	--
MAR										
04...	1140	.02	2000	--	2.0	--	--	--	--	--
09...	1230	.02	2400	--	3.5	--	--	--	--	--
24...	1340	.02	3000	--	8.0	--	--	--	--	--
MAY										
07...	1150	.01	2800	--	9.0	--	--	--	--	--
JUN										
11...	1200	.01	3000	--	13.0	--	--	--	--	--
AUG										
02...	0730	.63	550	E7.3	13.0	--	250	160	49	30
03...	0915	.07	800	7.6	16.0	--	400	200	76	50
03...	1245	.06	875	--	16.0	--	--	--	--	--
05...	1035	.49	975	7.3	18.0	--	500	320	87	69
05...	1420	.65	940	--	22.0	--	--	--	--	--
06...	1030	.14	1300	--	18.0	--	--	--	--	--

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CACU3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
OCT										
02...	--	--	--	--	--	--	--	--	--	--
NOV										
05...	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--	--
DEC										
29...	--	--	--	--	--	--	--	--	--	--
FEB										
17...	--	--	--	--	--	--	--	--	--	--
18...	35	17	.8	15	130	310	6.3	.2	569	.77
20...	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--
MAR										
04...	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--	--
MAY										
07...	--	--	--	--	--	--	--	--	--	--
JUN										
11...	--	--	--	--	--	--	--	--	--	--
AUG										
02...	29	19	.9	14	86	190	7.4	.1	378	.51
03...	55	22	1.4	14	200	300	10	.5	635	.86
03...	--	--	--	--	--	--	--	--	--	--
05...	77	24	1.7	13	180	450	9.2	.1	826	1.1
05...	--	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--	--

E - Estimated; estimated pH indicates laboratory determination.

LITTLE MISSOURI RIVER BASIN

97

06336515 HAY CREEK NEAR WIBAUX, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	SOLIDS, DIS- SOLVED (TUNS PER DAY) (70302)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MU) (01060)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	POTAS- SIUM 40 DIS- SOLVED (PCI/L AS K40) (82068)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
OCT									
02...	--	--	--	--	--	--	--	--	--
NOV									
05...	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--
DEC									
29...	--	--	--	--	--	--	--	--	--
FEB									
17...	--	--	--	--	--	--	--	--	--
18...	2.4	240	360	10	--	<10	600	11	--
20...	--	--	--	--	--	--	--	--	30
23...	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	45
MAR									
04...	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--
MAY									
07...	--	--	--	--	--	--	--	--	--
JUN									
11...	--	--	--	--	--	--	--	--	--
AUG									
02...	.64	160	93	10	56	<10	310	--	170
03...	.12	270	190	21	210	<10	550	--	43
03...	--	--	--	--	--	--	--	--	--
05...	1.1	350	140	25	72	<10	650	--	479
05...	--	--	--	--	--	--	--	--	427
06...	--	--	--	--	--	--	--	--	21

DATE	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN (70342)	BED MAT. SIEVE DIAM. % FINER THAN (80164)	BED MAT. SIEVE DIAM. % FINER THAN (80165)	BED MAT. SIEVE DIAM. % FINER THAN (80166)	BED MAT. SIEVE DIAM. % FINER THAN (80167)	BED MAT. SIEVE DIAM. % FINER THAN (80168)	BED MAT. SIEVE DIAM. % FINER THAN (80169)	BED MAT. SIEVE DIAM. % FINER THAN (80170)
OCT									
02...	--	--	--	--	--	--	--	--	--
NOV									
05...	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--
DEC									
29...	--	--	--	--	--	--	--	--	--
FEB									
17...	--	--	--	--	--	--	--	--	--
18...	--	--	--	--	--	--	--	--	--
20...	.02	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
26...	.00	--	--	--	--	--	--	--	--
MAR									
04...	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--
MAY									
07...	--	--	--	--	--	--	--	--	--
JUN									
11...	--	--	--	--	--	--	--	--	--
AUG									
02...	.29	100	--	--	--	--	--	--	--
03...	.01	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--
05...	.63	--	52	59	67	71	77	87	96
05...	.75	--	--	--	--	--	--	--	--
06...	.01	--	--	--	--	--	--	--	--

LITTLE MISSOURI RIVER BASIN

06336545 LITTLE BEAVER CREEK NEAR WIBAUX, MT

LOCATION.--Lat 47°03'44", long 104°05'30", in NW¼NW¼NW¼ sec.14, T.15 N., R.60 W., Wibaux County, Hydrologic Unit 10110204, on the right bank 100 ft (30.5 m) upstream from county highway bridge, 9.5 mi (15.3 km) northeast of Wibaux.

DRAINAGE AREA.--96.2 mi² (249.2 km²).

PERIOD OF RECORD.--March 1978 to September 1981 (discontinued).

GAGE.--Water-stage recorder.

REMARKS.--Records good except those for winter periods, which are fair. Flow regulated by Odlands Dam, capacity 600 acre-ft (740 hm³) to the top of the spillway, 9.1 mi (14.6 km) upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,850 ft³/s (52.4 m³/s) Mar. 21, 1978, gage height, 10.14 ft (3.091 m), backwater from ice; no flow for some days most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 50 ft³/s (1.42 m³/s) Feb. 14, gage height, 3.38 ft (1.030 m); no flow July 4-31 and Aug. 30 to Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.11	.10	.08	.35	.08	.32	.16	.15	.05	.01	.88	.00
2	.09	.11	.08	.33	.08	.34	.15	.11	.04	.01	1.8	.00
3	.09	.13	.08	.32	.08	.36	.14	.08	.03	.01	.57	.00
4	.09	.09	.08	.30	.08	.35	.12	.06	.04	.00	.20	.00
5	.09	.09	.08	.30	.08	.34	.11	.05	.04	.00	1.2	.00
6	.09	.09	.08	.30	.05	.30	.11	.03	.04	.00	.37	.00
7	.09	.09	.08	.28	.05	.30	.07	.02	.04	.00	.22	.00
8	.09	.09	.08	.26	.05	.28	.07	.03	.04	.00	.35	.00
9	.09	.09	.08	.24	.03	.23	.08	.03	.03	.00	.25	.00
10	.08	.09	.08	.22	.03	.25	.07	.03	.03	.00	.15	.00
11	.07	.09	.10	.20	.03	.25	.09	.03	.02	.00	.10	.00
12	.07	.09	.15	.20	.05	.22	.13	.03	.03	.00	.05	.00
13	.07	.09	.18	.22	.08	.22	.15	.07	.04	.00	.04	.00
14	.08	.09	.20	.22	12	.22	.11	.08	.04	.00	.04	.00
15	.11	.09	.22	.22	30	.21	.11	.08	.05	.00	.04	.00
16	.17	.09	.24	.20	11	.20	.08	.09	.05	.00	.04	.00
17	.27	.09	.26	.18	5.7	.19	.06	.07	.06	.00	.04	.00
18	.30	.09	.22	.18	2.9	.19	.07	.05	.06	.00	.03	.00
19	.30	.09	.14	.18	2.2	.22	.05	.04	.06	.00	.03	.00
20	.30	.09	.10	.75	1.0	.22	.03	.03	.05	.00	.02	.00
21	.30	.10	.08	2.0	.50	.20	.03	.03	.05	.00	.02	.00
22	3.0	.10	.08	3.0	.45	.19	.03	.03	.04	.00	.02	.00
23	.73	.10	.05	2.0	.50	.20	.03	.05	.03	.00	.02	.00
24	.20	.10	.05	.50	.44	.20	.03	.05	.03	.00	.02	.00
25	.17	.10	.05	.25	.37	.19	.04	.04	.02	.00	.02	.00
26	.15	.10	.20	.15	.36	.21	.09	.03	.02	.00	.02	.00
27	.11	.10	1.0	.10	.37	.20	.09	.03	.02	.00	.02	.00
28	.11	.10	2.0	.08	.33	.19	.13	.03	.01	.00	.02	.00
29	.09	.09	1.8	.08	---	.20	.16	.03	.01	.00	.01	.00
30	.09	.08	.70	.08	---	.19	.19	.05	.01	.00	.00	.00
31	.10	---	.40	.08	---	.18	---	.06	---	.00	.00	---
TOTAL	7.70	2.84	9.02	13.77	68.89	7.36	2.78	1.59	1.08	.03	6.59	.00
MEAN	.25	.095	.29	.44	2.46	.24	.093	.051	.036	.001	.21	.000
MAX	3.0	.13	2.0	3.0	30	.36	.19	.15	.06	.01	1.8	.00
MIN	.07	.08	.05	.08	.03	.18	.03	.02	.01	.00	.00	.00
AC-FT	15	5.6	18	27	137	15	5.5	3.2	2.1	.06	13	.00

CAL YR 1980 TOTAL 220.15 MEAN .60 MAX 11 MIN .00 AC-FT 437
WTR YR 1981 TOTAL 121.65 MEAN .33 MAX 30 MIN .00 AC-FT 241

LITTLE MISSOURI RIVER BASIN

99

06336600 BEAVER CREEK NEAR TROTTERS, ND

LOCATION.--Lat 47°09'47", long 103°59'32", in SW¼SW¼NE¼ sec.33, T.143 N., R.105 W., Golden Valley County, Hydrologic Unit 10110204, on left bank 100 ft (30 m) upstream from bridge on county road, 2.4 mi (3.9 km) east of Montana-North Dakota State line, 13 mi (21 km) southwest of Trotters, 17 mi (27 km) north of Beach, 20 mi (32 km) upstream from Elk Creek, and 27 mi (43 km) above mouth.

DRAINAGE AREA.--485 mi² (1,260 km²), approximately.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Altitude of gage is 2,370 ft (722 m), from topographic map.

REMARKS.--Records good except those for periods from June to August, which are fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,720 ft³/s (77.0 m³/s) Mar. 29, 1978, gage height, 18.61 ft (5.672 m); maximum gage height, 19.27 ft (5.874 m) Mar. 22, 1978, ice jam; no flow Aug. 1, Aug. 10 - Sept. 30, 1981.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, about 80 ft³/s (2.41 m³/s) Feb. 16, gage height, 4.68 ft (1.426 m), ice jam, no peak above base of 200 ft³/s (5.66 m³/s); no flow Aug. 1, Aug. 10 - Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.11	.37	1.1	3.0	1.2	14	3.8	1.9	.74	.54	.00	.00
2	.18	.49	1.1	2.8	1.0	14	3.9	1.8	.74	.37	.02	.00
3	.15	.32	1.1	2.5	1.0	15	4.1	1.4	.60	.28	.04	.00
4	.15	.28	1.3	2.0	1.2	17	3.5	1.3	.60	.24	.04	.00
5	.15	.28	1.4	2.6	1.2	15	3.4	1.2	.74	.08	.05	.00
6	.15	.28	1.2	2.4	1.4	13	2.9	1.1	.74	.07	.04	.00
7	.15	.28	1.1	2.2	1.1	12	2.6	.81	.60	.05	.02	.00
8	.18	.49	1.2	2.0	.95	11	2.4	.79	.82	.02	.01	.00
9	.18	.54	1.1	1.8	.85	10	2.4	.67	1.1	.01	.01	.00
10	.18	.28	1.0	1.8	.80	9.0	2.4	.78	.74	.01	.00	.00
11	.21	.21	1.0	2.5	.80	8.0	2.4	.85	.74	.02	.00	.00
12	.21	.32	1.5	2.8	.76	7.5	2.6	.82	.74	.02	.00	.00
13	.24	.43	1.7	2.8	.90	6.5	2.4	1.0	.74	.02	.00	.00
14	.28	.37	2.0	2.6	4.5	6.0	2.5	1.2	.74	.05	.00	.00
15	.43	.32	2.4	2.2	30	5.5	2.8	1.0	.74	.05	.00	.00
16	.82	.28	2.8	2.1	62	6.4	2.5	1.1	.74	.04	.00	.00
17	.43	.43	4.0	2.6	72	5.6	2.3	1.1	.82	.03	.00	.00
18	.24	.67	3.2	2.9	62	5.0	2.0	.92	1.1	.04	.00	.00
19	.18	.82	2.3	2.9	45	4.9	1.7	.78	.82	.06	.00	.00
20	.18	.82	2.0	2.7	38	4.7	1.5	.77	.82	.06	.00	.00
21	.15	2.8	1.8	2.7	29	4.7	1.5	.82	.82	.05	.00	.00
22	.90	1.8	1.6	3.3	21	4.4	1.8	.74	.93	.04	.00	.00
23	.67	1.2	1.3	4.0	18	4.2	1.7	.90	.82	.02	.00	.00
24	.74	.90	.96	5.0	17	4.2	1.7	.98	.82	.02	.00	.00
25	.60	.98	1.0	5.0	19	3.9	1.9	1.2	.82	.02	.00	.00
26	.43	1.2	1.4	3.4	12	4.0	1.7	1.2	.74	.02	.00	.00
27	.28	1.0	2.0	3.1	12	3.7	2.3	1.1	.74	.02	.00	.00
28	.24	2.0	3.0	2.5	13	3.9	2.9	1.2	.67	.01	.00	.00
29	.24	1.9	4.5	1.8	---	3.9	2.7	1.2	.74	.01	.00	.00
30	.28	1.5	4.0	1.9	---	3.9	2.1	.98	.67	.01	.00	.00
31	.28	---	3.4	1.9	---	3.9	---	.98	---	.01	.00	---
TOTAL	9.61	23.56	59.46	83.8	467.66	234.8	74.4	32.59	23.19	2.29	.23	.00
MEAN	.31	.79	1.92	2.70	16.7	7.57	2.48	1.05	.77	.074	.007	.000
MAX	.90	2.8	4.5	5.0	72	17	4.1	1.9	1.1	.54	.05	.00
MIN	.11	.21	.96	1.8	.76	3.7	1.5	.67	.60	.01	.00	.00
AC-FT	19	47	118	166	928	466	148	65	46	4.5	.5	.00
CAL YR 1980	TOTAL	1456.37	MEAN	3.98	MAX	50	MIN	.02	AC-FT	2890		
WTR YR 1981	TOTAL	1011.59	MEAN	2.77	MAX	72	MIN	.00	AC-FT	2010		

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1978 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCTI- ANCE (UMHUS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00300) (00301)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00300) (00301)	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT												
29...	0955	.20	3050	8.3	7.0	2.5	11.7	93	500	0	73	77
NOV												
26...	1145	1.2	3350	8.2	5.0	.0	12.6	93	750	240	120	110
DEC												
15...	1355	2.4	2960	8.0	9.0	.0	12.2	91	750	250	120	110
JAN												
26...	1355	3.4	2900	8.3	-3.0	.0	13.0	98	800	300	140	110
FEB												
11...	1125	.81	3000	7.9	-13.5	.0	11.0	83	840	310	140	120
16...	1230	40	1520	8.2	12.5	.5	100	13	--	--	--	--
21...	1130	30	1310	8.3	1.0	.5	12.6	95	--	--	--	--
24...	1230	11	1540	8.4	5.0	.0	13.4	100	390	140	70	52
MAR												
13...	1000	5.0	1810	8.3	8.0	.5	12.6	96	430	130	75	59
25...	1530	3.9	1930	8.5	9.5	6.5	13.8	121	--	--	--	--
APR												
23...	1315	1.8	2600	8.4	25.5	15.0	10.9	104	630	210	100	92
MAY												
20...	1100	.82	2600	8.3	23.5	15.0	8.8	94	630	210	93	96
JUN												
09...	1215	.85	2680	8.4	21.0	20.0	7.2	86	--	--	--	--
18...	0910	.94	2570	8.5	15.0	14.5	8.1	86	610	190	90	93
JUL												
08...	1300	.02	2800	8.7	21.0	21.5	12.7	157	640	240	73	110

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY, CARBON- ATE FET-FLD (MG/L CACU3) (00430)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
OCT												
29...	570	71	11	8.7	538	1100	13	.5	6.4	2280	--	3.1
NOV												
26...	550	61	8.7	13	510	1400	13	.3	5.7	2560	2520	3.4
DEC												
15...	490	58	7.8	11	500	1200	11	.3	7.2	2270	2250	3.0
JAN												
26...	440	54	6.8	9.8	500	1200	11	.2	6.9	2270	2220	3.0
FEB												
11...	420	52	6.3	10	530	1200	17	.3	7.3	2350	2230	3.2
16...	--	--	--	--	276	--	--	--	--	--	--	--
21...	--	--	--	--	220	--	--	--	--	--	--	--
24...	200	52	4.4	9.3	250	580	6.1	.2	7.0	1100	1080	1.5
MAR												
13...	260	56	5.5	7.0	300	660	7.0	.2	3.7	1300	1250	1.7
25...	--	--	--	--	318	--	--	--	--	--	--	--
APR												
23...	430	59	7.5	9.7	420	1000	16	.3	2.0	2000	1900	2.7
MAY												
20...	410	58	7.1	11	420	1100	9.5	.2	2.4	1990	1980	2.7
JUN												
09...	--	--	--	--	416	--	--	--	--	--	--	--
18...	430	60	7.6	10	420	1100	14	.3	3.0	2020	1990	2.7
JUL												
08...	450	60	7.8	12	400	1200	17	.2	.6	2150	2100	2.9

LITTLE MISSOURI RIVER BASIN

101

06336600 BEAVER CREEK NEAR TROTTERS, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHURUS, TOTAL (MG/L AS P) (00665)	PHOS- PHURUS TOTAL (MG/L AS PO4) (71886)	PHOS- PHURUS, DIS- SOLVED (MG/L AS P) (00666)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC SUS- PENDED TOTAL (UG/L AS AS) (01001)	ARSENIC TOTAL IN BOT- TOM MA- TERIAL (UG/G AS AS) (01003)
OCT 29...	1.2	--	--	--	--	--	--	--	--	--	--	--
NOV 26...	8.2	.00	.000	.00	1.5	1.50	.040	.12	.030	--	--	--
DEC 15...	14.7	--	--	--	--	--	--	--	--	--	--	--
JAN 26...	20.8	.45	.080	.10	.47	.55	.020	.06	.010	--	--	--
FEB 11...	5.1	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--	--
24...	32.7	--	--	--	--	--	--	--	--	2	1	--
MAR 13...	17.8	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--
APR 23...	9.7	.00	.070	--	.69	.76	.050	.15	.010	--	--	--
MAY 20...	4.4	--	--	--	--	--	--	--	--	--	--	--
JUN 09...	--	--	--	--	--	--	--	--	--	--	--	--
18...	5.1	--	--	--	--	--	--	--	--	2	1	63
JUL 08...	.12	.09	.080	--	1.6	1.70	.110	.34	.020	--	--	--

DATE	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BARIUM, SUS- PENDED RECOV- ERABLE (UG/L AS BA) (01006)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BERYL- LIUM, SUS- PENDED RECOV- ERABLE (UG/L AS BE) (01011)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, SUS- PENDED RECOV- ERABLE (UG/L AS CR) (01031)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	CHRO- MIUM, RECOV- FM BOT- TOM MA- TERIAL (UG/G AS CR) (01029)	COBALT, RECOV- FM BOT- TOM MA- TERIAL (UG/G AS CO) (01038)
OCT 29...	100	0	100	--	--	--	580	--	--	--	--	--
NOV 26...	--	--	--	--	--	--	590	--	--	--	--	--
DEC 15...	--	--	--	--	--	--	620	--	--	--	--	--
JAN 26...	--	--	--	--	--	--	640	--	--	--	--	--
FEB 11...	--	--	--	--	--	--	640	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	0	--	<1	350	10	10	0	--	--
MAR 13...	--	--	--	--	--	--	390	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--
APR 23...	100	0	100	--	--	--	620	--	--	--	--	--
MAY 20...	--	--	--	--	--	--	640	--	--	--	--	--
JUN 09...	--	--	--	--	--	--	--	--	--	--	--	--
18...	--	--	--	0	0	0	700	20	10	10	3	10
JUL 08...	--	--	--	--	--	--	940	--	--	--	--	--

06336600 BEAVER CREEK NEAR TROTTERS, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	CUPPER, TOTAL RECUP- ERABLE (UG/L AS CU) (01042)	CUPPER, SUS- PENDE RECUP- ERABLE (UG/L AS CU) (01041)	CUPPER, DIS- SOLVED (UG/L AS CU) (01040)	COPPER, FM BOT- TOM MA- TERIAL (UG/G AS CU) (01043)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM TOTAL RECUP- ERABLE (UG/L AS LI) (01132)	LITHIUM SUS- PENDE RECUP- ERABLE (UG/L AS LI) (01131)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, TOTAL RECUP- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, SUS- PENDE RECUP- ERABLE (UG/L AS MN) (01054)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECUP- ERABLE (UG/L AS HG) (71900)
OCT												
29...	--	--	49	--	50	70	0	70	100	60	40	--
NOV												
26...	--	--	--	--	40	--	--	--	80	30	50	--
DEC												
15...	--	--	--	--	20	--	--	--	50	10	40	--
JAN												
26...	--	--	--	--	30	--	--	--	50	20	30	--
FEB												
11...	--	--	--	--	10	--	--	--	80	20	60	--
16...	--	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--	--
24...	6	3	3	--	40	--	--	--	70	50	20	.1
MAR												
13...	--	--	--	--	10	--	--	--	50	20	30	--
25...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
23...	--	--	--	--	40	60	0	60	120	70	50	--
MAY												
20...	--	--	--	--	40	--	--	--	140	100	40	--
JUN												
09...	--	--	--	--	--	--	--	--	--	--	--	--
18...	5	4	1	150	20	--	--	--	150	130	20	.1
JUL												
08...	--	--	--	--	10	--	--	--	70	60	10	--

[illegible]

LITTLE MISSOURI RIVER BASIN

103

06336600 BEAVER CREEK NEAR TROTTERS, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	ZINC, SUS- PENDE RECOVERABLE (UG/L AS ZN) (01091)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	ZINC, FM BOT- TOM MA- TERIAL (UG/G AS ZN) (01093)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT) (80030)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)	GROSS BETA, DIS- SOLVED (PCI/L AS SH/ YT-90) (80050)
FEB									
11...	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--
24...	40	30	7	--	--	--	--	--	--
JUN									
09...	--	--	--	--	--	--	--	--	--
18...	20	10	10	18	<57	2.1	<25	2.7	<24
JUL									
08...	--	--	--	--	--	--	--	--	--

DATE	GROSS BETA, SUSP. TOTAL (PCI/L AS SH/ YT-90) (80060)	POTAS- SIUM 40 DIS- SOLVED (PCI/L AS K40) (82068)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHENOLS (UG/L) (32730)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)
OCT								
29...	--	--	--	--	--	--	74	.04
NOV								
26...	--	--	20	.5	--	--	34	.11
DEC								
15...	--	--	--	--	--	--	32	.21
JAN								
26...	--	7.3	29	.5	--	--	110	1.0
FEB								
11...	--	7.5	--	--	--	--	94	.21
16...	--	--	--	--	--	--	229	25
21...	--	--	--	--	--	--	84	6.8
24...	--	6.9	--	--	.00	1	61	1.8
MAR								
13...	--	5.2	--	--	--	--	51	.70
APR								
23...	--	7.2	20	.1	--	--	64	.31
MAY								
20...	--	8.2	--	--	--	--	168	.37
JUN								
09...	--	--	--	--	--	--	141	.32
18...	2.5	7.5	--	--	.00	0	111	.28
JUL								
08...	--	9.0	11	1.6	--	--	66	.00

DATE	BED MAT. FALL DIAM. % FINER THAN (80158)	BED MAT. FALL DIAM. % FINER THAN (80159)	BED MAT. FALL DIAM. % FINER THAN (80160)	BED MAT. FALL DIAM. % FINER THAN (80161)	BED MAT. FALL DIAM. % FINER THAN (80162)	BED MAT. FALL DIAM. % FINER THAN (80169)	BED MAT. FALL DIAM. % FINER THAN (80170)	BED MAT. FALL DIAM. % FINER THAN (80171)	BED MAT. FALL DIAM. % FINER THAN (80172)	BED MAT. FALL DIAM. % FINER THAN (80173)
FEB										
24...	6	10	15	16	19	27	47	70	89	100

DATE	LENGTH OF EXPO- SURE (DAYS) (00022)	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUORUM (MG/M2) (70957)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUORUM (MG/M2) (70958)	PERI- PHYTON BIOMASS ASH WEIGHT G/SQ M (00572)	PERI- PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)
OCT					
29...	39	4.60	1.29	17.0	20.5

LITTLE MISSOURI RIVER BASIN

06336600 BEAVER CREEK NEAR TROTTERS, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO JULY 1981

DATE TIME	UCT 29,80 0955	NOV 26,80 1145	DEC 15,80 1355	JAN 26,81 1355	FEB 11,81 1125	FEB 24,81 1230
TOTAL CELLS/ML	1400	620	780	170	90	340
DIVERSITY: DIVISION	1.5	1.6	1.8	1.8	1.6	1.3
..CLASS	1.5	1.6	1.8	1.8	1.6	1.3
..ORDER	1.7	1.8	2.0	2.4	2.0	2.0
...FAMILY	1.9	2.3	2.7	2.4	2.2	2.2
...GENUS	2.3	2.7	2.8	2.4	2.2	2.2

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												
...OOCYSTACEAE												
....ANKISTRODESMUS	90	7	120#	19	96	12	--	--	26#	29	26	8
....CHODATELLA	--	--	13	2	--	--	--	--	--	--	--	--
....DICTYOSPHAERIUM	--	--	--	--	--	--	--	--	--	--	--	--
....OOCYSTIS	--	--	--	--	--	--	--	--	--	--	--	--
....SELENASTRUM	--	--	--	--	--	--	--	--	--	--	--	--
....TREUBARIA	--	--	--	--	--	--	--	--	--	--	--	--
...SCENEDESMACEAE												
....CRUCIGENIA	130	10	52	8	--	--	--	--	--	--	--	--
....SCENEDESMUS	77	6	130#	21	55	7	26#	15	--	--	--	--
....TETRASTRUM	52	4	--	--	55	7	--	--	--	--	52#	15
...VOLVOCALES												
...CHLAMYDOMONADACEAE												
...CHLAMYDOMONAS	26	2	26	4	--	--	39#	23	--	--	90#	27
CHRYSTOPHYTA												
..BACILLARIOPHYCEAE												
...CENTRALES												
...COSCINODISCACEAE												
....CYCLOTELLA	170	12	77	13	27	4	13	8	13	14	13	4
....MELOSIRA	--	--	--	--	--	--	--	--	--	--	--	--
....STEPHANODISCUS	--	--	--	--	--	--	--	--	--	--	--	--
...PENNALES												
...ACHNANTHACEAE												
...COCCONEIS	--	--	--	--	--	--	--	--	--	--	--	--
...DIATOMACEAE												
....DIATOMA	--	--	--	--	14	2	--	--	--	--	--	--
...FRAGILARIACEAE												
....ASTERIONELLA	--	--	--	--	--	--	--	--	--	--	--	--
....SYNEDRA	--	--	--	--	--	--	--	--	--	--	--	--
...NAVICULACEAE												
....NAVICULA	--	--	--	--	82	11	--	--	13	14	--	--
...NITZSCHACEAE												
....DENTICULA	--	--	--	--	--	--	--	--	--	--	--	--
....NITZSCHIA	26	2	--	--	260#	33	26#	15	13	14	130#	38
...XANTHOPHYCEAE												
...HETEROCOCCALES												
...CHLOROTHECIACEAE												
...OPHIOCYTIUM	--	--	--	--	--	--	--	--	--	--	--	--
CRYPTOPHYTA (CRYPTOMONADS)												
..CRYPTOPHYCEAE												
...CRYPTOMONADALES												
...CRYPTOCHRYSIDACEAE												
...CHROOMONAS	13	1	--	--	--	--	--	--	--	--	--	--
...CRYPTOMONADACEAE												
...CRYPTOMONAS	--	--	--	--	--	--	--	--	--	--	--	--
CYANOPHYTA (BLUE-GREEN ALGAE)												
..CYANOPHYCEAE												
...CHROOCOCCALES												
...CHROOCOCCACEAE												
....ANACYSTIS	--	--	--	--	55	7	--	--	--	--	26	8
...HORMOGONALES												
...OSCILLATORIA												
...OSCILLATORIA	--	--	--	--	--	--	--	--	--	--	--	--
EUGLENOPHYTA (EUGLENUIDS)												
..EUGLENOPHYCEAE												
...EUGLENALES												
...EUGLENACEAE												
....EUGLENA	39	3	13	2	--	--	--	--	--	--	--	--
....PHACUS	--	--	--	--	--	--	--	--	--	--	--	--
...TRACHELOMONAS	720#	53	170#	27	120#	16	13	8	--	--	--	--
PYRRHOPHYTA (FIRE ALGAE)												
..DINOPHYCEAE												
...PERIDINIALES												
...GLENODINIACEAE												
...GLENODINIUM	13	1	26	4	14	2	52#	31	26#	29	--	--

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

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

06336600 BEAVER CREEK NEAR TROTTERS, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO JULY 1981

DATE TIME	MAR 13,81 1000	APR 23,81 1315	MAY 20,81 1100	JUN 18,81 0910	JUL 8,81 1300					
TOTAL CELLS/ML	800	1300	1200	4600	14000					
DIVERSITY: DIVISION	1.4	1.9	2.1	1.6	1.4					
..CLASS	1.4	1.9	2.1	1.6	1.5					
..ORDER	1.8	2.4	2.5	1.6	2.3					
...FAMILY	1.9	2.4	3.1	2.0	2.5					
....GENUS	1.9	2.7	3.4	2.5	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										
...OOCYSTACEAE										
....ANKISTRODESMUS	13	2	150	12	90	7	340	7	490	4
....CHODATELLA	--	--	--	--	--	--	--	--	--	--
....DICTYOSPHAERIUM	--	--	--	--	--	--	200	4	--	--
....OOCYSTIS	--	--	51	4	13	1	--	--	--	--
....SELENASTRUM	--	--	--	--	--	--	33	1	--	--
....TREUBARIA	--	--	--	--	--	--	--	--	200	1
...SCENEDESMACEAE										
....CRUCIGENIA	--	--	--	--	--	--	780#	17	--	--
....SCENEDESMUS	--	--	--	--	250#	19	290	6	2000	14
....TETRASTRUM	--	--	--	--	100	9	65	1	790	6
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	410#	52	26	2	39	3	--	--	5700#	41
CHRYSTOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	--	--	--	--	150	13	65	1	1400	10
....MELOSIRA	--	--	51	4	--	--	--	--	--	--
....STEPHANODISCUS	190#	24	100	8	--	--	--	--	--	--
...PENNALES										
....ACHNANTHACEAE										
....COCONEIS	--	--	--	--	13	1	*	0	--	--
...DIATOMACEAE										
....DIATOMA	--	--	--	--	13	1	--	--	--	--
...FRAGILARIACEAE										
....ASTERIONELLA	26	3	13	1	--	--	--	--	--	--
....SYNEORA	--	--	--	--	--	--	--	--	98	1
...NAVICULACEAE										
....NAVICULA	--	--	--	--	39	3	49	1	98	1
...NITZSCHACEAE										
....DENTICULA	--	--	--	--	--	--	--	--	98	1
....NITZSCHIA	39	5	13	1	120	10	160	4	690	5
...XANTHOPHYCEAE										
..HETEROCOCCALES										
...CHLOROTHECIACEAE										
....OPHIOCYTIUM	--	--	--	--	--	--	--	--	490	4
CRYPTOPHYTA (CRYPTOMONADS)										
..CRYPTOPHYCEAE										
...CRYPTOMONADALES										
....CRYPTOCHRYSIDACEAE										
...CHROOMONAS	--	--	--	--	100	9	--	--	--	--
...CRYPTOMONADACEAE										
....CRYPTOMONAS	--	--	--	--	13	1	--	--	--	--
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROOCOCCALES										
....CHROOCOCCACEAE										
....ANACYSTIS	--	--	400#	31	140	12	2300#	49	1600	11
...HORMOGONALES										
...OSCILLATORIA	--	--	180	14	--	--	--	--	--	--
EUGLENOPHYTA (EUGLENOIDS)										
..EUGLENOPHYCEAE										
...EUGLENALES										
....EUGLENACEAE										
....EUGLENA	--	--	--	--	26	2	110	2	--	--
....PHACUS	--	--	--	--	--	--	*	0	--	--
....TRACHELOMONAS	--	--	310#	24	120	10	210	5	98	1
PYRRHOPHYTA (FIRE ALGAE)										
..DINOPHYCEAE										
...PERIDINIALES										
...GLENODINIACEAE										
....GLENODINIUM	120	15	--	--	--	--	--	--	200	1

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

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

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) National Geodetic Vertical Datum of 1929. 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.--47 years, 590 ft³/s (16.71 m³/s), 427,500 acre-ft/yr (527 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, 1,390 ft³/s (39.4 m³/s) Oct. 23, gage height, 3.54 ft (1.079 m), no peak above base of 8,000 ft³/s (227 m³/s); maximum gage height, 4.28 ft (1.305 m) Feb. 18, backwater from ice; no flow Feb. 9-12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	111	11	80	1.6	90	45	23	113	86	143	30
2	11	101	10	50	1.5	56	42	22	187	150	208	28
3	11	90	9.0	30	1.3	58	40	20	83	101	313	23
4	11	85	9.0	30	1.1	142	39	18	174	62	150	22
5	10	81	8.5	30	1.1	217	39	18	147	45	501	20
6	9.4	76	8.0	25	1.0	505	37	16	126	36	606	18
7	9.4	72	7.0	18	.75	480	35	14	134	31	475	16
8	8.8	68	6.0	14	.50	420	34	14	94	25	671	15
9	8.8	60	5.5	10	.00	360	33	15	72	23	555	14
10	8.2	60	5.2	7.0	.00	270	31	16	66	20	375	12
11	8.2	60	5.0	4.0	.00	226	31	18	51	18	320	12
12	8.2	64	5.0	4.0	.00	192	30	18	56	17	315	11
13	7.0	58	5.0	4.0	.50	156	27	18	92	16	217	11
14	6.0	48	5.0	3.5	1.0	134	25	18	94	19	166	11
15	6.0	37	6.0	3.0	10	123	25	18	118	84	134	11
16	100	31	15	2.5	240	118	25	18	154	34	162	10
17	360	31	12	2.0	816	111	24	16	172	17	265	10
18	516	30	8.0	2.0	1100	99	23	16	148	20	315	8.8
19	485	30	7.0	2.0	1020	92	22	15	203	64	455	8.8
20	636	30	5.0	1.8	744	88	22	15	247	76	286	8.8
21	697	30	4.5	1.8	395	81	23	14	221	60	172	8.2
22	961	30	4.0	2.0	256	74	30	15	206	112	134	7.0
23	1240	25	3.5	2.5	213	70	25	16	199	88	154	6.5
24	718	20	2.5	2.5	206	66	27	16	166	88	134	6.0
25	505	18	2.0	2.5	210	62	24	18	111	208	97	6.5
26	370	16	2.0	2.4	203	62	22	16	78	118	81	6.5
27	265	16	25	2.0	159	58	25	15	74	83	66	6.0
28	192	18	50	1.8	162	56	29	19	76	50	54	6.0
29	159	16	100	1.8	---	54	25	21	68	31	46	5.5
30	145	12	100	1.7	---	50	27	19	60	34	40	6.5
31	123	---	85	1.7	---	48	---	43	---	76	35	---
TOTAL	7607.0	1424	530.7	345.5	5744.35	4618	886	558	3790	1892	7645	365.1
MEAN	245	47.5	17.1	11.1	205	149	29.5	18.0	126	61.0	247	12.2
MAX	1240	111	100	80	1100	505	45	43	247	208	671	30
MIN	6.0	12	2.0	1.7	.00	48	22	14	51	16	35	5.5
AC-FT	15090	2820	1050	685	11390	9160	1760	1110	7520	3750	15160	724
CAL YR 1980 TOTAL	33496.00			MEAN 91.5	MAX 1240	MIN .00	AC-FT 66440					
WTR YR 1981 TOTAL	35405.65			MEAN 97.0	MAX 1240	MIN .00	AC-FT 70230					

LITTLE MISSOURI RIVER BASIN

107

06337000 LITTLE MISSOURI RIVER NEAR WATFORD CITY, ND--Continued
(National water-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1948 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1974 to current year.

WATER TEMPERATURES: April 1974 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 5,030 micromhos Dec. 9, 1980; minimum daily, 325 micromhos, Mar. 30, 1978.

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.--

SPECIFIC CONDUCTANCE: Maximum daily, 5,030 micromhos Dec. 9; minimum daily, 420 micromhos Feb. 17.

WATER TEMPERATURES: Maximum daily, 28.0°C July 5; minimum daily, 0.0°C on many days during winter months.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION (00301)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
OCT											
13...	1230	6.4	3100	8.4	8.5	9.0	46	11.4	107	K65	K25
NOV											
11...	1125	56	2000	8.6	-2.0	2.0	140	11.8	91	K44	K75
DEC											
10...	1145	5.2	3980	8.5	-15.0	.0	4.4	12.2	88	K78	K40
JAN											
20...	1240	1.8	3350	8.6	-2.0	.0	6.6	12.2	90	K22	K20
MAR											
11...	1100	246	1400	8.7	14.0	2.0	920	--	--	K230	K130
APR											
01...	1355	47	2640	8.7	21.0	11.0	120	10.6	97	--	--
MAY											
12...	0940	19	3100	8.9	11.0	9.0	22	10.6	99	K120	110
JUN											
09...	1010	70	1800	8.7	11.5	14.5	14000	8.8	95	K170	K75
JUL											
14...	1030	15	2800	8.7	28.0	22.0	42	8.0	99	K90	K80
AUG											
11...	0940	312	1200	8.5	27.0	20.5	13000	8.0	95	K78	K175
SEP											
15...	0930	11	2300	8.7	13.5	12.0	22	10.0	99	K40	K60

K - 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 1980 TO SEPTEMBER 1981

DATE	HARD- NESS (MG/L AS CAC03) (00900)	HARD- NESS NONCAR- BONATE (MG/L AS CAC03) (95902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINEITY LAB (MG/L AS CAC03) (90410)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2) (00405)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)
OCT 13...	450	5.0	91	53	590	73	12	14	440	--	1200
NOV 11...	230	.00	49	26	420	79	12	11	340	1.4	760
DEC 10...	710	33	160	76	720	68	12	25	680	3.4	1500
JAN 20...	750	65	160	84	630	64	10	16	680	2.7	1400
MAR 11...	150	.00	30	17	260	79	9.4	5.4	250	.8	460
APR 01...	410	27	82	49	480	71	10	8.5	380	1.2	1000
MAY 12...	490	110	91	64	550	70	11	13	380	.8	1300
JUN 09...	110	.00	27	10	370	87	15	8.0	230	.7	650
JUL 14...	140	.00	37	12	620	89	23	15	360	1.2	1100
AUG 11...	180	37	41	18	210	71	7.5	9.3	140	.7	490
SEP 15...	390	18	81	45	440	70	9.7	14	370	1.2	940

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS DAY) (70302)	NITRO- GEN, NO2+NO3 DIS- SOLVED TOTAL (MG/L AS N) (00630)	NITRO- GEN, NO2+NO3 DIS- SOLVED TOTAL (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)
OCT 13...	16	.5	10	2330	2240	3.2	40.3	.00	.00	.000	.000
NOV 11...	11	.4	8.9	1370	1490	1.9	207	.33	.33	.030	.000
DEC 10...	27	.5	16	3150	2930	4.3	44.2	.01	.06	.310	.500
JAN 20...	18	.5	16	2810	2740	3.8	13.7	.47	.48	.510	.490
MAR 11...	7.4	.3	5.1	914	936	1.2	607	.09	.11	.080	.120
APR 01...	22	.3	7.9	1910	1880	2.6	242	.00	.00	.030	.130
MAY 12...	32	.3	6.8	2210	2290	3.0	113	.02	.04	.170	.100
JUN 09...	22	.5	8.7	1310	1250	1.8	248	2.3	3.2	--	.540
JUL 14...	18	.4	11	2020	2030	2.8	81.8	.01	<.10	.080	.040
AUG 11...	19	.5	9.9	871	888	1.2	734	1.3	1.4	.350	.350
SEP 15...	35	.4	15	1820	1790	2.5	54.1	.00	.00	.100	.080

06337000 LITTLE MISSOURI RIVER NEAR WATFORD CITY, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN, ORGANIC DIS- SOLVED (MG/L AS N) (00607)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)	NITRO- GEN,AM- MONIA + ORGANIC DIS. TOTAL (MG/L AS N) (00623)	NITRO- GEN, DIS- SOLVED TOTAL (MG/L AS N) (00600)	NITRO- GEN, DIS- SOLVED TOTAL (MG/L AS N) (00602)	NITRO- GEN, DIS- SOLVED TOTAL (MG/L AS N) (00602)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)
OCT										
13...	.00	1.2	.82	1.20	.38	.82	1.2	.82	5.3	.050
NOV										
11...	.00	1.1	--	1.10	--	--	1.4	--	6.3	.030
DEC										
10...	.64	1.2	1.6	1.50	.00	2.1	1.5	2.2	6.7	.050
JAN										
20...	.63	1.5	1.3	2.00	.20	1.8	2.5	2.3	11	.010
MAR										
11...	.15	2.1	1.2	2.20	.90	1.3	2.3	1.4	10	.750
APR										
01...	.17	1.1	.61	1.10	.36	.74	1.1	.74	4.9	.090
MAY										
12...	.13	.66	.71	.83	.02	.81	.85	.85	3.8	.030
JUN										
09...	.70	--	2.6	.08	.00	3.1	2.4	6.3	11	4.50
JUL										
14...	.05	1.2	.96	1.30	.30	1.0	1.3	1.1	5.8	.090
AUG										
11...	.45	--	1.2	--	--	1.5	--	2.9	--	.000
SEP										
15...	.10	1.0	.92	1.10	.10	1.0	1.1	1.0	4.9	.020

DATE	PHOS- PHORUS TOTAL (MG/L AS P) (71886)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS, ORTHU, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHATE, ORTHU, DIS- SOLVED (MG/L AS P) (00660)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC SUS- PENDE TOTAL (UG/L AS AS) (01001)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BARIUM, SUS- PENDE RECOV- ERABLE (UG/L AS BA) (01006)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)
OCT										
13...	.15	.010	--	--	--	--	--	--	--	--
NOV										
11...	.09	.030	--	--	4	2	2	100	50	50
DEC										
10...	.15	.040	--	--	--	--	--	--	--	--
JAN										
20...	.03	.030	--	--	--	--	--	--	--	--
MAR										
11...	2.3	.050	--	--	--	--	--	--	--	--
APR										
01...	.28	.020	--	--	--	--	--	--	--	--
MAY										
12...	.09	.020	--	--	2	0	2	100	0	100
JUN										
09...	14	.080	.110	.34	--	--	--	--	--	--
JUL										
14...	.28	.020	--	--	--	--	--	--	--	--
AUG										
11...	.00	.000	--	--	58	56	2	2200	2200	50
SEP										
15...	.06	.010	--	--	--	--	--	--	--	--

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

[illegible]

06337000 LITTLE MISSOURI RIVER NEAR WATFORD CITY, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	MERCURY SUS- PENDE RECUV- ERABLE (UG/L AS HG) (71895)	MERCURY DIS- SULVED (UG/L AS HG) (71890)	NICKEL, TOTAL RECUV- ERABLE (UG/L AS NI) (01067)	NICKEL, SUS- PENDE RECUV- ERABLE (UG/L AS NI) (01066)	NICKEL, DIS- SULVED (UG/L AS NI) (01065)	SELE- NIUM, SUS- PENDE TOTAL (UG/L AS SE) (01147)	SELE- NIUM, SUS- PENDE TOTAL (UG/L AS SE) (01146)	SELE- NIUM, DIS- SULVED (UG/L AS SE) (01145)	SILVER, TOTAL RECUV- ERABLE (UG/L AS AG) (01077)	SILVER, SUS- PENDE RECUV- ERABLE (UG/L AS AG) (01076)
OCT										
13...	--	--	--	--	--	--	--	--	--	--
NOV										
11...	.1	.0	25	12	13	3	0	3	0	0
DEC										
10...	--	--	--	--	--	--	--	--	--	--
JAN										
20...	--	--	--	--	--	--	--	--	--	--
MAR										
11...	--	--	--	--	--	--	--	--	--	--
APR										
01...	--	--	--	--	--	--	--	--	--	--
MAY										
12...	.2	.0	6	4	2	0	0	0	0	0
JUN										
09...	--	--	--	--	--	--	--	--	--	--
JUL										
14...	--	--	--	--	--	--	--	--	--	--
AUG										
11...	1.1	.2	280	250	35	6	3	3	1	1
SEP										
15...	--	--	--	--	--	--	--	--	--	--

DATE	SILVER, DIS- SULVED (UG/L AS AG) (01075)	ZINC, TOTAL RECUV- ERABLE (UG/L AS ZN) (01092)	ZINC, SUS- PENDE RECUV- ERABLE (UG/L AS ZN) (01091)	ZINC, DIS- SULVED (UG/L AS ZN) (01090)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CARBON, ORGANIC DIS- SULVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	PCB, TOTAL (UG/L) (39516)	ALDRIN, TOTAL (UG/L) (39330)	CHLOR- DANE, TOTAL (UG/L) (39350)
OCT										
13...	--	--	--	--	29	--	--	--	--	--
NOV										
11...	0	180	--	<3	--	14	1.9	ND	ND	ND
DEC										
10...	--	--	--	--	22	--	--	--	--	--
JAN										
20...	--	--	--	--	32	--	--	--	--	--
MAR										
11...	--	--	--	--	11	--	--	--	--	--
APR										
01...	--	--	--	--	19	--	--	--	--	--
MAY										
12...	0	20	0	20	--	18	.5	--	--	--
JUN										
09...	--	--	--	--	48	--	--	--	--	--
JUL										
14...	--	--	--	--	17	--	--	--	--	--
AUG										
11...	0	1100	1100	9	--	11	--	--	--	--
SEP										
15...	--	--	--	--	13	--	--	--	--	--

Whole water ND - Not detected at 0.01 µg/L level.
 Bed mater 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 1980 TO SEPTEMBER 1981

DATE	DDO, TOTAL (UG/L) (39360)	DDE, TOTAL (UG/L) (39365)	DDT, TOTAL (UG/L) (39370)	DI- AZINON, TOTAL (UG/L) (39570)	DI- ELURIN TOTAL (UG/L) (39380)	ENDRIN, TOTAL (UG/L) (39390)	ETHION, TOTAL (UG/L) (39398)	HEPTA- CHLOR, TOTAL (UG/L) (39410)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L) (39420)	LINDANE TOTAL (UG/L) (39340)
OCT 13...	--	--	--	--	--	--	--	--	--	--
NOV 11...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

DATE	MALA- THION, TOTAL (UG/L) (39530)	METH- OXY- CHLOR, TOTAL (UG/L) (39480)	METHYL PARA- THION, TOTAL (UG/L) (39600)	METHYL TRI- THION, TOTAL (UG/L) (39790)	PARA- THION, TOTAL (UG/L) (39540)	TOX- APHENE, TOTAL (UG/L) (39400)	TOTAL TRI- THION (UG/L) (39786)	PHYTO- PLANK- TON, TOTAL (CELLS PER ML) (60050)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 13...	--	--	--	--	--	--	--	--	131	2.3	98
NOV 11...	ND	ND	ND	ND	ND	ND	ND	9800	402	61	95
DEC 10...	--	--	--	--	--	--	--	--	149	2.1	54
JAN 20...	--	--	--	--	--	--	--	--	156	.76	72
MAR 11...	--	--	--	--	--	--	--	550	2380	1580	50
APR 01...	--	--	--	--	--	--	--	--	155	20	99
MAY 12...	--	--	--	--	--	--	--	5200	36	1.8	98
JUN 09...	--	--	--	--	--	--	--	--	19700	3720	100
JUL 14...	--	--	--	--	--	--	--	900000	242	9.8	98
AUG 11...	--	--	--	--	--	--	--	--	--	--	100
SEP 15...	--	--	--	--	--	--	--	72000	96	2.9	98

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

DISSOLVED OXYGEN AND WATER TEMPERATURE PROFILE, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	MG/L	DEGREES, C	SATURATION, %	DATE	MG/L	DEGREES, C	SATURATION, %
Aug. 31, 1981				Sept. 1, 1981			
1245	9.2	14.5	97	0045	9.0	14.5	95
1345	9.3	15.5	100	0145	9.1	14.0	95
1445	9.2	17.0	101	0245	9.3	13.5	96
1545	9.2	18.0	103	0345	9.8	13.0	100
1645	9.2	18.0	103	0445	9.4	12.5	95
1745	9.1	18.5	103	0545	10.0	12.0	100
1845	9.0	18.0	101	0645	10.8	11.5	107
1945	8.9	17.5	99	0745	10.6	11.5	105
2045	8.8	17.0	98	0845	10.6	12.0	106
2145	8.8	16.0	96	0945	10.5	12.5	106
2245	8.8	15.5	95	1045	10.8	14.0	113
2345	8.9	15.0	95	1145	11.0	15.5	118
				1245	11.4	15.5	123

LITTLE MISSOURI RIVER BASIN

113

06337000 LITTLE MISSOURI RIVER NEAR WATFORD CITY, ND--Continued

SPECIFIC CONDUCTANCE (MICROMHUS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
UNCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2250	1300	3500	680	3200	1600	2640	2600	1950	2000	2600	2000
2	2150	1410	3600	1200	3400	1500	2600	2800	2600	2100	1250	2050
3	2190	1500	4000	1200	3400	1600	3000	2700	1550	2100	1100	2100
4	2350	1700	4500	990	3500	1500	2500	3000	1850	2100	1100	2100
5	2350	1710	4500	1010	3500	1400	2600	3000	2150	2100	1150	2100
6	2310	1800	4500	1150	3600	---	2600	3000	1850	2180	1200	---
7	2310	1850	4020	1200	3600	1600	2600	3000	2000	2250	1100	2300
8	2390	1900	5000	1500	3650	1300	2300	3000	2800	2600	---	2300
9	2210	1950	5030	1700	---	1500	2400	---	1750	2750	1050	2300
10	2350	1800	4000	1600	---	1450	2900	3000	2150	2800	1250	2300
11	2400	1700	4100	2000	2200	1500	2300	2900	2200	---	1300	2400
12	3000	2010	4000	1800	2400	1500	3000	3000	2450	2800	1300	2400
13	2690	2000	4000	2200	2400	1400	2300	3200	---	2700	1150	2450
14	2800	2400	3700	2500	1800	1700	2100	3000	2450	2700	1400	2400
15	3000	2500	3800	2600	700	1800	2390	3300	2150	1700	1350	2450
16	1900	2450	3600	3100	600	2100	2800	3500	1850	1800	1400	2430
17	1150	2420	3100	3200	420	2010	2300	3500	1700	2450	1300	2450
18	1100	2690	2900	3000	440	2100	2850	3500	1650	2400	1280	2450
19	1150	2450	3500	3200	750	2200	3000	3500	1850	2350	1280	2450
20	1300	2600	4000	4000	800	2200	3300	3600	1700	2450	1100	2450
21	1290	2600	3700	3900	750	---	2800	3600	1200	1600	1250	2450
22	950	2400	---	3500	1000	---	2800	3600	1250	1600	1140	2450
23	945	2620	---	3520	985	---	2600	3400	1700	1600	1400	2480
24	900	2800	---	3500	1200	---	2610	3200	1400	1550	1350	2480
25	950	3000	---	3500	1200	---	2610	3300	1350	---	1650	2480
26	900	3000	---	3500	1400	---	3000	3300	1350	1180	1500	2450
27	1000	3000	3400	3400	1700	2250	2800	2700	1800	1100	1650	2450
28	1200	2990	900	3400	1830	2300	2300	3100	1750	1300	1700	2400
29	1310	3000	875	3000	---	2210	2500	3200	1900	1500	1900	2400
30	1390	2400	1200	3200	---	2100	2700	3500	1900	1700	2000	2400
31	1310	---	750	2600	---	2300	---	3600	---	2100	1900	---

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
UNCE-DAILY

DAY	UCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11.0	5.0	.0	.0	1.0	1.0	11.0	11.0	16.5	23.5	22.0	11.5
2	8.0	6.0	.0	.0	.0	1.0	10.0	15.5	19.0	20.5	23.0	13.0
3	15.0	7.0	1.5	1.0	.0	3.0	8.0	13.0	16.0	19.0	23.0	16.0
4	10.0	5.0	.0	1.0	.0	1.0	12.0	14.5	18.5	21.0	24.0	18.0
5	12.0	5.0	.0	.0	1.0	1.0	9.0	11.5	16.0	28.0	21.0	18.5
6	12.0	8.0	.0	1.0	.0	---	8.0	10.0	18.0	22.0	21.0	---
7	12.5	7.0	.0	1.0	.0	1.0	7.0	10.5	16.0	23.0	21.0	22.0
8	10.0	11.0	.0	1.5	.0	2.0	5.0	10.5	17.0	14.5	---	22.5
9	13.0	6.0	.0	.0	---	2.0	10.0	---	15.0	16.0	22.0	15.5
10	15.0	7.0	.0	.0	---	2.5	10.0	15.0	16.0	18.0	20.0	23.0
11	6.0	8.0	1.5	.0	.0	4.0	7.0	17.0	16.0	---	25.0	14.0
12	7.0	3.0	3.5	2.0	1.0	4.0	7.0	16.5	15.0	27.0	23.0	15.0
13	7.0	4.0	3.5	1.0	1.0	4.0	9.0	14.0	---	23.0	24.0	23.5
14	6.0	2.0	2.5	1.0	1.0	5.0	9.0	12.0	19.5	23.0	21.0	15.5
15	7.0	3.0	4.5	2.0	7.0	8.0	7.0	14.0	12.0	19.0	21.0	18.0
16	6.0	2.5	3.5	2.0	2.5	7.0	12.0	12.0	20.0	20.0	22.0	9.0
17	4.0	2.0	3.5	.0	8.0	6.0	11.0	18.5	17.5	21.0	21.0	11.0
18	4.0	2.0	2.0	.0	4.0	3.5	10.0	12.0	12.0	19.0	21.0	20.0
19	12.0	1.0	1.5	.0	4.0	3.5	7.0	15.0	13.0	20.0	22.0	12.0
20	7.0	3.0	2.5	1.0	4.0	3.0	7.0	14.0	11.5	18.0	22.0	16.5
21	9.0	3.0	3.5	1.0	4.0	---	12.0	16.0	20.5	22.5	21.0	13.0
22	7.0	2.0	---	1.5	2.0	---	11.0	17.0	15.5	20.0	20.5	20.0
23	4.0	1.0	---	1.5	2.0	---	10.0	12.0	19.5	24.0	21.5	17.5
24	4.0	1.0	---	1.5	1.5	---	19.0	9.5	17.0	20.5	20.0	11.0
25	3.0	1.0	---	2.0	.0	---	16.0	12.0	16.0	---	18.5	12.5
26	2.0	1.0	---	2.0	2.0	---	15.0	17.5	18.0	18.0	18.0	10.0
27	3.0	.0	.5	1.5	2.0	9.0	12.0	16.0	21.5	18.0	18.0	7.0
28	3.0	2.0	.5	1.0	1.5	5.5	10.0	15.5	18.0	16.0	17.0	14.0
29	8.0	1.0	.5	.0	---	5.0	11.0	15.5	21.5	19.0	25.5	10.0
30	5.0	1.0	.5	.0	---	3.0	11.0	19.5	20.0	22.5	25.0	12.0
31	5.0	---	.5	1.0	---	6.0	---	25.0	---	18.0	14.5	---

LITTLE MISSOURI RIVER BASIN

06337000 LITTLE MISSOURI RIVER NEAR WATFORD CITY, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	NOV 11,80 1125	MAR 11,81 1100	MAY 12,81 0940	JUL 14,81 1030	SEP 15,81 0930					
TOTAL CELLS/ML	9800	550	5200	900000	72000					
DIVERSITY: DIVISION	1.4	1.5	2.0	0.1	1.0					
..CLASS	1.4	1.5	2.0	0.1	1.0					
...ORDER	1.8	2.5	2.7	0.8	1.8					
...FAMILY	2.4	2.6	3.0	0.9	2.0					
....GENUS	3.0	2.6	3.3	0.9	2.2					
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
BACILLARIOPHYTA (DIATOMS)										
..BACILLARIOPHYCEAE										
...BACILLARIALES										
....NITZSCHIAEAE										
.....NITZSCHIA	970	10	56	10	1100#	21	--	-	760	1
....EUPODISCALES										
....COSCINODISCAEAE										
....CYCLOTELLA	3200#	32	70	13	--	-	*	0	2600	4
....STEPHANODISCUS	--	-	--	-	400	8	--	-	--	-
...FRAGILARIALES										
....FRAGILARIAEAE										
....SYNEDRA	--	-	14	3	--	-	*	0	--	-
....NAVICULALES										
....ENTOMONEIDACEAE										
....ENTOMONEIS	--	-	--	-	67	1	--	-	--	-
....NAVICULACEAE										
....DIPLONEIS	--	-	--	-	--	-	--	-	*	0
....NAVICULA	--	-	--	-	67	1	--	-	--	-
CHLOROPHYTA (GREEN ALGAE)										
..CHLOROPHYCEAE										
...CHLOROCUCCALES										
....DICTYOSPHAERIAEAE										
....DICTYOSPHAERIUM	410	4	14	3	--	-	--	-	*	0
....DUCYSTACEAE										
....ANKISTRUDESUS	1200	13	--	-	470	9	*	0	8300	11
....CHODATELLA	--	-	--	-	--	-	--	-	610	1
....KIRCHNERIELLA	140	1	--	-	--	-	--	-	--	-
....DUCYSTIS	410	4	56	10	--	-	*	0	1100	1
....QUADRIGULA	--	-	--	-	--	-	--	-	610	1
....SELENASTRUM	--	-	--	-	34	1	--	-	--	-
....FREUBARIA	--	-	--	-	67	1	--	-	--	-
....SCENEDESMACEAE										
....ACTINASTRUM	550	6	--	-	270	5	--	-	1800	3
....SCENEDESMUS	830	8	--	-	340	6	*	0	2400	3
....TETRASTRUM	1100	11	--	-	130	3	--	-	--	-
...VOLVOCALES										
....CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	140	1	84#	15	130	3	*	0	*	0
CHRYSTOPHYTA										
..CHRYSTOPHYCEAE										
...CHROMULINALES										
....CHRYSOCUCCACEAE										
....CHRYSOCOCCUS	140	1	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROOCUCCALES										
....CHROOCUCCACEAE										
....ANACYSTIS	690	7	42	8	400	8	710000#	79	41000#	56
....NOSTOCALES										
....NOSTOCAEAE										
....ANABAENA	--	-	--	-	--	-	180000#	20	--	-
....ANABAENOPSIS	--	-	--	-	--	-	--	-	3500	5
...OSCILLATORIALES										
....OSCILLATORIAEAE										
....OSCILLATORIA	--	-	210#	38	940#	18	--	-	9200	13
EUGLENOPHYTA (EUGLENOIDS)										
..EUGLENOPHYCEAE										
...EUGLENALES										
....EUGLENAEAE										
....EUGLENA	--	-	--	-	34	1	--	-	--	-
....TRACHELUMONAS	--	-	--	-	740	14	--	-	--	-

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

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

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, 14 mi (23 km) upstream from Knife River, and at mile 1,389.9 (2,236.3 km).

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 National Geodetic Vertical Datum of 1929.

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.--Elevations and contents are furnished by the Corps of Engineers. Elevations are observed elevations at midnight on the last day of each month. Contents are computed based on reservoir inflow, reservoir outflow, evaporation, and rainfall; and 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 normal maximum level in July of 1969, 14,742,000 acre-ft (18.2 km³) Mar. 13, 1978, elevation, 1,825.2 ft (556.32 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 18,411,000 acre-ft (22.7 km³) Oct. 1, elevation at 2400 hours, 1837.9 ft (560.19 m); minimum, 15,630,000 acre-ft (19.3 km³) May 9, elevation at 2400 hours, 1,828.1 ft (557.20 m).

MONTHEND ELEVATION AND CONTENTS, AT 2400, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30-----	1837.9	18,410,000	--
Oct. 31-----	1837.1	18,274,000	-136,000
Nov. 30-----	1835.6	17,714,000	-560,000
Dec. 31-----	1833.6	17,128,000	-586,000
CAL YR 1980-----	--	--	-2,725,000
Jan. 31-----	1832.3	16,738,000	-390,000
Feb. 28-----	1830.5	16,230,000	-508,000
Mar. 31-----	1829.6	16,014,000	-216,000
Apr. 30-----	1828.5	15,687,000	-327,000
May 31-----	1829.8	16,067,000	+380,000
June 30-----	1835.4	17,714,000	+1,647,000
July 31-----	1835.3	17,676,000	-38,000
Aug. 31-----	1834.0	17,304,000	-372,000
Sept. 30-----	1833.3	16,970,000	-334,000
WTR YR 1981-----	--	--	-1,440,000

MISSOURI RIVER MAIN STEM

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, 14 mi (23 km) upstream from Knife River, and at mile 1,389.9 (2,236.3 km).

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.--12 years, 25,930 ft³/s (734 m³/s), 18,790,000 acre-ft/yr (23.2 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, 30,200 ft³/s (855 m³/s) Feb. 13; minimum daily, 15,000 ft³/s (425 m³/s) Mar. 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21300	23600	25300	19500	27800	25700	16000	18400	25300	27600	24500	22400
2	20400	23900	26200	20900	27200	28500	16100	18200	24800	29100	24400	22000
3	20200	23700	23200	20700	27200	26400	15900	17900	24100	26500	24200	21800
4	21300	23200	23200	20600	27300	26600	16500	16400	24100	27100	27400	22000
5	21400	23600	25900	21500	27000	27200	16100	17200	24600	27800	26800	20500
6	21200	23000	23400	21700	27400	26600	16400	16500	24200	29200	27400	19200
7	21600	23300	23000	22500	27300	26900	16200	16500	23900	28800	25700	18200
8	21700	23400	23200	22900	27700	25500	16400	16400	23400	29700	23400	18200
9	21700	23300	23600	22600	27500	27300	16200	16100	25700	29700	22400	17900
10	21400	23200	23400	23400	28400	28000	16300	16100	25900	28800	22300	17800
11	22000	23700	23000	23800	29200	27700	16000	16500	26300	26200	23300	17800
12	22100	23900	23900	24800	28100	27800	15900	16300	25800	27800	22700	18000
13	22100	24300	23100	25700	30200	27900	16100	16700	25600	29100	23400	17900
14	22200	25200	23200	25500	28900	27000	15900	16300	25900	29300	22900	17800
15	22500	25700	24100	25400	26500	25400	16100	15600	23500	29200	23000	17600
16	22100	26100	23100	27500	29100	23800	15900	16100	24800	29300	22000	17600
17	22000	25400	23300	27100	29000	23300	16300	16300	25800	29900	22300	17700
18	21700	25100	23000	28200	27500	21000	16000	16400	25800	28900	23100	17600
19	21300	25200	23400	27900	28700	20200	16400	16400	24900	30000	23000	17600
20	22000	25000	16500	27500	26800	20700	16600	15700	24600	29400	21400	17900
21	23200	25000	15800	27000	28400	19400	16800	15500	22800	29800	20600	18000
22	23500	25300	17000	26100	27500	16100	16400	15500	25500	29300	19800	18200
23	23200	25100	17200	27500	27800	17100	16600	15800	24600	28900	20300	20700
24	23800	25400	16600	26400	27800	15000	16600	15600	25300	29500	19700	20400
25	22900	25200	17300	25800	25500	15600	16600	15500	25900	26500	21300	20600
26	22200	27200	16700	26900	25400	16300	17400	18900	25700	26600	21900	20200
27	23300	23000	18100	27200	26000	16200	16800	20200	25800	26800	21400	20700
28	23500	23200	18400	27200	26300	16300	16400	21500	25400	26200	21700	20300
29	23400	21000	17800	28000	---	16000	18500	21700	25900	27000	22000	20300
30	23300	23100	17400	27400	---	15800	18600	23100	26000	25000	20400	19900
31	23100	---	18900	26800	---	16200	---	24600	---	24500	21600	---
TOTAL	687600	727300	658200	776000	773500	693500	494000	539900	751900	873500	706300	576800
MEAN	22180	24240	21230	25030	27630	22370	16470	17420	25060	28180	22780	19230
MAX	23800	27200	26200	28200	30200	28500	18600	24600	26300	30000	27400	22400
MIN	20200	21000	15800	19500	25400	15000	15900	15500	22800	24500	19700	17600
AC-FT	1364000	1443000	1306000	1539000	1534000	1376000	979800	1071000	1491000	1733000	1401000	1144000
CAL YR 1980	TOTAL	8414900	MEAN	22990	MAX	29700	MIN	15800	AC-FT	16690000		
WTR YR 1981	TOTAL	8258500	MEAN	22630	MAX	30200	MIN	15000	AC-FT	16380000		

MISSOURI RIVER MAIN STEM

117

06338490 MISSOURI RIVER AT GARRISON DAM, ND--Continued
(National stream-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, 870 micromhos May 4, 18, 19, July 4, 1980; minimum daily, 553 micromhos Dec. 24, 1975.

WATER TEMPERATURES: Maximum daily, 18.0°C Sept. 11, 12, 1980 and Sept. 11, 1981; minimum daily, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 860 micromhos Jan. 7; minimum daily, 600 micromhos June 22.

WATER TEMPERATURES: Maximum daily, 18.0°C Sept. 11; minimum observed 1.5°C Feb. 2.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (UMHUS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	COLI- FORM, FECAL, 0.7 UM-MF (CULS./ 100 ML) (31625)	STREP- TOCOCCI FECAL, KF AGAR (CULS. PER 100 ML) (31673)
OCT										
20...	1315	787	8.5	15.5	12.0	.50	9.6	88	<1	K1
NOV										
24...	1500	780	8.5	4.5	7.5	.40	10.8	89	<1	K1
DEC										
22...	1500	770	8.5	-6.5	3.0	.60	12.4	92	<1	--
FEB										
02...	1400	780	8.5	-12.0	1.5	.50	13.0	92	<1	<1
23...	1545	752	8.4	11.0	2.5	.40	12.5	91	<1	<1
MAR										
23...	1415	790	8.2	17.0	3.0	1.0	10.2	76	<1	<1
APR										
20...	1400	740	8.4	17.0	4.5	1.4	12.2	94	<1	<1
MAY										
18...	1350	730	8.5	22.0	7.5	1.5	11.8	97	K3	<1
JUL										
02...	1015	750	8.3	20.0	14.5	1.6	9.1	1	K5	<2
20...	1300	750	8.3	27.0	14.5	1.0	8.5	83	<1	K1
AUG										
26...	1400	750	8.0	--	14.5	.80	7.2	70	K1	<1
SEP										
29...	1430	760	8.1	15.0	15.0	2.0	7.6	75	K3	K8

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

MISSOURI RIVER MAIN STEM

06338490 MISSOURI RIVER AT GARRISON DAM, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	HARD- NESS (MG/L AS CAC03) (00900)	HARD- NESS NONCAR- BONATE (MG/L AS CAC03) (95902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CAC03) (90410)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2) (00405)
UCT										
20...	252	92	58	26	79	40	2.2	4.7	160	.8
NOV										
24...	240	80	55	25	74	40	2.1	4.4	160	.8
DEC										
22...	254	94	59	26	78	40	2.2	3.9	160	.8
FEB										
02...	248	88	58	25	73	39	2.1	3.8	160	.8
23...	241	91	57	24	71	39	2.1	4.0	150	1.0
MAR										
23...	261	100	65	24	82	40	2.3	4.3	160	1.6
APR										
20...	241	100	57	24	70	38	2.0	4.0	140	.9
MAY										
18...	236	130	55	24	68	38	2.0	3.6	110	.6
JUL										
02...	258	98	62	25	69	36	1.9	3.9	160	1.3
20...	253	100	60	25	69	37	1.9	4.0	150	1.2
AUG										
26...	248	88	58	25	68	37	1.9	4.0	160	2.6
SEP										
29...	249	89	60	24	62	35	1.8	3.9	160	2.0

DATE	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)
UCT										
20...	240	11	.6	6.1	523	521	.71	.00	.01	.000
NOV										
24...	220	11	.5	5.8	--	492	.67	.00	.03	.040
DEC										
22...	240	11	.5	6.0	507	521	.69	.00	.00	.000
FEB										
02...	230	9.9	.5	5.7	492	502	.67	.04	.02	.070
23...	230	11	.4	5.3	488	493	.66	.02	.03	.030
MAR										
23...	240	10	.5	5.9	530	528	.72	.05	.01	.030
APR										
20...	220	9.8	.5	4.8	501	474	.68	.01	.02	.060
MAY										
18...	250	9.5	.4	4.6	486	482	.66	.02	.06	.110
JUL										
02...	230	11	.5	4.5	497	503	.68	.17	.09	.350
20...	230	12	.5	3.3	497	494	.68	.03	.03	.060
AUG										
26...	210	13	.5	5.3	497	481	.68	--	.16	--
SEP										
29...	210	10	.6	5.6	504	473	.69	.15	.16	.100

MISSOURI RIVER MAIN STEM

119

06338490 MISSOURI RIVER AT GARRISON DAM, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN, ORGANIC DIS- SOLVED (MG/L AS N) (00607)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)	NITRO- GEN,AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N) (00623)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	NITRO- GEN DIS- SOLVED (MG/L AS N) (00602)	NITRO- GEN, TOTAL (MG/L AS NO3) (71887)
OCT										
20...	.000	.00	.39	.32	.39	.07	.32	.39	.33	1.7
NOV										
24...	.050	.06	.42	.28	.46	.13	.33	.46	.36	2.0
DEC										
22...	.000	.00	.59	.43	.59	.16	.43	.59	.43	2.6
FEB										
02...	.050	.06	.47	.35	.54	.14	.40	.58	.42	2.6
23...	.060	.08	.33	.26	.36	.04	.32	.38	.35	1.7
MAR										
23...	.010	.01	.42	.75	.45	.00	.76	.50	.77	2.2
APR										
20...	.060	.08	.40	.40	.46	.00	.46	.47	.48	2.1
MAY										
18...	.100	.13	.41	.32	.52	.10	.42	.54	.48	2.4
JUL										
02...	.140	.18	.63	.51	.98	.33	.65	1.2	.74	5.1
20...	.080	.10	.60	.55	.66	.03	.63	.69	.66	3.1
AUG										
26...	.110	.14	--	.53	--	--	.64	--	.80	--
SEP										
29...	.100	.13	.36	.32	.46	.04	.42	.61	.58	2.7

DATE	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS TOTAL (MG/L AS PU4) (71886)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC SUS- PENDE TOTAL (UG/L AS AS) (01001)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BARIUM, SUS- PENDE RECOV- ERABLE (UG/L AS BA) (01006)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)
OCT									
20...	.210	.64	.210	--	--	--	--	--	--
NOV									
24...	.040	.12	.020	--	--	--	--	--	--
DEC									
22...	.030	.09	.010	2	0	2	200	100	60
FEB									
02...	.030	.09	.040	--	--	--	--	--	--
23...	.040	.12	.020	--	--	--	--	--	--
MAR									
23...	.000	.00	.010	3	1	2	100	40	60
APR									
20...	.010	.03	.020	--	--	--	--	--	--
MAY									
18...	.030	.09	.030	--	--	--	--	--	--
JUL									
02...	.010	.03	.010	3	0	3	100	0	100
20...	.030	.09	.010	--	--	--	--	--	--
AUG									
26...	<.010	--	.030	--	--	--	--	--	--
SEP									
29...	.010	.03	<.010	2	0	3	0	0	62

MISSOURI RIVER MAIN STEM

06338490 MISSOURI RIVER AT GARRISON DAM, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	CADMIUM TOTAL RECUV- ERABLE (UG/L AS CU) (01027)	CADMIUM DIS- SOLVED (UG/L AS CU) (01025)	CHRO- MIUM, TOTAL RECUV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, SUS- PENDED RECUV- ERABLE (UG/L AS CR) (01031)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, TOTAL RECUV- ERABLE (UG/L AS CU) (01037)	COBALT, DIS- SOLVED (UG/L AS CU) (01035)	COPPER, TOTAL RECUV- ERABLE (UG/L AS CU) (01042)	COPPER, SUS- PENDED RECUV- ERABLE (UG/L AS CU) (01041)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)
OCT										
20...	--	--	--	--	--	--	--	--	--	--
DEC										
22...	0	<1	0	0	0	0	<3	4	3	1
FEB										
02...	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--
MAR										
23...	0	<1	10	10	0	0	<3	4	0	4
JUL										
02...	0	<1	0	0	0	0	<3	3	1	2
20...	--	--	--	--	--	--	--	--	--	--
AUG										
26...	--	--	--	--	--	--	--	--	--	--
SEP										
29...	0	<1	10	10	0	0	<3	4	2	2

DATE	IRON, TOTAL RECUV- ERABLE (UG/L AS FE) (01045)	IRON, SUS- PENDED RECUV- ERABLE (UG/L AS FE) (01044)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECUV- ERABLE (UG/L AS PB) (01051)	LEAD, SUS- PENDED RECUV- ERABLE (UG/L AS PB) (01050)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, TOTAL RECUV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, SUS- PENDED RECUV- ERABLE (UG/L AS MN) (01054)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
OCT									
20...	--	--	--	--	--	--	--	--	--
DEC									
22...	90	--	<10	2	2	0	10	9	1
FEB									
02...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
MAR									
23...	20	0	20	5	5	0	10	0	10
JUL									
02...	80	60	20	0	0	1	0	0	6
20...	--	--	--	--	--	--	--	--	--
AUG									
26...	--	--	--	--	--	--	--	--	--
SEP									
29...	240	--	<10	6	6	0	20	20	3

DATE	MERCURY TOTAL RECUV- ERABLE (UG/L AS HG) (71900)	MERCURY SUS- PENDED RECUV- ERABLE (UG/L AS HG) (71895)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	NICKEL, TOTAL RECUV- ERABLE (UG/L AS NI) (01067)	NICKEL, SUS- PENDED RECUV- ERABLE (UG/L AS NI) (01066)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, TOTAL RECUV- ERABLE (UG/L AS SE) (01147)	SELE- NIUM, SUS- PENDED RECUV- ERABLE (UG/L AS SE) (01146)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)
OCT									
20...	--	--	--	--	--	--	--	--	--
DEC									
22...	.0	.0	.0	0	0	1	1	0	1
FEB									
02...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
MAR									
23...	.2	.2	.0	1	0	3	1	0	1
JUL									
02...	.4	.3	.1	3	2	1	0	0	1
20...	--	--	--	--	--	--	--	--	--
AUG									
26...	--	--	--	--	--	--	--	--	--
SEP									
29...	.1	.1	.0	2	0	3	1	0	1

06338490 MISSOURI RIVER AT GARRISON DAM, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	SILVER, TOTAL RECOVERABLE (UG/L AS AG) (01077)	SILVER, SUS- PENDED RECOVERABLE (UG/L AS AG) (01076)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	ZINC, SUS- PENDED RECOVERABLE (UG/L AS ZN) (01091)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C) (00689)
OCT 20...	--	--	--	--	--	--	5.0	--	--
DEC 22...	0	0	0	20	--	<3	--	5.2	.3
FEB 02...	--	--	--	--	--	--	9.4	--	--
23...	--	--	--	--	--	--	6.6	--	--
MAR 23...	0	0	0	10	0	10	--	5.2	.1
APR 20...	--	--	--	--	--	--	3.6	--	--
MAY 18...	--	--	--	--	--	--	8.0	--	--
JUL 02...	0	0	0	50	0	50	--	3.7	.0
20...	--	--	--	--	--	--	2.7	--	--
AUG 26...	--	--	--	--	--	--	2.7	--	--
SEP 29...	0	0	0	10	0	15	--	4.0	.1

PHYTO-
PLANK-
TON,
TOTAL
(CELLS
PER ML)
(60050)

NOV 24...	320
MAR 23...	65
MAY 18...	400
JUL 02...	180
20...	270
AUG 26...	680
SEP 29...	0

DISSOLVED OXYGEN AND WATER TEMPERATURE PROFILE, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	MG/L	DEGREES, C	SATURATION, %	DATE	MG/L	DEGREES, C	SATURATION, %
Aug. 26, 1981				Aug. 27, 1981			
1300	7.6	--	--	0100	7.2	13.5	68
1400	7.1	14.5	69	0200	7.3	13.5	69
1500	7.0	14.5	68	0300	7.3	13.5	69
1600	7.1	14.0	68	0400	7.3	13.0	68
1700	6.8	14.0	65	0500	7.3	13.0	68
1800	6.9	14.0	66	0600	7.3	13.0	68
1900	7.0	14.5	68	0700	6.6	13.0	62
2000	7.0	14.5	68	0800	6.9	13.5	65
2100	7.0	14.5	68	0900	7.0	13.5	66
2200	7.0	14.5	68	1000	7.0	13.5	66
2300	7.1	14.0	68	1100	7.0	13.5	66
2400	7.2	14.0	69	1200	7.1	12.5	65
				1300	7.1	13.0	66
				1400	7.1	13.0	66

MISSOURI RIVER MAIN STEM

06338490 MISSOURI RIVER AT GARRISON DAM, ND--Continued

SPECIFIC CONDUCTANCE (MICROMHUS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
UNCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	750	800	800	790	---	745	825	725	700	750	730	750
2	750	800	750	750	---	675	760	720	710	760	740	755
3	750	790	775	770	---	660	725	725	740	710	720	755
4	750	650	750	760	---	705	690	670	740	725	730	760
5	750	655	740	765	725	720	650	700	730	710	740	755
6	750	780	750	850	750	725	760	700	730	760	730	760
7	750	760	740	860	740	780	710	700	650	750	740	760
8	750	800	740	800	750	800	720	705	690	760	740	760
9	750	780	725	800	750	755	710	710	700	750	750	760
10	750	780	750	840	675	740	740	715	710	725	600	760
11	750	760	750	820	750	750	725	710	740	740	740	740
12	775	760	750	750	775	740	720	710	740	710	760	770
13	800	760	750	800	750	750	720	750	740	720	760	770
14	800	750	750	745	700	740	720	750	740	740	770	780
15	750	755	745	800	725	750	750	750	740	735	770	780
16	725	755	750	800	750	740	740	700	750	740	780	775
17	750	750	800	800	720	740	750	700	750	740	760	775
18	720	810	740	840	750	799	750	710	750	755	770	770
19	730	760	780	850	750	780	750	710	750	750	760	775
20	720	760	720	840	750	760	---	710	690	745	765	775
21	720	800	760	720	720	790	---	625	750	745	760	780
22	760	800	730	710	750	800	750	750	600	745	765	775
23	750	800	690	710	715	800	750	730	625	745	760	775
24	770	750	700	710	750	760	750	740	675	740	780	770
25	770	790	690	710	700	810	750	720	715	740	750	790
26	770	790	675	720	675	800	750	710	730	740	760	675
27	770	790	800	710	760	795	730	715	750	750	640	660
28	760	800	700	730	750	850	750	710	750	740	760	765
29	780	800	710	730	---	800	735	705	750	740	690	760
30	790	800	720	730	---	800	730	710	760	740	780	700
31	790	---	750	740	---	840	---	700	---	720	650	---

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
UNCE-DAILY

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

MISSOURI RIVER MAIN STEM

123

06338490 MISSOURI RIVER AT GARRISON DAM, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	NOV 24,80 1500	MAR 23,81 1415	MAY 18,81 1350	JUL 2,81 1015				
TOTAL CELLS/ML	320	65	400	180				
DIVERSITY: DIVISION	1.5	1.0	1.2	1.9				
..CLASS	1.5	1.0	1.2	1.9				
...ORDER	1.6	1.5	1.6	2.2				
....FAMILY	1.8	1.5	1.6	2.2				
.....GENUS	1.8	1.5	2.3	2.4				
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
BACILLARIOPHYTA (DIATOMS)								
..BACILLARIOPHYCEAE								
...EUPODISCALES								
....CUSCINODISCACEAE								
.....CYCLOTELLA	13	4	--	-	--	-	13	7
.....MELOSIRA	--	-	--	-	77#	19	--	-
.....STEPHANODISCUS	--	-	26#	40	--	-	--	-
..FRAGILARIALES								
...FRAGILARIACEAE								
....ASTERIONELLA	39	12	13#	20	39	10	52#	29
....SYNEDRA	--	-	--	-	26	6	--	-
..NAVICULALES								
...NAVICULACEAE								
....GYRUSIGMA	--	-	--	-	--	-	--	-
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCUCCALES								
....DICTYUSPHERACEAE								
.....DICTYUSPHERIUM	--	-	--	-	--	-	--	-
...UOCYSTACEAE								
....ANKISTRODESMUS	--	-	26#	40	--	-	--	-
....CHOUATELLA	--	-	--	-	--	-	26	14
....UOCYSTIS	--	-	--	-	--	-	13	7
....SELENASTRUM	13	4	--	-	--	-	--	-
...SCENEDESMACEAE								
....SCENEDESMUS	--	-	--	-	26	6	--	-
CRYPTOPHYTA (CRYPTOMONADS)								
..CRYPTOPHYCEAE								
...CRYPTOMONADALES								
....CRYPTOCHRYSIDACEAE								
.....CHROMONAS	39	12	--	-	--	-	26	14
....CRYPTOMONADACEAE								
.....CRYPTOMONAS	26	8	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROOCUCCALES								
....CHROOCUCCACEAE								
.....AGMENELLUM	--	-	--	-	100#	26	--	-
....ANACYSTIS	190#	60	--	-	130#	32	52#	29
...OSCILLATORIALES								
....OSCILLATORIACEAE								
.....LYNGBYA	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)								
..EUGLENOPHYCEAE								
...EUGLENALES								
....EUGLENACEAE								
.....LEPUCINCLIS	--	-	--	-	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)								
..PINOPHYCEAE								
...PINOKUNTAE								
....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

06338490 MISSOURI RIVER AT GARRISON DAM, ND--Continued
 PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	JUL 20,81 1300	AUG 26,81 1400	SEP 29,81 1430
TOTAL CELLS/ML	270	680	0
DIVERSITY: DIVISION	0.3	1.8	0.0
..CLASS	0.3	1.8	0.0
...ORDER	0.3	1.9	0.0
...FAMILY	0.3	2.1	0.0
....GENUS	0.3	2.2	0.0

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
BACILLARIOPHYTA (DIATOMS)						
..BACILLARIOPHYCEAE						
...EUPODISCALES						
...CUSCINODISCACEAE						
....CYCLUTELLA	--	-	14	2	--	-
....MELUSIRA	--	-	170#	24	--	-
....STEPHANODISCUS	--	-	--	-	--	-
..FRAGILARIALES						
...FRAGILARIACEAE						
....ASTERIONELLA	--	-	--	-	--	-
....SYNEURA	--	-	--	-	--	-
..NAVICULALES						
...NAVICULACEAE						
....GYROSIGMA	--	-	14	2	--	-
CHLOROPHYTA (GREEN ALGAE)						
..CHLOROPHYCEAE						
...CHLOROCOCCALES						
...DICTYUSPHAERACEAE						
....DICTYUSPHAERIUM	--	-	220#	33	--	-
...UOUCYSTACEAE						
....ANKISTRODESMUS	--	-	--	-	--	-
....CHODATELLA	--	-	--	-	--	-
....UOCYSTIS	--	-	--	-	--	-
....SELENASTRUM	14	5	--	-	--	-
...SCENEDESMACEAE						
....SCENEDESMUS	--	-	28	4	--	-
CRYPTOPHYTA (CRYPTOMONADS)						
..CRYPTOPHYCEAE						
...CRYPTOMONADALES						
...CRYPTOCHRYSIACEAE						
....CHROMONAS	--	-	--	-	--	-
...CRYPTOMONADACEAE						
....CRYPTOMONAS	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...CHROOCOCCALES						
...CHROOCOCCACEAE						
....AGMENELLUM	--	-	--	-	--	-
....ANACYSTIS	260#	95	--	-	--	-
...USCILLATORIALES						
...USCILLATORIACEAE						
....LYNGBYA	--	-	210#	31	--	-
EUGLENOPHYTA (EUGLENOIDS)						
..EUGLENOPHYCEAE						
...EUGLENALES						
...EUGLENACEAE						
....LEPUCINCLIS	--	-	14	2	--	-
PYRRHOPHYTA (FIRE ALGAE)						
..DINOPHYCEAE						
...DINOKONTAE						
...GLENODINIACEAE						
....GLENODINIUM	--	-	14	2	--	-

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

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

MISSOURI RIVER BASIN

125

06339010 MISSOURI RIVER ABOVE STANTON, ND

LOCATION.--Lat 47°21'45", long 101°21'25", SE $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.22, T.14S N., R.84 W., Mercer County, Hydrologic Unit 10130101, 9 mi (14 km) south of Riverdale, and at mile 1,379 (2,217 km).

DRAINAGE AREA.--181,400 mi² (469,800 km²), approximately.

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

GAGE.--Water-stage recorder. Datum of gage is 1600.00 ft (487.680 m) National Geodetic Vertical Datum of 1929.

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, 64.80 ft (19.751 m) May 7, 1978.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	67.27	67.18	67.47		---	68.02	66.11	66.46	67.66	67.74	67.52	67.17
2	67.20	67.99	68.33		---	68.25	66.18	66.57	67.47	68.52	67.69	67.04
3	67.02	67.78	67.66		---	68.22	66.17	66.48	67.74	68.25	67.89	67.15
4	67.22	67.70	67.16		---	67.97	66.10	66.32	67.59	68.06	67.93	66.99
5	67.19	67.63	---		---	68.03	66.24	66.26	67.76	68.10	68.13	66.96
6	67.30	67.52	---		---	68.08	66.35	66.24	67.59	68.75	68.21	67.03
7	67.40	67.62	---		---	68.02	66.02	66.15	67.54	68.60	67.97	66.30
8	67.22	67.56	---		---	67.84	66.19	66.22	67.77	68.51	67.63	66.39
9	67.25	67.65	---		---	68.16	66.16	66.11	67.68	68.55	67.15	66.22
10	67.18	67.74	---		---	68.08	66.20	66.01	67.75	68.58	67.48	66.66
11	67.28	67.59	---		---	68.35	66.16	66.19	67.98	68.05	67.44	66.30
12	67.28	67.66	---		---	68.28	66.10	66.13	67.97	68.04	67.44	66.18
13	67.58	67.78	---		---	68.16	66.10	66.07	67.96	68.59	67.59	66.58
14	67.39	67.94	---		---	68.30	66.11	66.22	67.67	68.47	67.35	66.27
15	67.41	67.98	---		---	68.08	66.16	65.94	67.77	68.49	67.53	66.48
16	67.43	67.99	---		---	67.66	66.13	66.12	67.75	68.62	67.56	66.37
17	67.37	68.18	---		---	67.59	66.15	66.23	68.06	68.46	67.25	66.32
18	67.43	67.88	---		---	67.17	66.11	66.14	67.82	68.53	67.40	66.41
19	67.27	68.23	---		---	66.95	66.00	66.17	67.86	68.48	67.51	66.36
20	67.32	67.67	---		68.22	67.12	66.26	66.13	67.79	68.63	67.30	66.34
21	67.45	68.23	---		68.17	66.97	66.23	66.04	67.34	68.56	67.10	66.53
22	67.67	67.72	---		68.23	66.27	66.10	66.02	67.84	68.58	66.97	66.47
23	67.61	67.91	---		68.49	66.24	66.22	65.90	67.81	68.38	67.00	66.90
24	67.73	67.99	---		68.13	66.23	66.13	66.20	67.76	68.62	67.14	67.00
25	67.46	67.97	---		68.17	65.90	66.21	66.02	67.96	68.21	67.12	66.98
26	67.31	68.08	---		67.75	66.19	66.37	66.47	67.96	68.10	67.34	66.79
27	67.59	67.97	---		67.92	66.24	66.26	66.93	67.98	68.05	67.24	66.78
28	67.60	67.67	---		67.98	66.21	66.12	67.28	67.71	67.90	67.23	67.05
29	67.63	67.05	---		---	66.30	66.52	66.98	68.01	68.12	67.25	66.82
30	67.69	67.59	---		---	66.07	66.62	67.35	68.44	67.87	67.05	66.86
31	67.53	---	---		---	66.09	---	67.57	---	67.99	67.15	---
TOTAL	2089.28	2033.45	---		---	2087.04	1985.78	2056.92	2033.99	2118.40	2090.56	1999.70
MEAN	67.40	67.78	---		---	67.32	66.19	66.35	67.80	68.34	67.44	66.66
MAX	67.73	68.23	---		---	68.35	66.62	67.57	68.44	68.75	68.21	67.17
MIN	67.02	67.05	---		---	65.90	66.00	65.90	67.34	67.74	66.97	66.18

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, and 0.4 mi (0.6 km) north of Manning.

DRAINAGE AREA.--205 mi² (531 km²), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1967 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,156.55 ft (657.316 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good.

AVERAGE DISCHARGE.--14 years, 22.9 ft³/s (0.649 m³/s) 16,590 acre-ft/yr (20.5 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 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.--Maximum discharge, 214 ft³/s (6.06 m³/s) Feb. 16, gage height, 7.65 ft (2.332 m), backwater from ice; no peak above base of 300 ft³/s (8.50 m³/s); minimum daily, 0.01 ft³/s (<0.001 m³/s) Aug. 15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	1.8	.84	19	1.5	6.8	2.0	2.1	1.3	.69	.05	.03
2	1.1	1.6	.75	11	1.2	6.0	1.8	2.1	.89	.41	.10	.03
3	1.1	1.4	.65	5.2	1.0	5.3	1.8	1.8	.48	.43	.13	.03
4	1.1	1.2	.65	3.1	.90	5.2	1.8	1.5	.67	.42	.07	.03
5	1.1	1.1	.64	1.9	.85	5.1	1.8	1.2	.73	.40	.12	.02
6	.84	1.1	.64	1.5	.80	4.8	1.5	.97	.67	.34	.07	.05
7	.64	1.1	.64	1.2	.70	4.3	1.4	.68	.56	.22	.07	.04
8	.53	1.2	.64	1.1	.60	4.1	1.2	.70	.65	.14	.06	.04
9	.48	1.2	.64	1.0	.55	3.9	1.2	.67	.53	.14	.06	.03
10	.45	1.0	.64	.90	.50	3.9	1.2	.64	.61	.14	.05	.02
11	.45	.98	.64	.90	.45	4.2	1.2	.70	.63	.13	.04	.02
12	.42	1.2	.65	1.0	.45	4.4	1.2	.77	.64	.12	.04	.02
13	.42	1.2	.70	1.0	.45	4.3	1.2	.83	1.6	.14	.03	.02
14	.20	1.2	.75	1.1	2.0	3.9	1.4	.95	1.9	.10	.02	.02
15	.10	1.2	.90	1.2	15	3.8	1.3	.99	1.1	.08	.01	.02
16	.48	1.2	1.5	1.2	120	3.8	1.2	.99	.85	.07	.02	.02
17	.77	1.3	2.0	1.2	190	3.6	1.1	.99	.76	.06	.02	.02
18	1.2	1.3	1.7	1.1	137	3.4	1.0	.91	.72	.06	.02	.02
19	1.5	1.3	1.2	1.2	84	3.0	.94	1.1	.78	.05	.03	.02
20	.99	1.3	.64	1.2	65	2.9	.99	1.0	.99	.03	.02	.03
21	.58	1.3	.60	1.2	52	2.7	.85	.82	1.2	.04	.02	.04
22	1.2	1.3	.55	1.4	35	2.6	1.2	.64	2.5	.04	.03	.03
23	5.1	1.3	.55	2.4	27	2.3	1.3	.52	1.7	.04	.03	.03
24	9.3	1.3	.50	5.4	20	2.2	1.3	.68	1.4	.03	.02	.03
25	7.6	1.2	.45	8.6	15	2.0	1.3	.92	1.3	.02	.02	.03
26	11	.99	.40	15	13	2.0	1.1	.82	1.2	.13	.02	.05
27	7.3	.99	.70	30	10	1.8	1.3	.53	1.1	.07	.02	.05
28	4.7	.92	13	19	6.9	1.7	1.4	.66	1.1	.06	.03	.05
29	3.6	.91	14	7.8	---	1.8	1.9	.70	1.1	.05	.03	.05
30	2.9	.84	18	2.4	---	1.9	2.5	.69	.99	.04	.03	.05
31	2.5	---	15	1.7	---	1.9	---	.55	---	.04	.02	---
TOTAL	70.85	35.93	81.16	151.90	801.85	109.6	41.38	29.12	30.65	4.73	1.30	.94
MEAN	2.29	1.20	2.62	4.90	28.6	3.54	1.38	.94	1.02	.15	.042	.031
MAX	11	1.8	18	30	190	6.8	2.5	2.1	2.5	.69	.13	.05
MIN	.10	.84	.40	.90	.45	1.7	.85	.52	.48	.02	.01	.02
AC-FT	141	71	161	301	1590	217	82	58	61	9.4	2.6	1.9

CAL YR 1980 TOTAL 1472.94 MEAN 4.02 MAX 194 MIN .02 AC-FT 2920
WTR YR 1981 TOTAL 1359.41 MEAN 3.72 MAX 190 MIN .01 AC-FT 2700

KNIFE RIVER BASIN

127

06339100 KNIFE RIVER AT MANNING, ND--Continued

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (000061)	SPE- CIFIC CON- DUCT- ANCE (UMHUS) (000095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION (00301)	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT												
07...	1030	.64	1920	8.1	21.0	12.0	3.8	38	210	0	44	25
15...	1335	.07	2420	--	4.0	7.0	--	--	--	--	--	--
NOV												
11...	1420	.94	1810	--	6.0	5.0	--	--	--	--	--	--
12...	1310	1.2	1770	8.4	.0	3.0	11.4	90	190	0	37	24
DEC												
04...	1200	.67	2690	--	.0	1.5	--	--	--	--	--	--
16...	1045	1.5	2580	8.1	8.5	1.0	10.2	77	260	--	51	32
JAN												
15...	1155	1.1	1580	--	.0	.0	--	--	--	--	--	--
27...	0930	30	1750	8.1	-7.0	.0	12.7	95	190	0	40	22
FEB												
17...	1330	120	427	7.7	11.0	.5	12.2	93	68	0	15	7.3
18...	1045	132	345	--	9.0	2.5	--	--	--	--	--	--
21...	1110	50	375	--	8.0	2.5	--	--	--	--	--	--
24...	1125	22	438	--	5.0	2.5	--	--	--	--	--	--
MAR												
11...	1505	4.4	910	--	14.0	3.5	--	--	--	--	--	--
18...	0835	3.4	830	7.9	.0	.0	10.9	80	110	0	24	12
APR												
07...	1140	1.4	1130	8.3	13.0	8.0	11.4	106	150	0	32	17
08...	1110	1.2	1080	--	11.0	8.5	--	--	--	--	--	--
MAY												
08...	1450	.73	1750	--	10.0	12.0	--	--	--	--	--	--
13...	0845	.77	1780	8.7	13.0	10.5	10.8	104	240	0	50	27
JUN												
03...	1120	.49	1950	--	20.0	19.0	--	--	--	--	--	--
24...	1220	1.2	1890	8.6	25.0	20.5	9.3	111	240	0	45	31
JUL												
07...	1405	.19	2080	--	40.0	28.5	--	--	--	--	--	--
28...	0930	.04	2360	8.2	17.0	16.5	9.6	105	220	0	34	33
AUG												
05...	1530	.07	2090	--	27.0	24.0	--	--	--	--	--	--
19...	0800	.03	2700	7.7	23.0	14.5	6.6	61	250	0	44	35
SEP												
01...	0945	.02	2980	7.8	15.0	13.5	8.5	88	260	0	45	37
09...	1405	.02	2660	--	33.0	--	--	--	--	--	--	--

KNIFE RIVER BASIN

06339100 KNIFE RIVER AT MANNING, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY, CARBON- ATE FET-FLD (MG/L CACU3) (00430)	SULFATE DIS- SOLVED (MG/L AS SU4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIU2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
UCT												
07...	400	79	12	12	588	460	5.6	.7	3.3	1300	1310	1.7
15...	--	--	--	--	--	--	--	--	--	--	--	--
NOV												
11...	--	--	--	--	--	--	--	--	--	--	--	--
12...	360	79	11	9.6	488	470	4.8	.5	6.2	1200	1210	1.6
DEC												
04...	--	--	--	--	--	--	--	--	--	--	--	--
16...	560	82	15	9.2	--	700	7.3	.9	4.4	1830	--	2.4
JAN												
15...	--	--	--	--	--	--	--	--	--	--	--	--
27...	340	78	11	10	410	500	10	.4	10	1210	1180	1.6
FEB												
17...	66	64	3.5	11	94	140	5.2	.1	8.2	304	310	.41
MAR												
11...	--	--	--	--	--	--	--	--	--	--	--	--
18...	160	75	6.7	5.6	220	210	4.9	.3	6.7	547	556	.74
APR												
07...	210	74	7.5	6.3	330	280	5.4	.4	2.5	741	753	1.0
08...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
08...	--	--	--	--	--	--	--	--	--	--	--	--
13...	350	76	9.9	8.1	530	500	6.6	.5	2.0	1220	1260	1.6
JUN												
03...	--	--	--	--	--	--	--	--	--	--	--	--
24...	390	77	11	8.5	570	540	6.7	.6	.6	1300	1370	1.7
JUL												
07...	--	--	--	--	--	--	--	--	--	--	--	--
28...	480	82	14	8.4	670	610	7.0	.7	5.2	1590	1580	2.1
AUG												
05...	--	--	--	--	--	--	--	--	--	--	--	--
19...	560	82	15	8.0	840	690	8.2	1.3	7.6	1910	1860	2.6
SEP												
01...	640	84	19	8.0	910	700	6.7	1.4	9.4	2070	2000	2.8

[illegible]

KNIFE RIVER BASIN

129

06339100 KNIFE RIVER AT MANNING, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BARIUM, SUS- PENDE RECUM- ERABLE (UG/L AS BA) (01006)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BERYL- LIUM, SUS- PENDE RECUM- ERABLE (UG/L AS BE) (01011)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, SUS- PENDE RECUM- ERABLE (UG/L AS CR) (01031)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	CHRO- MIUM, RECUM- ERABLE FM BOT- TOM MA- TERIAL (UG/G) (01029)	COBALT, RECUM- ERABLE FM BOT- TOM MA- TERIAL (UG/G) AS CU) (01038)
OCT												
07...	100	10	90	--	--	--	330	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--	--
NOV												
11...	--	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	420	--	--	--	--	--
DEC												
04...	--	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	540	--	--	--	--	--
JAN												
15...	--	--	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	390	--	--	--	--	--
FEB												
17...	--	--	--	10	--	<1	70	10	0	10	--	--
MAR												
11...	--	--	--	--	--	--	--	--	--	--	--	--
18...	--	--	--	--	--	--	170	--	--	--	--	--
APR												
07...	100	50	50	--	--	--	210	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
08...	--	--	--	--	--	--	--	--	--	--	--	--
13...	--	--	--	0	--	<1	330	0	0	10	2	3
JUN												
03...	--	--	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	420	--	--	--	--	--
JUL												
07...	--	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	510	--	--	--	--	--
AUG												
05...	--	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	0	0	0	600	10	0	10	4	10
SEP												
01...	--	--	--	--	--	--	620	--	--	--	--	--

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	COPPER, SUS- PENDE RECUM- ERABLE (UG/L AS CU) (01041)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	COPPER, RECUM- ERABLE FM BOT- TOM MA- TERIAL (UG/G) AS CU) (01043)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI) (01132)	LITHIUM SUS- PENDE RECUM- ERABLE (UG/L AS LI) (01131)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, SUS- PENDE RECUM- ERABLE (UG/L AS MN) (01054)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)
OCT												
07...	--	--	--	--	150	40	10	30	190	70	120	--
15...	--	--	--	--	--	--	--	--	--	--	--	--
NOV												
11...	--	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	190	--	--	--	120	110	10	--
DEC												
04...	--	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	140	--	--	--	110	70	40	--
JAN												
15...	--	--	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	160	--	--	--	110	60	50	--
FEB												
17...	10	6	4	--	550	--	--	--	230	140	90	.3
MAR												
11...	--	--	--	--	--	--	--	--	--	--	--	--
18...	--	--	--	--	310	--	--	--	80	40	40	--
APR												
07...	--	--	--	--	40	20	0	20	100	90	10	--
08...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
08...	--	--	--	--	--	--	--	--	--	--	--	--
13...	3	1	2	10	80	--	--	--	100	70	30	.1
JUN												
03...	--	--	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	70	--	--	--	40	20	20	--
JUL												
07...	--	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	110	--	--	--	110	50	60	--
AUG												
05...	--	--	--	--	--	--	--	--	--	--	--	--
19...	4	1	3	13	220	--	--	--	280	10	270	.1
SEP												
01...	--	--	--	--	380	--	--	--	220	20	200	--

06339100 KNIFE RIVER AT MANNING, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

[illegible][illegible]

KNIFE RIVER BASIN

131

06339100 KNIFE RIVER AT MANNING, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90) (80060)	POTAS- SIUM 40 DIS- SULVED (PCI/L AS K40) (82068)	CARBON, ORGANIC DIS- SULVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDEO TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHENOLS (UG/L) (32730)	SEDI- MENT, SUS- PENDEO (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDEO (T/DAY) (80155)
OCT 07...	--	--	--	--	--	--	52	.09
NOV 12...	--	--	29	.5	--	--	78	.25
DEC 16...	--	--	--	--	--	--	133	.54
JAN 27...	--	7.5	23	3.1	--	--	76	6.2
FEB 17...	--	8.2	--	--	.00	13	147	48
MAR 18...	--	4.2	--	--	--	--	29	.27
APR 07...	--	4.7	16	.2	--	--	20	.08
MAY 13...	1.8	6.0	15	1.1	.00	2	76	.16
JUN 24...	--	6.3	--	--	--	--	19	.06
JUL 28...	--	--	15	.2	--	--	30	.00
AUG 19...	.5	--	--	--	.00	--	14	.00
SEP 01...	--	--	--	--	--	--	98	.01

DATE	LENGTH OF EXPO- SURE (DAYS) (00022)	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2) (70957)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2) (70958)	PERI- PHYTON BIOMASS ASH WEIGHT G/SQ M (00572)	PERI- PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)
OCT 07...	28	3.74	1.52	2.60	4.09
SEP 01...	13	2.76	1.23	1.73	2.91

KNIFE RIVER BASIN

06339100 KNIFE RIVER AT MANNING, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	OCT 7,80 1030	NOV 12,80 1310	DEC 16,80 1045	JAN 27,81 0930	FEB 17,81 1330	MAR 18,81 0835
TOTAL CELLS/ML	990	4000	1600	1500	1000	260
DIVERSITY: DIVISION	0.4	1.8	1.6	1.6	1.4	0.7
..CLASS	0.4	1.8	1.6	1.6	1.4	0.7
...ORDER	0.7	2.2	2.1	2.3	2.3	1.5
...FAMILY	0.7	2.3	2.3	2.6	2.7	1.9
...GENUS	0.7	2.5	2.3	2.6	2.7	1.9

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												
...ODCYSTACEAE												
....ANKISTRODESMUS	13	1	700#	18	330#	21	140	10	110	11	52#	20
....KIRCHNERIELLA	--	--	--	--	--	--	--	--	--	--	--	--
....ODCYSTIS	--	--	--	--	--	--	14	1	--	--	--	--
....TETRAEDRON	--	--	--	--	--	--	--	--	--	--	--	--
....TREUBARIA	--	--	--	--	--	--	--	--	--	--	--	--
....WESTELLA	--	--	100	3	--	--	--	--	--	--	--	--
...SCENEDESMACEAE												
....SCENEDESMUS	52	5	--	--	52	3	140	10	56	5	52#	20
....TETRASTRUM	--	--	100	3	--	--	--	--	--	--	--	--
...VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	13	1	680#	17	170	11	42	3	56	5	100#	40
CHRYSTOPHYTA												
..BACILLARIOPHYCEAE												
...CENTRALES												
...COSCINODISCAEAE												
....CYCLOTELLA	--	--	930#	23	630#	40	14	1	28	3	--	--
....STEPHANODISCUS	--	--	--	--	--	--	--	--	--	--	52#	20
...PENNALES												
....ACHNANTHACEAE												
....ACHNANTHES	--	--	--	--	--	--	14	1	--	--	--	--
....COCCONEIS	--	--	--	--	--	--	--	--	--	--	--	--
....RHOICOSPHEA	--	--	--	--	--	--	--	--	--	--	--	--
....FRAGILARIACEAE												
....SYNEORA	--	--	--	--	--	--	--	--	56	5	--	--
...GOMPHONEMATAEAE												
....GOMPHONEMA	--	--	--	--	--	--	--	--	--	--	--	--
...NAVICULACEAE												
....NAVICULA	--	--	--	--	--	--	--	--	56	5	--	--
...NITZSCHIAEAE												
....NITZSCHIA	--	--	--	--	13	1	70	5	42	4	--	--
...SURIPELLACEAE												
....SURIPELLA	--	--	--	--	52	3	14	1	14	1	--	--
...CHRYSTOPHYCEAE												
...CHRYDOMONADALES												
...UCHROMONADACEAE												
....STENOCALYX	--	--	--	--	--	--	--	--	--	--	--	--
CRYPTOPHYTA (CRYPTOMONADS)												
..CRYPTOPHYCEAE												
...CRYPTOMONADALES												
...CRYPTOMONADACEAE												
....CRYPTOMONAS	--	--	25	1	--	--	--	--	--	--	--	--
CYANOPHYTA (BLUE-GREEN ALGAE)												
..CYANOPHYCEAE												
...CHROCOCCALES												
...CHROCOCCACEAE												
....AGMENELLUM	--	--	--	--	--	--	--	--	--	--	--	--
....ANACYSTIS	39	4	200	5	280#	18	280#	19	340#	32	--	--
...HORMOGONALES												
...NOSTOCACEAE												
....ANABAENA	--	--	--	--	--	--	--	--	--	--	--	--
...OSCILLATORIAEAE												
....OSCILLATORIA	880#	88	--	--	--	--	630#	43	280#	27	--	--
EUGLENOPHYTA (EUGLENIIDS)												
..EUGLENOPHYCEAE												
...EUGLENALES												
...EUGLENACEAE												
....EUGLENA	--	--	50	1	--	--	--	--	--	--	--	--
....LEPOCINCLIS	--	--	--	--	--	--	--	--	--	--	--	--
....PHACUS	--	--	--	--	--	--	--	--	--	--	--	--
...TRACHELUMONAS	--	--	1200#	30	39	2	70	5	--	--	--	--
PYRRHOPHYTA (FIRE ALGAE)												
..DINOPHYCEAE												
...GYMNODINIALES												
...GYMNODINIACEAE												
....GYMNODINIUM	--	--	--	--	--	--	28	2	--	--	--	--
...PERIDINIALES												
...GLENODINIACEAE												
....GLENODINIUM	--	--	--	--	--	--	--	--	--	--	--	--
...PERIDINIACEAE												
....PERIDINIUM	--	--	--	--	--	--	14	1	--	--	--	--

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

06339100 KNIFE RIVER AT MANNING, ND--Continued
 PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	APR 7,81 1140	MAY 13,81 0845	JUN 24,81 1220	JUL 28,81 0930	AUG 19,81 0800	SEP 1,81 0945				
TOTAL CELLS/ML	3400	450	250	2900	270	320				
DIVERSITY: DIVISION	1.0	1.5	1.9	1.6	1.2	1.8				
..CLASS	1.0	1.5	1.9	1.6	1.2	1.8				
...ORDER	1.6	1.7	1.9	1.8	1.2	1.9				
...FAMILY	1.8	2.2	2.0	2.1	2.2	2.0				
....GENUS	1.9	2.2	2.7	2.4	2.2	2.0				
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										
...OOCYSTACEAE										
....ANKISTRODESMUS	690# 20		77# 17	42# 17	110 4	-- --	-- --	-- --	-- --	
....KIRCHNERIELLA	-- --	-- --	-- --	28 11	-- --	-- --	-- --	-- --	-- --	
....OOCYSTIS	-- --	-- --	-- --	42# 17	-- --	-- --	-- --	-- --	-- --	
....TETRAEDRON	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	29 9	
....TREUBARIA	29 1	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	
....WESTELLA	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	
...SCENEDESMACEAE										
....SCENEDESMUS	120 3		180# 40	-- --	27 1	-- --	-- --	-- --	-- --	
....TETRASTRUM	-- --	-- --	-- --	-- --	55 2	-- --	-- --	-- --	-- --	
...VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	400 12		13 3	-- --	55 2	-- --	-- --	-- --	-- --	
CHRYSOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	-- --	-- --	-- --	-- --	41 1	-- --	-- --	14 5	-- --	
....STEPHANODISCUS	2000# 58		26 6	-- --	-- --	-- --	-- --	-- --	-- --	
...PENNALES										
....ACHNANTHACEAE										
....ACHNANTHES	-- --	-- --	-- --	14 6	-- --	-- --	-- --	-- --	-- --	
....COCCONEIS	-- --	-- --	-- --	-- --	27 1	29 11	-- --	-- --	-- --	
....RHOICOSPHENIA	-- --	-- --	-- --	-- --	41 1	-- --	-- --	-- --	-- --	
....FRAGILARIACEAE										
....SYNEDRA	58 2	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	
...GOMPHONEMACEAE										
....GOMPHONEMA	-- --	-- --	-- --	-- --	96 3	57# 21	-- --	14 5	-- --	
...NAVICULACEAE										
....NAVICULA	58 2	-- --	-- --	14 6	55 2	43# 16	-- --	14 5	-- --	
...NITZSCHACEAE										
....NITZSCHIA	58 2	26 6	-- --	-- --	300 10	14 5	-- --	-- --	-- --	
...SURIRELLACEAE										
....SURIRELLA	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	
...CHRYSOPHYCEAE										
...CHRYSONOMADALES										
...OCHROMONADACEAE										
....STENOCLALYX	-- --	-- --	-- --	-- --	* 0	-- --	-- --	-- --	-- --	
CRYPTOPHYTA (CRYPTOMONADS)										
..CRYPTOPHYCEAE										
...CRYPTOMONADALES										
...CRYPTOMONADACEAE										
....CRYPTOMONAS	-- --	-- --	-- --	14 6	-- --	-- --	-- --	-- --	-- --	
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROOCOCCALES										
...CHROOCOCCACEAE										
....AGMENELLUM	-- --	-- --	-- --	-- --	-- --	110# 42	-- --	-- --	-- --	
....ANACYSTIS	-- --	120# 26	-- --	84# 33	-- --	-- --	-- --	-- --	-- --	
...HORMOGONALES										
...NOSTOCACEAE										
....ANABAENA	-- --	-- --	-- --	-- --	-- --	-- --	-- --	130# 41	-- --	
...OSCILLATORIA										
....OSCILLATORIA	-- --	-- --	-- --	-- --	1700# 58	-- --	-- --	-- --	-- --	
EUGLENOPHYTA (EUGLENOIDS)										
..EUGLENOPHYCEAE										
...EUGLENALES										
...EUGLENACEAE										
....EUGLENA	-- --	-- --	-- --	-- --	160 6	-- --	-- --	120# 36	-- --	
....LEPOCINCLIS	-- --	-- --	-- --	-- --	* 0	-- --	-- --	-- --	-- --	
....PHACUS	-- --	-- --	-- --	-- --	180 6	-- --	-- --	-- --	-- --	
...TRACHELOMONAS	-- --	13 3	14 6	41 1	14 5	-- --	-- --	-- --	-- --	
PYRRHOPHYTA (FIRE ALGAE)										
..DINOPHYCEAE										
...GYMNODINIALES										
...GYMNODINIACEAE										
....GYMNODINIUM	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	
...PERIDINIALES										
...GLENODINIACEAE										
....GLENODINIUM	29 1	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	
...PERIDINIACEAE										
....PERIDINIUM	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	

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

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

KNIFE RIVER BASIN

06339180 STRAY CREEK NEAR MANNING, ND

LOCATION.--Lat 47°12'47", long 102°37'22", in SW¼SE¼SW¼ sec.8, T.143 N., R.94 W., Dunn County, Hydrologic Unit 10130201, on left bank 200 ft (61 m) upstream from bridge on county road, 6.9 mi (11.1 km) east of Manning and 3.0 mi (4.8 km) above mouth.

DRAINAGE AREA.--30.3 mi² (78.4 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1978 to September 1981 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 2,090 ft (637 m), from topographic map. Prior to Oct. 1, 1979 at datum 10.00 ft (3.048 m) lower.

REMARKS.--Records good except those for winter periods, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 241 ft³/s (6.83 m³/s) June 12, 1980, from rating curve extended above 60 ft³/s (1.70 m³/s), gage height, 13.38 ft (4.078 m); no flow for several months each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 36 ft³/s (1.02 m³/s) June 13, gage height, 12.33 ft (3.758 m), only peak above base of 30 ft³/s (0.85 m³/s), maximum gage height, 12.48 ft (3.804 m), Feb. 16, ice jam; no flow for many months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.17	.01	.60	.00	.45	.08	.03	.00	.00	.00	.00
2	.00	.19	.00	.30	.00	.32	.09	.04	.00	.00	.00	.00
3	.00	.24	.00	.20	.00	.26	.07	.04	.00	.00	.00	.00
4	.00	.19	.00	.25	.00	.24	.07	.03	.09	.00	.00	.00
5	.00	.15	.00	.30	.00	.23	.10	.02	.24	.00	.00	.00
6	.00	.11	.00	.27	.00	.22	.10	.02	.15	.00	.00	.00
7	.00	.08	.00	.23	.00	.22	.09	.01	.07	.00	.00	.00
8	.00	.09	.00	.21	.00	.19	.07	.00	.05	.00	.00	.00
9	.00	.07	.00	.19	.00	.19	.06	.00	.03	.00	.00	.00
10	.00	.08	.00	.18	.00	.18	.06	.00	.02	.00	.00	.00
11	.00	.07	.00	.17	.00	.18	.06	.00	.02	.00	.00	.00
12	.00	.09	.00	.16	.00	.18	.07	.00	.02	.00	.00	.00
13	.00	.10	.00	.15	.08	.19	.07	.00	2.4	.00	.00	.00
14	.00	.08	.00	.15	.50	.19	.05	.00	16	.00	.00	.00
15	.00	.07	.00	.10	1.0	.19	.06	.00	5.1	.00	.00	.00
16	.00	.08	.00	.08	3.0	.19	.06	.00	2.6	.00	.00	.00
17	.00	.08	.00	.07	10	.19	.06	.00	1.5	.00	.00	.00
18	.00	.07	.00	.06	13	.18	.07	.00	.86	.00	.00	.00
19	.00	.05	.00	.04	10	.17	.06	.00	.45	.00	.00	.00
20	.00	.05	.00	.04	8.0	.15	.04	.00	.25	.00	.00	.00
21	.00	.05	.00	.04	5.0	.14	.04	.00	.18	.00	.00	.00
22	.00	.05	.00	.06	3.0	.12	.04	.00	.09	.00	.00	.00
23	.28	.04	.00	.08	1.8	.12	.04	.00	.05	.00	.00	.00
24	4.4	.05	.00	.06	1.4	.10	.03	.00	.04	.00	.00	.00
25	2.4	.06	.00	.03	1.2	.08	.03	.00	.03	.00	.00	.00
26	1.5	.05	.00	.00	1.2	.08	.03	.00	.02	.00	.00	.00
27	1.2	.05	.00	.00	.52	.10	.04	.00	.01	.00	.00	.00
28	.70	.05	.02	.00	.60	.10	.03	.00	.01	.00	.00	.00
29	.38	.04	.05	.00	---	.09	.03	.00	.01	.00	.00	.00
30	.27	.03	.10	.00	---	.08	.03	.00	.00	.00	.00	.00
31	.19	---	1.0	.00	---	.08	---	.00	---	.00	.00	---
TOTAL	11.32	2.58	1.18	4.02	60.30	5.40	1.73	.19	30.29	.00	.00	.00
MEAN	.37	.086	.038	.13	2.15	.17	.058	.006	1.01	.000	.000	.000
MAX	4.4	.24	1.0	.60	13	.45	.10	.04	16	.00	.00	.00
MIN	.00	.03	.00	.00	.00	.08	.03	.00	.00	.00	.00	.00
AC-FT	22	5.1	2.3	8.0	120	11	3.4	.4	60	.00	.00	.00
CAL YR 1980	TOTAL	119.59	MEAN	.33	MAX	46	MIN	.00	AC-FT	237		
WTR YR 1981	TOTAL	117.01	MEAN	.32	MAX	16	MIN	.00	AC-FT	232		

KNIFE RIVER BASIN

06339180 STRAY CREEK NEAR MANNING, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BARIUM, SUS- PENDE D RECOV- ERABLE (UG/L AS BA) (01006)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BERYL- LIUM, SUS- PENDE D RECOV- ERABLE (UG/L AS BE) (01011)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, SUS- PENDE D RECOV- ERABLE (UG/L AS CR) (01031)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	CHRO- MIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/L AS CR) (01029)	COBALT, RECOV. FM BOT- TOM MA- TERIAL (UG/L AS CO) (01038)
NOV 13...	200	200	0	--	--	--	420	--	--	--	--	--
FEB 17...	--	--	--	0	--	<1	130	10	10	0	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 18...	--	--	--	--	--	--	200	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--	--	--	--
APR 07...	100	0	100	10	10	0	450	20	20	0	5	10
27...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 06...	--	--	--	--	--	--	--	--	--	--	--	--
JUN 24...	--	--	--	--	--	--	230	--	--	--	--	--

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	COPPER, SUS- PENDE D RECOV- ERABLE (UG/L AS CU) (01041)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	COPPER, RECOV. FM BOT- TOM MA- TERIAL (UG/L AS CU) (01043)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI) (01132)	LITHIUM SUS- PENDE D RECOV- ERABLE (UG/L AS LI) (01131)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, SUS- PENDE D RECOV- ERABLE (UG/L AS MN) (01054)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)
NOV 13...	--	--	--	--	100	30	10	20	80	70	10	--
FEB 17...	6	1	5	--	450	--	--	--	180	40	140	.3
25...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 18...	--	--	--	--	200	--	--	--	70	30	40	--
24...	--	--	--	--	--	--	--	--	--	--	--	--
APR 07...	2	0	2	16	80	50	0	50	130	110	20	.1
27...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 06...	--	--	--	--	--	--	--	--	--	--	--	--
JUN 24...	--	--	--	--	150	--	--	--	190	150	40	--

DATE	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MERCURY SUS- PENDE D RECOV- ERABLE (UG/L AS HG) (71895)	MERCURY RECOV. FM BOT- TOM MA- TERIAL (UG/L AS HG) (71921)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	NICKEL, SUS- PENDE D RECOV- ERABLE (UG/L AS NI) (01066)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE) (01147)	SELE- NIUM, SUS- PENDE D RECOV- ERABLE (UG/L AS SE) (01146)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE) (01148)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
NOV 13...	--	--	--	--	--	--	--	--	--	--	380
FEB 17...	.1	.2	--	8	3	5	0	0	0	--	--
25...	--	--	--	--	--	--	--	--	--	--	--
MAR 18...	--	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--	--	--
APR 07...	.2	.0	.60	6	4	2	0	0	0	0	900

KNIFE RIVER BASIN

137

06339180 STRAY CREEK NEAR MANNING, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, SUS- PENDE RECOV- ERABLE (UG/L AS ZN) (01091)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	ZINC, RECOV. FM BUT- TOM MA- TERIAL (UG/G AS ZN) (01093)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT) (80030)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)	GROSS BETA, DIS- SOLVED (PCI/L AS SR/ YT-90) (80050)
NOV 13...	--	--	--	--	--	--	--	--	--
FEB 17...	20	10	7	--	--	--	--	--	--
MAR 18...	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--
APR 07...	10	0	20	19	<23	.5	16	1.6	15
27...	--	--	--	--	--	--	--	--	--
MAY 06...	--	--	--	--	--	--	--	--	--
JUN 24...	--	--	--	--	--	--	--	--	--

DATE	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90) (80060)	POTAS- SIUM 40 DIS- SOLVED (PCI/L AS K40) (82068)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHENOLS (UG/L) (32730)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)
NOV 13...	--	--	15	.2	--	--	31	.01
FEB 17...	--	9.0	38	3.1	.00	10	69	1.5
MAR 18...	--	4.9	--	--	--	--	11	.01
24...	--	--	--	--	--	--	25	.01
APR 07...	1.5	9.0	18	.3	.00	3	11	.00
27...	--	--	--	--	--	--	8	.00
MAY 06...	--	--	--	--	--	--	129	.00
JUN 24...	--	6.4	--	--	--	--	197	.02

DATE	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)
FEB 17...	92	100

KNIFE RIVER BASIN

06339180 STRAY CREEK NEAR MANNING, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO JUNE 1981

DATE TIME	NOV 13,80 0025	FEB 17,81 1035	MAR 18,81 1115	APR 7,81 0915	JUN 24,81 1500					
TOTAL CELLS/ML	34000	840	5800	11000	570					
DIVERSITY: DIVISION	1.2	1.5	1.1	1.6	1.8					
..CLASS	1.2	1.5	1.1	1.6	1.8					
...ORDER	1.8	2.1	1.3	1.7	2.5					
...FAMILY	2.1	2.4	1.3	1.8	2.8					
....GENUS	2.2	2.7	1.3	2.0	3.3					
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										
....ANKISTRODESMUS	2400	7	110	13	--	--	6400#	58	73	13
....DICTYOSPHAERIUM	--	--	--	--	--	--	--	--	26	5
....KIRCHNERIELLA	--	--	--	--	--	--	--	--	22	4
....OOCYSTIS	--	--	110	13	--	--	--	--	--	--
....SELENASTRUM	600	2	14	2	--	--	--	--	--	--
....TETRAEDRON	--	--	--	--	--	--	--	--	17	3
....TREUBARIA	*	0	--	--	--	--	--	--	--	--
...SCENEDESMACEAE										
...SCENEDESMUS	--	--	--	--	--	--	190	2	17	3
...VULVOCALES										
...CHLAMYDOMONADACEAE										
...CHLAMYDOMONAS	300	1	320#	38	340	6	93	1	140#	24
CHRYSTOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...COSCINODISCACEAE										
...CYCLOTELLA	4500	13	--	--	590	10	280	3	34	6
...PENNALES										
...ACHNANTHACEAE										
...COCCONEIS	--	--	27	3	--	--	--	--	--	--
...FRAGILARIACEAE										
...ASTERIONELLA	--	--	--	--	320	6	--	--	--	--
...SYNEURA	--	--	41	5	--	--	--	--	--	--
...NAVICULACEAE										
...NAVICULA	--	--	41	5	--	--	--	--	30	5
...NITZSCHIA										
...NITZSCHIA	--	--	14	2	*	0	1000	9	56	10
...SURIRELLACEAE										
...SURIRELLA	--	--	--	--	*	0	--	--	--	--
CRYPTOPHYTA (CRYPTOMONADS)										
..CRYPTOPHYCEAE										
...CRYPTOMONADALES										
...CRYPTOCHRYSIDACEAE										
...CHROOMONAS	--	--	27	3	--	--	--	--	--	--
...CRYPTOMONADACEAE										
...CRYPTOMONAS	--	--	--	--	--	--	--	--	9	2
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROOCOCCALES										
...CHROOCOCCACEAE										
....ANACYSTIS	6500#	19	--	--	--	--	1700#	15	110#	20
....GOMPHUSPHAERIA	--	--	--	--	--	--	370	3	--	--
...HORMOGONALES										
...NOSTOCACEAE										
....ANABAENA	2300	7	--	--	--	--	--	--	--	--
...OSCILLATORIACEAE										
...OSCILLATORIA	16000#	48	120	15	4300#	75	--	--	--	--
EUGLENOPHYTA (EUGLENOIDS)										
..EUGLENOPHYCEAE										
...EUGLENALES										
...EUGLENACEAE										
....EUGLENA	910	3	14	2	52	1	--	--	17	3
....PHACUS	--	--	--	--	--	--	--	--	9	2
...TRACHELOMONAS	--	--	--	--	120	2	1000	9	13	2

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

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

KNIFE RIVER BASIN

139

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, and on right bank 250 ft (75 m) downstream from bridge on State Highway 8 in Marshall.

DRAINAGE AREA.--722 mi² (1,870 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1970 to September 1981 (discontinued).

GAGE.--Water-stage recorder.

REMARKS.--Records good except for winter periods, which are fair.

AVERAGE DISCHARGE.--11 years, 66.3 ft³/s (1.878 m³/s), 48,030 acre-ft/yr (59.2 hm³/yr); median of yearly mean discharges, 56 ft³/s (1.59 m³/s), 40,600 acre-ft/yr (50 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.

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, 376 ft³/s (10.6 m³/s) Sept. 7, gage height, 5.91 ft (1.801 m); no peaks above base of 750 ft³/s (21.2 m³/s); maximum gage height, 6.41 ft (1.954 m) Feb. 19, backwater from ice; minimum daily, 0.26 ft³/s (0.007 m³/s) July 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.2	8.2	4.2	7.0	4.5	21	6.0	4.9	2.4	.85	5.9	1.9
2	3.2	7.3	4.0	9.0	4.5	19	6.2	5.0	2.4	2.8	11	2.1
3	3.0	6.4	3.8	40	4.0	18	5.8	4.9	2.4	3.9	13	2.2
4	2.5	6.1	3.8	55	4.0	16	5.8	4.5	2.9	5.7	13	2.2
5	2.7	6.0	3.8	25	4.0	14	5.8	4.3	5.0	4.5	25	2.4
6	2.5	5.6	3.5	13	4.0	13	6.7	4.0	4.0	3.0	208	17
7	2.7	5.4	3.5	8.5	4.0	13	6.7	4.2	3.9	2.1	104	293
8	3.1	6.0	3.2	6.5	3.5	13	6.8	4.4	3.3	1.8	36	84
9	2.7	5.8	3.2	5.0	3.5	12	6.5	4.2	2.8	1.6	21	29
10	2.4	5.6	3.0	4.5	3.5	12	6.2	4.2	2.6	1.2	14	18
11	2.2	5.6	3.0	4.5	3.5	12	5.9	4.4	2.2	.98	9.8	14
12	2.0	5.8	3.2	4.5	3.5	12	5.6	3.8	2.2	.58	7.2	12
13	2.0	6.0	3.2	4.5	3.5	12	5.9	3.7	11	.34	5.4	9.9
14	2.2	6.1	3.2	4.5	4.0	13	5.9	3.7	36	.77	3.6	9.0
15	2.0	6.4	3.5	4.5	10	12	5.7	3.3	89	.87	2.8	8.7
16	4.4	6.4	3.8	4.5	18	12	5.6	3.0	32	.46	2.8	8.3
17	7.1	6.5	3.8	4.5	30	13	5.4	2.6	18	.26	2.4	7.9
18	13	6.2	3.8	4.5	140	11	5.6	2.9	9.2	.38	12	7.8
19	11	6.7	3.5	4.5	267	9.7	5.1	2.3	5.3	.59	10	7.1
20	13	6.8	3.2	4.5	196	7.7	4.7	1.7	3.7	.49	7.3	6.5
21	14	6.5	3.0	4.5	117	6.3	5.3	1.6	3.0	.50	6.3	6.4
22	13	6.6	3.0	4.5	104	5.9	5.3	2.5	44	30	5.1	6.1
23	16	6.4	3.0	5.0	92	6.2	5.1	3.0	32	23	3.3	5.6
24	28	6.3	3.0	5.0	73	6.2	4.9	2.5	10	5.8	2.6	5.1
25	26	6.5	3.0	5.5	56	5.9	5.1	2.2	4.6	1.6	2.7	4.8
26	23	6.6	3.0	5.5	57	5.8	4.7	2.4	2.4	4.4	2.4	7.7
27	22	6.2	3.0	5.5	37	5.7	5.1	2.3	1.2	18	1.8	5.5
28	17	6.3	3.2	5.0	29	5.9	4.7	3.0	.70	19	1.2	8.8
29	15	5.3	4.5	5.0	---	5.9	4.9	2.6	.57	17	.85	5.2
30	12	5.3	5.0	5.0	---	5.8	5.0	2.3	.42	11	1.2	4.0
31	9.7	---	6.0	5.0	---	6.1	---	2.7	---	8.2	2.5	---
TOTAL	282.6	186.9	109.9	274.0	1280.0	331.1	168.0	103.1	339.19	171.67	544.15	602.2
MEAN	9.12	6.23	3.55	8.84	45.7	10.7	5.60	3.33	11.3	5.54	17.6	20.1
MAX	28	8.2	6.0	55	267	21	6.8	5.0	89	30	208	293
MIN	2.0	5.3	3.0	4.5	3.5	5.7	4.7	1.6	.42	.26	.85	1.9
AC-FT	561	371	218	543	2540	657	333	204	673	341	1080	1190

CAL YR 1980 TOTAL 6054.18 MEAN 16.5 MAX 1500 MIN .34 AC-FT 12010
WTR YR 1981 TOTAL 4392.81 MEAN 12.0 MAX 293 MIN .26 AC-FT 8710

KNIFE RIVER BASIN

06339300 KNIFE RIVER AT MARSHALL, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1972 to September 1981 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CACO3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
UCT												
14...	1420	2.2	2220	--	10.0	9.5	--	--	--	--	--	--
15...	0945	2.0	2200	8.2	3.0	6.0	9.8	83	240	0	41	34
NOV												
11...	1235	5.4	2050	--	5.0	5.0	--	--	--	--	--	--
19...	0830	6.9	2150	8.5	1.5	.5	13.6	101	270	0	51	35
DEC												
03...	1455	3.6	2940	--	.0	2.0	--	--	--	--	--	--
11...	1005	3.0	2810	8.2	-10.0	.0	12.7	93	330	0	64	42
JAN												
14...	1330	4.6	2780	8.0	-2.0	.0	10.8	78	290	0	52	40
14...	1340	4.6	2950	--	-2.0	.0	--	--	--	--	--	--
FEB												
18...	1335	165	1830	--	9.0	--	--	--	--	--	--	--
21...	1315	122	700	--	8.0	2.5	--	--	--	--	--	--
24...	1415	72	705	--	6.0	2.5	--	--	--	--	--	--
25...	0730	50	770	7.7	-3.5	.0	12.6	91	91	0	18	11
MAR												
11...	1155	12	1170	--	12.0	2.5	--	--	--	--	--	--
19...	0740	9.3	1080	8.2	-5	.0	13.0	96	140	0	28	16
APR												
07...	1250	.13	1540	8.4	--	9.0	--	--	--	--	--	--
07...	1620	6.8	1480	--	9.0	9.5	--	--	--	--	--	--
08...	0650	6.6	1460	8.6	1.0	7.0	10.8	96	180	0	36	21
MAY												
12...	1105	3.8	2020	--	13.0	12.0	--	--	--	--	--	--
19...	1130	2.4	2820	8.6	21.5	16.5	9.7	105	740	160	140	95
JUN												
03...	1520	2.3	2130	--	24.0	21.5	--	--	--	--	--	--
24...	0835	11	1250	8.2	22.5	17.5	6.6	73	150	0	29	19
JUL												
08...	1210	1.8	1430	--	22.0	23.0	--	--	--	--	--	--
28...	1345	23	1400	8.6	26.5	22.5	9.2	112	180	0	38	21
AUG												
07...	1525	79	880	8.5	27.0	23.0	--	--	120	0	29	12
19...	1230	10	1240	8.5	35.0	25.0	7.0	92	190	0	40	21
SEP												
10...	1600	17	840	--	33.0	21.0	--	--	--	--	--	--
11...	0910	14	900	8.0	17.0	17.5	6.3	70	110	0	26	12

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS TOTAL (MG/L AS P04) (71886)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC SUS- PENDED TOTAL (UG/L AS AS) (01001)	ARSENIC TOTAL IN BUT- TOM MA- TERIAL (UG/G AS AS) (01003)
OCT												
14...	--	--	--	--	--	--	--	--	--	--	--	--
15...	7.9	--	--	--	--	--	--	--	--	--	--	--
NOV												
11...	--	--	--	--	--	--	--	--	--	--	--	--
19...	27.9	.19	.020	.02	1.2	1.20	.060	.18	.030	--	--	--
DEC												
03...	--	--	--	--	--	--	--	--	--	--	--	--
11...	15.6	--	--	--	--	--	--	--	--	--	--	--
JAN												
14...	24.6	.45	.200	.24	1.4	1.60	.110	.34	.060	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--	--
FEB												
25...	71.1	.41	.410	--	1.5	1.90	.200	.61	.050	2	1	--
MAR												
11...	--	--	--	--	--	--	--	--	--	--	--	--
19...	18.9	--	--	--	--	--	--	--	--	--	--	--
APR												
08...	17.6	.02	.040	--	1.1	1.10	.080	.25	.030	--	--	--
MAY												
12...	--	--	--	--	--	--	--	--	--	--	--	--
19...	14.2	--	--	--	--	--	--	--	--	--	--	--
JUN												
03...	--	--	--	--	--	--	--	--	--	--	--	--
24...	24.7	--	--	--	--	--	--	--	--	--	--	--
JUL												
08...	--	--	--	--	--	--	--	--	--	--	--	--
28...	58.1	<1.0	.200	--	1.7	1.90	.150	.46	.050	3	0	--
AUG												
07...	138	--	--	--	--	--	--	--	--	--	--	--
19...	19.4	--	--	--	--	--	--	--	--	--	--	--
SEP												
10...	--	--	--	--	--	--	--	--	--	--	--	--
11...	22.5	--	--	--	--	--	--	--	--	5	2	94

06339300 KNIFE RIVER AT MARSHALL, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BARIUM, SUS- PENDE RECov- ERABLE (UG/L AS BA) (01006)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORDN, DIS- SOLVED (UG/L AS B) (01020)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, SUS- PENDE RECov- ERABLE (UG/L AS CR) (01031)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	CHRO- MIUM, RECov- FM BOT- TOM MA- TERIAL (UG/G) (01029)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COBALT, RECov- FM BOT- TOM MA- TERIAL (UG/G) AS CO) (01038)
OCT												
14...	--	--	--	--	--	--	--	--	--	--	--	--
15...	100	0	100	--	--	330	10	--	--	--	--	--
NOV												
11...	--	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	320	--	--	--	--	--	--
DEC												
03...	--	--	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	400	--	--	--	--	0	--
JAN												
14...	--	--	--	--	--	1100	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--	--
FEB												
25...	100	60	40	0	<1	110	10	0	10	--	--	--
MAR												
11...	--	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	160	--	--	--	--	--	--
APR												
08...	100	50	50	--	--	210	--	--	--	--	--	--
MAY												
12...	--	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	890	--	--	--	--	--	--
JUN												
03...	--	--	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	340	--	--	--	--	--	--
JUL												
08...	--	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	0	<10	250	20	20	<1	--	--	--
AUG												
07...	--	--	--	--	--	600	--	--	--	--	--	--
19...	--	--	--	--	--	200	--	--	--	--	--	--
SEP												
10...	--	--	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	0	<1	130	40	30	10	2	--	10

DATE	CUPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	CUPPER, SUS- PENDE RECov- ERABLE (UG/L AS CU) (01041)	CUPPER, DIS- SOLVED (UG/L AS CU) (01040)	CUPPER, FM BOT- TOM MA- TERIAL (UG/G AS CU) (01043)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI) (01132)	LITHIUM SUS- PENDE RECov- ERABLE (UG/L AS LI) (01131)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, SUS- PENDE RECov- ERABLE (UG/L AS MN) (01054)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)
OCT												
14...	--	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	34	--	50	60	0	60	110	90	20	--
NOV												
11...	--	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	100	--	--	--	100	80	20	--
DEC												
03...	--	--	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	60	--	--	--	110	80	30	--
JAN												
14...	--	--	--	--	130	--	--	--	260	30	230	--
14...	--	--	--	--	--	--	--	--	--	--	--	--
FEB												
25...	9	5	4	--	350	20	0	20	100	70	30	.3
MAR												
11...	--	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	170	--	--	--	70	30	40	--
APR												
08...	--	--	--	--	30	30	0	30	100	100	4	--
MAY												
12...	--	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	50	--	--	--	320	0	320	--
JUN												
03...	--	--	--	--	--	--	--	--	--	--	--	--
24...	--	--	42	--	90	--	--	--	810	810	0	--
JUL												
08...	--	--	--	--	--	--	--	--	--	--	--	--
28...	11	8	3	--	26	--	--	--	210	210	3	.1
AUG												
07...	--	--	--	--	230	--	--	--	--	--	10	--
19...	--	--	--	--	71	--	--	--	230	220	6	--
SEP												
10...	--	--	--	--	--	--	--	--	--	--	--	--
11...	43	39	4	8	140	--	--	--	600	600	3	.1

KNIFE RIVER BASIN

143

06339300 KNIFE RIVER AT MARSHALL, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MERCURY SUS- PENDE RECOV- ERABLE (UG/L AS HG) (71895)	MERCURY FM BOT- TOM MA- TERIAL (UG/G AS HG) (71921)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	NICKEL, SUS- PENDE RECOV- ERABLE (UG/L AS NI) (01066)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, TOTAL SOLVED (UG/L AS SE) (01147)	SELE- NIUM, PENDE TOTAL (UG/L AS SE) (01146)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SELE- NIUM, TOTAL IN BOT- TOM MA- TERIAL (UG/G) (01148)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
OCT											
14...	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	220
FEB											
18...	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--	--	--
25...	.1	.2	--	8	1	7	0	0	0	--	230
MAR											
11...	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--
APR											
07...	--	--	--	--	--	--	--	--	--	--	--
07...	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	520
MAY											
12...	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	<100	--	--	--	--	--
JUN											
03...	--	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--	--	--
JUL											
08...	--	--	--	--	--	--	--	--	--	--	--
28...	.1	.0	--	8	5	3	<1	0	<1	--	--
AUG											
07...	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--
SEP											
10...	--	--	--	--	--	--	--	--	--	--	--
11...	.0	.1	.02	36	30	6	1	1	0	0	--

DATE	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, SUS- PENDE RECOV- ERABLE (UG/L AS ZN) (01091)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	ZINC, FM BOT- TOM MA- TERIAL (UG/G AS ZN) (01093)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT) (80030)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)	GROSS BETA, DIS- SOLVED (PCI/L AS SR/ YT-90) (80050)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90) (80060)
OCT										
15...	--	--	--	--	--	--	--	--	--	--
NOV										
19...	--	--	--	--	--	--	--	--	--	--
DEC										
11...	--	--	--	--	--	--	--	--	--	--
JAN										
14...	--	--	--	--	--	--	--	--	--	--
FEB										
25...	330	320	7	--	--	--	--	--	--	--
MAR										
19...	--	--	--	--	--	--	--	--	--	--
APR										
08...	--	--	--	--	--	--	--	--	--	--
MAY										
19...	--	--	--	--	--	--	--	--	--	--
JUN										
24...	--	--	--	--	--	--	--	--	--	--
JUL										
28...	30	--	<3	--	--	--	--	--	--	--
AUG										
19...	--	--	--	--	--	--	--	--	--	--
SEP										
11...	120	--	<3	20	<14	37	11	36	10	34

KNIFE RIVER BASIN

06339300 KNIFE RIVER AT MARSHALL, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	POTASSIUM 40 DIS-SOLVED (PCI/L AS K40) (82068)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHENOLS (UG/L) (32730)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)
OCT 15...	--	--	--	--	--	47	.25	--	--	--
NOV 19...	--	30	.5	--	--	114	2.1	--	--	--
DEC 11...	--	--	--	--	--	112	.91	--	--	--
JAN 14...	5.4	41	.6	--	--	111	1.4	--	--	--
FEB 25...	6.6	24	1.9	.00	24	65	8.8	--	--	--
MAR 19...	4.7	--	--	--	--	47	1.2	--	--	--
APR 08...	5.0	10	.3	--	--	54	.96	--	--	--
MAY 19...	6.3	--	--	--	--	112	.73	--	--	--
JUN 24...	5.7	--	--	--	--	1180	35	94	96	100
JUL 28...	--	11	.8	.01	12	115	7.1	--	--	--
AUG 19...	--	--	--	--	--	124	3.3	--	--	--
SEP 11...	--	--	--	>.01	13	779	29	--	--	--

DATE	BED MAT. FALL DIAM. % FINER THAN .062 MM (80158)	BED MAT. FALL DIAM. % FINER THAN .125 MM (80159)	BED MAT. FALL DIAM. % FINER THAN .250 MM (80160)	BED MAT. FALL DIAM. % FINER THAN .500 MM (80161)	BED MAT. FALL DIAM. % FINER THAN 1.00 MM (80162)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)	BED MAT. SIEVE DIAM. % FINER THAN 64.0 MM (80174)
JUL 28...	1	2	4	10	14	20	31	46	58	78	100

DATE	LENGTH OF EXPO-SURE (DAYS) (00022)	CHLOR-A PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2) (70957)	CHLOR-B PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2) (70958)	PERI-PHYTON BIOMASS ASH WEIGHT G/SQ M (00572)	PERI-PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)
OCT 15...	26	1.91	.280	2.13	2.60
JUN 24...	21	.220	.030	.079	.315
JUL 28...	34	2.88	.280	7.56	10.1
SEP 11...	42	2.10	.900	1.65	2.44

06339300 KNIFE RIVER AT MARSHALL, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO AUGUST 1981

DATE TIME	UCT 15,80 0945	NOV 19,80 0830	DEC 11,80 1005	JAN 14,81 1330	FEB 25,81 0730	MAR 19,81 0740				
TOTAL CELLS/ML	2500	8400	3800	160	1900	1200				
DIVERSITY: DIVISION	1.2	1.7	1.4	0.7	1.6	1.7				
..CLASS	1.2	1.7	1.4	0.7	1.7	1.7				
..ORDER	1.6	2.3	1.7	1.4	2.2	2.5				
...FAMILY	2.4	2.7	1.8	1.4	2.5	2.7				
....GENUS	3.0	3.4	2.1	2.0	2.6	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										
....SCHROEDERIA	--	-	--	-	--	-	--	-	--	-
....MICRACTINIACEAE										
....GOLENKINIA	--	-	--	-	--	-	--	-	--	-
....MICRACTINIUM	150	6	--	-	--	-	--	-	--	-
...OOCYSTACEAE										
....ANKISTRODESMUS	390#	16	1700#	21	1100#	30	78#	50	210	11
....CHODATELLA	13	1	--	-	--	-	--	-	--	-
....DICTYOSPHAERIUM	150	6	150	2	--	-	--	-	--	-
....KIRCHNERIELLA	--	-	99	1	--	-	--	-	14	1
...OOCYSTIS	--	-	200	2	67	2	--	-	--	-
....SELENASTRUM	--	-	300	4	100	3	26#	17	--	-
....TETRAEDRON	--	-	--	-	--	-	--	-	--	-
....TREUBARIA	13	1	--	-	--	-	--	-	--	-
....WESTELLA	52	2	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....ACTINASTRUM	--	-	400	5	--	-	--	-	--	-
....CRUCIGENIA	52	2	99	1	--	-	--	-	56	3
...SCENEDESMUS	490#	20	600	7	67	2	--	-	56	3
....TETRASTRUM	52	2	--	-	--	-	--	-	--	-
...VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	280	11	790	9	230	6	26#	17	280#	15
...PHACOTACEAE										
....PHACOTUS	--	-	--	-	--	-	--	-	--	-
CHRYSTOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...COSCINODISCACEAE										
....CYCLOTETRA	--	-	1400#	17	67	2	13	8	56	3
....MELOSIRA	--	-	--	-	--	-	--	-	--	-
....STEPHANODISCUS	--	-	--	-	--	-	--	-	--	-
...PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	--	-	--	-	--	-	--	-	--	-
....COCCONEIS	--	-	--	-	--	-	--	-	--	-
...FRAGILARIACEAE										
....FRAGILARIA	--	-	--	-	--	-	--	-	--	-
....SYNEDRA	--	-	50	1	--	-	--	-	--	-
...NAVICULACEAE										
....CALONEIS	--	-	--	-	--	-	--	-	--	-
...NAVICULA	--	-	50	1	34	1	13	8	14	1
...NITZSCHIIACEAE										
....NITZSCHIA	52	2	250	3	34	1	--	-	98	5
...SURIPELLACEAE										
....SURIPELLA	--	-	150	2	--	-	--	-	70	4
..CHRYSTOPHYCEAE										
...CHRYSOMONADALES										
...CHROMULINACEAE										
....CHRYSOCUCCUS	--	-	--	-	--	-	--	-	28	2
...XANTHOPHYCEAE										
...HETEROCOCCALES										
...CENTRITRACTACEAE										
....CENTRITRACTUS	--	-	--	-	--	-	--	-	--	-

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

CONTINUED ...

KNIFE RIVER BASIN

06339300 KNIFE RIVER AT MARSHALL, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO AUGUST 1981

(CONTINUED)

DATE TIME	OCT 15,80 0945		NOV 19,80 0830		DEC 11,80 1005		JAN 14,81 1330		FEB 25,81 0730		MAR 19,81 0740	
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
CRYPTOPHYTA (CRYPTOMONADS)												
..CRYPTOPHYCEAE												
...CRYPTOMONADALES												
...CRYPTOCHRYSIDACEAE												
....CHRUOMONAS	--	-	--	-	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
..CYANOPHYCEAE												
...CHROOCOCCALES												
...CHROOCOCCACEAE												
....ANACYSTIS	700#	28	--	-	130	4	--	-	14	1	14	1
...HORMOGONALES												
...OSCILLATORIACEAE												
....LYNGBYA	--	-	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	1400#	16	--	-	--	-	910#	49	--	-
EUGLENOPHYTA (EUGLENIDS)												
..EUGLENOPHYCEAE												
...EUGLENALES												
...EUGLENACEAE												
....EUGLENA	64	3	99	1	34	1	--	-	--	-	--	-
....LEPOCINCLIS	--	-	--	-	--	-	--	-	--	-	--	-
....PHACUS	--	-	50	1	--	-	--	-	--	-	--	-
....TRACHELONAS	26	1	600	7	1800#	49	--	-	42	2	42	4
PYRRHOPHYTA (FIRE ALGAE)												
..DINOPHYCEAE												
...GYMNODINIALES												
...GYMNODINIACEAE												
....GYMNODINIUM	--	-	--	-	--	-	--	-	14	1	170	14
...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%

KNIFE RIVER BASIN

147

06339300 KNIFE RIVER AT MARSHALL, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO AUGUST 1981

DATE TIME	APR 7,81 1250	APR 8,81 0650	MAY 19,81 1130	JUN 24,81 0835	JUL 28,81 1345	AUG 19,81 1230
TOTAL CELLS/ML	440	3900	2300	800	11000	28000
DIVERSITY: DIVISION	2.0	1.6	1.6	1.3	1.9	1.5
..CLASS	2.0	1.6	1.6	1.3	1.9	1.5
..ORDER	2.3	1.8	1.9	2.2	2.4	2.4
...FAMILY	2.4	2.1	2.3	2.6	2.8	2.9
....GENUS	2.4	2.2	2.7	3.1	3.4	3.3

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	13	3	34	1	--	-	--	-	--	-	--	-
...MICRACTINIACEAE												
....GOLENKINIA	--	-	34	1	--	-	--	-	--	-	--	-
...MICRACTINIUM	--	-	--	-	--	-	--	-	--	-	920	3
...OOCYSTACEAE												
....ANKISTRODESMUS	--	-	340	9	190	8	41	5	150	1	1700	6
....CHUDATELLA	--	-	--	-	--	-	--	-	--	-	--	-
...DICTYOSPHAERIUM	--	-	--	-	13	1	55	7	1300	12	5400#	19
...KIRCHNERIELLA	--	-	130	3	--	-	--	-	*	0	--	-
...OOCYSTIS	--	-	--	-	--	-	--	-	--	-	--	-
...SELENASTRUM	--	-	--	-	13	1	14	2	99	1	260	1
...TETRAEDRON	--	-	--	-	--	-	--	-	--	-	*	0
...TREUBARIA	--	-	--	-	26	1	--	-	--	-	--	-
...WESTELLA	--	-	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE												
....ACTINASTRUM	--	-	--	-	--	-	--	-	--	-	--	-
...CRUCIGENIA	--	-	--	-	260	11	--	-	590	6	1100	4
...SCENEDESMUS	26	6	200	5	340	15	--	-	890	8	790	3
...TETRASTRUM	--	-	--	-	--	-	--	-	390	4	--	-
..VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	100#	24	67	2	77	3	120#	16	540	5	6600#	24
...PHACOTACEAE												
...PHACOTUS	--	-	--	-	--	-	14	2	--	-	--	-
CHRYSTOPHYTA												
..BACILLARIOPHYCEAE												
...CENTRALES												
...COSCIINUODISCACEAE												
....CYCLOTETRA	13	3	--	-	--	-	180#	22	590	6	790	3
....MELOSIRA	--	-	--	-	--	-	28	3	--	-	--	-
...STEPHANODISCUS	--	-	1900#	49	52	2	--	-	--	-	--	-
..PENNALES												
...ACHNANTHACEAE												
....ACHNANTHES	--	-	--	-	--	-	--	-	--	-	--	-
...COCCONEIS	--	-	--	-	39	2	--	-	99	1	--	-
...FRAGILARIACEAE												
....FRAGILARIA	--	-	--	-	--	-	--	-	--	-	260	1
...SYNEURA	--	-	34	1	--	-	--	-	--	-	--	-
...NAVICULACEAE												
....CALONEIS	--	-	--	-	--	-	14	2	--	-	--	-
...NAVICULA	--	-	--	-	77	3	140#	17	150	1	400	1
...NITZSCHIA												
....NITZSCHIA	26	6	67	2	52	2	110	14	250	2	260	1
...SURIPELLACEAE	--	-	--	-	--	-	--	-	--	-	--	-
...SURIPELLA	--	-	--	-	--	-	--	-	--	-	--	-
..CHRYSTOPHYCEAE												
...CHROMONADACEAE												
....CHRYSOCCUS	--	-	--	-	--	-	--	-	--	-	--	-
..XANTHOPHYCEAE												
...HETEROCOCCALES												
...CENTRITRACTACEAE												
...CENTRITRACTUS	--	-	--	-	--	-	--	-	--	-	*	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

06339300 KNIFE RIVER AT MARSHALL, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO AUGUST 1981

(CONTINUED)

DATE TIME	APR 7,81 1250		APR 8,81 0650		MAY 19,81 1130		JUN 24,81 0835		JUL 28,81 1345		AUG 19,81 1230	
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
CRYPTOPHYTA (CRYPTOMONADS)												
..CRYPTOPHYCEAE												
...CRYPTOMONADALES												
...CRYPTOCHRYSIDACEAE												
....CHROOMONAS	13	3	--	-	--	-	--	-	--	-	260	1
CYANOPHYTA (BLUE-GREEN ALGAE)												
..CYANOPHYCEAE												
...CHROOCOCCALES												
...CHROOCOCCACEAE												
....ANACYSTIS	160#	35	67	2	1000#	46	--	-	300	3	3000	11
...HORMOGONALES												
...OSCILLATORIACEAE												
....LYNGBYA	--	-	--	-	--	-	--	-	--	-	4200#	15
....OSCILLATORIA	--	-	--	-	--	-	--	-	3000#	28	--	-
EUGLENOPHYTA (EUGLENOIDS)												
..EUGLENOPHYCEAE												
...EUGLENALES												
...EUGLENACEAE												
....EUGLENA	--	-	--	-	65	3	55	7	--	-	660	2
....LEPOCINCLIS	--	-	--	-	--	-	--	-	--	-	*	0
....PHACUS	--	-	--	-	--	-	--	-	690	6	*	0
....TRACHELOMONAS	91#	21	1000#	26	13	1	28	3	1500	14	660	2
PYRRHOPHYTA (FIRE ALGAE)												
..DINOPHYCEAE												
...GYMNODINIALES												
...GYMNODINIACEAE												
....GYMNODINIUM	--	-	--	-	--	-	--	-	--	-	--	-
...PERIDINIALES												
...GLENODINIACEAE												
....GLENODINIUM	--	-	--	-	26	1	--	-	--	-	--	-
...PERIDINIACEAE												
....PERIDINIUM	--	-	--	-	--	-	--	-	150	1	--	-

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

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

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, and 13.5 mi (21.7 km) south of Golden Valley.

WATER-DISCHARGE RECORDS

GAGE.--Water-stage recorder. Datum of gage is 1,915.17 ft (583.744 m) National Geodetic Vertical Datum of 1929.

AVERAGE DISCHARGE.--14 years, 7.51 ft³/s (0.213 m³/s), 5,440 acre-ft/yr (6.71 hm³/yr); median of yearly mean discharges, 5.3 ft³/s (0.15 m³/s), 3,840 acre-ft/yr (4.7 hm³/yr).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 113 ft³/s (3.20 m³/s) July 18, gage height, 7.49 ft (2.283 m), only peak above base of 100 ft³/s (2.83 m³/s); no flow for many days.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.07	.03	.00	.00	1.0	.05	.02	.00	.01	.01	.13
2	.00	.06	.02	.00	.00	1.0	.05	.01	.00	.01	.01	.05
3	.00	.06	.01	.00	.00	1.0	.05	.01	.02	.02	.02	.03
4	.00	.05	.01	.00	.00	1.0	.05	.01	.04	.03	.03	.02
5	.00	.05	.01	.00	.00	1.0	.04	.01	.04	.02	7.7	.02
6	.00	.05	.00	.00	.00	1.0	.04	.01	.02	.02	5.0	.21
7	.00	.04	.00	.00	.00	1.0	.06	.01	.02	.02	2.4	.21
8	.00	.04	.00	.00	.00	1.0	.06	.01	.02	.02	3.4	.07
9	.00	.04	.00	.00	.00	1.0	.05	.01	.02	.01	2.1	.03
10	.00	.04	.00	.00	.00	1.0	.05	.00	.02	.01	1.1	.03
11	.00	.03	.00	.00	.00	.90	.05	.00	.02	.01	1.3	.03
12	.00	.02	.00	.00	.00	.90	.04	.00	.02	.01	.55	.02
13	.00	.02	.00	.00	.00	.80	.04	.00	.34	.00	.33	.02
14	.00	.02	.00	.00	.10	.80	.04	.00	1.6	.00	.13	.02
15	.00	.02	.00	.00	20	.70	.03	.00	.08	.00	.04	.02
16	.00	.01	.00	.00	75	.70	.04	.00	.06	.00	.04	.01
17	.00	.01	.00	.00	36	.60	.05	.00	.04	.00	.04	.01
18	.00	.01	.00	.00	22	.60	.05	.00	.02	20	.05	.01
19	.00	.01	.00	.00	20	.50	.05	.00	.02	3.3	.09	.01
20	.00	.01	.00	.00	18	.50	.05	.00	.02	.19	.06	.01
21	.00	.02	.00	.00	16	.40	.05	.00	.02	.15	.04	.01
22	.00	.03	.00	.00	15	.30	.04	.00	.02	.11	.03	.01
23	4.4	.04	.00	.00	10	.20	.04	.00	.02	.05	5.6	.01
24	.84	.04	.00	.00	8.0	.10	.04	.00	.02	.02	12	.01
25	7.6	.06	.00	.00	6.0	.08	.04	.00	.02	.02	4.0	.01
26	61	.05	.00	.00	2.0	.06	.03	.00	.01	.02	2.5	.01
27	41	.04	.00	.00	1.0	.05	.03	.00	.01	.02	1.6	.01
28	5.2	.04	.00	.00	1.0	.05	.03	.00	.01	.02	1.5	.01
29	4.5	.03	.00	.00	---	.05	.02	.00	.01	.02	1.1	.01
30	.08	.02	.00	.00	---	.05	.02	.00	.01	.02	.50	.01
31	.08	---	.00	.00	---	.05	---	.00	---	.01	.37	---
TOTAL	124.70	1.03	.08	.00	250.10	18.39	1.28	.10	2.57	24.14	53.64	1.06
MEAN	4.02	.034	.003	.000	8.93	.59	.043	.003	.086	.78	1.73	.035
MAX	61	.07	.03	.00	75	1.0	.06	.02	1.6	20	12	.21
MIN	.00	.01	.00	.00	.00	.05	.02	.00	.00	.00	.01	.01
AC-FT	247	2.0	.2	.00	496	36	2.5	.2	5.1	48	106	2.1
CAL YR 1980	TOTAL 179.57		MEAN .49		MAX 61	MIN .00	AC-FT 356					
WTR YR 1981	TOTAL 477.09		MEAN 1.31		MAX 75	MIN .00	AC-FT 946					

KNIFE RIVER BASIN

06339490 ELM CREEK NEAR GOLDEN VALLEY, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1973 to September 1981 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION (00301)	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CACO3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
NOV												
11...	0920	E.03	1990	--	3.0	4.0	--	--	--	--	--	--
DEC												
03...	1130	.01	2800	--	-5.0	.5	--	--	--	--	--	--
FEB												
20...	0900	18	920	7.5	4.5	.0	12.6	92	100	0	19	13
20...	1550	20	990	--	6.0	3.0	--	--	--	--	--	--
23...	1110	7.0	1110	--	7.0	2.5	--	--	--	--	--	--
MAR												
10...	1030	1.0	1090	--	1.0	2.0	--	--	--	--	--	--
18...	1340	.60	898	8.0	8.5	1.0	10.8	82	110	0	22	13
APR												
07...	1015	E.06	955	--	9.0	7.5	--	--	--	--	--	--
JUL												
23...	1125	.05	550	8.9	25.0	20.5	--	--	79	--	20	7.1
AUG												
06...	1120	4.9	840	--	23.0	21.0	--	--	--	--	--	--
07...	0945	1.7	995	8.2	--	20.0	--	--	110	--	23	13
19...	0910	.01	1015	8.1	24.0	19.5	5.0	59	130	0	28	15
SEP												
10...	1005	E.01	950	--	27.0	17.0	--	--	--	--	--	--

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY FIELD (MG/L AS CACO3) (00410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
NOV												
11...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
03...	--	--	--	--	--	--	--	--	--	--	--	--
FEB												
20...	170	76	7.4	11	180	290	5.4	.1	12	652	630	.89
20...	--	--	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--	--	--
MAR												
10...	--	--	--	--	--	--	--	--	--	--	--	--
18...	160	74	6.7	9.3	200	250	4.4	.2	10	655	590	.89
APR												
07...	--	--	--	--	--	--	--	--	--	--	--	--
JUL												
23...	93	69	4.5	9.9	--	160	3.0	.2	6.1	345	373	.47
AUG												
06...	--	--	--	--	--	--	--	--	--	--	--	--
07...	210	78	8.7	13	--	240	7.2	.2	4.4	714	708	.97
19...	180	73	7.6	11	240	250	4.5	.4	9.9	660	644	.90
SEP												
10...	--	--	--	--	--	--	--	--	--	--	--	--

E - Estimated.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

[illegible]

KNIFE RIVER BASIN

06339490 ELM CREEK NEAR GOLDEN VALLEY, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MERCURY SUS- PENDE RECOV- ERABLE (UG/L AS HG) (71895)	MERCURY RECov. FM BOT- TOM MA- TERIAL (UG/G AS HG) (71921)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	NICKEL, SUS- PENDE RECOV- ERABLE (UG/L AS NI) (01066)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE) (01147)	SELE- NIUM, SUS- PENDE TOTAL (UG/L AS SE) (01146)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)
FEB 20...	.1	.1	.0	--	11	9	2	0	0	0
MAR 18...	--	--	--	--	--	--	--	--	--	--
AUG 19...	.0	.0	.0	.03	9	5	4	0	0	0

DATE	SELE- NIUM, TOTAL IN BOT- TOM MA- TERIAL (UG/G) (01148)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, SUS- PENDE RECOV- ERABLE (UG/L AS ZN) (01091)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	ZINC, FM BOT- TOM MA- TERIAL (UG/G AS ZN) (01093)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT) (80030)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)
FEB 20...	--	230	30	20	8	--	--	--	--	--
MAR 18...	--	--	--	--	--	--	--	--	--	--
AUG 19...	0	330	60	50	14	26	<13	2.2	14	2.3

DATE	GROSS BETA, DIS- SOLVED (PCI/L AS SR/ YT-90) (80050)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90) (80060)	POTAS- SIUM 40 DIS- SOLVED (PCI/L AS K40) (82068)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHENOLS (UG/L) (32730)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)
FEB 20...	--	--	8.2	31	3.0	.00	7	82	4.0
MAR 18...	--	--	6.9	--	--	--	--	68	.11
AUG 19...	14	2.2	--	17	2.6	.00	--	109	.00

DATE	BED MAT. FALL DIAM. % FINER THAN .062 MM (80158)	BED MAT. FALL DIAM. % FINER THAN .125 MM (80159)	BED MAT. FALL DIAM. % FINER THAN .250 MM (80160)	BED MAT. FALL DIAM. % FINER THAN .500 MM (80161)	BED MAT. FALL DIAM. % FINER THAN 1.00 MM (80162)
AUG 19...	20	43	90	99	100

KNIFE RIVER BASIN

153

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) National Geodetic Vertical Datum of 1929. See WSP 1729 or 1917 for history of changes prior to May 1, 1946.

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

AVERAGE DISCHARGE.--55 years, 95.1 ft³/s (2.693 m³/s), 68,900 acre-ft/yr (85.0 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, 311 ft³/s (8.81 m³/s) Aug. 7, gage height, 7.46 ft (2.274 m), no peak above base of 1,500 ft³/s (42.5 m³/s); maximum gage height, 7.59 ft (2.313 m) Feb. 20, backwater from ice; minimum daily, 1.9 ft³/s (0.054 m³/s) Oct. 11, 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.8	20	5.4	8.4	7.0	37	11	5.5	6.2	6.9	8.2	7.5
2	2.7	16	5.4	9.6	6.8	33	11	6.0	6.6	7.3	10	7.1
3	3.3	13	5.3	9.8	6.5	34	9.7	6.2	8.0	6.6	15	6.7
4	2.8	11	5.3	9.4	6.5	34	9.3	5.8	7.2	6.5	78	6.4
5	2.3	9.9	5.3	9.9	6.5	30	9.2	5.5	5.4	5.2	65	6.4
6	2.0	8.9	5.3	11	6.5	24	9.0	4.9	5.3	5.0	98	15
7	2.3	8.6	5.3	13	6.5	24	8.6	4.5	5.3	6.8	254	155
8	2.7	8.3	5.0	17	6.3	26	8.3	4.4	6.6	6.3	179	180
9	2.4	7.8	5.0	24	6.0	22	8.3	4.6	7.1	5.7	74	100
10	2.1	7.4	5.0	23	5.0	23	8.1	4.9	6.0	4.9	41	54
11	1.9	7.4	5.0	15	4.0	21	7.6	5.1	5.2	4.2	26	36
12	1.9	7.1	5.3	11	3.0	22	7.5	4.8	4.9	3.3	17	26
13	2.3	7.8	5.3	9.2	3.0	21	7.0	4.9	23	3.0	14	18
14	3.1	7.7	5.5	8.7	3.5	22	6.6	5.1	18	3.3	13	12
15	2.4	7.6	5.5	8.0	4.0	22	6.4	4.7	53	3.5	12	11
16	6.4	7.8	6.0	7.5	6.0	20	6.7	4.2	101	3.7	11	8.5
17	22	7.8	6.5	7.8	25	19	6.1	3.8	52	2.8	17	7.7
18	24	8.0	6.5	7.8	35	18	6.0	3.8	36	2.7	38	6.4
19	51	8.4	5.0	7.5	100	18	5.5	3.7	27	22	23	5.7
20	41	8.1	4.5	7.1	176	16	5.3	3.7	23	7.1	18	5.7
21	32	8.4	4.0	7.1	150	16	5.3	4.0	21	5.3	17	5.1
22	36	8.3	4.0	7.1	125	14	5.1	4.4	17	4.7	15	4.9
23	39	7.6	4.0	7.4	120	14	5.1	5.3	50	10	18	5.1
24	35	7.9	3.5	7.4	95	14	5.1	4.9	51	92	72	4.9
25	59	8.0	3.5	7.5	70	14	4.9	4.5	28	53	82	6.0
26	56	8.2	3.5	7.8	55	13	5.0	4.3	19	25	32	17
27	48	7.8	3.5	7.8	70	13	5.1	4.5	14	15	22	14
28	44	8.3	4.0	7.5	40	12	5.5	5.4	11	12	17	8.8
29	32	7.2	4.0	7.2	---	12	5.6	5.3	9.7	12	13	6.9
30	30	7.0	5.0	7.2	---	11	5.6	4.7	8.1	15	9.2	13
31	26	---	7.5	7.2	---	11	---	4.4	---	11	8.3	---
TOTAL	618.4	267.3	153.9	305.9	1148.1	630	209.5	147.8	635.6	371.8	1316.7	760.8
MEAN	19.9	8.91	4.96	9.87	41.0	20.3	6.98	4.77	21.2	12.0	42.5	25.4
MAX	59	20	7.5	24	176	37	11	6.2	101	92	254	180
MIN	1.9	7.0	3.5	7.1	3.0	11	4.9	3.7	4.9	2.7	8.2	4.9
AC-FT	1230	530	305	607	2280	1250	416	293	1260	737	2610	1510
CAL YR 1980	TOTAL	7628.8	MEAN	20.8	MAX	1310	MIN	1.1	AC-FT	15130		
WTR YR 1981	TOTAL	6565.8	MEAN	18.0	MAX	254	MIN	1.9	AC-FT	13020		

KNIFE RIVER BASIN

06339550 COYOTE CREEK NEAR ZAP, ND

LOCATION.--Lat 47°11'57", long 101°54'42", in NW¼SW¼SW¼ sec.13, T.143 N., R.89 W., Mercer County, Hydrologic Unit 10130201, on right bank 40 ft (12 m) upstream from bridge on county road 6.0 mi (9.6 km) south of Zap, and 0.8 mi (1.3 km) upstream from mouth.

DRAINAGE AREA.--65.2 mi² (169 km²).

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,809.75 ft (551.612 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for winter periods, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,880 ft³/s (53.2 m³/s) Mar. 27, 1978, gage height, 10.67 ft (3.252 m); no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 75 ft³/s (2.12 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Mar. 13	0545	101 2.86	4.42 1.347	Aug. 22	1800	86 2.44	4.25 1.295
Aug. 6	0245	*138 3.91	4.77 1.454				

No flow Oct. 11-13, July 8-14, 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.10	1.3	.55	1.4	.41	2.7	1.3	.43	1.0	.20	.79	.67
2	.07	1.2	.45	.90	.36	2.4	1.2	.43	1.1	.54	19	.49
3	.07	.93	.50	.47	.41	1.9	1.1	.37	1.8	.23	8.4	.31
4	.07	.80	.54	.47	.47	1.9	.94	.35	2.9	.17	13	.23
5	.06	.70	.54	.41	.41	2.3	.91	.35	3.5	.12	44	.20
6	.02	1.0	.36	.47	.47	2.0	.82	.27	1.8	.12	95	1.2
7	.02	1.0	.41	.54	.41	1.4	.63	.23	1.2	.05	62	.80
8	.03	1.1	.41	.47	.47	1.3	.74	.23	1.0	.00	44	.86
9	.03	.86	.54	.54	.31	1.4	1.1	.18	.71	.00	26	.54
10	.03	.86	.41	.61	.20	2.4	.81	.21	.69	.00	14	.31
11	.00	.96	.41	.70	.41	12	.62	.21	.46	.00	7.8	.20
12	.00	.88	.54	.61	.36	68	.55	.18	.34	.00	4.2	.18
13	.00	1.0	.47	.58	.27	88	.46	.19	5.5	.00	2.8	.17
14	.05	1.0	.47	.55	.80	65	.42	.24	20	.00	1.9	.15
15	.08	.91	.70	.55	5.0	44	.40	.23	4.3	.05	1.4	.13
16	2.1	.77	.80	.47	30	25	.35	.17	3.9	.00	1.2	.10
17	11	.80	.81	.56	42	13	.30	.24	2.3	.33	.93	.08
18	5.9	.71	.70	.70	34	5.8	.35	.21	1.5	1.2	.54	.07
19	2.7	.87	.54	.61	27	4.1	.31	.20	1.2	1.1	.37	.07
20	1.5	1.1	.41	.54	23	3.4	.33	.16	1.1	19	.24	.07
21	1.1	.93	.36	.61	17	2.9	.31	.11	1.0	8.1	.18	.07
22	2.8	.85	.30	.70	14	2.2	.25	.17	.70	3.1	23	.08
23	7.2	.80	.25	.80	12	2.0	.24	.27	.62	2.0	47	.08
24	5.3	.74	.22	.61	10	2.0	.30	.18	.47	1.2	37	.07
25	4.0	.74	.20	.54	8.0	2.7	.28	.15	.41	.62	32	.30
26	2.6	.72	.25	.47	6.0	2.4	.25	.17	.54	.53	17	6.9
27	3.0	.70	.47	.47	3.1	2.1	.52	.23	.31	.63	9.0	3.2
28	2.3	.70	.70	.41	2.9	1.8	.53	.56	.36	.48	5.3	1.0
29	1.7	.68	1.1	.41	---	1.6	.56	.40	.80	.40	3.1	.36
30	1.4	.62	2.0	.47	---	1.4	.47	.34	.41	.23	2.4	.27
31	1.4	---	1.8	.47	---	1.4	---	.46	---	.17	1.6	---
TOTAL	56.63	26.23	18.21	18.11	239.76	370.5	17.35	8.12	61.92	40.57	525.15	19.36
MEAN	1.83	.87	.59	.58	8.56	12.0	.58	.26	2.06	1.31	16.9	.65
MAX	11	1.3	2.0	1.4	42	88	1.3	.56	20	19	95	6.9
MIN	.00	.62	.20	.41	.20	1.3	.24	.11	.31	.00	.18	.07
AC-FT	112	52	36	36	476	735	34	16	123	80	1040	38

CAL YR 1980	TOTAL	547.61	MEAN 1.50	MAX 26	MIN .00	AC-FT 1090
WTR YR 1981	TOTAL	1401.91	MEAN 3.84	MAX 95	MIN .00	AC-FT 2780

KNIFE RIVER BASIN

155

06339550 COYOTE CREEK NEAR ZAP, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1978 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS (MG/L AS CAC03) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CAC03) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)
OCT											
14...	1245	.06	2230	8.2	12.5	9.0	11.8	107	310	0	51
NOV											
19...	1250	.96	1830	8.4	8.5	2.5	14.2	112	200	0	39
DEC											
17...	0830	.81	2660	8.4	3.5	.0	13.0	96	410	0	76
JAN											
14...	1030	.55	2520	8.0	-3.5	.0	12.2	88	370	0	68
FEB											
19...	1400	28	680	7.5	9.0	.0	12.8	92	140	0	29
MAR											
18...	1140	6.3	570	7.9	5.0	2.0	12.8	101	110	0	24
25...	1040	2.9	890	8.3	7.5	5.5	12.4	105	--	--	--
APR											
08...	1155	.73	1190	8.5	11.0	9.0	11.4	106	200	0	40
28...	1600	.54	1580	8.4	--	--	10.2	107	250	--	48
MAY											
20...	0915	.19	1830	8.6	19.0	15.0	11.3	118	280	0	50
28...	1205	.74	1720	8.5	20.0	24.5	12.0	141	--	--	--
JUN											
10...	1815	.58	1760	8.5	21.5	22.0	10.0	120	240	0	41
JUL											
15...	1140	.07	1670	8.7	24.0	26.0	12.0	158	190	0	28
AUG											
19...	1430	.36	1090	8.4	28.0	28.0	11.6	161	180	0	36
SEP											
03...	1320	.38	1160	8.7	17.5	20.0	12.5	144	180	0	37

DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY, CARBON- ATE FET-FLD (MG/L CAC03) (00430)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
OCT											
14...	43	430	75	11	12	590	630	9.7	.4	9.2	1090
NOV											
19...	26	350	78	11	10	468	510	6.6	.4	4.8	1270
DEC											
17...	54	520	73	11	10	605	870	10	.4	5.3	1920
JAN											
14...	49	500	74	11	9.8	630	740	12	.4	7.6	1770
FEB											
19...	16	100	59	3.7	11	160	220	4.5	.1	9.8	473
MAR											
18...	12	81	60	3.4	7.5	130	130	2.7	.2	7.5	409
25...	--	--	--	--	--	210	--	--	--	--	--
APR											
08...	24	210	69	6.5	7.6	320	350	5.2	.3	2.6	793
28...	31	270	69	7.5	9.7	--	430	6.2	.3	4.7	1050
MAY											
20...	37	330	71	8.6	9.5	490	520	8.1	.3	4.0	1220
28...	--	--	--	--	--	--	--	--	--	--	--
JUN											
10...	33	360	76	10	9.1	540	490	7.2	.3	2.7	1250
JUL											
15...	30	360	79	11	8.9	462	510	5.6	.2	4.2	1180
AUG											
19...	21	190	69	6.9	9.5	280	280	5.0	.3	11	717
SEP											
03...	22	200	69	7.2	10	320	260	5.5	.2	9.4	786

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

[illegible]

KNIFE RIVER BASIN

157

06339550 COYOTE CREEK NEAR ZAP, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BURON, DIS- SOLVED (UG/L AS B) (01020)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, SUS- PENDE RECOV. (UG/L AS CR) (01031)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	CHRO- MIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G) AS CU) (01029)	COBALT, RECOV. FM BOT- TOM MA- TERIAL (UG/G) AS CU) (01038)	CUPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	COPPER, SUS- PENDE RECOV- ERABLE (UG/L AS CU) (01041)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)
OCT										
14...	--	240	0	--	--	--	--	--	--	--
NOV										
19...	--	320	--	--	--	--	--	--	--	--
DEC										
17...	--	390	--	--	--	--	--	--	--	--
JAN										
14...	--	380	--	--	--	--	--	--	--	--
FEB										
19...	<1	120	10	10	0	--	--	7	6	1
MAR										
18...	--	110	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--
APR										
08...	--	190	--	--	--	--	--	--	--	--
28...	--	280	--	--	--	--	--	--	--	--
MAY										
20...	<1	370	10	10	0	1	5	5	4	1
28...	--	--	--	--	--	--	--	--	--	--
JUN										
10...	--	340	--	--	--	--	--	--	--	21
JUL										
15...	--	370	--	--	--	--	--	--	--	35
AUG										
19...	<1	240	0	0	0	--	--	11	7	4
SEP										
03...	--	280	--	--	--	--	--	--	--	--

DATE	COPPER, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CU) (01043)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI) (01132)	LITHIUM SUS- PENDE RECOV- ERABLE (UG/L AS LI) (01131)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, SUS- PENDE RECOV. (UG/L AS MN) (01054)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)
OCT										
14...	--	30	60	0	70	130	100	30	--	--
NOV										
19...	--	90	--	--	--	110	70	40	--	--
DEC										
17...	--	40	--	--	--	120	30	90	--	--
JAN										
14...	--	120	--	--	--	150	10	140	--	--
FEB										
19...	--	290	20	0	20	190	100	90	.1	.1
MAR										
18...	--	280	--	--	--	110	40	70	--	--
25...	--	--	--	--	--	--	--	--	--	--
APR										
08...	--	30	30	0	30	140	100	40	--	--
28...	--	30	--	--	--	160	90	70	--	--
MAY										
20...	5	30	--	--	--	70	20	50	.1	.1
28...	--	--	--	--	--	--	--	--	--	--
JUN										
10...	--	50	--	--	--	60	30	30	--	--
JUL										
15...	--	40	--	--	--	70	50	20	--	--
AUG										
19...	--	35	--	--	--	170	130	42	.0	.0
SEP										
03...	--	40	--	--	--	130	130	3	--	--

KNIFE RIVER BASIN

06339550 COYOTE CREEK NEAR ZAP, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

[illegible][illegible]

KNIFE RIVER BASIN

159

06339550 COYOTE CREEK NEAR ZAP, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	GRUSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90) (80060)	POTAS- SIUM 40 DIS- SOLVED (PCI/L AS K40) (82068)	CARBON, ORGANIC UIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHENOLS (UG/L) (32730)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)
OCT 14...	--	--	--	--	--	--	47	.01
NOV 19...	--	--	13	.7	--	--	82	.21
DEC 17...	--	--	--	--	--	--	54	.12
JAN 14...	--	--	32	.4	--	--	119	.18
FEB 19...	--	8.2	28	2.4	.00	8	104	7.9
MAR 18...	--	5.6	--	--	--	--	56	.96
25...	--	--	--	--	--	--	17	.13
APR 08...	--	5.7	11	.3	--	--	30	.06
28...	--	7.2	--	--	--	--	26	.04
MAY 20...	.6	7.1	--	--	.00	2	39	.02
28...	--	--	--	--	--	--	38	.08
JUN 10...	--	6.8	--	--	.01	--	29	.05
JUL 15...	--	6.6	12	.5	--	--	31	.01
AUG 19...	--	--	--	--	.00	15	64	.06
SEP 03...	--	--	--	--	--	--	56	.06

DATE	BED MAT. FALL DIAM. % FINER THAN .062 MM (80158)	BED MAT. FALL DIAM. % FINER THAN .125 MM (80159)	BED MAT. FALL DIAM. % FINER THAN .250 MM (80160)	BED MAT. FALL DIAM. % FINER THAN .500 MM (80161)	BED MAT. FALL DIAM. % FINER THAN 1.00 MM (80162)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)
AUG 19...	2	3	5	15	28	36	54	76	94	100

DATE	LENGTH OF EXPO- SURE (DAYS) (00022)	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUORUM (MG/M2) (70957)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUORUM (MG/M2) (70958)	PERI- PHYTON BIOMASS TOTAL ASH WEIGHT G/SQ M (00572)	PERI- PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)
MAY 20...	22	1.37	.480	.709	1.97
JUN 10...	21	1.16	.440	1.18	1.81
JUL 15...	35	3.59	.850	3.07	6.06
AUG 19...	35	16.3	2.60	23.4	28.2
SEP 03...	22	3.49	.310	2.91	4.17

KNIFE RIVER BASIN

06339550 COYOTE CREEK NEAR ZAP, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	OCT 14,80 1245	NOV 19,80 1250	DEC 17,80 0830	JAN 14,81 1030	FEB 19,81 1400
TOTAL CELLS/ML	1200	2200	3500	130	1300
DIVERSITY: DIVISION	1.8	2.0	1.8	1.3	1.5
..CLASS	1.8	2.0	2.0	1.3	1.5
..ORDER	1.9	2.6	2.4	2.1	1.8
...FAMILY	2.1	2.9	2.5	2.1	3.1
....GENUS	2.2	3.3	2.8	2.1	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										
...CHLOROCUCCALES										
....CHARACIACEAE	--	-	--	-	--	-	--	-	14	1
....SCHROEDERIA										
....COELASTRACEAE										
....COELASTRUM	--	-	--	-	--	-	--	-	--	-
....OOCYSTACEAE										
....ANKISTRODESMUS	--	-	170	8	320	9	26#	20	130	10
....DICTYOSPHAERIUM	--	-	--	-	--	-	--	-	--	-
....KIRCHNERIELLA	--	-	35	2	--	-	--	-	--	-
....OOCYSTIS	--	-	--	-	--	-	--	-	--	-
....SELENASTRUM	--	-	--	-	64	2	--	-	--	-
....TETRAEDRON	--	-	--	-	--	-	--	-	--	-
....SCENEDESMACEAE										
....CRUCIGENIA	310#	25	--	-	86	2	--	-	--	-
....SCENEDESMUS	--	-	100	5	--	-	--	-	56	4
....TETRASTRUM	--	-	--	-	86	2	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CARTERIA	--	-	--	-	86	2	--	-	--	-
....CHLAMYDOMONAS	26	2	420#	19	640#	18	52#	40	42	3
CHRYSOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
....COSCINODISCEAE										
....CYCLOTELLA	--	-	400#	18	390	11	13	10	14	1
....MELUSIRA	--	-	35	2	--	-	--	-	--	-
....STEPHANODISCUS	--	-	--	-	--	-	--	-	--	-
..PENNALES										
...ACHNANTHACEAE										
....COCCONEIS	--	-	--	-	--	-	--	-	--	-
....CYMBELLACEAE										
....AMPHORA	13	1	--	-	--	-	--	-	--	-
....CYMBELLA	13	1	--	-	--	-	--	-	--	-
....DIATOMACEAE										
....DIATOMA	--	-	--	-	21	1	--	-	370#	29
....FRAGILARIACEAE										
....SYNEDRA	26	2	17	1	--	-	--	-	56	4
....GOMPHONEMACEAE										
....GOMPHONEMA	--	-	--	-	--	-	--	-	--	-
....NAVICULACEAE										
....GYRUSIGMA	13	1	--	-	--	-	--	-	--	-
....NAVICULA	26	2	52	2	--	-	--	-	110	9
....NITZSCHIACEAE										
....NITZSCHIA	26	2	140	6	--	-	26#	20	140	11
....SURIPELLACEAE										
....SURIPELLA	--	-	17	1	--	-	--	-	56	4
..CHRYSOPHYCEAE										
...CHRYSUMONADALES										
....CHROMULINACEAE										
....CHRYSOCCUS	--	-	--	-	300	8	--	-	--	-
....OCHROMONADACEAE										
....STENOCALYX	--	-	17	1	--	-	--	-	--	-

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

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

CONTINUED ...

KNIFE RIVER BASIN

161

06339550 COYOTE CREEK NEAR ZAP, ND--Continued
 PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

(CONTINUED)

DATE TIME	OCT 14,80 1245		NOV 19,80 1250		DEC 17,80 0830		JAN 14,81 1030		FEB 19,81 1400	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CRYPTOPHYTA (CRYPTOMONADS)										
..CRYPTOPHYCEAE										
...CRYPTOMONADALES										
....CRYPTOMONADACEAE										
.....CRYPTOMONAS	--	-	--	-	--	-	--	-	14	1
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROOCOCCALES										
....CHROOCOCCACEAE										
.....AGMENELLUM	--	-	--	-	--	-	--	-	--	-
....ANACYSTIS	530#	43	120	5	--	-	--	-	28	2
...GOMPHOSPHERIA	--	-	260	12	--	-	--	-	--	-
..HORMOGONALES										
...OSCILLATORIACEAE										
....OSCILLATORIA	--	-	--	-	--	-	--	-	250#	20
EUGLENOPHYTA (EUGLENUIDS)										
..EUGLENOPHYCEAE										
...EUGLENALES										
....EUGLENACEAE										
.....EUGLENA	--	-	--	-	--	-	--	-	--	-
....PHACUS	--	-	35	2	--	-	--	-	--	-
...TRACHELOMONAS	240#	20	400#	18	1300#	36	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)										
..DINOPHYCEAE										
...GYMNODINIALES										
....GYMNODINIACEAE										
.....GYMNODINIUM	--	-	17	1	260	7	--	-	--	-
...PERIDINIALES										
....GLENODINIACEAE										
.....GLENODINIUM	--	-	--	-	--	-	13	10	--	-
...PERIDINIACEAE										
....PERIDINIUM	--	-	--	-	--	-	--	-	--	-

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

KNIFE RIVER BASIN

06339550 COYOTE CREEK NEAR ZAP, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	MAR 18,81 1140	APR 8,81 1155	APR 28,81 1600	MAY 20,81 0915
TOTAL CELLS/ML	1200	6300	1100	360
DIVERSITY: DIVISION	1.4	0.8	1.4	1.4
..CLASS	1.4	0.8	1.4	1.4
..ORDER	2.3	1.3	2.2	1.4
...FAMILY	2.8	1.5	2.3	1.7
....GENUS	3.1	1.6	2.4	1.7

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
...CHARACIACEAE								
...SCHROEDERIA	--	-	150	2	--	-	--	-
...COELASTRACEAE								
...COELASTRUM	--	-	--	-	--	-	--	-
...OOCYSTACEAE								
...ANKISTRODESMUS	210#	18	50	1	13	1	26	7
...DICTYOSPHAERIUM	14	1	--	-	--	-	--	-
...KIRCHNERIELLA	--	-	--	-	--	-	--	-
...OOCYSTIS	56	5	--	-	--	-	--	-
...SELENASTRUM	--	-	--	-	26	2	--	-
...TETRAEDRON	--	-	--	-	13	1	--	-
...SCENEDESMACEAE								
...CRUCIGENIA	--	-	--	-	--	-	52	14
...SCENEDESMUS	28	2	--	-	39	3	--	-
...TETRASTRUM	--	-	--	-	--	-	--	-
...VOLVOCALES								
...CHLAMYDOMONADACEAE								
...CARTERIA	--	-	--	-	--	-	--	-
...CHLAMYDOMONAS	280#	24	250	4	64	6	--	-
CHRYSTOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
...CUSCINODISCACEAE								
...CYCLOTELLA	290#	25	--	-	--	-	--	-
...MELOSIRA	--	-	--	-	--	-	--	-
...STEPHANODISCUS	--	-	4800#	76	--	-	--	-
...PENNALES								
...ACHNANTHACEAE								
...COCCONEIS	--	-	--	-	--	-	13	4
...CYMBELLACEAE								
...AMPHURA	--	-	--	-	--	-	--	-
...CYMBELLA	--	-	--	-	--	-	--	-
...DIATOMACEAE								
...DIATOMA	42	4	150	2	--	-	--	-
...FRAGILARIACEAE								
...SYNEDRA	14	1	100	2	--	-	13	4
...GOMPHONEMACEAE								
...GOMPHONEMA	28	2	100	2	13	1	--	-
...NAVICULACEAE								
...GYROSIGMA	--	-	--	-	--	-	--	-
...NAVICULA	70	6	150	2	39	3	--	-
...NITZSCHIACEAE								
...NITZSCHIA	56	5	50	1	26	2	--	-
...SURIPELLACEAE								
...SURIPELLA	--	-	--	-	--	-	--	-
..CHRYSTOPHYCEAE								
...CHRYSOMONADALES								
...CHROMULINACEAE								
...CHRYSOCUCCUS	--	-	--	-	--	-	--	-
...OCHROMONADACEAE								
...STENOALYX	--	-	--	-	--	-	--	-

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

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

CONTINUED ...

KNIFE RIVER BASIN

163

06339550 COYOTE CREEK NEAR ZAP, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

(CONTINUED)

DATE TIME	MAR 18,81 1140		APR 8,81 1155		APR 28,81 1600		MAY 20,81 0915	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CRYPTOPHYTA (CRYPTOMONADS)								
..CRYPTOPHYCEAE								
...CRYPTOMONADALES								
...CRYPTOMONADACEAE								
....CRYPTOMONAS	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROOCOCCALES								
...CHROOCOCCACEAE								
....AGMENELLUM	--	-	--	-	--	-	--	-
....ANACYSTIS	--	-	--	-	240# 21		230# 64	
....GOMPHOSPHAERIA	--	-	--	-	--	-	--	-
..HORMOGONALES								
...OSCILLATORIAEAE								
....OSCILLATORIA	42	4	--	-	520# 45		--	-
EUGLENOPHYTA (EUGLENOIDS)								
..EUGLENOPHYCEAE								
...EUGLENALES								
...EUGLENACEAE								
....EUGLENA	14	1	50	1	--	-	--	-
....PHACUS	--	-	--	-	--	-	--	-
....TRACHELOMONAS	--	-	300	5	150	13	26	7
PYRRHOPHYTA (FIRE ALGAE)								
..DINOPHYCEAE								
...GYMNODINIALES								
...GYMNODINIACEAE								
....GYMNODINIUM	28	2	--	-	--	-	--	-
...PERIDINIALES								
...GLENODINIACEAE								
....GLENODINIUM	--	-	150	2	--	-	--	-
...PERIDINIACEAE								
....PERIDINIUM	--	-	--	-	--	-	--	-

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

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

KNIFE RIVER BASIN

06339550 COYOTE CREEK NEAR ZAP, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	JUN 10,81 1815	JUL 15,81 1140	AUG 19,81 1430	SEP 3,81 1320
TOTAL CELLS/ML	2600	590	4500	9500
DIVERSITY: DIVISION	1.0	2.1	2.0	1.4
..CLASS	1.0	2.1	2.0	1.4
..ORDER	1.0	2.3	2.4	1.8
...FAMILY	1.3	2.4	2.5	2.3
....GENUS	1.4	2.9	2.9	2.8

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
....CHARACIACEAE								
....SCHROEDERIA	--	-	--	-	--	-	530	6
...COELASTRACEAE								
....COELASTRUM	180	7	--	-	--	-	--	-
...OUCYSTACEAE								
....ANKISTRODESMUS	69	3	--	-	110	2	--	-
....DICTYOSPHAERIUM	--	-	--	-	--	-	--	-
....KIRCHNERIELLA	--	-	--	-	--	-	470	5
...OUCYSTIS	27	1	--	-	--	-	--	-
....SELENASTRUM	96	4	--	-	--	-	--	-
....TETRAEDRON	--	-	--	-	--	-	--	-
...SCENEDESMACEAE								
....CRUCIGENIA	--	-	100#	17	--	-	--	-
....SCENEDESMUS	55	2	77	13	360	8	1500#	16
....TETRASTRUM	55	2	--	-	--	-	1900#	20
...VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CARTERIA	--	-	--	-	--	-	--	-
....CHLAMYDOMONAS	--	-	13	2	650	14	--	-
CHRYSOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
...COSCINODISCACEAE								
....CYCLOTELLA	27	1	13	2	470	10	2400#	25
....MELOSIRA	--	-	--	-	--	-	350	4
....STEPHANODISCUS	--	-	--	-	--	-	--	-
..PENNALES								
...ACHNANTHACEAE								
....COCCONEIS	--	-	--	-	--	-	--	-
...CYMBELLACEAE								
....AMPHORA	--	-	--	-	--	-	--	-
....CYMBELLA	--	-	--	-	--	-	--	-
...DIATOMACEAE								
....DIATOMA	--	-	--	-	--	-	--	-
...FRAGILARIACEAE								
....SYNEDRA	14	1	--	-	--	-	180	2
...GOMPHONEMACEAE								
....GOMPHONEMA	--	-	13	2	--	-	--	-
...NAVICULACEAE								
....GYROSIGMA	--	-	--	-	36	1	--	-
....NAVICULA	14	1	26	4	320	7	940	10
...NITZSCHIACEAE								
....NITZSCHIA	27	1	26	4	36	1	--	-
...SURIRELLACEAE								
....SURIRELLA	--	-	--	-	--	-	--	-
..CHRYSOPHYCEAE								
...CHRYSOMONADALES								
....CHROMULINACEAE								
....CHRYSOCOCCLUS	--	-	--	-	--	-	--	-
...UCHROMONADACEAE								
....STENOCALYX	--	-	--	-	--	-	--	-

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

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

CONTINUED ...

06339550 COYOTE CREEK NEAR ZAP, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

(CONTINUED)

DATE TIME	JUN 10,81 1815		JUL 15,81 1140		AUG 19,81 1430		SEP 3,81 1320	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CRYPTOPHYTA (CRYPTOMONADS)								
..CRYPTOPHYCEAE								
...CRYPTOMONADALES								
....CRYPTOMONADACEAE								
.....CRYPTOMONAS	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROOCUCCALES								
....CHROOCUCCACEAE								
.....AGMENELLUM	--	-	--	-	--	-	1200	12
.....ANACYSTIS	2000#	78	--	-	760#	17	--	-
....GOMPHOSPHAERIA	--	-	--	-	--	-	--	-
...HORMOGONALES								
....OSCILLATORIACEAE								
.....USCILLATORIA	--	-	210#	35	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)								
..EUGLENOPHYCEAE								
...EUGLENALES								
....EUGLENACEAE								
.....EUGLENA	--	-	39	7	580	13	--	-
....PHACUS	--	-	--	-	--	-	--	-
....TRACHELOMONAS	27	1	39	7	1200#	26	--	-
PYRRHOPHYTA (FIRE ALGAE)								
..DINOPHYCEAE								
...GYMNODINIALES								
....GYMNODINIACEAE								
.....GYMNODINIUM	--	-	--	-	--	-	--	-
...PERIDINIALES								
....GLENODINIACEAE								
.....GLENODINIUM	--	-	39	7	--	-	--	-
...PERIDINIACEAE								
.....PERIDINIUM	--	-	--	-	36	1	--	-

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

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

KNIFE RIVER BASIN

06339560 BRUSH CREEK NEAR BEULAH, ND

LOCATION.--Lat 47°10'43", long 101°47'05", in NW¼SW¼NW¼ sec.25, T.143 N., R.88 W., Mercer County, Hydrologic Unit 10130201, on right bank 60 ft (18 m) upstream from bridge on State Highway 49, and 6 mi (10 km) south of Beulah.

DRAINAGE AREA.--22 mi² (57 km²), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,948 ft (593.8 m) from State Highway Department levels.

REMARKS.--Records poor.

AVERAGE DISCHARGE.--7 years, 1.19 ft³/s (0.034 m³/s), 862 acre-ft/yr (1.06 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 200 ft³/s (5.7 m³/s) Mar. 21, 1978, gage height 9.26 ft (2.822 m), backwater from ice; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 59 ft³/s (1.67 m³/s) Aug. 22, gage height, 5.30 ft (1.615 m), only peak above base of 50 ft³/s (1.42 m³/s); minimum daily discharge, 0.01 ft³/s (<0.001 m³/s) July 7-14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.11	.49	.20	.30	.15	.45	.69	.33	.81	.05	.17	.11
2	.10	.46	.15	.25	.15	.30	.62	.33	1.2	.05	1.5	.10
3	.10	.46	.20	.15	.15	.35	.62	.28	.95	.04	1.1	.10
4	.10	.43	.25	.15	.15	.40	.62	.24	.77	.04	.66	.10
5	.10	.40	.20	.20	.20	.35	.59	.22	.77	.03	.69	.12
6	.10	.40	.20	.20	.20	.30	.52	.20	.55	.02	.66	.46
7	.10	.40	.15	.15	.15	.25	.49	.17	.43	.01	.40	.49
8	.10	.43	.20	.15	.10	.30	.46	.17	.38	.01	.30	.35
9	.10	.49	.20	.15	.05	.50	.46	.17	.38	.01	.20	.30
10	.10	.43	.15	.15	.05	.80	.43	.17	.30	.01	.12	.20
11	.10	.40	.20	.20	.05	1.5	.43	.20	.28	.01	.10	.15
12	.10	.43	.25	.25	.05	3.0	.43	.20	.22	.01	.08	.12
13	.10	.46	.30	.30	.10	8.0	.43	.20	1.0	.01	.08	.10
14	.11	.46	.25	.25	.40	6.0	.40	.18	.90	.01	.08	.08
15	.14	.44	.35	.25	1.0	5.0	.35	.17	.66	.22	.08	.08
16	.71	.42	.50	.20	2.0	3.0	.35	.17	.66	.10	.11	.08
17	1.1	.40	.40	.25	5.0	2.0	.35	.15	.55	.08	.09	.11
18	.52	.38	.25	.30	3.0	1.2	.33	.11	.46	.66	.08	.10
19	.33	.38	.15	.25	2.2	.90	.33	.09	.43	.73	.07	.14
20	.22	.40	.15	.25	1.8	.86	.30	.08	.43	.33	.07	.18
21	.18	.40	.20	.30	1.6	.73	.28	.08	.43	.18	.07	.20
22	.38	.40	.20	.40	1.4	.73	.28	.11	.40	.12	7.9	.22
23	1.3	.35	.15	.45	1.2	.77	.28	.20	.33	.09	1.2	.22
24	.73	.35	.05	.40	1.1	1.4	.28	.22	.26	.08	.55	.20
25	.90	.35	.10	.35	1.0	1.2	.28	.26	.17	.07	.40	.47
26	.81	.33	.20	.30	.85	.95	.28	.26	.12	.07	.38	.84
27	.66	.35	.30	.25	.70	.90	.35	.26	.08	.06	.33	.33
28	.59	.33	.70	.15	.60	.81	.46	.54	.08	.05	.24	.22
29	.55	.35	.60	.15	---	.77	.46	.49	.09	.05	.18	.17
30	.55	.25	.60	.20	---	.66	.38	.38	.07	.04	.15	.17
31	.52	---	.40	.20	---	.69	---	.24	---	.04	.12	---
TOTAL	11.61	12.02	8.20	7.50	25.40	45.07	12.53	6.87	14.16	3.28	18.16	6.51
MEAN	.37	.40	.26	.24	.91	1.45	.42	.22	.47	.11	.59	.22
MAX	1.3	.49	.70	.45	5.0	8.0	.69	.54	1.2	.73	7.9	.84
MIN	.10	.25	.05	.15	.05	.25	.28	.08	.07	.01	.07	.08
AC-FT	23	24	16	15	50	89	25	14	28	6.5	36	13

CAL YR 1980 TOTAL 98.84 MEAN .27 MAX 1.3 MIN .04 AC-FT 196
WTR YR 1981 TOTAL 171.31 MEAN .47 MAX 8.0 MIN .01 AC-FT 340

KNIFE RIVER BASIN

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 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHUS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CACO3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)
OCT											
14...	1500	.12	1830	7.8	13.0	6.0	10.3	87	420	0	74
NOV											
21...	0805	.39	1970	8.1	4.0	1.5	11.2	87	510	2	88
DEC											
17...	1130	.40	1900	8.0	2.0	.0	10.6	78	420	0	77
JAN											
09...	1025	.14	1920	7.6	-13.5	.0	8.2	59	440	0	80
FEB											
19...	1000	2.1	640	7.3	5.5	.0	11.0	83	160	0	31
MAR											
18...	0835	1.3	643	7.8	-1.0	1.0	9.4	73	180	0	38
25...	0845	1.1	1090	8.0	3.0	3.0	9.8	78	--	--	--
APR											
08...	1535	.47	1540	8.2	12.0	10.0	11.2	106	410	0	75
28...	1025	.46	1910	8.0	18.0	11.5	9.2	90	--	--	--
MAY											
20...	1325	.10	1890	8.1	26.5	16.5	11.0	120	450	0	76
28...	1010	.69	1880	8.1	19.5	15.5	7.6	83	--	--	--
JUN											
10...	1545	.28	1280	8.1	21.5	19.5	6.5	76	370	0	60
JUL											
15...	0910	.37	1480	8.1	21.0	17.0	5.1	57	290	0	47
AUG											
20...	0940	.10	1700	7.8	26.0	20.0	4.0	47	350	0	57
SEP											
03...	0940	.03	1620	8.0	13.5	13.5	6.7	68	340	0	59

DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY, CARBON- ATE FET-FLU (MG/L CACU3) (00430)	SULFATE DIS- SOLVED (MG/L AS SU4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SI02) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
OCT											
14...	56	290	60	6.2	10	560	470	6.1	.4	9.0	2540
NOV											
21...	71	310	56	6.0	11	510	600	7.5	.3	8.6	1440
DEC											
17...	56	300	60	6.4	9.2	550	500	6.2	.3	13	1310
JAN											
09...	59	310	60	6.4	8.5	570	530	7.4	.3	14	1360
FEB											
19...	21	84	51	2.9	12	180	190	4.6	.1	11	446
MAR											
18...	21	77	47	2.5	8.8	200	150	10	.2	9.8	446
25...	--	--	--	--	--	304	--	--	--	--	--
APR											
08...	53	210	52	4.5	9.0	450	440	5.5	.3	6.1	1050
28...	--	--	--	--	--	502	--	--	--	--	--
MAY											
20...	63	290	58	6.0	8.1	510	590	4.4	.2	7.0	1320
28...	--	--	--	--	--	510	--	--	--	--	--
JUN											
10...	54	290	62	6.5	7.2	540	540	3.7	.3	7.6	1310
JUL											
15...	43	250	64	6.3	14	--	430	13	.1	12	1030
AUG											
20...	50	280	63	7.5	8.9	--	410	6.2	.2	12	1140
SEP											
03...	47	260	62	7.0	9.3	--	390	6.4	.2	14	1110

KNIFE RIVER BASIN

06339560 BRUSH CREEK NEAR BEULAH, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

[illegible][illegible]

KNIFE RIVER BASIN

169

06339560 BRUSH CREEK NEAR BEULAH, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, SUS- PENDE RECOV. (UG/L AS CR) (01031)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	CHRO- MIUM, RECOV. FM BOT- TUM MA- TERIAL (UG/G) (01029)	COBALT, RECOV. FM BOT- TUM MA- TERIAL (UG/G) AS CU) (01038)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	COPPER, SUS- PENDE RECOV- ERABLE (UG/L AS CU) (01041)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)
OCT										
14...	--	80	10	--	--	--	--	--	--	--
NOV										
21...	--	340	--	--	--	--	--	--	--	--
DEC										
17...	--	300	--	--	--	--	--	--	--	--
JAN										
09...	--	260	--	--	--	--	--	--	--	--
FEB										
19...	<1	110	0	0	0	--	--	4	4	0
MAR										
18...	--	110	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--
APR										
08...	--	240	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
MAY										
20...	<1	390	10	10	0	2	5	4	4	0
28...	--	--	--	--	--	--	--	--	--	--
JUN										
10...	--	380	--	--	--	--	--	--	--	21
JUL										
15...	--	330	--	--	--	--	--	--	--	35
AUG										
20...	--	400	--	--	--	--	--	--	--	--
SEP										
03...	--	350	--	--	--	--	--	--	--	--

DATE	COPPER, RECOV. FM BOT- TUM MA- TERIAL (UG/G AS CU) (01043)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI) (01132)	LITHIUM SUS- PENDE RECOV- ERABLE (UG/L AS LI) (01131)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, SUS- PENDE RECOV. (UG/L AS MN) (01054)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)
OCT										
14...	--	40	90	0	90	120	60	60	--	--
NOV										
21...	--	70	--	--	--	50	20	30	--	--
DEC										
17...	--	40	--	--	--	410	20	390	--	--
JAN										
09...	--	120	--	--	--	260	260	0	--	--
FEB										
19...	--	260	30	0	30	180	30	150	.1	.1
MAR										
18...	--	300	--	--	--	50	0	50	--	--
25...	--	--	--	--	--	--	--	--	--	--
APR										
08...	--	70	60	0	70	30	0	30	--	--
28...	--	--	--	--	--	--	--	--	--	--
MAY										
20...	5	60	--	--	--	50	20	30	.1	.0
28...	--	--	--	--	--	--	--	--	--	--
JUN										
10...	--	110	--	--	--	40	0	<10	--	--
JUL										
15...	--	140	--	--	--	230	50	180	--	--
AUG										
20...	--	140	--	--	--	290	20	270	--	--
SEP										
03...	--	98	--	--	--	260	20	240	--	--

KNIFE RIVER BASIN

06339560 BRUSH CREEK NEAR BEULAH, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

[illegible][illegible]

KNIFE RIVER BASIN

06339560 BRUSH CREEK NEAR BEULAH, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90) (80060)	POTAS- SIUM 40 DIS- (PCI/L AS K40) (82068)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENED TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHENOLS (UG/L) (32730)	SEDI- MENT, SUS- PENED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENED (T/OAY) (80155)
OCT								
14...	--	--	--	--	--	--	26	.01
NOV								
21...	--	--	26	.4	--	--	20	.02
DEC								
17...	--	--	--	--	--	--	16	.02
JAN								
09...	--	--	13	.5	--	--	72	.03
FEB								
19...	--	9.0	27	1.9	.00	8	41	.24
MAR								
18...	--	6.6	--	--	--	--	12	.04
25...	--	--	--	--	--	--	9	.03
APR								
08...	--	6.7	10	.1	--	--	32	.04
28...	--	--	--	--	--	--	16	.02
MAY								
20...	4.4	6.0	--	--	.00	13	46	.01
28...	--	--	--	--	--	--	46	.09
JUN								
10...	--	5.4	--	--	.00	--	40	.03
JUL								
15...	--	10	9.0	.4	--	--	30	.03
AUG								
20...	--	--	--	--	--	--	48	.01
SEP								
03...	--	--	--	--	--	--	30	.00

DATE	LENGTH OF EXPO- SURE (DAYS) (00022)	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUORUM (MG/M2) (70957)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUORUM (MG/M2) (70958)	PERI- PHYTON BIOMASS ASH WEIGHT G/SQ M (00572)	PERI- PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)
JUN					
10...	21	10.3	.410	4.72	6.93
JUL					
15...	35	5.72	.850	1.73	2.60
AUG					
20...	35	3.18	.350	1.81	2.52
SEP					
03...	13	3.82	.440	1.58	1.89

06339560 BRUSH CREEK NEAR BEULAH, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	OCT 14,80 1500	NOV 21,80 0805	DEC 17,80 1130	JAN 9,81 1025	FEB 19,81 1000	MAR 18,81 0835				
TOTAL CELLS/ML	51	1100	710	26	4500	2500				
DIVERSITY: DIVISION	1.5	2.0	1.9	1.0	1.1	1.9				
..CLASS	1.5	2.0	1.9	1.0	1.1	1.9				
...ORDER	1.5	2.4	2.2	1.0	1.8	2.1				
...FAMILY	1.5	2.5	2.4	1.0	1.9	2.2				
....GENUS	1.5	2.7	2.6	1.0	2.0	2.3				
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
BACILLARIOPHYTA (DIATOMS)										
..BACILLARIOPHYCEAE										
...ACHNANTHALES										
....ACHNANTHACEAE										
.....ACHNANTHES	--	-	--	-	--	-	--	-	28	1
..BACILLARIALES										
...NITZSCHIALES										
....NITZSCHIA	--	-	39	4	13	2	--	-	*	0
...EUPODISCALES										
....COSCINODISCACEAE										
.....CYCLOTELLA	--	-	13	1	--	-	13#	50	--	-
...MELOSIRA	--	-	--	-	--	-	--	-	--	-
...STEPHANODISCUS	--	-	--	-	--	-	--	-	--	-
..FRAGILARIALES										
...FRAGILARIAEAE										
....DIATOMA	--	-	26	2	13	2	--	-	40	1
....SYNEDRA	--	-	--	-	--	-	--	-	*	0
..NAVICULALES										
...CYMBELLACEAE										
....CYMBELLA	--	-	--	-	--	-	--	-	*	0
...GOMPHONEMACEAE										
....GOMPHONEMA	--	-	--	-	--	-	--	-	--	-
..NAVICULACEAE										
....NAVICULA	13#	25	13	1	--	-	--	-	80	2
....PLEUROSIGMA	--	-	--	-	--	-	--	-	--	-
CHLOROPHYTA (GREEN ALGAE)										
..CHLOROPHYCEAE										
...CHLOROCOCCALES										
....DICTYOSPHAERIAEAE										
.....DICTYOSPHAERIUM	--	-	--	-	--	-	--	-	*	0
...ODCYSTACEAE										
....ANKISTRODESMUS	--	-	39	4	--	-	--	-	420	9
...SCENEDESMACEAE										
....SCENEDESMUS	--	-	52	5	52	7	--	-	80	2
...TETRASTRUM	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	26#	50	170#	15	280#	40	--	-	180	4
...VOLVOACEAE										
....PANDORINA	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA										
..CHRYSOPHYCEAE										
...OCHROMONADALES										
....SYNURACEAE										
.....SYNURA	--	-	64	6	52	7	13#	50	--	-
CRYPTOPHYTA (CRYPTOMONADS)										
..CRYPTOPHYCEAE										
...CRYPTOMONADALES										
....CRYPTOCHRYSIDACEAE										
.....CHROOMONAS	--	-	--	-	52	7	--	-	--	-
...CRYPTOMONADACEAE										
....CRYPTOMONAS	--	-	26	2	100	15	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROOCOCCALES										
....CHROOCOCCACEAE										
.....ANACYSTIS	--	-	130	12	--	-	--	-	740#	17
...OSCILLATORIALES										
....OSCILLATORIAEAE										
.....OSCILLATORIA	--	-	--	-	--	-	--	-	2700#	61
EUGLENOPHYTA (EUGLENOIDS)										
..EUGLENOPHYCEAE										
...EUGLENALES										
....EUGLENACEAE										
.....EUGLENA	--	-	52	5	100	15	--	-	*	0
....LEPOCINCLIS	--	-	--	-	--	-	--	-	--	-
....TRACHELOMONAS	13#	25	480#	44	39	5	--	-	60	1
PYRRHOPHYTA (FIRE ALGAE)										
..DINOPHYCEAE										
...DINOKONTAE										
....GLENODINIACEAE										
.....GLENODINIUM	--	-	--	-	--	-	--	-	*	0
...GYMNODINIACEAE										
....GYMNODINIUM	--	-	--	-	--	-	--	-	*	0

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

06339560 BRUSH CREEK NEAR BEULAH, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	APR 8,81 1535	MAY 20,81 1325	JUN 10,81 1545	JUL 15,81 0910	AUG 20,81 0940	SEP 3,81 0940				
TOTAL CELLS/ML	390	850	550	700	320	1200				
DIVERSITY: DIVISION	1.1	1.0	1.3	0.9	1.1	2.1				
..CLASS	1.1	1.0	1.3	0.9	1.1	2.1				
...ORDER	2.5	2.6	2.1	1.1	2.3	2.9				
...FAMILY	2.6	2.7	2.4	1.1	2.3	3.0				
....GENUS	3.0	2.9	2.7	1.1	2.5	3.2				
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
BACILLARIOPHYTA (DIATOMS)										
..BACILLARIOPHYCEAE										
...ACHNANTHALES										
....ACHNANTHACEAE										
....ACHNANTHES	--	-	--	-	--	-	--	-	--	-
..BACILLARIALES										
...NITZSCHIA										
....NITZSCHIA	26	7	140#	17	41	7	13	2	72#	23
...EUPODISCALES										
....EUPODISCAEAE										
...COSCINODISCALES										
....COSCINODISCAEAE										
...CYCLOTELLA	64#	17	260#	30	41	7	13	2	58#	18
...MELOSIRA	--	-	--	-	--	-	--	-	--	-
...STEPHANODISCUS	77#	20	--	-	--	-	--	-	--	-
..FRAGILARIALES										
...FRAGILARIAEAE										
...DIATOMA	64#	17	65	8	--	-	--	-	--	-
...SYNEDRA	--	-	77	9	14	2	--	-	14	5
..NAVICULALES										
...CYMBELLACEAE										
....CYMBELLA	--	-	--	-	--	-	--	-	--	-
...GOMPHONEMACEAE							13	2	--	-
....GOMPHONEMA	--	-	13	2	--	-	--	-	--	-
..NAVICULACEAE										
...NAVICULA	52	13	120	14	55	10	52	7	72#	23
...PLEUROSIGMA	--	-	--	-	--	-	--	-	--	-
CHLOROPHYTA (GREEN ALGAE)										
..CHLOROPHYCEAE										
...CHLOROCOCCALES										
....DICTYOSPHAERIACEAE										
...DICTYOSPHAERIUM	--	-	--	-	--	-	--	-	--	-
...OOCYSTACEAE										
...ANKISTRODESMUS	13	3	13	2	27	5	13	2	--	-
...SCENEDESMACEAE										
...SCENEDESMUS	39	10	52	6	220#	40	--	-	--	-
...TETRASTRUM	--	-	--	-	55	10	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	13	3	13	2	41	7	--	-	14	5
...VOLVOCAEAE										
...PANDORINA	--	-	--	-	--	-	--	-	--	-
CHRYSTOPHYTA										
..CHRYSTOPHYCEAE										
...OCHROMONADALES										
...SYNURACEAE										
....SYNURA	--	-	--	-	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)										
..CRYPTOPHYCEAE										
...CRYPTOMONADALES										
....CRYPTOCHRYSIDACEAE										
...CHROMONAS	--	-	--	-	--	-	--	-	--	-
...CRYPTOMONADACEAE										
....CRYPTOMONAS	--	-	--	-	--	-	--	-	42	3
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROOCOCCALES										
....CHROOCOCCACEAE										
...ANACYSTIS	--	-	90	11	55	10	--	-	--	-
...OSCILLATORIALES										
....OSCILLATORIAEAE										
...OSCILLATORIA	--	-	--	-	--	-	570#	81	--	-
EUGLENOPHYTA (EUGLENOIDS)										
..EUGLENOPHYCEAE										
...EUGLENALES										
....EUGLENACEAE										
...EUGLENA	--	-	--	-	--	-	14	5	200#	16
...LEPOCINCLIS	--	-	--	-	--	-	--	-	14	1
...TRACHELOMONAS	39	10	13	2	--	-	26	4	72#	23
PYRRHOPHYTA (FIRE ALGAE)										
..PYRRHOPHYCEAE										
...DINOKONTAE										
....GLENODINIACEAE										
...GLENODINIUM	--	-	--	-	--	-	--	-	240#	20
...GYMNODINIACEAE										
....GYMNODINIUM	--	-	--	-	--	-	--	-	--	-

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

LOCATION.--Lat 47°20'34", long 102°37'03", in NW¼NW¼NE¼ sec.35, T.145 N., R.94 W., Dunn County, Hydrologic Unit 10130201, on right bank 100 ft (30 m) upstream from bridge on township road, 0.5 mi (0.8 km) south of Dunn Center, and 3.8 mi (6.1 km) downstream from Lake Ilo.

WATER-DISCHARGE RECORDS

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 69 ft³/s (1.95 m³/s) Feb. 17, gage height, 2.30 ft (0.701 m), from floodmark; minimum daily, 0.23 ft³/s (0.007 m³/s) July 25.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.60	.50	.53	.39	.30	.38	.52	.54	.57	.44	.26	.28
2	.34	.53	.52	.36	.29	.42	.50	.53	.52	.46	.42	.29
3	.30	.54	.50	.34	.30	.42	.49	.52	.48	.45	.42	.29
4	.30	.50	.53	.34	.29	.42	.48	.50	.49	.44	.42	.29
5	.34	.52	.53	.33	.32	.44	.50	.47	.47	.45	.42	.29
6	.34	.51	.50	.36	.32	.39	.46	.44	.42	.41	.44	.36
7	.34	.50	.52	.36	.34	.39	.47	.45	.44	.37	.44	.35
8	.34	.56	.50	.35	.32	.39	.48	.48	.45	.35	.42	.32
9	.36	.54	.50	.35	.32	.39	.48	.48	.42	.35	.35	.29
10	.35	.52	.48	.34	.30	.39	.64	.49	.44	.38	.30	.28
11	.34	.54	.48	.34	.30	.41	1.1	.49	.42	.41	.32	.24
12	.34	.57	.50	.34	.50	.53	1.1	.62	.40	.38	.30	.26
13	.36	.59	.48	.36	1.0	.75	.59	1.1	.71	.35	.29	.29
14	.37	.59	.48	.35	3.0	.45	.56	.58	.56	.37	.28	.30
15	.41	.57	.48	.36	10	.36	.57	.47	.49	.66	.26	.32
16	.62	.57	.49	.35	30	.38	.59	.45	.43	.44	.30	.42
17	.68	.59	.43	.35	60	.38	.60	.47	.43	.34	.32	.75
18	.50	.58	.39	.35	40	.39	.60	.47	.61	.29	.30	.59
19	.44	.56	.35	.36	20	.41	.57	.44	.88	.26	.30	.35
20	.56	.57	.36	.36	10	.44	.59	.39	.59	.24	.30	.32
21	.84	.59	.36	.35	5.0	.48	.71	.38	.81	.24	.30	.32
22	.73	.59	.38	.36	2.0	.50	.81	.39	.55	.25	.44	.30
23	.76	.57	.39	.52	1.0	.54	.75	.42	.49	.25	1.0	.32
24	.60	.54	.39	.75	.50	.59	.75	.45	.48	.26	.96	.35
25	.56	.53	.39	.62	.34	.59	.75	.45	.44	.23	.75	.39
26	.50	.53	.39	.35	.35	.56	.75	.46	.40	.29	.39	.48
27	.50	.52	.41	.32	.35	.54	1.1	.47	.39	.32	.34	.45
28	.48	.54	.64	.30	.34	.54	.78	.52	.40	.30	.30	.45
29	.49	.56	.97	.29	---	.54	.63	.53	.44	.32	.29	.45
30	.55	.56	.77	.28	---	.53	.57	.50	.44	.29	.29	.47
31	.51	---	.43	.30	---	.54	---	.50	---	.26	.30	---
TOTAL	14.75	16.48	15.07	11.48	187.78	14.48	19.49	15.45	15.06	10.85	12.22	10.86
MEAN	.48	.55	.49	.37	6.71	.47	.65	.50	.50	.35	.39	.36
MAX	.84	.59	.97	.75	60	.75	1.1	1.1	.88	.66	1.0	.75
MIN	.30	.50	.35	.28	.29	.36	.46	.38	.39	.23	.26	.24
AC-FT	29	33	30	23	372	29	39	31	30	22	24	22
CAL YR 1980	TOTAL	274.47	MEAN	.75	MAX 20	MIN	.28	AC-FT	544			
WTR YR 1981	TOTAL	343.97	MEAN	.94	MAX 60	MIN	.23	AC-FT	682			

KNIFE RIVER BASIN

175

06339800 SPRING CREEK BELOW LAKE ILO AT DUNN CENTER, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1978 to September 1981 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHUS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS (MG/L AS CACU3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CACO3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT												
13...	1745	.36	2600	8.3	7.0	7.0	12.8	111	550	61	100	72
NOV												
18...	0930	.59	2620	8.2	1.5	2.5	14.2	112	550	30	100	74
DEC												
16...	0845	.49	2430	7.6	5.0	1.0	9.2	70	470	0	88	60
JAN												
13...	0935	.35	2500	7.5	.0	.0	12.4	91	470	0	88	60
FEB												
25...	1130	.34	1600	7.5	5.5	1.0	14.7	109	360	37	72	43
MAR												
17...	1345	.36	2390	8.4	6.0	7.0	--	--	510	180	99	63
24...	1405	.59	2080	8.4	13.5	8.0	15.4	141	--	--	--	--
APR												
07...	1540	.47	2190	8.5	8.0	9.5	13.0	120	440	0	85	55
27...	1600	1.2	2370	8.2	10.5	12.0	8.0	80	--	--	--	--
MAY												
05...	1705	.47	3120	8.6	19.5	17.0	13.5	148	--	--	--	--
18...	1625	.46	2800	8.7	20.0	17.5	--	--	250	0	48	32
JUN												
08...	1530	.48	2400	8.5	26.0	22.0	9.5	117	500	0	90	66
JUL												
14...	0930	.38	2330	8.7	19.0	22.0	6.8	84	390	0	67	54
AUG												
18...	1500	.30	2450	8.7	33.0	26.0	9.8	129	460	0	77	64
SEP												
10...	0950	.27	2470	8.7	26.5	18.5	7.8	91	430	0	72	60

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY, CARBON- ATE FET-FLD (MG/L CACU3) (00430)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLU- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
OCT												
13...	450	64	8.4	10	486	940	22	.9	8.8	2200	--	2.9
NOV												
18...	470	64	8.7	10	524	1000	6.8	.7	15	2020	1990	2.7
DEC												
16...	440	67	8.9	8.0	558	750	6.2	.7	17	1780	1710	2.4
JAN												
13...	410	65	8.3	7.6	580	830	10	.9	19	1820	1750	2.4
FEB												
25...	260	61	6.0	7.1	320	620	5.5	.4	12	1180	1210	1.6
MAR												
17...	300	56	5.8	5.7	330	770	20	.6	16	1550	1470	2.1
24...	--	--	--	--	412	--	--	--	--	--	--	--
APR												
07...	380	65	7.9	7.5	490	780	6.5	.7	11	1620	1620	2.2
27...	--	--	--	--	509	--	--	--	--	--	--	--
MAY												
05...	--	--	--	--	528	--	--	--	--	--	--	--
18...	410	77	11	8.2	450	590	5.2	.5	4.8	1460	1370	1.9
JUN												
08...	410	64	8.0	8.0	530	870	21	.7	12	1810	1800	2.4
JUL												
14...	460	71	10	8.2	540	910	7.6	.7	6.9	1780	1840	2.4
AUG												
18...	450	68	9.2	8.5	480	880	7.2	.6	8.3	1800	1790	2.4
SEP												
10...	440	69	9.3	8.7	530	840	17	.9	4.5	1800	1760	2.4

KNIFE RIVER BASIN

06339800 SPRING CREEK BELOW LAKE ILO AT DUNN CENTER, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS TOTAL (MG/L AS PO4) (71886)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC SUS- PENDE TOTAL (UG/L AS AS) (01001)	ARSENIC TOTAL IN BOT- TOM MA- TERIAL (UG/G AS AS) (01003)
OCT												
13...	2.1	--	--	--	--	--	--	--	--	--	--	--
NOV												
18...	3.2	.01	.060	.07	1.4	1.50	.060	.18	.030	--	--	--
DEC												
16...	2.3	--	--	--	--	--	--	--	--	--	--	--
JAN												
13...	1.7	.00	.210	.25	1.3	1.50	.080	.25	.030	--	--	--
FEB												
25...	1.0	--	--	--	--	--	--	--	--	--	--	--
MAR												
17...	1.5	--	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
07...	2.0	.03	.070	--	1.6	1.70	.120	.37	.050	--	--	--
27...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
05...	--	--	--	--	--	--	--	--	--	--	--	--
18...	1.8	--	--	--	--	--	--	--	--	--	--	--
JUN												
08...	2.3	--	--	--	--	--	--	--	--	--	--	--
JUL												
14...	1.8	.00	.080	--	1.8	1.90	.470	1.4	.340	6	0	60
AUG												
18...	1.4	--	--	--	--	--	--	--	--	--	--	--
SEP												
10...	1.3	--	--	--	--	--	--	--	--	--	--	--

DATE	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BARIUM, SUS- PENDE RECOV- ERABLE (UG/L AS BA) (01006)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BERYL- LIUM, SUS- PENDE RECOV. (UG/L AS BE) (01011)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, SUS- PENDE RECOV. (UG/L AS CR) (01031)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	CHRO- MIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G) (01029)	CUBALT, RECOV. FM BOT- TOM MA- TERIAL (UG/G) AS CO (01038)
OCT												
13...	200	100	100	--	--	--	440	10	--	--	--	--
NOV												
18...	--	--	--	--	--	--	720	--	--	--	--	--
DEC												
16...	--	--	--	--	--	--	590	--	--	--	--	--
JAN												
13...	--	--	--	--	--	--	610	--	--	--	--	--
FEB												
25...	--	--	--	--	--	--	440	--	--	--	--	--
MAR												
17...	--	--	--	0	0	0	680	10	0	10	--	--
24...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
07...	100	0	100	--	--	--	550	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
05...	--	--	--	--	--	--	--	--	--	--	--	--
18...	--	--	--	--	--	--	260	--	--	--	--	--
JUN												
08...	--	--	--	--	--	--	750	--	--	--	--	--
JUL												
14...	--	--	--	0	0	0	840	0	0	0	0	10
AUG												
18...	--	--	--	--	--	--	1100	--	--	--	--	--
SEP												
10...	--	--	--	--	--	--	760	--	--	--	--	--

KNIFE RIVER BASIN

177

06339800 SPRING CREEK BELOW LAKE ILO AT DUNN CENTER, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	COPPER, TOTAL RECOVERABLE (UG/L AS CU) (01042)	COPPER, SUS- PENDE RECOVERABLE (UG/L AS CU) (01041)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	COPPER, FM BUT- TOM MA- TERIAL (UG/G AS CU) (01043)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM TOTAL RECOVERABLE (UG/L AS LI) (01132)	LITHIUM SUS- PENDE RECOVERABLE (UG/L AS LI) (01131)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	MANGA- NESE, SUS- PENDE RECOVERABLE (UG/L AS MN) (01054)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOVERABLE (UG/L AS HG) (71900)
OCT 13...	--	--	--	--	50	70	0	90	340	230	110	--
NOV 18...	--	--	--	--	50	--	--	--	350	30	320	--
DEC 16...	--	--	--	--	100	--	--	--	500	10	490	--
JAN 13...	--	--	--	--	210	--	--	--	650	0	660	--
FEB 25...	--	--	--	--	390	--	--	--	600	0	630	--
MAR 17...	4	3	1	--	50	--	--	--	440	310	130	--
MAR 24...	--	--	--	--	--	--	--	--	--	--	--	--
APR 07...	--	--	--	--	50	60	0	60	480	100	380	--
APR 27...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 05...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 18...	--	--	--	--	20	--	--	--	160	150	10	--
JUN 08...	--	--	21	--	40	--	--	--	310	140	170	--
JUL 14...	3	1	2	14	70	--	--	--	190	110	80	.1
AUG 18...	--	--	--	--	40	--	--	--	160	90	70	--
SEP 10...	--	--	--	--	20	--	--	--	130	60	70	--

DATE	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MERCURY SUS- PENDE RECOVERABLE (UG/L AS HG) (71895)	MERCURY FM BUT- TOM MA- TERIAL (UG/G AS HG) (71921)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI) (01067)	NICKEL, SUS- PENDE RECOVERABLE (UG/L AS NI) (01066)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, TOTAL RECOVERABLE (UG/L AS SE) (01147)	SELE- NIUM, SUS- PENDE RECOVERABLE (UG/L AS SE) (01146)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SELE- NIUM, TOTAL RECOVERABLE (UG/L AS SE) (01148)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
OCT 13...	--	--	--	--	--	--	--	--	--	--	790
MAR 17...	.0	--	--	3	1	2	--	--	0	--	--
MAR 24...	--	--	--	--	--	--	--	--	--	--	--
APR 07...	--	--	--	--	--	--	--	--	--	--	1700
APR 27...	--	--	--	--	--	--	--	--	--	--	--
JUL 14...	.1	.0	.03	4	0	4	0	0	0	0	--

DATE	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	ZINC, SUS- PENDE RECOVERABLE (UG/L AS ZN) (01091)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	ZINC, FM BUT- TOM MA- TERIAL (UG/G AS ZN) (01093)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT) (80030)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137) (03516)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)
MAR 17...	30	10	20	--	--	--	--	--	--	--
MAR 24...	--	--	--	--	--	--	--	--	--	--
JUL 14...	20	0	20	35	<46	<.5	<18	<.5	<18	--

KNIFE RIVER BASIN

06339800 SPRING CREEK BELOW LAKE ILO AT DUNN CENTER, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90) (80060)	POTAS- SIUM 40 DIS- SOLVED (PCI/L AS K40) (82068)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHENOLS (UG/L) (32730)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)
OCT								
13...	--	--	--	--	--	--	143	.14
NOV								
18...	--	--	34	1.0	--	--	62	.10
DEC								
16...	--	--	--	--	--	--	37	.05
JAN								
13...	--	5.7	18	.6	--	--	160	.15
FEB								
25...	--	5.3	--	--	--	--	8	.01
MAR								
17...	--	4.3	--	--	.00	3	54	.05
24...	--	--	--	--	--	--	44	.07
APR								
07...	--	5.6	11	.5	--	--	121	.15
27...	--	--	--	--	--	--	80	.26
MAY								
05...	--	--	--	--	--	--	185	.23
18...	--	6.1	--	--	--	--	76	.09
JUN								
08...	--	6.0	--	--	--	--	117	.15
JUL								
14...	<.5	6.1	20	.7	.00	75	9	.01
AUG								
18...	--	--	--	--	--	--	33	.03
SEP								
10...	--	--	--	--	--	--	21	.02

DATE	BED MAT. FALL DIAM. % FINER THAN (80158)	BED MAT. FALL DIAM. % FINER THAN (80159)	BED MAT. FALL DIAM. % FINER THAN (80160)	BED MAT. FALL DIAM. % FINER THAN (80161)	BED MAT. FALL DIAM. % FINER THAN (80162)	BED MAT. SIEVE DIAM. % FINER THAN (80169)	BED MAT. SIEVE DIAM. % FINER THAN (80170)	BED MAT. SIEVE DIAM. % FINER THAN (80171)	BED MAT. SIEVE DIAM. % FINER THAN (80172)	BED MAT. SIEVE DIAM. % FINER THAN (80173)
MAR										
17...	1	4	12	25	37	49	64	74	84	100

DATE	LENGTH OF EXPO- SURE (DAYS) (00022)	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2) (70957)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2) (70958)	PERI- PHYTON BIOMASS ASH WEIGHT G/SQ M (00572)	PERI- PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)
JUN					
08...	21	1.82	.470	1.73	4.72
JUL					
14...	36	.080	.000	12.8	13.2
AUG					
18...	35	44.2	2.48	37.5	45.5
SEP					
10...	23	3.61	1.10	1.89	3.23

KNIFE RIVER BASIN

179

06339800 SPRING CREEK BELOW LAKE ILO AT DUNN CENTER, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	OCT 13,80 1745	NOV 18,80 0930	DEC 16,80 0845	JAN 13,81 0935	FEB 25,81 1130	MAR 17,81 1345
TOTAL CELLS/ML	29000	3600	1500	870	13000	33000
DIVERSITY: DIVISION	1.8	1.8	1.2	1.2	0.6	1.4
..CLASS	1.8	1.8	1.2	1.2	0.6	1.4
..ORDER	2.2	2.2	1.8	1.2	0.8	1.4
...FAMILY	2.6	2.3	1.9	1.2	0.9	1.4
....GENUS	2.9	2.4	2.0	1.2	1.0	1.4

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	--	-	--	-	--	-	--	-	--	-	--	-
...MICRACTINIACEAE												
....GOLENKINIOPSIS	--	-	--	-	--	-	*	0	--	-	--	-
...MICRACTINIUM	--	-	--	-	--	-	--	-	--	-	--	-
...OOCYSTACEAE												
....ANKISTRODESMUS	3500	12	330	9	280#	19	290	2	--	-	--	-
....CHODATELLA	--	-	--	-	--	-	--	-	--	-	--	-
....KIRCHNERIELLA												
...OOCYSTIS	180	1	--	-	--	-	*	0	--	-	--	-
...SELENASTRUM	370	1	--	-	13	1	130	1	--	-	--	-
...TETRAEDRON	--	-	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE												
....ACTINASTRUM	--	-	--	-	--	-	110	1	--	-	--	-
....CRUCIGENIA	--	-	--	-	--	-	--	-	--	-	--	-
...SCENEDESMUS	5900#	20	100	3	--	-	180	1	--	-	--	-
...TETRASTRUM	1500	5	--	-	--	-	--	-	--	-	--	-
...VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CARTERIA	--	-	--	-	--	-	*	0	--	-	--	-
...CHLAMYDOMONAS	3100	11	630#	17	840#	58	590#	69	220	2	19000#	58
...PHACOTACEAE												
....PHACOTUS	--	-	--	-	--	-	--	-	--	-	--	-
...ZYGEMATALES												
...DESMIDIACEAE												
....COSMARIUM	--	-	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA												
..BACILLARIOPHYCEAE												
...CENTRALES												
...COSCINODISCACEAE												
....CYCLOTELLA	5500#	19	450	12	--	-	90	1	--	-	--	-
....MELOSIRA	180	1	--	-	--	-	--	-	--	-	--	-
...STEPHANODISCUS	--	-	--	-	--	-	--	-	--	-	--	-
...PENNALES												
...ACHNANTHACEAE												
....COCCONEIS	--	-	--	-	--	-	--	-	--	-	--	-
...CYMBELLACEAE												
....CYMBELLA	--	-	--	-	--	-	--	-	--	-	--	-
...DIATOMACEAE												

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

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

CONTINUED ...

06339800 SPRING CREEK BELOW LAKE ILO AT DUNN CENTER, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

(CONTINUED)

DATE TIME	OCT 13,80 1745		NOV 18,80 0930		DEC 16,80 0845		JAN 13,81 0935		FEB 25,81 1130		MAR 17,81 1345	
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
....DIATOMA	--	-	--	-	--	-	--	-	*	0	--	-
...FRAGILARIACEAE	--	-	--	-	--	-	--	-	--	-	--	-
...FRAGILARIA	--	-	--	-	--	-	--	-	--	-	--	-
...SYNEDRA	--	-	--	-	--	-	--	-	*	0	--	-
...GUMPHONEMACEAE	--	-	--	-	--	-	--	-	--	-	--	-
...GUMPHONEMA	--	-	--	-	13	1	--	-	--	-	--	-
...NAVICULACEAE	--	-	--	-	--	-	--	-	--	-	--	-
...GYROSIGMA	--	-	--	-	--	-	--	-	--	-	--	-
...NAVICULA	--	-	--	-	13	1	--	-	*	0	--	-
...NITZSCHACEAE	--	-	--	-	--	-	--	-	--	-	--	-
...NITZSCHIA	180	1	25	1	13	1	--	-	90	1	440	1
...SURIRELLACEAE	--	-	--	-	--	-	--	-	--	-	--	-
...SURIRELLA	--	-	--	-	--	-	--	-	*	0	--	-
..CHRYSOPHYCEAE	--	-	--	-	--	-	--	-	--	-	--	-
..CHRYSOMONADALES	--	-	--	-	--	-	--	-	--	-	--	-
...OCHROMONADACEAE	--	-	--	-	--	-	--	-	--	-	--	-
...OCHROMONAS	--	-	--	-	--	-	--	-	--	-	--	-
...STENOCALYX	--	-	--	-	--	-	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)												
..CRYPTOPHYCEAE												
...CRYPTOMONADALES												
...CRYPTOCHRYSIDACEAE												
...CHROOMONAS	--	-	--	-	13	1	--	-	--	-	--	-
...CRYPTOMONADACEAE	180	1	350	10	13	1	52	6	--	-	--	-
...CRYPTOMONAS												
CYANOPHYTA (BLUE-GREEN ALGAE)												
..CYANOPHYCEAE												
...CHROCOCCALES												
...CHROCOCCACEAE												
...ANACYSTIS	2700	9	25	1	52	4	--	-	*	0	--	-
...HORMOGONALES												
...OSCILLATORIACEAE												
...LYNGBYA	--	-	--	-	--	-	--	-	180	1	--	-
...OSCILLATORIA	--	-	--	-	--	-	--	-	11000#	87	--	-
EUGLENOPHYTA (EUGLENOIDS)												
..EUGLENOPHYCEAE												
...EUGLENALES												
...EUGLENACEAE												
...EUGLENA	--	-	75	2	13	1	13	1	*	0	--	-
...PHACUS	--	-	--	-	--	-	--	-	*	0	--	-
...TRACHELOMONAS	5700#	20	1600#	45	150	11	--	-	*	0	9400#	28
PYRRHOPHYTA (FIRE ALGAE)												
..DINOPHYCEAE												
...GYMNODINIALES												
...GYMNODINIACEAE												
...GYMNODINIUM	--	-	--	-	--	-	--	-	*	0	4200	13
...PERIDINIALES												
...GLENODINIACEAE												
...GLENODINIUM	--	-	25	1	39	3	210#	24	--	-	--	-

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

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

KNIFE RIVER BASIN

181

06339800 SPRING CREEK BELOW LAKE ILO AT DUNN CENTER, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	APR 7,81 1540	MAY 18,81 1625	JUN 8,81 1530	JUL 14,81 0930	AUG 18,81 1500	SEP 10,81 0950
TOTAL CELLS/ML	1000	350	10000	5000	1600	3000
DIVERSITY: DIVISION	1.6	1.6	1.6	1.7	1.5	1.8
..CLASS	1.6	1.6	1.6	1.7	1.5	1.8
..ORDER	2.0	1.6	1.9	1.9	2.0	2.2
..FAMILY	2.7	2.3	2.5	2.0	2.9	2.6
....GENUS	3.0	2.4	3.0	2.8	3.6	3.2

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	--	-	--	-	--	-	--	-	--	-	*	0
...MICRACTINIACEAE												
....GOLENKINIOPSIS	--	-	--	-	--	-	--	-	--	-	--	-
...MICRACTINIUM	--	-	--	-	--	-	--	-	--	-	55	2
...OOCYSTACEAE												
....ANKISTRODESMUS	150#	15	52	15	750	7	110	2	58	4	96	3
...CHODATELLA	--	-	--	-	54	1	--	-	--	-	--	-
...KIRCHNERIELLA	--	-	--	-	--	-	--	-	--	-	27	1
...OOCYSTIS	--	-	--	-	*	0	35	1	58	4	41	1
...SELENASTRUM	--	-	--	-	54	1	--	-	--	-	--	-
...TETRAEDRON	--	-	--	-	--	-	--	-	--	-	*	0
...SCENEDESMACEAE												
....ACTINASTRUM	--	-	--	-	--	-	--	-	--	-	--	-
...CRUCIGENIA	52	5	--	-	1900#	19	--	-	58	4	--	-
...SCENEDESMUS	340#	33	150#	44	2400#	24	350	7	320#	20	820#	27
...TETRASTRUM	--	-	--	-	--	-	140	3	120	7	270	9
...VOLVUCALES												
...CHLAMYDOMONADACEAE												
....CARTERIA	--	-	--	-	--	-	--	-	--	-	--	-
...CHLAMYDOMONAS	26	3	--	-	*	0	71	1	14	1	27	1
...PHACOTACEAE												
...PHACOTUS	--	-	--	-	--	-	--	-	--	-	*	0
...ZYGNEATALES												
...DESMIDIACEAE												
...COSMARIUM	--	-	--	-	--	-	--	-	29	2	--	-
CHRYSTOPHYTA												
..BACILLARIOPHYCEAE												
...CENTRALES												
...COSCINODISCACEAE												
....CYCLOTETRA	--	-	--	-	320	3	71	1	120	7	140	5
....MELOSIRA	--	-	--	-	*	0	110	2	--	-	69	2
...STEPHANODISCUS	170#	17	--	-	--	-	--	-	--	-	--	-
...PENNALES												
...ACHNANTHACEAE												
...COCCONEIS	--	-	--	-	--	-	--	-	200	13	*	0
...CYMBELLACEAE												
...CYMBELLA	--	-	--	-	--	-	--	-	14	1	--	-
...DIATOMACEAE												

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

CONTINUED ...

KNIFE RIVER BASIN

06339800 SPRING CREEK BELOW LAKE ILO AT DUNN CENTER, ND--Continued
 PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

(CONTINUED)

DATE TIME	APR 7,81 1540		MAY 18,81 1625		JUN 8,81 1530		JUL 14,81 0930		AUG 18,81 1500		SEP 10,81 0950	
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
....DIATOMA	--	-	--	-	81	1	--	-	--	-	--	-
....FRAGILARIACEAE												
....FRAGILARIA	26	3	13	4	270	3	--	-	43	3	--	-
....SYNEDRA	13	1	26	7	--	-	--	-	--	-	27	1
....GOMPHONEMACEAE												
....GOMPHONEMA	--	-	--	-	*	0	--	-	--	-	--	-
....NAVICULACEAE												
....GYRUSIGMA	13	1	--	-	--	-	35	1	14	1	--	-
....NAVICULA	65	6	39	11	650	6	35	1	130	8	--	-
....NITZSCHACEAE												
....NITZSCHIA	13	1	--	-	110	1	420	9	120	7	230	8
....SURIPELLACEAE												
....SURIPELLA	--	-	--	-	--	-	--	-	--	-	--	-
..CHRYSOPHYCEAE												
..CHRYSUMONADALES												
....OCHROMONACEAE												
....UCHROMONAS	--	-	--	-	110	1	--	-	--	-	--	-
....STENOCALYX	--	-	--	-	*	0	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)												
..CRYPTOPHYCEAE												
..CRYPTOMONADALES												
....CRYPTOCHRYSIDACEAE												
....CHROMONAS	13	1	--	-	*	0	--	-	--	-	--	-
....CRYPTOMONADACEAE												
....CRYPTOMONAS	13	1	26	7	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
..CYANOPHYCEAE												
..CHROOCOCCALES												
....CHROOCOCCACEAE												
....ANACYSTIS	65	6	39	11	2600#	26	35	1	--	-	55	2
..HORMOGONALES												
....OSCILLATORIACEAE												
....LYNGBYA	--	-	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	400	4	--	-	--	-	780#	26
EUGLENOPHYTA (EUGLENOIDS)												
..EUGLENOPHYCEAE												
..EUGLENALES												
....EUGLENACEAE												
....EUGLENA	--	-	--	-	81	1	2100#	42	--	-	120	4
....PHACUS	--	-	--	-	--	-	180	4	160	10	--	-
....TRACHELOMONAS	52	5	--	-	81	1	630	13	170	11	160	5
PYRRHOPHYTA (FIRE ALGAE)												
..DINOPHYCEAE												
..GYMNODINIALES												
....GYMNODINIACEAE												
....GYMNODINIUM	--	-	--	-	--	-	--	-	--	-	--	-
..PERIDINIALES												
....GLENODINIACEAE												
....GLENODINIUM	--	-	--	-	--	-	670	13	--	-	*	0

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

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

KNIFE RIVER BASIN

183

06339900 SPRING CREEK NEAR HALLIDAY, ND

LOCATION.--Lat 47°21'56", long 102°22'35", in NE¼SE¼NE¼ sec.22, T.145 N., R.92 W., Dunn County, Hydrologic Unit 10130201, on left bank 600 ft (183 m) upstream from bridge on township road, 1.7 mi (2.7 km) northwest of Halliday, and 3.6 mi (5.8 km) upstream from Alkali Creek.

DRAINAGE AREA.--260 mi² (673 km²) approximately, of which about 25 mi² (65 km²) probably is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1977 to September 1981 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 2,050 ft (625 m), from topographic map.

REMARKS.--Records good except those for winter periods, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,100 ft³/s (59.5 m³/s) Mar. 27, 1978, gage height, 14.3 ft (4.36 m), from floodmark, backwater from ice; no flow Mar. 14-17, 1978.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 160 ft³/s (4.53 m³/s) Feb. 17, gage height, 4.56 ft (1.390 m), ice jam, only peak above base of 130 ft³/s (3.68 m³/s); minimum daily, 1.3 ft³/s (0.037 m³/s) July 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.9	6.1	2.5	4.5	4.2	6.5	4.9	4.2	5.1	3.3	1.7	2.0
2	2.8	5.5	2.7	3.5	3.7	6.0	4.4	3.8	6.4	3.6	2.6	2.0
3	3.0	5.1	3.0	3.0	4.0	5.0	4.4	3.6	4.9	3.1	4.1	1.9
4	3.6	4.7	3.0	3.3	3.9	5.5	4.4	3.3	4.1	2.7	3.8	1.7
5	3.4	4.7	2.8	3.5	3.8	5.5	4.7	3.3	3.8	2.3	4.4	1.6
6	3.1	4.4	2.7	3.2	3.8	5.0	4.6	3.1	3.0	2.2	4.2	2.8
7	2.9	4.2	2.5	3.0	3.0	5.3	4.2	2.9	3.1	1.9	3.1	2.4
8	2.9	4.6	2.8	3.0	2.5	5.1	4.1	3.1	3.1	1.8	3.0	2.3
9	2.9	4.7	2.8	2.7	2.0	5.3	4.1	3.3	3.4	1.3	2.6	2.1
10	2.8	4.2	2.6	2.7	2.0	5.5	4.1	3.2	3.9	1.4	3.0	2.2
11	2.6	4.1	3.0	3.0	2.0	5.7	3.8	3.4	3.4	1.5	2.6	2.0
12	2.4	4.2	3.5	3.5	2.5	5.7	4.2	3.3	3.4	1.5	2.3	2.0
13	2.6	4.6	3.5	3.3	3.0	5.7	4.6	3.2	9.2	1.5	2.1	2.0
14	2.7	4.6	3.3	3.0	4.0	5.5	5.5	3.3	15	1.6	1.9	2.0
15	2.8	4.1	4.0	2.7	15	6.1	5.5	3.1	8.3	42	1.9	2.0
16	6.2	3.9	4.9	2.7	40	6.8	4.7	3.5	6.2	22	2.0	2.1
17	15	3.9	4.6	3.0	120	5.5	4.2	3.9	5.1	5.5	2.0	2.1
18	9.0	3.8	3.5	3.5	90	4.9	3.9	3.6	4.6	3.7	1.9	2.2
19	6.2	3.7	2.5	3.2	65	4.6	3.4	3.3	4.2	3.1	1.9	2.3
20	4.7	3.8	2.5	3.2	50	4.4	3.4	3.0	6.6	2.6	1.9	2.2
21	3.9	4.0	2.8	3.5	35	4.4	3.6	2.7	23	2.3	1.8	2.6
22	5.1	4.1	2.8	5.0	25	4.6	4.1	2.8	13	2.0	2.2	3.3
23	12	3.8	2.5	6.5	20	4.7	4.1	3.6	7.7	2.4	5.6	3.0
24	11	3.6	2.0	8.0	18	4.9	3.8	3.7	6.2	2.9	4.1	2.4
25	9.2	3.4	2.5	6.5	15	4.9	3.9	3.8	5.7	2.4	2.9	3.0
26	6.6	3.5	3.0	6.0	10	4.7	3.9	3.7	4.7	2.3	2.3	3.6
27	5.3	3.4	4.0	5.5	8.0	4.7	5.7	3.7	4.4	2.4	2.4	2.8
28	4.7	3.6	5.0	4.9	7.0	4.9	6.4	4.1	4.1	2.2	3.4	2.6
29	4.4	3.3	5.5	4.2	---	4.9	6.2	3.8	3.9	2.0	3.1	2.7
30	5.1	3.0	5.5	4.1	---	4.7	4.9	3.3	3.8	2.0	2.6	2.8
31	6.6	---	5.0	4.3	---	4.9	---	3.2	---	1.8	2.3	---
TOTAL	158.4	124.6	103.3	122.0	562.4	161.9	133.7	105.8	183.3	133.3	85.7	70.7
MEAN	5.11	4.15	3.33	3.94	20.1	5.22	4.46	3.41	6.11	4.30	2.76	2.36
MAX	15	6.1	5.5	8.0	120	6.8	6.4	4.2	23	42	5.6	3.6
MIN	2.4	3.0	2.0	2.7	2.0	4.4	3.4	2.7	3.0	1.3	1.7	1.6
AC-FT	314	247	205	242	1120	321	265	210	364	264	170	140
CAL YR 1980	TOTAL	2157.3	MEAN	5.89	MAX	244	MIN	2.0	AC-FT	4280		
WTR YR 1981	TOTAL	1945.1	MEAN	5.33	MAX	120	MIN	1.3	AC-FT	3860		

KNIFE RIVER BASIN

06339900 SPRING CREEK NEAR HALLIDAY, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1978 to September 1981 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHUS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)
OCT											
14...	0900	2.7	2000	8.1	1.0	4.0	10.8	87	460	12	76
NOV											
18...	1245	3.7	2070	8.3	1.0	1.0	13.5	102	540	75	97
DEC											
16...	1230	4.7	2200	8.0	7.5	.0	14.0	103	590	90	110
JAN											
13...	1410	3.3	2170	7.8	3.0	.0	12.0	88	540	32	100
FEB											
17...	1800	112	470	7.3	3.5	.0	--	--	130	27	26
MAR											
17...	1420	5.2	1290	8.5	3.0	5.0	13.2	112	310	2	59
26...	0940	4.9	1490	8.3	4.5	5.0	11.0	93	--	--	--
APR											
07...	1745	4.2	1700	8.5	6.0	9.0	11.2	105	420	4	80
27...	1920	6.5	1900	8.2	10.0	12.0	8.0	79	--	--	--
MAY											
05...	1215	3.2	2170	8.5	15.5	16.0	9.3	100	--	--	--
19...	0830	3.3	2080	8.6	16.0	16.0	8.6	87	540	48	95
JUN											
08...	1900	3.3	2000	8.5	15.5	21.0	8.7	104	510	31	86
JUL											
14...	1340	1.6	1930	8.7	22.0	23.5	8.6	109	400	3	51
AUG											
18...	1650	1.9	2130	8.6	33.0	25.5	11.2	145	370	0	49
SEP											
10...	1340	2.2	2020	8.6	31.5	21.0	10.3	123	430	24	60

DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY, CARBON- ATE FET-FLU (MG/L CACO3) (00430)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
OCT											
14...	65	310	59	6.3	10	448	640	6.7	.6	3.5	1530
NOV											
18...	72	320	56	6.0	10	464	680	8.2	.6	7.9	1510
DEC											
16...	77	320	54	5.7	9.1	500	730	6.7	.6	13	1620
JAN											
13...	71	310	55	5.8	7.6	510	730	6.9	.7	16	1580
FEB											
17...	15	55	46	2.1	11	100	160	4.9	.2	7.8	345
MAR											
17...	40	200	58	4.9	6.5	310	380	4.8	.5	5.8	929
26...	--	--	--	--	--	316	--	--	--	--	--
APR											
07...	54	250	56	5.3	7.1	420	550	5.4	.5	7.7	1190
27...	--	--	--	--	--	462	--	--	--	--	--
MAY											
05...	--	--	--	--	--	510	--	--	--	--	--
19...	73	310	55	5.8	7.7	490	710	5.9	.6	8.7	1520
JUN											
08...	72	330	58	6.4	7.8	480	750	7.0	.6	7.1	1560
JUL											
14...	67	330	64	7.2	6.7	395	730	7.3	.4	1.6	1430
AUG											
18...	61	330	65	8.7	7.5	400	650	6.2	.5	.6	1330
SEP											
10...	69	320	61	6.7	9.5	410	670	9.1	.6	.7	1450

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

[illegible][illegible]

KNIFE RIVER BASIN

06339900 SPRING CREEK NEAR HALLIDAY, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, SUS- PENDED RECOV. (UG/L AS CR) (01031)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	CHRO- MIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G) (01029)	COBALT, RECOV. FM BOT- TOM MA- TERIAL (UG/G) AS CO) (01038)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	COPPER, SUS- PENDED RECOV- ERABLE (UG/L AS CU) (01041)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)
OCT										
14...	--	600	10	--	--	--	--	--	--	35
NOV										
18...	--	720	--	--	--	--	--	--	--	--
DEC										
16...	--	760	--	--	--	--	--	--	--	--
JAN										
13...	--	710	--	--	--	--	--	--	--	--
FEB										
17...	<1	130	0	0	0	--	--	4	4	0
MAR										
17...	--	420	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--
APR										
07...	--	550	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--
MAY										
05...	--	--	--	--	--	--	--	--	--	--
19...	--	590	--	--	--	--	--	--	--	--
JUN										
08...	--	780	--	--	--	--	--	--	--	20
JUL										
14...	<1	830	20	20	0	0	10	3	1	2
AUG										
18...	--	870	--	--	--	--	--	--	--	--
SEP										
10...	--	810	--	--	--	--	--	--	--	--

DATE	COPPER, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CU) (01043)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI) (01132)	LITHIUM SUS- PENDED RECOV- ERABLE (UG/L AS LI) (01131)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, SUS- PENDED RECOV. (UG/L AS MN) (01054)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)
OCT										
14...	--	10	80	0	80	90	80	9	--	--
NOV										
18...	--	40	--	--	--	40	20	20	--	--
DEC										
16...	--	30	--	--	--	50	10	40	--	--
JAN										
13...	--	20	--	--	--	50	0	50	--	--
FEB										
17...	--	210	10	0	20	120	30	90	.1	.1
MAR										
17...	--	80	--	--	--	70	10	60	--	--
26...	--	--	--	--	--	--	--	--	--	--
APR										
07...	--	20	60	0	70	120	60	60	--	--
27...	--	--	--	--	--	--	--	--	--	--
MAY										
05...	--	--	--	--	--	--	--	--	--	--
19...	--	40	--	--	--	180	100	80	--	--
JUN										
08...	--	30	--	--	--	150	90	60	--	--
JUL										
14...	12	50	--	--	--	70	40	30	.1	.0
AUG										
18...	--	12	--	--	--	60	50	14	--	--
SEP										
10...	--	30	--	--	--	50	30	20	--	--

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

[illegible]

KNIFE RIVER BASIN

06339900 SPRING CREEK NEAR HALLIDAY, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	GRUSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90) (80060)	POTAS- SIUM 40 DIS- SOLVED (PCI/L AS K40) (82068)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDEO TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHENOLS (UG/L) (32730)	SEDI- MENT, SUS- PENDEO (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDEO (T/DAY) (80155)
OCT								
14...	--	--	--	--	--	--	39	.28
NOV								
18...	--	--	23	.4	--	--	47	.47
DEC								
16...	--	--	--	--	--	--	29	.37
JAN								
13...	--	5.7	38	.3	--	--	53	.47
FEB								
17...	--	8.2	31	2.1	.00	5	63	19
MAR								
17...	--	4.8	--	--	--	--	--	--
26...	--	--	--	--	--	--	25	.33
APR								
07...	--	5.3	23	.3	--	--	76	.86
27...	--	--	--	--	--	--	34	.60
MAY								
05...	--	--	--	--	--	--	175	1.5
19...	--	5.7	--	--	--	--	138	1.2
JUN								
08...	--	5.8	--	--	--	--	138	1.2
JUL								
14...	.7	5.0	17	.4	.00	28	24	.10
AUG								
18...	--	--	--	--	--	--	44	.23
SEP								
10...	--	--	--	--	--	--	33	.20

DATE	LENGTH OF EXPO- SURE (DAYS) (00022)	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2) (70957)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2) (70958)	PERI- PHYTON BIOMASS ASH WEIGHT G/SQ M (00572)	PERI- PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)
OCT					
14...	35	2.31	.270	1.10	1.34
JUN					
08...	20	4.18	.480	7.17	8.58
JUL					
14...	36	4.21	.100	7.01	8.50
AUG					
18...	35	18.9	1.53	68.7	79.3
SEP					
10...	23	7.05	.780	20.9	25.2

06339900 SPRING CREEK NEAR HALLIDAY, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	OCT 14,80 0900	NOV 18,80 1245	DEC 16,80 1230	JAN 13,81 1410	FEB 17,81 1800	MAR 17,81 1420
TOTAL CELLS/ML	450	1600	590	1500	24000	810
DIVERSITY: DIVISION	1.9	1.6	0.9	0.2	0.2	1.1
..CLASS	1.9	1.6	1.3	0.5	0.2	1.1
..ORDER	2.2	2.0	1.4	0.5	0.4	2.1
...FAMILY	2.3	2.1	1.5	0.5	1.4	2.6
....GENUS	2.4	2.1	1.5	0.5	1.6	2.6

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												
...MICRACTINIACEAE												
....MICRACTINIUM	--	-	--	-	--	-	--	-	--	-	--	-
...OOCYSTACEAE												
....ANKISTRODESMUS	13	3	140	9	13	2	--	-	430	2	77	10
...OOCYSTIS	--	-	--	-	--	-	--	-	--	-	--	-
...SELENASTRUM	--	-	14	1	--	-	--	-	--	-	--	-
...TETRAEDRON	--	-	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE												
...CRUCIGENIA	--	-	--	-	--	-	--	-	--	-	--	-
...SCENEDESMUS	26	6	29	2	--	-	--	-	--	-	--	-
...TETRASTRUM	52	11	--	-	--	-	--	-	--	-	--	-
..TETRASPORALES												
...COCCOMYXACEAE												
...ELAKATOTHRIX	--	-	--	-	--	-	--	-	--	-	--	-
...VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	26	6	72	5	--	-	--	-	120	1	170#	21
CHRYSOPHYTA												
..BACILLARIOPHYCEAE												
...CENTRALES												
...COSCINODISCACEAE												
....CYCLOTELLA	13	3	910#	57	26	4	--	-	--	-	--	-
...STEPHANODISCUS	--	-	--	-	--	-	--	-	--	-	240#	30
..PENNALES												
...ACHNANTHACEAE												
...ACHNANTHES	--	-	--	-	--	-	--	-	--	-	--	-
...CYMBELLACEAE												
...EPITHEMIA	--	-	--	-	--	-	--	-	--	-	--	-
...DIATOMACEAE												
....DIATOMA	--	-	--	-	26	4	58	4	--	-	180#	22
...FRAGILARIACEAE												
....ASTERIONELLA	--	-	14	1	--	-	--	-	--	-	--	-
...SYNEDRA	52	11	--	-	--	-	--	-	--	-	52	6
...GOMPHONEMATACEAE												
...GOMPHONEMA	--	-	--	-	--	-	--	-	--	-	--	-
...NAVICULACEAE												
....GYROSIGMA	--	-	--	-	--	-	--	-	--	-	--	-
...NAVICULA	--	-	--	-	--	-	14	1	--	-	13	2
...NITZSCHIACEAE												

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

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

CONTINUED ...

KNIFE RIVER BASIN

06339900 SPRING CREEK NEAR HALLIDAY, ND--Continued
 PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

(CONTINUED)

DATE TIME	OCT 14,80 0900		NOV 18,80 1245		DEC 16,80 1230		JAN 13,81 1410		FEB 17,81 1800		MAR 17,81 1420	
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
....NITZSCHIA	--	-	72	5	13	2	--	-	120	1	39	5
.CHRYSTOPHYCEAE												
..CHRYSUMONADALES												
...OCHROMONADACEAE												
....STENOALYX	--	-	--	-	--	-	--	-	--	-	--	-
...SYNURACEAE	--	-	--	-					--	-	--	-
....SYNURA	--	-	--	-	440#	74	1400#	92	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)												
.CRYPTOPHYCEAE												
..CRYPTOMONADALES												
...CRYPTOCHRYSIDACEAE												
....CHROOMONAS	--	-	--	-	--	-	14	1	--	-	--	-
...CRYPTOMONADACEAE	--	-	--	-					--	-	--	-
....CRYPTOMONAS	--	-	--	-	13	2	29	2	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..CHROOCOCCALES												
...CHROOCOCCACEAE												
....AGMENELLUM	--	-	--	-	--	-	--	-	490	2	--	-
....ANACYSTIS	190#	43	72	5	--	-	--	-	--	-	39	5
..HORMOGONALES												
...NOSTOCACEAE												
....ANABAENA	--	-	--	-	--	-	--	-	16000#	67	--	-
...OSCILLATORIACEAE												
....LYNGBYA	--	-	--	-	--	-	--	-	3100	13	--	-
...OSCILLATORIA	--	-	--	-	--	-	--	-	2300	10	--	-
...RIVULARIACEAE												
....RAPHIIDIOPSIS	--	-	--	-	--	-	--	-	1200	5	--	-
EUGLENOPHYTA (EUGLENOIDS)												
.EUGLENOPHYCEAE												
..EUGLENALES												
...EUGLENACEAE												
....EUGLENA	--	-	--	-	--	-	--	-	*	0	--	-
....TRACHELOMONAS	77#	17	240#	15	52	9	--	-	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)												
.DINOPHYCEAE												
..PERIDINIALES												
...GLENODINIACEAE												
....GLENODINIUM	--	-	29	2	13	2	--	-	--	-	--	-

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

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

KNIFE RIVER BASIN

191

06339900 SPRING CREEK NEAR HALLIDAY, ND--Continued
 PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	APR 7,81 1745	MAY 19,81 0830	JUN 8,81 1900	JUL 14,81 1340	AUG 18,81 1650	SEP 10,81 1340				
TOTAL CELLS/ML	1700	2100	5400	2200	920	56				
DIVERSITY: DIVISION	1.9	1.5	1.0	1.5	1.6	0.0				
..CLASS	1.9	1.5	1.0	1.5	1.6	0.0				
...ORDER	2.4	1.9	1.4	1.8	2.0	0.0				
....FAMILY	2.6	2.6	2.1	2.4	2.3	0.0				
....GENUS	2.8	3.2	2.9	2.5	2.3	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										
....MICRACTINIACEAE										
.....MICRACTINIUM	--	-	52	2	--	-	--	-	--	-
....OOCYSTACEAE										
.....ANKISTRODESMUS	130	8	210	10	1900#	36	64	3	58	6
.....OOCYSTIS	--	-	--	-	210	4	--	-	--	-
....SELENASTRUM	16	1	26	1	240	4	--	-	--	-
....TETRAEDRON	--	-	13	1	--	-	--	-	--	-
...SCENEDESMACEAE										
....CRUCIGENIA	--	-	410#	20	340	6	77	4	--	-
....SCENEDESMUS	64	4	390#	19	690	13	77	4	58	6
....TETRASTRUM	--	-	--	-	410	8	--	-	--	-
..TETRASPORALES										
...COCCOMYXACEAE										
....ELAKATUTHRIX	--	-	--	-	--	-	--	-	43	5
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	520#	31	90	4	380	7	52	2	--	-
CHRYSOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
....COSCINODISCACEAE										
.....CYCLOTELLA	79	5	170	8	34	1	120	5	230#	25
....STEPHANODISCUS	170	10	--	-	--	-	--	-	--	-
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	--	-	13	1	--	-	--	-	--	-
...CYMBELLACEAE										
....EPITHEMIA	--	-	--	-	--	-	--	-	29	3
...DIATOMACEAE										
....DIATOMA	--	-	13	1	--	-	--	-	--	-
...FRAGILARIACEAE										
....ASTERIONELLA	16	1	--	-	--	-	--	-	--	-
....SYNEDRA	16	1	--	-	--	-	--	-	--	-
...GOMPHONEMACEAE										
....GOMPHONEMA	--	-	--	-	--	-	13	1	--	-
...NAVICULACEAE										
....GYROSIGMA	--	-	39	2	--	-	--	-	--	-
....NAVICULA	--	-	39	2	100	2	64	3	14	2
...NITZSCHACEAE										

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

CONTINUED ...

KNIFE RIVER BASIN

06339900 SPRING CREEK NEAR HALLIDAY, ND--Continued
 PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

(CONTINUED)

DATE TIME	APR 7,81 1745		MAY 19,81 0830		JUN 8,81 1900		JUL 14,81 1340		AUG 18,81 1650		SEP 10,81 1340	
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
....NITZSCHIA	16	1	120	6	69	1	410# 19		43	5	--	-
..CHRYSTOPHYCEAE												
...CHRYSUMONADALES												
...OCHROMONADACEAE												
....STENOCALYX	--	-	--	-	34	1	--	-	--	-	--	-
....SYNURACEAE	--	-	--	-	--	-	--	-	--	-	--	-
....SYNURA	--	-	--	-	--	-	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)												
..CRYPTOPHYCEAE												
...CRYPTOMONADALES												
....CRYPTOCHRYSIACEAE												
....CHROOMONAS	48	3	--	-	--	-	--	-	--	-	--	-
....CRYPTOMONADACEAE												
....CRYPTOMONAS	48	3	--	-	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
..CYANOPHYCEAE												
...CHROOCOCCALES												
....CHROOCOCCACEAE												
....AGMENELLUM	--	-	--	-	--	-	--	-	--	-	--	-
....ANACYSTIS	64	4	39	2	860# 16		--	-	--	-	--	-
...HORMOGONALES												
....NOSTOCACEAE												
....ANABAENA	--	-	--	-	--	-	150	7	430# 47		--	-
....OSCILLATORIACEAE												
....LYNGBYA	--	-	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	--	-	1100# 49		--	-	--	-
....RIVULARIACEAE												
....RAPHIIDOPSIS	--	-	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENIIDS)												
..EUGLENOPHYCEAE												
...EUGLENALES												
....EUGLENACEAE												
....EUGLENA	--	-	26	1	--	-	--	-	--	-	--	-
....TRACHELOMONAS	480# 29		430# 21		69	1	64	3	14	2	--	-
PYRRHOPHYTA (FIRE ALGAE)												
..DINOPHYCEAE												
...PERIDINIALES												
....GLENODINIACEAE												
....GLENODINIUM	--	-	--	-	--	-	13	1	--	-	--	-

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

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

KNIFE RIVER BASIN

193

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) National Geodetic Vertical Datum of 1929. 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.--36 years, 42.2 ft³/s (1.195 m³/s), 30,570 acre-ft/yr (37.7 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, 482 ft³/s (13.7 m³/s) Feb. 17, gage height, 8.04 ft (2.451 m), no peak above base of 1,000 ft³/s (28.3 m³/s); minimum daily, 1.5 ft³/s (0.042 m³/s) Aug. 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.8	13	7.1	17	7.6	9.9	17	16	16	6.4	3.1	2.1
2	6.8	13	6.9	12	7.4	10	16	15	20	7.8	4.6	2.0
3	7.1	14	6.1	10	7.0	11	15	14	23	6.1	10	2.7
4	7.8	13	6.9	8.9	7.2	10	14	12	17	5.4	11	2.6
5	7.4	12	7.8	8.2	7.3	9.0	14	10	14	5.6	12	3.4
6	7.4	12	7.8	8.0	7.4	7.2	13	7.8	11	5.4	6.9	57
7	7.4	12	7.7	7.6	7.4	6.7	13	6.4	9.9	4.2	5.6	18
8	8.2	12	7.7	7.8	6.8	7.8	12	6.2	8.6	3.3	5.2	8.6
9	9.4	12	7.4	7.7	6.1	8.2	12	6.4	7.8	3.0	4.9	4.5
10	9.9	11	6.8	7.6	5.6	8.7	12	6.5	8.2	2.6	4.6	3.1
11	9.0	11	7.1	7.5	5.4	10	10	7.6	7.8	2.6	3.6	2.7
12	9.4	11	7.4	7.3	4.4	12	11	7.8	7.4	2.6	3.1	2.4
13	9.9	11	7.4	7.2	4.8	11	10	7.6	17	2.7	3.3	2.4
14	10	12	7.5	7.1	5.1	12	10	7.5	53	3.4	2.3	2.1
15	11	11	8.3	7.1	38	14	10	7.6	51	4.6	2.3	2.3
16	18	11	9.0	7.2	171	16	9.8	6.4	37	88	2.3	3.2
17	26	10	9.6	7.4	355	15	9.7	6.4	25	121	2.1	2.9
18	22	10	9.7	6.9	432	21	12	6.9	17	67	2.0	2.9
19	26	10	6.4	6.6	303	18	10	6.8	13	32	1.9	2.8
20	22	10	5.6	6.8	245	14	9.8	6.4	11	18	1.6	3.1
21	16	10	5.8	7.0	177	10	9.4	6.6	9.9	12	1.7	3.2
22	18	9.7	6.2	7.8	125	11	9.0	7.1	9.9	10	1.5	3.3
23	23	9.0	6.4	8.4	82	11	9.9	7.1	16	8.0	3.9	3.4
24	21	9.4	7.6	9.6	58	12	10	7.1	24	6.5	7.2	3.9
25	21	9.6	7.7	10	39	13	9.9	7.8	15	5.4	3.0	6.7
26	20	9.3	7.3	9.6	28	13	10	8.6	10	4.7	2.6	32
27	19	8.7	7.4	9.0	49	14	14	10	8.6	4.6	4.6	16
28	17	9.1	7.4	8.6	30	13	16	13	6.8	5.4	6.1	9.7
29	15	7.9	7.6	8.4	---	14	17	13	6.8	4.5	3.9	7.5
30	13	8.7	8.0	8.2	---	15	15	11	6.8	3.8	3.8	6.5
31	13	---	13	8.0	---	15	---	10	---	3.4	4.3	---
TOTAL	437.5	322.4	234.6	260.5	2221.5	372.5	360.5	272.6	488.5	460.0	135.0	223.0
MEAN	14.1	10.7	7.57	8.40	79.3	12.0	12.0	8.79	16.3	14.8	4.35	7.43
MAX	26	14	13	17	432	21	17	16	53	121	12	57
MIN	6.8	7.9	5.6	6.6	4.4	6.7	9.0	6.2	6.8	2.6	1.5	2.0
AC-FT	868	639	465	517	4410	739	715	541	969	912	268	442

CAL YR 1980 TOTAL 4670.1 MEAN 12.8 MAX 253 MIN 3.6 AC-FT 9260
WTR YR 1981 TOTAL 5788.6 MEAN 15.9 MAX 432 MIN 1.5 AC-FT 11480

KNIFE RIVER BASIN

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 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS NONCAR- BONATE (MG/L AS CACO3) (95902)
OCT										
22...	1020	15	1770	8.5	--	5.5	10.5	83	360	.00
NOV										
26...	1020	9.3	1950	8.4	7.0	.0	13.0	88	420	.00
DEC										
24...	0950	5.8	2450	8.1	--	.0	10.3	68	630	29
FEB										
05...	1030	7.3	2080	7.9	-4.0	.0	10.7	73	510	.00
18...	1255	432	464	--	--	.5	--	--	--	--
25...	1000	37	545	8.1	-2.0	.5	12.4	86	140	21
MAR										
25...	1020	12	1100	8.4	6.0	4.0	11.7	89	270	.00
APR										
22...	1030	8.4	1600	8.3	13.5	12.5	9.2	86	420	17
MAY										
20...	1000	6.5	1840	8.4	21.0	15.0	8.0	80	440	89
JUL										
01...	1100	6.6	1800	8.4	29.0	24.0	7.5	89	440	18
22...	1305	10	1750	8.3	32.0	23.0	8.2	95	430	130
AUG										
28...	1030	6.6	1400	8.3	22.5	20.0	7.2	79	310	10

DATE	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2) (00405)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)
OCT									
22...	65	49	290	63	6.6	9.7	400	2.0	560
NOV									
26...	75	56	300	60	6.4	9.2	460	2.9	620
DEC									
24...	120	80	380	56	6.6	9.8	582	9.3	790
FEB									
05...	99	64	300	56	5.8	7.3	517	13	640
18...	--	--	--	--	--	--	--	--	--
25...	50	16	55	44	2.0	11	120	1.5	160
MAR									
25...	56	31	150	54	4.0	6.6	290	1.9	290
APR									
22...	83	51	250	56	5.3	7.8	400	3.2	490
MAY									
20...	80	58	260	56	5.4	8.1	350	2.2	600
JUL									
01...	75	61	300	59	6.2	8.2	420	4.2	670
22...	70	63	260	56	5.4	9.9	300	2.9	670
AUG									
28...	55	42	210	59	5.9	8.8	300	2.4	420

KNIFE RIVER BASIN

195

06340000 SPRING CREEK AT ZAP, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUU- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SI02) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)
OCT									
22...	11	.6	5.4	--	1230	1.7	49.8	--	--
NOV									
26...	8.0	.4	6.9	1380	1350	1.9	34.7	--	--
DEC									
24...	11	.5	13	1780	1770	2.4	27.9	--	--
FEB									
05...	8.4	.5	13	1460	1450	2.0	28.8	--	--
18...	--	--	--	--	--	--	--	--	--
25...	3.9	.1	9.2	353	357	.48	35.3	--	--
MAR									
25...	4.7	.4	6.5	739	720	1.0	23.9	--	--
APR									
22...	7.0	.4	7.1	1150	1140	1.6	26.1	.03	.000
MAY									
20...	7.7	.4	6.7	1300	1230	1.8	22.8	.00	.010
JUL									
01...	6.1	.4	7.6	1300	1380	1.8	23.2	.28	.010
22...	6.8	.3	7.5	1290	1270	1.8	34.8	.00	.000
AUG									
28...	6.3	.4	5.4	959	929	1.3	17.1	.01	.100

DATE	NITRO- GEN, N02+N03 TOTAL (MG/L AS N) (00630)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	NITRO- GEN, TOTAL (MG/L AS N03) (71887)	PHOS- PHURUS, TOTAL (MG/L AS P) (00665)	PHOS- PHURUS TOTAL (MG/L AS P04) (71886)
OCT									
22...	.03	.020	.02	.58	.60	.63	2.8	.270	.83
NOV									
26...	.00	.020	.02	1.1	1.10	1.1	4.9	.060	.18
DEC									
24...	.08	.000	.00	.82	.82	.90	4.0	.050	.15
FEB									
05...	.22	.160	.19	.60	.76	.98	4.3	.030	.09
18...	--	--	--	--	--	--	--	--	--
25...	.42	.530	--	1.6	2.10	2.5	11	.280	.86
MAR									
25...	.01	.030	--	.76	.79	.80	3.5	.050	.15
APR									
22...	.03	.050	--	.81	.86	.89	3.9	.060	.18
MAY									
20...	.01	.130	--	1.3	1.40	1.4	6.2	.070	.21
JUL									
01...	.29	.400	--	.90	1.30	1.6	7.0	.110	.34
22...	.00	.030	--	1.6	1.60	1.6	7.1	.110	.34
AUG									
28...	.11	.110	--	.84	.95	1.1	4.7	.040	.12

06340000 SPRING CREEK AT ZAP, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	PHOS- PHURUS, TOTAL (MG/L AS P) (70507)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL) (01105)	ARSENIC TOTAL (UG/L AS AS) (01002)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI) (01132)
OCT 22...	--	--	--	--	410	--	--	--	--	--	--
NOV 26...	--	140	2	0	110	0	0	7	640	4	80
DEC 24...	--	50	1	0	550	0	10	4	560	2	90
FEB 05...	--	--	--	--	500	--	--	--	--	--	--
25...	--	--	--	--	110	--	--	--	--	--	--
MAR 25...	--	--	--	--	220	--	--	--	--	--	--
APR 22...	.020	--	--	--	380	--	--	--	--	--	--
MAY 20...	.050	--	--	--	440	--	--	--	--	--	--
JUL 01...	.090	420	3	0	540	0	0	5	650	0	70
22...	--	--	--	--	--	--	--	--	--	--	--
22...	.010	--	--	--	560	--	--	--	--	--	--
AUG 28...	<.010	--	--	--	400	--	--	--	--	--	--

DATE	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO) (01062)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE) (01147)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C) (00689)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)
OCT 22...	--	--	--	--	--	--	13	.8	102	4.1
NOV 26...	70	.1	2	9	0	30	14	.5	14	.35
DEC 24...	90	.0	3	3	0	20	34	.8	55	.86
FEB 05...	--	--	--	--	--	--	19	.8	22	.43
25...	--	--	--	--	--	--	24	--	20	2.0
MAR 25...	--	--	--	--	--	--	13	.6	18	.58
APR 22...	--	--	--	--	--	--	9.7	.4	36	.82
MAY 20...	--	--	--	--	--	--	39	.7	35	.61
JUL 01...	150	.4	2	5	0	10	13	.5	42	.75
22...	--	--	--	--	--	--	13	.3	--	--
22...	--	--	--	--	--	--	--	<.1	226	6.1
AUG 28...	--	--	--	--	--	--	9.0	.2	186	3.3

DATE	BED MAT. FALL DIAM. % FINER THAN .062 MM (80158)	BED MAT. FALL DIAM. % FINER THAN .125 MM (80159)	BED MAT. FALL DIAM. % FINER THAN .250 MM (80160)	BED MAT. FALL DIAM. % FINER THAN .500 MM (80161)	BED MAT. FALL DIAM. % FINER THAN 1.00 MM (80162)	BED MAT. FALL DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. FALL DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. FALL DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. FALL DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. FALL DIAM. % FINER THAN 32.0 MM (80173)
MAR 25...	5	6	18	40	43	50	64	82	93	100

KNIFE RIVER BASIN

197

06340200 WEST BRANCH OTTER CREEK NEAR BEULAH, ND

LOCATION.--Lat 47°08'05", long 101°39'35", in NW¼NW¼SW¼ sec.12, T.142 N., R.87 W., Oliver County, Hydrologic Unit 10130201, and on right bank 10 mi (16 km) southeast of Beulah.

DRAINAGE AREA.--26.5 mi² (68.6 km²).

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

GAGE.--Water-stage recorder.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--16 years, 2.94 ft³/s (0.083 m³/s), 2,130 acre-ft/yr (2.63 hm³/yr); median of yearly mean discharges, 2.4 ft³/s (0.070 m³/s), 1,740 acre-ft/yr (2.1 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 daily discharge, 60 ft³/s (1.70 m³/s) Mar. 15, occurred during a period of missing gage-height record, no peak above base of 100 ft³/s (2.83 m³/s); no flow on many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.02	.01	.01	.38	.31	.00	.00	.00	.00	.00
2	.00	.00	.01	.01	.01	.38	.28	.00	.00	.00	.00	.00
3	.00	.00	.01	.01	.01	.28	.25	.00	.00	.00	.19	.00
4	.00	.04	.01	.01	.01	.33	.22	.00	.00	.00	3.4	.00
5	.00	.08	.01	.01	.01	.33	.19	.00	.00	.00	1.6	.00
6	.00	.08	.01	.01	.01	.30	.16	.00	.00	.00	2.0	.00
7	.00	.10	.01	.01	.01	.22	.13	.00	.00	.00	1.4	.00
8	.00	.12	.01	.01	.01	.25	.10	.00	.00	.00	.53	.00
9	.00	.08	.01	.01	.01	.28	.07	.00	.00	.00	.38	.00
10	.00	.08	.01	.01	.01	.14	.04	.00	.00	.00	.38	.00
11	.00	.08	.01	.01	.01	.14	.04	.00	.00	.00	.14	.00
12	.00	.06	.01	.01	.01	.14	.04	.00	.00	.00	.02	.00
13	.00	.06	.01	.01	.01	2.0	.04	.00	.00	.00	.02	.00
14	.00	.06	.01	.01	1.0	10	.04	.00	.00	.00	.06	.00
15	.00	.06	.01	.01	1.8	60	.04	.00	.00	.00	.08	.00
16	.00	.06	.01	.01	5.5	20	.03	.00	.00	.00	.12	.00
17	.00	.06	.01	.01	7.0	5.0	.03	.00	.00	.00	.12	.00
18	.00	.08	.01	.01	3.5	2.0	.03	.00	.00	.00	.01	.00
19	.00	.10	.01	.01	3.0	1.0	.03	.00	.00	.00	.00	.00
20	.00	.10	.01	.01	2.5	.55	.03	.00	.00	.00	.00	.00
21	.00	.10	.01	.01	1.6	.52	.03	.00	.00	.00	.00	.00
22	.01	.04	.01	.01	1.0	.50	.03	.00	.00	.00	.00	.00
23	.12	.02	.01	.01	1.0	.48	.02	.00	.00	.00	.00	.00
24	.08	.02	.01	.01	.65	.44	.02	.00	.00	.00	.00	.00
25	.06	.06	.01	.01	.47	.40	.03	.00	.00	.00	.01	.00
26	.04	.04	.01	.01	.44	.40	.01	.00	.00	.00	.00	.00
27	.04	.02	.01	.01	.85	.39	.00	.00	.00	.00	.00	.02
28	.04	.02	.01	.01	.60	.38	.00	.00	.00	.00	.00	.01
29	.04	.02	.01	.01	---	.38	.00	.00	.00	.00	.00	.01
30	.02	.02	.01	.01	---	.37	.00	.00	.00	.00	.00	.01
31	.00	---	.01	.01	---	.34	---	.00	---	.00	.00	---
TOTAL	.45	1.66	.32	.31	31.04	108.32	2.24	.00	.00	.00	10.46	.05
MEAN	.015	.055	.010	.010	1.11	3.49	.075	.000	.000	.000	.34	.002
MAX	.12	.12	.02	.01	7.0	60	.31	.00	.00	.00	3.4	.02
MIN	.00	.00	.01	.01	.01	.14	.00	.00	.00	.00	.00	.00
AC-FT	.9	3.3	.6	.6	62	215	4.4	.00	.00	.00	21	.10
CAL YR 1980	TOTAL 100.93	MEAN .28	MAX 10	MIN .00	AC-FT 200							
WTR YR 1981	TOTAL 154.85	MEAN .42	MAX 60	MIN .00	AC-FT 307							

LOCATION.--Lat 47°17'07", long 101°37'18", in SW¼SE¼ sec.18, T.144 N., R.86 W., Mercer County, Hydrologic Unit 10130201, on left bank at downstream 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) National Geodetic Vertical Datum of 1929. 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.--48 years (1929-33, 1937-81), 176 ft³/s (4.984 m³/s), 127,500 acre-ft/yr (157 hm³/yr); median of yearly mean discharges, 146 ft³/s (4.13 m³/s), 105,800 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, 900 ft³/s (25.5 m³/s) Feb. 18, gage height, 9.92 ft (3.024 m), backwater from ice; no peak above base of 1,500 ft³/s (42.5 m³/s); minimum daily discharge, 9.2 ft³/s (0.26 m³/s) Sept. 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	49	21	19	21	155	37	26	27	23	42	25
2	16	44	18	18	20	124	36	25	29	25	50	24
3	16	39	18	17	19	123	35	25	33	32	74	21
4	15	37	17	16	19	130	33	24	38	29	59	19
5	15	34	17	16	18	118	31	24	29	24	197	19
6	15	31	16	16	17	108	30	23	27	21	199	90
7	15	29	16	16	16	97	27	22	24	19	183	118
8	16	28	15	15	15	96	27	22	22	18	287	82
9	14	27	15	15	14	90	27	20	21	16	250	250
10	14	25	15	15	13	92	27	20	20	17	136	153
11	15	23	16	16	12	102	27	20	20	18	96	87
12	15	22	18	16	14	170	26	20	20	18	74	62
13	15	22	19	17	29	244	25	21	37	21	60	48
14	15	22	19	17	33	277	25	20	82	21	51	40
15	15	22	20	17	50	429	25	20	80	22	44	34
16	23	24	21	17	123	152	24	19	63	24	39	30
17	52	25	22	18	433	98	24	19	119	75	34	27
18	91	26	19	18	718	69	24	20	88	101	30	25
19	66	27	18	18	619	64	23	19	62	104	33	22
20	81	29	17	18	505	57	24	18	52	79	47	21
21	80	36	16	20	532	55	23	17	50	61	37	19
22	67	34	15	21	405	51	22	16	47	46	47	17
23	106	31	15	24	302	51	22	18	40	27	78	13
24	107	29	15	28	246	51	22	19	35	23	50	9.2
25	79	28	16	28	219	49	21	18	77	48	59	10
26	92	26	17	27	193	48	22	17	57	86	132	31
27	92	25	18	26	168	45	23	21	41	49	75	54
28	79	24	19	25	154	44	24	22	33	34	52	38
29	73	23	20	24	---	42	26	20	29	36	40	29
30	61	22	20	23	---	39	26	21	25	41	32	22
31	54	---	20	22	---	39	---	20	---	39	27	---
TOTAL	1429	863	548	603	4927	3309	788	636	1327	1197	2614	1439.2
MEAN	46.1	28.8	17.7	19.5	176	107	26.3	20.5	44.2	38.6	84.3	48.0
MAX	107	49	22	28	718	429	37	26	119	104	287	250
MIN	14	22	15	15	12	39	21	16	20	16	27	9.2
AC-FT	2830	1710	1090	1200	9770	6560	1560	1260	2630	2370	5180	2850
CAL YR 1980	TOTAL	18092.0	MEAN	49.4	MAX	1310	MIN	12	AC-FT	35890		
WTR YR 1981	TOTAL	19680.2	MEAN	53.9	MAX	718	MIN	9.2	AC-FT	39040		

KNIFE RIVER BASIN

199

06340500 KNIFE RIVER AT HAZEN, ND--Continued
(National stream-quality accounting network station)

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, 225 micromhos Mar. 24, 1978.
WATER TEMPERATURES: Maximum daily, 32.0°C July 5, 1981; minimum daily, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,400 micromhos Dec. 28, 29 and Feb. 13; minimum daily, 380 micromhos Mar. 15.
WATER TEMPERATURES: Maximum daily, 32.0°C July 5; minimum daily, 0.0°C on many days during winter months.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION (00301)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L) (00340)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
OCT											
21...	1225	76	1650	8.5	7.0	7.0	5.7	11.1	91	34	220
NOV											
25...	1205	28	1900	8.4	6.0	.0	9.8	13.2	89	52	K40
DEC											
23...	1300	15	2200	8.1	--	.0	5.1	11.2	75	62	100
FEB											
04...	1135	18	2350	8.0	-6.0	.0	9.7	10.3	73	27	42
24...	1310	233	680	8.1	2.5	.5	100	12.4	86	67	K35
MAR											
24...	1240	50	935	8.3	14.0	7.5	31	12.2	101	30	70
APR											
21...	1210	23	1400	8.4	22.5	14.0	16	9.9	97	48	K750
MAY											
19...	1240	19	1570	8.4	22.0	19.0	6.0	10.0	107	18	90
JUL											
01...	1630	23	2080	8.5	33.0	28.5	30	7.8	100	61	210
21...	1215	58	1070	8.2	30.0	25.5	110	7.3	89	53	730
AUG											
27...	0920	79	1140	8.2	18.0	20.0	130	7.5	81	74	440
SEP											
30...	1405	21	1320	8.3	--	12.0	18	11.2	104	57	620

DATE	TIME	STREP- TUOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS (MG/L AS CACO3) (00900)	HAND- NESS NONCAR- BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2) (00405)
OCT												
21...	560	274	.00	52	35	290	69	7.8	10	430		2.2
NOV												
25...	K35	331	.00	65	41	330	68	8.1	9.1	500		3.2
DEC												
23...	--	459	.00	93	55	360	63	7.5	8.5	570		7.2
FEB												
04...	23	456	.00	92	55	380	64	7.9	8.6	640		10
24...	2400	111	.00	23	13	100	64	4.2	9.8	150		1.9
MAR												
24...	K65	205	.00	46	22	140	59	4.4	6.9	250		2.0
APR												
21...	73	321	.00	69	36	230	60	5.7	7.5	410		2.6
MAY												
19...	150	331	.00	65	41	250	62	6.1	7.4	420		2.7
JUL												
01...	280	329	.00	61	43	410	72	10	9.3	470		2.4
21...	960	229	.00	44	29	160	59	4.7	9.1	240		2.4
AUG												
27...	680	209	.00	44	24	180	64	5.6	11	280		2.8
SEP												
30...	440	287	.00	59	34	190	58	5.0	8.9	340		2.7

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

KNIFE RIVER BASIN

06340500 KNIFE RIVER AT HAZEN, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	SULFATE DIS- SOLVED (MG/L AS SU4) (00945)	CHLU- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIU2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)
OCT											
21...	460	6.3	.4	7.0	1080	1118	1.5	223	.03	.03	.010
NOV											
25...	550	5.0	.4	8.3	1350	1310	1.8	102	.00	.00	.170
DEC											
23...	620	8.4	.4	12	1470	1500	2.0	59.5	.06	.06	.000
FEB											
04...	650	7.9	.5	13	1660	1590	2.3	80.7	.30	.29	.180
24...	180	4.5	.2	8.4	447	431	.61	281	.68	.51	.400
MAR											
24...	250	4.1	.3	7.6	620	628	.84	83.7	.03	.03	.060
APR											
21...	370	5.6	.4	8.2	971	973	1.3	60.3	.00	.01	.090
MAY											
19...	420	7.5	.4	8.6	1060	1050	1.4	54.4	.01	.00	.130
JUL											
01...	750	6.3	.5	8.7	1470	1570	2.0	92.1	.05	.05	.100
21...	340	4.6	.2	8.3	734	741	.00	115	.36	.38	.240
AUG											
27...	280	4.5	.3	9.9	769	723	1.0	164	.17	.12	.190
SEP											
30...	320	9.3	.4	9.1	909	836	1.2	51.5	.12	.12	.110

DATE	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN, ORGANIC DIS- SOLVED (MG/L AS N) (00607)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)	NITRO- GEN,AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N) (00623)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	NITRO- GEN, DIS- SOLVED (MG/L AS N) (00602)	NITRO- GEN, TOTAL (MG/L AS NO3) (71887)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)
OCT											
21...	.000	.00	1.3	1.1	1.30	.20	1.1	1.3	1.1	5.9	.270
NOV											
25...	.180	.23	1.0	.45	1.20	.57	.63	1.2	.63	5.3	.070
DEC											
23...	.000	.00	1.0	.79	1.00	.21	.79	1.1	.85	4.7	.030
FEB											
04...	.180	.23	.72	.41	.90	.31	.59	1.2	.88	5.3	.030
24...	.400	.52	2.3	1.3	2.70	1.0	1.7	3.4	2.2	15	.350
MAR											
24...	.030	.04	1.1	.97	1.20	.20	1.0	1.2	1.0	5.4	.090
APR											
21...	.140	.18	1.1	.38	1.20	.68	.52	1.2	.53	5.3	.060
MAY											
19...	.100	.13	.97	.52	1.10	.48	.62	1.1	.62	4.9	.070
JUL											
01...	.100	.13	1.6	1.0	1.70	.60	1.1	1.8	1.2	7.7	.100
21...	.200	.26	1.7	.90	1.90	.80	1.1	2.3	1.5	10	.220
AUG											
27...	.120	.15	1.7	.88	1.90	.90	1.0	2.1	1.1	9.2	.190
SEP											
30...	.070	.09	1.3	1.1	1.40	.20	1.2	1.5	1.3	6.7	.060

KNIFE RIVER BASIN

201

06340500 KNIFE RIVER AT HAZEN, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	PHOS- PHURUS TOTAL (MG/L AS PU4) (71886)	PHOS- PHURUS, DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHURUS, ORTHU, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHATE, ORTHU, DIS- SOLVED (MG/L AS PU4) (00660)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC SUS- PENDE TOTAL (UG/L AS AS) (01001)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BARIUM, SUS- PENDE RECOV- ERABLE (UG/L AS BA) (01006)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)
OCT										
21...	.83	.230	--	--	--	--	--	--	--	--
NOV										
25...	.21	.030	--	--	--	--	--	--	--	--
DEC										
23...	.09	.020	--	--	2	1	1	200	100	100
FEB										
04...	.09	.020	--	--	--	--	--	--	--	--
24...	1.1	.180	--	--	--	--	--	--	--	--
MAR										
24...	.28	.020	--	--	2	0	2	100	50	50
APR										
21...	.18	.020	--	--	--	--	--	--	--	--
MAY										
19...	.21	.040	.050	.15	--	--	--	--	--	--
JUL										
01...	.31	.020	--	--	4	0	4	100	0	100
21...	.67	.030	--	--	--	--	--	--	--	--
AUG										
27...	.58	.030	--	--	--	--	--	--	--	--
SEP										
30...	.18	.010	--	--	2	0	2	100	0	100

DATE	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CADMIUM SUS- PENDE RECOV- ERABLE (UG/L AS CD) (01026)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, SUS- PENDE RECOV. (UG/L AS CR) (01031)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO) (01037)	COBALT, SUS- PENDE RECOV- ERABLE (UG/L AS CO) (01036)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)
OCT										
21...	--	--	--	--	--	--	--	--	--	--
NOV										
25...	--	--	--	--	--	--	--	--	--	--
DEC										
23...	0	0	0	20	20	0	0	0	0	5
FEB										
04...	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--	--
MAR										
24...	0	--	<1	10	10	0	0	--	<3	8
APR										
21...	--	--	--	--	--	--	--	--	--	--
MAY										
19...	--	--	--	--	--	--	--	--	--	--
JUL										
01...	0	0	0	0	0	10	1	1	0	7
21...	--	--	--	--	--	--	--	--	--	--
AUG										
27...	--	--	--	--	--	--	--	--	--	--
SEP										
30...	0	--	<1	20	20	0	1	--	<3	6

KNIFE RIVER BASIN

06340500 KNIFE RIVER AT HAZEN, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	COPPER, SUS- PENDE RECov- ERABLE (UG/L AS CU) (01041)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECov- ERABLE (UG/L AS FE) (01045)	IRON, SUS- PENDE RECov- ERABLE (UG/L AS FE) (01044)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECov- ERABLE (UG/L AS PB) (01051)	LEAD, SUS- PENDE RECov- ERABLE (UG/L AS PB) (01050)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, TOTAL RECov- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, SUS- PENDE RECov- ERABLE (UG/L AS MN) (01054)
OCT										
21...	--	--	--	--	--	--	--	--	--	--
NOV										
25...	--	--	--	--	--	--	--	--	--	--
DEC										
23...	3	2	500	470	30	2	2	0	170	10
FEB										
04...	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--	--
MAR										
24...	6	2	1700	1700	50	10	9	1	130	60
APR										
21...	--	--	--	--	--	--	--	--	--	--
MAY										
19...	--	--	--	--	--	--	--	--	--	--
JUL										
01...	4	3	1300	1300	0	2	0	4	220	220
21...	--	--	--	--	--	--	--	--	--	--
AUG										
27...	--	--	--	--	--	--	--	--	--	--
SEP										
30...	4	2	1200	1200	18	15	15	0	150	130

DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECov- ERABLE (UG/L AS HG) (71900)	MERCURY SUS- PENDE RECov- ERABLE (UG/L AS HG) (71895)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	NICKEL, TOTAL RECov- ERABLE (UG/L AS NI) (01067)	NICKEL, SUS- PENDE RECov- ERABLE (UG/L AS NI) (01066)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, TOTAL (UG/L AS SE) (01147)	SELE- NIUM, SUS- PENDE TOTAL (UG/L AS SE) (01146)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)
OCT										
21...	--	--	--	--	--	--	--	--	--	--
NOV										
25...	--	--	--	--	--	--	--	--	--	--
DEC										
23...	160	.1	.1	.0	3	0	3	0	0	0
FEB										
04...	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--	--
MAR										
24...	70	.2	.2	.0	4	0	5	0	0	0
APR										
21...	--	--	--	--	--	--	--	--	--	--
MAY										
19...	--	--	--	--	--	--	--	--	--	--
JUL										
01...	0	.3	.2	.1	8	4	4	0	0	0
21...	--	--	--	--	--	--	--	--	--	--
AUG										
27...	--	--	--	--	--	--	--	--	--	--
SEP										
30...	24	.2	.1	.1	4	0	5	1	1	0

KNIFE RIVER BASIN

06340500 KNIFE RIVER AT HAZEN, ND---Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	SILVER, TOTAL RECUV- ERABLE (UG/L AS AG) (01077)	SILVER, SUS- PENDEU RECUV- ERABLE (UG/L AS AG) (01076)	SILVER, DIS- SULVED (UG/L AS AG) (01075)	ZINC, TOTAL RECUV- ERABLE (UG/L AS ZN) (01092)	ZINC, SUS- PENDEU RECUV- ERABLE (UG/L AS ZN) (01091)	ZINC, DIS- SULVED (UG/L AS ZN) (01090)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CARBON, ORGANIC DIS- SULVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDEU TOTAL (MG/L AS C) (00689)
OCT									
21...	--	--	--	--	--	--	14	--	--
NOV									
25...	--	--	--	--	--	--	12	--	--
DEC									
23...	0	0	0	20	10	10	--	31	.6
FEB									
04...	--	--	--	--	--	--	21	--	--
24...	--	--	--	--	--	--	33	--	--
MAR									
24...	0	0	0	180	60	120	--	12	1.4
APR									
21...	--	--	--	--	--	--	13	--	--
MAY									
19...	--	--	--	--	--	--	30	--	--
JUL									
01...	0	0	1	10	0	10	--	15	1.5
21...	--	--	--	--	--	--	12	--	--
AUG									
27...	--	--	--	--	--	--	15	--	--
SEP									
30...	1	1	0	350	160	190	--	10	.8

DATE	PHYTO- PLANK- TON, TOTAL (CELLS PER ML) (60050)	SEDI- MENT, SUS- PENDEU (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDEU (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT				
21...	--	77	16	99
NOV				
25...	5400	26	2.0	98
DEC				
23...	--	42	1.7	34
FEB				
04...	--	34	1.7	73
24...	--	110	69	93
MAR				
24...	13000	38	5.1	96
APR				
21...	--	44	2.7	97
MAY				
19...	14000	30	1.5	93
JUL				
01...	140000	108	6.8	97
21...	16000	598	94	99
AUG				
27...	24000	596	127	99
SEP				
30...	14000	42	2.4	97

DISSOLVED OXYGEN AND WATER TEMPERATURE PROFILE, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	MG/L	DEGREES, C	SATURATION, %	DATE	MG/L	DEGREES, C	SATURATION, %
Aug. 27, 1981				Aug. 28, 1981			
1345	--	23.5	--	0100	7.9	21.0	87
1400	9.6	23.5	111	0200	7.9	20.5	86
1500	9.8	24.0	114	0300	7.9	20.0	85
1600	9.8	24.0	114	0400	7.9	19.5	85
1700	9.7	24.0	113	0500	7.9	19.0	84
1800	9.4	23.5	109	0600	7.9	19.0	84
1900	9.0	23.5	104	0700	7.9	18.5	83
2000	8.7	23.0	100	0800	8.1	18.5	85
2100	8.5	22.5	97	0900	8.4	18.5	88
2200	8.3	22.0	93	1000	8.6	19.5	92
2300	8.1	21.5	90	1100	8.9	20.0	97
2400	8.0	21.0	88	1200	9.3	21.0	103
				1300	9.5	22.0	107
				1400	9.8	23.5	114

KNIFE RIVER BASIN

06340500 KNIFE RIVER AT HAZEN, ND--Continued

SPECIFIC CONDUCTANCE (MICROMHUS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
UNCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1480	2080	1900		2200	680	1060	1450	1460	1700	1420	1200
2	1440	2200	1980		---	600	1100	1420	1500	1520	1260	1200
3	1480	2300	2080		2220	950	1040	1360	1560	1900	1360	1300
4	1500	2000	2040		2300	950	1140	1340	1560	1880	1360	1300
5	1500	2000	2040		2300	950	1120	1380	1560	1700	1400	1280
6	1520	1920	2020		2300	940	1140	1390	1480	1680	1020	1200
7	1500	1700	2040		2300	940	1140	1380	1580	1600	1020	430
8	1500	1720	2200		2200	980	1160	1500	1620	1680	1100	1080
9	1480	1780	2000		2180	980	1160	1500	1600	1500	---	1020
10	1520	1820	2020		2200	980	1180	1520	1580	1580	1260	1000
11	1500	1800	2100		2300	960	1270	1500	1620	1580	1280	1380
12	1480	1840	2180		2320	820	1270	1500	1600	1560	1200	960
13	1560	1840	2180		2400	700	1300	1520	1520	1460	1120	940
14	1540	1820	2200		2360	660	1290	1500	1200	1440	1100	900
15	1500	1800	2180		2200	380	1320	1520	1200	1480	1100	820
16	1500	1820	2160		1900	440	1330	1520	1220	1500	1080	880
17	1520	1840	2180		1500	520	1330	1560	1280	1500	1100	880
18	1520	1840	2260		700	560	1360	1580	1600	1480	1100	940
19	1520	1860	2380		580	560	1370	1580	1600	1280	1080	980
20	1540	1860	2300		750	760	1340	1580	1660	980	1120	1020
21	1580	1820	2220		875	840	1370	1560	1600	1080	1140	1040
22	1520	1860	2200		1100	850	1350	1580	1600	1300	1020	1080
23	1560	1860	2200		720	900	1360	1600	1620	1320	1120	1080
24	1600	1900	2100		740	920	1390	1520	1740	1320	1140	1160
25	1640	1880	2210		780	900	1400	1520	1500	1360	820	1060
26	1600	1860	2380		840	950	1380	1500	1800	1520	1000	1080
27	1620	1840	2380		760	950	1420	1380	2020	1900	1080	1110
28	1680	1860	2400		700	1000	1440	1420	1960	1300	1140	1220
29	1680	1750	2400		---	1020	1420	1420	2100	---	1200	1300
30	1760	1750	2200		---	1040	1420	1480	1660	1400	1260	1300
31	1700	---	2380		---	1040	---	1500	---	1340	1240	---

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
UNCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15.5	6.0	1.0		.0	.5	8.0	18.5	14.0	29.0	26.5	18.5
2	13.5	6.5	.5		.0	.0	7.0	17.0	17.5	28.0	24.0	20.5
3	15.0	7.0	.5		.0	.0	7.0	16.5	23.0	28.0	27.0	19.5
4	16.0	5.5	.5		.0	.0	11.0	16.0	22.5	31.0	27.0	20.0
5	13.0	6.5	.5		.0	.5	7.0	20.0	22.0	32.0	26.0	17.0
6	19.0	7.0	.5		.0	.5	8.0	18.0	23.0	27.0	24.5	18.0
7	18.0	7.5	.5		.0	.5	11.5	12.0	20.0	31.0	25.5	20.0
8	17.5	9.0	.5		.0	1.0	7.5	12.0	21.5	24.5	23.0	23.0
9	15.0	7.0	.5		.0	.5	8.0	9.0	20.5	28.0	---	21.5
10	13.0	5.0	.5		.0	.5	7.0	16.0	22.0	24.0	25.0	21.5
11	13.0	5.0	.5		.0	.5	8.0	16.0	20.0	24.0	25.5	21.5
12	11.5	5.0	.5		.0	1.0	6.5	15.0	20.0	28.0	26.5	22.5
13	10.0	4.5	.5		.0	1.0	6.0	16.5	20.0	23.0	27.0	17.0
14	12.0	3.0	.5		.0	1.5	13.0	18.0	18.0	23.0	27.0	18.0
15	9.0	2.5	.5		.0	1.5	16.0	17.0	17.0	26.0	24.0	18.0
16	7.0	2.5	1.0		.0	3.0	17.0	13.5	21.5	28.0	23.0	17.0
17	6.0	3.0	.5		1.5	4.0	16.0	12.0	18.5	25.0	26.0	18.0
18	7.0	2.5	.0		2.0	5.0	10.5	19.0	19.0	24.0	26.5	19.0
19	6.0	3.0	.0		2.5	5.0	9.5	20.0	19.0	24.0	27.0	19.0
20	6.0	3.0	.0		2.0	4.0	13.5	21.0	16.0	27.0	29.0	13.5
21	7.0	3.0	.0		2.0	5.0	15.0	20.0	17.5	28.0	28.0	15.0
22	7.0	3.5	.0		2.0	3.0	15.0	20.0	22.0	26.5	22.0	17.0
23	5.0	3.0	.0		1.5	7.5	15.0	12.0	22.0	27.0	24.0	18.5
24	5.0	2.0	.0		.5	8.0	21.0	10.0	24.0	26.0	24.5	15.0
25	4.0	2.0	.0		.5	7.0	19.0	11.0	24.5	20.0	23.0	14.5
26	5.0	1.5	.0		.5	8.0	17.0	15.0	26.0	21.5	23.0	11.0
27	4.0	1.5	.0		.5	7.0	14.0	17.0	27.5	24.0	22.5	9.0
28	4.0	2.0	.0		.5	5.0	16.0	23.5	21.0	24.5	24.0	11.0
29	4.0	2.0	.0		---	4.0	16.0	21.0	26.0	---	21.5	14.0
30	4.5	1.5	.0		---	10.0	17.0	19.0	27.0	27.0	21.5	13.0
31	5.0	---	.0		---	8.0	---	17.5	---	25.0	17.0	---

KNIFE RIVER BASIN

205

06340500 KNIFE RIVER AT HAZEN, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	NOV 25,80 1205		MAR 24,81 1240		MAY 19,81 1240		JUL 1,81 1630	
TOTAL CELLS/ML	5400		13000		14000		140000	
DIVERSITY: DIVISION	1.6		0.3		1.4		0.9	
..CLASS	1.6		0.3		1.4		0.9	
...ORDER	1.9		0.5		1.6		1.8	
....FAMILY	2.1		0.5		1.9		1.9	
.....GENUS	2.4		0.5		2.4		2.3	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
BACILLARIOPHYTA (DIATOMS)								
..BACILLARIOPHYCEAE								
...BACILLARIALES								
....NITZSCHIAEAE								
.....NITZSCHIA	29	1	120	1	130	1	4400	3
...EUPODISCALES								
....COSCINUOISCAEAE								
.....CYCLOTELLA	150	3	12000#	93	270	2	1800	1
.....MELUSIRA	29	1	--	-	--	-	*	0
....SKELETONEMA	--	-	--	-	--	-	--	-
....THALASSIOSIRA	--	-	--	-	--	-	--	-
...NAVICULALES								
....NAVICULACEAE								
.....NAVICULA	--	-	--	-	*	0	*	0
...SURIRELLALES								
....SURIRELLACEAE								
.....SURIRELLA	--	-	--	-	--	-	--	-
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
....CHLOROCOCCACEAE								
.....SCHROEDERIA	--	-	--	-	--	-	--	-
....DICTYOSPHAERIACEAE								
.....DICTYOSPHAERIUM	--	-	--	-	200	1	--	-
....MICRACTINIACEAE								
.....GOLENKINIA	--	-	--	-	--	-	--	-
....MICRACTINIUM	29	1	--	-	--	-	--	-
...UOCYSTACEAE								
....ANKISTRUDESUS	790	15	350	3	840	6	5700	4
....CHODATELLA	--	-	--	-	--	-	*	0
....CLUSTERIOPSIS	--	-	--	-	--	-	--	-
....FRANCEIA	--	-	--	-	--	-	--	-
....KIRCHNERIELLA	--	-	--	-	--	-	--	-
....NEPHROCITIUM	--	-	--	-	--	-	--	-
....UOCYSTIS	29	1	--	-	170	1	1400	1
....SELENASTRUM	120	2	--	-	470	3	--	-
....TREUBARIA	59	1	--	-	--	-	--	-
...SCENEDESMACEAE								
....ACTINASTRUM	--	-	--	-	--	-	920	1
....CRUCIGENIA	--	-	--	-	1100	8	3400	2
....SCENEDESMUS	180	3	230	2	2000	14	3700	3
....TETRASTRUM	--	-	--	-	270	2	--	-

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 1980 TO SEPTEMBER 1981

(CONTINUED)

DATE TIME	NOV 25,80 1205	MAR 24,81 1240	MAY 19,81 1240	JUL 1,81 1630
TOTAL CELLS/ML	5400	13000	14000	140000
DIVERSITY: DIVISION	1.6	0.3	1.4	0.9
..CLASS	1.6	0.3	1.4	0.9
..ORDER	1.9	0.5	1.5	1.8
...FAMILY	2.1	0.5	1.9	1.9
....GENUS	2.4	0.5	2.4	2.3
ORGANISM	CELLS /ML PER- CENT	CELLS /ML PER- CENT	CELLS /ML PER- CENT	CELLS /ML PER- CENT
..VOLVOCALES				
...CHLAMYDOMONADACEAE				
....CHLAMYDOMONAS	640 12	230 2	440 3	* 0
...PHACOTACEAE				
....PHACOTUS	-- -	-- -	-- -	* 0
CHRYSTOPHYTA				
..XANTHOPHYCEAE				
...MISCHOCUCCALES				
...SCIADACEAE				
....CENTRITRACTUS	-- -	-- -	-- -	* 0
CYANOPHYTA (BLUE-GREEN ALGAE)				
..CYANOPHYCEAE				
...CHROOCOCCALES				
....CHROOCOCCACEAE				
....AGMENELLUM	-- -	-- -	-- -	4600 3
....ANACYSTIS	2800# 51	-- -	7500# 54	51000# 36
....GOMPHOSPHAERIA	-- -	-- -	-- -	-- -
...OSCILLATORIALES				
....OSCILLATORIAEAE				
....LYNGBYA	-- -	-- -	-- -	2300 2
....OSCILLATORIA	-- -	-- -	-- -	57000# 41
EUGLENOPHYTA (EUGLENOIDS)				
..EUGLENOPHYCEAE				
...EUGLENALES				
....EUGLENACEAE				
....EUGLENA	59 1	-- -	130 1	* 0
....LEPOCINCLIS	-- -	-- -	-- -	-- -
....PHACUS	29 1	-- -	-- -	-- -
....TRACHELUMONAS	500 9	-- -	300 2	1400 1
PYRRHOPHYTA (FIRE ALGAE)				
..DINOPHYCEAE				
...DINOKONTAE				
....GLENODINIACEAE				
....GLENODINIUM	-- -	-- -	* 0	-- -
...PERIDINIACEAE				
....PERIDINIUM	-- -	-- -	-- -	* 0

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

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

06340500 KNIFE RIVER AT HAZEN, ND--Continued
 PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	JUL 21,81 1215	AUG 27,81 0920	SEP 30,81 1405
TOTAL CELLS/ML	16000	24000	14000
DIVERSITY: DIVISION	1.9	1.6	1.6
..CLASS	1.9	1.6	1.6
...ORDER	2.5	2.4	2.1
...FAMILY	2.8	3.0	2.4
....GENUS	3.0	3.7	2.8

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
BACILLARIOPHYTA (DIATOMS)						
..BACILLARIOPHYCEAE						
...BACILLARIALES						
....NITZSCHIACEAE						
.....NITZSCHIA	4400#	27	870	4	620	4
...EUPODISCALES						
....COSCINODISCAEAE						
.....CYCLOTELLA	390	2	430	2	460	3
.....MELUSIRA	--	-	760	3	--	-
....SKELETONEMA	--	-	220	1	--	-
....THALASSIOSIRA	--	-	6200#	26	--	-
...NAVICULALES						
....NAVICULACEAE						
.....NAVICULA	880	5	540	2	--	-
...SURIPELLALES						
....SURIPELLACEAE						
.....SURIPELLA	--	-	*	0	--	-
CHLOROPHYTA (GREEN ALGAE)						
..CHLOROPHYCEAE						
...CHLOROCOCCALES						
....CHLOROCOCCACEAE						
.....SCHROEDERIA	98	1	--	-	150	1
...DICTYOSPHAERIACEAE						
....DICTYOSPHAERIUM	--	-	2200	9	210	1
...MICRACTINIACEAE						
.....GULENKINIA	--	-	980	4	--	-
....MICRACTINIUM	490	3	430	2	--	-
...OOCYSTACEAE						
....ANKISTRODESMUS	200	1	*	0	1000	7
....CHODATELLA	--	-	*	0	--	-
...CLUSTERIOPSIS						
....FRANCEIA	--	-	220	1	--	-
....KIRCHNERIELLA	--	-	--	-	360	2
....NEPHROCYTIUM	--	-	--	-	210	1
....OOCYSTIS	--	-	430	2	--	-
....SELENASTRUM	--	-	--	-	--	-
....TREUBARIA	--	-	220	1	--	-
...SCENEDESMACEAE						
....ACTINASTRUM	780	5	--	-	210	1
....CRUCIGENIA	--	-	430	2	--	-
....SCENEDESMUS	3100#	19	2200	9	210	1
....TETRASTRUM	--	-	1300	5	820	6

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 1980 TO SEPTEMBER 1981

(CONTINUED)

DATE TIME	JUL 21,81 1215	AUG 27,81 0920	SEP 30,81 1405
TOTAL CELLS/ML	16000	24000	14000
DIVERSITY: DIVISION	1.9	1.6	1.6
..CLASS	1.9	1.6	1.6
..ORDER	2.3	2.3	2.1
...FAMILY	2.8	2.9	2.4
....GENUS	3.0	3.7	2.8

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
..VULVOCALES						
...CHLAMYDOMONADACEAE						
....CHLAMYDOMONAS	390	2	1300	5	410	3
...PHACOTACEAE						
....PHACUTUS	--	-	--	-	--	-
CHRYSTOPHYTA						
..XANTHOPHYCEAE						
..MISCHOCOCCELES						
...SCIADACEAE						
....CENTRITRACTUS	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...CHROCOCCALES						
...CHROCOCCACEAE						
....AGMENELLUM	2700#	17	--	-	--	-
....ANACYSTIS	--	-	--	-	1000	7
....GUMPHOSPHERIA	--	-	2700	11	--	-
...OSCILLATORIALES						
...OSCILLATORIAEAE						
....LYNGBYA	--	-	--	-	--	-
....OSCILLATORIA	780	5	1600	7	7200#	50
EUGLENOPHYTA (EUGLENOIDS)						
..EUGLENOPHYCEAE						
...EUGLENALES						
...EUGLENACEAE						
....EUGLENA	--	-	330	1	360	2
....LEPUCINCLIS	2100	13	--	-	--	-
....PHACUS	--	-	--	-	--	-
....TRACHELUMONAS	--	-	*	0	1100	8
PYRRHOPHYTA (FIRE ALGAE)						
..DINOPHYCEAE						
...DINOKUNTAE						
...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%

KNIFE RIVER BASIN

209

06340520 ANTELOPE CREEK ABOVE HAZEN, ND

LOCATION.--Lat 47°20'07", long 101°41'41", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.36, T.145 N., R.87 W., Mercer County, Hydrologic Unit 10130201, on left bank about 100 ft (30 m) upstream from bridge on county road, 4.2 mi (6.8 km) northeast of Hazen, and 2.0 mi (3.2 km) upstream from Schramm Dam.

DRAINAGE AREA.--47.2 mi² (122.2 km²), revised.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Altitude of gage is 1,800 ft (549 m), from topographic map.

REMARKS.--Records fair except those for December to May, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 700 ft³/s (19.8 m³/s) Apr. 17, 1979, gage height, 6.70 ft (2.042 m); maximum gage height, 8.95 ft (2.728 m) Mar. 21, 1978, ice jam; no flow for many days 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)
Feb. 17	0200	125	3.54	Sept. 25	2230	93	2.63
Aug. 5	0400	*138	3.91				3.65 1.113
			a*4.27 1.302				
			4.00 1.219				

No flow for many days.

a - Ice jam

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.67	.04	.13	.02	1.4	.08	.04	.04	.00	.00	.00
2	.00	.48	.01	.00	.01	1.1	.07	.02	.06	.00	.00	.00
3	.00	.43	.00	.00	.01	.90	.06	.00	.04	.00	.00	.00
4	.00	.64	.01	.00	.01	.75	.05	.00	.02	.00	.00	.00
5	.00	.75	.02	.01	.02	.47	.05	.00	.01	.00	33	.00
6	.00	.59	.01	.00	.02	.62	.04	.00	.00	.00	6.3	.00
7	.00	.39	.00	.00	.01	.68	.03	.00	.00	.00	6.4	.04
8	.00	.34	.00	.00	.00	.57	.04	.00	.00	.00	4.6	.13
9	.00	.28	.00	.00	.00	.47	.06	.00	.00	.00	2.6	.08
10	.00	.18	.00	.00	.00	.43	.05	.00	.00	.00	1.4	.05
11	.00	.14	.01	.01	.00	.47	.03	.00	.00	.00	.90	.02
12	.00	.15	.03	.03	.00	.52	.02	.00	.00	.00	.43	.00
13	.00	.17	.06	.05	.01	.68	.01	.00	.32	.00	.21	.00
14	.00	.13	.05	.04	.10	.90	.01	.00	.43	.00	.13	.00
15	.00	.11	.06	.03	1.0	.75	.01	.00	.28	.01	.10	.00
16	.00	.10	.08	.02	10	.57	.01	.00	1.4	.00	.09	.00
17	.00	.10	.10	.03	70	.47	.00	.00	2.6	.00	.07	.00
18	.00	.10	.03	.06	35	.43	.00	.00	1.6	.00	.05	.00
19	.00	.10	.00	.04	30	.39	.00	.00	1.1	.00	.02	.00
20	.00	.11	.00	.03	20	.32	.00	.00	.82	.00	.00	.00
21	.00	.11	.01	.07	16	.23	.00	.00	.62	.00	.00	.00
22	.00	.11	.01	.10	15	.17	.00	.01	.39	.00	.02	.00
23	.18	.08	.01	.14	11	.13	.00	.04	.26	.00	.02	.00
24	.34	.07	.01	.20	7.5	.12	.02	.03	.21	.00	.02	.00
25	.14	.07	.01	.17	5.0	.10	.01	.02	.12	.00	.01	6.8
26	.08	.07	.01	.12	2.9	.10	.01	.00	.08	.00	.00	8.3
27	.06	.06	.02	.08	2.2	.09	.05	.00	.04	.00	.00	.19
28	.49	.07	.04	.05	2.2	.09	.07	.05	.02	.00	.00	.12
29	1.3	.06	.02	.03	---	.09	.08	.04	.02	.00	.00	.58
30	1.1	.06	.11	.04	---	.10	.06	.02	.00	.00	.00	.96
31	.82	---	.16	.03	---	.09	---	.00	---	.00	.00	---
TOTAL	4.51	6.72	.92	1.51	228.01	14.20	.92	.27	10.48	.01	56.37	17.27
MEAN	.15	.22	.030	.049	8.14	.46	.031	.009	.35	.000	1.82	.58
MAX	1.3	.75	.16	.20	70	1.4	.08	.05	2.6	.01	33	8.3
MIN	.00	.06	.00	.00	.00	.09	.00	.00	.00	.00	.00	.00
AC-FT	8.9	13	1.8	3.0	452	28	1.8	.5	21	.02	112	34
CAL YR 1980	TOTAL 152.52	MEAN .42	MAX 29	MIN .00	AC-FT 303							
WTR YR 1981	TOTAL 341.19	MEAN .93	MAX 70	MIN .00	AC-FT 677							

KNIFE RIVER BASIN

06340520 ANTELOPE CREEK ABOVE HAZEN, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1978 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS (MG/L AS CAC03) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CAC03) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
NOV 20...	1120	.11	2510	8.4	3.5	2.0	11.8	90	480	0	79	68
DEC 17...	1425	.07	3080	8.1	-1.5	.0	10.0	73	600	1	100	85
FEB 18...	1500	24	300	7.2	9.5	1.0	11.3	85	85	0	18	9.8
21...	1625	12	450	7.5	4.5	1.0	12.0	93	--	--	--	--
MAR 11...	1340	.64	1040	8.1	15.0	2.5	11.6	92	--	--	--	--
18...	0910	.42	1070	8.0	1.0	1.5	13.3	100	220	0	44	26
APR 24...	1300	.02	1970	8.4	27.0	15.0	14.6	159	360	0	61	50

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY, CARBON- ATE FET-FLD (MG/L CAC03) (00430)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
NOV 20...	430	65	8.6	19	480	800	17	.2	6.8	1870	1710	2.5
DEC 17...	550	66	9.8	16	599	1100	21	.3	8.2	2230	2240	3.0
FEB 18...	28	38	1.3	12	92	74	3.6	--	--	220	--	.30
21...	--	--	--	--	134	--	--	--	--	--	--	--
MAR 11...	--	--	--	--	282	--	--	--	--	--	--	--
18...	170	62	5.0	7.7	280	280	5.2	.1	8.9	713	710	.97
APR 24...	320	65	7.4	12	510	570	15	.2	.6	1380	1340	1.8

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	NITRO- GEN, TOTAL (MG/L AS NO3) (71887)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS TOTAL (MG/L AS PO4) (71886)
NOV 20...	.56	--	.16	.030	.04	1.6	1.60	--	--	.090	.28
DEC 17...	.42	--	--	--	--	--	--	--	--	--	--
FEB 18...	14.3	.86	.85	.720	--	.78	1.50	2.4	10	.590	1.8
21...	--	--	--	--	--	--	--	--	--	--	--
MAR 11...	--	--	--	--	--	--	--	--	--	--	--
18...	.81	--	--	--	--	--	--	--	--	--	--
APR 24...	.07	--	.01	.050	--	.93	.98	--	--	.080	.25

06340520 ANTELOPE CREEK ABOVE HAZEN, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC SUS- PENDE TOTAL (UG/L AS AS) (01001)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BARIUM, SUS- PENDE RECOV- ERABLE (UG/L AS BA) (01006)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BERYL- LIUM, SUS- PENDE RECOV- ERABLE (UG/L AS BE) (01011)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)
NOV 20...	.050	--	--	100	0	100	--	--	--	310	--
DEC 17...	--	--	--	--	--	--	--	--	--	320	--
FEB 18...	.450	2	1	100	100	0	0	0	0	160	10
MAR 11...	--	--	--	--	--	--	--	--	--	--	--
MAR 18...	--	--	--	--	--	--	--	--	--	100	--
APR 24...	.040	--	--	100	60	40	--	--	--	290	--

DATE	CHRO- MIUM, SUS- PENDE RECOV- ERABLE (UG/L AS CR) (01031)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	COPPER, SUS- PENDE RECOV- ERABLE (UG/L AS CU) (01041)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI) (01132)	LITHIUM SUS- PENDE RECOV- ERABLE (UG/L AS LI) (01131)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, SUS- PENDE RECOV- ERABLE (UG/L AS MN) (01054)
NOV 20...	--	--	--	--	--	80	90	0	90	80	40
DEC 17...	--	--	--	--	--	70	--	--	--	150	20
FEB 18...	0	10	8	5	3	370	10	0	10	180	110
MAR 11...	--	--	--	--	--	--	--	--	--	--	--
MAR 18...	--	--	--	--	--	90	--	--	--	50	20
APR 24...	--	--	--	--	--	40	60	0	60	100	50

DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MERCURY SUS- PENDE RECOV- ERABLE (UG/L AS HG) (71895)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	NICKEL, SUS- PENDE RECOV- ERABLE (UG/L AS NI) (01066)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE) (01147)	SELE- NIUM, SUS- PENDE RECOV- ERABLE (UG/L AS SE) (01146)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
NOV 20...	40	--	--	--	--	--	--	--	--	--	1100
DEC 17...	130	--	--	--	--	--	--	--	--	--	--
FEB 18...	70	.2	.2	.0	8	3	5	0	0	1	150
MAR 11...	--	--	--	--	--	--	--	--	--	--	--
MAR 18...	30	--	--	--	--	--	--	--	--	--	--
APR 24...	50	--	--	--	--	--	--	--	--	--	830

DATE	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, SUS- PENDE RECOV- ERABLE (UG/L AS ZN) (01091)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	POTAS- SIUM 40 DIS- SOLVED (PCI/L AS K40) (82068)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHENOLS TOTAL (UG/L) (32730)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- SOLVED (T/DAY) (80155)
NOV 20...	--	--	--	--	27	.7	--	--	31	.01
DEC 17...	--	--	--	--	--	--	--	--	27	.01
FEB 18...	120	60	60	9.0	21	2.9	.00	7	115	7.5
FEB 21...	--	--	--	--	--	--	--	--	62	2.0
MAR 11...	--	--	--	--	--	--	--	--	21	.04
MAR 18...	--	--	--	5.7	--	--	--	--	7	.01
APR 24...	--	--	--	9.0	22	.6	--	--	25	.00

KNIFE RIVER BASIN

06340520 ANTELOPE CREEK ABOVE HAZEN, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO APRIL 1981

DATE TIME	NOV 20,80 1120	DEC 17,80 1425	FEB 18,81 1500	MAR 18,81 0910	APR 24,81 1300					
TOTAL CELLS/ML	11000	2700	680	7600	4100					
DIVERSITY: DIVISION	1.6	2.2	1.6	1.5	1.8					
..CLASS	1.6	2.2	1.6	1.5	1.8					
...ORDER	1.7	2.6	2.4	2.1	2.5					
...FAMILY	2.0	2.8	2.8	2.3	3.0					
....GENUS	2.4	3.0	2.9	2.3	3.4					
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										
...CHLOROCUCCALES										
...CHARACIACEAE										
...SCHROEDERIA	81	1	--	--	--	--	--	--	--	--
...MICRACTINIACEAE										
...GOLENKINIA	--	--	--	--	--	--	* 0	--	--	--
...OOCYSTACEAE										
...ANKISTRUESMUS	730	6	80	3	28	4	250	3	180	4
...DICTYUSPHAERIUM	970	9	240	9	--	--	--	--	100	2
...SELENASTRUM	--	--	--	--	--	--	--	--	50	1
...TREUBARIA	--	--	--	--	--	--	--	--	75	2
...SCENEDESMACEAE										
...ACTINASTRUM	650	6	--	--	--	--	--	--	--	--
...SCENEDESMUS	970	9	180	7	28	4	220	3	300	7
...VULVUCALES										
...CHLAMYDOMONADACEAE										
...CHLAMYDOMONAS	81	1	340	13	99	15	950	13	50	1
CHRYSTOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...COSCINODISCAEAE										
...CYCLOTELLA	650	6	100	4	14	2	900	12	480	12
...MELOSIRA	--	--	40	1	--	--	--	--	--	--
...STEPHANODISCUS	--	--	--	--	--	--	--	--	500	12
...PENNALES										
...DIATOMACEAE										
...DIATOMA	--	--	--	--	28	4	140	2	75	2
...FRAGILARIACEAE										
...SYNEDRA	--	--	--	--	14	2	* 0	--	25	1
...NAVICULACEAE										
...ENTOMONEIS	--	--	--	--	--	--	--	--	25	1
...NAVICULA	--	--	--	--	70	10	56	1	130	3
...NITZSCHIAEAE										
...NITZSCHIA	160	1	60	2	14	2	360	5	880#	21
CRYPTOPHYTA (CRYPTOMONADS)										
..CRYPTOPHYCEAE										
...CRYPTOMONADALES										
...CRYPTOCHRYSIDACEAE										
...CHROMONAS	240	2	40	1	--	--	--	--	25	1
...CRYPTOMONADACEAE										
...CRYPTOMONAS	--	--	340	13	--	--	--	--	25	1
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROOCOCCALES										
...CHROOCOCCACEAE										
...AGMENELLUM	--	--	--	--	110#	17	--	--	--	--
...ANACYSTIS	6400#	56	720#	27	28	4	220	3	100	2
...HORMOGONALES										
...NOSTOCACEAE										
...ANABAENA	--	--	--	--	--	--	--	--	830#	20
...USCILLATORIACEAE										
...USCILLATORIA	--	--	--	--	230#	33	4200#	56	--	--
EUGLENOPHYTA (EUGLENOIDS)										
..EUGLENOPHYCEAE										
...EUGLENALES										
...EUGLENACEAE										
...EUGLENA	160	1	--	--	--	--	--	--	25	1
...TRACHELUMONAS	240	2	540#	20	14	2	84	1	230	5
PYRRHOPHYTA (FIRE ALGAE)										
..DINOPHYCEAE										
...GYMNODINIALES										
...GYMNODINIACEAE										
...GYMNODINIUM	--	--	--	--	--	--	110	1	--	--
...PERIDINIALES										
...GLENODINIACEAE										
...GLENODINIUM	81	1	20	1	--	--	--	--	25	1

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

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

KNIFE RIVER BASIN

213

06340524 WEST BRANCH ANTELOPE CREEK NO. 5 NEAR ZAP, ND

LOCATION.--Lat 47°23'10", long 101°50'04", in NE¼NE¼SE¼ sec.20, T.145 N., R.88 W., Mercer County, Hydrologic Unit 10130301, on left bank upstream from culvert on county highway, and 5.5 mi (8.9 km) north of Zap.

DRAINAGE AREA.--4.37 mi² (11.32 km²), revised.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1977 to current year. Prior to October 1979, published as Antelope Creek Tributary No. 5 near Zap.

GAGE.--Water-stage recorder.

REMARKS.--Records fair. Some regulation by stock dams upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 435 ft³/s (12.3 m³/s) Apr. 17, 1979, gage height, 9.78 ft (2.981 m); no flow for many months.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 39.2 ft³/s (1.11 m³/s) Feb. 16, gage height, 3.31 ft (1.009 m), from high-water mark, only peak above base of 10 ft³/s (0.28 m³/s); no flow for many months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.07	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.16	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.02	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.10	.00	.00	.00	.01	.00	.00	.00
15	.00	.00	.00	.00	1.0	.00	.00	.00	.01	.00	.00	.00
16	.00	.00	.00	.00	15	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	7.0	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	4.0	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	2.5	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	1.6	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	1.0	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.50	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.13	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.09	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.01	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	.00	.00	.00	.00	32.94	.31	.01	.01	.02	.00	.00	.00
MEAN	.000	.000	.000	.000	1.18	.010	.000	.000	.001	.000	.000	.000
MAX	.00	.00	.00	.00	15	.16	.01	.01	.01	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	65	.6	.02	.02	.04	.00	.00	.00

CAL YR 1980 TOTAL 14.75 MEAN .040 MAX 5.1 MIN .00 AC-FT 29
WTR YR 1981 TOTAL 33.29 MEAN .091 MAX 15 MIN .00 AC-FT 66

KNIFE RIVER BASIN

06340524 WEST BRANCH ANTELOPE CREEK NO. 5 NEAR ZAP, ND--Continued

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	HARD- NESS (MG/L AS CAC03) (00900)	HARD- NESS NONCAR- BONATE (MG/L AS CAC03) (95902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	CALCIUM RECOV. FM BOT- TOM MA- TERIAL (MG/KG AS CA) (00917)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	MAGNE- SIUM, RECOV. FM BOT- TOM MA- TERIAL (MG/KG) (00924)
FEB												
17...	1430	6.0	110	--	.5	--	--	--	--	--	--	--
18...	1432	5.5	150	7.9	1.0	66	67	16	17	--	5.9	--
19...	1413	4.2	160	--	2.0	--	--	--	--	--	--	--
23...	1039	.12	250	--	1.5	--	--	--	--	--	--	--
23...	1407	.11	255	--	4.5	--	--	--	--	--	--	--
25...	1155	.01	300	--	2.0	--	--	--	--	--	--	--
JUL												
21...	1300	--	--	--	--	--	--	--	--	340	--	130

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	SODIUM, RECOV. FM BOT- TOM MA- TERIAL (MG/KG AS NA) (00934)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	POTAS- SIUM, RECOV. FM BOT- TOM MA- TERIAL (MG/KG AS FE) (00938)	ALKA- LINITY LAB (MG/L AS CAC03) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
FEB												
17...	--	--	--	--	--	--	--	--	--	--	--	--
18...	3.1	7	.2	--	13	--	51	5.1	16	.1	100	.14
JUL												
21...	--	--	--	4.0	--	1180	--	--	--	--	--	--

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	BORON, DIS- SOLVED (UG/L AS B) (01020)	BORON, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS B) (01023)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	IRON, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS FE) (01170)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MANGA- NESE, RECOV. FM BOT- TOM MA- TERIAL (UG/G) (01053)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	MOLYB- DENUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G) (01063)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
FEB											
17...	--	--	--	--	--	--	--	--	--	--	--
18...	1.5	170	--	400	--	10	60	--	0	--	60
JUL											
21...	--	--	265	--	11000	--	--	640	--	3	--

DATE	STRON- TIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G) (01083)	POTAS- SIUM 40 DIS- SOLVED (PCI/L AS K40) (82068)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)
FEB											
17...	--	--	92	1.5	--	--	--	--	--	--	--
18...	--	9.7	76	1.1	--	--	--	--	--	--	--
19...	--	--	64	.73	--	--	--	--	--	--	--
23...	--	--	48	.02	--	--	--	--	--	--	--
23...	--	--	54	.02	--	--	--	--	--	--	--
25...	--	--	12	.00	--	--	--	--	--	--	--
JUL											
21...	82	--	--	--	73	75	81	92	94	96	98

KNIFE RIVER BASIN

215

06340528 WEST BRANCH ANTELOPE CREEK NO. 4 NEAR ZAP, ND

LOCATION.--Lat 47°21'21", long 101°51'16", in the NW¼NW¼NE¼ sec.26, T.145 N., R.88 W., Mercer County, Hydrologic Unit 10130201, on left bank upstream from culvert, and 6.0 mi (9.7 km) northeast of Zap.

DRAINAGE AREA.--8.46 mi² (21.91 km²), revised.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1976 to current year. Prior to Oct. 1978, published as Antelope Creek Tributary No. 4 near Zap.

GAGE.--Water-stage recorder.

REMARKS.--Records fair. Some regulation by stock dams above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 650 ft³/s (18.4 m³/s) Apr. 17, 1979, gage height, 9.66 ft (2.944 m); no flow for several months each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 10 ft³/s (0.28 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Feb. 16	--	30 0.85	3.70 1.128	Sept. 5	2245	*99 2.80	5.57 1.698

No flow for many months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.02	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.06	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.09	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.51	.00	.00	.00	.00	.00	4.5
6	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00	2.2
7	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.13	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.04	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.20	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	2.0	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	20	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	10	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	5.0	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	2.9	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	2.6	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.99	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.59	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.32	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.14	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.01	.00	.02	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.01	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	.00	.00	.02	.00	44.83	.91	.00	.00	.00	.00	.00	6.70
MEAN	.000	.000	.001	.000	1.60	.029	.000	.000	.000	.000	.000	.22
MAX	.00	.00	.01	.00	20	.51	.00	.00	.00	.00	.00	4.5
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.04	.00	89	1.8	.00	.00	.00	.00	.00	13

CAL YR 1980 TOTAL 30.18 MEAN .082 MAX 9.3 MIN .00 AC-FT 60
WTR YR 1981 TOTAL 52.46 MEAN .14 MAX 20 MIN .00 AC-FT 104

KNIFE RIVER BASIN

06340528 WEST BRANCH ANTELOPE CREEK NO. 4 NEAR ZAP, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1976 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	HARD- NESS (MG/L AS CAC03) (00900)	HARD- NESS NONCAR- BONATE (MG/L AS CAC03) (95902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	CALCIUM RECOV. FM BOT- TOM MA- TERIAL (MG/KG AS CA) (00917)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	MAGNE- SIUM, RECOV. FM BOT- TOM MA- TERIAL (MG/KG) (00924)
FEB												
17...	1238	11	130	--	.5	--	--	--	--	--	--	--
18...	1209	4.8	160	--	.5	--	--	--	--	--	--	--
18...	1705	11	200	--	.0	--	--	--	--	--	--	--
19...	1115	2.9	190	8.1	1.0	85	77	13	18	--	7.7	--
23...	1205	.59	310	--	1.5	--	--	--	--	--	--	--
23...	1512	.31	320	--	2.0	--	--	--	--	--	--	--
25...	1235	.01	375	--	2.0	--	--	--	--	--	--	--
MAR												
11...	1424	.03	560	--	3.0	--	--	--	--	--	--	--
JUL												
21...	1000	--	--	--	--	--	--	--	--	270	--	108

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	SODIUM, RECOV. FM BOT- TOM MA- TERIAL (MG/KG AS NA) (00934)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	POTAS- SIUM, RECOV. FM BOT- TOM MA- TERIAL (MG/KG) (00938)	ALKA- LINEITY LAB (MG/L AS CAC03) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED PER AC-FT) (70303)
FEB												
17...	--	--	--	--	--	--	--	--	--	--	--	--
18...	--	--	--	--	--	--	--	--	--	--	--	--
18...	--	--	--	--	--	--	--	--	--	--	--	--
19...	5.8	12	.3	--	11	--	66	31	4.2	.2	129	.18
23...	--	--	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--
MAR												
11...	--	--	--	--	--	--	--	--	--	--	--	--
JUL												
21...	--	--	--	5.7	--	1517	--	--	--	--	--	--

KNIFE RIVER BASIN

217

06340528 WEST BRANCH ANTELOPE CREEK NO. 4 NEAR ZAP, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	BORON, DIS- SOLVED (UG/L AS B) (01020)	BORON, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS B) (01023)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	IRON, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS FE) (01170)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MANGA- NESE, RECOV. FM BOT- TOM MA- TERIAL (UG/G) (01053)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	MOLYB- DENUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G) (01063)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
FEB											
17...	--	--	--	--	--	--	--	--	--	--	--
18...	--	--	--	--	--	--	--	--	--	--	--
18...	--	--	--	--	--	--	--	--	--	--	--
19...	1.0	10	--	380	--	<4	50	--	<10	--	100
23...	--	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--
MAR											
11...	--	--	--	--	--	--	--	--	--	--	--
JUL											
21...	--	--	253	--	14000	--	--	600	--	2	--

DATE	STRON- TIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G) (01083)	POTAS- SIUM 40 DIS- SOLVED (PCI/L AS K40) (82068)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)
FEB											
17...	--	--	116	3.6	--	--	--	--	--	--	--
18...	--	--	79	1.0	--	--	--	--	--	--	--
18...	--	--	58	1.7	--	--	--	--	--	--	--
19...	--	8.2	39	.31	--	--	--	--	--	--	--
23...	--	--	24	.04	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	9	.00	--	--	--	--	--	--	--
MAR											
11...	--	--	16	.00	--	--	--	--	--	--	--
JUL											
21...	104	--	--	--	45	54	69	87	91	94	98

KNIFE RIVER BASIN

06340540 WEST BRANCH ANTELOPE CREEK NEAR HAZEN, ND

LOCATION.--Lat 47°19'00", long 101°41'27", in NE¼SE¼SW¼ sec.3, T.144 N., R.87 W., Mercer County, Hydrologic Unit 10130201, on right bank 50 ft (15 m) upstream from bridge on county road, 600 ft (183 m) upstream from mouth, and 3.2 mi (5.1 km) northwest of Hazen.

DRAINAGE AREA.--37.7 mi² (97.6 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1977 to current year. Prior to October 1979, published as Antelope Creek Tributary near Hazen.

GAGE.--Water-stage recorder. Altitude of gage is 1,780 ft (543 m), from topographic map.

REMARKS.--Records poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 508 ft³/s (14.4 m³/s) Apr. 18, 1979, gage height, 11.93 ft (3.636 m); no flow much of the time each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 39 ft³/s (1.10 m³/s) Feb. 18, gage height, 7.28 ft (2.219 m), only peak above base of 15 ft³/s (0.42 m³/s); no flow for most of time.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.02	.00	.19	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.05	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.18	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.30	.00	.00	.00	.00	1.0	.00
6	.00	.00	.00	.00	.00	.50	.00	.00	.00	.00	.00	.08
7	.00	.00	.00	.00	.00	.40	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.35	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.18	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.02	.00	.06	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.07	.00	.08	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.10	.00	.08	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.05	.00	.06	.00	.00	.33	.00	.00	.00
14	.00	.00	.00	.01	.00	.37	.00	.00	.07	.00	.00	.00
15	.00	.00	.00	.00	4.0	.39	.00	.00	.00	.10	.00	.00
16	.14	.00	.00	.00	10	.21	.00	.00	.00	.00	.00	.00
17	.37	.00	.00	.05	5.0	.06	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.12	24	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.08	26	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.05	17	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	8.5	.00	.00	.00	.00	.00	.00	.00
22	.07	.00	.00	.00	2.7	.00	.00	.00	.00	.00	.01	.00
23	.23	.00	.00	.00	1.8	.00	.00	.00	.00	.00	.00	.00
24	.22	.00	.00	.00	1.0	.00	.00	.00	.00	.00	.00	.00
25	.09	.00	.00	.00	.89	.00	.00	.00	.00	.00	.00	.20
26	.00	.00	.00	.05	.48	.00	.00	.00	.00	.00	.00	.31
27	.00	.00	.01	.10	.58	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.30	.00	.42	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.10	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.08	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.05	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	1.12	.00	.54	.72	102.37	3.46	.00	.00	.40	.10	1.01	.59
MEAN	.036	.000	.017	.023	3.66	.11	.000	.000	.013	.003	.033	.020
MAX	.37	.00	.30	.12	26	.50	.00	.00	.33	.10	1.0	.31
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	2.2	.00	1.1	1.4	203	6.9	.00	.00	.8	.2	2.0	1.2
CAL YR 1980	TOTAL 110.70		MEAN .30	MAX 16	MIN .00	AC-FT 220						
WTR YR 1981	TOTAL 110.31		MEAN .30	MAX 26	MIN .00	AC-FT 219						

KNIFE RIVER BASIN

219

06340540 WEST BRANCH ANTELOPE CREEK NEAR HAZEN, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1978 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHUS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS (MG/L AS CACU3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CACU3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)
FEB 18...	1030	22	260	7.0	9.0	.0	11.6	85	72	0	16
MAR 11...	1515	.10	2740	8.2	9.0	2.0	9.6	75	500	0	67

DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SURP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY, CARBON- ATE FET-FLU (MG/L CACU3) (00430)	SULFATE DIS- SOLVED (MG/L AS SU4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
FEB 18...	7.8	24	38	1.2	10	84	54	3.3	.1	9.5	187
MAR 11...	81	410	63	8.0	11	530	900	18	.2	11	1930

DATE	SOLIDS, SUM OF CONSTI- TUENTS DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	NITRO- GEN, TOTAL (MG/L AS NO3) (71887)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)
FEB 18...	176	.25	11.6	.78	.79	.400	.03	.43	1.2	5.4	.590
MAR 11...	1820	2.6	.52	--	.00	.110	.99	1.10	--	--	.050

DATE	PHOS- PHURUS TOTAL (MG/L AS PU4) (71886)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC SUS- PENDED TOTAL (UG/L AS AS) (01001)	ARSENIC TOTAL IN BOT- TOM MA- TERIAL (UG/G AS AS) (01003)	BARIIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BARIIUM, SUS- PENDED RECOV- ERABLE (UG/L AS BA) (01006)	BARIIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BERYL- LIUM, SUS- PENDED RECOV- ERABLE (UG/L AS BE) (01011)
FEB 18...	1.8	.450	2	1	--	100	0	100	0	0
MAR 11...	.15	.080	3	1	10	100	0	100	0	0

KNIFE RIVER BASIN

06340540 WEST BRANCH ANTELOPE CREEK NEAR HAZEN, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, SUS- PENDE RECov. (UG/L AS CR) (01031)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	CHRO- MIUM, RECov. FM BOT- TUM MA- TERIAL (UG/G AS CU) (01029)	COBALT, RECov. FM BOT- TUM MA- TERIAL (UG/G AS CU) (01038)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	COPPER, SUS- PENDE RECov- ERABLE (UG/L AS CU) (01041)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)
FEB 18...	0	170	10	10	0	--	--	8	4	4
MAR 11...	0	460	20	10	10	2	5	5	4	1

DATE	COPPER, RECov. FM BOT- TUM MA- TERIAL (UG/G AS CU) (01043)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI) (01132)	LITHIUM SUS- PENDE RECov- ERABLE (UG/L AS LI) (01131)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, SUS- PENDE RECov. (UG/L AS MN) (01054)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)
FEB 18...	--	470	10	0	10	140	90	50	.1	.2
MAR 11...	5	70	70	0	70	30	10	20	.1	.0

DATE	MERCURY SUS- PENDE RECov- ERABLE (UG/L AS HG) (71895)	MERCURY RECov. FM BOT- TUM MA- TERIAL (UG/G AS HG) (71921)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	NICKEL, SUS- PENDE RECov- ERABLE (UG/L AS NI) (01066)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE) (01147)	SELE- NIUM, SUS- PENDE RECov. (UG/L AS SE) (01146)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/G AS SR) (01148)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
FEB 18...	.0	--	9	4	5	0	0	0	--	160
MAR 11...	.1	.06	2	0	2	0	0	0	0	2200

DATE	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, SUS- PENDE RECov- ERABLE (UG/L AS ZN) (01091)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	ZINC, FM BOT- TUM MA- TERIAL (UG/G AS ZN) (01093)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT) (80030)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)	GROSS BETA, DIS- SOLVED (PCI/L AS YT-90) (80050)
FEB 18...	50	30	20	--	--	--	--	--	--
MAR 11...	60	50	10	9	<24	<.5	<15	<.5	<14

KNIFE RIVER BASIN

221

06340540 WEST BRANCH ANTELOPE CREEK NEAR HAZEN, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	GRUSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90) (80060)	POTAS- SIUM 40 DIS- SOLVED (PCI/L AS K40) (82068)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENED TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHENOLS (UG/L) (32730)	SEDI- MENT, SUS- PENED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENED (T/DAY) (80155)
FEB 18...	--	7.5	26	1.8	.00	6	112	6.9
MAR 11...	<.5	8.2	20	.4	.00	4	24	.01

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO MARCH 1981

DATE TIME	FEB 18,81 1030	MAR 11,81 1515
TOTAL CELLS/ML	590	300
DIVERSITY: DIVISION	1.8	1.3
..CLASS	1.8	1.3
..ORDER	2.3	1.3
...FAMILY	2.4	1.3
....GENUS	2.4	1.3

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)				
..CHLOROPHYCEAE				
...CHLOROCOCCALES				
....DOCYSTACEAE				
....DICTYOSPHAERIUM	14	2	--	-
..VOLVOCALES				
...CHLAMYDOMONADACEAE				
....CHLAMYDOMONAS	130#	21	77#	26
CHRYSOPHYTA				
..BACILLARIOPHYCEAE				
...PENNALES				
...NAVICULACEAE				
....NAVICULA	42	7	--	-
...NITZSCHACEAE				
....NITZSCHIA	28	5	13	4
CYANOPHYTA (BLUE-GREEN ALGAE)				
..CYANOPHYCEAE				
...CHRUOCOCCALES				
...CHRUOCOCCACEAE				
....ANACYSTIS	200#	33	190#	65
...HORMUGONALES				
...OSCILLATORIACEAE				
....OSCILLATORIA	70	12	--	-
EUGLENOPHYTA (EUGLENUIDS)				
..EUGLENOPHYCEAE				
...EUGLENALES				
...EUGLENACEAE				
....TRACHELUMONAS	110#	19	--	-
PYRRHOPHYTA (FIRE ALGAE)				
..DINOPHYCEAE				
...PERIDINIALES				
...GLENODINIACEAE				
....GLENODINIUM	--	-	13	4

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

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

KNIFE RIVER BASIN

06340580 COAL CREEK NEAR STANTON, ND

LOCATION.--Lat 47°20'03", long 101°31'38", in SE¼NE¼SE¼ sec.32, T.145 N., R.85 W., Mercer County, Hydrologic Unit 10130201, on right bank 60 ft (18.3 m) upstream from bridge, on county road 6.3 mi (10.1 km) west of Stanton, 5.3 mi (8.5 km) northwest of Hazen, and 1.1 mi (1.8 km) upstream from mouth.

DRAINAGE AREA.--15.8 mi² (40.9 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1977 to September 1981 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 1,710 ft (521 m), from topographic map. Prior to Oct. 1, 1979 at datum 10.00 ft (3.05 m) lower.

REMARKS.--Records good except those for winter periods, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 476 ft³/s (13.5 m³/s) Apr. 17, 1979, gage height, 8.40 ft (2.560 m); maximum gage height, 8.67 ft (2.643 m) Mar. 22, 1978, ice jam; no flow on many days each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 75 ft³/s (2.12 m³/s) Feb. 16, gage height, 14.99 ft (4.569 m), ice jam, only peak above base of 30 ft³/s (0.85 m³/s); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.34	.18	.00	.00	.45	.51	.05	.10	.00	.00	.00
2	.00	.34	.13	.00	.00	.45	.45	.02	.15	.00	.00	.00
3	.00	.39	.10	.00	.00	1.0	.38	.00	.20	.00	.00	.00
4	.00	.34	.10	.00	.00	3.0	.34	.00	.18	.00	.00	.00
5	.00	.30	.16	.00	.00	4.0	.28	.00	.08	.00	1.8	.00
6	.00	.30	.12	.00	.00	.80	.28	.00	.05	.00	1.6	.00
7	.00	.28	.10	.00	.00	.52	.22	.00	.00	.00	.79	.00
8	.00	.28	.04	.00	.00	.44	.20	.00	.00	.00	.20	.00
9	.00	.28	.04	.00	.00	1.5	.20	.00	.00	.00	.12	.00
10	.00	.25	.02	.00	.00	4.0	.15	.00	.00	.00	.05	.00
11	.00	.25	.04	.00	.00	5.0	.18	.00	.00	.00	.00	.00
12	.00	.25	.04	.00	.00	4.0	.12	.00	.00	.00	.00	.00
13	.00	.30	.04	.00	.00	2.0	.12	.00	1.4	.00	.00	.00
14	.00	.30	.03	.00	.00	1.5	.12	.01	2.3	.00	.00	.00
15	.00	.25	.04	.00	20	1.8	.12	.01	.20	.00	.00	.00
16	.28	.25	.05	.00	50	1.3	.10	.00	.22	.00	.00	.00
17	3.8	.23	.05	.00	40	1.3	.08	.00	.30	.00	.00	.00
18	.45	.23	.10	.00	20	.86	.08	.00	.20	.00	.00	.00
19	.25	.23	.06	.00	12	.76	.08	.00	.15	.00	.00	.00
20	.20	.23	.00	.00	8.0	.67	.02	.00	.10	.00	.00	.00
21	.20	.23	.00	.00	5.0	.59	.02	.00	.10	.00	.00	.00
22	.30	.23	.00	.00	3.0	.59	.02	.00	.10	.00	.00	.00
23	1.5	.23	.00	.00	2.0	.51	.02	.00	.15	.00	.00	.00
24	1.1	.20	.00	.00	1.2	.76	.02	.00	.08	.00	.00	.00
25	.76	.18	.00	.00	.90	.76	.02	.00	.02	.00	.00	.00
26	.76	.18	.00	.00	.60	.67	.01	.01	.00	.00	.00	.09
27	.67	.15	.00	.00	.55	.51	.05	.05	.00	.00	.00	.30
28	.51	.15	.00	.00	.50	.67	.15	.08	.00	.00	.00	.08
29	.39	.15	.00	.00	---	.67	.15	.12	.00	.00	.00	.02
30	.39	.18	.00	.00	---	.59	.12	.12	.00	.00	.00	.00
31	.39	---	.00	.00	---	.51	---	.08	---	.00	.00	---
TOTAL	11.95	7.50	1.44	.00	163.75	42.18	4.61	.55	6.08	.00	4.56	.49
MEAN	.39	.25	.046	.000	5.85	1.36	.15	.018	.20	.000	.15	.016
MAX	3.8	.39	.18	.00	50	5.0	.51	.12	2.3	.00	1.8	.30
MIN	.00	.15	.00	.00	.00	.44	.01	.00	.00	.00	.00	.00
AC-FT	24	15	2.9	.00	325	84	9.1	1.1	12	.00	9.0	1.0

CAL YR 1980 TOTAL 157.32 MEAN .43 MAX 10 MIN .00 AC-FT 312
WTR YR 1981 TOTAL 243.11 MEAN .67 MAX 50 MIN .00 AC-FT 482

KNIFE RIVER BASIN

06340580 COAL CREEK NEAR STANTON, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

[illegible][illegible][illegible]

KNIFE RIVER BASIN

06340580 COAL CREEK NEAR STANTON, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	MERCURY SUS- PENDE REC OV- ERABLE (UG/L AS HG) (71895)	MERCURY REC OV. FM BOT- TUM MA- TERIAL (UG/G AS HG) (71921)	NICKEL, TOTAL REC OV- ERABLE (UG/L AS NI) (01067)	NICKEL, SUS- PENDE REC OV- ERABLE (UG/L AS NI) (01066)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, SUS- PENDE TOTAL (UG/L AS SE) (01147)	SELE- NIUM, SUS- PENDE TOTAL (UG/L AS SE) (01146)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SELE- NIUM, TOTAL IN BOT- TUM MA- TERIAL (UG/G AS SE) (01148)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
NOV 20...	--	--	--	--	--	--	--	--	--	1700
DEC 16...	--	--	--	--	--	--	--	--	--	--
FEB 20...	.0	--	6	2	4	0	0	0	--	--
APR 03...	--	--	--	--	--	--	--	--	--	1400
23...	--	--	--	--	--	--	--	--	--	--
MAY 15...	.1	.01	9	4	5	0	0	0	0	--
27...	--	--	--	--	--	--	--	--	--	--

DATE	ZINC, TOTAL REC OV- ERABLE (UG/L AS ZN) (01092)	ZINC, SUS- PENDE REC OV- ERABLE (UG/L AS ZN) (01091)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	ZINC, FM BOT- TUM MA- TERIAL (UG/G AS ZN) (01093)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT) (80030)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)	GROSS BETA, DIS- SOLVED (PCI/L AS YT-90) (80050)
FEB 20...	30	20	10	--	--	--	--	--	--
MAY 15...	10	0	10	3	<47	<.6	<24	1.9	<23
27...	--	--	--	--	--	--	--	--	--

DATE	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90) (80060)	POTAS- SIUM 40 DIS- SOLVED (PCI/L AS K40) (82068)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHENOLS (UG/L) (32730)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)
NOV 20...	--	--	20	.3	--	--	103	.06
DEC 16...	--	--	--	--	--	--	49	.01
FEB 20...	--	6.2	24	2.6	.00	3	89	1.0
MAR 12...	--	5.1	--	--	--	--	61	.53
18...	--	--	--	--	--	--	15	.04
25...	--	--	--	--	--	--	22	.04
APR 03...	--	6.6	15	.3	--	--	16	.02
23...	--	--	--	--	--	--	44	.00
MAY 15...	1.8	10	--	--	.00	4	139	.01
27...	--	--	--	--	--	--	108	.01

DATE	BED MAT. FALL DIAM. % FINER THAN .062 MM (80158)	BED MAT. FALL DIAM. % FINER THAN .125 MM (80159)	BED MAT. FALL DIAM. % FINER THAN .250 MM (80160)	BED MAT. FALL DIAM. % FINER THAN .500 MM (80161)	BED MAT. FALL DIAM. % FINER THAN 1.00 MM (80162)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)
MAR 18...	5	9	15	24	37	46	64	87	96	100

KNIFE RIVER BASIN

06340580 COAL CREEK NEAR STANTON, ND--Continued
 PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO MAY 1981

DATE TIME	NOV 20,80 1415	DEC 16,80 1540	FEB 20,81 1455	MAR 12,81 1455	APR 3,81 0900	MAY 15,81 0715						
TOTAL CELLS/ML	670	320	760	6900	220	1200						
DIVERSITY: DIVISION	1.9	0.9	1.8	0.5	1.7	1.3						
..CLASS	1.9	0.9	1.8	0.5	1.7	1.3						
..ORDER	2.4	1.0	2.4	0.5	2.0	1.8						
...FAMILY	2.9	1.0	2.7	0.6	2.4	2.4						
....GENUS	2.9	1.0	2.7	0.6	2.8	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												
...OOCYSTACEAE												
....ANKISTRODESMUS	14	2	--	-	28	4	--	-	26	12	13	1
....TREUBARIA	--	-	--	-	--	-	--	-	--	-	13	1
...TETRASPORALES												
...PALMELLACEAE												
....SPHAEROCYSTIS	--	-	--	-	--	-	140	2	--	-	--	-
...VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	230#	35	270#	84	150#	20	250	4	26	12	120	10
CHRYSOPHYTA												
..BACILLARIOPHYCEAE												
...CENTRALES												
...COSCINODISCEAE												
....CYCLOTELLA	27	4	13	4	--	-	--	-	--	-	--	-
....STEPHANODISCUS	--	-	--	-	--	-	--	-	--	-	130	11
...PENNALES												
...ACHNANTHACEAE												
....ACHNANTHES	--	-	--	-	28	4	--	-	--	-	--	-
...FRAGILARIACEAE												
....FRAGILARIA	--	-	--	-	--	-	--	-	13	6	13	1
....SYNEDRA	--	-	--	-	--	-	*	0	39#	18	26	2
...GOMPHONEMATACEAE												
....GOMPHONEMA	14	2	--	-	--	-	--	-	--	-	13	1
...NAVICULACEAE												
....GYROSIGMA	--	-	--	-	--	-	--	-	--	-	13	1
....NAVICULA	69	10	13	4	42	6	82	1	--	-	77	6
...NITZSCHIACEAE												
....NITZSCHIA	82	12	--	-	56	7	69	1	52#	24	610#	51
...SURIRELLACEAE												
....SURIRELLA	55	8	--	-	14	2	--	-	--	-	--	-
CRYPTIOPHYTA (CRYPTIOMONADS)												
..CRYPTOPHYCEAE												
...CRYPTIOMONADALES												
...CRYPTOMONADACEAE												
....CRYPTOMONAS	27	4	--	-	--	-	--	-	--	-	13	1
CYANOPHYTA (BLUE-GREEN ALGAE)												
..CYANOPHYCEAE												
...CHROOCOCCALES												
...CHROOCOCCACEAE												
....ANACYSTIS	41	6	--	-	--	-	--	-	13	6	77	6
...GUMPHOSPHAERIA	--	-	--	-	280#	37	--	-	--	-	--	-
...HORMOGONALES												
...OSCILLATORIAEAE												
....OSCILLATORIA	82	12	--	-	98	13	6400#	92	--	-	--	-
EUGLENOPHYTA (EUGLENUIDS)												
..EUGLENOPHYCEAE												
...EUGLENALES												
...EUGLENACEAE												
....EUGLENA	--	-	13	4	14	2	--	-	13	6	13	1
....TRACHELOMONAS	--	-	--	-	14	2	--	-	39#	18	77	6
PYRRHOPHYTA (FIRE ALGAE)												
..DINOPHYCEAE												
...GYMNODINIALES												
...GYMNODINIACEAE												
....GYMNODINIUM	27	4	--	-	28	4	--	-	--	-	--	-
...PERIDINIALES												
...GLENODINIACEAE												
....GLENODINIUM	--	-	13	4	--	-	--	-	--	-	--	-

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

MISSOURI RIVER MAIN STEM

227

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, and at mile 1,372 (2,208 km).

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) National Geodetic Vertical Datum of 1929 (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, 10.73 ft (3.270 m) May 7, 1978.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13.48	13.49	13.95	13.11	15.02	14.50	12.23	12.61	14.12	14.02	13.82	13.48
2	13.45	14.40	14.74	13.48	16.33	13.92	12.32	12.81	13.95	15.06	14.08	13.37
3	13.27	14.14	14.00	13.68	17.30	14.84	12.33	12.70	14.14	14.81	14.24	13.57
4	13.45	14.10	13.82	14.54	17.50	14.58	12.23	12.57	13.96	14.44	14.41	13.36
5	13.42	13.99	14.05	15.63	17.20	14.56	12.39	12.50	14.11	14.55	14.64	13.38
6	13.55	14.09	14.07	14.93	16.66	14.68	12.44	12.46	14.01	15.25	14.72	13.36
7	13.69	13.98	13.68	15.25	17.12	14.59	12.09	12.26	13.93	15.09	14.45	12.42
8	13.56	13.88	14.18	16.02	19.96	14.32	12.31	12.31	14.13	14.97	14.07	12.59
9	13.59	14.07	13.86	16.25	19.91	14.71	12.21	12.23	13.15	15.06	13.58	12.38
10	13.54	14.12	13.94	16.89	19.62	14.61	12.35	12.14	---	15.15	13.83	12.90
11	13.49	13.91	13.96	17.34	19.73	14.93	12.32	12.33	---	14.55	13.80	12.50
12	13.54	14.07	13.91	17.22	19.21	14.85	12.20	12.28	---	14.49	13.77	12.32
13	14.00	14.15	14.04	17.05	18.68	14.73	12.19	12.12	---	15.16	13.91	12.79
14	13.68	14.32	14.01	16.77	18.77	14.90	12.19	12.35	---	15.03	13.72	12.29
15	13.69	14.35	13.97	16.51	16.76	14.68	12.26	11.98	---	15.07	13.89	12.66
16	13.75	14.36	14.03	16.34	16.64	14.14	12.19	12.30	---	15.18	13.84	12.46
17	13.65	14.56	13.99	16.37	16.03	14.08	12.23	12.41	---	15.01	13.50	12.42
18	13.75	14.18	13.93	16.07	15.57	13.57	12.24	12.36	---	15.13	13.72	12.56
19	13.51	14.58	13.77	16.22	15.10	13.30	12.21	12.35	---	15.02	13.54	12.48
20	13.64	13.92	13.64	15.76	14.97	13.47	12.50	12.21	---	15.23	13.63	12.45
21	13.85	14.58	11.82	15.56	14.77	13.28	12.42	12.18	---	15.15	13.39	12.64
22	14.16	13.96	13.26	15.12	14.81	12.56	12.27	12.19	---	15.17	13.18	12.63
23	14.00	14.23	12.46	15.27	15.06	12.60	12.44	12.00	---	14.98	13.25	13.10
24	13.72	14.32	12.87	15.06	14.71	12.79	12.26	12.24	---	15.17	13.38	---
25	13.92	14.30	13.57	14.65	14.80	12.05	12.30	12.09	14.38	14.72	13.37	---
26	13.74	14.36	13.21	15.32	14.15	12.36	12.59	12.69	14.37	14.57	13.64	---
27	13.97	14.34	13.12	14.73	14.33	12.45	12.45	13.18	14.44	14.51	13.55	---
28	13.99	13.87	13.00	14.95	14.55	12.37	12.27	13.54	14.05	14.33	13.49	---
29	13.99	13.22	13.38	15.19	---	12.47	12.53	13.29	14.46	14.59	13.52	---
30	14.03	13.76	12.74	15.34	---	12.13	12.92	13.73	14.97	14.42	13.32	13.01
31	13.88	---	12.63	15.11	---	12.26	---	13.98	---	14.42	13.29	---
TOTAL	424.95	423.60	421.60	481.73	465.26	425.28	369.88	388.39	---	460.30	426.54	---
MEAN	13.71	14.12	13.60	15.54	16.62	13.72	12.33	12.53	---	14.85	13.76	---
MAX	14.16	14.58	14.74	17.34	19.96	14.93	12.92	13.98	---	15.25	14.72	---
MIN	13.27	13.22	11.82	13.11	14.15	12.05	12.09	11.98	---	14.02	13.18	---

ALDERIN CREEK BASIN

06340780 ALDERIN CREEK NEAR FORT CLARK, ND

LOCATION.--Lat 47°16'09", long 101°18'34", in NW¼NW¼NE¼ sec.27, T.144 N., R.84 W., Mercer County, Hydrologic Unit 10130101, on left bank 80 ft (24 m) upstream from box culvert on North Dakota Highway 200-A, 3.5 mi (5.6 km) northwest of Ft. Clark, and 2.3 mi (3.7 km) upstream from mouth.

DRAINAGE AREA.--21.9 mi² (56.7 km²) of which 1.1 mi² (2.8 km²) is probably noncontributing.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Altitude of gage is 1,690 ft (515 m), from topographic map.

REMARKS.--Records poor. Flow occasionally affected by pumpage from mine dewatering upstream from the station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,540 ft³/s (43.6 m³/s) Apr. 17, 1979, gage height, 9.95 ft (3.033 m), from rating curve extended above 200 ft³/s (5.66 m³/s) on basis of contracted-opening measurement of peak flow; no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 75 ft³/s (2.12 m³/s) Feb. 16, gage height, 3.90 ft (1.189 m), no peak above base of 75 ft³/s (2.12 m³/s); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.12	4.1	.06	.67	.00	.40	.58	.15	.09	.07	.05	.02
2	.17	3.0	.04	.21	.00	.40	1.0	.13	.22	.06	1.2	.02
3	.16	.71	.03	.01	.00	.60	2.2	.09	.19	.05	6.6	.02
4	.16	.31	.03	.00	.00	1.3	.43	.07	.16	.05	.48	.02
5	.15	.22	.03	.00	.00	3.0	.09	.06	.10	.05	7.0	.02
6	.13	.26	.02	.00	.00	1.0	.44	.06	.05	.03	.58	.02
7	.12	.26	.01	.00	.00	.80	.35	.05	.00	.00	.31	.06
8	.11	.27	.00	.00	.00	.70	.06	.04	.00	.00	.19	.07
9	.11	.38	.00	.00	.00	2.0	.06	.04	.00	.00	.11	.04
10	.12	.18	.00	.00	.00	6.0	.05	.03	.00	.00	.08	.02
11	.09	.11	.00	.00	.00	11	.04	.03	.00	.00	.06	.02
12	.09	.30	.00	.00	.00	25	.04	.02	.00	.03	.08	.02
13	.14	.58	.00	.00	.00	36	.04	.03	1.7	.04	.36	.01
14	.16	.60	.00	.00	.00	21	.04	.07	.50	.20	.33	.01
15	.15	1.9	.00	.00	15	8.5	.04	.06	.22	1.3	.31	.01
16	14	1.6	.10	.00	35	5.0	.04	.04	.20	.36	.33	.00
17	18	1.3	.16	.00	25	2.6	.48	.22	.14	.22	.20	.01
18	2.8	1.0	.06	.00	10	1.1	.75	.36	.20	.73	.22	.00
19	.90	.73	.02	.00	6.0	1.0	.62	.18	.09	.98	.17	.00
20	.42	.67	.00	.00	7.0	1.4	.59	.60	.08	.26	.05	.00
21	.26	.50	.00	.00	3.3	.83	.47	.39	.11	.16	.03	.00
22	2.7	.50	.00	.00	1.5	.16	.28	.24	.19	.10	.03	.00
23	9.1	.36	.00	.00	1.2	.20	.19	.73	.10	.45	.03	.00
24	5.4	.18	.00	.00	.70	.80	.10	.61	.08	.97	.03	.00
25	3.7	.14	.00	.00	.60	.85	.08	.28	.05	.19	.03	.00
26	1.5	.13	.00	.00	.50	.44	.31	.17	.04	.15	.03	.52
27	1.0	.14	.00	.00	.45	.31	.72	.14	.05	.09	.03	.18
28	.62	.16	3.4	.00	.40	.39	.30	.17	.05	.08	.02	.03
29	.71	.16	3.4	.00	---	.39	.22	.18	.06	.08	.02	.03
30	1.9	.16	2.4	.00	---	.34	.16	.13	.06	.06	.02	.03
31	5.7	---	1.8	.00	---	.58	---	.08	---	.06	.02	---
TOTAL	70.69	20.91	11.56	.89	106.65	134.09	10.77	5.45	4.73	6.82	19.00	1.18
MEAN	2.28	.70	.37	.029	3.81	4.33	.36	.18	.16	.22	.61	.039
MAX	18	4.1	3.4	.67	35	36	2.2	.73	1.7	1.3	7.0	.52
MIN	.09	.11	.00	.00	.00	.16	.04	.02	.00	.00	.02	.00
AC-FT	140	41	23	1.8	212	266	21	11	9.4	14	38	2.3

CAL YR 1980 TOTAL 288.27 MEAN .79 MAX 18 MIN .00 AC-FT 572
WTR YR 1981 TOTAL 392.74 MEAN 1.08 MAX 36 MIN .00 AC-FT 779

ALDERIN CREEK BASIN

229

06340780 ALDERIN CREEK NEAR FORT CLARK, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1978 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHUS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION (MG/L) (00301)	HARD- NESS (MG/L AS CACU3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L AS CACU3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)
OCT											
07...	1630	.13	2380	8.1	24.0	13.0	8.1	79	300	0	52
NOV											
13...	1245	.59	2120	8.6	2.5	2.5	12.4	97	320	0	59
DEC											
18...	1205	.07	3440	8.2	-14.5	.0	12.0	86	580	0	110
FEB											
20...	1635	5.6	664	8.2	8.0	.5	13.4	99	--	--	--
21...	0830	.14	780	8.0	3.0	.0	12.9	94	110	0	21
MAR											
12...	1215	12	845	8.3	13.0	.5	13.2	96	120	0	25
18...	1437	.27	680	8.0	9.0	2.5	13.1	102	--	--	--
APR											
03...	1250	2.2	1550	8.6	9.5	9.5	11.4	107	240	0	46
23...	1200	.20	1890	8.5	17.0	12.5	12.0	120	--	--	--
MAY											
14...	1300	.08	2490	8.6	23.0	13.5	12.0	121	400	0	64
26...	1415	.17	1710	8.6	16.0	13.0	11.4	115	--	--	--
JUL											
21...	1355	.16	1010	8.7	25.5	25.0	9.8	124	180	0	35
AUG											
13...	1345	.43	1100	8.3	33.0	22.5	8.9	109	260	0	57
SEP											
01...	1355	.02	1810	8.6	24.5	16.0	13.1	141	370	0	41

DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SURP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY, CARBON- ATE FET-FLD (MG/L CACU3) (00430)	SULFATE DIS- SOLVED (MG/L AS SU4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SI02) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
OCT											
07...	42	490	77	12	9.0	784	540	5.0	.3	13	2210
NOV											
13...	41	420	74	10	9.6	674	540	4.7	.3	7.4	1470
DEC											
18...	73	650	71	12	12	853	910	9.8	.5	14	2370
FEB											
20...	--	--	--	--	--	205	--	--	--	--	--
21...	15	130	69	5.3	11	230	180	4.4	.2	11	518
MAR											
12...	14	150	71	6.0	8.0	290	190	3.4	.2	13	555
18...	--	--	--	--	--	215	--	--	--	--	--
APR											
03...	31	290	71	8.1	7.8	470	430	4.0	.3	9.3	1040
23...	--	--	--	--	--	477	--	--	--	--	--
MAY											
14...	58	470	71	10	11	660	860	8.3	.3	1.9	1780
26...	--	--	--	--	--	504	--	--	--	--	--
JUL											
21...	22	170	66	5.5	8.9	260	260	12	.3	9.2	722
AUG											
13...	29	150	55	4.5	8.4	270	300	9.8	.4	9.6	764
SEP											
01...	64	290	63	7.8	10	520	500	13	.3	12	1260

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

[illegible]

ALDERIN CREEK BASIN

231

06340780 ALDERIN CREEK NEAR FORT CLARK, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BURON, DIS- SOLVED (UG/L AS B) (01020)	CHRO- MIUM, TOTAL RECUV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, SUS- PENDED RECUV. (UG/L AS CR) (01031)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	CHRO- MIUM, RECUV. FM BUT- TUM MA- TERIAL (UG/G) (01029)	CUBALT, RECUV. FM BUT- TUM MA- TERIAL (UG/G AS CU) (01038)	COPPER, TOTAL RECUV- ERABLE (UG/L AS CU) (01042)	COPPER, SUS- PENDED RECUV- ERABLE (UG/L AS CU) (01041)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)
OCT										
07...	--	320	--	--	--	--	--	--	--	--
NOV										
13...	--	320	--	--	--	--	--	--	--	--
DEC										
18...	--	340	--	--	--	--	--	--	--	--
FEB										
20...	--	--	--	--	--	--	--	--	--	--
21...	0	210	10	0	10	--	--	13	8	5
MAR										
12...	--	120	--	--	--	--	--	--	--	--
18...	--	--	--	--	--	--	--	--	--	--
APR										
03...	--	170	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--
MAY										
14...	0	240	0	0	<11	2	13	5	1	4
26...	--	--	--	--	--	--	--	--	--	--
JUL										
21...	--	180	--	--	--	--	--	--	--	--
AUG										
13...	--	170	--	--	--	--	--	--	--	--
SEP										
01...	--	260	--	--	--	--	--	--	--	--

DATE	COPPER, RECUV. FM BUT- TUM MA- TERIAL (UG/G AS CU) (01043)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM TOTAL RECUV- ERABLE (UG/L AS LI) (01132)	LITHIUM SUS- PENDED RECUV- ERABLE (UG/L AS LI) (01131)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, TOTAL RECUV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, SUS- PENDED RECUV. (UG/L AS MN) (01054)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECUV- ERABLE (UG/L AS HG) (71900)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)
OCT										
07...	--	120	70	0	70	210	190	20	--	--
NOV										
13...	--	100	--	--	--	230	150	80	--	--
DEC										
18...	--	60	--	--	--	650	30	620	--	--
FEB										
20...	--	--	--	--	--	--	--	--	--	--
21...	--	390	--	--	--	280	190	90	.2	.2
MAR										
12...	--	310	--	--	--	540	470	70	--	--
18...	--	--	--	--	--	--	--	--	--	--
APR										
03...	--	120	40	0	40	140	100	40	--	--
23...	--	--	--	--	--	--	--	--	--	--
MAY										
14...	7	50	--	--	--	60	40	20	.1	.1
26...	--	--	--	--	--	--	--	--	--	--
JUL										
21...	--	50	--	--	--	110	100	8	--	--
AUG										
13...	--	10	--	--	--	100	90	14	--	--
SEP										
01...	--	10	--	--	--	40	40	4	--	--

ALDERIN CREEK BASIN

06340780 ALDERIN CREEK NEAR FORT CLARK, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

[illegible][illegible]

ALDERIN CREEK BASIN

233

06340780 ALDERIN CREEK NEAR FORT CLARK, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	GRUSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90) (80060)	POTAS- SIUM 40 DIS- SOLVED (PCI/L AS K40) (82068)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHENOLS (UG/L) (32730)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)
OCT 07...	--	--	--	--	--	--	198	.07
NOV 13...	--	--	25	1.4	--	--	257	.41
DEC 18...	--	--	--	--	--	--	170	.03
FEB 20...	--	--	--	--	--	--	151	2.3
21...	--	8.2	30	1.0	.00	1	242	.09
MAR 12...	--	6.0	--	--	--	--	826	27
18...	--	--	--	--	--	--	190	.14
APR 03...	--	5.8	25	1.4	--	--	147	.87
23...	--	--	--	--	--	--	74	.04
MAY 14...	1.6	8.2	--	--	.00	5	106	.02
26...	--	--	--	--	--	--	122	.06
JUL 21...	--	6.6	12	1.3	--	--	102	.04
AUG 13...	--	--	--	--	--	--	113	.13
SEP 01...	--	--	--	--	--	--	64	.00

DATE	BED MAT. FALL DIAM. % FINER THAN .062 MM (80158)	BED MAT. FALL DIAM. % FINER THAN .125 MM (80159)	BED MAT. FALL DIAM. % FINER THAN .250 MM (80160)	BED MAT. FALL DIAM. % FINER THAN .500 MM (80161)	BED MAT. FALL DIAM. % FINER THAN 1.00 MM (80162)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)
FEB 20...	--	--	--	--	--	99	100	--	--	--
21...	34	52	69	73	75	76	80	88	94	100

DATE	LENGTH OF EXPO- SURE (DAYS) (00022)	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2) (70957)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2) (70958)	PERI- PHYTON BIOMASS ASH WEIGHT G/SQ M (00572)	PERI- PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)
AUG 13...	21	.700	.320	1.10	1.42
SEP 01...	28	.620	.250	1.50	1.89

ALDERIN CREEK BASIN

06340780 ALDERIN CREEK NEAR FORT CLARK, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	OCT 7,80 1630	NOV 13,80 1245	FEB 21,81 0830	MAR 12,81 1215	APR 3,81 1250
TOTAL CELLS/ML	710	3200	640	2400	7400
DIVERSITY: DIVISION	1.7	1.1	1.4	1.1	1.8
..CLASS	1.7	1.1	1.4	1.1	1.8
..ORDER	1.9	1.9	1.9	1.2	2.3
...FAMILY	2.5	2.4	2.5	1.7	2.3
....GENUS	3.2	2.8	2.5	1.8	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										
...CHLOROCUCCALES										
...CHARACIACEAE										
...SCHROEDERIA	--	-	27	1	--	-	--	-	--	-
...MICRACTINIACEAE										
...MICKACTINIUM	26	4	--	-	--	-	--	-	--	-
...UOCYSTACEAE										
...ANKISTRUDES MUS	100	15	1200#	38	14	2	57	2	140	2
...CHODATELLA	--	-	--	-	--	-	--	-	--	-
...DICTYUSPHAERIUM	13	2	--	-	--	-	--	-	--	-
...KIRCHNERIELLA	--	-	27	1	--	-	--	-	--	-
...UOCYSTIS	--	-	--	-	14	2	--	-	--	-
...SELENASTRUM	--	-	--	-	--	-	--	-	--	-
...TREUBARIA	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
...ACTINASTRUM	--	-	--	-	--	-	--	-	--	-
...CRUCIGENIA	52	7	110	3	--	-	--	-	--	-
...SCENEDESMUS	100	15	210	7	--	-	110	5	--	-
...TETRASTRUM	52	7	110	3	--	-	--	-	--	-
..TETRASPORALES										
...PALMELLACEAE										
...SPHAEROCYSTIS	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
...CARTERIA	--	-	27	1	--	-	--	-	--	-
...CHLAMYDOMONAS	26	4	770#	24	220#	35	110	5	1800#	25
...VOLVOCACEAE										
...PANDORINA	--	-	--	-	110#	17	--	-	--	-
CHRYSOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...COSCINODISCACEAE										
...CYCLOTILLA	52	7	27	1	28	4	--	-	2300#	31
...MELUSIRA	--	-	--	-	--	-	--	-	--	-
...PENNALES										
...ACHNANTHACEAE										
...CUCCONEIS	--	-	--	-	--	-	--	-	--	-
...CYMBELLACEAE										
...EPITHEMIA	--	-	--	-	--	-	14	1	--	-
...DIATOMACEAE										
...DIATOMA	--	-	--	-	14	2	--	-	--	-

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

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

CONTINUED ...

ALDERIN CREEK BASIN

235

06340780 ALDERIN CREEK NEAR FORT CLARK, ND--Continued
 PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

(CONTINUED)

DATE TIME	OCT 7,80 1630		NOV 13,80 1245		FEB 21,81 0830		MAR 12,81 1215		APR 3,81 1250	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
...FRAGILARIACEAE										
....SYNEORA	--	-	--	-	--	-	--	-	--	-
...GOMPHONEMACEAE										
....GOMPHONEMA	--	-	--	-	--	-	14	1	--	-
...NAVICULACEAE										
....GYROSIGMA	--	-	--	-	--	-	43	2	--	-
....NAVICULA	--	-	110	3	--	-	110	5	47	1
....PLEUROSIGMA	--	-	--	-	--	-	14	1	--	-
...NITZSCHIACEAE										
....NITZSCHIA	13	2	80	2	70	11	130	5	230	3
...SURIPELLACEAE										
....SURIPELLA	--	-	27	1	--	-	--	-	140	2
..CHRYSOPHYCEAE										
...CHRYSONOMADALES										
...OCHROMONADACEAE										
....DINOBRYON	--	-	--	-	--	-	--	-	--	-
....OCHROMONAS	--	-	--	-	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)										
..CRYPTOPHYCEAE										
...CRYPTOMONADALES										
...CRYPTOMONADACEAE										
....CRYPTOMONAS	--	-	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROOCOCCALES										
...CHROOCOCCACEAE										
....ANACYSTIS	190#	27	80	2	28	4	--	-	230	3
...HORMOGONALES										
...OSCILLATORIACEAE										
....LYNGBYA	--	-	--	-	--	-	--	-	--	-
...OSCILLATORIA	--	-	--	-	140#	22	1700#	70	2100#	28
...RIVULARIACEAE										
...RAPIDIOPSIS	--	-	--	-	--	-	110	5	--	-
EUGLENOPHYTA (EUGLENOIDS)										
..EUGLENOPHYCEAE										
...EUGLENALES										
...EUGLENACEAE										
....EUGLENA	39	5	80	2	--	-	--	-	190	3
....LEPOCINCLIS	--	-	--	-	--	-	--	-	--	-
....PHACUS	--	-	--	-	--	-	--	-	47	1
....TRACHELOMONAS	39	5	290	9	--	-	--	-	140	2
PYRRHOPHYTA (FIRE ALGAE)										
..DINOPHYCEAE										
...PERIDINIALES										
...GLENODINIACEAE										
....GLENODINIUM	--	-	27	1	--	-	--	-	--	-
UNKNOWN 30 25	--	-	--	-	--	-	--	-	--	-

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

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

ALDERIN CREEK BASIN

06340780 ALDERIN CREEK NEAR FORT CLARK, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	MAY 14,81 1300	JUL 21,81 1355	AUG 13,81 1345	SEP 1,81 1355
TOTAL CELLS/ML	5300	4300	5600	2800
DIVERSITY: DIVISION	1.4	1.7	1.8	2.0
..CLASS	1.4	1.7	1.8	0.0
..ORDER	1.4	2.2	2.4	0.0
...FAMILY	1.5	2.6	3.0	0.0
....GENUS	1.8	3.2	3.4	0.0

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
...CHARACIACEAE								
....SCHROEDERIA	--	-	--	-	--	-	--	-
...MIRACTINIACEAE								
....MIRACTINIUM	--	-	--	-	150	3	--	-
...OOCYSTACEAE								
....ANKISTRODESUS	1100#	21	310	7	690	12	100	4
....CHODATELLA	--	-	--	-	*	0	--	-
....DICTYOSPHAERIUM	--	-	120	3	130	2	87	3
....KIRCHNERIELLA	--	-	--	-	170	3	--	-
...OOCYSTIS	--	-	--	-	43	1	17	1
....SELENASTRUM	600	11	--	-	--	-	--	-
....TREUBARIA	--	-	92	2	*	0	17	1
...SCENEDESMACEAE								
....ACTINASTRUM	--	-	980#	23	--	-	--	-
....CRUCIGENIA	--	-	--	-	110	2	--	-
...SCENEDESMUS	50	1	--	-	220	4	70	3
....TETRASTRUM	--	-	--	-	--	-	--	-
...TETRASPORALES								
...PALMELLACEAE								
....SPHAERUCYSTIS	--	-	--	-	86	2	--	-
...VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CARTERIA	--	-	--	-	--	-	--	-
....CHLAMYDOMONAS	--	-	580	14	150	3	420#	15
...VOLVOCAEAE								
....PANDOURINA	--	-	--	-	--	-	--	-
CHRYSOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
...COSCINUISCACEAE								
....CYCLOTELLA	50	1	61	1	110	2	510#	18
....MELOSIRA	--	-	--	-	*	0	--	-
...PENNALES								
...ACHNANTHACEAE								
....COCCONEIS	--	-	--	-	65	1	--	-
...CYMBELLACEAE								
....EPITHEMIA	--	-	--	-	--	-	--	-
...DIATUMACEAE								
....DIATOMA	--	-	--	-	--	-	--	-

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

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

CONTINUED ...

ALDERIN CREEK BASIN

237

06340780 ALDERIN CREEK NEAR FORT CLARK, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

(CONTINUED)

DATE TIME	MAY 14,81 1300		JUL 21,81 1355		AUG 13,81 1345		SEP 1,81 1355	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
...FRAGILARIACEAE								
...SYNEDRA	--	-	--	-	--	-	35	1
...GOMPHONEMATACEAE								
...GOMPHONEMA	--	-	--	-	*	0	--	-
...NAVICULACEAE								
...GYROSIGMA	*	0	--	-	--	-	--	-
...NAVICULA	--	-	120	3	220	4	52	2
...PLEUROSIGMA	--	-	--	-	65	1	17	1
...NITZSCHIACEAE								
...NITZSCHIA	280	5	640#	15	470	9	87	3
...SURIRELLACEAE								
...SURIRELLA	--	-	--	-	--	-	--	-
..CHRYSOPHYCEAE								
..CHRYSOMONADALES								
...OCHROMONADACEAE								
....DINOBRYON	--	-	--	-	--	-	35	1
....OCHROMONAS	--	-	--	-	65	1	190	7
CRYPTOPHYTA (CRYPTOMONADS)								
..CRYPTOPHYCEAE								
..CRYPTOMONADALES								
...CRYPTOMONADACEAE								
....CRYPTOMONAS	--	-	--	-	110	2	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
..CHROOCYCEALES								
...CHROOCOCCACEAE								
....ANACYSTIS	3000#	57	--	-	430	8	120	4
..HORMOGONALES								
...OSCILLATORIACEAE								
....LYNGBYA	--	-	--	-	--	-	440#	16
...OSCILLATORIA	--	-	180	4	2000#	36	280	10
...RIVULARIACEAE								
....RAPHIIDIOPSIS	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)								
..EUGLENOPHYCEAE								
..EUGLENALES								
...EUGLENACEAE								
....EUGLENA	--	-	640#	15	170	3	--	-
....LEPOCINCLIS	--	-	150	4	--	-	--	-
....PHACUS	--	-	210	5	--	-	--	-
....TRACHELOMONAS	130	2	150	4	--	-	190	7
PYRRHOPHYTA (FIRE ALGAE)								
..DINOPHYCEAE								
..PERIDINIALES								
...GLENODINIACEAE								
....GLENODINIUM	--	-	--	-	--	-	--	-
UNKNOWN 30 25	--	-	--	-	--	-	87	3

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

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

MISSOURI RIVER MAIN STEM

06340890 MISSOURI RIVER TRIBUTARY NO. 2 NEAR HENSLER, ND

LOCATION.--Lat 47°16'31", long 101°11'49", in SW¼NE¼SE¼ sec.21, T.144 N., R.83 W., McLean County, Hydrologic Unit 10130101, on right bank 200 ft (61 m) upstream from culverts on county road, 7.9 mi (12.7 km) west of Washburn, 5.4 mi (8.7 km) northwest of Hensler and 0.5 mi (0.8 km) upstream from mouth.

DRAINAGE AREA.--9.8 mi² (25.4 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1978 to September 1981 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 1,670 ft (509 m), from topographic map.

REMARKS.--Records good except those for February, March, and May to September, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 455 ft³/s (12.9 m³/s) Apr. 17, 1979, gage height, 9.45 ft (2.880 m); no flow much of the time each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, about 27 ft³/s (0.76 m³/s) Feb. 15, gage height, 5.9 ft (1.80 m) from floodmark, ice jam, no peak above base of 30 ft³/s (0.85 m³/s); no flow for most of the time.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.08	.00	.00	.00	.34	.09	.00	.00	.00	.00	.00
2	.00	.06	.00	.00	.00	.26	.09	.00	.00	.00	.00	.00
3	.00	.02	.00	.00	.00	.20	.06	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.50	.04	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	1.0	.01	.00	.00	.00	.15	.00
6	.00	.00	.00	.00	.00	.40	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.25	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.25	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.80	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	2.1	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	4.0	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	2.2	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	1.2	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.70	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	3.5	.45	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	15	.35	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	10	.25	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	6.0	.15	.00	.00	.00	.00	.00	.00
19	.02	.00	.00	.00	5.0	.09	.00	.00	.00	.00	.00	.00
20	.10	.00	.00	.00	3.0	.06	.00	.00	.00	.00	.00	.00
21	.04	.00	.00	.00	1.4	.04	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.86	.02	.00	.00	.00	.03	.00	.00
23	1.0	.00	.00	.00	.62	.03	.00	.00	.00	.05	.00	.00
24	1.1	.00	.00	.00	.50	.12	.00	.00	.00	.00	.00	.00
25	.52	.00	.00	.00	.30	.12	.00	.00	.00	.00	.00	.00
26	.32	.00	.00	.00	.20	.06	.00	.00	.00	.00	.00	.00
27	.23	.00	.00	.00	.35	.03	.00	.00	.00	.00	.00	.00
28	.14	.00	.00	.00	.45	.06	.00	.00	.00	.00	.00	.00
29	.10	.00	.00	.00	---	.08	.00	.00	.00	.00	.00	.00
30	.10	.00	.00	.00	---	.09	.00	.00	.00	.00	.00	.00
31	.08	---	.00	.00	---	.10	---	.00	---	.00	.00	---
TOTAL	3.75	.16	.00	.00	47.18	16.30	.29	.00	.00	.08	.15	.00
MEAN	.12	.005	.000	.000	1.69	.53	.010	.000	.000	.003	.005	.000
MAX	1.1	.08	.00	.00	15	4.0	.09	.00	.00	.05	.15	.00
MIN	.00	.00	.00	.00	.00	.02	.00	.00	.00	.00	.00	.00
AC-FT	7.4	.3	.00	.00	94	32	.6	.00	.00	.2	.3	.00

CAL YR 1980 TOTAL 86.17 MEAN .24 MAX 6.0 MIN .00 AC-FT 171
WTR YR 1981 TOTAL 67.91 MEAN .19 MAX 15 MIN .00 AC-FT 135

06340890 MISSOURI RIVER TRIBUTARY NO. 2 NEAR HENSLER, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1978 to September 1981 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION (00301)	HARD- NESS (MG/L AS CACU3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L AS CACU3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)
FEB											
20...	0905	4.4	592	8.0	8.0	.0	13.0	96	--	--	--
21...	0835	1.4	512	8.0	3.0	.0	12.9	93	120	0	22
MAR											
10...	1040	2.0	920	7.9	3.5	.0	12.1	86	200	0	39
18...	1645	.15	420	7.7	3.0	2.5	10.6	82	--	--	--
APR											
02...	0935	.09	640	8.2	12.0	5.5	12.0	101	160	0	36

DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY, CARBON- ATE FET-FLD (MG/L CACU3) (00430)	SULFATE DIS- SOLVED (MG/L AS SU4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIU2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
FEB											
20...	--	--	--	--	--	151	--	--	--	--	--
21...	15	70	54	2.8	8.6	140	140	2.7	.1	12	343
MAR											
10...	26	130	57	4.0	8.3	240	250	4.0	.1	14	628
18...	--	--	--	--	--	144	--	--	--	--	--
APR											
02...	17	85	52	2.9	6.2	230	110	2.1	.2	10	413

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TUNS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TUNS PER DAY) (70302)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHURUS, TOTAL (MG/L AS P) (00665)	PHOS- PHURUS TOTAL (MG/L AS PU4) (71886)	PHOS- PHURUS, DIS- SOLVED (MG/L AS P) (00666)	ARSENIC TOTAL (UG/L AS AS) (01002)
FEB											
21...	556	.47	1.3	.44	.160	1.9	2.10	.240	.74	.150	3
MAR											
10...	616	.85	3.4	--	--	--	--	--	--	--	--
18...	--	--	--	--	--	--	--	--	--	--	--
APR											
02...	405	.56	.10	.03	.080	1.2	1.30	.140	.43	.070	--

DATE	ARSENIC SUS- PENDED TOTAL (UG/L AS AS) (01001)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BARIUM, SUS- PENDED RECOV- ERABLE (UG/L AS BA) (01006)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BERYL- LIUM, SUS- PENDED RECOV- ERABLE (UG/L AS BE) (01011)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, SUS- PENDED RECOV- ERABLE (UG/L AS CR) (01031)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)
FEB											
21...	0	--	--	--	0	0	0	180	10	10	0
MAR											
10...	--	--	--	--	--	--	--	80	--	--	--
18...	--	--	--	--	--	--	--	--	--	--	--
APR											
02...	--	100	40	60	--	--	--	70	--	--	--

MISSOURI RIVER MAIN STEM

06340890 MISSOURI RIVER TRIBUTARY NO. 2 NEAR HENSLER, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	COPPER, SUS- PENDE RECov- ERABLE (UG/L AS CU) (01041)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI) (01132)	LITHIUM SUS- PENDE RECov- ERABLE (UG/L AS LI) (01131)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, SUS- PENDE RECov- ERABLE (UG/L AS MN) (01054)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
FEB										
20...	--	--	--	--	--	--	--	--	--	--
21...	5	1	4	640	--	--	--	120	60	60
MAR										
10...	--	--	--	260	--	--	--	40	20	20
18...	--	--	--	--	--	--	--	--	--	--
APR										
02...	--	--	--	190	20	0	20	50	30	20

DATE	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MERCURY SUS- PENDE RECov- ERABLE (UG/L AS HG) (71895)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	NICKEL, SUS- PENDE RECov- ERABLE (UG/L AS NI) (01066)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE) (01147)	SELE- NIUM, SUS- PENDE RECov- ERABLE (UG/L AS SE) (01146)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
FEB										
20...	--	--	--	--	--	--	--	--	--	--
21...	.1	.1	.0	16	13	3	0	0	0	--
APR										
02...	--	--	--	--	--	--	--	--	--	270

DATE	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, SUS- PENDE RECov- ERABLE (UG/L AS ZN) (01091)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	POTAS- SIUM 40 DIS- SOLVED (PCI/L AS K40) (82068)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHENOLS (UG/L) (32730)	SEDI- MENT, SUS- PENDE TOTAL (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)
FEB										
20...	--	--	--	--	--	--	--	--	64	.76
21...	40	0	40	6.4	27	2.2	.00	1	55	.21
MAR										
10...	--	--	--	6.2	--	--	--	--	32	.18
18...	--	--	--	--	--	--	--	--	37	.01
APR										
02...	--	--	--	4.6	12	.7	--	--	34	.01

DATE	BED MAT. FALL DIAM. % FINER THAN (00158)	BED MAT. FALL DIAM. % FINER THAN (00159)	BED MAT. FALL DIAM. % FINER THAN (00160)	BED MAT. FALL DIAM. % FINER THAN (00161)	BED MAT. FALL DIAM. % FINER THAN (00162)	BED MAT. FALL DIAM. % FINER THAN (00169)	BED MAT. FALL DIAM. % FINER THAN (00170)	BED MAT. FALL DIAM. % FINER THAN (00171)	BED MAT. FALL DIAM. % FINER THAN (00172)
FEB									
20...	35	40	46	52	57	60	67	78	100
MAR									
18...	91	96	99	100	--	--	--	--	--

06340890 MISSOURI RIVER TRIBUTARY NO. 2 NEAR HENSLER, ND--Continued
 PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO APRIL 1981

DATE TIME	FEB 21,81 0835	MAR 10,81 1040	APR 2,81 0935
TOTAL CELLS/ML	1000	5200	720
DIVERSITY: DIVISION	0.8	0.4	0.8
..CLASS	0.8	0.4	0.8
...ORDER	1.5	0.5	1.7
...FAMILY	1.5	1.0	2.0
....GENUS	1.6	1.1	2.2

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)						
..CHLOROPHYCEAE						
...CHLOROCOCCALES						
...DOCYSTACEAE						
....ANKISTRODESMUS	14	1	69	1	65	9
....DOCYSTIS	14	1	*	0	--	-
....SELENASTRUM	14	1	--	-	--	-
...SCENEDESMACEAE						
....ACTINASTRUM	--	-	*	0	--	-
...SCENEDESMUS	--	-	--	-	100	14
....TETRASTRUM	--	-	--	-	52	7
..TETRASPOALES						
...PALMELLACEAE						
....SPHAEROCYSTIS	--	-	55	1	--	-
..VOLVOCALES						
...CHLAMYDOMONADACEAE						
....CHLAMYDOMONAS	96	10	96	2	400#	55
CHRYSTOPHYTA						
..BACILLARIOPHYCEAE						
...CENTRALES						
...COSCINODISCACEAE						
....CYCLOTELLA	--	-	*	0	13	2
..PENNALES						
...MERIDIONACEAE						
....MERIDION	--	-	*	0	--	-
...NAVICULACEAE						
....NAVICULA	14	1	--	-	--	-
...NITZSCHIA						
....NITZSCHIA	--	-	*	0	39	5
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...CHROOCOCCALES						
...CHROOCOCCACEAE						
....ANACYSTIS	170#	16	--	-	13	2
...HORMOGONALES						
...OSCILLATORIACEAE						
....LYNGBYA	--	-	110	2	--	-
...OSCILLATORIA	670#	67	4200#	81	--	-
...RIVULARIACEAE						
....RAPHIIDIOPSIS	--	-	560	11	--	-
EUGLENOPHYTA (EUGLENIDS)						
..EUGLENOPHYCEAE						
...EUGLENALES						
...EUGLENACEAE						
....EUGLENA	--	-	--	-	26	4
...TRACHELONAS	14	1	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)						
..DINOPHYCEAE						
...GYMNODINIALES						
...GYMNODINIACEAE						
....GYMNODINIUM	--	-	*	0	--	-
...PERIDINIALES						
...GLENODINIACEAE						
....GLENODINIUM	--	-	*	0	13	2

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

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

MISSOURI RIVER MAIN STEM

06340900 MISSOURI RIVER NEAR HENSLER, ND

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 (12.1 km) west of Washburn, and at mile 1,362 (2,191 km).

DRAINAGE AREA.--183,000 mi² (474,000 km²), approximately.

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

GAGE.--Water-stage recorder. Datum of gage is 1,640.00 ft (499.872 m) National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). 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, 27.77 ft (8.464 m) Mar. 20, 1965; minimum daily recorded, 15.18 ft (4.627 m) Nov. 23, 1979.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17.73	17.89				---	16.72	17.00	18.38	18.36	---	17.80
2	17.67	18.40				---	16.78	17.26	18.34	19.27	---	17.78
3	17.46	18.21				16.78	16.81	17.23	18.61	19.26	---	17.92
4	17.63	18.14				16.96	16.71	17.10	18.43	18.74	---	17.75
5	17.68	17.80				17.34	16.89	16.92	18.35	18.84	---	17.88
6	17.80	18.24				16.49	16.90	17.06	18.43	19.44	---	17.86
7	17.84	18.27				17.09	16.61	16.79	18.31	19.38	---	17.00
8	17.78	18.22				17.96	16.71	16.88	18.62	19.26	---	17.08
9	17.71	18.04				17.82	16.65	16.76	18.32	19.32	---	16.97
10	17.82	17.72				17.77	16.88	16.61	18.55	19.46	---	17.32
11	17.72	18.17				18.13	16.83	16.86	18.84	18.88	---	17.00
12	17.83	18.17				17.73	16.73	16.84	18.80	18.85	---	16.85
13	18.28	---				17.70	16.72	16.69	18.97	19.38	---	17.43
14	18.01	---				18.49	16.58	16.88	18.39	19.30	---	16.69
15	17.99	---				17.96	16.78	16.54	18.73	19.36	---	17.18
16	18.12	---				17.95	16.72	16.79	18.49	19.38	---	16.90
17	17.98	---				17.37	16.76	16.81	18.79	19.26	---	16.91
18	17.84	---				17.36	16.78	16.76	18.56	19.47	---	16.99
19	17.81	---				17.21	16.73	16.77	18.64	19.18	---	16.95
20	17.75	---				17.37	16.88	16.76	18.60	19.46	---	16.90
21	18.00	---				17.37	16.84	16.69	18.11	19.39	17.90	17.07
22	18.39	---				16.68	16.74	16.69	18.46	19.40	17.63	17.06
23	18.02	---				16.96	16.88	16.57	18.68	19.29	17.70	17.40
24	17.85	---				16.98	16.81	16.80	18.42	19.32	17.82	17.58
25	17.51	---				16.67	16.78	16.64	18.57	19.14	17.77	17.55
26	17.37	---				16.75	17.12	16.92	18.73	18.88	17.99	17.37
27	17.57	---				16.94	16.95	17.62	18.75	18.76	17.97	17.28
28	17.48	---				16.82	16.89	17.95	18.52	18.67	17.90	17.71
29	17.65	---				16.92	16.99	17.64	18.74	18.85	17.90	17.44
30	18.09	---				16.58	17.29	18.14	19.23	18.78	17.87	17.49
31	17.53	---				16.74	---	18.28	---	---	17.59	---
TOTAL	551.91	---				---	504.46	527.25	557.36	---	---	519.11
MEAN	17.80	---				---	16.82	17.01	18.58	---	---	17.30
MAX	18.39	---				---	17.29	18.28	19.23	---	---	17.92
MIN	17.37	---				---	16.58	16.54	18.11	---	---	16.69

LOCATION.--Lat 47°18'09", long 101°07'52", in SW¼SE¼ sec.12, T.144 N., R.83 W., McLean County, Hydrologic Unit 10130101, on right bank 100 ft (30 m) upstream from bridge, on county road 4.5 mi (7.2 km) west of Washburn, 3.6 mi (5.8 km) northwest of Hensler, and 0.3 mi (0.8 km) upstream from mouth.

WATER-DISCHARGE RECORDS

REMARKS.--Records poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 926 ft³/s (26.2 m³/s) Aug. 20, 1980, gage height, 8.61 ft (2.624 m) from rating extended above 600 ft³/s (17.0 m³/s) on basis of a culvert computation of peak flow; no flow for many months each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 76 ft³/s (2.15 m³/s) Mar. 11, gage height, 2.71 ft (0.826 m), only peak above base of 40 ft³/s (1.13 m³/s); no flow for many months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.03	.00	.00	.00	.47	.01	.00	.00	.00	.00	.00
2	.00	.03	.00	.00	.00	.29	.01	.00	.00	.00	.00	.00
3	.00	.03	.00	.00	.00	.25	.01	.00	.00	.00	.00	.00
4	.00	.01	.00	.00	.00	.50	.01	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.75	.01	.00	.00	.00	.24	.00
6	.00	.00	.00	.00	.00	.19	.01	.00	.00	.00	.00	.00
7	.00	.01	.00	.00	.00	.20	.00	.00	.00	.00	.00	.00
8	.00	.01	.00	.00	.00	.50	.01	.00	.00	.00	.00	.00
9	.00	.02	.00	.00	.00	1.5	.01	.00	.00	.00	.00	.00
10	.00	.01	.00	.00	.00	3.6	.01	.00	.00	.00	.00	.00
11	.00	.01	.00	.00	.00	19	.01	.00	.00	.00	.00	.00
12	.00	.01	.00	.00	.00	10	.01	.00	.00	.00	.00	.00
13	.00	.02	.00	.00	.00	6.0	.00	.00	.00	.00	.00	.00
14	.00	.01	.00	.00	.25	3.0	.01	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.50	2.0	.01	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	1.5	1.0	.01	.00	.00	.00	.00	.00
17	.24	.00	.00	.00	5.0	.60	.01	.00	.00	.00	.00	.00
18	.34	.00	.00	.00	10	.35	.02	.00	.00	.00	.00	.00
19	.19	.00	.00	.00	5.9	.20	.00	.00	.00	.00	.00	.00
20	.06	.00	.00	.00	3.1	.01	.02	.00	.00	.00	.00	.00
21	.01	.02	.00	.00	1.7	.00	.03	.00	.00	.00	.00	.00
22	.08	.01	.00	.00	1.6	.01	.00	.00	.00	.07	.00	.00
23	.36	.00	.00	.01	1.5	.05	.00	.00	.00	.08	.00	.00
24	.31	.00	.00	.08	1.3	.31	.00	.00	.00	.00	.00	.00
25	.25	.00	.00	.04	.80	.18	.00	.00	.00	.00	.00	.00
26	.19	.00	.00	.00	.50	.05	.00	.00	.00	.00	.00	.00
27	.16	.00	.00	.00	2.1	.00	.01	.00	.00	.00	.00	.00
28	.08	.00	.01	.00	1.4	.00	.01	.00	.00	.00	.00	.00
29	.06	.00	.05	.00	---	.00	.02	.00	.00	.00	.00	.00
30	.04	.00	.06	.00	---	.00	.01	.00	.00	.00	.00	.00
31	.03	---	.02	.00	---	.01	---	.00	---	.00	.00	---
TOTAL	2.40	.23	.14	.13	37.15	51.02	.27	.00	.00	.15	.24	.00
MEAN	.077	.008	.005	.004	1.33	1.65	.009	.000	.000	.005	.008	.000
MAX	.36	.03	.06	.08	10	19	.03	.00	.00	.08	.24	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	4.8	.5	.3	.3	74	101	.5	.00	.00	.3	.5	.00
CAL YR 1980	TOTAL	410.26	MEAN	1.12	MAX	190	MIN	.00	AC-FT	814		
WTR YR 1981	TOTAL	91.73	MEAN	.25	MAX	19	MIN	.00	AC-FT	182		

COAL LAKE COULEE BASIN

06340905 COAL LAKE COULEE NEAR HENSLER, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1978 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHDS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION (00301)	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CACO3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)
NOV 12...	1020	.01	1420	8.0	.5	2.5	11.8	91	350	0	85
FEB 20...	1100	2.0	438	7.9	9.5	.5	13.5	101	--	--	--
21...	1330	1.5	524	8.2	9.5	1.5	12.9	97	100	0	22
MAR 10...	1440	3.3	590	8.2	4.0	.0	12.9	92	110	0	23
APR 02...	1220	.01	1380	8.2	14.0	10.0	12.0	113	390	0	100

DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY, CARBON- ATE FET-FLD (MG/L CACO3) (00430)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
NOV 12...	33	210	56	4.9	8.3	510	320	4.2	.3	18	1010
FEB 20...	--	--	--	--	--	150	--	--	--	--	--
21...	12	78	60	3.3	8.0	150	130	3.2	.1	13	366
MAR 10...	13	95	63	3.9	7.8	180	150	3.4	.1	14	420
APR 02...	35	190	51	4.2	5.7	560	270	4.6	.2	20	925

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TUNS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TUNS PER DAY) (70302)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS TOTAL (MG/L AS P04) (71886)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)
NOV 12...	986	1.3	.03	.00	.040	.05	1.1	1.10	.090	.28	.070
FEB 21...	357	.50	1.4	.28	.200	--	2.6	2.80	.250	.77	.140
MAR 10...	415	.57	3.7	--	--	--	--	--	--	--	--
APR 02...	963	1.2	.02	.72	.070	--	1.3	1.40	.090	.28	.040

DATE	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC SUS- PENDE TOTAL (UG/L AS AS) (01001)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BARIUM, SUS- PENDE RECOV- ERABLE (UG/L AS BA) (01006)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, SUS- PENDE RECOV- ERABLE (UG/L AS CR) (01031)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)
NOV 12...	--	--	100	0	100	--	--	160	--	--	--
FEB 21...	3	0	--	--	--	0	<1	70	10	10	0
MAR 10...	--	--	--	--	--	--	--	80	--	--	--
APR 02...	--	--	100	0	100	--	--	110	--	--	--

COAL LAKE COULEE BASIN

245

06340905 COAL LAKE COULEE NEAR HENSLER, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	COPPER, SUS- PENDE RECOV- ERABLE (UG/L AS CU) (01041)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI) (01132)	LITHIUM SUS- PENDE RECOV- ERABLE (UG/L AS LI) (01131)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, SUS- PENDE RECOV- ERABLE (UG/L AS MN) (01054)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
NOV 12...	--	--	--	90	40	0	40	160	20	140
FEB 20...	--	--	--	--	--	--	--	--	--	--
21...	4	4	0	180	--	--	--	100	50	50
MAR 10...	--	--	--	260	--	--	--	50	20	30
APR 02...	--	--	--	40	30	0	40	100	10	90

DATE	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MERCURY SUS- PENDE RECOV- ERABLE (UG/L AS HG) (71895)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	NICKEL, SUS- PENDE RECOV- ERABLE (UG/L AS NI) (01066)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE) (01147)	SELE- NIUM, SUS- PENDE RECOV- ERABLE (UG/L AS SE) (01146)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
NOV 12...	--	--	--	--	--	--	--	--	--	450
FEB 20...	--	--	--	--	--	--	--	--	--	--
21...	.1	.1	.0	6	5	1	0	0	0	--
MAR 10...	--	--	--	--	--	--	--	--	--	--
APR 02...	--	--	--	--	--	--	--	--	--	470

DATE	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, SUS- PENDE RECOV- ERABLE (UG/L AS ZN) (01091)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	POTAS- SIUM 40 DIS- SOLVED (PCI/L AS K40) (82068)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHENOLS (UG/L) (32730)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)
NOV 12...	--	--	--	--	18	.5	--	--	86	.00
FEB 20...	--	--	--	--	--	--	--	--	55	.30
21...	20	20	3	6.0	27	1.9	.00	1	65	.26
MAR 10...	--	--	--	5.8	--	--	--	--	26	.23
APR 02...	--	--	--	4.3	15	.2	--	--	39	.00

DATE	BED MAT. FALL DIAM. % FINER THAN .062 MM (80158)	BED MAT. FALL DIAM. % FINER THAN .125 MM (80159)	BED MAT. FALL DIAM. % FINER THAN .250 MM (80160)	BED MAT. FALL DIAM. % FINER THAN .500 MM (80161)	BED MAT. FALL DIAM. % FINER THAN 1.00 MM (80162)	BED MAT. FALL DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. FALL DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. FALL DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. FALL DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. FALL DIAM. % FINER THAN 32.0 MM (80173)
FEB 21...	4	5	10	18	24	31	42	57	80	100

COAL LAKE COULEE BASIN

06340905 COAL LAKE COULEE NEAR HENSLER, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO APRIL 1981

DATE TIME	NOV 12,80 1020	FEB 21,81 1330	MAR 10,81 1440	APR 2,81 1220
TOTAL CELLS/ML	4200	910	6100	570
DIVERSITY: DIVISION	0.4	1.5	0.7	1.7
..CLASS	0.4	1.5	0.7	1.7
..ORDER	0.6	2.0	0.7	2.0
...FAMILY	0.7	2.4	0.9	2.5
....GENUS	0.7	2.4	0.9	2.5

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
....OOCYSTACEAE								
....ANKISTRODESMUS	--	-	28	3	55	1	13	2
....OOCYSTIS	--	-	--	-	96	2	--	-
..VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	38	1	270#	29	160	3	77	14
CHRYSOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
....BIDDULPHIACEAE								
....BIDDULPHIA	--	-	14	2	--	-	--	-
...COSCINODISCACEAE								
....STEPHANODISCUS	3800#	90	--	-	--	-	26	5
..PENNALES								
...ACHNANTHACEAE								
....ACHNANTHES	--	-	28	3	*	0	--	-
...CYMBELLACEAE								
....RHOPALODIA	--	-	--	-	260	4	--	-
...FRAGILARIACEAE								
....FRAGILARIA	--	-	--	-	--	-	26	5
...SYNEDRA	76	2	42	5	96	2	26	5
...GOMPHONEMACEAE								
....GOMPHONEMA	--	-	--	-	--	-	13	2
...NAVICULACEAE								
....NAVICULA	--	-	56	6	55	1	--	-
...NITZSCHACEAE								
....NITZSCHIA	110	3	42	5	69	1	140#	25
...SURIRELLACEAE								
....SURIRELLA	--	-	14	2	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)								
..CRYPTOPHYCEAE								
...CRYPTOMONADALES								
....CRYPTOMONADACEAE								
....CRYPTOMONAS	38	1	--	-	--	-	210#	36
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROOCOCCALES								
....CHROOCOCCACEAE								
....ANACYSTIS	--	-	56	6	--	-	--	-
...HORMOGONALES								
....OSCILLATORIACEAE								
....OSCILLATORIA	--	-	370#	40	5300#	87	--	-
EUGLENOPHYTA (EUGLENIDS)								
..EUGLENOPHYCEAE								
...EUGLENALES								
....EUGLENACEAE								
....TRACHELOMONAS	150	4	--	-	--	-	39	7

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

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

BUFFALO CREEK BASIN

247

06340930 BUFFALO CREEK NEAR WASHBURN, ND

LOCATION.--Lat 47°18'12", long 101°05'20", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.8, T.144 N., R.82 W., McLean County, Hydrologic Unit 10130101, on right bank 70 ft (21 m) upstream from culvert, on county road 1.2 mi (1.9 km) above mouth, and 2.7 mi (4.3 km) west of Washburn.

DRAINAGE AREA.--57.3 mi² (148 km²) of which 30.0 mi² (77.7 km²) is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1978 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,660 ft (506 m) from topographic map.

REMARKS.--Records good except those for winter periods, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,800 ft³/s (108 m³/s) Apr. 19, 1979, caused by the release of water that was impounded behind two road embankments upstream when the embankments washed out, by computation of peak flow through culvert and over road, gage height, 17.0 ft (5.18 m) from floodmark; no flow for several months each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 40 ft³/s (1.13 m³/s) Feb. 18, gage height, 9.3 ft (2.83 m), from floodmark, only peak above base of 20 ft³/s (0.57 m³/s); no flow for many days during winter months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.14	.23	.05	.04	.00	3.8	.39	.10	.19	.07	.07	.08
2	.14	.23	.03	.02	.00	3.0	.35	.12	.12	.07	.15	.08
3	.13	.23	.01	.00	.00	3.9	.31	.12	.10	.07	.11	.08
4	.14	.20	.02	.00	.00	3.8	.28	.10	.10	.07	.07	.08
5	.14	.20	.06	.00	.00	3.7	.24	.12	.08	.07	1.6	.08
6	.14	.20	.04	.00	.00	3.5	.22	.12	.10	.06	.10	.24
7	.15	.20	.02	.00	.00	3.4	.22	.12	.08	.06	.08	.12
8	.12	.26	.00	.00	.00	3.5	.22	.12	.08	.06	.07	.10
9	.11	.20	.00	.00	.00	3.7	.22	.10	.08	.04	.07	.12
10	.11	.18	.00	.00	.00	3.9	.22	.10	.10	.04	.07	.12
11	.12	.18	.00	.02	.00	4.2	.22	.12	.08	.06	.07	.10
12	.13	.20	.02	.06	.00	5.0	.22	.12	.10	.06	.08	.10
13	.13	.16	.06	.04	.01	6.0	.16	.12	.38	.25	.08	.10
14	.12	.15	.10	.02	.25	10	.16	.14	.12	.13	.08	.10
15	.14	.12	.10	.02	1.0	8.5	.16	.12	.10	.08	.08	.10
16	.94	.11	.06	.02	3.0	4.5	.16	.14	.10	.06	.08	.10
17	.44	.10	.01	.04	10	2.8	.16	.14	.12	.06	.08	.10
18	.19	.10	.00	.06	30	2.0	.16	.12	.10	.06	.08	.10
19	.19	.13	.00	.08	25	1.4	.16	.12	.08	.06	.08	.10
20	.16	.13	.00	.11	16	1.2	.12	.14	.10	.06	.08	.12
21	.14	.13	.00	.15	11	1.1	.14	.14	.10	.07	.08	.10
22	.37	.13	.00	.18	9.5	1.0	.16	.19	.10	.08	.10	.08
23	.69	.11	.00	.20	8.0	1.1	.16	.22	.10	.06	.10	.10
24	.56	.09	.00	.18	7.5	1.1	.12	.19	.08	.06	.08	.10
25	.41	.10	.00	.12	6.5	.87	.12	.19	.08	.06	.08	.40
26	.33	.12	.01	.07	5.5	.65	.12	.16	.08	.06	.08	.26
27	.26	.11	.03	.04	4.7	.54	.16	.14	.08	.06	.08	.08
28	.23	.14	.08	.00	4.5	.49	.14	.16	.08	.07	.08	.08
29	.23	.14	.10	.00	---	.49	.14	.12	.10	.07	.08	.08
30	.26	.13	.08	.00	---	.39	.12	.12	.08	.07	.08	.10
31	.23	---	.06	.00	---	.39	---	.12	---	.07	.08	---
TOTAL	7.59	4.71	.94	1.47	142.46	89.92	5.73	4.15	3.19	2.22	4.10	3.50
MEAN	.24	.16	.030	.047	5.09	2.90	.19	.13	.11	.072	.13	.12
MAX	.94	.26	.10	.20	30	10	.39	.22	.38	.25	1.6	.40
MIN	.11	.09	.00	.00	.00	.39	.12	.10	.08	.04	.07	.08
AC-FT	15	9.3	1.9	2.9	283	178	11	8.2	6.3	4.4	8.1	6.9
CAL YR 1980	TOTAL	280.74	MEAN	.77	MAX	40	MIN	.00	AC-FT	557		
WTR YR 1981	TOTAL	269.98	MEAN	.74	MAX	30	MIN	.00	AC-FT	536		

BUFFALO CREEK BASIN

06340930 BUFFALO CREEK NEAR WASHBURN, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1978 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION) (00301)	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CACO3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT												
08...	0945	.12	2430	8.1	25.0	9.0	7.9	72	170	0	25	26
NOV												
12...	0905	.18	2160	8.5	.5	2.0	11.8	90	230	0	46	28
FEB												
20...	1235	17	366	7.8	8.5	.0	13.0	95	--	--	--	--
21...	1210	12	442	7.9	8.0	.0	13.2	96	110	0	26	12
MAR												
12...	1025	4.5	440	8.1	6.0	.0	12.6	93	140	130	33	13
20...	1015	1.6	750	7.9	3.5	1.0	11.8	89	--	--	--	--
APR												
02...	1600	.36	1520	8.6	13.5	12.5	10.9	109	190	0	42	21
23...	1030	.16	2190	8.5	14.5	11.5	12.1	119	--	--	--	--
MAY												
13...	1215	.11	2420	8.6	18.0	13.0	12.8	127	200	0	33	28
26...	1115	.13	2330	8.6	15.0	14.0	11.2	114	--	--	--	--
JUN												
09...	1230	.09	2100	8.8	17.0	19.0	11.2	129	160	0	22	26
JUL												
21...	1100	.07	2400	8.6	26.5	25.0	6.7	85	160	0	21	26
AUG												
13...	1130	.08	2190	8.3	27.0	25.5	7.9	101	150	0	22	23
SEP												
01...	1050	.08	2530	8.6	17.5	14.0	12.7	128	180	0	25	28

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY, CARBON- ATE FET-FLD (MG/L CACO3) (00430)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
OCT												
08...	570	87	19	8.1	856	520	5.4	.5	5.6	1690	1680	2.3
NOV												
12...	450	80	13	8.6	722	480	4.4	.5	5.2	1460	1460	2.0
FEB												
20...	--	--	--	--	104	--	--	--	--	--	--	--
21...	50	45	2.0	15	140	100	3.8	.1	12	302	307	.41
MAR												
12...	55	44	2.1	12	166	93	3.2	.1	13	337	226	.46
20...	--	--	--	--	258	--	--	--	--	--	--	--
APR												
02...	300	76	9.4	9.5	540	340	4.3	.3	8.1	911	1050	1.2
23...	--	--	--	--	795	--	--	--	--	--	--	--
MAY												
13...	510	84	16	7.2	830	590	4.5	.3	5.6	1670	1680	2.3
26...	--	--	--	--	843	--	--	--	--	--	--	--
JUN												
09...	530	87	18	6.3	860	520	13	.4	.4	1670	1640	2.3
JUL												
21...	550	88	19	8.8	876	420	9.6	.4	7.6	1660	1570	2.3
AUG												
13...	530	88	19	9.2	880	380	5.7	.4	1.5	1670	1500	2.3
SEP												
01...	570	87	19	7.9	910	440	11	.4	5.5	1750	1640	2.4

BUFFALO CREEK BASIN

249

06340930 BUFFALO CREEK NEAR WASHBURN, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS TOTAL (MG/L AS PO4) (71886)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC SUS- PENDED TOTAL (UG/L AS AS) (01001)	ARSENIC TOTAL IN BOT- TOM MA- TERIAL (UG/G AS AS) (01003)
OCT 08...	.55	--	--	--	--	--	--	--	--	--	--	--
NOV 12...	.71	.00	.000	.00	.74	.74	.040	.12	.020	--	--	--
FEB 20...	--	--	--	--	--	--	--	--	--	--	--	--
21...	9.8	.70	.160	--	1.8	2.00	.440	1.4	.280	3	1	--
MAR 12...	4.1	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
APR 02...	.89	.03	.080	--	1.9	2.00	.130	.40	.070	--	--	--
23...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 13...	.50	--	--	--	--	--	--	--	--	2	0	0
26...	--	--	--	--	--	--	--	--	--	--	--	--
JUN 09...	.41	--	--	--	--	--	--	--	--	--	--	--
JUL 21...	.31	.09	.160	--	1.1	1.30	.140	.43	.050	--	--	--
AUG 13...	.36	--	--	--	--	--	--	--	--	--	--	--
SEP 01...	.38	--	--	--	--	--	--	--	--	--	--	--

DATE	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BARIUM, SUS- PENDED RECOV- ERABLE (UG/L AS BA) (01006)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BERYL- LIUM, SUS- PENDED RECOV. (UG/L AS BE) (01011)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, SUS- PENDED RECOV. (UG/L AS CR) (01031)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	CHRO- MIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CR) (01029)	COBALT, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CO) (01038)
OCT 08...	100	0	100	--	--	--	620	--	--	--	--	--
NOV 12...	--	--	--	--	--	--	540	--	--	--	--	--
FEB 20...	--	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	0	0	0	180	10	10	0	--	--
MAR 12...	--	--	--	--	--	--	50	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
APR 02...	100	30	70	--	--	--	310	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 13...	--	--	--	10	10	0	560	10	10	0	2	13
26...	--	--	--	--	--	--	--	--	--	--	--	--
JUN 09...	--	--	--	--	--	--	700	--	--	--	--	--
JUL 21...	--	--	--	--	--	--	820	--	--	--	--	--
AUG 13...	--	--	--	--	--	--	760	--	--	--	--	--
SEP 01...	--	--	--	--	--	--	780	--	--	--	--	--

BUFFALO CREEK BASIN

06340930 BUFFALO CREEK NEAR WASHBURN, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	COPPER, SUS- PENDE RECOV- ERABLE (UG/L AS CU) (01041)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	COPPER, FM BOT- TOM MA- TERIAL (UG/G AS CU) (01043)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI) (01132)	LITHIUM SUS- PENDE RECOV- ERABLE (UG/L AS LI) (01131)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, SUS- PENDE RECOV- ERABLE (UG/L AS MN) (01054)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
OCT 08...	--	--	--	--	70	100	0	100	70	20	50
NOV 12...	--	--	--	--	70	--	--	--	30	0	30
FEB 20...	--	--	--	--	--	--	--	--	--	--	--
21...	5	2	3	--	230	--	--	--	300	160	140
MAR 12...	--	--	--	--	210	--	--	--	150	50	100
20...	--	--	--	--	--	--	--	--	--	--	--
APR 02...	--	--	--	--	70	60	0	60	80	30	50
23...	--	--	--	--	--	--	--	--	--	--	--
MAY 13...	2	1	1	5	90	--	--	--	50	10	40
26...	--	--	--	--	--	--	--	--	--	--	--
JUN 09...	--	--	27	--	120	--	--	--	20	20	0
JUL 21...	--	--	42	--	160	--	--	--	100	50	50
AUG 13...	--	--	--	--	110	--	--	--	190	70	120
SEP 01...	--	--	--	--	90	--	--	--	40	10	30

DATE	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MERCURY SUS- PENDE RECOV- ERABLE (UG/L AS HG) (71895)	MERCURY FM BOT- TOM MA- TERIAL (UG/G AS HG) (71921)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	NICKEL, SUS- PENDE RECOV- ERABLE (UG/L AS NI) (01066)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, TOTAL (UG/L AS SE) (01147)	SELE- NIUM, SUS- PENDE TOTAL (UG/L AS SE) (01146)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)
FEB 20...	--	--	--	--	--	--	--	--	--	--
21...	.1	.1	.0	--	9	5	4	0	0	0
MAR 12...	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--
APR 02...	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--
MAY 13...	.2	.1	.1	.01	11	6	5	0	0	0
26...	--	--	--	--	--	--	--	--	--	--

DATE	SELE- NIUM, TOTAL IN BOT- TOM MA- TERIAL (UG/G) (01148)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, SUS- PENDE RECOV- ERABLE (UG/L AS ZN) (01091)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	ZINC, FM BOT- TOM MA- TERIAL (UG/G AS ZN) (01093)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT) (80030)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)
OCT 08...	--	460	--	--	--	--	--	--	--	--
NOV 12...	--	--	--	--	--	--	--	--	--	--
FEB 20...	--	--	--	--	--	--	--	--	--	--
21...	--	--	30	20	10	--	--	--	--	--
MAR 12...	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--
APR 02...	--	420	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--
MAY 13...	0	--	30	20	10	47	<37	<.4	<19	.7

BUFFALO CREEK BASIN

251

06340930 BUFFALO CREEK NEAR WASHBURN, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	GROSS BETA, DIS- SOLVED (PCI/L AS SR/ YT-90) (80050)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90) (80060)	POTAS- SIUM 40 DIS- SOLVED (PCI/L AS K40) (82068)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHENOLS (UG/L) (32730)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)
OCT									
08...	--	--	--	--	--	--	--	51	.02
NOV									
12...	--	--	--	18	.3	--	--	24	.01
FEB									
20...	--	--	--	--	--	--	--	296	14
21...	--	--	11	20	3.1	.00	2	182	5.9
MAR									
12...	--	--	9.0	--	--	--	--	92	1.1
20...	--	--	--	--	--	--	--	10	.04
APR									
02...	--	--	7.1	15	.8	--	--	66	.06
23...	--	--	--	--	--	--	--	14	.01
MAY									
13...	<18	.7	5.4	--	--	.00	4	36	.01
26...	--	--	--	--	--	--	--	83	.03
JUN									
09...	--	--	4.7	--	--	.00	--	23	.01
JUL									
21...	--	--	6.6	14	.7	--	--	70	.01
AUG									
13...	--	--	--	--	--	--	--	152	.03
SEP									
01...	--	--	--	--	--	--	--	27	.01

DATE	BED MAT. FALL DIAM. % FINER THAN .062 MM (80158)	BED MAT. FALL DIAM. % FINER THAN .125 MM (80159)	BED MAT. FALL DIAM. % FINER THAN .250 MM (80160)	BED MAT. FALL DIAM. % FINER THAN .500 MM (80161)	BED MAT. FALL DIAM. % FINER THAN 1.00 MM (80162)	BED MAT. FALL DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. FALL DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. FALL DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. FALL DIAM. % FINER THAN 16.0 MM (80172)
MAR									
20...	24	35	52	73	81	88	94	97	100

DATE	LENGTH OF EXPO- SURE (DAYS) (00022)	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2) (70957)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2) (70958)	PERI- PHYTON BIOMASS TOTAL ASH WEIGHT G/SQ M (00572)	PERI- PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)
OCT					
08...	21	1.34	.580	.866	1.50
JUN					
09...	27	1.47	.440	4.09	5.28
JUL					
21...	42	6.65	2.99	1.10	1.34
AUG					
13...	23	9.69	3.98	2.21	3.62
SEP					
01...	19	1.48	1.13	.709	1.10

BUFFALO CREEK BASIN

06340930 BUFFALO CREEK NEAR WASHBURN, ND---Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	OCT 8,80 0945	NOV 12,80 0905	FEB 21,81 1210	MAR 12,81 1025	APR 2,81 1600
TOTAL CELLS/ML	170	280	1800	8900	1700
DIVERSITY: DIVISION	1.3	1.3	1.5	0.8	1.9
..CLASS	1.3	1.3	1.5	0.8	1.9
..ORDER	2.0	2.2	1.7	0.9	2.2
...FAMILY	2.6	2.2	2.3	1.1	2.3
....GENUS	2.6	2.5	2.4	1.1	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										
...CHARACIACEAE										
....CHARACIUM	--	-	--	-	--	-	--	-	--	-
...OUCYSTACEAE										
....ANKISTRODESMUS	--	-	--	-	28	2	400	4	65	4
....KIRCHNERIELLA	--	-	--	-	--	-	--	-	--	-
....NEPHRUCYTUM	--	-	--	-	--	-	--	-	--	-
....SELENASTRUM	--	-	--	-	--	-	--	-	--	-
....TETRAEDRON	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....CRUCIGENIA	--	-	--	-	56	3	--	-	--	-
....SCENEDESMUS	26#	15	52#	18	--	-	--	-	--	-
...VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CARTERIA	--	-	26	9	--	-	--	-	--	-
....CHLAMYDOMONAS	39#	23	26	9	98	5	110	1	670#	39
...PHACOTACEAE										
....PHACOTUS	--	-	--	-	--	-	--	-	--	-
...ZYGNEMATALES										
...ZYGNEMATAACEAE										
....MUUGEUTIA	--	-	--	-	--	-	--	-	--	-
CHRYSTOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	13	8	64#	23	14	1	190	2	39	2
....STEPHANODISCUS	--	-	--	-	--	-	*	0	160	9
...PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	--	-	--	-	--	-	*	0	--	-
...COCCONEIS	13	8	--	-	--	-	--	-	--	-
...RHODICUSPHENIA	--	-	--	-	--	-	--	-	--	-
...CYMBELLACEAE										
....AMPHORA	--	-	--	-	--	-	--	-	--	-
....CYMBELLA	--	-	--	-	--	-	*	0	--	-
....EPITHEMIA	--	-	--	-	--	-	*	0	--	-
...DIATOMACEAE										
....DIATOMA	--	-	--	-	84	5	*	0	--	-
...FRAGILARIACEAE										
....SYNEDRA	--	-	--	-	130	7	*	0	--	-
...GOMPHONEMATAACEAE										
....GOMPHONEMA	--	-	--	-	--	-	--	-	13	1
...MERIDIIONACEAE										
....MERIDIION	--	-	--	-	28	2	--	-	--	-
...NAVICULACEAE										
....ENTOMONEIS	--	-	--	-	42	2	*	0	--	-
...GYRUSIGMA	--	-	--	-	--	-	--	-	--	-
...NAVICULA	13	8	--	-	150	8	170	2	26	2
...PLEURUSIGMA	--	-	--	-	--	-	--	-	--	-
...NITZSCHIA	51#	31	90#	32	84	5	190	2	100	6
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROOCOCCALES										
...CHROOCOCCACEAE										
....ANACYSTIS	--	-	--	-	14	1	--	-	--	-
...HORMOGONALES										
...OSCILLATORIACEAE										
....OSCILLATORIA	--	-	--	-	1100#	58	7500#	84	220	13
...RIVULARIACEAE										
....RAPHIDIOPSIS	--	-	--	-	--	-	76	1	--	-
EUGLENOPHYTA (EUGLENOIDS)										
..EUGLENOPHYCEAE										
...EUGLENALES										
...EUGLENACEAE										
....EUGLENA	13	8	13	5	--	-	*	0	210	12
....LEPUCINCLIS	--	-	--	-	--	-	--	-	--	-
....PHACUS	--	-	--	-	--	-	--	-	--	-
....TRACHELOMONAS	--	-	13	5	42	2	*	0	210	12
PYRRHOPHYTA (FIRE ALGAE)										
..DINOPHYCEAE										
...PERIDINIALES										
...GLENODINIACEAE										
....GLENODINIUM	--	-	--	-	14	1	--	-	--	-
...PERIDINIACEAE										
....PERIDINIUM	--	-	--	-	--	-	*	0	--	-

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

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

06340930 BUFFALO CREEK NEAR WASHBURN, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	MAY 13,81 1215	JUN 9,81 1230	JUL 21,81 1100	AUG 13,81 1130	SEP 1,81 1050
TOTAL CELLS/ML	350	2000	2400	3600	270
DIVERSITY: DIVISION	1.7	1.6	1.6	1.1	1.3
..CLASS	1.7	1.6	1.6	1.1	1.3
...ORDER	1.9	2.3	1.8	1.2	1.4
...FAMILY	2.6	3.0	2.5	1.5	1.6
....GENUS	2.7	3.1	2.5	1.7	1.9

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										
...CHLOROCUCCALES										
....CHLORACIACEAE										
.....CHLORACIUM	--	-	82	4	--	-	--	-	--	-
.....OOCYSTACEAE										
.....ANKISTRUDISMUS	100#	30	150	8	14	1	*	0	14	5
.....KIRCHNERIELLA	--	-	--	-	--	-	*	0	--	-
.....NEPHROCYTIUM	--	-	--	-	96	4	--	-	--	-
.....SELENASTRUM	--	-	27	1	--	-	--	-	--	-
.....TETRAEDRON	--	-	27	1	--	-	--	-	--	-
.....SCENEDESMACEAE										
.....CRUCIGENIA	--	-	--	-	--	-	--	-	--	-
.....SCENEDESMUS	52	15	360#	18	140	6	--	-	--	-
...VULVOCALES										
....CHLAMYDOMONADACEAE										
.....CARTERIA	--	-	--	-	--	-	--	-	--	-
.....CHLAMYDOMONAS	--	-	--	-	--	-	28	1	14	5
...PHACUTACEAE										
.....PHACUTUS	--	-	41	2	--	-	--	-	--	-
...ZYGNEMATALES										
....ZYGNEMATAACEAE										
.....MOUGEOTIA	--	-	27	1	--	-	--	-	--	-
CHRYSTOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
....COSCINODISCAEAE										
.....CYCLOTELLA	13	4	110	5	83	4	*	0	--	-
.....STEPHANODISCUS	--	-	--	-	--	-	--	-	--	-
...PENNALES										
....ACHNANTHACEAE										
.....ACHNANTHES	--	-	--	-	--	-	--	-	--	-
....COCCONEIS	--	-	--	-	--	-	*	0	--	-
....RHOICOSPHEA	--	-	14	1	--	-	--	-	--	-
...CYMBELLACEAE										
.....AMPHURA	--	-	--	-	--	-	*	0	--	-
.....CYMBELLA	--	-	--	-	--	-	--	-	--	-
.....EPITHEMIA	--	-	--	-	--	-	--	-	--	-
...DIATOMACEAE										
.....DIATOMA	--	-	--	-	--	-	--	-	--	-
...FRAGILARIACEAE										
.....SYNEOKA	--	-	14	1	14	1	*	0	--	-
...GUMPHONEMATAEAE										
.....GUMPHONEMA	--	-	--	-	83	4	*	0	--	-
...MERIDIONACEAE										
.....MERIDION	--	-	--	-	--	-	--	-	--	-
...NAVICULACEAE										
.....ENTOMONEIS	--	-	--	-	--	-	--	-	--	-
...GYROSIGMA										
.....NAVICULA	77#	22	140	7	330	14	300	8	42#	16
.....PLEUROSIGMA	--	-	--	-	--	-	--	-	28	11
...NITZSCHIAEAE										
.....NITZSCHIA	39	11	230	12	660#	28	590#	16	14	5
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHRODOCCUCCALES										
....CHRODOCCUCCACEAE										
.....ANACYSTIS	26	7	150	8	--	-	--	-	--	-
...HORMOGONALES										
....OSCILLATORIACEAE										
.....OSCILLATORIA	--	-	620#	31	830#	35	2400#	68	--	-
...RIVULARIACEAE										
.....RAPIDIOPSIS	--	-	--	-	--	-	--	-	150#	58
EUGLENOPHYTA (EUGLENIDS)										
..EUGLENOPHYCEAE										
...EUGLENALES										
....EUGLENACEAE										
.....EUGLENA	13	4	14	1	110	5	41	1	--	-
.....LEPDOCINCLIS	--	-	--	-	--	-	*	0	--	-
.....PHACUS	--	-	--	-	--	-	*	0	--	-
.....TRACHELOMUNAS	26	7	--	-	--	-	*	0	--	-
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

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, and at mile 1,355 (2,180 km).

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) National Geodetic Vertical Datum of 1929. 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, 9.73 ft (2.966 m) May 7, 1978.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12.92	13.04	13.14	13.06	---	13.85	11.59	12.03	13.45	13.28	---	12.25
2	12.79	13.60	13.92	13.47	---	13.79	11.61	12.15	13.52	14.07	---	12.80
3	12.63	13.14	13.46	15.27	---	14.08	11.62	12.15	13.77	14.18	---	12.87
4	12.74	12.92	13.16	18.28	---	13.84	11.55	11.98	13.63	13.60	13.32	12.77
5	12.83	12.78	13.25	19.34	---	13.83	11.73	11.73	13.35	13.68	13.94	12.88
6	12.90	---	13.48	19.41	---	13.80	11.75	11.95	13.47	14.25	13.86	12.87
7	12.92	---	13.09	18.92	---	14.01	11.46	11.66	13.45	14.26	13.79	12.13
8	12.85	---	13.36	19.17	---	13.42	11.63	11.75	13.69	14.14	13.62	12.09
9	12.87	---	13.15	19.17	---	13.81	11.52	11.55	13.52	14.21	13.11	12.10
10	12.89	---	13.23	19.05	---	13.75	11.68	11.52	13.65	14.33	13.30	12.29
11	12.79	---	13.29	19.38	---	14.06	11.66	11.73	13.81	13.77	13.05	12.04
12	12.89	---	13.16	19.49	---	14.00	11.56	11.73	13.93	13.74	13.33	11.98
13	13.23	---	13.29	19.73	---	13.96	11.49	11.61	14.21	14.21	13.12	12.49
14	13.07	---	13.24	---	---	14.07	11.55	11.77	13.67	14.20	13.15	11.73
15	13.01	---	13.17	---	---	14.02	11.58	11.47	14.15	14.26	13.21	12.21
16	13.12	---	13.28	---	---	13.43	11.53	11.75	13.52	14.26	13.46	11.98
17	12.97	---	13.20	---	---	13.31	11.53	11.77	13.65	14.17	12.88	12.00
18	13.09	---	13.02	---	---	12.97	11.61	11.74	13.45	14.43	12.91	12.05
19	12.88	---	13.19	---	16.22	12.65	11.63	11.85	13.50	14.05	13.19	12.04
20	12.78	---	13.82	---	16.15	12.70	---	11.86	13.48	14.36	13.13	11.98
21	13.01	---	12.77	---	15.11	12.56	11.24	11.76	13.04	14.31	12.94	12.11
22	13.33	---	13.12	---	14.78	12.09	11.55	11.76	13.22	14.61	12.66	12.12
23	13.32	---	11.95	---	14.49	11.84	11.65	11.65	13.56	14.24	12.71	12.40
24	13.33	---	12.01	---	14.10	11.80	11.62	11.83	13.32	14.16	12.82	12.61
25	13.22	13.21	15.27	---	14.38	11.58	11.55	11.67	13.33	---	12.77	12.59
26	13.04	13.58	17.40	---	13.55	11.58	11.91	11.84	13.63	---	12.95	12.49
27	13.18	13.84	17.29	---	13.82	11.86	11.76	12.64	13.56	---	12.97	12.35
28	13.24	13.36	17.27	---	13.75	11.67	11.78	12.96	13.47	---	12.90	12.68
29	13.27	12.74	16.04	---	---	11.79	11.86	12.70	13.53	---	12.91	12.51
30	13.31	12.84	14.64	---	---	11.43	12.07	13.15	14.02	---	12.95	12.54
31	13.19	---	13.47	---	---	11.56	---	13.26	---	---	12.52	---
TOTAL	403.61	---	427.13	---	---	403.11	---	370.97	407.55	---	---	369.95
MEAN	13.02	---	13.78	---	---	13.00	---	11.97	13.59	---	---	12.33
MAX	13.33	---	17.40	---	---	14.08	---	13.26	14.21	---	---	12.88
MIN	12.63	---	11.95	---	---	11.43	---	11.47	13.04	---	---	11.73

PAINTED WOODS CREEK BASIN

255

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 September 1981 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 1,760 ft (536 m), from topographic map.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--24 years, 8.07 ft³/s (0.229 m³/s), 5,850 acre-ft/yr (7.21 hm³/yr); median of yearly mean discharges, 6.7 ft³/s (0.19 m³/s), 4,850 acre-ft/yr (6.0 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,050 ft³/s (115 m³/s) Apr. 19, 1979, gage height, 9.64 ft (2.938 m); no flow for many days most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 30 ft³/s (0.85 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)
Feb. 17	2100	*118 3.34	5.56 1.695	Aug. 22	1600	33 0.94	4.82 1.469
Aug. 5	2100	86 2.44	5.42 1.652				

Minimum daily discharge, 0.15 ft³/s (0.004 m³/s) July 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.52	4.3	1.6	.64	.33	15	3.7	2.3	.76	.74	.71	3.1
2	.48	4.0	1.3	.66	.32	12	3.6	2.1	.91	.60	6.2	2.7
3	.48	3.7	1.1	.57	.30	11	3.2	1.8	.76	.54	6.2	2.7
4	.48	3.4	1.1	.47	.28	12	3.2	1.7	.61	.48	4.2	2.7
5	.44	3.2	1.1	.42	.30	12	3.0	1.4	.59	.43	4.4	2.5
6	.44	2.9	.90	.48	.30	9.6	2.9	1.4	.60	.37	5.0	6.7
7	.44	2.7	.84	.46	.34	8.1	2.7	1.3	.57	.29	3.1	9.0
8	.40	2.9	.79	.39	.30	7.6	2.7	1.2	.54	.21	3.1	7.5
9	.40	2.9	.78	.37	.24	7.0	2.7	1.1	.43	.17	2.7	7.9
10	.33	2.9	.72	.34	.22	6.6	2.7	1.0	.30	.15	2.0	6.6
11	.36	2.8	.70	.32	.22	6.3	2.7	.94	.23	.16	1.5	5.5
12	.40	2.8	.73	.32	.20	6.3	2.7	.94	.26	.17	1.1	5.0
13	.40	2.8	.72	.33	.20	6.5	2.6	.72	1.3	.37	8.5	4.6
14	.36	3.0	.73	.32	.24	6.1	2.4	.57	1.3	.87	6.5	4.3
15	.40	3.0	.72	.37	5.0	6.0	2.4	.52	1.7	.84	5.0	3.8
16	.93	2.7	.79	.34	5.5	5.8	2.3	.57	2.4	1.0	4.2	3.2
17	3.1	2.5	.82	.34	8.0	5.3	2.2	.67	2.6	2.1	3.3	2.8
18	4.0	2.3	.79	.34	11.0	5.3	2.1	.62	2.6	2.2	2.8	2.6
19	3.8	2.3	.60	.34	9.4	4.9	2.0	.53	2.3	2.2	2.3	2.4
20	4.1	2.3	.50	.33	6.2	4.6	2.0	.46	2.3	1.6	2.1	2.1
21	4.1	2.1	.51	.31	4.6	4.3	1.7	.39	2.3	1.3	1.8	2.1
22	4.5	2.3	.50	.31	3.1	3.9	1.8	.37	2.1	1.3	1.6	1.7
23	6.2	2.4	.55	.32	2.6	3.7	1.8	.45	2.0	8.0	1.1	1.8
24	7.0	2.4	.51	.37	2.4	3.9	2.0	.55	1.7	3.1	6.2	1.6
25	7.0	2.2	.48	.61	2.1	3.9	2.0	.62	1.4	2.2	1.4	1.6
26	6.1	2.0	.41	1.0	1.5	4.1	2.0	.62	1.2	1.8	1.1	2.1
27	5.7	1.8	.41	.60	2.1	4.1	2.0	.74	1.1	1.4	7.7	2.2
28	5.3	1.8	.64	.40	1.4	3.9	2.0	.85	1.2	1.0	5.4	2.2
29	5.2	1.5	.55	.36	---	3.7	2.0	.82	1.3	.84	4.1	1.8
30	4.9	1.6	.53	.33	---	4.1	2.1	.66	1.1	.78	3.4	1.7
31	4.6	---	.57	.35	---	3.9	---	.57	---	.70	3.1	---
TOTAL	82.86	79.5	22.99	13.11	607.79	201.5	73.2	28.48	38.46	49.61	364.71	106.5
MEAN	2.67	2.65	.74	.42	21.7	6.50	2.44	.92	1.28	1.60	11.8	3.55
MAX	7.0	4.3	1.6	1.0	11.0	15	3.7	2.3	2.6	13	50	9.0
MIN	.33	1.5	.41	.31	.20	3.7	1.7	.37	.23	.15	.71	1.6
AC-FT	164	158	46	26	1210	400	145	56	76	98	723	211

CAL-YR 1980 TOTAL 1175.54 MEAN 3.21 MAX 123 MIN .01 AC-FT 2330
WTR YR 1981 TOTAL 1668.71 MEAN 4.57 MAX 110 MIN .15 AC-FT 3310

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, and at mile 1,338 (2,153 km).

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) National Geodetic Vertical Datum of 1929 (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 (FEET ABOVE DATUM), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21.06	21.17	21.07	---	---	---	19.57	20.00	---	21.99	21.76	21.05
2	20.91	21.32	21.62	---	---	---	19.57	19.99	---	22.20	21.84	21.12
3	20.86	21.30	---	---	---	21.96	19.58	20.05	---	22.56	21.85	21.12
4	20.81	21.32	---	---	---	21.80	19.56	19.96	---	22.14	21.70	21.11
5	20.99	21.29	---	---	---	21.80	19.64	19.73	---	22.05	22.20	21.11
6	20.93	21.28	---	---	---	21.70	19.68	19.90	---	22.38	22.18	21.16
7	21.17	21.19	---	---	---	21.93	19.54	19.75	---	22.66	22.16	20.71
8	21.36	21.25	---	---	---	21.49	19.55	---	---	22.54	22.02	20.41
9	21.33	21.22	---	---	---	21.64	19.54	---	---	22.58	21.67	20.49
10	21.12	21.29	---	---	---	21.73	19.57	---	---	22.62	21.49	20.44
11	21.18	21.34	---	---	---	21.92	19.61	---	21.85	22.34	21.43	20.37
12	21.21	21.25	---	---	---	22.00	19.56	---	21.97	22.18	21.56	20.36
13	---	21.34	---	---	---	21.99	19.58	---	22.18	22.38	21.43	20.58
14	---	21.50	---	24.94	---	22.02	19.52	---	21.81	22.62	21.49	20.20
15	---	21.61	---	24.84	---	21.98	19.85	---	21.84	22.59	21.46	20.34
16	---	21.65	---	24.82	---	21.57	19.77	---	21.72	22.62	21.66	20.28
17	---	21.75	---	24.97	---	21.32	19.69	---	21.91	22.59	21.35	20.24
18	---	21.69	---	25.00	---	21.13	19.65	---	21.87	22.77	21.20	20.25
19	---	21.72	---	25.10	---	20.77	19.55	---	21.84	22.50	21.35	20.27
20	---	21.56	---	25.13	---	20.68	19.60	---	21.81	22.64	21.46	20.22
21	---	21.59	---	24.90	---	20.63	19.87	---	21.49	22.68	21.24	20.26
22	---	21.55	---	24.78	---	20.35	19.80	---	21.57	22.68	21.06	20.33
23	---	21.49	---	24.50	---	19.95	19.78	---	21.88	22.68	20.98	20.45
24	---	21.62	---	24.70	---	19.86	19.82	---	21.84	22.58	21.06	20.77
25	21.32	21.65	---	24.45	---	19.74	19.67	---	21.64	22.59	21.08	20.79
26	21.12	21.64	---	24.43	---	19.55	19.78	---	21.97	22.24	21.16	20.81
27	21.10	21.84	---	24.35	---	19.80	19.75	---	21.91	22.05	21.26	20.61
28	21.23	21.45	---	---	---	19.69	19.72	---	21.99	22.11	21.20	20.74
29	21.26	20.98	---	---	---	19.72	19.75	---	21.80	22.11	21.20	20.80
30	21.29	20.81	---	---	---	19.55	19.82	---	22.15	22.13	21.27	20.73
31	21.22	---	---	---	---	19.54	---	---	---	22.06	20.91	---
TOTAL	---	642.66	---	---	---	---	589.94	---	---	694.86	665.68	618.12
MEAN	---	21.42	---	---	---	---	19.66	---	---	22.41	21.47	20.60
MAX	---	21.84	---	---	---	---	19.87	---	---	22.77	22.20	21.16
MIN	---	20.81	---	---	---	---	19.52	---	---	21.99	20.91	20.20

LOCATION.--Lat 47°08'06", long 101°25'31", in NW¼SW¼NW¼ sec.11, T.142 N., R.85 W., Oliver County, Hydrologic Unit 10130101, on left bank 100 ft (30 m) downstream from box culvert on North Dakota Highway 31, 1.5 mi (2.4 km) north of Hannover, and 2.6 mi (4.2 km) upstream from Brady Creek.

WATER-DISCHARGE RECORDS

REMARKS.--Records good except those for winter periods, which are poor.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 141 ft³/s (3.99 m³/s) Mar. 12, gage height, 5.05 ft (1.539 m), only 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 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	1.0	.08	.30	.00	1.0	.81	.52	.33	.00	.00	.00
2	.00	.92	.02	.10	.00	.90	.62	.38	.95	.00	.00	.00
3	.00	.77	.02	.01	.00	1.0	.59	.27	1.5	.00	1.3	.00
4	.00	.59	.02	.00	.00	1.0	.46	.15	1.1	.00	.73	.00
5	.00	.45	.01	.00	.00	.80	.38	.12	.63	.00	.42	.00
6	.00	.44	.00	.00	.00	.70	.37	.07	.16	.00	.57	.00
7	.00	.39	.00	.00	.00	.55	.32	.05	.09	.00	.19	.00
8	.00	.38	.00	.00	.00	.38	.27	.04	.06	.00	.06	.00
9	.00	.38	.00	.00	.00	.60	.27	.05	.02	.00	.00	.00
10	.00	.38	.00	.00	.00	.83	.27	.06	.01	.00	.00	.00
11	.00	.44	.00	.00	.00	12	.27	.07	.00	.00	.00	.00
12	.00	.38	.00	.00	.00	52	.27	.06	.00	.00	.00	.00
13	.00	.38	.00	.00	.00	38	.27	.07	.01	.00	.00	.00
14	.00	.38	.00	.00	.04	38	.22	.06	.18	.00	.00	.00
15	.00	.36	.00	.00	5.0	14	.22	.04	.27	.00	.00	.00
16	.07	.27	.03	.00	15	2.8	.19	.04	.27	.00	.00	.00
17	2.3	.27	.25	.00	12	2.1	.22	.04	.22	.00	.00	.00
18	1.7	.27	.19	.00	10	1.3	.18	.04	.18	.00	.00	.00
19	.80	.27	.00	.00	7.0	.77	.15	.04	.18	.00	.00	.00
20	.50	.27	.00	.00	6.0	.67	.15	.03	.12	.00	.00	.00
21	.27	.30	.00	.00	5.0	.67	.15	.00	.18	.00	.00	.00
22	.28	.32	.00	.00	4.0	.67	.15	.00	.44	.00	.00	.00
23	1.4	.32	.00	.00	3.0	.67	.18	.03	.60	.00	.00	.00
24	1.5	.27	.00	.00	2.0	1.0	.18	.23	.52	.00	.00	.00
25	1.5	.20	.00	.00	1.7	1.1	.27	.32	.52	.00	.00	.00
26	1.0	.19	.00	.00	1.5	.75	.27	.32	.67	.00	.00	.00
27	.62	.19	.10	.00	1.3	.74	.32	.41	.32	.00	.00	.00
28	.44	.19	.50	.00	1.1	.77	.75	.58	.10	.00	.00	.00
29	.38	.19	1.0	.00	---	.87	.82	1.0	.04	.00	.00	.00
30	.78	.19	.80	.00	---	.77	.67	.87	.00	.00	.00	.00
31	1.1	---	.60	.00	---	.82	---	.68	---	.00	.00	---
TOTAL	14.64	11.35	3.62	.41	74.64	178.23	10.26	6.64	9.67	.00	3.27	.00
MEAN	.47	.38	.12	.013	2.67	5.75	.34	.21	.32	.000	.11	.000
MAX	2.3	1.0	1.0	.30	15	52	.82	1.0	1.5	.00	1.3	.00
MIN	.00	.19	.00	.00	.00	.38	.15	.00	.00	.00	.00	.00
AC-FT	29	23	7.2	.8	148	354	20	13	19	.00	6.5	.00
CAL YR 1980	TOTAL 310.66		MEAN .85	MAX 37	MIN .00	AC-FT 616						
WTR YR 1981	TOTAL 312.73		MEAN .86	MAX 52	MIN .00	AC-FT 620						

06342040 SQUARE BUTTE CREEK NEAR HANNOVER, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1978 to September 1981 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (000061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (000095)	PH (UNITS) (000400)	TEMPER- ATURE AIR (DEG C) (000020)	TEMPER- ATURE (DEG C) (000010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS (MG/L AS CAC03) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CAC03) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
NOV												
11...	1010	.46	1130	8.2	4.0	3.0	12.0	95	450	150	91	54
FEB												
19...	1015	4.5	310	7.7	7.5	.0	11.9	88	110	17	23	12
20...	1230	5.7	378	7.8	8.5	.5	11.0	84	--	--	--	--
MAR												
13...	1515	33	160	7.9	14.0	1.0	12.8	96	66	9	17	5.8
19...	1310	.60	405	7.9	5.0	5.5	9.7	82	--	--	--	--
APR												
01...	1520	.72	798	8.3	18.5	10.0	12.8	123	300	51	64	34
29...	1300	.82	1190	8.3	12.5	11.5	10.5	104	--	--	--	--
MAY												
14...	0855	.06	1240	8.5	18.5	11.5	11.2	110	440	88	78	59
25...	1500	.31	1090	8.4	12.0	10.5	10.2	99	--	--	--	--

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITI, CARBON- ATE FET-FLD (MG/L CACO3) (00430)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
NOV												
11...	98	32	2.0	8.1	302	350	6.9	.4	11	799	802	1.0
FEB												
19...	18	24	.8	13	90	71	4.8	.1	10	219	206	.30
20...	--	--	--	--	114	--	--	--	--	--	--	--
MAR												
13...	6.0	14	.3	10	57	25	2.7	.1	8.3	138	110	.19
19...	--	--	--	--	149	--	--	--	--	--	--	--
APR												
01...	61	30	1.5	6.7	250	190	4.1	.3	7.1	515	519	.70
29...	--	--	--	--	348	--	--	--	--	--	--	--
MAY												
14...	120	37	2.5	5.5	350	360	5.7	.4	2.8	853	842	1.1
25...	--	--	--	--	310	--	--	--	--	--	--	--

[illegible]

SQUARE BUTTE CREEK BASIN

06342040 SQUARE BUTTE CREEK NEAR HANNOVER, ND---Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, SUS- PENDE D RECOV- ERABLE (UG/L AS ZN) (01091)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	ZINC, FM BOT- TOM MA- TERIAL (UG/G AS ZN) (01093)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT) (80030)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)	GROSS BETA, DIS- SOLVED (PCI/L AS SR/ YT-90) (80050)
NOV 11...	--	--	--	--	<11	<.4	7.9	<.4	7.6
FEB 19...	80	70	9	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
MAR 13...	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--
APR 01...	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--
MAY 14...	10	4	6	11	<15	<.4	<9.7	.6	<9.4
25...	--	--	--	--	--	--	--	--	--

DATE	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90) (80060)	POTAS- SIUM 40 DIS- SOLVED (PCI/L AS K40) (82068)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE D TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHENOLS (UG/L) (32730)	SEDI- MENT, SUS- PENDE D (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE D (T/DAY) (80155)
NOV 11...	<.4	--	23	.1	--	--	17	.02
FEB 19...	--	9.7	27	1.3	.00	10	26	.32
20...	--	--	--	--	--	--	17	.26
MAR 13...	--	7.5	--	--	--	--	23	2.1
19...	--	--	--	--	--	--	4	.01
APR 01...	--	5.0	9.6	.1	--	--	16	.03
29...	--	--	--	--	--	--	30	.07
MAY 14...	.6	4.1	--	--	.00	3	53	.01
25...	--	--	--	--	--	--	14	.01

DATE	BED MAT. FALL DIAM. % FINER THAN .062 MM (80158)	BED MAT. FALL DIAM. % FINER THAN .125 MM (80159)	BED MAT. FALL DIAM. % FINER THAN .250 MM (80160)	BED MAT. FALL DIAM. % FINER THAN .500 MM (80161)	BED MAT. FALL DIAM. % FINER THAN 1.00 MM (80162)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)	BED MAT. SIEVE DIAM. % FINER THAN 64.0 MM (80174)
MAR 19...	3	4	6	13	18	26	49	75	87	93	100

SQUARE BUTTE CREEK BASIN

261

06342040 SQUARE BUTTE CREEK NEAR HANNOVER, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO MAY 1981

DATE TIME	NOV 11,80 1010	FEB 19,81 1015	MAR 13,81 1515	APR 1,81 1520	MAY 14,81 0855					
TOTAL CELLS/ML	170	740	6000	670	370					
DIVERSITY: DIVISION	1.1	1.5	0.5	2.0	1.7					
..CLASS	1.1	1.5	0.5	2.0	1.7					
..ORDER	1.5	2.2	0.6	2.4	1.7					
...FAMILY	2.0	2.9	1.5	2.7	2.5					
....GENUS	2.0	3.2	1.8	2.7	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										
....DOCCYSTACEAE										
....ANKISTRODESMUS	--	-	42	6	*	0	13	2	--	-
....KIRCHNERIELLA	--	-	14	2	--	-	--	-	--	-
....SCENEDESMACEAE										
....SCENEDESMUS	--	-	170#	23	--	-	--	-	--	-
....TETRASTRUM	--	-	56	8	--	-	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	13	8	110#	15	41	1	150#	23	13	3
CHRYSOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...COSCINODISCEAE										
....CYCLOTELLA	13	8	42	6	--	-	--	-	--	-
....STEPHANODISCUS	--	-	--	-	--	-	52	8	--	-
...PENNALES										
...DIATOMACEAE										
....DIATOMA	--	-	--	-	--	-	--	-	13	3
....FRAGILARIACEAE										
....SYNEDRA	26#	15	28	4	*	0	64	10	--	-
...GOMPHONEMATACEAE										
....GOMPHONEMA	--	-	--	-	*	0	--	-	13	3
...MERIDIONACEAE										
....MERIDION	--	-	14	2	*	0	--	-	--	-
...NAVICULACEAE										
....NAVICULA	--	-	42	6	55	1	13	2	--	-
...NITZSCHACEAE										
....NITZSCHIA	90#	54	130#	17	230	4	39	6	13	3
CRYPTOPHYTA (CRYPTOMONADS)										
..CRYPTOPHYCEAE										
...CRYPTOMONADALES										
....CRYPTOCHRYSIDACEAE										
....CHROOMONAS	--	-	--	-	--	-	--	-	120#	31
...CRYPTOMONADACEAE										
....CRYPTOMONAS	13	8	--	-	--	-	26	4	120#	31
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROOCOCCALES										
....CHROOCOCCACEAE										
....ANACYSTIS	--	-	14	2	96	2	13	2	52	14
...HORMOGONALES										
....NOSTOCACEAE										
....ANABAENA	--	-	--	-	82	1	250#	37	--	-
...CYLINDROSPERMUM	--	-	70	9	--	-	--	-	--	-
...OSCILLATORIACEAE										
....LYNGBYA	--	-	--	-	400	7	--	-	--	-
....OSCILLATORIA	--	-	--	-	3500#	59	--	-	--	-
...RIVULARIACEAE										
....RAPHIIDIOPSIS	--	-	--	-	1500#	25	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
..EUGLENOPHYCEAE										
...EUGLENALES										
....EUGLENACEAE										
....EUGLENA	13	8	--	-	*	0	--	-	--	-
....TRACHELOMONAS	--	-	14	2	*	0	52	8	39	10

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

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

SQUARE BUTTE CREEK BASIN

06342200 SQUARE BUTTE CREEK ABOVE NELSON LAKE NEAR CENTER, ND

LOCATION.--Lat 47°06'08", long 101°15'22", in SW¼NW¼SW¼ sec.19, T.142 N., R.83 W., Oliver County, Hydrologic Unit 10130101, on left bank 30 ft (9 m) downstream from bridge on county road 2 mi (3.2 km) southeast of Center, and 2 mi (3.2 km) upstream from Nelson Lake.

DRAINAGE AREA.--75.8 mi² (196 km²).

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Altitude of gage is 1,930 ft (588 m), from topographic map.

REMARKS.--Records fair except those for the period June to August, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,670 ft³/s (104 m³/s) Apr. 17, 1979, gage height, 9.96 ft (3.036 m); minimum observed discharge, 0.01 ft³/s (<0.001 m³/s) Mar. 7, 1978.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 70 ft³/s (1.98 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)
Feb. 17	--	80 2.27	ice jam	Mar. 13	0530	*190 5.38	5.96 1.817

Minimum daily, 0.60 ft³/s (0.017 m³/s) Aug. 31, Sept. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	2.6	1.7	1.6	1.2	3.4	3.1	1.8	1.3	1.4	1.3	.60
2	1.5	2.5	1.5	1.3	1.2	3.0	3.1	1.7	1.7	1.4	4.6	.64
3	1.7	2.4	1.4	1.2	1.3	3.0	2.8	1.5	1.6	1.3	7.0	.60
4	1.8	2.4	1.5	1.2	1.2	3.1	2.7	1.5	1.5	1.3	5.0	.68
5	1.4	2.3	1.4	1.2	1.2	3.0	2.6	1.5	1.4	1.2	4.0	.68
6	1.3	2.4	1.2	1.2	1.2	3.1	2.4	1.5	1.1	1.2	4.5	1.3
7	1.2	2.5	1.3	1.2	1.2	2.9	2.3	1.5	1.1	1.2	2.5	1.1
8	1.2	2.8	1.3	1.2	1.1	2.9	2.3	1.5	1.2	1.1	1.5	.85
9	1.2	2.4	1.3	1.2	.94	4.2	2.3	1.3	1.2	1.1	1.1	.68
10	1.1	2.2	1.3	1.1	1.0	6.4	2.1	1.4	1.3	1.1	1.0	.72
11	1.1	2.2	1.3	1.1	.94	20	2.2	1.4	1.3	1.1	.98	.68
12	1.1	2.1	1.4	1.1	.91	45	2.3	1.5	1.2	1.1	.96	.72
13	1.1	2.2	1.4	1.2	.97	115	2.0	1.5	3.0	1.2	.95	.68
14	1.1	2.1	1.4	1.1	1.1	75	2.0	1.4	2.2	1.3	.95	.68
15	1.1	2.0	1.5	1.2	3.0	45	2.1	1.4	2.0	1.4	.94	.64
16	2.7	2.0	1.6	1.1	25	23	2.0	1.4	1.8	1.7	.93	.60
17	5.8	2.1	1.6	1.1	70	12	1.9	1.4	1.7	2.5	.93	.64
18	3.8	2.0	1.5	1.1	50	6.8	1.9	1.3	1.6	5.0	.92	.72
19	3.4	2.0	1.3	1.1	42	5.6	1.8	1.3	1.6	4.0	.92	.68
20	3.2	2.0	1.2	1.1	32	4.6	1.9	1.3	1.5	2.7	.90	.68
21	2.7	2.2	1.1	1.1	19	4.5	1.8	1.2	2.2	2.0	.93	.68
22	3.0	2.3	1.0	1.3	13	3.8	1.7	1.3	2.0	1.8	.90	.72
23	3.8	1.9	1.0	1.4	10	3.5	1.7	1.7	2.5	1.7	.90	.72
24	3.8	1.8	.90	1.3	7.0	3.6	1.8	1.7	3.4	2.2	.90	.76
25	3.3	1.8	.90	1.3	4.9	3.3	1.8	1.6	4.0	2.0	.85	.85
26	3.3	1.8	1.2	1.2	4.2	3.1	1.7	1.5	3.3	1.7	.85	1.3
27	3.0	1.8	1.5	1.2	4.9	3.1	2.2	1.4	2.8	1.5	.90	1.0
28	3.3	1.8	1.9	1.2	4.0	3.1	2.3	1.7	2.2	1.3	.81	.90
29	3.1	1.9	2.2	1.2	---	3.1	2.1	1.5	1.9	1.3	.76	.81
30	2.8	1.9	2.5	1.2	---	3.0	1.8	1.4	1.6	1.5	.76	.81
31	2.7	---	2.0	1.2	---	3.1	---	1.4	---	1.2	.60	---
TOTAL	72.8	64.4	44.30	37.2	304.46	424.2	64.7	45.5	57.2	52.5	51.04	23.12
MEAN	2.35	2.15	1.43	1.20	10.9	13.7	2.16	1.47	1.91	1.69	1.65	.77
MAX	5.8	2.8	2.5	1.6	70	115	3.1	1.8	4.0	5.0	7.0	1.3
MIN	1.1	1.8	.90	1.1	.91	2.9	1.7	1.2	1.1	1.1	.60	.60
AC-FT	144	128	88	74	604	841	128	90	113	104	101	46

CAL YR 1980	TOTAL	1151.03	MEAN	3.14	MAX	65	MIN	.61	AC-FT	2280
WTR YR 1981	TOTAL	1241.42	MEAN	3.40	MAX	115	MIN	.60	AC-FT	2460

SQUARE BUTTE CREEK BASIN

263

06342200 SQUARE BUTTE CREEK ABOVE NELSON LAKE NEAR CENTER, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1978 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION (00301)	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CACO3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT												
07...	1100	1.2	1310	7.5	19.5	13.0	7.5	75	320	0	68	35
NOV												
11...	1355	2.1	1130	8.1	7.0	3.5	11.5	93	280	0	56	33
DEC												
10...	0855	1.2	1360	8.0	-15.0	.0	9.7	70	330	0	73	36
JAN												
07...	1230	1.2	1340	7.8	-10.5	.0	9.4	69	310	0	68	34
FEB												
11...	1045	.91	1280	7.5	-12.0	.0	8.6	61	340	0	76	36
19...	1510	27	324	7.8	11.5	.5	11.9	89	--	--	--	--
22...	0830	9.4	350	7.8	.5	.0	12.2	90	99	0	23	10
MAR												
13...	1140	104	325	8.0	7.0	1.0	11.6	87	--	--	--	--
19...	1630	5.4	420	7.9	5.0	4.5	10.7	89	120	0	29	12
APR												
04...	0855	2.8	867	8.2	3.5	6.5	10.4	90	220	0	49	23
29...	1055	2.1	1210	8.2	11.0	10.5	8.5	82	--	--	--	--
MAY												
12...	1240	1.7	1180	8.4	16.5	10.0	10.2	97	--	--	--	--
27...	1130	1.4	1160	8.3	19.0	14.0	9.0	94	--	--	--	--
JUN												
10...	1130	1.4	1100	8.1	24.5	17.0	7.3	80	280	0	59	32
JUL												
22...	0920	1.9	860	8.2	20.0	21.5	3.2	39	180	0	39	21
AUG												
20...	1410	.91	1380	8.4	33.0	26.5	10.2	134	350	0	72	41
SEP												
02...	1305	.66	1370	8.3	26.0	16.5	10.0	110	340	0	71	39

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY, CARBON- ATE FET-FLU (MG/L CACO3) (00430)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TUNS PER AC-FT) (70303)
OCT												
07...	200	57	4.9	6.7	398	370	7.4	.3	14	896	943	1.2
NOV												
11...	180	58	4.7	7.0	354	270	6.6	.3	11	762	780	1.0
DEC												
10...	200	56	4.8	8.7	490	260	8.8	.3	17	920	899	1.2
JAN												
07...	200	58	4.9	5.3	460	270	6.8	.3	18	868	879	1.1
FEB												
11...	180	53	4.3	5.1	460	270	8.0	.3	20	852	873	1.1
19...	--	--	--	--	99	--	--	--	--	--	--	--
22...	35	40	1.5	12	120	67	4.1	.1	10	--	236	.32
MAR												
13...	--	--	--	--	101	--	--	--	--	--	--	--
19...	45	43	1.8	8.4	150	79	3.2	.1	10	284	277	.39
APR												
04...	120	54	3.5	6.6	300	190	4.6	.2	9.1	563	584	.77
29...	--	--	--	--	398	--	--	--	--	--	--	--
MAY												
12...	--	--	--	6.1	410	260	7.1	.2	--	796	--	1.0
27...	--	--	--	--	414	--	--	--	--	--	--	--
JUN												
10...	160	55	4.2	5.2	420	220	6.9	.2	11	760	747	1.0
JUL												
22...	140	61	4.5	5.9	314	150	4.1	.2	11	580	561	.79
AUG												
20...	200	55	5.2	7.1	360	400	10	.2	14	938	962	1.2
SEP												
02...	200	56	5.3	6.0	410	290	12	.2	16	978	881	1.3

SQUARE BUTTE CREEK BASIN

06342200 SQUARE BUTTE CREEK ABOVE NELSON LAKE NEAR CENTER. ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS, TOTAL (MG/L AS PO4) (71886)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC SUS- PENDED TOTAL (UG/L AS AS) (01001)	ARSENIC TOTAL IN BOT- TOM MA- TERIAL (UG/G AS AS) (01003)
OCT												
07...	3.0	--	--	--	--	--	--	--	--	--	--	--
NOV												
11...	4.3	.66	.120	.15	.55	.67	.050	.15	.020	--	--	--
DEC												
10...	2.9	--	--	--	--	--	--	--	--	--	--	--
JAN												
07...	2.8	1.0	.190	.23	1.2	1.40	.040	.12	.020	--	--	--
FEB												
11...	2.0	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--	--
22...	5.9	.54	.680	--	2.8	3.50	.230	.71	.140	2	1	--
MAR												
13...	--	--	--	--	--	--	--	--	--	--	--	--
19...	4.1	--	--	--	--	--	--	--	--	--	--	--
APR												
04...	4.2	.52	.090	--	1.5	1.60	.110	.34	.040	--	--	--
29...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
12...	3.6	--	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--	--	--
JUN												
10...	2.8	--	--	--	--	--	--	--	--	--	--	--
JUL												
22...	3.0	.54	.420	--	1.3	1.70	.100	.31	.020	4	2	39
AUG												
20...	2.3	--	--	--	--	--	--	--	--	--	--	--
SEP												
02...	1.7	--	--	--	--	--	--	--	--	--	--	--

DATE	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BARIUM, SUS- PENDED RECOV- ERABLE (UG/L AS BA) (01006)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, SUS- PENDED RECOV- (UG/L AS CR) (01031)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	CHRO- MIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G) (01029)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COBALT, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CO) (01038)
OCT												
07...	100	0	100	--	--	330	--	--	--	--	--	--
NOV												
11...	--	--	--	--	--	400	--	--	--	--	--	--
DEC												
10...	--	--	--	--	--	360	--	--	--	--	0	--
JAN												
07...	--	--	--	--	--	280	--	--	--	--	--	--
FEB												
11...	--	--	--	--	--	320	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	0	<1	80	10	10	0	--	--	--
MAR												
13...	--	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	80	--	--	--	--	--	--
APR												
04...	100	0	100	--	--	230	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
12...	--	--	--	--	--	290	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--	--	--
JUN												
10...	--	--	--	--	--	340	--	--	--	--	--	--
JUL												
22...	--	--	--	0	<1	310	10	0	10	0	--	10
AUG												
20...	--	--	--	--	--	800	--	--	--	--	--	--
SEP												
02...	--	--	--	--	--	640	--	--	--	--	--	--

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	COPPER, TOTAL RECOVERABLE (UG/L AS CU) (01042)	CUPPER, SUS- PENDE RECOVERABLE (UG/L AS CU) (01041)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	CUPPER, FM BOT- TOM MA- TERIAL (UG/G AS CU) (01043)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM TOTAL RECOVERABLE (UG/L AS LI) (01132)	LITHIUM SUS- PENDE RECOVERABLE (UG/L AS LI) (01131)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	MANGA- NESE, SUS- PENDE RECOVERABLE (UG/L AS MN) (01054)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOVERABLE (UG/G AS HG) (71900)
OCT 07...	--	--	--	--	20	60	0	60	210	60	150	--
NOV 11...	--	--	--	--	50	--	--	--	120	10	110	--
DEC 10...	--	--	--	--	30	--	--	--	190	0	190	--
JAN 07...	--	--	--	--	40	--	--	--	230	230	0	--
FEB 11...	--	--	--	--	40	--	--	--	200	0	210	--
19...	--	--	--	--	--	--	--	--	--	--	--	--
22...	3	3	0	--	280	--	--	--	100	20	80	.2
MAR 13...	--	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	270	--	--	--	130	20	110	--
APR 04...	--	--	--	--	100	30	0	30	230	60	170	--
29...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 12...	--	--	--	--	--	--	--	--	290	--	--	--
27...	--	--	--	--	--	--	--	--	--	--	--	--
JUN 10...	--	--	29	--	30	--	--	--	350	70	280	--
JUL 22...	7	1	42	10	50	--	--	--	240	110	130	.1
AUG 20...	--	--	--	--	34	--	--	--	190	80	110	--
SEP 02...	--	--	--	--	22	--	--	--	190	80	110	--

[illegible]

SQUARE BUTTE CREEK BASIN

06342200 SQUARE BUTTE CREEK ABOVE NELSON LAKE NEAR CENTER, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, SUS- PENDE RECOV- ERABLE (UG/L AS ZN) (01091)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	ZINC, FM BUT- TOM MA- TERIAL (UG/G AS ZN) (01093)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT) (80030)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)	GROSS BETA, DIS- SOLVED (PCI/L AS YT-90) (80050)
FEB 11...	--	--	--	--	--	--	--	--	--
22...	10	1	9	--	--	--	--	--	--
JUL 22...	20	10	10	18	<13	3.5	<6.4	3.9	<6.2

DATE	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90) (80060)	POTAS- SIUM 40 DIS- SOLVED (PCI/L AS K40) (82068)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHENOLS (UG/L) (32730)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)
OCT 07...	--	--	--	--	--	--	97	.32
NOV 11...	--	--	25	.4	--	--	41	.23
DEC 10...	--	--	--	--	--	--	23	.07
JAN 07...	--	--	22	.4	--	--	85	.28
FEB 11...	--	3.8	--	--	--	--	53	.13
22...	--	9.0	26	1.7	.00	2	27	.69
MAR 13...	--	--	--	--	--	--	233	65
19...	--	6.3	--	--	--	--	36	.52
APR 04...	--	4.9	11	1.1	--	--	40	.30
29...	--	--	--	--	--	--	93	.53
MAY 12...	--	4.6	--	--	--	--	101	.46
27...	--	--	--	--	--	--	71	.27
JUN 10...	--	3.9	--	--	--	--	117	.44
JUL 22...	3.7	4.4	8.2	1.6	.00	10	76	.39
AUG 20...	--	--	--	--	--	--	79	.19
SEP 02...	--	--	--	--	--	--	79	.14

DATE	BED MAT. FALL DIAM. % FINER THAN .062 MM (80158)	BED MAT. FALL DIAM. % FINER THAN .125 MM (80159)	BED MAT. FALL DIAM. % FINER THAN .250 MM (80160)	BED MAT. FALL DIAM. % FINER THAN .500 MM (80161)	BED MAT. FALL DIAM. % FINER THAN 1.00 MM (80162)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)
FEB 22...	49	66	81	85	86	88	91	94	97	100

DATE	LENGTH OF EXPO- SURE (DAYS) (00022)	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUORUM (MG/M2) (70957)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUORUM (MG/M2) (70958)	PERI- PHYTON BIOMASS ASH WEIGHT G/SQ M (00572)	PERI- PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)
OCT 07...	19	1.78	.000	2.13	2.60
JUN 10...	29	4.21	.930	11.8	14.3
JUL 22...	42	22.3	8.49	21.5	26.5
SEP 02...	12	9.36	.980	47.6	50.5

SQUARE BUTTE CREEK BASIN

267

06342200 SQUARE BUTTE CREEK ABOVE NELSON LAKE NEAR CENTER, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	OCT 7,80 1100	NOV 11,80 1355	DEC 10,80 0855	JAN 7,81 1230	FEB 11,81 1045					
TOTAL CELLS/ML	710	770	190	52	39					
DIVERSITY: DIVISION	1.6	1.1	1.8	1.0	0.0					
..CLASS	1.6	1.1	1.8	1.0	0.0					
...ORDER	2.1	1.9	2.2	1.0	0.0					
...FAMILY	2.5	2.3	2.9	1.5	1.6					
....GENUS	2.6	2.4	3.1	1.5	1.6					
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										
...CHLOROCUCCALES										
...OOCYSTACEAE										
....ANKISTRUEDEMUS	13	2	13	2	--	-	--	-	--	-
....DICTYOSPHAERIUM	--	-	--	-	--	-	--	-	--	-
....KIRCHNERIELLA	--	-	--	-	--	-	--	-	--	-
....OOCYSTIS	--	-	--	-	--	-	--	-	--	-
....SELENASTRUM	13	2	--	-	--	-	--	-	--	-
....TETRAEDRON	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....CRUCIGENIA	--	-	--	-	--	-	--	-	--	-
....SCENEDESMUS	--	-	--	-	--	-	--	-	--	-
....TETRASTRUM	--	-	--	-	--	-	--	-	--	-
...VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	90	13	64	8	39#	20	26#	50	--	-
CHRYSOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...COSCINODISCAEAE										
....CYCLOTELLA	52	7	430#	55	26	13	--	-	--	-
....MELOSIRA	--	-	--	-	--	-	--	-	--	-
....STEPHANODISCUS	--	-	--	-	--	-	--	-	--	-
...PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	--	-	--	-	13	7	--	-	--	-
....COCCONEIS	13	2	--	-	--	-	--	-	--	-
...CYMBELLACEAE										
....CYMBELLA	13	2	--	-	--	-	--	-	--	-
...DIATOMACEAE										
....DIATOMA	--	-	26	3	--	-	--	-	13#	33
...FRAGILARIACEAE										
....FRAGILARIA	13	2	13	2	--	-	--	-	--	-
....SYNEDRA	--	-	13	2	13	7	--	-	--	-
...GOMPHONEMATACEAE										
....GOMPHONEMA	--	-	13	2	--	-	--	-	--	-
...NAVICULACEAE										
....NAVICULA	26	4	26	3	26	13	13#	25	13#	33
....PINNULARIA	--	-	--	-	--	-	--	-	--	-
...NITZSCHACEAE										
....NITZSCHIA	220#	31	90	12	13	7	13#	25	13#	33

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

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

CONTINUED ...

SQUARE BUTTE CREEK BASIN

06342200 SQUARE BUTTE CREEK ABOVE NELSON LAKE NEAR CENTER, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

(CONTINUED)

DATE TIME	OCT 7,80 1100	NOV 11,80 1355	DEC 10,80 0855	JAN 7,81 1230	FEB 11,81 1045	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
..CHRYSOPHYCEAE						
...CHRYSOMONADALES						
....CHROMULINACEAE						
.....CHRYSOCOCCUS	--	-	--	-	--	-
...UCHROMONADACEAE						
....UCHROMONAS	--	-	--	-	--	-
..XANTHOPHYCEAE						
..HETEROCOCCALES						
...CENTRITRACTACEAE						
....CENTRITRACTUS	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)						
..CRYPTOPHYCEAE						
..CRYPTOMONADALES						
...CRYPTOCHRYSIDACEAE						
....CHROMONAS	--	-	--	-	--	-
...CRYPTOMONADACEAE						
....CRYPTOMONAS	--	-	26	3	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
..CHROOCOCCALES						
...CHROOCOCCACEAE						
....ANACYSTIS	230#	33	13	2	26	13
..HORMOGONALES						
...OSCILLATORIACEAE						
....USCILLATORIA	--	-	--	-	--	-
...RIVULARIACEAE						
....RAPHIDIOPSIS	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)						
..EUGLENOPHYCEAE						
..EUGLENALES						
...EUGLENACEAE						
....EUGLENA	13	2	--	-	13	7
....LEPUCINCLIS	--	-	--	-	--	-
....PHACUS	--	-	--	-	--	-
....TRACHELONAS	13	2	52	7	26	13
PYRRHOPHYTA (FIKE ALGAE)						
..DINOPHYCEAE						
..GYMNODINIALES						
...GYMNODINIACEAE						
....GYMNODINIUM	--	-	--	-	--	-
..PERIDINIALES						
...PERIDINIACEAE						
....PERIDINIUM	--	-	--	-	--	-

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

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

SQUARE BUTTE CREEK BASIN

269

06342200 SQUARE BUTTE CREEK ABOVE NELSON LAKE NEAR CENTER, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	FEB 22,81 0830	MAR 19,81 1630	APR 4,81 0855	MAY 12,81 1240
TOTAL CELLS/ML	810	4700	5400	15000
DIVERSITY: DIVISION	1.3	1.0	1.3	1.5
..CLASS	1.3	1.1	1.3	1.5
...ORDER	1.3	1.2	1.6	1.6
....FAMILY	1.7	1.7	1.7	1.7
.....GENUS	1.7	1.7	2.1	1.8

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
....UOCYSTACEAE								
.....ANKISTRUEDESMUS	--	-	110	2	50	1	360	2
.....DICTYOSPHAERIUM	--	-	--	-	--	-	--	-
.....KIRCHNERIELLA	--	-	--	-	--	-	--	-
....UOCYSTIS	--	-	--	-	--	-	--	-
....SELENASTRUM	--	-	--	-	--	-	180	1
....TETRAEDRON	--	-	--	-	--	-	--	-
...SCENEDESMACEAE								
....CRUCIGENIA	--	-	--	-	--	-	--	-
....SCENEDESMUS	--	-	56	1	--	-	--	-
....TETRASTRUM	--	-	--	-	--	-	--	-
...VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	140#	17	350	7	1500#	27	480	3
CHRYSOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
....COSCINOIDISCEAE								
.....CYCLOTELLA	--	-	42	1	700	13	480	3
.....MELOSIRA	--	-	--	-	--	-	--	-
....STEPHANODISCUS	--	-	--	-	2400#	44	--	-
...PENNALES								
....ACHNANTHACEAE								
.....ACHNANTHES	--	-	*	0	--	-	--	-
....COCCONEIS	--	-	--	-	--	-	--	-
....CYMBELLACEAE								
.....CYMBELLA	--	-	--	-	--	-	--	-
....DIATOMACEAE								
.....DIATOMA	41	5	84	2	--	-	--	-
....FRAGILARIACEAE								
.....FRAGILARIA	--	-	--	-	--	-	--	-
....SYNEDRA	27	3	--	-	--	-	--	-
...GOMPHONEMATACEAE								
....GOMPHONEMA	--	-	--	-	--	-	--	-
...NAVICULACEAE								
....NAVICULA	55	7	150	3	150	3	540	4
....PINNULARIA	--	-	--	-	50	1	--	-
...NITZSCHIACEAE								
....NITZSCHIA	27	3	42	1	50	1	600	4

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

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

CONTINUED ...

SQUARE BUTTE CREEK BASIN

06342200 SQUARE BUTTE CREEK ABOVE NELSON LAKE NEAR CENTER, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

(CONTINUED)

DATE TIME	FEB 22,81 0830		MAR 19,81 1630		APR 4,81 0855		MAY 12,81 1240	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
..CHRYSTOPHYCEAE								
..CHRYSDOMONADALES								
...CHROMULINACEAE								
....CHRYSUCCUS	--	-	* 0		--	-	--	-
...UCHROMONADACEAE								
....UCHROMUNAS	--	-	--	-	--	-	--	-
..XANTHOPHYCEAE								
..HETEROCOCCALES								
...CENTRITRACTACEAE								
....CENTRITRACTUS	--	-	84	2	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)								
..CRYPTOPHYCEAE								
..CRYPTOMONADALES								
...CRYPTOCHRYSIDACEAE								
....CHROMONAS	--	-	--	-	--	-	360	2
...CRYPTOMONADACEAE								
....CRYPTOMONAS	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROOCOCCALES								
....CHROOCOCCACEAE								
....ANACYSTIS	--	-	--	-	100	2	10000#	69
..HORMOGONALES								
...OSCILLATORIACEAE								
....OSCILLATORIA	520#	64	3400#	72	--	-	--	-
...RIVULARIACEAE								
....RAPHIIDOPSIS	--	-	320	7	--	-	--	-
EUGLENOPHYTA (EUGLENUIDS)								
..EUGLENOPHYCEAE								
..EUGLENALES								
...EUGLENACEAE								
....EUGLENA	--	-	--	-	--	-	*	0
....LEPOCINCLIS	--	-	--	-	--	-	--	-
....PHACUS	--	-	--	-	--	-	--	-
....TRACHELOMONAS	--	-	--	-	450	8	1700	11
PYRRHOPHYTA (FIRE ALGAE)								
..DINOPHYCEAE								
...GYMNODINIALES								
....GYMNODINIACEAE								
....GYMNODINIUM	--	-	42	1	--	-	--	-
..PERIDINIALES								
...PERIDINIACEAE								
....PERIDINIUM	--	-	--	-	--	-	--	-

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

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

SQUARE BUTTE CREEK BASIN

271

06342200 SQUARE BUTTE CREEK ABOVE NELSON LAKE NEAR CENTER, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	JUN 10,81 1130	JUL 22,81 0920	AUG 20,81 1410	SEP 2,81 1305
TOTAL CELLS/ML	15000	22000	42	4700
DIVERSITY: DIVISION	1.6	1.8	0.0	1.8
..CLASS	1.7	1.8	0.0	1.8
...ORDER	2.0	2.5	0.0	2.3
....FAMILY	2.3	2.8	0.0	3.1
.....GENUS	2.6	3.2	0.0	3.3

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCUCCALES								
....UOYSTACEAE								
.....ANKISTRUESMUS	840	6	680	3	--	--	210	4
.....DICTYOSPHAERIUM	--	--	490	2	--	--	--	--
.....KIRCHNERIELLA	210	1	--	--	--	--	140	3
.....OOCYSTIS	700	5	580	3	--	--	--	--
.....SELENASTRUM	280	2	--	--	--	--	--	--
.....TETRAEDRON	--	--	*	0	--	--	--	--
...SCENEDESMACEAE								
....CRUCIGENIA	--	--	3000	13	--	--	--	--
....SCENEDESMUS	980	7	780	3	--	--	280	6
....TETRASTRUM	280	2	--	--	--	--	--	--
..VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	840	6	1100	5	--	--	100	2
CHRYSOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
....COSCINOIDISCEAE								
.....CYCLOTELLA	420	3	880	4	--	--	420	9
.....MELUSIRA	--	--	--	--	--	--	170	4
.....STEPHANODISCUS	--	--	--	--	--	--	--	--
..PENNALES								
...ACHNANTHACEAE								
....ACHNANTHES	--	--	--	--	--	--	100	2
....COCCONEIS	--	--	--	--	--	--	--	--
...CYMBELLACEAE								
....CYMBELLA	--	--	--	--	42#100	--	--	--
...DIATOMACEAE								
....DIATOMA	--	--	--	--	--	--	--	--
...FRAGILARIACEAE								
....FRAGILARIA	--	--	--	--	--	--	--	--
....SYNEDRA	--	--	--	--	--	--	140	3
...GOMPHONEMACEAE								
....GOMPHONEMA	--	--	--	--	--	--	35	1
...NAVICULACEAE								
....NAVICULA	2200#	15	680	3	--	--	520	11
....PINNULARIA	--	--	--	--	--	--	--	--
...NITZSCHACEAE								
....NITZSCHIA	140	1	2200	10	--	--	1200#	26

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

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

CONTINUED ...

SQUARE BUTTE CREEK BASIN

06342200 SQUARE BUTTE CREEK ABOVE NELSON LAKE NEAR CENTER, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

(CONTINUED)

DATE TIME	JUN 10,81 1130		JUL 22,81 0920		AUG 20,81 1410		SEP 2,81 1305	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
..CHRYSOPHYCEAE								
..CHRYSOMONADALES								
...CHROMULINACEAE								
...CHRYSOCOCCLUS	--	-	--	-	--	-	--	-
...UCHROMONADACEAE								
...UCHROMONAS	210	1	--	-	--	-	--	-
..XANTHOPHYCEAE								
..HETEROCOCCALES								
...CENTRITRACTACEAE								
....CENTRITRACTUS	--	-	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)								
..CRYPTOPHYCEAE								
..CRYPTOMONADALES								
...CRYPTOCHRYSIDACEAE								
...CHROOMONAS	--	-	--	-	--	-	--	-
...CRYPTOMONADACEAE								
....CRYPTOMONAS	140	1	--	-	--	-	140	3
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
..CHROOCOCCALES								
...CHROOCOCCACEAE								
....ANACYSTIS	7200#	49	7800#	35	--	-	900#	19
..HORMOGONALES								
...OSCILLATORIACEAE								
....OSCILLATORIA	--	-	2300	10	--	-	--	-
...RIVULARIACEAE								
....RAPHIDIOPSIS	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)								
..EUGLENOPHYCEAE								
..EUGLENALES								
...EUGLENACEAE								
....EUGLENA	--	-	580	3	--	-	35	1
....LEPOCINCLIS	--	-	290	1	--	-	--	-
....PHACUS	--	-	390	2	--	-	35	1
....TRACHELOMONAS	210	1	190	1	--	-	310	7
PYRRHOPHYTA (FIRE ALGAE)								
..DINOPHYCEAE								
..GYMNODINIALES								
...GYMNODINIACEAE								
....GYMNODINIUM	--	-	--	-	--	-	--	-
..PERIDINIALES								
...PERIDINIACEAE								
....PERIDINIUM	--	-	290	1	--	-	--	-

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

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

SQUARE BUTTE CREEK BASIN

273

06342230 HAGEL CREEK NEAR CENTER, ND

LOCATION.--Lat 47°03'58", long 101°14'11", in SE $\frac{1}{4}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.6, T.141 N., R.83 W., Oliver County, Hydrologic Unit 10130101, on right bank 1,200 ft (366 m) upstream from bridge on county road, 0.8 mi (1.3 km) upstream from Nelson Lake, 1 mi (1.6 km) west of Milton R. Young Powerplant, and 4.5 mi (7.2 km) southeast of Center.

DRAINAGE AREA.--45.6 mi² (118 km²).

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Altitude of gage is 1,950 ft (594 m), from topographic map.

REMARKS.--Records fair except those for winter periods, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,150 ft³/s (32.6 m³/s) Apr. 17, 1979, gage height, 7.41 ft (2.259 m); no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 41 ft³/s (1.16 m³/s) Mar. 11, gage height, 2.98 ft (0.908 m), no peak above base of 70 ft³/s (1.98 m³/s); no flow on many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.13	1.6	.53	.27	.03	3.6	1.5	.26	.09	.03	.00	.00
2	.08	1.4	.35	.22	.02	2.9	1.4	.24	.09	.03	.01	.00
3	.06	1.4	.20	.17	.01	2.6	1.3	.20	.09	.02	1.9	.00
4	.05	1.2	.22	.10	.01	2.4	1.4	.13	.06	.02	1.2	.00
5	.05	1.4	.25	.08	.00	2.9	1.2	.12	.05	.01	.65	.00
6	.05	1.3	.16	.07	.00	2.8	.98	.09	.04	.01	.66	.00
7	.04	1.3	.07	.06	.00	2.0	.81	.09	.04	.01	.30	.00
8	.04	1.4	.08	.05	.00	2.0	.77	.09	.06	.01	.08	.00
9	.03	1.4	.10	.04	.00	2.4	.85	.09	.06	.00	.01	.00
10	.02	1.2	.11	.04	.00	4.2	.73	.07	.05	.00	.00	.00
11	.02	1.2	.14	.07	.00	10	.56	.05	.04	.00	.00	.00
12	.01	1.1	.16	.09	.00	27	.53	.09	.04	.00	.02	.00
13	.01	1.2	.19	.09	.10	32	.53	.05	.14	.00	.01	.00
14	.01	1.2	.21	.06	1.0	29	.47	.06	.90	.01	.00	.00
15	.01	1.1	.22	.05	10	23	.38	.05	.64	.01	.00	.00
16	.25	.95	.24	.05	20	18	.42	.05	.39	.01	.00	.00
17	11	.86	.25	.07	25	14	.30	.04	.28	.01	.00	.00
18	4.4	.82	.26	.11	20	9.9	.30	.03	.19	.01	.00	.00
19	2.2	.78	.14	.13	17	7.3	.34	.02	.15	.03	.00	.00
20	1.7	.77	.07	.15	16	5.5	.26	.01	.13	.02	.00	.00
21	1.5	.77	.12	.18	15	4.3	.26	.01	.23	.02	.00	.00
22	1.6	.79	.17	.19	14	3.4	.21	.01	.30	.07	.00	.00
23	2.9	.81	.10	.20	13	3.1	.20	.01	.23	.06	.00	.00
24	3.6	.75	.05	.19	9.0	3.0	.18	.02	.31	.04	.00	.00
25	3.1	.65	.04	.17	5.7	2.6	.18	.04	.44	.01	.00	.00
26	2.3	.59	.06	.14	5.2	2.2	.18	.05	.25	.01	.00	.00
27	1.9	.57	.10	.12	4.9	1.9	.20	.04	.15	.01	.00	.00
28	1.8	.53	.18	.10	4.2	1.8	.22	.04	.10	.00	.00	.00
29	1.7	.53	.23	.08	---	1.8	.30	.04	.06	.00	.00	.00
30	1.7	.53	.27	.06	---	1.7	.28	.05	.04	.00	.00	.00
31	1.6	---	.30	.04	---	1.6	---	.08	---	.00	.00	---
TOTAL	43.86	30.10	5.57	3.43	180.17	230.9	17.24	2.22	5.64	.46	4.84	.00
MEAN	1.41	1.00	.18	.11	6.43	7.45	.57	.072	.19	.015	.16	.000
MAX	11	1.6	.53	.27	25	32	1.5	.26	.90	.07	1.9	.00
MIN	.01	.53	.04	.04	.00	1.6	.18	.01	.04	.00	.00	.00
AC-FT	87	60	11	6.8	357	458	34	4.4	11	.9	9.6	.00

CAL YR 1980 TOTAL 702.47 MEAN 1.92 MAX 138 MIN .00 AC-FT 1390
WTR YR 1981 TOTAL 524.43 MEAN 1.44 MAX 32 MIN .00 AC-FT 1040

SQUARE BUTTE CREEK BASIN
06342230 HAGEL CREEK NEAR CENTER, ND--Continued
WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1978 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHUS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS (MG/L AS CACU3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
UCI												
07...	0815	.04	1100	8.1	16.0	10.0	6.3	60	190	0	32	26
NOV												
13...	0910	1.2	1210	8.4	-1.0	2.5	11.3	88	240	0	44	31
DEC												
10...	1145	.11	1850	8.1	-18.5	.5	10.0	74	350	0	67	45
JAN												
06...	1425	.07	2080	7.9	-9.5	.5	9.2	68	420	0	82	52
FEB												
19...	1700	24	675	8.1	5.0	.0	12.3	90	--	--	--	--
22...	1050	10	632	8.0	5.0	.0	12.2	89	110	0	22	14
MAR												
13...	0930	36	530	8.2	4.0	.0	11.8	86	--	--	--	--
19...	1000	7.4	555	8.0	3.5	3.0	11.5	91	110	0	23	13
APR												
04...	1240	1.3	995	8.4	8.5	10.0	12.3	116	200	0	41	23
29...	0925	.26	1270	8.3	11.0	10.5	9.2	88	--	--	--	--
MAY												
12...	0815	.06	1330	8.8	10.0	9.0	9.3	85	210	0	32	32
26...	1610	.04	1220	9.3	16.0	16.0	14.6	159	--	--	--	--
JUN												
10...	0900	.06	1240	9.8	16.5	12.0	7.8	80	160	0	15	29
JUL												
22...	1300	.11	1660	9.7	28.0	30.0	9.7	137	120	0	13	22
AUG												
12...	1545	.02	1730	9.0	36.0	31.5	11.5	164	150	0	21	23

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY, CARBON- ATE FET-FLD (MG/L CACO3) (00430)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS -SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
OCT												
07...	210	70	6.7	10	406	260	4.8	.2	.3	752	788	1.0
NOV												
13...	210	65	5.9	11	368	300	3.8	.2	1.4	821	823	1.1
DEC												
10...	320	65	7.4	14	580	440	6.3	.3	2.3	1270	1240	1.7
JAN												
06...	380	66	8.1	9.0	700	500	7.5	.3	3.1	1440	1460	2.0
FEB												
19...	--	--	--	--	193	--	--	--	--	--	--	--
22...	100	64	4.1	9.0	180	170	3.9	.1	8.2	424	436	.58
MAR												
13...	--	--	--	--	180	--	--	--	--	--	--	--
19...	82	60	3.4	6.9	170	120	3.2	.1	7.7	371	359	.50
APR												
04...	160	63	5.0	7.7	350	220	3.8	.2	2.0	640	669	.87
29...	--	--	--	--	458	--	--	--	--	--	--	--
MAY												
12...	240	70	7.2	8.4	460	280	4.5	.1	1.2	893	875	1.2
26...	--	--	--	--	438	--	--	--	--	--	--	--
JUN												
10...	250	77	8.7	7.2	450	260	5.6	.2	1.3	841	839	1.1
JUL												
22...	380	86	15	8.7	610	210	6.2	.2	3.6	1160	1010	1.6
AUG												
12...	350	83	15	10	620	200	6.0	.2	.7	1120	1040	1.5

SQUARE BUTTE CREEK BASIN

275

06342230 HAGEL CREEK NEAR CENTER, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS, TOTAL (MG/L AS PU4) (71886)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC SUS- PENDED TOTAL (UG/L AS AS) (01001)	ARSENIC TOTAL IN BOT- TOM MA- TERIAL (UG/G AS AS) (01003)
OCT												
07...	.08	--	--	--	--	--	--	--	--	--	--	--
NOV												
13...	2.6	.00	.040	.05	1.1	1.10	.080	.25	.030	--	--	--
DEC												
10...	.38	--	--	--	--	--	--	--	--	--	--	--
JAN												
06...	.27	.14	.200	.24	2.2	2.40	.060	.18	.030	--	--	--
FEB												
19...	--	--	--	--	--	--	--	--	--	--	--	--
22...	11.4	--	--	--	--	--	--	--	--	--	--	--
MAR												
13...	--	--	--	--	--	--	--	--	--	--	--	--
19...	7.4	--	--	--	--	--	--	--	--	--	--	--
APR												
04...	2.2	.02	.090	--	1.6	1.70	.110	.34	.050	--	--	--
29...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
12...	.14	--	--	--	--	--	--	--	--	2	0	40
26...	--	--	--	--	--	--	--	--	--	--	--	--
JUN												
10...	.14	--	--	--	--	--	--	--	--	--	--	--
JUL												
22...	.34	.09	.120	--	--	--	.830	2.5	.130	--	--	--
AUG												
12...	.06	--	--	--	--	--	--	--	--	--	--	--

DATE	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BARIUM, SUS- PENDED RECOV- ERABLE (UG/L AS BA) (01006)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BERYL- LIUM, SUS- PENDED RECOV- ERABLE (UG/L AS BE) (01011)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, SUS- PENDED RECOV- ERABLE (UG/L AS CR) (01031)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	CHRO- MIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G) (01029)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)
OCT												
07...	100	0	100	--	--	--	380	--	--	--	--	--
NOV												
13...	--	--	--	--	--	--	370	--	--	--	--	--
DEC												
10...	--	--	--	--	--	--	440	--	--	--	--	0
JAN												
06...	--	--	--	--	--	--	420	--	--	--	--	--
FEB												
19...	--	--	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	0	--	<1	140	0	0	10	--	--
MAR												
13...	--	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	80	--	--	--	--	--
APR												
04...	100	0	100	--	--	--	230	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
12...	--	--	--	0	0	1	320	0	0	0	1	--
26...	--	--	--	--	--	--	--	--	--	--	--	--
JUN												
10...	--	--	--	--	--	--	330	--	--	--	--	--
JUL												
22...	--	--	--	--	--	--	510	--	--	--	--	--
AUG												
12...	--	--	--	--	--	--	770	--	--	--	--	--

SQUARE BUTTE CREEK BASIN

06342230 HAGEL CREEK NEAR CENTER, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	CUBALT, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CU) (01038)	CUPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	CUPPER, SUS- PENDE RECOV- ERABLE (UG/L AS CU) (01041)	CUPPER, DIS- SOLVED (UG/L AS CU) (01040)	CUPPER, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CU) (01043)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI) (01132)	LITHIUM SUS- PENDE RECOV- ERABLE (UG/L AS LI) (01131)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, SUS- PENDE RECOV. (UG/L AS MN) (01054)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
UCT												
07...	--	--	--	--	--	70	40	0	40	70	40	30
NOV												
13...	--	--	--	--	--	40	--	--	--	110	100	10
DEC												
10...	--	--	--	--	--	20	--	--	--	180	50	130
JAN												
06...	--	--	--	--	--	90	--	--	--	260	30	230
FEB												
19...	--	--	--	--	--	--	--	--	--	--	--	--
22...	--	4	1	3	--	300	--	--	--	210	120	90
MAR												
13...	--	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	350	--	--	--	80	60	20
APR												
04...	--	--	--	--	--	110	30	0	30	130	120	10
29...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
12...	5	3	1	2	7	60	--	--	--	80	30	50
26...	--	--	--	--	--	--	--	--	--	--	--	--
JUN												
10...	--	--	--	28	--	130	--	--	--	60	40	20
JUL												
22...	--	--	--	--	--	90	--	--	--	100	60	40
AUG												
12...	--	--	--	--	--	190	--	--	--	140	110	32

DATE	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MERCURY SUS- PENDE RECOV- ERABLE (UG/L AS HG) (71895)	MERCURY RECOV. FM BOT- TOM MA- TERIAL (UG/G AS HG) (71921)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	NICKEL, SUS- PENDE RECOV- ERABLE (UG/L AS NI) (01066)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE) (01147)	SELE- NIUM, SUS- PENDE RECOV- ERABLE (UG/L AS SE) (01146)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SELE- NIUM, TOTAL IN BOT- TOM MA- TERIAL (UG/G) (01148)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
UCT												
07...	--	--	--	--	--	--	--	--	--	--	--	460
FEB												
19...	--	--	--	--	--	--	--	--	--	--	--	--
22...	--	.1	--	--	5	2	3	--	--	0	--	--
MAR												
13...	--	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
04...	--	--	--	--	--	--	--	--	--	--	--	510
29...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
12...	.2	.1	.1	.05	9	6	3	0	0	0	0	--

DATE	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, SUS- PENDE RECOV- ERABLE (UG/L AS ZN) (01091)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	ZINC, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS ZN) (01093)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT) (80030)	GROSS ALPHA, TOTAL (UG/L AS U-NAT) (80040)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, TOTAL (PCI/L AS CS-137) (03516)	GROSS BETA, DIS- SOLVED (PCI/L AS YT-90) (80050)
FEB									
22...	40	30	6	--	--	--	--	--	--
MAR									
13...	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--
APR									
04...	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--
MAY									
12...	30	--	<3	7	<19	<.6	13	1.5	12

SQUARE BUTTE CREEK BASIN

06342230 HAGEL CREEK NEAR CENTER, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90) (80060)	POTAS- SIUM 40 DIS- SOLVED (PCI/L AS K40) (82068)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENED TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHENOLS (UG/L) (32730)	SEDI- MENT, DIS- CHARGE, SUS- PENED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENED (T/DAY) (80155)
OCT 07...	--	--	--	--	--	--	29	.00
NOV 13...	--	--	20	.6	--	--	41	.13
DEC 10...	--	--	--	--	--	--	69	.02
JAN 06...	--	--	39	.4	--	--	73	.01
FEB 22...	--	6.7	--	--	.00	2	48	1.3
MAR 13...	--	--	--	--	--	--	36	3.5
19...	--	5.1	--	--	--	--	32	.64
APR 04...	--	5.7	14	.9	--	--	18	.06
29...	--	--	--	--	--	--	29	.02
MAY 12...	1.4	6.3	--	--	.00	1	66	.01
26...	--	--	--	--	--	--	23	.00
JUN 10...	--	5.4	--	--	.00	--	23	.00
JUL 22...	--	6.5	21	.8	--	--	28	.01
AUG 12...	--	--	--	--	--	--	80	.00

DATE	BED MAT. FALL DIAM. % FINER THAN .062 MM (80158)	BED MAT. FALL DIAM. % FINER THAN .125 MM (80159)	BED MAT. FALL DIAM. % FINER THAN .250 MM (80160)	BED MAT. FALL DIAM. % FINER THAN .500 MM (80161)	BED MAT. FALL DIAM. % FINER THAN 1.00 MM (80162)	BED MAT. FALL DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. FALL DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. FALL DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. FALL DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. FALL DIAM. % FINER THAN 32.0 MM (80173)
FEB 22...	15	23	38	53	56	62	77	92	98	100

DATE	LENGTH OF EXPO- SURE (DAYS) (00022)	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUORUM (MG/M2) (70957)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUORUM (MG/M2) (70958)	PERI- PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00572)	PERI- PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)
JUN 10...	29	.280	.110	.787	1.10
AUG 12...	21	4.83	1.35	5.04	6.14

SQUARE BUTTE CREEK BASIN

06342230 HAGEL CREEK NEAR CENTER, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO AUGUST 1981

DATE TIME	UCT 7,80 0815	NOV 13,80 0910	DEC 10,80 1145	JAN 6,81 1425	FEB 22,81 1050	MAR 19,81 1000
TOTAL CELLS/ML	340	21000	5500	2100	8900	18000
DIVERSITY: DIVISION	1.1	1.5	1.6	1.5	1.4	1.3
..CLASS	1.1	1.5	1.6	1.5	1.4	1.3
..ORDER	1.1	2.2	2.1	2.2	2.2	2.2
...FAMILY	1.1	2.3	2.1	2.2	2.5	2.6
....GENUS	1.1	2.9	2.4	2.8	2.6	2.9

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												
....DOCYSTACEAE												
.....ANKISTRODESMEUS	--	-	1500	7	660	12	78	4	300	3	1400	8
.....CHODATELLA	--	-	270	1	--	-	--	-	--	-	--	-
.....DICTYOSPHAERIUM	--	-	820	4	--	-	--	-	410	5	--	-
.....KIRCHNERIELLA	--	-	--	-	--	-	--	-	--	-	*	0
.....DOCYSTIS	--	-	270	1	180	3	--	-	--	-	--	-
.....SELENASTRUM	--	-	270	1	130	2	26	1	68	1	120	1
.....SCENEDESMACEAE												
.....CRUCIGENIA	--	-	680	3	--	-	--	-	--	-	--	-
.....SCENEDESMUS	26	8	270	1	--	-	13	1	--	-	--	-
.....TETRASTRUM	--	-	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES											240	1
...CHLAMYDOMONADACEAE												
....CARTERIA	--	-	--	-	--	-	--	-	*	0	--	-
....CHLAMYDOMONAS	--	-	960	5	2200#	40	91	4	1000	11	1900	11
....PHACOTACEAE												
.....PHACOTUS	--	-	--	-	--	-	--	-	--	-	--	-
..ZYGNEMATALES												
...ZYGNEMATACEAE												
....MOUGEOTIA	--	-	--	-	--	-	--	-	--	-	--	-
CHRYSTOPHYTA												
..BACILLARIOPHYCEAE												
...CENTRALES												
....COSCINODISCEACEAE												
.....CYCLOTETRA	--	-	1400	7	400	7	13	1	--	-	1300	7
.....MELOSIRA	--	-	--	-	--	-	--	-	--	-	--	-
.....STEPHANODISCUS	--	-	--	-	--	-	--	-	--	-	--	-
..PENNALES												
...CYMBELLACEAE												
....CYMBELLA	--	-	--	-	--	-	--	-	--	-	--	-
...DIATOMACEAE												
....DIATOMA	--	-	--	-	--	-	--	-	68	1	--	-
...FRAGILARIACEAE												
....SYNEDRA	--	-	270	1	--	-	--	-	*	0	*	0
...NAVICULACEAE												
....NAVICULA	--	-	--	-	--	-	--	-	200	2	*	0
...NITZSCHIA	64#	19	*	0	--	-	--	-	100	1	180	1
...SURIRELLACEAE												
....SURIRELLA	--	-	--	-	--	-	--	-	--	-	120	1
CYANOPHYTA (BLUE-GREEN ALGAE)												
..CYANOPHYCEAE												
...CHROOCOCCALES												
....CHROOCOCCACEAE												
.....AGMENELLUM	--	-	--	-	--	-	--	-	--	-	1900	11
.....ANACYSTIS	240#	73	9200#	45	840#	15	450#	21	3800#	43	1700	10
.....COCCOCHLORIS	--	-	270	1	--	-	--	-	--	-	--	-
.....GOMPHOSPHAERIA	--	-	410	2	--	-	--	-	--	-	--	-
...HORMUGONALES												
....NOSTOCACEAE												
.....ANABAENA	--	-	--	-	--	-	--	-	--	-	780	4
....CYLINDROSPERMUM	--	-	--	-	--	-	--	-	340	4	--	-
...OSCILLATORIA												
....LYNGBYA	--	-	--	-	--	-	310	15	--	-	--	-
....OSCILLATORIA	--	-	2400	12	--	-	630#	30	1600#	18	7400#	41
....SPIRULINA	--	-	--	-	--	-	--	-	--	-	--	-
...RIVULARIACEAE												
....RAPHIIDIOPSIS	--	-	--	-	--	-	--	-	--	-	240	1
EUGLENOPHYTA (EUGLENOIDS)												
..EUGLENOPHYCEAE												
...EUGLENALES												
....EUGLENACEAE												
.....EUGLENA	--	-	*	0	130	2	78	4	--	-	120	1
.....PHACUS	--	-	--	-	--	-	--	-	*	0	--	-
....TRACHELOMONAS	--	-	1400	7	970#	18	250	12	810	9	120	1
PYRRHOPHYTA (FIRE ALGAE)												
..DINOPHYCEAE												
...PERIDINIALES												
....GLENODINIACEAE												
.....GLENODINIUM	--	-	--	-	--	-	190	9	--	-	--	-
....PERIDINIACEAE												
.....PERIDINIUM	--	-	--	-	--	-	--	-	*	0	120	1

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

06342230 HAGEL CREEK NEAR CENTER, ND--Continued
 PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO AUGUST 1981

DATE TIME	APR 4,81 1240	MAY 12,81 0650	JUN 10,81 0900	JUL 22,81 1300	AUG 12,81 1545
TOTAL CELLS/ML	9900	77	510	16000	110000
DIVERSITY: DIVISION	1.7	1.5	0.5	0.3	0.7
..CLASS	1.7	1.5	0.5	0.3	0.7
...ORDER	2.4	1.5	0.5	0.4	1.1
...FAMILY	2.5	1.5	0.5	0.4	1.5
...GENUS	2.7	1.5	0.5	0.8	1.6
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					
...UOCYSTACEAE					
....ANKISTRUESMUS	1900# 19	39# 50	-- --	120 1	* 0
....CHUDATELLA	-- --	-- --	-- --	-- --	-- --
....DICTYOSPHAERIUM	150 2	-- --	-- --	-- --	-- --
....KIRCHNERIELLA	-- --	-- --	-- --	* 0	* 0
....UOCYSTIS	-- --	-- --	-- --	-- --	-- --
....SELENASTRUM	200 2	-- --	-- --	-- --	1300 1
...SCENEDESMACEAE					
....CRUCIGENIA	200 2	-- --	-- --	-- --	890 1
....SCENEDESMUS	100 1	-- --	-- --	* 0	* 0
....TETRASTRUM	-- --	-- --	-- --	-- --	-- --
...VOLVOCALES					
...CHLAMYDOMONADACEAE					
....CARTERIA	-- --	-- --	-- --	-- --	-- --
....CHLAMYDOMONAS	1400 14	-- --	-- --	160 1	* 0
...PHACOTACEAE					
....PHACOTUS	-- --	-- --	-- --	-- --	* 0
...ZYGNEATALES					
....ZYGNEATAACEAE					
....MOUGEOTIA	-- --	-- --	27 5	-- --	-- --
CHRYSTOPHYTA					
..BACILLARIOPHYCEAE					
...CENTRALES					
...COSCINODISCACEAE					
....CYCLOTETRA	-- --	-- --	-- --	-- --	770 1
....MELOSIRA	-- --	-- --	-- --	-- --	* 0
....STEPHANODISCUS	2300# 23	-- --	-- --	-- --	-- --
...PENNALES					
....CYMBELLACEAE					
....CYMBELLA	-- --	-- --	-- --	-- --	* 0
...DIATOMACEAE					
....DIATOMA	-- --	-- --	-- --	-- --	-- --
....FRAGILARIACEAE					
....SYNEORA	-- --	-- --	-- --	-- --	-- --
....NAVICULACEAE					
....NAVICULA	-- --	-- --	-- --	160 1	1000 1
....NITZSCHACEAE					
....NITZSCHIA	150 2	-- --	-- --	120 1	7500 7
....SURIRELLACEAE					
....SURIRELLA	-- --	-- --	-- --	-- --	-- --
CYANOPHYTA (BLUE-GREEN ALGAE)					
..CYANOPHYCEAE					
...CHROOCOCCALES					
...CHROOCOCCACEAE					
....AGMENELLUM	-- --	-- --	-- --	-- --	-- --
....ANACYSTIS	2800# 28	26# 33	-- --	98 1	7300 7
....CUCCOCHLORIS	-- --	-- --	-- --	-- --	-- --
....GOMPHOSPHAERIA	-- --	-- --	-- --	-- --	-- --
...MORMOGONALES					
...NOSTOCACEAE					
....ANABAENA	-- --	-- --	-- --	-- --	9400 8
....CYLINDROSPERMUM	-- --	-- --	-- --	-- --	-- --
...OSCILLATORIACEAE					
....LYNGBYA	-- --	-- --	-- --	1000 6	-- --
....OSCILLATORIA	600 6	-- --	470# 92	14000# 88	81000# 73
....SPIRULINA	-- --	-- --	-- --	* 0	-- --
....RIVULARIACEAE					
....RAPIDIOPSIS	-- --	-- --	-- --	-- --	-- --
EUGLENOPHYTA (EUGLENIDS)					
..EUGLENOPHYCEAE					
...EUGLENALES					
....EUGLENACEAE					
....EUGLENA	50 1	13# 17	-- --	* 0	* 0
....PHACUS	-- --	-- --	-- --	-- --	-- --
....TRACHELUMONAS	150 2	-- --	14 3	-- --	* 0
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%

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, and 6 mi (10 km) southeast of Center.

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

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.

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, 70 ft³/s (1.98 m³/s) Mar. 19, gage height, 3.08 ft (0.939 m); maximum gage height 3.49 ft (1.064 m) Mar. 3, backwater from ice; minimum daily 0.22 ft³/s (0.006 m³/s) Aug. 11.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.4	2.4	1.1	1.1	.96	5.0	1.9	1.8	.90	1.7	.81	3.6
2	6.5	2.4	1.1	1.1	.82	5.0	1.6	1.8	.90	1.8	1.6	3.5
3	6.5	2.4	1.1	1.1	.95	50	1.3	1.8	.90	1.8	1.0	3.4
4	4.5	2.1	1.1	1.1	.96	60	1.0	1.8	.90	1.8	.54	3.0
5	3.0	2.1	1.1	1.1	1.1	65	1.0	1.8	1.0	1.9	.87	3.3
6	2.7	1.9	1.1	1.1	1.1	25	1.0	1.8	1.0	1.5	.50	4.0
7	2.5	1.8	1.1	1.1	1.0	6.0	1.0	1.6	1.0	1.5	.43	3.3
8	2.4	1.7	1.1	1.1	1.0	5.0	1.1	1.7	1.0	1.6	.32	2.9
9	2.4	1.6	1.1	1.1	1.0	5.0	1.1	1.7	1.0	1.6	.38	2.7
10	2.4	1.5	1.1	1.1	1.0	5.0	1.1	1.7	1.1	1.6	.44	2.8
11	2.4	1.5	1.1	1.1	.90	5.1	1.1	1.8	1.1	1.9	.22	2.6
12	2.4	1.5	1.1	1.1	.80	4.5	1.2	1.8	1.2	2.0	.27	2.5
13	2.4	1.5	1.1	1.0	.78	29	1.2	1.9	1.3	2.3	.24	2.4
14	2.4	1.5	1.1	1.0	1.1	65	1.3	2.0	1.4	2.5	.30	2.3
15	2.4	1.5	1.1	.90	1.3	65	1.3	2.0	1.5	2.3	.35	2.1
16	4.5	1.5	1.1	.90	1.7	67	1.3	2.0	1.6	2.3	.70	2.2
17	4.5	1.5	1.1	1.0	1.8	67	1.3	1.8	1.7	2.2	.89	1.7
18	3.2	1.5	1.1	1.1	1.7	68	1.3	1.6	1.8	2.3	1.6	2.0
19	3.2	1.5	1.1	1.2	1.6	69	1.3	1.5	1.9	3.0	1.6	1.7
20	2.2	1.5	1.1	1.3	1.5	39	1.4	1.4	2.0	2.4	1.4	1.5
21	2.0	1.4	1.1	1.3	1.4	6.3	1.4	1.3	2.1	2.2	1.8	1.7
22	2.0	1.3	1.0	1.3	1.3	6.5	1.4	1.3	2.2	2.0	1.9	1.6
23	2.2	1.2	1.1	1.2	1.3	6.5	1.5	1.5	2.2	1.8	1.8	1.8
24	1.8	1.2	1.1	1.2	1.3	5.9	1.8	1.4	2.1	2.0	1.6	1.7
25	1.7	1.2	1.1	1.2	1.2	5.0	1.8	1.3	2.0	1.6	1.5	1.6
26	1.8	1.2	1.1	1.2	2.5	4.5	1.9	1.2	1.9	1.4	1.5	1.8
27	2.0	1.2	1.1	1.2	4.0	4.3	1.9	1.2	1.8	1.3	1.5	1.5
28	2.5	1.2	1.1	1.1	4.5	3.9	1.9	1.0	1.7	1.2	2.4	1.4
29	2.5	1.1	1.1	1.0	---	3.2	1.9	1.0	1.6	1.0	3.5	1.3
30	2.5	1.1	1.1	1.0	---	2.6	1.9	.90	1.6	.99	3.7	1.2
31	2.5	---	1.1	1.0	---	2.3	---	.90	---	.90	3.7	---
TOTAL	92.4	47.0	34.0	34.30	40.57	760.6	42.2	48.30	44.40	56.39	39.36	69.1
MEAN	2.98	1.57	1.10	1.11	1.45	24.5	1.41	1.56	1.48	1.82	1.27	2.30
MAX	6.5	2.4	1.1	1.3	4.5	69	1.9	2.0	2.2	3.0	3.7	4.0
MIN	1.7	1.1	1.0	.90	.78	2.3	1.0	.90	.90	.90	.22	1.2
AC-FT	183	93	67	68	80	1510	84	96	88	112	78	137
CAL YR 1980	TOTAL	1956.40	MEAN	5.35	MAX	246	MIN	1.0	AC-FT	3880		
WTR YR 1981	TOTAL	1308.62	MEAN	3.59	MAX	69						

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, and 7 mi (11 km) northwest of Bismarck.

AVERAGE DISCHARGE.--14 years, 7.76 ft³/s (0.220 m³/s), 5,620 acre-ft/yr (6.93 hm³/yr); median of yearly mean discharges, 4.6 ft³/s (0.13 m³/s), 3,330 acre-ft/yr (4.1 hm³/yr).

EXTREMES FOR CURRENT YEAR.--Maximum discharge observed, 170 ft³/s (4.81 m³/s) Feb. 17, gage height, 7.42 ft (2.262 m), backwater from ice, only peak above base of 100 ft³/s (2.83 m³/s); no flow for many days.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	1.9	.37	.13	.03	10	1.1	2.9	1.0	.23	.00	.00
2	.00	1.9	.32	.12	.03	7.0	2.0	2.8	.64	.19	.00	.00
3	.00	1.8	.29	.11	.02	6.5	1.5	2.5	.34	.15	.00	.00
4	.00	1.5	.29	.11	.01	6.0	1.2	1.9	.27	.10	.00	.00
5	.00	1.4	.29	.10	.01	5.0	.86	1.3	.25	.05	.00	.00
6	.00	2.3	.29	.10	.01	4.0	.89	1.1	.21	.00	.00	.00
7	.00	2.6	.28	.10	.00	3.5	1.2	.80	.20	.00	.00	.00
8	.00	1.7	.28	.09	.00	3.0	1.1	.76	.22	.00	.00	.00
9	.00	1.5	.27	.08	.00	2.5	1.1	.68	.20	.00	.00	.00
10	.00	1.4	.27	.07	.00	2.0	.98	.76	.19	.00	.00	.00
11	.00	1.3	.27	.07	.00	1.7	.92	.52	.16	.00	.00	.00
12	.00	1.2	.26	.06	.00	1.6	.93	.43	.14	.00	.00	.00
13	.00	1.1	.26	.06	.00	1.6	.82	.32	.51	.00	.00	.00
14	.00	.96	.25	.06	.00	1.6	.76	.30	.24	.00	.00	.00
15	.00	.92	.25	.06	20	1.6	.77	.32	.21	.00	.00	.00
16	.92	1.2	.24	.06	160	1.6	.88	.34	2.3	.00	.00	.00
17	2.2	1.2	.24	.06	144	1.6	.67	.30	2.3	.00	.00	.00
18	4.1	1.2	.22	.06	74	1.6	.62	.28	1.7	.16	.00	.00
19	8.6	1.0	.20	.06	50	1.6	.53	.26	1.4	.07	.00	.00
20	5.8	.92	.18	.06	42	1.6	.57	.25	1.1	.00	.00	.00
21	5.3	.88	.17	.06	35	1.7	.71	.22	1.0	.00	.00	.00
22	4.1	.84	.17	.06	31	1.7	.80	.25	.68	.00	.00	.00
23	4.2	.80	.16	.06	27	1.7	.94	.30	.84	.00	.00	.00
24	3.9	.64	.15	.06	23	1.7	.90	.28	.49	.00	.00	.00
25	4.3	.64	.14	.06	20	1.7	1.1	.26	.34	.00	.00	.00
26	3.9	.68	.13	.05	17	1.7	.91	.29	.34	.00	.00	.00
27	3.6	.60	.13	.04	13	1.7	.98	.46	.32	.00	.00	.00
28	3.0	.52	.13	.04	12	1.7	1.3	1.6	.32	.00	.00	.00
29	2.7	.52	.13	.04	---	1.7	2.7	1.8	.30	.00	.00	.00
30	2.4	.46	.13	.03	---	1.7	3.1	1.7	.27	.00	.00	.00
31	2.1	---	.13	.03	---	1.5	---	1.1	---	.00	.00	---
TOTAL	61.12	35.58	6.89	2.15	668.11	84.1	32.84	27.08	18.48	.95	.00	.00
MEAN	1.97	1.19	.22	.069	23.9	2.71	1.09	.87	.62	.031	.000	.000
MAX	8.6	2.6	.37	.13	160	10	3.1	2.9	2.3	.23	.00	.00
MIN	.00	.46	.13	.03	.00	1.5	.53	.22	.14	.00	.00	.00
AC-FT	121	71	14	4.3	1330	167	65	54	37	1.9	.00	.00
CAL YR 1980	TOTAL 928.11			MEAN 2.54	MAX 120	MIN .00	AC-FT 1840					
WTR YR 1981	TOTAL 937.30			MEAN 2.57	MAX 160	MIN .00	AC-FT 1860					

MISSOURI RIVER MAIN STEM

06342500 MISSOURI RIVER AT BISMARCK, ND

LOCATION.--Lat 46°48'51", long 100°49'12", in SE&NW&SE& 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 (2,115.0 km).

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 1,618.28 ft (493.252 m), revised, National Geodetic Vertical Datum of 1929. 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.--53 years (1928-81), 22,670 ft³/s (642.0 m³/s), 16,420,000 acre-ft/yr (20.2 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). Since completion of Garrison Dam in 1953, maximum discharge, 68,900 ft³/s (1,950 m³/s) July 13, 1975, gage height, 14.24 ft (4.340 m); maximum gage height, 14.58 ft (4.444 m) Dec. 18, 1979, backwater from ice. 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, 34,300 ft³/s (971 m³/s) July 18, gage height, 9.55 ft (2.911 m); maximum gage height, 12.97 ft (3.953 m) Dec. 23, backwater from ice; minimum daily, 16,800 ft³/s (476 m³/s) Apr. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23200	24600	23500	18500	29500	32300	17300	20200	26000	29800	27900	22300
2	23000	23900	24800	20000	28500	30600	17400	20000	26800	27200	26000	22900
3	22600	26000	29200	21000	29500	30400	17400	20500	26600	30900	26800	22800
4	21900	25000	26000	22500	29000	29900	17400	20400	27400	30600	27000	23000
5	22500	25700	24400	22000	29000	29000	17200	19700	26900	28200	27200	22600
6	22600	25000	25200	22000	29000	28600	17800	19000	26700	28600	28900	23300
7	23000	24600	25300	23000	29000	29100	17800	19400	26900	31700	28900	22700
8	23200	24700	24000	23000	29500	28700	16800	18600	26700	31700	28100	19400
9	23100	24700	25000	24000	29000	27200	17300	18700	27500	31100	26900	19400
10	23300	24900	24500	24500	29500	28400	17100	18200	26900	31200	24700	19000
11	22900	25300	24900	24000	29500	28700	17600	17800	27700	31400	25500	20000
12	22800	25000	25800	25000	30500	29900	17500	18500	28500	28800	24800	19000
13	23100	25000	24300	25500	31000	30000	17100	18400	29400	28600	25400	18600
14	24500	25600	24200	26500	30000	29800	17000	18100	29500	31700	25100	20100
15	23900	26200	23800	27500	32500	29900	17200	18600	27400	31400	24800	18000
16	24200	26600	23400	27500	31000	28800	17300	17400	28200	31600	25400	19300
17	24600	26500	23500	27000	28500	26600	17200	18200	27400	31600	25800	18500
18	23900	27200	23100	29500	31000	25800	17300	18300	28800	31700	23800	18600
19	23900	26500	22900	29000	31000	24100	17300	18300	27900	32400	24100	18800
20	23000	27400	20000	30000	29500	22900	17100	18400	28000	31000	25100	18600
21	23000	25400	19500	30000	30500	23000	18000	18300	27600	32200	24300	18600
22	24000	27200	17500	29500	28500	22200	18000	18100	25600	31900	23500	19200
23	25300	25500	17000	29000	30500	19800	17500	18000	26900	32000	22500	19300
24	25200	26100	18000	28000	29500	19000	17900	17700	27800	31400	22600	20700
25	25300	26400	18500	29500	29500	18700	17800	18400	26900	31600	23200	21500
26	24600	26300	18000	28000	29500	17400	17800	17900	27300	30000	23100	21900
27	23900	26800	18500	27500	27500	18000	19100	19300	28100	28500	23800	21100
28	24600	26900	18000	29000	30000	18400	18700	22400	28200	28100	23600	20600
29	24900	25000	19000	29000	---	18000	18700	24000	27400	27700	23400	21800
30	25000	22700	19500	29000	---	18000	19200	23400	27800	28400	23500	21300
31	25100	---	19000	30000	---	17100	---	25000	---	27800	23000	---
TOTAL	736100	768700	690300	810500	831500	780300	528800	599200	824800	940800	778700	612900
MEAN	23750	25620	22270	26150	29700	25170	17630	19330	27490	30350	25120	20430
MAX	25300	27400	29200	30000	32500	32300	19200	25000	29500	32400	28900	23300
MIN	21900	22700	17000	18500	27500	17100	16800	17400	25600	27200	22500	18000
AC-FT	1460000	1525000	1369000	1608000	1649000	1548000	1049000	1189000	1636000	1866000	1545000	1216000
CAL YR 1980	TOTAL	8959300	MEAN	24480	MAX	31300	MIN	17000	AC-FT	17770000		
WTR YR 1981	TOTAL	8902600	MEAN	24390	MAX	32500	MIN	16800	AC-FT	17660000		

MISSOURI RIVER MAIN STEM

06342500 MISSOURI RIVER AT BISMARCK, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--June 1946 to September 1981 (discontinued).

PERIOD OF DAILY RECORD.--

SEDIMENT RECORDS.--June 1946 to September 1981 (discontinued).

REMARKS.--Sediment records from June 1946 to September 1971 are available from Corps of Engineers, Omaha, NE.
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 September 1981, discontinued): Maximum daily mean, about 1,000 mg/L Apr. 19, 1979; minimum daily mean, 14 mg/L Dec. 15-21, 1977.

SEDIMENT LOADS (July 1972 to September 1981, discontinued): Maximum daily, 144,000 tons (131,000 metric tons) Apr. 19, 1979; minimum daily, 718 tons (651 metric tons) Dec. 16-18, 1977.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATIONS: Maximum daily mean, 268 mg/L Dec. 12, minimum daily mean, 25 mg/L Dec. 26 - Jan. 1.

SEDIMENT LOADS: Maximum daily, 19,400 tons (17,600 metric tons) Mar. 12, 13, 15; minimum daily, 1,220 tons (1,110 metric tons) Dec. 26, 28.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)
OCT					
28...	1040	E24600	765	--	8.0
NOV					
04...	0930	E25000	--	--	8.5
05...	1530	E25500	--	--	9.0
19...	0925	E26500	--	--	6.0
DEC					
12...	1120	E25800	--	--	1.0
JAN					
06...	1500	E22000	--	--	.0
27...	1515	30100	766	.0	.0
28...	1240	E29000	760	-1.0	.0
FEB					
24...	1010	E29500	--	--	.0
MAR					
11...	1500	E28700	--	--	2.5
12...	1620	31700	760	--	2.5
23...	1430	E19800	--	--	3.5
APR					
07...	1015	17400	736	--	5.0
23...	1020	E17500	--	--	7.5
MAY					
08...	0900	E18600	--	--	8.0
08...	1625	18600	750	16.0	9.0
28...	1110	E22400	--	--	10.5
JUN					
11...	1215	E27700	--	--	14.0
26...	1005	E27300	--	--	16.5
JUL					
14...	1405	E31700	770	22.5	16.5
27...	1505	E28500	--	--	15.5
AUG					
18...	1130	22800	774	--	17.5
18...	1530	E23800	--	--	18.5
24...	1105	E22600	--	--	17.5
SEP					
10...	0930	E19000	--	--	18.0
15...	1115	16400	770	--	15.5

E - Estimated.

MISSOURI RIVER MAIN STEM

06342500 MISSOURI RIVER AT BISMARCK, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	SED. SUSP. FALL DIAM. % FINER THAN .125 MM (70343)	SED. SUSP. FALL DIAM. % FINER THAN .250 MM (70344)	SED. SUSP. FALL DIAM. % FINER THAN .500 MM (70345)	SED. SUSP. FALL DIAM. % FINER THAN 1.00 MM (70346)	SED. SUSP. FALL DIAM. % FINER THAN 2.00 MM (70336)
OCT								
28...	182	--	--	--	--	--	--	--
NOV								
04...	142	--	17	51	100	--	--	--
19...	182	--	--	--	--	--	--	--
DEC								
12...	268	--	--	--	--	--	--	--
JAN								
06...	42	--	--	--	--	--	--	--
28...	100	--	--	--	--	--	--	--
FEB								
24...	96	--	--	--	--	--	--	--
MAR								
11...	241	--	--	--	--	--	--	--
23...	134	--	--	--	--	--	--	--
APR								
23...	75	--	4	21	82	99	100	--
MAY								
08...	86	--	25	--	--	--	--	--
28...	98	--	--	--	--	--	--	--
JUN								
11...	146	--	15	59	100	--	--	--
26...	119	--	--	--	--	--	--	--
JUL								
14...	177	15000	--	--	--	--	--	--
27...	114	--	21	--	--	--	--	--
AUG								
18...	91	--	1	5	70	92	98	99
24...	115	--	--	--	--	--	--	--
SEP								
10...	71	--	22	--	--	--	--	--

DATE	BED MAT. FALL DIAM. % FINER THAN .062 MM (80158)	BED MAT. FALL DIAM. % FINER THAN .125 MM (80159)	BED MAT. FALL DIAM. % FINER THAN .250 MM (80160)	BED MAT. FALL DIAM. % FINER THAN .500 MM (80161)	BED MAT. FALL DIAM. % FINER THAN 1.00 MM (80162)	BED MAT. FALL DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. FALL DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. FALL DIAM. % FINER THAN 8.00 MM (80171)
OCT								
28...	--	--	--	--	--	--	--	--
NOV								
04...	0	0	13	89	98	99	99	100
19...	--	--	--	--	--	--	--	--
DEC								
12...	--	--	--	--	--	--	--	--
JAN								
06...	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--
FEB								
24...	--	--	--	--	--	--	--	--
MAR								
11...	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--
APR								
23...	4	17	62	98	100	--	--	--
MAY								
08...	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--
JUN								
11...	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--
JUL								
14...	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--
AUG								
18...	0	3	25	96	98	99	100	--
24...	--	--	--	--	--	--	--	--
SEP								
10...	--	--	--	--	--	--	--	--

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DAY	MEAN CONCEN- TRATION		MEAN CONCEN- TRATION		MEAN CONCEN- TRATION		MEAN CONCEN- TRATION		MEAN CONCEN- TRATION		MEAN CONCEN- TRATION	
	(MG/L)	LOADS (T/DAY)	(MG/L)	LOADS (T/DAY)	(MG/L)	LOADS (T/DAY)	(MG/L)	LOADS (T/DAY)	(MG/L)	LOADS (T/DAY)	(MG/L)	LOADS (T/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	100	4670	90	4910	110	7720	130	10500	110	8290	125	7530
2	100	4700	90	4860	115	8320	140	10300	100	7020	125	7730
3	100	4700	90	4980	115	8260	140	11700	110	7960	125	7690
4	95	4460	90	4960	120	8880	140	11600	115	8380	125	7760
5	95	4410	85	4520	120	8720	150	11400	120	8810	120	7320
6	95	4570	85	4360	120	8650	150	11600	125	9750	120	7550
7	90	4330	85	4450	120	8720	150	12800	130	10100	120	7350
8	90	4080	86	4320	120	8650	160	13700	125	9480	100	5240
9	90	4200	85	4290	130	9650	160	13400	120	8720	85	4450
10	85	3920	85	4180	130	9440	160	13500	110	7340	71	3640
11	85	4040	85	4090	146	10900	170	14400	110	7570	70	3780
12	85	4020	85	4250	150	11500	170	13200	100	6700	70	3590
13	80	3690	85	4220	150	11900	170	13100	100	6860	70	3520
14	80	3670	85	4150	150	11900	177	15100	100	6780	70	3800
15	80	3720	85	4270	140	10400	180	15300	100	6700	60	2920
16	75	3500	80	3760	140	10700	180	15400	100	6860	60	3130
17	75	3480	85	4180	130	9620	170	14500	100	6970	60	3000
18	75	3500	85	4200	130	10100	170	14600	91	5850	60	3010
19	75	3500	85	4200	130	9790	170	14900	95	6180	60	3050
20	75	3460	85	4220	130	9830	160	13400	100	6780	60	3010
21	80	3890	85	4200	125	9310	160	13900	105	6890	60	3010
22	80	3890	85	4150	120	8290	160	13800	110	6980	70	3630
23	75	3540	85	4130	120	8720	160	13800	115	6990	70	3650
24	75	3620	85	4060	120	9010	150	12700	115	7020	75	4190
25	75	3600	85	4220	120	8720	150	12800	120	7520	80	4640
26	75	3600	85	4110	119	8770	130	10500	120	7480	80	4730
27	80	4130	90	4690	120	9100	114	8770	125	8030	80	4560
28	80	4040	98	5930	120	9140	110	8350	125	7960	80	4450
29	80	4040	100	6480	130	9620	110	8230	125	7900	80	4710
30	85	4410	105	6630	130	9760	110	8430	125	7930	80	4600
31	---	---	110	7420	---	---	110	8260	125	7760	---	---
TOTAL	---	119380	---	143390	---	284090	---	383940	---	235560	---	141240
TOTAL LOAD FOR YEAR:			3061730	TONS.								

HEART RIVER BASIN

06342850 NORWEGIAN CREEK NEAR BELFIELD, ND

LOCATION.--Lat 46°51'12", long 103°08'51", in NW¼NW¼SW¼ sec.14, T.139 N., R.99 W., Stark County, Hydrologic Unit 10130202, on left bank 60 ft (18 m) downstream from bridge on township road, 3.4 mi (5.5 km) southeast of Belfield, and 5.4 mi (8.7 km) upstream from mouth.

DRAINAGE AREA.--39.8 mi² (103 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1978 to September 1981 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 2,550 ft (777 m), from topographic map.

REMARKS.--Records good except those for August 16, 17, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 644 ft³/s (18.2 m³/s) Aug. 16, 1981, from rating extended above 2 ft³/s (0.06 m³/s) on basis of step backwater study, gage height, 8.92 ft (2.719 m); no flow for many months each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 30 ft³/s (0.85 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 12	2315	30 0.85	2.69 0.820	Aug. 16	1500	a*644 18.2	8.92 2.719

No flow for many months.

a - From rating extended above 2 ft³/s (0.06 m³/s) on basis of step backwater study

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	1.1	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	1.6	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.18	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	323	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	84	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.0	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	.00	.00	.00	.00	.00	.00	.00	.00	2.94	.00	408.02	.00
MEAN	.000	.000	.000	.000	.000	.000	.000	.000	.098	.000	13.2	.000
MAX	.00	.00	.00	.00	.00	.00	.00	.00	1.6	.00	323	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.00	.00	5.8	.00	809	.00

CAL YR 1980 TOTAL 89.79 MEAN .25 MAX 18 MIN .00 AC-FT 178
WTR YR 1981 TOTAL 410.96 MEAN 1.13 MAX 323 MIN .00 AC-FT 815

HEART RIVER BASIN

287

06342850 NORWEGIAN CREEK NEAR BELFIELD, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1978 to September 1981 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION (00301)	HARD- NESS (MG/L AS CACU3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L AS CACU3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
AUG 17...	1716	23	660	7.7	26.0	20.5	4.8	57	140	30	33	14

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY, CARBON- ATE FET-FLD (MG/L CACU3) (00430)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L) (70301)
AUG 17...	97	58	3.9	8.5	110	230	14	.2	9.0	448	472

DATE	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS, TOTAL (MG/L AS PU4) (71886)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC SUS- PENDED TOTAL (UG/L AS AS) (01001)
AUG 17...	.61	27.8	.17	.330	3.3	3.60	.450	1.4	.090	0	0

DATE	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, SUS- PENDED RECOV. (UG/L AS CR) (01031)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	COPPER, SUS- PENDED RECOV- ERABLE (UG/L AS CU) (01041)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)
AUG 17...	0	<1	200	20	10	10	33	29	4	140	540

DATE	MANGA- NESE, SUS- PENDED RECOV. (UG/L AS MN) (01054)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MERCURY SUS- PENDED RECOV- ERABLE (UG/L AS HG) (71895)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	NICKEL, SUS- PENDED RECOV- ERABLE (UG/L AS NI) (01066)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE) (01147)	SELE- NIUM, SUS- PENDED TOTAL (UG/L AS SE) (01146)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)
AUG 17...	530	.6	.2	.0	.2	28	21	7	1	0	1

HEART RIVER BASIN

06342850 NORWEGIAN CREEK NEAR BELFIELD, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHENOLS (UG/L) (32730)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN (70338)	SED. SUSP. FALL DIAM. % FINER THAN (70340)	SED. SUSP. FALL DIAM. % FINER THAN (70342)
AUG 17...	90	<3	11	3.0	.01	15	617	38	95	96	100

DATE	BED MAT. FALL DIAM. % FINER THAN (80158)	BED MAT. FALL DIAM. % FINER THAN (80159)	BED MAT. FALL DIAM. % FINER THAN (80160)	BED MAT. FALL DIAM. % FINER THAN (80161)	BED MAT. FALL DIAM. % FINER THAN (80162)	BED MAT. FALL DIAM. % FINER THAN (80169)	BED MAT. FALL DIAM. % FINER THAN (80170)	BED MAT. FALL DIAM. % FINER THAN (80171)	BED MAT. FALL DIAM. % FINER THAN (80172)	BED MAT. FALL DIAM. % FINER THAN (80173)
AUG 17...	78	91	96	98	98	98	98	98	98	100

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO AUGUST 1981

DATE	AUG 17, 81
TIME	1716
TOTAL CELLS/ML	3300
DIVERSITY: DIVISION	1.6
..CLASS	1.6
..ORDER	1.9
...FAMILY	2.1
....GENUS	2.3

ORGANISM	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)		
..CHLOROPHYCEAE		
...VOLVOCALES		
...CHLAMYDOMONADACEAE		
....CHLAMYDOMONAS	350	11
CHRYSPHYTA		
..BACILLARIOPHYCEAE		
...CENTRALES		
...COSCINODISCACEAE		
....CYCLOTELLA	420	13
...PENNALES		
...ACHNANTHACEAE		
....ACHNANTHES	70	2
...NAVICULACEAE		
....NAVICULA	140	4
...NITZSCHACEAE		
....NITZSCHIA	280	9
CYANOPHYTA (BLUE-GREEN ALGAE)		
..CYANOPHYCEAE		
...HORMOGONALES		
...OSCILLATORIACEAE		
....OSCILLATORIA	1800	53
EUGLENOPHYTA (EUGLENOIDS)		
..EUGLENOPHYCEAE		
...EUGLENALES		
....EUGLENACEAE		
.....EUGLENA	70	2
....PHACUS	70	2
....TRACHELOMONAS	140	4

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

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

HEART RIVER BASIN

289

06342900 SOUTH BRANCH HEART RIVER NEAR SOUTH HEART, ND

LOCATION.--Lat 46°50'24", long 103°01'12", in NE¼NE¼SE¼ sec.22, T.139 N., R.98 W., Stark County, Hydrologic Unit 10130202, on left bank 20 ft (6.1 m) upstream from bridge on county road, 4.1 mi (6.6 km) upstream from mouth and 2.1 mi (3.4 km) southwest of South Heart.

DRAINAGE AREA.--132 mi² (342 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1978 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 2,480 ft (756 m), from topographic map. Prior to October 1979 at datum 10.0 ft (3.05 m) higher.

REMARKS.--Records good except those for February, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 631 ft³/s (17.9 m³/s) Aug. 17, 1981, gage height, 19.94 ft (6.078 m); no flow for long periods each year.

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

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
June 13	1945	109 3.09	14.63 4.459	Aug. 17	1330	*631 17.9	19.94 6.078
Aug. 6	1600	248 7.02	16.62 5.066	Sept. 6	1300	149 4.22	15.31 4.666

No flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.03	.08	.00	.00	.00	.02	.02	.00	.08	.02	.03	.10
2	.02	.05	.00	.02	.00	.01	.01	.00	7.2	.01	.03	.12
3	.00	.05	.00	.04	.00	.00	.01	.00	4.0	.00	11	.10
4	.00	.03	.00	.02	.00	.01	.00	.00	2.8	.00	8.8	.07
5	.00	.03	.00	.00	.00	.01	.00	.00	5.8	.00	80	.06
6	.00	.02	.00	.00	.00	.01	.00	.01	1.6	.00	202	58
7	.00	.02	.00	.00	.00	.02	.00	.05	.62	.00	90	29
8	.00	.05	.00	.00	.00	.04	.00	.05	.33	.00	31	13
9	.00	2.0	.00	.00	.00	.07	.00	.04	8.4	.00	15	6.7
10	.00	.91	.00	.00	.00	.06	.00	.04	1.9	.00	8.8	4.0
11	.00	.32	.00	.00	.00	.06	.00	.04	.68	.00	5.0	2.3
12	.00	.23	.00	.00	.00	.05	.00	.04	.28	.00	2.6	1.1
13	.00	.17	.00	.00	.00	.06	.00	.04	48	.00	1.8	.68
14	.00	.13	.00	.00	.00	.08	.00	.05	22	.00	1.2	.26
15	.00	.07	.00	.00	.00	.07	.00	.04	4.5	.00	4.5	.14
16	24	.04	.00	.00	.05	.10	.00	.05	2.1	.88	440	.08
17	32	.03	.00	.00	.40	.12	.00	.04	.96	.54	590	.05
18	17	.02	.00	.00	.30	.12	.00	.04	.95	.17	234	.03
19	5.4	.02	.00	.00	.24	.09	.00	.04	1.4	.06	46	.02
20	2.4	.02	.00	.00	.22	.09	.00	.05	.84	.03	22	.01
21	.78	.10	.00	.00	.20	.08	.00	.05	.67	.02	12	.00
22	1.4	.08	.00	.00	.17	.08	.00	.04	.32	.01	7.0	.00
23	10	.04	.00	.00	.14	.07	.00	.03	.14	.01	4.2	.00
24	6.1	.01	.00	.00	.12	.06	.00	.03	.10	.00	2.6	.00
25	2.3	.01	.00	.00	.09	.05	.00	.03	.07	.00	1.9	.00
26	.83	.01	.00	.00	.06	.04	.00	.03	.10	.34	1.4	.00
27	.40	.02	.00	.00	.05	.04	.00	.03	.10	1.8	.93	.00
28	.26	.02	.00	.00	.03	.04	.00	.05	.06	1.1	.68	.00
29	.17	.01	.00	.00	---	.03	.00	.00	.05	.32	.49	.00
30	.12	.00	.00	.00	---	.03	.00	.32	.03	.10	.36	.00
31	.12	---	.00	.00	---	.02	---	.17	---	.05	.12	---
TOTAL	103.33	4.59	.00	.08	2.07	1.63	.04	1.40	116.08	5.46	1825.44	115.82
MEAN	3.33	.15	.000	.003	.074	.053	.001	.045	3.87	.18	58.9	3.86
MAX	32	2.0	.00	.04	.40	.12	.02	.32	48	1.8	590	58
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.03	.00	.03	.00
AC-FT	205	9.1	.00	.2	4.1	3.2	.08	2.8	230	11	3620	230

CAL YR 1980	TOTAL	332.38	MEAN	.91	MAX	32	MIN	.00	AC-FT	659
WTR YR 1981	TOTAL	2175.94	MEAN	5.96	MAX	590	MIN	.00	AC-FT	4320

06342900 SOUTH BRANCH HEART RIVER NEAR SOUTH HEART, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1978 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (000061)	SPE- CIFIC CON- DUCT- ANCE (UMHUS) (000095)	PH (UNITS) (000400)	TEMPER- ATURE, AIR (DEG C) (000020)	TEMPER- ATURE (DEG C) (000010)	OXYGEN, DIS- SOLVED (MG/L) (000300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (000301)	HARD- NESS (MG/L AS CACO3) (000900)	HARD- NESS, NONCAR- BONATE (MG/L CACO3) (000902)	CALCIUM DIS- SOLVED (MG/L AS CA) (000915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (000925)
NOV												
11...	1245	.25	665	8.8	5.5	3.0	11.4	92	15	0	5.2	.5
FEB												
18...	0905	.30	651	8.0	5.0	.0	13.0	99	31	0	8.1	2.6
MAR												
16...	1510	.10	910	8.3	17.5	.0	12.0	90	38	0	11	2.6
26...	1050	.04	705	8.2	8.5	1.0	10.9	83	--	--	--	--
JUN												
23...	1030	.14	618	8.1	24.0	16.0	6.6	73	26	0	7.6	1.6
JUL												
27...	1455	2.1	470	8.8	22.5	18.0	6.2	70	6	0	1.9	.3
AUG												
18...	1300	.151	465	7.7	26.0	20.0	4.8	56	90	0	22	8.6
31...	1230	.08	850	8.3	17.0	14.0	7.8	82	150	0	36	15

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY, CARBON- ATE FET-FLD (MG/L CACO3) (00430)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
NOV 11...	140	94	16	2.5	168	140	3.2	--	130	460	525	.63
FEB 18...	140	90	11	3.4	140	220	3.0	.2	12	460	477	.63
MAR 16...	190	91	13	2.7	200	250	1.6	.4	7.6	589	586	.80
26...	--	--	--	--	170	--	--	--	--	--	--	--
JUN 23...	130	90	11	3.3	150	170	2.1	.3	14	417	420	.57
JUL 27...	86	96	16	2.2	360	8.0	1.9	.5	39	323	260	.44
AUG 18...	64	58	3.2	8.2	90	130	7.7	.2	9.1	309	304	.42
31...	130	63	5.0	8.8	180	230	14	.2	10	562	552	.76

[illegible]

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

[illegible]

HEART RIVER BASIN

06342900 SOUTH BRANCH HEART RIVER NEAR SOUTH HEART, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	ZINC, TOTAL RECUV- ERABLE (UG/L AS ZN) (01092)	ZINC, SUS- PENDE RECUV- ERABLE (UG/L AS ZN) (01091)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	ZINC, FM BOT- TOM MA- TERIAL (UG/G AS ZN) (01093)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT) (80030)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)	GROSS BETA, DIS- SOLVED (PCI/L AS SR/ YT-90) (80050)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90) (80060)
NOV										
11...	--	--	--	--	--	--	--	--	--	--
FEB										
18...	10	7	3	--	--	--	--	--	--	--
MAR										
16...	--	--	--	--	--	--	--	--	--	--
JUN										
23...	30	20	9	120	<10	18	6.9	14	6.7	14
JUL										
27...	290	280	7	--	--	--	--	--	--	--
AUG										
18...	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--

DATE	POTAS- SIUM 40 DIS- SOLVED (PCI/L AS K40) (82068)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHENOLS (UG/L) (32730)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)
NOV										
11...	--	13	2.7	--	--	3640	2.5	--	--	--
FEB										
18...	2.5	39	1.1	.00	3	162	.13	--	--	--
MAR										
16...	2.0	--	--	--	--	15	.00	--	--	--
JUN										
23...	2.5	3.8	4.3	.00	8	241	.09	--	--	--
JUL										
27...	--	8.6	14	.00	7	8600	49	99	100	--
AUG										
18...	--	--	--	--	--	583	238	89	95	100
31...	--	--	--	--	--	38	.01	--	--	--

DATE	BED MAT. FALL DIAM. % FINER THAN .062 MM (80158)	BED MAT. FALL DIAM. % FINER THAN .125 MM (80159)	BED MAT. FALL DIAM. % FINER THAN .250 MM (80160)	BED MAT. FALL DIAM. % FINER THAN .500 MM (80161)	BED MAT. FALL DIAM. % FINER THAN 1.00 MM (80162)	BED MAT. FALL DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. FALL DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. FALL DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. FALL DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. FALL DIAM. % FINER THAN 32.0 MM (80173)
FEB										
18...	43	47	51	55	61	66	76	86	97	100
JUN										
23...	92	94	97	100	--	--	--	--	--	--
JUL										
27...	66	75	82	87	88	92	96	98	100	--

06342900 SOUTH BRANCH HEART RIVER NEAR SOUTH HEART, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO AUGUST 1981

DATE TIME	FEB 18,81 0905	MAR 16,81 1510	JUN 23,81 1030	AUG 18,81 1300	AUG 31,81 1230
TOTAL CELLS/ML	310	8900	51000	10000	33000
DIVERSITY: DIVISION	0.9	0.3	1.2	0.3	1.0
..CLASS	0.9	0.3	1.2	0.3	1.0
...ORDER	1.4	0.3	1.6	0.5	1.2
...FAMILY	1.4	0.3	2.5	1.1	1.4
...GENUS	1.5	0.3	2.8	1.2	1.7

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										
...CHLOROCUCCALES										
...CHARACIACEAE										
...SCHROEDERIA	--	-	--	-	* 0	--	-	--	-	
...MICRACTINIACEAE										
...MICRACTINIUM	--	-	--	-	320 1	55 1		890 3		
...UOCYSTACEAE										
...ANKISTRUDESUS	28 9		* 0		2700 5	* 0		610 2		
...DICTYOSPHAERIUM	--	-	--	-	2900 6	--	-	1800 5		
...KIRCHNERIELLA	14 5		--	-	* 0	--	-	--	-	
...UOCYSTIS	--	-	--	-	720 1	--	-	280 1		
...POLYUORIOPSIS	--	-	--	-	--	-		* 0		
...SELENASTRUM	--	-	--	-	--	-	* 0	--	-	
...TETRAEDRON	--	-	--	-	--	-	--	* 0		
...SCENEDESMACEAE										
...ACTINASTRUM	--	-	--	-	8700# 17	--	-	220 1		
...SCENEDESMUS	--	-	--	-	960 2	--	-	670 2		
...TETRASTRUM	--	-	--	-	320 1	--	-	--	-	
...TETRASPORALES										
...PALMELLACEAE										
...SPHAEROCYSTIS	--	-	--	-	--	-	--	* 0		
...VOLVOCALES										
...CHLAMYDOMONADACEAE										
...CHLAMYDOMONAS	210# 68		100 1		* 0	* 0		390 1		
CHRYSDOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...COSCINUDISCACEAE										
...CYCLOTELLA	28 9		--	-	1600 3	--	-	720 2		
...MELOSIRA	--	-	--	-	--	-	* 0	280 1		
...STEPHANODISCUS	--	-	90 1		--	-	--	--	-	
...PENNALES										
...ACHNANTHACEAE										
...COCCONEIS	--	-	--	-	--	-	* 0	--	-	
...CYMBELLACEAE										
...EPITHEMIA	--	-	--	-	--	-	* 0	--	-	
...FRAGILARIACEAE										
...SYNEDRA	--	-	--	-	--	-	* 0	--	-	
...NAVICULACEAE										
...NAVICULA	--	-	--	-	--	-	120 1	--	-	
...NITZSCHACEAE										
...NITZSCHIA	--	-	* 0		1000 2	55 1		* 0		
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROOCOCCALES										
...CHROOCOCCACEAE										
...AGMENELLUM	--	-	--	-	--	-	--	-	220 1	
...ANACYSTIS	28 9		90 1		3800 7	340 3		890 3		
...HORMOGONALES										
...NOSTOCACEAE										
...ANABAENOPSIS	--	-	--	-	12000# 23	1000 10		--	-	
...OSCILLATORIACEAE										
...LYNGBYA	--	-	--	-	--	-	160 2	--	-	
...OSCILLATORIA	--	-	8500# 96		16000# 31	8300# 80		25000# 76		
...RIVULARIACEAE										
...RAPHIIDIOPSIS	--	-	--	-	--	-	110 1	--	-	
EUGLENOPHYTA (EUGLENIDS)										
..EUGLENOPHYCEAE										
...EUGLENALES										
...EUGLENACEAE										
...EUGLENA	--	-	65 1		--	-	* 0	390 1		
...LEPUCINCLIS	--	-	--	-	--	-	* 0	* 0		
...TRACHELOMONAS	--	-	--	-	--	-	* 0	--	-	
PYRRHOPHYTA (FIRE ALGAE)										
..DINOPHYCEAE										
...PERIDINIALES										
...GLENODINIACEAE										
...GLENODINIUM	--	-	--	-	--	-	--	-	* 0	

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

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

HEART RIVER BASIN

06342970 NORTH CREEK NEAR SOUTH HEART, ND

LOCATION.--Lat 46°53'44", long 102°59'55", in SE $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.35, T.140 N., R.98 W., Stark County, Hydrologic Unit 10130202, on left bank 120 ft (36 m) downstream from culvert on county road, 5.4 mi (8.7 km) upstream from mouth and 2.2 mi (3.5 km) north of South Heart.

DRAINAGE AREA.--40.8 mi² (106 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1978 to September 1981 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 2,470 ft (753 m), from topographic map.

REMARKS.--Records fair except those for December, January, and February, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 260 ft³/s (7.36 m³/s) Apr. 16, 1979, gage height, 7.36 ft (2.243 m); maximum gage height, 8.8 ft (2.68 m) from floodmark, Mar. 25, 1979, backwater from ice; no flow for long periods each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 40 ft³/s (1.13 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	0900	71 2.01	4.61 1.405	Aug. 16	0700	*162 4.59	5.64 1.719
June 21	0600	42 1.19	4.17 1.271				

No flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.06	.00	.00	.00	.19	.05	.01	.00	.07	.00	.00
2	.00	.05	.00	.00	.00	.18	.05	.01	.00	.06	.00	.00
3	.00	.04	.00	.00	.00	.18	.05	.01	.00	.04	.00	.00
4	.00	.04	.00	.00	.00	.18	.05	.01	.00	.02	.00	.00
5	.00	.04	.00	.00	.00	.17	.05	.00	.00	.01	8.1	.00
6	.00	.04	.00	.00	.00	.15	.04	.00	.00	.00	.92	.00
7	.00	.04	.00	.00	.00	.15	.04	.00	.00	.00	.25	.00
8	.00	.06	.00	.00	.00	.16	.03	.00	.00	.00	.11	.00
9	.00	.06	.00	.00	.00	.16	.03	.00	.00	.00	.06	.00
10	.00	.07	.00	.00	.00	.15	.02	.00	.00	.00	.02	.00
11	.00	.07	.00	.00	.00	.15	.02	.00	.00	.00	.01	.00
12	.00	.06	.00	.00	.00	.14	.02	.00	.04	.00	.00	.00
13	.00	.06	.00	.00	.00	.14	.02	.00	28	.00	.00	.00
14	.00	.06	.00	.00	.00	.13	.02	.00	2.4	.00	.00	.00
15	.00	.06	.00	.00	.01	.12	.02	.00	1.4	.00	.00	.00
16	.00	.04	.00	.00	.02	.11	.02	.00	.79	.00	96	.00
17	.00	.03	.00	.00	.05	.10	.03	.00	.21	.00	15	.00
18	.13	.03	.00	.00	.15	.09	.02	.00	.06	.00	5.5	.00
19	.25	.02	.00	.00	.25	.09	.01	.00	.06	.00	2.4	.00
20	.13	.02	.00	.00	.22	.09	.01	.00	.04	.00	1.0	.00
21	.09	.02	.00	.00	.16	.08	.01	.00	18	.00	.46	.00
22	.08	.02	.00	.00	.40	.08	.01	.00	3.6	.00	.22	.00
23	.10	.01	.00	.00	.33	.08	.01	.00	1.3	.00	.10	.00
24	.29	.01	.00	.00	.27	.08	.00	.00	.51	.00	.04	.00
25	.22	.01	.00	.00	.24	.08	.00	.00	.22	.00	.02	.00
26	.15	.00	.00	.00	.22	.08	.00	.00	.15	.00	.02	.00
27	.10	.00	.00	.00	.21	.08	.00	.00	.08	.00	.01	.00
28	.08	.01	.00	.00	.20	.07	.00	.00	.07	.00	.01	.00
29	.06	.01	.00	.00	---	.06	.00	.00	.08	.00	.00	.00
30	.06	.00	.00	.00	---	.06	.00	.00	.08	.00	.00	.00
31	.06	---	.00	.00	---	.06	---	.00	---	.00	.00	---
TOTAL	1.80	1.04	.00	.00	2.73	3.64	.63	.04	57.09	.20	130.25	.00
MEAN	.058	.035	.000	.000	.098	.12	.021	.001	1.90	.006	4.20	.000
MAX	.29	.07	.00	.00	.40	.19	.05	.01	.28	.07	.96	.00
MIN	.00	.00	.00	.00	.00	.06	.00	.00	.00	.00	.00	.00
AC-FT	3.6	2.1	.00	.00	5.4	7.2	1.2	.08	113	.4	258	.00

CAL YR 1980 TOTAL 102.22 MEAN .28 MAX 53 MIN .00 AC-FT 203
WTR YR 1981 TOTAL 197.42 MEAN .54 MAX 96 MIN .00 AC-FT 392

HEART RIVER BASIN

295

06342970 NORTH CREEK NEAR SOUTH HEART, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1978 to September 1981 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION (00301)	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CACO3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
NOV												
11...	0910	.07	4060	8.6	2.0	3.0	11.1	90	410	0	71	56
FEB												
18...	1615	.43	930	8.1	9.0	.5	11.4	88	96	0	17	13
MAR												
17...	1415	.10	2020	8.6	5.0	3.0	14.6	118	120	0	20	18
26...	1325	.08	2370	8.8	11.5	5.5	14.3	123	--	--	--	--
APR												
06...	1400	.04	2650	8.6	14.5	7.5	11.5	106	220	0	39	29
MAY												
04...	1645	.01	4250	8.6	16.5	19.5	10.8	127	--	--	--	--
JUN												
22...	1615	2.8	795	7.7	26.0	20.0	3.6	43	140	0	30	15
AUG												
18...	1700	5.6	455	7.6	26.0	24.5	2.3	29	91	0	21	9.3

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY, CARBON- ATE FET-FLD (MG/L CACU3) (00430)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
NOV												
11...	840	81	18	17	616	1700	11	.5	3.4	2990	3070	4.0
FEB												
18...	170	78	7.6	8.7	130	340	4.9	.2	7.4	650	643	.88
MAR												
17...	430	88	17	5.1	390	620	3.9	.3	6.1	1390	1340	1.8
26...	--	--	--	--	458	--	--	--	--	--	--	--
APR												
06...	560	84	17	7.5	530	920	5.9	.4	3.5	1930	1890	2.6
MAY												
04...	--	--	--	--	850	--	--	--	--	--	--	--
JUN												
22...	130	66	4.8	9.3	140	290	5.1	.2	10	545	574	.74
AUG												
18...	63	57	3.2	10	130	95	2.7	.2	12	299	292	.41

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS TOTAL (MG/L AS P) (71886)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC SUS- PENDED TOTAL (UG/L AS AS) (01001)	ARSENIC TOTAL IN BOT- TOM MA- TERIAL (UG/G AS AS) (01003)
NOV												
11...	.57	.00	.010	.01	2.0	2.00	.150	.46	.060	--	--	--
FEB												
18...	.75	.69	.220	--	2.3	2.50	.450	1.4	.340	2	0	--
MAR												
17...	.38	--	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
06...	.21	.03	.070	--	1.7	1.80	.130	.40	.050	3	2	100
MAY												
04...	--	--	--	--	--	--	--	--	--	--	--	--
JUN												
22...	4.1	--	--	--	--	--	--	--	--	--	--	--
AUG												
18...	4.5	.16	.220	--	2.7	2.90	.380	1.2	.120	5	2	--

HEART RIVER BASIN

06342970 NORTH CREEK NEAR SOUTH HEART, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BARIUM, SUS- PENDE D RECOV- ERABLE (UG/L AS BA) (01006)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BERYL- LIUM, SUS- PENDE D RECOV- ERABLE (UG/L AS BE) (01011)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, SUS- PENDE D RECOV- ERABLE (UG/L AS CR) (01031)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	CHRO- MIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/L AS CR) (01029)	COBALT, RECOV. FM BOT- TOM MA- TERIAL (UG/L AS CO) (01038)
NOV 11...	100	0	100	--	--	--	1200	--	--	--	--	--
FEB 18...	--	--	--	0	--	<1	230	0	0	0	--	--
MAR 17...	--	--	--	--	--	--	650	--	--	--	--	--
MAR 26...	--	--	--	--	--	--	--	--	--	--	--	--
APR 06...	100	100	0	10	10	0	880	20	20	0	4	10
MAY 04...	--	--	--	--	--	--	--	--	--	--	--	--
JUN 22...	--	--	--	--	--	--	300	--	--	--	--	--
AUG 18...	--	--	--	0	--	<1	110	20	20	0	--	--

DATE	CUPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	CUPPER, SUS- PENDE D RECOV- ERABLE (UG/L AS CU) (01041)	CUPPER, DIS- SOLVED (UG/L AS CU) (01040)	CUPPER, FM BOT- TOM MA- TERIAL (UG/L AS CU) (01043)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI) (01132)	LITHIUM SUS- PENDE D RECOV- ERABLE (UG/L AS LI) (01131)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, SUS- PENDE D RECOV- ERABLE (UG/L AS MN) (01054)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)
NOV 11...	--	--	--	--	120	50	0	50	300	280	20	--
FEB 18...	9	3	6	--	430	--	--	--	220	80	140	.2
MAR 17...	--	--	--	--	200	--	--	--	200	150	50	--
MAR 26...	--	--	--	--	--	--	--	--	--	--	--	--
APR 06...	2	0	3	19	130	40	10	30	210	200	10	.2
MAY 04...	--	--	--	--	--	--	--	--	--	--	--	--
JUN 22...	--	--	--	--	160	--	--	--	330	310	20	--
AUG 18...	22	16	6	--	76	--	--	--	310	300	13	.3

DATE	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MERCURY SUS- PENDE D RECOV- ERABLE (UG/L AS HG) (71895)	MERCURY RECOV. FM BOT- TOM MA- TERIAL (UG/L AS HG) (71921)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	NICKEL, SUS- PENDE D RECOV- ERABLE (UG/L AS NI) (01066)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE) (01147)	SELE- NIUM, SUS- PENDE D RECOV- ERABLE (UG/L AS SE) (01146)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE) (01148)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
NOV 11...	--	--	--	--	--	--	--	--	--	--	740
FEB 18...	.2	.0	--	8	3	5	0	0	0	--	--
MAR 17...	--	--	--	--	--	--	--	--	--	--	--
MAR 26...	--	--	--	--	--	--	--	--	--	--	--
APR 06...	.0	.2	.60	7	5	2	0	0	0	0	500
MAY 04...	--	--	--	--	--	--	--	--	--	--	--
JUN 22...	--	--	--	--	--	--	--	--	--	--	--
AUG 18...	.0	.3	--	32	26	6	1	0	1	--	--

HEART RIVER BASIN

297

06342970 NORTH CREEK NEAR SOUTH HEART, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, SUS- PENDE RECOV- ERABLE (UG/L AS ZN) (01091)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	ZINC, FM BUT- TUM MA- TERIAL (UG/G AS ZN) (01093)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT) (80030)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)	GROSS BETA, DIS- SOLVED (PCI/L AS SR/ YT-90) (80050)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90) (80060)
NOV 11...	--	--	--	--	--	--	--	--	--	--
FEB 18...	20	10	7	--	--	--	--	--	--	--
MAR 17...	--	--	--	--	--	--	--	--	--	--
APR 06...	80	50	30	290	<48	<1.4	<21	2.7	<20	2.5
MAY 04...	--	--	--	--	--	--	--	--	--	--
JUN 22...	--	--	--	--	--	--	--	--	--	--
AUG 18...	70	--	<3	--	--	--	--	--	--	--

DATE	POTAS- SIUM 40 DIS- SOLVED (PCI/L AS K40) (82068)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHENOLS (UG/L) (32730)	SEDI- MENT, DIS- SUS- PENDE (MG/L) (80154)	SEDI- MENT, CHARGE; SUS- PENDE (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)
NOV 11...	--	40	2.1	--	--	57	.01	--	--	--
FEB 18...	6.5	40	--	.00	4	67	.08	--	--	--
MAR 17...	3.8	--	--	--	--	19	.01	--	--	--
APR 06...	5.6	18	.7	.00	4	90	.01	--	--	--
MAY 04...	--	--	--	--	--	96	.00	--	--	--
JUN 22...	6.9	--	--	--	--	355	2.7	--	--	--
AUG 18...	--	12	3.0	.01	40	305	4.7	96	96	100

DATE	BED MAT. FALL DIAM. % FINER THAN .062 MM (80158)	BED MAT. FALL DIAM. % FINER THAN .125 MM (80159)	BED MAT. FALL DIAM. % FINER THAN .250 MM (80160)	BED MAT. FALL DIAM. % FINER THAN .500 MM (80161)	BED MAT. FALL DIAM. % FINER THAN 1.00 MM (80162)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)
FEB 18...	63	70	79	86	86	88	91	95	100
AUG 18...	41	56	77	87	88	90	94	98	100

HEART RIVER BASIN

06342970 NORTH CREEK NEAR SOUTH HEART, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO JUNE 1981

DATE TIME	NOV 11,80 0910	FEB 18,81 1615	MAR 17,81 1415	APR 6,81 1400	JUN 22,81 1615					
TOTAL CELLS/ML	39000	2000	15000	12000	5500					
DIVERSITY: DIVISION	1.4	1.6	1.1	0.8	1.5					
..CLASS	1.4	1.6	1.1	0.8	1.5					
...ORDER	2.0	2.4	1.4	1.1	1.7					
...FAMILY	2.5	2.4	1.4	1.1	2.0					
....GENUS	2.8	2.5	1.4	1.2	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										
....DOCYSTACEAE										
.....ANKISTRODESMUS	5200	13	270	13	740	5	720	6	2500#	46
.....DICTYOSPHAERIUM	600	2	28	1	--	--	--	--	--	--
.....KIRCHNERIELLA	--	--	14	1	--	--	--	--	--	--
....DOCYSTIS	*	0	--	--	--	--	--	--	--	--
....QUADRIGULA	--	--	--	--	--	--	--	--	70	1
....SELENASTRUM	890	2	--	--	*	0	*	0	--	--
...SCENEDESMACEAE										
.....ACTINASTRUM	1200	3	--	--	--	--	--	--	--	--
....SCENEDESMUS	--	--	--	--	--	--	--	--	140	3
...VULVOCALLES										
....CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	1200	3	210	10	340	2	120	1	70	1
CHRYSTOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
....COSCIINODISCACEAE										
.....CYCLOTELLA	450	1	350#	17	2100	14	--	--	140	3
.....STEPHANODISCUS	--	--	--	--	*	0	320	3	--	--
...PENNALES										
....FRAGILARIACEAE										
.....SYNEDRA	--	--	--	--	--	--	--	--	35	1
....NAVICULACEAE										
.....ENTOMONEIS	--	--	--	--	*	0	--	--	--	--
....NAVICULA	--	--	56	3	*	0	*	0	110	2
....NITZSCHIA	--	--	--	--	--	--	240	2	420	8
CRYPTOPHYTA (CRYPTOMONADS)										
..CRYPTOPHYCEAE										
...CRYPTOMONADALES										
....CRYPTOMONADACEAE										
....CRYPTOMONAS	--	--	14	1	--	--	--	--	--	--
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROOCOCCALES										
....CHROOCOCCACEAE										
.....ANACYSTIS	5400	14	320#	16	400	3	360	3	--	--
...HORMOGONALES										
....NOSTOCACEAE										
.....ANABAENOPSIS	3600	9	--	--	--	--	--	--	--	--
....OSCILLATORIACEAE										
.....OSCILLATORIA	15000#	38	740#	37	11000#	73	9800#	82	1900#	34
EUGLENOPHYTA (EUGLENOIDS)										
..EUGLENOPHYCEAE										
...EUGLENALES										
....EUGLENACEAE										
.....EUGLENA	2700	7	14	1	270	2	340	3	35	1
.....PHACUS	--	--	--	--	--	--	--	--	70	1
....TRACHELUMONAS	2800	7	14	1	--	--	*	0	35	1

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

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

HEART RIVER BASIN

299

06343000 HEART RIVER NEAR SOUTH HEART, ND

LOCATION.--Lat 46°51'56", long 102°56'53", in NE¼SE¼SW¼ sec.8, T.139 N., R.97 W., Stark County, Hydrologic Unit 10130202, on left bank 1.7 mi (2.7 km) downstream from North Creek, 2 mi (3.2 km) east of South Heart, and 5.5 mi (8.8 km) upstream from Edward Arthur Patterson Lake.

DRAINAGE AREA.--311 mi² (805 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1947 to September 1970, October 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,429.45 ft (740.496 m) National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers).

REMARKS.--Records fair.

AVERAGE DISCHARGE.--28 years, 27.9 ft³/s (0.790 m³/s), 20,210 acre-ft/yr (24.9 hm³/yr); median of yearly mean discharges, 27 ft³/s (0.76 m³/s), 19,600 acre-ft/yr (24.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,080 ft³/s (229 m³/s) May 9, 1970, gage height, 22.77 ft (6.940 m); no flow at times in some years.

EXTREMES FOR CURRENT YEAR.--Peak discharges 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)
Aug. 7	0430	278 7.87	6.09 1.856	Aug. 17	1630	*973 27.6	10.25 3.124

No flow July 16-20, 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.16	.70	.94	.60	.88	1.2	.68	.88	.38	2.3	.16	.70
2	.16	.70	.76	.60	.88	1.1	.76	.76	.53	2.5	.10	.49
3	.16	.70	.68	.60	.88	1.1	.82	.76	3.5	2.6	.10	.30
4	.16	.76	.76	.60	.76	1.1	.82	.82	3.3	2.3	16	.23
5	.16	.82	.82	.56	.70	1.1	.82	.82	3.0	2.0	63	.16
6	.16	.76	.70	.53	.70	1.1	.82	.88	3.8	1.4	179	23
7	.16	.76	.68	.60	.70	1.1	.88	.93	2.2	.85	191	57
8	.16	.88	.63	.63	.68	1.1	.88	.82	1.5	.42	54	25
9	.16	.94	.65	.65	.65	1.1	1.3	.75	2.0	.38	26	16
10	.16	1.0	.60	.65	.65	1.0	.70	.65	3.8	.30	15	11
11	.16	1.1	.60	.65	.60	1.0	.65	.63	1.7	.23	9.8	8.0
12	.16	1.1	.63	.65	.60	1.0	.63	.65	1.0	.23	6.1	5.4
13	.23	1.2	.65	.63	.65	1.0	.63	.60	68	.23	4.3	3.8
14	.16	1.5	.60	.65	.70	1.0	.56	.60	112	.16	3.8	3.1
15	.23	1.3	.60	.64	.94	.94	.56	.49	26	.05	4.3	2.2
16	.82	1.2	.65	.65	1.2	.99	.53	.49	13	.00	293	1.6
17	6.6	1.1	.72	.70	1.9	1.6	.49	.56	8.3	.00	892	1.1
18	4.4	1.1	.76	.68	2.7	.82	.49	.49	5.1	.00	641	1.0
19	2.5	1.0	.60	.68	3.2	.82	.49	.49	3.5	.00	130	.94
20	1.6	1.1	.49	.76	3.7	.82	.49	.44	3.3	.00	52	.90
21	1.1	1.1	.49	.76	2.4	.80	.44	.23	3.8	.19	30	.85
22	.76	1.1	.53	.76	2.3	.76	.38	.49	22	.23	19	.80
23	1.1	1.0	.60	.82	2.1	.68	.46	.60	9.6	.16	12	.74
24	3.0	.97	.63	.94	1.7	.60	.53	.49	4.5	.16	78	.70
25	2.5	.93	.63	1.0	1.5	.60	.65	.38	2.6	.10	6.0	.66
26	1.5	.90	.63	1.1	1.6	.71	.76	.38	1.7	.10	4.2	.62
27	1.1	.91	.65	1.1	1.5	.53	.94	.53	2.0	.10	2.7	.58
28	.94	.95	.70	1.0	1.3	.60	1.1	.56	1.9	.10	1.6	.56
29	.88	1.1	.68	1.0	---	.63	1.1	.56	2.3	.16	1.2	.54
30	.82	1.0	.68	.94	---	.65	.94	.53	2.6	.48	.88	.52
31	.70	---	.65	.88	---	.65	---	.38	---	.45	.70	---
TOTAL	32.86	29.68	20.39	23.01	38.07	28.20	21.30	18.64	318.91	18.18	2736.94	168.49
MEAN	1.06	.99	.66	.74	1.36	.91	.71	.60	10.6	.59	88.3	5.62
MAX	6.6	1.5	.94	1.1	3.7	1.6	1.3	.93	112	2.6	892	57
MIN	.16	.70	.49	.53	.60	.53	.38	.23	.38	.00	.10	.16
AC-FT	65	59	40	46	76	56	42	37	633	36	5430	334

CAL YR 1980 TOTAL 728.12 MEAN 1.99 MAX 55 MIN .00 AC-FT 1440
WTR YR 1981 TOTAL 3454.67 MEAN 9.46 MAX 892 MIN .00 AC-FT 6850

HEART RIVER BASIN

06343000 HEART RIVER NEAR SOUTH HEART, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1978 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION (00301)	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CACO3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT												
10...	0955	.18	2250	8.5	10.5	7.5	10.5	94	95	0	18	12
NOV												
13...	1330	1.4	2680	8.8	-5	2.5	12.6	98	190	0	37	24
DEC												
17...	1100	.72	3730	8.2	1.0	2.0	11.0	86	290	--	54	38
JAN												
15...	0945	.64	3800	8.0	-6.0	.5	10.3	77	310	0	59	40
FEB												
18...	1335	3.1	3100	8.4	11.0	.5	13.3	102	280	0	52	37
24...	1600	1.8	2000	8.0	4.5	.0	9.2	69	--	--	--	--
MAR												
17...	0915	.87	1920	8.3	1.0	2.5	12.6	100	120	0	23	16
26...	0815	.52	1950	8.5	3.0	4.5	10.6	88	--	--	--	--
APR												
09...	0920	.93	2140	8.7	12.0	6.5	10.3	90	--	--	--	--
22...	1200	.37	2320	8.3	15.0	13.5	9.6	100	160	0	31	19
MAY												
12...	1110	.61	3420	8.7	10.0	9.0	10.2	96	330	0	59	44
JUN												
04...	1150	3.5	3290	8.6	11.5	20.5	7.1	85	--	--	--	--
24...	1835	3.8	3130	8.4	24.0	22.0	8.2	100	340	0	56	49
JUL												
29...	1115	.04	2980	8.6	30.0	25.0	8.3	108	210	0	41	26
AUG												
18...	0900	808	450	7.7	24.0	20.0	4.7	55	85	0	21	8.0
SEP												
01...	1320	.76	1340	8.4	27.0	16.5	8.0	89	170	0	38	18

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY, CARBON- ATE FET-FLD (MG/L CACO3) (00430)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
OCT												
10...	490	91	22	6.9	617	530	19	1.0	13	1520	1460	2.0
NOV												
13...	570	86	18	7.0	554	860	27	.8	6.3	1870	1870	2.5
DEC												
17...	870	86	22	10	--	930	62	2.6	11	2770	--	3.7
JAN												
15...	620	81	15	11	910	820	8.8	.7	8.7	2710	2120	3.6
FEB												
18...	690	84	18	7.0	710	1100	36	.9	12	2300	2360	3.1
24...	--	--	--	--	--	--	--	--	--	--	--	--
MAR												
17...	390	87	15	3.7	440	510	19	.7	6.3	1270	1230	1.7
26...	--	--	--	--	476	--	--	--	--	--	--	--
APR												
09...	--	--	--	--	518	--	--	--	--	--	--	--
22...	490	87	17	5.0	580	670	23	.9	5.9	1600	1600	2.1
MAY												
12...	740	83	18	6.8	740	1200	49	1.0	4.8	2570	2550	3.5
JUN												
04...	--	--	--	--	772	--	--	--	--	--	--	--
24...	630	79	15	12	430	1300	20	.4	9.9	2390	2340	3.2
JUL												
29...	660	87	20	7.2	630	980	20	.7	10	2100	2120	2.8
AUG												
18...	63	59	3.2	8.3	92	130	8.5	.2	8.3	300	303	.41
SEP												
01...	240	74	8.8	9.0	290	350	11	.4	11	918	852	1.2

06343000 HEART RIVER NEAR SOUTH HEART, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	SOLIDS, DIS- SOLVED (TUNS PER DAY) (70302)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS, TOTAL (MG/L AS P04) (71886)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC SUS- PENDE TOTAL (UG/L AS AS) (01001)	ARSENIC TOTAL IN BOT- TUM MA- TERIAL (UG/G AS AS) (01003)
OCT												
10...	.74	--	--	--	--	--	--	--	--	--	--	--
NOV												
13...	7.0	.00	.010	.01	.91	.92	.120	.37	.060	--	--	--
DEC												
17...	5.3	--	--	--	--	--	--	--	--	--	--	--
JAN												
15...	4.6	.16	.190	.23	.91	1.10	.260	.80	.160	--	--	--
FEB												
18...	19.3	--	--	--	--	--	--	--	--	3	0	--
24...	--	--	--	--	--	--	--	--	--	--	--	--
MAR												
17...	2.9	--	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
09...	--	--	--	--	--	--	--	--	--	--	--	--
22...	1.6	.01	.090	--	.51	.60	.160	.49	.090	--	--	--
MAY												
12...	4.2	.01	.120	--	.88	1.00	.230	.71	.170	7	--	99
JUN												
04...	--	--	--	--	--	--	--	--	--	--	--	--
24...	24.5	--	--	--	--	--	--	--	--	--	--	--
JUL												
29...	.23	.00	.290	--	1.6	1.90	.310	.95	.210	--	--	--
AUG												
18...	654	--	--	--	--	--	--	--	--	10	7	--
SEP												
01...	1.8	--	--	--	--	--	--	--	--	--	--	--

DATE	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BARIUM, SUS- PENDE RECOV- ERABLE (UG/L AS BA) (01006)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BERYL- LIUM, SUS- PENDE RECOV. (UG/L AS BE) (01011)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, SUS- PENDE RECOV. (UG/L AS CR) (01031)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	CHRO- MIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G) (01029)	COBALT, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CO) (01038)
OCT												
10...	100	0	100	--	--	--	90	--	--	--	--	--
NOV												
13...	--	--	--	--	--	--	820	--	--	--	--	--
DEC												
17...	--	--	--	--	--	--	1300	--	--	--	--	--
JAN												
15...	--	--	--	--	--	--	430	--	--	--	--	--
FEB												
18...	--	--	--	0	0	0	920	10	0	10	--	--
24...	--	--	--	--	--	--	--	--	--	--	--	--
MAR												
17...	--	--	--	--	--	--	500	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
09...	--	--	--	--	--	--	--	--	--	--	--	--
22...	100	0	200	--	--	--	600	--	--	--	--	--
MAY												
12...	100	0	100	10	10	0	1000	0	0	10	1	5
JUN												
04...	--	--	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	890	--	--	--	--	--
JUL												
29...	--	--	--	--	--	--	750	--	--	--	--	--
AUG												
18...	--	--	--	0	--	<1	90	30	30	0	--	--
SEP												
01...	--	--	--	--	--	--	290	--	--	--	--	--

06343000 HEART RIVER NEAR SOUTH HEART, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	COPPER, TOTAL RECOVERABLE (UG/L AS CU) (01042)	COPPER, SUS- PENDED RECOVERABLE (UG/L AS CU) (01041)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	COPPER, FM BOT- TOM MA- TERIAL (UG/G AS CU) (01043)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM TOTAL RECOVERABLE (UG/L AS LI) (01132)	LITHIUM SUS- PENDED RECOVERABLE (UG/L AS LI) (01131)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	MANGA- NESE, SUS- PENDED RECOVERABLE (UG/L AS MN) (01054)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOVERABLE (UG/L AS HG) (71900)
OCT												
10...	--	--	--	--	130	40	0	40	180	160	20	--
NOV												
13...	--	--	--	--	70	--	--	--	70	50	20	--
DEC												
17...	--	--	--	--	70	--	--	--	150	30	120	--
JAN												
15...	--	--	--	--	200	--	--	--	100	50	50	--
FEB												
18...	5	2	3	--	110	--	--	--	320	40	280	.0
24...	--	--	--	--	--	--	--	--	--	--	--	--
MAR												
17...	--	--	--	--	100	--	--	--	160	50	110	--
26...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
09...	--	--	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	50	30	0	40	150	130	20	--
MAY												
12...	3	0	3	7	60	60	0	60	120	100	20	.2
JUN												
04...	--	--	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	90	--	--	--	240	190	50	--
JUL												
29...	--	--	--	--	90	--	--	--	350	190	160	--
AUG												
18...	51	50	1	--	150	--	--	--	820	770	47	.3
SEP												
01...	--	--	--	--	25	--	--	--	140	130	11	--

[illegible]

HEART RIVER BASIN

06343000 HEART RIVER NEAR SOUTH HEART, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	ZINC, SUS- PENDE RECOVERABLE (UG/L AS ZN) (01091)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	ZINC, FM BUT- TOM MA- TERIAL (UG/G AS ZN) (01093)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT) (80030)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)	GROSS BETA, DIS- SOLVED (PCI/L AS SR/ YT-90) (80050)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90) (80060)
FEB 18...	20	0	20	--	--	--	--	--	--	--
MAR 17...	--	--	--	--	--	--	--	--	--	--
APR 09...	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	--
MAY 12...	30	20	10	8	<54	2.3	<30	2.8	<29	2.6
AUG 18...	140	--	<3	--	--	--	--	--	--	--
SEP 01...	--	--	--	--	--	--	--	--	--	--

DATE	POTAS- SIUM 40 DIS- SOLVED (PCI/L AS K40) (82068)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHENOLS (UG/L) (32730)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)
OCT 10...	--	--	--	--	--	175	.09	--	--	--
NOV 13...	--	18	.7	--	--	104	.39	--	--	--
DEC 17...	--	--	--	--	--	182	.35	--	--	--
JAN 15...	8.2	25	--	--	--	158	.27	--	--	--
FEB 18...	5.2	--	--	.00	1	130	1.1	--	--	--
MAR 17...	2.8	--	--	--	--	94	.22	--	--	--
APR 09...	--	--	--	--	--	63	.16	--	--	--
22...	3.7	14	.9	--	--	91	.09	--	--	--
MAY 12...	5.1	31	1.3	1.0	2	155	.26	--	--	--
JUN 04...	--	--	--	--	--	153	1.4	--	--	--
24...	9.0	--	--	--	--	144	1.5	--	--	--
JUL 29...	--	22	1.3	--	--	137	.01	--	--	--
AUG 18...	--	--	--	.00	10	816	1780	78	81	88
SEP 01...	--	--	--	--	--	85	.17	--	--	--

DATE	BED MAT. FALL DIAM. % FINER THAN .062 MM (80158)	BED MAT. FALL DIAM. % FINER THAN .125 MM (80159)	BED MAT. FALL DIAM. % FINER THAN .250 MM (80160)	BED MAT. FALL DIAM. % FINER THAN .500 MM (80161)	BED MAT. FALL DIAM. % FINER THAN 1.00 MM (80162)	BED MAT. FALL DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. FALL DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. FALL DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. FALL DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. FALL DIAM. % FINER THAN 32.0 MM (80173)
FEB 18...	3	7	15	19	24	31	44	64	81	100
AUG 18...	13	20	35	43	50	57	66	76	89	100

HEART RIVER BASIN

06343000 HEART RIVER NEAR SOUTH HEART, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	OCT 10,80 0955	NOV 13,80 1330	JAN 15,81 0945	FEB 18,81 1335	MAR 17,81 0915	APR 22,81 1200				
TOTAL CELLS/ML	6400	22000	3800	11000	13000	9600				
DIVERSITY: DIVISION	1.4	1.0	1.6	1.3	1.4	1.5				
..CLASS	1.4	1.1	1.6	1.3	1.4	1.5				
..ORDER	2.2	1.1	1.9	1.5	1.8	2.1				
...FAMILY	2.5	1.1	2.2	1.6	1.8	2.5				
....GENUS	2.8	1.5	2.4	1.6	1.8	2.9				
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)										
..CHLOROPHYCEAE										
...CHLOROCOCCALES										
...CHARACIACEAE										
....SCHROEDERIA	--	-	--	-	60	2	--	-	--	-
...MICRACTINIACEAE										
....MICRACTINIUM	--	-	--	-	--	-	--	-	--	-
...OOCYSTACEAE										
....ANKISTRUDES MUS	270	4	3900#	17	210	5	420	4	2200#	17
....DICTYOSPHAERIUM	--	-	--	-	720#	19	--	-	--	-
....KIRCHNERIELLA	--	-	--	-	--	-	--	-	230	2
....OOCYSTIS	--	-	--	-	--	-	--	-	--	-
....SELENASTRUM	--	-	--	-	--	-	--	-	--	-
....TETRAEDRON	--	-	--	-	--	-	--	-	--	-
....TREUBARIA	--	-	--	-	--	-	--	-	--	-
....WESTELLA	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....CRUCIGENIA	400	6	--	-	--	-	--	-	--	-
....SCENEDESMUS	270	4	--	-	120	3	--	-	--	-
....TETRASTRUM	200	3	--	-	--	-	--	-	--	-
..TETRASPORALES										
...PALMELLACEAE										
....SPHAEROCYSTIS	--	-	--	-	--	-	--	-	--	-
..VOLVOCALLES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	120	2	210	1	60	2	210	2	120	1
CHRYSOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	150	2	15000#	70	2000#	52	4000#	35	8000#	62
....MELOSIRA	--	-	640	3	--	-	--	-	--	-
....STEPHANODISCUS	--	-	640	3	--	-	--	-	--	-
...PENNALES										
....ACHNANTHACEAE										
....ACHNANTHES	--	-	--	-	--	-	110	1	--	-
...CYMBELLACEAE										
....EPITHEMIA	--	-	--	-	--	-	--	-	--	-
...FRAGILARIACEAE										
....FRAGILARIA	67	1	--	-	--	-	--	-	--	-
....SYNEDRA	*	0	--	-	--	-	--	-	--	-
...GUMPHONEMACEAE										

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

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

CONTINUED ...

HEART RIVER BASIN

06343000 HEART RIVER NEAR SOUTH HEART, ND--Continued
 PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	MAY 12,81 1110	JUN 24,81 1035	JUL 29,81 1115	AUG 18,81 0900	SEP 1,81 1320
TOTAL CELLS/ML	7500	14000	13000	27000	4600
DIVERSITY: DIVISION	1.1	1.4	1.8	0.2	1.8
..CLASS	1.1	1.4	1.8	0.2	1.8
...ORDER	1.5	2.0	2.5	0.2	2.2
...FAMILY	1.8	2.5	2.8	0.2	2.9
....GENUS	2.0	3.2	3.2	0.2	3.4

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	--	-	--	-	--	-	--	-	70	2
...OOCYSTACEAE										
....ANKISTRODESMUS	870	12	1700	12	1200	9	--	-	--	-
....DICTYOSPHAERIUM	81	1	2400#	17	--	-	--	-	560	12
....KIRCHNERIELLA	--	-	--	-	270	2	--	-	70	2
....OOCYSTIS	--	-	180	1	550	4	--	-	--	-
....SELENASTRUM	200	3	--	-	140	1	--	-	--	-
....TETRAEDRUM	--	-	--	-	--	-	--	-	70	2
....TREUBARIA	*	0	90	1	--	-	--	-	--	-
....WESTELLA	81	1	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....CRUCIGENIA	--	-	--	-	270	2	--	-	--	-
....SCENEDESMUS	810	11	2900#	21	1500	12	--	-	560	12
....TETRASTRUM	--	-	360	3	--	-	--	-	280	6
...TETRASPORALES										
...PALMELLACEAE										
...SPHAEROCYSTIS	--	-	720	5	--	-	--	-	210	5
...VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	120	2	360	3	140	1	*	0	70	2
CHRYSTOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	--	-	3000#	22	3200#	24	140	1	70	2
....MELOSIRA	--	-	360	3	--	-	--	-	--	-
....STEPHANODISCUS	81	1	--	-	--	-	--	-	--	-
...PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	--	-	--	-	--	-	--	-	--	-
...CYMBELLACEAE										
....EPITHEMIA	--	-	--	-	--	-	*	0	--	-
...FRAGILARIACEAE										
....FRAGILARIA	--	-	--	-	--	-	--	-	--	-
....SYNEDRA	--	-	--	-	--	-	--	-	--	-
...GOMPHONEMACEAE										

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

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

CONTINUED ...

HEART RIVER BASIN

307

06343000 HEART RIVER NEAR SOUTH HEART, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

(CONTINUED)

DATE TIME	MAY 12,81 1110		JUN 24,81 1035		JUL 29,81 1115		AUG 18,81 0900		SEP 1,81 1320	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
....GOMPHONEMA	--	-	--	-	--	-	--	-	--	-
...NAVICULACEAE	--	-	--	-	--	-	--	-	--	-
....GYROSIGMA	--	-	--	-	--	-	--	-	--	-
...NAVICULA	--	-	--	-	210	2	280	1	70	2
...NITZSCHACEAE	--	-	--	-	--	-	--	-	--	-
....NITZSCHIA	120	2	360	3	1400	11	140	1	70	2
...SURIPELLACEAE	--	-	--	-	--	-	--	-	--	-
....SURIPELLA	--	-	--	-	--	-	--	-	--	-
..CHRYSOPHYCEAE	--	-	--	-	--	-	--	-	--	-
..CHRYSOMONADALES	--	-	--	-	--	-	--	-	--	-
...OCHROMONADACEAE	--	-	--	-	--	-	--	-	--	-
....KEPHYRIOPSIS	--	-	--	-	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)										
..CRYPTOPHYCEAE	--	-	--	-	--	-	--	-	--	-
..CRYPTOMONADALES	--	-	--	-	--	-	--	-	--	-
...CRYPTOMONADACEAE	--	-	--	-	--	-	--	-	--	-
....CRYPTOMONAS	--	-	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROOCOCCALES										
...CHROOCOCCACEAE										
....ANACYSTIS	4600#	61	270	2	2200#	17	--	-	--	-
...HORMOGONALES										
...NOSTOCACEAE										
....ANABAENA	--	-	--	-	--	-	--	-	420	9
....ANABAENOPSIS	--	-	--	-	1300	10	--	-	--	-
...OSCILLATORIACEAE										
....OSCILLATORIA	440	6	540	4	--	-	26000#	97	1000#	23
EUGLENOPHYTA (EUGLENUIDS)										
..EUGLENOPHYCEAE										
...EUGLENALES										
...EUGLENACEAE										
....EUGLENA	--	-	270	2	340	3	--	-	630	14
....PHACUS	--	-	180	1	69	1	--	-	70	2
....TRACHELUMONAS	100	1	180	1	69	1	--	-	280	6
PYRRHOPHYTA (FIRE ALGAE)										
..DINOPHYCEAE										
...GYMNODINIALES										
...GYMNODINIACEAE										
....GYMNODINIUM	--	-	--	-	--	-	--	-	--	-
...PERIDINIALES										
...GLENODINIACEAE										
....GLENODINIUM	--	-	--	-	69	1	--	-	--	-
...PERIDINIACEAE										
....PERIDINIUM	--	-	--	-	--	-	--	-	70	2

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, and 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) National Geodetic Vertical Datum of 1929 (levels by Water and Power Resources Service); gage readings have been reduced to elevations NGVD. 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 recorded, 6,900 acre-ft (8.51 hm³) Aug. 18, 19, elevation, 2,416.78 ft (736.635 m); minimum, 3,220 acre-ft (3.97 hm³) June 12, elevation 2,410.90 ft (734.842 m).

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30-----	2,411.81	3,670	--
Oct. 31-----	2,412.17	3,860	+190
Nov. 30-----	2,412.10	3,820	-40
Dec. 31-----	2,411.85	3,690	-130
CAL YR 1980-----	--	--	-1,170
Jan. 31-----	2,411.70*	3,620	-70
Feb. 28-----	2,411.75	3,640	+20
Mar. 31-----	2,411.74	3,640	0
Apr. 30-----	2,411.35	3,440	-200
May 31-----	2,410.94	3,240	-200
June 30-----	2,412.26	3,900	+660
July 31-----	2,412.21	3,880	-20
Aug. 31-----	2,415.96	6,240	+2,360
Sept. 30-----	2,415.78	6,110	-130
WTR YR 1981-----	--	--	+2,440

* - Estimate

HEART RIVER BASIN

309

06344600 GREEN RIVER NEAR NEW HRADEC, ND

LOCATION.--Lat 47°01'40", long 103°03'10", on line between secs.13 and 14, T.141 N., R.98 W., Billings County, Hydrologic Unit 10130202, on left bank below county highway bridge, and 8 mi (13 km) west of New Hradec.

DRAINAGE AREA.--152 mi² (394 km²), approximately.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder.

REMARKS.--Records good.

AVERAGE DISCHARGE.--17 years, 16.9 ft³/s (0.478 m³/s), 12,240 acre-ft/yr (15.1 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, 17.60 ft (5.364 m) Mar. 22, 1978, backwater from ice; no flow for several days in some years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 904 ft³/s (25.6 m³/s) Aug. 15, gage height, 11.82 ft (3.603 m), only peak above base of 100 ft³/s (2.83 m³/s); no flow July 16-29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.70	2.0	2.3	1.0	2.0	2.6	1.3	1.0	1.8	.35	.32	.27
2	.68	2.0	1.6	.95	2.0	2.2	1.4	.98	2.0	.41	.47	.23
3	.68	2.0	.88	.95	1.8	2.1	1.4	.93	2.6	.50	.88	.17
4	.68	2.0	.70	.95	1.8	1.9	1.2	.88	1.7	.47	.50	.21
5	.68	2.0	.68	.90	1.8	2.0	1.1	.83	1.2	.41	.80	.20
6	.64	2.0	.66	.90	1.8	1.9	1.2	.78	1.3	.35	.78	.35
7	.60	2.0	.64	.90	1.8	1.8	1.2	.79	2.3	.23	.68	.35
8	.60	2.0	.62	.90	1.6	1.8	1.1	.73	2.8	.13	.68	.17
9	.60	2.0	.60	.90	1.6	1.8	1.0	.77	3.2	.07	.68	.21
10	.53	2.1	.60	.90	1.4	1.8	1.1	.70	3.2	.08	.73	.20
11	.50	2.2	.60	.90	1.2	1.8	1.1	.83	3.4	.11	.64	.11
12	.50	2.2	.65	.90	1.2	1.8	1.1	.85	3.1	.10	.50	.10
13	.47	2.1	.70	.90	1.4	1.7	1.1	.83	3.6	.04	.35	.10
14	.47	2.3	.75	.90	3.0	1.7	1.0	.83	3.1	.01	.23	.02
15	.56	2.3	.80	.90	5.5	1.7	1.0	.84	3.1	.01	246	.02
16	.73	2.3	.85	.90	9.5	1.7	.99	.78	2.9	.00	544	.01
17	.83	2.3	.90	.90	21	1.7	.78	.78	3.1	.00	108	.01
18	.88	2.3	.90	.95	20	1.6	.78	.78	2.7	.00	3.0	.01
19	.93	2.3	.80	1.0	19	1.6	.78	.78	2.5	.00	1.1	.02
20	.88	2.4	.70	1.2	17	1.5	.98	.98	2.9	.00	.70	.02
21	.83	2.4	.65	1.4	12	1.4	.97	1.1	5.4	.00	.34	.03
22	.78	2.5	.60	1.6	9.3	1.4	1.1	1.5	4.5	.00	.32	.05
23	.83	2.7	.55	2.0	8.4	1.3	1.1	1.7	2.7	.00	.24	.05
24	1.5	2.5	.50	2.2	7.2	1.2	1.1	1.6	2.5	.00	.12	.05
25	2.0	2.5	.50	2.5	4.8	1.2	1.1	1.6	2.1	.00	.16	.05
26	2.3	2.5	.50	2.5	3.6	1.2	1.0	1.5	1.4	.00	.17	.08
27	2.6	2.5	.60	2.4	3.2	1.1	1.1	1.5	.93	.00	.18	.10
28	2.3	2.7	.70	2.4	2.9	1.2	1.0	1.7	.93	.00	.34	.10
29	2.2	2.7	.80	2.2	---	1.2	1.0	1.7	.83	.00	.29	.12
30	2.1	2.5	.90	2.2	---	1.2	1.1	2.0	.60	.12	.25	.14
31	2.0	---	1.0	2.2	---	1.3	---	2.0	---	.23	.27	---
TOTAL	32.58	68.3	24.23	42.30	167.8	50.4	32.18	34.57	74.39	3.62	913.72	3.55
MEAN	1.05	2.28	.78	1.36	5.99	1.63	1.07	1.12	2.48	.12	29.5	.12
MAX	2.6	2.7	2.3	2.5	21	2.6	1.4	2.0	5.4	.50	544	.35
MIN	.47	2.0	.50	.90	1.2	1.1	.78	.70	.60	.00	.12	.01
AC-FT	65	135	48	84	333	100	64	69	148	7.2	1810	7.0

CAL YR 1980 TOTAL 1609.48 MEAN 4.40 MAX 515 MIN .25 AC-FT 3190
WTR YR 1981 TOTAL 1447.64 MEAN 3.97 MAX 544 MIN .00 AC-FT 2870

HEART RIVER BASIN

06344600 GREEN RIVER NEAR NEW HRADEC, ND--Continued

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CACO3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT												
07...	1415	.60	1110	8.4	26.0	14.5	9.0	95	220	0	41	29
14...	1150	.48	1080	--	5.0	8.0	--	--	--	--	--	--
NOV												
12...	1000	2.0	1180	--	.0	4.0	--	--	--	--	--	--
14...	0700	2.3	2880	8.3	-9.0	2.0	11.6	90	390	77	51	63
DEC												
04...	1005	.66	1390	--	.0	2.0	--	--	--	--	--	--
16...	1415	.85	1340	7.6	9.0	2.0	12.3	96	300	--	59	37
JAN												
15...	1330	.92	1070	--	.0	.0	--	--	--	--	--	--
27...	1145	2.4	948	8.0	-6.0	.5	13.0	100	250	0	52	28
FEB												
19...	1130	18	1080	--	9.0	3.0	--	--	--	--	--	--
24...	1400	6.2	1000	7.7	7.0	.0	11.6	87	120	0	24	15
26...	1035	3.4	960	--	2.0	2.5	--	--	--	--	--	--
MAR												
17...	1200	1.8	725	8.3	4.0	3.0	13.0	105	120	0	25	14
17...	1535	1.8	740	--	4.0	4.5	--	--	--	--	--	--
APR												
06...	1700	1.2	860	8.4	9.0	9.0	10.1	96	160	0	34	19
08...	1430	1.0	910	--	14.0	10.0	--	--	--	--	--	--
MAY												
07...	1440	.69	1050	--	9.0	11.0	--	--	--	--	--	--
13...	1130	.83	1020	8.6	16.5	11.5	10.0	100	240	0	48	29
JUN												
04...	1120	1.9	1020	--	--	20.0	--	--	--	--	--	--
22...	1235	4.5	1090	8.3	23.0	18.5	6.8	79	190	0	38	24
JUL												
07...	1215	.15	1950	--	35.0	30.0	--	--	--	--	--	--
AUG												
05...	1350	.80	1870	--	--	25.5	--	--	--	--	--	--
16...	1545	322	335	8.2	23.0	18.5	--	--	66	--	16	6.3
19...	1530	1.1	475	7.7	30.0	23.0	4.2	53	87	0	20	9.1
SEP												
02...	0900	.29	660	8.0	20.0	16.0	5.8	64	120	0	26	13
09...	1235	.21	670	--	28.0	20.5	--	--	--	--	--	--

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

[illegible][illegible]

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

[illegible]

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

[illegible]

HEART RIVER BASIN

06344600 GREEN RIVER NEAR NEW HRADEC, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	GROSS BETA, DIS- SOLVED (PCI/L AS SR/ YT-90) (80050)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90) (80060)	POTAS- SIUM 40 DIS- SOLVED (PCI/L AS K40) (82068)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHENOLS (UG/L) (32730)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)
OCT 07...	--	--	--	--	--	--	--	52	.08
NOV 14...	--	--	--	26	.5	--	--	75	.47
DEC 16...	--	--	--	--	--	--	--	55	.13
JAN 27...	--	--	--	10	.5	--	--	25	.16
FEB 24...	--	--	6.4	28	1.5	.00	16	54	.90
MAR 17...	--	--	3.1	--	--	--	--	22	.11
APR 06...	--	--	3.5	10	.4	--	--	18	.06
MAY 13...	<7.5	1.0	3.9	17	.8	.00	5	40	.09
JUN 22...	--	--	4.6	--	--	--	--	40	.49
AUG 19...	--	--	--	17	2.5	.00	48	222	.66
SEP 02...	--	--	--	--	--	--	--	79	.06

DATE	BED MAT. FALL DIAM. % FINER THAN (80158)	BED MAT. FALL DIAM. % FINER THAN (80159)	BED MAT. FALL DIAM. % FINER THAN (80160)	BED MAT. FALL DIAM. % FINER THAN (80161)	BED MAT. FALL DIAM. % FINER THAN (80162)	BED MAT. FALL DIAM. % FINER THAN (80169)	BED MAT. FALL DIAM. % FINER THAN (80170)	BED MAT. FALL DIAM. % FINER THAN (80171)	BED MAT. FALL DIAM. % FINER THAN (80172)	BED MAT. FALL DIAM. % FINER THAN (80173)
AUG 19...	6	8	12	20	28	33	42	57	77	100

DATE	LENGTH OF EXPO- SURE (DAYS) (00022)	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2) (70957)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2) (70958)	PERI- PHYTON BIOMASS ASH WEIGHT G/SQ M (00572)	PERI- PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)
JUN 22...	49	2.58	1.31	29.4	46.5

06344600 GREEN RIVER NEAR NEW HRADEC, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	OCT 7,80 1415	NOV 14,80 0700	DEC 16,80 1415	JAN 27,81 1145	FEB 24,81 1400
TOTAL CELLS/ML	1100	3200	360	120	17000
DIVERSITY: DIVISION	1.1	1.2	1.7	1.4	0.5
..CLASS	1.1	1.2	1.7	1.4	0.5
..ORDER	1.7	1.7	2.0	1.8	0.7
...FAMILY	2.8	2.1	2.0	1.8	0.8
....GENUS	3.0	2.3	2.1	1.8	0.8

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
BACILLARIOPHYTA (DIATOMS)										
..BACILLARIOPHYCEAE										
...BACILLARIALES										
....NITZSCHIAEAE										
.....NITZSCHIA	13	1	150	5	13	4	--	-	100	1
...EUPODISCALES										
....COSCINODISCACEAE										
.....CYCLOTELLA	39	3	1700#	53	39	11	13	11	*	0
....MELOSIRA	--	-	50	2	--	-	--	-	--	-
...STEPHANODISCUS	--	-	--	-	--	-	--	-	--	-
..FRAGILARIALES										
...FRAGILIACEAE										
....DIATOMA	--	-	--	-	--	-	--	-	*	0
...NAVICULALES										
....GOMPHONEMACEAE									*	0
...GOMPHONEMA	--	-	--	-	--	-	--	-	*	0
...NAVICULACEAE										
....NAVICULA	--	-	--	-	--	-	--	-	*	0
CHLOROPHYTA (GREEN ALGAE)										
..CHLOROPHYCEAE										
...CHLOROCOCCALES										
....CHLOROCOCCACEAE										
.....TETRAEDRON	26	2	--	-	--	-	--	-	--	-
...DICTYOSPHAERIAEAE										
.....DICTYOSPHAERIUM	52	4	--	-	--	-	--	-	--	-
...MICRACTINIAEAE										
....MICRACTINIUM	64	6	300	9	--	-	--	-	--	-
...OOCYSTACEAE										
....ANKISTRODESMUS	150	13	170	5	13	4	13	11	580	3
...KIRCHNERIELLA	--	-	--	-	--	-	--	-	--	-
...OOCYSTIS	--	-	--	-	--	-	--	-	--	-
...SELENASTRUM	--	-	50	2	--	-	--	-	*	0
...TREUBARIA	--	-	--	-	--	-	--	-	--	-
...PALMELLACEAE										
....SPHAEROCYSTIS	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....ACTINASTRUM	--	-	--	-	--	-	--	-	*	0
...CRUCIGENIA	52	4	--	-	--	-	--	-	--	-
...SCENEDESMUS	390#	34	400	12	--	-	--	-	100	1
...TETRASTRUM	--	-	--	-	--	-	--	-	--	-
...VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	90	8	250	8	190#	54	39#	33	180	1
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROOCOCCALES										
....CHROOCOCCACEAE										
.....ANACYSTIS	64	6	99	3	52	14	52#	44	500	3
...OSCILLATORIALES										
....OSCILLATORIAEAE										
.....OSCILLATORIA	180#	16	--	-	--	-	--	-	15000#	89
EUGLENOPHYTA (EUGLENOIDS)										
..EUGLENOPHYCEAE										
...EUGLENALES										
....EUGLENAEAE										
.....EUGLENA	--	-	25	1	39	11	--	-	--	-
...PHACUS	--	-	--	-	--	-	--	-	--	-
...TRACHELOMONAS	26	2	--	-	13	4	--	-	*	0
PYRRHOPHYTA (FIRE ALGAE)										
..DINOPHYCEAE										
...DINOKONTAE										
....GLENODINIACEAE										
.....GLENODINIUM	--	-	--	-	--	-	--	-	--	-
...GYMNODINIACEAE										
....GYMNODINIUM	--	-	--	-	--	-	--	-	*	0

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

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

HEART RIVER BASIN

06344600 GREEN RIVER NEAR NEW HRADEC, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	MAR 17,81 1200	APR 6,81 1700	MAY 13,81 1130	JUN 22,81 1235	SEP 2,81 0900
TOTAL CELLS/ML	1600	4600	1000	61000	5500
DIVERSITY: DIVISION	1.2	1.2	1.8	1.1	1.2
..CLASS	1.2	1.2	1.8	1.1	1.2
...ORDER	2.0	1.3	2.4	1.9	1.3
...FAMILY	2.0	1.3	2.6	2.1	1.5
....GENUS	2.0	1.4	3.0	2.3	1.6

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
BACILLARIOPHYTA (DIATOMS)										
..BACILLARIOPHYCEAE										
...BACILLARIALES										
...NITZSCHIACEAE										
....NITZSCHIA	77	5	--	-	130	13	--	-	*	0
...EUPODISCALES										
...COSCINODISCAEAE										
....CYCLOTELLA	920#	59	--	-	--	-	*	0	65	1
....MELOSIRA	--	-	--	-	--	-	*	0	--	-
....STEPHANODISCUS	--	-	170	4	90	9	--	-	--	-
...FRAGILARIALES										
...FRAGILARIAEAE										
....DIATOMA	100	7	--	-	--	-	--	-	--	-
...NAVICULALES										
...GOMPHONEMACEAE										
....GOMPHONEMA	--	-	--	-	--	-	--	-	--	-
...NAVICULACEAE										
....NAVICULA	13	1	33	1	26	3	--	-	110	2
CHLOROPHYTA (GREEN ALGAE)										
..CHLOROPHYCEAE										
...CHLOROCOCCALES										
...CHLOROCOCCACEAE										
....TETRAEDRON	--	-	--	-	--	-	--	-	--	-
...DICTYOSPHAERIAEAE										
....DICTYOSPHAERIUM	--	-	--	-	52	5	1100	2	--	-
...MICRACTINIACEAE										
....MICRACTINIUM	--	-	--	-	--	-	--	-	*	0
...OOCYSTACEAE										
....ANKISTRUDESUS	220	14	600	13	260#	26	1400	2	130	2
....KIRCHNERIELLA	--	-	--	-	--	-	410	1	--	-
....OOCYSTIS	--	-	--	-	--	-	*	0	--	-
....SELENASTRUM	--	-	--	-	13	1	--	-	--	-
....TREUBARIA	--	-	--	-	13	1	--	-	--	-
...PALMELLACEAE										
....SPHAEROCYSTIS	--	-	--	-	--	-	--	-	*	0
...SCENEDESMACEAE										
....ACTINASTRUM	--	-	--	-	--	-	--	-	--	-
....CRUCIGENIA	--	-	--	-	--	-	8300	14	--	-
...SCENEDESMUS	--	-	67	1	--	-	1700	3	520	9
....TETRASTRUM	--	-	--	-	--	-	550	1	--	-
...VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	100	7	67	1	65	6	830	1	65	1
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROOCOCCALES										
...CHROOCOCCACEAE										
....ANACYSTIS	--	-	3400#	75	90	9	21000#	34	--	-
...OSCILLATORIALES										
...OSCILLATORIAEAE										
....OSCILLATORIA	--	-	--	-	--	-	23000#	38	4000#	73
EUGLENOPHYTA (EUGLENOIDS)										
..EUGLENOPHYCEAE										
...EUGLENALES										
...EUGLENACEAE										
....EUGLENA	--	-	33	1	65	6	*	0	170	3
....PHACUS	--	-	--	-	--	-	*	0	110	2
....TRACHELOMONAS	90	6	170	4	210#	21	2100	3	280	5
PYRRHOPHYTA (FIRE ALGAE)										
..DINOPHYCEAE										
...DINOKONTAE										
...GLENODINIACEAE										
....GLENODINIUM	39	2	33	1	--	-	--	-	--	-
...GYMNODINIACEAE										
....GYMNODINIUM	--	-	--	-	--	-	--	-	--	-

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

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

HEART RIVER BASIN

317

06344610 GREEN RIVER TRIBUTARY NEAR NEW HRADEC, ND

LOCATION.--Lat 47°00'25", long 102°59'24", in the SE¼NE¼NE¼, sec.29, T.141 N., R.97 W., Dunn County, Hydrologic Unit 10130201, on left bank upstream from county highway culvert, and 5 mi (8 km) west of New Hradec.

DRAINAGE AREA.--22.4 mi² (58.00 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1978 to September 1981 (discontinued).

GAGE.--Water-stage recorder.

REMARKS.--Records fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,100 ft³/s (87.8 m³/s) Aug. 15, 1981, gage height, 17.42 ft (5.310 m); no flow Feb. 10-13, 1981.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 40.0 ft³/s (1.13 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)
Feb. 17	--	65 1.84	6.58 2.006	Aug. 15	2000	*3,100 87.8	17.42 5.310
June 13	0815	259 7.33	6.39 1.948				

No flow Feb. 10-13.

a - Backwater from ice.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.12	.22	.15	.16	.08	.25	.29	.28	.18	.16	.07	.15
2	.11	.19	.14	.16	.05	.24	.28	.26	.20	.16	.07	.15
3	.12	.19	.14	.15	.05	.22	.26	.24	.19	.12	.25	.15
4	.13	.19	.14	.14	.05	.26	.26	.22	.24	.12	.60	.15
5	.13	.19	.14	.14	.05	.24	.26	.22	.26	.10	1.0	.15
6	.13	.22	.12	.14	.05	.22	.26	.21	.26	.09	.50	.18
7	.13	.23	.12	.13	.05	.19	.26	.20	.24	.08	.24	.18
8	.18	.26	.12	.13	.03	.19	.24	.21	.28	.07	.20	.18
9	.18	.23	.12	.13	.03	.24	.26	.22	.26	.06	.20	.18
10	.14	.20	.12	.13	.00	.20	.26	.22	.24	.05	.16	.18
11	.12	.20	.12	.13	.00	.25	.26	.21	.22	.07	.11	.18
12	.14	.19	.15	.20	.00	.30	.28	.21	1.2	.08	.09	.16
13	.16	.20	.17	.22	.00	.35	.30	.21	100	.08	.08	.16
14	.18	.18	.18	.22	.25	.38	.28	.21	6.7	.11	.08	.16
15	.24	.17	.20	.21	3.0	.50	.28	.20	1.8	.11	502	.16
16	.70	.17	.30	.18	10	.49	.28	.19	.89	.09	263	.18
17	.90	.17	.32	.20	15	.47	.28	.20	.65	.09	6.5	.18
18	.50	.17	.20	.25	8.0	.46	.28	.20	.56	.09	1.0	.18
19	.37	.17	.14	.20	1.0	.44	.26	.19	.42	.09	.68	.18
20	.29	.17	.13	.20	.48	.43	.26	.18	.44	.09	.56	.18
21	.26	.17	.12	.30	.32	.42	.24	.16	.60	.68	.44	.19
22	.36	.17	.12	.25	.46	.40	.26	.19	.46	1.7	.28	.19
23	.60	.17	.11	.20	.49	.39	.26	.18	.34	.77	.22	.20
24	.50	.15	.11	.20	.59	.37	.28	.19	.22	.40	.20	.20
25	.39	.15	.10	.18	.28	.36	.28	.20	.20	.21	.19	.20
26	.30	.18	.10	.15	.22	.35	.28	.20	.19	.19	.18	.22
27	.24	.22	.13	.12	.18	.34	.34	.20	.18	.17	.18	.22
28	.23	.22	.14	.10	.24	.33	.36	.21	.19	.11	.15	.22
29	.22	.22	.15	.10	---	.32	.36	.20	.18	.10	.15	.22
30	.22	.23	.17	.10	---	.31	.34	.18	.17	.09	.15	.22
31	.22	---	.17	.10	---	.30	---	.18	---	.08	.15	---
TOTAL	8.51	5.79	4.64	5.22	40.95	10.21	8.39	6.37	117.96	6.41	779.68	5.45
MEAN	.27	.19	.15	.17	1.46	.33	.28	.21	3.93	.21	25.2	.18
MAX	.90	.26	.32	.30	15	.50	.36	.28	100	1.7	502	.22
MIN	.11	.15	.10	.10	.00	.19	.24	.16	.17	.05	.07	.15
AC-FT	17	11	9.2	10	81	20	17	13	234	13	1550	11

CAL YR 1980 TOTAL 117.30 MEAN .32 MAX 30 MIN .06 AC-FT 233
WTR YR 1981 TOTAL 999.58 MEAN 2.74 MAX 502 MIN .00 AC-FT 1980

06344610 GREEN RIVER TRIBUTARY NEAR NEW HRADEC, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1978 to September 1981 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCTI- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	HARD- NESS (MG/L AS CACU3) (00900)	HARD- NESS NONCAR- BONATE (MG/L AS CACU3) (95902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)
UCT								
08...	1135	.13	2300	--	13.0	--	--	--
08...	1200	.17	2300	--	13.0	--	--	--
NOV								
04...	1215	.18	2300	7.5	5.0	190	.00	34
DEC								
02...	1515	.13	3000	--	.0	--	--	--
JAN								
02...	1005	.16	2100	--	.0	--	--	--
FEB								
19...	1450	1.3	1300	--	.0	--	--	--
23...	1635	.41	1175	--	.0	--	--	--
26...	1600	.32	1200	--	.0	--	--	--
MAR								
10...	1415	.20	1425	--	.0	--	--	--
25...	1145	.34	1700	--	6.0	--	--	--
APR								
03...	0910	.26	1750	--	8.0	--	--	--
10...	1005	.25	2000	--	7.5	--	--	--
24...	1045	.29	2100	--	9.0	--	--	--
MAY								
26...	1210	.20	2600	--	13.5	--	--	--
JUN								
24...	1500	.24	1600	--	22.0	--	--	--
JUL								
13...	1515	.08	2500	--	22.5	--	--	--
23...	1015	.02	1975	--	21.0	--	--	--
AUG								
06...	1435	.49	1550	--	23.0	--	--	--
16...	1335	E52	240	--	20.0	--	--	--
SEP								
10...	0935	.18	2200	--	17.0	--	--	--

DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINEITY LAB (MG/L AS CACU3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)
UCT									
08...	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--
NOV									
04...	25	470	84	15	7.3	620	540	3.1	.4

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
UCT								
08...	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--
NOV								
04...	1460	2.0	.71	970	200	20	10	650

E - Estimated.

HEART RIVER BASIN

319

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 1309.

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) National Geodetic Vertical Datum of 1929. 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 good except those for the winter period, which are fair. Flow regulated by Edward Arthur Patterson Lake (station 06343500) 59 mi (95 km) upstream.

AVERAGE DISCHARGE.--57 years, 103 ft³/s (2.92 m³/s), 74,620 acre-ft/yr (91.9 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, 1,920 ft³/s (54.3 m³/s) Aug. 17, gage height, 12.44 ft (3.792 m); minimum daily, 2.4 ft³/s (0.068 m³/s) May 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.5	14	8.5	9.5	8.5	40	12	7.8	6.0	3.7	8.9	15
2	4.9	15	8.0	9.5	8.0	40	12	6.8	5.1	5.4	9.9	14
3	4.9	15	8.0	9.0	8.0	40	11	6.6	6.1	6.2	59	13
4	4.7	16	8.0	9.0	8.0	35	10	5.9	4.7	5.7	21	12
5	4.7	15	8.0	8.5	8.0	30	10	5.5	4.3	5.6	55	11
6	4.9	15	7.5	8.5	8.0	25	9.9	4.8	4.1	5.1	41	11
7	4.9	15	7.0	8.5	7.5	35	9.2	5.3	4.5	4.6	84	194
8	5.1	15	6.6	8.5	7.5	30	9.7	6.0	5.6	3.8	52	96
9	5.1	15	6.5	8.5	7.0	20	9.7	5.6	4.9	3.8	32	46
10	4.9	15	6.4	8.5	7.0	20	9.4	4.8	5.3	3.8	21	30
11	4.9	15	6.5	8.5	7.0	25	8.9	4.5	5.1	4.1	14	21
12	4.9	15	7.0	8.5	7.0	25	9.7	4.6	5.3	5.7	10	17
13	4.9	14	8.0	9.0	7.0	20	9.7	4.5	7.8	5.9	8.9	15
14	4.9	14	10	9.0	7.5	20	9.4	4.5	8.0	5.6	6.4	14
15	6.9	13	12	9.0	8.0	20	10	5.2	20	4.6	4.3	12
16	12	14	15	9.0	10	19	11	4.7	38	4.4	223	11
17	13	13	18	9.0	15	17	9.9	4.5	41	4.1	1450	11
18	21	13	18	9.0	20	17	8.2	4.1	33	3.6	874	11
19	22	13	15	9.0	30	16	7.3	3.5	21	4.1	318	11
20	18	13	10	9.0	40	15	6.4	2.9	15	3.5	348	9.9
21	16	12	8.0	9.0	45	15	6.0	2.4	13	3.1	173	9.6
22	15	12	7.0	9.0	50	15	6.9	4.6	11	3.6	108	9.3
23	15	12	7.0	9.0	60	14	8.0	6.0	10	4.7	73	9.2
24	15	12	6.0	9.0	55	13	8.0	6.9	11	74	57	9.0
25	18	12	6.0	9.0	50	13	7.8	6.6	11	43	47	9.4
26	17	12	6.0	9.0	50	12	7.8	7.6	9.5	28	41	12
27	15	11	6.5	9.0	50	11	8.0	11	7.5	20	36	24
28	14	11	8.0	9.0	45	11	8.2	10	6.9	16	32	38
29	13	10	8.0	9.0	---	11	7.8	8.7	5.6	12	28	25
30	13	9.0	9.0	9.0	---	11	8.0	7.3	4.5	11	21	19
31	14	---	10	8.5	---	11	---	7.3	---	9.9	17	---
TOTAL	326.1	400.0	275.5	275.5	634.0	646	269.9	180.5	334.8	318.6	4273.4	739.4
MEAN	10.5	13.3	8.89	8.89	22.6	20.8	9.00	5.82	11.2	10.3	138	24.6
MAX	22	16	18	9.5	60	40	12	11	41	74	1450	194
MIN	4.5	9.0	6.0	8.5	7.0	11	6.0	2.4	4.1	3.1	4.3	9.0
AC-FT	647	793	546	546	1260	1280	535	358	664	632	8480	1470
CAL YR 1980	TOTAL	6636.20	MEAN	18.1	MAX	430	MIN	.10	AC-FT	13160		
WTR YR 1981	TOTAL	8673.70	MEAN	23.8	MAX	1450	MIN	2.4	AC-FT	17200		

HEART RIVER BASIN

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, Hydrologic Unit 10130202, 10 mi (16 km) upstream from Heart Butte Creek, and 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 National Geodetic Vertical Datum of 1929, levels by Water and Power Resources Service.

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. Monthend elevations interpolated from once-daily readings. Extremes are those observed.

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, 66,500 acre-ft (82.0 hm³) Sept. 11-14, elevation, 2,061.69 ft (628.403 m); minimum, 57,800 acre-ft (71.3 hm³) Aug. 3, elevation, 2,058.86 ft (627.541 m).

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30-----	2,060.10	61,500	--
Oct. 31-----	2,060.23	61,900	+400
Nov. 30-----	2,060.39	62,400	+500
Dec. 31-----	2,060.02	61,300	-1,100
CAL YR 1980-----	--	--	-500
Jan. 31-----	2,060.12	61,600	+300
Feb. 28-----	2,060.48	62,700	+1,100
Mar. 31-----	2,061.03	64,400	+1,700
Apr. 30-----	2,061.06	64,500	+100
May 31-----	2,060.35	62,300	-2,200
June 30-----	2,060.10	61,500	-800
July 31-----	2,058.90	57,900	-3,600
Aug. 31-----	2,061.65	66,400	+8,500
Sept. 30-----	2,061.63	66,300	-100
WTR YR 1981-----	--	--	+4,800

HEART RIVER BASIN

321

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.

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

GAGE.--Water-stage recorder. Datum of gage is 1,802.83 ft (549.503 m) National Geodetic Vertical Datum of 1929 (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 poor. Flow regulated by Lake Tschida (06346000) 45 mi (72 km) upstream since 1949.

AVERAGE DISCHARGE.--35 years, 212 ft³/s (6.004 m³/s), 153,600 acre-ft/yr (189 hm³/yr); median of yearly mean discharges, 170 ft³/s (4.81 m³/s), 123,200 acre-ft/yr (152 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, 354 ft³/s (10.0 m³/s) July 19, gage height, 4.25 ft (1.295 m); minimum daily, 11 ft³/s (0.31 m³/s) Jan. 30-31, Feb. 1-10, Apr. 22, 25-26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	36	17	23	11	42	25	17	22	29	23	45
2	16	33	15	22	11	40	24	18	23	25	30	35
3	16	33	16	21	11	38	22	18	21	22	64	24
4	16	30	24	20	11	36	21	18	21	18	64	22
5	16	28	25	19	11	33	21	17	22	15	73	22
6	18	28	28	18	11	34	21	17	21	14	152	31
7	17	27	31	16	11	35	20	20	19	12	320	30
8	15	28	33	15	11	32	19	32	33	12	306	28
9	15	27	33	14	11	30	18	71	34	20	195	21
10	14	27	31	14	11	30	17	61	29	28	137	16
11	14	27	32	14	13	32	17	79	28	25	106	15
12	24	27	33	13	14	35	17	83	34	116	88	14
13	25	28	34	12	14	60	16	74	39	126	63	13
14	27	29	32	12	15	100	16	38	57	87	41	13
15	29	29	32	12	18	110	15	23	41	82	34	12
16	40	28	32	12	20	90	15	20	30	67	50	12
17	76	27	32	12	21	76	14	24	32	42	48	12
18	89	26	32	12	20	59	14	25	35	54	46	12
19	62	25	30	12	40	50	13	23	44	237	44	12
20	47	25	28	12	55	42	12	23	47	113	38	13
21	41	24	26	13	50	36	12	21	59	80	36	12
22	42	23	25	14	55	33	11	23	64	62	114	12
23	44	23	25	17	60	33	12	28	49	97	89	12
24	46	23	24	15	60	34	12	39	42	79	69	13
25	50	22	23	14	55	35	11	58	37	68	66	16
26	53	21	23	13	50	38	11	62	34	83	63	16
27	58	20	23	12	50	33	12	59	33	73	62	14
28	56	19	24	12	45	31	15	56	34	65	56	14
29	49	18	24	12	---	29	17	39	40	37	50	14
30	43	17	24	11	---	29	18	35	34	18	45	14
31	39	---	23	11	---	27	---	28	---	13	45	---
TOTAL	1114	778	834	449	765	1362	488	1149	1058	1819	2617	539
MEAN	35.9	25.9	26.9	14.5	27.3	43.9	16.3	37.1	35.3	58.7	84.4	18.0
MAX	89	36	34	23	60	110	25	83	64	237	320	45
MIN	14	17	15	11	11	27	11	17	19	12	23	12
AC-FT	2210	1540	1650	891	1520	2700	968	2280	2100	3610	5190	1070
CAL YR 1980	TOTAL	17736.5	MEAN	48.5	MAX	774	MIN	9.0	AC-FT	35180		
WTR YR 1981	TOTAL	12972.0	MEAN	35.5	MAX	320	MIN	11	AC-FT	25730		

HEART RIVER BASIN

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) National Geodetic Vertical Datum of 1929; gage readings have been reduced to elevations NGVD.

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, 3,490 acre-ft (4.30 hm³) Mar. 13, elevation, 1,940.6 ft (591.49 m); minimum, 3,170 acre-ft (3.91 hm³) Sept. 30, elevation, 1,939.48 ft (591.154 m).

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30-----	1,939.98	3,310	--
Oct. 31-----	*1,940.05	3,340	+30
Nov. 30-----	*1,940.04	3,330	-10
Dec. 31-----	*1,940.00	3,320	-10
CAL YR 1980-----	--	--	+400
Jan. 31-----	*1,940.04	3,330	+10
Feb. 28-----	*1,940.04	3,330	0
Mar. 31-----	*1,940.00	3,320	-10
Apr. 30-----	1,939.93	3,300	-20
May 31-----	1,939.69	3,230	-70
June 30-----	1,939.66	3,220	-10
July 31-----	1,939.58	3,200	-20
Aug. 31-----	1,939.77	3,260	-60
Sept. 30-----	1,939.48	3,170	-90
WTR YR 1981-----	--	--	-140

* Estimated

HEART RIVER BASIN

323

06349000 HEART RIVER NEAR MANDAN, ND

LOCATION.--Lat 46°50'02", long 100°58'27", in NW¼ 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.

DRAINAGE AREA.--3,310 mi² (8,570 km²), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April to September 1924, March 1928 to June 1933, August 1937 to current year. Published as "at Sunny" 1924, 1928-33.

REVISED RECORDS.--WSP 926: 1938. WSP 1209: Drainage area. WSP 1239: 1924, 1928-29, 1948.

GAGE.--Water-stage recorder. Datum of gage is 1,638.70 ft (499.476 m) National Geodetic Vertical Datum of 1929, and 1,623.03 ft (494.700 m) above Burlington Northern Railway datum. See WSP 1729 or 1917 for history of changes prior to June 30, 1958.

REMARKS.--Records good except those for winter periods, which are fair. Flow regulated by Lake Tschida (station 06346000) 105 mi (169 km) upstream since 1949. Some diversions above station.

AVERAGE DISCHARGE.--48 years (1928-32, 1937-81), 254 ft³/s (7.193 m³/s), 184,000 acre-ft/yr (227 hm³/yr); median of yearly mean discharges, 188 ft³/s (5.32 m³/s), 136,000 acre-ft/yr (168 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, 544 ft³/s (15.4 m³/s) Mar. 16, gage height, 4.08 ft (1.244 m); minimum daily discharge, 11 ft³/s (0.31 m³/s) Feb. 11-15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	75	17	22	17	79	51	20	31	30	37	39
2	34	52	14	23	16	120	49	18	31	30	40	40
3	32	49	12	24	14	60	48	18	31	30	42	40
4	31	46	12	26	13	52	43	17	32	28	36	38
5	31	49	12	27	13	54	41	16	30	28	60	33
6	31	43	13	26	13	59	40	15	28	26	71	37
7	31	39	13	25	13	63	38	13	27	26	74	37
8	31	38	13	22	12	63	36	12	27	25	119	37
9	31	37	13	20	12	63	35	13	29	35	320	37
10	31	37	14	19	12	66	34	12	29	50	300	36
11	30	37	14	18	11	68	34	12	31	60	216	36
12	30	36	15	18	11	74	33	28	36	65	145	31
13	31	36	13	18	11	80	32	31	36	70	107	30
14	30	34	14	18	11	257	31	40	32	80	82	30
15	34	32	14	18	11	341	29	40	39	100	69	29
16	55	29	14	18	13	365	29	34	44	90	56	27
17	102	27	15	17	14	116	28	25	50	80	44	26
18	116	25	18	17	19	81	27	20	40	70	45	25
19	96	22	22	18	21	65	28	15	33	75	47	25
20	106	20	31	19	25	54	26	14	35	110	46	24
21	90	24	31	18	28	51	25	14	42	250	41	24
22	76	24	30	17	31	47	25	13	49	175	36	23
23	71	24	27	17	36	46	24	17	47	90	33	23
24	70	24	22	17	40	49	23	17	56	80	54	23
25	70	22	18	17	45	55	23	15	52	70	90	23
26	70	20	15	17	49	60	22	18	40	60	67	25
27	70	20	16	16	57	65	24	24	33	55	58	27
28	70	21	18	16	63	65	24	33	32	55	51	26
29	78	15	21	16	---	62	23	37	31	60	52	25
30	82	14	22	16	---	59	21	38	30	51	50	24
31	81	---	23	17	---	53	---	35	---	47	43	---
TOTAL	1777	971	546	597	631	2792	946	674	1083	2101	2531	900
MEAN	57.3	32.4	17.6	19.3	22.5	90.1	31.5	21.7	36.1	67.8	81.6	30.0
MAX	116	75	31	27	63	365	51	40	56	250	320	40
MIN	30	14	12	16	11	46	21	12	27	25	33	23
AC-FT	3520	1930	1080	1180	1250	5540	1880	1340	2150	4170	5020	1790
CAL YR 1980	TOTAL	21990.0	MEAN	60.1	MAX	1210	MIN	8.0	AC-FT	43620		
WTR YR 1981	TOTAL	15549.0	MEAN	42.6	MAX	365	MIN	11	AC-FT	30840		

HEART RIVER BASIN

06349000 HEART RIVER NEAR MANDAN, ND--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1946-50, 1971-76, 1978 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1978 to current year.

WATER TEMPERATURES: January 1978 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,300 micromhos Feb. 3, 1980; minimum daily, 390 micromhos Mar. 28, 1978.

WATER TEMPERATURES: Maximum daily, 33.0°C July 22, 1979; 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,200 micromhos Dec. 6-10, Feb. 11, 12; minimum daily, 870 micromhos Mar. 20.

WATER TEMPERATURES: Maximum daily, 32.5°C July 7, Aug. 20; minimum daily, 0.0°C on many days during winter months.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (000061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (000095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, (PER- CENT SATUR- ATION) (00301)	COLI- FORM, FECAL, UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOC- CI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
OCT											
24...	1450	60	1380	--	--	4.0	--	--	--	--	--
NOV											
21...	1230	18	1550	8.5	11.5	.0	6.5	13.0	89	K7	K40
DEC											
22...	1110	31	2000	--	--	.0	--	--	--	--	--
JAN											
26...	1315	17	1770	8.0	1.0	.0	1.5	--	--	K1	K5
MAR											
02...	1610	75	1060	--	2.0	.5	--	--	--	--	--
27...	0930	64	1140	8.5	6.5	4.5	8.7	11.5	89	--	K22
APR											
30...	0910	21	1520	--	14.0	10.0	--	--	--	--	--
MAY											
22...	1230	14	1720	8.5	16.5	17.5	8.5	9.3	98	110	500
JUN											
30...	1245	28	1420	--	31.0	26.0	--	--	--	--	--
JUL											
23...	1435	90	950	8.5	28.0	29.0	15	7.9	102	K70	160
AUG											
25...	1200	90	1340	--	--	22.0	--	--	--	--	--

DATE	HARD- NESS (MG/L AS CACU3) (00900)	HARD- NESS NONCAR- BONATE (MG/L AS CACU3) (95902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L CACU3) (90410)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2) (00405)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)
NOV											
21...	335	.00	65	42	230	59	5.6	8.3	400	1.8	350
JAN											
26...	418	.00	85	50	260	57	5.7	7.2	470	7.4	460
MAR											
27...	230	.00	46	28	180	62	5.3	7.1	290	1.5	300
MAY											
22...	343	.00	55	50	270	62	6.5	10	390	2.6	520
JUL											
23...	218	8.0	41	28	140	57	4.2	8.8	210	1.5	300

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIU2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)
NOV											
21...	15	.4	4.8	1020	956	1.4	49.6	--	--	.00	.00
JAN											
26...	13	.4	5.9	1190	1160	1.6	53.0	--	--	.12	.06
MAR											
27...	10	.4	3.1	752	749	1.0	130	--	--	.01	.00
MAY											
22...	21	.4	3.1	1170	1160	1.6	44.2	.00	.000	.00	.00
JUL											
23...	7.6	.3	4.8	666	657	.91	162	--	--	.09	.09

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

HEART RIVER BASIN

06349000 HEART RIVER NEAR MANDAN, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN, ORGANIC DIS- SOLVED (MG/L AS N) (00607)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)	NITRO- GEN,AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N) (00623)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	NITRO- GEN DIS- SOLVED (MG/L AS N) (00602)	NITRO- GEN, TOTAL (MG/L AS NO3) (71887)
NOV 21...	.000	.010	.01	.97	.95	.97	.01	.96	.97	.96	4.3
JAN 26...	.080	.060	.08	1.1	.40	1.20	.74	.46	1.3	.52	5.8
MAR 27...	.050	.020	.03	.95	.57	1.00	.41	.59	1.0	.59	4.5
MAY 22...	.070	.060	.08	1.0	.61	1.10	.43	.67	1.1	.67	4.9
JUL 23...	.060	.060	.08	.94	.59	1.00	.35	.65	1.1	.74	4.8

DATE	PHOS- PHURUS, TOTAL (MG/L AS P) (00665)	PHOS- PHURUS TOTAL (MG/L AS PU4) (71886)	PHOS- PHURUS, DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHURUS, ORTHU, TOTAL (MG/L AS P) (70507)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC SUS- PENDE TOTAL (UG/L AS AS) (01001)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BARIUM, SUS- PENDE RECOV- ERABLE (UG/L AS BA) (01006)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)
NOV 21...	.050	.15	.010	--	--	--	--	--	--	--
JAN 26...	.040	.12	.030	--	2	1	1	100	90	9
MAR 27...	.040	.12	.010	--	2	0	2	100	40	60
MAY 22...	.030	.09	.010	.000	--	--	--	--	--	--
JUL 23...	.050	.15	<.010	--	1	0	2	100	40	60

DATE	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CU) (01027)	CADMIUM SUS- PENDE RECOV- ERABLE (UG/L AS CU) (01026)	CADMIUM DIS- SOLVED (UG/L AS CU) (01025)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, SUS- PENDE RECOV- ERABLE (UG/L AS CR) (01031)	CHRO- MIUM, SUS- PENDE RECOV- ERABLE (UG/L AS CR) (01030)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO) (01037)	COBALT, SUS- PENDE RECOV- ERABLE (UG/L AS CO) (01036)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)
JAN 26...	0	--	<1	0	0	0	1	1	0	4
MAR 27...	1	0	1	10	10	0	1	--	<3	6
MAY 22...	--	--	--	--	--	--	--	--	--	--
JUL 23...	1	--	<1	10	0	10	0	0	3	10

DATE	CUPPER, SUS- PENDE RECOV- ERABLE (UG/L AS CU) (01041)	CUPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	IRON, SUS- PENDE RECOV- ERABLE (UG/L AS FE) (01044)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	LEAD, SUS- PENDE RECOV- ERABLE (UG/L AS PB) (01050)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, SUS- PENDE RECOV- ERABLE (UG/L AS MN) (01054)
JAN 26...	3	1	190	170	20	5	1	4	30	10
MAR 27...	2	4	710	670	40	6	5	1	60	50
MAY 22...	--	--	--	--	--	--	--	--	--	--
JUL 23...	9	1	700	--	<10	3	1	2	100	100

HEART RIVER BASIN

06349000 HEART RIVER NEAR MANDAN, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	MERCURY SUS- PENDE RECov- ERABLE (UG/L AS HG) (71895)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	NICKEL, SUS- PENDE RECov- ERABLE (UG/L AS NI) (01066)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, TOTAL (UG/L AS SE) (01147)	SELE- NIUM, SUS- PENDE TOTAL (UG/L AS SE) (01146)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)
NOV 21...	--	--	--	--	--	--	--	--	--	--
JAN 26...	20	.0	.0	.0	4	4	0	0	0	0
MAR 27...	10	.2	.2	.0	5	0	5	0	0	0
MAY 22...	--	--	--	--	--	--	--	--	--	--
JUL 23...	4	.2	.1	.1	3	1	2	0	0	0

DATE	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG) (01077)	SILVER, SUS- PENDE RECov- ERABLE (UG/L AS AG) (01076)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, SUS- PENDE RECov- ERABLE (UG/L AS ZN) (01091)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)
NOV 21...	--	--	--	--	--	--	8.1	--	--
JAN 26...	0	0	0	30	20	10	--	--	--
MAR 27...	0	0	0	60	30	30	--	--	--
MAY 22...	--	--	--	--	--	--	8.7	--	--
JUL 23...	0	0	0	20	9	11	--	7.8	.2

DATE	PHYTO- PLANK- TON, TOTAL (CELLS PER ML) (60050)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV 21...	2300	20	.97	91
JAN 26...	--	14	.62	61
MAR 27...	2000	20	3.5	77
MAY 22...	9200	17	.64	84
JUL 23...	50000	34	8.3	87

HEART RIVER BASIN

327

06349000 HEART RIVER NEAR MANDAN, ND--Continued

SPECIFIC CONDUCTANCE (MICROMHUS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
UNCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1500	1380	1800	1500	1700	1050	1210	1550	1400	1500	1450	---
2	1520	1350	2000	1600	1800	1080	1200	1640	1450	1470	1550	1280
3	1600	1460	1950	1600	1900	1080	1200	1700	1460	1500	1350	1330
4	1610	1480	2100	1650	1980	1060	1250	1700	1430	1500	1300	1390
5	1620	1480	2150	1650	1950	1110	1300	1680	1440	1560	1290	1400
6	1640	1440	2200	1620	1950	1100	1350	1730	1520	1660	1400	1350
7	1640	1400	2200	1550	2100	1120	1360	1780	1500	1650	1440	1300
8	1640	1430	2200	1530	2150	1120	1350	1790	1500	1690	---	1320
9	1630	1450	2200	1500	2100	1110	1390	1790	1590	1730	1340	1340
10	1630	1450	2200	1600	2150	1150	1400	1800	1500	1760	1200	1300
11	1630	1400	2150	1770	2200	1160	1410	1800	1500	1820	950	1400
12	1620	1400	2150	2000	2200	950	1400	---	1440	1750	1000	1480
13	1620	1380	2160	1800	2150	1030	1400	1500	1400	1700	1020	1440
14	1630	1340	---	1950	2000	890	1450	1500	1400	1600	1090	1500
15	1630	1700	2150	1800	---	---	1500	1520	1440	1500	1200	1500
16	1360	1500	2180	1900	---	970	1500	1450	1430	1400	1180	1500
17	1280	1580	2100	1900	1510	1060	1550	1420	1400	1280	1270	1510
18	1290	1600	2040	1950	1520	1080	1550	1500	1390	1100	1300	1540
19	1260	1640	2050	1920	1480	900	1560	1550	1400	1020	1330	1520
20	1260	1550	---	2000	1330	870	1590	1670	1360	1100	1340	1530
21	1260	1550	1900	1900	1200	920	1500	1600	1340	1120	1340	1540
22	1300	1600	1890	2000	1160	950	1400	1670	1430	930	1300	1500
23	1330	1500	1800	1850	1180	1000	1520	1700	1510	1000	1400	1540
24	---	1500	1830	1900	1000	1000	1530	1600	1340	1030	1420	1540
25	1380	1620	1780	1850	970	1040	1570	1600	1380	1100	1350	1510
26	1360	1700	1700	1780	1040	1100	1600	1610	1410	1220	1300	1500
27	1350	1620	1800	1650	1080	1100	1480	1610	1400	1550	1250	1520
28	1300	1700	1700	1670	1080	1120	1500	1400	1440	1630	1160	1500
29	1290	1720	1600	1700	---	1130	1540	1400	1450	1560	1080	1450
30	1350	1600	1350	1800	---	1150	1500	1390	1480	1500	1140	1500
31	1400	---	1400	1800	---	1180	---	1380	---	1600	1300	---
MEAN	1460	1520	1960	1760	1650	1050	1440	1600	1440	1440	1270	1450

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
UNCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16.0	7.0	.0	.0	.0	1.0	14.0	20.5	24.0	30.0	30.0	20.5
2	12.0	8.0	.0	.0	.0	1.0	13.0	23.0	25.0	28.5	26.5	23.0
3	16.0	9.0	.0	.0	.0	1.0	13.0	19.0	23.5	29.0	30.5	22.0
4	20.0	7.0	.5	.0	.0	1.0	12.0	22.0	26.0	30.0	30.0	21.5
5	19.0	8.0	.0	.0	.0	1.0	13.0	22.0	26.0	29.0	30.0	18.0
6	19.5	9.5	.0	.0	.0	1.0	11.0	19.0	17.0	30.0	26.0	20.0
7	19.0	9.5	.0	.0	.0	1.0	13.0	12.5	23.0	32.5	28.0	22.0
8	19.5	7.0	.0	.0	.0	1.0	12.0	15.0	24.0	25.0	---	23.0
9	16.0	6.0	.0	.0	.0	1.0	15.0	17.0	20.0	28.0	26.0	25.0
10	11.0	5.0	.0	.0	.0	1.0	15.0	16.0	25.0	28.0	26.0	26.0
11	13.0	5.0	.0	.0	.0	1.0	8.0	15.0	21.0	27.0	28.0	24.0
12	11.0	4.0	.0	.0	.0	1.0	15.0	---	18.5	28.0	30.0	22.0
13	12.0	3.0	.0	.0	.0	1.0	14.0	19.0	21.0	24.5	29.0	17.0
14	10.0	1.5	---	.0	.0	1.0	16.0	19.0	20.0	24.0	30.0	17.0
15	10.0	.5	.0	.0	---	---	19.0	18.5	17.5	28.5	22.5	19.0
16	5.0	.5	.0	.0	---	2.0	18.0	16.0	25.0	31.0	26.0	20.0
17	4.0	.5	.0	.0	1.0	5.0	18.0	17.0	21.0	29.5	29.0	20.0
18	7.0	.5	.0	.0	1.0	6.0	18.0	23.0	22.0	24.0	29.0	21.0
19	11.0	.5	.0	.0	1.0	8.0	14.0	23.0	22.0	21.0	31.0	21.0
20	10.0	.5	---	.0	1.0	5.0	12.0	23.0	22.0	28.0	32.5	20.0
21	8.5	.5	.0	.0	1.0	7.0	17.0	23.0	22.0	29.0	32.0	19.5
22	7.0	.5	.0	.0	1.0	9.0	17.0	19.0	27.0	30.0	25.0	22.0
23	5.0	.5	.0	.0	1.0	11.0	20.0	10.0	23.0	30.0	22.0	21.5
24	---	.5	.0	.0	1.0	14.0	22.0	10.0	25.0	24.0	26.0	15.0
25	5.0	.0	.0	.0	1.0	11.0	20.0	16.0	26.0	23.0	25.0	17.0
26	5.0	.0	.0	.0	1.0	11.0	21.0	17.5	27.0	22.5	26.0	15.0
27	4.0	.0	.0	.0	1.0	10.0	13.0	18.0	28.0	25.0	27.0	11.0
28	5.0	.0	.0	.0	1.0	8.0	17.0	25.5	22.5	18.0	26.0	17.0
29	6.0	.5	.0	.0	---	13.0	17.0	25.0	26.0	29.0	27.0	16.0
30	6.0	.0	.0	.0	---	12.0	19.0	26.0	29.0	28.5	20.5	15.0
31	7.0	---	.0	.0	---	8.0	---	24.0	---	30.5	18.0	---
MEAN	10.5	3.0	.0	.0	.5	5.0	15.5	19.0	23.5	27.5	27.0	19.5

HEART RIVER BASIN

06349000 HEART RIVER NEAR MANDAN, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO JULY 1981

DATE TIME	NOV 21,80 1230	MAR 27,81 0930	MAY 22,81 1230	JUL 23,81 1435				
TOTAL CELLS/ML	2300	2000	9200	50000				
DIVERSITY: DIVISION	2.0	1.4	1.3	1.6				
..CLASS	2.0	1.4	1.3	1.6				
...ORDER	2.5	2.1	1.5	2.5				
...FAMILY	2.8	2.3	2.2	2.7				
...GENUS	3.1	2.8	2.7	3.0				
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
BACILLARIOPHYTA (DIATOMS)								
.BACILLARIOPHYCEAE								
..ACHNANTHALES								
...ACHNANTHACEAE								
....ACHNANTHES	--	-	13	1	--	-	--	-
....COCCUNEIS	--	-	13	1	--	-	--	-
..BACILLARIALES								
...NITZSCHIAEAE								
....HANTZSCHIA	--	-	--	-	--	-	*	0
....NITZSCHIA	130	6	13	1	200	2	6700	13
..EUPODISCALES								
...COSCINODISCAEAE								
....CYCLOTELLA	450#	20	880#	43	250	3	4700	9
....MELUSIRA	--	-	280	14	--	-	7200	14
..FRAGILARIALES								
...FRAGILARIAEAE								
....DIATOMA	--	-	77	4	--	-	--	-
....SYNEDRA	14	1	13	1	--	-	--	-
..NAVICULALES								
...NAVICULACEAE								
....GYROSIGMA	--	-	13	1	--	-	--	-
....NAVICULA	14	1	26	1	--	-	750	1
CHLOROPHYTA (GREEN ALGAE)								
.CHLOROPHYCEAE								
..CHLOROCOCCALES								
...CHLOROCOCCACEAE								
....SCHROEDERIA	--	-	--	-	--	-	*	0
...DICTYOSPHAERIAEAE								
....DICTYOSPHAERIUM	58	3	--	-	400	4	--	-
...MICRACTINIACEAE								
....MICRACTINIUM	29	1	130	6	300	3	--	-
...UOCYSTACEAE								
....ANKISTRODESMUS	72	3	210	10	2300#	25	4500	9
....CHODATELLA	14	1	--	-	50	1	*	0
....UOCYSTIS	--	-	--	-	--	-	750	1
...SELENASTRUM	72	3	--	-	100	1	--	-
...TREUBARIA	14	1	--	-	--	-	--	-
...SCENEDESMACEAE								
....CRUCIGENIA	120	5	--	-	--	-	--	-
...SCENEDESMUS	58	3	26	1	600	7	3500	7
...TETRASTRUM	--	-	--	-	200	2	--	-
...VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	160	7	150	8	300	3	750	1
CRYPTOPHYTA (CRYPTOMONADS)								
.CRYPTOPHYCEAE								
...CRYPTOMONADALES								
...CRYPTUCHRYSIDACEAE								
....CHRUOMONAS	14	1	--	-	--	-	*	0
...CRYPTOMONADACEAE								
....CRYPTOMONAS	14	1	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
.CYANOPHYCEAE								
...CHROOCOCCALES								
...CHROOCOCCACEAE								
....AGMENELLUM	--	-	--	-	800	9	--	-
....ANACYSTIS	750#	33	64	3	3600#	39	13000#	25
...USCILLATORIALES								
...USCILLATORIAEAE								
....USCILLATORIA	--	-	--	-	--	-	7700#	15
EUGLENOPHYTA (EUGLENOIDS)								
.EUGLENOPHYCEAE								
...EUGLENALES								
...EUGLENACEAE								
....EUGLENA	43	2	13	1	--	-	--	-
....TRACHELUMONAS	240	11	90	4	100	1	--	-
PYRRHOPHYTA (FIRE ALGAE)								
.DINOPHYCEAE								
...DINOKUNTAE								
...GLENODINIACEAE								
....GLENODINIUM	--	-	26	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

329

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, 6 mi (10 km) southeast of Mandan, and at mile 1,309 (2,106 km).

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) National Geodetic Vertical Datum of 1929 (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 (FEET ABOVE DATUM), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22.41	22.66	22.45	26.18	26.62	25.49	21.05	21.40	22.74	23.70	23.54	22.47
2	22.39	22.50	22.75	26.00	26.05	24.95	21.06	21.37	22.97	23.21	23.17	22.58
3	22.29	22.95	23.83	25.75	25.89	24.47	21.08	21.47	22.95	23.84	23.33	22.57
4	22.13	22.75	23.25	25.22	26.26	24.15	21.06	21.47	23.10	23.90	23.37	22.62
5	22.23	22.81	22.66	25.15	26.63	23.84	21.01	21.32	22.96	23.46	23.37	22.55
6	22.28	22.76	22.80	25.76	26.92	23.73	21.11	21.13	22.97	23.49	23.73	22.70
7	22.36	22.68	22.90	26.34	26.91	23.74	21.14	21.21	23.01	24.03	23.72	22.56
8	22.41	22.67	22.61	26.08	26.40	23.71	20.91	21.06	22.95	24.09	23.60	21.97
9	22.36	22.68	22.80	26.20	26.05	23.37	21.00	21.05	23.12	24.02	23.39	21.95
10	22.40	22.74	22.70	26.34	26.70	23.61	20.93	20.91	22.99	24.06	22.97	21.85
11	22.37	22.83	22.95	26.31	26.97	23.64	21.03	20.83	23.16	24.10	23.07	22.02
12	22.34	22.78	23.17	26.54	27.24	23.88	21.01	20.98	23.35	23.66	22.95	21.82
13	22.40	22.77	22.78	26.76	27.44	23.91	20.91	20.98	23.53	23.59	23.05	21.76
14	22.70	22.89	22.77	27.01	27.36	23.86	20.86	20.91	23.58	24.09	23.00	22.03
15	22.61	23.04	22.71	27.03	27.69	23.93	20.87	21.01	23.14	24.11	22.92	21.63
16	22.68	23.11	22.68	26.99	27.44	23.80	20.90	20.76	23.29	24.12	23.04	21.85
17	22.74	23.11	22.73	27.03	27.43	23.35	20.88	20.92	23.11	24.15	23.14	21.69
18	22.58	23.27	22.68	27.18	27.63	23.15	20.87	20.94	23.39	24.15	22.73	21.68
19	22.59	23.10	23.21	27.21	27.60	22.77	20.90	20.92	23.28	24.36	22.77	21.72
20	22.38	23.27	25.66	27.41	27.32	22.48	20.79	20.94	23.28	24.04	22.96	21.68
21	22.32	22.87	26.12	27.30	27.46	22.46	20.97	20.94	23.23	24.23	22.85	21.66
22	22.54	23.22	25.80	27.14	27.32	22.29	21.00	20.88	22.78	24.22	22.69	21.77
23	22.84	22.90	25.95	26.93	27.40	21.77	20.90	20.91	23.04	24.24	22.50	21.78
24	22.83	23.03	---	26.86	27.49	21.55	20.96	20.82	23.23	24.14	22.50	22.07
25	22.83	23.10	25.24	26.85	27.37	21.46	20.94	20.97	23.08	24.16	22.60	22.25
26	22.71	23.10	25.16	26.58	27.43	21.18	20.93	20.86	23.15	23.97	22.59	22.24
27	22.53	23.18	25.85	26.73	26.84	21.22	21.20	21.13	23.33	23.69	22.75	22.15
28	22.66	23.21	26.09	26.46	26.18	21.33	21.12	21.86	23.36	23.56	22.73	22.04
29	22.72	22.86	26.42	26.43	---	21.23	21.09	22.26	23.24	23.51	22.68	22.28
30	22.74	22.36	26.61	26.15	---	21.24	21.21	22.15	23.31	23.61	22.70	22.17
31	22.77	---	26.43	26.24	---	21.02	---	22.50	---	23.53	22.60	---
TOTAL	698.14	687.20	---	822.16	756.04	712.58	629.69	656.86	694.62	741.03	713.01	662.11
MEAN	22.52	22.91	---	26.52	27.00	22.99	20.99	21.19	23.15	23.90	23.00	22.07
MAX	22.84	23.27	---	27.41	27.69	25.49	21.21	22.50	23.58	24.36	23.73	22.70
MIN	22.13	22.36	---	25.15	25.89	21.02	20.79	20.76	22.74	23.21	22.50	21.63

APPLE CREEK BASIN

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) National Geodetic Vertical Datum of 1929. See WSP 1729 or 1917 for history of changes prior to Sept. 30, 1953.

REMARKS.--Records good.

AVERAGE DISCHARGE.--36 years, 33.0 ft³/s (0.935 m³/s), 23,910 acre-ft/yr (29.5 hm³/yr); median of yearly mean discharges, 17.6 ft³/s (0.50 m³/s), 12,800 acre-ft/yr (16 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); maximum gage height, 17.46 ft (5.322 m) Apr. 19, 1979; no flow at times in some years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 196 ft³/s (5.55 m³/s) Feb. 22, gage height, 6.91 ft (2.106 m), no peak above base of 200 ft³/s (5.66 m³/s); minimum daily, 0.05 ft³/s (0.001 m³/s) Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	4.2	1.9	1.0	.99	27	2.2	1.3	2.6	.35	.18	.25
2	.71	4.2	1.9	1.0	.93	22	2.3	.85	2.6	.42	.24	.22
3	.67	5.0	1.8	.89	.89	19	2.8	.51	2.6	.44	.33	.20
4	.67	3.1	1.7	.85	.86	17	2.9	.50	2.5	.32	.40	.18
5	.74	2.5	1.7	.78	.86	14	2.6	.67	2.5	.25	.82	.14
6	.67	2.5	1.7	.78	.97	12	2.9	.72	2.3	.24	2.1	.42
7	.54	2.5	1.6	.71	1.0	10	2.9	.55	2.2	.24	1.7	.57
8	.48	2.5	1.7	.67	.86	9.5	3.0	.67	2.2	.23	1.1	.64
9	.45	2.6	1.8	.67	.89	8.8	3.0	.84	1.9	.21	.73	.57
10	.39	2.4	1.7	.60	.78	8.2	2.8	.91	1.2	.18	.54	.44
11	.36	2.3	1.5	.64	.82	8.5	2.8	1.1	1.2	.18	.43	.36
12	.36	2.2	1.3	.71	.86	7.7	2.7	1.0	1.4	.27	.34	.31
13	.33	2.2	1.3	.74	.86	7.2	2.6	.97	1.5	.32	.33	.29
14	.33	2.0	1.3	.85	.86	5.9	2.4	.99	1.7	.41	.30	.28
15	.39	1.9	1.2	.85	1.1	5.4	2.1	.99	1.7	.40	.25	.28
16	4.8	1.9	1.2	.85	1.8	4.7	2.1	.97	1.8	.33	.20	.26
17	17	1.8	1.3	.89	2.1	4.1	1.6	.95	1.6	.34	.27	.23
18	8.2	1.8	1.4	.93	2.2	3.4	1.1	.95	1.3	.41	.30	.23
19	5.0	2.1	1.5	1.0	20	3.0	.78	1.1	1.0	.94	.30	.31
20	4.0	2.2	1.4	.93	124	2.8	.57	1.1	.88	1.1	.27	.51
21	3.1	2.2	1.3	.97	169	2.9	.33	1.3	.83	.86	.27	.47
22	2.8	2.1	1.2	1.0	190	2.6	.54	1.3	.77	.71	.39	.57
23	2.7	2.1	1.3	1.0	171	2.6	.71	1.3	1.0	.68	.45	.21
24	2.3	1.9	1.3	1.0	131	2.5	.74	1.5	1.1	.64	.45	.16
25	2.0	1.9	1.3	.89	112	2.2	.57	1.7	.85	.52	.48	.18
26	1.7	1.9	1.2	.97	79	2.4	.39	2.0	.90	.43	.57	.26
27	2.1	2.0	1.1	1.1	50	2.9	1.3	2.3	1.2	.37	.51	.28
28	2.8	2.0	1.0	1.0	38	3.0	1.7	2.7	1.1	.32	.48	.28
29	3.5	2.0	1.1	.93	---	2.9	1.6	2.7	.82	.32	.39	.23
30	3.9	1.9	.97	.89	---	2.7	1.4	2.7	.57	.29	.27	.05
31	4.0	---	1.0	1.0	---	2.6	---	2.8	---	.23	.27	---
TOTAL	78.09	71.9	43.67	27.09	1103.63	229.5	55.43	39.94	45.82	12.95	15.66	9.38
MEAN	2.52	2.40	1.41	.87	39.4	7.40	1.85	1.29	1.53	.42	.51	.31
MAX	17	5.0	1.9	1.1	190	27	3.0	2.8	2.6	1.1	2.1	.64
MIN	.33	1.8	.97	.60	.78	2.2	.33	.50	.57	.18	.18	.05
AC-FT	155	143	87	54	2190	455	110	79	91	26	31	19

CAL YR 1980 TOTAL 1167.27 MEAN 3.19 MAX 96 MIN .05 AC-FT 2320
WTR YR 1981 TOTAL 1733.06 MEAN 4.75 MAX 190 MIN .05 AC-FT 3440

APPLE CREEK BASIN

06349500 APPLE CREEK NEAR MENOKEN, ND--Continued

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	COLOR (PLAT- INUM- CUBALT UNITS) (00080)	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS (MG/L AS CACU3) (00900)	HARD- NESS NONCAR- BONATE (MG/L AS CACU3) (95902)
OCT 01...	1405	1.2	1090	8.2	18.0	14.0	60	17	7.4	--	201	.00
NOV 04...	1530	4.8	1427	8.5	12.0	5.5	60	4.1	10.6	74	229	.00
DEC 09...	1440	1.7	1630	8.2	-8.0	1.0	40	2.6	7.2	50	261	.00
JAN 23...	1410	1.0	1840	7.9	16.0	.5	40	1.8	--	--	363	.00
FEB 19...	1355	2.6	1910	--	--	1.0	--	--	--	--	--	--
MAR 13...	1530	6.9	405	7.9	7.0	2.0	90	11	10.0	72	130	.00
APR 01...	1420	2.6	610	8.0	16.0	9.5	55	14	6.8	60	141	.00
MAY 07...	1030	.58	1040	8.0	--	13.0	30	18	6.1	58	206	.00
JUL 02...	1440	.28	1360	8.2	25.0	23.5	30	3.4	7.8	91	286	.00
AUG 13...	1405	.41	1380	8.6	34.0	25.0	60	5.6	9.6	115	232	.00
SEP 09...	1050	.58	1450	8.3	24.5	18.0	50	9.0	6.5	68	233	.00

DATE	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CU2) (00405)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SI02) (00955)
OCT 01...	36	27	210	68	6.6	10	380	4.5	230	34	.4	13
NOV 04...	39	32	250	69	7.3	11	430	.3	250	52	.3	7.4
DEC 09...	47	35	270	68	7.4	10	530	5.4	240	46	.5	3.7
JAN 23...	68	47	320	65	7.5	7.4	630	15	420	43	.4	12
FEB 19...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 13...	29	14	63	49	2.5	8.9	180	4.4	94	7.8	.4	10
APR 01...	30	16	87	56	3.3	7.2	200	3.2	110	12	.2	7.7
MAY 07...	43	24	160	62	5.0	7.1	340	5.4	210	23	.3	6.3
JUL 02...	57	35	250	65	6.6	8.2	480	4.9	290	37	.3	6.0
AUG 13...	45	29	250	69	7.3	8.6	460	1.9	250	70	.4	14
SEP 09...	44	30	270	71	7.9	9.0	500	4.0	270	57	.4	13

APPLE CREEK BASIN

06349500 APPLE CREEK NEAR MENOKEN, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TUNS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TUNS PER DAY) (70302)	NITRO- GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS NO3) (71851)	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS NO2) (71856)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)
UCT												
01...	893	784	1.2	2.9	--	--	--	--	--	--	--	--
NOV												
04...	907	669	1.2	11.8	--	.00	.00	--	.000	.00	.00	.00
DEC												
09...	1020	972	1.4	4.7	--	.04	.18	--	.030	.10	.05	.07
JAN												
23...	1180	1300	1.6	3.2	--	.16	.71	--	.000	.00	.22	.16
FEB												
19...	--	--	--	--	--	--	--	--	--	--	--	--
MAR												
13...	342	338	.47	6.4	--	.37	1.6	--	.010	.03	.52	.38
APR												
01...	393	391	.53	2.8	--	.09	.40	--	.020	.07	.04	.11
MAY												
07...	668	679	.91	1.0	.00	.00	.00	.000	.000	.00	.00	.00
JUL												
02...	951	973	1.3	.72	--	.05	.22	--	.020	.07	.10	.07
AUG												
13...	943	945	1.3	1.0	--	.00	.00	--	.000	.00	.00	.00
SEP												
09...	963	995	1.3	1.5	--	.00	.00	--	<.010	--	<.09	.01

DATE	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN, ORGANIC DIS- SOLVED (MG/L AS N) (00607)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN,NH4 + URG. SUSP. TOTAL (MG/L AS N) (00624)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	NITRO- GEN, TOTAL (MG/L AS NO3) (71887)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS TOTAL (MG/L AS PO4) (71886)
UCT												
01...	--	--	--	--	--	--	--	--	--	--	--	--
NOV												
04...	--	.030	.04	--	1.6	2.00	.40	1.6	2.0	8.9	.660	2.0
DEC												
09...	--	.200	.26	--	1.3	1.80	.30	1.5	1.9	8.2	.300	.92
JAN												
23...	--	.090	.12	--	--	1.50	--	--	1.7	7.6	.300	.92
FEB												
19...	--	--	--	--	--	--	--	--	--	--	--	--
MAR												
13...	.110	.120	.15	1.8	1.5	1.90	.30	1.6	2.4	11	.150	.46
APR												
01...	--	.070	.09	--	.93	1.40	.40	1.0	1.4	6.4	.230	.71
MAY												
07...	--	.080	.10	--	1.1	1.80	.60	1.2	1.8	8.0	.420	1.3
JUL												
02...	--	.090	.12	--	1.2	1.40	.10	1.3	1.5	6.6	.700	2.1
AUG												
13...	.130	.070	.09	2.3	1.0	2.40	1.3	1.1	2.4	11	1.00	3.1
SEP												
09...	--	.070	.09	--	1.2	2.50	1.2	1.3	--	--	.870	2.7

APPLE CREEK BASIN

333

06349500 APPLE CREEK NEAR MENOKEN, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	PHOS- PHOSUS, DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHURUS, URTHU, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHATE, ORTHU, DIS- SOLVED (MG/L AS PU4) (00660)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
OCT 01...	--	--	--	440	40	160
NOV 04...	.610	.420	1.3	830	50	20
DEC 09...	.270	.250	.77	880	20	70
JAN 23...	.250	.180	.55	970	30	290
MAR 13...	.170	.100	.31	210	280	90
APR 01...	--	.060	.18	260	110	80
MAY 07...	.222	.150	.46	560	30	270
JUL 02...	.583	.500	1.5	860	<10	20
AUG 13...	.771	.840	2.6	1000	14	10
SEP 09...	.754	.460	1.4	1100	74	46

DATE	SEDI- MENT, DIS- CHARGE, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)
OCT 01...	41	.13
NOV 04...	8	.10
DEC 09...	16	.07
JAN 23...	16	.04
FEB 19...	20	.14
APR 01...	17	.12
MAY 07...	53	.08
JUL 02...	12	.01
AUG 13...	45	.05
SEP 09...	9	.01

MISSOURI RIVER MAIN STEM

06349700 MISSOURI RIVER NEAR SCHMIDT, ND

LOCATION.--Lat 46°39'22", long 100°44'18", in SW¼ 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, 13 mi (21 km) southeast of Mandan, and at mile 1,298 (2,088 km).

DRAINAGE AREA.--191,700 mi² (496,500 km²), approximately.

GAGE-HEIGHT RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,600.00 ft (487.680 m) National Geodetic Vertical Datum of 1929.

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 (FEET ABOVE DATUM), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15.17	15.58		---	19.18	20.14	13.79	14.07	15.63	---	16.60	15.12
2	15.16	15.40		---	18.77	20.22	13.80	14.14	15.90	---	16.15	15.28
3	15.00	15.78		---	18.52	19.69	13.84	14.19	15.95	16.79	16.33	15.31
4	14.84	15.69		---	18.78	18.53	13.80	14.23	16.05	---	16.36	15.36
5	14.85	15.73		---	19.18	17.38	13.73	14.09	16.03	16.61	16.27	15.27
6	14.96	15.68		---	19.55	16.85	13.86	13.80	---	16.52	16.77	15.50
7	15.01	15.60		---	19.59	16.77	13.94	13.89	---	16.99	16.79	15.46
8	15.10	15.54		---	19.22	16.80	13.66	13.74	---	17.21	16.69	14.56
9	15.04	15.59		---	18.63	16.44	13.72	13.77	---	17.14	16.46	14.35
10	15.16	15.62		---	19.20	16.60	13.63	13.53	15.94	17.19	15.91	14.29
11	15.14	15.72		---	19.61	16.66	13.75	13.46	16.08	17.24	15.93	14.48
12	15.04	15.73		---	19.90	16.86	13.75	13.58	16.26	16.87	15.76	14.25
13	15.12	---		---	20.19	16.90	13.66	13.62	16.47	16.70	15.92	14.13
14	15.41	---		19.06	20.19	16.85	13.53	13.51	16.60	17.13	---	14.62
15	15.45	---		19.23	20.47	16.91	13.54	13.63	16.20	17.28	---	14.02
16	15.50	---		19.23	20.48	16.85	13.55	13.36	16.27	17.27	15.88	14.34
17	15.63	---		19.25	20.38	16.43	13.52	13.49	16.12	17.28	16.11	14.18
18	15.44	---		19.41	20.56	16.18	13.52	13.53	16.30	17.24	15.57	14.14
19	15.40	---		19.49	20.66	15.85	13.59	13.50	16.29	17.53	15.46	14.17
20	15.18	---		19.66	20.44	15.50	13.44	13.50	16.25	17.21	15.77	14.15
21	15.03	---		19.69	20.45	15.48	13.60	13.50	16.26	17.35	15.74	14.11
22	15.28	---		19.58	20.37	15.34	13.70	13.45	15.86	17.37	15.51	14.23
23	15.67	---		19.43	20.47	14.80	13.59	13.50	15.87	17.37	15.20	14.30
24	15.77	---		19.29	20.59	14.42	13.60	13.46	16.24	17.32	15.17	14.57
25	15.73	---		19.37	20.57	14.30	13.60	13.58	16.13	17.27	15.30	14.93
26	15.65	16.06		19.17	20.64	14.03	13.56	13.51	16.08	17.17	15.33	14.99
27	15.43	16.08		19.22	20.30	13.95	13.88	13.64	16.36	16.82	15.49	14.99
28	15.50	16.21		19.09	20.20	14.18	13.86	14.44	16.38	16.59	15.54	14.76
29	15.59	---		19.01	---	14.07	13.82	14.99	16.35	16.55	15.46	---
30	15.63	---		18.82	---	14.08	13.91	15.01	16.30	16.63	15.46	---
31	15.68	---		18.77	---	13.77	---	15.29	---	16.60	15.46	---
TOTAL	474.56	---	---	---	557.09	502.83	410.74	429.00	---	---	---	---
MEAN	15.31	---	---	---	19.90	16.22	13.69	13.84	---	---	---	---
MAX	15.77	---	---	---	20.66	20.22	13.94	15.29	---	---	---	---
MIN	14.84	---	---	---	18.52	13.77	13.44	13.36	---	---	---	---

MISSOURI RIVER MAIN STEM

06349700 MISSOURI RIVER NEAR SCHMIDT, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1967-79, 1981 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (UMHUS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	COLI- FORM, TOTAL, IMMED. (CULS. PER 100 ML) (31501)	COLI- FORM, FECAL, 0.7 UM-MF (CULS./ 100 ML) (31625)	HARD- NESS (MG/L AS CACU3) (00900)	HARD- NESS NONCAR- BONATE (MG/L AS CACU3) (95902)
OCT 28...	1305	801	8.4	--	7.5	1.1	10.5	86	K40	K10	248	231
NOV 19...	1100	760	8.4	--	6.0	5.2	11.2	89	K40	<1	250	94
JAN 06...	1140	790	8.4	-3.0	.0	4.6	13.6	91	28	<3	255	83
FEB 24...	1200	730	8.2	--	.0	6.6	12.0	82	K28	K2	234	84
MAR 24...	1145	745	8.1	15.0	4.5	5.7	12.0	92	<2	--	230	--
APR 23...	1330	730	8.2	18.0	9.0	43	10.6	91	K12	K1	236	86
MAY 28...	1315	725	8.2	23.0	11.5	7.2	10.1	93	560	K65	246	96
JUN 26...	1200	735	8.5	25.0	17.0	6.5	8.7	89	K40	K8	248	88
JUL 27...	1215	755	8.2	22.0	17.5	4.8	9.1	93	--	--	239	89
AUG 24...	1240	745	8.3	--	18.0	7.0	--	--	--	--	250	90

DATE	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	BICAR- BONATE, FET-LAB (MG/L AS HCO3) (95440)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)
OCT 28...	58	25	74	39	2.0	4.9	210	170	230	11	.6
NOV 19...	59	25	73	38	2.0	5.0	190	150	260	10	.5
JAN 06...	61	25	73	38	2.0	4.3	210	170	240	14	.5
FEB 24...	54	24	71	39	2.0	4.0	--	150	240	10	.4
MAR 24...	54	23	68	39	2.0	3.8	--	150	230	10	.5
APR 23...	55	24	68	38	1.9	3.7	--	150	220	9.3	.5
MAY 28...	59	24	70	38	1.9	3.9	--	150	220	9.5	.4
JUN 26...	58	25	72	38	2.0	3.8	--	160	230	12	.5
JUL 27...	56	24	70	38	2.2	4.2	--	150	230	11	.5
AUG 24...	59	25	72	38	2.2	3.9	--	160	230	12	.5

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

06349700 MISSOURI RIVER NEAR SCHMIDT, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	SILICA, DIS- SOLVED (MG/L AS SI02) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS, ORTHO, TOTAL (MG/L AS P) (70507)	ARSENIC TOTAL (UG/L AS AS) (01002)
OCT 28...	6.2	525	420	.71	--	.00	.000	.47	.040	--	3
NOV 19...	6.1	520	532	.71	--	.01	.000	.24	.040	--	--
JAN 06...	6.0	522	527	.71	--	.00	.020	.68	.040	--	--
FEB 24...	5.2	469	499	.64	.010	.03	.040	.40	.060	.010	--
MAR 24...	4.9	489	485	.67	.000	.03	.020	.29	.050	.010	--
APR 23...	4.8	495	476	.67	--	--	--	--	--	--	2
MAY 28...	5.0	490	482	.67	.000	.00	.000	.81	.040	.000	3
JUN 26...	5.1	500	503	.68	.020	.06	.220	1.20	.040	.040	4
JUL 27...	5.1	503	491	.68	.030	.15	.130	.49	.010	.000	3
AUG 24...	5.2	493	504	.67	.020	.16	.140	.45	.060	.010	2

DATE	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MERCURY, TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE) (01147)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)
OCT 28...	0	0	0	12	1100	31	20	.1	10	1	30
NOV 19...	--	--	--	--	--	--	--	--	--	--	--
JAN 06...	--	--	--	--	--	--	--	--	--	--	--
FEB 24...	--	--	--	--	--	--	--	--	--	--	--
MAR 24...	--	--	--	--	--	--	--	--	--	--	--
APR 23...	0	0	20	8	1300	4	30	.2	5	0	40
MAY 28...	0	1	10	8	1800	3	50	.3	3	1	70
JUN 26...	0	1	10	8	1300	22	40	.2	5	0	20
JUL 27...	0	0	0	9	2000	4	40	.3	4	1	20
AUG 24...	0	0	0	7	1000	16	20	2.5	2	1	50

CANNONBALL RIVER BASIN

337

06349900 CANNONBALL RIVER AT NEW ENGLAND, ND

LOCATION.--Lat 46°32'35", long 102°53'16", in SW¼SE¼SE¼ sec.32, T.136 N., R.97 W., Hettinger County, Hydrologic Unit 10130204, on left bank 70 ft (21 m) upstream from bridge on county road, 1.0 mi (1.6 km) west of New England, 0.3 mi (0.5 km) above Coon Creek and 17 mi (27 km) below confluence of North Fork Cannonball River and Philbrick Creek.

DRAINAGE AREA.--285 mi² (738 km²), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1978 to September 1981 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 2,560 ft (780 m), from topographic map.

REMARKS.--Records fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,450 ft³/s (41.1 m³/s) Apr. 10, 1979, gage height, 10.50 ft (3.200 m), backwater from ice; no flow for parts of several days in October 1980 when water was being pumped from gage pool.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of April 13, 1982 reached a stage of 13.80 ft (4.206 m), from floodmark, discharge 2,900 ft³/s (82.1 m³/s). Discharge and stage obtained from field measurements made after station was discontinued.

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

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Aug. 5	1800	432 12.2	6.66 2.030	Sept. 25	1800	651 18.4	7.75 2.362
Aug. 16	0800	*838 23.7	8.52 2.597				

Minimum daily, 0.01 ft³/s (>0.001 m³/s) Nov. 23, 24, Dec. 1-10, 24, Feb. 9-11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.02	.02	.01	.06	.03	.09	.64	.03	.05	.22	.05	.60
2	.02	.03	.01	.05	.03	.09	.36	.03	.07	48	.05	.49
3	.02	.03	.01	.05	.03	.12	.28	.04	.07	35	45	.37
4	.02	.03	.01	.05	.03	.11	.24	.05	.09	12	114	.30
5	.03	.02	.01	.06	.05	.10	.31	.05	.06	5.2	372	.27
6	.03	.02	.01	.05	.05	.11	.29	.05	.05	2.6	280	.62
7	.03	.02	.01	.05	.02	.27	.30	.05	.05	1.9	175	8.3
8	.03	.03	.01	.05	.02	.81	.19	.05	.09	1.0	73	2.4
9	.03	.03	.01	.05	.01	1.0	.18	.05	.07	.60	40	1.1
10	.02	.02	.01	.06	.01	.98	.15	.06	.05	.30	27	.54
11	.02	.02	.04	.09	.01	1.0	.15	.06	.05	.60	19	.37
12	.02	.02	.05	.07	.02	.98	.15	.07	.05	13	14	.30
13	.02	.02	.05	.06	.04	.95	.12	.07	.22	2.0	8.9	.25
14	.02	.02	.04	.04	.08	.95	.11	.07	.13	47	5.2	.20
15	.02	.03	.11	.04	.11	.86	.09	.07	2.6	13	49	.19
16	.05	.03	.12	.06	.14	.95	.08	.07	15	4.1	556	.19
17	.06	.03	.11	.09	.19	.79	.04	.07	11	2.0	276	.19
18	.03	.03	.06	.10	.11	.41	.05	.06	7.4	.72	161	.19
19	.02	.03	.03	.10	.10	.22	.04	.07	6.2	.22	82	.19
20	.02	.03	.04	.10	.10	.22	.03	.06	5.7	.14	41	.19
21	.02	.02	.05	.09	.09	.20	.03	.05	4.9	.13	25	.19
22	.02	.02	.05	.10	.08	.27	.03	.06	3.0	.11	18	.19
23	.05	.01	.03	.11	.08	.33	.03	.09	1.9	.10	13	.19
24	.02	.01	.01	.10	.08	.37	.03	.05	.79	.10	8.9	.19
25	.02	.02	.02	.09	.07	.37	.03	.05	.50	.09	5.5	81
26	.02	.02	.03	.09	.09	.31	.03	.06	.25	.07	2.8	8.5
27	.02	.02	.05	.07	.12	.34	.07	.07	.25	.06	2.0	.41
28	.02	.02	.08	.05	.11	.37	.07	.10	.22	.06	1.5	.27
29	.02	.02	.08	.04	---	.33	.05	.07	.19	.07	1.0	.25
30	.02	.02	.09	.05	---	.33	.04	.04	.18	.06	.79	.20
31	.02	---	.09	.04	---	.57	---	.04	---	.05	.72	---
TOTAL	.78	.69	1.33	2.11	1.90	14.80	4.21	1.81	61.18	190.50	2417.41	108.64
MEAN	.025	.023	.043	.068	.068	.48	.14	.058	2.04	6.15	78.0	3.62
MAX	.06	.03	.12	.11	.19	1.0	.64	.10	15	48	556	81
MIN	.02	.01	.01	.04	.01	.09	.03	.03	.05	.05	.05	.19
AC-FT	1.5	1.4	2.6	4.2	3.8	29	8.4	3.6	121	378	4790	215

CAL YR 1980 TOTAL 236.31 MEAN .65 MAX 13 MIN .01 AC-FT 469
WTR YR 1981 TOTAL 2805.36 MEAN 7.69 MAX 556 MIN .01 AC-FT 5560

CANNONBALL RIVER BASIN

06349900 CANNONBALL RIVER AT NEW ENGLAND, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1978 to September 1981 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (MG/L) (00301)	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CACO3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT												
08...	0930	.03	1880	8.2	16.5	10.0	12.2	118	300	0	59	37
NOV												
26...	1100	.02	1825	7.9	2.5	2.0	10.8	82	340	0	58	47
DEC												
10...	1420	.01	2170	7.9	-14.5	1.0	8.4	65	440	0	81	57
JAN												
28...	0900	.05	2050	7.3	-6.0	1.0	6.4	51	480	0	93	60
FEB												
25...	0905	.07	1770	7.9	-3.0	.0	9.5	74	400	0	79	48
MAR												
13...	1000	.95	2700	8.0	8.5	5.0	12.5	105	580	220	94	83
25...	1450	.41	2580	8.1	10.5	9.5	11.1	108	--	--	--	--
APR												
07...	0905	.35	2730	8.3	6.5	7.0	10.3	94	590	190	95	86
21...	1000	.03	2700	8.3	16.5	13.0	9.6	102	--	--	--	--
MAY												
12...	1630	.07	2800	8.2	--	10.5	--	--	590	--	100	83
JUN												
03...	1730	.09	2780	8.4	23.5	21.0	10.5	128	--	--	--	--
25...	0830	.53	4080	8.5	13.5	17.5	6.8	76	810	330	110	130
JUL												
29...	1500	.08	1300	8.3	31.0	29.0	9.6	133	280	0	55	34
AUG												
18...	0945	191	432	8.1	12.5	20.0	--	--	110	--	23	12
SEP												
02...	1330	.46	1240	8.3	27.0	18.0	9.6	110	260	0	53	31

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY, CARBON- ATE FET-FLD (MG/L CACO3) (00430)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
OCT												
08...	340	70	8.5	8.5	475	560	5.3	.4	11	1290	1310	1.7
NOV												
26...	330	67	7.8	10	450	570	7.4	.4	6.6	1290	--	1.7
DEC												
10...	370	64	7.7	12	540	680	6.2	.4	9.2	1470	1540	2.0
JAN												
28...	360	62	7.2	7.6	550	640	6.5	.3	8.6	1520	1510	2.0
FEB												
25...	290	61	6.4	6.7	490	530	5.0	.2	7.3	1230	1260	1.6
MAR												
13...	490	65	8.9	8.3	360	1200	15	.4	3.1	2010	2110	2.7
25...	--	--	--	--	358	--	--	--	--	--	--	--
APR												
07...	480	63	8.6	9.1	400	1200	21	.4	3.0	2110	--	2.8
21...	--	--	--	--	444	--	--	--	--	--	--	--
MAY												
12...	490	64	8.8	9.4	--	1200	18	.4	5.2	2160	--	2.9
JUN												
03...	--	--	--	--	449	--	--	--	--	--	--	--
25...	720	66	11	12	480	1900	20	.4	2.7	3170	3180	4.3
JUL												
29...	190	60	5.5	.5	320	370	3.9	.3	11	893	858	1.2
AUG												
18...	45	45	2.1	10	--	130	42	.1	9.4	296	--	.40
SEP												
02...	180	59	5.4	8.7	290	370	4.4	.2	11	844	833	1.1

CANNONBALL RIVER BASIN

339

06349900 CANNONBALL RIVER AT NEW ENGLAND, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS TOTAL (MG/L AS PO4) (71886)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC SUS- PENDEED TOTAL (UG/L AS AS) (01001)	ARSENIC TOTAL IN BOT- TOM MA- TERIAL (UG/G AS AS) (01003)
OCT												
08...	.10	--	--	--	--	--	--	--	--	--	--	--
NOV												
26...	.07	.00	.000	.00	.58	.58	.050	.15	.030	--	--	--
DEC												
10...	.04	--	--	--	--	--	--	--	--	--	--	--
JAN												
26...	.21	.00	.210	--	.78	.99	.040	.12	.020	--	--	--
FEB												
25...	.23	--	--	--	--	--	--	--	--	--	--	--
MAR												
13...	5.1	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
07...	1.9	.01	.040	--	1.2	1.20	.050	.15	.030	2	0	100
21...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
12...	.41	--	--	--	--	--	--	--	--	--	--	--
JUN												
03...	--	--	--	--	--	--	--	--	--	--	--	--
25...	4.5	--	--	--	--	--	--	--	--	--	--	--
JUL												
29...	.19	.14	.210	--	.99	1.20	.060	.18	<.010	--	--	--
AUG												
18...	153	--	--	--	--	--	--	--	--	12	11	--
SEP												
02...	1.0	--	--	--	--	--	--	--	--	--	--	--

DATE	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BARIUM, SUS- PENDEED RECOV- ERABLE (UG/L AS BA) (01006)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BERYL- LIUM, SUS- PENDEED RECOV. (UG/L AS BE) (01011)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, SUS- PENDEED RECOV. (UG/L AS CR) (01031)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	CHRO- MIUM, RECov. FM BOT- TOM MA- TERIAL (UG/G) (01029)	CUBALT, DIS- SOLVED (UG/L AS CO) (01035)
OCT												
08...	0	0	20	--	--	--	560	--	--	--	--	--
NOV												
26...	--	--	--	--	--	--	510	--	--	--	--	--
DEC												
10...	--	--	--	--	--	--	540	--	--	--	--	0
JAN												
28...	--	--	--	--	--	--	510	--	--	--	--	--
FEB												
25...	--	--	--	--	--	--	350	--	--	--	--	--
MAR												
13...	--	--	--	--	--	--	420	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
07...	100	0	100	0	0	10	480	10	10	0	3	--
21...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
12...	--	--	--	--	--	--	530	--	--	--	--	--
JUN												
03...	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	700	--	--	--	--	--
JUL												
29...	--	--	--	--	--	--	360	--	--	--	--	--
AUG												
18...	500	400	70	10	--	<1	80	60	60	0	--	--
SEP												
02...	--	--	--	--	--	--	390	--	--	--	--	--

06349900 CANNONBALL RIVER AT NEW ENGLAND, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	CUBALT, RECOV. FM BUT- TOM MA- TERIAL (UG/G AS CU) (01038)	CUPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	COPPER, SUS- PENDE RECOV- ERABLE (UG/L AS CU) (01041)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	COPPER, RECOV. FM BUT- TOM MA- TERIAL (UG/G AS CU) (01043)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI) (01132)	LITHIUM SUS- PENDE RECOV- ERABLE (UG/L AS LI) (01131)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, SUS- PENDE RECOV- ERABLE (UG/L AS MN) (01054)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
UCT												
08...	--	--	--	--	--	10	50	0	50	520	100	420
NOV												
26...	--	--	--	--	--	<10	--	--	--	300	50	250
DEC												
10...	--	--	--	--	--	40	--	--	--	400	10	390
JAN												
28...	--	--	--	--	--	70	--	--	--	460	0	470
FEB												
25...	--	--	--	--	--	20	--	--	--	420	20	400
MAR												
13...	--	--	--	--	--	40	--	--	--	220	70	150
25...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
07...	10	1	0	1	14	50	50	0	50	210	40	170
21...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
12...	--	--	--	--	--	30	--	--	--	250	50	200
JUN												
03...	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	40	--	--	--	260	200	60
JUL												
29...	--	--	--	--	--	11	--	--	--	430	230	200
AUG												
18...	--	180	170	13	--	150	50	40	8	1200	1200	3
SEP												
02...	--	--	--	--	--	36	--	--	--	390	200	190

[illegible]

06349900 CANNONBALL RIVER AT NEW ENGLAND, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, SUS- PENDE RECOV- ERABLE (UG/L AS ZN) (01091)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	ZINC, FM BUT- TUM MA- TERIAL (UG/G AS ZN) (01093)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT) (80030)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)	GROSS BETA, DIS- SOLVED (PCI/L AS SR/ YT-90) (80050)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90) (80060)
APR 07...	20	0	20	22	<42	<.4	<20	1.3	<19	1.3
21...	--	--	--	--	--	--	--	--	--	--
AUG 18...	350	--	<3	--	--	--	--	--	--	--

DATE	POTAS- SIUM 40 DIS- SOLVED (PCI/L AS K40) (802068)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHENOLS (UG/L) (32730)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)
OCT 08...	--	--	--	--	--	51	.00	--	--	--
NOV 26...	--	21	.4	--	--	54	.00	--	--	--
DEC 10...	--	--	--	--	--	48	.00	--	--	--
JAN 28...	5.7	29	.5	--	--	58	.01	--	--	--
FEB 25...	5.0	--	--	--	--	26	.00	--	--	--
MAR 13...	6.2	--	--	--	--	52	.13	--	--	--
25...	--	--	--	--	--	67	.07	--	--	--
APR 07...	6.8	17	.4	.00	0	68	.06	--	--	--
21...	--	--	--	--	--	74	.01	--	--	--
MAY 12...	7.0	--	--	--	--	83	.02	--	--	--
JUN 03...	--	--	--	--	--	133	.03	--	--	--
25...	9.0	--	--	--	--	190	.27	--	--	--
JUL 29...	--	9.6	.9	--	--	63	.01	--	--	--
AUG 18...	--	--	--	.00	4	1560	804	94	98	100
SEP 02...	--	--	--	--	--	80	.10	--	--	--

DATE	BED MAT. FALL DIAM. % FINER THAN .062 MM (80158)	BED MAT. FALL DIAM. % FINER THAN .125 MM (80159)	BED MAT. FALL DIAM. % FINER THAN .250 MM (80160)	BED MAT. FALL DIAM. % FINER THAN .500 MM (80161)	BED MAT. FALL DIAM. % FINER THAN 1.00 MM (80162)	BED MAT. FALL DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. FALL DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. FALL DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. FALL DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. FALL DIAM. % FINER THAN 32.0 MM (80173)
AUG 18...	43	56	75	83	86	90	94	96	98	100

DATE	LENGTH OF EXPO- SURE (DAYS) (00022)	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUORUM (MG/M2) (70957)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUORUM (MG/M2) (70958)	PERI- PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00572)	PERI- PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)
OCT 08...	34	8.08	1.93	3.23	5.28
JUN 25...	44	3.35	.140	7.80	8.98
JUL 29...	34	12.9	.000	126	140

CANNONBALL RIVER BASIN

06349900 CANNONBALL RIVER AT NEW ENGLAND, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	OCT 8,80 0930	NOV 26,80 1100	DEC 10,80 1420	JAN 28,81 0900	FEB 25,81 0905	MAR 13,81 1000
TOTAL CELLS/ML	7400	2700	5100	850	1200	2200
DIVERSITY: DIVISION	1.1	1.8	1.1	2.2	1.9	1.9
..CLASS	1.1	2.0	1.1	2.2	1.9	1.9
...ORDER	1.3	2.3	1.5	2.7	2.2	2.5
...FAMILY	1.7	2.9	1.6	3.1	2.5	2.6
....GENUS	2.1	3.3	1.7	3.2	2.9	2.8

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)												
..CHLOROPHYCEAE												
...CHLOROCOCCALES												
...COELASTRACEAE												
....COELASTRUM	--	-	--	-	--	-	--	-	--	-	--	-
...MICRACTINIACEAE												
....GOLENKINIA	*	0	--	-	--	-	--	-	--	-	--	-
...MICRACTINIUM	--	-	--	-	--	-	--	-	--	-	--	-
...OOCYSTACEAE												
....ANKISTRODESMUS	200	3	130	5	77	2	78	9	77	7	480#	22
....CHODATELLA	--	-	*	0	--	-	--	-	--	-	--	-
....DICTYOSPHAERIUM	--	-	--	-	--	-	--	-	39	3	--	-
....KIRCHNERIELLA	--	-	--	-	--	-	--	-	--	-	--	-
...OOCYSTIS	*	0	--	-	--	-	--	-	--	-	--	-
....SELENASTRUM	180	2	77	3	130	3	--	-	26	2	--	-
....TETRAEDRON	--	-	--	-	--	-	--	-	--	-	--	-
....TREUBARIA	--	-	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE												
....ACTINASTRUM	--	-	--	-	--	-	--	-	--	-	--	-
....CRUCIGENIA	4500#	61	360	13	360	7	--	-	--	-	--	-
...SCENEDESMUS	600	8	180	7	--	-	--	-	77	7	--	-
....TETRASTRUM	--	-	51	2	--	-	160#	18	51	4	--	-
...TETRASPORALES												
...CUCCOMYXACEAE												
....ELAKATOTHRIX	--	-	--	-	--	-	--	-	--	-	--	-
...VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	75	1	*	0	150	3	120	14	150	13	220	10
CHRYSTOPHYTA												
..BACILLARIOPHYCEAE												
...CENTRALES												
...COSCINODISCACEAE												
....CYCLOTELLA	130	2	26	1	51	1	13	2	--	-	--	-
....MELOSIRA	--	-	--	-	--	-	--	-	--	-	200	9
...STEPHANODISCUS	--	-	--	-	--	-	--	-	--	-	320	15
...PENNALES												
...DIATOMACEAE												
....DIATOMA	--	-	240	9	--	-	--	-	26	2	--	-
...FRAGILARIACEAE												
....SYNEDRA	--	-	26	1	--	-	--	-	--	-	--	-
...NAVICULACEAE												
....NAVICULA	--	-	64	2	51	1	39	5	--	-	20	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

343

06349900 CANNONBALL RIVER AT NEW ENGLAND, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

(CONTINUED)

DATE TIME	OCT 8,80 0930		NOV 26,80 1100		DEC 10,80 1420		JAN 28,81 0900		FEB 25,81 0905		MAR 13,81 1000	
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
...NITZSCHIACEAE												
....NITZSCHIA	50	1	150	6	39	1	39	5	39	3	220	10
..CHRYSOPHYCEAE												
...CHRYSONOMADALES												
....OCHROMONADACEAE												
....DINOBRYON	--	-	77	3	--	-	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)												
..CRYPTOPHYCEAE												
...CRYPTOMONADALES												
....CRYPTOCHRYSIDACEAE												
....CHROOMONAS	--	-	--	-	--	-	26	3	--	-	20	1
....CRYPTOMONADACEAE												
....CRYPTOMONAS	--	-	--	-	*	0	26	3	--	-	20	1
CYANOPHYTA (BLUE-GREEN ALGAE)												
..CYANOPHYCEAE												
...CHROOCOCCEALES												
....CHROOCOCCEACEAE												
....AGMENELLUM												
....ANACYSTIS	630	8	220	8	240	5	39	5	230#	20	--	-
....GOMPHOSPHAERIA	--	-	--	-	--	-	--	-	--	-	40	2
...HORMOGONALES												
...NOSTOCACEAE												
....APHANIZOMENON	--	-	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIACEAE												
....LYNGBYA	--	-	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIA	400	5	870#	32	3700#	72	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)												
..EUGLENOPHYCEAE												
...EUGLENALES												
....EUGLENACEAE												
....EUGLENA	50	1	--	-	*	0	39	5	26	2	--	-
....LEPOCINCLIS	--	-	--	-	--	-	--	-	--	-	--	-
....PHACUS	--	-	--	-	--	-	--	-	--	-	--	-
....TRACHELOMONAS	530	7	210	8	270	5	120	14	410#	35	580#	27
PYRRHOPHYTA (FIRE ALGAE)												
..DINOPHYCEAE												
...PERIDINIALES												
....GLENODINIACEAE												
....GLENODINIUM	--	-	*	0	--	-	170#	20	26	2	60	3

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

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

CANNONBALL RIVER BASIN

06349900 CANNONBALL RIVER AT NEW ENGLAND, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	APR 7,81 0905	MAY 12,81 1630	JUN 25,81 0830	JUL 29,81 1500	AUG 18,81 0945	SEP 2,81 1330				
TOTAL CELLS/ML	1100	4300	23000	33000	290	31000				
DIVERSITY: DIVISION	1.5	1.3	1.2	1.2	0.3	1.2				
..CLASS	1.5	1.3	1.2	1.2	0.3	1.2				
...ORDER	2.1	1.3	1.3	2.0	0.3	1.4				
...FAMILY	2.5	2.0	2.0	2.2	0.3	2.6				
....GENUS	3.1	2.4	2.4	2.7	0.3	3.7				
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	--	-	--	-	--	-	--	-	2300	7
...MICRACTINIACEAE										
.....GOLENKINIA	--	-	--	-	--	-	--	-	--	-
...MICRACTINIUM	--	-	--	-	--	-	--	-	1700	6
...OOCYSTACEAE										
.....ANKISTRODESMUS	170#	15	1100#	26	2500	11	640	2	1300	4
...CHODATELLA	--	-	--	-	--	-	*	0	--	-
...DICTYOSPHAERIUM	--	-	--	-	--	-	1100	4	5900#	19
...KIRCHNERIELLA	--	-	--	-	--	-	360	1	680	2
...OOCYSTIS	26	2	--	-	1800	8	360	1	870	3
...SELENASTRUM	26	2	160	4	*	0	430	1	190	1
...TETRAEDRON	13	1	--	-	*	0	--	-	*	0
...TREUBARIA	26	2	--	-	*	0	*	0	--	-
...SCENEDESMACEAE										
.....ACTINASTRUM	--	-	--	-	--	-	--	-	1200	4
...CRUCIGENIA	--	-	1600#	37	400	2	290	1	2700	9
...SCENEDESMUS	130	12	80	2	1400	6	1500	5	4700	15
...TETRASTRUM	52	5	80	2	--	-	290	1	1200	4
...TETRASPORALES										
...COCCOMYXACEAE										
...ELAKATOTHRIX	--	-	--	-	--	-	--	-	190	1
...VULVOCALES										
...CHLAMYDOMONADACEAE										
...CHLAMYDOMONAS	13	1	--	-	--	-	570	2	--	-
CHRYSOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...COSCINODISCACEAE										
....CYCLOTETRA	--	-	--	-	--	-	290	1	1600	5
....MELOSIRA	--	-	--	-	--	-	--	-	--	-
...STEPHANODISCUS	64	6	80	2	--	-	--	-	--	-
...PENNALES										
...DIATOMACEAE										
.....DIATOMA	--	-	--	-	--	-	--	-	--	-
...FRAGILARIACEAE										
....SYNEDRA	52	5	--	-	--	-	--	-	190	1
...NAVICULACEAE										
....NAVICULA	--	-	--	-	--	-	570	2	--	-

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

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

CONTINUED ...

CANNONBALL RIVER BASIN

06349900 CANNONBALL RIVER AT NEW ENGLAND, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

(CONTINUED)

DATE TIME	APR 7,81 0905		MAY 12,81 1630		JUN 25,81 0830		JUL 29,81 1500		AUG 18,81 0945		SEP 2,81 1330	
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
...NITZSCHIACEAE												
....NITZSCHIA	52	5	100	2	450	2	1600	5	--	-	580	2
...CHRYSOPHYCEAE												
...CHRYSOMONADALES												
...OCHROMONADACEAE												
....DINOBRYON	--	-	--	-	--	-	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)												
..CRYPTOPHYCEAE												
...CRYPTOMONADALES												
....CRYPTOCHRYSIDACEAE												
....CHROOMONAS	--	-	*	0	--	-	--	-	--	-	--	-
...CRYPTOMONADACEAE												
....CRYPTOMONAS	13	1	*	0	--	-	360	1	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
..CYANOPHYCEAE												
...CHROOCOCCALES												
....CHROOCOCCACEAE												
....AGMENELLUM							290	1	--	-	--	-
....ANACYSTIS	90	8	860#	20	500	2	16000#	51	--	-	4600	15
...GOMPHOSPHAERIA	--	-	--	-	--	-	--	-	--	-	--	-
...HORMOGONALES												
...NOSTOCACEAE												
....APHANIZOMENON	--	-	--	-	3200	14	--	-	--	-	--	-
...OSCILLATORIACEAE												
....LYNGBYA	--	-	--	-	--	-	570	2	--	-	--	-
....OSCILLATORIA	390#	35	--	-	12000#	51	6100#	19	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)												
..EUGLENOPHYCEAE												
...EUGLENALES												
....EUGLENACEAE												
....EUGLENA	--	-	--	-	*	0	*	0	--	-	390	1
....LEPOCINCLIS	--	-	--	-	--	-	--	-	14	5	*	0
....PHACUS	--	-	--	-	*	0	*	0	--	-	*	0
....TRACHELOMONAS	--	-	180	4	760	3	430	1	--	-	580	2
PYRRHOPHYTA (FIRE ALGAE)												
..DINOPHYCEAE												
...PERIDINIALES												
....GLENODINIACEAE												
....GLENODINIUM	--	-	--	-	--	-	--	-	--	-	190	1

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

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

CANNONBALL RIVER BASIN

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, on right bank 30 ft (90 m) downstream from bridge on county highway, and 1 mile south of Havelock.

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 good except for the winter periods and the period July - September, which are poor.

AVERAGE DISCHARGE.--7 years, 1.95 ft³/s (0.141 m³/s), 3,610 acre-ft/yr (4.45 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,490 ft³/s (42.2 m³/s) Aug. 17, 1981, by computation of peak flow through bridge opening, gage height, 11.15 ft (3.399 m), from floodmark; no flow at times.

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)
Aug. 6	Unknown	200 5.66	Unknown	Aug. 17	Unknown	a*1,490 42.2	b11.15 3.399

No flow Feb. 9-13, July 28 - Aug. 2.

a - By computation of peak flow through bridge opening.

b - From floodmark.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.05	.10	.11	.10	.04	.06	.12	.12	.07	.02	.00	.37
2	.05	.11	.09	.08	.03	.06	.12	.08	.08	.04	.00	.27
3	.05	.10	.07	.05	.03	.07	.13	.08	.09	.05	1.0	.23
4	.04	.10	.09	.03	.03	.06	.13	.08	.10	.05	35	.14
5	.04	.10	.07	.03	.03	.05	.15	.08	.10	.04	70	.10
6	.04	.10	.06	.03	.03	.05	.15	.06	.08	.02	100	.10
7	.04	.11	.05	.03	.02	.05	.15	.06	.08	.00	60	.23
8	.05	.11	.04	.03	.01	.05	.13	.06	.08	.00	37	.50
9	.04	.11	.05	.03	.00	.05	.12	.07	.07	.00	20	.43
10	.03	.11	.04	.03	.00	.05	.12	.06	.06	.00	14	.26
11	.03	.11	.06	.03	.00	.06	.12	.08	.06	.00	7.8	.20
12	.03	.11	.10	.03	.00	.05	.14	.08	.07	.00	3.8	.15
13	.03	.12	.08	.03	.00	.05	.15	.08	.30	.00	2.0	.09
14	.03	.11	.07	.03	.11	.05	.13	.08	.33	.04	1.3	.05
15	.05	.11	.11	.04	.50	.06	.15	.06	.23	.06	1.2	.03
16	.24	.11	.18	.04	.41	.06	.13	.06	.18	.07	13	.02
17	.35	.11	.12	.03	.54	.07	.13	.09	.47	.07	170	.02
18	.24	.12	.07	.03	.44	.07	.13	.09	.52	.07	52	.02
19	.13	.12	.03	.04	.44	.08	.13	.08	.37	.06	33	.02
20	.11	.12	.02	.05	.47	.08	.11	.06	.29	.04	20	.02
21	.11	.12	.02	.05	.47	.09	.10	.04	.18	.03	12	.02
22	.11	.12	.02	.07	.32	.09	.10	.07	.12	.02	7.0	.02
23	.11	.12	.02	.09	.32	.10	.10	.09	.10	.02	4.0	.02
24	.11	.13	.01	.09	.27	.10	.10	.09	.07	.02	2.4	.02
25	.11	.13	.01	.09	.15	.10	.10	.09	.05	.01	1.6	.03
26	.11	.13	.01	.07	.08	.10	.11	.09	.04	.01	1.2	3.0
27	.12	.13	.10	.05	.08	.11	.20	.10	.04	.01	.77	2.5
28	.11	.13	.25	.04	.06	.11	.18	.13	.03	.00	.64	.85
29	.11	.13	.22	.04	---	.11	.15	.10	.03	.00	.50	.55
30	.11	.13	.18	.03	---	.11	.12	.09	.03	.00	.44	.50
31	.10	---	.14	.04	---	.12	---	.08	---	.00	.40	---
TOTAL	2.88	3.46	2.49	1.45	4.88	2.32	3.90	2.48	4.32	.75	672.05	10.76
MEAN	.093	.12	.080	.047	.17	.075	.13	.080	.14	.024	21.7	.36
MAX	.35	.13	.25	.10	.54	.12	.20	.13	.52	.07	170	3.0
MIN	.03	.10	.01	.03	.00	.05	.10	.04	.03	.00	.00	.02
AC-FT	5.7	6.9	4.9	2.9	9.7	4.6	7.7	4.9	8.6	1.5	1330	21

CAL YR 1980 TOTAL 41.36 MEAN .11 MAX 12 MIN .00 AC-FT 82
WTR YR 1981 TOTAL 711.74 MEAN 1.95 MAX 170 MIN .00 AC-FT 1410

CANNONBALL RIVER BASIN

347

06349930 COAL BANK CREEK NEAR HAVELOCK, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS (MG/L AS CACU3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CACO3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT												
08...	1240	.04	1990	8.8	26.0	14.5	14.1	150	470	140	66	73
NOV												
26...	0900	.13	2150	8.2	2.0	2.0	15.6	119	620	230	120	77
DEC												
09...	0930	.05	2630	8.0	-11.5	1.5	10.8	84	760	250	150	94
JAN												
28...	1130	.04	2380	7.2	-7.5	1.0	10.4	83	870	330	190	97
FEB												
25...	1250	.13	1520	8.2	2.5	.5	12.3	92	440	100	97	48
MAR												
13...	1315	.05	1220	--	13.0	7.0	14.4	127	340	--	75	38
25...	1630	.10	1300	8.2	11.0	10.0	13.7	132	--	--	--	--
APR												
07...	1250	.13	1540	8.4	10.5	9.0	13.1	126	450	80	93	53
21...	1115	.09	1780	8.4	18.0	13.0	9.8	104	--	--	--	--
MAY												
12...	1415	.08	1930	8.5	--	12.0	--	--	530	--	92	73
JUN												
03...	1430	.09	1930	8.7	24.0	23.0	15.5	194	--	--	--	--
24...	1630	.06	2020	8.6	23.0	22.0	14.6	180	560	270	81	88
AUG												
18...	1515	53	470	8.4	29.0	22.0	4.6	58	150	34	37	13
SEP												
02...	0815	.27	1050	8.0	21.5	15.0	6.0	67	340	71	77	36

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY, CARBON- ATE FET-FLD (MG/L CACU3) (00430)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TUNS AC-FT) (70303)
OCT												
08...	300	58	6.1	11	333	780	9.2	.3	.2	1460	1440	1.9
NOV												
26...	280	49	4.9	11	390	820	12	.4	.7	1620	--	2.2
DEC												
09...	360	50	5.7	14	510	1000	13	.3	2.7	1970	1940	2.6
JAN												
28...	300	42	4.4	9.1	540	910	12	.3	8.1	1860	1850	2.5
FEB												
25...	190	48	3.9	6.3	340	530	7.0	.1	5.1	1080	1090	1.4
MAR												
13...	150	48	3.5	5.0	--	400	5.4	.2	2.0	840	839	1.1
25...	--	--	--	--	283	--	--	--	--	--	--	--
APR												
07...	220	51	4.5	6.6	370	550	7.4	.3	.5	1130	--	1.5
21...	--	--	--	--	372	--	--	--	--	--	--	--
MAY												
12...	290	54	5.5	6.8	--	720	8.4	.2	.2	1430	--	1.9
JUN												
03...	--	--	--	--	302	--	--	--	--	--	--	--
24...	260	50	4.8	8.1	--	780	9.2	.2	.1	1510	1400	2.0
AUG												
18...	35	32	1.4	11	116	120	3.9	.1	12	309	--	.42
SEP												
02...	100	38	2.6	10	290	300	6.3	.2	15	731	707	.99

06349930 COAL BANK CREEK NEAR HAVELOCK, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	SOLIDS, DIS- SOLVED (TUNS PER DAY) (70302)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS TOTAL (MG/L AS PO4) (71886)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC SUS- PENDED TOTAL (UG/L AS AS) (01001)	ARSENIC TOTAL IN BOT- TOM MA- TERIAL (UG/G AS AS) (01003)
OCT 08...	.16	--	--	--	--	--	--	--	--	--	--	--
NOV 26...	.57	2.7	.000	.00	.90	.90	.040	.12	.040	--	--	--
DEC 09...	.27	--	--	--	--	--	--	--	--	--	--	--
JAN 28...	.20	.00	.100	.12	.90	1.00	.030	.09	.030	--	--	--
FEB 25...	.38	--	--	--	--	--	--	--	--	1	0	--
MAR 13...	.11	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--
APR 07...	.40	.00	.040	--	1.1	1.10	.040	.12	.030	2	1	100
21...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 12...	.31	--	--	--	--	--	--	--	--	--	--	--
JUN 03...	--	--	--	--	--	--	--	--	--	--	--	--
24...	.24	--	--	--	--	--	--	--	--	--	--	--
AUG 18...	44.2	.19	.190	--	2.2	2.40	.330	1.0	.100	6	4	--
SEP 02...	.53	--	--	--	--	--	--	--	--	--	--	--

DATE	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BARIUM, SUS- PENDED RECOV- ERABLE (UG/L AS BA) (01006)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, SUS- PENDED RECOV- (UG/L AS CR) (01031)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	CHRO- MIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G) (01029)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COBALT, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CO) (01038)
OCT 08...	100	10	90	--	--	1100	--	--	--	--	--	--
NOV 26...	--	--	--	--	--	1100	--	--	--	--	--	--
DEC 09...	--	--	--	--	--	1300	--	--	--	--	0	--
JAN 28...	--	--	--	--	--	1000	--	--	--	--	--	--
FEB 25...	--	--	--	0	<1	690	0	0	0	--	--	--
MAR 13...	--	--	--	--	--	620	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--
APR 07...	100	10	90	0	<1	840	10	10	0	4	--	10
21...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 12...	--	--	--	--	--	1200	--	--	--	--	--	--
JUN 03...	--	--	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	1200	--	--	--	--	--	--
AUG 18...	300	200	100	10	<1	120	20	20	0	--	--	--
SEP 02...	--	--	--	--	--	400	--	--	--	--	--	--

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

[illegible]

CANNONBALL RIVER BASIN

06349930 COAL BANK CREEK NEAR HAVELOCK, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	POTAS- SIUM 40 DIS- SOLVED (PCI/L AS K40) (82068)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHENOLS (UG/L) (32730)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)
OCT 08...	--	--	--	--	--	5	.00	--	--	--
NOV 26...	--	17	.2	--	--	44	.02	--	--	--
DEC 09...	--	--	--	--	--	37	.00	--	--	--
JAN 28...	6.8	24	.4	--	--	162	.02	--	--	--
FEB 25...	4.7	--	--	.00	3	10	.00	--	--	--
MAR 13...	3.7	--	--	--	--	20	.00	--	--	--
MAR 25...	--	--	--	--	--	17	.00	--	--	--
APR 07...	4.9	15	.2	.00	0	74	.03	--	--	--
APR 21...	--	--	--	--	--	42	.01	--	--	--
MAY 12...	5.1	--	--	--	--	6	.00	--	--	--
JUN 03...	--	--	--	--	--	8	.00	--	--	--
JUN 24...	6.0	--	--	--	--	10	.00	--	--	--
AUG 18...	--	12	--	.00	6	481	69	97	98	100
SEP 02...	--	--	--	--	--	61	.04	--	--	--

DATE	BED MAT. FALL DIAM. % FINER THAN .062 MM (80158)	BED MAT. FALL DIAM. % FINER THAN .125 MM (80159)	BED MAT. FALL DIAM. % FINER THAN .250 MM (80160)	BED MAT. FALL DIAM. % FINER THAN .500 MM (80161)	BED MAT. FALL DIAM. % FINER THAN 1.00 MM (80162)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)
AUG 18...	63	70	76	78	80	83	87	89	94	100

DATE	LENGTH OF EXPO- SURE (DAYS) (00022)	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUORUM (MG/M2) (70957)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUORUM (MG/M2) (70958)	PERI- PHYTON BIOMASS ASH WEIGHT G/SQ M (00572)	PERI- PHYTON BIOMASS DRY WEIGHT G/SQ M (00573)
OCT 08...	34	2.11	.290	2.60	3.78
JUN 24...	43	.270	.130	2.68	2.84

06349930 COAL BANK CREEK NEAR HAVELOCK, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	OCT 8,80 1240	NOV 26,80 0900	DEC 9,80 0930	JAN 28,81 1130	FEB 25,81 1250					
TOTAL CELLS/ML	640	140	1100	350	4100					
DIVERSITY: DIVISION	1.5	1.7	1.5	2.2	0.3					
..CLASS	1.5	1.7	1.5	2.2	0.3					
..ORDER	1.9	1.9	1.5	2.5	0.3					
...FAMILY	1.9	1.9	2.1	2.5	0.3					
....GENUS	1.9	1.9	2.1	2.5	0.3					
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
BACILLARIOPHYTA (DIATOMS)										
..BACILLARIOPHYCEAE										
...ACHNANTHALES										
...ACHNANTHACEAE										
...COCONEIS	13	2	--	-	--	-	--	-	--	-
...BACILLARIALES										
...NITZSCHIAEAE										
...NITZSCHIA	13	2	--	-	--	-	13	4	130	3
...EUPODISCALES										
...COSCINODISCAEAE										
...CYCLOTELLA	--	-	13	9	13	1	--	-	*	0
...MELOSIRA	--	-	--	-	--	-	120#	33	--	-
...FRAGILARIALES										
...FRAGILARIAEAE										
...DIATOMA	--	-	--	-	--	-	--	-	--	-
...SYNEDRA	--	-	--	-	--	-	--	-	--	-
...NAVICULALES										
...GOMPHONEMACEAE										
...GOMPHONEMA	--	-	--	-	--	-	--	-	--	-
...NAVICULACEAE										
...NAVICULA	--	-	13	9	--	-	--	-	--	-
CHLOROPHYTA (GREEN ALGAE)										
..CHLOROPHYCEAE										
...CHLOROCOCCALES										
...MICRACTINIACEAE										
...MICRACTINIUM	--	-	--	-	--	-	--	-	--	-
...DOCYSTACEAE										
...ANKISTRODESMUS	--	-	--	-	--	-	--	-	--	-
...SELENASTRUM	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
...ACTINASTRUM	--	-	--	-	--	-	--	-	--	-
...SCENEDESMUS	52	8	--	-	--	-	26	7	--	-
...VOLVOCALES										
...CHLAMYDOMONADACEAE										
...CHLAMYDOMONAS	260#	40	26#	18	64	6	13	4	26	1
CHRYSOPHYTA										
..CHRYSOPHYCEAE										
...OCHROMONADALES										
...DINOBRYACEAE										
...DINOBRYON	--	-	--	-	64	6	--	-	--	-
...OCHROMONADACEAE										
...OCHROMONAS	--	-	--	-	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)										
..CRYPTOPHYCEAE										
...CRYPTOMONADALES										
...CRYPTOCHRYSIDACEAE										
...CHROOMONAS	39	6	--	-	360#	32	--	-	--	-
...CRYPTOMONADACEAE										
...CRYPTOMONAS	13	2	--	-	390#	34	52	15	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROOCOCCALES										
...CHROOCOCCACEAE										
...ANACYSTIS	--	-	77#	55	--	-	52	15	--	-
...GOMPHOSPHAERIA	--	-	--	-	--	-	--	-	--	-
...NOSTOCALES										
...NOSTOCACEAE										
...ANABAENA	--	-	--	-	--	-	--	-	--	-
...OSCILLATORIALES										
...OSCILLATORIAEAE										
...OSCILLATORIA	260#	40	--	-	--	-	--	-	3900#	96
EUGLENOPHYTA (EUGLENOIDS)										
..EUGLENOPHYCEAE										
...EUGLENALES										
...EUGLENACEAE										
...EUGLENA	--	-	--	-	13	1	--	-	--	-
...LEPOCINCLIS	--	-	--	-	--	-	--	-	--	-
...PHACUS	--	-	--	-	--	-	--	-	--	-
...TRACHELOMONAS	--	-	--	-	--	-	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)										
..DINOPHYCEAE										
...DINOKONTAE										
...GLENODINIACEAE										
...GLENODINIUM	--	-	13	9	220#	20	77#	22	*	0

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

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

CANNONBALL RIVER BASIN

06349930 COAL BANK CREEK NEAR HAVELOCK, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	MAR 13,81 1315	MAY 12,81 1415	JUN 24,81 1630	AUG 18,81 1515	SEP 2,81 0815					
TOTAL CELLS/ML	540	170	180	0	11000					
DIVERSITY: DIVISION	1.1	0.4	0.6	0.0	2.4					
..CLASS	1.1	0.4	0.6	0.0	2.4					
..ORDER	2.4	0.8	0.7	0.0	2.8					
...FAMILY	2.4	0.8	0.7	0.0	3.1					
....GENUS	2.4	0.8	0.7	0.0	3.6					
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
BACILLARIOPHYTA (DIATOMS)										
..BACILLARIOPHYCEAE										
...ACHNANTHALES										
....ACHNANTHACEAE										
....COCCONEIS	--	-	--	-	--	-	--	-	--	-
..BACILLARIALES										
...NITZSCHIA										
....NITZSCHIA	--	-	140# 85		13 7		--	-	68 1	
..EUPODISCALES										
...COSCIDODISCACEAE										
....CYCLOTELLA	--	-	13 8		--	-	--	-	1400 13	
....MELOSIRA	--	-	--	-	--	-	--	-	270 2	
..FRAGILARIALES										
...FRAGILARIACEAE										
....DIATOMA	13 2		--	-	--	-	--	-	--	-
....SYNEDRA	--	-	--	-	--	-	--	-	68 1	
..NAVICULALES										
...GOMPHONEMACEAE										
....GOMPHONEMA	--	-	--	-	--	-	--	-	68 1	
..NAVICULACEAE										
....NAVICULA	--	-	--	-	13 7		--	-	--	-
CHLOROPHYTA (GREEN ALGAE)										
..CHLOROPHYCEAE										
...CHLOROCOCCALES										
...MICRACTINIACEAE										
....MICRACTINIUM	--	-	--	-	--	-	--	-	550 5	
...OOCYSTACEAE										
...ANKISTRODESMUS	26 5		--	-	--	-	--	-	480 4	
...SELENASTRUM	--	-	13 8		--	-	--	-	--	-
...SCENEDESMACEAE										
...ACTINASTRUM	--	-	--	-	--	-	--	-	270 2	
...SCENEDESMUS	--	-	--	-	--	-	--	-	270 2	
...VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	64 12		--	-	--	-	--	-	2500# 23	
CHRYSOPHYTA										
..CHRYSOPHYCEAE										
...OCHROMONADALES										
...DINOBRYACEAE										
....DINOBRYON	--	-	--	-	--	-	--	-	--	-
...OCHROMONADACEAE										
....OCHROMONAS	--	-	--	-	--	-	--	-	550 5	
CRYPTOPHYTA (CRYPTOMONADS)										
..CRYPTOPHYCEAE										
...CRYPTOMONADALES										
...CRYPTOCHRYSIDACEAE										
...CHROOMONAS	--	-	--	-	--	-	--	-	--	-
...CRYPTOMONADACEAE										
....CRYPTOMONAS	--	-	--	-	150# 86		--	-	1200 11	
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROOCOCCALES										
...CHROOCOCCACEAE										
...ANACYSTIS	--	-	--	-	--	-	--	-	550 5	
...GOMPHOSPHERIA	100# 19		--	-	--	-	--	-	--	-
...NOSTOCALES										
...NOSTOCACEAE										
...ANABAENA	120# 21		--	-	--	-	--	-	--	-
...OSCILLATORIALES										
...OSCILLATORIA	190# 36		--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
..EUGLENOPHYCEAE										
...EUGLENALES										
...EUGLENACEAE										
...EUGLENA	--	-	--	-	--	-	--	-	750 7	
...LEPOCINCLIS	--	-	--	-	--	-	--	-	340 3	
...PHACUS	--	-	--	-	--	-	--	-	68 1	
...TRACHELOMONAS	13 2		--	-	--	-	--	-	1200 11	
PYRRHOPHYTA (FIRE ALGAE)										
..PYRRHOPHYCEAE										
...DINOKONTAE										
...GLENODINIACEAE										
....GLENODINIUM	13 2		--	-	--	-	--	-	270 2	

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

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

CANNONBALL RIVER BASIN

353

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, and 0.3 mi (0.5 km) north of Regent.

DRAINAGE AREA.--580 mi² (1,500 km²), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,422.90 ft (738.500 m) National Geodetic Vertical Datum of 1929.

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

AVERAGE DISCHARGE.--31 years, 44.7 ft³/s (1.266 m³/s), 32,390 acre-ft/yr (39.9 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, 10,000 ft³/s (283 m³/s) Mar. 27, 1978, gage height, 20.55 ft (6.264 m); 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)
Aug. 6	0115	1,060 30.0	7.83 2.387	Aug. 16	1845	*5,240 148	15.52 4.730

Minimum daily discharge, 1.8 ft³/s (0.051 m³/s) Oct. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	3.5	2.8	4.0	3.8	5.7	3.9	4.8	4.4	2.2	2.8	13
2	2.2	3.5	2.7	4.0	3.6	5.8	3.9	4.3	4.2	2.6	3.9	12
3	1.9	3.5	2.6	4.0	3.6	5.8	3.9	4.2	4.3	2.6	19	11
4	1.9	3.5	2.5	4.0	3.4	5.8	3.9	3.6	4.9	6.8	167	9.4
5	1.9	3.5	2.5	3.7	3.4	5.8	4.0	3.5	4.1	34	402	9.0
6	1.9	3.5	2.5	3.5	3.4	5.8	4.0	3.5	4.0	19	779	9.2
7	1.9	3.5	2.5	3.5	3.2	5.6	4.6	3.9	3.9	12	415	9.2
8	1.8	3.5	2.5	3.5	3.2	5.5	5.0	4.3	4.0	7.3	259	8.7
9	1.9	3.5	2.5	3.5	3.0	5.5	4.6	4.0	3.7	5.8	145	8.4
10	2.0	3.5	2.5	3.5	2.8	5.3	4.2	3.5	3.3	4.6	92	10
11	2.0	3.5	2.5	3.2	2.4	5.3	4.2	3.2	2.9	4.2	65	11
12	2.0	3.5	2.5	3.2	2.2	5.3	4.3	3.2	2.8	7.9	45	8.4
13	2.0	3.5	2.5	3.2	2.3	5.0	4.4	3.2	4.6	6.8	34	8.5
14	2.0	3.5	2.8	3.5	3.4	5.2	4.4	3.2	5.6	13	27	7.6
15	2.1	3.5	2.9	3.5	4.4	5.5	4.4	3.0	6.8	153	25	7.3
16	3.8	3.5	3.2	3.5	4.6	6.5	4.6	3.1	7.1	89	3200	7.3
17	6.5	3.5	3.4	3.5	5.3	6.8	4.5	3.4	9.0	42	2120	6.3
18	6.8	3.5	3.5	3.4	6.0	6.1	4.0	3.4	7.2	26	531	6.0
19	6.8	3.5	3.2	3.4	7.3	6.0	3.7	3.5	9.1	17	292	5.8
20	6.3	3.5	3.2	3.4	8.5	6.0	3.1	2.9	12	12	178	5.5
21	5.3	3.5	3.0	3.4	8.5	6.0	3.2	2.6	9.8	8.4	115	5.3
22	5.0	3.5	3.0	3.5	8.5	6.0	3.4	3.4	8.3	7.6	79	5.0
23	5.0	3.5	3.0	3.5	8.5	6.0	3.2	4.4	6.7	7.9	56	5.3
24	5.0	3.3	3.0	3.7	7.7	6.0	3.2	4.2	5.3	7.9	42	5.5
25	4.8	3.2	2.8	4.0	7.7	6.0	3.2	4.2	4.3	5.5	35	6.3
26	4.6	3.2	2.8	4.0	7.3	5.7	3.6	4.0	3.7	5.8	29	51
27	4.6	3.2	3.0	4.0	6.9	5.1	5.0	4.3	3.3	5.3	25	136
28	4.6	3.2	3.6	4.0	5.8	4.8	5.0	4.8	3.3	5.8	21	66
29	4.2	3.2	3.7	4.0	---	4.8	5.2	4.1	2.9	4.8	19	37
30	4.0	3.2	3.5	3.8	---	4.7	5.0	4.1	2.4	4.2	17	26
31	3.7	---	3.5	3.8	---	4.1	---	4.0	---	3.4	15	---
TOTAL	110.9	103.0	90.2	112.7	140.7	173.5	123.6	115.8	157.9	534.4	9254.7	517.0
MEAN	3.58	3.43	2.91	3.64	5.03	5.60	4.12	3.74	5.26	17.2	299	17.2
MAX	6.8	3.5	3.7	4.0	8.5	6.8	5.2	4.8	12	153	3200	136
MIN	1.8	3.2	2.5	3.2	2.2	4.1	3.1	2.6	2.4	2.2	2.8	5.0
AC-FT	220	204	179	224	279	344	245	230	313	1060	18360	1030

CAL YR 1980	TOTAL	2364.68	MEAN	6.46	MAX	645	MIN	.55	AC-FT	4690
WTR YR 1981	TOTAL	11434.40	MEAN	31.3	MAX	3200	MIN	1.8	AC-FT	22680

CANNONBALL RIVER BASIN

06350000 CANNONBALL RIVER AT REGENT, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1964-66, 1971 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CACO3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT												
02...	1010	2.5	1600	8.4	11.0	10.0	--	--	350	0	65	46
09...	1310	2.0	1640	8.4	14.0	12.5	10.0	102	330	0	60	43
NOV												
03...	1635	3.5	1710	--	10.0	6.5	--	--	--	--	--	--
25...	1500	3.2	1725	8.0	3.5	2.0	136	102	380	0	72	49
DEC												
08...	1540	2.5	2090	--	.0	.0	--	--	--	--	--	--
09...	1200	2.5	2050	7.9	-1.5	.5	13.8	105	500	0	100	60
JAN												
19...	1720	3.4	1890	--	2.0	.0	--	--	--	--	--	--
28...	1430	4.0	1710	7.6	-8.0	1.0	12.6	98	370	0	76	43
FEB												
18...	1430	6.0	1720	8.3	11.5	.5	13.2	100	390	0	80	45
23...	1735	8.4	1440	--	6.0	1.0	--	--	--	--	--	--
MAR												
12...	1400	5.3	120	7.9	12.0	4.0	13.7	111	270	0	56	32
30...	1630	4.9	1260	--	7.0	8.0	--	--	--	--	--	--
APR												
08...	0815	5.0	1410	8.4	7.5	6.5	10.5	94	330	3	67	40
MAY												
12...	1110	3.2	1640	8.4	14.0	10.0	10.5	103	390	--	72	51
12...	1605	3.2	1650	--	11.0	10.5	--	--	--	--	--	--
JUN												
02...	1040	4.3	1660	8.4	14.0	18.0	--	--	360	0	62	50
24...	1250	5.8	2160	8.6	24.5	21.0	8.8	106	440	77	71	63
29...	1755	2.6	1870	--	25.0	25.0	--	--	--	--	--	--
JUL												
30...	1030	4.2	1500	8.5	29.5	23.0	7.4	92	360	53	71	45
AUG												
03...	1815	22	1470	--	27.0	24.5	--	--	--	--	--	--
17...	1505	1350	312	8.2	27.0	19.5	--	--	89	--	23	7.7
19...	0815	312	502	7.9	--	21.5	--	--	150	--	35	15
SEP												
02...	1100	13	1400	8.4	24.5	16.5	8.8	98	360	40	80	39
03...	1325	10	1380	--	21.0	17.5	--	--	--	--	--	--

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

[illegible]

CANNONBALL RIVER BASIN

06350000 CANNONBALL RIVER AT REGENT, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

[illegible][illegible]

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

[illegible]

CANNONBALL RIVER BASIN

06350000 CANNONBALL RIVER AT REGENT, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	GROSS BETA, DIS- SOLVED (PCI/L AS SR/ YT-90) (80050)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90) (80060)	POTAS- SIUM 40 DIS- SOLVED (PCI/L AS K40) (82068)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHENOLS (UG/L) (32730)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)
OCT 09...	--	--	--	--	--	--	--	87	.47
NOV 25...	--	--	--	16	.1	--	--	34	.29
DEC 09...	--	--	--	--	--	--	--	50	.34
JAN 28...	--	--	3.8	28	.3	--	--	86	.93
FEB 18...	--	--	4.0	--	--	.00	4	44	.71
MAR 12...	--	--	3.3	--	--	--	--	6	.09
APR 08...	--	--	4.3	13	.3	--	--	55	.74
MAY 12...	--	--	4.7	--	--	--	--	90	.78
JUN 24...	--	--	6.1	--	--	--	--	67	1.0
JUL 30...	<12	1.0	--	11	1.1	.00	7	58	.66
AUG 19...	--	--	--	--	--	.00	9	770	649
SEP 02...	--	--	--	--	--	--	--	105	3.7

DATE	BED MAT. FALL DIAM. % FINER THAN .062 MM (80158)	BED MAT. FALL DIAM. % FINER THAN .125 MM (80159)	BED MAT. FALL DIAM. % FINER THAN .250 MM (80160)	BED MAT. FALL DIAM. % FINER THAN .500 MM (80161)	BED MAT. FALL DIAM. % FINER THAN 1.00 MM (80162)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)
FEB 18...	6	8	21	25	27	34	52	77	96	100
JUL 30...	0	2	3	32	71	99	100	--	--	--
AUG 19...	5	11	80	100	--	--	--	--	--	--

DATE	LENGTH OF EXPO- SURE (DAYS) (00022)	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2) (70957)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2) (70958)	PERI- PHYTON BIOMASS ASH WEIGHT G/SQ M (00572)	PERI- PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)
OCT 09...	35	1.13	.360	3.78	4.41
JUL 30...	36	4.15	.030	8.58	10.2

CANNONBALL RIVER BASIN

359

06350000 CANNONBALL RIVER AT REGENT, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	OCT 9,80 1310	NOV 25,80 1500	DEC 9,80 1200	JAN 28,81 1430	FEB 18,81 1430	MAR 12,81 1400				
TOTAL CELLS/ML	2400	220	360	52	65	910				
DIVERSITY: DIVISION	1.5	1.9	1.9	0.8	0.0	1.2				
..CLASS	1.5	1.9	1.9	0.8	0.0	1.2				
...ORDER	1.8	2.3	2.4	2.0	1.5	1.4				
...FAMILY	2.6	2.3	2.4	2.0	1.5	1.4				
....GENUS	2.9	2.3	2.5	2.0	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
BACILLARIOPHYTA (DIATOMS)										
..BACILLARIOPHYCEAE										
...ACHNANTHALES										
....ACHNANTHACEAE										
.....ACHNANTHES	--	-	--	-	--	-	--	-	--	-
...BACILLARIALES										
....NITZSCHIA	630#	26	13	6	26	7	13#	25	26#	40
...EUPODISCALES										
....COSCINODISCACEAE										
.....CYCLOTELLA	46	2	26	12	--	-	--	-	26	3
....MELOSIRA	--	-	--	-	--	-	--	-	--	-
....STEPHANODISCUS	--	-	--	-	--	-	--	-	--	-
..FRAGILARIALES										
....FRAGILARIACEAE										
.....ASTERIONELLA	--	-	--	-	--	-	--	-	39	4
....DIATOMA	--	-	--	-	--	-	26#	40	64	7
....FRAGILARIA	--	-	--	-	--	-	--	-	--	-
....SYNEDRA	--	-	--	-	--	-	--	-	--	-
..NAVICULALES										
....CYMBELLACEAE										
.....CYMBELLA	--	-	--	-	--	-	--	-	--	-
....GOMPHONEMACEAE										
.....GOMPHONEMA	--	-	--	-	--	-	13#	20	--	-
....NAVICULACEAE										
.....GYROSIGMA	--	-	--	-	--	-	--	-	--	-
....NAVICULA	15	1	26	12	13	4	13#	25	--	-
..SURIPELLALES										
....SURIPELLACEAE										
.....SURIPELLA	--	-	--	-	--	-	13#	25	--	-
CHLOROPHYTA (GREEN ALGAE)										
..CHLOROPHYCEAE										
...CHLOROCOCCALES										
....CHLOROCOCCACEAE										
.....SCHROEDERIA	--	-	--	-	--	-	--	-	--	-
...DICTYOSPHAERIA										
....DICTYOSPHAERIUM	--	-	--	-	--	-	--	-	--	-
...HYDRODICTYACEAE										
....PEDIASTRUM	250	10	--	-	--	-	--	-	--	-
...MICRACTINIACEAE										
....MICRACTINIUM	--	-	--	-	--	-	--	-	--	-

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

CONTINUED ..

CANNONBALL RIVER BASIN

06350000 CANNONBALL RIVER AT REGENT, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

(CONTINUED)

DATE TIME	OCT 9,80 1310		NOV 25,80 1500		DEC 9,80 1200		JAN 28,81 1430		FEB 18,81 1430		MAR 12,81 1400	
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
...OOCYSTACEAE												
....ANKISTRODESMUS	540#	22	39#	18	26	7	--	-	--	-	--	-
....FRANCEIA	--	-	--	-	--	-	--	-	--	-	--	-
....KIRCHNERIELLA	--	-	--	-	--	-	--	-	--	-	--	-
....OOCYSTIS	61	3	--	-	--	-	--	-	--	-	--	-
....SELENASTRUM	--	-	--	-	13	4	--	-	--	-	--	-
....SCENEDESMACEAE												
....ACTINASTRUM	--	-	--	-	--	-	--	-	--	-	--	-
....CRUCIGENIA	180	8	--	-	--	-	--	-	--	-	--	-
....SCENEDESMUS	340	14	--	-	--	-	--	-	--	-	--	-
....TETRASTRUM	--	-	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES												
....CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	61	3	--	-	150#	43	--	-	--	-	64	7
CRYPTOPHYTA (CRYPTOMONADS)												
..CRYPTOPHYCEAE												
..CRYPTOMONADALES												
....CRYPTOCHRYSIDACEAE												
....CHROOMONAS	15	1	--	-	52	14	--	-	--	-	--	-
....CRYPTOMONADACEAE												
....CRYPTOMONAS	--	-	--	-	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
..CYANOPHYCEAE												
..CHROOCOCCALES												
....CHROOCOCCACEAE												
....ANACYSTIS	220	9	--	-	--	-	--	-	--	-	--	-
..NOSTOCALES												
....HAMMATOIDEACEAE												
....RAPHIDIOPSIS	--	-	--	-	--	-	--	-	--	-	--	-
....NOSTOCACEAE												
....ANABAENOPSIS	--	-	--	-	--	-	--	-	--	-	--	-
..OSCILLATORIALES												
....OSCILLATORIACEAE												
....LYNGBYA	--	-	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	--	-	--	-	--	-	670#	73
EUGLENOPHYTA (EUGLENIDS)												
..EUGLENOPHYCEAE												
..EUGLENALES												
....EUGLENACEAE												
....EUGLENA	92	4	--	-	--	-	--	-	--	-	--	-
....LEPOCINCLIS	--	-	--	-	--	-	--	-	--	-	--	-
....PHACUS	--	-	--	-	--	-	--	-	--	-	--	-
....TRACHELONAS	--	-	90#	41	52	14	--	-	--	-	13	1
PYRRHOPHYTA (FIRE ALGAE)												
..DINOPHYCEAE												
..DINOKONTAE												
....GLENODINIACEAE												
....GLENODINIUM	--	-	26	12	26	7	13#	25	--	-	26	3

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

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

CANNONBALL RIVER BASIN

361

06350000 CANNONBALL RIVER AT REGENT, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	APR 8,81 0815	MAY 12,81 1110	JUN 24,81 1250	JUL 30,81 1030	AUG 19,81 0815	SEP 2,81 1100
TOTAL CELLS/ML	550	3500	1800	80000	630	40000
DIVERSITY: DIVISION	1.7	1.6	1.3	1.2	0.5	1.5
..CLASS	1.7	1.6	1.3	1.2	0.5	1.5
...ORDER	2.3	1.8	2.4	1.6	1.8	1.9
...FAMILY	2.4	1.9	2.5	1.9	1.8	2.7
....GENUS	2.4	1.9	2.5	2.3	1.8	2.9

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
BACILLARIOPHYTA (DIATOMS)												
..BACILLARIOPHYCEAE												
...ACHNANTHALES												
....ACHNANTHACEAE												
....ACHNANTHES	--	-	--	-	13	1	--	-	--	-	--	-
...BACILLARIALES												
....NITZSCHIA												
....NITZSCHIA	190#	35	130	4	210	11	*	0	280#	44	440	1
...EUPODISCALES												
....COSCINODISCAEAE												
....CYCLOTELLA	26	5	--	-	39	2	*	0	210#	33	5200	13
....MELOSIRA	--	-	--	-	--	-	3700	5	--	-	--	-
...STEPHANODISCUS	--	-	50	1	--	-	--	-	--	-	--	-
..FRAGILARIALES												
...FRAGILARIAEAE												
....ASTERIONELLA	--	-	--	-	--	-	--	-	--	-	--	-
....DIATOMA	--	-	--	-	--	-	--	-	--	-	--	-
....FRAGILARIA	--	-	--	-	--	-	*	0	--	-	--	-
....SYNEDRA	--	-	--	-	13	1	--	-	--	-	--	-
...NAVICULALES												
....CYMBELLACEAE												
....CYMBELLA	--	-	--	-	13	1	--	-	--	-	--	-
...GOMPHONEMACEAE												
....GOMPHONEMA	13	2	--	-	--	-	--	-	--	-	--	-
...NAVICULACEAE												
....GYROSIGMA	13	2	--	-	--	-	--	-	--	-	--	-
....NAVICULA	--	-	34	1	52	3	410	1	70	11	*	0
...SURIPELLALES												
....SURIPELLACEAE												
....SURIPELLA	--	-	--	-	--	-	--	-	--	-	*	0
CHLOROPHYTA (GREEN ALGAE)												
..CHLOROPHYCEAE												
...CHLOROCOCCALES												
....CHLOROCOCCACEAE												
....SCHROEDERIA	--	-	--	-	--	-	--	-	--	-	290	1
...DICTYOSPHAERIAEAE												
....DICTYOSPHAERIUM	--	-	--	-	--	-	3200	4	--	-	14000#	34
...HYDRODICTYACEAE												
....PEDIASTRUM	--	-	--	-	--	-	--	-	--	-	--	-
...MICRACTINIACEAE												
....MICRACTINIUM	--	-	--	-	--	-	*	0	--	-	--	-

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

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

CONTINUED ...

CANNONBALL RIVER BASIN

06350000 CANNONBALL RIVER AT REGENT, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

(CONTINUED)

DATE TIME	APR 8,81 0815		MAY 12,81 1110		JUN 24,81 1250		JUL 30,81 1030		AUG 19,81 0815		SEP 2,81 1100	
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
...OOCYSTACEAE												
....ANKISTRODESMUS	52	9	130	4	140	8	1900	2	--	-	730	2
....FRANCEIA	--	-	--	-	--	-	*	0	--	-	--	-
....KIRCHNERIELLA	--	-	--	-	--	-	*	0	--	-	--	-
....OOCYSTIS	--	-	--	-	--	-	550	1	--	-	--	-
....SELENASTRUM	--	-	--	-	--	-	550	1	--	-	--	-
....SCENEDESMACEAE												
....ACTINASTRUM	--	-	--	-	--	-	1100	1	--	-	7100#	18
....CRUCIGENIA	--	-	--	-	--	-	4300	5	--	-	--	-
....SCENEDESMUS	--	-	230	7	150	8	2900	4	--	-	2600	6
....TETRASTRUM	--	-	--	-	--	-	1400	2	--	-	--	-
..VOLVOCALES												
....CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	64	12	67	2	52	3	550	1	70	11	440	1
CRYPTOPHYTA (CRYPTOMONADS)												
..CRYPTOPHYCEAE												
....CRYPTOMONADALES												
....CRYPTOCHRYSIDACEAE												
....CHROOMONAS	--	-	--	-	--	-	*	0	--	-	--	-
....CRYPTOMONADACEAE												
....CRYPTOMONAS	26	5	--	-	--	-	--	-	--	-	*	0
CYANOPHYTA (BLUE-GREEN ALGAE)												
..CYANOPHYCEAE												
....CHROOCOCCALES												
....CHROOCOCCACEAE												
....ANACYSTIS	--	-	1800#	51	570#	31	52000#	65	--	-	1200	3
....NOSTOCALES												
....HAMMATOIDEACEAE												
....RAPHIDIOPSIS	--	-	--	-	--	-	--	-	--	-	5100	13
....NOSTOCACEAE												
....ANABAENOPSIS	--	-	--	-	--	-	1900	2	--	-	--	-
..OSCILLATORIALES												
....OSCILLATORIACEAE												
....LYNGBYA	--	-	--	-	--	-	2500	3	--	-	--	-
....OSCILLATORIA	--	-	--	-	590#	32	--	-	--	-	1700	4
EUGLENOPHYTA (EUGLENIDS)												
..EUGLENOPHYCEAE												
....EUGLENALES												
....EUGLENACEAE												
....EUGLENA	--	-	*	0	--	-	690	1	--	-	730	2
....LEPOCINCLIS	--	-	--	-	--	-	--	-	--	-	*	0
....PHACUS	--	-	--	-	--	-	*	0	--	-	*	0
....TRACHELOMONAS	170#	30	1000#	29	--	-	410	1	--	-	290	1
PYRRHOPHYTA (FIRE ALGAE)												
..DINOPHYCEAE												
....DINOKONTAE												
....GLENODINIACEAE												
....GLENODINIUM	--	-	--	-	--	-	*	0	--	-	--	-

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

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

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, and 2 mi (3 km) north-east of Bentley.

DRAINAGE AREA.--1,140 mi² (2,950 km²), approximately.

PERIOD OF RECORD.--April 1943 to September 1981 (discontinued). 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) National Geodetic Vertical Datum of 1929. 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.--38 years, 89.2 ft³/s (2.526 m³/s), 64,620 acre-ft/yr (79.7 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 (1,470 m³/s) Apr. 17, 1950, gage height, 34.0 ft (10.36 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 (8.20 m) and slope-area and contracted-opening measurements at gage height 34.0 ft (10.36 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)
Aug. 7	1115	830 23.5	6.47 1.972	Aug. 18	0700	*2,560 72.5	10.70 3.261

Minimum daily discharge, 2.3 ft³/s (0.07 m³/s) July 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.0	15	8.5	7.5	9.0	13	12	9.2	7.0	9.4	6.0	34
2	4.8	14	8.0	7.5	8.5	16	12	7.7	10	9.8	8.6	30
3	4.8	14	8.0	7.5	8.0	19	13	6.3	34	7.6	78	27
4	5.1	13	8.0	7.5	8.0	20	12	5.3	23	5.7	136	25
5	5.1	13	8.0	7.5	8.0	21	12	4.7	17	4.9	80	24
6	5.0	12	7.5	7.5	8.0	20	12	4.4	9.6	4.2	283	27
7	4.9	12	7.5	7.5	7.5	19	11	4.2	6.0	3.7	710	24
8	4.7	12	7.5	7.5	7.0	18	9.8	4.6	5.5	3.2	555	22
9	4.4	11	7.3	7.5	6.5	18	13	9.4	4.6	2.7	355	21
10	4.2	11	7.0	7.0	6.5	18	13	8.5	4.0	6.2	248	20
11	4.2	11	7.0	7.0	6.5	18	12	8.3	15	15	163	18
12	4.7	11	7.5	7.0	6.5	17	11	6.7	20	17	97	17
13	4.5	11	8.0	7.5	11	17	9.9	6.9	28	18	75	17
14	4.2	11	8.0	9.0	20	16	11	6.3	24	24	61	18
15	4.8	11	8.0	12	25	16	12	5.9	21	19	51	17
16	12	11	8.5	10	24	16	11	5.9	16	15	45	16
17	20	10	8.5	9.0	23	16	10	5.5	12	27	975	16
18	22	10	8.5	8.0	22	15	9.6	4.8	14	74	2050	15
19	18	10	8.0	8.5	20	15	9.2	4.3	20	52	828	16
20	17	10	7.5	8.0	19	15	8.7	3.7	19	42	472	16
21	17	10	7.0	10	14	15	8.3	3.5	19	35	331	14
22	18	10	7.0	14	13	15	8.8	4.3	21	45	249	13
23	19	9.5	7.0	15	12	16	8.7	5.4	21	32	188	12
24	18	9.0	6.5	14	20	16	8.9	6.0	20	37	137	11
25	16	9.0	6.5	12	14	16	8.8	6.1	20	44	102	11
26	42	9.0	7.0	12	14	16	8.3	6.6	28	38	81	12
27	25	9.0	8.0	12	17	15	11	8.5	22	22	69	13
28	20	9.0	10	12	15	15	9.7	11	21	17	62	16
29	17	9.0	9.0	11	---	15	10	8.9	16	14	53	104
30	16	9.0	8.5	10	---	14	10	8.5	12	10	47	74
31	15	---	7.5	9.0	---	13	---	7.6	---	6.5	39	---
TOTAL	382.4	325.5	240.8	291.5	373.0	509	316.7	199.0	509.7	660.9	8634.6	700
MEAN	12.3	10.9	7.77	9.40	13.3	16.4	10.6	6.42	17.0	21.3	279	23.3
MAX	42	15	10	15	25	21	13	11	34	74	2050	104
MIN	4.2	9.0	6.5	7.0	6.5	13	8.3	3.5	4.0	2.7	6.0	11
AC-FT	758	646	478	578	740	1010	628	395	1010	1310	17130	1390

CAL YR 1980 TOTAL 9120.7 MEAN 24.9 MAX 2080 MIN 1.1 AC-FT 18090
WTR YR 1981 TOTAL 13143.1 MEAN 36.0 MAX 2050 MIN 2.7 AC-FT 26070

CANNONBALL RIVER BASIN

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 (370 m) downstream from county highway bridge, and 13 mi (21 km) northeast of Scranton.

DRAINAGE AREA.--42.9 mi² (111.1 km²).

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

GAGE.--Water-stage recorder. Altitude of gage is 2,825 ft (861 m), from topographic map.

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

AVERAGE DISCHARGE.--16 years, 4.19 ft³/s (0.119 m³/s), 3,040 acre-ft/yr (3.75 hm³/yr), median of yearly mean discharges, 3.85 ft³/s (0.109 m³/s), 2,790 acre-ft/yr (3.4 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 645 ft³/s (18.3 m³/s) May 8, 1970, gage height, 7.20 ft (2.195 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, 73 ft³/s (2.07 m³/s) Aug. 16, gage height, 4.11 ft (1.253 m); 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 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.07	.01	.00	.08	.15	.02	.31	.01	.00	.00	.00
2	.00	.05	.00	.00	.05	.15	.02	.79	.00	.00	.00	.00
3	.00	.03	.00	.00	.05	.15	.09	1.3	.00	.00	.00	.00
4	.00	.02	.00	.00	.05	.15	.09	.86	.01	.00	.00	.00
5	.00	.02	.00	.00	.05	.15	.04	.26	.00	.00	.00	.00
6	.00	.01	.00	.00	.05	.15	.03	1.7	.00	.00	.56	.00
7	.00	.01	.00	.00	.04	.15	.03	.31	.00	.00	.27	.00
8	.00	.02	.00	.00	.02	.15	.12	.15	.00	.00	.09	.00
9	.00	.01	.00	.00	.01	.15	.12	.12	.00	.00	.05	.00
10	.00	.01	.00	.00	.00	.15	.12	.01	.00	.00	.02	.00
11	.00	.02	.00	.00	.00	.15	.21	.01	.00	.00	.01	.00
12	.00	.02	.00	.00	.00	.15	.31	.01	.00	.00	.00	.00
13	.00	.02	.00	.01	.00	.12	.31	.02	.80	.00	.00	.00
14	.00	.03	.00	.01	.80	.09	.27	.15	1.4	.00	.00	.00
15	.00	.05	.01	.01	6.0	.09	.27	.02	.43	.00	.02	.00
16	.00	.05	.02	.01	8.0	.07	.27	.01	.24	.00	37	.00
17	.00	.07	.05	.01	2.5	.05	.18	.02	.15	.00	36	.00
18	.00	.09	.09	.01	1.4	.04	.15	.01	.09	.00	6.0	.00
19	.00	.09	.07	.05	1.2	.02	.12	.01	.09	.00	2.3	.00
20	.00	.09	.02	.10	.65	.02	.09	.01	.04	.00	1.3	.00
21	.00	.09	.00	.12	.80	.01	.09	.01	.04	.00	.60	.00
22	.00	.05	.00	.12	.35	.01	.09	.03	.02	.00	.31	.00
23	.00	.05	.00	.12	.35	.01	.09	.03	.02	.00	.18	.00
24	.00	.05	.00	.12	.25	.01	.09	.02	.01	.00	.07	.00
25	.00	.04	.00	.12	.20	.01	.12	.02	.01	.00	.03	1.6
26	.00	.04	.00	.12	.15	.01	.15	.03	.00	.00	.02	4.7
27	.00	.04	.00	.12	.15	.01	.24	.03	.00	.00	.01	.24
28	.00	.02	.00	.12	.15	.02	.24	.04	.00	.00	.00	.02
29	.00	.02	.00	.10	---	.02	.39	.02	.00	.00	.00	.01
30	.01	.02	.00	.10	---	.02	.31	.01	.00	.00	.00	.00
31	.12	---	.00	.10	---	.04	---	.01	---	.00	.00	---
TOTAL	.13	1.20	.27	1.47	23.35	2.47	4.67	6.33	3.36	.00	84.84	6.57
MEAN	.004	.040	.009	.047	.83	.080	.16	.20	.11	.000	2.74	.22
MAX	.12	.09	.09	.12	8.0	.15	.39	1.7	1.4	.00	37	4.7
MIN	.00	.01	.00	.00	.00	.01	.02	.01	.00	.00	.00	.00
AC-FT	.3	2.4	.5	2.9	46	4.9	9.3	13	6.7	.00	168	13

CAL YR 1980 TOTAL 16.82 MEAN .046 MAX 1.1 MIN .00 AC-FT 33
WTR YR 1981 TOTAL 134.66 MEAN .37 MAX 37 MIN .00 AC-FT 267

CANNONBALL RIVER BASIN

365

06352000 CEDAR CREEK NEAR HAYNES, ND

LOCATION.--Lat 46°09'15", long 102°28'25", in W½ 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) National Geodetic Vertical Datum of 1929, 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.--31 years, 34.9 ft³/s (0.988 m³/s), 25,280 acre-ft/yr (31.2 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); maximum gage height, 22.05 ft (6.721 m) Mar. 28, 1978, backwater from ice and snow; 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, 1,210 ft³/s (34.3 m³/s) Aug. 16, gage height, 13.55 ft (4.130 m), only peak above base of 400 ft³/s (11.3 m³/s); minimum daily, 0.66 ft³/s (0.019 m³/s) July 9-11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.7	5.2	3.0	2.6	2.8	6.0	3.5	2.3	2.3	1.3	5.9	14
2	2.7	4.9	2.6	2.6	2.6	5.4	3.5	2.3	3.8	1.2	5.4	12
3	2.3	4.8	2.4	2.6	2.6	4.7	3.8	2.1	2.9	1.1	19	12
4	2.1	4.4	2.4	2.4	2.4	4.4	3.7	2.0	2.5	1.0	40	10
5	2.0	4.1	2.4	2.2	2.4	4.6	3.8	2.0	2.2	.97	46	8.1
6	2.1	4.1	2.2	2.2	2.4	5.2	3.7	1.8	1.8	.90	162	7.3
7	2.1	4.1	2.2	2.2	2.4	5.6	3.6	1.7	1.6	.78	162	5.7
8	2.1	3.9	2.2	2.2	2.2	5.6	3.4	1.8	1.6	.72	95	4.7
9	2.0	3.8	2.2	2.0	2.2	5.6	3.4	1.9	1.6	.66	50	4.3
10	1.9	3.7	2.1	2.0	2.0	5.4	3.3	1.9	1.6	.66	30	3.7
11	2.0	3.7	2.2	2.0	2.0	5.4	3.1	1.9	1.6	.66	20	3.1
12	2.0	3.7	2.4	2.2	2.0	5.2	3.2	1.8	1.5	1.0	17	2.9
13	1.9	3.7	2.6	2.4	2.0	5.2	3.4	1.7	1.8	6.3	16	2.6
14	1.9	3.7	2.6	2.6	2.0	5.0	3.5	1.7	2.8	5.4	15	2.4
15	2.2	3.7	2.8	2.6	2.0	4.8	3.4	1.6	3.4	31	13	2.4
16	5.0	3.7	3.0	2.4	2.0	4.7	3.2	1.6	3.1	112	568	2.3
17	8.8	3.7	3.0	2.4	2.2	4.7	3.0	1.6	2.3	39	843	2.3
18	7.2	3.7	3.0	2.4	2.5	4.3	2.8	1.6	2.2	26	312	2.2
19	7.4	3.7	2.8	2.4	3.0	4.1	2.5	1.7	1.9	17	130	2.2
20	7.2	3.6	2.6	2.7	3.5	4.1	2.5	1.6	1.8	42	84	2.2
21	7.2	3.7	2.4	2.8	5.0	4.3	2.4	1.6	1.6	74	56	2.2
22	8.1	3.8	2.2	3.0	8.0	4.3	2.4	1.7	1.6	34	39	2.3
23	8.1	4.0	2.2	3.0	9.0	4.2	2.4	1.8	1.6	19	32	2.2
24	7.4	3.8	2.0	3.2	7.0	4.1	2.4	1.8	1.5	8.8	27	2.2
25	7.0	3.8	2.0	3.2	7.1	4.1	2.4	1.8	1.2	7.1	24	2.4
26	6.4	3.7	2.0	3.1	8.1	4.0	2.3	1.8	1.1	28	21	3.7
27	5.6	3.7	2.0	3.0	5.0	3.7	3.1	2.0	1.6	18	19	4.7
28	5.6	3.6	2.4	3.0	5.6	3.7	3.1	2.1	1.6	13	18	3.1
29	5.4	3.4	2.4	2.8	---	3.8	2.9	2.3	1.6	15	17	2.6
30	5.4	3.2	2.4	2.8	---	3.8	2.5	2.2	1.4	12	16	16
31	5.2	---	2.4	2.8	---	3.6	---	2.2	---	8.0	15	---
TOTAL	139.0	116.6	75.1	79.8	102.0	143.6	92.2	57.9	59.1	526.55	2917.3	147.8
MEAN	4.48	3.89	2.42	2.57	3.64	4.63	3.07	1.87	1.97	17.0	94.1	4.93
MAX	8.8	5.2	3.0	3.2	9.0	6.0	3.8	2.3	3.8	112	843	16
MIN	1.9	3.2	2.0	2.0	2.0	3.6	2.3	1.6	1.1	.66	5.4	2.2
AC-FT	276	231	149	158	202	285	183	115	117	1040	5790	293

CAL YR 1980 TOTAL 2798.13 MEAN 7.65 MAX 772 MIN .40 AC-FT 5550
WTR YR 1981 TOTAL 4456.95 MEAN 12.2 MAX 843 MIN .66 AC-FT 8840

CANNONBALL RIVER BASIN

367

06352400 TIMBER CREEK NEAR BENTLEY, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1978 to September 1981 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (000061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION (00301)	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CACO3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT												
09...	0925	.36	2030	8.2	18.5	11.5	9.6	95	510	470	83	73
NOV												
25...	1200	.76	3590	7.9	3.0	1.0	13.6	102	880	430	140	130
DEC												
09...	1530	.72	3980	8.0	-9.0	.0	13.4	100	900	380	130	140
JAN												
27...	1430	.75	3890	7.7	.0	.0	13.9	104	910	340	150	130
FEB												
18...	1010	1.0	3270	8.1	10.5	.0	12.2	90	880	350	140	130
MAR												
12...	1100	1.5	2180	7.9	8.5	2.0	13.4	102	500	150	88	68
26...	1055	1.5	2240	8.2	10.0	6.0	12.4	107	--	--	--	--
APR												
08...	1305	1.5	2400	8.4	12.0	8.5	12.2	114	610	250	100	86
22...	0850	1.1	2480	8.3	11.0	10.5	9.4	92	--	--	--	--
MAY												
12...	0830	.43	2590	8.4	9.0	9.0	10.2	95	600	190	96	88
JUN												
03...	1025	1.5	3160	8.2	20.0	17.5	8.0	90	--	--	--	--
24...	0950	.30	2430	8.6	21.0	20.0	11.8	137	490	140	60	82
JUL												
21...	0900	11	1550	8.2	27.0	22.5	3.7	46	290	130	51	39
AUG												
19...	1125	1.3	2020	8.5	30.5	24.5	10.8	138	430	78	71	61
SEP												
01...	1600	.14	2150	8.8	23.0	18.0	10.7	123	470	140	68	72

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY, CARBON- ATE FET-FLU (MG/L CACO3) (00430)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
OCT												
09...	290	55	5.6	10	357	760	13	.3	4.4	1460	1260	1.9
NOV												
25...	580	58	8.5	16	450	1600	21	.4	2.9	2870	--	3.9
DEC												
09...	620	59	9.0	20	520	1700	17	.5	3.6	3150	2940	4.2
JAN												
27...	660	61	9.5	12	570	1700	16	.4	2.4	3130	3010	4.2
FEB												
18...	540	57	7.9	9.9	530	1400	15	.3	4.0	2510	2560	3.4
MAR												
12...	330	59	6.4	7.3	350	900	8.2	.3	.2	1570	1610	2.1
26...	--	--	--	--	348	--	--	--	--	--	--	--
APR												
08...	370	57	6.6	9.5	360	1100	29	.3	.9	1850	--	2.5
22...	--	--	--	--	382	--	--	--	--	--	--	--
MAY												
12...	400	59	7.1	9.4	410	1100	13	.3	.9	1940	--	2.6
JUN												
03...	--	--	--	--	391	--	--	--	--	--	--	--
24...	420	65	8.3	8.5	350	980	14	.3	3.0	1760	1780	2.3
JUL												
21...	240	63	6.2	12	160	630	6.4	.3	8.2	1110	1090	1.5
AUG												
19...	340	63	7.1	12	350	740	10	.3	5.8	1490	1450	2.0
SEP												
01...	350	61	7.1	13	330	850	26	.3	1.1	1600	1560	2.1

CANNONBALL RIVER BASIN

06352400 TIMBER CREEK NEAR BENTLEY, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	SOLIDS, DIS- SOLVED (TUNS PER DAY) (70302)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN,AM- MUNIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS TOTAL (MG/L AS PU4) (71886)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC SUS- PENDE TOTAL (UG/L AS AS) (01001)	ARSENIC TOTAL IN BOT- TOM MA- TERIAL (UG/G AS AS) (01003)
OCT 09...	1.4	--	--	--	--	--	--	--	--	--	--	--
NOV 25...	5.8	1.8	.000	.00	1.3	1.30	.050	.15	.040	--	--	--
DEC 09...	6.1	--	--	--	--	--	--	--	--	--	--	--
JAN 27...	6.3	2.2	.100	.12	.85	.95	.030	.09	.030	--	--	--
FEB 18...	6.7	--	--	--	--	--	--	--	.020	--	--	--
MAR 12...	6.3	--	--	--	--	--	--	--	--	--	--	--
MAR 26...	--	--	--	--	--	--	--	--	--	--	--	--
APR 08...	7.2	.90	.080	--	1.0	1.10	.030	.09	.030	0	0	60
APR 22...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 12...	2.2	--	--	--	--	--	--	--	--	--	--	--
JUN 03...	--	--	--	--	--	--	--	--	--	--	--	--
JUN 24...	1.4	--	--	--	--	--	--	--	--	--	--	--
JUL 21...	32.4	.68	.230	--	1.4	1.60	.120	.37	.040	3	1	--
AUG 19...	5.2	--	--	--	--	--	--	--	--	--	--	--
SEP 01...	.60	--	--	--	--	--	--	--	--	--	--	--

DATE	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BARIUM, SUS- PENDE RECOV- ERABLE (UG/L AS BA) (01006)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BERYL- LIUM, SUS- PENDE RECOV- ERABLE (UG/L AS BE) (01011)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, SUS- PENDE RECOV- ERABLE (UG/L AS CR) (01031)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	CHRO- MIUM, FM BOT- TOM MA- TERIAL (UG/G AS CO) (01029)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)
OCT 09...	100	50	50	--	--	--	370	--	--	--	--	--
NOV 25...	--	--	--	--	--	--	630	--	--	--	--	--
DEC 09...	--	--	--	--	--	--	820	--	--	--	--	0
JAN 27...	--	--	--	--	--	--	690	--	--	--	--	--
FEB 18...	--	--	--	0	0	0	560	0	0	10	--	--
MAR 12...	--	--	--	--	--	--	400	--	--	--	--	--
MAR 26...	--	--	--	--	--	--	--	--	--	--	--	--
APR 08...	100	100	0	0	0	0	440	10	0	10	4	--
APR 22...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 12...	--	--	--	--	--	--	480	--	--	--	--	--
JUN 03...	--	--	--	--	--	--	--	--	--	--	--	--
JUN 24...	--	--	--	--	--	--	520	--	--	--	--	--
JUL 21...	--	--	--	0	--	<10	160	10	10	0	--	--
AUG 19...	--	--	--	--	--	--	650	--	--	--	--	--
SEP 01...	--	--	--	--	--	--	770	--	--	--	--	--

CANNONBALL RIVER BASIN

369

06352400 TIMBER CREEK NEAR BENTLEY, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	COBALT, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CU) (01038)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	COPPER, SUS- PENDE RECOV- ERABLE (UG/L AS CU) (01041)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	COPPER, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CU) (01043)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI) (01132)	LITHIUM SUS- PENDE RECOV- ERABLE (UG/L AS LI) (01131)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, SUS- PENDE RECOV. (UG/L AS MN) (01054)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
OCT 09...	--	--	--	--	--	20	130	0	130	90	40	50
NOV 25...	--	--	--	--	--	40	--	--	--	80	40	40
DEC 09...	--	--	--	--	--	40	--	--	--	70	40	30
JAN 27...	--	--	--	--	--	50	--	--	--	50	0	50
FEB 18...	--	3	0	3	--	50	--	--	--	120	0	120
MAR 12...	--	--	--	--	--	40	--	--	--	140	20	120
MAR 26...	--	--	--	--	--	--	--	--	--	--	--	--
APR 08...	10	0	0	2	10	50	100	0	110	100	60	40
APR 22...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 12...	--	--	--	--	--	40	--	--	--	50	10	40
JUN 03...	--	--	--	--	--	--	--	--	--	--	--	--
JUN 24...	--	--	--	--	--	30	--	--	--	20	0	20
JUL 21...	--	6	4	2	--	70	--	--	--	120	80	40
AUG 19...	--	--	--	56	--	20	--	--	--	120	60	60
SEP 01...	--	--	--	--	--	20	--	--	--	80	30	50

DATE	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MERCURY SUS- PENDE RECOV- ERABLE (UG/L AS HG) (71895)	MERCURY RECOV. FM BOT- TOM MA- TERIAL (UG/G AS HG) (71921)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	NICKEL, SUS- PENDE RECOV- ERABLE (UG/L AS NI) (01066)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE) (01147)	SELE- NIUM, SUS- PENDE RECOV- ERABLE (UG/L AS SE) (01146)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE) (01148)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
OCT 09...	--	--	--	--	--	--	--	--	--	--	--	1600
FEB 18...	--	.0	--	--	3	2	1	--	--	11	--	--
MAR 12...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 26...	--	--	--	--	--	--	--	--	--	--	--	--
APR 08...	.1	.0	.1	.30	4	4	0	0	0	8	0	1500
JUL 21...	.0	.0	.0	--	5	3	2	3	0	3	--	--

DATE	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	ZINC, SUS- PENDE RECOV- ERABLE (UG/L AS ZN) (01091)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	ZINC, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS ZN) (01093)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT) (80030)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)	GROSS BETA, DIS- SOLVED (PCI/L AS YT-90) (80050)
FEB 18...	40	0	40	--	--	--	--	--	--
MAR 12...	--	--	--	--	--	--	--	--	--
MAR 26...	--	--	--	--	--	--	--	--	--
APR 08...	10	0	20	16	<41	<.4	<32	1.0	<30
JUL 21...	20	10	10	--	--	--	--	--	--

CANNONBALL RIVER BASIN

06352400 TIMBER CREEK NEAR BENTLEY, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90) (80060)	POTAS- SIUM 40 DIS- SOLVED (PCI/L AS K40) (82068)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHENOLS (UG/L) (32730)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)
UCT 09...	--	--	--	--	--	--	74	.07
NOV 25...	--	--	18	1.3	--	--	86	.18
DEC 09...	--	--	93	--	--	--	45	.09
JAN 27...	--	9.0	41	.4	--	--	64	.13
FEB 18...	--	7.4	--	--	.00	0	31	.08
MAR 12...	--	5.4	--	--	--	--	32	.13
26...	--	--	--	--	--	--	64	.26
APR 08...	1.0	7.1	11	.3	.00	0	38	.15
22...	--	--	--	--	--	--	51	.16
MAY 12...	--	7.0	--	--	--	--	48	.06
JUN 03...	--	--	--	--	--	--	36	.15
24...	--	6.3	--	--	--	--	21	.02
JUL 21...	--	9.0	11	.0	.00	5	77	2.2
AUG 19...	--	--	--	--	--	--	38	.13
SEP 01...	--	--	--	--	--	--	45	.02

	BED MAT. SIEVE DIAM. % FINER THAN DATE	BED MAT. SIEVE DIAM. % FINER THAN DATE
	2.00 MM (80169)	4.00 MM (80170)

FEB 18...	98	100
--------------	----	-----

DATE	LENGTH OF EXPO- SURE (DAYS) (00022)	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2) (70957)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2) (70958)	PERI- PHYTON BIOMASS ASH WEIGHT G/SQ M (00572)	PERI- PHYTON BIOMASS DRY WEIGHT G/SQ M (00573)
UCT 09...	36	3.08	.830	7.48	9.37
JUN 24...	37	4.93	.970	2.84	3.94
AUG 19...	56	.430	.110	1.58	1.81
SEP 01...	13	2.18	.320	5.59	7.17

CANNONBALL RIVER BASIN

371

06352400 TIMBER CREEK NEAR BENTLEY, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	OCT 9,80 0925	NOV 25,80 1200	DEC 9,80 1530	JAN 27,81 1430	FEB 18,81 1010	MAR 12,81 1100
TOTAL CELLS/ML	790	3400	4000	480	1800	1400
DIVERSITY: DIVISION	1.6	2.0	2.1	0.7	0.1	1.3
..CLASS	1.6	2.0	2.1	0.7	0.1	1.3
...ORDER	1.9	2.2	2.4	1.0	0.2	1.4
...FAMILY	2.8	2.5	2.5	1.3	0.5	1.8
....GENUS	2.8	2.7	2.5	1.3	0.5	1.8

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)												
..CHLOROPHYCEAE												
...CHLOROCOCCALES												
...CHARACIACEAE												
....SCHROEDERIA	--	-	--	-	--	-	--	-	--	-	--	-
...MICRACTINIACEAE												
....MICRACTINIUM	--	-	25	1	--	-	--	-	--	-	--	-
...OOCYSTACEAE												
...ANKISTRODESMUS	--	-	450	13	380	9	13	3	--	-	51	4
...CHODATELLA	--	-	--	-	--	-	--	-	--	-	--	-
...DICTYOSPHAERIUM	--	-	--	-	--	-	--	-	--	-	--	-
...KIRCHNERIELLA	--	-	--	-	--	-	--	-	--	-	--	-
...SELENASTRUM	--	-	75	2	--	-	--	-	--	-	--	-
...TETRAEDRON	--	-	--	-	--	-	--	-	--	-	--	-
...TREUBARIA	--	-	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE												
...CRUCIGENIA	--	-	100	3	--	-	--	-	--	-	--	-
...SCENEDESMUS	26	3	230	7	100	2	--	-	--	-	26	2
...TETRASTRUM	--	-	--	-	--	-	--	-	--	-	--	-
...VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	52	7	100	3	130	3	26	5	--	-	13	1
CHRYSTOPHYTA												
..BACILLARIOPHYCEAE												
...CENTRALES												
...CHAETOCERACEAE												
....CHAETOCEROS	--	-	--	-	--	-	--	-	--	-	--	-
...COSCINODISCACEAE												
...CYCLOTELLA	52	7	730#	21	750#	19	13	3	52	3	13	1
...MELOSIRA	--	-	--	-	--	-	--	-	--	-	--	-
...PENNALES												
...ACHNANTHACEAE												
...ACHNANTHES	--	-	--	-	--	-	--	-	--	-	--	-
...COCCONEIS	--	-	--	-	--	-	--	-	--	-	--	-
...RHOICOSPHENIA	--	-	--	-	--	-	--	-	--	-	--	-
...CYMBELLACEAE												
...CYMBELLA	--	-	--	-	--	-	--	-	--	-	--	-
...DIATOMACEAE												
...DIATOMA	--	-	--	-	--	-	370#	78	1700#	93	940#	67
...FRAGILARIACEAE												
...FRAGILARIA	13	2	--	-	150	4	--	-	26	1	--	-
...SYNEDRA	--	-	--	-	--	-	--	-	13	1	13	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

06352400 TIMBER CREEK NEAR BENTLEY, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

(CONTINUED)

DATE TIME	OCT 9,80 0925		NOV 25,80 1200		DEC 9,80 1530		JAN 27,81 1430		FEB 18,81 1010		MAR 12,81 1100	
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
...GOMPHONEMATACEAE												
....GOMPHONEMA	--	-	--	-	--	-	--	-	--	-	--	-
...NAVICULACEAE												
....ENTOMONEIS	--	-	--	-	--	-	--	-	13	1	--	-
....GYRUSIGMA	13	2	--	-	--	-	--	-	--	-	--	-
....NAVICULA	52	7	--	-	--	-	13	3	--	-	13	1
....PLEURUSIGMA	--	-	--	-	--	-	--	-	--	-	--	-
...NITZSCHIA												
....NITZSCHIA	180#	23	75	2	25	1	13	3	13	1	64	5
CRYPTOPHYTA (CRYPTOMONADS)												
..CRYPTOPHYCEAE												
...CRYPTOMONADALES												
....CRYPTOCHRYSIDACEAE												
....CHROOMONAS	26	3	25	1	--	-	--	-	--	-	--	-
....CRYPTOMONADACEAE												
....CRYPTOMONAS	13	2	--	-	100	2	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
..CYANOPHYCEAE												
...CHROOCOCCALES												
....CHROOCOCCACEAE												
....ANACYSTIS	--	-	400	12	50	1	--	-	--	-	13	1
...HORMOGONALES												
....NOSTOCACEAE												
....ANABAENA	150#	20	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIACEAE												
....LYNGBYA	--	-	--	-	1100#	26	--	-	--	-	--	-
....OSCILLATORIA	210#	26	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENUIDS)												
..EUGLENOPHYCEAE												
...EUGLENALES												
....EUGLENACEAE												
....EUGLENA	--	-	--	-	--	-	--	-	--	-	--	-
....PHACUS	--	-	--	-	--	-	--	-	--	-	--	-
....FRACHELOMONAS	--	-	1200#	35	1300#	32	--	-	13	1	150	11
PYRRHOPHYTA (FIRE ALGAE)												
..DINOPHYCEAE												
...PERIDINIALES												
....GLENODINIACEAE												
....GLENODINIUM	--	-	25	1	--	-	26	5	--	-	100	7

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

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

CANNONBALL RIVER BASIN

373

06352400 TIMBER CREEK NEAR BENTLEY, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	APR 8,81 1305	MAY 12,81 0830	JUN 24,81 0950	JUL 21,81 0900	AUG 19,81 1125	SEP 1,81 1600
TOTAL CELLS/ML	4100	2100	580	7700	7500	3300
DIVERSITY: DIVISION	1.8	1.4	1.0	1.9	1.7	1.8
..CLASS	1.8	1.4	1.0	1.9	1.7	1.8
...ORDER	1.9	1.5	1.6	2.6	1.8	2.2
...FAMILY	2.4	2.0	2.5	2.9	2.5	2.5
...GENUS	2.5	2.2	2.8	3.5	3.1	3.3

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	--	-	--	-	--	-	240	3	--	-	--	-
....MICRACTINIACEAE												
....MICRACTINIUM	--	-	--	-	--	-	--	-	--	-	--	-
...OOCYSTACEAE												
....ANKISTRODESMUS	420	10	430#	20	26	4	470	6	--	-	150	5
....CHODATELLA	--	-	--	-	--	-	--	-	68	1	--	-
....DICTYOSPHAERIUM	--	-	--	-	--	-	750	10	--	-	--	-
....KIRCHNERIELLA	--	-	--	-	--	-	93	1	200	3	*	0
....SELENASTRUM	93	2	13	1	--	-	--	-	340	5	--	-
....TETRAEDRON	--	-	--	-	--	-	--	-	140	2	--	-
....TREUBAKIA	23	1	--	-	--	-	47	1	--	-	*	0
...SCENEDESMACEAE												
....CRUCIGENIA	--	-	100	5	--	-	--	-	1900#	25	56	2
....SCENEDESMUS	1200#	30	390#	18	150#	27	370	5	610	8	170	5
....TETRASTRUM	--	-	--	-	--	-	--	-	410	5	170	5
...VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	70	2	13	1	--	-	280	4	--	-	--	-
CHRYCOPHYTA												
..BACILLARIOPHYCEAE												
...CENTRALES												
....CHAETOCERACEAE												
....CHAETOCEROS	--	-	--	-	--	-	47	1	--	-	--	-
...COSCINODISCACEAE												
....CYCLOTELLA	70	2	--	-	100#	18	750	10	--	-	290	9
....MELOSIRA	--	-	--	-	--	-	510	7	440	6	42	1
...PENNALES												
....ACHNANTHACEAE												
....ACHNANTHES	--	-	13	1	13	2	--	-	--	-	--	-
....COCCONEIS	--	-	--	-	39	7	--	-	68	1	28	1
....RHOICOSPHENIA	--	-	--	-	90#	16	--	-	--	-	--	-
...CYMBELLACEAE												
....CYMBELLA	--	-	--	-	--	-	47	1	--	-	*	0
...DIATOMACEAE												
....DIATOMA	230	6	13	1	--	-	--	-	--	-	--	-
...FRAGILARIACEAE												
....FRAGILARIA	--	-	--	-	--	-	--	-	--	-	--	-
...SYNEDRA	23	1	13	1	--	-	--	-	240	3	28	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

06352400 TIMBER CREEK NEAR BENTLEY, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

(CONTINUED)

DATE TIME	APR 8,81 1305	MAY 12,81 0830	JUN 24,81 0950	JUL 21,81 0900	AUG 19,81 1125	SEP 1,81 1600
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
...GOMPHONEMATACEAE						
....GOMPHONEMA	--	-	--	-	--	-
....NAVICULACEAE			13	2	--	-
....ENTOMONEIS	--	-	--	-	--	-
....GYROSIGMA	--	-	--	-	--	-
....NAVICULA	--	-	13	1	--	-
....PLEUROSIGMA	--	-	26	4	170	2
....NITZSCHACEAE	--	-	--	-	93	1
....NITZSCHIA	23	1	26	1	1900#	24
CRYPTOPHYTA (CRYPTOMONADS)						
..CRYPTOPHYCEAE						
...CRYPTOMONADALES						
....CRYPTOCHRYSIDACEAE						
....CHROOMONAS	--	-	52	2	--	-
....CRYPTOMONADACEAE	--	-	--	-	--	-
....CRYPTOMONAS	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...CHROOCOCCALES						
....CHROOCOCCACEAE						
....ANACYSTIS	1200#	30	1000#	48	13	2
...HORMOGONALES					610	8
...NOSTOCACEAE					--	-
....ANABAENA	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	--	-
....LYNGBYA	--	-	--	-	2100#	28
....OSCILLATORIA	--	-	--	-	700	9
EUGLENOPHYTA (EUGLENOIDS)						
..EUGLENOPHYCEAE						
...EUGLENALES						
....EUGLENACEAE						
....EUGLENA	23	1	--	-	330	4
....PHACUS	--	-	--	-	470	6
....TRACHELOMONAS	630#	16	39	2	280	4
PYRRHOPHYTA (FIRE ALGAE)						
..DINOPHYCEAE						
...PERIDINIALES						
....GLENODINIACEAE						
....GLENODINIUM	--	-	--	-	510	7

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

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

CANNONBALL RIVER BASIN

375

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) National Geodetic Vertical Datum of 1929. 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.--19 years (water years 1963-81), 95 ft³/s (2.679 m³/s), 68,540 acre-ft/yr (84.5 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, 13,400 ft³/s (379 m³/s) Mar. 28, 1978, gage height, 13.70 ft (4.176 m); no flow at times in most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known since 1950, about 18 ft (5.5 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, 448 ft³/s (12.7 m³/s) Aug. 3, gage height 3.85 ft (1.173 m); no peak above base of 700 ft³/s (19.8 m³/s); no flow Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	9.6	4.0	4.6	4.6	14	8.6	4.4	11	.78	15	25
2	10	9.6	4.0	4.8	3.8	18	8.6	4.2	5.8	.72	19	23
3	12	9.6	4.0	4.8	5.0	13	9.6	4.2	6.2	.60	184	20
4	11	9.6	4.4	4.8	5.0	17	8.9	3.8	4.4	.40	45	18
5	8.6	10	4.2	4.8	5.2	16	9.2	3.6	3.0	.30	40	16
6	7.8	9.6	4.2	4.8	5.4	15	8.9	3.4	2.8	.16	69	112
7	6.5	9.2	4.4	4.8	5.2	14	8.6	3.2	3.4	.08	62	92
8	5.8	8.6	4.4	4.8	4.8	13	8.2	3.0	4.2	.03	62	40
9	4.6	8.6	4.4	4.8	4.5	12	8.2	2.6	4.4	.02	83	26
10	3.4	7.5	4.6	4.8	4.0	11	7.2	2.4	3.0	.01	74	20
11	3.0	7.2	4.8	4.8	3.7	10	10	1.9	2.5	.01	75	17
12	2.6	7.0	4.6	4.8	3.2	8.6	10	1.9	2.6	4.6	102	15
13	2.2	7.0	4.6	5.0	3.7	8.9	8.9	2.2	4.2	19	86	14
14	2.2	6.8	4.8	5.0	4.1	8.2	8.6	2.2	5.0	11	62	13
15	4.0	6.8	4.8	4.6	4.4	8.2	8.2	2.2	6.2	5.0	46	12
16	51	6.2	4.6	4.6	4.7	8.6	7.8	2.2	5.2	1.9	38	10
17	139	6.5	4.6	4.6	5.0	8.6	7.5	2.5	2.8	1.1	31	9.6
18	46	6.8	4.6	4.8	5.3	8.6	7.2	2.4	2.1	.78	26	7.8
19	27	6.8	4.6	4.8	5.0	8.2	6.2	2.2	2.1	.60	23	7.0
20	18	6.5	4.6	4.8	5.1	8.2	6.2	2.4	1.9	.50	52	5.5
21	13	6.5	4.4	4.8	5.5	8.9	5.8	2.1	3.0	28	347	4.8
22	11	6.5	4.4	4.8	5.5	8.6	6.0	2.4	2.8	59	240	4.0
23	10	6.5	4.6	4.6	5.5	7.8	5.8	6.5	1.7	18	158	3.6
24	9.6	6.2	4.8	4.5	5.5	7.8	5.2	8.9	1.0	34	105	3.0
25	9.2	6.0	5.0	4.5	7.0	8.9	5.2	4.8	.78	33	79	3.0
26	9.2	5.5	5.0	4.5	7.0	10	5.2	4.4	.66	26	62	2.1
27	10	5.5	4.8	4.5	8.0	10	5.2	4.4	.55	20	52	1.8
28	10	6.0	5.0	4.4	9.0	10	5.2	6.5	7.1	16	44	1.7
29	10	4.6	4.5	4.5	---	9.6	5.0	6.8	3.2	20	38	1.6
30	10	3.2	4.5	4.5	---	8.6	4.8	6.0	1.1	23	34	1.4
31	9.6	---	4.6	4.6	---	8.2	---	5.0	---	18	28	---
TOTAL	476.30	216.0	140.8	145.8	144.7	327.5	220.0	114.7	104.69	342.59	2381	529.9
MEAN	15.4	7.20	4.54	4.70	5.17	10.6	7.33	3.70	3.49	11.1	76.8	17.7
MAX	139	10	5.0	5.0	9.0	18	10	8.9	11	59	347	112
MIN	.00	3.2	4.0	4.4	3.2	7.8	4.8	1.9	.55	.01	15	1.4
AC-FT	945	428	279	289	287	650	436	228	208	680	4720	1050

CAL YR 1980 TOTAL 8079.98 MEAN 22.1 MAX 700 MIN .00 AC-FT 16030
WTR YR 1981 TOTAL 5143.98 MEAN 14.1 MAX 347 MIN .00 AC-FT 10200

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.

WATER-DISCHARGE RECORDS

GAGE.--Water-stage recorder. Datum of gage is 1,673.54 ft (510.095 m) National Geodetic Vertical Datum of 1929. Prior to June 12, 1973, at site 600 ft (180 m) upstream at datum 3.00 ft (0.914 m) higher. June 13, 1973, to April 8, 1980, at datum 2.00 ft (0.610 m) higher.

AVERAGE DISCHARGE.--47 years, 245 ft³/s (6.938 m³/s), 177,500 acre-ft/yr (219 hm³/yr); median of yearly mean discharges, 171 ft³/s (4.84 m³/s), 124,000 acre-ft/yr (153 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 measurements of peak flow, site and datum then in use; no flow at times in some years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,110 ft³/s (59.8 m³/s) Aug. 20, gage height, 7.15 ft (2.179 m), from graph of observer readings, only peak above base of 1,000 ft³/s (28.3 m³/s); minimum daily, 3.5 ft³/s (0.099 m³/s) July 9.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.4	33	15	15	17	47	36	15	16	15	56	105
2	4.8	38	14	15	16	46	34	14	17	11	120	86
3	4.6	32	13	15	15	45	31	14	32	9.1	715	80
4	4.8	28	13	14	15	44	32	14	32	7.4	387	70
5	4.6	26	13	14	15	43	32	17	20	6.8	320	62
6	4.8	25	13	14	15	42	29	16	15	6.8	297	110
7	6.6	24	13	14	14	41	28	15	17	5.4	183	449
8	9.7	22	13	14	13	41	27	14	15	4.0	188	237
9	8.8	22	13	13	12	40	27	14	17	3.5	387	132
10	7.9	20	13	13	11	39	25	13	23	11	614	88
11	7.4	20	13	13	10	38	27	13	16	50	452	67
12	7.1	19	13	13	9.0	37	31	12	17	276	384	56
13	7.6	18	13	12	8.0	37	31	12	23	401	291	49
14	7.6	17	13	12	8.0	36	31	11	21	204	214	44
15	7.9	17	13	12	8.0	35	27	10	30	110	181	41
16	120	16	13	12	9.0	35	24	9.2	30	60	142	39
17	512	16	12	12	10	34	22	10	20	44	122	36
18	387	16	12	13	12	34	22	9.1	15	26	94	32
19	166	18	12	14	14	34	22	8.1	14	63	267	31
20	94	18	12	14	16	34	21	7.6	14	84	1560	28
21	63	20	12	14	21	33	20	6.7	14	36	1200	27
22	53	18	12	14	26	33	19	7.4	20	21	925	25
23	52	18	12	16	31	33	18	8.7	19	201	672	26
24	53	17	12	16	36	33	18	12	17	342	520	25
25	48	17	12	17	41	33	17	15	14	118	360	30
26	42	17	12	19	46	33	16	25	13	370	279	27
27	38	17	12	20	50	32	17	18	11	161	226	29
28	34	17	13	19	49	33	17	17	11	97	194	27
29	32	17	14	19	---	36	16	16	12	63	170	26
30	31	16	15	18	---	38	16	19	25	55	132	24
31	31	---	15	17	---	36	---	18	---	54	113	---
TOTAL	1855.6	619	400	457	547.0	1155	733	410.8	560	2916.0	11765	2108
MEAN	59.9	20.6	12.9	14.7	19.5	37.3	24.4	13.3	18.7	94.1	380	70.3
MAX	512	38	15	20	50	47	36	25	32	401	1560	449
MIN	4.6	16	12	12	8.0	32	16	6.7	11	3.5	56	24
AC-FT	3680	1230	793	906	1080	2290	1450	815	1110	5780	23340	4180
CAL YR 1980	TOTAL	23456.3	MEAN	64.1	MAX	2330	MIN	2.3	AC-FT	46530		
WTR YR 1981	TOTAL	23526.4	MEAN	64.5	MAX	1560	MIN	3.5	AC-FT	46660		

CANNONBALL RIVER BASIN

377

06354000 CANNONBALL RIVER AT BREIEN, ND--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD---Water years 1946-50 (partial-record station), 1970-72, 1974 to current year.

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.

EXTREMES FOR PERIOD OF DAILY RECORD---

SPECIFIC CONDUCTANCE: Maximum daily, 5,000 micromhos Feb. 9, 1980; minimum daily, 300 micromhos Sept. 23, 1977 and March 23, 1978.

WATER TEMPERATURES: Maximum daily, 30.0°C on July 23, 1977, July 3, 8, 10, 21, 1979; minimum daily, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR---

SPECIFIC CONDUCTANCE: Maximum daily, 3,800 micromhos Feb. 13, 14; minimum daily, 460 micromhos Aug. 5.

WATER TEMPERATURES: Maximum daily, 27.5°C July 21; minimum daily, 0.0°C on many days during winter months.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, (PER- CENT SATUR- ATION) (00301)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
OCT											
23...	1110	48	1210	8.4	4.0	4.0	3.0	11.5	86	700	1600
DEC											
03...	1240	13	2700	8.5	2.5	.0	7.0	14.3	97	K5	190
JAN											
05...	1345	16	3120	8.2	3.0	.0	7.7	13.6	92	<1	28
27...	1330	20	2920	8.1	-5.0	.0	7.2	12.7	87	K7	41
FEB											
20...	1030	15	1900	--	2.0	.0	--	--	--	--	--
26...	1040	46	1750	8.4	2.0	.0	4.7	13.3	91	--	57
MAR											
26...	1135	33	1650	8.6	6.0	5.0	11	11.6	90	K5	K8
APR											
23...	1340	19	1950	8.5	19.5	15.0	16	10.2	100	42	100
MAY											
21...	1100	6.8	2100	8.6	21.0	15.5	18	9.0	91	260	550
JUN											
25...	1245	15	1740	8.4	24.0	22.5	28	8.0	91	--	140
JUL											
24...	1200	316	850	8.0	26.0	24.0	360	6.2	73	10000	23000
AUG											
20...	1700	2050	575	--	35.0	24.5	--	--	--	--	--
24...	1515	479	700	8.1	24.5	23.0	630	7.0	81	--	K1500
SEP											
28...	1500	28	1300	8.4	22.0	15.5	17	10.3	105	K32	62

DATE	HARD- NESS (MG/L AS CAC03) (00900)	HARD- NESS NONCAR- BONATE (MG/L AS CAC03) (95902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CAC03) (90410)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CU2) (00405)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)
UCT											
23...	211	11	40	27	190	65	5.8	8.5	200	1.3	410
DEC											
03...	450	.00	96	51	400	65	8.4	18	480	2.4	810
JAN											
05...	778	200	130	110	490	57	7.8	13	580	5.9	1100
27...	695	225	120	96	430	57	7.3	11	470	5.9	1000
FEB											
26...	367	67	63	51	260	60	6.0	6.2	300	1.9	610
MAR											
26...	360	50	65	48	260	61	6.1	7.0	310	1.3	510
APR											
23...	389	29	65	55	320	64	7.2	8.6	360	1.8	680
MAY											
21...	398	.00	59	61	360	66	8.0	11	400	1.6	730
JUN											
25...	327	17	55	46	300	66	7.4	9.2	310	2.0	680
JUL											
24...	143	.00	31	16	140	67	5.2	7.9	160	1.0	260
AUG											
24...	190	30	38	23	79	46	2.6	11	160	2.0	190
SEP											
28...	297	27	61	35	180	56	4.7	9.5	270	1.7	390

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

06354000 CANNONBALL RIVER AT BREIEN, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SI02) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS NO2) (71856)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)
OCT											
23...	8.4	.3	6.1	805	810	1.1	104	--	--	.31	.30
DEC											
03...	20	.6	6.5	1910	1690	2.6	67.0	--	--	.00	.00
JAN											
05...	22	.6	6.4	2390	2220	3.3	103	--	--	.01	.00
27...	27	.4	4.0	2100	1970	2.9	116	--	--	.74	.01
FEB											
26...	10	.3	3.2	1180	1180	1.6	147	--	--	.00	.00
MAR											
26...	12	.4	1.9	1170	1090	1.6	104	--	--	.01	.02
APR											
23...	20	.5	3.4	1370	1370	1.9	70.3	.000	.00	.01	.02
MAY											
21...	17	.5	2.6	1490	1480	2.0	27.4	--	--	.00	.00
JUN											
25...	13	.4	4.4	1300	1290	1.8	52.3	--	--	.00	.00
JUL											
24...	9.2	.2	8.8	570	571	.78	486	--	--	.39	.40
AUG											
24...	4.5	.3	8.8	459	453	.62	594	--	--	.49	.49
SEP											
28...	12	.4	8.3	898	859	1.2	67.9	--	--	.00	.02

DATE	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN, ORGANIC DIS- SOLVED (MG/L AS N) (00607)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)	NITRO- GEN,AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N) (00623)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	NITRO- GEN, DIS- SOLVED (MG/L AS N) (00602)
OCT										
23...	.020	.000	.00	1.2	.92	1.20	.28	.92	1.5	1.2
DEC										
03...	.090	.020	.03	.05	.98	.14	.00	1.0	.14	1.0
JAN										
05...	.030	.030	.04	.97	1.1	1.00	.00	1.1	1.0	1.1
27...	<.870	.030	.04	.00	.88	.87	.00	.91	1.6	.92
FEB										
26...	.040	.060	.08	1.1	.46	1.10	.58	.52	1.1	.52
MAR										
26...	.060	.050	.06	.65	.40	.71	.26	.45	.72	.47
APR										
23...	.080	.060	.08	.48	.61	.56	.00	.67	.57	.69
MAY										
21...	.070	.050	.06	1.1	.63	1.20	.52	.68	1.2	.68
JUN										
25...	.120	.110	.14	1.1	1.2	1.20	.00	1.3	1.2	1.3
JUL										
24...	.290	.170	.22	9.3	.93	9.60	8.5	1.1	10.0	1.5
AUG										
24...	.140	.090	.12	3.3	.71	3.40	2.6	.80	3.9	1.3
SEP										
28...	.060	.080	.10	1.0	.45	1.10	.57	.53	1.1	.55

CANNONBALL RIVER BASIN

379

06354000 CANNONBALL RIVER AT BRIEN, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	NITRO- GEN, TOTAL (MG/L AS NUS) (71887)	PHOS- PHURUS, TOTAL (MG/L AS P) (00665)	PHOS- PHURUS, TOTAL (MG/L AS PU4) (71886)	PHOS- PHURUS, DIS- SOLVED (MG/L AS P) (00666)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC SUS- PENDE TOTAL (UG/L AS AS) (01001)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BARIUM, SUS- PENDE RECOV- ERABLE (UG/L AS BA) (01006)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)
UCT										
23...	6.7	.200	.61	.040	--	--	--	--	--	--
DEC										
03...	.62	.050	.15	.050	--	--	--	--	--	--
JAN										
05...	4.5	.040	.12	.050	2	1	1	200	100	100
27...	7.1	.030	.09	.010	--	--	--	--	--	--
FEB										
26...	4.9	.060	.18	.020	--	--	--	--	--	--
MAR										
26...	3.2	.030	.09	.010	3	0	3	100	60	40
APR										
23...	2.5	.060	.18	.010	--	--	--	--	--	--
MAY										
21...	5.3	.050	.15	.050	--	--	--	--	--	--
JUN										
25...	5.3	.070	.21	.010	4	1	3	100	0	100
JUL										
24...	44	.610	1.9	.030	10	7	3	400	300	120
AUG										
24...	17	.190	.58	.030	--	--	--	--	--	--
SEP										
28...	4.9	.010	.03	.030	1	0	1	200	100	90

DATE	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CADMIUM SUS- PENDE RECOV- ERABLE (UG/L AS CD) (01026)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, SUS- PENDE RECOV. (UG/L AS CR) (01031)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CU) (01037)	COBALT, SUS- PENDE RECOV- ERABLE (UG/L AS CU) (01036)	COBALT, DIS- SOLVED (UG/L AS CU) (01035)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)
JAN										
05...	0	0	0	0	0	0	2	2	0	5
27...	--	--	--	--	--	--	--	--	--	--
FEB										
26...	--	--	--	--	--	--	--	--	--	--
MAR										
26...	0	--	<1	10	10	0	1	--	<3	5
JUN										
25...	0	--	<1	0	0	0	2	--	<3	5
JUL										
24...	1	--	<1	40	30	10	22	0	33	80
AUG										
24...	--	--	--	--	--	--	--	--	--	--
SEP										
28...	0	--	<1	0	0	0	1	--	<3	5

DATE	COPPER, SUS- PENDE RECOV- ERABLE (UG/L AS CU) (01041)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	IRON, SUS- PENDE RECOV- ERABLE (UG/L AS FE) (01044)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	LEAD, SUS- PENDE RECOV- ERABLE (UG/L AS PB) (01050)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, SUS- PENDE RECOV. (UG/L AS MN) (01054)
JAN										
05...	3	2	310	230	80	0	0	0	70	40
27...	--	--	--	--	--	--	--	--	--	--
FEB										
26...	--	--	--	--	--	--	--	--	--	--
MAR										
26...	3	2	370	--	<10	7	7	0	90	70
JUN										
25...	2	3	700	680	20	7	7	0	160	150
JUL										
24...	76	4	34000	34000	46	<30	32	0	700	690
AUG										
24...	--	--	--	--	--	--	--	--	--	--
SEP										
28...	3	2	500	--	<10	4	2	2	50	40

CANNONBALL RIVER BASIN

06354000 CANNONBALL RIVER AT BREIEN, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	MANGANESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOVERABLE (UG/L AS HG) (71900)	MERCURY SUSPENDED RECOVERABLE (UG/L AS HG) (71895)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI) (01067)	NICKEL, SUSPENDED RECOVERABLE (UG/L AS NI) (01066)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELENIUM, TOTAL (UG/L AS SE) (01147)	SELENIUM, SUSPENDED TOTAL (UG/L AS SE) (01146)	SELENIUM, DIS-SOLVED (UG/L AS SE) (01145)
OCT 23...	--	--	--	--	--	--	--	--	--	--
DEC 03...	--	--	--	--	--	--	--	--	--	--
JAN 05...	30	.0	.0	.0	4	1	3	0	0	0
JAN 27...	--	--	--	--	--	--	--	--	--	--
FEB 26...	--	--	--	--	--	--	--	--	--	--
MAR 26...	20	.2	.2	.0	4	2	2	0	0	0
APR 23...	--	--	--	--	--	--	--	--	--	--
MAY 21...	--	--	--	--	--	--	--	--	--	--
JUN 25...	10	.3	.2	.1	7	2	5	0	0	0
JUL 24...	6	.5	.4	.1	74	66	8	<0	0	1
AUG 24...	--	--	--	--	--	--	--	--	--	--
SEP 28...	12	.1	.1	.0	4	0	4	0	0	0

DATE	SILVER, TOTAL RECOVERABLE (UG/L AS AG) (01077)	SILVER, SUSPENDED RECOVERABLE (UG/L AS AG) (01076)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	ZINC, SUSPENDED RECOVERABLE (UG/L AS ZN) (01091)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C) (00689)
OCT 23...	--	--	--	--	--	--	15	--	--
DEC 03...	--	--	--	--	--	--	19	--	--
JAN 05...	1	1	0	10	0	10	--	16	--
JAN 27...	--	--	--	--	--	--	23	--	--
FEB 26...	--	--	--	--	--	--	13	--	--
MAR 26...	1	1	0	1200	1100	70	--	11	.3
APR 23...	--	--	--	--	--	--	11	--	--
MAY 21...	--	--	--	--	--	--	12	--	--
JUN 25...	0	0	0	20	10	10	--	28	1.7
JUL 24...	0	0	<1	290	180	110	--	--	5.3
AUG 24...	--	--	--	--	--	--	26	--	--
SEP 28...	0	0	0	20	20	5	--	7.4	.7

CANNONBALL RIVER BASIN

381

06354000 CANNONBALL RIVER AT BRIEN, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	PHYTO- PLANK- TON, TOTAL (CELLS PER ML) (60050)	SEDI- MENT, SUS- PENDEO (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDEO (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT				
23...	--	372	48	100
DEC				
03...	7900	25	.88	100
JAN				
05...	--	68	2.9	77
27...	--	10	.55	81
FEB				
26...	--	9	1.1	94
MAR				
26...	1700	50	4.5	98
APR				
23...	--	36	1.8	97
MAY				
21...	23000	54	.99	97
JUN				
25...	430000	67	2.7	97
JUL				
24...	--	2180	1860	100
AUG				
24...	--	1880	2430	--
SEP				
28...	9600	61	4.6	99

DISSOLVED OXYGEN AND WATER TEMPERATURE PROFILE, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	MG/L	DEGREES, C	SATURATION, %	DATE	MG/L	DEGREES, C	SATURATION, %
Aug. 24, 1981				Aug. 25, 1981			
1315	--	22.5	--	0100	7.6	22.5	87
1345	--	23.0	--	0200	7.6	22.0	86
1400	7.7	22.5	88	0300	7.6	22.0	86
1500	7.7	22.5	88	0400	7.7	22.0	87
1530	--	22.5	--	0500	7.7	21.5	86
1600	7.6	23.0	88	0600	7.7	21.5	86
1700	7.6	23.0	88	0700	7.9	21.0	87
1800	7.6	23.0	88	0800	7.9	21.0	87
1900	7.6	23.0	88	0900	8.0	21.0	88
2000	7.6	23.0	88	1000	8.0	21.0	88
2100	7.5	23.0	87	1100	8.0	21.0	88
2200	7.6	23.0	88	1200	8.0	22.0	90
2300	7.6	23.0	88	1300	8.0	22.0	90
2400	7.6	22.5	87	1400	8.0	23.0	92
				1500	7.9	23.5	92

CANNONBALL RIVER BASIN

06354000 CANNONBALL RIVER AT BREIEN, ND--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
UNCE-DAILY

DAY	UCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2000	1600	2000	2800	2850	1700	1700	1800	1850	1900	1150	800
2	2000	1600	2200	2800	2850	1700	1700	1800	1700	1900	1150	800
3	2000	1600	2400	3000	3000	1700	1800	1900	1700	1700	900	875
4	2000	1600	2400	3000	3000	1600	1800	1900	1750	1700	600	925
5	2000	1700	2400	3250	3000	1500	1800	1950	1800	1750	460	950
6	1900	1700	2500	3250	3000	1500	1800	1950	1500	1800	540	800
7	1900	1700	2600	3000	3000	1500	1700	2000	1500	1750	650	825
8	2000	1750	2600	3000	3000	1500	1700	2000	1600	1500	950	580
9	2050	1800	2600	2800	3000	1500	1750	2000	1500	1500	1300	600
10	2050	1800	2800	2800	3200	1500	1750	2000	1400	1650	1600	700
11	2000	1850	3000	2800	3500	1500	1700	2000	1600	850	1300	750
12	2000	1850	2800	3000	3600	1400	1750	2000	1650	500	1350	800
13	2000	1850	2800	2800	3800	1300	1750	2000	1650	540	1100	800
14	2000	1850	2700	2800	3800	1400	1750	2000	1600	600	1300	900
15	2050	1850	2600	2800	3500	1350	1750	2000	1550	750	1250	950
16	1300	1800	2400	2800	3200	1500	1750	2000	1400	850	1250	1000
17	900	1800	2000	2800	2800	1500	1750	2000	1500	1100	1200	1000
18	---	1850	2600	2800	2600	1550	1800	2000	1550	1200	1300	1050
19	600	1900	2800	2800	2200	1550	1850	2000	1600	900	900	1050
20	750	1800	3000	3000	1800	1600	2000	2000	1500	625	975	1100
21	900	1850	3000	3000	2000	1600	1900	2100	1400	650	500	1100
22	1050	1800	3000	3000	2000	1600	1850	2100	1500	750	900	1150
23	1100	1700	3200	2800	2000	1600	1800	2100	1650	1150	800	---
24	1200	1800	3200	2800	1800	1600	1800	2000	1700	800	700	---
25	1300	1800	3500	2800	1800	1600	1800	1950	1750	1100	600	---
26	1400	1700	3500	2800	1800	1650	1800	2000	1800	1100	650	---
27	1400	1800	3500	2700	1800	1650	1800	2000	1800	1050	650	---
28	1350	1900	3500	2800	1700	1700	1800	1900	1800	1100	650	---
29	1500	1850	3250	2850	---	1700	1800	1900	1800	950	700	---
30	1500	1900	3000	2850	---	1700	1800	1850	1800	950	750	---
31	1600	---	3000	2800	---	1700	---	1850	---	1000	800	---
MEAN	1590	1780	2800	2880	2700	1560	1780	1970	1630	1150	933	887

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
UNCE-DAILY

DAY	UCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13.0	5.0	.0	.0	.0	.0	5.0	10.0	19.0	21.5	23.0	14.5
2	11.0	8.0	.0	.0	.0	.0	9.0	18.0	18.5	22.5	23.0	16.0
3	10.0	7.0	.0	.0	.0	.0	13.0	16.0	10.0	21.5	22.0	15.0
4	12.0	5.0	.0	.0	.0	1.5	8.0	15.0	20.0	21.5	23.0	15.0
5	13.0	4.0	.0	.0	.0	1.0	7.0	14.0	19.0	24.0	20.0	17.0
6	14.0	8.0	.0	.0	.0	.0	10.0	11.0	21.0	25.0	22.0	20.0
7	12.0	7.0	.0	.0	.0	.0	10.5	11.0	20.0	24.0	21.0	18.0
8	12.0	10.0	.0	.0	.0	.0	8.5	9.0	16.0	20.0	22.0	17.0
9	15.0	5.0	.0	.0	.0	.0	10.0	12.0	19.5	21.0	22.0	18.0
10	14.0	5.0	.0	.0	.0	.0	10.0	16.0	16.0	22.0	21.0	20.0
11	10.0	4.0	.0	.0	.0	1.0	8.0	11.0	20.0	25.0	23.0	18.0
12	11.0	5.0	.0	.0	.0	2.0	8.5	9.0	17.5	24.0	22.0	18.0
13	11.0	3.0	.0	.0	.0	.0	10.5	9.0	20.0	24.0	24.0	21.0
14	10.0	1.0	.0	.0	.0	4.0	9.5	12.0	21.0	22.0	23.0	17.0
15	7.0	2.0	.0	.0	.0	3.0	10.0	13.0	15.0	21.5	25.0	14.0
16	6.0	.0	1.0	.0	.0	5.0	15.0	12.0	16.0	24.0	23.0	12.0
17	4.0	2.0	1.0	.0	.0	4.0	12.0	12.5	16.5	23.0	20.0	13.0
18	---	2.5	.0	.0	.0	1.0	11.0	12.0	14.5	27.0	21.0	12.0
19	6.0	.0	.0	.0	.0	3.5	8.5	15.0	16.0	22.5	22.0	13.5
20	8.0	1.0	.0	.0	1.0	3.0	8.0	12.0	18.0	20.5	22.5	19.0
21	9.0	1.0	.0	.0	2.0	4.0	14.5	15.5	18.5	27.5	23.5	13.0
22	7.0	1.5	.0	.0	2.0	8.5	12.0	16.0	16.5	22.0	24.0	15.0
23	4.0	.0	.0	.0	2.0	5.5	15.0	12.5	25.5	25.0	23.0	---
24	2.0	.0	.0	.0	.0	13.0	12.0	9.5	18.0	24.0	22.0	---
25	3.0	.0	1.0	.0	.0	9.0	17.0	12.0	18.5	22.0	22.0	---
26	2.0	1.0	.0	.0	.0	5.0	19.0	13.5	19.0	20.0	21.0	---
27	3.0	.0	.0	.0	.0	5.0	14.0	15.0	25.0	20.0	20.5	---
28	2.0	1.0	.0	.0	.0	6.5	13.0	17.0	23.5	19.0	20.0	---
29	1.0	.0	.0	.0	---	5.0	12.0	18.0	18.5	20.0	20.0	---
30	6.5	.0	.0	.0	---	8.0	12.0	18.5	22.0	---	25.0	---
31	3.5	---	.0	.0	---	8.0	---	24.5	---	23.0	19.0	---
MEAN	8.0	3.0	.0	.0	.5	3.5	11.0	13.5	18.5	22.5	22.0	16.0

06354000 CANNONBALL RIVER AT BREIEN, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

DATE TIME	DEC 3,80 1240	MAR 26,81 1135	MAY 21,81 1100	JUN 25,81 1245	SEP 28,81 1500					
TOTAL CELLS/ML	7900	1700	23000	430000	9600					
DIVERSITY: DIVISION	1.7	1.7	1.2	0.6	1.1					
..CLASS	1.8	1.7	1.2	0.6	1.1					
..ORDER	2.2	2.0	1.6	0.8	1.4					
...FAMILY	2.4	2.5	2.2	0.9	2.4					
....GENUS	2.8	2.6	3.2	1.6	3.0					
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)										
..CHLOROPHYCEAE										
...CHLOROCOCCALES										
...CHARACIACEAE										
...SCHROEDERIA	--	-	--	-	--	-			140	1
...MICRACIINIACEAE										
...MICRACIINIUM	--	-	130	8	160	1	--	-	--	-
...OOCYSTACEAE										
...ANKISTRODESMUS	3000#	38	180	11	4000#	17	23000	5	3000#	31
...CHODATELLA	49	1	--	-	*	0	--	-	--	-
...DICTYOSPHAERIUM	390	5	--	-	3300	15	17000	4	--	-
...KIRCHNERIELLA	49	1	--	-	--	-	*	0	190	2
...OOCYSTIS	--	-	--	-	390	2	--	-	190	2
...SELENASTRUM	150	2	26	2	160	1	--	-	--	-
...TREUBARIA	--	-	--	-	230	1	--	-	--	-
...SCENEDESMACEAE										
...ACTINASTRUM	--	-	--	-	620	3	--	-	190	2
...CRUCIGENIA	200	2	--	-	2200	9	4200	1	770	8
...SCENEDESMUS	--	-	26	2	1600	7	4800	1	960	10
...TETRASTRUM	--	-	--	-	620	3	--	-	190	2
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
...CHLAMYDOMONAS	98	1	77	5	*	0	*	0	480	5
CHRYSTOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...COSCINODISCACEAE										
...CYCLOTELLA	--	-	64	4	--	-	--	-	140	1
..PENNALES										
...FRAGILARIACEAE										
...SYNEDRA	--	-	26	2	*	0	--	-	--	-
...NAVICULACEAE										
...NAVICULA	49	1	39	2	*	0	*	0	--	-
...NITZSCHIA	340	4	460#	27	390	2	*	0	*	0
..CHRYSTOPHYCEAE										
...CHRYSOMONADALES										
...CHROMULINACEAE										
...CHRYSOCOCCUS	49	1	--	-	--	-	--	-	--	-
...UCHROMONADACEAE										
...UCHROMONAS	49	1	--	-	--	-	--	-	--	-
...STENOCALYX	390	5	--	-	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)										
..CRYPTOPHYCEAE										
...CRYPTOMONADALES										
...CRYPTOMONADACEAE										
...CRYPTOMONAS	98	1	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROOCOCCALES										
...CHROOCOCCACEAE										
...AGMENELLUM	--	-	--	-	--	-	71000#	17	--	-
...ANACYSTIS	730	9	13	1	4500#	20	290000#	69	--	-
...HORMOGONALES										
...OSCILLATORIACEAE										
...LYNGBYA	--	-	--	-	--	-	3800	1	--	-
...OSCILLATORIA	1900#	23	--	-	4200#	18	5500	1	1200	13
...RIVULARIACEAE										
...RAPHIIDIOPSIS	--	-	--	-	--	-	--	-	1900#	20
EUGLENOPHYTA (EUGLENOIDS)										
..EUGLENOPHYCEAE										
...EUGLENALES										
...EUGLENACEAE										
...TRACHELUMONAS	390	5	630#	37	310	1	*	0	140	1
PYRRHOPHYTA (FIRE ALGAE)										
..DINOPHYCEAE										
...PERIDINIALES										
...GLENODINIACEAE										
...GLENODINIUM	49	1	13	1	--	-	--	-	--	-

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

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

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.

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) National Geodetic Vertical Datum of 1929. Prior to June 18, 1958, nonrecording gage at site 60 ft (18 m) upstream at same datum.

REMARKS.--Records fair, except for winter periods and periods of no gage-height record which are poor.

AVERAGE DISCHARGE.--32 years, 40.5 ft³/s (1.147 m³/s), 29,340 acre-ft/yr (36.2 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, 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.--Maximum discharge, 772 ft³/s (21.9 m³/s) July 12, gage height, 11.11 ft (3.39 m), only peak above base of 200 ft³/s (5.66 m³/s); no flow Oct. 1-15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	2.4	2.0	.80	.50	3.5	6.3	2.8	1.1	4.9	21	.66
2	.00	2.1	1.8	.80	.50	3.8	6.3	2.8	.85	3.2	21	.56
3	.00	2.0	1.5	.80	.45	4.0	6.2	2.8	.78	2.6	24	.46
4	.00	1.9	1.4	.80	.42	4.2	6.1	2.5	.66	4.0	26	.42
5	.00	1.6	1.4	.80	.40	4.3	6.0	2.6	.78	4.5	24	.38
6	.00	1.5	1.4	.80	.40	4.5	5.9	2.5	.85	2.8	24	2.8
7	.00	1.7	1.3	.80	.40	4.6	5.8	2.2	.78	1.8	22	2.9
8	.00	1.8	1.2	.80	.40	4.7	5.7	2.1	.72	1.2	20	1.4
9	.00	2.0	1.2	.70	.40	4.7	5.6	1.8	.66	.66	19	1.1
10	.00	2.0	1.2	.70	.40	4.8	5.4	1.9	.61	1.4	17	.92
11	.00	1.9	1.2	.70	.40	4.9	5.3	1.8	.46	1.8	15	.72
12	.00	1.9	1.1	.70	.40	5.0	5.2	1.8	.42	459	12	.56
13	.00	1.9	1.1	.70	.40	5.1	5.1	1.7	.85	272	9.9	.38
14	.00	1.8	1.1	.70	.45	5.2	5.0	1.5	.61	334	8.0	.38
15	.00	1.7	1.1	.70	.50	5.3	4.8	1.5	.56	260	6.9	.38
16	.41	1.7	1.1	.70	.50	5.4	4.7	1.6	.56	230	5.9	.38
17	5.9	2.1	1.1	.70	.55	5.5	4.6	1.6	.38	204	4.9	.46
18	39	2.3	1.1	.70	.58	5.6	4.4	1.6	.30	168	4.5	.66
19	32	2.3	1.0	.70	.60	5.7	4.3	1.5	.30	133	3.8	.78
20	18	2.2	.90	.70	.65	5.7	4.2	1.4	.34	88	3.2	.66
21	12	2.2	.90	.70	.70	5.8	4.0	1.5	.42	72	2.9	.51
22	8.8	2.2	.90	.70	1.0	5.9	3.9	1.4	.61	62	2.7	.42
23	7.2	2.1	.90	.70	1.2	5.9	3.8	1.2	.42	42	2.1	.42
24	6.5	1.9	.90	.70	1.6	6.0	3.6	1.2	.34	53	2.1	.42
25	9.4	1.9	.90	.70	2.0	6.0	3.5	1.0	.30	88	1.9	.38
26	8.0	1.9	.90	.70	2.5	6.1	3.3	1.0	.22	45	2.3	.42
27	6.0	1.9	.90	.60	2.9	6.1	3.2	1.0	.26	44	1.7	.38
28	4.2	2.0	.90	.60	3.2	6.2	3.1	1.5	1.1	42	1.3	.34
29	4.0	2.0	.90	.60	---	6.2	2.9	1.4	13	31	1.1	.38
30	3.6	2.2	.90	.60	---	6.3	2.8	1.1	13	25	.99	.46
31	3.0	---	.90	.60	---	6.3	---	1.0	---	23	.85	---
TOTAL	168.01	59.1	35.10	22.00	24.40	163.3	141.0	53.3	42.24	2703.86	312.04	21.09
MEAN	5.42	1.97	1.13	.71	.87	5.27	4.70	1.72	1.41	87.2	10.1	.70
MAX	39	2.4	2.0	.80	3.2	6.3	6.3	2.8	13	459	26	2.9
MIN	.00	1.5	.90	.60	.40	3.5	2.8	1.0	.22	.66	.85	.34
AC-FT	333	117	70	44	48	324	280	106	84	5360	619	42
CAL YR 1980	TOTAL	5388.23	MEAN 14.7	MAX 373	MIN .00	AC-FT 10690						
WTR YR 1981	TOTAL	3745.44	MEAN 10.3	MAX 459	MIN .00	AC-FT 7430						

GRAND RIVER BASIN

385

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, Hydrologic Unit 10130301, at dam on North Fork Grand River, and 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 National Geodetic Vertical Datum of 1929.

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, 37,540 acre-ft (46.3 hm³) Mar. 28, 1978, elevation, 2,762.66 ft (842.059 m); minimum since first reaching spillway level, 13,070 acre-ft (16.1 hm³) Sept. 30, 1981, elevation, 2,750.27 ft (838.282 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 14,910 acre-ft (18.4 hm³) Oct. 1, elevation, 2,751.68 ft (838.712 m); minimum, 13,070 acre-ft (16.1 hm³) Sept. 30, elevation, 2,750.27 ft (838.282 m).

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30-----	2,751.71	14,950	--
Oct. 31-----	2,751.63	14,850	-100
Nov. 30-----	2,751.52	14,700	-150
Dec. 31-----	2,751.51	14,680	-20
CAL YR 1980-----	--	--	-4,330
Jan. 31-----	2,751.50	14,670	-10
Feb. 28-----	2,751.51	14,680	+10
Mar. 31-----	2,751.37	14,490	-190
Apr. 30-----	2,751.09	14,110	-380
May 31-----	2,750.96	13,940	-170
June 30-----	2,750.80	13,730	-210
July 31-----	2,750.89	13,850	+120
Aug. 31-----	2,750.66	13,560	-290
Sept. 30-----	2,750.27	13,070	-490
WTR YR 1981-----	--	--	-1,880

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.

PERIOD OF RECORD.--May 1908 to September 1917, October 1945 to current year. Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Water-stage recorder. Datum of gage is 2,658.60 ft (810.341 m) National Geodetic Vertical Datum of 1929. 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.

AVERAGE DISCHARGE.--45 years, 27.7 ft³/s (0.784 m³/s), 20,100 acre-ft/yr (24.8 hm³/yr); median of yearly mean discharges, 22 ft³/s (0.62 m³/s), 15,900 acre-ft/yr (20 hm³/yr).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 79 ft³/s (2.24 m³/s) July 12, gage height, 6.74 ft (2.054 m); minimum daily discharge, 0.05 ft³/s (0.001 m³/s) Aug. 13-14.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.35	1.3	1.1	1.3	.90	2.0	1.0	.86	1.9	2.1	.73	.09
2	.35	1.1	1.1	1.3	.90	1.8	1.0	.86	1.9	2.1	1.2	.09
3	.35	1.1	1.1	1.3	.90	1.7	1.1	.86	1.2	1.5	1.1	.09
4	.35	1.2	1.1	1.3	.90	1.7	1.0	.86	1.3	2.8	.90	.09
5	.42	1.2	1.1	1.3	.90	1.6	1.0	.86	.84	1.7	1.1	.09
6	.42	1.3	1.1	1.3	.90	1.5	.95	.86	1.2	.52	.97	.21
7	.42	1.5	1.1	1.3	.90	1.5	.95	1.0	1.5	.15	.63	.21
8	.42	1.5	1.1	1.2	.80	1.5	.95	1.0	1.9	.09	.49	.21
9	.56	1.5	1.1	1.2	.80	1.5	.95	1.3	1.8	.09	.42	.28
10	.71	1.7	1.1	1.2	.70	1.5	.95	1.5	1.9	.06	.21	.28
11	.78	1.8	1.1	1.1	.70	1.5	1.0	1.6	2.3	.10	.15	.28
12	.78	2.0	1.2	1.1	.70	1.4	1.0	1.6	2.9	27	.15	.28
13	.78	2.1	1.2	1.1	.80	1.3	.95	1.6	3.5	5.1	.05	.21
14	.78	2.1	1.2	1.1	.90	1.3	.95	1.9	3.7	2.8	.05	.21
15	.78	2.2	1.2	1.1	1.6	1.3	.95	2.1	3.6	1.8	.09	.28
16	1.9	2.2	1.2	1.1	2.0	1.1	.95	2.1	3.2	1.2	.21	.21
17	2.2	2.0	1.2	1.1	2.3	1.2	.90	2.1	3.4	1.4	.28	.21
18	2.0	1.9	1.1	1.1	2.0	1.2	.80	2.2	3.2	1.7	.28	.21
19	1.7	1.5	1.0	1.2	2.0	1.2	.70	2.2	3.0	1.7	.21	.21
20	1.5	1.4	1.0	1.2	2.0	1.2	.60	1.8	3.3	1.8	.09	.21
21	1.4	1.4	1.0	1.2	2.2	1.3	.50	1.7	4.4	1.5	.09	.21
22	1.3	1.4	1.0	1.2	2.6	1.2	.50	2.4	3.3	1.7	.09	.21
23	1.4	1.4	1.0	1.2	2.2	1.3	.50	2.6	4.0	1.8	.09	.21
24	1.5	1.3	1.0	1.2	2.1	1.3	.60	2.6	3.3	1.8	.09	.49
25	1.4	1.3	1.0	1.2	2.0	1.4	.70	2.6	3.0	1.7	.15	1.7
26	1.3	1.3	1.0	1.2	1.7	1.2	.70	2.7	3.4	1.8	.21	2.1
27	1.5	1.3	1.0	1.1	2.1	1.2	.80	3.5	3.2	1.7	.15	.56
28	1.4	1.2	1.1	1.1	1.7	1.2	.86	3.4	3.3	1.6	.16	.49
29	1.2	1.2	1.1	1.0	---	1.1	.86	1.3	2.8	1.3	.21	.49
30	1.2	1.2	1.2	1.0	---	1.1	.86	.80	2.6	1.2	.25	.49
31	1.1	---	1.2	1.0	---	1.0	---	1.2	---	.78	.13	---
TOTAL	32.25	45.6	34.0	36.3	40.20	42.3	25.53	53.96	80.84	72.59	10.93	10.90
MEAN	1.04	1.52	1.10	1.17	1.44	1.36	.85	1.74	2.69	2.34	.35	.36
MAX	2.2	2.2	1.2	1.3	2.6	2.0	1.1	3.5	4.4	27	1.2	2.1
MIN	.35	1.1	1.0	1.0	.70	1.0	.50	.80	.84	.06	.05	.09
AC-FT	64	90	67	72	80	84	51	107	160	144	22	22
CAL YR 1980	TOTAL	616.59	MEAN	1.68	MAX	7.1	MIN	.21	AC-FT	1220		
WTR YR 1981	TOTAL	485.40	MEAN	1.33	MAX	27	MIN	.05	AC-FT	963		

387

LOCATION.--Lat 46°06'40", long 103°02'20", in SE 1/4 sec.3, T.130 N., R.99 W., Bowman County, Hydrologic Unit 10130301, on left bank 46 ft (14 m) downstream from Chicago, Milwaukee, St. Paul, Pacific Railway bridge, and 1.8 mi (2.9 km) east of Gascoyne.

WATER-DISCHARGE RECORDS

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2.9 ft³/s (0.08 m³/s) July 24, gage height, 6.67 ft (2.033 m); maximum gage height, 6.76 ft (2.060 m) Feb. 16, 17, backwater from ice; no flow for many days.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.15	.04	.10	.06	.22	.10	.01	.02	.00	.01	.00
2	.00	.12	.02	.07	.05	.23	.09	.02	.02	.00	.30	.00
3	.00	.14	.01	.07	.04	.28	.12	.01	.02	.00	.52	.00
4	.00	.14	.01	.05	.04	.36	.11	.00	.02	.00	.44	.00
5	.00	.14	.01	.07	.03	.36	.12	.00	.04	.00	.63	.00
6	.00	.14	.01	.06	.02	.36	.11	.00	.02	.00	.69	.00
7	.00	.12	.01	.04	.00	.29	.07	.00	.01	.00	.29	.00
8	.00	.09	.01	.04	.00	.25	.06	.00	.01	.00	.13	.00
9	.00	.09	.01	.04	.00	.21	.05	.00	.01	.00	.06	.00
10	.00	.12	.01	.04	.00	.21	.04	.00	.01	.00	.03	.00
11	.00	.12	.01	.05	.00	.20	.05	.00	.01	.00	.02	.00
12	.00	.12	.01	.06	.00	.20	.12	.01	.01	.23	.01	.00
13	.00	.09	.02	.07	.00	.17	.12	.01	.04	.23	.00	.00
14	.00	.09	.04	.07	.05	.13	.07	.01	.12	.13	.00	.00
15	.00	.09	.10	.05	.70	.09	.07	.01	.07	.16	.00	.00
16	.00	.09	.30	.04	1.5	.07	.07	.01	.05	.14	.02	.00
17	.28	.09	.30	.05	1.5	.09	.04	.01	.07	.06	.03	.00
18	.48	.09	.25	.07	1.3	.06	.03	.01	.14	.03	.03	.00
19	.48	.09	.12	.07	1.0	.04	.02	.01	.12	.02	.02	.00
20	.48	.09	.05	.07	.80	.03	.01	.01	.07	.01	.01	.00
21	.48	.09	.03	.10	.75	.03	.00	.01	.07	.01	.00	.00
22	.39	.09	.02	.14	.55	.03	.01	.05	.03	.05	.00	.00
23	.33	.09	.02	.20	.50	.03	.01	.12	.02	.66	.00	.00
24	.29	.09	.02	.24	.45	.04	.01	.05	.01	2.1	.00	.00
25	.29	.09	.01	.22	.35	.05	.01	.04	.00	1.4	.00	.00
26	.21	.07	.01	.16	.24	.04	.00	.03	.00	.48	.00	.00
27	.17	.05	.01	.13	.23	.03	.01	.04	.00	.23	.00	.00
28	.19	.06	.09	.10	.22	.05	.02	.03	.00	.11	.00	.00
29	.21	.07	.07	.08	---	.06	.03	.02	.00	.08	.00	.00
30	.21	.07	.14	.07	---	.10	.02	.02	.00	.04	.00	.00
31	.18	---	.24	.06	---	.14	---	.01	---	.02	.00	---
TOTAL	4.67	2.98	2.00	2.68	10.38	4.45	1.59	.55	1.01	6.19	3.24	.00
MEAN	.15	.099	.065	.086	.37	.14	.053	.018	.034	.20	.10	.000
MAX	.48	.15	.30	.24	1.5	.36	.12	.12	.14	2.1	.69	.00
MIN	.00	.05	.01	.04	.00	.03	.00	.00	.00	.00	.00	.00
AC-FT	9.3	5.9	4.0	5.3	21	8.8	3.2	1.1	2.0	12	6.4	.00
CAL YR 1980	TOTAL 87.27		MEAN .24	MAX 3.2	MIN .00	AC-FT 173						
WTR YR 1981	TOTAL 39.74		MEAN .11	MAX 2.1	MIN .00	AC-FT 79						

GRAND RIVER BASIN

06355310 BUFFALO CREEK TRIBUTARY NEAR GASCOYNE, ND--Continued

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHUS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (MG/L) (00301)	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)
NOV											
25...	0815	.12	6100	8.6	-6.0	2.0	--	--	910	250	150
DEC											
10...	0930	.01	8000	8.5	-16.0	.0	--	--	1200	360	180
JAN											
27...	0845	.13	5000	8.0	-7.0	.0	10.0	75	610	0	83
FEB											
26...	1400	.24	3480	8.6	11.5	1.0	--	--	590	260	93
MAR											
11...	1600	.20	3200	8.2	13.0	8.0	14.6	134	650	340	110
26...	1400	.04	5280	8.6	11.0	7.0	11.5	105	--	--	--
APR											
09...	0835	.04	5800	8.6	10.5	7.0	10.2	94	1100	480	150
22...	1130	.01	6700	8.6	14.0	17.0	7.9	91	--	--	--
MAY											
22...	0900	<.01	>8000	8.2	--	16.0	--	--	1300	--	170
JUN											
02...	1730	.02	8150	8.6	25.0	21.0	6.4	77	--	--	--
23...	1545	.02	8560	8.8	23.5	28.5	16.9	238	1300	670	140
JUL											
30...	1430	.04	5000	8.8	29.5	30.0	13.4	189	1100	710	140
AUG											
17...	1815	.04	6400	8.8	25.5	24.0	8.4	111	1500	1100	160

DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY, CARBON- ATE FET-FLD (MG/L AS CAC03) (00430)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SI02) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
NOV											
25...	130	1300	75	19	17	662	3000	25	1.5	3.4	5240
DEC											
10...	190	1700	74	21	33	880	4000	32	1.6	3.5	6860
JAN											
27...	98	1200	81	21	14	690	2400	24	1.6	10	4460
FEB											
26...	86	640	70	12	8.1	330	1500	14	.7	6.3	2630
MAR											
11...	92	600	66	10	8.1	310	1500	16	.3	.0	2510
26...	--	--	--	--	--	562	--	--	--	--	--
APR											
09...	170	1200	71	16	13	600	3000	51	1.5	2.3	4960
22...	--	--	--	--	--	658	--	--	--	--	--
MAY											
22...	220	1700	74	20	2.0	--	4000	37	1.8	1.1	6910
JUN											
02...	--	--	--	--	--	736	--	--	--	--	--
23...	240	1900	75	23	16	--	4700	35	1.6	.8	7490
JUL											
30...	170	920	65	12	14	340	2700	16	.8	5.0	4440
AUG											
17...	270	1300	65	15	18	410	3700	31	.9	1.5	6000

06355310 BUFFALO CREEK TRIBUTARY NEAR GASCOYNE, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

[illegible][illegible]

GRAND RIVER BASIN

06355310 BUFFALO CREEK TRIBUTARY NEAR GASCOYNE, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	CHRO- MIUM, SUS- PENDE RECUM, SOLVED (UG/L AS CR) (01031)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	CHRO- MIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/L AS CR) (01029)	COBALT, DIS- SOLVED (UG/L AS CU) (01035)	COBALT, RECOV. FM BOT- TOM MA- TERIAL (UG/L AS CU) (01038)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	COPPER, SUS- PENDE RECUM, SOLVED (UG/L AS CU) (01041)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	COPPER, RECOV. FM BOT- TOM MA- TERIAL (UG/L AS CU) (01043)
NOV 25...	--	--	--	--	--	--	--	--	--	--
DEC 10...	--	--	--	--	22	--	--	--	--	--
JAN 27...	--	--	--	--	--	--	--	--	--	--
FEB 26...	10	10	0	--	--	--	4	3	1	--
APR 09...	20	10	10	6	--	10	0	0	2	12
MAY 22...	--	--	--	--	--	--	--	--	--	--
MAY 22...	--	--	10	--	2	--	--	--	2	--

DATE	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI) (01132)	LITHIUM SUS- PENDE RECUM, SOLVED (UG/L AS LI) (01131)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, SUS- PENDE RECUM, SOLVED (UG/L AS MN) (01054)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MERCURY SUS- PENDE RECUM, SOLVED (UG/L AS HG) (71895)
NOV 25...	50	--	--	--	60	20	40	--	--	--
DEC 10...	60	160	0	160	80	20	60	--	--	--
JAN 27...	140	--	--	--	250	0	250	--	--	--
FEB 26...	100	--	--	--	230	20	210	.1	.0	.1
MAR 11...	50	--	--	--	180	50	130	--	--	--
APR 09...	70	110	0	110	160	40	120	.1	.1	.0
MAY 22...	90	--	--	170	--	--	190	--	.3	--
JUN 02...	--	--	--	--	--	--	--	--	--	--
JUL 23...	60	--	--	--	80	60	20	--	--	--
AUG 30...	60	--	--	--	50	10	40	--	--	--
AUG 17...	50	--	--	--	90	20	70	--	--	--

DATE	MERCURY RECOV. FM BOT- TOM MA- TERIAL (UG/L AS HG) (71921)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	NICKEL, SUS- PENDE RECUM, SOLVED (UG/L AS NI) (01066)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE) (01147)	SELE- NIUM, SUS- PENDE RECUM, SOLVED (UG/L AS SE) (01146)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SELE- NIUM, TOTAL IN BOT- TOM MA- TERIAL (UG/L AS SE) (01148)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
NOV 25...	--	--	--	--	--	--	--	--	--	--
DEC 10...	--	--	--	--	--	--	--	--	--	5200
JAN 27...	--	--	--	--	--	--	--	--	--	--
FEB 26...	--	--	3	0	4	0	0	0	--	--
APR 09...	.30	--	8	3	5	0	0	0	0	3200
MAY 22...	--	--	--	--	--	--	--	--	--	--
MAY 22...	--	7	--	--	2	--	--	0	--	3400

GRAND RIVER BASIN

391

06355310 BUFFALO CREEK TRIBUTARY NEAR GASCOYNE, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	ZINC, SUS- PENDED RECOVERABLE (UG/L AS ZN) (01091)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	ZINC, RECUM- TUM MA- TERIAL (UG/G AS ZN) (01093)	GROSS ALPHA, VIS- SOLVED (UG/L AS U-NAT) (80030)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS BETA, VIS- SOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)	GROSS BETA, VIS- SOLVED (PCI/L AS SR/ YT-90) (80050)
NOV 25...	--	--	--	--	--	--	--	--	--
DEC 10...	--	--	--	--	--	--	--	--	--
JAN 27...	--	--	--	--	--	--	--	--	--
FEB 26...	20	10	10	--	--	--	--	--	--
MAR 11...	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--
APR 09...	20	0	40	22	<99	<.4	<50	1.4	<49

DATE	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90) (80060)	POTAS- SIUM 40 DIS- SOLVED (PCI/L AS K40) (82068)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHENOLS TOTAL (UG/L) (32730)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)
NOV 25...	--	--	37	.6	--	--	37	.01
DEC 10...	--	--	--	--	--	--	93	.00
JAN 27...	--	10	43	1.3	--	--	112	.04
FEB 26...	--	6.0	--	--	.00	2	9	.01
MAR 11...	--	6.0	--	--	--	--	15	.01
26...	--	--	--	--	--	--	234	.03
APR 09...	1.3	9.7	41	.7	.00	3	215	.02
22...	--	--	--	--	--	--	194	.01
MAY 22...	--	1.5	--	--	--	--	--	--
JUN 02...	--	--	--	--	--	--	332	.02
23...	--	12	--	--	--	--	237	.01
JUL 30...	--	--	36	.3	--	--	8	.00
AUG 17...	--	--	--	--	--	--	6	.00

DATE	LENGTH OF EXPOSURE (DAYS) (00022)	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUORUM (MG/M2) (70957)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUORUM (MG/M2) (70958)	PERI- PHYTON BIOMASS ASH WEIGHT G/SQ M (00572)	PERI- PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)
JUL 30...	37	15.4	.000	19.8	24.6

GRAND RIVER BASIN

06355310 BUFFALO CREEK TRIBUTARY NEAR GASCOYNE, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO AUGUST 1981

DATE TIME	NOV 25,80 0815	DEC 10,80 0930	JAN 27,81 0845	FEB 26,81 1400	MAR 11,81 1600					
TOTAL CELLS/ML	10000	1200	43000	4100	11000					
DIVERSITY: DIVISION	1.5	1.6	0.7	1.2	1.9					
..CLASS	1.5	1.6	0.7	1.2	1.9					
..ORDER	1.8	1.9	0.7	1.5	2.4					
...FAMILY	1.8	1.9	0.7	1.5	2.4					
....GENUS	1.9	2.5	0.7	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
BACILLARIOPHYTA (DIATOMS)										
..BACILLARIOPHYCEAE										
...BACILLARIALES										
....NITZSCHIAEAE										
.....NITZSCHIA	--	-	64	5	--	-	35	1	420	4
....EUPODISCALES										
....COSCINODISCAEAE										
.....CYCLOTELLA	6300#	63	--	-	*	0	--	-	1400	13
....STEPHANODISCUS	--	-	--	-	--	-	--	-	--	-
..FRAGILARIALES										
...FRAGILARIAEAE										
....DIATOMA	--	-	--	-	*	0	--	-	--	-
....SYNEDRA	--	-	--	-	--	-	--	-	--	-
..NAVICULALES										
...ENTOMONEIDAEAE										
....ENTOMONEIS	--	-	39	3	--	-	35	1	70	1
...NAVICULAEAE										
....NAVICULA	180	2	--	-	--	-	35	1	910	9
CHLOROPHYTA (GREEN ALGAE)										
..CHLOROPHYCEAE										
...CHLOROCOCCALES										
....CHLOROCOCCAEAE										
.....SCHROEDERIA	--	-	--	-	--	-	--	-	--	-
....OOCYSTAEAE										
.....ANKISTRODESMUS	970	10	100	8	*	0	180	4	490	5
....KIRCHNERIELLA	--	-	--	-	--	-	--	-	--	-
....OOCYSTIS	--	-	--	-	--	-	280	7	--	-
....SELENASTRUM	--	-	--	-	--	-	--	-	--	-
....TREUBARIA	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADAEAE										
....CHLAMYDOMONAS	440	4	90	7	1600	4	1100#	26	140	1
CHRYSOPHYTA										
..CHRYSOPHYCEAE										
...OCHROMONADALES										
....OCHROMONADAEAE										
.....OCHROMONAS	--	-	--	-	--	-	--	-	--	-
....SYNURAEAE										
.....MALLOMONAS	88	1	--	-	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)										
..CRYPTOPHYCEAE										
...CRYPTOMONADALES										
....CRYPTOMONADAEAE										
.....CRYPTOMONAS	--	-	26	2	--	-	--	-	70	1
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROOCOCCALES										
....CHROOCOCCAEAE										
.....ANACYSTIS	--	-	13	1	--	-	35	1	--	-
....OSCILLATORIALES										
....OSCILLATORIAEAE										
.....OSCILLATORIA	970	10	--	-	38000#	89	--	-	1400	13
....SPIRULINA	--	-	--	-	*	0	--	-	70	1
EUGLENOPHYTA (EUGLENIDS)										
..EUGLENOPHYCEAE										
...EUGLENALES										
....EUGLENAEAE										
.....EUGLENA	970	10	320#	26	360	1	--	-	630	6
....PHACUS	--	-	--	-	300	1	--	-	--	-
....TRACHELOMONAS	180	2	480#	38	--	-	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)										
..PYRRHOPHYCEAE										
...DINOKONTAE										
....GLENODINIACEAE										
.....GLENODINIUM	--	-	120	9	--	-	--	-	--	-
....GYMNODINIACEAE										
.....GYMNODINIUM	--	-	--	-	2100	5	2500#	60	5000#	47

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

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

GRAND RIVER BASIN

393

06355310 BUFFALO CREEK TRIBUTARY NEAR GASCOYNE, ND--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO AUGUST 1981

DATE TIME	APR 9,81 0835	JUN 23,81 1545	JUL 30,81 1430	AUG 17,81 1815				
TOTAL CELLS/ML	8900	12000	2800	3400				
DIVERSITY: DIVISION	1.9	1.4	2.0	1.6				
..CLASS	1.9	1.4	2.0	1.6				
...ORDER	2.5	1.8	2.7	1.9				
...FAMILY	2.5	1.8	2.8	1.9				
....GENUS	2.7	1.8	2.8	2.1				
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
BACILLARIOPHYTA (DIATOMS)								
..BACILLARIOPHYCEAE								
...BACILLARIALES								
....NITZSCHIAEAE								
....NITZSCHIA	230	3	280	2	420	15	180	5
...EUPODISCALES								
....COSCINODISCACEAE								
....CYCLOTELLA	--	-	5600#	45	66	2	25	1
...STEPHANODISCUS	3900#	44	--	-	--	-	--	-
..FRAGILARIALES								
...FRAGILARIAEAE								
....DIATOMA	--	-	--	-	--	-	--	-
....SYNEDRA	--	-	69	1	--	-	--	-
..NAVICULALES								
...ENTOMONEIDACEAE								
....ENTOMONEIS	--	-	69	1	44	2	--	-
...NAVICULACEAE								
....NAVICULA	310	3	140	1	750#	27	130	4
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
....CHLOROCOCCACEAE								
....SCHROEDERIA	150	2	--	-	--	-	--	-
...OOCYSTACEAE								
....ANKISTRODESMUS	840	9	69	1	--	-	--	-
...KIRCHNERIELLA	--	-	--	-	--	-	130	4
...OOCYSTIS	--	-	--	-	200	7	--	-
...SELENASTRUM	150	2	--	-	--	-	1800#	55
...TREUBARIA	150	2	--	-	--	-	--	-
..VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	610	7	140	1	400	14	--	-
CHRYSOPHYTA								
..CHRYSOPHYCEAE								
...OCHROMONADALES								
....OCHROMONADACEAE								
....OCHROMONAS	--	-	--	-	22	1	--	-
...SYNURACEAE								
....MALLOMONAS	--	-	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)								
..CRYPTOPHYCEAE								
...CRYPTOMONADALES								
....CRYPTOMONADACEAE								
....CRYPTOMONAS	150	2	280	2	640#	23	250	8
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROOCOCCALES								
....CHROOCOCCACEAE								
....ANACYSTIS	1100	12	5200#	42	--	-	460	14
...OSCILLATORIALES								
....OSCILLATORIAEAE								
....OSCILLATORIA	--	-	340	3	180	6	360	11
...SPIRULINA	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)								
..EUGLENOPHYCEAE								
...EUGLENALES								
....EUGLENACEAE								
....EUGLENA	1100	13	210	2	110	4	--	-
...PHACUS	--	-	--	-	--	-	--	-
...TRACHELOMONAS	76	1	--	-	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)								
..DINOPHYCEAE								
...DINOKONTAE								
....GLENODINIACEAE								
....GLENODINIUM	150	2	69	1	--	-	--	-
...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

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 National Geodetic Vertical Datum of 1929. 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, 23,510,000 acre-ft (29,000 hm³) below elevation 1,620.0 ft (493.78 m), top of spillway gates. Normal maximum, 22,420,000 acre-ft (27,600 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, 5,521,000 acre-ft (6,810 hm³) below elevation 1,540.0 ft (469.39 m). Dead storage, 3,030 acre-ft (3.74 hm³) below elevation 1,425.0 ft (434.34 m), invert of lowest outlet tunnel. From capacity table put into use Jan. 1, 1981: Maximum capacity, 23,338,000 acre-ft (23,800 hm³). Normal maximum, 22,240,000 acre-ft (27,400 hm³). Inactive storage, 5,451,000 acre-ft (6,720 hm³). Dead storage 1,970 acre-ft (243 hm³). 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, affected by wind; minimum since initial filling, 14,815,000 acre-ft (18,300 hm³) Sept. 25, 1981.

EXTREMES FOR CURRENT YEAR.--Period of Oct. 1 to Dec. 31: Maximum contents, 16,432,000 acre-ft (20,300 hm³) Dec. 31; minimum contents, 15,993,000 acre-ft (19,700 hm³), Nov. 25. Period of Jan. 1 to Sept. 30: Maximum contents, 17,550,000 acre-ft (21,600 hm³) Mar. 17; minimum contents, 14,815,000 acre-ft (18,300 hm³) Sept. 25.

CORRECTIONS.--Capacity and storage figures in the REMARKS paragraph are in error for some years. The following table gives the correct figures for water years 1959-80.

Date	Maximum capacity	Normal maximum	Inactive storage	Dead storage
Aug. 1958 to Dec. 31, 1971	23,630,000	22,530,000	5,538,000	2,020
Jan. 31, 1972 to Sept. 30, 1980	23,510,000	22,420,000	5,521,000	3,030

Elevations shown in EXTREMES FOR PERIOD OF RECORD and EXTREMES FOR CURRENT YEAR, for water years 1959-80, may have been incorrectly computed and may be slightly in error.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30-----	1,597.96	16,370,000	--
Oct. 31-----	1,597.17	16,230,000	-140,000
Nov. 30-----	1,596.81	16,065,000	-165,000
Dec. 31-----	1,598.09	16,432,000	+367,000
Dec. 31-----	1,598.09	*16,313,000	-119,000
CAL YR 1980-----	--	--	-2,091,000
Jan. 31-----	1,599.67	16,729,000	+416,000
Feb. 28-----	1,601.35	17,230,000	+501,000
Mar. 31-----	1,602.01	17,333,000	+103,000
Apr. 30-----	1,597.81	16,184,000	-114,900
May 31-----	1,594.71	15,438,000	-746,000
June 30-----	1,594.98	15,550,000	+112,000
July 31-----	1,595.52	15,625,000	+75,000
Aug. 31-----	1,594.22	15,238,000	-387,000
Sept. 30-----	1,592.63	14,829,000	-409,000
WTR YR 1981-----	--	--	-1,541,000

Note.--Reservoir frozen over Feb. 8 to Mar. 14.

*New capacity table put into use Jan. 1, 1981.

JAMES RIVER BASIN

395

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, and 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) National Geodetic Vertical Datum of 1929. Prior to Sept. 16, 1957, crest-stage gage only on downstream side of bridge at same datum.

REMARKS.--Records fair except for periods of no gage-height record, which are poor.

AVERAGE DISCHARGE.--24 years (1957-81), 3.48 ft³/s (0.0986 m³/s), 2,520 acre-ft/yr (3.11 hm³/yr); median of yearly mean discharges, 2.9 ft³/s (0.082 m³/s), 2,100 acre-ft/yr (2.6 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 2,000 ft³/s (56.6 m³/s) Apr. 18 or 19, 1979, gage height, 9.2 ft (2.80 m), from highwater mark, backwater from snow; no flow for long periods each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 30 ft³/s (0.85 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)
Feb. 18	--	50 1.42	*ab3.72 1.133	July 26	1100	*90 2.55	3.26 0.994

a - Maximum observed gage height.

b - Backwater from ice.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	6.5	2.4	.10	.00	21	4.4	1.7	2.1	2.1	21	.82
2	1.1	6.0	2.2	.10	.00	19	4.3	1.6	2.0	2.1	17	.70
3	1.0	5.7	2.0	.00	.00	16	4.3	1.6	2.0	2.0	15	.58
4	.94	5.5	1.8	.00	.00	13	4.1	1.6	2.0	2.0	12	.38
5	.90	5.3	1.6	.00	.00	12	3.8	1.5	1.9	1.9	11	.30
6	.82	5.1	1.5	.00	.00	11	3.4	1.5	1.9	1.9	11	8.0
7	.78	4.9	1.4	.00	.00	8.8	3.2	1.5	1.9	1.8	9.2	10
8	.70	4.7	1.2	.00	.00	9.4	2.9	1.4	1.8	1.8	7.8	9.0
9	.66	4.5	1.1	.00	.00	7.6	2.8	1.4	1.7	1.7	6.5	8.0
10	.62	4.3	1.0	.00	.00	7.6	2.6	1.4	1.7	1.6	5.6	7.0
11	.58	4.1	.90	.00	.00	7.8	2.4	1.3	1.6	1.8	4.9	6.0
12	.54	3.9	.90	.00	.00	6.5	2.4	1.3	1.6	1.9	4.7	4.0
13	.54	3.8	.90	.00	.00	6.5	2.2	1.3	5.0	1.8	4.6	3.0
14	.54	3.8	.90	.00	.00	6.5	2.1	1.2	15	1.7	3.7	2.6
15	.54	3.8	.90	.00	5.0	6.5	2.1	1.2	12	1.7	2.8	2.4
16	.90	3.8	.80	.00	10	6.5	2.0	1.2	10	1.7	2.4	2.2
17	1.8	3.8	.80	.00	30	6.5	1.9	1.1	8.0	1.4	1.9	2.0
18	2.5	3.8	.80	.00	50	6.7	1.9	1.1	7.0	1.2	1.5	1.8
19	3.2	3.6	.70	.00	50	6.5	1.9	1.1	6.0	1.2	1.2	1.6
20	2.8	3.4	.60	.00	49	6.0	1.9	1.1	5.0	1.1	.98	1.5
21	2.5	3.4	.50	.00	48	5.6	1.9	1.0	4.0	1.0	.86	1.5
22	2.7	3.4	.40	.00	46	5.1	1.8	1.0	3.0	1.2	.74	1.5
23	3.4	3.4	.30	.00	42	4.7	1.8	1.4	2.8	1.2	.66	1.5
24	3.8	3.4	.20	.00	39	4.6	1.7	1.7	2.6	1.1	.62	1.4
25	4.6	3.3	.20	.00	36	4.6	1.7	2.1	2.4	17	.54	1.2
26	4.8	3.2	.20	.00	33	4.5	1.6	2.0	2.3	86	.50	2.0
27	5.3	3.0	.20	.00	30	4.3	1.6	2.0	2.3	78	.46	1.8
28	5.6	2.9	.20	.00	26	4.7	1.8	2.0	2.2	66	.46	1.6
29	5.6	2.7	.20	.00	---	4.7	1.7	1.9	2.2	54	.46	1.4
30	5.9	2.6	.20	.00	---	4.6	1.7	1.9	2.2	42	.42	1.2
31	6.5	---	.10	.00	---	4.6	---	1.9	---	32	.94	---
TOTAL	73.26	121.6	27.10	.20	494.00	243.4	73.9	46.0	116.2	413.9	151.44	86.98
MEAN	2.36	4.05	.87	.006	17.6	7.85	2.46	1.48	3.87	13.4	4.89	2.90
MAX	6.5	6.5	2.4	.10	50	21	4.4	2.1	15	86	21	10
MIN	.54	2.6	.10	.00	.00	4.3	1.6	1.0	1.6	1.0	.42	.30
AC-FT	145	241	54	.4	980	483	147	91	230	821	300	173

CAL YR 1980 TOTAL 2465.84 MEAN 6.74 MAX 351 MIN .00 AC-FT 4890
WTR YR 1981 TOTAL 1847.98 MEAN 5.06 MAX 86 MIN .00 AC-FT 3670

JAMES RIVER BASIN

397

06468500 JAMES RIVER NEAR PINGREE, ND

LOCATION.--Lat 47°08'30", long 98°47'00", in SW¼SW¼ sec.3, T.142 N., R.64 W., Stutsman County, Hydrologic Unit 10160001, on right bank 500 ft (152 m) upstream from dam at outlet of DePuy Marsh, 6.5 mi (10.5 km) southeast of Pingree, and 6.25 mi (10.06 km) northeast of Buchanan.

DRAINAGE AREA.--1,670 mi² (4,330 km²), approximately, of which about 990 mi² (2,560 km²) is probably noncontributing.

PERIOD OF RECORD.--Water years 1965, 1979 to current year.

REMARKS.--Current sampling site is located at bridge 2 mi (3 km) upstream from former stream gaging station.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE, AIR (DEG C) (00020)	TEMPERATURE (DEG C) (00010)	COLOR (PLATINUM-COBALT UNITS) (00080)	HARDNESS (MG/L AS CaCO3) (00900)	HARDNESS NONCARBONATE (MG/L AS CaCO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS Ca) (00915)	MAGNESIUM, DIS-SOLVED (MG/L AS Mg) (00925)	SODIUM, DIS-SOLVED (MG/L AS Na) (00930)
OCT 09...	1555	650	8.6	12.0	14.0	50	210	.00	36	30	63
MAR 04...	1100	800	8.4	--	4.0	40	300	.00	51	42	83
JUN 03...	1030	540	8.9	--	15.0	30	190	.00	28	28	52
SEP 02...	1030	630	8.6	--	16.0	25	180	.00	26	27	66

DATE	PERCENT SODIUM (00932)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKALINITY LAB (MG/L AS CaCO3) (90410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLORIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUORIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)
OCT 09...	37	1.9	17	220	110	16	.2	11	428	416	.58
MAR 04...	36	2.1	16	280	180	20	.2	15	579	576	.79
JUN 03...	35	1.7	18	210	91	10	.1	7.7	376	362	.51
SEP 02...	42	2.5	15	220	99	18	.1	4.8	408	389	.55

DATE	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOSPHORUS, DIS-SOLVED (MG/L AS P) (00666)	ALUMINUM, DIS-SOLVED (UG/L AS AL) (01106)	ARSENIC, DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BORON, DIS-SOLVED (UG/L AS B) (01020)	CADMIUM, DIS-SOLVED (UG/L AS CD) (01025)	CHROMIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
OCT 09...	.00	.030	0	4	80	160	<1	0	<3	0	20
MAR 04...	.00	.000	0	3	80	150	<1	0	<3	2	<10
JUN 03...	.01	.040	0	3	200	100	<1	0	<3	1	<10
SEP 02...	.02	.080	30	3	67	140	<1	0	0	4	<10

DATE	LEAD, DIS-SOLVED (UG/L AS Pb) (01049)	LITHIUM, DIS-SOLVED (UG/L AS LI) (01130)	MANGANESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY, DIS-SOLVED (UG/L AS Hg) (71890)	MOLYBDENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELENIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRONTIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANADIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	CYANIDE TOTAL (MG/L AS CN) (00720)
OCT 09...	0	50	10	.1	1	0	0	230	1.0	3	.01
MAR 04...	0	60	30	.3	<10	3	0	290	1.0	20	.00
JUN 03...	4	30	130	.1	<10	1	0	190	4.0	9	.00
SEP 02...	0	40	230	.0	<10	3	0	180	3.0	4	.01

E - Estimated; estimated pH is laboratory determination.

JAMES RIVER BASIN

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) National Geodetic Vertical Datum of 1929; gage readings have been reduced to elevations NGVD. 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. 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, 37,160 acre-ft (45.8 hm³) May 23, elevation, 1,433.29 ft (436.867 m); minimum, 28,380 acre-ft (35.0 hm³) Dec. 25, elevation, 1,429.54 ft (435.724 m).

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30-----	1,430.15	29,650	-
Oct. 31-----	1,429.98	29,280	-370
Nov. 30-----	1,429.72	28,750	-530
Dec. 31-----	*1,429.59	28,480	-270
CAL YR 1980-----	--	--	-120
Jan. 31-----	*1,429.80	28,910	+430
Feb. 28-----	1,429.96	29,240	+330
Mar. 31-----	1,431.44	32,540	+3,300
Apr. 30-----	1,433.00	36,370	+3,830
May 31-----	1,433.25	37,060	+690
June 30-----	1,433.03	36,460	-600
July 31-----	1,432.82	35,920	-540
Aug. 31-----	1,432.73	35,690	-230
Sept. 30-----	1,431.07	31,670	-4,020
WTR YR 1981-----	--	--	+2,020

* Estimated

JAMES RIVER BASIN

399

06469400 PIPESTEM CREEK NEAR PINGREE, ND

LOCATION.--Lat 47°10'03", long 98°58'07", in NE¼NE¼NW¼ sec.31, T.143 N., R.65 W., Stutsman County, Hydrologic Unit 10160002, on right bank on downstream side of State Highway 36 bridge, and 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.

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

GAGE.--Water-stage recorder. Datum of gage is 1,500.63 ft (457.392 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--8 years, 21.6 ft³/s (0.612 m³/s), 15,650 acre-ft/yr (19.3 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,520 ft³/s (71.37 m³/s) Apr. 20, 1979, gage height, 11.60 ft (3.536 m), backwater from ice; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 200 ft³/s (5.66 m³/s) Feb. 24, gage height, 7.05 ft (2.145 m), backwater from ice; maximum gage height, 7.19 ft (2.192 m), backwater from ice; only peak above base of 100 ft³/s (2.83 m³/s); no flow Sept. 21-23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	14	13	3.7	1.6	80	15	11	7.5	2.4	2.4	2.0
2	12	16	12	3.6	1.6	75	20	12	7.3	2.8	6.3	1.4
3	11	18	12	3.6	1.7	70	20	12	5.3	3.3	25	1.3
4	10	18	11	3.6	1.7	65	19	11	5.1	3.3	42	1.2
5	10	20	10	3.5	1.7	60	19	9.6	5.7	3.7	47	1.1
6	9.5	22	9.0	3.5	1.7	56	19	8.6	5.8	3.6	49	2.6
7	9.4	22	9.0	3.3	1.8	52	18	7.2	5.4	3.2	42	4.9
8	8.6	24	8.0	3.3	1.8	49	18	6.8	5.2	3.2	42	3.9
9	8.6	26	7.0	3.2	1.9	45	18	6.6	4.9	3.5	35	3.3
10	8.5	25	7.0	3.0	1.9	40	18	5.2	4.8	4.3	31	2.8
11	6.7	26	6.5	2.8	2.0	35	17	4.8	4.2	3.9	29	2.3
12	6.5	26	6.2	2.6	2.0	32	17	4.6	3.6	4.0	25	1.8
13	6.0	28	6.0	2.5	2.5	28	16	4.6	4.2	3.2	23	1.3
14	5.5	25	5.9	2.4	3.0	25	16	4.2	5.3	4.9	21	.94
15	5.0	24	5.8	2.2	3.5	22	16	3.7	5.7	4.9	17	.78
16	4.4	22	5.7	2.0	10	19	17	3.6	4.9	5.1	15	.56
17	7.3	21	5.5	1.8	15	17	16	3.5	4.2	4.6	14	.56
18	7.9	20	5.4	1.7	20	15	13	3.1	4.2	3.2	13	.35
19	7.6	18	5.2	1.7	30	14	15	2.4	4.0	3.6	12	.21
20	7.9	18	5.0	1.7	20	13	12	2.1	4.3	3.7	11	.04
21	7.6	19	4.8	1.7	75	12	13	1.8	4.2	7.1	10	.00
22	8.3	18	4.7	1.7	130	12	14	1.6	4.4	10	9.8	.00
23	11	20	4.6	1.7	150	11	12	1.7	4.5	7.4	8.2	.00
24	15	19	4.5	1.6	170	11	12	1.7	4.7	6.0	7.5	.25
25	13	18	4.4	1.6	150	10	11	1.8	4.9	5.7	7.3	2.0
26	11	17	4.3	1.6	120	10	11	2.1	4.1	5.0	7.6	2.5
27	10	16	4.2	1.5	100	9.0	13	2.7	3.6	3.9	7.0	2.0
28	10	15	4.1	1.5	90	9.0	12	3.4	3.5	3.1	5.5	1.5
29	11	14	4.0	1.5	---	8.5	12	5.9	3.4	2.6	4.4	1.5
30	12	14	3.9	1.6	---	8.0	13	6.2	2.8	2.6	3.2	4.0
31	14	---	3.8	1.6	---	10	---	5.3	---	2.5	2.3	---
TOTAL	287.3	603	202.5	73.3	1110.4	922.5	462	160.8	141.7	130.3	574.5	47.09
MEAN	9.27	20.1	6.53	2.36	39.7	29.8	15.4	5.19	4.72	4.20	18.5	1.57
MAX	15	28	13	3.7	170	80	20	12	7.5	10	49	4.9
MIN	4.4	14	3.8	1.5	1.6	8.0	11	1.6	2.8	2.4	2.3	.00
AC-FT	570	1200	402	145	2200	1830	916	319	281	258	1140	93
CAL YR 1980 TOTAL	3499.13			MEAN 9.56	MAX 63	MIN .00	AC-FT 6940					
WTR YR 1981 TOTAL	4715.39			MEAN 12.9	MAX 170	MIN .00	AC-FT 9350					

JAMES RIVER BASIN

06470000 JAMES RIVER AT JAMESTOWN, ND

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 5 mi (5 km) downstream from Pipestem Creek.

DRAINAGE AREA.--2,820 mi² (7,300 km²), approximately, of which about 1,650 mi² (4,270 km²) is probably non-contributing.

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.

REVISED RECORDS.--WSP 1239: 1938(M). WSP 1917: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,373.27 ft (418.573 m) National Geodetic Vertical Datum of 1929. 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 good except for winter periods, which are 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.--46 years (water years 1929-34, 1938-39, 1944-81), 58.4 ft³/s (1.654 m³/s), 42,310 acre-ft/yr (52.2 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, 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, 231 ft³/s (6.54 m³/s) Sept. 6, gage height, 4.78 ft (1.457 m); minimum daily, 3.1 ft³/s (0.09 m³/s) July 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	51	50	44	14	8.0	119	46	20	17	4.7	3.7	41
2	47	48	43	14	8.0	104	34	17	14	4.4	5.1	9.0
3	43	51	43	14	8.2	82	32	22	17	4.3	6.2	59
4	42	51	43	13	8.4	83	32	17	24	4.0	4.6	75
5	41	48	42	13	8.5	82	32	14	23	3.7	19	73
6	40	48	41	12	8.5	80	30	12	51	3.6	6.0	79
7	40	48	40	12	8.5	75	30	11	19	3.1	5.3	78
8	40	49	39	11	8.5	70	30	11	13	3.3	5.3	70
9	38	51	38	11	8.5	66	28	11	8.7	3.5	5.0	67
10	38	50	37	10	8.5	63	27	9.3	20	3.9	4.6	66
11	43	50	36	10	8.5	59	27	6.1	7.1	18	4.5	65
12	37	51	36	9.0	9.0	55	25	7.1	5.8	53	4.5	66
13	35	53	35	9.0	9.5	51	23	7.1	6.3	40	4.8	63
14	34	55	35	8.5	10	48	26	4.9	5.0	85	28	64
15	34	55	35	8.5	27	46	24	6.2	8.6	15	56	64
16	60	55	34	8.0	47	44	26	7.0	12	8.0	53	63
17	67	55	34	8.0	36	41	24	6.2	11	6.0	30	62
18	55	55	34	8.0	28	38	22	4.3	14	6.1	5.3	61
19	50	56	34	8.0	24	36	15	5.6	13	7.0	7.0	59
20	49	55	34	8.0	28	33	17	6.0	12	5.1	6.5	59
21	47	55	34	8.0	28	32	14	5.2	10	5.0	17	58
22	49	51	33	8.0	35	30	13	4.9	13	10	12	52
23	55	51	33	8.3	43	28	19	8.7	15	5.8	18	41
24	59	49	32	8.5	37	28	22	25	11	5.5	16	30
25	57	49	32	8.2	58	27	18	19	7.3	5.1	19	30
26	54	48	18	8.0	83	26	17	12	8.1	4.8	18	30
27	52	48	15	8.0	86	25	16	9.9	10	4.3	15	28
28	52	48	15	7.9	133	25	17	16	11	3.8	15	28
29	52	46	15	7.9	---	25	19	11	7.4	3.7	18	28
30	53	45	15	8.0	---	24	20	9.2	5.1	3.9	14	31
31	54	---	14	8.0	---	40	---	8.9	---	3.8	28	---
TOTAL	1468	1524	1013	297.8	813.6	1585	725	334.6	399.4	337.4	454.4	1599.0
MEAN	47.4	50.8	32.7	9.61	29.1	51.1	24.2	10.8	13.3	10.9	14.7	53.3
MAX	67	56	44	14	133	119	46	25	51	85	56	79
MIN	34	45	14	7.9	8.0	24	13	4.3	5.0	3.1	3.7	9.0
AC-FT	2910	3020	2010	591	1610	3140	1440	664	792	669	901	3170
CAL YR 1980 TOTAL	10432.9			MEAN 28.5	MAX 134	MIN 3.7	AC-FT 20690					
WTR YR 1981 TOTAL	10551.2			MEAN 28.9	MAX 133	MIN 3.1	AC-FT 20930					

LOCATION.--Lat 46°21'20", long 98°18'15", in NEkNEk 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.

WATER-DISCHARGE RECORDS

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 146 ft³/s (4.13 m³/s) Oct. 10, gage height, 7.60 ft (2.316 m); minimum daily, 6.1 ft³/s (0.17 m³/s) Aug. 16.

CAL YR 1980	TOTAL	16761.1	MEAN	45.8	MAX	372	MIN	4.6	AC-FT	33250
WTR YR 1981	TOTAL	12781.4	MEAN	35.0	MAX	85	MIN	6.1	AC-FT	25350

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 September 1978.

REMARKS.--Due to recorder malfunctions, continuous water temperature data does not conform to acceptable accuracy standards. Once daily observations recorded by a local observer are being published in lieu of the recorder data.

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, 1,880 micromhos Jan. 31, 1979; minimum daily, 200 micromhos Mar. 24, 25, and 26, 1978.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum daily, 27.0°C July 4-6; minimum, 0.5°C on many days during the winter.

SPECIFIC CONDUCTANCE: Maximum daily, 1,310 micromhos Feb. 12; minimum daily, 550 micromhos Mar. 29-31.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	COLOR (PLAT- INUM- COBALT UNITS) (00080)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS (MG/L AS CAC03) (00900)	HARD- NESS NONCAR- BONATE (MG/L AS CAC03) (95902)
OCT											
07...	1545	63	740	E8.4	28.0	16.0	35	10.5	119	256	16
NOV											
11...	1040	76	760	8.7	3.5	3.5	25	11.9	89	277	27
DEC											
09...	1120	31	890	8.8	-4.0	.0	25	20.1	137	343	23
JAN											
20...	1030	14	1210	8.1	-26.0	.0	30	--	--	474	98
MAR											
03...	1030	47	730	8.3	-2.0	.5	10	13.8	96	249	39
APR											
14...	1630	46	810	8.4	12.0	11.0	30	11.3	99	296	46
JUN											
02...	1100	31	920	8.4	15.0	18.0	30	8.3	0	333	13
JUL											
14...	1000	56	900	8.4	21.0	21.0	80	6.2	68	262	12
SEP											
01...	1000	6.9	1050	8.6	12.0	18.0	30	7.4	68	307	.00

E - Estimated; estimated pH indicates laboratory value.

JAMES RIVER BASIN

403

06470500 JAMES RIVER AT LA MOURE, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SURP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CACU3) (90410)	SULFATE DIS- SOLVED (MG/L AS SU4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)
OCT										
07...	58	27	64	34	1.8	13	240	120	23	.3
NOV										
11...	63	29	60	31	1.6	12	250	130	21	.2
DEC										
09...	78	36	77	32	1.9	14	320	160	27	.2
JAN										
20...	94	58	120	35	2.5	17	370	280	41	.3
MAR										
03...	60	24	66	36	1.9	7.7	210	130	35	.1
APR										
14...	69	30	64	31	1.7	10	250	150	24	.2
JUN										
02...	74	36	84	35	2.1	11	320	170	33	.2
JUL										
14...	57	29	91	42	2.5	9.8	250	170	49	.2
SEP										
01...	70	32	120	45	3.1	12	320	170	72	.3

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TUNS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TUNS PER DAY) (70302)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	BORON, DIS- SOLVED (UG/L AS B) (01020)	SEDI- MENT, DIS- SOLVED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)
OCT										
07...	16	492	465	.67	83.7	.00	.130	170	74	13
NOV										
11...	11	502	478	.68	103	.11	.110	170	47	9.6
DEC										
09...	6.9	625	592	.85	52.0	.01	.050	200	9	.75
JAN										
20...	3.7	879	837	1.2	33.2	.00	.060	300	40	1.5
MAR										
03...	7.1	468	458	.64	59.4	.28	.000	180	10	1.3
APR										
14...	4.8	530	503	.72	65.5	.01	.070	160	--	--
JUN										
02...	11	603	612	.82	50.5	.02	.060	230	30	2.5
JUL										
14...	18	577	575	.78	87.4	.15	.190	310	--	--
SEP										
01...	24	709	693	.96	13.2	.01	.250	370	48	.89

JAMES RIVER BASIN

06470500 JAMES RIVER AT LA MOURE, ND--Continued

SPECIFIC CONDUCTANCE (MICROMHUS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
UNCE-DAILY

DAY	UCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	650	780	850	910	910	800	600	950	960	1000	1000	1020
2	660	760	860	1020	920	780	620	950	960	1000	1050	1010
3	690	770	860	1100	920	750	650	920	950	1010	1050	1010
4	690	750	860	1180	980	750	700	930	950	1040	1070	1010
5	700	750	870	1210	1050	750	750	950	940	1010	1080	1000
6	710	740	890	1260	1080	760	750	960	960	1040	1100	990
7	710	740	880	1150	1100	770	750	960	950	1040	1100	990
8	730	730	900	1150	1140	750	750	950	950	1050	1080	990
9	750	730	900	1160	1180	730	760	940	960	1050	1060	970
10	750	720	900	1150	1240	700	770	940	970	1060	1060	960
11	760	720	910	1180	1280	700	800	940	970	1080	1010	950
12	780	725	910	1180	1310	680	810	960	950	1080	1000	950
13	790	725	920	1160	1290	660	820	960	950	1090	980	920
14	800	730	940	1180	1300	650	800	950	960	1100	950	940
15	800	740	940	1180	1300	650	810	960	980	1100	940	920
16	800	730	940	1200	1300	640	830	970	960	1120	910	920
17	790	760	950	1200	1300	630	830	980	990	1140	880	900
18	810	750	950	1200	1250	620	840	980	980	1110	860	900
19	825	770	950	1210	1220	620	860	960	960	1110	860	880
20	810	760	960	1220	1180	600	840	960	980	1140	850	880
21	820	780	960	1240	1160	600	860	970	990	1120	850	850
22	810	790	980	1200	1140	600	880	980	980	1100	840	840
23	800	810	980	1160	1120	600	900	960	1000	1080	840	840
24	780	825	960	1120	1050	600	880	950	980	1060	860	820
25	780	835	980	1080	900	580	900	950	980	1040	880	800
26	790	850	980	1040	850	580	900	950	980	1000	900	800
27	800	840	920	1000	860	560	910	960	990	1010	950	800
28	780	855	800	960	840	560	910	960	1010	1020	960	780
29	790	850	760	900	---	550	920	960	1020	1040	980	780
30	780	865	700	900	---	550	940	970	1020	1000	980	760
31	770	---	840	900	---	550	---	980	---	1040	1000	---
MEAN	765	773	903	1120	1110	655	811	957	973	1060	965	906

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
UNCE-DAILY

DAY	UCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.0	7.0	1.0	1.0	.5	1.5	6.0	14.0	15.0	25.0	25.0	21.0
2	9.0	7.0	1.0	1.0	.5	1.5	6.0	13.0	16.0	26.0	25.5	20.0
3	9.0	7.0	1.0	1.0	.5	1.5	7.0	13.0	17.0	26.0	25.0	20.0
4	10.0	7.0	1.0	1.0	.5	1.5	7.0	13.0	17.0	27.0	25.0	20.0
5	10.5	7.0	2.0	1.0	.5	1.5	7.5	14.0	17.5	27.0	25.0	19.0
6	9.0	7.0	2.0	1.0	.5	1.0	7.5	14.0	18.0	27.0	25.0	19.0
7	9.0	6.0	1.0	1.0	.5	1.0	9.0	14.0	18.0	26.0	25.0	19.0
8	8.0	6.0	1.0	1.0	.5	1.0	10.0	14.0	19.0	24.0	24.0	19.0
9	8.0	6.0	1.0	1.0	.5	1.0	12.0	14.0	18.0	24.0	25.0	18.0
10	8.0	6.0	1.0	1.0	.5	1.0	9.0	14.0	18.0	24.0	25.0	18.0
11	6.0	6.0	1.0	1.0	.5	1.5	7.0	14.0	18.0	24.0	24.0	18.0
12	5.0	6.0	1.0	1.0	1.0	1.5	6.5	14.0	18.0	25.0	24.0	18.0
13	6.0	6.0	1.0	1.0	1.0	1.5	7.0	14.5	18.0	24.0	23.0	17.0
14	6.0	6.0	1.0	1.0	1.0	1.5	7.0	14.5	17.0	25.0	24.0	17.0
15	6.0	5.0	1.0	1.0	1.5	1.5	8.0	14.0	19.0	24.0	25.0	17.0
16	6.0	5.0	1.0	1.0	2.0	1.5	8.0	15.0	19.0	24.0	25.0	16.0
17	6.0	3.0	1.0	1.0	2.0	1.5	9.0	14.0	18.0	24.0	24.0	16.0
18	6.0	3.0	1.0	1.0	2.0	1.5	10.0	14.0	18.0	24.0	23.0	15.0
19	6.0	2.0	1.0	1.5	1.5	1.5	10.0	15.0	18.0	24.0	24.0	15.0
20	6.0	2.0	1.0	1.5	2.0	1.5	11.0	15.0	18.0	25.0	24.0	16.0
21	7.0	2.0	1.0	1.5	2.0	2.0	11.0	14.0	18.0	25.0	23.0	16.0
22	7.0	2.0	1.0	1.5	1.5	2.0	12.0	14.0	19.0	25.0	24.0	17.0
23	6.0	2.0	1.0	1.5	1.5	4.0	13.0	14.0	20.0	25.0	23.0	16.0
24	5.0	2.0	1.0	1.5	1.5	5.0	12.0	13.0	19.0	25.0	22.0	16.0
25	5.0	2.0	1.0	1.5	1.5	4.0	11.0	14.0	21.0	26.0	23.0	14.0
26	4.5	2.0	1.0	1.0	1.5	5.0	11.0	14.0	22.0	25.0	23.0	15.0
27	5.0	2.0	1.0	1.0	1.5	7.0	13.0	15.0	23.0	25.5	22.0	14.0
28	5.0	2.0	1.0	1.0	1.0	7.0	13.0	15.0	24.0	25.0	21.0	13.0
29	5.0	2.0	1.0	1.0	---	7.0	14.0	15.0	24.0	25.0	20.0	12.0
30	5.0	2.0	2.0	1.0	---	6.0	14.5	16.0	24.0	25.0	20.0	12.0
31	5.0	---	2.0	.5	---	5.0	---	16.0	---	26.0	20.0	---
MEAN	6.5	4.5	1.0	1.0	1.0	2.5	9.5	14.0	19.0	25.0	23.5	17.0

JAMES RIVER BASIN

405

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.

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

GAGE.--Water-stage recorder. Datum of gage is 1,291.30 ft (393.588 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Record fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,170 ft³/s (33.1 m³/s) Apr. 15, 1979, gage height, 11.47 ft (3.496 m); 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 floodmark, discharge, 4,590 ft³/s (130 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 13 ft³/s (0.368 m³/s) June 23, gage height, 4.39 ft (1.388 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 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.12	.50	.00	.00	.20	.80	.00
2	.00	.00	.00	.00	.00	.15	.48	.00	.00	.10	1.3	.00
3	.00	.00	.00	.00	.00	.15	.45	.00	.00	.13	1.7	.00
4	.00	.00	.00	.00	.00	.12	.42	.00	.00	.04	1.4	.00
5	.00	.00	.00	.00	.00	.10	.38	.00	.00	.00	1.2	.00
6	.00	.00	.00	.00	.00	.07	.35	.00	.00	.00	.71	.00
7	.00	.00	.00	.00	.00	.05	.32	.00	.00	.00	.50	.00
8	.00	.00	.00	.00	.00	.02	.29	.00	.00	.00	.38	.00
9	.00	.00	.00	.00	.00	.00	.27	.00	.00	.00	.20	.00
10	.00	.00	.00	.00	.00	.00	.25	.00	.00	.00	.20	.00
11	.00	.00	.00	.00	.00	.00	.22	.00	.00	.00	.20	.00
12	.00	.00	.00	.00	.00	.00	.20	.00	.00	.00	.16	.00
13	.00	.00	.00	.00	.00	.00	.18	.00	.00	.00	.13	.00
14	.00	.00	.00	.00	.00	.00	.16	.00	.13	.50	.10	.00
15	.00	.00	.00	.00	.00	.00	.07	.00	.24	2.6	.02	.00
16	.00	.00	.00	.00	.00	.00	.07	.00	.13	2.2	.00	.00
17	.00	.00	.00	.00	.00	.00	.10	.00	.02	1.6	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	2.2	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	3.3	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	4.6	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	1.4	4.8	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	7.9	5.3	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	9.8	4.8	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	9.3	5.1	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	5.3	4.8	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	2.2	3.8	.00	.00
27	.00	.00	.00	.00	.05	.00	.00	.00	1.2	3.2	.00	.00
28	.00	.00	.00	.00	.10	.00	.00	.00	.80	2.6	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.44	1.7	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.28	1.3	.00	.00
31	.00	---	.00	.00	---	.20	---	.00	---	.80	.00	---
TOTAL	.00	.00	.00	.00	.15	.98	4.71	.00	39.14	55.67	9.00	.00
MEAN	.000	.000	.000	.000	.005	.032	.16	.000	1.30	1.80	.29	.000
MAX	.00	.00	.00	.00	.10	.20	.50	.00	9.8	5.3	1.7	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.3	1.9	9.3	.00	78	110	18	.00
CAL YR 1980 TOTAL	1191.98			MEAN 3.26	MAX 56	MIN .00	AC-FT 2360					
WTR YR 1981 TOTAL	109.65			MEAN .30	MAX 9.8	MIN .00	AC-FT 217					

JAMES RIVER BASIN

06470833 PILOT DRAIN AT OAKES, ND

LOCATION.--Lat 46°07'30", long 98°05'49", in SW¼ sec.29, T.131 N., R.59 W., Dickey County, Hydrologic Unit 10160003, and 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) National Geodetic Vertical Datum of 1929 (levels by Water and Power Resources Service).

REMARKS.--Records good. The flow is primarily due to ground water.

AVERAGE DISCHARGE.--10 years, 1.05 ft³/s (0.030 m³/s), 761 acre-ft/yr (0.938 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11 ft³/s (0.31 m³/s) Apr. 18, 1979, gage height, 2.36 ft (0.719 m); no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1.0 ft³/s (0.03 m³/s) Feb. 16, estimated mean daily; no flow Oct. 1 - Feb. 13 and Mar. 5 - Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.10	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.05	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.05	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.30	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	1.0	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.80	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.60	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.50	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.45	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.40	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.35	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.40	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.35	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.30	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.25	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.20	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.15	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	.00	.00	.00	.00	6.10	.19	.00	.00	.00	.00	.00	.00
MEAN	.000	.000	.000	.000	.22	.006	.000	.000	.000	.000	.000	.000
MAX	.00	.00	.00	.00	1.0	.10	.00	.00	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	12	.4	.00	.00	.00	.00	.00	.00
CAL YR 1980 TOTAL	167.65		MEAN .46	MAX 2.6	MIN .00	AC-FT 333						
WTR YR 1981 TOTAL	6.29		MEAN .017	MAX 1.0	MIN .00	AC-FT 12						

JAMES RIVER BASIN

06470833 PILOT DRAIN AT OAKES, ND--Continued

WATER-QUALITY RECORDS

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

REMARKS.--No flow except dates noted below.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHQS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)
FEB 19...	1510	.50	410	10.5	1.5
APR 14...	0900	.00	650	--	7.0

JAMES RIVER BASIN

06470878 JAMES RIVER AT NORTH DAKOTA-SOUTH DAKOTA STATE LINE

LOCATION.--Lat 45°56'10", long 98°10'26", in SE¼SE¼ 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.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 4,000 micromhos Mar. 15, 16, 1979; minimum daily, 242 micromhos Apr. 25, 1975.

WATER TEMPERATURES: Maximum daily, 28.5°C June 12, 1976, July 5, 1977; minimum daily, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,580 micromhos Feb. 13-14; minimum daily, 520 micromhos Mar. 29, 30 and Apr. 3.

WATER TEMPERATURES: Maximum daily, 27.0°C July 3, Aug. 2; minimum daily, 0.0°C on many days during winter months.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (UMHUS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	COLOR (PLAT- INUM- COBALT UNITS) (00080)	OXYGEN, DIS- SOLVED OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED CENT SATUR- ATION (00301)	HARD- NESS (MG/L AS CACU3) (00900)
UCT 07...	0920	771	8.7	14.5	12.0	28	9.3	97	258
NOV 11...	0855	775	8.7	5.0	3.5	36	11.4	86	275
DEC 08...	1740	840	8.8	-1.5	2.0	15	18.2	131	284
MAR 02...	1300	1050	8.2	--	2.0	15	--	--	378
APR 13...	1610	640	8.3	9.0	10.0	25	--	--	226
JUN 01...	1300	870	8.6	--	17.0	15	--	--	284
JUL 13...	1330	980	8.5	--	26.0	100	--	--	286
AUG 31...	1315	1000	8.5	18.0	21.0	30	--	--	272

JAMES RIVER BASIN

409

06470878 JAMES RIVER AT NORTH DAKOTA-SOUTH DAKOTA STATE LINE--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	HARD- NESS NONCAR- BONATE (MG/L AS CACU3) (95902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY LAB (MG/L AS CACU3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)
OCT 07...	38	57	28	66	34	1.8	15	240	150
NOV 11...	35	59	31	71	35	1.9	12	240	150
DEC 08...	14	61	32	72	34	1.9	13	270	160
MAR 02...	38	77	45	110	38	2.5	13	340	240
APR 13...	36	51	24	52	32	1.5	9.7	190	120
JUN 01...	34	56	35	84	38	2.2	13	250	190
JUL 13...	36	57	35	100	42	2.6	14	250	220
AUG 31...	.00	53	34	120	47	3.2	17	280	190

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	BORON, DIS- SOLVED (UG/L AS B) (01020)
OCT 07...	28	.2	17	496	493	.67	.00	.090	210
NOV 11...	30	.3	13	521	511	.71	.00	.070	220
DEC 08...	30	.2	8.0	573	539	.78	.00	.080	200
MAR 02...	49	.2	2.8	747	742	1.0	.00	.000	270
APR 13...	17	.2	1.7	411	390	.56	.01	.030	120
JUN 01...	33	.2	3.4	582	565	.79	.01	.060	210
JUL 13...	49	.2	27	651	653	.89	.07	.270	310
AUG 31...	65	.3	7.7	658	656	.89	.00	.120	360

JAMES RIVER BASIN

06470878 JAMES RIVER AT NORTH DAKOTA-SOUTH DAKOTA STATE LINE--Continued

SPECIFIC CONDUCTANCE (MICROMHUS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
UNCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	900	760	810	1000	1330	1100	550	780	900	990	1000	1010
2	850	750	820	1020	1350	1090	530	800	900	1000	970	1020
3	750	750	830	1050	1350	1060	520	810	900	960	950	1020
4	740	750	830	1070	1350	950	590	830	930	990	950	1020
5	750	760	840	1090	1400	950	580	830	920	990	960	1050
6	770	760	810	1100	1400	900	590	910	930	990	990	1040
7	760	780	830	1190	1430	810	590	890	940	990	960	1030
8	760	780	850	1230	1480	760	600	850	940	1000	970	1020
9	760	790	850	1260	1500	760	610	850	940	1040	980	1010
10	770	800	850	1250	1510	720	610	860	930	1050	990	1010
11	770	800	850	1240	1530	720	620	870	920	1060	990	1020
12	770	800	880	1230	1540	700	640	870	930	1030	990	1020
13	770	810	900	1240	1580	700	660	880	910	1000	990	1020
14	770	830	940	1250	1580	710	660	930	920	990	990	1010
15	760	840	940	1280	1450	720	650	910	930	980	990	990
16	750	840	930	1270	1400	680	650	900	930	990	990	990
17	730	850	950	1280	1300	670	660	950	950	990	990	1000
18	720	850	950	1280	1200	650	680	1000	960	990	1000	1000
19	720	850	980	1280	---	610	690	1000	960	990	1010	1000
20	720	800	990	1290	---	600	700	990	970	1000	1010	1010
21	730	800	1000	1300	---	562	710	990	970	1000	1010	1010
22	730	800	1020	1300	---	560	720	960	960	1000	1010	1020
23	730	800	1050	1280	1050	575	730	940	940	980	1000	1050
24	710	800	1000	1240	850	560	740	910	950	990	1000	1050
25	710	780	1050	1100	960	550	740	910	950	990	1000	1060
26	710	790	1080	1090	1020	530	740	920	960	1000	1000	1050
27	720	740	1080	1090	1100	530	740	920	960	1000	1000	1060
28	730	770	1080	1190	1200	525	740	910	960	1000	1000	1080
29	740	780	990	1250	---	520	750	910	960	1000	1000	1090
30	750	780	960	1300	---	520	760	910	970	1010	1010	1060
31	750	---	1010	1290	---	530	---	920	---	1000	1010	---
MEAN	752	793	934	1200	1330	704	658	900	940	1000	991	1030

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
UNCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12.0	4.5	.0	1.0	.0	3.5	6.0	11.0	18.0	23.0	24.0	17.5
2	11.0	6.0	.5	1.0	.0	2.0	7.5	13.0	18.5	23.5	27.0	18.0
3	9.5	5.5	.5	.5	.0	2.5	8.0	13.5	18.0	27.0	26.5	16.0
4	10.5	6.5	2.0	.5	1.0	2.5	6.0	13.0	19.0	25.0	24.5	16.0
5	14.0	5.5	2.5	.5	1.5	2.5	6.0	12.5	19.5	24.5	24.5	17.0
6	13.0	8.5	2.0	2.0	1.5	3.0	8.0	13.5	21.0	25.5	23.0	18.5
7	14.0	7.5	2.0	.0	1.0	2.0	9.0	13.0	20.5	24.5	21.0	21.5
8	14.5	7.0	2.0	.5	.0	2.5	9.5	12.5	20.0	21.5	21.5	19.5
9	14.0	6.5	1.5	.5	.0	3.0	10.0	9.0	20.0	20.5	19.5	19.5
10	9.0	4.5	1.5	.5	.5	2.5	9.5	7.5	18.5	22.0	20.0	21.0
11	8.5	6.0	1.5	.5	1.5	3.0	8.0	11.0	20.0	24.5	20.5	19.5
12	8.0	5.5	2.0	.5	1.5	3.5	8.5	10.5	20.0	23.5	21.0	19.0
13	7.5	3.5	1.0	1.5	1.5	4.0	10.0	13.0	20.0	25.5	22.5	18.0
14	7.0	2.0	1.5	1.5	1.5	4.0	8.0	14.0	18.5	24.0	24.5	17.5
15	7.5	1.5	2.0	1.0	1.0	3.5	9.0	15.0	19.0	23.0	23.5	15.5
16	7.0	2.5	1.5	.5	1.0	3.0	11.0	14.5	17.5	24.5	21.0	15.0
17	6.5	3.0	2.0	1.5	1.0	2.5	11.5	13.5	17.5	25.0	21.5	12.5
18	5.0	4.0	.0	1.5	4.0	1.5	11.0	14.0	16.5	24.5	21.5	13.5
19	7.0	4.0	.5	1.5	---	3.0	8.5	14.0	18.5	24.0	21.5	15.5
20	7.5	3.5	.5	1.5	---	3.0	9.0	14.5	20.0	24.5	21.0	15.0
21	8.0	3.0	1.0	1.5	---	3.5	11.5	15.0	17.0	25.0	22.5	14.5
22	7.0	3.5	1.5	1.5	---	3.0	12.0	15.0	16.5	23.5	22.0	14.5
23	7.0	2.0	.5	1.5	2.5	7.0	12.0	13.5	18.5	25.0	22.0	14.5
24	4.0	1.5	.5	1.5	2.5	5.5	11.5	11.0	19.5	24.5	22.5	15.5
25	4.0	3.0	.5	1.0	3.0	5.5	13.5	13.5	22.0	22.5	22.0	17.0
26	3.5	3.0	.5	.5	2.5	5.0	18.0	14.5	23.0	22.0	21.5	14.5
27	3.0	3.0	1.5	.5	3.5	5.5	16.5	15.0	21.0	21.5	21.0	12.0
28	2.0	2.0	2.0	.0	3.0	5.5	15.0	16.5	25.0	20.0	20.5	10.0
29	3.5	1.5	1.5	.5	---	5.0	12.5	17.0	22.5	19.5	20.5	11.0
30	5.0	3.0	1.0	.0	---	6.5	13.5	17.0	22.5	21.5	20.5	11.0
31	4.0	---	1.5	.0	---	6.0	---	17.5	---	23.5	20.5	---
MEAN	8.0	4.0	1.5	1.0	1.5	3.5	10.5	13.5	19.5	23.5	22.0	16.0

JAMES RIVER BASIN

411

06471200 MAPLE RIVER AT NORTH DAKOTA-SOUTH DAKOTA STATE LINE

LOCATION.--Lat 45°56'20", long 98°27'08", in SW¼SE¼ sec.33, T.129 N., R.62 W., Dickey County, ND, 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 and specific conductance were made during the year.

AVERAGE DISCHARGE.--25 years, 19.3 ft³/s (0.547 m³/s), 13,980 acre-ft/yr (17.2 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, 188 ft³/s (5.32 m³/s) July 17, gage height, 5.97 ft (1.820 m), 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 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	3.5	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	3.1	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	2.4	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	2.0	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.8	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.5	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.4	.01
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.1	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.82	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.60	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.47	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.33	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.25	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.16	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.11	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.07	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	91	.04	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	148	.02	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	87	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	49	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	43	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	33	.16	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	25	3.3	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	20	13	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	2.0	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	14	.67	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	.33	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	8.8	.22	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	6.7	.11	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	4.8	.07	.00
31	.00	---	.00	.00	---	.00	---	.00	---	4.1	.07	---
TOTAL	.00	.00	.00	.00	.00	.00	.00	.00	.00	563.40	39.60	.01
MEAN	.000	.000	.000	.000	.000	.000	.000	.000	.000	18.2	1.28	.000
MAX	.00	.00	.00	.00	.00	.00	.00	.00	.00	148	13	.01
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.00	.00	.00	1120	79	.02

CAL YR 1980 TOTAL 602.02 MEAN 1.64 MAX 30 MIN .00 AC-FT 1190
WTR YR 1981 TOTAL 603.01 MEAN 1.65 MAX 148 MIN .00 AC-FT 1200

DISCHARGE MEASUREMENTS MADE AT MISCELLANEOUS SITES DURING WATER YEAR 1981

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
Heart River basin						
North Creek	Heart River	Lat 46°55'24", long 103°06'01", in NE¼SW¼SW¼ sec.19, T.140 N., R.98 W., Stark County, 5 mi (8.0 km) northeast of Belfield.	--	1979-80	11-4-80	0
North Creek	Heart River	Lat 46°54'23", long 103°04'54", in NW¼SW¼NW¼ sec.29, T.140 N., R.98 W., Stark County, 5 mi (8.0 km) east of Belfield.	--	1979-80	11-4-80	0
North Creek	Heart River	Lat 46°54'57", long 103°04'54", in SW¼SW¼SW¼ sec.28, T.140 N., R.98 W., Stark County, 6 mi (9.7 km) east of Belfield.	--	1979-80	11-4-80	0
Heart River	Missouri River	Lat 46°51'46", long 102°45'51", sec.11, T.139 N., R.96 W., below concrete ford, 1.0 mi (1.6 km) south, 1.0 mi (1.6 km) east and 0.1 mi (0.2 km) north of Dickinson.	--	--	4-7-81	.85
Green River Tributary	Green River	Lat 46°59'27", long 103°03'12", in NE¼SE¼NE¼ sec.35, T.141 N., R.98 W., Billings County, 10 mi (16 km) north of South Heart.	--	1979-80	11-4-80	*0
Green River Tributary	Green River	Lat 46°59'59", long 103°01'08", in SW¼NW¼SE¼ sec.30, T.141 N., R.97 W., Dunn County, 10 mi (16 km) north of South Heart.	--	1980	11-4-80	*.13
Green River	Heart River	Lat 46°55'40", long 102°40'01", sec.21, T.140 N., R.95 W., Stark County, above pool 6 mi (9.7 km) east, 2.5 mi (4.0 km) north and 0.25 mi (0.4 km) west of Dickinson.	--	--	5-14-81	2.93
Green River	Heart River	Lat 46°55'53", long 102°38'36", sec.22, T.140 N., R.95 W., below wier dam 6 mi (9.7 km) east, 2.5 mi (4.0 km) north and 0.25 mi (0.4 km) east of Dickinson.	--	--	5-14-81	2.05
Green River	Heart River	Lat 46°53'31", long 102°37'01", sec.36, T.140 N., R.95 W., at bridge on county highway Old No. 10, 8.3 mi (13 km) east of Dickinson.	--	--	3-25-81 4-27-81 5-7-81	3.34 5.52 1.47
Heart River	Missouri River	Lat 46°51'35", long 102°35'19", sec.18, T.139 N., R.94 W., Stark County, 1.0 mi (1.6 km) west of Gladstone and 0.25 mi (0.4 km) downstream from confluence of Green River.	--	--	4-7-81 4-27-81 5-7-81 5-14-81	8.36 5.69 3.24 3.28
Antelope Creek	Heart River	Lat 46°30'00", long 102°00'22", in NW¼NW¼NW¼ sec.21, T.135 N., R.90 W., 9 mi (14 km) northwest of Elgin, Grant County.	--	--	10-7-80 11-25-80 4-22-81	*0 *0 *0
Antelope Creek	Heart River	Lat 46°29'41", long 101°57'51", in SW¼SW¼NW¼ sec.23, T.135 N., R.90 W., 8 mi (13 km) northwest of Elgin, Grant County.	--	--	10-7-80 11-25-80 4-22-81	*0 *0 *0

a - Estimated

b - Affected by diversion for irrigation

† - Peak flow

* - Base flow

DISCHARGE MEASUREMENTS MADE AT MISCELLANEOUS SITES DURING WATER YEAR 1981

413

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements Date	Discharge (ft ³ /s)
Heart River basin						
Antelope Creek	Heart River	Lat 46°29'09", long 101°50'20", in NW¼NW¼NW¼ sec.26, T.135 N., R.89 W., 6 mi (9.7 km) north of Elgin, Grant County.	--	--	10-7-80 11-25-80 4-22-81	*0 *.24 *.40
Cannonball River basin						
30 Mile Creek	Cannonball River	Lat 46°29'14", long 102°15'19", in SW¼SW¼SW¼ sec.21, T.135 N., R.92 W., 9 mi (14 km) north-northeast of Burt, Hettinger County.	--	--	11-25-80 4-22-81	*.89 *.92
30 Mile Creek	Cannonball River	Lat 46°26'31", long 102°10'05", in NW¼NW¼NW¼ sec.7, T.134 N., R.91 W., 5 mi (8.0 km) north of Burt, Hettinger County.	--	--	10-7-80 11-25-80 4-22-81	a*.04 *.96 *.72
30 Mile Creek	Cannonball River	Lat 46°21'25", long 102°03'18", in SE¼SW¼SE¼ sec.1, T.133 N., R.91 W., 4 mi (6.4 km) east of Burt, Hettinger County, near the mouth of 30 Mile Creek.	--	--	11-25-80 4-23-81	*2.27 *2.13
Grand River basin						
North Fork Grand River	Grand River	Lat 45°57'09", long 103°18'23", on west line of sec.34, T.129 N., R.101 W., Bowman County, at bridge on county highway, 9 mi (14 km) west of Haley.	--	1977-80	10-16-80 4-2-81 5-5-81 7-9-81 8-11-81	.45 .14 .07 0 .03
Alkali Creek	North Fork Grand River	Lat 46°00'00", long 103°22'05", on west line of sec.18, T.129 N., R.101 W., Bowman County, on right bank on downstream side of county highway bridge, 12 mi (19 km) south of Bowman.	58.1	1965-73, 1977-80	10-16-80 4-2-81 5-6-81 7-9-81 8-11-81	.37 .26 .06 .07 .10
Spring Creek	North Fork Grand River	Lat 46°01'04", long 103°17'29", on south line of sec.3, T.129 N., R.101 W., Bowman County, at bridge on county highway, 9 mi (14 km) northwest of Haley.	--	1977-80	10-15-80 4-3-81 5-5-81 7-7-81 8-11-81	.42 .56 .26 .08 7.14
North Fork Grand River	Grand River	Lat 45°59'01", long 103°14'04", in NE¼SE¼SW¼ sec.19, T.129 N., R.100 W., Bowman County, 0.5 mi (0.8 km) below Bowman-Haley Dam, 6 mi (9.7 km) west of Haley.	446	--	5-19-81 6-5-81 7-2-81 8-12-81	.33 .49 .41 .42
James River basin						
Pipestem Creek	James River	Lat 46°57'00", long 98°45'26", on south line sec.9, T.140 N., R.64 W., Stutsman County, below dam embankment on county highway 3 mi (4.8 km) northwest of Jamestown.	1,010	1974-76, 1978-79	10-8-80 11-13-80 12-12-80 1-21-81 3-4-81 4-15-81 6-3-81 7-15-81 9-2-81	9.1 25 11 2.7 92 25 10 .10 0

a - Estimated

b - Affected by diversion for irrigation

† - Peak flow

* - Base flow

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD WATER-QUALITY LAKE STATIONS
 CHEMICAL ANALYSES, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	SAMP- LING DEPTH (FT) (00003)	RESER- VOIR DEPTH (FEET) (72025)	ELEV. OF LAND SURFACE DATUM (FT. ABOVE NGVD) (72000)	TEMPER- ATURE, AIR (DEG C) (00020)	CLOUD COVER (PER- CENT) (00032)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
MISSOURI RIVER MAIN STEM								
06332510 LAKE SAKAKAWEA NEAR NEW TOWN, ND								
FEB								
19...	1155	.00	40	1800.00	2.0	10	270	5.0
19...	1157	1.60	--	1800.00	--	--	--	--
19...	1159	3.30	--	1800.00	--	--	--	--
19...	1201	6.60	--	1800.00	--	--	--	--
19...	1203	16.5	--	1800.00	--	--	--	--
19...	1205	26.4	--	1800.00	--	--	--	--
19...	1207	33.0	--	1800.00	--	--	--	--
APR								
30...	1950	.00	55	1800.00	9.0	25	315	15
30...	1952	1.60	--	1800.00	--	--	--	--
30...	1954	3.30	--	1800.00	--	--	--	--
30...	1956	6.60	--	1800.00	--	--	--	--
30...	1958	16.5	--	1800.00	--	--	--	--
30...	2000	33.0	--	1800.00	--	--	--	--
30...	2005	52.8	--	1800.00	--	--	--	--
JUN								
03...	1105	.00	65	1800.00	19.0	20	135	7.0
03...	1107	1.60	--	1800.00	--	--	--	--
03...	1109	3.30	--	1800.00	--	--	--	--
03...	1111	6.60	--	1800.00	--	--	--	--
03...	1113	16.0	--	1800.00	--	--	--	--
03...	1115	30.0	--	1800.00	--	--	--	--
03...	1117	60.0	--	1800.00	--	--	--	--
JUL								
10...	1036	.00	73	1800.00	20.0	90	95	10
10...	1038	1.60	--	1800.00	--	--	--	--
10...	1040	3.30	--	1800.00	--	--	--	--
10...	1042	6.60	--	1800.00	--	--	--	--
10...	1044	16.5	--	1800.00	--	--	--	--
10...	1046	33.0	--	1800.00	--	--	--	--
10...	1048	66.0	--	1800.00	--	--	--	--
10...	1050	69.3	--	1800.00	--	--	--	--
AUG								
05...	1355	.00	59	1800.00	22.0	90	305	11
05...	1357	1.60	--	1800.00	--	--	--	--
05...	1359	3.30	--	1800.00	--	--	--	--
05...	1401	16.5	--	1800.00	--	--	--	--
05...	1403	33.0	--	1800.00	--	--	--	--
05...	1405	55.0	--	1800.00	--	--	--	--

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD WATER-QUALITY LAKE STATIONS

415

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	BARO- METRIC PRES- SURE (MM OF HG) (00025)	ICE THICK- NESS (FEET) (82130)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	TRANS- PAH- ENCY (SECCHI DISK) (IN) (00077)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)
------	---	--	--	--------------------------	--	---	---	---

MISSOURI RIVER MAIN STEM

06332510 LAKE SAKAKAWEA NEAR NEW TOWN, ND--Continued

FEB								
19...	760	1.70	558	8.0	.5	93.6	12.3	85
19...	--	--	592	8.2	.2	--	12.6	86
19...	--	--	622	8.4	.2	--	12.7	87
19...	--	--	645	8.5	.1	--	12.9	88
19...	--	--	645	8.6	.1	--	12.9	88
19...	--	--	658	8.7	.2	--	13.2	91
19...	--	--	660	8.8	.4	--	13.4	92
APR								
30...	760	--	770	8.5	7.4	--	9.3	78
30...	--	--	770	8.5	7.3	--	9.4	77
30...	--	--	769	8.5	7.3	--	9.4	77
30...	--	--	768	8.5	7.3	--	9.5	78
30...	--	--	766	8.5	7.3	--	9.6	79
30...	--	--	766	8.5	7.3	--	9.7	80
30...	--	--	752	8.5	6.8	--	9.3	77
JUN								
03...	756	--	720	8.6	15.3	34.0	10.5	105
03...	--	--	723	8.6	15.2	--	10.6	106
03...	--	--	723	8.6	15.2	--	10.6	106
03...	--	--	723	8.6	15.2	--	10.6	106
03...	--	--	733	8.5	14.2	--	9.5	93
03...	--	--	755	8.5	13.8	--	9.3	90
03...	--	--	797	8.4	12.7	--	8.7	82
JUL								
10...	756	--	502	8.4	20.4	38.4	8.6	97
10...	--	--	504	8.4	20.4	--	8.6	97
10...	--	--	508	8.4	20.4	--	8.5	96
10...	--	--	506	8.4	20.4	--	8.5	96
10...	--	--	509	8.4	20.3	--	8.4	94
10...	--	--	528	8.3	19.2	--	8.2	89
10...	--	--	678	8.0	13.8	--	6.8	67
10...	--	--	681	8.0	13.8	--	6.8	67
AUG								
05...	765	--	657	8.4	20.3	91.2	9.1	100
05...	--	--	657	8.5	20.3	--	9.2	101
05...	--	--	659	8.5	20.3	--	9.2	101
05...	--	--	652	8.5	20.3	--	9.8	108
05...	--	--	517	8.5	20.1	--	9.1	100
05...	--	--	618	8.0	16.6	--	5.6	57

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD WATER-QUALITY LAKE STATIONS

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	SAMP- LING DEPTH (FT) (00003)	RESER- VOIR DEPTH (FEET) (72025)	ELEV. OF LAND SURFACE DATUM (FT. ABOVE NGVD) (72000)	TEMPER- ATURE, AIR (DEG C) (00020)	CLOUD COVER (PER- CENT) (00032)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
MISSOURI RIVER MAIN STEM								
06337995 LAKE SAKAKAWEA AT RIVERDALE, ND								
FEB								
18...	1120	.00	156	1800.00	2.0	40	270	5.0
18...	1122	1.60	--	1800.00	--	--	--	--
18...	1124	3.30	--	1800.00	--	--	--	--
18...	1126	6.60	--	1800.00	--	--	--	--
18...	1128	16.5	--	1800.00	--	--	--	--
18...	1130	33.0	--	1800.00	--	--	--	--
18...	1132	66.0	--	1800.00	--	--	--	--
18...	1134	99.0	--	1800.00	--	--	--	--
18...	1136	132	--	1800.00	--	--	--	--
18...	1138	150	--	1800.00	--	--	--	--
APR								
28...	1240	.00	150	1800.00	12.0	100	215	5.0
28...	1242	1.60	--	1800.00	--	--	--	--
28...	1244	3.30	--	1800.00	--	--	--	--
28...	1246	6.60	--	1800.00	--	--	--	--
28...	1248	16.5	--	1800.00	--	--	--	--
28...	1250	33.0	--	1800.00	--	--	--	--
28...	1252	66.0	--	1800.00	--	--	--	--
28...	1254	99.0	--	1800.00	--	--	--	--
28...	1256	132	--	1800.00	--	--	--	--
28...	1258	140	--	1800.00	--	--	--	--
JUN								
02...	1210	.00	155	1800.00	14.0	5	0	10
02...	1212	1.60	--	1800.00	--	--	--	--
02...	1214	3.30	--	1800.00	--	--	--	--
02...	1216	6.60	--	1800.00	--	--	--	--
02...	1218	16.0	--	1800.00	--	--	--	--
02...	1220	33.0	--	1800.00	--	--	--	--
02...	1222	66.0	--	1800.00	--	--	--	--
02...	1224	99.0	--	1800.00	--	--	--	--
02...	1226	132	--	1800.00	--	--	--	--
02...	1228	150	--	1800.00	--	--	--	--
JUL								
09...	1128	.00	165	1800.00	29.0	0	120	5.0
09...	1130	1.60	--	1800.00	--	--	--	--
09...	1132	3.30	--	1800.00	--	--	--	--
09...	1134	6.60	--	1800.00	--	--	--	--
09...	1136	16.5	--	1800.00	--	--	--	--
09...	1138	33.0	--	1800.00	--	--	--	--
09...	1140	66.0	--	1800.00	--	--	--	--
09...	1142	99.0	--	1800.00	--	--	--	--
09...	1144	132	--	1800.00	--	--	--	--
09...	1146	149	--	1800.00	--	--	--	--
09...	1148	152	--	1800.00	--	--	--	--
AUG								
04...	1515	.00	165	1800.00	29.0	30	4	275
04...	1517	1.60	--	1800.00	--	--	--	--
04...	1519	3.30	--	1800.00	--	--	--	--
04...	1521	16.5	--	1800.00	--	--	--	--
04...	1523	33.0	--	1800.00	--	--	--	--
04...	1525	66.0	--	1800.00	--	--	--	--
04...	1527	99.0	--	1800.00	--	--	--	--
04...	1529	132	--	1800.00	--	--	--	--
04...	1531	148	--	1800.00	--	--	--	--

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD WATER-QUALITY LAKE STATIONS
 CHEMICAL ANALYSES, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

417

DATE	BARO- METRIC PRES- SURE (MM OF HG) (00025)	ICE THICK- NESS (FEET) (82130)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	TRANS- PAK- ENCY (SECCHI DISK) (IN) (00077)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)
------	---	--	--	--------------------------	--	---	---	---

MISSOURI RIVER MAIN STEM

06337995 LAKE SAKAKAWEA AT RIVERDALE, ND--Continued

FEB								
18...	600	1.60	577	8.3	.4	137	12.6	111
18...	--	--	598	8.4	.4	--	12.9	113
18...	--	--	606	8.5	.5	--	12.9	114
18...	--	--	608	8.6	.5	--	13.2	116
18...	--	--	614	8.6	.5	--	13.2	116
18...	--	--	625	8.6	.4	--	12.7	112
18...	--	--	645	8.6	.6	--	12.7	112
18...	--	--	648	8.6	1.2	--	12.4	111
18...	--	--	652	8.6	1.8	--	12.1	110
18...	--	--	670	8.3	2.6	--	9.2	86
APR								
28...	753	--	610	8.3	4.0	142	9.5	73
28...	--	--	686	8.3	4.0	--	9.5	73
28...	--	--	682	8.3	4.0	--	9.6	74
28...	--	--	682	8.3	4.0	--	9.6	74
28...	--	--	686	8.3	4.0	--	9.6	74
28...	--	--	685	8.3	3.9	--	9.7	75
28...	--	--	685	8.3	3.9	--	9.7	75
28...	--	--	685	8.3	3.9	--	9.6	74
28...	--	--	685	8.3	3.8	--	9.6	74
28...	--	--	685	8.3	3.8	--	96.0	74
JUN								
02...	755	--	708	8.5	9.1	131	11.5	100
02...	--	--	709	8.5	9.1	--	11.1	97
02...	--	--	710	8.5	9.1	--	10.6	92
02...	--	--	713	8.5	9.0	--	10.7	93
02...	--	--	714	8.5	8.9	--	10.9	95
02...	--	--	718	8.5	8.6	--	11.1	96
02...	--	--	723	8.5	8.4	--	11.5	99
02...	--	--	724	8.5	8.0	--	11.6	98
02...	--	--	726	8.5	7.8	--	11.6	98
02...	--	--	728	8.5	7.7	--	11.5	97
JUL								
09...	761	--	747	8.5	18.8	101	9.4	101
09...	--	--	748	8.5	18.8	--	9.4	101
09...	--	--	748	8.5	18.8	--	9.4	101
09...	--	--	748	8.5	18.6	--	9.4	100
09...	--	--	752	8.5	18.4	--	9.3	101
09...	--	--	756	8.5	18.4	--	9.4	100
09...	--	--	766	8.5	17.6	--	9.4	98
09...	--	--	764	8.4	12.7	--	9.5	91
09...	--	--	780	8.4	11.2	--	9.5	89
09...	--	--	788	8.4	10.9	--	9.4	88
09...	--	--	788	8.4	10.9	--	9.4	88
AUG								
04...	758	--	732	8.6	22.0	198	9.9	114
04...	--	--	732	8.6	22.0	--	9.9	114
04...	--	--	732	8.6	21.9	--	10.0	115
04...	--	--	732	8.6	21.7	--	10.0	114
04...	--	--	732	8.5	20.5	--	9.8	109
04...	--	--	732	8.4	18.5	--	9.0	97
04...	--	--	--	8.2	12.2	--	9.4	88
04...	--	--	--	8.2	11.6	--	9.1	84
04...	--	--	--	8.2	11.4	--	8.8	81

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD WATER-QUALITY LAKE STATIONS

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	SAMP- LING DEPTH (FT) (00003)	RESER- VOIR DEPTH (FEET) (72025)	ELEV. OF LAND SURFACE DATUM (FT. ABOVE NGVD) (72000)	RESER- VOIR ELEV- ATION (FEET ABOVE DATUM) (00062)	TEMPER- ATURE, AIR (DEG C) (00020)	CLOUD COVER (PER- CENT) (00032)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)	BARO- METRIC PRES- SURE (MM OF HG) (00025)
------	------	---	--	---	---	--	---	--	--	---

HEART RIVER BASIN

06343500 - E A PATTERSON LAKE NEAR DICKINSON, N. DAK. (LAT 46 52 11 LONG 102 49 37)

FEB , 1981

20...	1518	.00	20	2400.00	11.51	8.0	80	315	15	693
20...	1520	1.60	--	2400.00	--	--	--	--	--	--
20...	1522	3.30	--	2400.00	--	--	--	--	--	--
20...	1524	6.60	--	2400.00	--	--	--	--	--	--
20...	1526	9.90	--	2400.00	--	--	--	--	--	--
20...	1528	13.2	--	2400.00	--	--	--	--	--	--
20...	1530	16.5	--	2400.00	--	--	--	--	--	--

APR

28...	1125	.00	21	2400.00	11.42	17.0	100	275	10	697
28...	1127	1.60	--	2400.00	--	--	--	--	--	--
28...	1129	3.30	--	2400.00	--	--	--	--	--	--
28...	1131	6.60	--	2400.00	--	--	--	--	--	--
28...	1133	9.90	--	2400.00	--	--	--	--	--	--
28...	1135	13.2	--	2400.00	--	--	--	--	--	--
28...	1137	16.5	--	2400.00	--	--	--	--	--	--
28...	1139	19.8	--	2400.00	--	--	--	--	--	--
28...	1141	21.0	--	2400.00	--	--	--	--	--	--

JUL

20...	1215	.00	21	2400.00	11.76	32.0	0	240	5.0	697
20...	1218	1.60	--	2400.00	--	--	--	--	--	--
20...	1220	3.30	--	2400.00	--	--	--	--	--	--
20...	1222	6.60	--	2400.00	--	--	--	--	--	--
20...	1224	9.90	--	2400.00	--	--	--	--	--	--
20...	1226	13.2	--	2400.00	--	--	--	--	--	--
20...	1228	16.5	--	2400.00	--	--	--	--	--	--
20...	1230	19.8	--	2400.00	--	--	--	--	--	--
20...	1232	21.0	--	2400.00	--	--	--	--	--	--

SEP

09...	1131	.00	21	2400.00	11.20	31.0	0	--	--	693
09...	1133	1.60	--	2400.00	--	--	--	--	--	--
09...	1135	3.30	--	2400.00	--	--	--	--	--	--
09...	1137	6.60	--	2400.00	--	--	--	--	--	--
09...	1139	9.90	--	2400.00	--	--	--	--	--	--
09...	1141	13.0	--	2400.00	--	--	--	--	--	--
09...	1143	16.0	--	2400.00	--	--	--	--	--	--
09...	1145	19.0	--	2400.00	--	--	--	--	--	--
09...	1147	21.0	--	2400.00	--	--	--	--	--	--

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD WATER-QUALITY LAKE STATIONS
 CHEMICAL ANALYSES, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

419

DATE	ICE THICK- NESS (FEET) (82130)	SPE- CIFIC CON- DUCT- ANCE (UMHUS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00301)	COLOR (PLAT- INUM- COBALT UNITS) (00080)	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS NONCAR- BONATE (MG/L AS CACO3) (95902)
------	--	--	--------------------------	--	---	---	---	---	---	--

HEART RIVER BASIN

06343500 - E A PATTERSON LAKE NEAR DICKINSON, N. DAK. (LAT 46 52 11 LONG 102 49 37)

FEB , 1981										
20...	1.20	--	--	2.0	118	9.8	78	--	--	--
20...	--	--	--	2.0	--	10.3	82	--	--	--
20...	--	2070	8.5	2.0	--	10.3	82	15	314	.00
20...	--	--	--	1.2	--	10.7	84	--	--	--
20...	--	--	--	1.2	--	9.4	74	--	--	--
20...	--	--	--	1.1	--	10.8	84	--	--	--
20...	--	--	--	1.0	--	5.6	44	--	--	--
APR										
28...	.00	--	--	12.5	33.0	8.1	84	--	--	--
28...	--	--	--	12.5	--	8.0	82	--	--	--
28...	--	1790	8.6	12.5	--	8.0	82	20	268	.00
28...	--	--	--	12.0	--	7.7	78	--	--	--
28...	--	--	--	12.0	--	7.8	80	--	--	--
28...	--	--	--	12.0	--	7.5	76	--	--	--
28...	--	--	--	12.0	--	7.4	76	--	--	--
28...	--	--	--	12.0	--	7.2	73	--	--	--
28...	--	--	--	12.0	--	1.0	10	--	--	--
JUL										
20...	--	--	--	25.0	20.0	7.6	100	--	--	--
20...	--	--	--	24.0	--	6.5	84	--	--	--
20...	--	1920	8.7	23.0	--	6.3	100	20	263	.00
20...	--	--	--	23.0	--	5.7	73	--	--	--
20...	--	--	--	22.8	--	5.7	73	--	--	--
20...	--	--	--	22.7	--	5.4	69	--	--	--
20...	--	--	--	22.5	--	5.2	66	--	--	--
20...	--	--	--	22.2	--	4.8	60	--	--	--
20...	--	--	--	22.1	--	4.6	58	--	--	--
SEP										
09...	--	--	--	19.0	--	8.7	102	--	--	--
09...	--	--	--	19.0	--	8.7	102	--	--	--
09...	--	1040	8.2	19.0	--	8.5	100	50	147	.00
09...	--	--	--	19.0	--	8.3	98	--	--	--
09...	--	--	--	19.0	--	7.6	89	--	--	--
09...	--	--	--	18.5	--	6.5	76	--	--	--
09...	--	--	--	17.5	--	6.1	70	--	--	--
09...	--	--	--	17.5	--	4.5	52	--	--	--
09...	--	--	--	17.5	--	4.1	47	--	--	--

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD WATER-QUALITY LAKE STATIONS
CHEMICAL ANALYSES, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SURP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY LAB (MG/L AS CAC03) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)
------	---	---	---	------------------------------	--	--	--	--	--

HEART RIVER BASIN

06343500 - E A PATTERSON LAKE NEAR DICKINSON, N. DAK. (LAT 46 52 11 LONG 102 49 37)

[illegible]

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L SIU2) (00955)	SOLIDS, RESIDUE SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (MG/L AC-FT) (70303)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	BORON, DIS- SOLVED (UG/L AS B) (01020)	PHYTO- PLANK- TON, TOTAL (CELLS (60050)
------	---	---	---	--	---	--	---	---	--

06343500 - E A PATTERSON LAKE NEAR DICKINSON, N. DAK. (LAT 46 52 11 LONG 102 49 37)

[illegible]

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD WATER-QUALITY LAKE STATIONS

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	SAMP- LING DEPTH (FT) (00003)	RESER- VOIR DEPTH (FEET) (72025)	ELEV. OF LAND SURFACE DATUM (FT. ABOVE NGVD) (72000)	RESEK- VOIR ELEV- ATION (FEET ABOVE DATUM) (00062)	TEMPER- ATURE, AIR (DEG C) (00020)	CLOUD COVER (PER- CENT) (00032)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)	BARO- METRIC PRES- SURE (MM OF HG) (00025)
HEART RIVER BASIN										
463547101484000 LAKE TSCHIDA NR GLEN ULLIN, ND (DEEP)										
OCT , 1980										
09...	1000	.00	44	2000.00	59.97	19.0	85	315	5.0	746
09...	1002	1.60	--	--	--	--	--	--	--	--
09...	1004	3.30	--	--	--	--	--	--	--	--
09...	1006	6.60	--	--	--	--	--	--	--	--
09...	1008	13.0	--	--	--	--	--	--	--	--
09...	1010	19.0	--	--	--	--	--	--	--	--
09...	1012	26.0	--	--	--	--	--	--	--	--
09...	1014	33.0	--	--	--	--	--	--	--	--
09...	1016	39.0	--	--	--	--	--	--	--	--
FEB , 1981										
11...	0930	.00	45	2000.00	60.19	-21.0	10	225	5.0	755
11...	0932	1.60	--	--	--	--	--	--	--	--
11...	0934	3.30	--	--	--	--	--	--	--	--
11...	0936	6.60	--	--	--	--	--	--	--	--
11...	0938	13.2	--	--	--	--	--	--	--	--
11...	0940	19.8	--	--	--	--	--	--	--	--
11...	0942	26.4	--	--	--	--	--	--	--	--
11...	0944	33.0	--	--	--	--	--	--	--	--
MAY										
11...	1435	.00	53	2000.00	60.69	16.0	100	120	15	748
11...	1437	1.60	--	--	--	--	--	--	--	--
11...	1439	3.30	--	--	--	--	--	--	--	--
11...	1441	6.60	--	--	--	--	--	--	--	--
11...	1443	16.5	--	--	--	--	--	--	--	--
11...	1445	19.8	--	--	--	--	--	--	--	--
11...	1447	26.4	--	--	--	--	--	--	--	--
11...	1449	33.0	--	--	--	--	--	--	--	--
11...	1451	39.6	--	--	--	--	--	--	--	--
11...	1453	41.5	--	--	--	--	--	--	--	--
JUL										
31...	1000	.00	44	2000.00	58.90	24.0	0	282	10	753
31...	1002	1.60	--	--	--	--	--	--	--	--
31...	1004	3.30	--	--	--	--	--	--	--	--
31...	1006	6.60	--	--	--	--	--	--	--	--
31...	1008	13.0	--	--	--	--	--	--	--	--
31...	1010	20.0	--	--	--	--	--	--	--	--
31...	1012	26.0	--	--	--	--	--	--	--	--
31...	1014	33.0	--	--	--	--	--	--	--	--
31...	1016	36.0	--	--	--	--	--	--	--	--

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD WATER-QUALITY LAKE STATIONS

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	ICE THICK- NESS (FEET) (82130)	SPE- CIFIC CON- DUCT- ANCE (UMHUS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	COLOR (PLAT- INUM- COBALT UNITS) (00080)	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS NONCAR- BONATE (MG/L AS CACO3) (95902)
------	--	--	--------------------------	--	---	---	---	---	---	--

HEART RIVER BASIN

463547101484000 . LAKE TSCHIDA NR GLEN ULLIN, ND (DEEP)--Continued

OCT , 1980										
09...	--	1130	--	14.6	90.0	8.4	84	--	--	--
09...	--	1130	--	14.6	--	8.4	84	--	--	--
09...	--	1133	E8.5	14.6	--	8.5	85	8	303	63
09...	--	1130	--	14.4	--	8.2	82	--	--	--
09...	--	1130	--	14.1	--	7.7	76	--	--	--
09...	--	1130	--	14.0	--	7.6	75	--	--	--
09...	--	1130	--	14.0	--	7.6	75	--	--	--
09...	--	1130	--	13.9	--	7.5	74	--	--	--
09...	--	1130	--	13.9	--	7.4	73	--	--	--
FEB , 1981										
11...	1.80	1070	8.2	1.5	130	11.7	81	--	--	--
11...	--	1140	8.4	2.3	--	12.2	91	--	--	--
11...	--	1180	8.5	2.6	--	12.8	95	5	343	83
11...	--	1210	8.5	2.7	--	12.8	95	--	--	--
11...	--	1230	8.5	2.9	--	13.4	100	--	--	--
11...	--	1241	8.4	2.6	--	12.4	92	--	--	--
11...	--	1260	8.4	2.3	--	11.9	88	--	--	--
11...	--	1410	8.1	3.4	--	9.2	71	--	--	--
MAY										
11...	--	1320	8.5	11.5	58.8	11.8	110	--	--	--
11...	--	1320	8.6	11.5	--	11.7	109	--	--	--
11...	--	1320	8.6	11.5	--	11.8	110	5	323	73
11...	--	1320	8.7	11.5	--	11.5	107	--	--	--
11...	--	1310	8.7	11.5	--	11.3	105	--	--	--
11...	--	1310	8.7	11.0	--	11.2	103	--	--	--
11...	--	1320	8.7	11.0	--	11.2	103	--	--	--
11...	--	1330	8.7	11.0	--	11.2	103	--	--	--
11...	--	1330	8.7	11.0	--	11.1	102	--	--	--
11...	--	1330	8.7	11.0	--	11.0	101	--	--	--
JUL										
31...	--	1330	8.4	22.3	72.0	7.4	85	--	--	--
31...	--	1330	8.4	22.3	--	7.4	85	--	--	--
31...	--	1330	8.4	22.3	--	7.5	86	5	323	63
31...	--	1330	8.4	22.3	--	7.4	85	--	--	--
31...	--	1332	8.4	22.3	--	7.4	85	--	--	--
31...	--	1335	8.4	22.3	--	7.4	85	--	--	--
31...	--	1338	8.4	22.3	--	7.4	85	--	--	--
31...	--	1340	8.4	22.2	--	7.3	84	--	--	--
31...	--	1342	8.3	21.6	--	5.3	60	--	--	--

E - Estimated, estimated pH indicates laboratory determination.

463547101484000 LAKE TSCHIDA NR GLEN ULLIN, ND (DEEP)--Continued[illegible]

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SI02) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	BORON, DIS- SOLVED (UG/L AS B) (01020)	PHYTO- PLANK- TON, TOTAL (CELLS PER ML) (60050)
------	---	--	---	---	--	--	---	---	---

HEART RIVER BASIN

463547101484000 LAKE TSCHIDA NR GLEN ULLIN, ND (DEEP)--Continued

OCT , 1980									
09...	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--
09...	.3	.1	845	817	1.1	.00	.020	250	--
09...	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--
FEB , 1981									
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	.3	.6	913	891	1.2	.09	.020	270	90
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
MAY									
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	.2	1.5	910	873	1.2	.11	.150	260	--
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
JUL									
31...	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--
31...	.3	1.8	932	911	1.3	.20	<.010	250	--
31...	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO FEBRUARY 1981

DATE	FEB 11, 81
TIME	0934
TOTAL CELLS/ML	90
DIVERSITY: DIVISION	0.0
..CLASS	0.0
...ORDER	0.0
...FAMILY	0.0
...GENUS	0.0
ORGANISM	CELLS PER- /ML CENT
CHLOROPHYTA (GREEN ALGAE)	
..CHLOROPHYCEAE	
...CHLOROCOCCALES	
...CHARACIACEAE	
...SCHROEDERIA	90#100

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

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD WATER-QUALITY LAKE STATIONS

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	SAMP- LING DEPTH (FT) (00003)	RESER- VOIR DEPTH (FEET) (72025)	ELEV- ATION ABOVE NGVD (FEET) (72020)	RESER- VOIR ELEV- ATION (FEET ABOVE DATUM) (00062)	TEMPER- ATURE, AIR (DEG C) (00020)	CLOUD COVER (PER- CENT) (00032)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
------	------	---	--	--	---	--	---	--	--

GRAND RIVER BASIN

455913103150000 BOWMAN-HALEY LAKE NR HALEY, ND

OCT									
21...	1218	.00	28	2700.00	51.67	13.0	10	135	5.0
21...	1220	1.60	--	--	--	--	--	--	--
21...	1222	3.30	--	--	--	--	--	--	--
21...	1224	9.80	--	--	--	--	--	--	--
21...	1226	16.4	--	--	--	--	--	--	--
21...	1228	23.0	--	--	--	--	--	--	--
21...	1230	28.5	--	--	--	--	--	--	--
JAN									
21...	1347	.00	29	2700.00	51.51	13.0	0	315	5.0
21...	1349	1.60	--	--	--	--	--	--	--
21...	1351	3.30	--	--	--	--	--	--	--
21...	1353	9.80	--	--	--	--	--	--	--
21...	1355	16.4	--	--	--	--	--	--	--
21...	1357	23.0	--	--	--	--	--	--	--
21...	1359	29.0	--	--	--	--	--	--	--
MAY									
13...	1550	.00	30	2700.00	50.99	15.0	75	158	5.0
13...	1552	1.60	--	--	--	--	--	--	--
13...	1555	3.30	--	--	--	--	--	--	--
13...	1602	9.80	--	--	--	--	--	--	--
13...	1604	16.4	--	--	--	--	--	--	--
13...	1608	23.0	--	--	--	--	--	--	--
13...	1611	29.5	--	--	--	--	--	--	--
JUN									
11...	1304	.00	30	2700.00	50.88	22.0	80	25	15
11...	1306	1.60	--	--	--	--	--	--	--
11...	1308	3.30	--	--	--	--	--	--	--
11...	1310	9.80	--	--	--	--	--	--	--
11...	1312	16.4	--	--	--	--	--	--	--
11...	1316	29.5	--	--	--	--	--	--	--

DATE	BARO- METRIC PRES- SURE (MM OF HG) (00025)	ICE THICK- NESS (FEET) (82130)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00300)	OXYGEN, DIS- SOLVED (MG/L) (00301)
OCT								
21...	690	--	2320	8.8	7.7	39.0	10.1	94
21...	--	--	--	--	7.6	--	10.3	95
21...	--	--	--	--	7.6	--	10.1	94
21...	--	--	--	--	7.5	--	10.6	98
21...	--	--	2340	8.8	7.5	--	10.3	95
21...	--	--	--	--	7.4	--	10.2	94
21...	--	--	2330	8.7	7.4	--	9.6	89
JAN								
21...	695	1.20	2610	8.5	2.5	202	12.4	100
21...	--	--	--	--	2.8	--	12.4	100
21...	--	--	--	--	2.8	--	12.4	100
21...	--	--	--	--	2.0	--	11.7	94
21...	--	--	2610	8.5	2.2	--	10.7	86
21...	--	--	--	--	1.5	--	9.1	73
21...	--	--	2610	8.4	2.1	--	5.8	46
MAY								
13...	693	--	2530	8.7	12.0	22.0	9.6	98
13...	--	--	--	--	11.0	--	9.2	--
13...	--	--	--	--	11.0	--	8.7	--
13...	--	--	--	--	10.0	--	8.5	--
13...	--	--	2470	8.8	10.0	--	8.6	84
13...	--	--	--	--	10.0	--	8.4	--
13...	--	--	2540	8.8	10.0	--	8.2	80
JUN								
11...	686	--	2570	8.5	18.0	36.0	7.7	100
11...	--	--	--	--	18.0	--	7.7	--
11...	--	--	--	--	18.0	--	7.6	--
11...	--	--	--	--	18.0	--	7.6	--
11...	--	--	2490	8.6	--	--	--	--
11...	--	--	2590	8.5	--	--	--	--

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD WATER-QUALITY LAKE STATIONS

427

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	SAMP- LING DEPTH (FT) (00003)	RESER- VOIR DEPTH (FEET) (72025)	RESER- VOIR ELEV- ATION (FEET ABOVE DATUM) (00062)	TEMPER- ATURE, AIR (DEG C) (00020)	CLOUD COVER (PER- CENT) (00032)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)	BARO- METRIC PRES- SURE (MM HG) (00025)	ICE THICK- NESS (FEET) (82130)	SPE- CIFIC CON- DUCT- ANCE (UMHUS) (00095)	PH (UNITS) (00400)
HEART RIVER BASIN												
06348486 SWEETBRIAR LAKE (SHALLOW) NR JUDSON, ND												
FEB												
13...	1200	.00	9	40.89	-11.0	0	225	5.0	760	1.10	944	7.3
13...	1202	1.60	--	--	--	--	--	--	--	--	994	7.3
13...	1204	3.30	--	--	--	--	--	--	--	--	1007	7.4
13...	1206	6.60	--	--	--	--	--	--	--	--	1010	7.4
MAY												
14...	1340	.00	9	39.75	22.0	75	180	7.0	754	--	960	8.5
14...	1342	1.60	--	--	--	--	--	--	--	--	970	8.5
14...	1344	3.30	--	--	--	--	--	--	--	--	930	8.5
14...	1346	6.60	--	--	--	--	--	--	--	--	940	8.5
JUL												
29...	1325	.00	11	39.56	30.0	20	120	2.0	753	--	945	8.8
29...	1327	1.60	--	--	--	--	--	--	--	--	945	8.8
29...	1329	3.30	--	--	--	--	--	--	--	--	955	8.8
29...	1331	6.60	--	--	--	--	--	--	--	--	982	8.8
29...	1333	9.90	--	--	--	--	--	--	--	--	1002	8.7
AUG												
21...	1140	.00	0	39.95	29.0	25	60	3.0	754	--	829	8.9
21...	1142	1.60	--	--	--	--	--	--	--	--	828	8.9
21...	1144	3.30	--	--	--	--	--	--	--	--	828	8.9
21...	1146	6.60	--	--	--	--	--	--	--	--	835	8.6
SEP												
30...	1110	.00	12	39.48	11.5	100	80	4.0	762	--	860	9.0
30...	1112	1.60	--	--	--	--	--	--	--	--	860	9.0
30...	1114	3.30	--	--	--	--	--	--	--	--	858	9.0
30...	1116	6.60	--	--	--	--	--	--	--	--	857	9.0

DATE	TEMPER- ATURE (DEG C) (00010)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION (00301)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P) (00671)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHYTO- PLANK- TON, TOTAL (CELLS PER ML) (60050)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
FEB											
13...	1.4	54.0	18.7	133	--	--	--	--	--	--	--
13...	2.4	--	18.6	136	--	--	--	--	--	--	--
13...	3.0	--	18.3	135	--	--	--	.00	1100	7.36	.000
13...	3.1	--	12.6	93	--	--	--	--	--	--	--
MAY											
14...	13.0	15.6	10.9	104	--	--	--	--	--	--	--
14...	12.0	--	10.8	101	--	--	--	--	--	--	--
14...	11.0	--	10.2	93	.03	.040	.070	--	1200	.480	.000
14...	11.0	--	9.8	89	--	--	--	--	--	--	--
JUL											
29...	23.1	54.0	7.7	87	--	--	--	--	--	--	--
29...	22.7	--	7.7	89	--	--	--	--	--	--	--
29...	22.0	--	7.7	88	.11	.050	.040	--	13000	10.9	.170
29...	21.1	--	6.1	69	--	--	--	--	--	--	--
29...	20.8	--	4.1	46	--	--	--	--	--	--	--
AUG											
21...	23.0	101	6.8	80	--	--	--	--	--	--	--
21...	22.9	--	7.2	85	--	--	--	--	--	--	--
21...	22.8	--	6.6	78	.25	.040	.020	--	12000	8.25	.000
21...	21.3	--	2.4	27	--	--	--	--	--	--	--
SEP											
30...	10.1	61.2	7.4	65	--	--	--	--	--	--	--
30...	10.1	--	7.4	65	--	--	--	--	--	--	--
30...	10.1	--	7.4	65	.16	.040	.010	--	6200	8.27	<.010
30...	10.0	--	7.2	63	--	--	--	--	--	--	--

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD WATER-QUALITY LAKE STATIONS

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

HEART RIVER BASIN

06348486 SWEETBRIAR LAKE (SHALLOW) NR JUDSON, ND--Continued

DATE TIME	FEB 13,81 1204	MAY 14,81 1344	JUL 29,81 1329	AUG 21,81 1144	SEP 30,81 1114					
TOTAL CELLS/ML	1100	1200	13000	12000	6200					
DIVERSITY: DIVISION	0.6	0.6	0.4	0.3	0.2					
..CLASS	0.6	0.6	0.4	0.3	0.2					
...ORDER	0.6	0.8	1.2	1.0	0.2					
...FAMILY	0.8	0.9	1.3	1.4	0.7					
....GENUS	0.8	0.9	1.9	1.4	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	--	-	--	-	* 0	--	-	82	1	
....UOCYSTACEAE										
....ANKISTRUESMUS	--	-	--	-	* 0	60	1	--	-	
....DICTYOSPHAERIUM	--	-	--	-	160	1	--	-	--	-
....NEPHROCITIUM	--	-	--	-	--	-	* 0	--	-	
....UOCYSTIS	--	-	13	1	--	-	260	2	--	-
...SCENEDESMACEAE										
....CRUCIGENIA	--	-	51	4	110	1	--	-	--	-
....SCENEDESMUS	--	-	--	-	110	1	* 0	--	-	
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMUNAS	51	5	--	-	--	-	60	1	--	-
....VOLVOCAEAE										
....PANDURINA	--	-	--	-	430	3	--	-	--	-
CHRYSTOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	--	-	39	3	* 0	* 0	--	-	--	-
..PENNALES										
...ACHNANTHACEAE										
....COCCONEIS	--	-	--	-	--	-	--	-	82	1
...FRAGILARIACEAE										
....ASTERIONELLA	940#	88	1100#	86	--	-	--	-	--	-
...NITZSCHIAEAE										
....NITZSCHIA	26	2	--	-	--	-	--	-	--	-
..CHRYSTOPHYCEAE										
...CHRYSOMONADALES										
....UCHROMONADACEAE										
....UCHROMUNAS	--	-	--	-	--	-	* 0	--	-	
CRYPTOPHYTA (CRYPTOMONADS)										
..CRYPTOPHYCEAE										
...CRYPTOMONADALES										
....CRYPTOCHRYSIDACEAE										
....CHROMUNAS	--	-	51	4	--	-	--	-	--	-
...CRYPTOMONADACEAE										
....CRYPTOMUNAS	--	-	--	-	--	-	* 0	--	-	
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROOCOCCALES										
....CHROOCOCCACEAE										
....ANACYSTIS	--	-	--	-	2700#	21	2400#	20	--	-
...HORMOGONALES										
....NOSTOCACEAE										
....ANABAENA	--	-	--	-	3000#	23	--	-	600	10
....APHANIZOMENON	--	-	--	-	6200#	48	8000#	68	4800#	77
...USCILLATORIAEAE										
....USCILLATORIA	--	-	--	-	--	-	920	8	670	11
EUGLENOPHYTA (EUGLENOIDS)										
..EUGLENOPHYCEAE										
...EUGLENALES										
....EUGLENACEAE										
....EUGLENA	--	-	--	-	--	-	* 0	--	-	
....TRACHELUMUNAS	39	4	13	1	* 0	--	-	--	-	
PYRRHOPHYTA (FIRE ALGAE)										
..DINOPHYCEAE										
...GYMNODINIALES										
....GYMNODINIACEAE										
....GYMNODINIUM	--	-	--	-	* 0	--	-	--	-	
...PERIDINIALES										
....GLENODINIACEAE										
....GLENODINIUM	13	1	--	-	--	-	--	-	--	-

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

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

SAMP- LING DEPTH (FT)	RESE- VOIR DEPTH (FEET)	RESE- VOIR ELEV- ATION (FEET ABOVE DATUM)	TEMPER- ATURE, AIR (DEG C)	CLOUD COVER (PER- CENT)	WIND DIREC- TION (DEG. FROM TRUE NORTH)	WIND SPEED (MILES PER HOUR)	BARO- METRIC PRES- SURE (MM OF HG)	ICE THICK- NESS (FEET)
(00003)	(72025)	(00062)	(00020)	(00032)	(00036)	(00035)	(00025)	(62130)

06348488 SWEETBRIAR LAKE (DEEP) NR JUDSON, ND

[illegible]

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	SPECIFIC CONDUCTANCE (UMHUS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	TRANSPARENCY (SECCHI DISK) (IN) (00077)	OXYGEN, DIS- SOLVED (PER- CENT SOLVED (MG/L) ATMOM) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SOLVED (MG/L) ATMOM) (00301)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS, ORTHOPHOS- PHATE (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)

HEART RIVER BASIN

06348488 SWEETBRIAR LAKE (DEEP) NR JUDSON, ND--Continued

TABLE 1. Monthly precipitation totals, 1950-59, by month and amount of precipitation										
Month	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
FEB										
13...	866	8.1	3.1	103	13.5	100	--	--	--	--
13...	912	8.2	3.1	--	13.7	102	--	--	--	--
13...	930	8.3	3.4	--	13.7	102	.00	.030	.000	20
13...	949	8.3	3.6	--	13.3	100	--	--	--	--
13...	979	7.8	4.3	--	4.4	33	--	--	--	--
13...	1010	7.7	4.9	--	.7	0	--	--	--	--
MAY										
14...	990	8.4	12.0	19.2	10.4	97	--	--	--	--
14...	930	8.4	11.5	--	10.4	96	--	--	--	--
14...	910	8.4	11.5	--	9.8	90	.05	.040	.040	--
14...	900	8.4	11.0	--	9.7	88	--	--	--	--
14...	920	8.3	11.0	--	8.8	80	--	--	--	--
14...	930	8.3	10.5	--	8.4	76	--	--	--	--
14...	910	8.2	10.5	--	8.0	72	--	--	--	--
JUL										
29...	886	8.6	22.0	46.0	5.8	66	--	--	--	--
29...	886	8.6	22.0	--	5.7	65	--	--	--	--
29...	885	8.6	21.9	--	5.5	63	.12	.030	.030	--
29...	884	8.5	21.7	--	5.2	59	--	--	--	--
29...	886	8.5	21.7	--	5.2	59	--	--	--	--
29...	889	8.5	21.7	--	5.2	59	--	--	--	--
29...	891	8.5	21.6	--	4.9	56	--	--	--	--
AUG										
21...	824	8.8	22.1	45.6	7.2	84	--	--	--	--
21...	820	8.8	22.1	--	7.8	91	--	--	--	--
21...	819	8.9	22.1	--	7.6	88	.11	.030	.010	--
21...	819	8.9	22.1	--	8.0	93	--	--	--	--
21...	823	8.6	20.4	--	3.7	42	.12	.020	<.010	--
21...	820	8.3	19.9	--	.9	10	.12	.060	.040	--
SEP										
30...	919	9.1	11.4	45.6	9.1	83	--	--	--	--
30...	883	9.1	11.4	--	9.0	82	--	--	--	--
30...	854	9.2	11.4	--	9.0	82	.13	.030	<.010	--
30...	844	9.2	11.4	--	9.0	82	--	--	--	--
30...	842	9.2	11.4	--	9.0	82	--	--	--	--
30...	842	9.2	11.4	--	8.9	81	--	--	--	--
30...	840	9.2	11.4	--	8.9	81	--	--	--	--
30...	838	9.2	11.4	--	9.0	82	--	--	--	--

[illegible]

	MANGANESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS-SOLVED (UG/L AS MO)	SELE- NIUM, DIS-SOLVED (UG/L AS SE)	ZINC, DIS-SOLVED (UG/L AS ZN)	CYANIDE TOTAL (MG/L AS CN)	PHYTO- PLANK-TON, TOTAL (CELLS PER ML)	CHLOR-A PHYTO- PLANK-TON CHROMO FLUOROM	CHLOR-B PHYTO- PLANK-TON CHROMO FLUOROM
DATE	(01056)	(71890)	(01060)	(01145)	(01090)	(00720)	(60050)	(70953)	(70954)

06348488 SWEETBRIAR LAKE (DEEP) NR JUDSON, ND--Continued

[illegible]

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD WATER-QUALITY LAKE STATIONS

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

HEART RIVER BASIN

06348488 SWEETBRIAR LAKE (DEEP) NR JUDSON, ND--Continued

DATE TIME	FEB 13,81 0949	MAY 14,81 1224	JUL 29,81 1104	AUG 21,81 1104	SEP 30,81 1024					
TOTAL CELLS/ML	3000	1100	15000	98000	170000					
DIVERSITY: DIVISION	0.1	1.6	0.1	0.4	0.0					
..CLASS	0.1	1.6	0.1	0.4	0.0					
...ORDER	0.1	1.8	1.1	0.7	0.9					
...FAMILY	0.1	1.9	1.4	0.7	1.1					
....GENUS	0.1	1.9	1.4	1.3	1.3					
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	--	-	--	-	* 0	--	-	--	-	
...UOOCYSTACEAE										
....ANKISTRODESMUS	--	-	--	-	* 0	* 0		--	-	
....NEPHROCYTIUM	--	-	--	-	--	720 1		--	-	
...UOOCYSTIS	--	-	--	-	* 0	--	-	--	-	
...SCENEDESMACEAE										
....SCENEDESMUS	--	-	210# 19	--	-	--	-		* 0	
...TETRASPORALES										
...PALMELLACEAE										
....SPHAEROCYSTIS	--	-	--	-	96 1	--	-	--	-	
...VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	26 2	--	-	* 0		* 0		
...ZYGNEMATALES										
...DESMIDIACEAE										
....STAUROSTRUM	--	-	--	-	--	* 0		--	-	
CHRYSOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...CUSCINODISCACEAE										
....CYCLOTELLA	--	-	26 2	--	-	--	-	--	-	
....MELOSIRA	--	-	--	-	--	4500 5		--	-	
....STEPHANODISCUS	--	-	--	-	* 0	* 0		--	-	
...PENNALES										
...FRAGILARIACEAE										
....ASTERIONELLA	3000# 99		490# 46	--	-	--	-	--	-	
...NAVICULACEAE										
....NAVICULA	--	-	13 1	--	-	--	-	--	-	
CRYPTOPHYTA (CRYPTOMONADS)										
..CRYPTOPHYCEAE										
...CRYPTOMONADALES										
...CRYPTOCHRYSIACEAE										
....CHROOMONAS	--	-	300# 28	--	-	--	-	--	-	
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROOCOCCALES										
...CHROOCOCCACEAE										
....ANACYSTIS	--	-	--	-	5300# 36	6600 7		110000# 69		
...HORMOGONALES										
...NOSTOCACEAE										
....ANABAENA	--	-	--	-	--	13000 14		5200 3		
....APHANIZOMENON	--	-	--	-	7900# 54	72000# 73		35000# 21		
...OSCILLATORIA										
....OSCILLATORIA	--	-	--	-	1300 9	--	-	11000 7		
EUGLENOPHYTA (EUGLENOIDS)										
..EUGLENOPHYCEAE										
...EUGLENALES										
...EUGLENACEAE										
....TRACHELOMONAS	--	-	13 1	* 0	--	-		--	-	
PYRRHOPHYTA (FIRE ALGAE)										
..DINOPHYCEAE										
...PERIDINIALES										
...GLENODINIACEAE										
....GLENODINIUM	33 1		--	-	--	-		--	-	

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

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

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD WATER-QUALITY LAKE STATIONS

433

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	SAMP- LING DEPTH (FT) (00003)	RESER- VOIR DEPTH (FEET) (72025)	RESER- VOIR ELEV- ATION (FEET ABOVE DATUM) (00062)	TEMPER- ATURE, AIR (DEG C) (00020)	CLOUD COVER (PER- CENT) (00032)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	ICE THICK- NESS (FEET) (82130)	SPE- CIFIC CON- DUCT- ANCE (UMHUS) (00095)
HEART RIVER BASIN											
06348880 CROWN BUTTE LAKE (SHALLOW) NR MANDAN, ND											
FEB											
09...	1325	.00	8	--	-18.0	75	270	8.0	756	1.70	1200
09...	1327	1.60	--	--	--	--	--	--	--	--	1280
09...	1329	3.30	--	--	--	--	--	--	--	--	1315
MAY											
13...	1135	.00	8	23.33	16.0	90	350	10	762	--	1060
13...	1137	1.60	--	--	--	--	--	--	--	--	1040
13...	1139	3.30	--	--	--	--	--	--	--	--	1040
JUL											
02...	1152	.00	8	22.33	21.0	95	0	10	757	--	942
02...	1154	1.60	--	--	--	--	--	--	--	--	942
02...	1156	3.30	--	--	--	--	--	--	--	--	959
02...	1158	6.60	--	--	--	--	--	--	--	--	1003
AUG											
04...	1030	.00	9	23.62	20.0	100	150	3.0	751	--	921
04...	1032	1.60	--	--	--	--	--	--	--	--	926
04...	1034	3.30	--	--	--	--	--	--	--	--	933
04...	1036	6.60	--	--	--	--	--	--	--	--	933
19...	1100	.00	8	22.01	22.0	95	165	3.0	755	--	867
19...	1102	1.60	--	--	--	--	--	--	--	--	872
19...	1104	3.30	--	--	--	--	--	--	--	--	870
19...	1106	6.60	--	--	--	--	--	--	--	--	872
SEP											
29...	1120	.00	6	22.08	12.0	80	65	2.0	757	--	905
29...	1122	1.60	--	--	--	--	--	--	--	--	906
29...	1124	3.30	--	--	--	--	--	--	--	--	908

DATE	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (MG/L) (00301)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P) (00671)	PHYTO- PLANK- TON, TOTAL (CELLS PER ML) (60050)	CHLOR-A PHYTO- PLANK- TON, CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON, CHROMO FLUOROM (UG/L) (70954)
FEB											
09...	8.2	2.7	69.5	15.7	117	--	--	--	--	--	--
09...	8.3	3.1	--	15.4	117	--	--	--	--	--	--
09...	8.3	3.2	--	15.3	116	.00	.060	.020	1200	3.81	.070
MAY											
13...	8.9	10.5	60.0	12.3	110	--	--	--	--	--	--
13...	8.9	10.5	--	12.0	107	--	--	--	--	--	--
13...	8.9	10.5	--	12.0	107	.01	.160	.020	620	3.86	.000
JUL											
02...	9.6	22.5	38.0	5.6	64	--	--	--	--	--	--
02...	9.6	22.5	--	5.6	64	--	--	--	--	--	--
02...	9.5	22.5	--	5.0	58	.08	.030	.000	170000	30.2	.000
02...	9.0	20.9	--	.3	3	--	--	--	--	--	--
AUG											
04...	9.3	22.9	20.4	9.6	114	--	--	--	--	--	--
04...	9.3	22.8	--	5.7	68	--	--	--	--	--	--
04...	9.2	21.8	--	5.5	65	.10	.180	.040	--	--	--
04...	9.1	21.8	--	.1	0	--	--	--	--	--	--
19...	9.3	21.0	18.0	4.7	53	--	--	--	--	--	--
19...	9.3	21.0	--	4.6	52	--	--	--	--	--	--
19...	9.3	20.9	--	4.3	49	.10	.030	<.010	910000	30.5	.000
19...	9.2	20.8	--	1.7	19	--	--	--	--	--	--
SEP											
29...	8.9	11.6	19.2	9.9	90	--	--	--	--	--	--
29...	8.9	11.6	--	10.0	92	--	--	--	--	--	--
29...	8.9	11.6	--	9.8	90	.11	.060	.030	93000	57.7	9.04

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD WATER-QUALITY LAKE STATIONS

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

HEART RIVER BASIN

06348880 CROWN BUTTE LAKE (SHALLOW) NR MANDAN, ND--Continued

DATE TIME	FEB 9,81 1329	MAY 13,81 1139	JUL 2,81 1020	JUL 2,81 1156	AUG 19,81 1104	SEP 29,81 1124		
TOTAL CELLS/ML	1200	620	170000	150000	910000	93000		
DIVERSITY: DIVISION	0.2	1.2	0.1	0.1	0.1	0.7		
..CLASS	0.2	1.2	0.1	0.1	0.1	0.7		
...ORDER	0.2	1.3	0.4	0.3	0.8	1.5		
....FAMILY	0.2	1.9	0.5	0.4	0.9	1.5		
....GENUS	0.2	2.6	1.3	1.0	1.0	1.8		
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
....OOCYSTACEAE								
....ANKISTRODESMUS	26	2	64	10	--	--	*	0
....DICTYOSPHAERIUM	--	--	--	--	--	--	--	--
....KIRCHNERIELLA	--	--	--	--	--	--	2700	3
....SELENASTRUM	--	--	51	8	--	--	2700	3
....TREUBARIA	--	--	--	--	--	--	--	--
...SCENEDESMACEAE					*	0	--	--
....ACTINASTRUM	--	--	100#	17	--	--	--	--
....SCENEDESMUS	--	--	210#	33	--	--	*	0
..VOLVOCALES					*	0	*	0
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	--	--	13	2	--	--	--	--
CHRYSTOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
...COSCINODISCACEAE								
....CYCLOTELLA	13	1	26	4	--	--	*	0
....MELOSIRA	--	--	--	--	--	--	*	0
...PENNALES								
...DIATOMACEAE								
....DIATOMA	--	--	--	--	*	0	--	--
...FRAGILARIACEAE								
....SYNEDRA	--	--	--	--	--	--	*	0
...NAVICULACEAE								
....NAVICULA	--	--	--	--	*	0	--	--
...NITZSCHACEAE								
....NITZSCHIA	--	--	--	--	--	--	*	0
..CHRYSTOPHYCEAE								
...CHRYSONOMADALES								
...UCHROMONADACEAE								
....DINOBYRON	1100#	97	--	--	--	--	--	--
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROOCOCCALES								
....CHROOCOCCACEAE								
....ANACYSTIS	--	--	130#	21	12000	7	5100	3
....GOMPHOSPHAERIA	--	--	--	--	--	--	700000#	77
...HORMOGONALES							15000	2
....NOSTOCACEAE								
....ANABAENA	--	--	--	--	44000#	26	20000	14
....APHANIZOMENON	--	--	--	--	110000#	65	120000#	80
...OSCILLATORIA							17000	2
....OSCILLATORIA	--	--	--	--	2000	1	2900	2
....SPIRULINA	--	--	--	--	--	--	160000#	18
...20000#							--	--
...6800							20000#	22
EUGLENOPHYTA (EUGLENOIDS)								
..EUGLENOPHYCEAE								
...EUGLENALES								
...EUGLENACEAE								
....EUGLENA	--	--	--	--	--	--	*	0
....TRACHELOMONAS	--	--	26	4	--	--	*	0
...3400							--	--
...4							--	--

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

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

SAMP- LING DEPTH (FT)	RESER- VOIR DEPTH (FEET)	RESER- VOIR ELEV- ATION (FEET ABOVE DATUM)	TEMPER- ATURE, AIR (DEG C)	CLOUD COVER (PER- CENT)	WIND DIREC- TION (DEG, FROM TRUE NORTH)	WIND SPEED (MILES PER HOUR)	BARO- METRIC PRES- SURE (MM OF HG)	ICE THICK- NESS (FEET)	SPE- CIFIC CON- DUCT- ANCE (UMHOS)
(00003)	(72025)	(00062)	(00020)	(00032)	(00036)	(00035)	(00025)	(82130)	(00095)

06348882 CROWN BUTTE LAKE (DEEP) NR MANDAN, ND

[illegible]

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	PH	TEMPER- ATURE (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (IN)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, (PER- CENT SATUR- ATION)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 TOT. IN BOT MAT (MG/KG AS N)	NITRO- GEN, NH4 + ORG. TOT IN BOT MAT (MG/KG AS N)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)
(00400)		(00010)	(00077)	(00300)	(00301)	(00631)	(00633)	(00626)	(00666)	(00671)

HEART RIVER BASIN

06348882 CROWN BUTTE LAKE (DEEP) NR MANDAN, ND--Continued

	09	13	17	21	25	29	36	40	44	48
FEB										
09...	8.0	1.4	62.4	10.6	77	--	--	--	--	--
09...	8.0	2.3	--	10.9	82	--	--	--	--	--
09...	8.1	3.0	--	10.8	80	.04	36	2850	.040	.010
09...	8.1	3.2	--	10.8	80	--	--	--	--	--
09...	8.1	3.3	--	10.9	81	--	--	--	--	--
09...	8.1	3.5	--	11.2	84	--	--	--	--	--
MAY										
13...	8.8	11.0	60.0	11.1	100	--	--	--	--	--
13...	8.8	11.0	--	11.2	101	--	--	--	--	--
13...	8.9	11.0	--	11.2	101	.01	--	--	.160	.030
13...	8.9	11.0	--	11.3	102	--	--	--	--	--
13...	8.9	11.0	--	11.3	102	--	--	--	--	--
13...	8.9	11.0	--	11.2	101	--	--	--	--	--
JUL										
02...	9.3	21.4	41.0	8.9	100	--	--	--	--	--
02...	9.3	21.4	--	8.9	100	--	--	--	--	--
02...	9.3	21.4	--	8.9	100	.07	--	--	.020	.000
02...	9.4	21.4	--	8.9	100	--	--	--	--	--
02...	9.1	18.6	--	3.2	34	.08	--	--	.040	.000
02...	8.9	16.8	--	1.1	11	--	--	--	--	--
AUG										
04...	9.4	22.6	14.4	12.0	140	--	--	--	--	--
04...	9.4	22.6	--	12.0	140	--	--	--	--	--
04...	9.2	22.8	--	4.7	55	.12	--	--	.060	.030
04...	9.1	21.5	--	2.6	30	--	--	--	--	--
04...	8.9	20.5	--	.1	0	.14	--	--	.160	.090
04...	8.3	16.5	--	.0	0	.12	--	--	.290	
19...	9.1	20.1	26.4	2.6	29	--	--	--	--	--
19...	9.1	20.1	--	2.6	29	--	--	--	--	--
19...	9.1	20.0	--	2.8	31	.10	--	--	.030	<.010
19...	9.2	20.0	--	3.0	33	--	--	--	--	--
19...	8.8	18.1	--	.0	0	.10	--	--	.080	.060
19...	8.2	15.3	--	.0	0	.11	--	--	.260	.240
SEP										
29...	8.1	11.5	18.0	8.5	78	--	--	--	--	--
29...	8.9	11.5	--	8.5	78	--	--	--	--	--
29...	8.8	11.5	--	8.5	78	.14	--	--	.060	.030
29...	8.8	11.5	--	8.5	78	--	--	--	--	--
29...	8.8	11.5	--	8.5	78	--	--	--	--	--
29...	8.8	11.5	--	8.4	77	--	--	--	--	--

[illegible]

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD WATER-QUALITY LAKE STATIONS

437

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MU) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	CYANIDE TOTAL (MG/L AS CN) (00720)	PHYTO- PLANK- TON, TOTAL (CELLS PER ML) (60050)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
------	---	---	---	--	--	---	--	---	--	--

HEART RIVER BASIN

06348882 CROWN BUTTE LAKE (DEEP) NR MANDAN, ND--Continued

FEB										
09...	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--
09...	0	20	.0	3	0	20	.00	610	3.00	.000
09...	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--
MAY										
13...	--	--	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	1800	4.91	.000
13...	--	--	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	--	--	--
JUL										
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
AUG										
04...	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	680000	34.9	7.71
04...	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	340000	64.0	.000
19...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
SEP										
29...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	75000	49.5	5.85
29...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--

DATE	TIME	SAMP- LING DEPTH (FT) (00003)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)
SEP 29...	1054	16.5	907	8.8	11.5	8.4	77

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

HEART RIVER BASIN

06348882 CROWN BUTTE LAKE (DEEP) NR MANDAN, ND—Continued

DATE TIME	FEB 9,81 1054	MAY 13,81 1049	AUG 4,81 1004	AUG 4,81 1034	AUG 19,81 1024	SEP 29,81 1049				
TOTAL CELLS/ML	610	1000	680000	470000	340000	75000				
DIVERSITY: DIVISION	0.8	1.4	0.2	0.3	0.2	1.1				
..CLASS	0.8	1.4	0.2	0.3	0.2	1.1				
..ORDER	0.8	1.9	1.1	0.8	1.2	1.2				
...FAMILY	0.8	2.3	1.3	0.8	1.2	1.5				
....GENUS	0.8	2.8	2.0	1.5	1.3	1.9				
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	--	-	--	-	--	-	--	-	1000	2
....UOYSTACEAE										
....ANKISTRODESUS	39	6	330#	19	11000	2	5500	1	5600	2
....DICTYOSPHAERIUM	--	-	--	-	--	-	--	-	11000	14
....KIRCHNERIELLA	--	-	--	-	--	-	--	-	1400	2
....UOYSTIS	--	-	51	3	--	-	--	-	9200	12
....SELENASTRUM	--	-	150	9	--	-	--	-	2100	1
....TREUBARIA	--	-	--	-	--	-	* 0	--	--	-
....SCENEDESMACEAE										
....CRUCIGENIA	--	-	--	-	--	-	--	-	1400	2
....SCENEDESMUS	--	-	180	10	--	-	* 0	--	2200	3
....TETRASTRUM	--	-	51	3	--	-	--	-	--	-
..VULVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	--	-	* 0	--	* 0	--	--	-
..ZYGNEATALES										
...DESMIDIACEAE										
....STAUSTRUM	--	-	--	-	--	-	--	-	1100	1
CHRYSOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
....COSCINODISCEAE										
....CYCLOTILLA	--	-	90	5	5300	1	* 0	2100	1	--
....STEPHANODISCUS	--	-	26	1	--	-	--	-	--	-
..PENNALES										
...NAVICULACEAE										
....NAVICULA	--	-	--	-	--	-	--	-	1400	2
...NITZSCHIA										
....NITZSCHIA	--	-	--	-	3500	1	* 0	--	--	-
..CHRYSOPHYCEAE										
...CHRYSOMONADALES										
....UCHROMONADACEAE										
....DINOBYTON	520#	85	--	-	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)										
..CRYPTOPHYCEAE										
...CRYPTOMONADALES										
....CRYPTOCHRYSIDACEAE										
....CHROMONAS	--	-	--	-	--	-	* 0	--	--	-
....CRYPTOMONADACEAE										
....CRYPTOMONAS	52	9	--	-	--	-	* 0	--	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROOCOCCALES										
....CHROOCOCCACEAE										
....AGMENELLUM	--	-	--	-	--	-	7000	2	--	-
....ANACYSTIS	--	-	350#	19	180000#	27	94000#	20	170000#	50
....GOMPHOSPHAERIA	--	-	--	-	300000#	44	300000#	64	46000#	62
...HORMOGONALES										
....NOSTOCACEAE										
....APHANIZOMENON	--	-	--	-	70000	10	--	-	--	-
....OSCILLATORIACEAE										
....LYNGBYA	--	-	510#	29	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	110000#	16	58000	12	150000#	45
EUGLENOPHYTA (EUGLENOIDS)										
..EUGLENUPHYCEAE										
...EUGLENALES										
....EUGLENACEAE										
....TRACHELUMONAS	--	-	39	2	--	-	* 0	--	--	-

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

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

DATE	TIME	SAMP- LING DEPTH (FT) (00003)	RESER- VOIR DEPTH (FEET) (72025)	RESER- VOIR ELEV-	TEMPER- ATURE, AIR (DEG C) (00002)	CLOUD COVER (PER- CENT) (00032)	WIND DIREC- TION (DEG, FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	ICE THICK- NESS (FEET) (82130)	SPE- CIFIC CON- DUCTI- VANCE (UMHUS) (00095)
				ATION (FEET ABOVE DATUM) (00062)			WIND TRUE (MILES PER HOUR) (00035)				
10-10-68	0000	00003	72025	00062	00002	00032	00036	00035	00025	82130	00095

462027102374101 LAKE IRIS (DEEP) NEAR REGENT, ND

[illegible]

CHEMICAL ANALYSES. WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

[illegible]

CANNONBALL RIVER BASIN

462027102374101 LAKE IRIS (DEEP) NEAR REGENT, ND--Continued

FEB										
10...	8.3	3.3	122	11.5	87	--	--	--	--	--
10...	8.2	3.2	--	11.9	90	--	--	--	--	--
10...	8.3	3.3	--	12.2	94	.17	15	298	.070	.000
10...	8.3	3.3	--	12.5	96	--	--	--	--	--
10...	8.0	4.1	--	8.9	69	--	--	--	--	--
10...	7.9	4.4	--	5.7	46	--	--	--	--	--
MAY										
12...	8.7	9.5	120	9.6	87	--	--	--	--	--
12...	8.7	9.5	--	9.6	87	--	--	--	--	--
12...	8.7	9.5	--	9.7	88	.03	--	--	.190	.030
12...	8.6	9.5	--	9.8	89	--	--	--	--	--
12...	8.6	9.5	--	10.0	90	--	--	--	--	--
12...	8.6	9.5	--	10.0	90	--	--	--	--	--
JUL										
30...	--	22.6	73.0	7.5	90	--	--	--	--	--
30...	--	22.6	--	7.5	90	--	--	--	--	--
30...	8.8	22.6	--	7.5	90	.13	--	--	.130	.070
30...	8.9	22.6	--	7.4	88	--	--	--	--	--
30...	8.8	22.6	--	7.4	88	--	--	--	--	--
30...	8.8	21.7	--	6.4	75	.13	--	--	.150	.090
30...	8.8	20.8	--	3.1	36	.14	--	--	.170	.100
AUG										
20...	9.1	21.6	34.8	11.5	135	--	--	--	--	--
20...	9.1	21.6	--	11.9	140	--	--	--	--	--
20...	9.1	21.6	--	12.0	141	.11	--	--	.120	.070
20...	9.0	21.4	--	8.9	105	--	--	--	--	--
20...	8.8	18.8	--	2.1	24	.16	--	--	.170	.120
SEP										
28...	8.8	12.1	76.8	8.3	79	--	--	--	--	--
28...	8.9	12.0	--	8.2	78	--	--	--	--	--
28...	8.9	11.0	--	8.2	78	.12	--	--	.090	.120
28...	8.9	11.6	--	8.1	77	--	--	--	--	--
28...	8.9	11.5	--	8.0	75	--	--	--	--	--
28...	8.9	11.4	--	7.9	74	--	--	--	--	--
28...	8.9	11.4	--	7.8	73	--	--	--	--	--

[illegible]

DATE	MANGANESE		MERCURY		MOLYBDENUM		SILICON		ZINC		CYANIDE	PHYTOPLANKTON		CHLOROPHYLL A		CHLOROPHYLL B	
	LEAD DIS-SOLVED (UG/L AS PB)	NESE DIS-SOLVED (UG/L AS MN)	SOLVED (UG/L AS HG)	SOLVED (UG/L AS MG)	SOLVED (UG/L AS SE)	SOLVED (UG/L AS SN)	TOTAL (MG/L AS CN)	TOTAL (CELLS PER ML)	TOTAL (MG/L AS CN)	TOTAL (CELLS PER ML)		CHLOROPHYLL A (UG/L)	CHLOROPHYLL B (UG/L)				
(010498)	(010498)	(010556)	(718900)	(010600)	(011455)	(010900)	(007200)	(600050)	(709535)	(709545)							

462027102374101 LAKE IRIS (DEEP) NEAR REGENT, ND--Continued

[illegible]

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD WATER-QUALITY LAKE STATIONS
PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

CANNONBALL RIVER BASIN

462027102374101 LAKE IRIS (DEEP) NEAR REGENT, ND--Continued

DATE TIME	FEB 10,81 1334	MAY 12,81 0949	JUL 30,81 1024	AUG 20,81 1024	SEP 28,81 1204					
TOTAL CELLS/ML	480	210	140000	150000	710					
DIVERSITY: DIVISION	1.0	0.5	0.0	0.0	1.3					
..CLASS	1.0	0.5	0.0	0.0	1.3					
...ORDER	1.0	1.2	1.0	0.9	1.3					
...FAMILY	1.0	1.2	1.0	0.9	1.3					
....GENUS	1.0	1.2	1.0	0.9	1.3					
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
BACILLARIOPHYTA (DIATOMS)										
..BACILLARIOPHYCEAE										
...ACHNANTHALES										
...ACHNANTHACEAE										
....RHOICUSPHENIA	--	-	--	-	--	-	--	-	41	6
..BACILLARIALES										
...NITZSCHIAEAE										
....NITZSCHIA	--	-	13	6	--	-	--	-	--	-
..EUPODISCALES										
...COSCINODISCACEAE										
....CYCLOTELLA	--	-	13	6	--	-	--	-	--	-
CHLOROPHYTA (GREEN ALGAE)										
..CHLOROPHYCEAE										
...CHLOROCOCCALES										
...CHLOROCOCCACEAE										
....SCHROEDERIA	--	-	150#	75	--	-	--	-	340#	48
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	26	13	--	-	--	-	--	-
CHRYSTOPHYTA										
..CHRYSTOPHYCEAE										
...OCHROMONADALES										
...DINOBRYACEAE										
....DINOBRYON	270#	57	--	-	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMUNADS)										
..CRYPTOPHYCEAE										
...CRYPTOMUNADALES										
...CRYPTOMUNADACEAE										
....CRYPTOMONAS	210#	43	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROOCOCCALES										
...CHROOCOCCACEAE										
....ANACYSTIS	--	-	--	-	4100	3	110000#	74	--	-
...NOSTOCALES										
...NOSTOCACEAE										
....APHANIZOMENON	--	-	--	-	100000#	71	2500	2	--	-
..USCILLATORIALES										
...USCILLATORIAEAE										
....USCILLATORIA	--	-	--	-	37000#	26	35000#	24	330#	46

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

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

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD WATER-QUALITY LAKE STATIONS

443

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	SAMP- LING DEPTH (FT) (000003)	RESER- VOIR DEPTH (FEET) (72025)	RESER- VOIR ELEV- ATION (FEET ABOVE DATUM) (000062)	TEMPER- ATURE, AIR (DEG C) (000020)	CLOUD COVER (PER- CENT) (000032)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (000036)	WIND SPEED (MILES PER HOUR) (000035)	BARO- METRIC PRES- SURE (MM OF HG) (000025)	ICE THICK- NESS (FEET) (82130)	SPE- CIFIC CON- DUCT- ANCE (UMHUS) (000095)
CANNONBALL RIVER BASIN											
461941102373201 LAKE IRIS (SHALLOW) NEAR REGENT, ND											
FEB											
10...	1600	.00	4	--	-20.0	100	315	10	744	1.30	1670
10...	1602	1.60	--	--	--	--	--	--	--	--	1630
10...	1604	3.30	--	--	--	--	--	--	--	--	1630
MAY											
12...	1045	.00	5	8.35	11.0	100	105	10	739	--	1840
12...	1047	1.60	--	--	--	--	--	--	--	--	1820
12...	1049	3.30	--	--	--	--	--	--	--	--	1820
JUL											
30...	1340	.00	6	78.50	32.0	50	80	7.0	733	--	1880
30...	1342	1.60	--	--	--	--	--	--	--	--	1888
30...	1344	3.30	--	--	--	--	--	--	--	--	1875
AUG											
20...	1220	.00	7	9.57	30.0	15	190	2.0	738	--	1480
20...	1222	1.60	--	--	--	--	--	--	--	--	1480
20...	1224	3.30	--	--	--	--	--	--	--	--	1481
SEP											
28...	1310	.00	7	--	12.0	0	--	.0	737	--	1500
28...	1312	1.60	--	--	--	--	--	--	--	--	1506
28...	1314	3.30	--	--	--	--	--	--	--	--	1501
28...	1316	6.60	--	--	--	--	--	--	--	--	1495

DATE	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS, ORTHU, DIS- SOLVED (MG/L AS P) (00671)	PHYTO- PLANK- TON, TOTAL (CELLS PER ML) (60050)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
FEB											
10...	8.4	3.1	44.4	11.4	86	--	--	--	--	--	--
10...	8.4	2.9	--	11.7	87	--	--	--	--	--	--
10...	8.4	2.9	--	12.0	91	.04	.070	.000	4600	11.8	.000
MAY											
12...	8.7	9.0	63.6	9.8	87	--	--	--	--	--	--
12...	8.8	9.0	--	9.4	84	--	--	--	--	--	--
12...	8.8	9.0	--	9.6	85	.02	.210	.070	100	1.19	.000
JUL											
30...	8.7	22.5	62.0	5.3	63	--	--	--	--	--	--
30...	--	21.7	--	5.3	62	--	--	--	--	--	--
30...	8.7	21.0	--	4.6	53	.13	.150	.080	45000	3.56	.000
AUG											
20...	8.7	19.5	16.8	5.3	68	--	--	--	--	--	--
20...	8.7	19.5	--	5.4	63	--	--	--	--	--	--
20...	8.7	19.4	--	5.1	59	.14	.150	.120	55000	16.8	.000
SEP											
28...	8.9	11.5	58.8	8.2	77	--	--	--	--	--	--
28...	8.9	11.5	--	8.1	76	--	--	--	--	--	--
28...	8.9	11.5	--	8.0	75	.14	.410	.120	1600	2.20	<.010
28...	8.9	11.3	--	7.9	74	--	--	--	--	--	--

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD WATER-QUALITY LAKE STATIONS

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO SEPTEMBER 1981

CANNONBALL RIVER BASIN

461941102373201 LAKE IRIS (SHALLOW) NEAR REGENT, ND

DATE TIME	FEB 10,81 1604	MAY 12,81 1049	JUL 30,81 1344	AUG 20,81 1224	SEP 28,81 1314					
TOTAL CELLS/ML	4600	100	45000	55000	1600					
DIVERSITY: DIVISION	0.5	1.3	0.0	0.1	0.2					
..CLASS	0.5	1.3	0.0	0.1	0.2					
...ORDER	1.3	1.5	1.0	1.3	0.2					
....FAMILY	1.4	1.5	1.0	1.3	0.2					
.....GENUS	1.4	1.5	1.0	1.3	0.2					
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
BACILLARIOPHYTA (DIATOMS)										
..BACILLARIOPHYCEAE										
...ACHNANTHALES										
....ACHNANTHACEAE										
.....RHUICUSPHENIA	--	-	--	-	--	-	--	-	41	3
..BACILLARIALES										
...NITZSCHIAEAE										
....NITZSCHIA	--	-	13	13	*	0	*	0	--	-
...EUPUDISCALES										
....COSCINODISCACEAE										
.....CYCLUTELLA	3000#	65	--	-	--	-	*	0	--	-
..FRAGILARIALES										
...FRAGILARIAEAE										
....DIATOMA	1300#	27	--	-	--	-	--	-	--	-
...NAVICULALES										
....NAVICULACEAE										
.....NAVICULA	--	-	13	13	--	-	*	0	--	-
CHLOROPHYTA (GREEN ALGAE)										
..CHLOROPHYCEAE										
...CHLOROCOCCALES										
....CHLOROCOCCACEAE										
.....SCHROEDERIA	--	-	64#	63	--	-	*	0	--	-
...DICTYUSPHAERIAEAE										
....DICTYUSPHAERIUM	--	-	--	-	--	-	*	0	--	-
...UOCYSTACEAE										
....ANKISTRUESMUS	170	4	--	-	--	-	*	0	--	-
....KIRCHNERIELLA	--	-	--	-	--	-	*	0	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	110	2	--	-	--	-	*	0	--	-
CRYPTOPHYTA (CRYPTOMONADS)										
..CRYPTOPHYCEAE										
...CRYPTOMONADALES										
....CRYPTOCHRYSIDACEAE										
.....CHROMONAS	28	1	--	-	--	-	--	-	--	-
...CRYPTOMONADACEAE										
....CRYPTOMONAS	28	1	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROOCOCCALES										
....CHROOCOCCACEAE										
.....ANACYSTIS	--	-	13	13	35000#	79	38000#	69	--	-
..NOSTOCALES										
...NOSTOCACEAE										
....APHANIZOMENON	--	-	--	-	3700	8	8700#	16	1500#	97
...USCILLATORIALES										
....USCILLATORIAEAE										
.....USCILLATORIA	--	-	--	-	5900	13	7500	14	--	-
PYRRHOPHYTA (FIRE ALGAE)										
..DINOPHYCEAE										
...DINOKONTAE										
....GLENODINIACEAE										
.....GLENODINIUM	28	1	--	-	--	-	--	-	--	-

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

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

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD WATER-QUALITY LAKE STATIONS

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	SAMP- LING DEPTH (FT) (000003)	RESE- VOIR DEPTH (FEET) (72025)	ELEV. OF LAND SURFACE DATUM (FT. ABOVE NGVD) (72000)	RESE- VOIR ELEV- ATION (FEET ABOVE DATUM) (00062)	TEMPER- ATURE, AIR (DEG C) (00020)	CLOUD COVER (PER- CENT) (00032)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)	BARO- METRIC PRES- SURE (MM OF HG) (00025)
------	------	--	---	---	--	--	---	--	--	---

JAMES RIVER BASIN

06469000 - JAMESTOWN RESERVOIR NR JAMESTOWN, ND (LAT 46 56 03 LONG 098 42 38)

OCT , 1980

07...	1100	.00	66	1400.00	30.36	19.0	0	315	10	765
07...	1102	1.60	--	1400.00	--	--	--	--	--	--
07...	1104	3.30	--	1400.00	--	--	--	--	--	--
07...	1106	6.60	--	1400.00	--	--	--	--	--	--
07...	1108	13.0	--	1400.00	--	--	--	--	--	--
07...	1110	19.0	--	1400.00	--	--	--	--	--	--
07...	1112	26.0	--	1400.00	--	--	--	--	--	--
07...	1114	33.0	--	1400.00	--	--	--	--	--	--

FEB , 1981

06...	1126	.00	33	1400.00	29.78	-2.0	100	225	5.0	774
06...	1128	1.60	--	1400.00	--	--	--	--	--	--
06...	1130	3.30	--	1400.00	--	--	--	--	--	--
06...	1132	6.60	--	1400.00	--	--	--	--	--	--
06...	1134	13.2	--	1400.00	--	--	--	--	--	--
06...	1136	19.8	--	1400.00	--	--	--	--	--	--
06...	1138	26.4	--	1400.00	--	--	--	--	--	--
06...	1140	33.0	--	1400.00	--	--	--	--	--	--

MAY

15...	1150	.00	40	1400.00	33.16	23.0	40	165	2.0	765
15...	1152	1.60	--	1400.00	--	--	--	--	--	--
15...	1154	3.30	--	1400.00	--	--	--	--	--	--
15...	1156	6.60	--	1400.00	--	--	--	--	--	--
15...	1158	16.5	--	1400.00	--	--	--	--	--	--
15...	1200	19.8	--	1400.00	--	--	--	--	--	--
15...	1202	26.4	--	1400.00	--	--	--	--	--	--
15...	1204	33.0	--	1400.00	--	--	--	--	--	--
15...	1206	36.3	--	1400.00	--	--	--	--	--	--

JUL

30...	1045	.00	33	1400.00	32.78	21.0	100	155	12	764
30...	1047	1.60	--	1400.00	--	--	--	--	--	--
30...	1049	3.30	--	1400.00	--	--	--	--	--	--
30...	1051	6.60	--	1400.00	--	--	--	--	--	--
30...	1053	13.2	--	1400.00	--	--	--	--	--	--
30...	1055	19.8	--	1400.00	--	--	--	--	--	--
30...	1057	26.4	--	1400.00	--	--	--	--	--	--

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD WATER-QUALITY LAKE STATIONS

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	ICE THICK- NESS (FEET) (82130)	SPE- CIFIC CON- DUCT- ANCE (UMHUS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00301)	COLOR (PLAT- INUM- COBALT UNITS) (00080)	HARD- NESS (MG/L AS CAC03) (00900)	HARD- NESS NONCAR- BONATE (MG/L AS CAC03) (95902)
------	--	--	--------------------------	--	---	---	---	---	---	--

JAMES RIVER BASIN

06469000 - JAMESTOWN RESERVOIR NR JAMESTOWN, ND (LAT 46 56 03 LONG 098 42 38)

OCT , 1980

07...	--	504	8.1	13.0	18.0	9.2	88	--	--	--
07...	--	553	8.1	12.9	--	9.4	89	--	--	--
07...	--	555	8.2	12.9	--	8.5	81	27	197	.00
07...	--	559	8.2	12.9	--	8.3	79	--	--	--
07...	--	560	8.2	12.8	--	8.3	79	--	--	--
07...	--	562	8.2	12.7	--	8.2	78	--	--	--
07...	--	562	8.2	12.7	--	8.0	76	--	--	--
07...	--	562	8.2	12.7	--	7.9	75	--	--	--

FEB , 1981

06...	2.00	595	8.3	.8	154	7.5	52	--	--	--
06...	--	605	8.4	1.5	--	7.8	55	--	--	--
06...	--	610	8.5	2.1	--	7.6	54	5	241	11
06...	--	608	8.4	2.4	--	7.1	51	--	--	--
06...	--	617	8.1	2.9	--	3.8	28	--	--	--
06...	--	627	7.8	3.3	--	1.1	8	--	--	--
06...	--	688	7.7	3.8	--	.9	0	--	--	--
06...	--	724	7.9	3.9	--	.9	0	--	--	--

MAY

15...	--	635	8.5	14.0	154	11.0	106	--	--	--
15...	--	630	8.5	14.0	--	11.0	106	--	--	--
15...	--	630	8.5	14.0	--	11.0	106	20	221	1.0
15...	--	620	8.5	13.5	--	11.0	105	--	--	--
15...	--	620	8.5	11.5	--	10.8	99	--	--	--
15...	--	630	8.5	11.0	--	10.4	94	--	--	--
15...	--	630	8.5	10.5	--	10.1	90	--	--	--
15...	--	620	8.5	10.5	--	9.8	88	--	--	--
15...	--	620	8.5	10.0	--	9.4	83	--	--	--

JUL

30...	--	626	8.4	21.8	30.0	6.6	75	--	--	--
30...	--	626	8.4	21.8	--	6.6	75	--	--	--
30...	--	626	8.4	21.8	--	6.7	76	25	216	.00
30...	--	625	8.4	21.8	--	6.9	78	--	--	--
30...	--	625	8.4	21.8	--	7.1	81	--	--	--
30...	--	627	8.4	21.8	--	6.6	75	--	--	--
30...	--	628	8.4	21.8	--	6.1	69	--	--	--

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SURP- TION RATIO (00931)	POTAS- SIUM, LAB SOLVED (MG/L AS K) (00935)	ALKA- LITY LAB SOLVED (MG/L CAC03) (90410)	SULFATE DIS- SOLVED (MG/L AS S04) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)
------	---	---	---	------------------------------	--	---	--	--	--

JAMES RIVER BASIN

06469000 - JAMESTOWN RESERVOIR NR JAMESTOWN, ND (LAT 46 56 03 LONG 098 42 38)

[illegible]

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SI2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	BORON, DIS- SOLVED (UG/L AS B) (01020)	PHYTO- PLANK- TON, TOTAL (CELLS (60050)
------	---	--	---	--	--	--	---	---	--

06469000 - JAMESTOWN RESERVOIR NR JAMESTOWN, ND (LAT 46 56 03 LONG 098 42 38)

[illegible]

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD SURFACE-WATER QUALITY STATIONS

449

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	TEMPER- ATURE, AIR (DEG C) (00020)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)
------	------	--	---	--	--	--------------------------	--	---	---

GRAND RIVER BASIN

*06354890 - NORTH FORK GRAND RIVER ABOVE BOWMAN-HALEY LAKE NEAR HALEY, ND

OCT									
16...	1450	1.5	682	.45	3000	8.9	3.5	11.8	98
APR									
02...	1550	13.0	675	.14	2750	8.7	10.5	11.8	119
MAY									
05...	1700	21.0	683	.07	3180	8.8	19.5	13.0	157

DATE	TIME	TEMPER- ATURE, AIR (DEG C) (00020)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)
------	------	--	---	--	--	--------------------------	--	---	---

*06354980 SPRING CREEK NR HALEY, ND

OCT									
15...	1600	2.5	665	.42	3420	8.7	4.5	11.0	96
APR									
03...	1145	10.0	673	.56	3130	8.3	9.5	8.8	87
MAY									
05...	1445	21.0	686	.26	3150	8.6	19.0	10.0	119

DATE	TIME	TEMPER- ATURE, AIR (DEG C) (00020)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)
------	------	--	---	--	--	--------------------------	--	---	---

*06354985 ALKALI CREEK NR BOWMAN, ND

OCT									
16...	1200	1.5	--	.37	4100	8.9	4.0	8.2	--
APR									
02...	1125	12.0	673	.26	3470	8.4	8.0	8.5	81
MAY									
06...	1105	17.0	681	.06	3750	8.5	12.0	9.0	93

* - Chemical analyses available from U.S. Corps of Engineers, Omaha, Neb.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

[illegible]

GRAND RIVER BASIN

06355000 NORTH FORK GRAND RIVER AT HALEY. ND

OCT	14...	1550	38002	15.0	--	.81	2820	8.8	10.5	10.4	104	390
NOV	05...	1435	--	21.0	--	1.2	2760	--	7.0	--	--	--
DEC	10...	1550	--	10.0	--	1.1	3710	--	.0	--	--	--
JAN	23...	1120	--	16.0	--	1.2	2670	--	.5	--	--	--
FEB	26...	1220	--	11.0	--	1.2	2120	--	1.0	--	--	--
APR	03...	1715	--	9.0	680	1.0	2270	8.5	10.0	9.6	95	--
MAY	04...	1525	--	20.0	672	.77	2880	8.6	18.0	8.4	100	--
JUN	03...	1705	38002	25.0	--	1.2	2900	8.5	21.0	--	--	340
JUL	06...	1625	--	40.0	--	.34	2690	--	28.0	--	--	--
AUG	06...	1335	--	24.0	--	.91	2170	--	25.0	--	--	--
SEP	01...	1445	--	26.0	--	.08	2480	--	19.5	--	--	--

[illegible][illegible]

ANALYSES OF SAMPLES AT MISCELLANEOUS SURFACE-WATER QUALITY SITES

451

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	HARD- NESS AS (MG/L CACO3) (00900)	HARD- NESS NONCAR- BONATE AS (MG/L CACO3) (95902)	CALCIUM DIS- SOLVED AS CA (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED AS MG (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED AS NA (MG/L AS NA) (00930)	PERCENT SODIUM (00932)
------	------	--	--	--------------------------	--	---	--	--	--	--	------------------------------

PART 6. MISSOURI RIVER BASIN

LITTLE MUDDY RIVER BASIN

06331000 - LITTLE MUDDY RIVER BL COM CREEK NR WILLISTON, ND (LAT 48 17 04 LONG 103 34 21)

APR , 1981											
08...	1330	14	1900	8.6	7.5	430	.00	78	57	300	60
JUL											
08...	1145	6.1	2300	8.4	20.0	440	.00	61	70	410	66

TOBACCO GARDEN CREEK BASIN

06331680 - TOBACCO GARDEN CREEK NR WATFORD CITY, ND (LAT 47 59 33 LONG 103 09 57)

APR , 1981											
06...	1245	1.3	2050	8.6	8.5	160	.00	28	22	470	86
AUG											
07...	1230	.90	1700	--	23.5	120	.00	27	13	410	87

WHITE EARTH RIVER BASIN

06332000 - WHITE EARTH RIVER AT WHITE EARTH, ND (LAT 49 22 35 LONG 102 46 00)

APR , 1981											
08...	1045	8.6	1750	8.9	5.0	310	.00	45	48	330	69
AUG											
05...	0945	2.2	1950	8.8	21.0	250	.00	33	41	430	78

SHELL CREEK BASIN

06332520 - SHELL CREEK NR PARSHALL, ND (LAT 48 03 11 LONG 102 08 10)

APR , 1981											
10...	1355	3.2	2450	8.7	9.0	250	.00	39	37	510	81
AUG											
03...	1355	.45	2600	8.9	26.0	240	.00	28	41	610	84

LITTLE MISSOURI RIVER BASIN

06335500 - LITTLE MISSOURI RIVER AT MARMARTH, ND (LAT 46 17 44 LONG 103 55 06)

OCT , 1980											
03...	1230	3.2	3460	9.0	15.5	200	.00	24	34	780	89
JUN , 1981											
04...	1345	90	1310	8.6	21.5	51	.00	8.3	7.4	260	90

ANALYSES OF SAMPLES AT MISCELLANEOUS SURFACE-WATER QUALITY SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	BICAR- BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR- BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA- LINEITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2) (00405)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
------	--	--	---	--	---	--	--	--	---	--	---

LITTLE MUDDY RIVER BASIN

06331000 - LITTLE MUDDY RIVER BL COW CREEK NR WILLISTON, ND (LAT 48 17 04 LONG 103 34 21)

APR , 1981											
08...	6.3	7.5	678	.00	556	2.7	500	8.8	.2	14	1310
JUL											
08...	8.5	14	835	10	702	5.4	620	7.0	.4	11	1600

TOBACCO GARDEN CREEK BASIN

06331680 - TOBACCO GARDEN CREEK NR WATFORD CITY, ND (LAT 47 59 33 LONG 103 09 57)

APR , 1981											
06...	16	7.6	829	.00	680	3.3	470	8.4	.4	11	1480
AUG											
07...	16	10	705	.00	578	--	440	6.4	.3	19	1260

WHITE EARTH RIVER BASIN

06332000 - WHITE EARTH RIVER AT WHITE EARTH, ND (LAT 48 22 35 LONG 102 46 00)

APR , 1981											
08...	8.2	8.9	627	6.0	524	1.3	440	37	.2	10	1270
AUG											
05...	12	10	862	.00	734	8.7	410	41	.4	11	1420

SHELL CREEK BASIN

06332520 - SHELL CREEK NR PARSHALL, ND (LAT 48 03 11 LONG 102 08 10)

APR , 1981											
10...	14	8.0	778	14	661	2.6	710	16	.3	17	1820
AUG											
03...	17	9.7	830	.00	787	1.7	790	7.2	.3	19	1960

LITTLE MISSOURI RIVER BASIN

06335500 - LITTLE MISSOURI RIVER AT MARMARTH, ND (LAT 46 17 44 LONG 103 55 06)

OCT , 1980											
03...	24	12	799	35	714	1.4	1100	24	.6	.7	2480
JUN , 1981											
04...	16	8.5	315	.00	258	1.3	360	7.3	.2	12	818

ANALYSES OF SAMPLES AT MISCELLANEOUS SURFACE-WATER QUALITY SITES

453

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS NO3) (71851)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4) (00660)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
------	---	---	--	--	--	---	---	--	---	---	---

LITTLE MUDDY RIVER BASIN

06331000 - LITTLE MUDDY RIVER BL COW CREEK NR WILLISTON, ND (LAT 48 17 04 LONG 103 34 21)

APR , 1981											
08...	1300	1.8	49.5	1.0	--	--	--	.00	320	30	40
JUL											
08...	1620	2.2	26.4	1.0	.01	--	.030	.00	60	40	20

TOBACCO GARDEN CREEK BASIN

06331680 - TOBACCO GARDEN CREEK NR WATFORD CITY, ND (LAT 47 59 33 LONG 103 09 57)

APR , 1981											
06...	1430	2.0	5.2	1.0	--	--	--	.00	390	90	10
AUG											
07...	1270	1.7	3.1	1.0	--	--	--	.23	690	120	10

WHITE EARTH RIVER BASIN

06332000 - WHITE EARTH RIVER AT WHITE EARTH, ND (LAT 48 22 35 LONG 102 46 00)

APR , 1981											
08...	1240	1.7	29.5	1.0	--	--	--	.00	260	60	50
AUG											
05...	1420	1.9	8.5	1.0	--	--	--	.35	640	110	80

SHELL CREEK BASIN

06332520 - SHELL CREEK NR PARSHALL, ND (LAT 48 03 11 LONG 102 08 10)

APR , 1981											
10...	1740	2.5	15.7	1.0	--	--	--	.00	230	120	30
AUG											
03...	1980	2.7	2.4	1.0	--	--	--	.05	550	170	20

LITTLE MISSOURI RIVER BASIN

06335500 - LITTLE MISSOURI RIVER AT MARMARTH, ND (LAT 46 17 44 LONG 103 55 06)

OCT , 1980											
03...	2410	3.4	21.4	4.6	--	--	--	.01	230	40	0
JUN , 1981											
04...	829	1.1	199	9.0	--	--	--	.09	160	460	0

ANALYSES OF SAMPLES AT MISCELLANEOUS SURFACE-WATER QUALITY SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS NONCAR- BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)
------	------	--	--	--------------------------	--	---	--	---	---	---	------------------------------

KNIFE RIVER BASIN

06339500 - KNIFE RIVER NR GOLDEN VALLEY, ND (LAT 47 09 40 LONG 102 03 39)

JUL , 1981											
23...	1345	4.2	1110	8.9	25.0	140	.00	27	18	210	75
AUG											
07...	1145	300	1280	8.3	23.0	170	.00	34	21	250	75

06340200 - WEST BRANCH OTTER CREEK NR BEULAH, ND (LAT 47 08 05 LONG 101 39 35)

SEP , 1981											
30...	0930	.01	1170	8.4	10.5	190	.00	27	30	220	70

PAINTED WOODS CREEK BASIN

06341800 - PAINTED WOODS CREEK NR WILTON, ND (LAT 47 16 30 LONG 100 47 30)

APR , 1981											
23...	1335	1.7	2050	8.4	15.0	530	60	77	82	310	55

SQUARE BUTTE CREEK BASIN

06342260 - SQUARE BUTTE CREEK BELOW CENTER, ND (LAT 47 03 25 LONG 101 11 35)

APR , 1981											
23...	1015	1.5	1620	7.8	12.0	490	140	110	52	220	49
SEP											
30...	1455	1.3	1650	7.8	12.0	530	160	120	56	240	49

BURNT CREEK BASIN

06342450 - BURNT CREEK NR BISMARCK, ND (LAT 46 54 54 LONG 100 48 48)

FEB , 1981											
17...	1200	141	418	8.1	.0	160	26	30	21	29	27

HEART RIVER BASIN

06345500 - HEART RIVER NR RICHARDTOWN, ND (LAT 46 44 46 LONG 102 18 27)

OCT , 1980											
01...	1335	4.6	2040	8.5	15.0	400	40	67	57	330	63
JUN , 1981											
01...	1420	6.1	1870	8.3	23.5	410	53	70	57	320	62
29...	1325	5.6	1730	8.4	25.0	350	.00	57	50	290	63
AUG											
17...	1525	1860	561	7.8	21.0	130	00	30	13	67	51

06348000 - HEART RIVER NR LARK, ND (LAT 46 36 37 LONG 101 22 54)

APR , 1981											
22...	1450	12	1250	8.5	15.5	350	.00	62	47	180	52
SEP											
28...	1415	14	1280	7.8	16.0	330	.20	54	47	210	57

ANALYSES OF SAMPLES AT MISCELLANEOUS SURFACE-WATER QUALITY SITES

455

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	BICAR- BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR- BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2) (00405)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
------	--	--	---	--	--	--	--	--	---	--	---

KNIFE RIVER BASIN

06339500 - KNIFE RIVER NR GOLDEN VALLEY, ND (LAT 47 09 40 LONG 102 03 39)

JUL , 1981 23...	7.7	11	325	.00	267	8.2	330	11	.3	5.4	738
AUG 07...	8.3	11	400	.00	328	3.6	390	4.3	.3	6.7	887

06340200 - WEST BRANCH OTTER CREEK NR BEULAH, ND (LAT 47 08 05 LONG 101 39 35)

SEP , 1981 30...	6.9	14	464	.00	380	7.4	270	19	.3	1.3	831
---------------------	-----	----	-----	-----	-----	-----	-----	----	----	-----	-----

PAINTED WOODS CREEK BASIN

06341800 - PAINTED WOODS CREEK NR WILTON, ND (LAT 47 16 30 LONG 100 47 30)

APR , 1981 23...	5.9	14	561	6.0	470	3.7	670	20	.2	5.5	1500
---------------------	-----	----	-----	-----	-----	-----	-----	----	----	-----	------

SQUARE BUTTE CREEK BASIN

06342260 - SQUARE BUTTE CREEK BELOW CENTER, ND (LAT 47 03 25 LONG 101 11 35)

APR , 1981 23...	4.3	5.9	431	.00	354	11	560	12	.3	16	1190
SEP 30...	4.5	11	455	.00	373	5.8	640	23	.3	19	1320

BURNT CREEK BASIN

06342450 - BURNT CREEK NR BISMARCK, ND (LAT 46 54 54 LONG 100 48 48)

FEB , 1981 17...	1.0	8.8	165	.00	135	2.1	75	8.1	.1	7.7	248
---------------------	-----	-----	-----	-----	-----	-----	----	-----	----	-----	-----

HEART RIVER BASIN

06345500 - HEART RIVER NR RICHARDTON, ND (LAT 46 44 46 LONG 102 18 27)

OCT , 1980 01...	7.2	9.1	441	.00	362	2.2	720	37	.5	5.6	1430
JUN , 1981 01...	6.9	14	434	.00	356	3.5	680	21	.3	5.2	1390
29...	6.8	12	430	.00	350	2.7	610	16	.6	6.6	1250
AUG 17...	2.6	11	176	.00	144	8.9	150	7.3	.2	5.9	358

06348000 - HEART RIVER NR LARK, ND (LAT 46 36 37 LONG 101 22 54)

APR , 1981 22...	4.2	5.6	428	.00	351	2.2	340	8.5	.3	3.5	853
SEP 28...	5.0	12	400	.00	328	4.0	420	21	.3	3.4	990

ANALYSES OF SAMPLES AT MISCELLANEOUS SURFACE-WATER QUALITY SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS NO3) (71851)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4) (00660)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
------	---	--	--	--	--	---	---	--	---	---	---

KNIFE RIVER BASIN

06339500 - KNIFE RIVER NR GOLDEN VALLEY, ND (LAT 47 09 40 LONG 102 03 39)

JUL , 1981 23...	773	1.0	8.4	1.0	--	--	--	.06	460	100	10
AUG 07...	914	1.2	718	1.0	--	--	--	.12	550	100	0

06340200 - WEST BRANCH OTTER CREEK NR BEULAH, ND (LAT 47 08 05 LONG 101 39 35)

SEP , 1981 30...	810	1.1	.02	1.0	--	--	--	.17	650	80	10
---------------------	-----	-----	-----	-----	----	----	----	-----	-----	----	----

PAINTED WOODS CREEK BASIN

06341800 - PAINTED WOODS CREEK NR WILTON, ND (LAT 47 16 30 LONG 100 47 30)

APR , 1981 23...	1460	2.0	6.9	1.0	--	--	--	.03	260	70	30
---------------------	------	-----	-----	-----	----	----	----	-----	-----	----	----

SQUARE BUTTE CREEK BASIN

06342260 - SQUARE BUTTE CREEK BELOW CENTER, ND (LAT 47 03 25 LONG 101 11 35)

APR , 1981 23...	1190	1.6	4.7	1.0	--	--	--	.03	580	30	260
SEP 30...	1330	1.8	4.5	.70	--	--	--	.12	1300	50	100

BURNT CREEK BASIN

06342450 - BURNT CREEK NR BISMARCK, ND (LAT 46 54 54 LONG 100 48 48)

FEB , 1981 17...	266	.34	94.4	3.8	--	--	--	.58	160	190	120
---------------------	-----	-----	------	-----	----	----	----	-----	-----	-----	-----

HEART RIVER BASIN

06345500 - HEART RIVER NR RICHARDTON, ND (LAT 46 44 46 LONG 102 18 27)

OCT , 1980 01...	1450	1.9	17.8	1.0	--	--	--	.01	190	40	30
JUN , 1981 01...	1380	1.9	22.9	1.0	--	--	--	.01	350	10	60
29...	1260	1.7	18.9	1.0	.02	--	.040	.00	30	20	40
AUG 17...	371	.49	1800	3.5	--	--	--	--	0	70	100

06348000 - HEART RIVER NR LARK, ND (LAT 46 36 37 LONG 101 22 54)

APR , 1981 22...	859	1.2	27.2	1.0	--	--	--	.05	390	20	20
SEP 28...	965	1.4	38.0	1.0	--	--	--	.12	530	40	30

ANALYSES OF SAMPLES AT MISCELLANEOUS SURFACE-WATER QUALITY SITES

457

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS NONCAR- BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)
CANNONBALL RIVER BASIN											
06351000 - CANNONBALL RIVER BELOW BENTLEY, ND (LAT 46 21 30 LONG 102 02 30)											
OCT , 1980											
01...	1730	4.8	1830	8.5	14.0	430	89	74	60	270	57
JUN , 1981											
02...	1605	8.3	1530	8.2	21.0	370	22	64	51	240	58
06351680 - WHITE BUTTE FORK CEDAR CREEK NR SCRANTON, ND (LAT 46 19 20 LONG 102 59 45)											
JAN , 1981											
22...	1645	.12	4700	7.8	.0	1900	1300	400	220	550	38
JUN											
04...	1830	.01	5390	7.8	21.5	1900	1700	310	270	900	51
06352000 - CEDAR CREEK NR HAYNES, ND (LAT 46 09 15 LONG 102 28 25)											
OCT , 1980											
02...	1350	2.5	4210	8.3	11.5	980	690	130	160	700	60
JUN , 1981											
03...	1145	3.0	2120	8.4	19.0	470	37	72	71	360	62
06353000 - CEDAR CREEK NR RALEIGH, ND (LAT 46 05 00 LONG 101 20 00)											
APR , 1981											
22...	1005	5.7	2500	8.7	12.5	520	160	80	78	420	63
SEP											
28...	1105	1.8	1000	8.5	13.0	300	42	56	39	200	58
BEAVER CREEK BASIN											
06354500 - BEAVER CREEK AT LINTON, ND (LAT 46 15 27 LONG 100 13 58)											
AUG , 1981											
26...	1200	2.4	600	7.8	22.5	240	.00	50	28	66	35
JAMES RIVER BASIN											
06467600 - JAMES RIVER NR MANFRED, ND (LAT 47 38 40 LONG 099 49 40)											
APR , 1981											
16...	1230	2.0	970	8.1	11.5	300	.00	58	38	130	48
SEP											
03...	1000	.58	900	8.3	14.0	250	.00	45	33	130	51
06468170 - JAMES RIVER NR GRACE CITY, ND (LAT 47 33 29 LONG 098 51 45)											
APR , 1981											
16...	0930	23	680	8.2	9.0	250	.00	47	32	62	34
SEP											
02...	1300	4.2	900	8.9	17.0	270	.00	41	41	120	47
06469400 - PIPESTEM CREEK NR PINGREE, ND (LAT 47 10 03 LONG 098 58 07)											
APR , 1981											
15...	1430	16	760	8.2	13.0	270	.00	55	32	65	33
SEP											
02...	0930	1.4	880	8.5	14.5	310	.00	54	43	110	42

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	BICAR- BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR- BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2) (00405)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
------	--	--	---	--	--	--	--	--	---	--	---

CANNONBALL RIVER BASIN

06351000 - CANNONBALL RIVER BELOW BENTLEY, ND (LAT 46 21 30 LONG 102 02 30)

OCT , 1980											
01...	5.7	8.2	418	.00	343	2.1	660	12	.4	4.7	1300
JUN , 1981											
02...	5.4	10	424	.00	348	4.3	510	10	.3	3.3	1090

06351680 - WHITE BUTTE FORK CEDAR CREEK NR SCRANTON, ND (LAT 46 19 20 LONG 102 59 45)

JAN , 1981											
22...	5.5	10	724	.00	594	18	2400	35	.2	17	4370
JUN											
04...	9.0	23	253	.00	208	6.4	3400	34	.2	1.2	5200

06352000 - CEDAR CREEK NR HAYNES, ND (LAT 46 09 15 LONG 102 28 25)

OCT , 1980											
02...	9.7	15	363	.00	298	2.9	2100	25	.5	3.4	3490
JUN , 1981											
03...	7.2	14	531	.00	436	3.4	800	13	.4	5.5	1540

06353000 - CEDAR CREEK NR RALEIGH, ND (LAT 46 05 00 LONG 101 20 00)

APR , 1981											
22...	8.0	9.0	437	.00	358	1.4	1000	14	.5	1.2	1840
SEP											
28...	5.0	14	314	.00	258	4.0	440	18	.4	5.2	953

BEAVER CREEK BASIN

06354500 - BEAVER CREEK AT LINTON, ND (LAT 46 15 27 LONG 100 13 58)

AUG , 1981											
26...	1.9	17	316	.00	259	13	110	18	.2	18	466

JAMES RIVER BASIN

06467600 - JAMES RIVER NR MANFRED, ND (LAT 47 38 40 LONG 099 49 40)

APR , 1981											
16...	3.3	7.5	498	.00	408	6.3	130	19	.3	7.8	632
SEP											
03...	3.6	18	482	.00	395	7.7	110	29	.2	8.9	610

06468170 - JAMES RIVER NR GRACE CITY, ND (LAT 47 33 29 LONG 098 51 45)

APR , 1981											
16...	1.7	10	309	.00	--	3.1	110	17	.1	2.9	426
SEP											
02...	3.2	18	448	.00	367	9.0	140	30	.2	4.8	598

06469400 - PIPESTEM CREEK NR PINGREE, ND (LAT 47 10 03 LONG 098 58 07)

APR , 1981											
15...	1.7	9.3	351	.00	288	3.5	120	13	.1	7.7	488
SEP											
02...	2.7	15	463	.00	380	5.9	130	26	.2	20	642

ANALYSES OF SAMPLES AT MISCELLANEOUS SURFACE-WATER QUALITY SITES

459

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS NO3) (71851)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4) (00660)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
------	---	--	--	--	--	---	---	--	---	---	---

CANNONBALL RIVER BASIN

06351000 - CANNONBALL RIVER BELOW BENTLEY, ND (LAT 46 21 30 LONG 102 02 30)

OCT , 1980											
01...	1300	1.8	16.8	1.0	--	--	--	.05	260	30	10
JUN , 1981											
02...	1100	1.5	24.4	1.0	--	--	--	.01	510	20	30

06351680 - WHITE BUTTE FORK CEDAR CREEK NR SCRANTON, ND (LAT 46 19 20 LONG 102 59 45)

JAN , 1981											
22...	3990	5.9	1.4	1.0	--	--	--	.05	640	60	300
JUN											
04...	5070	7.1	.14	1.0	--	--	--	.01	1000	50	50

06352000 - CEDAR CREEK NR HAYNES, ND (LAT 46 09 15 LONG 102 28 25)

OCT , 1980											
02...	3320	4.8	23.6	1.0	--	--	--	.02	970	40	60
JUN , 1981											
03...	1600	2.1	12.5	1.0	--	--	--	.03	420	10	50

06353000 - CEDAR CREEK NR RALEIGH, ND (LAT 46 05 00 LONG 101 20 00)

APR , 1981											
22...	1820	2.5	28.3	1.0	--	--	--	.05	320	30	40
SEP											
28...	927	1.3	4.6	1.0	--	--	--	.08	600	40	30

BEAVER CREEK BASIN

06354500 - BEAVER CREEK AT LINTON, ND (LAT 46 15 27 LONG 100 13 58)

AUG , 1981											
26...	463	.63	3.0	1.0	--	--	--	.57	100	30	560

JAMES RIVER BASIN

06467600 - JAMES RIVER NR MANFRED, ND (LAT 47 38 40 LONG 099 49 40)

APR , 1981											
16...	638	.86	3.5	1.0	--	--	--	.33	320	80	60
SEP											
03...	691	.83	.96	1.0	--	--	--	.69	600	50	70

06468170 - JAMES RIVER NR GRACE CITY, ND (LAT 47 33 29 LONG 098 51 45)

APR , 1981											
16...	435	.58	26.8	1.0	--	--	--	.85	320	50	10
SEP											
02...	615	.81	6.8	1.0	--	--	--	.21	100	40	10

06469400 - PIPESTEM CREEK NR PINGREE, ND (LAT 47 10 03 LONG 098 58 07)

APR , 1981											
15...	477	.66	20.8	1.0	--	--	--	.45	230	30	40
SEP											
02...	626	.87	2.4	1.0	--	--	--	1.6	500	70	80

ANALYSES OF SAMPLES AT MISCELLANEOUS SURFACE-WATER QUALITY SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS NONCAR- BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)
------	------	--	--	--------------------------	--	---	--	---	---	---	------------------------------

JAMES RIVER BASIN

06470000 - JAMES RIVER AT JAMESTOWN, ND (LAT 46 53 22 LONG 098 40 58)

APR , 1981											
15...	0940	25	780	8.5	8.0	310	57	64	36	63	30
SEP											
01...	1430	31	710	8.4	20.0	240	.00	49	29	87	42

06470800 - BEAR CREEK NR OAKES, ND (LAT 46 13 31 LONG 098 04 17)

APR , 1981											
14...	1300	.16	1060	8.2	11.0	430	180	88	51	75	27

DATE	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	BICAR- BONATE, FET-LAB (MG/L HCO3) (95440)	CAR- BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2) (00405)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
------	--	--	---	--	--	--	--	--	---	--	---

06470000 - JAMES RIVER AT JAMESTOWN, ND (LAT 46 53 22 LONG 098 40 58)

APR , 1981											
15...	1.6	9.0	306	.00	251	1.5	160	15	.2	4.3	506
SEP											
01...	2.4	14	309	.00	253	4.9	130	32	.2	14	514

06470800 - BEAR CREEK NR OAKES, ND (LAT 46 13 31 LONG 098 04 17)

APR , 1981											
14...	1.6	9.9	309	.00	253	3.1	290	42	.2	3.9	733

DATE	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS NO3) (71851)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4) (00660)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
------	--	--	--	--	--	---	---	--	---	---	---

06470000 - JAMES RIVER AT JAMESTOWN, ND (LAT 46 53 22 LONG 098 40 58)

APR , 1981											
15...	505	.69	34.2	1.0	--	--	--	.29	320	60	700
SEP											
01...	507	.70	43.0	1.0	--	--	--	.26	550	30	300

06470800 - BEAR CREEK NR OAKES, ND (LAT 46 13 31 LONG 098 04 17)

APR , 1981											
14...	714	1.0	.32	1.0	--	--	--	.14	190	20	20

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

461

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE (DEG C) (00010)	DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE (DEG C) (00010)
------	------	--	--	--	------	------	--	--	--

PART 6. MISSOURI RIVER BASIN

LITTLE MUDDY RIVER BASIN

06331000 - LITTLE MUDDY RIVER BL COW CREEK NR WILLISTON, ND (LAT 48 17 04 LONG 103 34 21)

OCT , 1980					APR , 1981				
08...	0835	9.0	2200	13.5	08...	1330	14	1900	7.5
NOV					MAY				
05...	1225	12	2250	5.5	08...	0820	11	2150	9.5
DEC					JUN				
04...	1540	9.1	2500	.5	04...	0815	39	2250	17.5
JAN , 1981					JUL				
14...	1355	11	2100	.5	08...	1145	6.1	2300	20.0
FEB					AUG				
19...	1615	195	450	1.0	05...	1245	6.8	1950	24.0
24...	1230	204	840	1.0	SEP				
MAR					03...	1455	5.0	2000	15.5
17...	1425	16	1550	4.0					

TOBACCO GARDEN BASIN

06331680 - TOBACCO GARDEN CREEK NR WATFORD CITY, ND (LAT 47 59 33 LONG 103 09 57)

OCT , 1980					APR , 1981				
10...	1115	.46	3800	9.0	06...	1245	1.3	2050	8.5
NOV					17...	1110	.75	2300	10.0
07...	1230	.94	2200	6.5	MAY				
DEC					04...	1345	1.2	2750	15.0
11...	1325	.57	3150	1.0	JUN				
JAN , 1981					01...	1320	3.9	2600	15.0
16...	1135	.67	2400	.5	JUL				
FEB					10...	1130	.27	3360	18.0
13...	1015	.31	2850	.0	AUG				
20...	1815	53	450	1.0	07...	1230	.90	1700	23.5
25...	1550	8.4	800	1.0	SEP				
MAR					01...	1415	.23	2450	17.0
19...	1035	2.7	1450	2.0					

WHITE EARTH RIVER BASIN

06332000 - WHITE EARTH RIVER AT WHITE EARTH, ND (LAT 48 22 35 LONG 102 46 00)

OCT , 1980					APR , 1981				
08...	1035	2.3	2200	12.0	08...	1045	8.6	1750	5.0
NOV					MAY				
05...	1450	5.6	2100	4.5	07...	1440	3.9	2200	11.0
DEC					JUN				
04...	1320	2.9	2600	.5	02...	1135	26	2100	15.0
JAN , 1981					JUL				
10...	1115	2.8	2200	.0	08...	0905	4.1	2220	19.0
FEB					AUG				
18...	1140	485	280	.5	05...	0945	2.2	1950	21.0
24...	1025	230	780	1.0	SEP				
MAR					03...	1245	.97	1900	15.0
17...	1150	24	950	3.0					

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS
WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE (DEG C) (00010)	DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE (DEG C) (00010)
------	------	--	--	--	------	------	--	--	--

SHELL CREEK BASIN

06332520 - SHELL CREEK NR PARSHALL, ND (LAT 48 03 11 LONG 102 08 10)

OCT , 1980					APR , 1981				
06...	1300	1.0	2950	14.0	10...	1355	3.2	2450	9.0
NOV					MAY				
03...	1155	1.9	2800	6.0	07...	1155	1.1	3400	11.5
DEC					JUN				
01...	1310	.88	3050	.0	05...	1230	2.7	3400	20.0
JAN , 1981					JUL				
12...	1230	.11	2100	.0	06...	1315	.44	3000	26.5
FEB					AUG				
18...	1440	146	400	1.0	03...	1355	.45	2600	26.0
23...	1305	30	750	1.5	SEP				
MAR					03...	1005	.02	2600	14.0
16...	1345	5.4	1900	4.5					

LITTLE MISSOURI RIVER BASIN

06335500 - LITTLE MISSOURI RIVER AT MARMARTH, ND (LAT 46 17 44 LONG 103 55 06)

OCT , 1980					MAY , 1981				
03...	1230	3.2	3460	15.5	14...	1325	22	2770	19.0
NOV					JUN				
06...	1215	19	2040	8.0	04...	1345	90	1310	21.5
DEC					JUL				
10...	1220	2.2	3960	.0	01...	1110	16	2660	26.0
JAN , 1981					AUG				
22...	1155	17	2430	.0	05...	1125	281	792	21.5
FEB					17...	1525	1860	561	21.0
25...	1225	52	1160	.0	SEP				
APR					02...	1245	11	2160	20.5
01...	1120	17	2250	9.0					

KNIFE RIVER BASIN

06339500 - KNIFE RIVER NR GOLDEN VALLEY, ND (LAT 47 09 40 LONG 102 03 39)

OCT , 1980					MAY , 1981				
14...	1215	3.1	2020	9.5	11...	1300	5.2	1850	14.0
NOV					JUN				
11...	1045	7.4	2190	5.0	01...	1220	6.0	2020	19.0
DEC					JUL				
03...	1320	5.2	2450	2.0	15...	1335	3.8	2550	26.0
JAN , 1981					23...	1345	4.2	1110	25.0
14...	1155	8.7	4020	.0	AUG				
FEB					06...	1330	119	760	23.5
20...	1410	195	1200	3.0	07...	1145	300	1280	23.0
23...	1300	122	885	4.0	SEP				
MAR					10...	1225	51	905	22.0
10...	1245	21	1190	2.5					
APR									
07...	1325	9.1	1360	11.0					

E - Estimated.

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS
WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

463

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE (DEG C) (00010)	DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE (DEG C) (00010)
------	------	--	--	--	------	------	--	--	--

KNIFE RIVER BASIN

06340200 - WEST BRANCH OTTER CREEK NR BEULAH, ND (LAT 47 08 05 LONG 101 39 35)

DEC , 1980					APR , 1981				
23...	0900	E.01	1760	.0	21...	0900	.03	1100	10.0
FEB , 1981					SEP				
04...	0850	E.01	1550	1.0	30...	0930	.01	1170	10.5
18...	1005	3.7	760	1.0					
24...	0930	.57	900	1.0					

PAINTED WOODS CREEK BASIN

06341800 - PAINTED WOODS CREEK NR WILTON, ND (LAT 47 16 30 LONG 100 47 30)

OCT , 1980					APR , 1981				
23...	1330	6.2	1750	4.0	23...	1335	1.7	2050	15.0
NOV					MAY				
25...	1450	2.3	2200	2.5	18...	1320	.60	2700	17.0
JAN , 1981					JUN				
05...	1105	.40	2500	.0	12...	1350	.26	2700	24.0
FEB					23...	1430	2.0	2700	22.0
19...	1735	87	350	.0	JUL				
MAR					24...	0955	3.2	1950	23.0
02...	1725	13	850	.0	AUG				
25...	1430	4.0	1050	10.0	20...	1435	2.1	1200	25.0

SQUARE BUTTE CREEK BASIN

06342260 - SQUARE BUTTE CREEK BELOW CENTER, ND (LAT 47 03 25 LONG 101 11 35)

OCT , 1980					APR , 1981				
24...	1005	1.8	1400	4.0	23...	1015	1.5	1620	12.0
NOV					MAY				
26...	1130	1.2	1450	3.0	21...	1450	1.4	1550	18.0
JAN , 1981					JUN				
13...	1100	1.1	1500	2.5	24...	1315	2.2	1500	21.5
21...	1135	1.3	1500	2.0	JUL				
FEB					22...	0955	1.8	1580	22.0
19...	0910	1.6	1200	4.0	AUG				
MAR					19...	1015	1.6	1600	22.5
11...	0946	5.3	2100	8.0	SEP				
24...	1520	5.9	1900	14.0	30...	1455	1.3	1650	12.0

BURNT CREEK BASIN

06342450 - BURNT CREEK NR BISMARCK, ND (LAT 46 54 54 LONG 100 48 48)

NOV , 1980					MAR , 1981				
03...	1510	1.8	1180	6.5	13...	1210	1.6	750	2.0
DEC					30...	1520	1.8	890	8.0
10...	1435	27	1710	.0	MAY				
FEB , 1981					05...	1110	1.4	1130	12.0
17...	1200	141	418	.0	JUN				
20...	1535	41	280	.5	04...	1540	.23	1370	18.0

E - Estimated.

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (000061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (000095)	TEMPER- ATURE (DEG C) (000010)	DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (000061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (000095)	TEMPER- ATURE (DEG C) (000010)
------	------	---	---	---	------	------	---	---	---

HEART RIVER BASIN

06345500 - HEART RIVER NR RICHARDTON, ND (LAT 46 44 46 LONG 102 18 27)

OCT , 1980					MAY , 1981				
01...	1335	4.6	2040	15.0	11...	1610	4.5	1940	13.0
NOV					JUN				
03...	1410	15	1650	7.0	01...	1420	6.1	1870	23.5
DEC					29...	1325	5.6	1730	25.0
08...	1335	6.6	2410	.0	AUG				
JAN , 1981					03...	1445	54	830	22.5
19...	1455	8.9	2320	.0	17...	1525	1860	561	21.0
FEB					31...	1135	18	1200	17.5
23...	1430	81	1680	.0					
MAR									
30...	1305	11	1360	9.5					

06348000 - HEART RIVER NR LARK, ND (LAT 46 36 37 LONG 101 22 54)

OCT , 1980					MAY , 1981				
22...	1245	35	1150	6.0	20...	1325	23	1400	19.0
NOV					JUN				
24...	1420	23	1410	.5	22...	1245	64	1250	24.0
JAN , 1981					JUL				
12...	1420	12	1580	.0	21...	1330	79	900	26.0
FEB					AUG				
18...	1415	21	1500	.0	18...	1250	46	1150	26.0
MAR					SEP				
04...	1345	34	1100	1.0	28...	1415	14	1280	16.0
23...	1315	32	800	9.0					
APR									
22...	1450	12	1250	15.5					

CANNONBALL RIVER BASIN

06351000 - CANNONBALL RIVER BELOW BENTLEY, ND (LAT 46 21 30 LONG 102 02 30)

OCT , 1980					MAY , 1981				
01...	1730	4.8	1830	14.0	12...	1125	8.0	1750	9.0
NOV					JUN				
04...	1050	13	1720	4.5	02...	1605	8.3	1530	21.0
DEC					30...	1015	11	1830	20.5
09...	1135	7.3	2070	.0	AUG				
JAN , 1981					04...	1110	104	1280	21.5
20...	1155	8.0	2220	.0	18...	1510	2170	305	20.0
FEB					SEP				
24...	1055	20	1590	.0	01...	0840	35	1400	15.0
MAR									
31...	1045	12	1470	6.0					

06351680 - WHITE BUTTE FORK CEDAR CREEK NR SCRANTON, ND (LAT 46 19 20 LONG 102 59 45)

NOV , 1980					MAY , 1981				
05...	1120	.02	5390	5.5	15...	1230	.02	4530	14.0
JAN , 1981					JUN				
22...	1645	.12	4700	.0	04...	1830	.01	5390	21.5
FEB					AUG				
26...	1505	.11	2320	.0	06...	1735	.63	3500	25.0
APR									
01...	1645	.02	2880	11.0					

06352000 - CEDAR CREEK NR HAYNES, ND (LAT 46 09 15 LONG 102 28 25)

OCT , 1980					MAY , 1981				
02...	1350	2.5	4210	11.5	17...	1110	1.7	2330	11.0
NOV					JUN				
04...	1635	4.1	3580	5.5	03...	1145	3.0	2120	19.0
DEC					30...	1405	1.3	1900	25.0
09...	1450	2.2	3440	.0	AUG				
JAN , 1981					04...	1430	58	1860	24.0
20...	1520	2.3	3600	.0	SEP				
FEB					01...	1115	13	1510	16.5
24...	1540	6.8	2060	.0					
MAR									
31...	1500	3.7	2100	6.5					

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

465

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE (DEG C) (00010)	DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE (DEG C) (00010)
------	------	--	--	--	------	------	--	--	--

CANNONBALL RIVER BASIN

06353000 - CEDAR CREEK NR RALEIGH, ND (LAT 46 05 00 LONG 101 20 00)

OCT , 1980					MAY , 1981				
22...	1005	10	1500	7.5	20...	1045	2.3	2800	15.0
NOV					JUN				
24...	1050	6.0	2500	1.0	04...	1210	4.0	1400	23.0
JAN , 1981					22...	1025	2.6	1650	20.5
12...	1005	4.8	3700	.0	JUL				
FEB					21...	0940	.39	1200	25.0
18...	1025	5.3	4000	.0	AUG				
MAR					18...	0925	26	1500	22.0
04...	1020	16	2400	.5	SEP				
23...	1005	7.7	2400	6.5	28...	1105	1.8	1000	13.0
APR									
22...	1005	5.7	2500	12.5					

BEAVER CREEK BASIN

06354500 - BEAVER CREEK AT LINTON, ND (LAT 46 15 27 LONG 100 13 58)

OCT , 1980					APR , 1981				
28...	1535	4.2	825	3.0	30...	1415	2.8	925	15.0
NOV					MAY				
25...	1450	1.9	1180	2.0	27...	1300	1.2	1100	15.0
JAN , 1981					JUN				
19...	1050	.70	2400	.0	30...	1100	13	1070	22.0
FEB					JUL				
19...	1120	.20	1620	1.5	30...	1130	25	250	21.0
20...	1040	.65	1650	1.0	AUG				
MAR					26...	1200	2.4	600	22.5
10...	1330	4.8	1100	.0	SEP				
31...	1200	6.3	700	6.0	30...	1130	.37	920	12.0

JAMES RIVER BASIN

06467600 - JAMES RIVER NR MANFRED, ND (LAT 47 38 40 LONG 099 49 40)

NOV , 1980					JUN , 1981				
03...	1310	5.7	1000	6.5	03...	1615	2.0	1200	21.0
DEC					JUL				
01...	1210	2.4	1200	.0	16...	0920	1.8	850	20.5
MAR , 1981					SEP				
05...	1100	12	480	.0	03...	1000	.58	900	14.0
26...	1100	4.5	630	2.0					
APR									
16...	1230	2.0	970	11.5					

06468170 - JAMES RIVER NR GRACE CITY, ND (LAT 47 33 29 LONG 098 51 45)

OCT , 1980					APR , 1981				
11...	1605	8.1	720	8.5	16...	0930	23	680	9.0
NOV					JUN				
14...	1345	23	815	2.0	03...	1245	6.8	940	19.5
DEC					JUL				
13...	1550	6.9	1150	.5	15...	1150	19	900	21.5
JAN , 1981					SEP				
21...	1300	1.6	1670	1.0	02...	1300	4.2	900	17.0
FEB									
19...	0950	24	590	.5					

MISCELLANEOUS TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS
WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE (DEG C) (00010)	DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE (DEG C) (00010)
------	------	--	--	--	------	------	--	--	--

JAMES RIVER BASIN

06469400 - PIPESTEM CREEK NR PINGREE, ND (LAT 47 10 03 LONG 098 58 07)

OCT , 1980					MAR , 1981				
11...	1410	7.0	675	8.5	04...	1005	66	600	.0
NOV					APR				
13...	1700	26	850	2.5	15...	1430	16	760	13.0
DEC					JUN				
12...	1220	6.2	1160	.5	03...	0935	5.3	1000	14.5
JAN , 1981					JUL				
21...	1050	1.7	1690	.5	15...	0950	5.1	890	21.0
FEB					SEP				
19...	1135	30	830	1.0	02...	0930	1.4	880	14.5

06470000 - JAMES RIVER AT JAMESTOWN, ND (LAT 46 53 22 LONG 098 40 58)

OCT , 1980					MAR , 1981				
08...	1135	40	640	13.5	03...	1430	84	790	2.0
NOV					APR				
12...	1420	52	650	4.0	15...	0940	25	780	8.0
DEC					JUN				
11...	1550	35	430	.0	02...	1435	15	850	17.0
JAN , 1981					SEP				
20...	1345	8.5	1090	.0	01...	1430	31	710	20.0

06470800 - BEAR CREEK NR OAKES, ND (LAT 46 13 31 LONG 098 04 17)

NOV , 1980					APR , 1981				
11...	1445	.14	1710	5.0	14...	1300	.16	1060	11.0
FEB , 1981									
19...	1440	.81	1600	1.5					

LITTLE MISSOURI RIVER BASIN

06336447 - DUCK CREEK NEAR WIBAUX MT

13-60-17CCC (LAT 46 52 30 LONG 104 09 18)

FEB , 1981					FEB , 1981				
17...	1515	.01	500	4.0	18...	1555	.01	650	4.5

06336545 - LITTLE BEAVER CREEK NEAR WIBAUX MT

15-60-148BB (LAT 47 03 44 LONG 104 05 30)

OCT , 1980					FEB , 1981				
01...	1255	.12	4000	15.0	23...	1420	.47	1600	1.0
NOV					26...	1340	.37	1500	1.0
05...	1105	.09	3200	6.0	MAR				
25...	1310	.10	6000	1.0	04...	1440	.37	2025	1.5
DEC					09...	1430	.27	2200	3.0
15...	1330	.22	4000	.0	24...	1420	.20	2400	8.5
29...	1230	.91	3800	.5	MAY				
FEB , 1981					05...	1240	.06	2500	10.0
09...	1340	.03	3000	.0	AUG				
17...	1125	5.1	850	.0	03...	1050	.38	1900	15.5
18...	1055	1.3	850	.0					
20...	1120	.92	1175	1.0					

GROUND-WATER LEVELS

467

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 Sandstone.

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.

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 1980 TO SEPTEMBER 1981

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 3	271.24	FEB 25	271.34	JUNE 4	271.33		

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 (0.03 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 1980 TO SEPTEMBER 1981

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	26.78	MAR 2	26.51	APR 30	25.24	AUG 4	27.37
NOV 25	26.40	MAR 30	25.32	JUNE 5	28.64	AUG 27	31.07

DUNN COUNTY

471323102290101. Local number, 143-093-09BCB.

LOCATION.--Lat 47°15'23", 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.

PERIOD OF RECORD.--February 1974 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 92.59 ft (28.22 m) below land-surface datum, Nov. 30, 1978; lowest measured, 93.79 ft (28.59 m) below land-surface datum, June 22, 1981.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 2	92.90	MAR 11	93.10	JUNE 22	93.79		

GROUND-WATER LEVELS

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 (0.03 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, 50.49 ft (15.39 m) below land-surface datum, Sept. 6, 1978.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 11	46.79	DEC 12	45.80	APR 16	46.85	JULY 15	44.80
NOV 14	46.10	MAR 5	45.27	JUNE 3	44.93	SEPT 2	45.01

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 (0.03 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, 1.21 ft (0.37 m) below land-surface datum, May 31, 1979; 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 1980 TO SEPTEMBER 1981

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 25	5.96	MAR 10	6.33	MAY 27	6.46		

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 Sandstone.

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, revised; lowest measured, 57.31 ft (17.47 m) below land-surface datum, Aug. 31, 1981.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 1	57.13	FEB 24	57.02	JUNE 2	57.08	AUG 31	57.31

GROUND-WATER LEVELS

469

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 Sandstone.

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.

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 1980 TO SEPTEMBER 1981

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 2	143.06	FEB 26	143.02	JUNE 5	143.03	SEPT 3	142.80

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 (0.03 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 1980 TO SEPTEMBER 1981

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 25	21.86	JULY 10	23.10	AUG 6	23.84	SEPT 3	22.64
APR 7	21.69						

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 (0.03 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.

PERIOD OF RECORD.--December 1969 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 37.45 ft (11.41 m) below land-surface datum, May 28, 1981; 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 1980 TO SEPTEMBER 1981

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 21	38.30	APR 29	38.31	JUNE 21	38.35	AUG 23	38.45
NOV 24	38.16	MAY 28	37.45	JULY 27	38.25	SEPT 29	37.95
MAR 4	38.29						

GROUND-WATER LEVELS

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 Sandstone.

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.

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 1980 TO SEPTEMBER 1981

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
JAN 13	198.80	MAR 11	198.80	MAY 19	199.10		

STARK COUNTY

465755102410701. 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 1980 TO SEPTEMBER 1981

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 23	19.11	JAN 23	19.16	APR 22	19.33	JULY 23	19.71
NOV 21	18.97	FEB 19	19.29	MAY 22	19.39	AUG 20	19.36
DEC 4	18.91	MAR 17	19.33	JUNE 22	19.56	SEPT 18	19.29
DEC 22	19.07						

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 (0.03 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, 15.20 ft (4.63 m) below land-surface datum, Sept. 6, 1979; 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 SEPTEMBER 1980 TO SEPTEMBER 1981

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
SEPT 30	16.78	MAR 17	18.59	JUNE 11	18.03	AUG 6	18.27
OCT 30	17.01	APR 14	17.97	JULY 8	18.16	SEPT 11	18.58
DEC 2	17.26	MAY 20	17.95				

GROUND-WATER LEVELS

471

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 (0.03 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.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 64.78 ft (19.74 m) below land-surface datum, Sept. 4, 1979; lowest measured, 66.65 ft (20.32 m) below land-surface datum, Mar. 15, 1967.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 2	65.69	JUNE 3	65.13	SEPT 3	65.37		

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 (0.03 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.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 18.02 ft (5.49 m) below land-surface datum, June 5, 1979; 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 1980 TO SEPTEMBER 1981

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 2	19.32	MAR 17	19.11	JUNE 2	19.27	SEPT 2	19.99

QUALITY OF GROUND WATER

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

STATION NUMBER	LOCAL IDENT- IFIER	COUNTY	GEO- LOGIC UNIT	DEPTH OF WELL, TOTAL (FEET) (72008)	DATE OF SAMPLE	TIME	DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET) (72019)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (UNITS) (00400)
ADAMS									
461130102122601	131-092-05DDD	001	125TGRV	140	81-06-23	1120	--	2800	8.5
		001	125TGRV	140	81-06-23	1210	--	2800	8.4
BURKE									
483948102175901	160-090-21DDD1	013	125SNLB	152	81-07-07	1010	--	2200	8.5
		013	125SNLB	152	81-07-07	1035	--	2200	8.2
483948102175902	160-090-21DDD2	013	125SNLB	124	81-07-07	1055	--	1725	7.9
		013	125SNLB	124	81-07-07	1115	--	1725	7.2
484033102162101	160-090-23BBA	013	125SNLB	52	81-07-07	1240	--	2900	8.2
484923102471401	162-093-30DDD1	013	125SNLB	144	81-07-08	0930	--	3100	8.5
		013	125SNLB	144	81-07-08	1005	--	3100	8.6
485245102511002	162-094-10AAA2	013	125SNLB	40	81-07-06	1500	--	3500	8.7
		013	125SNLB	40	81-07-06	1540	--	3450	8.0
485008102510001	162-094-26BBB	013	125SNLB	100	81-07-08	1130	--	6000	8.4
		013	125SNLB	100	81-07-08	1155	--	6000	7.9
DICKEY									
460630098014703	130-059-02AAA3	021	1120KES	18	80-11-20	0930	--	670	7.4
		021	1120KES	18	81-02-25	1315	--	600	7.8
		021	1120KES	18	81-05-14	1000	--	728	7.3
460401098012503	130-059-13CCC3	021	1120KES	18	80-11-20	1000	--	480	7.6
		021	1120KES	18	81-02-25	1350	--	520	7.6
		021	1120KES	18	81-05-14	1030	--	608	7.4
		021	1120KES	18	81-08-20	0745	--	600	7.4
460448098041502	130-059-16AAA2	021	1120KES	18	80-11-20	1100	--	720	7.5
		021	1120KES	18	81-02-25	1500	--	700	7.6
		021	1120KES	18	81-05-14	1130	--	770	7.5
		021	1120KES	18	81-08-20	0845	--	840	7.4
460403098041503	130-059-16DDD3	021	1120KES	18	80-11-20	1030	--	535	7.5
		021	1120KES	18	81-02-25	1445	--	580	7.5
		021	1120KES	18	81-05-14	1100	--	633	7.3
		021	1120KES	18	81-08-20	0815	--	710	7.3
460818098040202	131-059-27BBB2	021	1120KES	23	80-11-19	1645	--	1300	7.8
		021	1120KES	23	81-02-25	1045	--	1070	7.7
		021	1120KES	23	81-05-14	0730	--	1060	7.4
		021	1120KES	23	81-08-19	1615	--	950	7.7
460732098032402	131-059-27DCC2	021	1120KES	18	80-11-20	0800	--	400	7.6
		021	1120KES	18	81-02-25	1200	--	400	7.4
		021	1120KES	18	81-05-14	0830	--	320	7.2
		021	1120KES	18	81-08-19	1700	--	--	7.5
460739098041102	131-059-28DDA2	021	1120KES	18	80-11-19	1700	--	625	7.8
		021	1120KES	18	81-02-25	1140	--	600	7.7
		021	1120KES	18	81-05-14	0800	--	620	7.7
460706098041102	131-059-33ADD2	021	1120KES	23	80-11-18	1245	--	530	8.3
		021	1120KES	23	80-11-20	0900	--	680	7.6
		021	1120KES	23	81-02-25	1300	--	600	7.5
		021	1120KES	23	81-05-14	0930	--	670	7.5
		021	1120KES	23	81-08-19	1800	--	650	7.5
460719098040202	131-059-34BBC2	021	1120KES	19	80-11-20	0830	--	590	7.8
		021	1120KES	19	81-02-25	1220	--	570	7.6
		021	1120KES	19	81-05-14	0900	--	720	7.6
		021	1120KES	19	81-08-19	1730	--	650	7.6

Geologic unit (aquifer):

125TGRV - Tongue River-Ludlow Members of Fort Union
Formation, Paleocene age.125SNLB - Sentinel Butte Member, Fort Union Formation.
1120KES - Oakes aquifer, Pleistocene age.

QUALITY OF GROUND WATER

473

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

STATION NUMBER	DATE OF SAMPLE	TEMPERATURE (DEG C) (00010)	COLOR (PLAT-INUM-COBALT UNITS) (00080)	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS NONCARBONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNESIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORPTION RATIO (00931)	POTASSIUM, DIS-SOLVED (MG/L AS K) (00935)
ADAMS											
461130102122601	81-06-23	10.0	--	55	.00	14	4.7	620	96	37	4.8
	81-06-23	12.0	--	54	.00	13	5.0	620	96	37	4.5
BURKE											
483948102175901	81-07-07	8.0	--	23	.00	6.0	1.8	490	98	45	2.9
	81-07-07	9.0	--	22	.00	5.6	1.8	480	98	45	3.1
483948102175902	81-07-07	9.0	--	420	.00	100	40	250	56	5.3	7.9
	81-07-07	9.0	--	420	.00	100	40	250	56	5.3	8.2
484033102162101	81-07-07	15.0	--	60	.00	16	4.8	630	96	35	3.1
484923102471401	81-07-08	8.0	--	18	.00	4.7	1.5	720	99	74	2.1
	81-07-08	8.0	--	18	.00	4.8	1.4	730	99	75	2.1
485245102511002	81-07-06	14.0	--	36	.00	7.7	4.0	820	98	60	4.5
	81-07-06	16.5	--	37	.00	8.7	3.7	850	98	61	4.4
485008102510001	81-07-08	8.0	--	88	.00	20	8.9	1200	97	56	4.8
	81-07-08	9.0	--	87	.00	20	8.8	1200	97	56	4.5
DICKEY											
460630098014703	80-11-20	8.0	5	310	18	79	27	15	9	.4	10
	81-02-25	6.5	10	300	.00	79	26	16	10	.4	11
	81-05-14	6.5	5	380	52	100	32	15	8	.3	10
460401098012503	80-11-20	8.5	15	280	4.0	74	24	12	8	.3	3.4
	81-02-25	5.5	20	280	15	76	23	11	8	.3	3.2
	81-05-14	8.0	10	310	23	84	25	13	8	.3	3.3
	81-08-20	7.5	10	290	7.0	77	23	11	8	.3	3.1
460448098041502	80-11-20	8.0	10	320	.00	87	26	28	16	.7	5.1
	81-02-25	5.5	10	350	86	94	27	29	15	.7	4.6
	81-05-14	6.5	5	370	5.0	100	28	29	15	.7	4.6
	81-08-20	8.0	0	380	.00	103	30	31	15	.7	4.9
460403098041503	80-11-20	8.5	20	240	19	56	24	14	11	.4	6.8
	81-02-25	5.5	40	290	23	71	28	16	10	.4	6.9
	81-05-14	7.0	10	320	41	79	30	17	10	.4	7.3
	81-08-20	8.0	5	330	21	78	33	16	9	.4	7.8
460818098040202	80-11-19	7.5	0	610	230	150	58	21	7	.4	5.6
	81-02-25	6.5	5	590	220	150	53	22	7	.4	5.2
	81-05-14	7.0	10	550	160	140	49	20	7	.4	4.6
	81-08-19	6.5	0	460	110	118	41	19	8	.4	4.4
460732098032402	80-11-20	7.5	10	180	.00	50	14	1.8	2	.1	7.8
	81-02-25	4.5	45	140	.00	39	11	1.8	3	.1	7.1
	81-05-14	6.0	5	140	.00	41	10	1.9	3	.1	7.7
	81-08-19	6.5	0	160	.00	46	10	1.5	2	.1	7.0
460739098041102	80-11-19	8.5	5	300	54	64	35	15	10	.4	3.1
	81-02-25	5.5	0	310	37	67	34	12	8	.3	2.7
	81-05-14	7.0	5	330	49	74	35	12	7	.3	2.6
460706098041102	80-11-18	8.5	5	260	.00	52	31	11	8	.3	3.2
	80-11-20	8.0	10	330	13	87	28	24	13	.6	5.2
	81-02-25	7.0	5	320	40	86	25	22	13	.5	4.8
	81-05-14	7.5	5	330	5.0	89	25	23	13	.6	4.7
	81-08-19	7.0	0	300	.00	81	24	21	13	.6	4.4
460719098040202	80-11-20	8.0	15	270	14	52	35	20	13	.5	6.3
	81-02-25	7.0	5	260	25	50	34	22	15	.6	6.6
	81-05-14	7.5	6	340	46	62	44	23	13	.5	6.7
	81-08-19	7.0	5	300	55	54	39	21	13	.6	6.1

QUALITY OF GROUND WATER

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

STATION NUMBER	DATE OF SAMPLE	BICARBONATE, FET-LAB (MG/L AS HCO3) (95440)	CARBONATE, FET-LAB (MG/L AS CO3) (95445)	ALKALINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLORIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUORIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (70301)
ADAMS											
461130102122601	81-06-23	--	--	400	--	890	14	.8	7.6	1910	1800
	81-06-23	--	--	400	--	910	13	.8	7.7	1910	1820
BURKE											
483948102175901	81-07-07	--	--	850	--	250	11	.8	7.5	1410	1280
	81-07-07	--	--	810	--	250	11	.8	7.0	1400	1250
483948102175902	81-07-07	--	--	450	--	440	4.2	.1	24	1060	1140
	81-07-07	--	--	490	--	430	4.6	.1	25	1130	1160
484033102162101	81-07-07	--	--	740	--	690	27	1.0	22	1870	1840
484923102471401	81-07-08	--	--	1170	--	440	28	2.4	7.4	2090	1910
	81-07-08	--	--	1160	--	450	28	2.3	7.6	2090	1930
485245102511002	81-07-06	--	--	1670	--	2.0	120	1.2	7.6	2120	1970
	81-07-06	--	--	1780	--	2.2	58	1.2	7.6	2060	2010
485008102510001	81-07-08	--	--	1100	--	1500	29	1.3	9.4	3430	3440
	81-07-08	--	--	1080	--	1500	66	1.3	9.0	3440	3460
DICKEY											
460630098014703	80-11-20	--	--	290	--	70	2.7	.1	28	419	409
	81-02-25	--	--	270	--	69	2.9	.2	27	388	395
	81-05-14	--	--	330	--	89	2.8	.1	26	460	476
460401098012503	80-11-20	--	--	280	--	38	1.2	.4	31	360	356
	81-02-25	--	--	270	--	45	1.4	.4	29	348	354
	81-05-14	--	--	290	--	52	1.3	.3	29	376	385
	81-08-20	--	--	280	--	27	1.6	.4	31	355	347
460448098041502	80-11-20	--	--	340	--	33	12	.1	29	441	426
	81-02-25	--	--	260	--	52	11	.2	28	448	403
	81-05-14	--	--	360	--	54	11	.1	27	463	472
	81-08-20	--	--	390	--	52	20	.2	30	502	508
460403098041503	80-11-20	--	--	220	--	43	12	.1	27	330	319
	81-02-25	--	--	270	--	64	11	.1	26	379	390
	81-05-14	--	--	280	--	70	13	.0	25	411	414
	81-08-20	--	--	310	--	38	18	.1	27	431	410
460818098040202	80-11-19	--	--	380	--	130	91	.3	26	886	773
	81-02-25	--	--	360	--	160	80	.4	26	764	758
	81-05-14	--	--	390	--	100	69	.2	26	710	655
	81-08-19	--	--	350	--	84	49	.3	28	559	568
460732098032402	80-11-20	--	--	200	--	2.2	3.9	.1	26	240	239
	81-02-25	--	--	150	--	4.2	4.1	.1	1.7	183	166
	81-05-14	--	--	160	--	1.6	3.6	.1	24	187	200
	81-08-19	--	--	170	--	4.0	4.2	.1	24	208	207
460739098041102	80-11-19	--	--	250	--	45	6.2	.3	31	353	372
	81-02-25	--	--	270	--	51	5.4	.3	27	354	372
	81-05-14	--	--	280	--	51	4.9	.2	27	380	392
460706098041102	80-11-18	--	--	260	--	24	2.5	.1	10	303	291
	80-11-20	--	--	320	--	45	3.8	.2	30	422	417
	81-02-25	--	--	310	--	47	3.4	.3	29	392	405
	81-05-14	--	--	320	--	48	3.5	.2	29	366	416
	81-08-19	--	--	310	--	41	11	.3	30	388	401
460719098040202	80-11-20	--	--	260	--	41	3.8	.2	25	360	348
	81-02-25	--	--	240	--	56	4.3	.3	24	357	371
	81-05-14	--	--	290	--	56	3.8	.2	24	435	421
	81-08-19	--	--	240	--	47	4.0	.3	25	410	383

QUALITY OF GROUND WATER

475

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

STATION NUMBER	DATE OF SAMPLE	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
ADAMS											
461130102122601	81-06-23	--	--	1.1	--	--	690	10	40	2	420
	81-06-23	--	--	1.5	--	--	660	50	40	2	440
BURKE											
483948102175901	81-07-07	--	--	.97	--	--	240	70	10	<0	170
	81-07-07	--	--	1.2	--	--	260	70	10	1	170
483948102175902	81-07-07	--	--	1.6	--	--	220	50	230	<10	2200
	81-07-07	--	--	1.4	--	--	200	930	240	<10	2200
484033102162101	81-07-07	--	--	1.2	--	--	270	90	10	1	330
484923102471401	81-07-08	--	--	1.2	--	--	1900	60	10	0	230
	81-07-08	--	--	1.2	--	--	2000	80	10	0	230
485245102511002	81-07-06	--	--	1.1	--	--	250	80	20	<0	410
	81-07-06	--	--	1.3	--	--	250	50	10	0	400
485008102510001	81-07-08	--	--	1.6	--	--	260	150	30	0	830
	81-07-08	--	--	1.5	--	--	260	50	40	0	850
DICKEY											
460630098014703	80-11-20	.57	.00	--	.020	.000	60	2200	970	--	--
	81-02-25	--	.05	--	.210	.010	30	650	490	--	--
	81-05-14	--	.04	--	.050	.030	30	1000	1700	--	--
460401098012503	80-11-20	.49	.00	--	.020	.020	40	2800	930	--	--
	81-02-25	--	.01	--	.080	.020	20	1600	600	--	--
	81-05-14	--	.03	--	.090	.040	20	2200	770	--	--
	81-08-20	--	.17	--	.050	.060	30	2600	1000	--	--
460448098041502	80-11-20	.60	.00	--	.040	.010	60	370	1200	--	--
	81-02-25	--	.02	--	.060	.020	20	260	830	--	--
	81-05-14	--	.04	--	.070	.040	30	380	1000	--	--
	81-08-20	--	.14	--	.030	<.010	40	320	1400	--	--
460403098041503	80-11-20	.45	.00	--	.130	.120	60	2400	1300	--	--
	81-02-25	--	.04	--	.230	.070	30	2600	1400	--	--
	81-05-14	--	.03	--	.220	.040	30	3000	1600	--	--
	81-08-20	--	.12	--	.170	<.010	40	3200	1700	--	--
460818098040202	80-11-19	1.2	14	--	.120	.110	110	<10	910	--	--
	81-02-25	--	9.9	--	.130	.090	90	<10	810	--	--
	81-05-14	--	2.5	--	.140	.000	100	10	970	--	--
	81-08-19	--	2.9	--	.100	.110	110	12	840	--	--
460732098032402	80-11-20	.33	.88	--	.030	.010	50	5900	3400	--	--
	81-02-25	--	.05	--	.040	.020	20	4500	2500	--	--
	81-05-14	--	.77	--	.110	.000	20	6200	4300	--	--
	81-08-19	--	.31	--	.050	.030	20	3100	3300	--	--
460739098041102	80-11-19	.48	4.8	--	.040	.000	80	<10	1000	--	--
	81-02-25	--	2.1	--	.060	.030	60	<10	460	--	--
	81-05-14	--	3.7	--	.060	.000	60	20	740	--	--
460706098041102	80-11-18	.41	.24	--	.010	.010	50	10	160	--	--
	80-11-20	.57	.00	--	.020	.010	100	410	1200	--	--
	81-02-25	--	.19	--	.040	.020	80	40	180	--	--
	81-05-14	--	.04	--	.050	.030	80	230	480	--	--
	81-08-19	--	.18	--	.030	.020	90	65	830	--	--
460719098040202	80-11-20	.49	1.8	--	.040	.030	120	30	430	--	--
	81-02-25	--	6.6	--	.050	.030	100	20	280	--	--
	81-05-14	--	6.0	--	.070	.000	100	30	330	--	--
	81-08-19	--	<1.0	--	.040	.040	110	26	560	--	--

QUALITY OF GROUND WATER

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

STATION NUMBER	LOCAL IDENTIFIER	COUNTY	GEOLOGIC UNIT	DEPTH OF WELL, TOTAL (FEET) (72008)	DATE OF SAMPLE	TIME	DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET) (72019)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)
EDDY									
474347098524201	149-064-17ABB	027	112NRKF	26	80-11-19	1100	--	570	7.6
		027	112NRKF	26	81-02-24	1615	--	400	7.6
		027	112NRKF	26	81-05-13	1100	--	575	7.5
		027	112NRKF	26	81-08-19	1000	--	550	7.7
474346098561401	149-065-14AAB	027	112NRKF	23	80-11-19	1130	--	750	7.6
		027	112NRKF	23	81-02-24	1645	--	710	7.3
		027	112NRKF	23	81-05-13	1130	--	775	7.5
		027	112NRKF	23	81-08-19	1030	--	800	7.5
474747098354301	150-062-21ACD	027	112WRCK	--	81-05-28	1440	--	428	7.8
475004098375601	150-062-06DDA1	027	112WRCK	23	80-11-19	0930	--	380	7.7
		027	112WRCK	23	81-02-24	1515	--	450	7.5
		027	112WRCK	23	81-05-13	0930	--	381	7.7
		027	112WRCK	23	81-08-19	0830	--	--	7.7
474851098425501	150-063-15BBC	027	112WRCK	--	80-12-18	1430	--	436	8.2
		027	112WRCK	--	81-05-28	1300	--	715	7.7
474628099010301	150-065-29CCC	027	112NRKF	23	80-11-19	1200	--	625	7.6
		027	112NRKF	23	81-02-24	1715	--	500	7.3
		027	112NRKF	23	81-05-13	1215	--	650	7.4
		027	112NRKF	23	81-08-19	1115	--	750	7.5
GOLDEN VALLEY									
464716104003401	138-106-11AAA	033	125HRMN	52	81-06-02	1150	25.85	6000	5.8
		033	125HRMN	52	81-06-02	1220	25.85	5650	5.8
		033	125HRMN	52	81-06-02	1300	25.85	5800	7.1
		033	125HRMN	52	81-06-02	1405	25.85	5800	5.9
		033	125HRMN	52	81-07-09	1315	25.92	4200	6.2
		033	125HRMN	52	81-07-09	1400	25.92	4180	5.8
		033	125HRMN	52	81-07-09	1445	25.92	5620	6.7
		033	125HRMN	52	81-07-28	1500	25.97	5410	5.7
		033	125HRMN	52	81-07-28	1540	25.97	5400	5.8
		033	125HRMN	52	81-07-28	1600	25.97	5500	7.1
		033	125HRMN	52	81-07-28	1645	25.97	5500	5.9
464907103585501	139-105-30CCD	033	125HRMN	166	81-06-15	1515	--	2900	--
464946104014701	139-106-27AAD	033	125HRMN	29	81-06-16	1030	--	3000	6.1
		033	125HRMN	29	81-06-16	1200	--	3050	5.9
465656104014001	140-106-14BBB	033	125HRMN	207	81-06-16	1430	--	2025	8.4
		033	125HRMN	207	81-06-16	1545	--	2425	7.9
HETTINGER									
461348102121901	132-092-28BCB	041	125TGRV	60	81-06-23	1340	--	5250	8.3
		041	125TGRV	60	81-06-23	1415	--	5250	8.1
461452102194601	132-093-21BBB	041	125TGRV	60	81-06-23	1535	--	2600	8.3
		041	125TGRV	60	81-06-23	1610	--	2700	8.2
461755102163001	133-092-29CCC	041	125TGRV	240	81-06-24	1025	--	2025	8.7
		041	125TGRV	240	81-06-24	1135	--	1975	8.6
462632102462301	134-096-08BAB	041	125TGRV	160	81-06-25	1300	--	1650	8.7
462906102465201	135-096-30AAA	041	125TGRV	48	81-06-25	1105	--	1675	7.0
		041	125TGRV	48	81-06-25	1145	--	1625	8.2
463050102492201	135-097-14AAA	041	125TGRV	120	81-06-25	1100	--	1475	8.3
		041	125TGRV	120	81-06-25	1200	--	1475	8.1
462729102520101	135-097-33DOC	041	125TGRV	145	81-06-26	1020	--	4800	8.2
		041	125TGRV	145	81-06-26	1100	--	4800	8.3

Geologic unit (aquifer):

112NRKF - New Rockford aquifer, Pleistocene age.
112WRCK - Warwick aquifer, Pleistocene age.125HRMN - Harmon Lignite aquifer, Paleocene.
125TGRV - Tongue River Member, Fort Union Formation.

QUALITY OF GROUND WATER

477

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

STATION NUMBER	DATE OF SAMPLE	TEMPERATURE (DEG C) (00010)	COLOR (PLAT-INUM-COBALT UNITS) (00080)	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS (MG/L NONCARBONATE AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNESIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DIS-SOLVED (MG/L AS K) (00935)
EDDY											
474347098524201	80-11-19	7.5	10	280	90	74	23	5.6	4	.1	2.4
	81-02-24	6.5	5	260	81	70	21	5.5	4	.1	2.2
	81-05-13	6.5	0	290	91	77	24	5.8	4	.1	2.4
	81-08-19	6.0	0	260	74	71	21	6.3	5	.2	2.4
474346098561401	80-11-19	7.0	5	310	54	83	26	42	22	1.0	4.1
	81-02-24	6.0	5	320	74	87	26	42	22	1.0	3.5
	81-05-13	6.0	0	340	77	92	26	41	21	1.0	3.4
	81-08-19	6.0	0	320	58	86	25	40	21	1.0	3.6
474747098354301	81-05-28	10.5	10	230	30	64	17	3.4	3	.1	.9
475004098375601	80-11-19	7.0	5	200	.00	56	14	2.7	3	.1	.8
	81-02-24	5.5	0	210	10	61	14	3.1	3	.1	.7
	81-05-13	4.5	5	210	7.0	60	14	2.8	3	.1	.6
	81-08-19	9.0	0	210	5.0	59	14	2.7	3	.1	.7
474851098425501	80-12-18	3.0	0	210	23	59	16	8.6	8	.3	2.0
	81-05-28	16.0	40	390	.00	110	27	21	11	.5	.9
474628099010301	80-11-19	7.0	10	300	37	71	29	23	14	.6	5.5
	81-02-24	3.5	5	300	45	72	28	24	15	.6	4.9
	81-05-13	4.5	5	310	49	76	29	23	14	.6	4.8
	81-08-19	6.0	5	350	26	84	33	25	13	.6	5.1
GOLDEN VALLEY											
464716104003401	81-06-02	7.5	--	4200	4000	520	700	160	8	1.1	1.4
	81-06-02	7.5	--	4300	4100	520	720	160	8	1.1	2.5
	81-06-02	7.5	--	4200	4100	520	700	160	8	1.1	1.7
	81-06-02	7.5	--	4200	4100	520	710	150	7	1.0	16
	81-07-09	7.3	--	4300	4100	550	710	220	10	1.5	29
	81-07-09	7.3	--	4300	4100	530	720	210	10	1.4	28
	81-07-09	7.3	--	4200	4100	530	700	210	10	1.4	28
	81-07-28	7.3	--	4200	4040	520	700	270	12	1.8	27
	81-07-28	7.3	--	4300	4160	540	720	270	12	1.8	27
	81-07-28	7.3	--	4200	4080	520	700	270	12	1.8	27
	81-07-28	7.3	--	4200	4030	530	700	270	12	1.8	28
464907103585501	81-06-15	9.0	--	110	.00	22	13	690	93	29	4.1
464946104014701	81-06-16	10.0	--	2100	1900	410	260	71	7	.7	11
	81-06-16	11.0	--	2100	1900	400	260	73	7	.7	11
465656104014001	81-06-16	14.0	--	53	.00	12	5.6	530	95	32	2.8
	81-06-16	15.0	--	48	.00	10	5.6	530	96	33	2.7
HETTINGER											
461348102121901	81-06-23	10.0	--	280	.00	73	23	1400	91	37	10
	81-06-23	14.0	--	290	.00	75	24	1200	90	31	10
461452102194601	81-06-23	9.0	--	190	.00	27	29	540	86	17	5.4
	81-06-23	12.0	--	180	.00	26	28	570	87	18	5.3
461755102163001	81-06-24	10.0	--	25	.00	5.0	2.5	440	97	40	2.8
	81-06-24	23.0	--	46	.00	7.7	6.4	460	95	30	3.3
462632102462301	81-06-25	9.5	--	20	.00	5.1	1.7	400	98	39	1.9
462906102465201	81-06-25	15.0	--	230	.00	55	23	340	76	9.7	3.7
	81-06-25	9.0	--	220	.00	50	22	300	75	8.9	3.6
463050102492201	81-06-25	10.0	--	28	.00	6.5	2.8	330	96	27	2.5
	81-06-25	13.0	--	29	.00	7.0	2.8	330	96	27	2.4
462729102520101	81-06-26	10.0	--	180	.00	41	18	960	92	31	5.9
	81-06-26	11.0	--	180	.00	41	18	960	92	31	6.0

QUALITY OF GROUND WATER

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

STATION NUMBER	DATE OF SAMPLE	BICARBONATE, FET-LAB (MG/L AS HCO3) (95440)	CARBONATE, FET-LAB (MG/L AS CO3) (95445)	ALKALINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CU2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLORIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUORIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SI02) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L) (70301)
EDDY											
474347098524201	80-11-19	--	--	190	--	42	3.7	.1	23	373	368
	81-02-24	--	--	180	--	46	3.8	.1	23	321	351
	81-05-13	--	--	200	--	59	3.5	.1	21	358	340
	81-08-19	--	--	190	--	39	12	.2	23	334	351
474346098561401	80-11-19	--	--	260	--	120	22	.1	28	512	485
	81-02-24	--	--	250	--	130	21	.1	28	496	491
	81-05-13	--	--	260	--	130	20	.1	27	496	512
	81-08-19	--	--	260	--	120	25	.2	29	472	488
474747098354301	81-05-28	--	--	200	--	18	1.1	.1	25	262	254
475004098375601	80-11-19	--	--	200	--	5.7	.7	.2	25	236	226
	81-02-24	--	--	200	--	13	.7	.1	24	225	237
	81-05-13	--	--	200	--	9.1	.6	.1	23	223	231
	81-08-19	--	--	200	--	2.0	.5	.2	27	228	227
474851098425501	80-12-18	--	--	190	--	36	1.7	.2	27	269	265
	81-05-28	--	--	390	--	3.0	1.7	.2	47	443	446
474628099010301	80-11-19	--	--	260	--	80	4.6	.2	25	413	396
	81-02-24	--	--	250	--	86	5.0	.1	25	396	397
	81-05-13	--	--	260	--	89	4.6	.1	24	398	409
	81-08-19	--	--	320	--	83	5.3	.2	27	418	457
GOLDEN VALLEY											
464716104003401	81-06-02	--	--	180	718	4000	18	.0	45	6710	5610
	81-06-02	--	--	180	747	4000	17	.0	45	6690	5640
	81-06-02	--	--	99	36	4000	17	.0	36	6710	5600
	81-06-02	--	--	170	547	4000	17	.0	44	6640	5620
	81-07-09	--	--	185	2780	4500	23	.1	51	6640	6267
	81-07-09	--	--	194	639	4500	17	.1	52	6890	6254
	81-07-09	--	--	110	71	4500	17	.1	41	6560	6168
	81-07-28	173	.00	142	791	4500	16	.1	51	7480	6280
	81-07-28	183	.00	150	646	4500	17	.1	49	7550	6330
	81-07-28	128	.00	105	37	4500	13	.0	40	6320	6280
	81-07-28	213	.00	175	537	4500	14	.0	48	6620	6290
464907103585501	81-06-15	--	--	650	--	940	23	.6	7.3	2130	2090
464946104014701	81-06-16	--	--	190	--	1800	23	.0	12	3100	2710
	81-06-16	--	--	190	--	1800	19	.0	12	3110	2700
465656104014001	81-06-16	--	--	1150	--	210	20	1.1	8.1	1610	1490
	81-06-16	--	--	1120	--	240	28	1.1	8.1	1610	1500
HETTINGER											
461348102121901	81-06-23	--	--	390	--	2600	12	.4	7.6	4270	4360
	81-06-23	--	--	390	--	2600	6.5	.4	7.6	4250	4160
461452102194601	81-06-23	--	--	550	--	820	6.8	.5	7.7	1810	1770
	81-06-23	--	--	560	--	820	10	.5	7.6	1800	1810
461755102163001	81-06-24	--	--	480	--	510	4.5	1.4	8.7	1280	1270
	81-06-24	--	--	470	--	590	4.7	1.3	8.1	1300	1370
462632102462301	81-06-25	--	--	510	--	380	4.8	1.1	7.4	1080	1110
462906102465201	81-06-25	--	--	540	--	420	9.0	.7	12	1080	1190
	81-06-25	--	--	430	--	420	8.1	.7	12	1110	1080
463050102492201	81-06-25	--	--	380	--	330	7.0	.7	11	942	920
	81-06-25	--	--	380	--	350	6.9	.7	11	944	940
462729102520101	81-06-26	--	--	500	--	1700	11	.9	9.2	3170	3050
	81-06-26	--	--	520	--	1700	11	.9	9.2	3170	3060

QUALITY OF GROUND WATER

479

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

STATION NUMBER	DATE OF SAMPLE	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	NITRO-GEN, NO ₂ +NO ₃ DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MU) (01060)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
EDDY											
474347098524201	80-11-19	.51	18	--	.030	.010	50	10	220	--	--
	81-02-24	--	16	--	.130	--	30	30	20	--	--
	81-05-13	--	6.0	--	.050	.000	20	20	190	--	--
	81-08-19	--	14	--	.030	.020	30	18	200	--	--
474346098561401	80-11-19	.70	.27	--	.050	.010	90	1200	650	--	--
	81-02-24	--	.26	--	.080	--	70	1100	650	--	--
	81-05-13	--	3.2	--	.070	.000	60	1200	610	--	--
	81-08-19	--	.25	--	.060	.020	70	1100	710	--	--
474747098354301	81-05-28	--	1.0	--	.030	.010	10	30	10	--	--
475004098375601	80-11-19	.32	.03	--	.020	.000	30	10	40	--	--
	81-02-24	--	.00	--	.070	--	10	<10	10	--	--
	81-05-13	--	.03	--	.050	.000	10	<10	30	--	--
	81-08-19	--	.17	--	.020	.020	10	<10	30	--	--
474851098425501	80-12-18	.37	.04	--	.070	.050	40	10	80	--	--
	81-05-28	--	.00	--	.030	.010	60	110	150	--	--
474628099010301	80-11-19	.56	.00	--	.020	.000	70	950	210	--	--
	81-02-24	--	.17	--	.080	--	50	1000	200	--	--
	81-05-13	--	.11	--	.050	.000	30	1000	220	--	--
	81-08-19	--	.14	--	.030	.030	60	1300	250	--	--
GOLDEN VALLEY											
464716104003401	81-06-02	--	--	10	--	--	20000	--	4000	2	11000
	81-06-02	--	--	9.3	--	--	20000	--	3700	1	11000
	81-06-02	--	--	9.3	--	--	20000	--	3500	1	11000
	81-06-02	--	--	9.9	--	--	20000	--	4000	1	11000
	81-07-09	--	.12	--	--	.080	4900	63000	4200	--	--
	81-07-09	--	.05	--	--	.020	5100	71000	4000	--	--
	81-07-09	--	.06	--	--	.010	4900	66000	4000	--	--
	81-07-28	--	--	--	--	--	8000	64000	3800	--	--
	81-07-28	--	--	--	--	--	8000	62000	3800	--	--
	81-07-28	--	--	--	--	--	8400	63000	3800	--	--
	81-07-28	--	--	--	--	--	8200	64000	3800	--	--
464907103585501	81-06-15	--	--	1.2	--	--	520	80	40	1	580
464946104014701	81-06-16	--	--	1.2	--	--	970	350	1300	0	6800
	81-06-16	--	--	1.6	--	--	970	570	1300	0	6700
465656104014001	81-06-16	--	--	1.4	--	--	3600	60	20	0	290
	81-06-16	--	--	1.3	--	--	2300	70	20	0	310
HETTINGER											
461348102121901	81-06-23	--	--	1.4	--	--	500	80	170	0	2300
	81-06-23	--	--	1.6	--	--	470	110	170	<1	2200
461452102194601	81-06-23	--	--	1.2	--	--	870	70	20	3	1100
	81-06-23	--	--	1.1	--	--	880	90	20	3	1100
461755102163001	81-06-24	--	--	.83	--	--	660	30	10	<10	1800
	81-06-24	--	--	2.3	--	--	710	60	10	2	330
462632102462301	81-06-25	--	--	.88	--	--	760	80	10	0	170
462906102465201	81-06-25	--	--	1.2	--	--	290	30	130	<10	930
	81-06-25	--	--	.83	--	--	320	70	130	<10	940
463050102492201	81-06-25	--	--	.90	--	--	860	20	10	<10	220
	81-06-25	--	--	.70	--	--	890	40	10	<10	220
462729102520101	81-06-26	--	--	1.3	--	--	500	120	70	0	1200
	81-06-26	--	--	1.3	--	--	510	100	70	0	1200

QUALITY OF GROUND WATER

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

STATION NUMBER	LOCAL IDENTIFIER	COUNTY	GEOLOGIC UNIT	DEPTH OF WELL, TOTAL (FEET) (72008)	DATE OF SAMPLE	TIME	DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET) (72019)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)
MERCER									
472528101530202	146-088-27CDD2	057	112APCK	64	81-07-02	1300	--	1130	8.0
		057	112APCK	64	81-07-02	1330	--	1170	8.0
OLIVER									
471150101460202	143-087-19B8B2	065	125SNLB	44	81-06-29	1535	--	2200	7.7
		065	125SNLB	44	81-06-29	1615	--	2200	6.3
SLOPE									
462010103233501	133-101-17ABB	087	125TRVL	65	81-07-14	1245	--	2500	8.2
		087	125TRVL	65	81-07-14	1310	--	2450	7.7
461832103245101	133-101-19DCC	087	125TRVL	101	81-07-14	1030	--	5500	8.7
		087	125TRVL	101	81-07-14	1105	--	5500	8.5
462441103230601	134-101-17DDD	087	125TRVL	160	81-07-15	1050	--	1000	8.5
		087	125TRVL	160	81-07-15	1130	--	1020	8.0
463746102562001	136-098-01BAA	087	125TRVL	220	81-07-15	1350	--	1450	8.1
		087	125TRVL	220	81-07-16	1320	--	1450	8.3
463745103003801	136-098-05AAA	087	125TRVL	207	81-07-15	1130	--	3500	8.4
		087	125TRVL	207	81-07-16	1205	--	3500	8.3
463559102581001	136-098-15AAA	087	125TRVL	151	81-07-24	1140	--	1325	8.8
		087	125TRVL	151	81-07-24	1220	--	1325	8.6
463532102591501	136-098-15CBB	087	125TRVL	104	81-07-24	1310	--	1775	8.3
463538103053501	136-099-15ADD	087	125TRVL	88	81-07-24	1000	--	3500	8.4
463257103102301	136-099-31BCC	087	125TRVL	135	81-07-15	1500	--	4000	8.6
		087	125TRVL	135	81-07-15	1525	--	4000	8.4
463231103041101	136-099-36CCC	087	125TRVL	144	81-07-15	1315	--	2000	8.8
		087	125TRVL	144	81-07-15	1335	--	2010	8.8
STARK									
465145102583601	139-097-07CCC	089	125SBLG	37	81-06-30	1230	--	2650	8.3
		089	125SBLG	37	81-06-30	1300	--	2750	8.0
465053103044601	139-098-17CCD	089	125SNLB	164	81-06-30	1030	--	2100	8.8
		089	125SNLB	164	81-06-30	1115	--	2150	8.6
465819103010701	140-098-02CBB	089	125SBLG	151	80-12-11	1030	--	1825	6.7
		089	125SBLG	151	81-06-30	1455	--	1730	8.9
		089	125SBLG	151	81-06-30	1530	--	1730	8.9
465705103011601	140-098-10DDD	089	125SNLB	192	81-07-01	1250	--	1750	9.3
465658103034801	140-098-17AAA	089	125SNLB	140	81-07-01	1055	--	1800	9.3
		089	125SNLB	140	81-07-01	1130	--	1800	9.3
465511103011601	140-098-27AAA1	089	125SBLG	147	80-12-16	1100	--	2100	8.0
		089	125SBLG	147	81-07-01	1435	--	2000	8.6
		089	125SBLG	147	81-07-01	1515	--	1750	8.3

Geologic unit (aquifer):

112APCK - Antelope Creek, Pleistocene age.

125SNLB - Sentinel Butte Member, Fort Union Formation.

125TRVL - Tongue River-Ludlow Member, Fort Union Formation.

125SBLG - Sentinel Butte Lignite aquifer, Paleocene.

QUALITY OF GROUND WATER

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

STATION NUMBER	DATE OF SAMPLE	TEMPERATURE (DEG C) (00010)	COLOR (PLATINUM-COBALT UNITS) (00080)	HARDNESS (MG/L AS CaCO3) (00900)	HARDNESS-NONCARBONATE (MG/L AS CaCO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS Ca) (00915)	MAGNESIUM, DIS-SOLVED (MG/L AS Mg) (00925)	SODIUM, DIS-SOLVED (MG/L AS Na) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORPTION RATIO (00931)	POTASSIUM, DIS-SOLVED (MG/L AS K) (00935)
MERCER											
472528101530202	81-07-02	9.0	--	410	.00	97	41	110	37	2.4	3.8
	81-07-02	13.0	--	410	.00	96	41	110	37	2.4	3.8
OLIVER											
471150101460202	81-06-29	11.0	--	1300	1000	420	69	41	6	.5	4.7
	81-06-29	13.5	--	1300	1100	420	69	40	6	.5	5.3
SLOPE											
462010103233501	81-07-14	9.0	--	420	.00	85	51	420	68	8.9	5.2
	81-07-14	12.0	--	440	.00	87	53	420	67	8.8	5.1
461832103245101	81-07-14	10.5	--	200	.00	28	31	1200	92	37	12
	81-07-14	12.0	--	200	.00	29	32	1000	91	30	12
462441103230601	81-07-15	11.0	--	210	.00	50	20	140	59	4.2	5.4
	81-07-15	12.0	--	210	.00	50	20	140	59	4.2	5.6
463746102562001	81-07-15	14.0	--	110	.00	24	13	300	84	12	6.0
	81-07-16	10.5	--	110	.00	23	13	300	85	12	6.0
463745103003801	81-07-15	10.0	--	65	.00	11	9.0	830	96	45	4.4
	81-07-16	17.0	--	50	.00	5.0	8.9	800	97	50	4.3
463559102581001	81-07-24	11.0	--	22	.00	5.8	1.8	340	97	32	2.7
	81-07-24	11.0	--	24	.00	6.5	1.8	330	96	30	2.8
463532102591501	81-07-24	9.0	--	27	.00	8.1	1.7	420	97	35	2.3
463538103053501	81-07-24	9.5	--	80	.00	20	7.1	830	95	41	6.0
463257103102301	81-07-15	11.0	--	39	.00	9.6	3.6	870	98	61	2.7
	81-07-15	13.0	--	37	.00	8.7	3.6	880	98	63	2.6
463231103041101	81-07-15	11.0	--	16	.00	3.4	1.9	480	98	52	1.8
	81-07-15	12.0	--	20	.00	4.5	2.0	480	98	47	1.7
STARK											
465145102583601	81-06-30	10.0	--	36	.00	7.4	4.3	610	97	44	3.5
	81-06-30	16.0	--	36	.00	7.3	4.2	620	97	45	3.4
465053103044601	81-06-30	11.0	--	27	.00	5.6	3.1	540	97	45	3.7
	81-06-30	16.0	--	36	.00	9.4	2.9	530	97	39	3.6
465819103010701	80-12-11	7.0	--	7	.00	1.5	.7	420	99	71	5.4
	81-06-30	11.0	--	7	.00	1.5	.8	420	99	69	1.0
	81-06-30	13.0	--	10	.00	2.8	.8	430	99	58	.9
465705103011601	81-07-01	9.5	--	25	.00	7.3	1.5	410	97	36	2.8
465658103034801	81-07-01	10.0	--	230	.00	91	.1	410	80	12	.8
	81-07-01	11.0	--	4	.00	1.1	.3	420	99	92	.8
465511103011601	80-12-16	8.0	--	49	.00	11	5.0	580	96	36	3.1
	81-07-01	13.0	--	52	.00	12	5.3	560	96	34	2.1
	81-07-01	13.0	--	58	.00	14	5.4	570	95	33	2.1

QUALITY OF GROUND WATER

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

STATION	NUMBER	DATE OF SAMPLE	BICAR- BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR- BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2) (00405)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)
MERCER												
472528101530202		81-07-02	--	--	450	--	170	2.5	.3	24	681	721
		81-07-02	--	--	440	--	180	2.6	.3	24	711	724
OLIVER												
471150101460202		81-06-29	--	--	300	--	1000	17	.2	19	1960	1760
		81-06-29	--	--	280	--	1100	26	.2	18	2030	1850
SLOPE												
462010103233501		81-07-14	--	--	470	--	840	6.5	.2	10	1760	1700
		81-07-14	--	--	470	--	890	6.7	.2	10	1750	1760
461832103245101		81-07-14	--	--	820	--	1900	14	.1	16	3390	3700
		81-07-14	--	--	810	--	1700	8.0	.1	16	3420	3290
462441103230601		81-07-15	--	--	290	--	220	1.7	.4	12	603	625
		81-07-15	--	--	300	--	220	1.7	.3	12	611	631
463746102562001		81-07-15	--	--	460	--	330	2.1	.1	8.8	935	962
		81-07-16	--	--	460	--	330	2.1	.1	8.8	937	961
463745103003801		81-07-15	--	--	830	--	1000	4.2	1.6	11	2410	2370
		81-07-16	--	--	820	--	1100	5.0	1.6	11	2410	2430
463559102581001		81-07-24	--	--	720	--	1.2	7.1	.0	9.3	860	802
		81-07-24	--	--	710	--	1.0	15	3.4	8.8	843	797
463532102591501		81-07-24	--	--	540	--	380	4.0	1.1	11	1160	1150
463538103053501		81-07-24	--	--	790	--	1100	9.5	.4	8.5	2460	2460
463257103102301		81-07-15	--	--	590	--	1400	6.4	1.4	8.7	2700	2660
		81-07-15	--	--	590	--	1400	5.9	1.3	8.7	2720	2670
463231103041101		81-07-15	--	--	480	--	590	3.4	.6	10	1340	1380
		81-07-15	--	--	490	--	590	3.0	.6	10	1330	1390
STARK												
465145102583601		81-06-30	--	--	570	--	820	4.8	.9	18	1800	1810
		81-06-30	--	--	570	--	800	13	.8	18	1800	1810
465053103044601		81-06-30	--	--	920	--	290	4.3	2.9	10	1410	1410
		81-06-30	--	--	920	--	240	4.3	3.3	10	1420	1360
465819103010701		80-12-11	--	--	514	--	130	190	3.7	8.0	--	1180
		81-06-30	--	--	710	--	210	15	4.0	8.0	1170	1110
		81-06-30	--	--	710	--	230	10	3.8	8.0	1160	1130
465705103011601		81-07-01	--	--	560	--	300	21	1.4	7.7	1120	1090
465658103034801		81-07-01	--	--	520	--	440	1.9	.5	11	1160	1270
		81-07-01	--	--	510	--	400	1.8	.5	11	1170	1140
465511103011601		80-12-16	--	--	915	--	150	170	1.2	6.0	--	1620
		81-07-01	--	--	1120	--	500	70	2.8	13	1920	1860
		81-07-01	--	--	1100	--	500	75	2.7	11	1910	1860

QUALITY OF GROUND WATER

483

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

STATION NUMBER	DATE OF SAMPLE	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS-PHORUS, PHORUS, DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MERCER											
472528101530202	81-07-02	--	--	.94	--	--	160	20	610	<10	930
	81-07-02	--	--	1.0	--	--	170	20	570	<10	920
OLIVER											
471150101460202	81-06-29	--	--	1.0	--	--	2900	180	330	0	1100
	81-06-29	--	--	.94	--	--	2000	1800	290	0	1100
SLOPE											
462010103233501	81-07-14	--	--	.93	--	--	530	30	210	1	1700
	81-07-14	--	--	.81	--	--	610	40	210	0	160
461832103245101	81-07-14	--	--	1.3	--	--	1300	70	110	0	120
	81-07-14	--	--	1.2	--	--	1400	60	110	0	130
462441103230601	81-07-15	--	--	.81	--	--	60	30	40	<10	510
	81-07-15	--	--	1.0	--	--	60	40	40	<10	490
463746102562001	81-07-15	--	--	.98	--	--	260	20	60	<10	590
	81-07-16	--	--	.82	--	--	310	20	60	<10	590
463745103003801	81-07-15	--	--	.82	--	--	480	40	30	3	570
	81-07-16	--	--	1.0	--	--	490	60	30	2	570
463559102581001	81-07-24	--	--	1.0	--	--	460	300	20	<10	120
	81-07-24	--	--	1.1	--	--	470	40	10	14	130
463532102591501	81-07-24	--	--	.99	--	--	450	40	10	<10	150
463538103053501	81-07-24	--	--	1.0	--	--	1200	40	50	4	570
463257103102301	81-07-15	--	--	1.3	--	--	460	190	40	2	250
	81-07-15	--	--	1.2	--	--	480	170	40	2	240
463231103041101	81-07-15	--	--	.79	--	--	970	70	0	2	150
	81-07-15	--	--	.75	--	--	1100	80	0	2	150
STARK											
465145102583601	81-06-30	--	--	.95	--	--	500	50	20	0	250
	81-06-30	--	--	.96	--	--	500	50	10	0	270
465053103044601	81-06-30	--	--	.98	--	--	660	90	70	0	160
	81-06-30	--	--	.97	--	--	660	70	70	1	140
465819103010701	80-12-11	1.6	--	1.4	--	--	1200	200	10	3	130
	81-06-30	--	--	1.0	--	--	21000	150	0	4	100
	81-06-30	--	--	.95	--	--	21000	210	10	4	100
465705103011601	81-07-01	--	--	5.9	--	--	2900	80	20	9	90
465658103034801	81-07-01	--	--	.98	--	--	790	20	8	<10	20
	81-07-01	--	--	1.1	--	--	800	30	8	<10	20
465511103011601	80-12-16	2.2	--	--	--	--	580	1600	30	0	380
	81-07-01	--	--	8.8	--	--	21000	1200	30	350	460
	81-07-01	--	--	9.2	--	--	21000	1200	30	0	460

QUALITY OF GROUND WATER

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

STATION NUMBER	LOCAL IDENTIFIER	COUNTY	GEOLOGIC UNIT	DEPTH OF WELL, TOTAL (FEET) (72008)	DATE OF SAMPLE	TIME	DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET) (72019)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)
WILLIAMS									
481148103013401	154-096-04AAB	105	--	33	81-07-08	1400	--	2350	7.8
		105	--	33	81-07-08	1440	--	2350	7.5
481457103025301	155-096-17ADC	105	--	141	81-07-09	1335	--	2225	7.7
		105	--	141	81-07-09	1355	--	2200	7.6
481412103023301	155-096-21BCB1	105	--	88	81-07-09	1135	--	1900	8.0
		105	--	88	81-07-09	1155	--	1950	7.5
481412103023302	155-096-21BCB2	105	--	58	81-07-09	1220	--	1900	8.3
		105	--	58	81-07-09	1245	--	1900	7.4
481300103022301	155-096-28CBD	105	--	44	81-07-09	1000	--	2200	8.0
		105	--	44	81-07-09	1030	--	2225	7.0
WIBAUX									
465300104040001	13-61-18CCA	109	125HRMN	60	81-06-17	1045	--	3250	8.3
		109	125HRMN	60	81-06-17	1130	--	3250	7.3
465900104040001	14-60-10DDD	109	125HRMN	47	81-06-19	1045	--	995	7.8
		109	125HRMN	47	81-06-19	1130	--	1000	6.9
470000104040001	14-61-06CCA1	109	125TGRVL	155	81-06-18	1215	--	1490	8.7
470007104040002	14-61-06CCA2	109	125HRMN	124	81-06-18	1030	--	4000	8.6
		109	125HRMN	124	81-06-18	1130	--	4000	8.2

STATION NUMBER	DATE OF SAMPLE	TEMPERATURE (DEG C) (00010)	COLOR (PLATINUM-COBALT UNITS) (00080)	HARDNESS (MG/L AS CaCO3) (00900)	HARDNESS NONCARBONATE (MG/L AS CaCO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS Ca) (00915)	MAGNESIUM, DIS-SOLVED (MG/L AS Mg) (00925)	SODIUM, DIS-SOLVED (MG/L AS Na) (00930)	PERCENT SODIUM (00932)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DIS-SOLVED (MG/L AS K) (00935)
WILLIAMS											
481148103013401	81-07-08	7.5	--	490	.00	80	70	370	62	7.3	7.8
	81-07-08	15.5	--	490	17	79	70	370	62	7.3	8.0
481457103025301	81-07-09	8.0	--	490	.00	79	71	330	59	6.5	8.0
	81-07-09	20.0	--	490	.00	79	72	330	59	6.5	8.2
481412103023301	81-07-09	9.0	--	310	.00	58	40	340	70	8.4	8.2
	81-07-09	13.0	--	320	.00	59	41	340	69	8.3	8.0
481412103023302	81-07-09	11.0	--	490	66	87	65	270	54	5.3	8.1
	81-07-09	13.0	--	500	140	89	66	280	55	5.5	7.6
481300103022301	81-07-09	8.5	--	230	.00	42	29	460	81	13	5.9
	81-07-09	13.0	--	220	.00	40	28	460	82	14	6.0
WIBAUX											
465300104040001	81-06-17	9.0	--	1100	290	210	130	440	47	5.9	11
	81-06-17	10.0	--	1100	290	200	140	450	47	6.0	11
465900104040001	81-06-19	8.5	--	580	290	130	61	12	4	.2	3.7
	81-06-19	9.0	--	570	290	130	60	12	4	.2	3.8
470000104040001	81-06-18	10.0	--	310	.00	51	43	230	61	5.7	13
470007104040002	81-06-18	9.5	--	170	.00	33	21	930	92	31	4.3
	81-06-18	12.5	--	170	.00	33	20	1000	93	34	4.2

Geologic unit (aquifer):

125HRMN - Harmon Lignite aquifer, Paleocene.

125TGRVL - Tongue River member of Fort Union Formation, Lower, Paleocene.

QUALITY OF GROUND WATER

485

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

STATION NUMBER	DATE OF SAMPLE	BICARBONATE, FET-LAB (MG/L AS HCO3) (95440)	CARBONATE, FET-LAB (MG/L AS CO3) (95445)	ALKALINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLORIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUORIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SI02) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L) (70301)
WILLIAMS											
481148103013401	81-07-08	--	--	540	--	730	20	.3	21	1630	1630
	81-07-08	--	--	470	--	740	17	.3	22	1580	1590
481457103025301	81-07-09	--	--	530	--	700	6.0	.2	29	1510	1540
	81-07-09	--	--	530	--	710	16	.2	29	1490	1570
481412103023301	81-07-09	--	--	460	--	580	17	.4	17	1280	1340
	81-07-09	--	--	440	--	580	4.8	.4	18	1310	1320
481412103023302	81-07-09	--	--	420	--	580	15	.2	18	1260	1300
	81-07-09	--	--	360	--	580	19	.2	18	1300	1280
481300103022301	81-07-09	--	--	720	--	520	5.4	.7	11	1450	1510
	81-07-09	--	--	710	--	510	5.2	.7	10	1450	1490
WIBAUX											
465300104040001	81-06-17	--	--	780	--	1200	37	.1	11	2520	2510
	81-06-17	--	--	790	--	1200	25	.1	11	2550	2520
465900104040001	81-06-19	--	--	290	--	290	4.8	.1	14	722	692
	81-06-19	--	--	280	--	310	4.8	.1	14	723	705
470000104040001	81-06-18	--	--	450	--	380	2.6	.1	12	966	1000
470007104040002	81-06-18	--	--	780	--	1400	26	.6	8.2	2900	2890
	81-06-18	--	--	790	--	1500	6.3	.6	8.2	2870	3050

STATION NUMBER	DATE OF SAMPLE	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOSPHORUS, DIS-SOLVED (MG/L AS P) (00666)	PHOSPHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	MANGANESE, DIS-SOLVED (UG/L AS MN) (01056)	MOLYBDENUM, DIS-SOLVED (UG/L AS MO) (01060)	STRONTIUM, DIS-SOLVED (UG/L AS SR) (01080)
WILLIAMS											
481148103013401	81-07-08	--	--	.85	--	--	220	250	220	2	1100
	81-07-08	--	--	.84	--	--	230	1100	230	1	1100
481457103025301	81-07-09	--	--	2.5	--	--	210	1700	90	1	1000
	81-07-09	--	--	3.2	--	--	250	1300	90	1	1000
481412103023301	81-07-09	--	--	1.5	--	--	250	40	90	<10	1100
	81-07-09	--	--	1.5	--	--	240	420	90	<10	1100
481412103023302	81-07-09	--	--	.75	--	--	200	20	110	<10	990
	81-07-09	--	--	.66	--	--	190	330	110	<10	990
481300103022301	81-07-09	--	--	1.4	--	--	280	20	50	0	660
	81-07-09	--	--	1.4	--	--	250	130	50	1	650
WIBAUX											
465300104040001	81-06-17	--	--	1.9	--	--	1200	40	310	0	5200
	81-06-17	--	--	1.8	--	--	1100	30	310	0	5100
465900104040001	81-06-19	--	--	.89	--	--	380	30	170	<10	1400
	81-06-19	--	--	.81	--	--	380	40	170	<10	1400
470000104040001	81-06-18	--	--	1.6	--	--	720	10	20	<10	1600
470007104040002	81-06-18	--	--	1.2	--	--	500	50	40	2	1000
	81-06-18	--	--	1.4	--	--	500	50	40	2	1000

QUALITY OF GROUND WATER

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

STATION NUMBER	LOCAL IDENTIFIER	COUNTY	GEOLOGIC UNIT	DEPTH OF WELL, TOTAL (FEET) (72008)	DATE OF SAMPLE	TIME	SPECIFIC CONDUCTANCE (UMHQS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)
BOWMAN									
460705103041101	130-099-048AA		011 125TRVL	47	80-10-28	1100	4600	7.1	7.5
			* 011 125TRVL	47	81-07-08	1100	4390	7.1	7.6
			† 011 125TRVL	47	81-07-08	1130	4380	7.0	7.6
			‡ 011 125TRVL	47	81-07-08	1245	3260	7.0	7.6
			* 011 125TRVL	47	81-07-08	1300	4200	7.8	7.6
			* 011 125TRVL	47	81-07-08	1350	4220	7.1	7.6
460804103010101	131-099-260DD		011 125TRVL	76	80-10-28	1400	1420	8.6	8.1
			011 125TRVL	76	81-05-20	1510	1710	7.9	9.4
460856103024401	131-099-22DCC		011 125TRVL	76	80-10-27	1515	4130	7.3	7.7

STATION NUMBER	DATE OF SAMPLE	TURBIDITY (NTU) (00076)	HARDNESS (MG/L AS CAC03) (00900)	HARDNESS NONCARBONATE (MG/L AS CAC03) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNESIUM DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM DIS-SOLVED (MG/L AS K) (00935)	ALKALINITY LAB (MG/L AS CAC03) (90410)
BOWMAN											
460705103041101	80-10-28	--	741	350	130	100	870	72	14	14	390
	81-07-08	--	--	--	--	--	--	--	--	--	380
	81-07-08	--	832	450	150	110	700	64	11	15	380
	81-07-08	--	791	400	150	100	720	66	11	14	390
	81-07-08	--	816	460	160	100	800	68	13	14	360
	81-07-08	--	766	390	140	100	760	68	12	15	380
460804103010101	80-10-28	--	14	.00	2.9	1.5	340	98	42	2.9	420
	81-05-20	2.3	22	.00	4.2	2.8	370	97	35	2.6	410
460856103024401	80-10-27	--	1395	950	260	180	470	42	5.6	12	450

STATION NUMBER	DATE OF SAMPLE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLORIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUORIDE, DIS-SOLVED (MG/L AS F) (00950)	BROMIDE DIS-SOLVED (MG/L AS BR) (71870)	SILICA, DIS-SOLVED (MG/L AS SI02) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)
BOWMAN											
460705103041101	80-10-28	2200	9.0	.2	.00	14	3640	3580	5.0	.00	1.6
	81-07-08	2200	17	.1	--	14	3500	--	4.8	.01	--
	81-07-08	2200	52	.1	--	14	3550	3480	4.8	.05	--
	81-07-08	2200	39	.1	--	13	3540	3480	4.8	.01	--
	81-07-08	2500	42	.1	--	13	3560	3850	4.8	.00	--
	81-07-08	2200	40	.1	--	13	3550	3510	4.8	.03	--
460804103010101	80-10-28	280	5.1	2.1	.20	8.1	933	897	1.3	.00	1.3
	81-05-20	350	8.0	2.1	--	9.1	954	996	1.3	.00	--
460856103024401	80-10-27	1800	34	.5	.10	6.6	3120	3040	4.2	.00	1.2

Geologic unit (aquifer):

112TRVL - Tongue River-Ludlow Member of Fort Union Formation

* - Sampled by gas-squeeze pump.

† - Sampled by gas reciprocating pump.

‡ - Sampled by air-lift pump.

QUALITY OF GROUND WATER

487

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

STATION NUMBER	DATE OF SAMPLE	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS, URTHO, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)
BUWMAN											
460705103041101	80-10-28	.060	--	20	1	100	3600	1	0	7	1500
	81-07-08	--	.050	--	--	--	3100	--	--	--	--
	81-07-08	--	.050	20	0	0	2900	0	10	10	1300
	81-07-08	--	.050	20	0	0	2700	0	10	1	1300
	81-07-08	--	.050	10	0	0	2900	0	10	0	440
	81-07-08	--	.050	60	1	100	2900	1	10	6	1100
460804103010101	80-10-28	.210	--	40	1	0	910	0	0	6	90
	81-05-20	--	--	10	5	100	--	0	10	5	100
460856103024401	80-10-27	.030	--	40	3	200	510	0	0	5	140

STATION NUMBER	DATE OF SAMPLE	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT) (80030)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)
BUWMAN											
460705103041101	80-10-28	5	270	640	.0	0	0	4300	10	<53	<.4
	81-07-08	--	--	--	--	--	--	--	--	--	--
	81-07-08	7	290	730	.1	0	0	4100	50	--	--
	81-07-08	4	280	690	.0	0	0	4100	40	--	--
	81-07-08	5	280	620	.0	0	0	4000	10	--	--
	81-07-08	7	290	690	.1	0	0	4100	100	--	--
460804103010101	80-10-28	5	20	10	.0	0	0	160	10	14	.9
	81-05-20	4	30	30	.3	0	0	180	20	--	--
460856103024401	80-10-27	3	100	460	.0	11	0	4000	40	70	.5

STATION NUMBER	DATE OF SAMPLE	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)	GROSS BETA, DIS- SOLVED (PCI/L AS SR/ YF-90) (80050)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90) (80060)	RADIUM 226, DIS- SOLVED, RADON METHUD (PCI/L) (09511)	URANIUM DIS- SOLVED, EXTRAC- TIUN (UG/L) (80020)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CYANIDE TOTAL (MG/L AS CN) (00720)
BUWMAN									
460705103041101	80-10-28	<28	<.4	<27	<.4	.37	.07	15	.00
	81-07-08	--	--	--	--	--	--	8.0	--
	81-07-08	--	--	--	--	--	--	13	--
	81-07-08	--	--	--	--	--	--	7.2	--
	81-07-08	--	--	--	--	--	--	2.3	--
	81-07-08	--	--	--	--	--	--	6.8	--
460804103010101	80-10-28	<7.6	<.4	<7.3	<.4	.14	.25	21	.00
	81-05-20	--	--	--	--	--	--	--	--
460856103024401	80-10-27	<23	2.7	<21	2.6	.72	--	7.6	.00

INDEX

	Page
Accuracy of field data and computed results-----	13
Acknowledgment-----	2
Acre-foot (AC-FT, acre-ft), definition of-----	3
Adams County, miscellaneous ground-water quality sites in-----	472-475
Alderin Creek near Fort Clark-----	228-237
Alderin Creek basin, gaging-station records in-----	228-237
Algae, definition of-----	3
Algal growth potential (AGP), definition of-----	3
Alkali Creek near Bowman-----	413,449
Analyses of samples collected at miscellaneous ground-water quality sites-----	472-487
Analyses of samples collected at miscellaneous surface-water quality sites (specific conductance)-----	461-466
(chemical analyses)-----	451-460
Analyses of samples collected at partial-record surface-water quality sites-----	449-450
Analyses of samples collected at partial-record water-quality lake stations-----	414-448
Antelope Creek above Hazen-----	209-212
near Elgin-----	412-413
Apple Creek near Menoken-----	330-333
Apple Creek basin, gaging-station records in-----	330-333
Aquifer, definition of-----	3
Artesian, definition of-----	3
Artificial substrate, definition of-----	8
Ash mass, definition of-----	3
Bacteria, definition of-----	3
Fecal coliform, definition of-----	3
Fecal streptococcal, definition of-----	3
Total coliform, definition of-----	3
Bear Creek near Oakes-----	405,460,466
Bear Den Creek near Mandaree-----	74-79
Bear Den Creek basin, gaging station records in-----	74-79
Beaver Creek (tributary to Little Missouri River) at Wibaux, MT-----	90-93
near Trotters-----	99-105
Beaver Creek (tributary to Missouri River) at Linton-----	384,457-459,465
near Ray-----	65-72
Beaver Creek basin, gaging-station records in-----	65-72,384
miscellaneous surface-water quality sites in-----	457-459
miscellaneous temperature measurements and field determinations in-----	465
Bed material, definition of-----	3
Bedload, definition of-----	7
Biochemical oxygen demand (BOD), definition of-----	3
Biomass, definition of-----	3
Ash mass, definition of-----	3
Dry mass, definition of-----	3
Wet mass, definition of-----	3
Bowman County, ground-water levels in-----	467
miscellaneous ground-water quality sites in-----	486-487
Bowman-Haley Lake near Haley-----	385,426
Brush Creek near Beulah-----	166-173
Buffalo Creek near Washburn-----	247-253
Buffalo Creek Tributary near Gascoyne-----	387-393
Buffalo Creek basin, gaging-station records in-----	247-253
Burke County, miscellaneous ground-water quality sites in-----	472-475
Burleigh County, ground-water levels in-----	467
Burnt Creek near Bismarck-----	281,454-456,463
Burnt Creek basin, gaging-station records in-----	281
miscellaneous surface-water quality sites in-----	454-456
miscellaneous temperature measurements and field determinations in-----	463
Cannonball River, at Breien-----	376-383
at New England-----	337-345
at Regent-----	353-362
below Bentley-----	363,457-459,464

	Page
Cannonball River basin, gaging-station records in-----	337-383
miscellaneous discharge measurements in-----	413
miscellaneous surface-water quality sites in-----	457-459
miscellaneous temperature measurements and field determinations in-----	464-465
partial-record water-quality analyses of lakes in-----	439-444
Cedar Creek, near Haynes-----	365,457-459,464
near Raleigh-----	375,457-459,465
White Butte Fork, near Scranton-----	364,457-459,464
Cells/volume, definition of-----	3
Cfs-day, definition of-----	4
Charbonneau Creek nr Charbonneau-----	45-46
Chemical analyses of ground-water wells-----	472-487
Chemical oxygen demand (COD), definition of-----	4
Chlorophyll, definition of-----	4
Chlorophyta (green algae), definition of-----	6
Chrysophyta (yellow-green algae, yellow-brown algae, and diatoms), definition of-----	6
Coal Bank Creek near Havelock-----	346-352
Coal Creek near Stanton-----	222-226
Coal Lake Coulee basin, gaging station records in-----	243-246
Coal Lake Coulee near Hensler-----	243-246
Coliform bacteria, fecal, definition of-----	3
fecal streptococcal, definition of-----	3
total, definition of-----	3
Coliform organisms, definition of-----	4
Collection and computation of surface-water data-----	10
Collection and examination of water-quality data-----	14
Collection of ground-water data-----	15
Color unit, definition of-----	4
Concentration, mean, definition of-----	7
suspended-sediment, definition of-----	7
Contents, definition of-----	4
Continuing-record station, definition of-----	4
Control, definition of-----	4
Control structure, definition of-----	4
Cooperation-----	1
Coyote Creek near Zap-----	154-165
Crown Butte Lake (Deep) near Mandan-----	435-438
Crown Butte Lake (Shallow) near Mandan-----	433-434
Cryptophyta (cryptomonads), definition of-----	6
Cubic feet per second per square mile (CFSM), definition of-----	4
Cubic foot per second (FT ³ /S, ft ³ /s), definition of-----	4
Cyanophyta (blue-green algae), definition of-----	6
Data, accuracy of-----	13
explanation of, surface water-----	10
Deep Creek near Amidon-----	82-88
Definition of terms-----	3
Dickey County, miscellaneous ground-water quality sites in-----	472-475
Discharge, definition of-----	4
instantaneous, definition of-----	4
mean, definition of-----	4
suspended-sediment, definition of-----	7
total sediment, definition of-----	7
Dissolved, definition of-----	4
Diversity index, definition of-----	4
Downstream order and station number-----	9
Drainage area, definition of-----	5
Drainage basin, definition of-----	5
Dry mass, definition of-----	3
Duck Creek near Wibaux, MT-----	89,466
Dunn County, ground-water levels in-----	467
E. A. Patterson Lake near Dickinson-----	308,418-421
Eddy County, ground-water levels in-----	468
miscellaneous ground-water quality sites in-----	476-479
Elm Creek near Golden Valley-----	149-152
Emmons County, ground-water levels in-----	468

	Page		Page
Euglenophyta (euglenoids), definition of-----	6	James River, at Jamestown-----	400,460,466
Explanation of ground-water level records-----	15	at Lamoure-----	401-404
Explanation of stage and water-discharge		at North Dakota-South Dakota	
records-----	10	State line-----	408-410
Explanation of water-quality records-----	14	near Grace City-----	396,457-459,465
Fecal coliform bacteria, definition of-----	3	near Manfred-----	395,457-459,465
Fecal streptococcal bacteria, definition of-----	3	near Pingree-----	397
Gage height (G.H.), definition of-----	5	James River basin, gaging-station records in-----	395-411
Gaging station, definition of-----	5	miscellaneous discharge measurements in-----	413
Golden Valley county, miscellaneous ground-water		miscellaneous surface-water quality sites in-----	457-460
quality sites in-----	476-479	miscellaneous temperature measurements and	
Grand River, North Fork, above Bowman-Haley		field determinations in-----	465-466
Lake near Haley-----	449	partial-record water-quality analyses of	
at Haley-----	386,450	lakes in-----	445-448
near Haley-----	413	Jamestown Reservoir near Jamestown-----	398,445-448
Grand River basin, gaging-station records in-----	385-393	Kidder County, ground-water levels in-----	469
miscellaneous discharge measurements in-----	413	Knife River, at Hazen-----	198-208
partial-record water-quality analyses		at Manning-----	126-133
of lakes in-----	426	at Marshall-----	139-148
partial-record surface-water quality sites in-----	449-450	near Golden Valley-----	153,454-456,462
Grant County, ground-water levels in-----	468	Knife River basin, gaging-station	
Green River, near Dickinson-----	412	records in-----	126-226
near New Hradec-----	309-316	miscellaneous surface-water quality sites in-----	454-456
Tributary near New Hradec-----	317-318	miscellaneous temperature measurements and	
Tributary near South Heart-----	412	field determinations in-----	462-463
Ground-water level data, by counties:		Lake Iris (Deep) near Regent-----	439-442
Bowman County-----	467	Lake Iris (Shallow) near Regent-----	443-444
Burleigh County-----	467	Lake Oahe near Pierre, SD-----	394
Dunn County-----	467	Lake Sakakawea at Riverdale-----	416-417
Eddy County-----	468	Lake Sakakawea near New Town-----	414-415
Emmons County-----	468	Lake Sakakawea near Riverdale-----	115
Grant County-----	468	Lake Tschida near Glen Ullin-----	320
Hettinger County-----	469	Lake Tschida (Deep) near Glen Ullin-----	422-425
Kidder County-----	469	Lakes and Reservoirs:	
McLean County-----	469	Bowman-Haley Lake, near Haley-----	385,426
Oliver County-----	470	Crown Butte Lake (Deep) near Mandan-----	435-438
Stark County-----	470	Crown Butte Lake (Shallow) near Mandan-----	433-434
Stutsman County-----	470	E. A. Patterson Lake near Dickinson-----	308,418-421
Wells County-----	471	Iris, Lake (Deep) near Regent-----	439-442
Williams County-----	471	Iris, Lake (Shallow) near Regent-----	443-444
Ground-water chemical analyses by counties:		Jamestown Reservoir near Jamestown-----	398,445-448
Adams County-----	472-475	Oahe, Lake, near Pierre, SD-----	394
Bowman County-----	486-487	Sakakawea, Lake, at Riverdale-----	416-417
Burke County-----	472-475	Sakakawea, Lake, near New Town-----	414-415
Dickey County-----	472-475	Sakakawea, Lake, near Riverdale-----	115
Eddy County-----	476-479	Sweetbriar Lake (Deep) near Judson-----	429-432
Golden Valley County-----	476-479	Sweetbriar Lake (Shallow) near Judson-----	427-428
Hettinger County-----	476-479	Sweetbriar Reservoir near Judson-----	322
Mercer County-----	480-483	Tschida, Lake, near Glen Ullin-----	320
Oliver County-----	480-483	Tschida, Lake (Deep) near Glen Ullin-----	422-425
Slope County-----	480-483	Little Beaver Creek near Wibaux, MT-----	98,466
Stark County-----	480-483	Little Missouri River, at Marmarth-----	81,451-453,462
Wibaux County, MT-----	484-485	near Watford City-----	106-114
Williams County-----	484-485	Little Missouri River basin, gaging-station	
Ground-water level records-----	15	records in-----	81-114
Hagel Creek near Center-----	273-279	miscellaneous surface-water quality sites in-----	451-453
Hardness, definition of-----	5	miscellaneous temperature measurements and	
Hay Creek near Wibaux, MT-----	95-97	field determinations in-----	462,466
Hay Creek No. 2 near Wibaux, MT-----	94	Little Muddy River below Cow Creek near	
Heart River, near Dickinson-----	412	Williston-----	57,451-453,461
near Gladstone-----	412	Little Muddy River basin, gaging-station	
near Lark-----	321,454-456,464	records in-----	57
near Mandan-----	323-328	miscellaneous surface-water quality sites in-----	451-453
near Richardton-----	319,454-456,464	miscellaneous temperature measurements and	
near South Heart-----	299-307	field determinations in-----	461
Heart River basin, gaging-stations		Map showing location of, gaging stations-----	18
records in-----	286-328	water-quality stations-----	19
miscellaneous discharge measurements in-----	412-413	ground-water observation wells-----	20
miscellaneous surface-water quality sites in-----	454-456	Maple River (James River basin) at North	
miscellaneous temperature and field		Dakota-South Dakota State line-----	411
determinations in-----	464	McLean County, ground-water levels in-----	469
partial-record water-quality analyses of		Mean concentration, definition of-----	7
lakes in-----	418-425,427-438	Mean discharge, definition of-----	4
Hettinger County, ground-water levels in-----	469	Mercer County, miscellaneous ground-water	
miscellaneous ground-water quality sites in-----	476-479	quality sites in-----	480-483
Hydrologic bench-mark station, definition of-----	10	Metamorphic stage, definition of-----	5
Hydrologic conditions-----	2	Micrograms per gram (UG/G, $\mu\text{g/g}$),	
graph of-----	17	definition of-----	5
Hydrologic unit, definition of-----	5	Micrograms per liter (UG/L, $\mu\text{g/L}$),	
Instantaneous discharge, definition of-----	4	definition of-----	5
Introduction-----	1	Milligrams per liter (MG/L, mg/L),	
		definition of-----	5

	Page		Page
Miscellaneous sites, discharge measurements at-----	412-413	Radiochemical program, definition of-----	10
Miscellaneous surface-water quality sites-----	451-460	Records of discharge by other agencies-----	14
Miscellaneous temperature measurements and field determinations-----	461-466	Recoverable from bottom material, definition of-----	7
Missouri River, above Stanton-----	125	Reservoirs, See lakes and reservoirs:	
at Bismarck-----	282-285	Runoff in inches (IN, in), definition of-----	7
at Garrison Dam-----	116-124		
at Price-----	256	SAR (Sodium-adsorption ratio), definition of----	7
at Washburn-----	254	Sediment-----	15
below Mandan-----	329	bedload, definition of-----	7
near Culbertson, MT-----	21-30	definition of-----	7
near Hensler-----	242	mean concentration, definition of-----	7
near Schmidt-----	334-336	suspended sediment, definition of-----	7
near Stanton-----	227	suspended-sediment concentration, definition of-----	7
near Williston-----	52-55	suspended-sediment discharge, definition of-----	7
Missouri River Stage Gage No. 4 near Nohly, MT----	31	suspended-sediment load, definition of-----	7
Missouri River Stage Gage No. 5 at Nohly, MT----	32	total sediment discharge, definition of-----	7
Missouri River Stage Gage No. 5A at Buford-----	49	Shell Creek near Parshall-----	80,451-453,462
Missouri River Stage Gage No. 6 near Buford-----	50	Shell Creek basin, gaging-station records in-----	80
Missouri River Stage Gage No. 7 near Trenton-----	51	miscellaneous surface-water quality sites in--	451-453
Missouri River Stage Gage No. 9 at Williston----	56	miscellaneous temperature measurements and field determinations in-----	462
Missouri River Tributary No. 2 near Hensler-----	238-241	Slope County, miscellaneous ground-water quality sites in-----	480-483
National Geodetic Vertical Datum of 1929 (NGVD), definition of-----	5	Sodium-adsorption ratio (SAR), definition of----	7
National stream-quality accounting network (NASQAN), definition of-----	10	Solute, definition of-----	7
Natural substrate, definition of-----	8	South Branch Heart River near South Heart-----	289-293
North Creek, near Belfield-----	412	Special networks and programs-----	10
near South Heart-----	294-298	Specific conductance, definition of-----	7
North Fork Grand River, above Bowman-Haley Lake near Haley-----	449	Spring Creek, (Knife River basin) at Zap-----	193-196
at Haley-----	386,450	below Lake Ilo at Dunn Center-----	174-182
near Haley-----	413	near Haley-----	413,449
Norwegian Creek near Belfield-----	286-288	near Halliday-----	183-192
Numbering system for wells and miscellaneous sites-----	10	Square Butte Creek, above Nelson Lake near Center-----	262-272
Oliver County, ground-water levels in-----	470	below Center-----	280,454-456,463
miscellaneous ground-water quality sites in--	480-483	near Hannover-----	257-261
Order, downstream, and station number-----	9	Square Butte Creek basin, gaging-station records in-----	257-280
Organism, definition of-----	5	miscellaneous surface-water quality sites in-----	454-456
cells/volume, definition of-----	5	miscellaneous temperature measurements and field determinations in-----	463
organism count/area, definition of-----	5	Stage, definition of-----	7
organism count/volume, definition of-----	5	Stage-discharge relation, definition of-----	8
total organism count, definition of-----	5	Stark County, ground-water levels in-----	470
Organism count/area, definition of-----	5	miscellaneous ground-water quality sites in--	480-483
Organism count/volume, definition of-----	5	Station numbers, definition of-----	9
Other data available-----	14	Stony Creek near Williston-----	58-63
Painted Woods Creek near Wilton-----	255,454-456,463	Stony Creek basin, gaging station records in-----	58-63
Painted Woods Creek basin, gaging-station records in-----	255	Stray Creek near Manning-----	134-138
miscellaneous surface-water quality sites in--	454-456	Streamflow, definition of-----	8
miscellaneous temperature measurements and field determinations in-----	463	Stutsman County, ground-water levels in-----	470
Parameter codes-----	15	Substrate, definition of-----	8
Partial-record station, definition of-----	5	artificial, definition of-----	8
Partial-record surface-water quality stations----	449-450	natural, definition of-----	8
Partial-record water-quality analyses of lake stations-----	414-448	Surface area, definition of-----	8
Particle size distribution, definition of-----	6	Surficial bed material, definition of-----	8
Percent composition, definition of-----	6	Suspended, definition of-----	8
Percent saturation, definition of-----	6	Suspended, recoverable, definition of-----	8
Periphyton, definition of-----	6	Suspended sediment, definition of-----	7
Pesticide program, definition of-----	10	Suspended-sediment concentration, definition of-----	7
Pesticides, definition of-----	6	Suspended-sediment discharge, definition of-----	7
pH, definition of-----	6	Suspended-sediment load, definition of-----	7
Phytoplankton, definition of-----	6	Suspended, total, definition of-----	8
Picocurie (PC, pCi), definition of-----	6	Sweetbriar Lake (Deep) near Judson-----	429-432
Pilot Drain at Oakes-----	406-407	Sweetbriar Lake (Shallow) near Judson-----	427-428
Pipestem Creek, near Jamestown-----	413	Sweetbriar Reservoir near Judson-----	322
near Pingree-----	399,457-459,466		
Plankton, definition of-----	6	Taxonomy, definition of-----	8
Phytoplankton, definition of-----	6	Temperature, water-----	14
Chlorophyta (green algae), definition of-----	6	Terms, definition of-----	3
Chrysophyta (yellow-green algae, yellow- brown algae, and diatoms), definition of-----	6	Thermograph, definition of-----	8
Cryptophyta (cryptomonads), definition of-----	6	Thirty Mile Creek near Burt-----	413
Cyanophyta (blue-green algae), definition of-----	6	Timber Creek near Bentley-----	366-374
Euglenophyta (euglenoids), definition of-----	6	Time-weighted average, definition of-----	9
Pyrrhophyta (fire algae), definition of-----	6	Tobacco Garden Creek near Watford City-----	64,451-453,461
Zooplankton, definition of-----	7	Tobacco Garden Creek basin, gaging station records in-----	64
Polychlorinated biphenyls (PCBs), definition of-----	7	miscellaneous surface-water quality sites in-----	451-453
Primary productivity, definition of-----	7	miscellaneous temperature measurements and field determinations in-----	461
Publications on techniques of water-resources investigations-----	16		
Pyrrhophyta (fire algae), definition of-----	6		

	Page		Page
Tons per acre-foot, definition of-----	9	White Earth River at White Earth-----	73,451-453,461
Tons per day, definition of-----	9	White Earth River basin, gaging-station	
Total, definition of-----	9	records in-----	73
Total coliform bacteria, definition of-----	3	miscellaneous surface-water quality sites in-----	451-453
Total in bottom material,		miscellaneous temperature measurements and	
definition of-----	9	field determinations in-----	461
Total organism count, definition of-----	5	Wibaux County, miscellaneous ground-water	
Total, recoverable, definition of-----	9	quality sites in-----	484-485
Total sediment discharge, definition of-----	7	Williams County, ground-water levels in-----	471
		miscellaneous ground-water quality sites in-----	484-485
Water analysis-----	14	WRD, definition of-----	9
Water-supply papers, definition of-----	9	WSP, definition of-----	9
Water year, definition of-----	9		
Water temperature-----	14	Yellowstone River near Sidney, MT-----	33-43
Weighted average, definition of-----	9	Yellowstone River Stage Gage No. 1 near	
Well-numbering system-----	10	Fairview, MT-----	44
Wells County, ground-water levels in-----	471	Yellowstone River Stage Gage No. 2 near	
West Branch Antelope Creek near Hazen-----	218-221	Cartwright-----	47
West Branch Antelope Creek No. 4 near Zap-----	215-217	Yellowstone River Stage Gage No. 3 near	
West Branch Antelope Creek No. 5 near Zap-----	213-214	Buford-----	48
West Branch Otter Creek near Beulah-----	197,454-456,463	Yellowstone River basin, gaging-station	
Wet mass, definition of-----	3	records in-----	33-48
White Butte Fork Cedar Creek near			
Scranton-----	364,457-459,464	Zooplankton, definition of-----	7

FACTORS FOR CONVERTING INCH-POUND UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

The following factors may be used to convert the inch-pound units published herein to the International System of Units (SI). This report contains both the inch-pound and SI unit equivalents in the station manuscript descriptions.

Multiply inch-pound units	By	To obtain SI units
<i>Length</i>		
inches (in)	2.54×10^1	millimeters (mm)
	2.54×10^{-2}	meters (m)
feet (ft)	3.048×10^{-1}	meters (m)
miles (mi)	1.609×10^0	kilometers (km)
<i>Area</i>		
acres	4.047×10^3	square meters (m ²)
	4.047×10^{-1}	square hectometers (hm ²)
	4.047×10^{-3}	square kilometers (km ²)
square miles (mi ²)	2.590×10^0	square kilometers (km ²)
<i>Volume</i>		
gallons (gal)	3.785×10^0	liters (L)
	3.785×10^0	cubic decimeters (dm ³)
	3.785×10^{-3}	cubic meters (m ³)
million gallons	3.785×10^3	cubic meters (m ³)
	3.785×10^{-3}	cubic hectometers (hm ³)
cubic feet (ft ³)	2.832×10^1	cubic decimeters (dm ³)
	2.832×10^{-2}	cubic meters (m ³)
cfs-days	2.447×10^3	cubic meters (m ³)
	2.447×10^{-3}	cubic hectometers (hm ³)
acre-feet (acre-ft)	1.233×10^3	cubic meters (m ³)
	1.233×10^{-3}	cubic hectometers (hm ³)
	1.233×10^{-6}	cubic kilometers (km ³)
<i>Flow</i>		
cubic feet per second (ft ³ /s)	2.832×10^1	liters per second (L/s)
	2.832×10^1	cubic decimeters per second (dm ³ /s)
	2.832×10^{-2}	cubic meters per second (m ³ /s)
gallons per minute (gal/min)	6.309×10^{-2}	liters per second (L/s)
	6.309×10^{-2}	cubic decimeters per second (dm ³ /s)
	6.309×10^{-5}	cubic meters per second (m ³ /s)
million gallons per day	4.381×10^1	cubic decimeters per second (dm ³ /s)
	4.381×10^{-2}	cubic meters per second (m ³ /s)
<i>Mass</i>		
tons (short)	9.072×10^{-1}	megagrams (Mg) or metric tons

USGS LIBRARY - RESTON



3 1818 00453613 0

U.S. DEPARTMENT OF THE INTERIOR
INT 413

U.S. DEPARTMENT OF THE INTERIOR
Geological Survey
821 E. Interstate Avenue
Bismarck, ND 58501



OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE \$300
SPECIAL 4TH CLASS BOOK RATE