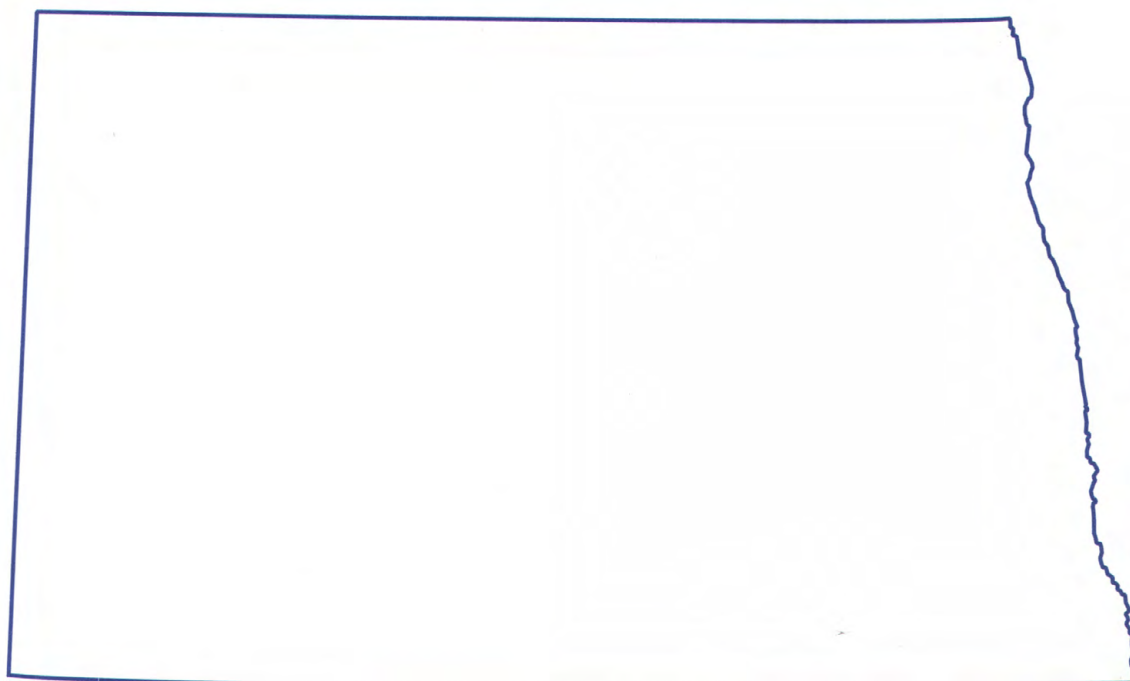
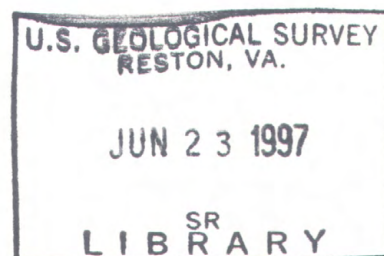




# Water Resources Data North Dakota Water Year 1996

Volume 1. Surface Water



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT ND-96-1  
Prepared in cooperation with the State of North Dakota  
and with other agencies

# CALENDAR FOR WATER YEAR 1996

1995

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

1996

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

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

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

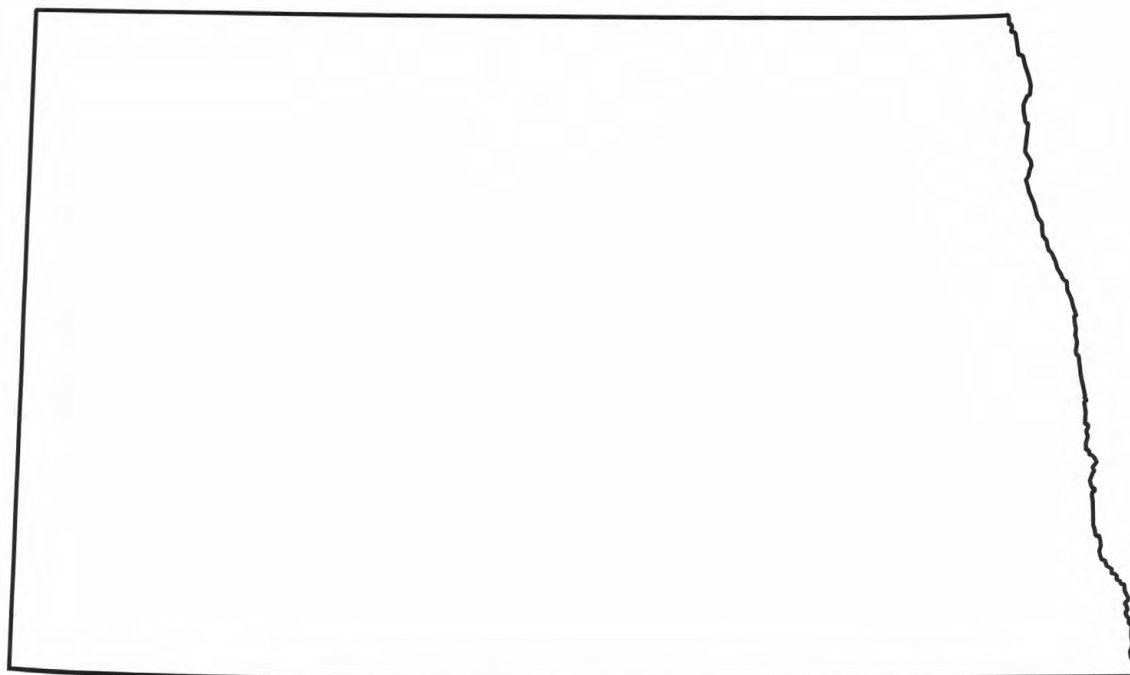




# Water Resources Data North Dakota Water Year 1996

Volume 1. Surface Water

by R.E. Harkness, W.R. Berkas, and S.W. Norbeck



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT ND-96-1

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

**U.S. DEPARTMENT OF THE INTERIOR**

**BRUCE BABBITT, Secretary**

**U.S. GEOLOGICAL SURVEY**

**Gordon P. Eaton, Director**

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U.S. Geological Survey  
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Bismarck, North Dakota 58501-1199



## PREFACE

This edition of the annual hydrologic data report of North Dakota is one of a series of annual reports that document hydrologic data collected from the U.S. Geological Survey's collection networks in each State, Puerto Rico, and the Trust Territories. These records of streamflow, ground-water levels, and quality of water provide the hydrologic information needed by Federal, State, local agencies, and the private sector for developing and managing land and water resources in North Dakota. The records are contained in 2 volumes:

Volume 1. Surface-Water Data

Volume 2. Ground-Water Data

This report is the culmination of a concerted effort by dedicated personnel of the U.S. Geological Survey who collected, compiled, analyzed, verified, and organized the data, and who typed, edited, and assembled the report. In addition to the authors, who had the primary responsibility for assuring that the information contained herein is accurate, complete, and adheres to U.S. Geological Survey policy and established guidelines. The following individuals contributed significantly to the collection, processing, and tabulation of the data:

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SURFACE-WATER STATIONS, IN DOWNSTREAM ORDER, FOR WHICH  
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[Letters after station names designate type of data: (d) discharge, (e) elevation, gage heights, or contents, (c) chemical, (b) biological, (m) microbiological, (t) water temperature, (s) sediment, (r) radiochemical, (p) pesticides]

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

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# WATER RESOURCES DATA - NORTH DAKOTA, 1996

## DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

The following continuous-record surface-water discharge or stage-only stations (gaging stations) in North Dakota have been discontinued. Daily streamflow or stage records were collected and published for the period of record, expressed in water years, shown for each station. Those stations with an asterisk (\*) after the station number are currently operated as crest-stage partial-record stations. Discontinued project stations with less than 3 years of record have not been included. Information regarding these stations may be obtained from the District Office at the address given on the back side of the title page of this report.

[(d), discharge; (e), elevation (stage only); 1, not published (records only available from computer and/or manual files); --, no data].

Station name	Station number	Drainage area (mi <sup>2</sup> )	Period of record
RED RIVER OF THE NORTH BASIN			
Bois de Sioux River near Fairmount, ND (d)	05050500	1,540	1919-44
Wild Rice River near Cayuga, ND (d)	05051700	955	1956-79
Wild Rice River near Mantador, ND (d)	05052000	1,540	1944-50
Richland County Drain No. 65 near Great Bend, ND (d)	05052100	38	1981-85
Antelope Creek at Dwight, ND (d)	05052500	294	1944-49
Sheyenne River near Harvey, ND (d)	05055000	534	1946-56
North Fork Sheyenne River near Wellsburg, ND (d)	05055100	693	1957-67
Big Coulee near Maddock, ND (d)	05055200	146	1957-67
Sheyenne River at Sheyenne, ND (d)	05055500	1,790	1929-33, 1940-51
Big Coulee near Fort Totten, ND (d)	05055520	23.2	1966-75
Mauvais Coulee Tributary No. 4 near Cando, ND (d)	05056085	109	1994
Webster Coulee at Webster, ND (d)	05056225	670	1980-87 (1), 1993-94
St. Joe Coulee near Webster, ND (d)	05056244	--	1986-87 (1)
Calio Coulee near Starkweather, ND (d)	05056247	130	1986-88, 1994
Lake Alice-Irvine Channel near Churchs Ferry, ND (d)	05056255	999	1985-87
Little Coulee at Leeds, ND (d)	05056300	280	1956-67
Comstock Coulee near Minnewaukan, ND (d)	05056403	58	1986-88 (1), 1994
Cass County Drain 52 near Amenia, ND (d)	05060510	13.5	1981-85
Rush River near Prosper, ND (d)	05060550	170	1981-85
Lower Branch Rush River near Prosper, ND (d)	05060570	35.8	1981-85
Elm River near Kelso, ND (d)	05062200	199	1956-63, 1981-86
Beaver Creek near Hatton, ND (d)	05065000	162	1954-57
Goose River near Portland, ND (d)	05065500	517	1940-75, 1981-86
South Branch Goose River near Portland, ND (d)	05066000	362	1940-42

**WATER RESOURCES DATA - NORTH DAKOTA, 1996**  
**DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS**

Station name	Station number	Drainage area (mi <sup>2</sup> )	Period of record
RED RIVER OF THE NORTH BASIN--Continued			
Turtle River at Manvel, ND (d)	05083000	613	1946-70 (d), 1980-82 (e)
Red River of the North at Oslo, MN (d)	05083500*	31,200	1936-37, 1941-43, 1945-60, 1974-76 (1)
Middle Branch Forest River near Whitman, ND (d)	05083600	47.7	1961-90
South Branch Park River near Park River, ND (d)	05088000	214	1940-50
Homme Reservoir near Park River, ND (e)	05088500	226	1949-94
South Branch Park River below Homme Dam, ND (d)	05089000	226	1950-94
Middle Branch Park River near Union, ND (d)	05089100	15.3	1966-86
Cart Creek at Mountain, ND (d)	05089500	16.9	1954-84
Pembina County Drain No. 20 near Glasston, ND (d)	05092200	80	1972-86
Hidden Island Coulee near Hansboro, ND (d)	05098700	38	1961-95
Cypress Creek near Sarles, ND (d)	05098800	71	1961-88
Cypress Creek above International Boundary near Sarles, ND (d)	05098820	83	1988-95
Little South Pembina River near Walhalla, ND (d)	05099400	182	1956-82
Pembina River at Walhalla, ND (d)	05099600	3,350	1940-90
Herzog Creek near Concrete, ND (d)	05100500	18.9	1954-77
Tongue River at Cavalier, ND (d)	05101500	167	1939-51
Tongue River near Pembina, ND (d)	05102000	460	1940-42
Long Creek near Crosby, ND (d)	05113500	2,080	1943-65
West Branch Short Creek near Columbus, ND (d)	05113700	167	1978-81
Des Lacs River near Kenmare, ND (d)	05116150	687	1988-93
Wintering River near Bergen, ND (d)	05120200	176	1957-78
Souris River near Towner, ND (d)	05121500	13,100	1933-41
Willow Creek at Dunseith, ND (d)	05122500	142	1953-70
Oak Creek at Lake Metigoshe Outlet near Bottineau, ND (d)	05123100	59	1954-81
Stone Creek near Kramer, ND (d)	05123500	168	1986-93
Egg Creek near Granville, ND (d)	05123600	289	1957-81
Cut Bank Creek at North Lake Outlet near Granville, ND (d)	05123700	534	1957-80
Cut Bank Creek at Upham, ND (d)	05123750	722	1975-80, 1986-91
Boundary Creek near Landa, ND (d)	05123900	230	1957-81, 1985-94



**WATER RESOURCES DATA - NORTH DAKOTA, 1996**  
**DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS**

Station name	Station number	Drainage area (mi <sup>2</sup> )	Period of record
MISSOURI RIVER BASIN			
Charbonneau Creek near Charbonneau, ND (d)	06329597	149	1967-81
Missouri River Stage Gage No. 8 near Trenton, ND (e)	06329680	164,000	1959-79 (e)
Blacktail Creek near Bonetrail, ND (d)	06330500	30	1956-60
Little Muddy Creek near Williston, ND (d)	06331500	1,010	1904-09, 1932-33, 1946-54
Stony Creek near Williston, ND (d)	06331570	146	1978-81
Missouri River Stage Gage No. 10 near Williston, ND (e)	06331600	165,000	1959-75 (e)
Missouri River Stage Gage No. 11 near Williston, ND (e)	06331650	165,000	1959-80 (e)
Tobacco Garden Creek near Watford City, ND (d)	06331680	135	1977-82
Beaver Creek near Ray, ND (d)	06331850	102	1978-82
White Earth River at White Earth, ND (d)	06332000	780	1954-81
Missouri River at Sanish, ND (d)	06332500	166,000	1928-32
Shell Creek near Parshall, ND (d)	06332520	465	1965-81
Little Beaver Creek near Marmarth, ND (d)	06335000	587	1938-79
Deep Creek near Amidon, ND (d)	06335750	250	1978-83
Little Missouri River at Medora, ND (d)	06336000	6,190	1903-09, 1922-24, 1928-34, 1946-75
Missouri River near Elbowwoods, ND (d)	06337500	179,800	1940-54
Missouri River below Garrison Dam, ND (d)	06339000	181,400	1948-69, 1970-76 (e)
Stray Creek near Manning, ND (d)	06339180	30.3	1979-81
Knife River at Marshall, ND (d)	06339300	722	1971-81
Elm Creek near Golden Valley, ND (d)	06339490	82	1967-81
Coyote Creek near Zap, ND (d)	06339550	65.2	1978-83
Brush Creek near Beulah, ND (d)	06339560	23.9	1975-91
Spring Creek below Lake Ilo at Dunn Center, ND (d)	06339800	116	1978-81
Spring Creek near Halliday, ND (d)	06339900	260	1978-81
West Branch Otter Creek near Beulah, ND (d)	06340200	26.5	1965-82
Antelope Creek above Hazen, ND (d)	06340520	47.2	1978-86
West Branch Antelope Creek No. 5 near Zap, ND (d)	06340524	4.37	1978-82
West Branch Antelope Creek No. 4 near Zap, ND (d)	06340528	8.46	1977-86
West Branch Antelope Creek No. 2 near Beulah, ND (d)	06340536	28.3	1977-80

**WATER RESOURCES DATA - NORTH DAKOTA, 1996**  
**DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS**

Station name	Station number	Drainage area (mi <sup>2</sup> )	Period of record
MISSOURI RIVER BASIN--Continued			
West Branch Antelope Creek near Hazen, ND (d)	06340540	37.7	1978-83
Coal Creek near Stanton, ND (d)	06340580	15.8	1978-81
Alderin Creek near Fort Clark, ND (d)	06340780	21.9	1978-83
Missouri River Tributary No. 2 near Hensler, ND (d)	06340890	9.80	1979-81
Coal Lake Coulee near Hensler, ND (d)	06340905	70.5	1978-89
Buffalo Creek near Washburn, ND (d)	06340930	57.3	1979-83
Turtle Creek near Turtle Lake, ND (d)	06341400	310	1957-76
Square Butte Creek near Hannover, ND (d)	06342040	16.9	1978-81
Square Butte Creek Tributary No. 2 near Center, ND (d)	06342100	13	1965-76
Square Butte Creek above Nelson Lake near Center, ND (d)	06342200	75.8	1978-82
Hagel Creek near Center, ND (d)	06342230	45.6	1978-82
Norwegian Creek near Belfield, ND (d)	06342850	39.8	1979-81
South Branch Heart River near South Heart, ND (d)	06342900	132	1979-83
North Creek near South Heart, ND (d)	06342970	40.8	1979-81
Heart River near South Heart, ND (d)	06343000*	311	1946-70, 1978-84
Heart River below Dickinson Dam near Dickinson, ND (d)	06344000	404	1952-72
Heart River at Lehigh, ND (d)	06344500	443	1943-52
Green River Tributary near New Hradec, ND (d)	06344610	22.4	1979-81
Green River near Gladstone, ND (d)	06345000	356	1946-75
Heart River below Heart Butte Dam near Glen Ullin, ND (d)	06346500	1,710	1943-72
Antelope Creek near Carson, ND (d)	06347000	221	1948-75
Wilson Creek near Glen Ullin, ND (d)	06347100	41.4	1965-70
Heart River near Lark, ND	06348000	2,750	1946-95
Sweetbriar Creek near Judson, ND (d)	06348500	157	1951-79
Missouri River below Mandan, ND (d)	06349070	189,800	1966-94
Long Lake Creek below Long Lake near Moffit, ND (d)	06349275	700	1989-93
Cannonball River at New England, ND (d)	06349900	285	1979-81
Coal Bank Creek near Havelock, ND (d)	06349930	70	1974-83
Cannonball River below Bentley, ND (d)	06351000	1,140	1943-81
Cannonball River near Heil, ND (d)	06351500	1,340	1951-53
White Butte Fork Cedar Creek near Scranton, ND (d)	06351680	42.9	1965-95
Cedar Creek near North Lemmon, ND (d)	06352300	901	1959-63

**WATER RESOURCES DATA - NORTH DAKOTA, 1996**  
**DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS**

Station name	Station number	Drainage area (mi <sup>2</sup> )	Period of record
MISSOURI RIVER BASIN--Continued			
Cannonball River near New Leipzig, ND (d)	---	1,180	1943-50
Timber Creek near Bentley, ND (d)	06352400	100	1978-81
Cedar Creek near Pretty Rock, ND (d)	06352500	1,340	1943-76
Hay Creek near Morristown, SD (d)	06352525	86	1991-92
Cannonball River near Timmer, ND (d)	06353500	3,670	1903-09, 1911-18, 1922, 1924, 1928-35
Beaver Creek at Linton, ND (d)	06354500	717	1949-89
One-Mile Creek near Fort Yates, ND (d)	06354825	19.8	1978-79
North Fork Grand River at Haley, ND	06355000	509	1908-17, 1945-95
Buffalo Creek Tributary near Gascoyne, ND (d)	06355310	15.7	1975-87
James River near Manfred, ND (d)	06467600	253	1954-94
Big Slough at Hamberg, ND (d)	06467900	60	1957-68, 1970-75
James River at New Rockford, ND (d)	06468000	714	1950-69
Juanita Lake Tributary near Grace City, ND (d)	06468190	94	1986-89
Kelly Creek below Niccum Reservoir near Bordulac, ND (d)	06468300	188	1986-89
James River near Pingree, ND (d)	06468500	1,670	1953-68
Pipestem Creek near Buchanan, ND (d)	06469500	758	1950-74
Pipestem Creek below Pipestem Dam, ND (d)	06469825	--	1985 (1)
Pilot Drain at Oakes, ND (d)	06470833	5.10	1972-82

## WATER RESOURCES DATA - NORTH DAKOTA, 1996

## DISCONTINUED CONTINUOUS-RECORD SURFACE-WATER-QUALITY STATIONS

The following stations were discontinued as continuous-record surface-water quality stations prior to the current water year. Daily records of temperature, specific conductance or sediment were collected and published for the periods shown for each station.

[--, no data]

Station name	Station number	Drainage area (mi <sup>2</sup> )	Type of record	Period of record (water years)
Wild Rice River near Cayuga, ND	05051700	955	temperature	1958
Wild Rice River near Abercrombie, ND	05053000	2,080	temperature specific conductance	1967-81 1968-81
Red River of the North at Fargo, ND	05054000	6,800	temperature specific conductance	1947-49, 1956-73 1965-73
Red River of the North below Fargo, ND	05054020	6,820	temperature specific conductance	1973-82 1973-82
Sheyenne River above Harvey, ND	05054500	424	temperature	1954
Sheyenne River near Warwick, ND	05056000	2,070	temperature specific conductance	1951-53, 1955-62, 1964-80 1952-60, 1964-80
Big Coulee near Churchs Ferry, ND	05056400	2,510	temperature specific conductance	1983-89 1983-89
Channel A near Penn, ND	05056410	---	temperature specific conductance	1983-89, 1991 1983-89
Sheyenne River near Cooperstown, ND	05057000	6,470	temperature specific conductance	1967-81 1968-81
Sheyenne River at Lisbon, ND	05058700	8,190	temperature specific conductance sediment	1956-81 1964-80 1976-79
Sheyenne River near Kindred, ND	05059000	8,800	temperature specific conductance sediment	1971-81 1976-81 1976-80
Sheyenne River near Horace, ND	05059400	8,800	temperature specific conductance	1976-80 1976-80
Red River of the North at Grand Forks, ND	05082500	30,100	temperature	1957-73
Red River of the North at Oslo, MN	05083500	31,200	temperature specific conductance	1974-78 1974-78
Red River of the North at Drayton, ND	05092000	34,800	temperature	1957-61, 1965-75
Pembina River at Walhalla, ND	05099600	3,350	temperature specific conductance sediment	1962-81 1965-81 1962-76
Souris River near Sherwood, ND	05114000	8,940	sediment	1975-81
Souris River near Foxholm, ND	05116000	9,470	temperature specific conductance	1973-81 1973-81
Souris River near Verendrye, ND	05120000	11,300	temperature specific conductance	1973-83 1973-83
Deep River below Cut Bank Creek near Upham, ND	05123760	1,722	temperature specific conductance sediment	1974-81, 1989 1974-81 1989



**WATER RESOURCES DATA - NORTH DAKOTA, 1996**  
**DISCONTINUED CONTINUOUS-RECORD SURFACE-WATER-QUALITY STATIONS**

Station name	Station number	Drainage area (mi <sup>2</sup> )	Type of record	Period of record (water years)
Souris River near Westhope, ND	05124000	16,900	temperature specific conductance sediment	1955, 1957-64, 1967-68, 1974-81, 1989 1957-64, 1967-68, 1974-81 1956-59, 1989
Missouri River near Williston, ND	06330000	164,500	temperature specific conductance	1952-65 1952-60, 1965
Bear Den Creek near Mandaree, ND	06332515	74	temperature specific conductance	1969-71, 1989-91 1969-71
Little Missouri River at Marmarth, ND	06335500	4,640	temperature sediment	1952-54 1952-54
Little Missouri River at Medora, ND	06336000	6,190	temperature sediment	1947-49 1946-51
Little Missouri River near Watford City, ND	06337000	8,310	temperature specific conductance sediment	1972-81 1972-81 1947-48, 1972-76
Missouri River Below Garrison Dam, ND	06339000	181,400	temperature	1952-71
Knife River near Golden Valley, ND	06339500	1,230	temperature sediment	1964-65 1946-49, 1964-65
Knife River at Hazen, ND	06340500	2,240	temperature specific conductance	1975-82 1975-82
Missouri River near Hensler, ND	06340900	183,000	temperature	1967-77
Missouri River at Bismarck, ND	06342500	186,400	temperature specific conductance sediment	1967-75 1972-75 1972-81
Heart River near Richardton, ND	06345500	1,240	sediment	1946-52
Heart River near Mandan, ND	06349000	3,310	temperature specific conductance sediment	1972-76, 1978-82 1972-76, 1978-82 1972-76
Missouri River near Schmidt, ND	06349700	191,700	temperature	1967-75
Cannonball River at Regent, ND	06350000	580	temperature specific conductance sediment	1965-66 1965-66 1965-66
Cedar Creek near Pretty Rock, ND	06352500	1,340	sediment	1946-49
Cannonball River at Breien, ND	06354000	4,100	temperature specific conductance sediment	1972-82, 1991 1972-82 1972-76
North Fork Grand River at Haley, ND	06355000	509	temperature	1951-52
Pilot Drain at Oakes, ND	06470833	5.10	temperature specific conductance	1972-80, 1982 1972-80, 1982
James River at North Dakota-South Dakota State line	06470878	6,650	temperature specific conductance	1974-88 1974-88



## INTRODUCTION

The Water Resources Division of the U.S. Geological Survey, in cooperation with many other agencies, obtains a large amount of data pertaining to the water resources of North Dakota each water year. These data, accumulated during many water years, constitute a valuable data base for developing an improved understanding of the water resources of the State. To make these data readily available to interested parties outside the U.S. Geological Survey, the data are published annually in this report series entitled "Water Resources Data - North Dakota."

This report includes records of discharge, stage, and water quality for streams and contents, stage, and water quality for lakes and reservoirs. Specifically, it contains records of water discharge for 99 streamflow-gaging stations; stage only for 19 river-stage stations; contents and/or stage for 13 lake or reservoir stations; annual maximum discharge for 28 crest-stage stations; and water quality for 88 streamflow-gaging stations, 1 river-stage station, 17 lake or reservoir stations, 4 stations where streamflow is not gaged, and miscellaneous sample sites on 9 rivers or canals and 61 lakes or wetlands. Locations of these stations are shown in figures 1 and 2 except for the miscellaneous water-quality sites. Data are included for 7 water-quality monitor sites on streams, 10 water-quality sites on miscellaneous wetlands, and for 2 precipitation-chemistry stations. These data represent that part of the National Water Data System collected by the U.S. Geological Survey and cooperating State and Federal agencies in North Dakota.

This series of annual reports for North Dakota began with the 1961 water year with a report that contained only data relating to the quantities of surface water. For the 1964 water year, a similar report was introduced that contained only data relating to water quality. For the 1975-95 water years, the report format was changed to present, in one volume, data on quantities of surface water, quality of surface and ground water, and ground-water levels. Beginning with the 1996 water year, ground-water levels and ground-water quality data will be published in a separate volume for North Dakota.

Prior to introduction of this series and for several water years concurrent with it, water-resources data for North Dakota were published in U.S. Geological Survey Water-Supply Papers. Data on stream discharge and stage and on lake or reservoir contents and stage, through September 1960, were published annually under the title "Surface-Water Supply of the United States, Parts 5 and 6." For the 1961-70 water years, the data were published in two 5-year reports. Data on chemical quality, temperature, and suspended sediment for the 1941-70 water years were published annually under the title "Quality of Surface Waters of the United States," and ground-water levels for the 1935-74 water years were published under the title "Ground-Water Levels in the United States." The above mentioned Water-

Supply Papers may be consulted in the libraries of the principal cities of the United States and may be purchased from U.S. Geological Survey, Branch of Information Services, Box 25286, Denver, CO 80225-0286.

Publications similar to this report are published annually by the U.S. Geological Survey for all States. These official Survey reports have an identification number consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example this volume is identified as "U.S. Geological Survey Water-Data Report ND-96-1." For archiving and general distribution, the reports for 1971-74 water years also are identified as water-data reports. These water-data reports are for sale in paper copy or in microfiche by the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161.

Additional information, including current prices, for ordering specific reports may be obtained from the District Chief at the address given on the back of the title page or by telephoning (701) 250-4601.

## COOPERATION

The U.S. Geological Survey and agencies of the State of North Dakota have had cooperative agreements for the collection of streamflow records since 1903, ground-water levels since 1937, and water-quality records since 1946. Organizations that assisted in collecting the data in this report through cooperative agreement with the Survey are: North Dakota State Water Commission, D. A. Sprynczynatyk, Chief Engineer; North Dakota Department of Health, Jon Rice, State Health Officer; Burleigh County Water Resource District, Ken Royce, Chairman; Barnes County Soil Conservation District, Diane Olson, Chairperson; Devils Lake Basin Joint Water Resource Board, Ben Varnson, Chairman; Lower Heart River Water Resources District, W. S. Russell, Chairman; Morton County Water Resources District, A. C. Mork, Chairman; Oliver County Water Resources District, Duane Bueligen, Chairman; Red River Joint Water Management Board, Ronald Osowski, Chairman; Red River Watershed Management Board, John Galegher, Chairman; Southeast Cass Water Resources District, Fred Selberg, Chairman; Stark County Water Resource District, Jack Olin, Chairman; City of Minot, Orlin Backes, Mayor.

Assistance with funds or services was given by the U.S. Army Corps of Engineers for 25 streamflow-gaging stations, 16 river-stage stations, 2 reservoir stations, and water quality for 2 streamflow-gaging stations and for 1 lake station; the U.S. Bureau of Reclamation for 4 streamflow-gaging stations, 1 river-stage station, and water quality for 3 streamflow-gaging stations and for 2 lake or reservoir stations; International Joint Commission of the U.S. State Department for 4 streamflow-gaging stations and 1 reservoir station; the U.S. Fish and Wildlife Service for 5 streamflow-gaging stations and water quality for 1 streamflow-gaging station and for 2 reservoir stations; the U.S. Bureau of Indian Affairs for 3 streamflow-

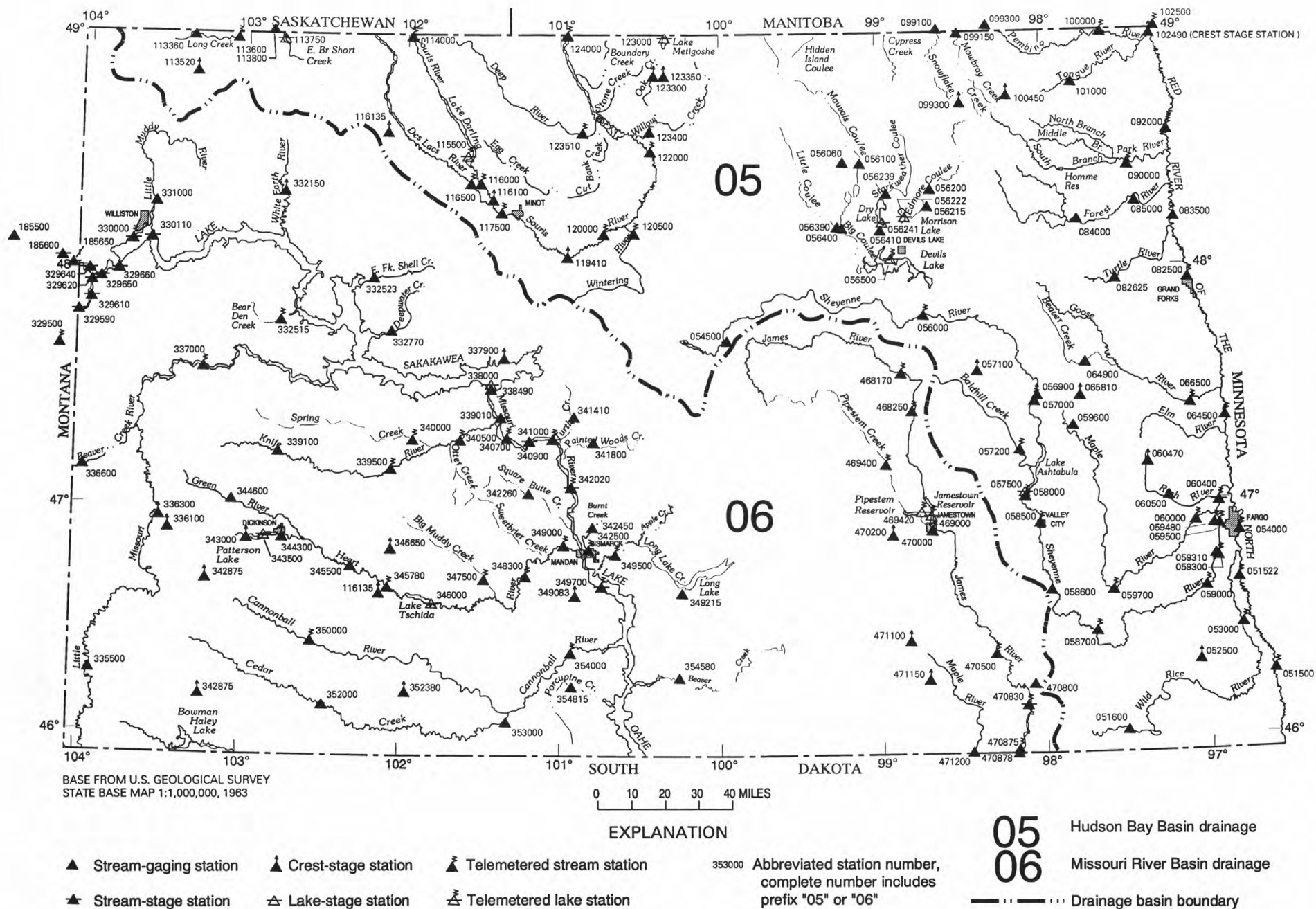
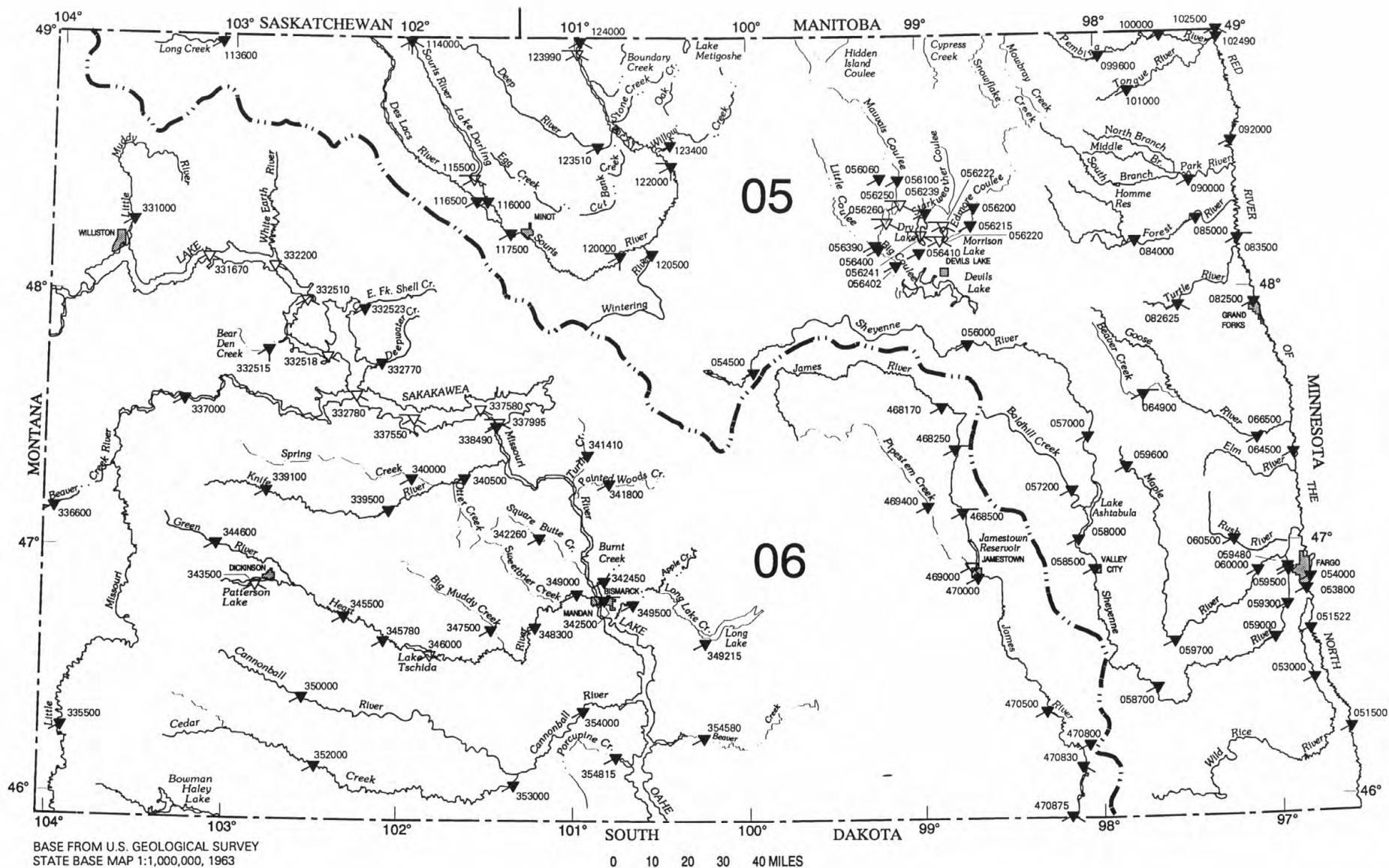


Figure 1. Location of active surface-water gaging stations.





# EXPLANATION

- ▼ Stream station
- ▼ Biological measurement
- ▼ Chemical measurement
- ▼ Sediment measurement
- ▼ Lake station
- ▼ Microbiological measurement
- ▼ Temperature measurement

353000 Abbreviated station number, complete number includes prefix "05" or "06"

05  
06

- Hudson Bay Basin drainage
- Missouri River Basin drainage
- Drainage basin boundary

Figure 2. Location of active surface-water-quality stations.

gaging stations and water-quality for 3 streamflow-gaging stations; and other U.S. Department of the Interior agencies concerned with the Missouri River Basin for 7 streamflow-gaging stations, 2 river-stage stations, 3 reservoir stations, and water quality for 5 streamflow-gaging stations, 1 river-stage station, and 1 reservoir station; and the U.S. Environmental Protection Agency for stage, precipitation, and water-quality data for 10 wetland sites.

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

Organizations that provided data are acknowledged in station descriptions.

## SUMMARY OF HYDROLOGIC CONDITIONS

### Climate

In North Dakota, normal annual precipitation ranges from about 14 inches in the northwestern part of the State to about 22 inches in the southeastern part of the State (Owenby, J.R., and Ezell, D.S., 1992, Monthly station normals of temperature, precipitation, and heating and cooling degree days, 1961-90, North Dakota: U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Environmental Satellite, Data, and Information Service, National Climatic Data Center, Asheville, North Carolina, Climatology of the United States, No. 81). Three-fourths of this precipitation occurs during April through September. The greatest normal monthly precipitation for the entire State generally occurs during June. Normal, as used in reference to meteorological data in this report, is a mean value for the reference period 1961 through 1990. Meteorological data were obtained from publications of the National Climatic Data Center (U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Climatic Data Center, 1995, 1996, Climatological data, North Dakota: Asheville, North Carolina, v. 104, no. 10-12, and v. 105, no. 1-9).

North Dakota is divided into nine climatological divisions (fig. 3). Precipitation during water year 1996 ranged from about 0.8 inch less than normal in the southwest division to about 2.9 inches greater than normal in the southeast division. A comparison of monthly precipitation for water year 1996 to normal monthly precipitation for 1961-90 for the nine climatological divisions in North Dakota is shown in figure 3. Data shown in figure 3 are means of monthly precipitation for reporting stations within each climatological division.

Monthly mean precipitation in some climatological divisions was as much as 0.1 inch (31 percent) less than normal during the usually dry fall and winter months of October through March. However, statewide monthly mean precipitation ranged from 0.4 inch (90 percent) greater than normal during January to 0.1 inch (22 percent) greater than normal during February. The greatest departure from normal

occurred in the southeast division where monthly mean precipitation was 2.3 inches (175 percent) greater than normal during October.

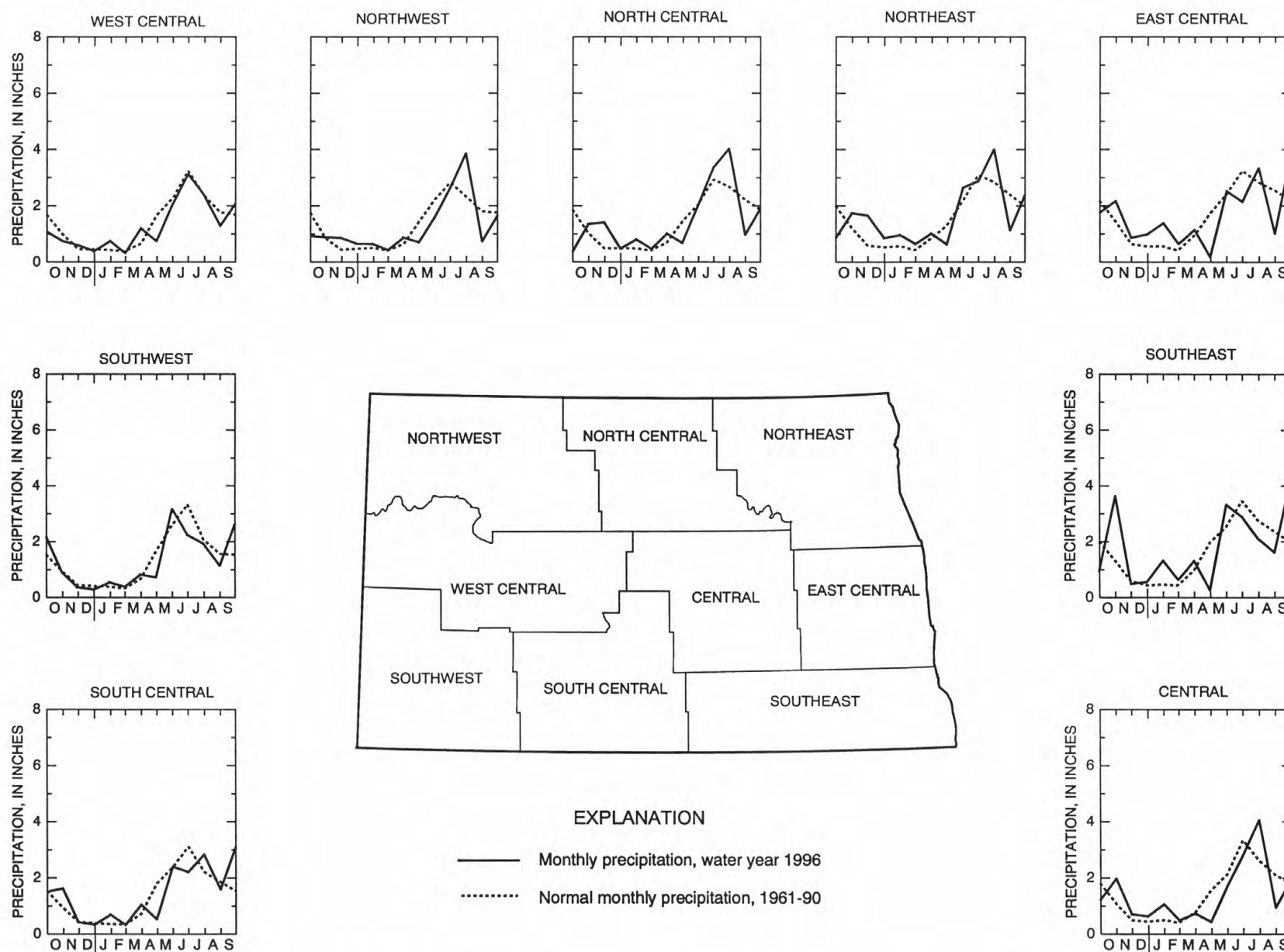
Statewide monthly mean precipitation during April was 1.1 inches (66 percent) less than normal and ranged from 0.7 inch less than normal in the northwest and northeast divisions to 1.7 inches less than normal in the east-central division. During May, statewide monthly mean precipitation was 0.1 inch (3 percent) greater than normal and ranged from 0.6 inch less than normal in the northwest division to 0.8 inch greater than normal in the southeast division. The alternating pattern for statewide monthly mean precipitation continued for June through September. Statewide monthly mean precipitation was 0.5 inch (15 percent) less than normal during June when statewide precipitation usually is greatest. However, during July, statewide monthly mean precipitation was 0.6 inch (26 percent) greater than normal. During August, all nine climatological divisions reported less-than-normal precipitation, and statewide monthly mean precipitation was 0.9 inch (44 percent) less than normal. During September, statewide monthly mean precipitation was 0.8 inch (45 percent) greater than normal and ranged from 0.1 inch less than normal in the northwest division to 2.1 inches greater than normal in the southeast division.

Temperatures during October through January were below normal in all nine climatological divisions except in December when temperatures were about 1°F (degrees Fahrenheit) greater than normal in the central, southwest, south-central, and southeast divisions. January was particularly cold and had monthly mean temperatures that ranged from 6 to 8°F below normal in the nine climatological divisions. February temperatures were near normal and ranged from 2°F below normal in the east-central division to 3°F above normal in the southwest division.

Temperatures during March and April were below normal in all nine climatological divisions. Monthly mean temperatures during March ranged from 14°F in the north-central and northeast divisions to 20°F in the southwest division. Monthly mean temperatures during April ranged from 32°F in the northeast division to 40°F in the southwest division. Above-freezing temperatures in mid-March started the spring thaw, particularly in the west, but were followed by lower temperatures that delayed most of the runoff until mid-April. The influence of temperatures on streamflow in North Dakota is diminished significantly after snowmelt and has little effect on streamflow from May through September.

### Streamflow

The largest mean monthly discharge of North Dakota rivers generally is coincident with snowmelt runoff. Because above-freezing temperatures normally occur earlier in the southwestern part of the State than in the northeastern part of the State, snowmelt runoff usually begins first on the Missouri River tributaries in southwestern North Dakota and progresses from southwest to northeast across the State. Hydrographs of



**Figure 3.** Comparison, by climatological division, of monthly precipitation, water year 1996, to normal monthly precipitation, 1961-90.



mean monthly discharge (fig. 4) for the period of record for selected streams within each of the climatological divisions verify this pattern. For example, the largest mean monthly discharge for the period of record for Bear Den Creek near Mandaree, which is in the west-central division, occurs in March, whereas the largest mean monthly discharges for the remaining streamflow-gaging stations occur in April. Mean monthly discharge for Cedar Creek near Haynes, which is in the southwest division, is almost as large for March as for April, further substantiating the general pattern of snowmelt progressing in time from southwest to northeast North Dakota.

Although many inferences about hydrologic conditions in the State can be made from precipitation (fig. 3) and streamflow (fig. 4) data, sound hydrologic judgment should be used. Variability of rainfall intensity and distribution should be considered when making conclusions about hydrologic response to rainfall, especially for small basins. Problems also may occur because different reporting periods are used in figures 3 and 4. Normal monthly precipitation is computed using data for a 30-year period (1961-90), but mean monthly discharge is computed using data for the period of record at each streamflow-gaging station--51 years (1946-96) in the case of Apple Creek near Menoken.

During October through January, runoff was significantly greater than normal only in the southeast division where precipitation also was significantly greater than normal during October. The greater-than-normal runoff for October for the Wild Rice River near Abercrombie is shown in figure 4.

Above-freezing temperatures during February started breakup in the southwestern part of the State as shown by the hydrographs for Bear Den Creek near Mandaree in the west-central division, Cedar Creek near Haynes in the southwest division, and, to a lesser degree, Apple Creek near Menoken in the south-central division. However, lower temperatures returned and delayed further significant runoff until mid-March.

In mid-March, higher temperatures returned and spring breakup began on streams throughout the State except in the northeast division (see Park River at Grafton, fig. 4). In late March, lower temperatures returned and breakup was delayed once again. Of the streams shown in figure 4, only Cedar Creek near Haynes in the southwest division peaked during March. The remaining streams, except for the Wild Rice River near Abercrombie, peaked during April when higher temperatures returned for the third time and stayed until the entire statewide snowpack had melted. The peak for Wild Rice River near Abercrombie occurred during May as a result of a rainstorm and was higher than the snowmelt peak during April.

Annual mean discharges for the 1994, 1995, and 1996 water years are shown in table 1. The annual mean discharges for 1996 were greater than the annual mean discharges for 1994 at all nine stations. However, the annual mean discharges for 1995 exceeded the annual mean discharges for

1996 at four of the stations (Cedar Creek near Haynes, Wintering River near Karlsruhe, Wild Rice River near Abercrombie, and James River near Grace City). Although none of the annual mean discharges for 1996 are the highest for their respective periods of record, one is the second highest, three are the third highest, and two of the remaining five are the sixth highest.

When ranked against the highest annual maximum instantaneous discharges for the period of record, the maximums for 1996 for the stations shown in table 1 do not rank as high as might be expected from the annual mean discharges. The multiple snowmelt peaks caused by the alternating warm and cool temperatures during February, March, and April spread the runoff out over a longer period of time and, thus, significantly reduced the volume of runoff available for any one event.

The Devils Lake Basin is a 3,810 square-mile closed basin adjacent to the headwaters of the Sheyenne River. Geologic evidence indicates that, in the past, water flowed from the Devils Lake Basin into the Sheyenne River. However, since 1867 when water levels of Devils Lake first were recorded, Devils Lake has not flowed into the Sheyenne River Basin and the level of the lake has varied greatly in response to wet and dry periods (fig. 5). From 1867 to 1940, the water level generally declined from a maximum of 1,438.4 feet above sea level in 1867 to a minimum of 1,400.9 feet above sea level in 1940. After 1940, the water level generally increased except during 1956-68 and 1987-93. The decline from 1987 to 1993 occurred as a result of a drought in the basin. From 1993 to 1996, the water level increased as a result of greater-than-normal precipitation and runoff in the basin, and, at the beginning of spring breakup in April 1996, the water level was 1,435.4 feet above sea level. The water level continued to increase as a result of spring runoff and rainfall in the basin and reached a maximum of 1,437.8 feet above sea level on July 21, 1996.

#### Chemical Quality of Streamflow

The chemical quality of streamflow at any particular site is dependent upon many factors, including source of streamflow, composition of rocks over which water flows, location, and time of year; therefore, the quality of streamflow varies considerably across the State. The chemical quality of streamflow also is dependent upon the volume of streamflow. During periods of low flow, most of the flow is derived from ground-water inflow, which is mineralized, and the resulting streamflow has large dissolved-solids concentrations. During periods of high flow, most of the flow is derived from snowmelt or precipitation runoff, which is less mineralized, and the resulting streamflow has small dissolved-solids concentrations.

Five stations from around the State were selected to show the variability in stream-water quality among the different river drainages. Specific conductance, an indicator of dissolved solids in water, is used to show the water-quality



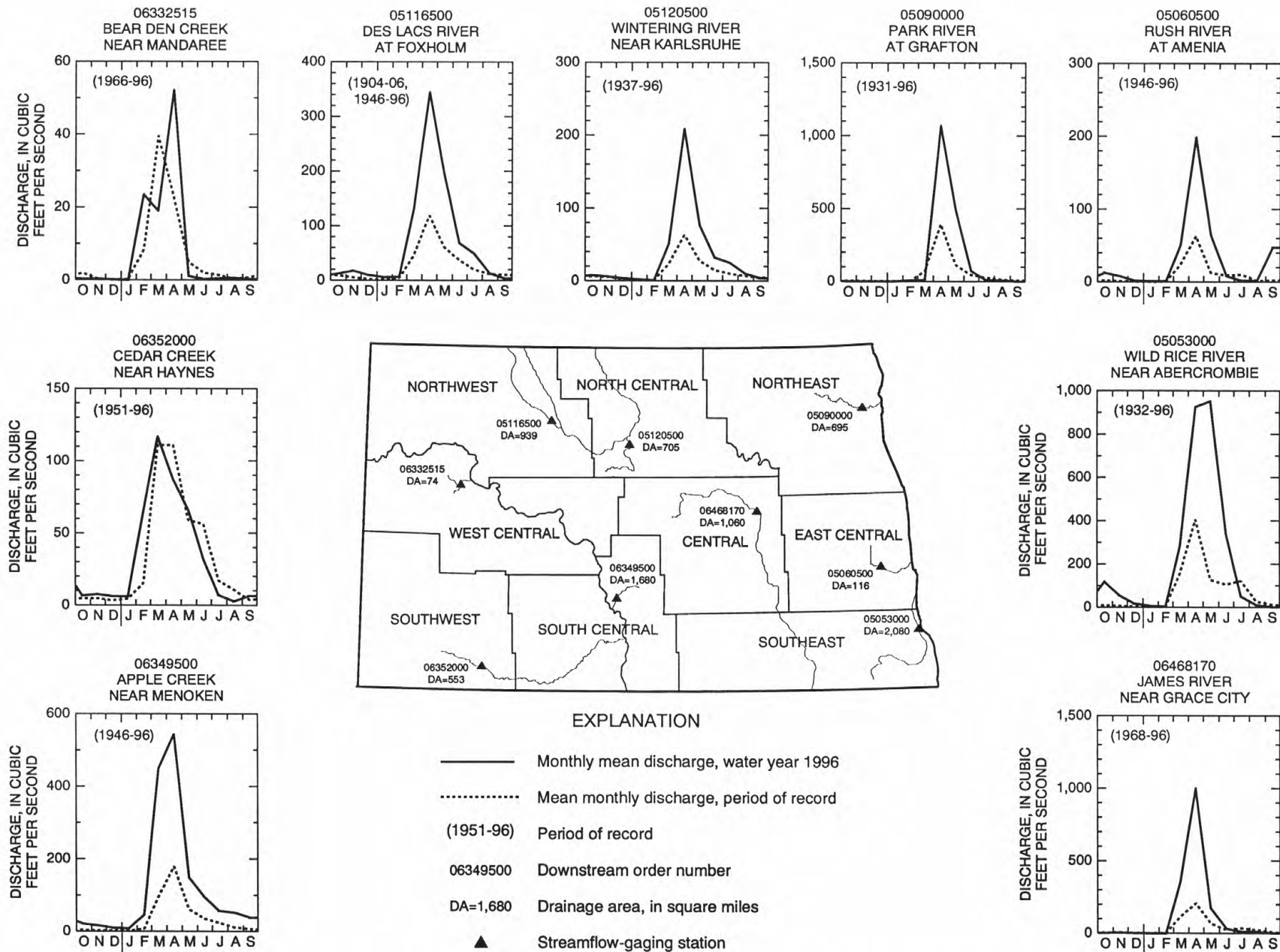


Figure 4. Comparison of monthly mean discharge during water year 1996 to mean monthly discharge for the period of record.

## WATER RESOURCES DATA - NORTH DAKOTA, 1996

**Table 1.** Period-of-record mean and median annual discharges; annual mean discharges for water years 1994, 1995, and 1996; ranking of annual mean discharges for water years 1994, 1995, and 1996 in relation to highest annual mean discharges for the period of record; maximum instantaneous discharge for water year 1996; and ranking of maximum instantaneous discharge for water year 1996 in relation to highest annual maximum instantaneous discharge for the period of record at selected streamflow-gaging stations

[ft<sup>3</sup>/s, cubic feet per second]

Period of record			Annual mean discharge for water year (ft <sup>3</sup> /s)			Ranking of annual mean discharge from highest for period of record			Maximum instantaneous discharge for 1996 (ft <sup>3</sup> /s)	Ranking of maximum instantaneous discharge for 1996 from highest annual maximum instantaneous discharge for period of record
Number of complete water years	Mean annual discharge (ft <sup>3</sup> /s)	Median annual discharge (ft <sup>3</sup> /s)	1994	1995	1996	1994	1995	1996		
06349500 Apple Creek near Menoken										
51	35.6	22	33.5	103	123	19	5	3	1,350	14
06352000 Cedar Creek near Haynes										
46	33.4	28	29.0	44.7	33.9	23	11	14	710	29
06332515 Bear Den Creek near Mandaree										
30	6.62	5.6	6.28	4.00	8.01	14	18	12	470	16
05116500 Des Lacs River at Foxholm										
53	27.4	16	17.3	23.9	71.4	23	18	7	2,000	6
05120500 Wintering River near Karlsruhe										
59	14.0	11	20.3	81.2	35.5	14	1	3	1,050	5
05090000 Park River at Grafton										
65	57.3	43	54.7	111	139	30	8	6	3,400	13
05060500 Rush River at Amenia										
50	10.4	6.6	18.5	30.3	32.8	10	4	3	750	11
05053000 Wild Rice River near Abercrombie										
64	81.5	38	212	276	230	8	4	6	3,260	11
06468170 James River near Grace City										
28	41.3	26	89.3	166	132	4	1	2	3,470	2

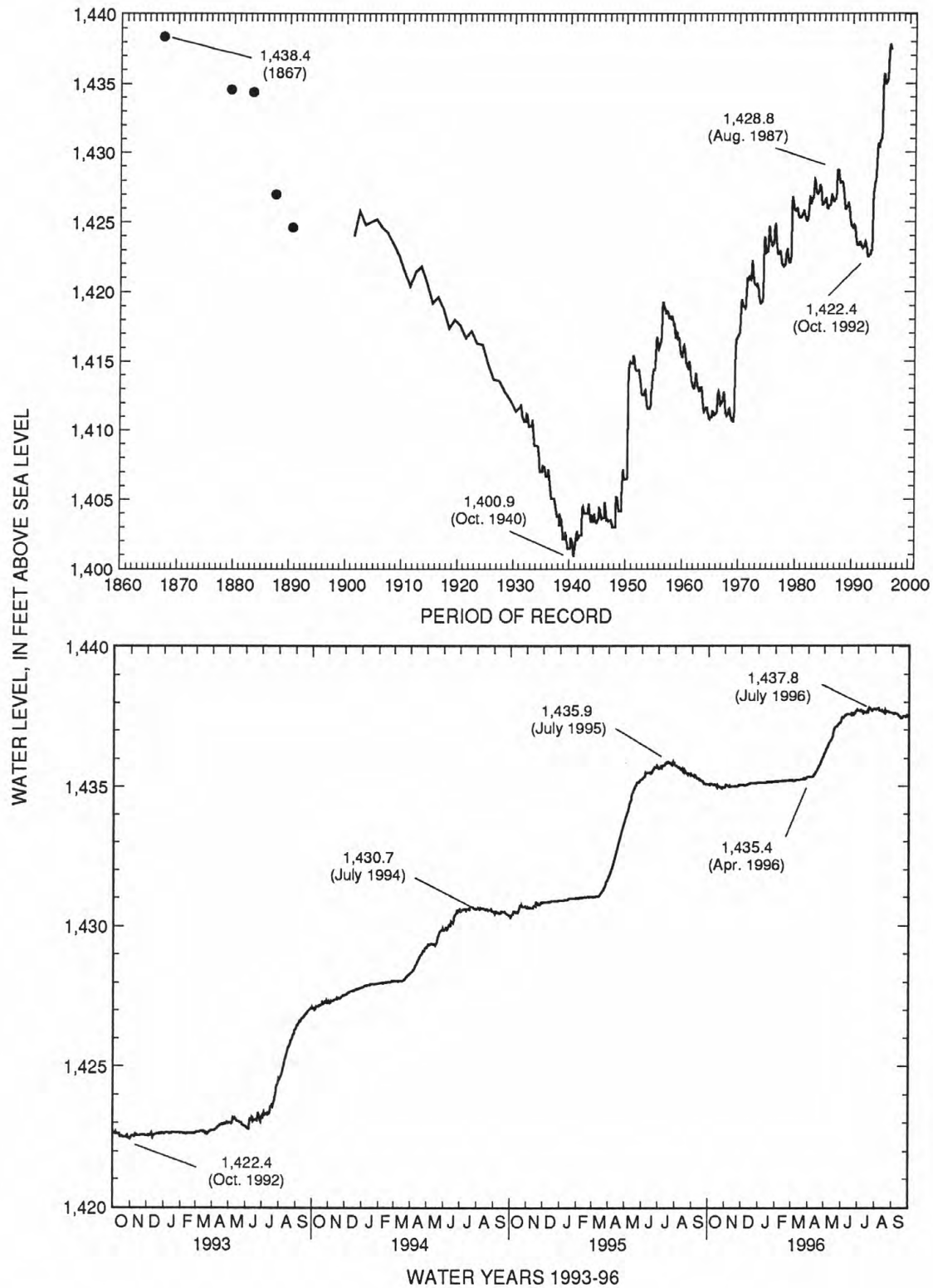


Figure 5. Devils Lake water levels for the period of record and for water years 1993-96.

variability among these stations and among months at a given station. The mean, maximum, and minimum specific conductance for the period of record and the specific conductances measured during the 1996 water year for each station are shown in table 2.

Specific conductance is used as an indicator of the suitability of water for irrigation and other uses. The U.S. Salinity Laboratory (U.S. Salinity Laboratory Staff, 1954, *Diagnosis and improvement of saline and alkali soils*: U.S. Department of Agriculture Handbook 60, 160 p.) has developed an index using specific conductance as an indicator of salinity hazard for irrigation water. The salinity hazard and corresponding specific conductance are as follow:

Salinity hazard	Specific conductance (microsiemens per centimeter at 25 degrees Celsius)
Low	Less than 250
Medium	250 to 750
High	750 to 2,250
Very high	2,250 to 5,000

The Red River of the North drains all of eastern North Dakota, much of northwestern Minnesota, and a small part of northeastern South Dakota. Of the five stations listed in table 2, the Red River of the North at Grand Forks has the smallest mean specific-conductance values for each month. The smaller mean values are caused partly by more precipitation occurring in the Red River of the North Basin, especially in Minnesota, than in other parts of North Dakota. The salinity hazard of stream water for irrigation use during the irrigation season (April through October) was low for part of April and medium for the rest of April and for the remaining months when measurements were made.

The Souris River upstream of Sherwood drains about 9,000 square miles of southeastern Saskatchewan, Canada, and a small part of northwestern North Dakota. Generally, the Souris River has larger specific-conductance values than the Red River of the North and the James River but smaller specific-conductance values than the Little Missouri River and the Cannonball River. The salinity hazard of stream water for irrigation use during the irrigation season (April through October) was medium during April and high for the remaining months when measurements were made.

The Little Missouri River drains parts of southwestern North Dakota, northwestern South Dakota, northeastern Wyoming, and southeastern Montana. During water year 1996, measured specific-conductance values in the Little Missouri River near Watford City were smaller during snowmelt runoff in March and high-flow recession in April than during low flow in July, August, and September. A new minimum specific-conductance value of 1,290 microsiemens per centimeter was measured for January and a new maximum

value of 2,470 microsiemens per centimeter was measured for September. The salinity hazard of stream water for irrigation use during the irrigation season (April through October) was very high for September and high for the remaining months when measurements were made.

The Cannonball River drains parts of southwestern North Dakota and northwestern South Dakota. During water year 1996, measured specific-conductance values in the Cannonball River at Breien were smaller during snowmelt runoff in February and April than during high-flow recession in May and June and low flow in July, August, and September (table 2). The salinity hazard of stream water for irrigation use during the irrigation season (April through October) was very high for June and high for the remaining months when measurements were made.

The James River drains east-central North Dakota. Flow in the James River Basin is regulated by the Jamestown and Pipestem Reservoirs, which are used primarily for flood control. High flows from snowmelt and rainfall are stored in the reservoirs and released throughout the summer. Specific-conductance values generally are smallest from March through October (table 2) during high flow or when the stored runoff water is released. During water year 1996, measured specific-conductance values in the James River at LaMoure were largest during low flow in October and December. The salinity hazard of stream water for irrigation use during the irrigation season (April through October) was high for October and medium for the remaining months when measurements were made.

## SPECIAL NETWORKS AND PROGRAMS

Hydrologic Benchmark Network is a network of 50 sites in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by human activities.

National Stream-Quality Accounting Network (NASQAN) monitors the water quality of large rivers within four of the Nation's largest river basins--the Mississippi, Columbia, Colorado, and Rio Grande. The network consists of 39 stations. Samples are collected with sufficient frequency that the flux of a wide range of constituents can be estimated. The objective of NASQAN is to characterize the water quality of these large rivers by measuring concentration and mass transport of a wide range of dissolved and suspended constituents, including nutrients, major ions, dissolved and sediment-bound heavy metals, common pesticides, and inorganic and organic forms of carbon. This information will be used (1) to describe the long-term trends and changes in concentration and transport of these constituents; (2) to test findings of the National Water-Quality Assessment Program (NAWQA); (3) to characterize processes unique to large-river



**Table 2.** Statistical summary of specific-conductance values for the period of record and listing of measured specific-conductance values for water year 1996

[Specific-conductance values are in microsiemens per centimeter at 25 degrees Celsius; --, no data]

	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Water year 1996	Period of record
<b>05082500 Red River of the North at Grand Forks (period of record, water years 1949, 1956-96)</b>														
Mean	518	617	634	602	575	495	462	561	553	502	516	502	523	530
Maximum	700	925	985	1,040	900	910	747	782	829	675	753	674	870	1,040
Minimum	399	440	468	275	400	305	200	325	348	280	266	340	248	200
Number of values	67	42	50	50	45	76	168	95	75	81	63	50	15	862
Measured values for water year 1996	611	870	--	536	--	--	248 375 386	396 436 450 532 748	680	500 568	507	--	--	--
<b>05114000 Souris River near Sherwood (period of record, water years 1970, 1972-96)</b>														
Mean	1,230	1,390	1,630	1,760	1,780	1,160	769	925	1,050	1,090	1,060	1,090	901	1,170
Maximum	2,240	2,460	2,230	2,770	2,920	3,500	2,510	2,460	1,530	1,640	1,700	1,350	1,900	3,500
Minimum	710	925	1,250	1,280	540	200	277	345	310	540	128	755	360	128
Number of values	32	30	14	22	26	45	59	27	34	28	34	19	9	370
Measured values for water year 1996	--	1,200	--	--	1,900	360	410 560 620	--	850	1,230	980	--	--	--
<b>06337000 Little Missouri River near Watford City (period of record, water years 1972-96)</b>														
Mean	2,010	2,060	2,880	2,410	1,160	927	1,470	1,690	1,620	1,700	1,660	1,820	1,560	1,700
Maximum	3,100	4,000	5,000	3,350	2,030	1,760	2,700	3,100	2,780	3,000	2,520	*2,470	2,470	5,000
Minimum	720	740	1,730	**1,290	640	400	515	780	750	695	682	900	410	400
Number of values	24	20	10	12	7	31	23	19	23	19	27	14	8	229
Measured values for water year 1996	1,770	1,620	--	**1,290	--	410	1,150	--	--	1,620	2,130	*2,470	--	--
<b>06354000 Cannonball River at Breien (period of record, water years 1950, 1971-96)</b>														
Mean	1,640	2,100	2,580	2,450	2,740	869	1,160	1,740	1,500	1,490	1,450	1,650	1,790	1,610
Maximum	2,400	3,070	3,290	3,800	4,860	3,100	2,260	2,930	3,020	3,000	2,800	2,300	2,670	4,860
Minimum	650	1600	284	680	190	190	300	481	288	440	500	730	900	190
Number of values	24	24	19	28	32	53	41	28	31	26	26	26	7	158
Measured values for water year 1996	--	--	--	--	900	--	955	2,140	2,670	1,690	1,980	2,200	--	--
<b>06470500 James River at LaMoure (period of record, water years 1957-96)</b>														
Mean	856	958	1,170	1,480	1,340	629	537	789	795	766	814	861	688	865
Maximum	1,210	1,300	1,550	2,590	1,780	1,350	940	1,210	1,180	1,280	1,180	1,210	1,350	2,590
Minimum	480	540	890	340	700	185	160	500	170	170	485	480	262	160
Number of values	34	24	12	32	18	38	47	31	29	24	28	28	7	345
Measured values for water year 1996	1,110	--	1,350	--	--	262	332	536	588	--	640	--	--	--

\*New maximum specific-conductance value.

\*\*New minimum specific-conductance value.

systems such as storage and re-mobilization of sediments and associated contaminants; and (4) to refine existing estimates of off-continent transport of water, sediment, and chemicals for assessing human effects on the world's oceans and for determining global cycles of carbon, nutrients, and other chemicals.

The National Atmospheric Deposition Program/National Trends Network (NADP/NTN) provides continuous measurement and assessment of the chemical climate of precipitation throughout the United States. As the lead federal agency, the USGS works together with over 100 organizations to accomplish the following objectives; (1) Provide a long-term, spatial and temporal record of atmospheric deposition generated from a network of 191 precipitation chemistry monitoring sites. (2) Provide the mechanism to evaluate the effectiveness of the significant reduction in SO<sub>2</sub> emissions that began in 1995 as implementation of the Clean Air Act Amendments (CAAA) occurred. (3) Provide the scientific basis and nationwide evaluation mechanism for implementation of the Phase II CAAA emission reductions for SO<sub>2</sub> and NO<sub>x</sub> scheduled to begin in 2000.

Data from the network, as well as information about individual sites, are available through the world wide web at:

<http://nadp.nrel.colostate.edu/NADP>

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

Assessment activities are being conducted in 53 study units (major watersheds and aquifer systems) that represent a wide range of environmental settings nationwide and that account for a large percentage of the Nation's water use. A wide array of chemical constituents will be measured in ground water, surface water, streambed sediments, and fish tissues. The coordinated application of comparative hydrologic studies at a wide range of spatial and temporal scales will provide information for decision making by water-resources managers and a foundation for aggregation and comparison of findings to address water-quality issues of regional and national interest.

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

information products, and opportunities to collaborate efforts among the agencies.

Additional information about the NAWQA Program is available through the world wide web at:

[http://www.wrvares.er.usgs.gov/nawqa/nawqa\\_home.html](http://www.wrvares.er.usgs.gov/nawqa/nawqa_home.html)

## EXPLANATION OF THE RECORDS

The surface-water records published in this report are for water year 1996 that began October 1, 1995, and ended September 30, 1996. A calendar of the water year is provided on the inside of the front cover. The records contain streamflow data and stage, content, and water-quality data for lakes and reservoirs. The locations of the stations where the data were collected are shown in figures 1 and 2. The following sections of the introductory text are presented to provide users with a more detailed explanation of how the hydrologic data published in this report were collected, analyzed, computed, and arranged for presentation.

### Station Identification Numbers

Each data station in this report is assigned a unique identification number. This number applies specifically to a given station and to no other. The number usually is assigned when a station is first established and is retained for that station indefinitely. The systems used by the U.S. Geological Survey to assign identification numbers for surface-water stations is based on geographic location. Generally, the "downstream-order" system is used for regular surface-water stations and the "latitude-longitude" system is used for surface-water stations where only miscellaneous measurements are made.

### Downstream-Order System

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

The station-identification number is assigned according to downstream order. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream-order position in a list made up of both types of stations. Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete eight-digit

number for each station, such as 06342500, which appears just to the left of the station name, includes the two-digit Part number "06" plus the six-digit downstream-order number "342500." The Part number designates the major river basin; for example, Part "06" is the Missouri River Basin. All records for a drainage basin encompassing more than one State can be arranged in downstream order by assembling pages from the various State reports by station number to include all records in the basin.

#### Latitude-Longitude System

The identification numbers for miscellaneous surface-water sites are assigned according to the grid system of latitude and longitude. The number consists of 15 digits. The first six digits denote the degrees, minutes, and seconds of latitude, the next seven digits denote degrees, minutes, and seconds of longitude, and the last two digits (assigned sequentially) identify the sites within a 1-second grid. This site-identification number, once assigned, is a pure number and has no locational significance. In the rare instance where the initial determination of latitude and longitude are found to be in error, the station will retain its initial identification number; however, its true latitude and longitude will be listed in the LOCATION paragraph of the station description (fig. 6).

#### Miscellaneous Site Numbers

In this report, miscellaneous sites also are numbered according to a system based on the location in the public-land classification of the U.S. Bureau of Land Management. This system is used to identify and locate miscellaneous measurement sites on maps that use the public-land classification of the U.S. Bureau of Land Management. The system is illustrated in figure 7. The first number denotes the township north of a base line, the second number denotes the range west of the fifth principal meridian, and the third numeral denotes the section in which the site 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 tract). For example, site 139-049-15ADC is in the SW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub> sec.15, T.139 N., R.049 W. Consecutive terminal numbers are added if more than one site is recorded within a 10-acre tract.

#### Records of Stage and Water Discharge

Records of stage and water discharge may be complete or partial. Complete records of discharge are those obtained using a continuous stage-recording device through which either instantaneous or mean daily discharges may be computed for any time, or any period of time, during the period of record. Complete records of lake or reservoir content, similarly, are those for which stage or content may be computed or estimated with reasonable accuracy for any time, or period of time. They may be obtained using a continuous stage-recording device, but need not be. Because

daily mean discharges and end-of-day contents commonly are published for such stations, they are referred to as "daily stations."

By contrast, partial records are obtained through discrete measurements without using a continuous stage-recording device and pertain only to a few flow characteristics, or perhaps only one. The nature of the partial record is indicated by table titles such as "Crest-stage partial records," or "Low-flow partial records." Records of miscellaneous discharge measurements or of measurements from special studies, such as low-flow seepage studies, may be considered as partial records. Locations of all complete-record and crest-stage partial-record stations for which data are given in this report are shown in figure 1.

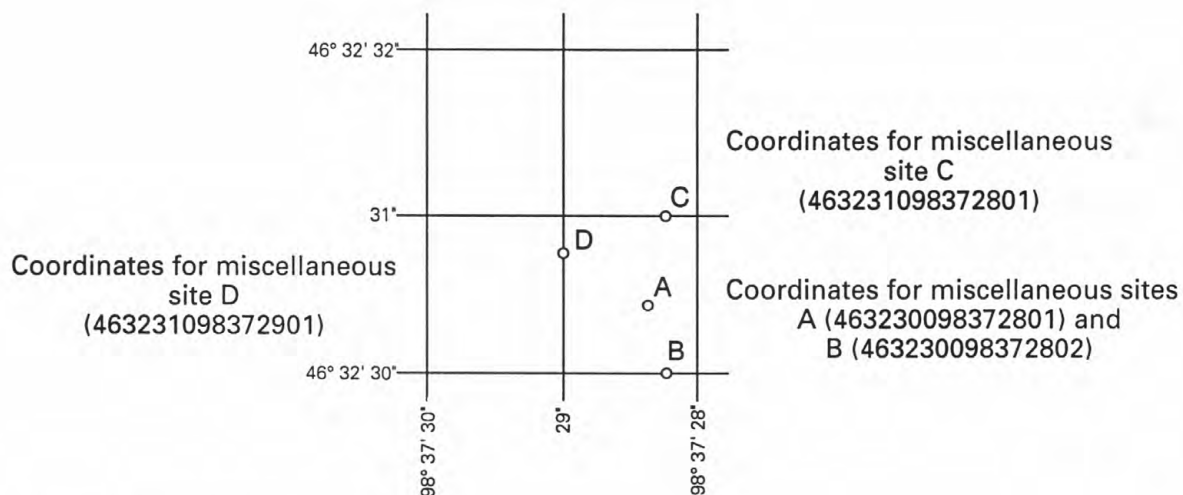
#### Data Collection and Computation

The data obtained at a complete-record gaging station on a stream or canal consist of a continuous record of stage, individual measurements of discharge throughout a range of stages, and notations regarding factors that may affect the relationships between stage and discharge. These data, together with supplemental information, such as weather records, are used to compute daily discharges. The data obtained at a complete-record gaging station on a lake or reservoir consist of a record of stage and of notations regarding factors that may affect the relationship between stage and lake content. These data are used with stage-area and stage-capacity curves or tables to compute water-surface areas and lake storage.

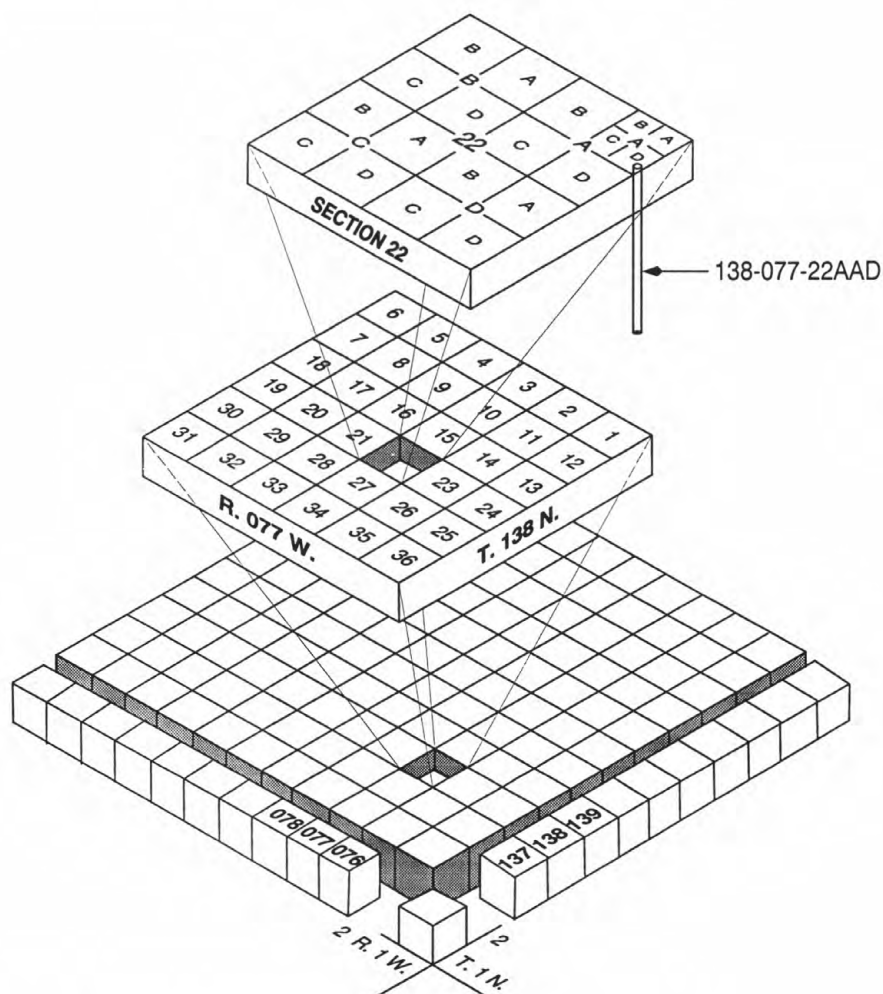
Continuous records of stage are obtained with analog recorders that trace continuous graphs of stage, with digital recorders that punch stage values on paper tapes at selected time intervals, with electronic data loggers that store data on an electronic chip, or with satellite data platforms that store data electronically and transmit the data periodically via satellite to a computer based data processing facility. Measurements of discharge are made with current meters using methods adopted by the U.S. Geological Survey as a result of experience accumulated since 1880. These methods are described in standard textbooks, Water-Supply Paper 2175, and the U.S. Geological Survey Techniques of Water-Resources Investigations (TWRI's), Book 3, Chapter A1 through A19 and Book 8, Chapters A2 and B2. The methods are consistent with the American Society for Testing and Materials (ASTM) standards and generally follow the standards of the International Organization for Standards (ISO).

In computing discharge records, results of individual measurements are plotted against the corresponding stages, and stage-discharge relation curves are then constructed. From these curves, rating tables indicating the approximate discharge for any stage within the range of the measurements are prepared. If it is necessary to define extremes of discharge outside the range of the current-meter measurements, the curves are extended using: (1) logarithmic plotting; (2) velocity-area studies; (3) results of indirect measurements





**Figure 6.** System for numbering miscellaneous sites (latitude and longitude).



**Figure 7.** System for numbering miscellaneous sites (township and range).



of peak discharge, such as slope-area or contracted-opening measurements, and computations of flow over dams or weirs; or (4) step-backwater techniques.

Daily mean discharges are computed by applying the daily mean stages (gage heights) to the stage-discharge curves or tables. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is determined by the shifting-control method, in which correction factors based on the individual discharge measurements and notes of the personnel making the measurements are applied to the gage heights before the discharges are determined from the curves or tables. This shifting-control method also is used if the stage-discharge relation is changed temporarily because of aquatic growth or debris on the control. For some stations, formation of ice in the winter may so obscure the stage-discharge relations that daily mean discharges must be estimated from other information such as temperature and precipitation records, notes of observations, and records for other stations in the same or nearby basins for comparable periods.

In computing records of lake or reservoir contents, it is necessary to have available from surveys, curves or tables defining the relationship of stage and content. The application of stage to the stage-content curves or tables gives the contents from which daily, monthly, or yearly changes then are determined. If the stage-content relationship changes because of deposition of sediment in a lake or reservoir, periodic resurveys may be necessary to redefine the relationship. Even when this is done, the contents computed may become increasingly in error as the lapsed time since the last survey increases. Discharges over lake or reservoir spillways are computed from stage-discharge relationships much as other stream discharges are computed.

For some gaging stations, there are periods when no gage-height record is obtained, or the recorded gage height is so faulty that it cannot be used to compute daily discharge or contents. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods, the daily discharges are estimated from the recorded range in stage, previous or following record, discharge measurements, weather records, and comparison with other station records from the same or nearby basins. Likewise, daily contents may be estimated from operator's logs, previous or following record, inflow-outflow studies, and other information. Information explaining how estimated daily-discharge values are identified in station records is included in the next two sections, "Data Presentation" (REMARKS paragraph) and "Identifying Estimated Daily Discharge."

## Data Presentation

Streamflow data in this report are presented in a new format that is considerably different from the format in data reports prior to the 1991 water year. The major changes are that statistical characteristics of discharge now appear in tabular summaries following the water-year data table and less information is provided in the text or station manuscript above the table. These changes represent the results of a pilot program to reformat the annual water-data report to meet current user needs and data preferences.

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

### Station manuscript

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

**LOCATION.**--Information on locations is obtained from the most accurate maps available. The location of the gaging station with respect to the cultural and physical features in the vicinity and with respect to the reference place mentioned in the station name is given. River mileages were determined by methods given in "River Mileage Measurement," Bulletin 14, Revision of October 1968, prepared by the Water Resources Council or were provided by the U.S. Army Corps of Engineers.

**DRAINAGE AREA.**--Drainage areas are measured using the most accurate maps available. Because the type of maps available varies from one drainage basin to another, the accuracy of drainage areas likewise varies. Drainage areas are updated as better maps become available.

**PERIOD OF RECORD.**--This indicates the period for which records have been published for the station or for an equivalent station. An equivalent station is one that was in operation at a time that the present station was not and whose location was such that flow at it can reasonably be considered equivalent to flow at the present station.

**REVISED RECORDS.**--Because of new information, published records occasionally are found to be incorrect, and revisions are printed in later reports. Listed under this heading are all the reports in which revisions have been published for the station and the water years to which the revisions apply. If a revision did not include daily, monthly, or annual figures of discharge, that fact is noted after the year dates as follows:

"(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the most recently revised figure was first published is given.

**GAGE.**--The type of gage in current use, the datum of the current gage referred to see level (see glossary), and a condensed history of the types, locations, and datums of previous gages are given under this heading.

**REMARKS.**--All periods of estimated daily discharge will either be identified by date in this paragraph of the station description for water-discharge stations or flagged in the daily discharge table. (See next section, "Identifying Estimated Daily Discharge.") If a REMARKS paragraph is used to identify estimated record, the paragraph will begin with this information presented as the first entry. The paragraph is also used to present information relative to the accuracy of the records, to special methods of computation, and to conditions that affect natural flow at the station. In addition, information may be presented pertaining to average discharge data for the period of record; to extremes data for the period of record and the current year; and, possibly, to other pertinent items. For reservoir stations, information is given on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir.

**COOPERATION.**--Records provided by a cooperating organization or obtained for the U.S. Geological Survey by a cooperating organization are identified here.

**EXTREMES OUTSIDE PERIOD OF RECORD.**--Included here is information concerning major floods or unusually low flows that occurred outside the stated period of record. The information may or may not have been obtained by the U.S. Geological Survey.

**REVISIONS.**--If a critical error in published records is discovered, a revision is included in the first report published following discovery of the error.

Although rare, occasionally the records of a discontinued gaging station may need revision. Because, for these stations, there would be no current or, possibly, future station manuscript published to document the revision in a "Revised Records" entry, users of data for these stations who obtained the record from previously published data reports may wish to contact the District office (address given on the back of the title page of this report) to determine if the published records were ever revised after the station was discontinued. Of course, if the data for a discontinued station were obtained by computer retrieval, the data would be current and there would be no need to check because any published revision of data is always accompanied by revision of the corresponding data in computer storage.

Manuscript information for lake or reservoir stations differs from that for stream stations in the nature of the "Remarks" and in the inclusion of a skeleton stage-capacity table when daily contents are given.

Headings for AVERAGE DISCHARGE, EXTREMES FOR PERIOD OF RECORD, AND EXTREMES FOR

CURRENT YEAR have been deleted and the information contained in these paragraphs is now presented in the tabular summaries following the discharge table or in the REMARKS paragraph. No changes have been made to the data presentations of lake contents.

#### Data table of daily mean values

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

#### Statistics of monthly mean data

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

#### Summary statistics

A table titled "SUMMARY STATISTICS" follows the statistics of monthly mean data tabulation. This table consists of four columns, with the first column containing the line headings of the statistics being reported. The table provides a statistical summary of yearly, daily, and instantaneous flows, not only for the current water year but also for the previous calendar year and for a designated period, as appropriate. The designated period selected, "WATER YEARS \_\_\_\_-\_\_\_\_," will consist of all of the station record within the specified water years, inclusive, including complete months of record for partial water years, if any, and may coincide with the



period of record for the station. The water years for which the statistics are computed will be consecutive, unless a break in the station record is indicated in the manuscript. All of the calculations for the statistical characteristics designated ANNUAL (See line headings below.), except for the "ANNUAL 7-DAY MINIMUM" statistic, are calculated for the designated period using complete water years. The other statistical characteristics may be calculated using partial water years.

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

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

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

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

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

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

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

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

**ANNUAL 7-DAY MINIMUM.**--The lowest mean discharge for 7 consecutive days for a calendar year or a water year. Note that most low-flow frequency analyses of annual 7-day minimum flows use a climatic year (April 1-March 31). The date shown in the summary statistics table is the initial date of the 7-

day period. (This value should not be confused with the 7-day 10-year low-flow statistic.)

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

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

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

**ANNUAL RUNOFF.**--Indicates the total quantity of water in runoff for a drainage area for the year. Data reports may use any of the following units of measurement in presenting annual runoff data:

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

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

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

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

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

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

Data collected at partial-record stations follow the information for continuous-record sites. Data for partial-record discharge stations are presented in two tables. The first is a table of annual maximum stage and discharge at crest-stage stations, and the second is a table of discharge measurements at low-flow partial-record stations. The tables of partial-record stations are followed by a listing of discharge measurements made at sites other than continuous-record or partial-record stations. These measurements are generally made in times of drought or flood to give better areal coverage to those events.

Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

#### Identifying Estimated Daily Discharge

Estimated daily-discharge values published in the water-discharge tables of annual State data reports are identified either by flagging individual daily values with the letter symbol "e" and printing a table footnote (e-Estimated) or by listing the dates of the estimated record in the REMARKS paragraph of the station description.

#### Accuracy of the Records

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

The accuracy attributed to the records is indicated under "REMARKS." "Excellent" means that about 95 percent of the daily discharges are within 5 percent of their true values; "good," within 10 percent; and "fair," within 15 percent. Records that do not meet the criteria mentioned are rated "poor." Different accuracies may be attributed to different parts of a given record.

Daily mean discharges in this report are given to the nearest hundredth of a cubic foot per second for values less than 1 ft<sup>3</sup>/s; to the nearest tenth between 1.0 and 10 ft<sup>3</sup>/s; to whole numbers between 10 and 1,000 ft<sup>3</sup>/s; and to 3 significant figures for more than 1,000 ft<sup>3</sup>/s. The number of significant figures used is based solely on the magnitude of the discharge value. The same rounding rules apply to discharges listed for partial-record stations and miscellaneous sites.

#### Other Records Available

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

#### Records of Surface-Water Quality

Records of surface-water quality in this report represent a variety of data types and measurement frequencies. Whenever possible, records of surface-water quality are obtained at or near stream-gaging stations because interpretation of surface-water quality and seasonal variation is enhanced by knowledge of corresponding discharge data. Locations of stations for which records on the quality of surface water appear in this report are shown in figure 2.

#### Classification of Records

Water-quality data for surface-water sites are grouped into one of three classifications. A continuing-record station is a site where data are collected on a regularly scheduled basis. Frequency may be once or more times daily, weekly, monthly, or quarterly. A partial-record station is a site where water-quality data are collected systematically over a period of years, but frequency of sampling is usually less than quarterly. A miscellaneous sampling site is a location where samples are collected one time or intermittently to provide better areal coverage for defining water-quality conditions over a broad area in a river basin.

A careful distinction needs to be made between "continuing records," as used in this report, and "continuous recordings," which refers to a continuous graph, a series of discrete values punched at short intervals on a paper tape, or electronically stored data from a data logger or satellite data platform. Some records of water quality, such as temperature and specific conductance, may be obtained through continuous recordings; however, because of costs, most data are obtained only monthly or less frequently. Locations of stations for which records on the quality of surface water appear in this report are shown in figure 2.

#### Arrangement of Records

Water-quality records collected at a surface-water daily record station are published immediately following that record, regardless of the frequency of sample collection. Station number and name are the same for both records. Where a surface-water daily record station is not available or where the water quality differs significantly from that at the nearby surface-water station, the continuing water-quality record is published with its own station number and name in the regular downstream-order sequence.

#### Onsite Measurements and Sample Collection

In obtaining water-quality data, a major concern needs to be assuring that the data obtained represent the in situ quality of the water. To assure this, certain measurements, such as water temperature, specific conductance, pH, and dissolved oxygen, need to be made onsite when the samples are taken. To assure that measurements made in the laboratory also represent the in situ water, carefully prescribed procedures need to be followed in collecting the samples, in treating the samples to prevent changes in quality pending analysis, and in shipping the samples to the laboratory. Procedures for onsite measurements and for collecting, treating, and shipping samples are detailed in the TWRI Book 1, Chapter D2; Book 3, Chapter C2; and Book 5, Chapters A1, A3, and A4. These references are listed in the "Publications on Techniques of Water-Resources Investigations" section of this report. These methods are consistent with ASTM standards and generally follow ISO standards.



One sample can define adequately the water quality at a given time if the mixture of solutes throughout the stream cross section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled through several vertical sections to obtain a representative sample needed for an accurate mean concentration and for use in calculating load. All samples obtained for the National Stream Quality Accounting Network (see definitions) are obtained from at least several verticals. Whether samples are obtained from the centroid of flow or from several verticals depends on flow conditions and other factors which must be evaluated by the collector.

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

For chemical-quality stations equipped with digital monitors, the records consist of daily maximum, minimum, and mean values for each constituent measured and are based upon hourly punches beginning at 0100 hours and ending at 2400 hours for the day of record. More detailed records (hourly values) may be obtained from the U.S. Geological Survey North Dakota District office whose address is given on the back of the title page of this report.

#### Water Temperature

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

At stations where recording instruments are used, either mean temperatures or maximum, minimum, and mean temperatures for each day are published. Water temperatures measured at the time of water-discharge measurements are published with the water-quality records for each surface-water station in this report.

#### 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. Although data collected periodically may represent conditions only at the time of observations, such data are useful in establishing seasonal relations between quality and streamflow and in predicting long-term sediment-discharge characteristics of the stream. Records of the periodic measurements of the particle-size distribution of the suspended sediment and bed material are included for some stations.

#### Laboratory Analyses

Traditionally, dissolved trace-element concentrations have been reported at the microgram per liter ( $\mu\text{g/L}$ ) level. Recent evidence, mostly from large rivers, indicates that actual dissolved-phase concentrations for a number of trace elements are within the range of 10's to 100's of nanograms per liter ( $\text{ng/L}$ ). Present data above the  $\mu\text{g/L}$  level should be viewed with caution. Such data may actually represent elevated environmental concentrations from natural or human causes; however, these data could reflect contamination introduced during sampling, processing, or analysis. To confidently produce dissolved trace-element data with insignificant contamination, the U.S. Geological Survey will begin using new trace-element protocols in the near future.

Samples for biochemical-oxygen demand (BOD) and samples for indicator bacteria are analyzed locally. Sediment samples are analyzed in the U.S. Geological Survey laboratory in Iowa City, Iowa. All other samples are analyzed in the U.S. Geological Survey laboratory in Arvada, Colo., the North Dakota State Water Commission laboratory in Bismarck, N. Dak., or the North Dakota Department of Health laboratory in Bismarck, N. Dak. Methods used in analyzing sediment samples and computing sediment records are given in TWRI, Book 5, Chap. C1. Methods used by the U.S. Geological Survey laboratory are given in TWRI, Book 1, Chap. D2; Book 3, Chap. C2; Book 5, Chap. A1, A3, and A4.

#### Data Presentation

For continuing-record stations, information pertinent to the history of station operation is provided in descriptive headings preceding the tabular data. These descriptive headings give details regarding location, drainage area, period of record, type of data available, instrumentation, general remarks, cooperating agencies, and extremes for parameters measured on a daily basis. Tables of chemical, physical, biological, and radiochemical data obtained at a frequency less than daily are presented first. Tables of "daily values" of specific conductance, pH, water temperature, and suspended sediment then follow in sequence.

In the descriptive headings, if the location is identical to that of the stream-gaging station, neither the LOCATION nor the DRAINAGE AREA statements are repeated. The following information, as appropriate, is provided with each continuous-record station. Comments that follow clarify information presented under the various headings of the station description.

**LOCATION.**--See Data Presentation under "Records of Stage and Water Discharge"; same comments apply.

**DRAINAGE AREA.**--See Data Presentation under "Records of Stage and Water Discharge"; same comments apply.

**PERIOD OF RECORD.**--This indicates the periods for which there are published water-quality records for the station. The periods are shown separately for records of parameters measured daily or continuously and those measured less than daily. For those measured daily or continuously, periods of record are given for the parameters individually.

**INSTRUMENTATION.**--Information on instrumentation is given only if a water-quality monitor, temperature monitor, pumping sampler, or other sampling device is in operation at a station.

**REMARKS.**--Remarks provide added information pertinent to the collection, analysis, or computation of the records.

**COOPERATION.**--Records provided by a cooperating organization or obtained for the Geological Survey by a cooperating organization are identified here.

**EXTREMES.**--Maximums and minimums are given only for parameters measured daily or more frequently. None are given for parameters measured weekly or less frequently, because the true maximums or minimums may not have been sampled. Extremes, when given, are provided for both the period of record and for the current water year.

**REVISIONS.**--If errors in published water-quality records are discovered after publication, appropriate updates are made to the Water-Quality File in the U.S. Geological Survey's computerized data system, WATSTORE, and subsequently by monthly transfer of update transactions to the U.S. Environmental Protection Agency's STORET system. Because the usual volume of updates makes it impractical to document individual changes in the State data-report series or elsewhere, potential users of U.S. Geological Survey water-quality data are encouraged to obtain all required data from the appropriate computer file to insure the most recent updates.

### ACCESS TO WATSTORE DATA

The U.S. Geological Survey is the principal Federal water-data agency and, as such, collects and disseminates about 70 percent of the water data currently being used by numerous State, local, private, and other Federal agencies to develop and manage our water resources. As part of the U.S. Geological Survey's program of releasing water data to the public, a large-scale computerized system has been developed for the storage and retrieval of water data collected through its activities. The National Water Data Storage and Retrieval System (WATSTORE) was established in 1972 to provide an effective and efficient means for the processing and maintenance of water data collected through the activities of

the U.S. Geological Survey and to facilitate release of the data to the public. A variety of useful products, ranging from data tables to complex statistical analyses such as Log Pearson Type III, can be produced using WATSTORE. The system resides on the central computer facilities of the U.S. Geological Survey at its National Center in Reston, Virginia, and consists of related files and data bases.

- Station Header File - Contains descriptive information on over 440,000 sites throughout the United States and its territories where the U.S. Geological Survey collects or has collected data.
- Daily Values File - Contains over 220 million daily values of streamflows, stages, reservoir contents, water temperatures, specific conductances, sediment concentrations, sediment discharges, and ground-water levels.
- \*Peak Flow File - Contains approximately 500,000 maximum (peak) streamflow and gage-height values at surface-water sites.
- \*Water-Quality Data Base - Contains approximately 2 million analyses of water samples that describe the chemical, physical, biological, and radiochemical characteristics of both surface and ground water.

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

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

In addition to providing direct access to WATSTORE, data can be provided in various machine-readable formats on magnetic tape or 3-1/2 inch floppy disk. Information about the availability of specific types of data, the acquisition of data or products, and user charges, can be obtained locally from the District office at the address on the back of the title page.

### DEFINITION OF TERMS

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

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



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

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 that produce blue colonies within 24 hours when incubated at 44.5°C plus or minus 0.2°C on M-FC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

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

Non-ideal colony count (K) is a remark code used in reporting bacteria densities when plate counts fall outside of an ideal range. The lower limit of 20 colonies is set as the number below which statistically valid results become increasingly questionable. The upper limit, which differs according to type of bacteria, represents numbers above which interference from colony crowding, deposition of extraneous material, and other factors appear to result in increasingly questionable results.

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

Bottom material: See Bed material.

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

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

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

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

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

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

Crest-stage gage is a device for obtaining the elevation of the flood crest of a stream.

Cubic feet per second per square mile [(ft<sup>3</sup>/s)/mi<sup>2</sup>] 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 (ft<sup>3</sup>/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to 7.48 gallons per second or 448.8 gallons per minute or 0.02832 cubic meters per second.

Cubic-foot-per-second day [(ft<sup>3</sup>/s)/d] is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, approximately 1.9835 acre-feet, about 646,000 gallons, or 2,447 cubic meters.

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.

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

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

Dissolved-solids concentration of water is determined either analytically by the "residue-on-evaporation" method, or mathematically by totaling the concentrations of individual constituents reported in a comprehensive chemical analysis. During the analytical determination of dissolved solids, the bicarbonate (generally a major dissolved component of water) is converted to carbonate. Therefore, in the mathematical calculation of dissolved-solids concentration, the bicarbonate

value, in milligrams per liter, is multiplied by 0.493 to reflect the change.

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

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 computed as the sum of equivalents of polyvalent cations and is expressed as the equivalent concentration of calcium carbonate ( $\text{CaCO}_3$ ).

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 eight-digit number.

Micrograms per gram (UG/G,  $\mu\text{g/g}$ ) is a unit expressing the concentration of a chemical constituent as the mass (micrograms) of the element per unit mass (gram) of material analyzed.

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

Microsiemens per centimeter at 25 degrees Celsius (US/CM,  $\mu\text{S/cm}$ ) is a unit for reporting specific electrical conductance.

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

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

Normal as related to meteorological data published by the National Weather Service are computed as the average value of a meteorological element over a time period. Effective January 1, 1993, the averaging period is 1961 to 1990.

Parameter code is a 5-digit number used in the U.S. Geological Survey computerized data system, WATSTORE, to uniquely identify a specific constituent. The codes used in WATSTORE are the same as those used in the U.S. Environmental Protection Agency data system, STORET. The Environmental Protection Agency assigns and approves all requests for new codes.

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

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

Particle-size classification used in this report agrees with the recommendation made by the American Geophysical Union Subcommittee on Sediment Terminology. The classification is as follows:

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

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

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

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



pH indicates the degree of acidity or alkalinity of water and is expressed in 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 less than 7.0 denote increasing acidity and those progressively greater than 7.0 denote increasingly alkalinity. The pH of most natural surface waters ranges between 6 and 8.

Picocurie (PC, pCi) is one trillionth ( $1 \times 10^{-12}$ ) of the amount of radioactivity represented by a curie (Ci). A curie is the amount of radioactivity that yields  $3.7 \times 10^{10}$  radioactive disintegrations per second. A picocurie yields 2.22 dpm (disintegrations per minute).

Return period is the average time interval between occurrences of a hydrological event of a given or greater magnitude, usually expressed in years. May also be called recurrence interval.

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

Sea level refers to the National Geodetic Vertical Datum of 1929--a geodetic datum derived from a general adjustment of the first-order level nets of the United States and Canada, formerly called Sea Level Datum of 1929.

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

Bed load is the sediment that is transported in a stream by rolling, sliding, or skipping along the bed and very close to it. In this report, bed load is considered to consist of particles in transit within 0.25 ft of 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).

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

Suspended-sediment discharge (tons/day) is the rate at which a quantity of sediment, as measured by dry mass or volume, passes a stream section in a given time. It is

calculated in units of tons per day as follows: concentration (mg/L)  $\times$  discharge ( $\text{ft}^3/\text{s}$ )  $\times$  0.0027.

Suspended-sediment load is a general term that refers to the total mass of material in suspension. It is not synonymous with sediment discharge, which is a rate of transport.

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

Solute is any substance that is dissolved in water.

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

Stage 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.

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.

Suspended (as pertains to chemical analyses) refers to the amount (concentration) of undissolved material in a water-sediment mixture. It is associated with the material retained on a 0.45-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  $\mu\text{m}$  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 are required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results. Determinations of "suspended, recoverable" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total recoverable concentrations of the constituent.

Suspended, total is the total amount of a given constituent in the part of a representative water-suspended sediment sample that is retained on a 0.45 micrometer 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.

Thermograph is an instrument that continuously records variations of temperature on a chart. The more general term "temperature recorder" is used in the table headings and refers to any instrument that records temperature whether on a chart, a tape, or any other medium.

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

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

Tons per day (T/DAY) is the quantity, in tons, of a substance in solution or suspension that passes a stream section during a 24-hour period.

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

analytical method determined all of the constituent in the sample.)

Total discharge is the total quantity of any individual constituent, as measured by dry mass or volume, that passes through a stream cross-section per unit of time. This term needs to be qualified, such as "total sediment discharge," "total chloride discharge," and so on.

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

Turbidity of a sample is the reduction of transparency due to the presence of particulate matter. In this report it is expressed in Nephelometric turbidity units (NTU), obtained from the Nephelometric method for turbidity determination which measures the intensity of light scattered by suspended particles at 90 degrees from the path of an incident light source.

Water year in Geological Survey reports dealing with surface-water supply is the 12-month period October 1 through September 30. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. Thus, the year ending September 30, 1990, is called "water year 1990."

WDR is used as an abbreviation for "Water-Data Report" in the REVISED RECORDS paragraph to refer to State annual hydrologic-data reports (WRD was used as an abbreviation for "Water-Resources Data" in reports published prior to 1976).

Weighted average is used in this report to indicate discharge-weighted average. It is computed by multiplying the discharge for a sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the sum of the discharges. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all the water passing a given location during the water year after thorough mixing in the reservoir.

## PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

The U.S. Geological Survey publishes a series of manuals describing procedures for planning and conducting specialized work in water-resources investigations. The material is grouped under major subject headings called books and is



further divided into sections and chapters. For example, Section A of Book 3 (Applications of Hydraulics) pertains to surface water. The chapter, the unit of publication, is limited to a narrow field of subject matter. This format permits flexibility in revision and publication as the need arises.

The reports listed below are for sale by the U.S. Geological Survey, Branch of Information Services, Box 25286, Federal Center, Denver, Colorado 80225 (authorized agent of the Superintendent of Documents, Government Printing Office). Prepayment is required. Remittance should be sent by check or money order payable to the U.S. Geological Survey. Prices are not included because they are subject to change. Current prices can be obtained by writing to the above address. When ordering or inquiring about prices for 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-D2. *Application of seismic-refraction techniques to hydrologic studies*, by F. P. Haeni: USGS--TWRI Book 2, Chapter D2. 1988. 86 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.
- 2-E2. *Borehole geophysics applied to ground-water investigations*, by W. S. Keys: USGS--TWRI Book 2, Chapter E2. 1990. 150 pages.
- 2-F1. *Application of drilling, coring, and sampling techniques to test holes and wells*, by Eugene Shuter and W. E. Teasdale: USGS--TWRI Book 2, Chapter F1. 1989. 97 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 measurement 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-A9. *Measurement of time of travel in streams by dye tracing*, by F. A. Kilpatrick and J. F. Wilson, Jr.: USGS--TWRI Book 3, Chapter A9. 1989. 27 pages.
- 3-A10. *Discharge ratings at gaging stations*, by E. J. Kennedy: USGS--TWRI Book 3, Chapter A10. 1984. 59 pages.
- 3-A11. *Measurement of discharge by the moving-boat method*, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 3, Chapter A11. 1969. 22 pages.
- 3-A12. *Fluorometric procedures for dye tracing*, Revised, by J. F. Wilson, Jr., E. D. Cobb, and F. A. Kilpatrick: USGS--TWRI Book 3, Chapter A12. 1986. 34 pages.
- 3-A13. *Computation of continuous records of streamflow*, by E. J. Kennedy: USGS--TWRI Book 3, Chapter A13. 1983. 53 pages.
- 3-A14. *Use of flumes in measuring discharge*, by F. A. Kilpatrick and V. R. Schneider: USGS--TWRI Book 3, Chapter A14. 1983. 46 pages.
- 3-A15. *Computation of water-surface profiles in open channels*, by Jacob Davidian: USGS--TWRI Book 3, Chapter A15. 1984. 48 pages.
- 3-A16. *Measurement of discharge using tracers*, by F. A. Kilpatrick and E. D. Cobb: USGS--TWRI Book 3, Chapter A16. 1985. 52 pages.
- 3-A17. *Acoustic velocity meter systems*, by Antonius Laenen: USGS--TWRI Book 3, Chapter A17. 1985. 38 pages.
- 3-A18. *Determination of stream reaeration coefficients by use of tracers*, by F. A. Kilpatrick, R. E. Rathbun, Nobuhiro Yotsukura, G. W. Parker, and L. L. DeLong: USGS--TWRI Book 3, Chapter A18. 1989. 52 pages.

- 3-A19. *Levels at streamflow gaging stations*, by E.J. Kennedy: USGS--TWRI Book 3, Chapter A19. 1990. 31 pages.
- 3-A20. *Simulation of soluble waste transport and buildup in surface waters using tracers*, by F. A. Kilpatrick: USGS--TWRI Book 3, Chapter A20. 1993. 38 pages.
- 3-A21. *Stream-gaging cableways*, by C. Russell Wagner: USGS--TWRI Book 3, Chapter A21. 1995. 56 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 programmed text for self-instruction*, by G. D. Bennett: USGS--TWRI Book 3, Chapter B2. 1976. 172 pages.
- 3-B3. *Type curves for selected problems of flow to wells in confined aquifers*, by J. E. Reed: USGS--TWRI Book 3, Chapter B3. 1980. 106 pages.
- 3-B4. *Regression modeling of ground-water flow*, by R. L. Cooley and R. L. Naff: USGS--TWRI Book 3, Chapter B4. 1990. 232 pages.
- 3-B4. *Supplement 1. Regression modeling of ground-water flow - Modifications to the computer code for nonlinear regression solution of steady-state ground-water flow problems*, by R. L. Cooley: USGS--TWRI Book 3, Chapter B4. 1993. 8 pages.
- 3-B5. *Definition of boundary and initial conditions in the analysis of saturated ground-water flow systems--An introduction*, by O. L. Franke, T. E. Reilly, and G. D. Bennett: USGS--TWRI Book 3, Chapter B5. 1987. 15 pages.
- 3-B6. *The principle of superposition and its application in ground-water hydraulics*, by T. E. Reilly, O. L. Franke, and G. D. Bennett: USGS--TWRI Book 3, Chapter B6. 1987. 28 pages.
- 3-B7. *Analytical solutions for one-, two-, and three-dimensional solute transport in ground-water systems with uniform flow*, by E. J. Wexler: USGS--TWRI Book 3, Chapter B7. 1992. 190 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.J. Fishman and L. C. Friedman, editors: USGS--TWRI Book 5, Chapter A1. 1989. 545 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 the determination of organic substances in water and fluvial sediments*, edited by R. L. Wershaw, M. J. Fishman, R. R. Grabbe, and L. E. Lowe: USGS--TWRI Book 5, Chapter A3. 1987. 80 pages.
- 5-A4. *Methods for collection and analysis of aquatic biological and microbiological samples*, by L. J. Britton and P. E. Greeson, editors: USGS--TWRI Book 5, Chapter A4. 1989. 363 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-A6. *Quality assurance practices for the chemical and biological analyses of water and fluvial sediments*, by L. C. Friedman and D. E. Erdmann: USGS--TWRI Book 5, Chapter A6. 1982. 181 pages.
- 5-C1. *Laboratory theory and methods for sediment analysis*, by H. P. Guy: USGS--TWRI Book 5, Chapter C1. 1969. 58 pages.
- 6-A1. *A modular three-dimensional finite-difference ground-water flow model*, by M. G. McDonald and A. W. Harbaugh: USGS--TWRI Book 6, Chapter A1. 1988. 586 pages.
- 6-A2. *Documentation of a computer program to simulate aquifer-system compaction using the modular finite-difference ground-water flow model*, by S. A. Leake and D. E. Prudic: USGS--TWRI Book 6, Chapter A2. 1991. 68 pages.



- 6-A3. *A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems, Part 1: Model Description and User's Manual*, by L. J. Torak: USGS--TWRI Book 6, Chapter A3. 1993. 136 pages
- 6-A4. *A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems, Part 2: Derivation of finite-element equations and comparisons with analytical solutions*, by R. L. Cooley: USGS--TWRI Book 6, Chapter A4. 1992. 108 pages.
- 6-A5. *A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems, Part 3: Design philosophy and programming details*, by L. J. Torak: USGS--TWRI Book 6, Chapter A5, 1993. 243 pages.
- 6-A6. A coupled surface-water and ground-water flow model (MODBRANCH) for simulation of stream-aquifer interaction, by Eric D. Swain and Eliezer J. Wexler. 1995. 125 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.
- 7-C3. *A model for simulation of flow in singular and interconnected channels*, by R. W. Schaffranek, R. A. Baltzer, and D. E. Goldberg: USGS--TWRI Book 7, Chapter C3. 1981. 110 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-A2. *Installation and service manual for U.S. Geological Survey manometers*, by J. D. Craig: USGS--TWRI Book 8, Chapter A2. 1983. 57 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.

## SURFACE-WATER-DISCHARGE AND SURFACE-WATER-QUALITY RECORDS

### Remark Codes

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

PRINT OUTPUT	REMARK
E	Estimated value.
>	Actual value is known to be greater than the value shown.
<	Actual value is known to be less than the value shown.
K	Results based on colony count outside the acceptance range (non-ideal colony count).

### Dissolved Trace-Element Concentrations

\*NOTE.--Traditionally, dissolved trace-element concentrations have been reported at the microgram per liter ( $\mu\text{g/L}$ ) level. Recent evidence, mostly from large rivers, indicates that actual dissolved-phase concentrations for a number of trace elements are within the range of 10's to 100's of nanograms per liter ( $\text{ng/L}$ ). Data above the  $\mu\text{g/L}$  level should be viewed with caution. Such data may actually represent elevated environmental concentrations from natural or human causes; however, these data could reflect contamination introduced during sampling, processing, or analysis. To confidently produce dissolved trace-element data with insignificant contamination, the U.S. Geological Survey began using new trace-element protocols at some stations in water year 1994.

### Change in National Trends Network Procedures

\*NOTE.--Sample handling procedures at all National Trends Network stations were changed substantially on January 11, 1994, in order to reduce contamination from the sample shipping container. The data for samples before and after that date are different and not directly comparable. A tabular summary of the differences based on a special intercomparison study, is available from the NADP/NTN Coordination Office, Colorado State University, Fort Collins, CO 80523 (Telephone: 303-491-5643).

RED RIVER OF THE NORTH BASIN  
05051500 RED RIVER OF THE NORTH AT WAHPETON, ND

LOCATION.--Lat 46°15'55", long 96°35'40", in NE<sup>1</sup>/<sub>4</sub> sec.8, T.132 N., R.47 W., Richland County, Hydrologic Unit 09020104, on left bank in Wahpeton, 800 ft downstream from confluence of Bois de Sioux and Otter Tail Rivers and at mile 548.6.

DRAINAGE AREA.--4,010 mi<sup>2</sup>, approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April to October 1942, March 1943 to current year. Gage-height records collected in this vicinity since 1917 are contained in reports of the National Weather Service.

GAGE.--Water-stage recorder and concrete and wooden dam. Datum of gage is 942.97 ft above sea level. Prior to Aug. 6, 1943, National Weather Service nonrecording gage 800 ft upstream, converted to present datum. Aug. 6, 1943, to Oct. 27, 1950, nonrecording gage at present site and datum.

REMARKS.--Records good except for periods of estimated daily discharges, which are fair. Flow regulated by Orwell Reservoir, capacity, 14,100 acre-ft at elevation 1,070 ft above National Geodetic Vertical Datum of 1929, adjustment of 1912; Lake Traverse, capacity, 137,000 acre-ft, available for flood control; numerous other controlled lakes and ponds and several powerplants.

EXTREMES OUTSIDE PERIOD OF RECORD.--A stage of 17.0 ft, discharge, 10,500 ft<sup>3</sup>/s, occurred in the spring of 1897 and discharge has not been exceeded since.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	316	1090	e640	e549	e736	e560	e1880	1600	2180	877	455	183
2	378	1180	e595	e549	e748	e470	e2060	1520	e2070	867	462	187
3	507	1200	e566	e466	e759	e470	e2280	1590	e1970	847	438	192
4	593	1010	e531	e428	e720	e660	e2490	1520	e1860	774	392	191
5	570	1300	e538	e431	e660	e928	e2630	1480	e1760	729	422	233
6	487	1310	e456	e440	e610	e975	e2780	1490	e1650	713	404	231
7	536	1320	e514	e500	e550	e1000	e3040	1550	e1640	662	402	249
8	568	1130	e542	e531	e500	e1030	e3380	1600	e1630	644	411	245
9	571	1040	e365	e466	e460	e1060	e3820	1630	e1610	660	450	239
10	587	1110	e337	e353	e435	e1100	e4110	1690	e1600	681	440	280
11	583	961	e456	e580	e421	e1120	e4100	1880	1550	663	397	325
12	598	833	e428	e443	e359	e1200	e3950	2000	1450	607	384	330
13	741	898	e392	e472	e389	e1320	3720	2030	1420	561	331	224
14	861	928	e443	e469	e456	e1520	3580	2050	1410	556	270	125
15	898	945	e483	e428	e440	e2000	3330	2180	1420	555	302	116
16	929	937	e500	e456	e427	e2620	3100	2450	1340	578	318	114
17	930	e928	e540	e431	e446	e3400	2940	2630	1280	622	335	102
18	927	e832	e510	e422	e450	e4000	2810	4440	1260	615	338	85
19	923	e732	e434	e198	e450	e4640	2680	5320	1230	575	335	129
20	906	e681	e422	e416	e450	e4490	2570	4790	1170	564	319	183
21	832	e486	e434	e531	e450	e4100	2420	3570	1150	521	278	225
22	731	e493	e456	e510	e460	e3200	2320	2480	1100	513	278	237
23	692	e599	e462	e500	e460	e2700	2210	2440	1050	513	223	235
24	680	e644	e469	e517	e460	e2300	2130	2560	1040	515	265	218
25	728	e751	e469	e524	e460	e2000	2090	2600	1010	520	383	182
26	1020	e724	e466	e538	e450	e1830	2060	2590	930	495	409	198
27	1120	e647	e459	e603	e450	e1500	2010	2540	888	433	372	234
28	1080	e559	e453	e628	e440	e1520	1960	2490	865	392	302	272
29	1050	e617	e483	e640	e420	e1570	1920	2430	874	397	243	266
30	1050	e636	e534	e625	---	e1640	1830	2320	882	389	198	264
31	1060	---	e542	e689	---	e1760	---	2250	---	406	186	---
TOTAL	23452	26521	14919	15333	14516	58683	82200	73710	41289	18444	10742	6294
MEAN	757	884	481	495	501	1893	2740	2378	1376	595	347	210
MAX	1120	1320	640	689	759	4640	4110	5320	2180	877	462	330
MIN	316	486	337	198	359	470	1830	1480	865	389	186	85
AC-FT	46520	52600	29590	30410	28790	116400	163000	146200	81900	36580	21310	12480

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1942 - 1996, BY WATER YEAR (WY)

	MEAN	331	307	274	265	276	665	1286	1074	1042	775	416	329
MAX	1599	952	820	678	687	2629	4436	3085	2675	2787	2496	2148	
(WY)	1994	1987	1987	1986	1987	1995	1969	1986	1962	1993	1993	1993	
MIN	5.72	7.40	6.60	8.81	18.0	84.3	138	22.5	90.0	65.6	53.5	2.18	
(WY)	1977	1977	1977	1977	1977	1977	1977	1977	1977	1977	1977	1976	

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR	FOR 1996 WATER YEAR	WATER YEARS 1942 - 1996
ANNUAL TOTAL	414402	386103	
ANNUAL MEAN	1135	1055	583
HIGHEST ANNUAL MEAN			1477
LOWEST ANNUAL MEAN			54.0
HIGHEST DAILY MEAN	6200	5320	8940
LOWEST DAILY MEAN	155	85	1.7
ANNUAL SEVEN-DAY MINIMUM	197	122	1.7
INSTANTANEOUS PEAK FLOW		5400	9200
INSTANTANEOUS PEAK STAGE		a 13.49	17.95
INSTANTANEOUS LOW FLOW			1.7
ANNUAL RUNOFF (AC-FT)	822000	765800	422100
10 PERCENT EXCEEDS	2610	2460	1410
50 PERCENT EXCEEDS	636	626	361
90 PERCENT EXCEEDS	296	279	105

a Backwater from ice.  
e Estimated.

RED RIVER OF THE NORTH BASIN  
05051500 RED RIVER OF THE NORTH AT WAHPETON, ND--Continued

29

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996											
DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (00095)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT 11...	1235	548	753	--	--	23.0	13.5	--	--	--	--
NOV 21...	1210	465	522	--	--	1.0	0.5	--	--	--	--
JAN 04...	1025	428	568	--	--	-9.0	0.5	--	--	--	--
13...	0930	371	687	--	--	-3.0	0.5	--	--	--	--
APR 10...	1140	4130	467	--	--	10.0	2.0	--	--	--	--
13...	1645	3550	--	520	--	--	--	280	196	58	32
MAY 02...	1000	1470	600	--	8.1	13.5	11.0	310	194	61	37
19...	1030	5190	582	--	--	20.0	18.0	--	--	--	--
JUL 11...	1255	665	414	--	--	28.5	24.0	--	--	--	--
AUG 14...	1525	263	439	--	8.1	22.0	24.0	210	209	38	29

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
APR 13...	16	11	0.4	6.9	65	11	0.10	307	396	0.54
MAY 02...	17	11	0.4	6.0	130	12	0.20	380	391	0.53
AUG 14...	12	11	0.4	3.4	23	12	0.20	243	272	0.37

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
APR 13...	3800	4	20	3	30	110	<0.1	<1	2	280
MAY 02...	1550	7	100	<1	30	50	0.1	1	<1	240
AUG 14...	193	4	10	<1	10	20	<0.1	<1	<1	180

RED RIVER OF THE NORTH BASIN  
05051522 RED RIVER OF THE NORTH AT HICKSON, ND

LOCATION.--Lat 46°39'35", long 96°47'44", in SW<sup>1</sup>/<sub>4</sub> sec.19, T.137 N., R.48 W., Clay County, MN, Hydrologic Unit 09020104, on right bank 60 ft downstream from bridge on township road, and 1 mi southeast of Hickson, ND.

DRAINAGE AREA.--4,300 mi<sup>2</sup>, approximately.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder and concrete control. Datum of gage is 877.06 ft above sea level.

REMARKS.--Records fair except for periods of estimated daily discharges, which are poor. Flow regulated by Orwell Reservoir, capacity, 14,100 acre-ft at 1,070 ft above sea level, adjustment of 1912; Lake Traverse, capacity, 137,000 acre-ft, available for flood control, numerous other controlled lakes and ponds, and several powerplants.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996 DAILY MEAN VALUES												
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	286	974	591	e541	e620	e436	e1690	1830	2430	836	380	199
2	308	985	634	e520	e690	e441	e1900	1660	2310	832	417	203
3	324	1020	650	e503	e710	e476	e2200	1520	2170	826	447	200
4	394	1050	638	e494	e740	e491	e2510	1530	2050	819	449	191
5	551	839	610	e428	e760	e500	e2820	1520	1930	778	424	191
6	652	957	565	e416	e705	e551	e3130	1460	1770	730	404	182
7	624	1220	523	e410	e650	e624	e3410	1450	1680	707	398	219
8	568	1410	512	e424	e595	e705	e3710	1480	1650	669	385	229
9	585	1160	505	e425	e540	e739	e4050	1520	1650	642	377	234
10	611	886	475	e490	e485	e778	e4400	1570	1620	639	388	231
11	596	955	353	e485	e460	e815	e4770	1580	1580	666	402	226
12	616	928	e335	e480	e430	e863	e5190	1690	1540	672	397	268
13	576	789	e399	e480	e400	e944	e5700	1830	1430	642	364	305
14	621	755	e404	e475	e360	e1070	e6190	1910	1350	595	342	300
15	751	863	e386	e460	e366	e1480	e6090	1970	1340	567	305	215
16	818	931	e429	e450	e387	e2080	e5360	2040	1340	564	285	158
17	850	966	e481	e440	e398	e2560	e4730	2310	1290	567	306	145
18	869	988	e514	e430	e396	e2960	e4180	3600	1220	601	325	143
19	878	951	e541	e425	e400	e3370	e3710	4810	1190	624	335	144
20	882	914	e541	e420	e397	e3730	e3300	5550	1170	599	338	141
21	863	830	e488	e220	e386	e3980	e2970	5890	1120	588	335	164
22	827	699	e480	e420	e390	e4030	e2720	5760	1080	554	305	194
23	740	532	e486	e520	e414	e3860	e2520	5210	1050	510	289	220
24	688	446	e496	e510	e430	e3640	e2370	4320	1020	502	267	229
25	667	495	e496	e500	e440	e3310	e2230	3530	991	510	231	227
26	658	622	e490	e520	e436	e3010	2140	3070	985	508	292	218
27	801	698	e480	e540	e435	e2630	2070	2840	931	507	376	203
28	988	652	e465	e570	e439	e2100	2010	2730	884	469	388	214
29	1010	570	e455	e590	e440	e1700	1950	2650	845	420	344	238
30	979	539	e471	e610	---	e1520	1900	2600	834	399	289	253
31	968	---	e507	e640	---	e1570	---	2520	---	392	233	---
TOTAL	21549	25624	15400	14836	14299	56963	101920	83950	42450	18934	10817	6284
MEAN	695	854	497	479	493	1838	3397	2708	1415	611	349	209
MAX	1010	1410	650	640	760	4030	6190	5890	2430	836	449	305
MIN	286	446	335	220	360	436	1690	1450	834	392	231	141
AC-FT	42740	50830	30550	29430	28360	113000	202200	166500	84200	37560	21460	12460

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 1996, BY WATER YEAR (WY)

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
MEAN	405	335	287	278	321	924	1840	1159	1003	831	500	426										
MAX	1558	900	817	747	745	2687	4165	3394	2485	2674	2674	2135										
(WY)	1994	1987	1986	1986	1987	1995	1978	1986	1986	1993	1993	1993										
MIN	2.02	.000	.000	4.95	14.0	75.9	165	22.0	86.4	73.4	35.6	12.6										
(WY)	1977	1977	1977	1977	1977	1977	1977	1977	1977	1977	1977	1976										

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR		FOR 1996 WATER YEAR		WATER YEARS 1975 - 1996	
ANNUAL TOTAL	427808		413026			
ANNUAL MEAN	1172		1128		693	
HIGHEST ANNUAL MEAN					1604	
LOWEST ANNUAL MEAN					53.1	
HIGHEST DAILY MEAN	7600	Mar 20	6190	Apr 14	12000	Apr 7 1989
LOWEST DAILY MEAN	182	Sep 24	141	Sep 20	.00	Oct 26 1976
ANNUAL SEVEN-DAY MINIMUM	207	Sep 22	156	Sep 16	.00	Oct 26 1976
INSTANTANEOUS PEAK FLOW			6290	Apr 14	12900	Apr 7 1989
INSTANTANEOUS PEAK STAGE			a 28.26	Apr 14	35.81	Apr 7 1989
ANNUAL RUNOFF (AC-FT)	848600		819200		501900	
10 PERCENT EXCEEDS	2500		2760		1740	
50 PERCENT EXCEEDS	634		623		381	
90 PERCENT EXCEEDS	307		291		83	

a Backwater from ice.  
e Estimated.



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

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WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT											
11...	1550	591	726	--	--	23.5	13.0	--	--	--	--
NOV											
21...	1645	824	600	--	--	1.0	1.0	--	--	--	--
JAN											
08...	1330	424	467	--	--	1.5	0.0	--	--	--	--
APR											
15...	0940	6200	456	--	9.1	-1.0	0.5	210	109	46	23
17...	1145	4610	550	--	--	8.0	6.0	--	--	--	--
MAY											
10...	1110	1590	603	8.0	--	12.5	10.0	310	203	60	38
20...	1505	5490	541	--	--	22.0	18.5	--	--	--	--
JUL											
23...	1005	524	424	--	--	21.5	23.0	--	--	--	--
AUG											
a15...	1650	306	599	8.1	--	28.5	26.0	250	242	43	34

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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 CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
APR										
15...	11	10	0.3	6.2	89	7.9	0.10	249	303	0.41
MAY										
10...	17	11	0.4	5.4	120	12	0.20	375	386	0.52
AUG										
a15...	24	16	0.7	24	50	25	0.10	345	365	0.50

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
APR										
15...	5070	5	20	7	20	60	<0.1	<1	1	230
MAY										
10...	1660	6	100	<1	30	50	0.1	<1	<1	240
AUG										
a15...	302	5	20	<1	20	10	<0.1	<1	<1	220

a Replicate sample also collected for quality-assurance purposes.

**DRAINAGE AREA.**--546 mi<sup>2</sup>, of which about 250 mi<sup>2</sup> is probably noncontributing.

PERIOD OF RECORD.--October 1959 to current year (seasonal records only since 1982).

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

EXTREMES FOR CURRENT YEAR.-- Maximum discharge, 573 ft<sup>3</sup>/s, May 19, gage height, about 6.02 ft, minimum daily discharge, 6.3 ft<sup>3</sup>/s, Aug. 26.

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 1996, BY WATER YEAR (WY)

### SUMMARY STATISTICS

SUMMARY STATISTICS		WATER YEARS 1960 - 1966	
ANNUAL MEAN	a 8.36		
HIGHEST ANNUAL MEAN	a 44.8		1969
LOWEST ANNUAL MEAN	a .000		1977
HIGHEST DAILY MEAN	1130	Apr	9 1969
LOWEST DAILY MEAN	.00	Oct	1 1959
ANNUAL SEVEN-DAY MINIMUM	.00	Oct	1 1959
INSTANTANEOUS PEAK FLOW	1270	Apr	8 1969
INSTANTANEOUS PEAK STAGE	8.78	Apr	8 1969
ANNUAL RUNOFF (AC-FT)	a 6050		
10 PERCENT EXCEEDS	25		
50 PERCENT EXCEEDS	.00		
90 PERCENT EXCEEDS	.00		

a Based on complete water years only (1960-82, 1984).  
e Estimated.

RED RIVER OF THE NORTH BASIN  
05053000 WILD RICE RIVER NEAR ABERCROMBIE, ND

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LOCATION.--Lat 46°28'05", long 96°47'00", in NE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub> sec.36, T.135 N., R.49 W., Richland County, Hydrologic Unit 09020105, on right bank 420 ft upstream from bridge on county highway, 0.75 mi upstream from rubble masonry dam which serves as control, 3.2 mi northwest of Abercrombie, and 7 mi downstream from Antelope Creek.

DRAINAGE AREA.--2,080 mi<sup>2</sup>, of which about 590 mi<sup>2</sup> is probably noncontributing.

WATER-DISCHARGE RECORDS

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

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

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

REMARKS.--Records good except for periods of estimated daily discharges, which are fair. Some regulation by Fish and Wildlife Service reservoirs, of which Lake Tewaukon is the largest. Some small diversions for irrigation.

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	81	e30	e11	e3.0	e1.5	e80	407	672	107	14	1.1
2	29	80	e29	e11	e2.8	e1.5	e90	386	589	99	14	1.7
3	55	76	e28	e11	e2.7	e1.5	e120	368	570	91	16	1.6
4	62	54	e27	e11	e2.7	e1.5	e180	350	540	84	17	1.4
5	68	76	e27	e9.0	e2.6	e1.4	e300	335	490	78	17	1.0
6	133	79	e27	e8.0	e2.6	e1.3	e450	318	449	77	16	.66
7	138	64	e26	e7.0	e2.6	e1.2	e700	306	425	72	15	.57
8	165	59	e25	e6.8	e2.6	e1.2	e1180	303	408	68	14	.48
9	209	e59	e23	e6.7	e2.6	e1.2	e1600	301	395	65	15	.33
10	229	59	e21	e6.6	e2.6	e1.3	e2000	306	379	63	14	.26
11	221	58	e20	e6.6	e2.6	e1.5	2260	323	400	62	17	.23
12	206	e58	e17	e6.8	e2.6	e4.5	2330	312	535	61	19	.20
13	180	e56	e16	e7.2	e2.6	e35	2230	295	353	57	20	.19
14	162	54	e14	e7.0	e2.6	e150	1970	284	306	54	20	.17
15	151	50	e13	e6.6	e2.6	e325	1530	285	322	51	17	.15
16	140	50	e13	e6.2	e2.6	e750	1260	356	311	48	13	.15
17	128	49	e12	e5.6	e2.6	e1050	1120	455	269	46	11	.14
18	118	46	e12	e5.2	e2.6	e1120	1000	1930	255	39	9.2	.13
19	115	45	e12	e4.7	e2.5	e950	887	3010	250	37	7.7	.13
20	105	46	e11	e4.5	e2.5	e750	815	3230	260	35	6.2	.13
21	93	45	e11	e4.2	e2.4	e700	765	2990	262	32	5.4	.13
22	86	e45	e11	e4.0	e2.3	e650	707	2420	251	29	4.9	.13
23	83	e44	e11	e3.8	e2.5	e600	645	1610	240	27	4.3	.13
24	81	e44	e11	e3.7	e3.5	e500	592	1110	224	25	3.9	.13
25	83	e43	e11	e3.6	e3.0	e350	552	1050	202	23	4.2	.12
26	86	e40	e11	e3.5	e2.5	e225	519	1110	179	21	4.7	.15
27	98	e38	e11	e3.5	e2.0	e190	493	1160	169	20	4.1	.19
28	111	e36	e11	e3.4	e1.7	e150	474	1170	150	19	3.3	.23
29	106	e35	e11	e3.3	e1.5	e100	456	1140	134	19	2.7	.22
30	95	e32	e11	e3.2	---	e90	432	1020	120	18	1.9	.21
31	86	---	e11	e3.1	---	e85	---	829	---	15	1.4	---
TOTAL	3636	1601	524	187.8	74.0	8789.6	27737	29469	10109	1542	332.9	12.36
MEAN	117	53.4	16.9	6.06	2.55	284	925	951	337	49.7	10.7	.41
MAX	229	81	30	11	3.5	1120	2330	3230	672	107	20	1.7
MIN	14	32	11	3.1	1.5	1.2	80	284	120	15	1.4	.12
AC-FT	7210	3180	1040	373	147	17430	55020	58450	20050	3060	660	25

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1932 - 1996, BY WATER YEAR (WY)

MEAN	8.40	6.33	3.19	1.16	1.79	157	405	126	104	121	26.3	11.1
MAX	117	60.4	19.2	14.5	37.6	1195	3077	951	929	1787	462	159
(WY)	1996	1943	1943	1994	1984	1995	1969	1996	1962	1962	1993	1986
MIN	.000	.000	.000	.000	.000	.000	2.81	.11	.085	.000	.000	.000
(WY)	1933	1933	1933	1933	1934	1937	1991	1934	1988	1933	1932	1932

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR		FOR 1996 WATER YEAR		WATER YEARS 1932 - 1996	
ANNUAL TOTAL	104405.6		84014.66			
ANNUAL MEAN	286		230		81.5	
HIGHEST ANNUAL MEAN					372	
LOWEST ANNUAL MEAN					.48	
HIGHEST DAILY MEAN	3680	Mar 30	3230	May 20	9360	Apr 11 1969
LOWEST DAILY MEAN	6.1	Jan 31	.12	Sep 25	.00	Jul 26 1932
ANNUAL SEVEN-DAY MINIMUM	6.3	Feb 22	.13	Sep 19	.00	Jul 26 1932
INSTANTANEOUS PEAK FLOW			3260	May 20	9540	Apr 11 1969
INSTANTANEOUS PEAK STAGE			16.18	May 20	24.58	Apr 11 1969
ANNUAL RUNOFF (AC-FT)	207100		166600		59020	
10 PERCENT EXCEEDS	659		680		143	
50 PERCENT EXCEEDS	62		37		1.9	
90 PERCENT EXCEEDS	7.1		1.5		.00	

e Estimated.

**RED RIVER OF THE NORTH BASIN**  
**05053000 WILD RICE RIVER NEAR ABERCROMBIE, ND--Continued**

**WATER-QUALITY RECORDS**

**PERIOD OF RECORD.--Water year 1967 to current year**

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT 11...	1000	229	962	--	10.0	11.5	--	--	--	--
NOV 21...	1420	44	2250	--	1.5	1.0	--	--	--	--
JAN 04...	1315	11	2250	--	-8.0	0.0	--	--	--	--
FEB 15...	1120	2.6	2070	--	-5.5	0.0	--	--	--	--
MAR 18...	1725	1120	186	--	-3.0	0.5	--	--	--	--
MAR 20...	1140	767	--	--	0.0	1.5	--	--	--	--
APR 08...	1440	1180	593	--	8.0	0.0	--	--	--	--
APR 17...	1320	1140	730	--	15.5	7.0	--	--	--	--
APR 29...	1300	458	1050	8.1	15.0	10.5	470	240	92	58
MAY 20...	1010	3250	554	--	18.0	18.0	--	--	--	--
JUL 11...	0910	62	1440	--	24.5	23.0	--	--	--	--
AUG 14...	1115	21	1470	8.1	21.0	23.5	610	356	120	75

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
APR 29...	73	25	1	12	310	26	0.20	716	746	1.01
AUG 14...	110	28	2	14	460	39	0.30	1030	1090	1.48

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
APR 29...	923	9	100	<1	70	50	0.1	1	2	430
AUG 14...	61.8	9	20	<1	110	130	<0.1	4	<1	630



RED RIVER OF THE NORTH BASIN  
05053800 RED RIVER OF THE NORTH ABOVE FARGO, ND

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LOCATION.--Lat 46°48'14", long 96°47'47", in SW<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> sec.31, T.139 N., R.48 W., Cass County, Hydrologic Unit 09020104, 3.0 mi south of Fargo.

DRAINAGE AREA.--6,800 mi<sup>2</sup>, approximately.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1994 to current year..

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996													
DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	DIS-CHARGE, IN CUBIC FEET PER SECOND (00060)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L AS CACO3) (39086)	
AUG 09...	0940	--	462	581	7.7	--	13.5	20.0	7.6	--	230	217	
27...	0710	276	--	617	8.6	750	16.5	21.5	6.1	71	240	218	
DATE		ALKA-LINITY LAB (MG/L AS CACO3) (90410)	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)	SODIUM SODIUM PERCENT (00932)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE WATER DIS IT FIELD (MG/L AS HCO3) (00453)	CAR-BONATE WATER DIS IT FIELD (MG/L AS CO3) (00452)	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)	
AUG 09...	231		40	31	22	16	0.6	18	260	0	46	19	0.20
27...	241		42	32	25	17	0.7	29	260	3	48	27	0.20
DATE		SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	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, NITRATE DIS-SOLVED (MG/L AS N) (00618)	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) (00608)	NITRO-GEN, ORGANIC DIS-SOLVED (MG/L AS N) (00605)	NITRO-GEN, ORGANIC DIS-SOLVED (MG/L AS N) (00607)
AUG 09...	16		324	355	0.48	443	0.030	0.780	0.810	0.810	0.030	1.2	1.1
27...	17		356	379	0.52	282	0.020	1.08	1.10	1.10	0.020	1.3	1.3
DATE		NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO-GEN, TOTAL (MG/L AS N) (00600)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	ACETO-CHLOR, WATER FLTRD REC (UG/L) (49260)	ACIFL-UORFEN, WATER, FLTRD, GF 0.7U REC (UG/L) (49315)	ALA-CHLOR, WATER, FLTRD, DISS, REC, (UG/L) (46342)
AUG 09...	1.2		1.1	2.0	0.100	0.040	0.050	5	1	10	<0.002	<0.035	<0.002
27...	1.3		1.3	2.4	0.120	0.060	0.050	<3	3	10	<0.002	<0.035	<0.002
DATE		ALDI-CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (49312)	ALDI-CARB, SULFONE WAT, FLT GF 0.7U REC (UG/L) (49313)	ALDICA-RB SUL-FOXIDE, WAT, FLT GF 0.7U REC (UG/L) (49314)	CHLOR-AMBEN, WATER, FLTRD, REC (UG/L) (49307)	ATRA-ZINE, WATER, DISS, REC (UG/L) (39632)	ALPHA BHC DIS-SOLVED (UG/L) (34253)	BEN-FLUR-ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)	BRO-MACIL, WATER, DISS, REC (UG/L) (04029)	BRO-MOXYNIL, WATER, FLTRD, GF 0.7U REC (UG/L) (49311)	BUTYL-ATE, WATER, FLTRD, DISS, REC (UG/L) (04028)	CAR-BARYL, WATER, FLTRD, GF, REC (UG/L) (82680)	CAR-BARYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49310)
AUG 09...	<0.016		<0.016	<0.021	<0.011	0.041	<0.002	<0.002	<0.035	<0.035	<0.002	<0.003	<0.008
27...	<0.016		<0.016	<0.021	<0.011	0.032	<0.002	<0.002	<0.035	<0.035	<0.002	<0.003	<0.008

**RED RIVER OF THE NORTH BASIN**  
**05053800 RED RIVER OF THE NORTH ABOVE FARGO, ND--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	CARBO- FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	CARBO- FURAN, WATER, FLTRD 0.7 U GF, REC (UG/L) (49309)	CHLOR- PYRIFOS DIS- SOLVED (UG/L) (38933)	CLOPYR- ALID, WATER, FLTRD 0.7 U GF, REC (UG/L) (49305)	CHLORO- THALO- NIL, WAT, FLT 0.7 U GF, REC (UG/L) (49306)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	P, P' DDE DISSOLV (UG/L) (34653)	DACTHAL MONO- ACID, WAT, FLT 0.7 U GF, REC (UG/L) (49304)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	DICAMBA WATER, FLTRD, 0.7 U GF, REC (UG/L) (38442)
AUG 09... 27...	<0.003 <0.003	<0.028 <0.028	<0.004 <0.004	<0.050 <0.050	<0.035 <0.035	0.020 0.009	<0.002 <0.002	<0.006 <0.006	<0.017 <0.017	e0.013 e0.007	<0.002 <0.002	<0.035 <0.035
DATE	DICHLO- BENIL, WATER, FLTRD, GF 0.7U REC (UG/L) (49303)	DICHLOR PROP, WATER, FLTRD, GF 0.7U REC (UG/L) (49302)	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	2,6-DI- ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	DINOSEB WATER, FLTRD, GF 0.7U REC (UG/L) (49301)	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	DIURON, WATER, FLTRD, GF 0.7U REC (UG/L) (49300)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	ESFEN- VAL- ERATE, WAT, FLT 0.7 U GF, REC (UG/L) (49298)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	FEN- URON, WATER, FLTRD, 0.7 U GF, REC (UG/L) (49297)
AUG 09... 27...	<0.020 <0.020	<0.032 <0.032	<0.001 <0.001	<0.003 <0.003	<0.035 <0.035	<0.017 <0.017	<0.020 <0.020	<0.002 <0.002	<0.019 <0.019	<0.004 <0.004	<0.003 <0.003	<0.013 <0.013
DATE	FLUO- METURON WATER, FLTRD, GF 0.7U REC (UG/L) (38811)	FONOFOS WATER DISS REC (UG/L) (04095)	LINDANE DIS- SOLVED (UG/L) (39341)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	LINURON WATER, FLTRD, GF 0.7U REC (UG/L) (38478)	MCPA, WATER, FLTRD, GF 0.7U REC (UG/L) (38482)	MCPB, WATER, FLTRD, GF 0.7U REC (UG/L) (38487)	MALA- THION, DIS- SOLVED (UG/L) (39532)	METHIO- CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (38501)	METH- OMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49296)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	METHYL PARA- THION WAT FLT 0.7 U GF, REC (UG/L) (82667)
AUG 09... 27...	<0.035 <0.035	<0.003 <0.003	<0.004 <0.004	<0.002 <0.002	<0.018 <0.018	<0.050 <0.050	<0.035 <0.035	<0.005 <0.005	<0.026 <0.026	<0.017 <0.017	<0.001 <0.001	<0.006 <0.006
DATE	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	METRI- BUZIN WATER DISSOLV (UG/L) (82630)	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	NEB- URON, WATER, FLTRD, GF 0.7U REC (UG/L) (49294)	NORFLUR AZON, WATER, FLTRD, GF 0.7U REC (UG/L) (49293)	DNOC WAT, FLT 0.7 U GF, REC (UG/L) (49299)	ORY- ZALIN, WATER, FLTRD, GF 0.7U REC (UG/L) (49292)	OXAMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (38866)	PARA- THION, DIS- SOLVED (UG/L) (39542)	PEB- ULATE WATER FLTRD 0.7 U GF, REC (UG/L) (82669)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)
AUG 09... 27...	<0.002 e0.003	<0.004 <0.004	<0.004 <0.004	<0.003 <0.003	<0.015 <0.015	<0.024 <0.024	<0.035 <0.035	<0.019 <0.019	<0.018 <0.018	<0.004 <0.004	<0.004 <0.004	<0.004 <0.004
DATE	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	PIC- LORAM, WATER FLTRD 0.7 U GF, REC (UG/L) (49291)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	PROP- CHLOR, WATER, DISS, REC (UG/L) (04024)	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	PRO- PHAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49236)	PRO- POXUR, WATER, FLTRD, GF 0.7U REC (UG/L) (38538)	SILVEX, DIS- SOLVED (UG/L) (39762)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)
AUG 09... 27...	<0.005 <0.005	<0.002 <0.002	<0.050 <0.050	<0.018 <0.018	<0.003 <0.003	<0.007 <0.007	<0.004 <0.004	<0.013 <0.013	<0.035 <0.035	<0.035 <0.035	<0.021 <0.021	<0.005 <0.005
DATE	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRI- CLOPYR, WATER, FLTRD, GF 0.7U REC (UG/L) (49235)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (49295)	1-NAPH THOL, WATER, FLTRD, GF 0.7U REC (UG/L) (39732)	2,4-DB WATER, FLTRD, GF 0.7U REC (UG/L) (38746)	2,4,5-T DIS- SOLVED (UG/L) (39742)	3HYDRXY CARBO- FURAN WAT, FLT 0.7 U GF, REC (UG/L) (49308)
AUG 09... 27...	<0.010 <0.010	<0.007 <0.007	<0.013 <0.013	<0.002 <0.002	<0.001 <0.001	<0.050 <0.050	0.004 <0.002	<0.007 <0.007	<0.035 <0.035	<0.035 <0.035	<0.035 <0.035	<0.014 <0.014

e Estimated.

RED RIVER OF THE NORTH BASIN  
05054000 RED RIVER OF THE NORTH AT FARGO, ND

37

LOCATION.--Lat 46°51'40", long 96°47'00", in NW<sup>1</sup>/<sub>4</sub> NE<sup>1</sup>/<sub>4</sub> sec.18, T.139 N., R.48 W., Cass County, Hydrologic Unit 09020104, at waterplant on 4th St. S. in Fargo, 25 mi upstream from mouth of Sheyenne River, and at mi 453.

DRAINAGE AREA.--6,800 mi<sup>2</sup>, approximately.

WATER-DISCHARGE RECORDS

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

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

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

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 7, 1897, reached a stage of 39.1 ft present datum, discharge, 25,000 ft<sup>3</sup>/s at site 1.5 mi downstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996 DAILY MEAN VALUES												
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	288	1210	549	559	638	438	1600	2560	3120	1090	419	217
2	270	1210	605	568	665	425	1700	2450	2950	1070	440	241
3	312	1220	652	560	705	453	1870	2250	2790	1050	512	183
4	675	1270	641	581	763	549	2150	2150	2650	1040	702	170
5	1000	1160	633	488	784	580	2670	2120	2550	1010	537	173
6	1020	1040	588	445	748	618	3240	2020	2410	953	484	e190
7	1000	1280	524	430	721	698	3800	1930	2270	894	487	e195
8	942	1420	508	424	691	849	4330	1900	2190	850	473	e225
9	923	1410	527	461	599	994	4870	1910	2140	802	462	e230
10	933	1430	534	490	509	1080	5460	1940	2100	765	476	e220
11	952	892	486	475	429	1120	6010	1950	2050	821	524	209
12	952	735	408	377	458	1110	6450	2030	2010	807	520	228
13	924	710	417	330	436	1120	7150	2160	2060	788	484	273
14	877	662	409	360	357	1200	8480	2260	1960	738	448	306
15	929	732	374	420	325	1420	9730	2290	1880	678	390	269
16	997	881	390	426	383	1710	9880	2330	1840	655	278	191
17	1040	972	448	434	450	2280	9340	2710	1810	644	271	146
18	1080	1030	483	485	468	3430	8540	4620	1690	667	292	135
19	1090	1040	521	532	489	4270	7690	5970	1600	708	313	127
20	1090	1020	535	504	478	4890	6750	7260	1570	708	331	137
21	1080	919	498	344	449	5370	5790	8250	1550	667	327	152
22	1060	824	469	256	454	5570	4930	8930	1520	656	311	167
23	1010	645	465	376	502	5550	4230	9020	1500	605	266	185
24	920	496	488	475	469	5460	3640	8340	1450	587	256	220
25	859	453	494	479	459	5090	3120	6970	1430	591	226	228
26	831	545	488	502	456	4580	2670	5570	1360	592	217	282
27	874	688	486	532	445	3970	2350	4480	1300	640	292	273
28	1080	714	483	552	434	3110	2290	3880	1230	589	377	239
29	1210	623	479	566	428	2060	2350	3590	1160	531	363	232
30	1220	552	480	578	---	1620	2450	3410	1110	468	288	251
31	1200	---	521	592	---	1570	---	3290	---	435	233	---
TOTAL	28638	27783	15583	14601	15192	73184	145530	120540	57250	23099	11999	6294
MEAN	924	926	503	471	524	2361	4851	3888	1908	745	387	210
MAX	1220	1430	652	592	784	5570	9880	9020	3120	1090	702	306
MIN	270	453	374	256	325	425	1600	1900	1110	435	217	127
AC-FT	56800	55110	30910	28960	30130	145200	288700	239100	113600	45820	23800	12480
(+)	1150	241	1100	1360	1330	1060	1350	1420	1800	2040	1930	1630
*	57950	55350	32000	30320	31460	146260	290050	240520	115400	47860	25730	14110

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1901 - 1996, BY WATER YEAR (WY)

	MEAN	315	273	225	207	208	722	1761	1047	1024	855	412	315
	MAX	1741	942	800	740	778	4722	9924	4589	5122	5692	3293	2280
	(WY)	1994	1907	1987	1986	1987	1995	1969	1986	1962	1962	1993	1993
	MIN	.000	.000	.000	.000	.18	26.8	102	8.12	2.87	.000	.000	.000
	(WY)	1935	1937	1938	1933	1933	1937	1934	1934	1936	1934	1932	1934

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR	FOR 1996 WATER YEAR	WATER YEARS 1901 - 1996
ANNUAL TOTAL	600971	539693	
ANNUAL MEAN	1646 (*1620)	1475 (*1500)	615
HIGHEST ANNUAL MEAN			1928
LOWEST ANNUAL MEAN			17.5
HIGHEST DAILY MEAN	10500	Mar 22	24800
LOWEST DAILY MEAN	160	Sep 25	.00
ANNUAL SEVEN-DAY MINIMUM	197	Sep 22	.00
INSTANTANEOUS PEAK FLOW			25300
INSTANTANEOUS PEAK STAGE			37.34
INSTANTANEOUS LOW FLOW			.00
ANNUAL RUNOFF (AC-FT)	1192000 (*1207900)	1070000 (*1087000)	445400
10 PERCENT EXCEEDS	3310	3820	1360
50 PERCENT EXCEEDS	831	708	305
90 PERCENT EXCEEDS	331	276	39

e Estimated.  
+ Diversions in acre-feet to cities of Fargo and Moorhead.  
\* Adjusted for diversions to cities of Fargo and Moorhead.



RED RIVER OF THE NORTH BASIN  
05054000 RED RIVER OF THE NORTH AT FARGO, ND--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINEITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT 12...	0745	947	627	--	6.5	11.0	--	--	--	--
NOV 22...	0945	854	--	--	0.5	0.5	--	--	--	--
JAN 09...	1000	456	534	--	1.5	1.0	--	--	--	--
FEB 21...	1235	442	551	--	0.5	1.0	--	--	--	--
APR 12...	1005	6450	385	--	3.0	1.0	--	--	--	--
MAY 01...	0920	2640	708	8.0	12.0	10.5	330	195	68	39
MAY 21...	1105	8150	490	--	20.5	18.0	--	--	--	--
JUL 09...	1655	778	578	--	27.0	25.0	--	--	--	--
SEP 05...	1205	178	628	--	32.5	24.5	--	--	--	--

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
MAY 01...	25	14	0.6	8.8	180	14	0.10	452	473	0.6

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAY 01...	3370	2	70	<1	30	20	<0.1	1	<1	330

## WATER-DISCHARGE RECORDS

REMARKS.--Records good except for period of estimated discharges, which are fair.

a Backwater from ice.  
e Estimated.

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

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	COLOR (PLAT- INUM- COBALT UNITS) (00080)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT 24...	1845	2.2	1420	8.7	--	11.5	7.0	22	180	36	22
MAR 19...	1050	87	495	--	--	-5.0	0.0	--	--	--	--
APR 15...	1040	289	550	--	--	1.5	1.0	--	--	--	--
MAY 09...	1600	61	1250	8.3	732	6.0	8.0	50	330	50	49
29...	1445	26	1390	8.3	--	24.0	19.0	55	390	56	60
JUL 15...	1415	5.0	1380	8.8	723	27.0	25.0	--	260	30	45
25...	1445	7.5	1220	9.0	--	25.0	22.0	80	250	35	40
AUG 26...	1330	4.2	1540	8.6	--	25.0	20.0	55	300	35	52
SEP 10...	0945	1.3	1290	8.1	--	17.0	15.5	60	200	40	25

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
OCT 24...	250	74	8	6.9	519	220	17	0.30	29	895	912
MAY 09...	140	47	3	13	337	320	13	0.30	8.2	797	860
29...	180	49	4	13	406	340	14	0.30	8.8	917	956
JUL 15...	210	63	6	6.8	444	300	10	0.30	7.5	878	944
25...	180	60	5	6.6	419	240	8.8	0.30	13	776	830
AUG 26...	240	62	6	11	497	330	16	0.30	13	997	1030
SEP 10...	230	70	7	7.1	497	190	15	0.30	30	838	842

DATE	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, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 TOTAL (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) (00608)	NITRO- GEN, ORGANIC DIS- SOLVED (MG/L AS N) (00607)	NITRO- GEN,AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N) (00623)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)
OCT 24...	1.24	5.42	<0.010	--	0.260	0.260	0.020	0.58	0.60	0.090	0.080
MAY 09...	1.17	142	<0.010	--	--	<0.050	<0.015	--	1.1	0.110	0.080
29...	1.30	67.1	<0.010	--	0.060	0.060	0.030	1.3	1.3	0.190	0.150
JUL 15...	1.28	12.8	0.020	0.060	0.080	0.080	0.040	1.4	1.4	0.230	0.210
25...	1.13	16.8	0.010	0.070	0.080	0.080	0.020	1.1	1.1	0.150	0.160
AUG 26...	1.40	11.6	0.030	0.050	0.080	0.080	0.050	1.5	1.6	0.070	0.060
SEP 10...	1.15	5.91	0.050	0.110	0.160	0.160	0.250	0.85	1.1	0.160	0.170



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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	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)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)
MAY 09...	<10	3	<100	400	<1.0	<1	<1	1	30	<1
29...	--	--	--	520	--	--	--	--	--	--
JUL 15...	5	6	<100	710	<1.0	<1	<1	1	18	<1
25...	--	--	--	560	--	--	--	--	--	--
AUG 26...	--	--	--	760	--	--	--	--	--	--
SEP 10...	--	--	--	620	--	--	--	--	--	--

DATE	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	CYANIDE TOTAL (MG/L AS CN) (00720)
MAY 09...	85	34	<0.1	2	2	<1	340	3	<3	0.010
JUL 15...	120	30	<0.1	1	1	<1	270	14	3	--

RED RIVER OF THE NORTH BASIN  
05056000 SHEYENNE RIVER NEAR WARWICK, ND

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

DRAINAGE AREA.--2,070 mi<sup>2</sup>, approximately, of which about 1,310 mi<sup>2</sup> is probably noncontributing, including 227 mi<sup>2</sup> in closed basins.

WATER-DISCHARGE RECORDS

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

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

GAGE.--Water-stage recorder and rubble masonry control. Elevation of gage is 1,370 ft above sea level, by barometer.

REMARKS.--Records good except for periods of estimated discharges, which are fair.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.7	20	12	8.0	e7.3	8.0	214	442	189	75	77	21
2	8.7	20	13	8.0	e7.0	8.0	194	412	208	68	71	21
3	8.7	14	13	8.0	e6.8	8.0	183	385	209	63	60	15
4	8.7	14	13	7.3	e6.5	8.0	172	366	189	59	55	15
5	12	14	13	7.4	e6.1	7.7	162	338	167	53	55	17
6	13	11	12	8.0	e5.8	7.3	149	315	155	52	55	15
7	13	11	12	9.0	e6.0	7.2	138	297	154	48	46	14
8	13	11	11	10	e6.3	6.6	127	276	144	47	40	10
9	16	11	10	9.5	e6.7	5.8	172	263	138	44	38	10
10	17	11	9.6	9.5	e7.0	4.6	450	250	125	41	34	11
11	16	11	8.8	10	e7.2	4.1	e820	230	118	38	28	10
12	17	9.5	8.6	10	7.3	4.9	e1540	221	109	36	26	10
13	17	9.5	8.0	10	7.3	7.1	e2350	212	99	37	26	10
14	16	9.5	8.0	10	7.3	9.8	e3110	202	86	37	24	9.3
15	16	9.5	8.0	10	7.9	20	3650	190	79	32	24	8.7
16	16	9.5	8.0	e9.9	8.0	57	3650	190	71	30	23	8.7
17	16	9.5	8.0	e9.8	8.0	74	3160	209	67	30	22	8.0
18	15	9.5	8.0	e9.6	8.0	162	2780	270	59	32	22	7.5
19	16	9.5	7.4	e9.3	8.0	234	2400	348	52	38	25	7.3
20	15	10	7.3	e9.2	8.0	249	1950	553	43	58	25	7.3
21	14	11	7.3	e9.1	8.1	310	1400	578	42	90	31	8.7
22	14	11	7.3	e8.9	8.7	356	1050	485	45	96	31	8.7
23	13	11	7.3	e8.7	8.7	387	875	400	48	79	28	8.7
24	12	11	7.3	e8.6	8.7	374	775	340	46	69	27	9.9
25	12	12	7.3	e8.4	8.7	369	700	299	53	63	26	15
26	11	12	7.3	e8.3	8.7	356	652	275	66	59	25	21
27	14	12	7.3	e8.1	8.7	343	598	247	83	59	21	23
28	17	12	7.3	e8.0	8.7	312	544	219	91	61	16	23
29	17	12	7.6	e7.9	8.3	273	507	200	89	77	16	25
30	20	12	8.0	e7.7	---	245	477	186	81	84	16	20
31	22	---	8.0	e7.6	---	233	---	177	---	80	17	---
TOTAL	444.8	350.0	280.7	273.8	219.8	4451.1	34949	9375	3105	1735	1030	398.8
MEAN	14.3	11.7	9.05	8.83	7.58	144	1165	302	103	56.0	33.2	13.3
MAX	22	20	13	10	8.7	387	3650	578	209	96	77	25
MIN	8.7	9.5	7.3	7.3	5.8	4.1	127	177	42	30	16	7.3
AC-FT	882	694	557	543	436	8830	69320	18600	6160	3440	2040	791

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 1996, BY WATER YEAR (WY)

	MEAN	13.5	12.5	7.79	5.24	9.85	131	292	106	55.3	42.0	24.7	11.6
MAX	73.2	65.5	42.8	26.3	154	793	1421	854	326	299	423	63.0	
(WY)	1983	1995	1995	1983	1981	1983	1950	1950	1954	1993	1993	1957	
MIN	1.16	1.28	.76	.47	.75	1.46	15.8	10.4	1.75	.36	.090	.71	
(WY)	1953	1961	1961	1990	1990	1964	1977	1990	1961	1989	1961	1961	

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR		FOR 1996 WATER YEAR		WATER YEARS 1950 - 1996	
ANNUAL TOTAL	54474.7		56613.0			
ANNUAL MEAN	149		155		59.3	
HIGHEST ANNUAL MEAN					204	
LOWEST ANNUAL MEAN					5.31	
HIGHEST DAILY MEAN	1900	Mar 21	3650	Apr 15	4370	Apr 14 1969
LOWEST DAILY MEAN	7.3	Dec 20	4.1	Mar 11	.00	Aug 7 1961
ANNUAL SEVEN-DAY MINIMUM	7.3	Dec 20	5.8	Mar 7	.00	Aug 7 1961
INSTANTANEOUS PEAK FLOW			3740	Apr 15	4660	Apr 14 1969
INSTANTANEOUS PEAK STAGE			7.79	Apr 15	7.83	Apr 18 1956
INSTANTANEOUS LOW FLOW					.00	Aug 7 1961
ANNUAL RUNOFF (AC-FT)	108100		112300		42950	
10 PERCENT EXCEEDS	360		341		110	
50 PERCENT EXCEEDS	22		17		9.5	
90 PERCENT EXCEEDS	9.5		7.5		1.5	

e Estimated.

**RED RIVER OF THE NORTH BASIN**  
**05056000 SHEYENNE RIVER NEAR WARWICK, ND--Continued**

**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--Water years 1951, 1953, 1958 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
MAR 06...	0945	7.5	--	--	-5.0	0.0	--	--	--	--
APR 17...	1130	3160	--	--	17.0	3.0	--	--	--	--
24...	1200	791	584	8.1	10.5	6.5	180	190	36	21
26...	1830	636	--	--	5.5	6.0	--	--	--	--
MAY 03...	1530	377	--	--	13.5	10.5	--	--	--	--
JUN 12...	1530	109	--	--	26.0	25.0	--	--	--	--
JUL 16...	1315	30	--	--	30.0	24.5	--	--	--	--
AUG 27...	1500	22	1150	8.4	26.5	22.5	270	496	45	38

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
APR 24...	50	37	2	9.6	110	11	0.10	352	391	0.53
AUG 27...	160	55	4	11	140	18	0.30	710	761	1.03

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
APR 24...	835	8	30	<1	30	50	0.1	<1	<1	220
AUG 27...	45.8	8	10	<1	90	20	0.2	<1	<1	300

RED RIVER OF THE NORTH BASIN  
05056060 MAUVAIS COULEE TRIBUTARY NO. 3 NEAR CANDO, ND

LOCATION.--Lat 48°27'28", long 99°13'24", in NE<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> sec.6, T.157 N., R.66 W., Towner County, Hydrologic Unit 09020201, at bridge 2.1 mi south of Cando.

DRAINAGE AREA.--60.2 mi<sup>2</sup>.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--1955-71 (annual maximum discharges only), 1986-88 (discharge measurements only), March 1989 to current year (seasonal records only since 1989).

GAGE.--Nonrecording gage. Elevation of gage is 1,460 ft above sea level, from topographic map. Prior to 1986 gage was at different datum.

REMARKS.--Records poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,300 ft<sup>3</sup>/s, Apr. 14, 1969, gage height, 9.35 ft, datum then in use.

EXTREMES FOR CURRENT PERIOD.--Maximum discharge, 635 ft<sup>3</sup>/s, Apr. 12, gage height, 8.78 ft, observed, no flow much of the time.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	e.00	e.00	34	17	80	80	e5.4
2	---	---	---	---	---	e.00	e.00	26	15	67	130	e5.2
3	---	---	---	---	---	e.00	e.00	24	12	57	182	e5.0
4	---	---	---	---	---	e.00	e.00	21	11	57	219	e4.8
5	---	---	---	---	---	e.00	e.00	16	8.8	70	165	e5.8
6	---	---	---	---	---	e.00	e.00	16	7.2	79	123	e5.8
7	---	---	---	---	---	e.00	e.00	14	6.3	65	90	e5.5
8	---	---	---	---	---	e.00	e.00	14	5.3	50	89	e5.1
9	---	---	---	---	---	e.00	e.00	11	4.3	43	86	e4.7
10	---	---	---	---	---	e.00	e.00	11	3.7	36	84	e4.5
11	---	---	---	---	---	e.00	e25	10	3.3	30	80	e4.2
12	---	---	---	---	---	e.00	607	10	2.9	25	76	e3.9
13	---	---	---	---	---	e.00	561	9.8	2.6	26	66	e3.7
14	---	---	---	---	---	e.00	374	9.5	2.6	24	59	e3.5
15	---	---	---	---	---	e.00	391	7.8	2.1	21	49	e3.3
16	---	---	---	---	---	e.00	366	7.8	1.7	19	41	e3.1
17	---	---	---	---	---	e.00	333	44	1.5	18	34	e2.9
18	---	---	---	---	---	e.00	306	38	1.9	15	e30	e2.8
19	---	---	---	---	---	e.00	249	43	7.8	14	e25	e2.8
20	---	---	---	---	---	e.00	216	49	85	36	e22	e2.6
21	---	---	---	---	---	e.00	157	42	62	44	e19	e2.4
22	---	---	---	---	---	e.00	119	37	56	54	e17	e2.3
23	---	---	---	---	---	e.00	92	34	52	49	e15	e2.1
24	---	---	---	---	---	e.00	71	27	62	44	e13	e2.0
25	---	---	---	---	---	e.00	56	24	40	40	e11	e1.9
26	---	---	---	---	---	e.00	46	21	140	59	e9.6	e2.0
27	---	---	---	---	---	e.00	40	18	151	59	e8.8	e2.0
28	---	---	---	---	---	e.00	38	16	149	77	e7.9	e1.9
29	---	---	---	---	---	e.00	40	13	158	100	e7.1	e1.9
30	---	---	---	---	---	e.00	38	10	129	94	e6.4	e1.8
31	---	---	---	---	---	e.00	---	9.5	---	87	e5.8	---
TOTAL	---	---	---	---	---	0.00	4125.00	667.4	1201.0	1539	1850.6	104.9
MEAN	---	---	---	---	---	.000	137	21.5	40.0	49.6	59.7	3.50
MAX	---	---	---	---	---	.00	607	49	158	100	219	5.8
MIN	---	---	---	---	---	.00	.00	7.8	1.5	14	5.8	1.8
AC-FT	---	---	---	---	---	.00	8180	1320	2380	3050	3670	208

e Estimated.



RED RIVER OF THE NORTH BASIN  
05056060 MAUVAIS COULEE TRIBUTARY NO. 3 NEAR CANDU, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1986 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996										
DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
APR										
12...	1445	605	305	--	3.0	1.5	--	--	--	--
15...	1625	391	310	8.0	5.0	5.0	130	85	30	13
23...	1315	90	490	--	12.5	8.0	--	--	--	--
MAY										
14...	0745	10	698	--	9.5	12.0	--	--	--	--
JUN										
18...	1225	2.2	850	--	25.0	22.0	--	--	--	--
AUG										
06...	1535	118	610	7.7	25.5	22.5	260	199	56	29
27...	1500	8.8	900	--	27.0	21.0	--	--	--	--

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
APR										
15...	8.5	12	0.3	8.4	63	6.7	0.20	181	221	0.30
AUG										
06...	34	21	0.9	9.1	130	19	0.10	397	423	0.58

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
APR										
15...	233	3	30	<1	10	30	0.1	<1	<1	150
AUG										
06...	135	3	10	<1	30	50	0.1	<1	<1	290

**DRAINAGE AREA.**--387 mi<sup>2</sup>, of which about 10 mi<sup>2</sup> is probably noncontributing.

**PERIOD OF RECORD.**--May 1956 to current year (seasonal records only since 1982).

REMARKS.--Records fair except for periods of estimated discharges, which are poor.

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,160 ft<sup>3</sup>/s, April 20, gage height, 9.54 ft; minimum recorded daily discharge, 0.01 ft<sup>3</sup>/s, many days during the year.

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 1996, BY WATER YEAR (WY)

### SUMMARY STATISTICS

SUMMARY STATISTICS	WATER YEARS 1956 - 1996		
ANNUAL MEAN	a 19.7		
HIGHEST ANNUAL MEAN	a 71.7		1974
LOWEST ANNUAL MEAN	a .004		1961
HIGHEST DAILY MEAN	2580	Apr 25	1979
LOWEST DAILY MEAN	.00	Aug 21	1956
ANNUAL SEVEN-DAY MINIMUM	.00	Aug 21	1956
INSTANTANEOUS PEAK FLOW	2660	Apr 25	1979
INSTANTANEOUS PEAK STAGE	11.18	Apr 25	1979
ANNUAL RUNOFF (AC-FT)	a 14260		
10 PERCENT EXCEEDS	33		
50 PERCENT EXCEEDS	.10		
90 PERCENT EXCEEDS	.00		

a Based on complete water years only (1957-82, 1994).  
e Estimated.

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, (PER- CENT SATUR- ATION) (00301)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)
OCT											
04...	1045	0.14	--	--	--	9.5	10.0	--	--	--	--
MAR											
05...	1125	0.02	2000	--	--	<-5.0	0.0	--	--	--	--
20...	0915	0.03	1600	--	--	<-5.0	0.0	--	--	--	--
APR											
12...	1250	45	650	--	--	2.5	0.5	--	--	--	--
15...	1845	297	320	7.9	725	4.0	0.5	11.0	80	110	26
20...	1125	1150	490	--	--	4.0	3.5	--	--	--	--
a23...	0940	858	460	7.9	724	8.0	4.5	11.2	91	180	39
27...	1125	460	510	--	--	2.5	4.0	--	--	--	--
MAY											
14...	0735	59	687	8.0	725	6.5	12.0	8.1	79	340	71
JUN											
18...	1330	4.6	1140	--	--	26.0	23.0	--	--	--	--
AUG											
06...	1300	209	1020	7.7	720	25.0	23.0	5.1	63	420	81
27...	1300	43	1050	7.9	725	27.0	20.5	6.7	79	440	86

DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
APR											
15...	12	14	20	0.6	8.4	63	76	8.3	0.10	189	214
a23...	20	16	15	0.5	9.4	113	110	11	0.20	281	297
MAY											
14...	40	37	18	0.9	13	207	210	19	0.10	515	578
AUG											
06...	52	86	30	2	11	276	290	24	0.10	712	754
27...	55	79	27	2	14	347	250	25	0.10	719	747

DATE	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, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 TOTAL (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) (00608)	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)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)
APR											
15...	0.29	172	0.050	0.950	1.00	1.00	0.220	1.3	1.5	2.5	0.450
a23...	0.40	688	0.050	1.35	1.40	1.40	0.040	1.1	1.1	2.5	0.310
MAY											
14...	0.79	91.9	<0.010	--	0.050	0.050	0.030	1.4	1.4	1.5	0.130
AUG											
06...	1.03	425	0.010	0.050	0.060	0.060	0.030	1.5	1.5	1.6	0.400
27...	1.02	87.5	<0.010	--	--	<0.050	0.030	1.7	1.7	1.7	0.490

DATE	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
APR										
15...	0.320	2	60	<1	10	140	0.1	<1	<1	140
a23...	0.250	2	30	<1	10	10	<0.1	<1	<1	190
MAY										
14...	0.070	3	40	<1	40	70	0.1	<1	1	270
AUG										
06...	0.400	3	10	<1	50	50	<0.1	<1	<1	380
27...	0.460	3	10	<1	50	50	0.1	<1	<1	390

a Replicate sample also collected for quality-assurance purposes.

RED RIVER OF THE NORTH BASIN  
05056200 EDMORE COULEE NEAR EDMORE, ND

LOCATION.--Lat 48°20'14", long 98°39'33", in NW<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> sec.17, T.156 N., R.62 W., Ramsey County, Hydrologic Unit 09020201, on right bank 50 ft upstream from bridge on county highway, 11 mi southwest of Edmore, and about 13 mi upstream from Sweetwater Lake.

DRAINAGE AREA.--382 mi<sup>2</sup>, of which about 100 mi<sup>2</sup> is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April to June 1956, June 1957 to current year (seasonal records only since 1982).

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,400.00 ft above sea level. June 26, 1957, to Sept. 30, 1985, water-stage recorder at same site at a datum of 1,479.79 ft above sea level. Prior to June 26, 1957, nonrecording gage at same site and datum.

REMARKS.--Records fair.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 720 ft<sup>3</sup>/s, Apr. 17, gage height, 86.90 ft, backwater from ice; no flow Mar. 1 to Apr. 6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	e.00	e.00	237	89	5.0	e36	6.4
2	---	---	---	---	---	e.00	e.00	210	79	4.4	45	6.6
3	---	---	---	---	---	e.00	e.00	184	66	3.8	49	6.7
4	---	---	---	---	---	e.00	e.00	161	59	3.4	52	6.7
5	---	---	---	---	---	e.00	e.00	140	53	3.0	55	8.6
6	---	---	---	---	---	e.00	e.00	121	49	2.7	55	9.7
7	---	---	---	---	---	e.00	e.05	110	49	2.5	53	10
8	---	---	---	---	---	e.00	e.15	99	49	2.1	50	10
9	---	---	---	---	---	e.00	e.50	91	45	1.8	46	10
10	---	---	---	---	---	e.00	e2.0	83	42	1.5	43	9.8
11	---	---	---	---	---	e.00	e5.0	78	39	2.0	41	9.0
12	---	---	---	---	---	e.00	e11	72	36	2.1	38	8.6
13	---	---	---	---	---	e.00	e35	66	33	2.0	36	8.1
14	---	---	---	---	---	e.00	e100	62	30	1.9	34	7.6
15	---	---	---	---	---	e.00	e300	60	27	1.6	30	7.4
16	---	---	---	---	---	e.00	e481	53	25	1.5	27	7.3
17	---	---	---	---	---	e.00	e720	200	22	e1.4	24	7.1
18	---	---	---	---	---	e.00	e710	e300	20	e1.6	21	7.0
19	---	---	---	---	---	e.00	e698	e420	18	e3.5	33	7.2
20	---	---	---	---	---	e.00	e690	e555	17	e7.0	38	7.3
21	---	---	---	---	---	e.00	e660	e551	14	e10	37	7.6
22	---	---	---	---	---	e.00	e630	497	12	e9.0	30	7.8
23	---	---	---	---	---	e.00	600	437	11	e6.5	24	7.6
24	---	---	---	---	---	e.00	531	359	10	e4.5	18	7.2
25	---	---	---	---	---	e.00	474	291	10	e4.0	13	6.9
26	---	---	---	---	---	e.00	402	227	9.9	e5.0	10	7.0
27	---	---	---	---	---	e.00	359	179	9.0	e6.8	7.8	7.5
28	---	---	---	---	---	e.00	316	143	7.9	e10	6.8	7.4
29	---	---	---	---	---	e.00	282	111	6.9	e13	6.3	7.2
30	---	---	---	---	---	e.00	268	91	5.9	e18	6.2	6.9
31	---	---	---	---	---	e.00	---	86	---	e25	6.2	---
TOTAL	---	---	---	---	---	0.00	8274.70	6274	943.6	166.6	971.3	234.2
MEAN	---	---	---	---	---	.000	276	202	31.5	5.37	31.3	7.81
MAX	---	---	---	---	---	.00	720	555	89	25	55	10
MIN	---	---	---	---	---	.00	.00	53	5.9	1.4	6.2	6.4
AC-FT	---	---	---	---	---	.00	16410	12440	1870	330	1930	465

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 1996, BY WATER YEAR (WY)

MEAN	.97	.32	.055	.000	.44	27.1	101	29.8	6.38	15.3	15.7	1.82
MAX	9.79	5.73	.98	.000	11.6	232	314	205	66.5	306	437	45.4
(WY)	1986	1981	1981	1958	1981	1995	1974	1974	1963	1993	1993	1993
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1959	1959	1958	1958	1959	1960	1991	1958	1958	1958	1958	1958

SUMMARY STATISTICS

WATER YEARS 1957 - 1996

ANNUAL MEAN	a 14.2
HIGHEST ANNUAL MEAN	a 47.7
LOWEST ANNUAL MEAN	a .028
HIGHEST DAILY MEAN	1170
LOWEST DAILY MEAN	.00
ANNUAL SEVEN-DAY MINIMUM	.00
INSTANTANEOUS PEAK FLOW	1180
INSTANTANEOUS PEAK STAGE	87.76
ANNUAL RUNOFF (AC-FT)	a 10280
10 PERCENT EXCEEDS	30
50 PERCENT EXCEEDS	.00
90 PERCENT EXCEEDS	.00

a Based on complete water years only (1958-82, 1994).

e Estimated.



RED RIVER OF THE NORTH BASIN  
05056200 EDMORE COULEE NEAR EDMORE, ND--Continued

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WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED WATER (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)
APR											
12...	0915	11	245	--	--	0.0	0.5	--	--	--	--
16...	1125	481	350	7.5	720	7.0	1.0	11.0	82	110	25
19...	1100	698	460	--	--	7.0	5.0	--	--	--	--
23...	1015	601	520	7.9	721	8.0	4.5	10.5	86	160	39
27...	1045	365	570	--	--	1.5	3.5	--	--	--	--
MAY											
08...	0915	100	780	7.8	722	13.0	10.0	9.6	90	270	63
21...	0950	551	564	--	--	14.5	14.5	--	--	--	--
29...	1715	101	780	--	--	23.0	20.0	--	--	--	--
JUN											
18...	0815	21	1100	--	--	20.0	21.0	--	--	--	--
AUG											
a06...	0850	55	1160	7.5	722	23.0	23.0	5.8	72	330	75
27...	0750	7.7	1300	7.6	725	19.0	19.0	3.9	44	340	73

DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB 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)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
APR											
16...	11	23	30	1	8.4	73	78	11	0.20	212	237
23...	16	35	30	1	11	115	120	15	0.20	316	353
MAY											
08...	28	55	29	1	15	697	210	24	0.20	814	544
AUG											
a06...	34	120	43	3	11	254	270	34	0.10	699	736
27...	38	100	38	2	14	327	210	35	0.20	669	715

DATE	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, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 TOTAL 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) (00608)	NITRO- GEN, ORGANIC TOTAL SOLVED (MG/L AS N) (00605)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL SOLVED (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)
APR											
16...	0.32	308	0.110	2.19	2.30	2.30	0.300	1.3	1.6	3.9	0.520
23...	0.48	573	0.090	2.01	2.10	2.10	0.060	1.0	1.1	3.2	0.420
MAY											
08...	0.74	147	<0.010	--	0.060	0.060	0.020	1.2	1.2	1.3	0.150
AUG											
a06...	1.00	109	0.010	0.050	0.060	0.060	0.020	1.4	1.4	1.5	0.550
27...	0.97	14.9	<0.010	--	--	<0.050	<0.020	1.8	1.8	1.8	0.730

DATE	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
APR										
16...	0.410	2	40	<1	10	110	0.1	<1	<1	130
23...	0.360	2	10	<1	20	10	0.1	1	<1	200
MAY										
08...	0.110	3	20	<1	30	20	<0.1	<1	1	290
AUG										
a06...	0.520	4	10	<1	40	50	0.1	<1	<1	330
27...	0.720	6	20	<1	40	30	<0.1	<1	<1	340

a Replicate sample also collected for quality-assurance purposes.

**RED RIVER OF THE NORTH BASIN**  
**05056215 EDMORE COULEE TRIBUTARY NEAR WEBSTER, ND**

**LOCATION.**--Lat 48°15'59", long 98°40'50", in NW<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> sec.7, T.155 N., R.62 W., Ramsey County, Hydrologic Unit 09020201, on upstream side of bridge on county road, 9 mi east of Webster.

**DRAINAGE AREA.**--148 mi<sup>2</sup>, approximately, of which about 44 mi<sup>2</sup> is probably noncontributing.

**WATER-DISCHARGE RECORDS**

**PERIOD OF RECORD.**--March 1986 to current year (seasonal records only). Discharge record available for 1986 water year in files of the District office.

**GAGE.**--Water-stage recorder. Datum of gage is 1400 ft above sea level, from topographic map. Prior to October 1986 nonrecording gage at present site and datum.

**REMARKS.**--Records fair.

**EXTREMES OUTSIDE PERIOD OF RECORD.**--Flood in spring of 1959 reached a stage of about 75.00 ft, from conversation with local residents.

**EXTREMES FOR CURRENT YEAR.**--Maximum discharge, 611 ft<sup>3</sup>/s, Apr. 19, gage height, 73.20 ft; maximum gage height, 73.28, backwater from ice; no flow much of the time.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	e.00	e.00	296	190	12	12	7.6
2	---	---	---	---	---	e.00	e.00	272	180	11	11	5.5
3	---	---	---	---	---	e.00	e.00	263	141	10	11	5.3
4	---	---	---	---	---	e.00	e.00	244	127	8.3	12	4.6
5	---	---	---	---	---	e.00	e.00	222	111	7.3	13	15
6	---	---	---	---	---	e.00	e.00	172	109	5.3	13	33
7	---	---	---	---	---	e.00	e.00	166	99	4.3	13	19
8	---	---	---	---	---	e.00	e.00	148	82	3.5	12	14
9	---	---	---	---	---	e.00	e.00	97	68	3.2	11	10
10	---	---	---	---	---	e.00	e.00	106	57	2.6	8.3	9.6
11	---	---	---	---	---	e.00	e.00	93	54	4.8	8.8	8.8
12	---	---	---	---	---	e.00	e.00	79	46	5.5	8.1	7.6
13	---	---	---	---	---	e.00	e.20	74	40	6.7	7.8	6.3
14	---	---	---	---	---	e.00	e.10	61	35	22	7.1	5.4
15	---	---	---	---	---	e.00	e300	56	29	25	6.7	4.2
16	---	---	---	---	---	e.00	e478	44	28	24	5.9	3.5
17	---	---	---	---	---	e.00	e580	153	26	23	5.3	3.3
18	---	---	---	---	---	e.00	e605	197	24	20	5.0	2.8
19	---	---	---	---	---	e.00	e611	222	22	18	24	2.4
20	---	---	---	---	---	e.00	e605	247	20	15	23	2.4
21	---	---	---	---	---	e.00	e600	296	19	11	18	2.2
22	---	---	---	---	---	e.00	e590	343	18	11	16	2.3
23	---	---	---	---	---	e.00	566	352	17	14	14	2.2
24	---	---	---	---	---	e.00	508	354	19	18	13	1.7
25	---	---	---	---	---	e.00	511	336	21	5.7	12	1.2
26	---	---	---	---	---	e.00	420	307	19	6.7	13	1.2
27	---	---	---	---	---	e.00	385	302	19	8.1	11	1.6
28	---	---	---	---	---	e.00	350	276	18	11	11	2.4
29	---	---	---	---	---	e.00	339	235	14	12	9.8	2.4
30	---	---	---	---	---	e.00	311	206	14	14	8.5	1.9
31	---	---	---	---	---	e.00	---	195	---	13	6.7	---
TOTAL	---	---	---	---	---	0.00	7769.20	6414	1666	356.0	351.0	189.4
MEAN	---	---	---	---	---	.000	259	207	55.5	11.5	11.3	6.31
MAX	---	---	---	---	---	.00	611	354	190	25	24	33
MIN	---	---	---	---	---	.00	.00	44	14	2.6	5.0	1.2
AC-FT	---	---	---	---	---	.00	15410	12720	3300	706	696	376

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 1996, BY WATER YEAR (WY)

MEAN	23.4	2.50	.000	.000	.000	42.4	107	32.1	10.3	31.5	82.3	13.1
MAX	23.4	2.50	.000	.000	.000	233	324	207	55.5	226	858	134
(WY)	1994	1994	1994	1994	1994	1995	1987	1996	1996	1993	1993	1993
MIN	23.4	2.50	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1994	1994	1994	1994	1994	1989	1990	1990	1988	1988	1988	1987

e Estimated.

RED RIVER OF THE NORTH BASIN  
05056215 EDMORE COULEE TRIBUTARY NEAR WEBSTER, ND--Continued

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WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1986 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996											
DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	HARDNESS TOTAL (MG/L AS CACO3) (00900)	ALKALINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNESIUM, DIS-SOLVED (MG/L AS MG) (00925)	
APR											
16...	0915	478	370	7.7	3.0	0.5	120	76	27	12	
19...	0905	611	440	--	6.0	5.0	--	--	--	--	
23...	1145	577	476	--	9.5	5.0	--	--	--	--	
27...	1215	387	512	--	3.0	4.0	--	--	--	--	
MAY											
08...	0915	150	690	--	10.0	10.5	--	--	--	--	
20...	1640	253	538	--	18.5	18.5	--	--	--	--	
29...	1715	226	727	--	26.0	22.5	--	--	--	--	
JUN											
18...	0920	54	1020	--	22.0	21.0	--	--	--	--	
AUG											
05...	1445	14	950	8.0	28.0	25.0	330	243	67	40	
27...	1000	11	1160	--	21.0	18.5	--	--	--	--	
DATE		SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORPTION RATIO (00931)	POTASSIUM, DIS-SOLVED (MG/L AS K) (00935)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLORIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUORIDE, DIS-SOLVED (MG/L AS F) (00950)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	
APR											
16...	22	27	0.9	8.0	86	11	0.20	212	249	0.34	
AUG											
05...	100	39	2	9.7	270	28	0.10	661	676	0.92	
DATE		SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGANESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MOLYBDENUM, DIS-SOLVED (UG/L AS MO) (01060)	SELENIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRONTIUM, DIS-SOLVED (UG/L AS SR) (01080)
APR											
16...	321	2	30	<1	10	70	0.1	<1	<1	150	
AUG											
05...	24.8	4	10	<1	50	50	0.1	<1	<1	330	

RED RIVER OF THE NORTH BASIN  
05056220 SWEETWATER LAKE AT SWEETWATER, ND

LOCATION.--Lat 48°12'39", long 98°52'15", in NE<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> sec.27, T. 155 N., R.64 W., Ramsey County, Hydrologic Unit 09020201, at southwest arm of lake 6 mi north of Devils Lake.

DRAINAGE AREA.--670 mi<sup>2</sup> of which about 290 mi<sup>2</sup> is probably noncontributing.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1960, 1962-87, 1993 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	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)
OCT 1995 18...	0905	0.0	1.7	1150	8.2	410	233	84	48	95
FEB 1996 21...	1325	0.0	1.7	1760	--	670	392	140	78	150
MAY 08...	1715	0.0	2.5	638	7.9	220	153	50	23	42
JUL 24...	1535	0.0	0.80	809	--	290	231	65	32	68

DATE	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C SOLVED (MG/L (70300)	SOLIDS, DIS- SOLVED PER AC-FT) (70303)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)
OCT 1995 18...	32	2	18	370	29	0.20	785	840	1.14	<0.010
FEB 1996 21...	32	3	26	600	52	0.40	1290	1360	1.85	0.010
MAY 08...	28	1	13	170	19	0.10	410	433	0.59	<0.010
JUL 24...	32	2	17	200	23	0.20	546	589	0.80	<0.010

DATE	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 TOTAL (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) (00608)	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)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)
OCT 1995 18...	--	--	<0.050	0.040	1.7	1.7	1.7	0.210	0.060	7
FEB 1996 21...	0.870	0.880	0.880	0.690	4.3	5.0	5.9	0.420	0.310	6
MAY 08...	--	0.060	0.060	0.040	1.2	1.2	1.3	0.210	0.150	3
JUL 24...	--	0.060	0.060	0.020	6.0	6.0	6.1	0.680	0.360	4

DATE	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
OCT 1995 18...	10	<1	60	10	<0.1	5	<1	370	15.0	4.10
FEB 1996 21...	60	<1	90	1300	<0.1	8	1	590	0.600	0.100
MAY 08...	10	<1	20	10	<0.1	<1	<1	250	6.40	0.900
JUL 24...	20	<1	40	30	0.1	<1	<1	320	92.0	<0.100



RED RIVER OF THE NORTH BASIN  
05056220 SWEETWATER LAKE AT SWEETWATER, ND--Continued

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WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH OF LAKE MAXIMUM (FEET) (82016)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
OCT							
18...	0900	5.40	0.0	1140	8.2	7.0	11.4
18...	0901	--	0.60	1140	8.2	7.0	11.4
18...	0902	--	1.1	1140	8.2	7.0	11.3
18...	0903	--	1.6	1140	8.2	7.0	11.3
FEB							
21...	1320	5.60	0.0	1710	7.1	0.0	1.4
21...	1321	--	1.0	1700	7.1	0.0	1.1
21...	1322	--	1.4	1700	7.2	1.5	0.7
21...	1323	--	1.7	1770	7.2	2.5	0.6
MAY							
08...	1705	8.40	0.0	660	8.0	10.5	9.7
08...	1706	--	0.50	660	8.1	10.5	9.6
08...	1707	--	1.0	657	8.1	10.5	9.5
08...	1708	--	1.5	640	8.2	10.0	9.7
08...	1709	--	2.0	631	8.3	10.0	10.2
08...	1710	--	2.6	631	8.4	10.0	10.3
JUL							
24...	1525	6.90	0.0	811	9.2	20.5	8.2
24...	1526	--	0.50	810	9.3	20.5	8.1
24...	1527	--	0.90	811	9.3	20.5	8.1
24...	1528	--	1.4	812	9.3	20.5	7.9
24...	1529	--	1.9	810	9.3	20.5	7.5
24...	1530	--	2.1	811	9.3	20.5	7.6

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
OCT						
18...	100	720	8.00	4.0	130	13
FEB						
21...	10	714	39.4	0.0	145	12
MAY						
08...	93	715	27.5	11.0	310	<5.0
JUL						
24...	98	718	15.0	24.0	350	7.0

RED RIVER OF THE NORTH BASIN  
05056222 MORRISON LAKE NEAR WEBSTER, ND

LOCATION.--Lat 48°15'35", long 98°50'48", in NW<sup>1</sup>/<sub>4</sub> sec.11, T.155 N., R.64 W., Ramsey County, Hydrologic Unit 09020201, on northwest shoreline of Morrison Lake, 2 mi southeast of Webster.

DRAINAGE AREA.--501 mi<sup>2</sup>, approximately.

GAGE-HEIGHT RECORDS

PERIOD OF RECORD.--March 1985 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,400.00 ft above sea level.

REMARKS.--Stage frequently affected by wind.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 62.36 ft, Aug. 8, 1993, from floodmark; minimum recorded, 53.35 ft, Sept. 17, 1991.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 61.43 ft, Apr. 27-28; minimum recorded, 58.31 ft, Apr. 15.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	58.50	---	---	---	---	---	61.26	---	59.51	59.35	---
2	---	58.40	---	---	---	---	---	61.20	---	59.51	59.29	---
3	58.47	58.43	---	---	---	---	58.57	61.13	---	59.40	59.33	---
4	58.44	---	---	---	---	---	58.56	61.07	---	59.40	59.37	---
5	58.42	---	---	---	---	---	58.58	61.01	---	59.39	59.35	---
6	58.42	---	---	---	---	---	58.58	---	---	59.40	59.35	---
7	58.44	---	---	---	---	---	58.57	---	---	59.36	59.32	---
8	58.67	---	---	---	---	---	58.57	---	---	59.31	59.33	---
9	58.65	---	---	---	---	---	58.58	---	---	59.30	59.32	---
10	58.62	---	---	---	---	---	58.56	---	---	59.20	59.30	59.31
11	58.62	---	---	---	---	---	58.48	---	---	59.34	59.32	59.28
12	58.55	---	---	---	---	---	58.45	---	59.98	59.33	59.30	59.26
13	58.43	---	---	---	---	---	58.44	60.36	59.95	59.32	59.33	59.23
14	58.44	---	---	---	---	---	58.42	60.18	59.88	59.33	59.32	59.34
15	58.46	---	---	---	---	---	58.41	60.19	59.88	59.34	59.33	59.46
16	58.69	---	---	---	---	---	58.46	60.07	59.83	59.25	59.34	59.53
17	58.70	---	---	---	---	---	58.54	60.27	59.77	59.26	59.27	---
18	58.64	---	---	---	---	---	58.89	60.25	59.66	59.35	59.13	---
19	58.56	---	---	---	---	---	59.49	60.23	59.70	59.30	59.12	---
20	58.51	---	---	---	---	---	59.79	60.25	59.70	59.32	---	---
21	58.58	---	---	---	---	---	60.13	60.28	59.66	59.39	---	---
22	58.61	---	---	---	---	---	60.65	60.35	59.61	59.35	---	---
23	58.53	---	---	---	---	---	60.89	60.40	59.59	59.34	---	---
24	58.55	---	---	---	---	---	---	60.51	59.63	59.33	---	---
25	58.58	---	---	---	---	---	61.35	60.60	59.54	59.34	---	59.23
26	58.55	---	---	---	---	---	61.40	60.63	59.63	59.36	---	59.22
27	58.54	---	---	---	---	---	61.42	60.64	59.52	59.40	---	59.20
28	58.53	---	---	---	---	---	61.42	60.64	59.59	59.40	---	59.21
29	58.52	---	---	---	---	---	61.38	60.58	59.58	59.42	---	59.22
30	58.47	---	---	---	---	---	61.32	60.40	59.54	59.42	---	59.22
31	58.53	---	---	---	---	---	---	---	---	59.41	---	---
MEAN	---	---	---	---	---	---	---	---	---	59.36	---	---
MAX	---	---	---	---	---	---	---	---	---	59.51	---	---
MIN	---	---	---	---	---	---	---	---	---	59.20	---	---

RED RIVER OF THE NORTH BASIN  
05056222 MORRISON LAKE NEAR WEBSTER, ND--Continued

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WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1993 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996										
DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	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)
OCT 17...	1310	0.0	1.7	915	8.0	340	209	75	37	65
FEB 21...	1405	0.0	2.2	1350	7.7	510	319	110	56	96
MAY 08...	1700	0.0	2.8	689	--	240	161	54	26	48
JUL 24...	1500	0.0	0.80	718	8.4	270	190	63	27	54
DATE	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, DIS- NITRITE DIS- SOLVED (MG/L AS N) (00613)
OCT 17...	28	2	17	270	23	0.20	613	664	0.90	<0.010
FEB 21...	28	2	22	420	37	0.30	938	1010	1.37	0.010
MAY 08...	29	1	13	190	19	0.10	449	476	0.65	0.030
JUL 24...	29	1	18	190	20	0.10	487	530	0.72	<0.010
DATE	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 TOTAL (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) (00608)	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)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)
OCT 17...	--	--	<0.050	<0.015	1.5	1.5	1.5	0.240	0.090	5
FEB 21...	0.590	0.600	0.600	0.150	1.4	1.6	2.2	0.300	0.230	9
MAY 08...	0.190	0.220	0.220	0.060	1.8	1.9	2.1	0.300	0.140	3
JUL 24...	--	0.060	0.060	0.020	1.7	1.7	1.8	0.280	0.210	6
DATE	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
OCT 17...	10	<1	40	<10	<0.1	3	<1	330	21.0	3.60
FEB 21...	280	<1	60	1000	<0.1	9	<1	480	0.800	<0.100
MAY 08...	10	<1	30	180	<0.1	<1	<1	260	22.0	3.50
JUL 24...	10	<1	30	20	<0.1	1	<1	290	27.0	<0.100

RED RIVER OF THE NORTH BASIN  
05056222 MORRISON LAKE NEAR WEBSTER, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

	TIME	DEPTH OF LAKE MAXIMUM (FEET) (82016)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
OCT							
	17...	1305	5.70	0.0	914	8.1	9.5
	17...	1306	--	0.50	914	8.2	9.4
	17...	1307	--	1.0	914	8.2	9.3
	17...	1308	--	1.7	914	8.2	9.3
FEB							
	21...	1400	7.20	0.0	1310	7.2	2.4
	21...	1401	--	1.1	1310	7.2	2.1
	21...	1402	--	2.1	1310	7.2	2.0
MAY							
	08...	1650	9.50	0.0	692	8.4	10.4
	08...	1651	--	0.50	695	8.4	10.4
	08...	1652	--	1.0	702	8.4	9.0
	08...	1653	--	1.5	706	8.3	8.3
	08...	1654	--	2.0	712	8.3	8.1
	08...	1655	--	2.5	716	8.2	8.0
	08...	1656	--	2.9	721	8.2	7.9
JUL							
	24...	1450	8.20	0.0	753	8.6	8.0
	24...	1451	--	0.60	754	8.6	7.9
	24...	1452	--	1.0	755	8.7	7.8
	24...	1453	--	1.5	754	8.7	7.7
	24...	1454	--	2.0	755	8.7	7.7
	24...	1455	--	2.5	754	8.7	7.6

	DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE OF HG) (00025)	ICE THICK- NESS (FEET) (82130)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
OCT								
	17...	85	714	--	3.00	9.5	270	30
FEB								
	21...	18	714	2.95	11.8	0.0	145	12
MAY								
	08...	95	715	--	15.4	11.0	290	<5.0
JUL								
	24...	95	717	--	16.0	23.5	350	15



RED RIVER OF THE NORTH BASIN  
05056239 STARKWEATHER COULEE NEAR WEBSTER, ND

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LOCATION.--Lat 48°19'13", long 98°56'23", in NW<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> sec.19, T.156 N., R.64 W., Ramsey County, Hydrologic Unit 09020201, on right bank 100 ft upstream from bridge on township road, 3.8 mi northwest of Webster.

DRAINAGE AREA.--About 310 mi<sup>2</sup>, of which about 100 mi<sup>2</sup> is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1979 to current year (seasonal records only since 1988).

GAGE.--Water-stage recorder. Elevation of gage is 1,448 ft above sea level, from topographic map. Prior to July 23, 1986, nonrecording gage 100 ft downstream at same datum.

REMARKS.--Records fair except for periods of estimated discharges, which are poor.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 482 ft<sup>3</sup>/s, Apr. 19-20, gage height, 6.63 ft; no flow, Mar. 1 to Apr. 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	e.00	e.00	228	38	1.6	29	29
2	---	---	---	---	---	e.00	e.00	197	33	1.2	40	28
3	---	---	---	---	---	e.00	e.00	168	27	e.90	51	26
4	---	---	---	---	---	e.00	e.00	145	23	e.75	61	24
5	---	---	---	---	---	e.00	e.00	126	26	e.58	69	34
6	---	---	---	---	---	e.00	e.01	103	24	e.50	74	32
7	---	---	---	---	---	e.00	e.05	97	19	e.42	75	28
8	---	---	---	---	---	e.00	e.20	82	17	e.35	73	26
9	---	---	---	---	---	e.00	e.40	70	17	e.30	69	23
10	---	---	---	---	---	e.00	e2.0	52	15	e.25	66	21
11	---	---	---	---	---	e.00	e11	51	13	e.30	63	18
12	---	---	---	---	---	e.00	e9.8	47	11	e.33	59	16
13	---	---	---	---	---	e.00	e9.0	43	8.2	e.30	58	15
14	---	---	---	---	---	e.00	e30	37	7.1	e.28	55	15
15	---	---	---	---	---	e.00	e110	36	6.8	e.25	54	15
16	---	---	---	---	---	e.00	e367	32	6.1	e.24	54	14
17	---	---	---	---	---	e.00	417	314	5.3	e.55	53	13
18	---	---	---	---	---	e.00	473	316	4.6	e1.4	51	12
19	---	---	---	---	---	e.00	481	309	5.2	e3.0	55	12
20	---	---	---	---	---	e.00	477	307	4.5	e5.0	53	12
21	---	---	---	---	---	e.00	473	272	4.0	e4.0	53	11
22	---	---	---	---	---	e.00	462	231	3.3	e2.8	54	11
23	---	---	---	---	---	e.00	444	178	3.2	e2.3	50	10
24	---	---	---	---	---	e.00	394	131	2.9	1.8	50	8.7
25	---	---	---	---	---	e.00	374	106	3.6	2.0	46	8.3
26	---	---	---	---	---	e.00	341	93	3.5	4.2	42	8.2
27	---	---	---	---	---	e.00	323	78	3.5	8.8	39	8.5
28	---	---	---	---	---	e.00	310	62	3.0	8.7	37	8.0
29	---	---	---	---	---	e.00	291	52	2.6	13	35	7.0
30	---	---	---	---	---	e.00	271	42	2.1	18	34	6.8
31	---	---	---	---	---	e.00	---	49	---	23	32	---
TOTAL	---	---	---	---	---	0.00	6070.46	4054	342.5	107.10	1634	500.5
MEAN	---	---	---	---	---	.000	202	131	11.4	3.45	52.7	16.7
MAX	---	---	---	---	---	.00	481	316	38	23	75	34
MIN	---	---	---	---	---	.00	.00	32	2.1	.24	29	6.8
AC-FT	---	---	---	---	---	.00	12040	8040	679	212	3240	993

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 1996, BY WATER YEAR (WY)

MEAN	1.30	.12	.010	.000	.73	29.8	92.2	18.2	5.85	16.0	14.9	2.74
MAX	5.53	1.09	.092	.000	6.61	180	310	131	22.2	119	138	22.0
(WY)	1983	1981	1983	1980	1981	1992	1995	1996	1984	1993	1993	1993
MIN	.000	.000	.000	.000	.000	.000	2.07	.000	.000	.000	.000	.000
(WY)	1980	1980	1980	1980	1980	1980	1991	1980	1980	1980	1980	1981

SUMMARY STATISTICS

WATER YEARS 1980 - 1996

ANNUAL MEAN	a 12.1
HIGHEST ANNUAL MEAN	a 24.5 1987
LOWEST ANNUAL MEAN	a .88 1980
HIGHEST DAILY MEAN	569 Apr 11 1987
LOWEST DAILY MEAN	.00 Oct 1 1979
ANNUAL SEVEN-DAY MINIMUM	.00 Oct 1 1979
INSTANTANEOUS PEAK FLOW	570 Apr 11 1987
INSTANTANEOUS PEAK STAGE	10.05 Apr 6 1989
ANNUAL RUNOFF (AC-FT)	a 8790
10 PERCENT EXCEEDS	50
50 PERCENT EXCEEDS	.00
90 PERCENT EXCEEDS	.00

a Based on complete water years only (1980-87, 1994).

e Estimated.

RED RIVER OF THE NORTH BASIN  
05056239 STARKWEATHER COULEE NEAR WEBSTER, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1980 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER FIELD (STAND- ARD UNITS) (00400)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)
APR											
12...	1100	9.8	170	--	--	0.0	0.5	--	--	--	--
16...	1420	367	360	7.9	720	10.0	5.0	10.2	85	130	31
20...	0905	480	425	--	--	0.0	2.0	--	--	--	--
23...	1125	449	460	8.0	725	7.5	5.5	10.2	85	180	42
27...	0935	322	465	--	--	4.0	2.0	--	--	--	--
MAY											
08...	1130	83	590	8.0	722	14.0	9.5	9.5	88	260	63
21...	1200	272	400	--	--	17.0	14.5	--	--	--	--
JUN											
12...	1225	12	854	--	--	25.5	24.5	--	--	--	--
18...	1105	4.6	1000	--	--	25.0	21.0	--	--	--	--
AUG											
06...	1115	76	700	7.9	720	24.0	22.0	7.1	86	280	69
27...	1130	39	870	8.0	725	23.0	21.0	6.2	73	400	94

DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
APR											
16...	13	15	19	0.6	10	74	86	12	0.20	225	251
23...	17	15	15	0.5	13	101	98	14	0.20	273	309
MAY											
08...	25	22	15	0.6	17	175	140	18	0.20	391	418
AUG											
06...	27	37	21	1	14	201	150	21	0.10	440	476
27...	41	49	20	1	16	336	150	34	0.20	588	633

DATE	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 TOTAL (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) (00608)	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)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)
APR											
16...	0.34	249	0.150	2.45	2.60	2.60	0.210	1.6	1.8	4.4	0.590
23...	0.42	375	0.100	2.50	2.60	2.60	0.060	1.3	1.4	4.0	0.460
MAY											
08...	0.57	94.1	<0.010	--	0.070	0.070	0.040	1.1	1.1	1.2	0.140
AUG											
06...	0.65	97.5	<0.010	--	0.060	0.060	0.020	1.1	1.1	1.2	0.320
27...	0.86	66.0	<0.010	--	--	<0.050	0.020	1.9	1.9	1.9	0.580

DATE	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
APR										
16...	0.370	4	10	<1	10	20	0.1	<1	1	150
23...	0.340	6	10	<1	10	10	<0.1	3	1	200
MAY										
08...	0.100	5	10	<1	20	10	<0.1	<1	1	270
AUG										
06...	0.310	5	10	<1	30	50	<0.1	<1	<1	280
27...	0.550	9	10	<1	40	50	<0.1	<1	<1	350

RED RIVER OF THE NORTH BASIN  
05056241 DRY LAKE NEAR PENN, ND

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LOCATION.--Lat 48°13'52", long 98°58'59", in NW<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> sec.23, T.155 N., R.65 W., Ramsey County, Hydrologic Unit 09020201, on west shoreline of Dry Lake, 6 mi east of Penn.

DRAINAGE AREA.--920 mi<sup>2</sup>, approximately.

GAGE-HEIGHT RECORDS

PERIOD OF RECORD.--October 1983 to current year (gage heights only).

GAGE.--Water-stage recorder. Datum of gage is 1,400.00 ft above sea level.

REMARKS.--Stage is seriously affected by wind at times.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height recorded, 51.66 ft, Aug. 15, 1993; minimum recorded, 41.80 ft, Sept. 14 and Oct. 1-20, 1991.

EXTREMES FOR CURRENT YEAR.--Maximum gage height recorded, 49.25 ft, May 4; minimum recorded, 45.69 ft, Nov. 30.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46.22	46.19	45.80	---	---	---	---	49.13	48.11	---	---	47.55
2	46.23	46.35	45.80	---	---	---	---	49.20	48.11	---	---	47.59
3	46.25	46.09	45.80	---	---	---	46.73	49.23	48.04	---	---	47.61
4	46.28	46.07	45.79	---	---	---	---	49.23	47.89	---	---	47.60
5	46.31	46.04	45.79	---	---	---	---	49.22	47.86	---	47.12	47.68
6	46.29	46.00	45.79	---	---	---	---	49.14	47.87	---	47.16	47.73
7	46.25	45.97	45.80	---	---	---	---	49.13	47.75	---	47.18	47.74
8	46.25	45.96	45.80	---	---	---	---	49.09	47.62	---	47.17	47.69
9	46.24	45.94	45.80	---	---	---	---	49.04	47.57	47.07	47.14	47.66
10	46.25	45.85	45.80	---	---	---	---	48.91	47.56	---	47.15	47.62
11	46.25	45.89	45.82	---	---	---	---	48.82	47.59	---	47.17	47.56
12	46.26	45.87	45.84	---	---	---	---	48.71	47.61	---	47.22	47.51
13	46.41	45.85	45.85	---	---	---	---	48.62	47.55	---	47.27	47.48
14	46.24	45.84	45.83	---	---	---	---	48.50	47.52	---	47.28	47.48
15	46.23	45.83	45.81	---	---	---	---	48.45	47.54	---	47.30	47.49
16	46.19	45.81	45.84	---	---	---	---	48.33	47.52	---	47.31	47.49
17	46.31	45.80	45.85	---	---	---	47.10	48.50	47.46	---	47.29	47.45
18	46.25	45.79	45.84	---	---	---	47.24	48.51	---	---	47.22	47.47
19	46.32	45.77	45.84	---	---	---	47.34	48.50	---	47.17	47.36	47.49
20	46.28	45.75	45.84	---	---	---	47.47	48.50	---	---	47.34	47.55
21	46.20	45.74	45.84	---	---	---	47.60	48.48	---	---	47.42	47.56
22	46.21	45.74	45.85	---	---	---	47.73	48.46	---	---	47.44	47.57
23	46.23	45.76	45.85	---	---	---	47.91	48.44	---	47.26	47.42	47.56
24	46.17	45.78	45.86	---	---	---	48.16	48.39	---	---	47.49	47.56
25	46.22	---	45.86	---	---	---	48.37	48.34	---	---	47.53	47.55
26	46.22	---	45.86	---	---	---	48.53	48.31	---	---	47.51	47.63
27	46.22	---	---	---	---	---	48.69	48.28	---	---	47.49	47.68
28	46.23	---	---	---	---	---	48.85	48.24	---	---	47.54	47.63
29	46.20	45.81	---	---	---	---	49.00	48.17	---	---	47.56	47.62
30	46.21	45.77	---	---	---	---	49.11	48.05	---	---	47.57	47.63
31	46.18	---	---	---	---	---	---	48.13	---	47.16	47.56	---
MEAN	46.25	---	---	---	---	---	---	48.65	---	---	---	47.58
MAX	46.41	---	---	---	---	---	---	49.23	---	---	---	47.74
MIN	46.17	---	---	---	---	---	---	48.05	---	---	---	47.45

RED RIVER OF THE NORTH BASIN  
05056241 DRY LAKE NEAR PENN, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1993 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	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)
OCT 17...	1110	0.0	0.90	965	8.0	380	254	83	41	61
FEB 21...	1155	0.0	0.90	2580	--	1200	812	260	130	190
MAY 08...	1535	0.0	1.9	594	--	220	140	50	22	35
JUL 24...	1305	0.0	0.40	724	8.3	280	204	64	29	53

DATE	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)
OCT 17...	25	1	21	260	25	0.20	645	694	0.94	<0.010
FEB 21...	25	2	50	820	77	0.60	2030	2150	2.92	0.080
MAY 08...	25	1	14	150	16	0.10	375	397	0.54	0.040
JUL 24...	27	1	20	180	19	0.20	489	541	0.74	<0.010

DATE	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 TOTAL (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) (00608)	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)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00665)	PHOS- PHORUS ORTHOPHOS- PHATE DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)
OCT 17...	--	--	<0.050	<0.015	3.4	3.4	3.4	1.20	0.280	10
FEB 21...	0.680	0.760	0.760	0.990	2.7	3.7	4.5	0.930	0.980	22
MAY 08...	0.580	0.620	0.620	0.050	1.5	1.5	2.1	0.320	0.200	3
JUL 24...	--	0.060	0.060	0.020	1.5	1.5	1.6	0.360	0.290	5

DATE	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
OCT 17...	10	<1	50	10	<0.1	3	<1	350	25.0	1.90
FEB 21...	490	1	150	3900	<0.1	14	2	980	1.80	<0.100
MAY 08...	10	<1	20	10	<0.1	<1	<1	250	10.0	1.00
JUL 24...	20	<1	30	20	<0.1	1	<1	290	8.90	<0.100



RED RIVER OF THE NORTH BASIN  
05056241 DRY LAKE NEAR PENN, ND--Continued

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WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH OF LAKE MAXIMUM (FEET) (82016)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
OCT							
17...	1105	3.00	0.0	954	8.2	7.5	11.1
17...	1106	--	0.50	952	8.2	7.5	11.1
17...	1107	--	0.90	951	8.2	7.5	11.0
FEB							
21...	1150	3.00	0.0	2560	7.1	0.0	1.4
21...	1151	--	0.90	2550	7.2	0.0	0.8
MAY							
08...	1530	6.40	0.0	598	8.3	9.5	8.8
08...	1531	--	0.50	598	8.3	9.5	8.7
08...	1532	--	1.0	598	8.4	9.5	8.5
08...	1533	--	1.5	597	8.4	9.5	8.1
08...	1534	--	2.0	597	8.4	9.5	8.1
JUL							
24...	1300	4.90	0.0	759	8.7	19.5	7.2
24...	1301	--	0.50	759	8.7	19.5	7.2
24...	1302	--	1.0	759	8.7	19.5	7.1
24...	1303	--	1.5	759	8.7	19.5	7.1

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	ICE THICK- NESS (FEET) (82130)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
OCT							
17...	99	714	--	3.00	9.0	270	25
FEB							
21...	10	716	2.00	10.0	-1.0	150	10
MAY							
08...	83	715	--	17.7	11.5	285	<5.0
JUL							
24...	84	718	--	8.00	19.0	340	10

RED RIVER OF THE NORTH BASIN  
05056250 LAKE ALICE NEAR CHURCHS FERRY, ND

LOCATION.--Lat 48°07'21", long 99°05'42", in SE<sup>1</sup>/<sub>4</sub> NE<sup>1</sup>/<sub>4</sub> NE<sup>1</sup>/<sub>4</sub> sec.11, T.156 N., R.66 W., Ramsey County, Hydrologic Unit 09020201, at northwest corner of lake 7.5 mi northwest of Churchs Ferry.

DRAINAGE AREA.--2,100 mi<sup>2</sup>, approximately, of which about 500 mi<sup>2</sup> is probably noncontributing.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1960, 1962-64, 1966-87, 1993 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996										
DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	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)
OCT 17...	0935	0.0	0.60	864	7.9	340	244	60	47	50
MAY 08...	1350	0.0	1.6	552	--	230	140	49	26	25
JUL 23...	1615	0.0	0.95	--	--	340	225	79	35	39

DATE	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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 CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)
OCT 17...	23	1	20	210	21	0.10	555	580	0.79	<0.010
MAY 08...	18	0.7	12	140	14	0.10	351	368	0.50	<0.010
JUL 23...	19	0.9	22	200	17	0.20	529	570	0.78	0.010

DATE	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 TOTAL (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) (00608)	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)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHOPHOSPHATE, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)
OCT 17...	--	--	<0.050	0.020	2.2	2.2	2.2	0.250	0.010	1
MAY 08...	--	0.050	0.050	0.020	1.7	1.7	1.7	0.170	0.010	3
JUL 23...	0.060	0.070	0.070	0.040	1.6	1.6	1.7	0.360	0.290	5

DATE	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
OCT 17...	10	<1	50	10	<0.1	1	<1	310	19.0	1.40
MAY 08...	20	<1	20	10	<0.1	<1	<1	250	12.0	1.00
JUL 23...	20	<1	40	60	0.1	<1	<1	330	19.0	0.600

RED RIVER OF THE NORTH BASIN  
05056250 LAKE ALICE NEAR CHURCHS FERRY, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH OF LAKE MAXIMUM (FEET) (82016)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
OCT							
17...	0930	2.00	0.0	850	8.1	7.0	10.3
17...	0931	--	0.60	851	8.1	7.0	10.2
MAY							
08...	1342	5.30	0.0	555	9.0	10.5	10.4
08...	1343	--	0.50	555	9.0	10.5	10.4
08...	1344	--	1.0	553	9.0	10.5	10.4
08...	1345	--	1.6	553	9.0	10.5	9.9
JUL							
23...	1608	3.10	0.0	926	8.8	23.0	7.2
23...	1609	--	0.60	925	8.8	23.0	7.1
23...	1610	--	0.95	926	8.9	23.0	7.0

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
OCT						
17...	92	713	22.0	9.0	270	25
MAY						
08...	100	715	22.8	16.5	180	<5.0
JUL						
23...	89	714	36.0	22.0	295	12

RED RIVER OF THE NORTH BASIN  
05056260 LAKE IRVINE NEAR CHURCHS FERRY, ND

LOCATION.--Lat 48°16'57", long 99°10'25", in SE<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> sec.32, T.156 N., R.66 W., Ramsey County, Hydrologic Unit 09020201, at south end of lake 1<sup>1</sup>/<sub>4</sub> mi northwest of Churchs Ferry.

DRAINAGE AREA.--2,120 mi<sup>2</sup>, approximately, of which about 500 mi<sup>2</sup> is probably noncontributing.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1966-87, 1993 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	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)
OCT 17...	1000	0.0	0.08	862	7.6	340	240	61	46	50
FEB 21...	1025	0.0	1.1	2420	--	1100	803	210	140	150
MAY 08...	1450	0.0	2.2	499	--	210	128	44	25	23
JUL 23...	1625	0.0	0.60	871	--	390	254	82	45	61

DATE	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C SOLVED (MG/L (70300)	SOLIDS, DIS- SOLVED PER AC-FT) (70303)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)
OCT 17...	23	1	20	210	22	0.10	554	586	0.80	<0.010
FEB 21...	22	2	47	660	67	0.50	1770	1860	2.53	0.010
MAY 08...	18	0.7	12	130	14	0.10	325	308	0.42	<0.010
JUL 23...	25	1	13	270	22	0.20	648	659	0.90	0.010

DATE	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 TOTAL (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) (00608)	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)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)
OCT 17...	--	--	<0.050	0.060	2.3	2.4	2.4	0.590	0.010	2
FEB 21...	--	--	<0.050	2.90	3.5	6.4	6.4	1.20	0.810	8
MAY 08...	--	0.060	0.060	0.020	2.0	2.0	2.1	0.230	<0.010	2
JUL 23...	0.050	0.060	0.060	0.040	1.4	1.4	1.5	0.410	0.410	2

DATE	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
OCT 17...	20	<1	50	10	<0.1	1	<1	310	50.0	4.20
FEB 21...	2500	<1	170	4300	0.1	2	3	860	0.500	<0.100
MAY 08...	20	<1	20	20	<0.1	<1	1	230	32.0	1.80
JUL 23...	30	<1	50	40	<0.1	<1	1	370	1.20	<0.100



**RED RIVER OF THE NORTH BASIN**  
**05056260 LAKE IRVINE NEAR CHURCHS FERRY, ND--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH OF LAKE MAXIMUM (FEET) (82016)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
OCT							
17...	0955	2.50	0.0	851	8.0	7.5	10.1
17...	0956	--	0.76	851	8.0	7.5	10.1
FEB							
21...	1020	3.60	0.0	2350	6.8	0.0	0.4
21...	1021	--	1.1	2390	7.0	0.0	0.4
MAY							
08...	1440	7.40	0.0	516	8.9	10.0	9.8
08...	1441	--	0.50	516	9.0	10.0	9.7
08...	1442	--	1.0	515	9.1	10.0	9.6
08...	1443	--	1.5	515	9.1	10.0	9.5
08...	1444	--	2.0	516	9.1	10.0	9.3
08...	1445	--	2.2	515	9.1	10.0	9.1
JUL							
23...	1620	4.90	0.0	811	8.4	21.5	8.0
23...	1621	--	0.50	811	8.4	21.5	8.0
23...	1622	--	0.90	811	8.4	21.5	7.9
23...	1623	--	1.5	812	8.4	21.5	7.9

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM HG) (00025)	ICE THICK- NESS (FEET) (82130)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
OCT							
17...	90	713	--	3.00	8.0	270	35
FEB							
21...	3	716	2.80	5.00	-4.0	145	5.0
MAY							
08...	93	717	--	16.1	13.0	240	<5.0
JUL							
23...	98	713	--	12.0	21.0	290	12

RED RIVER OF THE NORTH BASIN  
05056390 LITTLE COULEE NEAR BRINSMADE, ND

LOCATION.--Lat 48°11'15", long 99°14'34", in SW<sup>1</sup>/<sub>4</sub> sec.2, T.154 N., R.67 W., Benson County, Hydrologic Unit 09020201, on right bank 100 ft downstream from bridge on township road, 0.5 mi downstream from Silver Lake, and 4 mi east of Brinsmade.

DRAINAGE AREA.--350 mi<sup>2</sup>, of which about 160 mi<sup>2</sup> is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1975 to current year (seasonal records only since 1983).

GAGE.--Water-stage recorder. Elevation of gage is 1,435 ft above sea level, from topographic map.

REMARKS.--Records good except for period of estimated discharges and those below 1 ft<sup>3</sup>/s, which are poor.

EXTREMES FOR CURRENT YEAR.--Maximum observed discharge, 168 ft<sup>3</sup>/s, Apr. 20, gage height, 8.94 ft; no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	e.00	e.03	125	56	18	16	2.6
2	---	---	---	---	---	e.00	e.03	121	51	17	15	2.3
3	---	---	---	---	---	e.00	e.03	113	48	15	15	1.9
4	---	---	---	---	---	e.00	e.03	105	44	13	14	1.6
5	---	---	---	---	---	e.00	e.03	99	42	12	15	2.3
6	---	---	---	---	---	e.00	e.05	94	41	10	14	2.8
7	---	---	---	---	---	e.00	e.06	90	36	8.8	11	3.4
8	---	---	---	---	---	e.00	e.05	87	33	7.6	9.6	3.6
9	---	---	---	---	---	e.00	e5.0	82	31	6.1	9.4	3.4
10	---	---	---	---	---	e.00	e50	76	29	6.4	9.2	3.1
11	---	---	---	---	---	e.00	e103	73	27	7.1	8.7	2.9
12	---	---	---	---	---	e.00	100	69	24	6.4	8.4	2.7
13	---	---	---	---	---	e.01	78	67	21	6.8	7.4	2.7
14	---	---	---	---	---	e.02	101	66	20	7.5	6.5	2.5
15	---	---	---	---	---	e.04	138	65	18	8.0	6.0	2.1
16	---	---	---	---	---	e.05	151	64	15	7.9	6.0	2.0
17	---	---	---	---	---	e.04	159	84	13	7.6	5.7	2.0
18	---	---	---	---	---	e.03	161	90	11	8.1	5.5	1.8
19	---	---	---	---	---	e.03	160	91	18	7.5	4.9	1.7
20	---	---	---	---	---	e.03	160	88	17	14	4.2	1.5
21	---	---	---	---	---	e.03	156	84	16	14	4.6	1.8
22	---	---	---	---	---	e.04	153	80	13	12	3.6	1.7
23	---	---	---	---	---	e.04	151	80	16	12	3.3	1.6
24	---	---	---	---	---	e.03	150	76	18	11	3.0	1.6
25	---	---	---	---	---	e.03	151	71	22	12	2.7	1.6
26	---	---	---	---	---	e.03	145	68	23	13	2.4	2.0
27	---	---	---	---	---	e.03	144	66	24	14	2.3	1.6
28	---	---	---	---	---	e.03	139	62	25	14	3.3	.89
29	---	---	---	---	---	e.03	135	58	22	17	3.5	.92
30	---	---	---	---	---	e.03	130	55	19	17	3.3	1.1
31	---	---	---	---	---	e.03	---	56	---	16	2.8	---
TOTAL	---	---	---	---	---	0.60	2820.31	2505	793	346.8	226.3	63.71
MEAN	---	---	---	---	---	.019	94.0	80.8	26.4	11.2	7.30	2.12
MAX	---	---	---	---	---	.05	161	125	56	18	16	3.6
MIN	---	---	---	---	---	.00	.03	55	11	6.1	2.3	.89
AC-FT	---	---	---	---	---	1.2	5590	4970	1570	688	449	126

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 1996, BY WATER YEAR (WY)

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
MEAN	1.24	.53	.000	.000	.016	8.57	32.5	27.3	10.5	7.15	3.57	1.41
MAX	9.88	4.26	.000	.000	.13	86.5	281	231	68.5	47.7	41.7	21.8
(WY)	1994	1994	1976	1976	1981	1995	1995	1979	1995	1994	1993	1993
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1976	1976	1976	1976	1976	1979	1977	1977	1977	1977	1976	1976

SUMMARY STATISTICS

WATER YEARS 1975 - 1996

ANNUAL MEAN	a 8.55
HIGHEST ANNUAL MEAN	a 35.8 1979
LOWEST ANNUAL MEAN	a .006 1977
HIGHEST DAILY MEAN	375 May 4 1979
LOWEST DAILY MEAN	.00 Aug 27 1975
ANNUAL SEVEN-DAY MINIMUM	.00 Sep 7 1975
INSTANTANEOUS PEAK FLOW	425 May 1 1979
INSTANTANEOUS PEAK STAGE	10.78 Jul 29 1993
ANNUAL RUNOFF (AC-FT)	a 6190
10 PERCENT EXCEEDS	24
50 PERCENT EXCEEDS	.00
90 PERCENT EXCEEDS	.00

a Based on complete water years only (1976-82, 1994).

e Estimated.

RED RIVER OF THE NORTH BASIN  
05056390 LITTLE COULEE NEAR BRINSMADE, ND--Continued

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WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
MAR 19...	1440	0.03	--	--	<5.0	0.0	--	--	--	--
APR 11...	1445	103	550	--	2.0	2.5	--	--	--	--
15...	1330	141	760	7.9	7.0	3.5	280	208	59	32
20...	1400	168	580	--	5.0	4.0	--	--	--	--
23...	1650	148	530	--	12.0	7.0	--	--	--	--
27...	1315	139	675	--	5.0	3.5	--	--	--	--
MAY 14...	0945	70	687	--	5.0	9.5	--	--	--	--
JUN 17...	1510	13	780	--	28.0	29.0	--	--	--	--
AUG 07...	1200	11	800	8.5	23.0	20.0	340	258	75	36
27...	1600	2.3	800	--	27.0	24.0	--	--	--	--

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
APR 15...	47	25	1	17	170	18	0.20	469	524	0.71
AUG 07...	56	26	1	16	180	16	0.10	534	575	0.78

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
APR 15...	199	4	60	<1	40	480	0.1	1	<1	260
AUG 07...	17.5	5	100	<1	50	50	<0.1	<1	<1	330

RED RIVER OF THE NORTH BASIN  
05056400 BIG COULEE NEAR CHURCHS FERRY, ND

LOCATION.--Lat 48°10'40", long 99°13'15", in NW<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> sec.12, T. 154 N., R.67 W., Benson County, Hydrologic Unit 09020201, on left bank on downstream side of bridge on U.S. Highway 281, 1 mi downstream from Little Coulee, and 6 mi south of Churchs Ferry.

DRAINAGE AREA.--1,620 mi<sup>2</sup>, approximately, of which about 158 mi<sup>2</sup> is probably noncontributing. Drainage area reduced from approximately 2,510 mi<sup>2</sup> with the completion of Channel A in March 1979.

## WATER-DISCHARGE RECORDS

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

REVISÉD RECORDS.--1985: Drainage area.

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

REMARKS.--Records fair.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996 DAILY MEAN VALUES												
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.4	e2.6	e.00	e.00	e.00	e.00	e.05	718	494	259	272	201
2	10	e.70	e.00	e.00	e.00	e.00	e.05	718	455	257	283	182
3	9.9	e.20	e.00	e.00	e.00	e.00	e.05	691	437	269	280	175
4	10	e.10	e.00	e.00	e.00	e.00	e.05	673	446	270	266	178
5	8.9	e.05	e.00	e.00	e.00	e.00	e.05	670	459	266	267	191
6	8.4	e.00	e.00	e.00	e.00	e.00	e.08	675	454	248	266	174
7	9.6	e.00	e.00	e.00	e.00	e.00	e.20	574	419	242	240	169
8	11	e.00	e.00	e.00	e.00	e.00	e1.5	578	383	219	233	170
9	11	e.00	e.00	e.00	e.00	e.00	e10	567	381	229	250	158
10	11	e.00	e.00	e.00	e.00	e.00	e70	540	359	260	262	149
11	11	e.00	e.00	e.00	e.00	e.10	e166	526	340	255	261	140
12	9.3	e.00	e.00	e.00	e.00	e.11	e150	516	310	229	260	145
13	e3.5	e.00	e.00	e.00	e.00	e.14	e130	521	312	229	238	157
14	e3.8	e.00	e.00	e.00	e.00	e.20	e135	538	322	234	231	161
15	e5.0	e.00	e.00	e.00	e.00	e.21	e160	526	306	233	233	149
16	e9.3	e.00	e.00	e.00	e.00	e.22	e187	523	279	246	239	143
17	e3.7	e.00	e.00	e.00	e.00	e.17	e240	603	263	255	243	163
18	e8.6	e.00	e.00	e.00	e.00	e.11	e290	563	277	238	265	157
19	e3.8	e.00	e.00	e.00	e.00	e.05	e340	532	282	246	247	150
20	e3.3	e.00	e.00	e.00	e.00	e.05	e400	515	268	284	243	126
21	e3.5	e.00	e.00	e.00	e.00	e.05	e500	502	242	258	248	115
22	e3.6	e.00	e.00	e.00	e.00	e.05	586	510	237	234	225	108
23	e4.0	e.00	e.00	e.00	e.00	e.04	632	546	258	230	228	107
24	e5.7	e.00	e.00	e.00	e.00	e.04	684	561	251	224	218	107
25	e4.6	e.00	e.00	e.00	e.00	e.03	695	540	276	236	208	108
26	e6.2	e.00	e.00	e.00	e.00	e.03	694	527	264	248	207	98
27	e5.2	e.00	e.00	e.00	e.00	e.03	717	517	278	249	214	80
28	e3.3	e.00	e.00	e.00	e.00	e.04	716	501	275	249	209	87
29	e3.6	e.00	e.00	e.00	e.00	e.04	717	493	250	252	200	91
30	e4.1	e.00	e.00	e.00	---	e.05	719	505	244	253	195	102
31	e6.1	---	e.00	e.00	---	e.05	---	519	---	257	197	---
TOTAL	209.4	3.65	0.00	0.00	0.00	1.81	8940.03	17488	9821	7658	7428	4241
MEAN	6.75	.12	.000	.000	.000	.058	298	564	327	247	240	141
MAX	11	2.6	.00	.00	.00	.22	719	718	494	284	283	201
MIN	3.3	.00	.00	.00	.00	.00	.05	493	237	219	195	80
AC-FT	415	7.2	.00	.00	.00	3.6	17730	34690	19480	15190	14730	8410

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 1996, BY WATER YEAR (WY)

MEAN	13.6	9.66	5.50	2.26	1.02	9.64	110	167	114	70.3	39.1	21.7
MAX	254	169	95.0	39.4	17.7	131	1150	1211	1030	459	266	332
(WY)	1994	1994	1994	1994	1994	1995	1995	1979	1974	1974	1993	1993
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1952	1952	1951	1951	1951	1952	1953	1952	1952	1952	1952	1951

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR	FOR 1996 WATER YEAR	WATER YEARS 1951 - 1996
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ANNUAL TOTAL	100646.65		55790.89						
ANNUAL MEAN	276		152			47.2			
HIGHEST ANNUAL MEAN						287			1995
LOWEST ANNUAL MEAN						.000			1953
HIGHEST DAILY MEAN	1430	Apr 23	719	Apr 30		1430	Apr 23		1995
LOWEST DAILY MEAN	.00	Nov 6	.00	Nov 6		.00	Dec 1		1950
ANNUAL SEVEN-DAY MINIMUM	.00	Nov 6	.00	Nov 6		.00	Dec 1		1950
INSTANTANEOUS PEAK FLOW			724	May 6		1450	Apr 23		1995
INSTANTANEOUS PEAK STAGE			5.90	May 6		7.62	Apr 23		1995
ANNUAL RUNOFF (AC-FT)	199600		110700			34160			
10 PERCENT EXCEEDS	997		506			140			
50 PERCENT EXCEEDS	38		9.4			.10			
90 PERCENT EXCEEDS	.00		.00			.00			

e Estimated.



RED RIVER OF THE NORTH BASIN  
05056400 BIG COULEE NEAR CHURCHS FERRY, ND--Continued

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WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1958, 1961 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION) (00301)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)
OCT 03...	1530	10	957	7.7	721	15.0	13.5	2.4	24	360	65
APR 11...	1625	167	525	--	--	1.5	2.0	--	--	--	--
16...	1705	187	700	8.0	720	12.0	6.0	11.6	99	250	53
23...	1700	643	580	7.9	724	11.0	5.5	11.4	95	230	48
MAY 02...	1255	721	525	8.7	724	11.0	5.0	11.4	94	210	45
13...	1050	520	544	--	735	10.5	8.5	12.1	107	210	43
28...	1235	499	583	7.3	718	18.0	19.0	7.1	82	250	52
JUN 11...	1220	341	636	8.0	725	31.0	24.5	6.0	76	260	56
17...	1340	262	690	8.2	722	25.0	23.0	6.6	82	280	62
AUG 07...	1340	239	830	8.6	725	25.5	22.0	6.7	81	370	84
28...	1115	209	890	8.4	725	24.5	21.0	5.9	70	400	89

DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB 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)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
OCT 03...	47	60	26	1	19	273	210	23	0.20	592	640
APR 16...	28	40	25	1	14	165	170	17	0.20	428	472
23...	26	30	21	0.9	12	145	140	15	0.10	363	392
MAY 02...	23	25	20	0.8	11	142	130	13	0.10	334	344
13...	26	27	20	0.8	13	141	140	13	0.10	347	375
28...	28	30	20	0.8	14	164	150	15	0.10	388	409
JUN 11...	30	30	19	0.8	16	181	150	13	0.10	405	425
17...	31	33	19	0.9	16	195	160	15	0.10	436	453
AUG 07...	39	52	22	1	16	240	220	18	0.10	575	615
28...	42	52	21	1	15	272	220	19	0.10	602	642

DATE	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, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 TOTAL (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) (00608)	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)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)
OCT 03...	0.87	17.5	0.020	0.190	0.210	0.210	1.30	1.7	3.0	3.2	0.220
APR 16...	0.64	238	0.070	0.840	0.910	0.910	0.740	1.7	2.4	3.3	0.560
23...	0.53	681	0.040	0.510	0.550	0.550	0.550	1.2	1.7	2.3	0.360
MAY 02...	0.47	670	0.030	0.240	0.270	0.270	0.030	2.1	2.1	2.4	0.300
13...	0.51	527	<0.010	--	0.050	0.050	0.030	1.6	1.6	1.6	0.180
28...	0.56	551	<0.010	--	--	<0.050	0.040	1.4	1.4	1.4	0.160
JUN 11...	0.58	391	0.020	0.130	0.150	0.150	0.140	1.3	1.4	1.6	0.230
17...	0.62	320	0.030	0.110	0.140	0.140	0.120	1.7	1.8	1.9	0.190
AUG 07...	0.84	397	0.010	0.100	0.110	0.110	0.060	1.3	1.4	1.5	0.470
28...	0.87	362	0.010	--	--	<0.050	0.040	1.7	1.7	1.7	0.490

**RED RIVER OF THE NORTH BASIN**  
**05056400 BIG COULEE NEAR CHURCHS FERRY, ND--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
OCT 03...	0.100	2	10	<1	60	390	<0.1	<1	<1	340
APR 16...	0.390	3	40	<1	40	400	0.1	1	<1	250
23...	0.220	1	30	<1	30	430	<0.1	<1	<1	230
MAY 02...	0.090	2	20	<1	20	90	<0.1	<1	<1	220
13...	0.030	3	10	<1	30	20	0.1	<1	<1	200
28...	0.070	3	20	<1	30	80	<0.1	<1	<1	270
JUN 11...	0.140	3	20	<1	30	150	<0.1	<1	2	250
17...	0.130	2	20	<1	30	140	<0.1	<1	<1	270
AUG 07...	0.430	7	100	<1	40	90	<0.1	1	<1	330
28...	0.430	6	100	<1	40	50	0.1	<1	<1	350

RED RIVER OF THE NORTH BASIN  
05056402 BIG COULEE NEAR MINNEWAUKAN, ND

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LOCATION.--Lat 48°06'55", long 99°07'03", in NW<sup>1</sup>/<sub>4</sub> sec.34, T.154 N., R.66 W., Benson County, Hydrologic Unit 09020201, at bridge crossing on North Dakota State Highway 19, 7.1 mi northeast of Minnewaukan.

DRAINAGE AREA.--1,630 mi<sup>2</sup>, approximately.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1994 to October 1995 (discontinued).

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996										
DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)
OCT 03...	1715	930	7.6	722	12.0	14.5	2.8	29	350	68
DATE		MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)
OCT 03...	43	54	24	1	19	272	200	23	0.20	573
DATE		SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	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)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)
OCT 03...		620	0.84	0.030	<0.050	0.800	1.7	2.5	2.5	0.350 0.210
DATE		ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
OCT 03...		5	80	<1	50	120	<0.1	<1	<1	320

RED RIVER OF THE NORTH BASIN  
05056410 CHANNEL A NEAR PENN, ND

LOCATION.--Lat 48°10'00", long 98°58'47", in SE<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> sec.11, T.154 N., R.65 W., Ramsey County, Hydrologic Unit 09020201, on right bank 200 ft upstream from U.S. Highway 2, 9 mi northwest of Devils Lake, and 7 mi southeast of Penn.

DRAINAGE AREA.--930 mi<sup>2</sup>, approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1983 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,400.00 ft above sea level. Prior to Oct. 1, 1985, water-stage recorder at same site at datum of 1,437.31 ft.

REMARKS.--Records fair except for periods of estimated daily discharges, which are poor. Flow regulated by gate control on Dry Lake (station 05056241) 3 mi upstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.20	e65	e4.0	e.10	e.25	e.26	e.28	818	589	252	e19	.78
2	.29	e60	e3.2	e.10	e.29	e.23	e.26	813	611	238	e18	.87
3	.27	e55	e2.6	e.10	e.29	e.20	e.25	856	595	96	e18	.81
4	.19	e63	e2.9	e.10	e.29	e.18	e.25	876	e540	1.4	e17	1.8
5	.19	e60	e1.9	e.08	e.29	e.15	e.25	1010	e520	1.3	e16	1.4
6	.14	e64	e.49	e.08	e.35	e.14	e.27	966	e520	1.2	e16	.52
7	.12	e64	e.18	e.10	e.32	e.13	e.50	976	e500	1.2	e15	.43
8	.14	e58	e.15	e.11	e.34	e.12	e1.5	964	e480	1.2	e15	155
9	.15	e63	e.11	e.11	e.35	e.10	e5.0	1010	e460	.99	e14	155
10	.15	e51	e.08	e.11	e.37	e.10	e15	901	e450	.90	e13	156
11	.19	e46	e.07	e.12	e.34	e.10	e34	858	e300	1.0	e5.0	155
12	.19	e40	e.08	e.12	e.35	e.12	60	829	e245	1.0	e1.5	.78
13	.14	e31	e.10	e.11	e.35	e.19	77	802	193	1.0	e.94	.98
14	.08	e26	e.08	e.11	e.37	e.21	87	730	187	.81	e1.0	.50
15	.15	e24	e.10	e.10	e.34	e.37	73	708	192	.88	e1.1	.62
16	.14	e24	e.10	e.10	e.33	e1.0	114	669	189	e.85	e1.0	.31
17	.19	e26	e.10	e.10	e.34	e.70	210	722	166	e.84	e.95	.27
18	.13	e27	e.10	e.11	e.31	e.45	286	725	2.5	e.83	e.98	.24
19	.14	e28	e.10	e.13	e.33	e.29	331	727	1.5	e.83	e1.0	.24
20	.09	e23	e.08	e.14	e.30	e.25	352	734	.98	e.82	e1.1	.24
21	.12	e16	e.07	e.15	e.31	e.27	394	749	1.1	e.82	e1.1	.26
22	.14	e13	e.07	e.19	e.31	e.28	402	732	.89	e.81	e1.0	.14
23	.13	e12	e.07	e.19	e.32	e.28	514	728	1.0	e.81	e.84	.15
24	.12	e10	e.07	e.19	e.29	e.26	553	697	.75	e1.0	e.87	.15
25	.15	e10	e.08	e.19	e.26	e.25	630	683	107	e2.2	e1.0	.25
26	.13	e9.8	e.08	e.22	e.27	e.26	564	667	345	e5.0	e1.1	.65
27	.14	e9.3	e.09	e.27	e.28	e.27	589	657	322	e11	e1.1	.41
28	.14	e8.8	e.10	e.30	e.26	e.26	706	645	318	e14	e1.0	.24
29	.10	e6.1	e.10	e.31	e.27	e.25	721	619	294	e12	.76	.27
30	.10	e5.7	e.10	e.31	---	e.24	943	580	267	e17	.78	.31
31	24	---	e.10	e.29	---	e.26	---	602	---	e20	.75	---
TOTAL	28.55	998.7	17.45	4.74	9.07	8.17	7663.56	24053	8398.72	687.69	185.87	754.41
MEAN	.92	33.3	.56	.15	.31	.26	255	776	280	22.2	6.00	25.1
MAX	24	65	4.0	.31	.37	1.0	943	1010	611	252	19	156
MIN	.08	5.7	.07	.08	.25	.10	.25	580	.75	.81	.75	.14
AC-FT	57	1980	35	9.4	18	16	15200	47710	16660	1360	369	1500

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1996, BY WATER YEAR (WY)

	MEAN	33.6	20.0	3.70	.091	.28	16.0	218	153	49.3	18.6	97.7	57.1
MAX	184	66.6	22.9	.69	2.80	130	1178	776	280	149	1241	684	
(WY)	1994	1995	1994	1994	1984	1995	1995	1996	1996	1993	1993	1993	
MIN	.000	.010	.005	.000	.000	.000	.098	.049	.028	.000	.010	.010	
(WY)	1984	1990	1990	1985	1986	1990	1991	1990	1989	1988	1989	1988	

SUMMARY STATISTICS

FOR 1995 CALENDAR YEAR

FOR 1996 WATER YEAR

WATER YEARS 1984 - 1996

ANNUAL TOTAL	59909.30	42809.93	55.6
ANNUAL MEAN	164	117	182
HIGHEST ANNUAL MEAN			1995
LOWEST ANNUAL MEAN			1991
HIGHEST DAILY MEAN	1360	1010	1540
LOWEST DAILY MEAN	.05 Mar 2	.07 Dec 11	.00 Aug 15 1993
ANNUAL SEVEN-DAY MINIMUM	.05 Mar 2	.07 Dec 20	.00 Oct 1 1983
INSTANTANEOUS PEAK FLOW		1060	1560
INSTANTANEOUS PEAK STAGE		42.55	43.67
ANNUAL RUNOFF (AC-FT)	118800	84910	40310
10 PERCENT EXCEEDS	751	591	106
50 PERCENT EXCEEDS	.86	.83	.24
90 PERCENT EXCEEDS	.10	.10	.00

e Estimated.



RED RIVER OF THE NORTH BASIN  
05056410 CHANNEL A NEAR PENN, ND--Continued

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WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, (PER- CENT SATUR- ATION) (00301)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB AS CACO3) (90410)
OCT 05...	0900	0.20	--	1760	--	9.0	9.0	--	--	--	--
NOV 02...	1120	--	e60	962	8.2	-5.0	0.5	16.6	121	370	243
APR 11...	1855	34	--	260	--	1.0	1.0	--	--	--	--
18...	0910	319	--	1790	8.0	15.0	1.5	10.8	83	730	473
24...	0915	546	--	610	7.9	5.5	2.0	9.7	74	230	131
MAY 02...	1545	994	--	530	8.2	10.0	4.0	10.9	88	200	123
13...	1415	810	--	637	9.1	14.0	13.0	14.2	141	230	149
29...	1015	633	--	652	--	20.5	17.0	--	--	--	--
AUG 07...	0950	15	--	790	8.2	20.5	19.5	6.1	70	300	225
28...	0835	1.0	--	1000	--	22.0	20.0	--	--	--	--

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)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
NOV 02...	81	41	60	25	1	21	260	27	0.20	637	662
APR 18...	160	80	110	24	2	26	510	48	0.30	1230	1340
24...	51	24	32	22	0.9	13	150	17	0.20	373	418
MAY 02...	45	20	29	23	0.9	11	130	15	0.10	330	330
13...	52	25	39	25	1	15	170	19	0.10	410	462
AUG 07...	70	30	62	30	2	15	180	19	0.20	513	550

DATE	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
NOV 02...	0.90	--	11	20	<1	40	30	<0.1	4	<1	370
APR 18...	1.82	1150	12	50	<1	90	3300	0.1	5	<1	620
24...	0.57	616	10	10	<1	20	600	<0.1	<1	<1	230
MAY 02...	0.45	886	3	10	<1	20	300	<0.1	<1	<1	230
13...	0.63	1010	5	10	<1	30	10	0.1	<1	1	220
AUG 07...	0.75	22.7	8	10	<1	30	70	0.1	1	<1	310

e Estimated.

RED RIVER OF THE NORTH BASIN  
05056500 DEVILS LAKE NEAR DEVILS LAKE, ND

LOCATION.--Lat 48°04'00", long 98°56'07", in SW<sup>1</sup>/<sub>4</sub> sec.18, T.153 N., R.64 W., Ramsey County, Hydrologic Unit 09020201, at Lakewood on east bank of Creel Bay, and 4.5 mi southwest of city of Devils Lake. Creel Bay, which is 0.5 mi wide, is an arm of Devils Lake and extends 2 mi to the north of the lake.

DRAINAGE AREA.--3,130 mi<sup>2</sup>, approximately, of which about 1,000 mi<sup>2</sup> is probably noncontributing.

GAGE-HEIGHT RECORDS

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

REVISED RECORDS.--WSP 1913: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,400.00 ft above sea level. June 23, 1950, to June 6, 1963, nonrecording gage at present site and datum. See WSP 1913 for history of changes prior to June 23, 1950. Prior to October 1979 only monthend elevations were published.

REMARKS.--Elevation at gage frequently affected by wind.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--The lake level was at an elevation of about 1,441 ft around 1830 and lower thereafter. Reference is Geological Survey monograph, volume XXV, the Glacial History of Lake Agassiz by Warren Upham.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 1,437.93 ft, Aug. 7; minimum, 1,434.92 ft, Oct. 26.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35.08	34.98	35.06	e35.13	e35.19	35.23	35.36	36.18	37.44	37.71	37.76	37.62
2	35.08	35.07	35.06	e35.13	e35.19	35.23	35.35	36.23	37.47	37.71	37.75	37.62
3	35.09	35.06	35.06	e35.13	e35.19	35.22	35.35	36.27	37.46	37.70	37.77	37.62
4	35.07	35.05	35.06	e35.13	e35.18	35.23	35.35	36.32	37.45	37.70	37.78	37.58
5	35.09	35.04	35.05	e35.13	e35.18	35.20	35.35	36.36	37.48	37.70	37.78	37.59
6	35.10	35.02	35.05	e35.13	35.19	35.21	35.35	36.39	37.51	37.73	37.79	37.61
7	35.10	35.01	e35.05	e35.13	35.19	35.20	35.35	36.44	37.53	37.72	37.80	37.59
8	35.09	35.00	e35.05	35.13	35.19	35.22	35.35	36.49	37.54	37.69	37.74	37.59
9	35.08	35.04	e35.05	35.13	35.19	35.23	35.35	36.55	37.55	37.66	37.71	37.59
10	35.08	35.01	e35.06	35.13	35.19	35.23	35.38	36.57	37.57	37.62	37.71	37.59
11	35.06	35.00	e35.07	35.14	35.20	35.23	35.42	36.60	37.58	37.67	37.70	37.57
12	35.06	35.01	35.08	35.13	35.20	35.23	35.44	36.64	37.59	37.64	37.69	37.54
13	35.08	35.01	35.09	35.14	35.20	35.23	35.46	36.67	37.57	37.65	37.72	37.51
14	35.06	35.01	35.10	35.14	35.21	35.23	35.50	36.69	37.57	37.65	37.68	37.49
15	35.05	35.01	35.10	35.14	35.20	35.23	35.52	36.74	37.58	37.65	37.67	37.49
16	35.02	35.01	35.10	35.15	35.20	35.24	35.55	36.78	37.57	37.63	37.67	37.46
17	35.06	35.01	35.12	35.17	35.20	35.24	35.57	36.97	37.57	37.64	37.65	37.43
18	34.98	35.01	35.12	e35.17	35.21	35.25	35.62	37.03	37.55	37.71	37.62	37.43
19	35.03	35.01	35.12	e35.16	35.20	35.26	35.66	37.09	37.63	37.68	37.72	37.45
20	35.01	35.02	35.12	e35.17	35.21	35.26	35.69	37.11	37.62	37.78	37.66	37.46
21	35.01	35.01	35.12	e35.16	35.21	35.26	35.73	37.13	37.62	37.83	37.69	37.51
22	34.99	35.01	e35.12	e35.16	35.21	35.26	35.76	37.13	37.56	37.81	37.69	37.51
23	34.97	35.01	e35.12	e35.16	35.22	35.27	35.79	37.13	37.58	37.78	37.68	37.50
24	34.98	35.01	e35.12	e35.16	35.21	35.31	35.83	37.17	37.60	37.76	37.68	37.48
25	34.96	35.02	e35.12	e35.17	35.22	35.30	35.92	37.19	37.61	37.72	37.67	37.47
26	34.95	35.06	e35.12	e35.16	35.21	35.27	35.96	37.22	37.67	37.71	37.66	37.49
27	34.98	35.06	e35.12	e35.17	35.23	35.29	36.00	37.24	37.69	37.74	37.64	37.53
28	34.99	35.05	e35.12	e35.18	35.21	35.30	36.04	37.26	37.72	37.75	37.63	37.51
29	34.98	35.06	e35.13	e35.17	35.22	35.32	36.08	37.28	37.75	37.76	37.63	37.47
30	34.97	35.06	e35.13	e35.18	---	35.35	36.14	37.28	37.72	37.77	37.63	37.46
31	34.97	---	e35.13	e35.19	---	35.35	---	37.37	---	37.77	37.62	---
MEAN	35.03	35.02	35.09	35.15	35.20	35.25	35.61	36.82	37.58	37.71	37.70	37.53
MAX	35.10	35.07	35.13	35.19	35.23	35.35	36.14	37.37	37.75	37.83	37.80	37.62
MIN	34.95	34.98	35.05	35.13	35.18	35.20	35.35	36.18	37.44	37.62	37.62	37.43

e Estimated.

RED RIVER OF THE NORTH BASIN  
05057000 SHEYENNE RIVER NEAR COOPERSTOWN, ND

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LOCATION.--Lat 47°25'58", long 98°01'38", in NW<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> sec.26, T.146 N., R.58 W., Griggs County, Hydrologic Unit 09020203, on right bank at Ueland Dam 0.7 mi downstream from State Highway 200, and 5 mi east of Cooperstown.

DRAINAGE AREA.--6,470 mi<sup>2</sup>, approximately, of which about 5,200 mi<sup>2</sup> is probably noncontributing, includes 3,800 mi<sup>2</sup> in closed basins.

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1728: Drainage area. WRD ND-80-1: Gage datum.

GAGE.--Water-stage recorder and artificial control. Datum of gage is 1,271.76 ft above sea level (Coast and Geodetic Survey bench mark). Aug. 31, 1950, to Oct. 22, 1985, gage located on right bank 300 ft downstream of present site and datum. Prior to Aug. 3, 1950, nonrecording gage at site 150 ft downstream of present site at same datum.

REMARKS.--Records good except for periods of estimated daily discharges, which are fair.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48	74	e48	e48	e16	e27	e800	1350	421	e250	201	50
2	67	79	e48	e43	e15	e25	e900	1170	403	e210	187	54
3	59	81	e48	e43	e15	e23	e1000	1020	394	e180	179	53
4	60	87	e49	e41	e15	e22	e1100	911	381	e160	174	48
5	65	87	e49	e26	e15	e21	e1200	810	e370	139	173	42
6	69	86	e45	e24	e20	e21	e1100	723	e360	135	168	39
7	76	88	e40	e26	e23	e20	e1050	659	e340	137	161	35
8	85	85	e35	e30	e50	e20	e1000	610	e320	135	153	35
9	86	84	e28	e35	e47	e23	e1200	569	e300	124	143	35
10	82	81	e25	e38	e43	e25	e1430	536	e280	113	136	32
11	79	81	e26	e37	e40	e33	e1600	508	e260	110	130	29
12	78	81	e21	e37	e38	e44	e1780	483	e240	111	122	29
13	73	79	e21	e33	e39	e60	e2600	463	e230	102	117	29
14	68	79	e23	e39	e35	e75	e3500	438	e220	96	111	28
15	64	e79	e25	e60	e30	e85	4210	418	e210	92	104	27
16	63	e77	e26	e67	e32	e120	4130	403	e200	91	96	27
17	63	e77	e26	e54	e35	e110	4950	389	e190	87	90	26
18	67	e77	e25	e45	e40	e100	6650	418	e180	105	81	26
19	71	e75	e26	e40	e45	e100	5740	441	e170	281	76	27
20	71	e69	e26	e37	e40	e100	4710	448	e160	461	70	27
21	70	55	e26	e34	e37	e97	4250	447	e155	435	64	27
22	70	59	e28	e31	e39	e95	3930	437	e150	406	65	27
23	70	56	e28	e28	e42	e93	3540	439	e150	372	65	27
24	70	54	e29	e25	e40	e90	3150	452	e155	312	65	28
25	70	53	e29	e23	e38	e95	2810	484	e160	272	65	30
26	68	48	e30	e21	e35	e130	2510	518	e180	255	61	36
27	68	48	e30	e20	e33	e200	2320	531	e200	249	59	39
28	68	e47	e31	e19	e31	e250	2110	519	e230	238	60	44
29	69	e47	e35	e18	e29	e350	1850	484	e270	229	59	53
30	72	e47	e46	e17	---	e500	1580	443	e300	216	55	58
31	73	---	e49	e16	---	e650	---	416	---	206	53	---
TOTAL	2162	2120	1021	1055	957	3604	78700	17937	7579	6309	3343	1067
MEAN	69.7	70.7	32.9	34.0	33.0	116	2623	579	253	204	108	35.6
MAX	86	88	49	67	50	650	6650	1350	421	461	201	58
MIN	48	47	21	16	15	20	800	389	150	87	53	26
AC-FT	4290	4210	2030	2090	1900	7150	156100	35580	15030	12510	6630	2120

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 1996, BY WATER YEAR (WY)

	MEAN	33.6	30.4	18.7	12.2	12.8	189	602	223	118	88.6	54.1	32.2
MAX	392	255	119	68.2	74.7	1381	2623	1953	435	640	1033	321	
(WY)	1995	1995	1995	1995	1981	1995	1996	1950	1974	1993	1993	1994	
MIN	.83	2.83	3.14	1.94	.000	2.14	42.4	37.3	6.66	3.84	.68	.000	
(WY)	1964	1977	1977	1964	1963	1964	1991	1961	1961	1961	1961	1959	

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR		FOR 1996 WATER YEAR		WATER YEARS 1945 - 1996	
ANNUAL TOTAL	124123		125854			
ANNUAL MEAN	340		344		118	
HIGHEST ANNUAL MEAN					399	
LOWEST ANNUAL MEAN					13.2	
HIGHEST DAILY MEAN	3320		6650		7410	
LOWEST DAILY MEAN	21		15		.00	
ANNUAL SEVEN-DAY MINIMUM	24		16		.00	
INSTANTANEOUS PEAK FLOW			6760		7830	
INSTANTANEOUS PEAK STAGE			19.13		19.13	
ANNUAL RUNOFF (AC-FT)	246200		249600		85330	
10 PERCENT EXCEEDS	777		678		247	
50 PERCENT EXCEEDS	82		74		24	
90 PERCENT EXCEEDS	45		26		4.0	

e Estimated.

RED RIVER OF THE NORTH BASIN  
05057000 SHEYENNE RIVER NEAR COOPERSTOWN, ND--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
NOV 08...	0945	83	--	--	-6.5	0.5	--	--	--	--
JAN 04...	1225	42	--	--	-12.0	0.5	--	--	--	--
FEB 07...	1540	23	1060	--	3.5	1.0	--	--	--	--
APR 01...	1300	805	510	--	--	0.5	--	--	--	--
10...	1020	1430	440	--	--	0.5	--	--	--	--
12...	1150	1780	311	--	-2.0	0.5	--	--	--	--
15...	1115	4060	356	--	8.0	2.0	--	--	--	--
17...	1530	4740	457	--	--	--	--	--	--	--
25...	1545	2670	510	--	3.5	7.0	--	--	--	--
MAY 01...	0800	1380	652	8.3	8.0	9.5	230	202	46	27
13...	1240	491	913	--	--	11.5	--	--	--	--
JUN 05...	1300	358	510	--	--	14.5	--	--	--	--
JUL 11...	0920	108	1420	--	21.0	20.0	--	--	--	--
AUG 23...	0910	66	1170	8.5	12.5	20.5	340	457	66	42

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
MAY 01...	51	32	1	9.7	140	13	0.10	408	458	0.62
AUG 23...	150	48	4	11	200	25	0.20	769	791	1.08

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAY 01...	1710	1	20	<1	40	50	0.1	<1	1	240
AUG 23...	140	7	20	<1	90	90	<0.1	<1	<1	360



RED RIVER OF THE NORTH BASIN  
05057200 BALDHILL CREEK NEAR DAZEY, ND

77

LOCATION.--Lat 47°13'45", long 98°07'28", in NW<sup>1</sup>/<sub>4</sub> SE<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> sec.2, T.143 N., R.59 W., Barnes County, Hydrologic Unit 09020203, on left bank 500 ft upstream from bridge on county highway, 4.5 mi northeast of Dazez, and 14 mi upstream from mouth.

DRAINAGE AREA.--691 mi<sup>2</sup>, of which about 340 mi<sup>2</sup> is probably noncontributing.

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1728: Drainage area.

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

REMARKS.--Records good except for periods of estimated daily discharges, which are fair.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	24	e13	7.2	4.5	5.5	e75	254	124	23	58	12
2	16	24	13	7.2	4.5	5.5	e65	232	115	21	50	13
3	16	21	13	7.2	4.1	5.5	e60	214	106	20	44	13
4	17	21	12	7.2	4.1	5.5	e55	199	100	19	57	11
5	26	19	11	7.2	4.1	5.5	e50	196	92	20	88	9.8
6	30	20	e10	7.2	3.7	5.5	e50	187	90	25	57	11
7	30	20	e9.0	6.8	3.8	5.5	e60	177	84	29	45	11
8	28	20	e8.5	6.6	4.4	5.3	e150	171	76	30	40	9.6
9	27	e19	e7.5	6.6	4.9	5.0	e400	163	69	26	38	8.8
10	25	e18	e7.3	6.9	5.4	5.0	e1250	153	64	24	38	7.9
11	24	e18	7.2	7.2	5.2	5.0	e1600	144	58	28	37	7.1
12	23	e18	7.7	7.2	5.2	6.3	e1880	136	52	30	36	6.5
13	23	19	8.0	7.2	5.4	18	e1600	128	47	32	32	6.3
14	21	18	8.6	7.2	5.7	e35	e1700	124	42	32	28	6.3
15	21	18	9.0	7.2	5.7	e50	e1500	123	40	29	25	6.3
16	20	17	8.7	7.2	6.0	e250	1340	116	40	24	23	6.2
17	21	17	8.2	7.2	6.0	e200	1200	121	38	21	20	6.0
18	21	17	7.9	6.5	6.0	e200	1100	135	33	38	19	6.0
19	23	18	7.9	6.0	6.0	e220	950	132	31	32	18	6.1
20	23	19	7.9	5.6	6.0	e250	800	124	27	38	16	7.2
21	24	17	7.9	5.5	6.0	e350	679	114	25	47	15	8.7
22	24	20	7.9	5.5	6.0	e250	570	105	23	48	14	8.5
23	23	17	7.9	5.5	6.2	e200	501	99	23	48	12	7.4
24	22	17	7.5	5.5	6.6	e150	450	91	26	86	12	6.9
25	21	15	7.3	5.5	6.6	e200	416	85	28	107	11	6.6
26	20	15	7.4	5.5	6.6	e230	389	82	29	108	9.3	7.6
27	22	e15	7.2	5.1	6.0	e200	362	76	29	102	8.8	12
28	22	e14	7.2	5.0	6.0	e140	339	69	28	91	8.4	12
29	22	e14	7.2	5.0	5.8	e110	310	63	28	85	11	10
30	21	e14	7.2	5.0	---	e100	284	58	24	79	12	9.8
31	22	---	7.2	4.8	---	e85	---	87	---	69	11	---
TOTAL	694	543	267.3	196.5	156.5	3303.1	20185	4158	1591	1411	893.5	260.6
MEAN	22.4	18.1	8.62	6.34	5.40	107	673	134	53.0	45.5	28.8	8.69
MAX	30	24	13	7.2	6.6	350	1880	254	124	108	88	13
MIN	16	14	7.2	4.8	3.7	5.0	50	58	23	19	8.4	6.0
AC-FT	1380	1080	530	390	310	6550	40040	8250	3160	2800	1770	517

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 1996, BY WATER YEAR (WY)

MEAN	7.33	5.34	2.67	1.22	1.58	60.0	106	22.8	13.7	16.9	7.72	6.84
MAX	106	48.7	16.1	7.31	6.42	475	673	143	53.0	273	133	58.5
(WY)	1995	1995	1995	1995	1995	1995	1996	1995	1996	1993	1993	1957
MIN	.47	.38	.15	.000	.000	.59	2.44	1.71	.91	.021	.076	.094
(WY)	1992	1960	1959	1959	1957	1964	1981	1981	1961	1989	1984	1984

SUMMARY STATISTICS FOR 1995 CALENDAR YEAR FOR 1996 WATER YEAR WATER YEARS 1956 - 1996

ANNUAL TOTAL	37955.8	33659.5	
ANNUAL MEAN	104	92.0	21.1
HIGHEST ANNUAL MEAN			114
LOWEST ANNUAL MEAN			1.52
HIGHEST DAILY MEAN	1700	1880	4500
LOWEST DAILY MEAN	5.2	3.7	.00
ANNUAL SEVEN-DAY MINIMUM	5.5	4.1	.00
INSTANTANEOUS PEAK FLOW			
INSTANTANEOUS PEAK STAGE			
ANNUAL RUNOFF (AC-FT)	75290	66760	15290
10 PERCENT EXCEEDS	267	199	32
50 PERCENT EXCEEDS	25	20	3.0
90 PERCENT EXCEEDS	6.9	5.7	.20

a Backwater from ice.  
e Estimated.

RED RIVER OF THE NORTH BASIN  
05057200 BALDHILL CREEK NEAR DAZEY, ND--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LILITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
NOV 08...	1220	20	1000	--	4.0	0.5	--	--	--	--
JAN 04...	1615	7.3	465	--	-12.5	0.5	--	--	--	--
FEB 08...	1135	4.6	1220	--	1.5	1.0	--	--	--	--
MAR 20...	1110	250	472	--	-8.0	0.0	--	--	--	--
APR 01...	1510	75	632	--	--	0.5	--	--	--	--
09...	1245	406	--	--	1.0	1.0	--	--	--	--
10...	0850	1280	234	--	0.5	0.0	--	--	--	--
12...	0930	1860	266	--	0.0	0.0	--	--	--	--
MAY 01...	1110	256	704	8.1	8.5	8.5	300	193	62	35
JUN 20...	0920	29	1050	--	23.0	20.0	--	--	--	--
JUL 11...	1150	28	1010	--	22.0	20.5	--	--	--	--
AUG 22...	0805	15	1040	8.4	13.0	20.0	440	370	89	52
DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
MAY 01...	31	18	0.8	13	180	14	0.10	451	503	0.68
AUG 22...	77	27	2	11	230	17	0.20	699	747	1.02
DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAY 01...	348	2	30	<1	30	110	0.1	<1	<1	320
AUG 22...	30.1	4	20	<1	70	120	<0.1	<1	1	490

RED RIVER OF THE NORTH BASIN  
05057500 LAKE ASHTABULA AT BALDHILL DAM, ND

79

LOCATION.--Lat 47°02'00", long 98°05'00", in NW<sup>1</sup>/<sub>4</sub> sec.18, T.141 N., R.58 W., Barnes County, Hydrologic Unit 09020203, at Baldhill Dam on Sheyenne River, and 8 mi northwest of Valley City.

DRAINAGE AREA.--7,470 mi<sup>2</sup>, approximately, of which about 5,560 mi<sup>2</sup> is probably noncontributing, including 3,800 mi<sup>2</sup> in closed basins.

MONTHEND-ELEVATION AND CONTENTS RECORDS

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

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

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

REMARKS.--Reservoir is formed by an earth-filled dam, 1,650 ft long; storage began on July 30, 1949; dam completed September 1949.

Usable capacity, 69,100 acre-ft between invert of outlet conduit, elevation, 1,238.0 ft, and normal pool level, elevation, 1,266.0 ft. Dead storage below elevation 1,238.0 ft, 1,500 acre-ft. Maximum pool elevation, 1,273.2 ft, capacity, 116,500 acre-ft. Low flows are controlled by 2 sluice gates 3 ft in diameter. The spillway crest is 120 ft long at elevation 1,252.0 ft, surmounted by 3 taintor gates, each 15 ft high and 40 ft long. The reservoir is operated for flood control and to increase low-water flow.

COOPERATION.--Records furnished by U.S. Army Corps of Engineers.

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

EXTREMES FOR CURRENT YEAR.--Maximum contents, 78,680 acre-ft, Apr. 26, elevation, 1,267.41 ft; minimum, 30,940 acre-ft, Mar. 25, elevation, 1,256.98 ft.

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30-----	1,263.47	56,850	--
Oct. 31-----	1,263.84	58,700	+1,850
Nov. 30-----	1,264.22	60,710	+2,010
Dec. 31-----	1,263.75	58,250	-2,460
CAL YR 1995-----	--	--	+8,210
Jan. 31-----	1,263.00	54,500	-3,750
Feb. 29-----	1,258.95	37,430	-17,070
Mar. 31-----	1,257.27	31,860	-5,570
Apr. 30-----	1,266.27	72,140	+40,280
May 31-----	1,264.11	60,100	-12,040
June 30-----	1,264.35	61,420	+1,320
July 31-----	1,264.09	60,000	-1,420
Aug. 31-----	1,264.04	59,720	-280
Sept. 30-----	1,264.31	61,200	+1,480
WTR YR 1996-----	--	--	+4,350

RED RIVER OF THE NORTH BASIN  
05058000 SHEYENNE RIVER BELOW BALDHILL DAM, ND

LOCATION.--Lat 47°01'56", long 98°05'08", in NW<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> sec.18, T.141 N., R.58 W., Barnes County, Hydrologic Unit 09020204, on left bank .7 mi downstream from Baldhill Dam, 8 mi northwest of Valley City, and at mile 269.8.

DRAINAGE AREA.--7,470 mi<sup>2</sup>, approximately, of which about 5,560 mi<sup>2</sup> is probably noncontributing, including 3,800 mi<sup>2</sup> in closed basins.

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,200.00 ft above sea level. Prior to Dec. 29, 1994, at site .7 mi upstream at same datum.

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e58	e76	e110	105	173	358	319	3240	518	123	167	e40
2	e60	e76	e110	104	186	353	502	2820	533	125	168	e30
3	e80	e76	e110	103	193	349	495	2350	640	124	169	e20
4	e80	e76	e110	96	e200	333	496	1990	698	122	168	e18
5	e70	e76	e105	90	e210	297	505	1960	690	122	171	e20
6	e68	e74	105	70	e215	223	518	1720	660	120	171	e14
7	e66	e70	104	69	e220	202	534	1200	574	121	169	e18
8	e64	e68	105	72	e230	198	769	785	526	120	167	e14
9	e62	e66	104	73	269	158	1450	691	517	155	166	e13
10	e60	e66	102	82	292	132	2290	689	456	227	162	e12
11	e60	e66	99	101	310	107	2970	686	400	227	161	e11
12	e60	e66	98	108	306	118	3370	685	375	226	175	e10
13	e60	e66	99	117	316	117	3470	683	180	225	170	e10
14	e60	e66	105	122	355	240	3570	609	70	224	171	e10
15	e62	e66	105	127	370	549	3920	610	120	222	118	e10
16	e66	e66	103	129	353	1110	4330	554	150	183	81	e10
17	e70	e66	103	138	348	986	4500	625	145	116	82	e12
18	e80	e66	102	150	345	483	4630	675	136	115	78	e20
19	e80	e66	103	137	323	271	5080	676	e120	192	78	27
20	e80	e68	104	150	335	271	5410	674	e120	315	80	27
21	e78	e68	105	146	335	397	5360	651	e120	305	84	26
22	e76	e68	106	150	326	582	5070	593	e120	355	55	26
23	e76	e68	105	154	327	576	4520	541	e120	423	33	25
24	e76	e68	106	157	353	573	3900	498	e120	421	50	24
25	e76	e70	106	156	361	348	3480	470	120	420	e48	24
26	e75	e110	106	153	356	188	3520	466	119	420	e46	24
27	e75	e110	106	152	360	185	3590	470	119	420	e40	24
28	e75	e110	106	154	367	185	3560	471	121	419	e20	24
29	e76	e110	106	161	368	185	3500	477	124	420	e22	23
30	e78	e110	104	171	---	186	3450	486	125	418	e25	23
31	e78	---	104	172	---	185	---	504	---	265	e50	---
TOTAL	2185	2278	3246	3869	8702	10445	89078	29549	8836	7690	3345	589
MEAN	70.5	75.9	105	125	300	337	2969	953	295	248	108	19.6
MAX	80	110	110	172	370	1110	5410	3240	698	423	175	40
MIN	58	66	98	69	173	107	319	466	70	115	20	10
AC-FT	4330	4520	6440	7670	17260	20720	176700	58610	17530	15250	6630	1170

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 1996, BY WATER YEAR (WY)

	MEAN	53.9	64.0	61.2	58.1	68.4	206	561	278	154	121	79.6	55.5
MAX	622	291	231	182	300	1567	2969	2906	1154	1272	1555	577	
(WY)	1995	1995	1995	1995	1996	1995	1996	1950	1950	1993	1993	1994	
MIN	1.92	5.27	4.32	3.64	7.66	7.81	2.07	6.86	5.88	7.28	6.72	.81	
(WY)	1956	1956	1980	1956	1956	1955	1953	1959	1958	1959	1977	1955	

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR	FOR 1996 WATER YEAR	WATER YEARS 1950 - 1996
ANNUAL TOTAL	182221	169812	
ANNUAL MEAN	499	464	147
HIGHEST ANNUAL MEAN			574
LOWEST ANNUAL MEAN			12.8
HIGHEST DAILY MEAN	3950	Mar 29	5410
LOWEST DAILY MEAN	36	Jun 17	10
ANNUAL SEVEN-DAY MINIMUM	61	Oct 9	10
INSTANTANEOUS PEAK FLOW			5460
INSTANTANEOUS PEAK STAGE			36.46
ANNUAL RUNOFF (AC-FT)	361400	336800	106200
10 PERCENT EXCEEDS	1140	689	293
50 PERCENT EXCEEDS	185	134	42
90 PERCENT EXCEEDS	70	47	9.2

e Estimated.



RED RIVER OF THE NORTH BASIN  
05058000 SHEYENNE RIVER BELOW BALDHILL DAM, ND--Continued

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WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996										
DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
NOV										
09...	1000	66	1160	--	1.0	2.0	--	--	--	--
JAN										
05...	1150	99	--	--	-15.0	1.0	--	--	--	--
FEB										
08...	1410	235	1220	--	2.0	4.0	--	--	--	--
13...	1405	306	1310	--	5.0	4.0	--	--	--	--
APR										
02...	1020	441	776	--	-5.0	1.0	--	--	--	--
10...	0650	1960	610	--	3.5	1.5	--	--	--	--
12...	1025	3290	612	--	2.0	1.0	--	--	--	--
16...	1310	4370	366	--	4.0	1.0	--	--	--	--
18...	1045	4550	372	--	16.0	2.0	--	--	--	--
19...	1350	5510	386	--	4.0	1.5	--	--	--	--
20...	1035	5460	393	--	1.0	1.0	--	--	--	--
MAY										
02...	0700	2890	438	8.0	4.0	4.5	150	130	33	17
JUN										
03...	1435	708	672	--	18.5	16.0	--	--	--	--
19...	1520	123	782	--	21.5	20.0	--	--	--	--
JUL										
12...	0830	227	857	--	18.0	21.5	--	--	--	--
AUG										
21...	1100	83	942	8.5	18.5	22.5	340	307	67	42
26...	1425	47	952	--	22.0	23.0	--	--	--	--
28...	1545	21	875	--	25.0	24.5	--	--	--	--

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
MAY										
02...	27	26	1	8.4	88	9.8	0.10	262	312	0.42
AUG										
21...	86	34	2	12	230	17	0.20	639	649	0.88

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAY										
02...	2430	1	40	<1	20	90	0.1	<1	<1	180
AUG										
21...	146	5	10	<1	60	240	<0.1	<1	<1	370

RED RIVER OF THE NORTH BASIN  
05058500 SHEYENNE RIVER AT VALLEY CITY, ND

LOCATION.--Lat 46°54'50", long 98°00'30", in SE<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> sec.28, T.140 N., R.58 W., Barnes County, Hydrologic Unit 09020204, on left bank 100 ft downstream from College Dam in Valley City, and at mile 253.0.

DRAINAGE AREA.--7,810 mi<sup>2</sup>, approximately, of which about 5,700 mi<sup>2</sup> is probably noncontributing, includes 3,800 mi<sup>2</sup> in closed basins.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March to August 1919, March 1938 to September 1975; October 1979 to current year (gage heights and annual maximum discharge for water years 1980-96; seasonal discharge record for March 1995 to current year). Records for July 1938, published in WSP 855, have been found to be unreliable and should not be used.

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

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,199.27 ft above sea level. March to August 1919, nonrecording gage at site 0.5 mi upstream at different datum. March to Oct. 13, 1938, nonrecording gage at present site and datum.

REMARKS.--Records good. Flow regulated by Lake Ashtabula 13 mi upstream (see station 05057500). Small diversions above station for municipal supply.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,250 ft<sup>3</sup>/s, Apr. 21, 1996, gage height, 18.78 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,250 ft<sup>3</sup>/s, Apr. 21, gage height, 18.78 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	579	248	3500	534	123	148	48
2	---	---	---	---	---	532	468	3210	523	120	153	62
3	---	---	---	---	---	507	620	2760	537	119	160	38
4	---	---	---	---	---	492	625	2240	671	117	167	26
5	---	---	---	---	---	445	634	2120	695	131	168	22
6	---	---	---	---	---	380	657	2030	695	129	165	24
7	---	---	---	---	---	250	688	1630	639	119	163	24
8	---	---	---	---	---	284	1070	1070	527	116	161	22
9	---	---	---	---	---	216	1910	872	517	117	160	23
10	---	---	---	---	---	188	2590	862	503	175	161	24
11	---	---	---	---	---	138	2980	851	327	204	159	22
12	---	---	---	---	---	236	3340	840	336	201	161	21
13	---	---	---	---	---	483	3500	800	476	205	170	21
14	---	---	---	---	---	609	3540	810	39	201	168	22
15	---	---	---	---	---	1160	3620	740	120	196	157	21
16	---	---	---	---	---	1860	3910	674	113	196	99	22
17	---	---	---	---	---	1690	4140	764	114	143	91	23
18	---	---	---	---	---	925	4280	750	204	126	89	24
19	---	---	---	---	---	355	4450	844	42	124	90	26
20	---	---	---	---	---	336	4960	821	115	279	84	29
21	---	---	---	---	---	362	5210	806	123	308	90	27
22	---	---	---	---	---	712	5180	759	121	323	87	27
23	---	---	---	---	---	723	4870	652	132	444	61	26
24	---	---	---	---	---	667	4320	615	128	452	52	25
25	---	---	---	---	---	637	3750	530	131	441	52	25
26	---	---	---	---	---	298	3540	517	126	452	50	30
27	---	---	---	---	---	165	3590	510	122	448	49	38
28	---	---	---	---	---	220	3610	505	121	443	39	33
29	---	---	---	---	---	223	3590	495	120	444	26	29
30	---	---	---	---	---	224	3560	493	120	442	24	27
31	---	---	---	---	---	223	---	533	---	397	24	---
TOTAL	---	---	---	---	---	16119	89450	34603	8971	7735	3428	831
MEAN	---	---	---	---	---	520	2982	1116	299	250	111	27.7
MAX	---	---	---	---	---	1860	5210	3500	695	452	170	62
MIN	---	---	---	---	---	138	248	493	39	116	24	21

RED RIVER OF THE NORTH BASIN  
05058500 SHEYENNE RIVER AT VALLEY CITY, ND--Continued

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GAGE HEIGHT RECORDS

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.23	3.33	3.45	3.54	4.70	5.51	4.17	14.66	5.67	3.50	3.63	3.09
2	3.23	3.33	3.45	3.55	4.73	5.31	5.26	13.88	5.63	3.49	3.65	3.21
3	3.22	3.31	3.45	3.56	5.06	5.21	5.88	12.62	5.71	3.48	3.69	3.08
4	3.23	3.30	3.45	3.60	5.10	5.16	5.90	11.14	6.26	3.47	3.73	2.99
5	3.31	3.31	3.39	3.65	5.15	4.96	5.94	10.78	6.32	3.54	3.73	2.95
6	3.31	3.31	3.51	3.51	5.48	4.69	6.03	10.54	6.28	3.52	3.71	2.95
7	3.27	3.31	3.48	3.50	5.42	4.11	6.15	9.34	6.01	3.48	3.70	2.95
8	3.26	3.31	3.46	3.48	5.61	4.29	7.54	7.50	5.52	3.46	3.70	2.94
9	3.26	3.31	3.46	3.42	5.65	3.95	10.21	6.79	5.44	3.46	3.69	2.94
10	3.25	3.29	3.54	3.40	6.00	3.82	12.17	6.76	5.35	3.74	3.69	2.95
11	3.25	3.28	3.55	3.52	6.19	3.57	13.25	6.73	4.58	3.87	3.69	2.93
12	3.23	3.30	3.57	3.63	6.16	4.03	14.24	6.70	4.58	3.86	3.70	2.93
13	3.25	3.29	3.61	3.63	6.16	5.17	14.76	6.55	5.15	3.89	3.74	2.93
14	3.23	3.29	3.60	3.66	6.40	5.70	15.01	6.61	3.23	3.86	3.73	2.94
15	3.23	3.29	3.59	3.63	6.40	7.76	15.33	6.33	3.57	3.84	3.68	2.93
16	3.23	3.29	3.58	3.73	6.29	9.99	16.27	6.06	3.50	3.85	3.40	2.93
17	3.25	3.29	3.58	3.76	6.26	9.49	16.90	6.42	3.47	3.58	3.36	2.93
18	3.23	3.29	3.57	3.83	6.27	6.92	17.27	6.40	3.89	3.50	3.36	2.94
19	3.25	3.30	3.57	4.18	6.09	4.64	17.60	6.79	3.05	3.49	3.36	2.96
20	3.26	3.31	3.55	4.24	5.96	4.60	18.31	6.73	3.46	4.27	3.34	3.01
21	3.29	3.29	3.55	4.28	5.97	4.73	18.71	6.67	3.51	4.43	3.36	2.99
22	3.30	3.31	3.55	4.28	5.76	6.18	18.64	6.49	3.49	4.50	3.35	2.97
23	3.30	3.29	3.54	4.29	5.58	6.22	18.10	6.06	3.55	5.12	3.21	2.96
24	3.29	3.29	3.53	4.44	5.64	6.01	17.05	5.91	3.53	5.16	3.16	2.95
25	3.31	3.30	3.53	4.42	5.41	5.89	15.65	5.57	3.54	5.10	3.15	2.95
26	3.31	3.31	3.52	4.43	5.16	4.37	15.03	5.53	3.52	5.15	3.13	3.02
27	3.31	3.29	3.51	4.42	5.46	3.73	15.11	5.51	3.49	5.13	3.13	3.07
28	3.31	3.31	3.51	4.54	5.68	4.01	15.11	5.50	3.49	5.11	3.08	3.04
29	3.31	3.42	3.51	4.46	5.67	4.03	15.00	5.47	3.49	5.11	2.99	3.01
30	3.31	3.45	3.51	4.71	---	4.03	14.87	5.48	3.49	5.10	2.96	2.98
31	3.31	---	3.53	4.72	---	4.03	---	5.65	---	4.88	2.96	---
MEAN	3.27	3.31	3.52	3.94	5.70	5.23	13.05	7.52	4.39	4.13	3.44	2.98
MAX	3.31	3.45	3.61	4.72	6.40	9.99	18.71	14.66	6.32	5.16	3.74	3.21
MIN	3.22	3.28	3.39	3.40	4.70	3.57	4.17	5.47	3.05	3.46	2.96	2.93

RED RIVER OF THE NORTH BASIN  
05058500 SHEYENNE RIVER AT VALLEY CITY, ND--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
NOV 08...	1525	67	1230	--	-10.0	2.0	--	--	--	--
APR 02...	0830	399	728	--	-3.0	1.0	--	--	--	--
11...	1445	3350	655	--	3.0	2.0	--	--	--	--
18...	1015	4670	383	--	12.0	2.0	--	--	--	--
19...	1000	4370	384	--	4.5	2.5	--	--	--	--
20...	1425	5020	--	--	5.0	2.0	--	--	--	--
21...	1050	5200	389	--	--	2.5	--	--	--	--
MAY 01...	1430	3520	416	8.0	11.5	4.0	140	122	30	16
JUN 04...	0805	665	725	--	17.0	16.0	--	--	--	--
19...	0835	46	846	--	17.5	21.0	--	--	--	--
JUL 11...	1430	206	682	--	22.0	20.0	--	--	--	--
AUG 20...	1535	83	950	--	--	--	--	--	--	--

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
MAY 01...	26	27	1	7.9	81	9.6	0.10	244	290	0.39

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAY 01...	2760	1	50	<1	20	130	0.1	<1	<1	180



RED RIVER OF THE NORTH BASIN  
05058600 SHEYENNE RIVER NEAR KATHRYN, ND

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LOCATION.--Lat 46°37'47", long 97°56'22", in NW<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> NE<sup>1</sup>/<sub>4</sub> sec.2, T.136 N., R.50 W., Ransom County, Hydrologic Unit 09020204, at bridge on State Highway No. 46, 3.5 mi southeast of Kathryn.

DRAINAGE AREA.--8,000 mi<sup>2</sup>, approximately, of which about 5,800 mi<sup>2</sup> is probably noncontributing, includes 3,800 mi<sup>2</sup> in closed basins.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1995 to September 1996 (discontinued).

GAGE.--Nonrecording gage. Elevation of gage is 1,150 ft, from topographic map.

REMARKS.--Records fair.

EXTREMES FOR CURRENT PERIOD.--Maximum discharge, 5,150 ft<sup>3</sup>/s, Apr. 24, gage height, 19.85 ft; minimum daily, 12 ft<sup>3</sup>/s, Sept. 12-14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	e350	e216	3550	667	140	358	37
2	---	---	---	---	---	e350	e237	3490	667	140	265	54
3	---	---	---	---	---	e340	e286	3330	667	138	150	63
4	---	---	---	---	---	e320	e344	2990	684	134	145	66
5	---	---	---	---	---	e310	e401	2560	759	145	184	48
6	---	---	---	---	---	e290	e499	2270	773	171	178	45
7	---	---	---	---	---	e280	e619	2150	778	161	176	25
8	---	---	---	---	---	e260	e887	1720	714	148	171	24
9	---	---	---	---	---	e240	e1810	1340	635	138	169	18
10	---	---	---	---	---	e220	e2800	1140	565	135	169	18
11	---	---	---	---	---	e230	e3580	1010	519	158	169	14
12	---	---	---	---	---	e250	e3030	989	466	205	171	12
13	---	---	---	---	---	e300	e3030	959	350	208	174	12
14	---	---	---	---	---	e500	e3170	934	313	206	174	12
15	---	---	---	---	---	e1350	e3260	919	387	200	171	14
16	---	---	---	---	---	e2200	e3330	919	305	194	166	21
17	---	---	---	---	---	e2320	e3430	989	224	192	137	18
18	---	---	---	---	---	e2180	e3550	1170	163	169	113	18
19	---	---	---	---	---	e1600	e3960	1140	192	143	98	24
20	---	---	---	---	---	e642	4160	1080	147	152	91	26
21	---	---	---	---	---	e536	4420	1030	142	252	90	27
22	---	---	---	---	---	e633	4720	974	142	338	87	25
23	---	---	---	---	---	e707	5000	877	153	385	87	26
24	---	---	---	---	---	e672	5120	790	166	450	82	22
25	---	---	---	---	---	e656	4930	730	163	503	72	18
26	---	---	---	---	---	e572	4450	688	161	506	57	22
27	---	---	---	---	---	e471	3940	624	156	490	41	36
28	---	---	---	---	---	e372	3770	608	153	508	27	47
29	---	---	---	---	---	e254	3610	596	145	499	24	41
30	---	---	---	---	---	e230	3590	596	138	497	24	29
31	---	---	---	---	---	e214	---	610	---	460	25	---
TOTAL	---	---	---	---	---	19849	86149	42772	11494	8165	4045	862
MEAN	---	---	---	---	---	640	2872	1380	383	263	130	28.7
MAX	---	---	---	---	---	2320	5120	3550	778	508	358	66
MIN	---	---	---	---	---	214	216	596	138	134	24	12
AC-FT	---	---	---	---	---	39370	170900	84840	22800	16200	8020	1710

e Estimated.

RED RIVER OF THE NORTH BASIN  
05058700 SHEYENNE RIVER AT LISBON, ND  
(National water-quality assessment program)

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

DRAINAGE AREA.--8,190 mi<sup>2</sup>, approximately, of which about 5,700 mi<sup>2</sup> is probably noncontributing, including 3,800 mi<sup>2</sup> in closed basins.

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,066.46 ft above sea level.

REMARKS.--Records good except for period of estimated daily discharges, which is fair. Flow regulated by Lake Ashtabula (station 05057500) 108.5 mi upstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	124	86	67	e117	e250	e450	e410	3600	570	145	421	39
2	113	88	89	e115	e260	e450	e400	3560	648	143	396	33
3	94	59	109	e114	e270	e450	e440	3520	662	146	270	31
4	87	76	113	e113	e290	e440	e510	3410	636	144	202	50
5	106	87	109	e111	e300	e440	e650	3100	640	141	204	73
6	111	94	105	e107	e320	e450	e710	2510	713	153	195	57
7	109	80	100	e103	e340	e460	e830	2360	741	174	192	42
8	114	69	88	e99	e360	e460	e960	2100	735	176	185	34
9	109	75	98	e96	e380	e400	e1190	1700	688	157	181	28
10	101	64	100	e93	e400	e350	e1500	1200	589	140	181	24
11	97	60	93	e89	e410	e300	e2100	1040	541	142	177	22
12	93	65	94	e85	e420	e395	e2700	955	518	168	177	19
13	89	66	e110	e83	e430	e590	e4100	898	429	214	172	18
14	84	73	e115	e88	e440	e850	e3800	893	397	218	167	18
15	84	72	e118	e102	e450	e1100	e3100	859	425	214	171	18
16	81	70	e121	e120	e460	e1250	e3200	826	378	205	173	19
17	79	70	e121	e140	e480	e1380	e3400	819	220	198	172	18
18	77	70	e121	e180	e500	e1500	e3550	944	215	198	148	18
19	79	70	e120	e190	e490	e1600	e3750	1120	194	175	119	21
20	80	72	e120	e200	e480	e1470	e3900	1060	226	140	108	25
21	90	66	e120	e200	e470	e1100	4110	1070	186	131	104	31
22	94	67	e119	e200	e460	e840	4250	1040	113	194	103	34
23	91	60	e118	e200	e460	e710	4440	928	156	290	100	36
24	87	67	e116	e210	e470	e780	4690	826	175	294	100	38
25	87	73	e115	e210	e480	e900	4980	726	178	362	95	35
26	87	74	e114	e210	e490	e820	5050	678	179	415	78	37
27	86	68	e112	e210	e480	e730	4840	612	173	419	62	39
28	87	59	e112	e220	e470	e560	4340	578	175	432	56	48
29	87	60	e111	e220	e460	e490	3870	563	162	440	53	53
30	85	59	e112	e230	---	e430	3680	555	152	429	51	55
31	86	---	e115	e240	---	e460	---	555	---	423	47	---
TOTAL	2878	2119	3375	4695	11970	22605	85450	44605	11814	7220	4860	1013
MEAN	92.8	70.6	109	151	413	729	2848	1439	394	233	157	33.8
MAX	124	94	121	240	500	1600	5050	3600	741	440	421	73
MIN	77	59	67	83	250	300	400	555	113	131	47	18
AC-FT	5710	4200	6690	9310	23740	44840	169500	88470	23430	14320	9640	2010

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 1996, BY WATER YEAR (WY)

	MEAN	76.1	70.7	65.8	83.6	336	711	306	167	165	109	68.2
MAX	716	454	290	204	413	1525	2848	1989	555	1424	1945	561
(WY)	1995	1995	1995	1995	1996	1995	1996	1979	1974	1993	1993	1994
MIN	7.66	12.2	8.69	8.15	10.7	19.8	20.3	17.5	14.8	6.07	6.54	5.25
(WY)	1957	1991	1991	1991	1991	1964	1991	1959	1961	1973	1961	1959

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR	FOR 1996 WATER YEAR	WATER YEARS 1957 - 1996
ANNUAL TOTAL	203956	202604	
ANNUAL MEAN	559	554	185
HIGHEST ANNUAL MEAN			659
LOWEST ANNUAL MEAN			25.9
HIGHEST DAILY MEAN	4080	5050	5210
LOWEST DAILY MEAN	59	18	.00
ANNUAL SEVEN-DAY MINIMUM	66	18	.87
INSTANTANEOUS PEAK FLOW		5060	5270
INSTANTANEOUS PEAK STAGE		a 19.20	a 19.20
ANNUAL RUNOFF (AC-FT)	404500	401900	134300
10 PERCENT EXCEEDS	1440	1190	410
50 PERCENT EXCEEDS	205	178	55
90 PERCENT EXCEEDS	86	60	15

a Backwater from ice.  
e Estimated.

RED RIVER OF THE NORTH BASIN  
05058700 SHEYENNE RIVER AT LISBON, ND--Continued  
(National water-quality assessment program)

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WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	ALKA- LITY LAB (MG/L AS CACO3) (90410)
NOV 08...	1035	64	1200	--	--	-4.0	1.0	--	--	--	--
JAN 03...	1045	114	1090	--	--	--	0.5	--	--	--	--
APR 09...	1415	1190	673	--	--	14.0	0.0	--	--	--	--
13...	1515	4070	622	--	--	10.0	1.0	--	--	--	--
18...	1420	3500	405	--	--	16.0	5.0	--	--	--	--
21...	1510	4130	405	--	--	5.0	3.5	--	--	--	--
24...	1115	4650	412	7.6	--	12.5	5.5	--	--	--	--
26...	1330	5060	404	--	--	9.0	3.0	--	--	--	--
MAY 09...	1040	1790	544	7.9	--	3.5	8.5	--	210	--	162
JUN 04...	1455	631	837	--	--	24.0	18.0	--	--	--	--
JUL 10...	1125	138	1000	--	--	24.0	22.0	--	--	--	--
AUG 15...	1200	170	1010	8.1	--	24.5	25.5	--	370	--	293
SEP 04...	1105	46	1090	7.5	740	26.0	225.0	8.0	370	268	287

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)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	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)	
MAY 09...	47	22	43	30	1	9.0	--	--	130	12	0.20
AUG 15...	76	43	86	33	2	12	--	--	250	23	0.20
SEP 04...	73	45	94	35	2	14	327	0	270	27	0.20

DATE	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG C DIS- SOLVED (MG/L) (70300)	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, NO2+NO3 TOTAL (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) (00608)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)
MAY 09...	--	361	347	0.47	1680	--	--	--	--	--
AUG 15...	--	666	687	0.93	315	--	--	--	--	--
SEP 04...	15	700	723	0.98	90.6	<0.010	0.050	0.050	<0.015	1.0

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN,AM- MONIA DIS- SOLVED (MG/L AS N) (00623)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C) (00689)
MAY 09...	--	--	--	--	--	--	100	50	--	--
AUG 15...	--	--	--	--	--	--	20	60	--	--
SEP 04...	1.0	0.70	1.0	0.100	0.040	0.040	<3	430	9.1	0.90

RED RIVER OF THE NORTH BASIN  
05059000 SHEYENNE RIVER NEAR KINDRED, ND  
(National stream-quality accounting network station)

LOCATION.--Lat 46°37'54", long 97°00'01", in SE<sup>1</sup>/<sub>4</sub> SE<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> sec.33, T.137 N., R.50 W., Cass County, Hydrologic Unit 09020204, on left bank 100 ft downstream from North Dakota State Highway 46 bridge crossing, 1.5 mi southeast of Kindred, and at mile 67.9.

DRAINAGE AREA.--8,800 mi<sup>2</sup>, approximately, of which about 5,780 mi<sup>2</sup> is probably noncontributing, including 3,800 mi<sup>2</sup> in closed basins.

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 925.55 ft above sea level. From Oct. 1, 1962, to Sept. 30, 1989, gage was located at site 1,500 ft upstream. July 1949 to Sept. 30, 1962, nonrecording gage at same site and datum.

REMARKS.--Records good except for periods of estimated discharges, which are fair. Flow regulated to a large degree by Lake Ashtabula (station 05057500), 202 mi upstream, and several small reservoirs.

EXTREMES OUTSIDE PERIOD OF RECORD.--Spring flood in 1947 or 1948 reached a stage of 22.1 ft from floodmarks, discharge about 3,600 ft<sup>3</sup>/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	202	159	141	e124	e143	e610	e800	4950	941	281	542	107
2	198	161	133	e122	e147	e590	e710	4590	926	270	536	121
3	189	158	131	e121	e152	e550	e720	4150	913	259	529	111
4	193	117	129	e119	e158	e535	e760	3840	932	248	526	105
5	203	116	e127	e116	e163	e520	e800	3660	966	240	525	99
6	234	170	e123	e112	e168	e495	e850	3560	945	241	459	92
7	239	175	e117	e109	e175	e480	e1000	3490	921	249	388	86
8	239	163	e112	e105	e185	e465	e1350	e3260	950	247	317	100
9	223	156	e106	e101	e194	e450	e1700	e2900	996	248	284	112
10	214	150	e100	e98	e205	e430	e1900	e2500	1000	255	267	101
11	211	123	e98	e96	e220	e420	e2100	2200	976	254	257	90
12	205	126	e97	e93	e235	e410	e2350	1860	922	242	250	83
13	190	141	e103	e91	e245	e450	e2600	1590	864	235	243	80
14	180	164	e110	e89	e260	e580	e2900	1480	813	231	236	77
15	171	158	e115	e92	e280	e740	e3360	1450	785	252	229	77
16	167	152	e119	e97	e295	e990	e4100	1420	751	287	225	75
17	164	150	e125	e110	e310	e1200	e3800	1400	749	293	218	74
18	158	150	e128	e130	e330	e1340	e3600	1670	753	293	219	71
19	157	153	e126	e175	e350	e1450	3460	1710	589	283	220	71
20	157	154	e125	e200	e370	e1580	3390	1610	463	274	219	73
21	155	137	e123	e190	e395	e1700	3430	1620	409	270	203	77
22	153	117	e121	e180	e420	e1850	3570	1580	378	253	180	78
23	155	109	e121	e165	e450	e1930	3750	1510	392	226	167	79
24	159	112	e120	e150	e480	e1870	3900	1430	350	211	160	79
25	163	146	e119	e140	e510	e1550	4080	1350	295	260	154	80
26	162	150	e120	e130	e550	e1200	4190	1270	317	340	143	85
27	160	137	e119	e125	e580	e1100	4390	1180	324	374	143	92
28	160	133	e118	e128	e600	e1180	4600	1100	319	465	141	104
29	158	135	e120	e133	e620	e1230	4790	1040	306	529	130	104
30	155	144	e121	e136	---	e1100	5010	978	288	536	117	100
31	155	---	e122	e140	---	e920	---	946	---	543	107	---
TOTAL	5629	4316	3689	3917	9190	29915	83960	67294	20533	9189	8334	2683
MEAN	182	144	119	126	317	965	2799	2171	684	296	269	89.4
MAX	239	175	141	200	620	1930	5010	4950	1000	543	542	121
MIN	153	109	97	89	143	410	710	946	288	211	107	71
AC-FT	11170	8560	7320	7770	18230	59340	166500	133500	40730	18230	16530	5320

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1949 - 1996, BY WATER YEAR (WY)

	MEAN	86.8	94.3	81.8	73.4	85.5	311	767	465	269	233	140	86.8
MAX	693	589	339	205	317	1256	2964	3053	1938	1466	2231	483	
(WY)	1995	1995	1995	1995	1996	1987	1995	1950	1950	1975	1993	1993	
MIN	24.6	22.7	17.6	17.5	21.7	35.1	71.7	53.6	48.4	26.7	17.5	25.1	
(WY)	1957	1956	1956	1991	1956	1956	1991	1990	1961	1988	1988	1959	

SUMMARY STATISTICS

FOR 1995 CALENDAR YEAR

FOR 1996 WATER YEAR

WATER YEARS 1949 - 1996

ANNUAL TOTAL	235242	248649	
ANNUAL MEAN	644	679	225
HIGHEST ANNUAL MEAN			743
LOWEST ANNUAL MEAN			48.0
HIGHEST DAILY MEAN	3960	5010	5010
LOWEST DAILY MEAN	97	71	9.2
ANNUAL SEVEN-DAY MINIMUM	104	74	11
INSTANTANEOUS PEAK FLOW		5100	5100
INSTANTANEOUS PEAK STAGE		a 21.53	21.66
ANNUAL RUNOFF (AC-FT)	466600	493200	162900
10 PERCENT EXCEEDS	1780	1750	478
50 PERCENT EXCEEDS	256	235	82
90 PERCENT EXCEEDS	125	104	33

a Backwater from ice.  
e Estimated.



RED RIVER OF THE NORTH BASIN  
05059000 SHEYENNE RIVER NEAR KINDRED, ND--Continued  
(National water-quality assessment program)

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WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996												
DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	ALKA- LITY LAB (MG/L AS CACO3) (90410)
OCT 04...	1030	193	1040	--	--	11.0	11.0	--	--	--	--	--
JAN 03...	1630	121	678	--	--	-7.5	0.5	--	--	--	--	--
FEB 07...	1715	175	1300	--	--	0.5	0.5	--	--	--	--	--
APR 21...	1015	3430	--	--	--	9.0	5.0	--	--	--	--	--
29...	1610	4810	448	--	--	15.0	8.5	--	--	--	--	--
MAY 01...	1500	4960	444	--	--	15.0	8.0	--	--	--	--	--
08...	1430	3260	472	7.9	--	14.5	10.0	--	--	190	--	154
JUL 22...	1515	245	991	--	--	26.0	24.5	--	--	--	--	--
AUG 27...	1425	140	981	8.1	--	22.5	22.0	--	--	380	--	314
SEP 05...	0815	97.4	983	7.9	741	27.0	21.5	7.0	82	380	282	280
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)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	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)
MAY 08...	44	19	36	28	1	8.6	--	--	110	9.4	0.20	--
AUG 27...	86	41	74	29	2	10	--	--	220	25	0.20	--
SEP 05...	87	39	68	28	2	9.5	344	0	200	22	0.20	20
DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	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, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00605)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00625)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00623)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00600)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)
MAY 08...	320	331	0.45	2910	--	--	--	--	--	--	--	--
AUG 27...	645	662	0.90	250	--	--	--	--	--	--	--	--
SEP 05...	615	632	0.86	--	<0.010	<0.050	<0.015	0.70	0.70	0.40	0.70	0.100
DATE	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHOPHOSPHATE, DIS- SOLVED (MG/L AS P) (00671)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C) (00689)	ACETO- CHLOR, WATER, FLTRD REC (UG/L) (49260)	ACIFL- UORFEN WATER, FLTRD, GF 0.7U REC (UG/L) (49315)	ALA- CHLOR, WATER, FLTRD, DISS, REC (UG/L) (46342)	ALDI- CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (49312)	ALDI- CARB SULFONE WAT,FLT REC (UG/L) (49313)	ALDICA- RB SUL- FOXIDE, WAT,FLT REC (UG/L) (49314)
MAY 08...	--	--	100	50	--	--	--	--	--	--	--	--
AUG 27...	--	--	10	100	--	--	--	--	--	--	--	--
SEP 05...	0.040	0.040	4	82	6.2	1.6	<0.002	<0.035	<0.002	<0.016	<0.016	<0.021

RED RIVER OF THE NORTH BASIN  
05059000 SHEYENNE RIVER NEAR KINDRED, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	CHLOR- AMBEN, WATER, FLTRD, GF 0.7U REC (UG/L) (49307)	ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)	ALPHA BHC DIS- SOLVED (UG/L) (34253)	BEN- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82673)	BRO- MACIL, WATER, DISS, REC (UG/L) (04029)	BRO- MOXYNIL WATER, FLTRD, GF 0.7U REC (UG/L) (49311)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)	CAR- BARYL WATER, FLTRD, 0.7 U GF, REC (UG/L) (82680)	CAR- BARYL, WATER, FLTRD, 0.7U REC (UG/L) (49310)	CARBO- FURAN WATER, FLTRD, 0.7 U GF, REC (UG/L) (82674)	CARBO- FURAN, WATER, FLTRD, 0.7U GF, REC (UG/L) (49309)	CHLOR- PYRIFOS DIS- SOLVED (UG/L) (38933)
SEP 05...	<0.011	0.007	<0.002	<0.002	<0.035	<0.035	<0.002	<0.003	<0.008	<0.003	<0.028	<0.004
DATE	CLOPYR- ALID, WATER, FLTRD, GF 0.7U REC (UG/L) (49305)	CHLORO- THALO- NIL, WAT,FLT GF 0.7U REC (UG/L) (49306)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	P,P' DDE DISSOLV (UG/L) (34653)	DACTHAL MONO- ACID, WAT,FLT GF 0.7U REC (UG/L) (49304)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	DICAMBA WATER, FLTRD, GF 0.7U REC (UG/L) (38442)	DICHLOR- BENIL, WATER, FLTRD, GF 0.7U REC (UG/L) (49303)	DICHLOR PROP, WATER, FLTRD, GF 0.7U REC (UG/L) (49302)	DI- ELDRIN DIS- SOLVED (UG/L) (39381)
SEP 05...	<0.050	<0.035	<0.004	<0.002	<0.006	<0.017	e0.002	<0.002	<0.035	<0.020	<0.032	<0.001
DATE	2,6-DI- ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	DINOSEB WATER, FLTRD, GF 0.7U REC (UG/L) (49301)	DISUL- FOTON WATER, FLTRD 0.7 U GF, REC (UG/L) (82677)	DIURON, WATER, FLTRD 0.7 U GF, REC (UG/L) (49300)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	ESFEN- VAL- ERATE, WAT,FLT GF 0.7U REC (UG/L) (49298)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	FEN- URON, WATER, FLTRD, GF 0.7U REC (UG/L) (49297)	FLUO- METURON WATER, FLTRD, GF 0.7U REC (UG/L) (38811)	FONOFOS WATER DISS REC (UG/L) (04095)	LINDANE DIS- SOLVED (UG/L) (39341)
SEP 05...	<0.003	<0.035	<0.017	<0.020	<0.002	<0.019	<0.004	<0.003	<0.013	<0.035	<0.003	<0.004
DATE	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	LINURON WATER, FLTRD, GF 0.7U REC (UG/L) (38478)	MCPA, WATER, FLTRD, GF 0.7U REC (UG/L) (38482)	MCPB, WATER, FLTRD, GF 0.7U REC (UG/L) (38487)	MALA- THION, DIS- SOLVED (UG/L) (39532)	METHIO- CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (38501)	METH- OMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49296)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	METHYL PARA- THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	METRI- BUZIN WATER DISSOLV (UG/L) (82630)	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)
SEP 05...	<0.002	<0.018	<0.050	<0.035	e0.004	<0.026	<0.017	<0.001	<0.006	e0.001	<0.004	<0.004
DATE	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	NEB- URON, WATER, FLTRD, GF 0.7U REC (UG/L) (49294)	NORFLUR AZON, WATER, FLTRD, GF 0.7U REC (UG/L) (49293)	DNOC WAT,FLT GF 0.7U REC (UG/L) (49299)	ORY- ZALIN, WATER, FLTRD, GF 0.7U REC (UG/L) (49292)	OXAMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (38866)	PARA- THION, DIS- SOLVED (UG/L) (39542)	PEB- ULATE WATER FLTRD 0.7 U GF, REC (UG/L) (82669)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	
SEP 05...	<0.003	<0.015	<0.024	<0.035	<0.019	<0.018	<0.004	<0.004	<0.004	<0.005	<0.002	
DATE	PIC- LORAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49291)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	PROP- CHLOR, WATER, DISS, REC (UG/L) (04024)	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	PRO- PHAM, WATER, FLTRD, GF 0.7U GF, REC (UG/L) (49236)	PRO- POXUR, WATER, FLTRD, GF 0.7U REC (UG/L) (38538)	SILVEX, DIS- SOLVED (UG/L) (39762)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	
SEP 05...	<0.050	<0.018	<0.003	<0.007	<0.004	<0.013	<0.035	<0.035	<0.021	<0.005	<0.010	
DATE	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRI- CLOPYR, WATER, FLTRD, GF 0.7U REC (UG/L) (49235)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	1-NAPH THOL, WATER, FLTRD, GF 0.7U REC (UG/L) (49295)	2,4-DB WATER, FLTRD, 2,4-D, DIS- SOLVED (UG/L) (39732)	2,4,5-T WAT,FLT DIS- SOLVED (UG/L) (39742)	3HYDRXY CARBO- FURAN WAT,FLT GF 0.7U REC (UG/L) (49308)		
SEP 05...	<0.007	<0.013	<0.002	<0.001	<0.050	<0.002	<0.007	<0.035	<0.035	<0.035	<0.014	

e Estimated.

## RED RIVER OF THE NORTH BASIN

91

05059300 SHEYENNE RIVER ABOVE SHEYENNE RIVER DIVERSION NEAR HORACE, ND

LOCATION.--Lat 46°45'01", long 96°55'35", in NE<sup>1</sup>/<sub>4</sub> SE<sup>1</sup>/<sub>4</sub> SE<sup>1</sup>/<sub>4</sub> sec.24, T.138 N., R.50 W., Cass County, Hydrologic Unit 09020204, on right bank 300 ft upstream from diversion structure 1 mi southwest of Horace.

DRAINAGE AREA.--8,840 mi<sup>2</sup>, approximately, of which about 7,580 mi<sup>2</sup> is probably noncontributing, including 3,800 mi<sup>2</sup> in closed basins.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1992 to current year.

GAGE.--Water-stage recorder. Datum of gage is 890 ft above sea level.

REMARKS.--Records fair except for periods of estimated discharges, which are poor. Flow regulated to a large degree by Lake Ashtabula (station 05057500) 230 mi upstream. These records represent the total Sheyenne River flow immediately upstream from the Horace flood diversion.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	278	177	e148	e130	e133	e610	e1200	4350	837	289	589	e112
2	269	182	e147	e131	e139	e620	e1020	4410	828	e280	586	e118
3	259	187	e142	e129	e142	e610	e810	4360	819	e274	604	e128
4	244	161	e137	e125	e148	e590	e730	4230	816	e265	622	e123
5	258	164	e135	e122	e153	e570	e750	4090	848	e258	620	e106
6	296	150	e131	e120	e159	e550	e780	3890	865	e251	608	e100
7	323	200	e128	e115	e165	e520	e860	3710	835	e252	537	e95
8	328	229	e123	e112	e170	e500	e960	3550	821	e256	451	e92
9	320	210	e118	e109	e179	e480	e1180	e3140	843	e258	375	e100
10	295	200	e114	e107	e188	e470	e1450	e2700	872	e261	339	e120
11	277	190	e111	e103	e195	e450	e1620	e2500	868	e263	318	e102
12	253	157	e108	e100	e205	e435	e1800	e2250	835	e269	307	e93
13	222	145	e106	e98	e218	e425	e1900	e1980	789	e258	300	e87
14	209	160	e113	e96	e230	e430	e2050	e1550	734	e249	288	e84
15	198	178	e121	e97	e250	e520	e2200	1330	705	e242	280	e82
16	187	161	e127	e105	e265	e710	e2450	1300	669	e270	270	e79
17	179	152	e131	e118	e285	e880	e2720	1290	648	e290	261	e78
18	178	151	e136	e133	e300	e1000	e3050	1360	652	e315	255	e77
19	182	151	e139	e150	e320	e1200	e3400	1510	618	307	259	e76
20	181	152	e135	e178	e340	e1380	e3700	1450	498	301	261	e77
21	181	159	e132	e212	e365	e1520	e4000	1410	430	295	253	e79
22	176	137	e129	e204	e380	e1650	e4300	1410	394	289	224	e83
23	176	e128	e128	e190	e410	e1800	e4200	1360	375	266	196	e84
24	179	115	e127	e170	e430	e1900	e4000	1290	382	234	176	e85
25	185	127	e126	e158	e465	e2000	e3900	1230	337	227	165	e85
26	189	e148	e128	e145	e490	e1900	3870	1180	302	310	159	e86
27	188	e156	e129	e138	e530	e1550	4010	1110	316	382	155	e92
28	184	e154	e128	e129	e550	e1200	4110	1020	317	435	155	e100
29	181	e152	e126	e123	e580	e1100	4190	976	312	538	e150	e114
30	179	e150	e127	e125	---	e1150	4270	e910	300	578	e135	e120
31	177	---	e129	e130	---	e1280	---	910	---	582	e120	---
TOTAL	6931	4883	3959	4102	8384	30000	75480	67756	18865	9544	10018	2857
MEAN	224	163	128	132	289	968	2516	2186	629	308	323	95.2
MAX	328	229	148	212	580	2000	4300	4410	872	582	622	128
MIN	176	115	106	96	133	425	730	910	300	227	120	76
AC-FT	13750	9690	7850	8140	16630	59500	149700	134400	37420	18930	19870	5670

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 1996, BY WATER YEAR (WY)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
MEAN	294	252	187	149	201	732	1825	1008	462	677	797	344
MAX	673	617	344	233	289	1214	2908	2186	629	1157	2221	494
(WY)	1995	1995	1995	1995	1996	1995	1995	1996	1996	1993	1993	1993
MIN	52.9	54.8	31.7	73.0	98.6	230	695	232	309	308	291	95.2
(WY)	1993	1993	1993	1993	1993	1993	1993	1993	1993	1996	1994	1996

## SUMMARY STATISTICS

## FOR 1995 CALENDAR YEAR

## FOR 1996 WATER YEAR

## WATER YEARS 1993 - 1996

ANNUAL TOTAL	238806	242779	579
ANNUAL MEAN	654	663	748
HIGHEST ANNUAL MEAN			428
LOWEST ANNUAL MEAN			1995
HIGHEST DAILY MEAN	4020	4410	May 2 1996
LOWEST DAILY MEAN	106	76	Sep 19 1992
ANNUAL SEVEN-DAY MINIMUM	113	78	Sep 15 1992
INSTANTANEOUS PEAK FLOW		4430	May 2 1996
INSTANTANEOUS PEAK STAGE		24.67	May 2 1996
ANNUAL RUNOFF (AC-FT)	473700	481600	419200
10 PERCENT EXCEEDS	1590	1690	1340
50 PERCENT EXCEEDS	300	260	290
90 PERCENT EXCEEDS	136	113	90

e Estimated.

RED RIVER OF THE NORTH BASIN  
05059300 SHEYENNE RIVER ABOVE SHEYENNE RIVER DIVERSION NEAR HORACE, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1993 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CAC03) (00900)	ALKA- LITY LAB (MG/L AS CAC03) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
NOV 08...	1545	218	1120	--	0.0	0.5	--	--	--	--
JAN 02...	1530	131	--	--	-7.0	0.5	--	--	--	--
FEB 12...	1420	151	418	--	0.0	0.5	--	--	--	--
APR 17...	0930	2720	582	--	9.5	2.0	--	--	--	--
20...	1310	3700	497	--	4.0	5.0	--	--	--	--
25...	1200	3750	434	--	7.0	6.0	--	--	--	--
MAY 07...	1435	3810	449	7.8	13.0	10.0	170	140	40	18
15...	1415	1330	673	--	28.0	11.5	--	--	--	--
22...	1000	1420	751	--	14.0	16.0	--	--	--	--
30...	1420	903	850	--	23.0	17.0	--	--	--	--
JUL 23...	1440	266	1000	--	24.0	23.5	--	--	--	--
AUG 28...	0850	155	1020	8.1	20.0	21.0	390	320	89	41
SEP 30...	1525	120	956	--	17.0	12.5	--	--	--	--

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
MAY 07...	34	29	1	8.6	98	7.9	0.20	291	277	0.38
AUG 28...	76	29	2	10	220	25	0.20	654	679	0.92

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAY 07...	2850	4	100	<1	20	50	0.1	<1	<1	190
AUG 28...	284	5	20	<1	60	50	<0.1	2	<1	470



RED RIVER OF THE NORTH BASIN  
05059310 SHEYENNE RIVER DIVERSION NEAR HORACE, ND

93

LOCATION.--Lat 46°45'06", long 96°55'33", in NE<sup>1</sup>/<sub>4</sub> SE<sup>1</sup>/<sub>4</sub> SE<sup>1</sup>/<sub>4</sub> sec.24, T.138 N., R.50 W., Cass County, Hydrologic Unit 09020204, at diversion structure 1 mi southwest of Horace.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1992 to current year.

GAGE.--Water-stage recorder for Sheyenne River above Sheyenne River Diversion near Horace (station 05059300) is used to obtain stage record for this station. Datum of gage is 890 ft above sea level.

REMARKS.--Records fair except for periods of estimated discharge, which are poor.. The records are for the flow that is diverted from the Sheyenne River at this location. When flows are greater than about 1,000 ft<sup>3</sup>/s, diversions are made in order to control flood discharges downstream. The diverted flow returns to the Sheyenne River main channel at a location about 13 mi downstream, below the city of West Fargo. See station 05059480 (Sheyenne River Diversion at West Fargo) for return flows.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	e60	2160	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	e20	2190	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	e.00	2170	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	e.00	2110	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	e.00	2020	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	e.00	1880	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	e.00	1760	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	e5.0	1650	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	e40	e1420	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	e340	e960	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	506	e540	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	620	e350	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	670	e240	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	859	e150	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	1130	104	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	1340	74	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	e1610	62	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	e15	e1680	122	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	e45	e1770	279	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	e80	e1870	198	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	e420	e2100	149	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	e570	e2300	147	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	e610	e2200	107	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	e640	e2150	68	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	e650	e2080	38	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	e620	2090	18	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	e340	2100	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	e50	2110	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	.00	e25	2120	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	e35	2130	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	e70	---	.00	---	.00	.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	4170.00	33900.00	20966.00	0.00	0.00	0.00	0.00
MEAN	.000	.000	.000	.000	.000	135	1130	676	.000	.000	.000	.000
MAX	.00	.00	.00	.00	.00	650	2300	2190	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	8270	67240	41590	.00	.00	.00	.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 1996, BY WATER YEAR (WY)

	1993	1994	1995	1996
MEAN	.16	1.62	.000	.000
MAX	.65	6.50	.000	.000
(WY)	1993	1995	1993	1993
MIN	.000	.000	.000	.000
(WY)	1993	1993	1993	1993

SUMMARY STATISTICS FOR 1995 CALENDAR YEAR FOR 1996 WATER YEAR WATER YEARS 1993 - 1996

ANNUAL TOTAL	57697.53	59036.00	110
ANNUAL MEAN	158	161	161
HIGHEST ANNUAL MEAN			1996
LOWEST ANNUAL MEAN			18.9
HIGHEST DAILY MEAN	1830	2300	2300
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00	.00
INSTANTANEOUS PEAK FLOW		a 2300	2300
INSTANTANEOUS PEAK STAGE		b 24.67	b 24.67
ANNUAL RUNOFF (AC-FT)	114400	117100	80030
10 PERCENT EXCEEDS	406	446	248
50 PERCENT EXCEEDS	.00	.00	.00
90 PERCENT EXCEEDS	.00	.00	.00

a Maximum daily.  
b Maximum recorded.  
e Estimated.

RED RIVER OF THE NORTH BASIN  
05059480 SHEYENNE RIVER DIVERSION AT WEST FARGO, ND

LOCATION.--Lat 46°53'15", long 96°55'09", in NE<sup>1</sup>/<sub>4</sub> NE<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> sec.6, T.139 N., R.50 W., Cass County, Hydrologic Unit 09020204, on right bank, 50 ft upstream from 12th Ave N bridge in West Fargo, 0.5 mi upstream from confluence with the Sheyenne River.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1992 to current year.

GAGE.--Water-stage recorder. Datum of gage is 870.00 ft above sea level.

REMARKS.--Records fair. These records are for the flood flows that are diverted around West Fargo.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e110	e.00	e.00	e.00	e.00	e550	e1000	4170	403	.00	.00	.00
2	e90	e.00	e.00	e.00	e.00	e540	e900	4240	371	.00	.00	.00
3	e65	e.00	e.00	e.00	e.00	e520	e750	4230	360	.00	.00	.00
4	e50	e.00	e.00	e.00	e.00	e510	e700	4110	375	.00	.39	.00
5	e40	e.00	e.00	e.00	e.00	e500	e700	3920	372	.00	.00	.00
6	e30	e.00	e.00	e.00	e.00	e490	e750	3800	400	.00	.00	.00
7	e20	e.00	e.00	e.00	e.00	e470	e800	3650	390	.00	.00	.00
8	e15	e.00	e.00	e.00	e.00	e450	e850	3530	362	.00	.00	.00
9	e10	e.00	e.00	e.00	e.00	e440	e900	3400	384	.00	.00	.00
10	e8.0	e.00	e.00	e.00	e.00	e430	e1000	3010	425	.00	.00	.00
11	e5.0	e.00	e.00	e.00	e.00	e420	e1300	2580	436	.00	.00	.00
12	e3.2	e.00	e.00	e.00	e.00	e410	e1400	2100	422	.00	.00	.00
13	e2.5	e.00	e.00	e.00	e.00	e400	e1500	1510	385	.00	.00	.00
14	e2.0	e.00	e.00	e.00	e.00	e400	e1600	1170	337	.00	.00	.00
15	e1.0	e.00	e.00	e.00	e.00	e500	e2000	995	304	.00	.00	.00
16	e.50	e.00	e.00	e.00	e.00	e600	e2200	890	282	.00	.00	.00
17	e.30	e.00	e.00	e.00	e.00	e800	e2450	903	261	.00	.00	.00
18	e.20	e.00	e.00	e.00	e.00	e1000	e3000	1230	251	.00	.00	.00
19	e.10	e.00	e.00	e.00	e.00	e1100	e3400	1350	246	.00	.00	.00
20	e.00	e.00	e.00	e.00	e.00	e1200	e3700	1300	145	.00	.00	.00
21	e.00	e.00	e.00	e.00	e5.0	e1400	e4150	1070	21	.00	.00	.00
22	e.00	e.00	e.00	e.00	e10	e1600	e4100	1100	.00	.00	.00	.00
23	e.00	e.00	e.00	e.00	e50	e1700	4080	1150	.00	.00	.00	.00
24	e.00	e.00	e.00	e.00	e150	e1800	3960	1070	.00	.00	.00	.00
25	e.00	e.00	e.00	e.00	e300	e1900	3890	945	.00	.00	.00	.00
26	e.00	e.00	e.00	e.00	e450	e1700	3870	849	.00	.00	.00	.00
27	e.00	e.00	e.00	e.00	e500	e1400	e3950	764	.00	.00	.00	.00
28	e.00	e.00	e.00	e.00	e600	e1100	e4000	683	.00	1.1	.00	.00
29	e.00	e.00	e.00	e.00	e550	e1100	e4100	601	.00	29	.00	.00
30	e.00	e.00	e.00	e.00	---	e1000	4130	560	.00	.00	.00	.00
31	e.00	---	e.00	e.00	---	e1200	---	500	---	.00	.00	---
TOTAL	452.80	0.00	0.00	0.00	2615.00	27630	71130	61380	6932.00	30.10	0.39	0.00
MEAN	14.6	.000	.000	.000	90.2	891	2371	1980	231	.97	.013	.000
MAX	110	.00	.00	.00	600	1900	4150	4240	436	29	.39	.00
MIN	.00	.00	.00	.00	.00	400	700	500	.00	.00	.00	.00
AC-FT	898	.00	.00	.00	5190	54800	141100	121700	13750	60	.8	.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 1996, BY WATER YEAR (WY)

MEAN	35.5	31.2	.000	.000	23.8	586	1564	682	177	451	623	84.5
MAX	127	125	.000	.000	90.2	1111	2922	1980	477	1000	2144	292
(WY)	1995	1995	1993	1993	1996	1995	1995	1996	1995	1993	1993	1995
MIN	.000	.000	.000	.000	.000	130	467	.000	.000	.97	.000	.000
(WY)	1993	1993	1993	1993	1993	1993	1993	1993	1993	1996	1994	1996

SUMMARY STATISTICS

FOR 1995 CALENDAR YEAR

FOR 1996 WATER YEAR

WATER YEARS 1993 - 1996

ANNUAL TOTAL	193196.64	170170.29	
ANNUAL MEAN	529	465	356
HIGHEST ANNUAL MEAN			549
LOWEST ANNUAL MEAN			93.5
HIGHEST DAILY MEAN	3800	Apr 11	4240
LOWEST DAILY MEAN	.00	Jan 1	.00
ANNUAL SEVEN-DAY MINIMUM	.00	Jan 1	.00
INSTANTANEOUS PEAK FLOW			4280
INSTANTANEOUS PEAK STAGE			a 28.77
ANNUAL RUNOFF (AC-FT)	383200	337500	258000
10 PERCENT EXCEEDS	1640	1430	1140
50 PERCENT EXCEEDS	300	.00	.00
90 PERCENT EXCEEDS	.00	.00	.00

a Backwater from ice.  
e Estimated.

RED RIVER OF THE NORTH BASIN  
05059480 SHEYENNE RIVER DIVERSION AT WEST FARGO, ND--Continued

95

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1993 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT 12...	0755	3.2	830	--	13.5	12.5	--	--	--	--
APR 17...	1530	2440	528	--	18.0	6.0	--	--	--	--
20...	1745	3710	539	--	5.0	6.0	--	--	--	--
26...	0950	3870	441	--	3.0	5.0	--	--	--	--
MAY 06...	1340	3820	447	7.8	13.5	10.5	170	140	39	17
16...	0915	899	705	--	19.5	12.5	--	--	--	--
21...	1545	1030	705	--	23.5	18.0	--	--	--	--
31...	0955	507	851	--	18.5	15.5	--	--	--	--
JUN 06...	1515	392	921	--	26.0	20.0	--	--	--	--
17...	1520	259	839	--	28.5	26.0	--	--	--	--
DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
MAY 06...	33	29	1	8.0	100	8.1	0.20	290	273	0.37
DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAY 06...	2820	5	100	<1	20	50	0.1	<1	<1	180

RED RIVER OF THE NORTH BASIN  
05059500 SHEYENNE RIVER AT WEST FARGO, ND

LOCATION.--Lat 46°53'28", long 96°54'24", in SE<sup>1</sup>/<sub>4</sub> SE<sup>1</sup>/<sub>4</sub> sec.31, T.140 N., R.49 W., Cass County, Hydrologic Unit 09020204, on right bank at downstream side of county highway bridge, 1 mi north of West Fargo, 3 mi upstream from Maple River, and at mile 24.5.

DRAINAGE AREA.--8,870 mi<sup>2</sup>, approximately, of which about 5,780 mi<sup>2</sup> is probably noncontributing, including 3,800 mi<sup>2</sup> in closed basins.

WATER-DISCHARGE RECORDS

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

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

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

REMARKS.--Records fair except for periods of estimated daily discharges, which are poor. Flow regulated to a large degree by Lake Ashtabula (station 05057500) 246 mi upstream. Since March 1993 flood flows that are diverted from the Sheyenne River just downstream from gaging station Sheyenne River above Sheyenne River Diversion near Horace (station 05059300) bypass this station. These flows are measured at streamflow station Sheyenne River Diversion at West Fargo (station 05059480). Figures of discharge given here include flow of the bypass. During some years, flow is diverted from just above the station into the Red River of the North in order to maintain adequate supply for municipal uses. Figures of daily discharge do not include this diversion.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e270	e190	e150	e125	e130	e550	e1000	e4170	e900	309	e620	141
2	e260	e190	e150	e125	e135	e540	e900	e4240	e850	299	e630	e150
3	e250	e190	e145	e120	e140	e520	e750	e4230	e850	294	e630	e170
4	e245	e180	e140	e120	e150	e510	e700	e4110	e850	283	e640	e150
5	e240	e170	e140	e115	e155	e500	e700	e3920	e820	275	e640	e140
6	e270	e200	e135	e110	e160	e490	e750	e3800	e800	269	e620	e130
7	e300	e220	e130	e110	e165	e470	e800	e3650	e820	264	e560	e127
8	e310	e230	e125	e105	e170	e450	e850	e3530	e840	264	e520	e124
9	e320	e220	e120	e105	e180	e440	e900	e3400	e860	268	e460	120
10	e300	e210	e115	e100	e190	e430	e1000	e3000	e880	266	e380	132
11	e270	e190	e110	e100	e190	e420	e1300	e2580	e880	267	e350	136
12	e250	e170	e110	e100	e200	e410	e1400	e2200	e840	267	e330	126
13	e230	e150	e115	e100	e220	e400	e1500	e2000	e800	267	e300	117
14	e220	e170	e120	e100	e240	e400	e1600	e1700	e760	267	277	110
15	e210	e180	e125	e100	e250	e500	e2000	e1500	e720	267	267	107
16	e200	e170	e130	e100	e260	e600	e2200	e1400	e690	e290	261	105
17	e190	e160	e135	e110	e270	e800	e2450	e1400	e680	e310	252	103
18	e190	e155	e140	e125	e280	e1000	e3000	e1500	e660	e330	244	102
19	e190	e160	e145	e140	e300	e1100	e3400	e1500	e600	e320	243	100
20	e185	e160	e140	e160	e320	e1200	e3700	e1450	e550	e310	248	100
21	e180	e160	e140	e200	e350	e1400	e4150	e1400	e480	e300	247	103
22	e180	e150	e135	e210	e380	e1600	e4100	e1400	e430	e290	238	105
23	e180	e140	e130	e200	e400	e1700	e4080	e1380	e420	280	214	105
24	e185	e130	e130	e180	e430	e1800	e3960	e1340	e400	263	195	106
25	e190	e140	e130	e170	e460	e1900	e3890	e1300	e380	242	185	108
26	e190	e150	e130	e160	e500	e1700	e3870	e1250	334	241	180	128
27	e190	e160	e130	e150	e550	e1400	e3950	e1200	323	286	173	140
28	e190	e160	e130	e140	e600	e1100	e4000	e1150	331	320	166	137
29	e190	e160	e130	e130	e550	e1100	e4100	e1100	327	426	165	132
30	e190	e150	e130	e125	---	e1000	e4130	e1060	322	e500	160	139
31	e185	---	e130	e130	---	e1200	---	e1020	---	e600	149	---
TOTAL	6950	5165	4065	4065	8325	27630	71130	68880	19397	9434	10544	3693
MEAN	224	172	131	131	287	891	2371	2222	647	304	340	123
MAX	320	230	150	210	600	1900	4150	4240	900	600	640	170
MIN	180	130	110	100	130	400	700	1020	322	241	149	100
AC-FT	13790	10240	8060	8060	16510	54800	141100	136600	38470	18710	20910	7330

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1903 - 1996, BY WATER YEAR (WY)

	MEAN	73.5	80.7	66.6	58.0	66.2	249	736	428	251	199	122	76.1
MAX	713	674	359	238	287	1184	2922	2654	1785	1358	2218	532	
(WY)	1995	1995	1995	1995	1996	1995	1995	1950	1950	1975	1993	1993	
MIN	9.88	12.4	7.48	6.37	5.47	6.76	65.2	54.0	25.2	14.7	7.46	7.43	
(WY)	1937	1937	1937	1940	1937	1940	1991	1959	1934	1934	1936	1976	

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR	FOR 1996 WATER YEAR	WATER YEARS 1903 - 1996
ANNUAL TOTAL	241157	239278	
ANNUAL MEAN	661	654	200
HIGHEST ANNUAL MEAN			763
LOWEST ANNUAL MEAN			37.1
HIGHEST DAILY MEAN	3800	4240	4240
LOWEST DAILY MEAN	110	100	1.0
ANNUAL SEVEN-DAY MINIMUM	116	100	2.0
INSTANTANEOUS PEAK FLOW		a 4240	a 4240
INSTANTANEOUS PEAK STAGE		Unknown	22.25
ANNUAL RUNOFF (AC-FT)	478300	474600	144600
10 PERCENT EXCEEDS	1640	1530	437
50 PERCENT EXCEEDS	310	265	74
90 PERCENT EXCEEDS	145	125	20

a Maximum daily.  
e Estimated.



RED RIVER OF THE NORTH BASIN  
05059500 SHEYENNE RIVER AT WEST FARGO, ND--Continued

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WATER-QUALITY RECORDS

PERIOD OF RECORD --Water years 1969-94, October 1995 to August 1996.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	
OCT 12...	1400	250	1030	--	23.0	15.0	--	--	--	--	
JAN 02...	1130	124	485	--	--	--	--	--	--	--	
MAY 31...	1325	553	854	--	16.5	16.5	--	--	--	--	
JUN 06...	0930	400	856	--	16.0	17.0	--	--	--	--	
JUN 17...	1340	400	831	--	29.0	23.0	--	--	--	--	
JUL 09...	1040	269	1030	--	18.0	20.5	--	--	--	--	
AUG 27...	0930	174	995	8.1	19.5	21.0	390	319	88	42	
DATE		SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	
AUG 27...	76	29	2	10	220	26	0.20	654	674	0.92	
DATE		SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
AUG 27...	317	5	10	<1	60	10	<0.1	1	<1	460	

RED RIVER OF THE NORTH BASIN  
05059600 MAPLE RIVER NEAR HOPE, ND

LOCATION.--Lat 47°19'30", long 97°47'25", in NW<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> sec.4, T.144 N., R.56 W., Steele County, Hydrologic Unit 09020205, 100 ft downstream from box culvert on State Highway 38, 500 ft east of the intersection of State Highway 32 and 38, and 3 mi west of Hope.

DRAINAGE AREA.--20.2 mi<sup>2</sup>, of which about 2.8 mi<sup>2</sup> is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1964 to current year (seasonal records only since 1983).

GAGE.--Water-stage recorder. Datum of gage is 1,296.62 ft above sea level.

REMARKS.--Records fair, except for periods of estimated discharges, which are poor.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, about 300 ft<sup>3</sup>/s, Apr. 9, gage height, 6.37 ft; no flow many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	e.00	e.00	e3.5	2.9	.01	.00	.00
2	---	---	---	---	---	e.00	e.00	2.8	2.2	.01	.00	.00
3	---	---	---	---	---	e.00	e.00	2.1	3.0	.01	.00	.00
4	---	---	---	---	---	e.00	e.00	1.6	3.6	.01	.00	.00
5	---	---	---	---	---	e.00	e.00	1.6	2.9	.01	.00	.00
6	---	---	---	---	---	e.00	e.00	1.8	2.2	e.00	.00	.00
7	---	---	---	---	---	e.00	e5.0	2.0	2.1	e.00	.00	.00
8	---	---	---	---	---	e.00	e50	1.8	2.1	e.00	.00	.00
9	---	---	---	---	---	e.00	e100	1.5	1.7	e.00	.00	.00
10	---	---	---	---	---	e.00	e200	1.3	1.3	e.00	.00	.00
11	---	---	---	---	---	e.00	e100	1.3	.93	e.00	.00	.00
12	---	---	---	---	---	e.50	e50	1.3	.35	e.00	.00	.00
13	---	---	---	---	---	e2.0	e40	1.1	.13	e.00	.00	.00
14	---	---	---	---	---	e5.0	e40	.73	.07	e.00	.00	.00
15	---	---	---	---	---	e4.0	e42	.73	.06	e.00	.00	.00
16	---	---	---	---	---	e6.0	e45	1.0	.04	e.00	.00	.00
17	---	---	---	---	---	e10	53	49	.03	e.01	.00	.00
18	---	---	---	---	---	e7.5	61	133	.02	e.02	.00	.00
19	---	---	---	---	---	e5.0	64	44	.02	.00	.00	.00
20	---	---	---	---	---	e2.5	51	21	.02	.00	.00	.00
21	---	---	---	---	---	e1.0	41	13	.01	.00	.00	.00
22	---	---	---	---	---	e.50	33	8.8	.01	.00	.00	.00
23	---	---	---	---	---	e.20	e27	6.6	.01	.00	.00	.00
24	---	---	---	---	---	e.10	e20	5.2	.01	.00	.00	.00
25	---	---	---	---	---	e.00	e16	4.0	.02	.00	.00	.00
26	---	---	---	---	---	e.00	e13	3.6	.02	.00	.00	.00
27	---	---	---	---	---	e.00	e10	2.9	.02	.00	.00	.00
28	---	---	---	---	---	e.00	e8.0	2.1	.02	.00	.00	.00
29	---	---	---	---	---	e.00	e6.0	1.7	.02	.00	.00	.00
30	---	---	---	---	---	e.00	e4.5	1.3	.02	.00	.00	.00
31	---	---	---	---	---	e.00	---	1.8	---	.00	.00	---
TOTAL	---	---	---	---	---	44.30	1079.50	324.16	25.83	0.08	0.00	0.00
MEAN	---	---	---	---	---	1.43	36.0	10.5	.86	.003	.000	.000
MAX	---	---	---	---	---	10	200	133	3.6	.02	.00	.00
MIN	---	---	---	---	---	.00	.00	.73	.01	.00	.00	.00
AC-FT	---	---	---	---	---	88	2140	643	51	.2	.00	.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 1996, BY WATER YEAR (WY)

MEAN	.060	.003	.000	.000	.000	9.79	14.7	2.44	2.72	5.00	.58	.56
MAX	1.07	.054	.000	.000	.006	41.8	56.5	11.9	34.5	65.3	7.95	15.3
(WY)	1966	1966	1965	1965	1981	1987	1969	1972	1968	1993	1993	1994
MIN	.000	.000	.000	.000	.000	.000	.007	.000	.000	.000	.000	.000
(WY)	1965	1965	1965	1965	1965	1969	1991	1980	1973	1973	1967	1967

SUMMARY STATISTICS

WATER YEARS 1965 - 1996

ANNUAL MEAN	a 2.82
HIGHEST ANNUAL MEAN	a 5.55 1969
LOWEST ANNUAL MEAN	a .002 1981
HIGHEST DAILY MEAN	528 Jul 25 1993
LOWEST DAILY MEAN	.00 Oct 1 1964
ANNUAL SEVEN-DAY MINIMUM	.00 Oct 1 1964
INSTANTANEOUS PEAK FLOW	900 Apr 18 1979
INSTANTANEOUS PEAK STAGE	7.53 Jul 24 1993
ANNUAL RUNOFF (AC-FT)	a 2040
10 PERCENT EXCEEDS	4.6
50 PERCENT EXCEEDS	.00
90 PERCENT EXCEEDS	.00

a Based on complete water years only (1965-82).  
e Estimated.

RED RIVER OF THE NORTH BASIN  
05059600 MAPLE RIVER NEAR HOPE, ND--Continued

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WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996										
DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT 13...	1335	0.93	2550	--	9.5	10.0	--	--	--	--
MAR 14...	1105	4.5	326	--	2.0	1.0	--	--	--	--
APR 09...	0930	86	328	--	--	1.0	--	--	--	--
10...	1350	253	308	--	--	5.0	--	--	--	--
18...	1245	56	873	7.9	10.5	5.0	340	181	67	41
MAY 02...	1110	2.8	292	--	--	4.0	--	--	--	--
31...	0920	1.3	328	--	--	--	--	--	--	--

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
APR 18...	60	27	1	8.3	270	26	0.10	581	642	0.87

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
APR 18...	96.4	2	20	<1	40	130	0.1	<1	1	290

RED RIVER OF THE NORTH BASIN  
05059700 MAPLE RIVER NEAR ENDERLIN, ND

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

DRAINAGE AREA.--843 mi<sup>2</sup>, of which about 47 mi<sup>2</sup> is probably noncontributing.

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1728: Drainage area.

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

REMARKS.--Records good except for periods of estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.1	14	e7.0	e3.2	e1.9	e4.8	e150	240	90	7.6	2.8	2.1
2	5.2	13	e8.1	e3.1	e1.8	e4.5	e140	204	82	6.8	2.7	2.3
3	4.9	e13	e7.5	e3.0	e1.5	e3.0	e130	183	75	6.3	2.7	2.2
4	5.3	13	e7.4	e3.0	e1.5	e2.8	e125	163	90	5.4	4.2	2.4
5	10	13	e8.0	e2.9	e1.6	e2.5	e120	152	123	5.8	4.6	2.7
6	15	13	e7.0	e2.9	e1.6	e2.5	e115	143	112	11	3.6	174
7	17	13	e6.8	e2.9	e1.7	e2.5	e110	136	91	11	3.2	195
8	23	12	e6.5	e2.8	e1.8	e2.5	e105	135	74	9.3	3.1	152
9	26	12	e5.5	e2.8	e1.9	e2.4	880	129	62	13	2.7	105
10	28	e11	e4.5	e2.8	e2.0	e2.4	e2000	123	53	11	2.7	79
11	39	8.9	e4.0	e2.8	e2.5	e20	e3100	120	46	8.2	2.8	64
12	46	9.1	e4.0	e2.8	e3.0	e75	3140	118	41	6.3	2.8	51
13	45	9.2	e4.0	e2.8	e3.2	e150	2480	112	35	5.3	2.6	40
14	42	8.5	e4.0	e5.5	e3.4	e435	2120	108	31	4.7	2.6	32
15	38	8.0	e4.0	e5.0	e3.4	e485	1890	105	34	4.4	2.5	26
16	34	7.7	e4.0	e5.0	e3.3	e550	1640	100	31	4.1	2.4	21
17	31	7.8	e3.8	e5.0	e3.3	e650	1380	105	29	3.9	2.3	17
18	29	7.8	e3.8	e4.5	e3.2	e700	1180	139	28	3.7	2.3	12
19	26	7.7	e3.8	e4.0	e3.2	e825	e1000	e650	26	3.4	2.3	9.4
20	24	7.9	e3.8	e3.5	e3.5	1040	e900	1060	22	3.3	2.2	8.4
21	22	8.2	e3.8	e3.2	e3.7	1480	e825	844	20	3.2	2.1	8.3
22	20	7.4	e3.8	e3.0	e4.2	1300	717	698	16	3.0	2.2	7.0
23	19	e7.4	e3.8	e2.8	e5.0	1020	648	569	16	2.9	2.2	6.0
24	17	e7.0	e3.7	e2.6	e10	739	603	461	17	2.9	2.5	5.3
25	15	e6.5	e3.6	e2.4	e8.5	508	556	339	15	3.2	2.2	5.0
26	15	e6.0	e3.5	e2.2	e7.5	e400	511	234	14	3.1	2.0	5.4
27	15	e6.0	e3.5	e2.0	e6.0	e300	460	178	14	3.3	2.1	6.0
28	14	e5.8	e3.5	e2.0	e5.5	e250	390	147	12	3.2	2.2	5.8
29	13	e5.5	e3.4	e2.0	e5.0	e200	336	127	10	3.1	2.1	5.6
30	13	e5.5	e3.4	e2.0	---	e180	287	106	8.6	2.9	2.1	5.8
31	13	---	e3.3	e1.9	---	e160	---	96	---	2.8	2.3	---
TOTAL	670.5	274.9	146.8	96.4	104.7	11496.9	28038	8024	1317.6	168.1	81.1	1057.7
MEAN	21.6	9.16	4.74	3.11	3.61	371	935	259	43.9	5.42	2.62	35.3
MAX	46	14	8.1	5.5	10	1480	3140	1060	123	13	4.6	195
MIN	4.9	5.5	3.3	1.9	1.5	2.4	105	96	8.6	2.8	2.0	2.1
AC-FT	1330	545	291	191	208	22800	55610	15920	2610	333	161	2100

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 1996, BY WATER YEAR (WY)

	MEAN	9.77	5.73	3.34	2.43	2.99	131	232	51.3	38.8	65.5	23.1	10.6
MAX	211	63.6	16.0	4.05	11.9	622	1231	259	424	875	506	111	
(WY)	1995	1995	1995	1976	1976	1966	1969	1996	1975	1993	1993	1994	
MIN	1.52	1.49	1.32	1.21	1.30	2.10	2.06	2.19	1.41	1.44	1.33	1.28	
(WY)	1993	1961	1961	1969	1969	1969	1991	1992	1961	1961	1961	1984	

SUMMARY STATISTICS

FOR 1995 CALENDAR YEAR

FOR 1996 WATER YEAR

WATER YEARS 1956 - 1996

ANNUAL TOTAL	48578.8	51476.7	
ANNUAL MEAN	133	141	48.3
HIGHEST ANNUAL MEAN			165
LOWEST ANNUAL MEAN			2.14
HIGHEST DAILY MEAN	1680	Mar 17	5450
LOWEST DAILY MEAN	3.1	Jul 2	.10
ANNUAL SEVEN-DAY MINIMUM	3.4	Feb 16	.67
INSTANTANEOUS PEAK FLOW			7610
INSTANTANEOUS PEAK STAGE			15.41
ANNUAL RUNOFF (AC-FT)	96360	102100	35000
10 PERCENT EXCEEDS	454	442	73
50 PERCENT EXCEEDS	13	7.8	3.4
90 PERCENT EXCEEDS	3.7	2.4	1.8

e Estimated.



RED RIVER OF THE NORTH BASIN  
05059700 MAPLE RIVER NEAR ENDERLIN, ND--Continued

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WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT 04...	1230	5.1	1170	--	11.0	11.0	--	--	--	--
NOV 08...	0920	12	1940	--	-5.0	0.5	--	--	--	--
JAN 03...	0850	3.0	1950	--	-6.5	0.5	--	--	--	--
FEB 13...	0940	3.2	2130	--	1.0	1.0	--	--	--	--
MAR 14...	1745	396	326	--	5.5	2.0	--	--	--	--
15...	1600	427	336	--	6.5	2.5	--	--	--	--
19...	1715	786	--	--	-3.0	0.5	--	--	--	--
APR 09...	1725	892	458	--	10.5	1.0	--	--	--	--
11...	1635	3590	393	--	1.0	0.0	--	--	--	--
16...	1535	1620	557	--	13.0	--	--	--	--	--
24...	1705	589	869	--	14.0	9.5	--	--	--	--
MAY 02...	1610	199	1060	8.1	10.5	10.5	470	241	110	48
JUN 06...	1055	126	1610	--	23.0	17.5	--	--	--	--
JUL 10...	0845	11	1628	--	21.5	18.0	--	--	--	--
AUG 28...	1315	2.2	1600	7.8	26.5	23.0	740	352	190	64

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
MAY 02...	65	22	1	13	320	26	0.20	727	730	0.99
AUG 28...	85	20	1	11	470	58	0.20	1090	1140	1.55

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAY 02...	392	9	100	<1	50	80	0.1	1	<1	410
AUG 28...	6.83	3	30	<1	110	1300	<0.1	1	<1	830

**RED RIVER OF THE NORTH BASIN**  
05060000 (Revised) MAPLE RIVER BELOW MAPLETON, ND

**LOCATION.**--Lat 46°54'19", long 97°03'08", in NW<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> sec.31, T.140 N., R.50 W., Cass County, Hydrologic Unit 09020204, on left bank just downstream from bridge on county highway 1.0 mi north of Mapleton.

**DRAINAGE AREA.**--1,480 mi<sup>2</sup>, approximately, of which 70 mi<sup>2</sup> is probably noncontributing.

**WATER-DISCHARGE RECORDS**

**PERIOD OF RECORD.**--April 1944 to September 1975, March 1995 to current year. April 1944 to September 1958 published as "at Mapleton". October 1958 to September 1975 published as "near Mapleton".

**GAGE.**--Water-stage recorder. Datum of gage is 890.00 ft above sea level. Feb. 16, 1944, to Sept. 30, 1958, nonrecording gage at site 2 mi upstream at datum 3.33 ft lower. Oct. 1, 1958 to Sept. 30, 1975, water-stage recorder at site 9 mi upstream at datum 3.53 ft higher.

**REMARKS.**--Records good except for periods of estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	36	e8.0	e3.2	e1.1	e2.9	e220	408	175	36	9.2	.82
2	23	34	e8.2	e3.2	e1.0	e2.7	e200	352	155	34	8.5	1.7
3	23	32	e8.2	e3.2	e.90	e2.6	e180	306	139	32	7.6	1.8
4	26	e31	e8.5	e3.2	e.75	e2.5	e170	263	125	30	13	2.4
5	36	e30	e8.5	e3.2	e.70	e2.4	e160	229	114	27	31	2.4
6	42	e28	e8.0	e3.2	e.65	e2.4	e150	207	137	26	60	2.0
7	52	e27	e7.5	e3.1	e.60	e2.4	e140	189	155	24	68	11
8	78	e25	e7.0	e3.0	e.55	e2.4	e130	178	138	22	55	26
9	72	e23	e6.0	e2.9	e.50	e2.5	e200	173	133	22	41	28
10	64	e18	e5.5	e2.9	e.50	e2.6	e2000	165	119	22	29	88
11	62	e17	e4.5	e2.9	e.50	e3.0	e2250	157	108	21	21	145
12	68	e10	e4.3	e3.5	e.50	e6.5	e2450	148	98	20	15	128
13	68	e10	e4.3	e5.0	e.50	e11	e2650	139	88	20	11	102
14	75	e9.5	e4.3	e5.6	e.50	e50	e2900	138	82	20	7.8	84
15	69	e9.0	e4.4	e5.5	e.50	e200	e3200	130	78	19	6.6	72
16	71	e8.5	e4.4	e5.3	e.50	e350	3420	129	75	19	5.4	63
17	73	e8.0	e4.5	e5.2	e.50	e600	3130	136	71	19	3.9	56
18	66	e8.0	e4.3	e4.5	e.50	e1000	2750	392	69	17	2.7	46
19	62	e8.3	e4.3	e4.0	e.50	e1580	2510	757	65	16	2.3	39
20	60	e8.5	e4.3	e3.5	e.65	e1600	2290	430	58	15	1.9	36
21	57	e8.5	e4.3	e3.2	e1.2	e1650	2010	487	54	14	1.6	30
22	52	e8.3	e4.3	e2.8	e1.8	e1680	1710	960	50	12	1.3	26
23	49	e7.9	e4.3	e2.6	e2.5	e1600	1420	1060	53	10	1.0	24
24	47	e7.7	e4.0	e2.5	e3.0	e1300	1190	903	50	10	.83	22
25	45	e7.5	e3.8	e2.2	e5.0	e1100	1040	719	51	9.9	.80	21
26	40	e7.0	e3.6	e1.9	e4.0	e850	e900	572	47	10	.79	23
27	40	e6.5	e3.6	e1.9	e3.5	e600	e800	458	49	11	.76	23
28	40	e6.3	e3.5	e1.8	e3.2	e450	e700	353	48	10	.74	22
29	36	e6.4	e3.4	e1.7	e3.0	e350	e600	276	44	11	.74	21
30	34	e7.2	e3.3	e1.5	---	e300	e480	225	39	11	.72	22
31	33	---	e3.3	e1.2	---	e250	---	199	---	9.8	.71	---
TOTAL	1584	454.1	160.4	99.4	39.60	15555.9	41950	11238	2667	579.7	409.89	1169.12
MEAN	51.1	15.1	5.17	3.21	1.37	502	1398	363	88.9	18.7	13.2	39.0
MAX	78	36	8.5	5.6	5.0	1680	3420	1060	175	36	68	145
MIN	21	6.3	3.3	1.2	.50	2.4	130	129	39	9.8	.71	.82

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 1996, BY WATER YEAR (WY)

MEAN	9.29	9.04	3.75	1.18	.64	133	424	117	92.6	131	21.4	13.1
MAX	51.1	36.2	12.2	4.30	4.85	1040	1708	620	717	2375	267	65.8
(WY)	1996	1972	1963	1973	1973	1966	1969	1950	1953	1975	1962	1962
MIN	.000	.000	.000	.000	.000	.000	13.9	6.30	1.71	.000	.000	.000
(WY)	1953	1961	1961	1959	1945	1956	1959	1955	1961	1961	1960	1949

SUMMARY STATISTICS

FOR 1996 WATER YEAR

WATER YEARS 1944 - 1996

ANNUAL TOTAL	75907.11	
ANNUAL MEAN	207	77.7
HIGHEST ANNUAL MEAN		374
LOWEST ANNUAL MEAN		5.98
HIGHEST DAILY MEAN	a 3420	11300
LOWEST DAILY MEAN	.50	.00
ANNUAL SEVEN-DAY MINIMUM	.50	.00
INSTANTANEOUS PEAK FLOW	3460	c 11600
INSTANTANEOUS PEAK STAGE	b 22.85	22.85
10 PERCENT EXCEEDS	580	124
50 PERCENT EXCEEDS	22	6.0
90 PERCENT EXCEEDS	1.7	.00

a Gage height, 21.68 ft.

b Observed, backwater from ice.

c Gage height, 15.03 ft, site and datum then in use.

e Estimated.

RED RIVER OF THE NORTH BASIN  
05060000 MAPLE RIVER BELOW MAPLETON, ND--Continued

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WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1995 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996										
DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT 13...	0835	65	1240	--	10.0	12.5	--	--	--	--
NOV 07...	1300	27	1760	--	--	--	--	--	--	--
JAN 05...	0945	3.2	1120	--	-17.0	0.0	--	--	--	--
MAR 13...	1305	11	2110	--	3.5	0.5	--	--	--	--
19...	1130	1590	305	--	-18.0	0.5	--	--	--	--
22...	1025	1670	--	--	-8.0	0.5	--	--	--	--
APR 10...	1020	1910	348	--	5.5	0.0	--	--	--	--
13...	1400	2620	412	--	8.5	1.5	--	--	--	--
16...	0935	3460	458	--	6.5	2.0	--	--	--	--
30...	0950	495	902	8.0	13.0	10.5	390	208	94	38
JUN 18...	0950	70	1480	--	23.5	23.5	--	--	--	--
JUL 22...	1015	13	740	--	22.5	23.0	--	--	--	--
AUG 26...	1315	0.82	1020	8.6	16.5	21.0	440	290	94	50
SEP 30...	1125	21	948	--	16.0	11.0	--	--	--	--

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED PER AC-FT) (70303)
APR 30...	46	20	1	14	260	22	0.20	599	655	0.89
AUG 26...	64	23	1	11	250	37	0.30	681	729	0.99

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
APR 30...	875	3	20	<1	40	70	<0.1	1	<1	400
AUG 26...	1.61	12	10	<1	70	30	<0.1	5	1	480

**DRAINAGE AREA.**--7,500 mi<sup>2</sup>, approximately, of which about 5,800 mi<sup>2</sup> is probably noncontributing, including 3,800 mi<sup>2</sup> in closed basins.

## GAGE HEIGHT RECORDS

EXTREMES FOR CURRENT PERIOD.--Maximum discharge, 5,940 ft<sup>3</sup>/s, Apr. 16; maximum gage height, 90.73 ft (observed) Apr. 13, backwater from ice.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

[illegible]



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DRAINAGE AREA.--116 mi<sup>2</sup>.

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

GAGE.--Water-stage recorder. Elevation of gage is 943 ft above sea level, from topographic map. See WSP 1913 for history of changes prior to June 10, 1961.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 1996, BY WATER YEAR (WY)

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR	FOR 1996 WATER YEAR	WATER YEARS 1946 - 1996
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a Backwater from ice.  
e Estimated.

RED RIVER OF THE NORTH BASIN  
05060500 RUSH RIVER AT AMENIA, ND--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL AS CACO3 (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT										
13...	1040	14	1220	--	11.5	14.5	--	--	--	--
NOV										
22...	1240	12	--	--	0.0	0.5	--	--	--	--
JAN										
08...	1500	0.99	1980	--	0.5	0.5	--	--	--	--
FEB										
09...	1240	0.93	2270	--	10.0	0.5	--	--	--	--
MAR										
13...	1630	1.2	1150	--	5.0	0.5	--	--	--	--
20...	1520	124	425	--	1.5	1.0	--	--	--	--
APR										
09...	1310	612	359	--	12.0	0.5	--	--	--	--
11...	1300	699	317	--	-5.0	0.5	--	--	--	--
22...	1315	54	688	7.1	6.0	7.0	320	198	75	31
MAY										
09...	0920	11	1100	--	1.0	7.5	--	--	--	--
JUN										
18...	1405	4.5	1180	--	28.0	26.0	--	--	--	--
JUL										
24...	1535	4.7	1280	--	20.5	22.5	--	--	--	--
AUG										
26...	1135	0.22	1320	8.4	18.0	20.5	610	390	130	69
SEP										
18...	0745	2.1	322	--	11.5	15.0	--	--	--	--

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
APR										
22...	24	14	0.6	9.2	180	14	0.30	453	501	0.68
AUG										
26...	75	21	1	13	360	31	0.30	913	1080	1.47

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
APR										
22...	73.0	4	40	5	40	200	0.1	1	<1	370
AUG										
26...	0.64	16	20	<1	130	480	<0.1	4	<1	650

RED RIVER OF THE NORTH BASIN  
05064500 RED RIVER OF THE NORTH AT HALSTAD, MN

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

DRAINAGE AREA.--21,800 mi<sup>2</sup>, approximately, including 3,800 mi<sup>2</sup> in closed basins.

WATER-DISCHARGE RECORDS

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

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

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

REMARKS.--Records good except for periods of estimated discharge, which are poor.

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e880	1950	e1520	e840	e725	e940	e4300	8760	6430	1820	1140	521
2	e1170	1980	e1460	e820	e740	e930	e4000	8500	6020	1730	1120	542
3	1140	2000	e1410	e810	e750	e940	e3850	8370	5630	1650	1110	532
4	1140	1890	e1470	e825	e760	e960	e3750	8280	5320	1590	1110	586
5	1220	1770	e1420	e840	e750	e1000	e3900	8200	5080	1550	1220	692
6	1790	1820	e1380	e850	e740	e1040	e4500	8180	4900	1510	1470	808
7	2570	1680	e1320	e835	e740	e1080	e5200	8160	4800	1460	1370	687
8	2820	1650	e1290	e820	e735	e1100	e6400	8080	4850	1400	1230	563
9	2710	2170	e1250	e810	e740	e1130	e8000	7760	4690	1340	1160	472
10	2580	1900	e1210	e800	e750	e1180	e11000	7500	4450	1290	1090	497
11	2470	e1700	e1220	e795	e760	e1270	e14400	7160	4360	1260	1000	472
12	2350	e1500	e1260	e790	e750	e1400	e17500	6710	4270	1260	940	481
13	2250	e1300	e1300	e800	e745	e1620	e20000	6220	e4100	1270	925	562
14	2100	e1100	e1290	e800	e740	e1950	e22400	5730	e4000	1250	906	572
15	1950	e1200	e1270	e810	e730	e2350	e23000	5370	e3850	1210	878	567
16	1830	e1400	e1230	e805	e725	e2800	e23500	5210	e3700	1160	835	563
17	1820	e1500	e1190	e800	e740	e3400	e24500	5160	e3500	1130	782	520
18	1860	e1600	e1150	e795	e760	e3900	25100	8360	e3300	1140	713	422
19	1910	e1700	e1120	e790	e780	e4200	24700	12500	3190	1120	670	325
20	1930	e1800	e1100	e795	e795	e5100	23900	14200	3040	1130	657	266
21	1910	e1700	e1080	e790	e820	e5700	22200	15200	2880	1140	655	243
22	1880	e1500	e1050	e785	e840	e6400	20100	15700	2680	1150	668	228
23	1880	e1400	e1030	e780	e860	e7100	17900	15900	2530	1120	668	229
24	1850	e1350	e1010	e785	e850	e7500	16600	16000	2420	1100	644	246
25	1760	e1300	e1000	e790	e860	e7700	15200	15800	2350	1060	584	256
26	1660	e1300	e975	e780	e900	e7600	13700	14900	2290	1020	526	325
27	1550	e1250	e950	e775	e950	e6900	12300	13600	2230	1010	467	396
28	1480	e1300	e940	e760	e980	e6400	11100	11700	2090	1040	415	552
29	1630	e1400	e910	e750	e960	e5700	10000	9810	1980	1110	467	617
30	1840	e1480	e880	e740	---	e5200	9250	8130	1900	1130	536	584
31	1920	---	e860	e735	---	e4750	---	7050	---	1150	542	---
TOTAL	57850	47590	36545	24700	22975	109240	422250	302200	112830	39300	26498	14326
MEAN	1866	1586	1179	797	792	3524	14070	9748	3761	1268	855	478
MAX	2820	2170	1520	850	980	7700	25100	16000	6430	1820	1470	808
MIN	880	1100	860	735	725	930	3750	5160	1900	1010	415	228
AC-FT	114700	94390	72490	48990	45570	216700	837500	599400	223800	77950	52560	28420

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 1996, BY WATER YEAR (WY)

MEAN	800	711	546	456	468	2306	6996	3342	2575	2569	1110	709
MAX	2875	1843	1253	1023	1052	9444	20080	9748	10310	20060	11700	3360
(WY)	1995	1995	1987	1987	1987	1995	1969	1996	1962	1975	1993	1993
MIN	61.5	92.3	51.2	32.1	45.9	249	705	449	242	153	59.5	38.4
(WY)	1977	1977	1977	1977	1977	1962	1981	1977	1977	1988	1977	1976

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR	FOR 1996 WATER YEAR	WATER YEARS 1961 - 1996
ANNUAL TOTAL	1331175	1216304	
ANNUAL MEAN	3647	3323	1897
HIGHEST ANNUAL MEAN			3968
LOWEST ANNUAL MEAN			214
HIGHEST DAILY MEAN	23000	Mar 31	41500
LOWEST DAILY MEAN	474	Sep 27	10
ANNUAL SEVEN-DAY MINIMUM	532	Sep 24	17
INSTANTANEOUS PEAK FLOW			42000
INSTANTANEOUS PEAK STAGE			39.00
INSTANTANEOUS LOW FLOW			5.4
ANNUAL RUNOFF (AC-FT)	2640000	2413000	1374000
10 PERCENT EXCEEDS	9260	8300	4170
50 PERCENT EXCEEDS	1520	1290	769
90 PERCENT EXCEEDS	860	656	210

e Estimated.

RED RIVER OF THE NORTH BASIN  
05064500 RED RIVER OF THE NORTH AT HALSTAD, MN--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)
JAN 09...	1520	807	682	--	-1.0	0.0	--	--	--	--
FEB 22...	1035	843	621	--	-3.0	0.5	--	--	--	--
APR 11...	0955	14400	362	--	-5.0	0.5	--	--	--	--
20...	1625	24000	417	--	--	--	--	--	--	--
23...	1200	17800	475	--	--	5.5	--	--	--	--
MAY 08...	1010	8160	564	8.1	2.0	10.0	240	52	26	24
23...	0755	15900	529	--	12.0	10.0	--	--	--	--
JUN 18...	0900	3330	489	--	--	18.5	--	--	--	--
SEP 03...	1450	567	772	8.2	24.0	25.5	280	57	34	50

DATE	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
MAY 08...	17	0.7	7.4	174	110	14	0.10	338	384	0.52
SEP 03...	26	1	18	249	120	37	0.20	466	481	0.65

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAY 08...	8460	2	20	<1	30	10	0.1	1	1	230
SEP 03...	--	6	10	<1	30	<10	<0.1	3	<1	300



RED RIVER OF THE NORTH BASIN  
05064900 BEAVER CREEK NEAR FINLEY, ND  
(Hydrologic benchmark network station and radiochemical program station)

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LOCATION.--Lat 47°35'40", long 97°42'18", in NE<sup>1</sup>/<sub>4</sub> sec.31, T.148 N., R.55 W., Steele County, Hydrologic Unit 09020109, on right bank 500 ft upstream from bridge on county highway, and 7 mi northeast of Finley.

DRAINAGE AREA.--160 mi<sup>2</sup>, approximately.

WATER-DISCHARGE RECORDS

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

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

REMARKS.--Records poor. Since June 1987, some regulation by flood control dam 2.0 mi upstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.20	e.78	e.82	e.44	e.17	e.38	e.17	e90	e27	e4.2	e2.2	e.02
2	e.96	e.77	e.83	e.40	e.17	e.36	e.17	e84	e26	e4.0	e2.0	e.02
3	e.78	e.76	e.82	e.37	e.16	e.35	e.17	e80	e25	e3.8	e1.8	e1.0
4	e.70	e.76	e.81	e.34	e.17	e.34	e.17	e70	e24	e3.7	e2.5	e.90
5	e1.2	e.77	e.80	e.32	e.17	e.33	e.17	e64	e23	e3.5	e2.3	e.80
6	e2.0	e.79	e.79	e.30	e.18	e.32	e.18	e68	e24	e3.9	e2.1	e.70
7	e1.7	e.81	e.80	e.28	e.22	e.32	e1.0	e54	e22	e3.6	e1.9	e.46
8	e1.5	e.82	e.81	e.26	e.28	e.31	e100	e56	e21	e3.4	e1.7	e.39
9	e1.3	e.81	e.80	e.24	e.40	e.31	e300	e53	e20	e3.3	e1.5	e.24
10	e1.2	e.82	e.79	e.22	e.50	e.31	e600	e50	e21	e3.2	e1.4	e.18
11	e1.1	e.83	e.80	e.21	e.45	e.32	e1000	e48	e20	e3.1	e1.1	e.14
12	e1.0	e.82	e.79	e.20	e.40	e.34	e800	e46	e18	e3.7	e.96	e.10
13	e.90	e.81	e.80	e.19	e.41	e.36	e700	e45	e16	e3.5	e.86	e.06
14	e.80	e.80	e.79	e.18	e.38	e.45	e600	e43	e15	e3.3	e.76	e.04
15	e.76	e.81	e.80	e.17	e.35	e.54	e500	e42	e14	e3.1	e.68	e.02
16	e.70	e.82	e.79	e.17	e.33	e.64	e400	e41	e13	e2.9	e.60	e.02
17	e.66	e.83	e.78	e.17	e.31	e.80	e350	e43	e12	e3.0	e.50	e.02
18	e1.5	e.82	e.79	e.16	e.29	e.70	300	e46	e11	e4.0	e.35	e.02
19	e1.4	e.81	e.78	e.17	e.46	e.62	e260	e44	e10	e6.2	e.25	e.02
20	e1.3	e.82	e.79	e.16	e.39	e.54	e230	e40	e9.0	e5.6	e.19	e.17
21	e1.2	e.83	e.78	e.17	e.41	e.47	e200	e44	e8.5	e6.0	e.15	e.60
22	e1.1	e.82	e.76	e.17	e.52	e.40	e180	e38	e8.0	e5.0	e.08	e.50
23	e1.0	e.83	e.74	e.16	e.50	e.36	e160	e37	e6.8	e3.9	e.02	e.45
24	e.98	e.82	e.72	e.17	e.48	e.31	e150	e36	e8.0	e3.3	e.02	e.18
25	e.96	e.81	e.70	e.17	e.46	e.27	e140	e35	e7.2	e3.0	e.02	e.17
26	e.90	e.80	e.66	e.16	e.44	e.24	e130	e34	e7.8	e2.9	e.02	e.70
27	e1.1	e.81	e.61	e.17	e.41	e.21	e120	e33	e7.0	e3.3	e.02	e.60
28	e1.0	e.80	e.58	e.17	e.40	e.19	e115	e31	e6.0	e2.6	e.02	e.56
29	e.94	e.81	e.54	e.16	e.40	e.18	e110	e30	e5.0	e2.3	e.02	e.35
30	e.88	e.82	e.50	e.16	---	e.17	e100	e29	e4.6	e2.8	e.02	e.25
31	e.80	---	e.47	e.17	---	e.17	---	e28	---	e2.5	e.02	---
TOTAL	32.52	24.21	23.04	6.78	10.21	11.61	7547.03	1482	439.9	112.6	26.06	9.68
MEAN	1.05	.81	.74	.22	.35	.37	252	47.8	14.7	3.63	.84	.32
MAX	2.0	.83	.83	.44	.52	.80	1000	90	27	6.2	2.5	1.0
MIN	.20	.76	.47	.16	.16	.17	.17	28	4.6	2.3	.02	.02
AC-FT	65	48	46	13	20	23	14970	2940	873	223	52	19

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 1996, BY WATER YEAR (WY)

	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
MEAN	2.04	1.31	.29	.066	.26	26.5	57.6	12.4	5.61	9.23	3.96	2.37																				
MAX	30.3	25.4	4.33	1.06	2.61	151	252	81.2	29.4	104	43.4	21.2																				
(WY)	1995	1995	1995	1995	1984	1995	1996	1995	1994	1993	1994	1993																				
MIN	.000	.000	.000	.000	.000	.000	.19	.042	.001	.000	.000	.000																				
(WY)	1968	1968	1965	1965	1965	1965	1981	1977	1980	1972	1969	1967																				

SUMMARY STATISTICS FOR 1995 CALENDAR YEAR FOR 1996 WATER YEAR WATER YEARS 1965 - 1996

ANNUAL TOTAL	11450.66	9725.64	
ANNUAL MEAN	31.4	26.6	10.1
HIGHEST ANNUAL MEAN			36.2
LOWEST ANNUAL MEAN			.12
HIGHEST DAILY MEAN	320	1000	1540
LOWEST DAILY MEAN	.20	.02	.00
ANNUAL SEVEN-DAY MINIMUM	.21	.02	.00
INSTANTANEOUS PEAK FLOW		a 1200	1900
INSTANTANEOUS PEAK STAGE		b 10.79	b 10.79
ANNUAL RUNOFF (AC-FT)	22710	19290	7350
10 PERCENT EXCEEDS	110	45	19
50 PERCENT EXCEEDS	1.8	.80	.15
90 PERCENT EXCEEDS	.50	.17	.00

a About.  
b Backwater from ice.  
e Estimated.

RED RIVER OF THE NORTH BASIN  
05064900 BEAVER CREEK NEAR FINLEY, ND--Continued  
(Hydrologic benchmark network station and radiochemical program station)

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	DIS-CHARGE, IN CUBIC FEET PER SECOND (00060)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, (PER-CENT SATUR-ATION) (00301)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	
DEC 13...	0945	0.78	--	2730	8.0	735	-5.0	0.5	6.1	5.1	37	1100	
APR 09...	0720	228	--	1830	--	--	2.5	1.0	--	--	--	--	
18...	0800	298	--	365	--	--	5.0	2.0	--	--	--	--	
MAY 03...	0845	81	--	450	--	--	2.0	7.0	--	--	--	--	
31...	0720	28	--	--	--	--	10.5	16.5	--	--	--	--	
JUL 10...	0945	3.2	--	1470	--	--	18.5	20.0	--	--	--	--	
AUG 05...	1130	--	e2.3	1400	8.3	725	--	20.0	2.9	10.1	117	480	
DATE		COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML) (31673)	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)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	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)	
DEC 13...	K11	96	240	130	250	32	3	18	633	980	58	0.10	
AUG 05...	420	96	100	55	120	35	2	7.9	273	470	16	0.20	
DATE		SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	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, NITRATE DIS-SOLVED (MG/L AS N) (00618)	NITRO-GEN, NO2+NO3 TOTAL (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) (00608)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)
DEC 13...	24	2060	2110	2.87	4.44	0.030	0.680	0.710	0.710	0.770	1.4	2.2	
AUG 05...	21	950	1050	1.43	--	0.020	0.110	0.130	0.130	0.100	1.5	1.6	
DATE		NITRO-GEN, TOTAL (MG/L AS N) (00600)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	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 MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)
DEC 13...	2.9	0.110	0.070	0.070	<10	96	<1	26	160	500	3	4	
AUG 05...	1.7	0.270	0.220	0.240	120	57	4	210	68	440	<10	5	
DATE		SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	RA-226 2 SIGMA WATER, DISS, (PCI/L) (76001)	RADIUM 226, DIS-SOLVED, RADON METHOD (PCI/L) (09511)	URANIUM NATURAL 2 SIGMA WATER, DISS, (UG/L) (75990)	URANIUM NATURAL DIS-SOLVED (UG/L AS U) (22703)	SEDI-MENT, DIS-SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	
DEC 13...	<1	<1.0	1100	3	--	--	--	--	--	189	0.40	76	
AUG 05...	<1	<1.0	520	8	0.020	0.10	0.1	3.8	14	--	--	94	

e Estimated.

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

e Estimated.

RED RIVER OF THE NORTH BASIN  
05066500 GOOSE RIVER AT HILLSBORO, ND--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
JAN 09...	1255	24	1380	--	-3.0	0.5	--	--	--	--
FEB 26...	1135	11	1120	--	-15.0	0.5	--	--	--	--
APR 11...	0825	2660	--	--	-4.0	0.5	--	--	--	--
13...	1000	4600	365	--	0.0	0.5	--	--	--	--
16...	1405	4440	440	--	10.5	1.5	--	--	--	--
20...	0950	3360	554	7.9	4.5	1.5	230	121	54	22
24...	1635	1480	--	--	15.0	--	--	--	--	--
MAY 03...	1115	652	--	--	--	7.0	--	--	--	--
JUN 18...	1200	104	--	--	--	19.5	--	--	--	--
SEP 03...	1040	7.7	1470	8.1	23.5	24.5	630	265	130	73

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED PER (TONS AC-FT) (70303)
APR 20...	23	18	0.7	7.6	150	9.0	0.20	339	385	0.52
SEP 03...	100	25	2	9.2	510	53	0.20	1040	1100	1.50

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
APR 20...	3490	3	30	<1	20	180	0.1	<1	2	240
SEP 03...	22.9	6	20	<1	90	70	<0.1	5	1	680



RED RIVER OF THE NORTH BASIN  
05082500 RED RIVER OF THE NORTH AT GRAND FORKS, ND

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LOCATION.--Lat 47°55'38", long 97°01'34", in sec.2, T.151 N., R.50 W., Grand Forks County, Hydrologic Unit 09020301, on the right bank 200 ft upstream from the DeMers Avenue bridge, 0.4 mi downstream from Red Lake River, and at mile 293.8.

DRAINAGE AREA.--30,100 mi<sup>2</sup>, approximately, including 3,800 mi<sup>2</sup> in closed basins.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1882 to current year. Prior to January 1904 monthly discharge only, published in WSP 1308.

REVISED RECORDS.--WSP 855: 1936(M). WSP 1115: 1942. WSP 1175: 1897(M). WSP 1388: 1904, 1914-15, 1917-19, 1921-22, 1927, 1950. WSP 1728: Drainage area. WRD-ND-81-1: 1882, 1897 (M).

GAGE.--Water-stage recorder. Datum of gage is 779.00 ft above sea level. Oct. 1, 1983, to Sept. 30, 1986, datum of gage was 780.00 ft at same site. Apr. 14, 1965, to Sept. 30, 1983, water-stage recorder 1.9 mi downstream at a datum of 778.35 ft. Nov. 3, 1933, to Apr. 13, 1965, water-stage recorder 0.3 mi upstream at 778.35 ft datum. See WSP 1728 or 1913 for history of changes prior to Nov. 3, 1933.

REMARKS.--Records good except for periods of estimated daily discharges, which are fair.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1580	3340	e2340	e2160	e1860	e2180	e7950	e29700	e14600	4370	3630	1890
2	2630	3370	e2510	e2130	e1850	e1780	e7200	e28400	e13000	4180	3620	1910
3	3500	3420	e2490	e2120	e1860	e1760	e6650	e26900	e12100	3970	3540	1900
4	3470	3370	e2410	e2110	e1870	e1980	e6200	e25600	e11100	3560	3510	1870
5	3510	2960	e2430	e2120	e1880	e2100	e6000	e24400	e10500	3390	3400	1900
6	3640	3010	e2380	e2120	e1890	e2200	e6050	e19400	e10000	3340	3390	1900
7	4170	3120	e2300	e2220	e1870	e2300	e6100	e18100	e9560	3310	3600	2060
8	5010	3240	e2260	e2240	e1890	e2400	e6850	e16800	9190	3320	3610	2020
9	5210	3020	e2190	e2240	e1870	e2510	e8500	e15700	8950	3290	3560	1880
10	4970	3100	e2140	e2180	e1870	e2600	e12000	e14700	8500	3200	3380	1750
11	4660	2460	e2040	e2120	e1870	e2750	e15400	e14000	7910	3190	3200	1690
12	4420	e2060	e2140	e2070	e1900	e2860	e18600	e13200	7640	3190	2800	1680
13	4220	e2220	e2250	e2050	e1890	e3000	e21800	e12600	7410	3190	2470	1620
14	4050	e2230	e2270	e1990	e1870	e3200	e26000	e11700	7190	3210	2310	1590
15	3810	e2490	e2270	e1980	e1840	3370	e32000	e11000	7000	3180	2270	1660
16	3520	e2860	e2250	e2000	e1850	3610	e39000	e10300	6720	3140	2280	1620
17	3370	e3100	e2180	e1990	e1870	3840	41500	e11100	6430	3030	2270	1610
18	3250	e3200	e2200	e2000	e1850	4100	43200	e14200	6170	3520	2260	1610
19	3220	e3270	e2180	e1990	e1920	4490	47700	e20500	5980	3900	2260	1520
20	3190	e3360	e2150	e1980	e1940	5920	54900	e25800	5850	5000	2220	1450
21	3340	e3260	e2170	e1970	e1940	e6500	58100	e30300	5650	5390	2200	1400
22	3450	e3100	e2180	e1960	e2030	e7400	56200	e31900	5490	5200	2210	1400
23	3630	e2700	e2180	e1950	e2100	e8100	51300	e31800	5340	e4900	2200	1410
24	3650	e2410	e2200	e1940	e2070	e8600	46200	e28600	5210	e4600	2200	1410
25	3580	e2280	e2160	e1930	e1980	e9200	e42000	e26600	5160	e4300	2160	1390
26	3460	e2130	e2140	e1920	e2010	e9700	e40000	e24900	5090	e4000	2130	1450
27	3360	e2070	e2100	e1910	e2120	e9800	e38500	e23100	4970	e3710	2060	1560
28	3200	e2080	e2090	e1900	e1850	e9750	e37000	e21700	4820	3420	2010	1620
29	3060	e2050	e2130	e1890	e2140	e9450	e34700	e20000	4750	3370	1920	1750
30	3110	e2160	e2100	e1880	---	e9100	e32300	e18200	4600	3390	1840	1800
31	3240	---	e2140	e1870	---	e9600	---	e16400	---	3500	1870	---
TOTAL	112480	83440	68970	62930	55750	156150	849900	637600	226880	116260	82380	50320
MEAN	3628	2781	2225	2030	1922	5037	28330	20570	7563	3750	2657	1677
MAX	5210	3420	2510	2240	2140	9800	58100	31900	14600	5390	3630	2060
MIN	1580	2050	2040	1870	1840	1760	6000	10300	4600	3030	1840	1390
AC-FT	223100	165500	136800	124800	110600	309700	1686000	1265000	450000	230600	163400	99810

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1904 - 1996, BY WATER YEAR (WY)

MEAN	1403	1192	963	820	789	2524	9470	5114	3901	3280	1748	1430
MAX	5127	5218	3073	2030	1922	15370	31480	36510	19340	25270	17050	6251
(WY)	1995	1972	1972	1996	1996	1995	1979	1950	1962	1975	1993	1993
MIN	12.1	30.5	17.8	18.8	2.87	42.1	954	373	151	88.8	30.6	20.3
(WY)	1937	1937	1937	1937	1937	1937	1938	1934	1934	1936	1934	1936

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR	FOR 1996 WATER YEAR	WATER YEARS 1904 - 1996
ANNUAL TOTAL	2214710	2503060	
ANNUAL MEAN	6068	6839	2701
HIGHEST ANNUAL MEAN			7580
LOWEST ANNUAL MEAN			244
HIGHEST DAILY MEAN	34700	Apr 1	80900
LOWEST DAILY MEAN	1310	Sep 28	1.8
ANNUAL SEVEN-DAY MINIMUM	1400	Sep 24	2.5
INSTANTANEOUS PEAK FLOW		58400	Apr 21
INSTANTANEOUS PEAK STAGE		45.93	Apr 21
ANNUAL RUNOFF (AC-FT)	4393000	4965000	1957000
10 PERCENT EXCEEDS	14200	18300	6020
50 PERCENT EXCEEDS	3060	3190	1340
90 PERCENT EXCEEDS	1750	1870	270

e Estimated.

RED RIVER OF THE NORTH BASIN  
05082500 RED RIVER OF THE NORTH AT GRAND FORKS, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1949, 1956 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT 02...	1030	2560	611	--	12.5	13.5	--	--	--	--
NOV 07...	1220	3080	870	--	-4.0	1.0	--	--	--	--
JAN 02...	1550	2160	536	--	-15.0	0.0	--	--	--	--
FEB 06...	1515	1820	--	--	0.0	0.0	--	--	--	--
MAR 04...	1600	2010	--	--	-10.0	0.0	--	--	--	--
APR 15...	1020	31000	375	--	1.0	1.0	--	--	--	--
22...	1155	54600	386	--	3.0	4.5	--	--	--	--
24...	1005	45400	248	--	1.0	3.0	--	--	--	--
MAY 01...	1415	29600	396	--	13.0	3.5	--	--	--	--
10...	1450	14700	532	7.3	15.0	6.0	240	185	55	25
22...	0745	32400	450	--	14.0	14.0	--	--	--	--
23...	1205	30700	436	--	21.0	18.0	--	--	--	--
28...	1235	21700	748	--	24.0	17.5	--	--	--	--
JUN 07...	1150	9560	680	--	22.0	19.0	--	--	--	--
JUL 01...	1215	4530	568	--	27.0	25.5	--	--	--	--
26...	1315	4000	500	--	31.5	23.5	--	--	--	--
AUG 29...	1425	1900	507	8.1	26.0	25.0	220	199	50	24

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
MAY 10...	14	11	0.4	5.2	87	9.0	0.10	306	327	0.44
AUG 29...	19	15	0.6	6.0	62	15	0.10	296	328	0.45

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAY 10...	13000	1	10	<1	20	10	<0.1	1	1	200
AUG 29...	1680	3	20	<1	20	<10	<0.1	<1	<1	210

RED RIVER OF THE NORTH BASIN  
05082625 TURTLE RIVER AT TURTLE RIVER STATE PARK NEAR ARVILLA, ND  
(National water-quality assessment program)

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LOCATION.--Lat 47°55'55", long 97°30'51", in NE<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> sec.1,T.151 N., R.54 W., Grand Forks County, Hydrologic Unit 09020307, on right bank 200 ft upstream from U.S .Highway 2, 1/4 mi upstream from Turtle River State Park, 1 mi northwest of Arvilla and 65 mi above mouth.

DRAINAGE AREA.--311 mi<sup>2</sup>.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1992 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 980 ft above sea level, from topographic map.

REMARKS.--Records poor. Some regulation by Larimore Dam located 4 mi upstream on the south branch of the Turtle River.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.3	e11	e12	e11	e9.4	e9.9	e10	141	44	17	15	7.5
2	9.5	e14	e12	e11	e9.2	e9.8	e10	121	44	16	14	8.9
3	12	e12	e12	e11	e9.0	e9.8	e10	107	45	16	14	8.4
4	12	e11	e11	e11	e8.9	e9.7	e10	96	46	23	13	8.6
5	e20	e10	e11	e11	e8.8	e9.6	e11	86	47	27	12	7.8
6	e25	e11	e11	e10	e8.8	e9.5	e11	77	49	29	11	7.8
7	e23	e12	e11	e10	e8.9	e9.4	e12	69	49	39	11	7.8
8	e18	e13	e11	e10	e9.0	e9.4	e13	63	49	41	11	7.5
9	e16	e11	e11	e10	e9.2	e9.4	e20	63	45	44	10	7.1
10	e14	e11	e11	e10	e9.4	e9.4	e30	70	41	52	9.6	6.8
11	e13	e11	e11	e11	e9.6	e9.5	e125	70	39	51	9.8	6.9
12	e12	e11	e11	e12	e9.8	e9.8	e1140	79	37	46	11	5.1
13	e12	e11	e11	e13	e9.8	e10	e815	84	35	51	11	4.8
14	e11	e11	e11	e12	e9.8	e11	e975	78	33	46	12	4.8
15	e11	e11	e11	e12	e9.8	e13	e875	86	31	72	11	4.4
16	e10	e11	e11	e12	e9.7	e16	780	88	28	48	11	4.4
17	e10	e11	e11	e11	e9.6	e19	749	90	25	33	12	4.6
18	e11	e12	e11	e11	e9.6	e20	709	91	23	35	13	4.8
19	e15	e13	e11	e11	e10	e16	647	86	21	34	11	4.8
20	e18	e14	e11	e11	e11	e13	519	77	20	32	9.5	4.9
21	e13	e14	e11	e11	e10	e12	461	72	20	31	9.4	4.9
22	e12	e14	e11	e11	e10	e13	393	68	20	29	8.6	4.5
23	e12	e13	e11	e10	e10	e13	344	65	22	26	8.1	4.7
24	e11	e13	e11	e10	e11	e12	303	61	21	24	7.7	4.5
25	e11	e12	e11	e10	e10	e11	278	59	22	22	7.5	4.2
26	e11	e12	e11	e10	e10	e11	257	57	22	20	8.2	4.1
27	e11	e11	e11	e9.9	e9.9	e11	238	55	21	19	7.4	4.2
28	e10	e11	e11	e9.8	e9.8	e11	e215	52	19	18	7.1	3.9
29	e10	e11	e11	e9.7	e9.9	e10	e190	49	19	17	6.9	4.2
30	e10	e11	e11	e9.6	---	e10	e160	46	18	16	7.1	4.7
31	e10	---	e11	e9.5	---	e10	---	44	---	15	7.6	---
TOTAL	402.8	354	344	331.5	279.9	357.2	10310	2350	955	989	317.5	171.6
MEAN	13.0	11.8	11.1	10.7	9.65	11.5	344	75.8	31.8	31.9	10.2	5.72
MAX	25	14	12	13	11	20	1140	141	49	72	15	8.9
MIN	9.3	10	11	9.5	8.8	9.4	10	44	18	15	6.9	3.9
AC-FT	799	702	682	658	555	709	20450	4660	1890	1960	630	340

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 1996, BY WATER YEAR (WY)

MEAN	25.8	16.5	10.7	9.10	8.69	123	172	49.2	26.8	46.7	31.5	35.7
MAX	70.0	32.5	15.3	13.1	10.3	250	344	78.8	37.9	91.7	84.4	74.7
(WY)	1995	1995	1995	1995	1995	1995	1996	1995	1994	1993	1993	1993
MIN	5.47	7.71	5.59	3.97	4.59	11.5	58.9	12.5	13.8	29.0	10.2	5.72
(WY)	1993	1993	1993	1993	1993	1996	1993	1993	1993	1994	1996	1996

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR	FOR 1996 WATER YEAR	WATER YEARS 1993 - 1996
ANNUAL TOTAL	20043.0	17162.5	
ANNUAL MEAN	54.9	46.9	46.4
HIGHEST ANNUAL MEAN			61.8
LOWEST ANNUAL MEAN			34.0
HIGHEST DAILY MEAN	800	1140	1140
LOWEST DAILY MEAN	6.6	3.9	3.0
ANNUAL SEVEN-DAY MINIMUM	7.1	4.3	3.4
INSTANTANEOUS PEAK FLOW		1200	1200
INSTANTANEOUS PEAK STAGE		a, b 14.39	14.39
ANNUAL RUNOFF (AC-FT)	39760	34040	33610
10 PERCENT EXCEEDS	161	72	107
50 PERCENT EXCEEDS	14	11	14
90 PERCENT EXCEEDS	9.3	8.3	6.8

a From high water mark.  
b Backwater from ice.  
e Estimated.

RED RIVER OF THE NORTH BASIN  
05082625 TURTLE RIVER AT TURTLE RIVER STATE PARK NEAR ARVILLA, ND--Continued  
(National water-quality assessment program)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1993 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Water year 1993 to current year.

WATER TEMPERATURE: Water year 1993 to current year.

INSTRUMENTATION.--Water-quality sensors since May 1993.

REMARKS.--Records fair. Due to instrument malfunction, daily specific conductance values are not available in the 1996 water year.  
Interruptions in the daily temperature record are due to instrument malfunction.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 29.8°C, June 19; minimum recorded, 0.0°C, several days.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 1,400 microsiemens, Aug. 29, 1993, and Aug. 12, 1994; minimum recorded, 439 microsiemens, June 14, 1994.

WATER TEMPERATURE: Maximum recorded, 29.8°C, June 19, 1996; minimum recorded, -0.1°C, on many days.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	BARO- METRIC PRES- SURE OF HG (00025)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED DIS- SOLVED SATUR- ATION (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00301)	HARD- NESS TOTAL AS CACO3 (00900)	ALKA- LITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)
OCT												
04...	1045	11	--	931	--	--	8.0	10.0	--	--	--	--
JAN												
02...	1430	11	--	904	--	--	-9.0	0.0	--	--	--	--
FEB												
12...	1330	9.8	--	907	7.6	750	-0.5	0.0	10.3	72	420	268
APR												
13...	1350	815	--	371	--	--	1.0	0.0	--	--	--	--
16...	0930	796	--	440	--	--	5.0	0.5	--	--	--	--
20...	1430	540	--	610	8.0	--	5.0	1.5	--	--	220	--
MAY												
02...	1245	120	--	823	--	--	10.0	6.5	--	--	--	--
04...	0930	--	96	1270	7.5	745	--	14.5	11.0	110	--	279
JUN												
27...	0930	21	--	--	--	--	26.0	21.5	--	--	--	--
JUL												
31...	0915	--	15	964	7.2	745	7.0	19.5	9.4	105	410	243
AUG												
09...	1110	10	--	697	--	--	--	20.5	--	--	--	--
13...	1035	--	11	913	7.4	745	20.5	21.5	9.2	107	--	--
SEP												
03...	0840	8.5	--	787	8.1	740	10.0	19.5	7.3	82	360	215
19...	1330	5.0	--	805	--	--	--	17.0	--	--	--	--

DATE	ALKA- LITY LAB (MG/L AS CACO3) (90410)	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)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	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)
FEB												
12...	309	110	36	31	14	0.7	5.0	327	0	160	21	0.30
APR												
20...	131	52	21	41	28	1	6.4	--	--	160	18	0.20
MAY												
04...	--	--	--	--	--	--	--	340	0	--	--	--
JUL												
31...	265	98	41	46	19	1	5.1	296	0	230	25	0.30
SEP												
03...	235	85	35	33	16	0.8	5.6	262	0	170	19	0.30



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DATE	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	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, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 TOTAL (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) (00608)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)
FEB 12...	28	557	603	0.82	15.9	0.010	0.950	0.960	0.960	0.140	0.36
APR 20...	--	378	413	0.56	602	--	--	--	--	--	--
JUL 31...	16	607	678	0.92	27.5	--	--	--	--	--	--
AUG 13...	--	--	--	--	--	0.020	0.310	0.330	0.330	0.030	0.47
SEP 03...	19	498	528	0.72	12.1	0.020	0.320	0.340	0.340	0.040	0.56

DATE	NITRO- GEN, ORGANIC DIS- SOLVED (MG/L AS N) (00607)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C) (00689)
FEB 12...	0.26	0.50	0.40	1.5	0.050	0.050	0.050	10	140	4.4	--
APR 20...	--	--	--	--	--	--	--	40	180	--	--
JUL 31...	--	--	--	--	--	--	--	13	55	6.8	--
AUG 13...	0.47	0.50	0.50	0.83	0.120	0.090	0.120	--	--	--	--
SEP 03...	0.46	0.60	0.50	0.94	0.150	0.120	0.150	20	73	5.6	0.70

[illegible]

RED RIVER OF THE NORTH BASIN  
05082625 TURTLE RIVER AT TURTLE RIVER STATE PARK NEAR ARVILLA, ND--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	.0	.0	.0	.0	.0	.0	.0	.0	.0	10.6	6.9	8.6
2	.0	.0	.0	.0	.0	.0	.0	.0	.0	8.4	5.5	7.0
3	.0	.0	.0	.0	.0	.0	.0	.0	.0	9.1	4.9	7.0
4	.0	.0	.0	.0	.0	.0	.0	.0	.0	9.2	5.2	7.4
5	.0	.0	.0	.0	.0	.0	.0	.0	.0	10.3	6.7	8.4
6	.0	.0	.0	.0	.0	.0	.0	.0	.0	9.5	7.0	8.4
7	.0	.0	.0	.0	.0	.0	.0	.0	.0	9.2	7.6	8.5
8	.0	.0	.0	.0	.0	.0	.0	.0	.0	9.2	8.0	8.6
9	.0	.0	.0	.0	.0	.0	.0	.0	.0	8.7	6.6	7.5
10	.0	.0	.0	.0	.0	.0	.4	.0	.1	9.1	5.5	7.4
11	.0	.0	.0	.0	.0	.0	.1	.0	.0	9.0	6.2	7.5
12	.0	.0	.0	.0	.0	.0	.2	.0	.0	11.3	6.4	9.0
13	.0	.0	.0	.0	.0	.0	.4	.0	.1	13.5	8.4	11.0
14	.0	.0	.0	.0	.0	.0	.3	.0	.1	12.0	10.4	10.8
15	.0	.0	.0	.0	.0	.0	.8	.0	.2	16.6	10.4	13.4
16	.0	.0	.0	.0	.0	.0	2.5	.0	1.2	15.6	13.2	14.7
17	.0	.0	.0	.0	.0	.0	4.3	1.9	3.2	17.9	14.5	16.1
18	.0	.0	.0	.0	.0	.0	6.6	3.5	5.0	19.2	15.9	17.5
19	.0	.0	.0	.0	.0	.0	5.5	4.2	5.1	17.8	13.4	16.0
20	.0	.0	.0	.0	.0	.0	4.4	3.3	3.9	17.1	12.9	15.2
21	.0	.0	.0	.0	.0	.0	4.1	2.9	3.5	15.8	13.1	14.3
22	.0	.0	.0	.0	.0	.0	6.0	2.4	4.0	16.9	11.6	14.1
23	.0	.0	.0	.0	.0	.0	6.9	3.8	5.2	14.4	12.5	13.4
24	.0	.0	.0	.0	.0	.0	6.7	4.6	5.7	17.4	12.1	14.6
25	.0	.0	.0	.0	.0	.0	6.1	4.3	5.5	16.4	12.9	14.9
26	.0	.0	.0	.0	.0	.0	6.4	3.4	4.8	16.5	14.0	15.2
27	.0	.0	.0	.0	.0	.0	6.0	3.4	4.7	18.4	14.2	16.3
28	.0	.0	.0	.0	.0	.0	8.4	4.2	6.1	20.6	14.6	17.6
29	.0	.0	.0	.0	.0	.0	9.6	4.9	7.2	22.6	16.9	19.7
30	---	---	---	.0	.0	.0	10.9	6.4	8.5	23.4	18.3	20.8
31	---	---	---	.0	.0	.0	---	---	---	23.8	18.9	21.4
MONTH	.0	.0	.0	.0	.0	.0	10.9	.0	2.5	23.8	4.9	12.7

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	22.2	19.5	20.8	21.2	17.7	19.6	25.8	19.0	22.2	23.2	21.0	22.1
2	23.4	18.2	20.8	23.0	18.5	20.4	25.0	20.1	22.3	24.2	19.8	21.9
3	23.8	19.5	21.6	21.5	18.8	20.0	25.3	19.1	22.0	22.7	19.4	20.9
4	24.8	20.3	22.4	18.8	15.6	16.8	26.1	19.6	22.8	22.3	17.9	20.2
5	26.0	21.0	23.2	20.9	14.8	17.8	27.0	21.5	24.0	25.0	20.1	22.3
6	21.9	15.1	17.3	23.8	17.7	20.8	27.7	22.0	24.5	23.2	19.9	21.8
7	18.3	13.7	16.0	24.4	20.9	22.5	24.8	22.2	24.0	22.5	17.9	19.9
8	20.2	14.5	17.5	25.5	20.6	23.1	24.6	19.3	21.8	21.7	16.5	19.1
9	21.0	16.6	18.7	27.4	22.7	25.0	24.4	18.5	21.3	22.3	17.5	20.0
10	21.7	16.0	18.8	28.2	23.3	25.8	22.7	18.7	20.5	20.6	17.5	19.3
11	22.9	17.1	20.0	29.7	24.9	27.3	24.1	18.5	21.0	19.0	15.6	17.2
12	22.3	18.3	20.5	28.8	25.4	27.1	21.3	19.1	20.3	18.4	16.1	17.1
13	25.4	18.8	22.2	26.6	23.5	24.9	22.7	16.9	19.6	18.5	14.5	16.3
14	27.3	21.7	24.5	26.9	22.5	24.7	24.5	17.6	20.8	19.1	13.6	16.3
15	28.7	22.9	25.7	25.0	20.5	22.2	24.5	20.4	22.2	17.3	14.2	15.7
16	29.3	23.7	26.4	23.8	19.4	21.6	27.5	21.4	24.2	15.5	11.7	13.9
17	29.0	23.9	26.3	25.0	20.5	22.8	24.8	20.4	23.6	14.1	10.6	12.0
18	29.7	23.7	26.6	23.6	21.7	22.7	23.3	18.1	20.5	11.1	9.0	10.1
19	29.8	24.3	26.7	24.8	20.5	22.7	24.2	18.2	20.9	10.6	7.0	8.8
20	27.5	23.5	25.5	24.7	21.7	23.1	24.2	18.4	21.0	9.1	7.1	8.0
21	29.1	23.5	26.1	25.4	21.1	23.1	26.0	19.4	22.5	9.3	5.3	7.2
22	25.7	22.0	23.6	25.8	20.9	23.4	24.4	20.0	21.8	10.6	5.2	7.9
23	22.0	19.1	20.3	24.6	22.0	23.2	23.2	18.5	20.6	11.4	6.9	9.1
24	21.7	18.4	20.1	23.0	19.3	21.0	25.0	18.8	21.9	13.5	8.5	10.9
25	23.4	19.6	21.6	24.9	19.2	22.0	23.8	19.4	21.5	14.2	8.9	11.6
26	24.8	21.2	22.8	25.9	21.6	23.4	22.4	17.3	19.8	14.9	9.5	12.2
27	26.1	21.5	23.4	25.0	20.9	22.7	22.2	16.7	19.5	16.3	11.3	13.7
28	22.6	18.2	20.5	24.6	19.2	21.9	23.7	18.2	21.0	14.4	12.3	13.3
29	21.0	16.6	18.7	24.9	21.2	22.6	24.5	19.7	22.1	13.2	11.3	12.3
30	21.8	16.4	19.2	23.3	18.4	20.7	25.0	20.0	22.5	13.2	9.5	11.3
31	---	---	---	24.1	18.1	20.9	25.5	20.8	23.2	---	---	---
MONTH	29.8	13.7	21.9	29.7	14.8	22.4	27.7	16.7	21.8	25.0	5.2	15.1

RED RIVER OF THE NORTH BASIN  
05084000 FOREST RIVER NEAR FORDVILLE, ND

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LOCATION.--Lat 48°11'50", long 97°43'49", on line between secs.32 and 33, T.155 N., R.55 W., Walsh County, Hydrologic Unit 09020308, on right bank 50 ft upstream from highway bridge, 0.5 mi downstream from South Branch, and 3 mi southeast of Fordville.

DRAINAGE AREA.--456 mi<sup>2</sup>, of which about 120 mi<sup>2</sup> is probably noncontributing.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Elevation of gage is 1,035 ft above sea level, from topographic map. Prior to July 21, 1951, nonrecording gage at site 50 ft downstream at same datum.

REMARKS.--Records good except for periods of estimated discharges, which are fair. Some regulation of high flows by temporary retention in several retarding basins above station. Retarding basins have a combined capacity of about 14,000 acre-ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.1	13	13	e12	e11	e10	48	371	194	24	31	3.0
2	9.8	14	14	e12	e11	e10	41	347	167	21	26	3.1
3	11	12	13	e13	e11	e10	39	324	142	19	20	2.9
4	11	12	13	e14	e11	e10	39	301	127	17	17	2.5
5	13	13	13	e14	e11	e10	33	279	114	18	15	6.1
6	13	13	e12	e14	e11	e10	34	258	130	17	12	5.4
7	13	12	e11	e14	e11	e10	30	238	151	15	10	4.8
8	12	11	e10	e14	e11	e10	25	220	124	14	8.8	4.5
9	12	12	e9.5	e14	e11	e10	35	201	106	13	7.7	4.2
10	12	12	e9.0	e14	e11	e10	770	182	96	11	7.0	3.8
11	11	12	e8.8	e14	e11	e10	1610	164	85	12	6.4	4.1
12	11	12	e9.0	e14	e11	e10	914	150	77	11	5.8	4.1
13	13	12	e9.5	e14	e11	e10	883	142	71	10	5.5	4.2
14	9.3	12	e10	e14	e11	e25	926	134	65	11	4.9	3.8
15	8.8	12	e11	e14	e11	e150	679	129	61	10	4.6	3.7
16	9.0	12	e12	e14	e11	e450	696	125	57	9.6	4.4	3.5
17	9.1	13	e13	e13	e11	e400	738	e1150	54	8.7	3.8	3.5
18	10	13	e13	e12	e11	e260	736	e1400	50	11	3.1	4.1
19	11	14	e13	e12	e11	220	730	496	45	10	4.0	4.2
20	11	13	e13	e12	e11	219	626	421	42	14	3.8	5.0
21	11	13	e13	e12	e11	206	562	407	37	15	4.8	5.1
22	11	12	e13	e12	e11	183	532	400	33	22	4.8	6.4
23	11	12	e13	e12	e11	168	522	386	35	25	4.3	6.0
24	11	12	e13	e12	e11	195	517	363	35	20	3.5	5.2
25	11	12	e13	e12	e11	184	521	339	37	16	2.9	4.9
26	11	12	e13	e12	e11	172	509	311	37	16	2.9	7.5
27	11	12	e13	e12	e11	144	479	279	36	21	2.5	16
28	12	13	e13	e12	e10	116	444	253	34	25	2.5	14
29	11	13	e12	e12	e10	93	415	228	31	35	2.6	11
30	12	13	e12	e12	---	67	393	207	27	36	2.6	9.5
31	12	---	e12	e11	---	57	---	192	---	34	2.5	---
TOTAL	343.1	373	369.8	399	317	3439	14526	10397	2300	541.3	236.7	166.1
MEAN	11.1	12.4	11.9	12.9	10.9	111	484	335	76.7	17.5	7.64	5.54
MAX	13	14	14	14	11	450	1610	1400	194	36	31	16
MIN	8.8	11	8.8	11	10	10	25	125	27	8.7	2.5	2.5
AC-FT	681	740	733	791	629	6820	28810	20620	4560	1070	469	329

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 1996, BY WATER YEAR (WY)

	MEAN	10.3	8.97	7.40	6.42	7.38	65.3	202	66.8	34.3	25.6	12.5	8.75
MAX	57.9	23.7	19.2	16.3	29.9	323	1182	1037	255	232	280	53.3	
(WY)	1983	1983	1983	1986	1981	1995	1950	1950	1964	1982	1993	1993	
MIN	1.52	2.03	2.06	2.70	1.21	4.07	9.46	7.07	2.74	3.34	1.64	.91	
(WY)	1941	1941	1941	1941	1963	1941	1991	1961	1940	1941	1945	1940	

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR	FOR 1996 WATER YEAR	WATER YEARS 1940 - 1996
ANNUAL TOTAL	27264.6	33408.0	
ANNUAL MEAN	74.7	91.3	38.4
HIGHEST ANNUAL MEAN			193
LOWEST ANNUAL MEAN			6.37
HIGHEST DAILY MEAN	1350	1610	10900
LOWEST DAILY MEAN	6.4	2.5	.00
ANNUAL SEVEN-DAY MINIMUM	7.0	2.6	.00
INSTANTANEOUS PEAK FLOW		a 2900	16400
INSTANTANEOUS PEAK STAGE		e 7.30	14.48
ANNUAL RUNOFF (AC-FT)	54080	66260	27810
10 PERCENT EXCEEDS	226	304	48
50 PERCENT EXCEEDS	13	13	8.3
90 PERCENT EXCEEDS	9.9	5.0	3.6

a About.  
e Estimated.

RED RIVER OF THE NORTH BASIN  
05084000 FOREST RIVER NEAR FORDVILLE, ND--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
NOV 20...	1310	13	940	--	-2.0	0.5	--	--	--	--
JAN 09...	1330	15	953	--	-6.0	0.0	--	--	--	--
MAR 14...	1210	10	795	--	0.0	0.5	--	--	--	--
APR 09...	0955	27	895	--	1.0	1.0	--	--	--	--
14...	1115	996	373	--	10.0	2.0	--	--	--	--
20...	1110	629	545	--	2.0	3.0	--	--	--	--
MAY 07...	1135	238	666	7.6	13.5	9.0	250	149	60	25
JUN 28...	1105	35	879	--	29.0	25.5	--	--	--	--
AUG 06...	1600	12	904	8.1	22.5	25.0	360	235	83	38

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
MAY 07...	50	29	1	6.8	180	13	0.20	425	435	0.59
AUG 06...	62	27	1	7.8	260	16	0.20	608	626	0.85

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAY 07...	280	2	100	<1	30	90	0.1	<1	<1	210
AUG 06...	19.6	4	30	<1	40	110	<0.1	<1	<1	350



## WATER-DISCHARGE RECORDS

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

- a From rating curve extended above 7,200 ft<sup>3</sup>/s on basis of contracted opening measurement of peak flow.  
b From floodmark.  
c Backwater from ice.  
e Estimated.

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

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)
NOV 22...	1035	15	1050	--	-4.0	1.0	--	--	--	--
JAN 09...	1650	9.0	1190	--	-7.0	0.0	--	--	--	--
MAR 06...	1435	2.7	1060	--	-15.0	0.0	--	--	--	--
APR 13...	1550	3440	324	--	1.0	5.0	--	--	--	--
14...	1735	3080	316	--	9.0	2.0	--	--	--	--
18...	1745	1220	395	--	--	--	--	--	--	--
MAY 10...	1040	226	725	7.8	15.0	9.0	290	69	28	45
19...	1450	1450	--	--	22.0	14.0	--	--	--	--
JUN 26...	1345	47	901	--	30.0	20.0	--	--	--	--
AUG 08...	1120	26	956	8.1	20.0	21.5	400	94	41	61

DATE	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB 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)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
MAY 10...	25	1	8.2	170	200	17	0.20	470	506	0.69
AUG 08...	24	1	8.5	253	270	21	0.20	648	671	0.91

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAY 10...	309	1	50	<1	30	10	<0.1	1	<1	290
AUG 08...	46.6	4	30	<1	40	130	<0.1	<1	1	370

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

123

LOCATION.--Lat 48°25'29", long 97°24'42", in NE<sup>1</sup>/<sub>4</sub> sec.13, T.157 N., R.53 W., Walsh County, Hydrologic Unit 09020310, on right bank just upstream of U.S. Highway 81 bridge in Grafton, and 3.5 mi downstream from South Branch Park River.

DRAINAGE AREA.--695 mi<sup>2</sup>, approximately.

WATER-DISCHARGE RECORDS

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

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

GAGE.--Water-stage recorder. Datum of gage is 811.00 ft above sea level. Prior to Oct. 1, 1984, gage located on right bank 30 ft upstream of Wakeman Avenue bridge. Datum of gage was 807.39 ft. Prior to Sept. 30, 1940, nonrecording gage at site 30 ft downstream at same datum. Oct. 1, 1940, to Sept. 17, 1946, nonrecording gage at site 2 mi downstream above masonry dam at same datum. Sept. 18, 1946, to July 25, 1952, nonrecording gage at site 30 ft downstream at same datum.

REMARKS.--Records fair.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	.05	.01	.20	e.15	e9.2	e8.0	496	175	18	19	.01
2	.60	.33	.01	.20	e.15	e9.2	e8.0	454	143	16	21	.03
3	1.6	.26	.01	.20	e.15	e9.0	e8.0	428	131	15	21	.05
4	3.2	.05	.01	.20	e.15	e8.8	e8.0	404	135	13	21	.05
5	1.6	.05	.14	.20	e.15	e8.6	e8.0	387	131	11	17	1.3
6	.60	.05	.20	.20	e.15	e8.4	e9.0	315	123	9.6	15	.41
7	.60	.05	.07	.20	e.50	e8.4	e10	233	117	8.6	12	.05
8	.23	.05	.01	.20	e1.0	e8.0	e12	205	158	8.6	12	.05
9	.05	.05	.01	.22	e1.0	e8.0	e15	190	185	8.6	10	.05
10	.05	.05	.01	.20	e5.0	e8.0	e20	179	178	8.6	9.6	.03
11	.14	.05	.01	.20	e10	e8.0	e40	176	103	8.4	9.8	.00
12	.60	.05	.01	.20	e10	e9.0	e200	172	85	7.7	7.3	.00
13	.60	.05	.00	.20	e11	e10	e500	165	55	8.1	6.9	.00
14	.60	.03	.01	.20	e10	e10	e1400	154	44	9.4	5.3	.00
15	.60	.00	.01	e.19	e10	e11	e2500	148	38	7.7	5.2	.00
16	.60	.00	.01	e.19	e9.0	e13	e3300	140	34	6.1	3.5	.00
17	.60	.00	.01	e.19	e9.0	e12	e3250	698	32	6.0	3.2	.00
18	.60	.00	.01	e.18	e9.0	e11	e3200	2280	29	6.0	.61	.00
19	.60	.00	.01	e.18	e9.0	e11	e3000	2490	27	6.0	.43	.00
20	.17	.00	.01	e.18	e9.0	e10	e2800	1500	24	9.5	.60	.00
21	.00	.00	.01	e.17	e9.5	e10	e2500	1060	22	12	.66	.00
22	.00	.00	.01	e.17	e9.5	e10	2330	737	21	10	1.0	.00
23	.00	.00	.01	e.17	e9.5	e10	1770	456	21	8.6	1.9	.00
24	.00	.00	.01	e.16	e9.5	e9.0	1110	319	21	8.6	1.9	.00
25	.03	.00	.01	e.16	e9.5	e9.0	839	265	23	8.6	1.9	.00
26	.05	.00	.07	e.15	e9.5	e9.0	717	243	23	8.6	1.9	.05
27	.05	.00	.20	e.15	e9.5	e8.0	744	227	22	11	1.4	1.7
28	.05	.00	.20	e.15	e9.5	e8.0	682	210	21	14	1.2	3.2
29	.05	.00	.20	e.15	e9.5	e8.0	618	199	21	15	1.4	3.2
30	.05	.01	.20	e.15	---	e8.0	561	206	19	15	.20	1.6
31	.05	---	.20	e.15	---	e8.0	---	201	---	15	.15	---
TOTAL	15.37	1.18	1.69	5.66	189.90	287.6	32167.0	15337	2161	318.3	214.05	11.78
MEAN	.50	.039	.055	.18	6.55	9.28	1072	495	72.0	10.3	6.90	.39
MAX	3.2	.33	.20	.22	11	13	3300	2490	185	18	21	3.2
MIN	.00	.00	.00	.15	.15	8.0	8.0	140	19	6.0	.15	.00
AC-FT	30	2.3	3.4	11	377	570	63800	30420	4290	631	425	23

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 1996, BY WATER YEAR (WY)

	5.02	3.42	2.26	1.27	2.26	72.7	394	114	44.4	27.0	13.7	7.39
MEAN	5.02	3.42	2.26	1.27	2.26	72.7	394	114	44.4	27.0	13.7	7.39
MAX	69.9	31.3	17.4	13.9	45.7	654	2051	2071	576	398	569	151
(WY)	1983	1981	1983	1983	1981	1995	1950	1950	1964	1993	1993	1957
MIN	.000	.000	.000	.000	.000	.000	.000	2.05	.000	.000	.000	.000
(WY)	1934	1934	1933	1932	1933	1936	1991	1939	1961	1990	1932	1932

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR		FOR 1996 WATER YEAR		WATER YEARS 1931 - 1996	
ANNUAL TOTAL	40148.77		50710.53		57.3	
ANNUAL MEAN	110		139		353	
HIGHEST ANNUAL MEAN					1.38	
LOWEST ANNUAL MEAN					1950	
HIGHEST DAILY MEAN	1950	Mar 21	3300	Apr 16	11700	Apr 19 1950
LOWEST DAILY MEAN	.00	Oct 21	.00	Oct 21	.00	Aug 10 1931
ANNUAL SEVEN-DAY MINIMUM	.00	Nov 15	.00	Nov 15	.00	Aug 21 1931
INSTANTANEOUS PEAK FLOW			b 3400	Apr 16	a 12600	Apr 19 1950
INSTANTANEOUS PEAK STAGE			b 14.53	Apr 16	20.13	Apr 19 1950
ANNUAL RUNOFF (AC-FT)	79640		100600		41530	
10 PERCENT EXCEEDS	335		215		69	
50 PERCENT EXCEEDS	2.5		6.0		1.5	
90 PERCENT EXCEEDS	.01		.01		.00	

- a From rating curve extended above 9,000 ft<sup>3</sup>/s.  
b Backwater from ice.  
e Estimated.

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

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
MAR 06...	1245	8.4	1440	--	-15.0	0.0	--	--	--	--
APR 14...	1140	1390	332	--	7.5	1.0	--	--	--	--
16...	1035	3370	360	--	8.0	4.0	--	--	--	--
18...	1530	3220	353	--	--	5.5	--	--	--	--
19...	1615	2970	387	--	1.0	3.0	--	--	--	--
MAY 08...	1225	202	913	7.4	15.0	12.0	360	194	90	33
19...	1010	2690	--	--	17.0	14.0	--	--	--	--
JUN 26...	0925	23	1430	--	22.0	19.0	--	--	--	--
AUG 06...	1000	16	1290	8.0	20.5	23.5	430	283	97	46

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
MAY 08...	75	31	2	7.5	200	54	0.30	577	579	0.79
AUG 06...	110	35	2	11	270	110	0.40	815	843	1.15

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAY 08...	316	2	100	<1	40	130	0.1	1	1	340
AUG 06...	36.6	4	20	<1	60	150	<0.1	3	1	480



RED RIVER OF THE NORTH BASIN  
05092000 RED RIVER OF THE NORTH AT DRAYTON, ND

125

LOCATION.--Lat 48°34'20", long 97°08'50", in SE<sup>1</sup>/<sub>4</sub> SE<sup>1</sup>/<sub>4</sub> SE<sup>1</sup>/<sub>4</sub> sec.24, T.159 N., R.51 W., Pembina County, Hydrologic Unit 09020311, on downstream side of bridge on North Dakota State Highway 11, at the North Dakota-Minnesota border, 1.5 mi northeast of Drayton, and at mile 206.7.

DRAINAGE AREA.--34,800 mi<sup>2</sup>, approximately, includes 3,800 mi<sup>2</sup> in closed basins.

WATER-DISCHARGE RECORDS

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

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

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

REMARKS.--Records fair.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of April 1897 reached a stage of about 41 ft at site and datum in use prior to Nov. 30, 1954.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996 DAILY MEAN VALUES												
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1350	3050	e2300	e2100	e1900	e2150	e12800	49000	26000	4700	3820	2140
2	1380	3120	e2360	e2110	e1940	e2160	e12200	46000	24500	4560	3720	2100
3	1740	3220	e2420	e2110	e1980	e2170	e11400	43600	23000	4380	3670	2060
4	2650	3260	e2480	e2110	e2020	e2180	e10200	41000	21300	4200	3650	2040
5	3150	3290	e2550	e2100	e2060	e2190	e9940	39000	19500	4000	3640	2020
6	3270	3270	e2550	e2100	e2060	e2200	e9080	36500	18000	e3950	3580	2020
7	3370	3060	e2550	e2100	e2070	e2220	e8610	34500	16400	e3900	3550	2000
8	3580	2940	e2480	e2100	e2040	e2220	e8490	32500	14900	e3850	3520	1990
9	4080	2550	e2400	e2100	e2010	e2230	e8700	30500	13400	e3800	3510	1980
10	4480	2490	e2320	e2100	e1990	e2230	e8850	29000	12100	e3700	3510	1980
11	4560	2520	e2250	e2090	e1990	e2230	e12400	27000	11100	e3700	3490	1980
12	4450	2470	e2180	e2090	e1920	e2330	e15400	25500	10200	e3650	3470	1930
13	4280	2600	e2100	e2090	e1870	e2390	e18100	23800	9450	e3600	3420	1880
14	4120	2620	e2080	e2080	e1880	e2360	e20900	22300	8900	e3550	3250	1830
15	3960	2660	e2050	e2080	e1870	e2330	e24200	20500	8600	e3500	3040	1780
16	3780	2730	e2050	e2070	e1850	e2290	e27200	18800	8380	e3500	2860	1730
17	3560	2920	e2040	e2060	e1840	e2340	e30500	21200	7810	3430	2710	1700
18	3410	3130	e2030	e2040	e1840	e2560	e34800	24000	7290	3260	2610	1670
19	3270	3330	e2020	e2030	e1870	e2800	e39000	28500	6860	3320	2550	1650
20	3200	3470	e2010	e2020	e1900	e3150	43000	30600	6480	3710	2470	1640
21	3150	3540	e2010	e2020	e1900	e3940	48600	32100	6180	4290	2440	1630
22	3140	3630	e2000	e2010	e1900	e5540	53500	33200	5910	4830	2390	1590
23	3180	e3250	e2010	e2010	e1960	e7000	58500	33800	5700	5020	2370	1550
24	3300	e3070	e2020	e2000	e2180	e8200	59500	34300	5510	4870	2350	1490
25	3370	e2900	e2030	e2000	e2100	e8500	60500	34000	5340	4590	2340	1460
26	3400	e2770	e2040	e2000	e2010	e10200	60500	33800	5210	4490	2320	1450
27	3390	e2640	e2050	e2000	e2130	e11900	60000	32300	5120	4450	2310	1430
28	3350	e2510	e2060	e2000	e2140	e12600	55000	30600	5010	4380	2280	1430
29	3270	e2380	e2070	e1980	e2140	e13600	54000	30000	4940	4270	2240	1420
30	3150	e2320	e2080	e1960	---	e13100	50600	28500	4820	4150	2210	1420
31	3060	---	e2090	e1940	---	e13100	---	27500	---	4000	2180	---
TOTAL	103400	87710	67680	63600	57360	154410	926470	973900	327910	125600	91470	52990
MEAN	3335	2924	2183	2052	1978	4981	30880	31420	10930	4052	2951	1766
MAX	4560	3630	2550	2110	2180	13600	60500	49000	26000	5020	3820	2140
MIN	1350	2320	2000	1940	1840	2150	8490	18800	4820	3260	2180	1420
AC-FT	205100	174000	134200	126200	113800	306300	1838000	1932000	650400	249100	181400	105100

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1949 - 1996, BY WATER YEAR (WY)

	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
MEAN	1841	1549	1230	1076	1048	2952	14180	8674	5310	4590	2431	1838
MAX	5194	5653	3072	2065	1978	15720	38390	58890	23420	28240	21580	7912
(WY)	1995	1972	1972	1966	1996	1995	1966	1950	1962	1975	1993	1993
MIN	317	277	149	174	201	280	1275	938	676	348	243	329
(WY)	1991	1977	1977	1990	1977	1962	1981	1977	1977	1988	1977	1988

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR	FOR 1996 WATER YEAR	WATER YEARS 1949 - 1996
ANNUAL TOTAL	2496650	3032500	
ANNUAL MEAN	6840	8286	3910
HIGHEST ANNUAL MEAN			10510
LOWEST ANNUAL MEAN			536
HIGHEST DAILY MEAN	37800	Apr 1	91000
LOWEST DAILY MEAN	1350	Oct 1	110
ANNUAL SEVEN-DAY MINIMUM	1460	Sep 26	118
INSTANTANEOUS PEAK FLOW			92900
INSTANTANEOUS PEAK STAGE		42.41	43.66
INSTANTANEOUS LOW FLOW			7.7
ANNUAL RUNOFF (AC-FT)	4952000	6015000	2833000
10 PERCENT EXCEEDS	17100	27800	8610
50 PERCENT EXCEEDS	3050	3130	1750
90 PERCENT EXCEEDS	1750	1950	465

e Estimated.

**RED RIVER OF THE NORTH BASIN**  
**05092000 RED RIVER OF THE NORTH AT DRAYTON, ND--Continued**

**WATER-QUALITY RECORDS**

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
NOV 06...	1550	3260	880	--	-3.0	1.0	--	--	--	--
JAN 03...	1500	2120	688	--	-10.0	0.5	--	--	--	--
MAR 08...	1305	2220	741	--	-12.0	0.0	--	--	--	--
APR 21...	1500	48600	320	--	3.0	3.5	--	--	--	--
25...	1335	60500	309	--	8.0	4.5	--	--	--	--
MAY 03...	1100	43700	450	--	8.0	8.5	--	--	--	--
13...	1310	23800	558	7.7	16.0	8.0	230	168	53	24
20...	1115	30000	527	--	15.5	17.0	--	--	--	--
29...	1320	30000	587	--	26.0	18.0	--	--	--	--
JUN 11...	1130	11100	692	--	25.0	20.0	--	--	--	--
18...	1250	7340	650	--	26.0	20.0	--	--	--	--
AUG 12...	1500	3290	640	8.1	28.0	25.5	270	210	60	28

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
MAY 13...	21	16	0.6	6.8	97	18	0.20	321	354	0.48
AUG 12...	35	22	0.9	5.0	95	29	0.20	378	411	0.56

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAY 13...	22700	<1	10	<1	20	<10	0.1	<1	1	220
AUG 12...	3650	3	20	<1	30	<10	<0.1	<1	<1	270

RED RIVER OF THE NORTH BASIN  
05099100 SNOWFLAKE CREEK NEAR SNOWFLAKE, MANITOBA  
(International gaging station)

127

LOCATION.--Lat 49°01'17", long 98°36'13", in SW<sup>1</sup>/<sub>4</sub> sec.10, T.1, R.9 W., first meridian, Hydrologic Unit 09020313, at traffic bridge, 2.5 mi east, and 1.5 mi south of Snowflake, Manitoba.

DRAINAGE AREA.--348 mi<sup>2</sup>.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder since March 1968 and nonrecording gage prior thereto. Datum of gage is Geodetic Survey of Canada Datum of 1929. Prior to Jan. 1, 1987, recording gage at same site at datum of 1221.66 ft above Geodetic Survey of Canada Datum of 1929. Prior to Apr. 2, 1964, nonrecording gage at present site and datum. Apr. 2, 1964, to May 10, 1965, nonrecording gage at site 0.5 mi downstream at present datum.

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	6.0	e.07	e.00	e.00	e.00	e.07	770	142	20	95	46
2	23	4.2	e.07	e.00	e.00	e.04	e.07	742	134	18	97	44
3	23	2.4	e.07	e.00	e.00	e.07	e.04	706	120	17	98	42
4	23	3.3	e.07	e.00	e.00	e.11	e.04	664	113	16	110	40
5	22	.88	e.07	e.00	e.00	e.14	e.04	632	109	16	120	40
6	21	e.78	e.04	e.00	e.00	e.18	e.04	593	104	17	113	40
7	21	e.95	e.04	e.00	e.00	e.25	e.07	572	99	18	109	39
8	20	e1.4	e.04	e.00	e.00	e.32	e1.3	530	93	19	107	38
9	20	e.99	e.04	e.00	e.00	e.42	e35	470	87	19	105	37
10	19	e1.0	e.04	e.00	e.00	e.53	e126	431	81	19	103	36
11	17	e.88	e.04	e.00	e.00	e.60	e207	424	76	20	100	35
12	16	e.85	e.04	e.00	e.00	e.81	e157	403	70	19	95	34
13	14	e.71	e.04	e.00	e.00	e1.2	e258	378	64	17	91	34
14	10	e.64	e.04	e.00	e.00	e2.0	e283	352	57	17	86	33
15	12	e.53	e.04	e.00	e.00	e3.2	e305	331	50	17	81	33
16	11	e.49	e.04	e.00	e.00	e7.3	e303	296	45	15	77	32
17	11	e.46	e.04	e.00	e.00	e25	353	300	40	14	71	31
18	6.4	e.42	e.04	e.00	e.00	e14	367	278	35	16	67	30
19	8.1	e.39	e.04	e.00	e.00	e9.3	512	283	37	17	66	30
20	5.9	e.32	e.04	e.00	e.00	e6.6	523	266	36	25	65	30
21	6.6	e.25	e.04	e.00	e.00	e2.9	600	254	35	27	77	30
22	7.3	e.21	e.04	e.00	e.00	e1.1	618	236	30	28	72	30
23	6.5	e.14	e.04	e.00	e.00	e.64	692	224	30	32	70	29
24	6.3	e.14	e.04	e.00	e.00	e.39	862	208	29	40	66	29
25	6.7	e.14	e.04	e.00	e.00	e.39	1040	200	30	48	63	29
26	5.9	e.11	e.04	e.00	e.00	e1.6	915	187	30	55	60	30
27	6.1	e.11	e.04	e.00	e.00	e1.3	922	175	28	62	58	30
28	5.8	e.11	e.04	e.00	e.00	e.14	908	170	25	67	56	30
29	5.5	e.07	e.04	e.00	e.00	e4.6	883	162	25	79	53	30
30	5.6	e.07	e.04	e.00	---	e3.0	837	154	22	89	50	29
31	5.6	---	e.04	e.00	---	e.18	---	150	---	92	47	---
TOTAL	394.3	28.94	1.39	0.00	0.00	88.31	11707.67	11541	1876	975	2528	1020
MEAN	12.7	.96	.045	.000	.000	2.85	390	372	62.5	31.5	81.5	34.0
MAX	23	6.0	.07	.00	.00	25	1040	770	142	92	120	46
MIN	5.5	.07	.04	.00	.00	.00	.04	150	22	14	47	29
AC-FT	782	57	2.8	.00	.00	175	23220	22890	3720	1930	5010	2020

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 1996, BY WATER YEAR (WY)

MEAN	5.25	2.38	.31	.043	.16	7.82	110	70.8	20.4	8.24	6.69	5.98
MAX	70.5	39.9	7.67	1.36	4.90	74.6	668	390	123	35.7	81.5	99.7
(WY)	1995	1995	1995	1995	1981	1995	1995	1979	1974	1993	1996	1993
MIN	.000	.000	.000	.000	.000	.000	.22	.061	.000	.000	.000	.000
(WY)	1962	1962	1962	1962	1962	1962	1973	1988	1962	1961	1961	1961

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR		FOR 1996 WATER YEAR		WATER YEARS 1961 - 1996	
ANNUAL TOTAL	37955.83		30160.61		20.4	
ANNUAL MEAN	104		82.4		113	
HIGHEST ANNUAL MEAN					.38	
LOWEST ANNUAL MEAN					1988	
HIGHEST DAILY MEAN	1070		1040		1130	
LOWEST DAILY MEAN	.04		.00		.00	
ANNUAL SEVEN-DAY MINIMUM	.04		.00		.00	
INSTANTANEOUS PEAK FLOW			1080		1210	
INSTANTANEOUS PEAK STAGE			1230.59		1230.59	
ANNUAL RUNOFF (AC-FT)	75290		59820		14770	
10 PERCENT EXCEEDS	386		270		40	
50 PERCENT EXCEEDS	21		16		.03	
90 PERCENT EXCEEDS	.13		.00		.00	

e Estimated.

**RED RIVER OF THE NORTH BASIN**  
**05099150 MOWBRAY CREEK NEAR MOWBRAY, MANITOBA**  
(International gaging station)

**LOCATION.**--Lat 49°00'00", long 98°27'15", in SE<sup>1</sup>/<sub>4</sub> sec.3, T.1, R.8 W., first meridian, Hydrologic Unit 09020313, on downstream side of bridge on Municipal Road on international boundary, and 1.5 mi east of Mowbray, Manitoba.

**DRAINAGE AREA.**--93.9 mi<sup>2</sup>.

**WATER-DISCHARGE RECORDS**

**PERIOD OF RECORD.**--March 1962 to current year (seasonal records only most years).

**GAGE.**--Water-stage recorder. Datum of gage is Geodetic Survey of Canada datum of 1929. Nonrecording gage prior to 1971.

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.1	2.3	e.00	e.00	e.00	e.00	e.00	125	15	12	20	.42
2	3.0	.56	e.00	e.00	e.00	e.00	e.00	91	19	7.1	15	.49
3	3.0	.04	e.00	e.00	e.00	e.00	e.00	64	22	6.4	10	.42
4	3.0	.04	e.00	e.00	e.00	e.00	e.00	48	18	4.3	48	.28
5	3.0	.04	e.00	e.00	e.00	e.00	e.00	39	14	3.1	86	.18
6	3.1	.04	e.00	e.00	e.00	e.00	e.04	34	13	2.3	37	.21
7	3.1	e.07	e.00	e.00	e.00	e.00	e2.4	37	8.7	2.1	28	1.2
8	3.1	e.07	e.00	e.00	e.00	e.00	e13	41	6.3	2.0	22	5.1
9	3.0	e.04	e.00	e.00	e.00	e.00	e32	37	4.9	1.8	16	3.1
10	3.0	e.04	e.00	e.00	e.00	e.00	e32	34	4.0	1.2	9.6	2.2
11	3.0	e.04	e.00	e.00	e.00	e.00	e34	31	3.4	.99	5.8	1.3
12	2.8	e.04	e.00	e.00	e.00	e.00	e39	29	3.0	.92	4.4	1.1
13	2.6	e.00	e.00	e.00	e.00	e.00	e78	27	2.7	.88	3.6	.78
14	2.5	e.00	e.00	e.00	e.00	e.00	e315	25	2.2	.78	3.0	.71
15	2.4	e.00	e.00	e.00	e.00	e.00	e632	24	1.9	.81	2.7	.64
16	2.4	e.00	e.00	e.00	e.00	e.00	971	23	1.4	.85	2.1	.57
17	2.3	e.00	e.00	e.00	e.00	e.00	915	29	1.3	1.1	1.8	.53
18	2.2	e.00	e.00	e.00	e.00	e.00	890	43	1.3	1.3	1.3	.49
19	2.4	e.00	e.00	e.00	e.00	e.00	837	74	1.9	.77	1.0	.49
20	2.3	e.00	e.00	e.00	e.00	e.00	763	58	2.4	110	.81	.39
21	2.4	e.00	e.00	e.00	e.00	e.00	703	45	2.5	141	2.7	.25
22	2.4	e.00	e.00	e.00	e.00	e.00	569	34	1.9	138	1.7	.25
23	2.3	e.00	e.00	e.00	e.00	e.00	516	35	1.8	113	1.9	.25
24	2.4	e.00	e.00	e.00	e.00	e.00	434	32	1.8	74	2.6	.21
25	2.3	e.00	e.00	e.00	e.00	e.00	431	29	2.1	50	2.4	.18
26	2.3	e.00	e.00	e.00	e.00	e.00	367	26	3.1	42	2.2	.18
27	2.3	e.00	e.00	e.00	e.00	e.00	371	23	3.4	36	1.6	.42
28	2.3	e.00	e.00	e.00	e.00	e.00	284	21	3.3	33	1.0	.49
29	2.3	e.00	e.00	e.00	e.00	e.00	207	19	13	31	.81	.49
30	2.2	e.00	e.00	e.00	---	e.00	160	17	24	28	.49	.53
31	2.2	---	e.00	e.00	---	e.00	---	16	---	24	.35	---
TOTAL	80.7	3.32	0.00	0.00	0.00	0.00	9595.44	1210	203.3	946.93	335.86	23.85
MEAN	2.60	.11	.000	.000	.000	.000	320	39.0	6.78	30.5	10.8	.79
MAX	3.1	2.3	.00	.00	.00	.00	971	125	24	141	86	5.1
MIN	2.2	.00	.00	.00	.00	.00	.00	16	1.3	.78	.35	.18
AC-FT	160	6.6	.00	.00	.00	.00	19030	2400	403	1880	666	47

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1996, BY WATER YEAR (WY)

	MEAN	2.35	1.17	.095	.005	.34	12.9	73.2	17.2	6.99	4.94	9.72	2.07
MAX	56.5	16.4	1.35	.080	5.68	122	320	159	58.0	55.6	161	28.6	
(WY)	1995	1995	1995	1995	1981	1995	1996	1974	1995	1993	1995	1995	
MIN	.000	.000	.000	.000	.000	.000	1.05	.009	.000	.000	.000	.000	
(WY)	1963	1963	1963	1963	1963	1962	1973	1973	1968	1968	1962	1962	

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR	FOR 1996 WATER YEAR	WATER YEARS 1962 - 1996
ANNUAL TOTAL	17401.45	12399.40	
ANNUAL MEAN	47.7	33.9	13.3
HIGHEST ANNUAL MEAN			53.7
LOWEST ANNUAL MEAN			.59
HIGHEST DAILY MEAN	597	971	971
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00	.00
INSTANTANEOUS PEAK FLOW		1110	1110
INSTANTANEOUS PEAK STAGE		1534.39	1534.57
ANNUAL RUNOFF (AC-FT)	34520	24590	9640
10 PERCENT EXCEEDS	178	41	20
50 PERCENT EXCEEDS	4.0	.78	.00
90 PERCENT EXCEEDS	.00	.00	.00

e Estimated.



RED RIVER OF THE NORTH BASIN  
05099300 PEMBINA RIVER NEAR WINDYGATES, MANITOBA  
(International gaging station)

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LOCATION.--Lat 49°01'53", long 98°16'40", in SE<sup>1</sup>/<sub>4</sub> sec.13, T.1, R.7 W., first meridian, Hydrologic Unit 09020313, on left bank 0.2 mi downstream from bridge, and 3 mi northeast of Windygates, Manitoba.

DRAINAGE AREA.--3,020 mi<sup>2</sup>.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is Geodetic Survey of Canada datum of 1929. Prior to Jan. 1, 1985, datum of gage at 1102.02 ft above Geodetic Survey of Canada datum of 1929.

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	112	79	e37	e17	e19	e19	e22	4380	1140	399	e215	163
2	111	e74	e37	e17	e19	e18	e21	4060	1090	367	e224	162
3	118	e63	e36	e17	e19	e18	e20	3810	1060	348	e233	156
4	115	e67	e37	e18	e18	e18	e20	3570	1030	322	e239	153
5	114	e82	e33	e18	e19	e17	e19	3380	999	293	e246	151
6	112	e86	e30	e19	e18	e17	e19	3170	975	286	e249	151
7	107	e65	e30	e19	e17	e18	e19	3020	936	269	e252	150
8	104	e58	e29	e20	e16	e20	e20	2900	897	257	e257	150
9	103	e59	e30	e20	e16	e17	e42	2770	855	240	e264	147
10	101	e55	e29	e20	e16	e15	e590	2600	812	227	e268	147
11	97	e46	e27	e19	e15	e13	e1900	2470	780	222	e266	142
12	94	e44	e25	e19	e15	e11	e1860	2350	756	214	e265	141
13	92	e45	e25	e19	e15	e12	e2620	2250	720	198	e254	140
14	95	e45	e24	e19	e15	e13	e2910	2130	692	189	e244	139
15	91	e45	e24	e20	e17	e15	e3640	2050	671	183	e232	138
16	92	e45	e24	e18	e20	e27	3490	1950	636	173	e225	132
17	88	e40	e24	e17	e20	e28	3740	2150	604	168	e215	129
18	85	e42	e23	e18	e26	e39	3640	2140	576	164	e206	127
19	85	e44	e24	e19	e20	e45	3480	2220	569	158	201	125
20	96	e45	e24	e19	e16	e38	3290	2130	576	159	189	124
21	100	e37	e21	e19	e18	e32	3230	1900	569	e169	197	124
22	93	e43	e20	e18	e17	e32	3570	1760	547	e177	210	123
23	92	e42	e22	e17	e17	e30	4560	1660	530	e187	202	123
24	87	e38	e22	e18	e19	e31	5720	1570	505	e196	198	121
25	81	e39	e20	e19	e15	e29	6360	1480	491	e201	190	121
26	80	e39	e19	e20	e15	e28	6220	1400	487	e200	185	126
27	80	e38	e19	e20	e17	e26	6000	1330	470	e199	180	133
28	78	e37	e19	e20	e19	e24	5540	1270	448	e198	174	129
29	83	e37	e19	e19	e19	e24	5090	1220	420	e198	171	127
30	81	e37	e19	e19	---	e25	4700	1170	403	e200	167	126
31	79	---	e18	e18	---	e24	---	1150	---	e206	164	---
TOTAL	2946	1516	790	579	512	723	82352	71410	21244	6967	6782	4120
MEAN	95.0	50.5	25.5	18.7	17.7	23.3	2745	2304	708	225	219	137
MAX	118	86	37	20	26	45	6360	4380	1140	399	268	163
MIN	78	37	18	17	15	11	19	1150	403	158	164	121
AC-FT	5840	3010	1570	1150	1020	1430	163300	141600	42140	13820	13450	8170

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1996, BY WATER YEAR (WY)

MEAN	55.0	36.0	16.5	7.97	7.03	95.0	974	773	312	134	104	72.1
MAX	343	391	195	82.7	64.9	949	4241	3616	1512	633	719	543
(WY)	1969	1995	1995	1995	1995	1995	1995	1974	1974	1970	1993	1993
MIN	.000	.000	.000	.000	.000	.000	21.3	27.0	4.03	.070	.000	.000
(WY)	1989	1989	1989	1965	1963	1964	1977	1988	1988	1988	1988	1988

SUMMARY STATISTICS

FOR 1995 CALENDAR YEAR

FOR 1996 WATER YEAR

WATER YEARS 1962 - 1996

ANNUAL TOTAL	318968	199941	
ANNUAL MEAN	874	546	219
HIGHEST ANNUAL MEAN			936
LOWEST ANNUAL MEAN			9.61
HIGHEST DAILY MEAN	7270	Apr 21	11200
LOWEST DAILY MEAN	18	Dec 31	.00
ANNUAL SEVEN-DAY MINIMUM	19	Dec 25	.00
INSTANTANEOUS PEAK FLOW			11500
INSTANTANEOUS PEAK STAGE			1121.52
ANNUAL RUNOFF (AC-FT)	632700	396600	158600
10 PERCENT EXCEEDS	2760	2070	554
50 PERCENT EXCEEDS	144	102	30
90 PERCENT EXCEEDS	36	18	.00

e Estimated.

**RED RIVER OF THE NORTH BASIN**  
**05100000 PEMBINA RIVER AT NECHE, ND**  
 (International gaging station)

**LOCATION.**--Lat 48°59'20", long 97°33'05", in SE<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> sec.31, T.164 N., R.53 W., Pembina County, Hydrologic Unit 09020313, on right bank 0.3 mi east of State Highway 18, and at north edge of Neche.

**DRAINAGE AREA.**--3,410 mi<sup>2</sup>, approximately.

**WATER-DISCHARGE RECORDS**

**PERIOD OF RECORD.**--May 1903 to September 1908, June 1909 to September 1915, April 1919 to current year. Monthly discharge only for some periods, published in WSP 1308.

**REVISED RECORDS.**--WSP 1308: 1904-8, 1910-15, 1920, 1921, 1923, 1924. WSP 1388: 1904(M), 1914, 1915(M), 1931(M), 1933, 1938(M). WSP 1728: Drainage area.

**GAGE.**--Water-stage recorder and concrete control. Datum of gage is 809.69 ft above sea level. Prior to May 24, 1932, nonrecording gage at Burlington Northern Railway bridge 1 mi upstream, at same datum. May 25, 1932, to Apr. 17, 1939, nonrecording gage on bridge on State Highway 18, 500 ft downstream from railway bridge, at same datum.

**REMARKS.**--Records good except for periods of estimated discharge, which are poor.

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	189	125	66	e34	e11	e13	e38	5480	1410	701	344	224
2	188	126	69	e29	e10	e13	e45	5130	1440	634	340	217
3	186	77	66	e30	e10	e12	e60	4830	1380	590	331	214
4	185	59	62	e33	e9.0	e12	e75	4500	1320	538	322	209
5	184	87	60	e33	e9.0	e11	e65	4220	1270	493	315	220
6	180	102	e50	e48	e9.0	e10	e64	3970	1190	460	382	224
7	175	e100	e45	e48	e10	e10	e60	3730	1160	421	566	225
8	172	e95	e40	e48	e11	e11	e62	3520	1120	393	483	211
9	168	e85	e35	e40	e13	e11	e58	3270	1080	376	419	202
10	167	e75	e30	e26	e14	e12	e60	3060	1040	365	382	196
11	167	e70	e32	e24	e17	e12	e60	2860	1010	348	354	189
12	161	e60	e34	e26	e16	e12	e700	2650	960	333	331	186
13	156	e65	e36	e22	e15	e13	e2500	2480	923	326	314	185
14	160	e70	e38	e21	e15	e15	e3410	2370	883	313	301	182
15	158	e75	e40	e19	e14	e16	e4000	2280	844	298	286	180
16	156	e75	41	e18	e13	e15	e5650	2210	813	289	277	176
17	149	e80	43	e17	e12	e15	e6400	2180	778	277	269	172
18	143	e85	43	e16	e12	e15	e6500	2290	740	284	261	169
19	142	e85	43	e15	e12	e15	e6200	2430	706	315	264	166
20	143	e85	43	e15	e15	e15	e5700	2450	684	415	266	161
21	145	e85	42	e15	e14	e15	4750	2540	684	452	274	160
22	144	83	47	e15	e15	e15	4090	2340	680	623	260	157
23	149	80	52	e15	e15	e18	3750	2120	685	563	266	157
24	144	e75	52	e15	e16	e17	3880	1980	678	499	269	155
25	141	e70	49	e15	e15	e16	4650	1880	673	456	257	153
26	138	e65	49	e14	e15	e15	5900	1780	653	416	249	152
27	134	e55	48	e14	e14	e14	6980	1690	644	383	242	156
28	130	e60	e45	e14	e14	e14	6750	1610	617	366	239	169
29	128	e65	e40	e13	e14	e18	6470	1540	651	358	233	180
30	126	e65	e36	e13	---	e25	5980	1480	797	353	230	172
31	125	---	e34	e12	---	e28	---	1430	---	352	224	---
TOTAL	4833	2384	1410	717	379.0	453	94907	86300	27513	12990	9550	5519
MEAN	156	79.5	45.5	23.1	13.1	14.6	3164	2784	917	419	308	184
MAX	189	126	69	48	17	28	6980	5480	1440	701	566	225
MIN	125	55	30	12	9.0	10	38	1430	617	277	224	152
AC-FT	9590	4730	2800	1420	752	899	188200	171200	54570	25770	18940	10950

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1903 - 1996, BY WATER YEAR (WY)

	MEAN	75.0	48.7	23.0	11.7	8.06	101	834	672	322	167	107	78.9
MAX	643	486	261	120	65.8	1216	4382	4618	1777	839	946	648	
(WY)	1995	1995	1995	1995	1995	1995	1995	1974	1974	1904	1993	1993	
MIN	.000	.000	.000	.000	.000	.000	24.7	11.8	6.56	.000	.000	.000	
(WY)	1939	1939	1939	1933	1933	1936	1939	1939	1940	1940	1939	1938	

SUMMARY STATISTICS

FOR 1995 CALENDAR YEAR

FOR 1996 WATER YEAR

WATER YEARS 1903 - 1996

ANNUAL TOTAL	373307	246955.0	206
ANNUAL MEAN	1023	675	1116
HIGHEST ANNUAL MEAN			3.96
LOWEST ANNUAL MEAN			1995
HIGHEST DAILY MEAN	8110	Apr 23	9950
LOWEST DAILY MEAN	30	Dec 10	.00
ANNUAL SEVEN-DAY MINIMUM	35	Dec 8	.00
INSTANTANEOUS PEAK FLOW		7500	a 10700
INSTANTANEOUS PEAK STAGE		b 23.48	b 23.64
INSTANTANEOUS LOW FLOW			.00
ANNUAL RUNOFF (AC-FT)	740500	489800	149100
10 PERCENT EXCEEDS	3320	2300	465
50 PERCENT EXCEEDS	224	156	40
90 PERCENT EXCEEDS	60	14	1.0

- a From rating curve extended above 5,300 ft<sup>3</sup>/s.  
 b Backwater from ice.  
 e Estimated.

RED RIVER OF THE NORTH BASIN  
05100000 PEMBINA RIVER AT NECHE, ND--Continued

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WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
JAN										
08...	1440	50	1090	--	-4.0	0.0	--	--	--	--
APR										
04...	1540	76	1500	--	-3.0	0.0	--	--	--	--
14...	1545	3480	358	--	8.0	2.0	--	--	--	--
16...	1420	6150	365	--	9.0	4.0	--	--	--	--
18...	1120	6550	360	--	5.0	2.0	--	--	--	--
23...	1115	3750	573	--	9.0	4.0	--	--	--	--
28...	1220	6800	578	--	10.0	6.0	--	--	--	--
MAY										
02...	1340	5140	525	--	10.0	4.0	--	--	--	--
09...	1155	3310	568	7.8	5.5	8.0	220	143	56	20
JUN										
20...	1235	672	--	--	20.0	18.0	--	--	--	--
25...	1100	675	872	--	19.0	16.0	--	--	--	--
AUG										
07...	1300	582	787	8.1	22.5	23.5	290	208	70	29
16...	1345	278	--	--	26.0	22.0	--	--	--	--

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
MAY										
09...	34	24	1	7.8	150	10	0.20	364	383	0.52
AUG										
07...	59	29	1	10	200	16	0.20	509	544	0.74

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAY										
09...	3420	3	100	<1	30	50	0.1	1	<1	250
AUG										
07...	855	5	20	<1	50	<10	<0.1	2	2	380

RED RIVER OF THE NORTH BASIN  
05101000 TONGUE RIVER AT AKRA, ND

LOCATION.--Lat 48°46'42", long 97°44'43", in SW<sup>1</sup>/<sub>4</sub> sec.10, T.161 N., R.55 W., Pembina County, Hydrologic Unit 09020313, on left bank 300 ft downstream from Renwick Dam, 0.9 mi northwest of Akra, and 6 mi west of Cavalier.

DRAINAGE AREA.--160 mi<sup>2</sup>.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April to June 1950 (WSP 1137-B), October 1951 to current year (seasonal record since 1983).

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 930.00 ft above sea level. Prior to July 10, 1954, nonrecording gage 1.2 mi downstream at datum 30.00 ft lower. July 23, 1954, to Dec. 19, 1973, water stage recorder 2.7 mi downstream at datum 9.10 ft lower.

REMARKS.--Records fair. Flow regulated by temporary retention in ten retarding basins beginning 300 ft above station, four of which have slow release outlet structures to regulate the flow. Retarding basins were completed during the period 1955 to 1961 and have a combined capacity of 19,245 acre-ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 523 ft<sup>3</sup>/s, Apr. 19, gage height, 14.21 ft; minimum recorded discharge, 0.86 ft<sup>3</sup>/s, Apr. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	e50	.86	336	49	76	17	5.2
2	---	---	---	---	---	e50	.89	309	57	63	17	5.5
3	---	---	---	---	---	e50	1.1	288	56	49	16	5.8
4	---	---	---	---	---	e50	1.2	268	49	37	14	4.8
5	---	---	---	---	---	e50	1.2	247	44	29	14	4.7
6	---	---	---	---	---	54	1.5	213	42	24	15	5.7
7	---	---	---	---	---	54	1.6	189	40	21	13	6.7
8	---	---	---	---	---	55	2.3	174	38	17	9.0	7.3
9	---	---	---	---	---	55	13	161	34	16	7.6	7.1
10	---	---	---	---	---	55	30	149	27	13	6.5	7.0
11	---	---	---	---	---	42	65	136	22	15	7.1	6.1
12	---	---	---	---	---	29	79	122	18	16	6.2	5.5
13	---	---	---	---	---	17	127	109	16	14	6.7	4.8
14	---	---	---	---	---	4.7	313	79	14	15	5.5	4.5
15	---	---	---	---	---	4.6	382	61	17	16	5.4	5.3
16	---	---	---	---	---	5.6	409	74	14	15	5.7	6.5
17	---	---	---	---	---	6.0	462	102	11	15	5.3	5.9
18	---	---	---	---	---	5.9	499	159	9.4	24	5.0	5.1
19	---	---	---	---	---	33	516	179	10	40	7.1	5.1
20	---	---	---	---	---	51	505	166	11	55	7.6	6.5
21	---	---	---	---	---	52	481	152	11	72	8.3	7.8
22	---	---	---	---	---	51	451	135	10	70	7.8	7.4
23	---	---	---	---	---	51	418	120	12	55	7.4	8.3
24	---	---	---	---	---	51	398	102	13	43	6.3	7.7
25	---	---	---	---	---	37	406	87	16	33	5.3	7.2
26	---	---	---	---	---	24	417	75	19	24	4.1	7.9
27	---	---	---	---	---	24	410	66	21	21	4.0	11
28	---	---	---	---	---	24	392	59	24	19	4.2	13
29	---	---	---	---	---	9.9	375	50	45	19	4.0	16
30	---	---	---	---	---	.93	362	45	77	18	4.5	18
31	---	---	---	---	---	.92	---	43	---	18	4.4	---
TOTAL	---	---	---	---	---	1047.55	7520.65	4455	826.4	962	251.0	219.4
MEAN	---	---	---	---	---	33.8	251	144	27.5	31.0	8.10	7.31
MAX	---	---	---	---	---	55	516	336	77	76	17	18
MIN	---	---	---	---	---	.92	.86	43	9.4	13	4.0	4.5
AC-FT	---	---	---	---	---	2080	14920	8840	1640	1910	498	435

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1952 - 1996, BY WATER YEAR (WY)

	6.29	6.76	4.46	3.16	3.60	22.8	107	48.8	18.6	11.5	7.57	6.35
MEAN	6.29	6.76	4.46	3.16	3.60	22.8	107	48.8	18.6	11.5	7.57	6.35
MAX	30.1	22.7	12.9	7.27	18.7	135	294	225	78.7	107	144	28.3
(WY)	1981	1981	1971	1971	1981	1966	1956	1974	1964	1993	1993	1980
MIN	.51	.56	.065	.51	.24	.22	.43	1.63	.47	.086	.21	.096
(WY)	1962	1976	1953	1953	1953	1964	1991	1980	1988	1978	1988	1989

SUMMARY STATISTICS

WATER YEARS 1952 - 1996

ANNUAL MEAN	a 21.4	
HIGHEST ANNUAL MEAN	a 50.1	1956
LOWEST ANNUAL MEAN	a 3.11	1961
HIGHEST DAILY MEAN	1150	Apr 20 1956
LOWEST DAILY MEAN	.00	Dec 1 1952
ANNUAL SEVEN-DAY MINIMUM	.00	Dec 1 1952
INSTANTANEOUS PEAK FLOW	b 11800	Apr 18 1950
INSTANTANEOUS PEAK STAGE	c 48.70	Apr 18 1950
ANNUAL RUNOFF (AC-FT)	a 15480	
10 PERCENT EXCEEDS	46	
50 PERCENT EXCEEDS	4.6	
90 PERCENT EXCEEDS	.70	

a Based on complete water years only (1952-82)

b Site and datum then in use, from indirect measurement of peak flow.

c From floodmark.

e Estimated.



RED RIVER OF THE NORTH BASIN  
05101000 TONGUE RIVER AT AKRA, ND--Continued

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WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
APR										
09...	1240	3.1	1490	--	3.0	2.0	--	--	--	--
16...	1720	429	323	--	10.0	2.5	--	--	--	--
19...	1230	507	319	--	3.0	2.0	--	--	--	--
MAY										
09...	1405	162	590	7.8	16.0	9.0	240	126	66	17
JUN										
24...	1420	13	680	--	21.0	19.5	--	--	--	--
AUG										
07...	0825	13	627	8.1	19.0	23.0	280	226	76	21
DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
MAY										
09...	34	23	1	7.2	140	13	0.30	354	404	0.55
AUG										
07...	30	19	0.8	6.3	110	13	0.30	393	415	0.56
DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAY										
09...	177	3	100	<1	30	80	0.1	<1	<1	260
AUG										
07...	14.9	7	20	<1	30	340	<0.1	2	1	350

RED RIVER OF THE NORTH BASIN  
05102490 RED RIVER OF THE NORTH AT PEMBINA, ND  
(National water-quality assessment program)

LOCATION.--Lat 48°58'17", long 97°14'16", in NE<sup>1</sup>/<sub>4</sub> sec.4, T.163 N., R.51 W., Pembina County, Hydrologic Unit 09020311, at bridge crossing the Red River 0.1 mi north of Pembina.

DRAINAGE AREA.--Approximately 40,200 mi<sup>2</sup>, includes 3,800 mi<sup>2</sup> in closed basins.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1994 to current year..

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996												
DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	DIS-CHARGE, IN CUBIC FEET PER SECOND (00060)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, (PER-CENT SATUR-ATION) (00301)	HARD-NESS TOTAL (MG/L AS CaCO3) (00900)	ALKA-LINITY WAT DIS TOT IT FIELD CAC03 (39086)
OCT 16...	0930	--	1820	719	7.6	750	--	8.0	11.3	97	300	--
APR 26...	1015	--	66000	361	8.0	748	0.0	3.0	11.4	86	140	105
29...	1400	55400	--	385	7.9	755	13.0	3.5	>20.0	--	--	--
MAY 02...	0830	--	55800	440	7.2	743	3.0	3.5	10.8	83	--	--
JUN 26...	0910	--	6780	665	7.8	750	20.5	20.0	7.9	88	--	195
JUL 18...	0940	--	3710	625	8.2	--	22.0	24.5	6.7	--	260	--
AUG 12...	0940	--	3780	692	7.3	--	14.0	19.0	--	--	270	194
SEP 03...	0830	--	2020	636	7.6	748	21.5	23.0	--	--	250	189

DATE	ALKA-LINITY LAB (MG/L AS CaCO3) (90410)	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)	SODIUM PERCENT (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE WATER DIS IT FIELD (MG/L AS HCO3) (00453)	CAR-BONATE WATER DIS IT FIELD (MG/L AS CO3) (00452)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS Cl) (00940)
OCT 16...	215	66	33	30	17	0.8	8.4	--	--	120	32
APR 26...	112	34	14	13	16	0.5	7.3	128	0	47	10
JUN 26...	--	--	--	--	--	--	--	238	0	--	--
JUL 18...	210	59	28	30	19	0.8	5.7	--	--	83	25
AUG 12...	211	60	29	39	23	1	5.9	231	3	110	31
SEP 03...	207	56	27	37	24	1	7.7	211	10	85	32

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, SUM OF CON-STI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	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, NITRATE DIS-SOLVED (MG/L AS N) (00618)	NITRO-GEN, NO2+NO3 TOTAL (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) (00608)
OCT 16...	0.20	16	438	463	0.63	2280	0.020	0.590	0.610	0.610	0.060
APR 26...	0.20	13	211	226	0.31	40300	0.100	1.80	1.90	1.90	0.220
JUL 18...	0.20	13	370	397	0.54	3980	--	--	--	--	--
AUG 12...	0.20	15	409	449	0.61	4580	0.010	0.380	0.390	0.390	0.030
SEP 03...	0.20	13	372	406	0.55	2210	<0.010	--	0.090	0.090	<0.015

DATE	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, AM-MONIA + ORGANIC DIS-SOLVED (MG/L AS N) (00623)	NITRO-GEN, TOTAL (MG/L AS N) (00600)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	IRON, DIS-SOLVED (UG/L AS Fe) (01046)	MANGA-NESE, DIS-SOLVED (UG/L AS Mn) (01056)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)
OCT 16...	0.84	0.84	0.90	0.90	1.5	0.180	0.140	0.150	10	<1	13
APR 26...	1.2	0.68	1.4	0.90	3.3	0.400	0.250	0.230	55	4	9.0
29...	1.0	--	1.0	--	1.0	0.270	--	--	--	--	--
JUN 26...	--	--	--	--	--	--	--	--	--	--	13
JUL 18...	--	--	--	--	--	--	--	--	24	5	12
AUG 12...	0.87	0.67	0.90	0.70	1.3	0.180	0.060	0.080	5	1	11
SEP 03...	0.90	--	0.90	0.70	0.99	0.120	0.030	0.100	6	2	12

RED RIVER OF THE NORTH BASIN  
05102490 RED RIVER OF THE NORTH AT PEMBINA, ND--Continued

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WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C) (00689)	ACETO- CHLOR, WATER, FLTRD REC (UG/L) (49260)	ACIFL- UORFEN WATER, FLTRD GF 0.7U REC (UG/L) (49315)	ALA- CHLOR, WATER, DISS, REC (UG/L) (46342)	ALDI- CARB, WATER, FLTRD GF 0.7U REC (UG/L) (49312)	ALDI- CARB SULFONE WAT, FLT GF 0.7U REC (UG/L) (49313)	ALDICA- RB SUL- FOXIDE, WAT, FLT GF 0.7U REC (UG/L) (49314)	CHLOR- AMBEN, WATER, FLTRD GF 0.7U REC (UG/L) (49307)	ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)	ALPHA BHC DIS- SOLVED REC (UG/L) (34253)	BEN- FLUR- ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)
OCT 16...	3.6	e0.004	<0.035	e0.003	<0.016	<0.016	<0.021	<0.011	0.047	<0.002	<0.002
APR 26...	--	<0.002	<0.035	<0.002	<0.016	<0.016	<0.021	<0.011	0.016	<0.002	<0.002
JUN 26...	--	0.010	<0.035	0.024	<0.016	<0.016	<0.021	<0.011	0.031	<0.002	<0.002
JUL 18...	--	<0.002	<0.035	<0.002	<0.016	<0.016	<0.021	<0.011	0.040	<0.002	<0.002
AUG 12...	--	<0.002	<0.035	<0.002	<0.016	<0.016	<0.021	<0.011	0.026	<0.002	<0.002

DATE	BRO- MACIL, WATER, DISS, REC (UG/L) (04029)	BRO- MOXYNIL WATER, FLTRD GF 0.7U REC (UG/L) (49311)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)	CAR- BARYL WATER, FLTRD 0.7 U GF, REC (UG/L) (82680)	CAR- BARYL, WATER, FLTRD GF 0.7U REC (UG/L) (49310)	CARBO- FURAN WATER, FLTRD 0.7 U GF, REC (UG/L) (82674)	CARBO- FURAN, WATER, FLTRD GF 0.7U REC (UG/L) (49309)	CHLOR- PYRIFOS DIS- SOLVED REC (UG/L) (38933)	CLOPYR- ALID, WATER, FLTRD GF 0.7U REC (UG/L) (49305)	CHLORO- THALO- NIL, WAT, FLT GF 0.7U REC (UG/L) (49306)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)
OCT 16...	<0.035	<0.035	<0.002	<0.003	<0.008	<0.003	<0.028	<0.004	<0.050	<0.035	e0.011
APR 26...	<0.035	<0.035	<0.002	<0.003	<0.008	<0.003	<0.028	<0.004	<0.050	<0.035	<0.004
JUN 26...	<0.035	<0.035	<0.002	<0.003	<0.008	<0.003	<0.028	<0.004	<0.050	e0.020	0.017
JUL 18...	<0.035	<0.035	<0.002	<0.003	<0.008	<0.003	<0.028	0.034	<0.050	<0.035	0.018
AUG 12...	<0.035	<0.035	<0.002	<0.003	<0.008	<0.003	<0.028	0.005	<0.050	<0.035	0.012

DATE	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	P, P' DDE DISSOLV (UG/L) (34653)	DACTHAL MONO- ACID, WAT, FLT GF 0.7U REC (UG/L) (49304)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	DICAMBA WATER, FLTRD, GF 0.7U REC (UG/L) (38442)	DICHLO- BENIL, WATER, FLTRD, GF 0.7U REC (UG/L) (49303)	DICHLOR PROP, WATER, FLTRD, GF 0.7U REC (UG/L) (49302)	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	2,6-DI- ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	DINOSEB WATER, FLTRD, GF 0.7U REC (UG/L) (49301)
OCT 16...	e0.001	<0.006	<0.017	e0.007	e0.004	<0.035	<0.020	<0.032	<0.001	<0.003	<0.035
APR 26...	<0.002	<0.006	<0.017	e0.006	<0.002	<0.035	<0.020	<0.032	<0.001	<0.003	<0.035
JUN 26...	<0.002	<0.006	<0.017	e0.008	<0.002	<0.035	<0.020	<0.032	<0.001	<0.003	<0.035
JUL 18...	<0.002	<0.006	<0.017	e0.006	<0.002	<0.035	<0.020	<0.032	<0.001	<0.003	<0.035
AUG 12...	<0.002	<0.006	<0.017	e0.008	<0.002	<0.035	<0.020	<0.032	<0.001	<0.003	<0.035

DATE	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	DIURON, WATER, FLTRD, GF 0.7U REC (UG/L) (49300)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	ESFEN- VAL- ERATE, WAT, FLT GF 0.7U REC (UG/L) (49298)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	FEN- URON, WATER, FLTRD, GF 0.7U REC (UG/L) (49297)	FLUO- METURON WATER, FLTRD, GF 0.7U REC (UG/L) (38811)	FONOFOS WATER DISS REC (UG/L) (04095)	LINDANE DIS- SOLVED (UG/L) (39341)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)
OCT 16...	<0.017	<0.020	<0.002	<0.019	<0.004	<0.003	<0.013	<0.035	<0.003	<0.004	<0.002
APR 26...	<0.017	<0.020	0.032	<0.019	<0.004	<0.003	<0.013	<0.035	<0.003	<0.004	<0.002
JUN 26...	<0.017	<0.020	e0.004	<0.019	<0.004	<0.003	0.080	<0.035	<0.003	<0.004	<0.002
JUL 18...	<0.017	<0.020	e0.003	<0.019	<0.004	<0.003	<0.013	<0.035	<0.003	<0.004	<0.002
AUG 12...	<0.017	<0.020	<0.002	<0.019	<0.004	<0.003	<0.013	<0.035	<0.003	<0.004	<0.002

**RED RIVER OF THE NORTH BASIN**  
**05102490 RED RIVER OF THE NORTH AT PEMBINA, ND--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	LINURON WATER, FLTRD, GF 0.7U REC (UG/L) (38478)	MCPA, WATER, FLTRD, GF 0.7U REC (UG/L) (38482)	MCPB, WATER, FLTRD, GF 0.7U REC (UG/L) (38487)	MALA- THION, DIS- SOLVED (UG/L) (39532)	METHIO- CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (38501)	METH- OMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49296)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	METHYL PARA- THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	METRI- BUZIN WATER DISSOLV (UG/L) (82630)	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)
OCT 16...	<0.018	<0.050	<0.035	<0.005	<0.026	<0.017	<0.001	<0.006	0.008	<0.004	<0.004
APR 26...	<0.018	<0.050	<0.035	<0.005	<0.026	<0.017	<0.001	<0.006	0.020	<0.004	<0.004
JUN 26...	<0.018	<0.050	<0.035	<0.005	<0.026	<0.017	<0.001	<0.006	0.012	<0.004	<0.004
JUL 18...	<0.018	<0.050	<0.035	<0.005	<0.026	<0.017	<0.001	<0.006	0.006	<0.004	<0.004
AUG 12...	<0.018	<0.050	<0.035	<0.005	<0.026	<0.017	<0.001	<0.006	<0.002	<0.004	<0.004

DATE	NAPROP- AMIDE WATER, FLTRD, GF 0.7U GF, REC (UG/L) (82684)	NEB- URON WATER, FLTRD, GF 0.7U REC (UG/L) (49294)	NORFLUR AZON, WATER, FLTRD, GF 0.7U REC (UG/L) (49293)	DNOC WAT FLT GF 0.7U REC (UG/L) (49299)	ORY- ZALIN, WATER, FLTRD, GF 0.7U REC (UG/L) (49292)	OXAMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (38866)	PARA- THION, DIS- SOLVED (UG/L) (39542)	PEB- ULATE WATER, FLTRD, GF 0.7U GF, REC (UG/L) (82669)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)
OCT 16...	<0.003	<0.015	<0.024	<0.035	<0.019	<0.018	<0.004	<0.004	<0.004	<0.005	<0.002
APR 26...	<0.003	<0.015	<0.024	<0.035	<0.019	<0.018	<0.004	<0.004	<0.004	<0.005	<0.002
JUN 26...	<0.003	<0.015	<0.024	<0.035	<0.019	<0.018	<0.004	<0.004	<0.004	<0.005	<0.002
JUL 18...	<0.003	<0.015	<0.024	<0.035	<0.019	<0.018	<0.004	<0.004	<0.004	<0.005	<0.002
AUG 12...	<0.003	<0.015	<0.024	<0.035	<0.019	<0.018	<0.004	<0.004	<0.004	<0.005	<0.002

DATE	PIC- LORAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49291)	PRO- METON, WATER, DISS, 0.7 U REC (UG/L) (04037)	PRON- AMIDE WATER, FLTRD, GF 0.7 U GF, REC (UG/L) (82676)	PROP- CHLOR, WATER, DISS, 0.7 U REC (UG/L) (04024)	PRO- PANIL WATER, FLTRD, 0.7 U GF, REC (UG/L) (82679)	PRO- PARGITE WATER, FLTRD, 0.7 U GF, REC (UG/L) (82685)	PRO- PHAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49236)	PRO- POXUR, WATER, FLTRD, GF 0.7U REC (UG/L) (38538)	SILVEX, DIS- SOLVED (UG/L) (39762)	SI- MAZINE, WATER, DISS, 0.7 U REC (UG/L) (04035)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)
OCT 16...	<0.050	0.027	<0.003	<0.007	<0.004	<0.013	<0.035	<0.035	<0.021	0.008	<0.010
APR 26...	<0.050	<0.018	<0.003	<0.007	<0.004	<0.013	<0.035	<0.035	<0.021	<0.005	<0.010
JUN 26...	<0.050	<0.018	<0.003	<0.007	<0.004	<0.013	<0.035	<0.035	<0.021	e0.003	<0.010
JUL 18...	<0.050	<0.018	<0.003	<0.007	<0.004	<0.013	<0.035	<0.035	<0.021	<0.005	<0.010
AUG 12...	<0.050	<0.018	<0.003	<0.007	<0.004	<0.013	<0.035	<0.035	<0.021	<0.005	<0.010

DATE	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRI- CLOPYR, WATER, FLTRD, GF 0.7U REC (UG/L) (49235)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	1-NAPH THOL, WATER, FLTRD, GF 0.7U REC (UG/L) (49295)	2,4-D, DIS- SOLVED (UG/L) (39732)	2,4-DB WATER, FLTRD, GF 0.7U REC (UG/L) (38746)	2,4,5-T DIS- SOLVED (UG/L) (39742)	3HYDRXY CARBO- FURAN WAT FLT GF 0.7U REC (UG/L) (49308)
OCT 16...	<0.007	<0.013	<0.002	e0.003	<0.050	e0.003	<0.007	<0.035	<0.035	<0.035	<0.014
APR 26...	<0.007	<0.013	<0.002	0.044	<0.050	e0.009	<0.007	<0.035	<0.035	<0.035	<0.014
JUN 26...	<0.007	<0.013	<0.002	e0.003	<0.050	e0.002	<0.007	<0.035	<0.035	<0.035	<0.014
JUL 18...	<0.007	<0.013	<0.002	<0.001	<0.050	e0.005	<0.007	<0.035	<0.035	<0.035	<0.014
AUG 12...	<0.007	<0.013	<0.002	<0.001	<0.050	<0.002	<0.007	<0.035	<0.035	<0.035	<0.014

e Estimated.



RED RIVER OF THE NORTH BASIN  
05102500 RED RIVER OF THE NORTH AT EMERSON, MANITOBA  
(International gaging station)

137

LOCATION.--Lat 49°00'30", long 97°12'40", in sec.2, T.1, R.2 E., Hydrologic Unit 09020311, on right bank 1,500 ft downstream from Canadian National Railway bridge in Emerson, 0.8 mi downstream from international boundary, 3.6 mi downstream from Pembina River, and at mile 154.3.

DRAINAGE AREA.--40,200 mi<sup>2</sup>, approximately, includes 3,800 mi<sup>2</sup> in closed basins.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March to November 1902 (gage heights only), May 1912 to September 1929 (monthly discharge only, published in WSP 1308), October 1929 to current year.

GAGE.--Water-stage recorder. Datum of gage is Geodetic Survey of Canada Datum of 1929. See WSP 1728 or 1913 for history of changes prior to Apr. 10, 1953.

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1680	3270	e2630	e2120	e1740	e2000	e9290	55400	34100	6600	4200	2070
2	1630	3270	e2620	e2130	e1740	e2070	e9220	55800	32700	6390	4130	2070
3	1650	3330	e2630	e2130	e1740	e2120	e8970	55400	31200	6110	4100	2020
4	1770	3380	e2670	e2110	e1740	e2150	e8620	55100	29500	5830	4130	1980
5	2220	3430	e2730	e2090	e1740	e2150	e8120	54000	27500	5540	4100	1990
6	2860	3450	e2750	e2080	e1750	e2140	e7560	53000	25400	5190	4060	2020
7	3250	3390	e2720	e2060	e1750	e2130	e7100	51600	23700	4870	3990	2020
8	3460	e3350	e2650	e2030	e1750	e2130	e6820	49400	21900	4590	3990	1960
9	3670	e3250	e2580	e2000	e1740	e2140	e6710	45600	20000	4310	3960	1960
10	4100	e3190	e2490	e1960	e1740	e2170	e6820	43100	17900	4060	3920	1990
11	4590	e3110	e2380	e1910	e1740	e2190	e7240	41000	16100	3920	3850	2000
12	4770	e3090	e2260	e1890	e1750	e2210	e8370	39600	14400	3850	3780	1960
13	4730	e3030	e2190	e1850	e1760	e2250	e10100	38100	12900	3780	3600	1900
14	4630	e3060	e2150	e1820	e1760	e2280	e12700	36700	11800	3740	3400	1820
15	4480	e3090	e2120	e1800	e1770	e2330	e16000	35000	10900	3740	3130	1760
16	4340	e3080	e2110	e1800	e1780	e2400	e20400	33700	10200	3740	2850	1700
17	4130	e3080	e2100	e1820	e1780	e2490	e24500	33600	9640	3710	2630	1660
18	3920	e3150	e2100	e1840	e1780	e2590	e28900	34000	9110	3710	2490	1650
19	3710	e3280	e2080	e1830	e1780	e2750	e33800	34500	8620	3740	2420	1650
20	3530	e3450	e2050	e1820	e1790	e2930	e38100	34900	8230	3810	2380	1660
21	3430	e3570	e2040	e1810	e1810	e3130	e45900	35300	7840	4060	2370	1640
22	3340	e3640	e2030	e1790	e1820	e3430	54400	36000	7560	4590	2370	1620
23	3320	e3600	e2030	e1780	e1840	e4130	58300	36400	7310	5470	2350	1600
24	3370	e3520	e2040	e1780	e1860	e5090	62500	37100	7100	5900	2330	1540
25	3470	e3330	e2060	e1780	e1890	e6000	65700	37400	6920	5790	2320	1480
26	3570	e3080	e2080	e1780	e1920	e6780	66000	37800	6780	5440	2290	1470
27	3600	e2910	e2100	e1770	e1920	e7590	63600	37800	6640	5190	2270	1540
28	3600	e2780	e2100	e1760	e1920	e8230	59700	37400	6530	4980	2240	1590
29	3530	e2660	e2110	e1750	e1950	e8720	56200	36700	6890	4770	2200	1610
30	3480	e2620	e2110	e1740	---	e9110	55800	36000	6780	4560	2160	1650
31	3370	---	e2110	e1740	---	e9250	---	35100	---	4380	2120	---
TOTAL	107200	96440	70820	58570	52050	117080	867440	1282500	446150	146360	96130	53580
MEAN	3458	3215	2285	1889	1795	3777	28910	41370	14870	4721	3101	1786
MAX	4770	3640	2750	2130	1950	9250	66000	55800	34100	6600	4200	2070
MIN	1630	2620	2030	1740	1740	2000	6710	33600	6530	3710	2120	1470
AC-FT	212600	191300	140500	116200	103200	232200	1721000	2544000	884900	290300	190700	106300

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1912 - 1996, BY WATER YEAR (WY)

MEAN	1536	1355	989	813	775	2234	12980	8762	5036	3983	2072	1626
MAX	6015	5163	2945	2053	1914	15340	45820	72820	25430	28020	27000	10010
(WY)	1995	1972	1995	1951	1952	1995	1966	1950	1962	1975	1993	1993
MIN	28.6	23.7	33.3	7.05	1.21	2.25	1282	663	196	121	46.6	23.6
(WY)	1937	1937	1937	1937	1937	1937	1938	1934	1934	1936	1934	1934

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR	FOR 1996 WATER YEAR	WATER YEARS 1912 - 1996
ANNUAL TOTAL	2948250	3394320	
ANNUAL MEAN	8077	9274	3523
HIGHEST ANNUAL MEAN			12100
LOWEST ANNUAL MEAN			333
HIGHEST DAILY MEAN	42400	66000	94400
LOWEST DAILY MEAN	1590	1470	.90
ANNUAL SEVEN-DAY MINIMUM	1600	1550	.97
INSTANTANEOUS PEAK FLOW		66700	95500
INSTANTANEOUS PEAK STAGE		789.10	791.19
INSTANTANEOUS LOW FLOW		1450	.90
ANNUAL RUNOFF (AC-FT)	5848000	6733000	2552000
10 PERCENT EXCEEDS	23200	35000	7850
50 PERCENT EXCEEDS	3460	3270	1430
90 PERCENT EXCEEDS	1780	1760	263

e Estimated.

RED RIVER OF THE NORTH BASIN  
05102500 RED RIVER OF THE NORTH AT EMERSON, MANITOBA--Continued

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1977 to current year.

WATER TEMPERATURE: October 1977 to current year.

REMARKS.--Records of daily mean values of water temperature and specific conductance are furnished by Water Survey of Canada. At time of publication, daily temperature and specific conductance values for August and September were not available.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily mean, 2,180 microsiemens, Dec. 8, 1989; minimum daily mean, 259 microsiemens, Apr. 14, 1989.

WATER TEMPERATURES: Maximum daily mean, 26.7°C, Aug. 16, 1988; minimum daily mean, 0.0°C, on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily mean, 939 microsiemens, Nov. 15; minimum daily mean, 318 microsiemens, Apr. 22 and 27.

WATER TEMPERATURES: Maximum daily mean, 25.2°C, July 19; minimum daily mean, 0.0°C, on many days during the winter months.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)
FEB 08...	1300	1750	556	7.7	740	1.5	0.0	13.2	93	270	235

DATE	ALKA- LITY LAB (MG/L AS CACO3) (90410)	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)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)
FEB 08...	251	60	29	21	14	0.6	5.4	287	0	61	15

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	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, NO2+NO3 DIS- TOTAL (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) (00608)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)
FEB 08...	0.20	15	350	383	0.52	1810	<0.010	0.440	0.440	0.200	0.70

DATE	NITRO- GEN, ORGANIC DIS- SOLVED (MG/L AS N) (00607)	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, TOTAL (MG/L AS N) (00600)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)
FEB 08...	0.70	0.90	0.90	1.3	0.040	0.040	0.040	16	23	12

**RED RIVER OF THE NORTH BASIN**  
**05102500 RED RIVER OF THE NORTH AT EMERSON, MANITOBA--Continued**

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13.2	.7	.0	.0	.0	.4	1.0	8.6	18.4	23.2	---	---
2	12.5	.5	.1	.0	.0	.3	1.0	9.1	18.3	22.8	---	---
3	11.9	.6	.1	.0	.0	.2	.9	9.5	17.6	23.7	---	---
4	11.6	.4	.1	.0	.0	.0	.7	10.3	17.6	24.9	---	---
5	11.1	.1	.0	.0	.0	.0	.8	11.2	17.6	24.9	---	---
6	10.3	.1	.1	.0	.0	.0	.8	11.8	17.5	23.6	---	---
7	10.1	.2	.1	.0	.0	.0	.8	12.3	17.8	23.4	---	---
8	10.1	.2	.1	.0	.0	.0	.9	12.7	18.6	23.0	---	---
9	10.0	.2	.0	.0	.0	.1	.9	11.6	19.4	22.1	---	---
10	9.7	.1	.0	.0	.0	.1	1.0	10.5	20.3	22.8	---	---
11	9.9	.1	.1	.0	.0	.1	1.0	10.5	21.4	22.6	---	---
12	10.0	.1	.0	.0	.0	.1	.8	10.6	21.5	22.2	---	---
13	9.8	.1	.1	.0	.0	.1	.7	11.3	21.5	22.7	---	---
14	8.8	.1	.0	.0	.0	.0	.8	11.8	21.6	23.3	---	---
15	8.2	.1	.0	.0	.0	.1	.4	12.3	21.7	23.4	---	---
16	7.9	.1	.0	.0	.0	.0	.4	13.0	21.8	24.1	---	---
17	7.8	.1	.1	.0	.0	.0	.5	13.8	22.4	24.6	---	---
18	7.4	.1	.0	.0	.0	.0	.4	14.8	22.9	24.8	---	---
19	7.3	.2	.0	.0	.0	.0	.5	15.8	22.1	25.2	---	---
20	6.8	.1	.0	.0	.0	.0	1.5	16.6	22.4	24.5	---	---
21	6.1	.1	.0	.0	.0	.0	2.5	17.3	21.7	24.2	---	---
22	5.5	.1	.0	.0	.0	.0	3.3	17.7	20.7	23.9	---	---
23	5.1	.0	.0	.0	.0	.0	3.9	18.0	19.3	23.7	---	---
24	4.9	.1	.0	.0	.1	.0	4.1	17.0	19.6	23.2	---	---
25	4.8	.1	.0	.0	.0	.0	4.2	16.5	18.9	22.7	---	---
26	4.9	.1	.0	.0	.0	.0	4.1	17.0	19.9	22.6	---	---
27	5.0	.1	.0	.0	.0	.3	4.9	17.6	22.1	22.0	---	---
28	4.9	.1	.0	.0	.2	.2	5.8	18.1	22.3	21.7	---	---
29	4.6	.1	.0	.0	.2	.5	7.0	18.8	19.3	21.5	---	---
30	4.1	.2	.0	.0	---	.9	8.1	18.9	19.3	21.8	---	---
31	3.9	---	.0	.0	---	1.0	---	18.5	---	21.5	---	---
MEAN	8.0	.2	.0	.0	.0	.1	2.1	14.0	20.2	23.2	---	---

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	799	821	857	670	554	594	459	368	546	740	---	---
2	794	818	853	675	537	597	461	402	566	730	---	---
3	785	826	871	680	523	600	489	397	582	727	---	---
4	797	822	843	640	521	614	524	398	602	726	---	---
5	806	771	802	611	540	617	546	408	623	729	---	---
6	793	832	791	619	542	607	556	417	635	730	---	---
7	730	867	783	628	526	587	566	427	644	713	---	---
8	635	864	780	644	539	643	574	434	662	670	---	---
9	637	854	760	654	554	652	585	439	679	681	---	---
10	651	853	756	659	554	647	593	449	700	579	---	---
11	628	871	753	661	549	632	578	447	712	654	---	---
12	641	912	745	665	558	636	552	455	716	642	---	---
13	677	929	733	656	544	616	503	463	728	627	---	---
14	680	933	725	657	586	605	441	464	743	611	---	---
15	670	939	734	661	574	607	367	467	750	597	---	---
16	683	933	735	659	560	609	351	476	738	587	---	---
17	719	919	743	654	567	595	353	477	729	573	---	---
18	737	916	739	653	571	597	361	483	726	574	---	---
19	762	921	726	657	574	603	339	479	722	561	---	---
20	781	915	715	664	570	610	323	481	715	563	---	---
21	779	929	719	657	567	595	319	494	709	564	---	---
22	774	910	705	629	574	616	318	485	696	554	---	---
23	765	873	667	610	630	684	321	473	704	541	---	---
24	776	842	652	592	609	680	325	478	692	519	---	---
25	818	842	642	578	589	688	322	444	708	496	---	---
26	797	855	637	575	585	642	321	430	696	507	---	---
27	769	857	636	572	585	556	318	453	695	543	---	---
28	750	858	636	577	586	523	321	483	721	550	---	---
29	755	872	641	574	587	443	337	504	830	590	---	---
30	796	873	643	571	---	495	353	514	859	603	---	---
31	811	---	655	575	---	507	---	527	---	611	---	---
MEAN	742	874	732	632	564	603	426	455	694	616	---	---

**RED RIVER OF THE NORTH BASIN**  
**05113360 LONG CREEK AT WESTERN CROSSING OF INTERNATIONAL BOUNDARY, SASKATCHEWAN**  
 (International gaging station)

**LOCATION.**--Lat 49°00'01", long 103°21'08", in SE<sup>1</sup>/<sub>4</sub> sec.1, T.1, R.11 W., second meridian, Hydrologic Unit 09010001, on right bank 10 mi south of Outram, Saskatchewan.

**DRAINAGE AREA.**--1,320 mi<sup>2</sup>.

**WATER-DISCHARGE RECORDS**

**PERIOD OF RECORD.**--March 1959 to current year.

**GAGE.**--Water-stage recorder and artificial control. Datum of gage is 1,894.00 ft above sea level (international boundary survey).

**REMARKS.**--Records good.

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	e.00	e.00	e3.7	e46	52	9.7	.92	.11	.00
2	.00	.00	.00	e.00	e.00	e2.8	e30	49	8.5	.78	.11	.00
3	.00	.00	.00	e.00	e.00	e3.6	e22	44	7.4	.74	.07	.00
4	.00	.00	.00	e.00	e.00	e3.3	e27	38	6.6	.71	.07	.00
5	.00	.00	.00	e.00	e.00	e2.8	e27	33	6.2	.88	.07	.00
6	.00	.00	.00	e.00	e.00	e1.8	e19	31	5.6	.88	.04	.00
7	.00	.00	.00	e.00	e.00	e1.3	e25	27	4.9	.71	.04	.00
8	.00	.00	.00	e.00	e.00	e2.1	e91	25	4.1	.60	.00	.00
9	.00	.00	.00	e.00	e.00	e6.5	e438	23	3.4	.49	.00	.00
10	.00	.00	.00	e.00	e.00	e6.1	e710	21	3.3	.39	.00	.00
11	.00	.00	.00	e.00	e17	e7.9	e579	19	3.4	.39	.00	.00
12	.00	.00	.00	e.00	e34	e59	e378	18	4.2	.39	.00	.00
13	.00	.00	.00	e.00	e22	e65	e505	17	3.8	.32	.00	.00
14	.00	.00	.00	e.00	e15	e65	e498	16	3.2	.25	.00	.00
15	.00	.00	.00	e.00	e29	e130	e385	15	3.0	.14	.00	.00
16	.00	.00	.00	e.00	e53	e85	289	14	2.6	.07	.00	.00
17	.00	.00	.00	e.00	e34	e35	241	13	2.2	.07	.00	.00
18	.00	.00	.00	e.00	e19	e39	200	13	2.3	.07	.00	.00
19	.00	.00	.00	e.00	e14	e59	166	19	3.3	.07	.00	.00
20	.00	.00	.00	e.00	e11	e56	141	21	2.8	.18	.00	.00
21	.00	.00	.00	e.00	e8.8	e44	123	22	1.9	.14	.00	.00
22	.00	.00	.00	e.00	e9.6	e29	104	21	1.4	.07	.00	.00
23	.00	.00	.00	e.00	e24	e18	93	19	1.9	.07	.00	.00
24	.00	.00	.00	e.00	e38	e37	85	19	1.7	.04	.00	.00
25	.00	.00	.00	e.00	e27	e121	84	20	1.7	.04	.00	.00
26	.00	.00	.00	e.00	e22	e112	79	19	1.7	.25	.00	.00
27	.00	.00	.00	e.00	e19	e79	70	16	1.8	.28	.00	.00
28	.00	.00	.00	e.00	e13	e64	65	14	1.8	.28	.00	.00
29	.00	.00	.00	e.00	e5.1	e64	61	12	1.3	.21	.00	.00
30	.00	.00	.00	e.00	---	e65	57	12	1.0	.14	.00	.00
31	.00	---	.00	e.00	---	e61	---	11	---	.11	.00	---
TOTAL	0.00	0.00	0.00	0.00	414.50	1328.9	5638	693	106.7	10.68	0.51	0.00
MEAN	.000	.000	.000	.000	14.3	42.9	188	22.4	3.56	.34	.016	.000
MAX	.00	.00	.00	.00	53	130	710	52	9.7	.92	.11	.00
MIN	.00	.00	.00	.00	.00	1.3	19	11	1.0	.04	.00	.00
AC-FT	.00	.00	.00	.00	822	2640	11180	1370	212	21	1.0	.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 1996, BY WATER YEAR (WY)

MEAN	1.08	.31	.16	.062	1.34	62.9	193	55.9	26.8	30.4	6.24	2.89
MAX	25.1	4.17	2.75	1.75	26.5	545	1052	578	360	415	115	61.4
(WY)	1979	1979	1994	1994	1981	1994	1979	1970	1976	1978	1993	1978
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1960	1960	1960	1960	1960	1964	1961	1961	1961	1961	1960	1960

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR	FOR 1996 WATER YEAR	WATER YEARS 1960 - 1996
ANNUAL TOTAL	1863.72	8192.29	
ANNUAL MEAN	5.11	22.4	31.7
HIGHEST ANNUAL MEAN			150
LOWEST ANNUAL MEAN			.000
HIGHEST DAILY MEAN	177	Mar 14	4350
LOWEST DAILY MEAN	.00	Jan 1	.00
ANNUAL SEVEN-DAY MINIMUM	.00	Jan 1	.00
INSTANTANEOUS PEAK FLOW		798	4690
INSTANTANEOUS PEAK STAGE		a 6.05	12.05
ANNUAL RUNOFF (AC-FT)	3700	16250	22980
10 PERCENT EXCEEDS	13	56	32
50 PERCENT EXCEEDS	.00	.00	.00
90 PERCENT EXCEEDS	.00	.00	.00

a Backwater from ice.  
 e Estimated.



RED RIVER OF THE NORTH BASIN  
05113600 LONG CREEK NEAR NOONAN, ND  
(International gaging station)

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LOCATION.--Lat 48°58'52", long 103°04'34", near north line of NE<sup>1</sup>/<sub>4</sub> sec.1, T.163 N., R.96 W., Divide County, Hydrologic Unit 09010001, on right bank 150 ft upstream from county highway bridge, 1.5 mi upstream from international boundary, and 7 mi northwest of Noonan.

DRAINAGE AREA.--1,790 mi<sup>2</sup>, approximately, of which about 1,160 mi<sup>2</sup> is probably noncontributing.

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 2113: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 1,840 ft above sea level, from topographic map. Prior to Aug. 18, 1960, nonrecording gage at same site and datum.

REMARKS.--Records fair except for periods of estimated discharge, which are poor.

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.04	.67	e.00	e.00	e18	e80	52	16	3.6	4.4	.00
2	.00	.16	.63	e.00	e.00	e15	e60	48	15	3.6	1.8	.00
3	.00	.04	.67	e.00	e.00	e10	e45	47	13	2.8	1.5	.00
4	.00	.05	.62	e.00	e.00	e13	e35	41	12	6.6	1.2	.00
5	.00	.15	e.50	e.00	e.00	e8.0	e30	37	12	4.5	1.2	.00
6	.00	.23	e.40	e.00	e.00	e6.5	e25	34	11	4.5	1.0	.00
7	.00	.18	e.30	e.00	e.00	e5.0	e30	31	11	3.8	.86	.00
8	.00	.36	e.22	e.00	e.20	e8.0	e70	27	9.6	3.1	.55	.00
9	.00	e.31	e.15	e.00	e1.0	e10	e600	26	8.5	2.5	.35	.00
10	.00	e.27	e.05	e.00	e5.0	e9.0	e1100	22	7.6	3.1	.65	.00
11	.00	e.25	e.00	e.00	e2.0	e20	e750	21	7.4	1.2	.59	.00
12	.00	e.27	e.00	e.00	e1.0	e100	e600	21	7.4	.86	.46	.00
13	.00	e.32	e.00	e.00	e9.5	e200	e500	20	7.0	.62	.20	.00
14	.00	.36	e.00	e.00	e12	e220	e500	19	7.3	.56	.17	.00
15	.00	.33	e.00	e.00	e70	e260	e450	19	9.3	.41	.11	.00
16	.00	.36	e.00	e.00	e60	e300	400	17	7.2	.71	.06	.00
17	.00	.36	e.00	e.00	e50	e170	335	19	6.5	2.1	.00	.00
18	.00	.51	e.00	e.00	e70	e190	280	18	5.1	2.8	.00	.00
19	.00	.76	e.00	e.00	e50	e120	241	22	4.2	2.1	.00	.00
20	.02	.71	e.00	e.00	e30	e90	195	25	3.5	11	.00	.00
21	.07	.67	e.00	e.00	e25	e70	171	27	3.4	16	.20	.00
22	.14	.70	e.00	e.00	e20	e60	139	26	3.8	13	.11	.00
23	.03	.58	e.00	e.00	e30	e50	119	25	9.2	11	.06	.00
24	.01	.67	e.00	e.00	e50	e60	103	23	6.6	8.7	.00	.00
25	.00	.57	e.00	e.00	e45	e60	98	23	7.3	10	.00	.00
26	.02	.58	e.00	e.00	e38	e160	85	22	8.7	7.8	.00	.00
27	.16	.50	e.00	e.00	e32	e140	85	22	7.3	8.4	.00	.06
28	.04	.46	e.00	e.00	e28	e110	76	20	5.2	10	.00	.06
29	.00	.47	e.00	e.00	e25	e100	69	18	4.5	7.9	.00	.06
30	.00	.66	e.00	e.00	---	e110	60	17	2.8	5.9	.00	.06
31	.00	---	e.00	e.00	---	e100	---	16	---	5.2	.00	---
TOTAL	0.49	11.88	4.21	0.00	653.70	2792.5	7331	805	239.4	164.36	15.47	0.24
MEAN	.016	.40	.14	.000	22.5	90.1	244	26.0	7.98	5.30	.50	.008
MAX	.16	.76	.67	.00	70	300	1100	52	16	16	4.4	.06
AC-FT	1.0	24	8.4	.00	1300	5540	14540	1600	475	326	31	.5

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 1996, BY WATER YEAR (WY)

MEAN	1.68	.81	.58	.36	3.12	84.3	247	69.6	32.8	40.1	8.21	3.80
MAX	31.0	7.17	4.35	5.11	71.3	600	1396	728	375	452	131	77.2
(WY)	1979	1979	1976	1976	1981	1994	1979	1970	1976	1978	1993	1978

SUMMARY STATISTICS

FOR 1996 WATER YEAR

WATER YEARS 1960 - 1996

ANNUAL TOTAL	12018.25	
ANNUAL MEAN	32.8	41.0
HIGHEST ANNUAL MEAN		200
HIGHEST DAILY MEAN	1100	5710
LOWEST DAILY MEAN	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00
INSTANTANEOUS PEAK FLOW	1290	6310
INSTANTANEOUS PEAK STAGE	a 11.85	17.61
ANNUAL RUNOFF (AC-FT)	23840	29680
10 PERCENT EXCEEDS	72	44
50 PERCENT EXCEEDS	.67	.30
90 PERCENT EXCEEDS	.00	.00

a Backwater from ice.  
e Estimated.

**RED RIVER OF THE NORTH BASIN**  
**05113600 LONG CREEK NEAR NOONAN, ND--Continued**

**WATER-QUALITY RECORDS**

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)
NOV 29...	1045	0.46	1820	--	-2.0	0.0	--	--	--	--	--
FEB 13...	1100	9.4	2110	--	2.0	0.0	--	--	--	--	--
MAR 19...	1415	120	430	8.0	-5.0	0.5	110	21	13	48	46
APR 10...	1055	1120	530	--	--	1.0	--	--	--	--	--
12...	1350	604	400	--	1.0	0.5	--	--	--	--	--
16...	1500	387	510	--	15.0	2.5	--	--	--	--	--
JUN 04...	1400	12	1750	--	20.0	18.0	--	--	--	--	--
JUL 16...	1330	0.40	1830	8.8	30.0	25.5	570	96	79	200	43

DATE	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB 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)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)
MAR 19...	2	14	103	110	7.5	0.10	9.2	285	303	0.41	98.2
JUL 16...	4	18	308	710	34	0.20	--	1320	1370	1.86	1.48

DATE	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAR 19...	2	50	120	<1	17	110	--	<1	<1	120
JUL 16...	7	--	50	<1	100	40	<0.1	<1	<1	580

RED RIVER OF THE NORTH BASIN  
05113750 EAST BRANCH SHORT CREEK RESERVOIR NEAR COLUMBUS, ND

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LOCATION.--Lat 48°59'26", long 102°47'07", in SW<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> sec.32, T.164 N., R.93 W., Burke County, Hydrologic Unit 09010001, on left bank of reservoir on East Branch Short Creek, 0.5 mi south of international boundary, and 6.0 mi north of Columbus.

DRAINAGE AREA.--280 mi<sup>2</sup>, of which 175 mi<sup>2</sup> is probably noncontributing.

MONTHEND-GAGE HEIGHT AND CONTENTS RECORDS

PERIOD OF RECORD.--April 1963 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,860.00 ft above sea level.

REMARKS.--Records are good. Reservoir is formed by earth-fill dam; storage began April 1963. Outlet of lake is a fixed-crest concrete dam; average crest elevation, 1,886.90 ft above sea level. Reservoir capacity at crest elevation, 1,200 acre-ft. The reservoir is operated for water supply and recreation. Records of daily reservoir stage and contents are available from files at the Bismarck District office.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,850 acre-ft, Mar. 28, 1976, gage height, 32.13 ft; minimum, 770 acre-ft, Dec. 10, 1988, gage height, 22.57 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,590 acre-ft, Apr. 14, gage height, 30.20 ft; minimum contents, 1,130 acre-ft, Dec. 8, gage height, 26.38 ft.

MONTHEND GAGE HEIGHT AND CONTENTS AT 2400, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

Date	Gage height (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30-----	26.59	1,150	--
Oct. 31-----	26.48	1,140	-10
Nov. 30-----	26.47	1,140	0
Dec. 31-----	26.47	1,140	0
CAL YR 1995-----	--	--	+80
Jan. 31-----	--	*1,140	0
Feb. 29-----	26.62	1,160	+20
Mar. 31-----	28.36	1,360	+200
Apr. 30-----	29.06	1,450	+90
May 31-----	28.49	1,380	-70
June 30-----	27.99	1,320	-60
July 31-----	27.24	1,230	-90
Aug. 31-----	26.68	1,160	-70
Sept. 30-----	26.57	1,150	-10
WTR YR 1996-----	--	--	0

\* Estimated.

## RED RIVER OF THE NORTH BASIN

05113800 SHORT CREEK BELOW INTERNATIONAL BOUNDARY NEAR ROCHE PERCEE, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°01'42", long 102°51'00", in SW<sup>1</sup>/<sub>4</sub> sec.14, T.1, R.7 W., second meridian, Hydrologic Unit 09010001, 4 mi southwest of Roche Percee, Saskatchewan, and 5 mi upstream from mouth.

DRAINAGE AREA.--480 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder.

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.07	.00	e.04	e.04	e.04	e.04	e3.4	67	10	1.7	.32	.00
2	.07	.04	e.04	e.04	e.04	e.04	e4.3	64	9.8	1.7	.60	.00
3	.07	e.04	e.00	e.04	e.04	e.04	e3.4	59	8.9	1.7	1.3	.00
4	.07	e.04	e.00	e.04	e.04	e.04	e2.3	52	8.3	1.8	1.2	.00
5	.04	e.04	e.04	e.04	e.04	e.04	e2.9	46	8.2	1.9	.81	.11
6	.04	e.04	e.04	e.04	e.04	e.00	e6.7	42	7.5	2.0	.56	.07
7	.07	e.04	e.04	e.04	e.04	e.00	e17	38	6.9	1.9	.53	.04
8	.07	e.04	e.04	e.04	e.04	e.00	e70	35	6.5	1.8	.39	.00
9	.04	e.04	e.04	e.04	e.04	e.00	e299	31	5.8	1.7	.28	.00
10	.04	e.04	e.04	e.04	e1.3	e.14	e689	29	6.0	1.6	.25	.00
11	.04	e.04	e.04	e.04	e1.1	e1.1	e692	28	5.6	1.2	.25	.00
12	.04	e.04	e.04	e.04	e.92	e43	e565	25	5.2	.78	.25	.00
13	.07	e.04	e.04	e.04	e.85	e162	455	23	5.3	.64	.25	.00
14	.07	e.04	e.04	e.04	e.74	e167	395	22	5.5	.56	.21	.00
15	.07	e.04	e.04	e.04	e6.2	e244	320	21	5.5	.56	.21	.00
16	.04	e.04	e.04	e.04	e4.8	e235	256	20	4.8	.64	.11	.00
17	.04	e.04	e.04	e.04	e4.0	e129	213	21	4.2	.85	.11	.00
18	.04	e.04	e.04	e.04	e2.1	e166	181	21	3.6	.99	.14	.00
19	.11	e.04	e.04	e.04	e4.9	e149	158	25	4.3	.95	.11	.00
20	.11	e.04	e.04	e.04	e2.2	e104	138	24	2.7	1.0	.04	.00
21	.07	e.04	e.00	e.04	e1.4	e64	126	24	2.1	.88	.00	.00
22	.11	e.04	e.00	e.04	e.99	e45	118	23	1.9	.64	.00	.00
23	.11	e.04	e.00	e.04	e.71	e19	111	22	2.9	.56	.00	.00
24	.11	e.04	e.00	e.04	e.60	e9.6	106	21	2.7	.53	.04	.00
25	.14	e.04	e.00	e.04	e.35	e5.1	99	19	2.4	.53	.04	.00
26	.14	e.04	e.00	e.04	e.25	e3.8	93	17	2.3	.85	.04	.00
27	.14	e.04	e.00	e.04	e.14	e4.6	92	15	2.0	.92	.04	.00
28	.11	e.04	e.00	e.04	e.11	e3.8	91	13	2.0	.56	.00	.04
29	.07	e.04	e.00	e.04	e.07	e3.2	85	12	1.9	.42	.00	.04
30	.07	e.04	e.00	e.04	---	e3.3	76	11	1.8	.32	.00	.00
31	.00	---	e.00	e.04	---	e2.9	---	11	---	.32	.00	---
TOTAL	2.28	1.16	0.72	1.24	34.09	1564.74	5468.0	881	146.6	32.50	8.08	0.30
MEAN	.074	.039	.023	.040	1.18	50.5	182	28.4	4.89	1.05	.26	.010
MAX	.14	.04	.04	.04	6.2	244	692	67	10	2.0	1.3	.11
MIN	.00	.00	.00	.04	.04	.00	2.3	11	1.8	.32	.00	.00
AC-FT	4.5	2.3	1.4	2.5	68	3100	10850	1750	291	64	16	.6

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 1996, BY WATER YEAR (WY)

	MEAN	.91	.37	.090	.029	1.52	32.2	63.7	20.1	8.65	5.95	4.44	1.40
MAX	10.9	6.00	1.42	.28	27.9	285	311	169	100	41.1	69.9	16.5	
(WY)	1976	1976	1976	1976	1983	1976	1979	1975	1975	1986	1993	1975	
MIN	.000	.000	.000	.000	.000	.000	.016	.010	.000	.000	.000	.000	
(WY)	1962	1962	1961	1962	1962	1965	1991	1990	1980	1961	1961	1961	

## SUMMARY STATISTICS

FOR 1995 CALENDAR YEAR

FOR 1996 WATER YEAR

WATER YEARS 1960 - 1996

ANNUAL TOTAL	6291.42	8140.71	
ANNUAL MEAN	17.2	22.2	11.4
HIGHEST ANNUAL MEAN			51.9
LOWEST ANNUAL MEAN			.029
HIGHEST DAILY MEAN	441	Jun 25	1410
LOWEST DAILY MEAN	.00	Jan 4	.00
ANNUAL SEVEN-DAY MINIMUM	.00	Jan 4	.00
INSTANTANEOUS PEAK FLOW		717	1700
INSTANTANEOUS PEAK STAGE		a 9.63	14.39
ANNUAL RUNOFF (AC-FT)	12480	16150	8240
10 PERCENT EXCEEDS	35	48	14
50 PERCENT EXCEEDS	.78	.11	.05
90 PERCENT EXCEEDS	.00	.00	.00

a Backwater from ice.  
e Estimated.



WATER-DISCHARGE RECORDS

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1927 reached a stage of about 22 ft and flood in 1904 reached a stage of about 25.8 ft from information by local residents.

a Backwater from ice.  
e Estimated.

RED RIVER OF THE NORTH BASIN  
05114000 SOURIS RIVER NEAR SHERWOOD, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1970, 1972 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: August 1983 to current year.

PH: August 1992 to current year.

WATER TEMPERATURE: August 1983 to current year.

DISSOLVED OXYGEN: May 1993 to current year.

INSTRUMENTATION.--Water-quality monitor since August 1983.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 3,490 microsiemens, Apr. 28, 1991; minimum, 94 microsiemens, Apr. 5, 1990.

PH: Maximum, 10.4 units, Oct. 19, 1995; minimum, 7.8 units, June 8, 1994.

WATER TEMPERATURE: Maximum, 29.4°C, June 17, 1995; minimum, 0.0°C several days during winter months each year.

DISSOLVED OXYGEN: Maximum, 17.0 mg/L, Aug. 28, 1996; minimum, 3.1 mg/L, Aug. 27, 1994.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
NOV 06...	1230	7.3	1200	8.4	--	724	0.0	0.0	10.5	76	320	310
FEB 12...	1230	1.6	1900	6.9	--	--	0.0	0.5	--	--	490	K16
MAR a19...	1000	1120	360	8.0	--	743	-10.0	0.0	13.6	96	75	--
APR 12...	1030	2340	410	7.9	--	718	0.0	0.0	13.4	97	120	--
16...	1200	1850	620	7.8	7.6	712	6.0	2.0	13.5	105	170	--
30...	1030	791	560	8.2	--	715	5.0	6.5	13.5	117	180	--
JUN 04...	1100	183	850	--	7.7	715	10.0	15.0	9.0	95	260	--
JUL 16...	0930	34	1230	8.2	7.9	712	22.0	21.5	5.7	70	280	--
AUG 27...	1200	86	980	8.6	--	717	22.0	19.5	8.8	102	280	130

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)	SODIUM AD- SORP- TION RATIO (00931)	ALKA- LINEITY 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)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L) (00530)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)
NOV 06...	63	39	170	4	374	250	78	<0.10	3	894	1.10	1.10
FEB 12...	110	53	250	5	553	360	92	0.20	11	1280	0.250	0.250
MAR a19...	16	8.4	44	2	88	81	11	<0.10	24	251	0.350	0.350
APR 12...	23	14	26	1	94	73	6.6	<0.10	70	224	0.340	0.340
16...	34	21	47	2	147	130	11	0.10	86	366	0.170	0.170
30...	34	23	37	1	144	110	10	<0.10	48	335	0.100	0.100
JUN 04...	51	33	68	2	229	160	20	0.20	22	501	--	<0.050
JUL 16...	57	33	140	4	312	260	51	0.20	30	796	0.060	0.060
AUG 27...	48	40	89	2	273	210	25	0.20	14	638	--	<0.050

RED RIVER OF THE NORTH BASIN  
05114000 SOURIS RIVER NEAR SHERWOOD, ND--Continued

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WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (006008)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (006005)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (006025)	NITRO- GEN, TOTAL (MG/L AS N) (006000)	PHOS- PHORUS TOTAL (MG/L AS P) (006665)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL) (01105)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BORON, TOTAL RECOV- ERABLE (UG/L AS B) (01022)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)
NOV 06...	<0.015	1.3	1.3	2.4	0.150	60	2	<100	<10	350	<1	<1
FEB 12...	1.80	1.0	2.8	3.1	0.220	40	2	<100	<10	340	<1	<1
MAR a19...	0.220	1.1	1.3	1.7	0.280	300	1	<100	<10	90	<1	<1
APR 12...	0.290	1.2	1.5	1.8	0.330	--	1	<100	<10	40	<1	2
16...	0.150	1.4	1.6	1.8	0.310	--	<1	<100	<10	70	<1	2
30...	0.070	1.0	1.1	1.2	0.200	--	1	<100	<10	60	<1	<1
JUN 04...	0.030	1.3	1.3	1.3	0.210	--	2	<100	<10	110	<1	<1
JUL 16...	0.030	1.4	1.4	1.5	0.210	--	5	<100	<10	230	<1	<1
AUG 27...	<0.015	2.1	2.1	2.1	0.300	--	6	<100	<10	160	<1	<1

DATE	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO) (01037)	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)	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 TOTAL (MG/L AS C) (00680)	PHENOLS TOTAL (UG/L) (32730)	ACIFL- UORFEN WATER, FLTRD, REC (UG/L) (49315)	ALA- CHLOR, WATER, DISS, REC, (UG/L) (46342)
NOV 06...	<1	1	340	<1	3	3	<1	<10	17	<1	--	--
FEB 12...	<1	<1	540	<1	2	3	<1	<10	18	e3	--	--
MAR a19...	<1	2	680	1	2	3	<1	<10	16	--	<0.035	<0.002
APR 12...	<1	4	1700	2	<1	3	<1	10	21	--	<0.035	<0.002
16...	1	4	2100	3	2	4	<1	10	22	3	--	--
30...	1	2	930	1	2	4	<1	<10	--	<1	--	--
JUN 04...	<1	2	460	<1	1	3	<1	<10	--	--	--	--
JUL 16...	<1	2	600	<1	4	4	<1	<10	18	<1	<0.035	--
AUG 27...	<1	2	380	<1	3	3	<1	<10	24	2	--	--

DATE	ALDI- CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (49312)	ALDI- CARB SULFONE WAT,FLT GF 0.7U REC (UG/L) (49313)	ALDICA- RB SUL- FOXIDE, WAT,FLT GF 0.7U REC (UG/L) (49314)	ALDRIN, TOTAL (UG/L) (39330)	CHLOR- AMBEN, WATER, FLTRD, GF 0.7U REC (UG/L) (49307)	ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)	TRIAZIN SCREEN (ELISA) WAT,WH REC,AS ATRAZIN (UG/L) (34757)	BEN- FLUR- ALIN WAT FLD GF, REC (UG/L) (82673)	BENTA- ZON, WATER, FLTRD, GF 0.7U REC (UG/L) (38711)	BRO- MACIL, WATER, DISS, REC (UG/L) (04029)	BRO- MOXYNIL WATER, FLTRD, GF 0.7U REC (UG/L) (49311)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)
MAR a19...	<0.016	<0.016	<0.021	<0.010	<0.011	<0.001	<0.05	<0.002	<0.014	<0.035	<0.035	<0.002
APR 12...	<0.016	<0.016	<0.021	<0.010	<0.011	<0.001	0.1	<0.002	<0.014	<0.035	<0.035	<0.002
16...	--	--	--	--	--	--	0.1	--	--	--	--	--
30...	--	--	--	--	--	--	<0.05	--	--	--	--	--
JUN 04...	--	--	--	--	--	--	<0.05	--	--	--	--	--
JUL 16...	<0.016	<0.016	<0.021	--	<0.011	--	<0.05	--	<0.014	<0.035	<0.035	--

**RED RIVER OF THE NORTH BASIN**  
**05114000 SOURIS RIVER NEAR SHERWOOD, ND--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	CAR-BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	CAR-BARYL WATER, FLTRD, 0.7 U GF 0.7U REC (UG/L) (49310)	CARBO-FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	CARBO-FURAN WATER, FLTRD, 0.7 U GF 0.7U REC (UG/L) (49309)	CARBO-FURAN SCREEN, TOTAL (UG/L) (99902)	CHLOR-DANE, TECH-NICAL TOTAL (UG/L) (39350)	CHLOR-PYRIFOS TOTAL RECOVER (UG/L) (38932)	CHLOR-PYRIFOS DIS-SOLVED TOTAL (UG/L) (38933)	CLOPYR-ALID, WATER, FLTRD, 0.7 U GF 0.7U REC (UG/L) (49305)	CHLORO-THALO-NIL, WAT,FLT GF 0.7U REC (UG/L) (49306)	CYANA-ZINE, WATER, DISS, REC (UG/L) (04041)	CYANA-ZINE SCREEN, TOTAL (UG/L) 7 (99904)
MAR a19...	<0.003	<0.008	<0.003	<0.028	--	<0.100	<0.010	<0.004	<0.050	<0.035	<0.004	<0.04
APR 12...	<0.003	<0.008	<0.003	<0.028	--	<0.100	<0.010	<0.004	<0.050	<0.035	<0.004	<0.04
16...	--	--	--	--	--	--	--	--	--	--	--	<0.04
30...	--	--	--	--	--	--	--	--	--	--	--	<0.04
JUN 04...	--	--	--	--	<0.06	--	--	--	--	--	--	<0.04
JUL 16...	--	<0.008	--	<0.028	<0.06	--	--	--	<0.050	<0.035	--	<0.04

DATE	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	P,P'-DDD UNFILT RECOVER (UG/L) (39360)	DDE, TOTAL (UG/L) (39365)	P,P'-DDE DISSOLV (UG/L) (34653)	P,P'-DDT UNFILT RECOVER (UG/L) (39370)	DEF TOTAL (UG/L) (39040)	DACTHAL MONO-ACID, WAT,FLT GF 0.7U REC (UG/L) (49304)	DEETHYL ATRA-ZINE, WATER, DISS, REC (UG/L) (04040)	DI-AZINON, DIS-SOLVED TOTAL (UG/L) (39570)	DI-AZINON, DIS-SOLVED (UG/L) (39572)	DICAMBA FLTRD, GF 0.7U REC (UG/L) (38442)	DICHLOR-BENIL, WATER, FLTRD, GF 0.7U REC (UG/L) (49303)
MAR a19...	<0.002	<0.010	<0.010	<0.006	<0.010	<0.010	<0.017	<0.002	<0.010	<0.002	<0.035	<0.020
APR 12...	<0.002	<0.010	<0.010	<0.006	<0.010	<0.010	<0.017	<0.002	<0.010	<0.002	<0.035	<0.020
JUL 16...	--	--	--	--	--	--	<0.017	--	--	--	<0.035	<0.020

DATE	DICHLOR PROP, WATER, FLTRD, GF 0.7U REC (UG/L) (49302)	DI-ELDRIN TOTAL (UG/L) (39380)	DI-ELDRIN DIS-SOLVED (UG/L) (39381)	2,6-DI-ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	DINOSEB WATER, FLTRD, GF 0.7U REC (UG/L) (49301)	DISUL-FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	DISUL-FOTON UNFILT RECOVER (UG/L) (39011)	DIURON, WATER, FLTRD, GF 0.7U REC (UG/L) (49300)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	ENDO-SULFAN, I TOTAL (UG/L) (39388)	ENDRIN WATER UNFLTRD REC (UG/L) (39390)	ESFEN-VAL-ERATE, WAT,FLT GF 0.7U REC (UG/L) (49298)
MAR a19...	<0.032	<0.010	<0.001	<0.003	<0.035	<0.017	<0.010	<0.020	<0.002	<0.010	--	<0.019
APR 12...	<0.032	<0.010	<0.001	<0.003	<0.035	<0.017	--	<0.020	<0.002	<0.010	<0.010	<0.019
JUL 16...	<0.032	--	--	--	<0.035	--	--	<0.020	--	--	--	<0.019

DATE	ETHAL-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	ETHION, TOTAL (UG/L) (39398)	ETHO-PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	FEN-URON, WATER, FLTRD, GF 0.7U REC (UG/L) (49297)	FLUO-METURON WATER, FLTRD, GF 0.7U REC (UG/L) (38811)	FONOFOS (DY-FONATE) WATER WHOLE TOT.REC (UG/L) (82614)	FONOFOS WATER DISS REC (UG/L) (04095)	HEPTA-CHLOR, EPOXIDE TOTAL (UG/L) (39410)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L) (39420)	LINDANE TOTAL (UG/L) (39340)	LINDANE DIS-SOLVED (UG/L) (39341)	LIN-URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)
MAR a19...	<0.004	<0.010	<0.003	<0.013	<0.035	<0.010	<0.003	<0.010	<0.010	<0.010	<0.004	<0.002
APR 12...	<0.004	<0.010	<0.003	<0.013	<0.035	<0.010	<0.003	<0.010	<0.010	<0.010	<0.004	<0.002
JUL 16...	--	--	--	<0.013	<0.035	--	--	--	--	--	--	--



RED RIVER OF THE NORTH BASIN  
05114000 SOURIS RIVER NEAR SHERWOOD, ND--Continued

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WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	LINURON WATER, FLTRD, GF 0.7U REC (UG/L) (38478)	MCPA, WATER, FLTRD, GF 0.7U REC (UG/L) (38482)	MCPB, WATER, FLTRD, GF 0.7U REC (UG/L) (38487)	MALA- THION, DIS- SOLVED TOTAL (UG/L) (39530)	MALA- THION, DIS- SOLVED TOTAL (UG/L) (39532)	METHIO- CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (38501)	METH- OMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49296)	METH- OXY- CHLOR, TOTAL (UG/L) (39480)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	METHYL PARA- THION, WAT FLT 0.7 U GF, REC (UG/L) (39600)	METHYL PARA- THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	
	MAR a19...	<0.018	<0.050	<0.035	<0.010	<0.005	<0.026	<0.017	<0.010	<0.001	<0.010	<0.006	<0.002
	APR 12...	<0.018	<0.050	<0.035	<0.030	<0.005	<0.026	<0.017	<0.010	<0.001	<0.010	<0.006	<0.002
JUL 16...	<0.018	e0.220	<0.035	--	--	<0.026	<0.017	--	--	--	--	--	
DATE	METRI- BUZIN WATER DISSOLV (UG/L) (82630)	MIREX, TOTAL (UG/L) (39755)	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	NEB- URON, WATER, FLTRD, GF 0.7U REC (UG/L) (49294)	NORFLUR AZON, WATER, FLTRD, GF 0.7U REC (UG/L) (49293)	DNOC WAT,FLT REC (UG/L) (49299)	ORY- ZALIN, WATER, FLTRD, GF 0.7U REC (UG/L) (49292)	PCB, TOTAL (UG/L) (39516)	PCNS UNFILT RECOVER (UG/L) (39250)	PARA- THION, TOTAL (UG/L) (39540)		
MAR a19...	<0.004	<0.010	<0.004	<0.003	<0.015	<0.024	<0.035	<0.019	<0.100	<0.100	<0.010		
APR 12...	<0.004	<0.010	<0.004	<0.003	<0.015	<0.024	<0.035	<0.019	<0.100	<0.100	<0.010		
JUL 16...	--	--	--	--	<0.015	<0.024	<0.035	<0.019	--	--	--		
DATE	PARA- THION, DIS- SOLVED (UG/L) (39542)	PEB- ULATE WATER FLTRD 0.7 U GF, REC (UG/L) (82669)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	PER- THANE TOTAL (UG/L) (39034)	PHORATE TOTAL (UG/L) (39023)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	PRO- METON, WATER, DISS, 0.7 U REC (UG/L) (04037)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	PROP- CHLOR, WATER, DISS, 0.7 U REC (UG/L) (04024)	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)		
MAR a19...	<0.004	<0.004	<0.004	<0.005	<0.100	<0.010	<0.002	<0.018	<0.003	<0.007	<0.004		
APR 12...	<0.004	<0.004	<0.004	<0.005	<0.100	<0.010	<0.002	<0.018	<0.003	<0.007	<0.004		
DATE	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	PRO- PHAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49236)	PRO- POXUR, WATER, FLTRD, GF 0.7U REC (UG/L) (38538)	SILVEX, DIS- SOLVED (UG/L) (39762)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	TOX- APHENE, TOTAL (UG/L) (39400)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)		
MAR a19...	<0.013	<0.035	<0.035	<0.021	<0.005	<0.010	<0.007	<0.013	<0.002	<1.00	<0.001		
APR 12...	<0.013	<0.035	<0.035	<0.021	<0.005	<0.010	<0.007	<0.013	<0.002	<1.00	0.021		
JUL 16...	--	<0.035	<0.035	<0.021	--	--	--	--	--	--	--		
DATE	TRI- CLOPYR, WATER, FLTRD, GF 0.7U REC (UG/L) (49235)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	1-NAPH THOL, WATER, FLTRD, GF 0.7U TRI- THION (UG/L) (39786)	2,4-D, DIS- SOLVED (UG/L) (49295)	2,4-D SCREEN, TOTAL (UG/L) (99906)	2,4-DB WATER, FLTRD, GF 0.7U REC (UG/L) (38746)	2,4,5-T DIS- SOLVED (UG/L) (39742)	3HYDRXY CARBO- FURAN WAT,FLT GF 0.7U REC (UG/L) (49308)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)			
MAR a19...	<0.050	e0.004	<0.010	<0.007	<0.035	<0.700	<0.035	<0.035	<0.014	--	--		
APR 12...	<0.050	e0.010	<0.030	<0.007	<0.035	<0.700	<0.035	<0.035	<0.014	--	--		
16...	--	--	--	--	--	<0.700	--	--	--	--	--		
30...	--	--	--	--	--	<0.700	--	--	--	--	--		
JUN 04...	--	--	--	--	--	<0.700	--	--	--	--	--		
JUL 16...	<0.050	--	--	<0.007	<0.035	1.28	<0.035	<0.035	<0.014	4.90	0.300		
AUG 27...	--	--	--	--	--	--	--	--	--	12.0	1.10		

a Replicate sample also collected for quality-assurance purposes.

e Estimated.

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

RED RIVER OF THE NORTH BASIN  
05114000 SOURIS RIVER NEAR SHERWOOD, ND--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	12.0	10.5	11.1	2.3	1.0	1.9	.2	.1	.2	.2	.2	.2
2	12.6	10.6	11.4	1.0	.3	.4	.2	.1	.1	.3	.2	.3
3	12.1	11.0	11.5	.5	.2	.3	.1	.1	.1	.3	.2	.3
4	12.2	10.8	11.3	.5	.2	.3	.1	.1	.1	.3	.2	.3
5	10.9	9.5	10.3	.4	.2	.3	.2	.1	.1	.3	.2	.2
6	10.9	9.1	9.8	.4	.2	.3	.3	.2	.3	.2	.2	.2
7	9.6	8.1	8.7	.4	.2	.3	.2	.2	.2	.2	.1	.2
8	10.4	8.6	9.2	.4	.2	.3	.2	.2	.2	.1	.1	.1
9	10.3	8.7	9.3	.3	.2	.2	.2	.2	.2	.1	.1	.1
10	10.5	8.6	9.4	.2	.2	.2	.3	.2	.2	.2	.1	.1
11	10.8	9.5	10.0	.4	.2	.3	.3	.2	.2	.2	.1	.1
12	11.9	10.6	11.2	.2	.2	.2	.3	.2	.3	.1	.1	.1
13	11.3	8.3	10.0	.2	.2	.2	.2	.2	.2	.2	.1	.1
14	8.3	7.0	7.4	.2	.2	.2	.2	.2	.2	.2	.1	.2
15	8.1	6.7	7.3	.2	.2	.2	.2	.2	.2	.4	.2	.3
16	8.0	6.6	7.3	.2	.2	.2	.2	.2	.2	.3	.2	.3
17	8.4	7.4	7.9	.2	.2	.2	.2	.2	.2	.3	.2	.2
18	7.6	7.0	7.3	.2	.2	.2	.2	.2	.2	.3	.2	.2
19	7.4	6.3	7.0	.2	.2	.2	.2	.2	.2	.3	.2	.3
20	6.5	5.8	6.1	.2	.1	.2	.2	.2	.2	.3	.2	.3
21	6.7	5.7	6.2	.2	.2	.2	.2	.2	.2	.3	.2	.2
22	6.5	5.4	6.1	.2	.1	.2	.2	.2	.2	.2	.1	.2
23	5.4	4.0	4.7	.2	.2	.2	.2	.2	.2	.2	.2	.2
24	4.6	3.7	4.2	.2	.2	.2	.2	.1	.1	.2	.2	.2
25	4.6	3.7	4.1	.2	.2	.2	.2	.1	.2	.2	.2	.2
26	4.1	3.6	3.9	.2	.2	.2	.2	.1	.2	.2	.2	.2
27	4.7	4.0	4.4	.2	.2	.2	.2	.2	.2	.2	.1	.2
28	4.5	3.7	4.1	.2	.2	.2	.2	.2	.2	.2	.1	.2
29	3.9	3.2	3.5	.2	.2	.2	.2	.2	.2	.2	.2	.2
30	3.6	2.7	3.1	.2	.1	.1	.2	.2	.2	.2	.2	.2
31	2.8	1.6	2.1	---	---	---	.2	.2	.2	.2	.2	.2
MONTH	12.6	1.6	7.4	2.3	.1	.3	.3	.1	.2	.4	.1	.2

[illegible]

RED RIVER OF THE NORTH BASIN  
05114000 SOURIS RIVER NEAR SHERWOOD, ND--Continued

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WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	26.5	21.0	23.6	25.0	19.6	22.0	22.9	21.3	22.2
2	---	---	---	25.9	21.1	23.7	24.9	20.9	23.0	22.1	19.0	20.5
3	---	---	---	25.4	22.0	23.8	25.3	21.0	23.1	20.7	18.4	19.5
4	---	---	---	24.9	21.7	23.1	24.2	21.2	22.8	19.0	16.7	17.6
5	---	---	---	25.1	22.3	23.4	24.6	20.0	22.4	16.7	16.0	16.3
6	---	---	---	25.4	21.4	23.5	23.5	19.5	21.3	18.2	15.7	16.7
7	---	---	---	24.6	20.7	22.0	21.9	18.8	20.5	18.5	15.1	16.7
8	---	---	---	21.3	18.3	19.7	22.3	17.6	20.0	18.9	15.8	17.2
9	---	---	---	23.1	17.0	20.0	21.9	17.6	20.0	20.1	16.1	17.9
10	---	---	---	21.7	17.6	19.7	24.3	19.3	21.7	19.3	16.5	18.0
11	---	---	---	20.7	17.7	19.2	25.3	21.2	23.2	17.9	14.5	15.8
12	---	---	---	21.2	18.3	19.7	23.7	20.8	22.2	16.0	14.3	15.1
13	---	---	---	22.9	17.7	20.2	23.0	20.0	21.7	16.5	13.4	14.9
14	---	---	---	24.0	19.0	21.4	23.7	19.3	21.4	16.1	13.4	14.9
15	---	---	---	25.5	19.6	22.4	22.3	19.3	21.0	16.0	13.7	14.9
16	---	---	---	26.8	21.1	23.9	25.8	19.8	22.4	16.7	14.0	15.2
17	---	---	---	25.8	22.9	24.2	25.4	21.7	23.6	16.0	14.4	15.1
18	---	---	---	27.3	22.5	24.6	24.5	22.4	23.5	15.8	14.3	15.0
19	---	---	---	26.6	23.4	24.9	23.2	19.9	21.4	15.0	13.7	14.2
20	---	---	---	26.7	22.5	24.5	22.6	18.1	20.3	14.2	13.2	13.7
21	---	---	---	24.9	21.4	23.2	21.9	20.0	20.9	14.4	13.3	13.9
22	---	---	---	24.6	20.2	22.2	21.5	17.0	19.3	13.7	11.5	12.8
23	---	---	---	23.1	19.9	21.6	22.2	17.5	19.8	13.8	11.8	12.8
24	---	---	---	23.4	19.0	21.1	22.5	18.2	20.1	13.0	10.9	12.0
25	---	---	---	24.2	19.0	21.7	22.4	18.8	20.5	12.2	10.7	11.4
26	17.4	15.7	16.5	23.1	20.1	21.2	22.4	19.0	20.6	11.5	10.0	10.7
27	23.6	17.2	19.9	23.8	19.8	21.7	22.5	19.1	20.7	11.2	9.3	10.3
28	24.5	20.6	22.4	24.6	20.1	22.3	23.5	20.1	21.6	11.0	9.8	10.3
29	25.5	21.4	23.4	24.3	19.7	22.0	23.9	20.7	22.2	9.8	7.9	8.4
30	25.7	20.3	23.1	24.7	20.0	22.4	24.5	21.4	22.8	8.5	7.7	8.1
31	---	---	---	23.4	20.0	21.4	24.4	21.4	22.8	---	---	---
MONTH	---	---	---	27.3	17.0	22.2	25.8	17.0	21.6	22.9	7.7	14.7

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	1620	1040	1330	1120	1090	1120	1820	1810	1810	1760	1750	1760
2	1270	1110	1170	1150	1070	1130	1830	1820	1820	1760	1740	1750
3	1250	1070	1180	1160	1140	1150	1840	1820	1830	1750	1730	1740
4	1260	1070	1170	1200	1160	1190	1840	1830	1840	1740	1730	1730
5	1260	1080	1180	1210	1200	1200	1840	1840	1840	1730	1720	1730
6	1200	1130	1160	1200	1190	1200	1840	1830	1830	1730	1720	1720
7	1230	1070	1160	1200	1190	1200	1830	1820	1830	1720	1710	1720
8	1170	1000	1120	1260	1200	1240	1840	1820	1830	1710	1700	1700
9	1220	1040	1130	1270	1260	1260	1840	1830	1840	1700	1690	1700
10	1130	798	957	1270	1260	1270	1860	1840	1850	1690	1690	1690
11	1030	776	883	1320	1260	1290	1870	1860	1870	1690	1680	1680
12	1060	894	971	1400	1320	1380	1870	1870	1870	1680	1670	1670
13	1160	857	1000	1460	1400	1430	1870	1860	1870	1670	1660	1670
14	1110	896	1030	1480	1450	1470	1860	1860	1860	1660	1660	1660
15	1120	965	1040	1490	1480	1490	1860	1860	1860	1660	1650	1660
16	1130	978	1080	1490	1480	1490	1870	1860	1870	1650	1580	1610
17	1140	1060	1090	1480	1470	1480	1870	1860	1870	1600	1590	1600
18	1130	1010	1090	1480	1440	1470	1860	1850	1860	1600	1600	1600
19	1120	1040	1080	1460	1450	1460	1850	1830	1840	1600	1600	1600
20	1150	1000	1100	1460	1450	1460	1830	1810	1820	1630	1600	1600
21	1150	1010	1090	1450	1440	1450	1810	1800	1800	1650	1630	1640
22	1150	971	1100	1480	1440	1460	1800	1790	1790	1650	1640	1650
23	1160	1010	1110	1580	1480	1520	1790	1790	1790	1660	1650	1650
24	1160	932	1050	1620	1560	1580	1790	1780	1790	1670	1660	1660
25	1120	1020	1070	1680	1570	1630	1790	1790	1790	1680	1670	1680
26	1150	998	1090	1750	1660	1720	1790	1780	1790	1700	1680	1690
27	1140	1120	1130	1780	1720	1760	1780	1780	1780	1700	1590	1670
28	1120	988	1110	1800	1620	1750	1780	1780	1780	1700	1690	1700
29	1120	1050	1090	---	---	---	1780	1770	1780	1690	1690	1690
30	1150	1070	1140	---	---	---	1770	1770	1770	1690	1680	1680
31	1120	1120	1120	---	---	---	1770	1760	1770	1690	1680	1680
MONTH	1620	776	1100	---	---	---	1870	1760	1820	1760	1580	1680

RED RIVER OF THE NORTH BASIN  
05114000 SOURIS RIVER NEAR SHERWOOD, ND--Continued

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	1700	1690	1690	---	---	---	---	---	---	---	---	---
2	1710	1700	1700	1650	1640	1640	---	---	---	---	---	---
3	1720	1710	1710	1660	1640	1650	---	---	---	---	---	---
4	1720	1710	1720	1680	1660	1670	---	---	---	---	---	---
5	1720	1710	1720	1690	1680	1690	---	---	---	---	---	---
6	1710	1700	1710	1710	1690	1700	---	---	---	---	---	---
7	1710	1700	1700	1730	1710	1720	---	---	---	---	---	---
8	1700	1690	1700	1750	1730	1740	---	---	---	---	---	---
9	1690	1680	1690	1770	1750	1760	---	---	---	---	---	---
10	1680	1670	1680	1770	1760	1770	---	---	---	---	---	---
11	1670	1660	1670	---	---	---	---	---	---	---	---	---
12	1660	1650	1660	---	---	---	---	---	---	---	---	---
13	1650	1640	1650	---	---	---	---	---	---	---	---	---
14	1640	1630	1640	---	---	---	---	---	---	---	---	---
15	1630	1630	1630	---	---	---	---	---	---	---	---	---
16	1630	1620	1630	---	---	---	---	---	---	---	---	---
17	1620	1620	1620	---	---	---	---	---	---	---	---	---
18	1620	1610	1620	---	---	---	---	---	---	---	---	---
19	1620	1610	1610	---	---	---	---	---	---	---	---	---
20	1610	1600	1610	---	---	---	---	---	---	---	---	---
21	1610	1600	1600	---	---	---	---	---	---	---	---	---
22	1600	1590	1600	---	---	---	---	---	---	---	---	---
23	1590	1580	1590	---	---	---	---	---	---	---	---	---
24	1590	1580	1580	---	---	956	1040	1020	1030	856	838	849
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	1580	1570	1570	---	---	---	---	---	---	---	---	---
28	1620	1580	1610	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	889	860	872	1020	1000	1010	843	828	837
2	---	---	---	928	885	902	1030	906	1020	848	835	840
3	---	---	---	955	919	936	1040	978	1030	855	843	849
4	---	---	---	971	944	956	1040	1020	1030	856	838	849
5	---	---	---	989	960	976	1040	1030	1040	857	828	840
6	---	---	---	1010	985	994	1040	971	1030	854	831	842
7	---	---	---	1030	1000	1010	1040	1030	1030	858	836	846
8	---	---	---	1070	1030	1050	1040	1030	1030	839	827	834
9	---	---	---	1100	1070	1090	1050	1030	1040	839	824	829
10	---	---	---	1110	1060	1080	1070	1050	1060	843	828	834
11	---	---	---	1080	1050	1060	1080	1060	1070	854	834	842
12	---	---	---	1150	1080	1120	1090	1070	1080	872	850	863
13	---	---	---	1190	1150	1170	1100	1080	1090	884	862	873
14	---	---	---	1220	1190	1200	1100	1090	1090	894	880	887
15	---	---	---	1230	1220	1230	1110	1090	1100	909	890	899
16	---	---	---	1240	1200	1220	1120	1100	1110	926	903	916
17	---	---	---	1240	1180	1220	1120	1100	1110	930	914	921
18	---	---	---	1210	1180	1200	1120	1100	1110	922	913	917
19	---	---	---	1200	1110	1170	1120	1110	1110	933	922	927
20	---	---	---	1110	1030	1050	1120	1100	1110	940	925	933
21	---	---	---	1030	1010	1020	1130	1110	1120	944	935	939
22	---	---	---	1040	1000	1020	1130	1100	1120	952	936	945
23	---	---	---	1030	1000	1010	1190	1090	1130	955	944	949
24	---	---	---	1020	989	1000	1230	1130	1180	965	951	956
25	---	---	---	1020	1000	1010	1400	1200	1260	978	961	970
26	865	831	848	1020	988	1000	1470	1000	1180	989	974	981
27	842	831	836	1010	989	999	1030	870	962	996	982	989
28	856	838	845	1020	998	1010	870	832	849	1010	993	1000
29	869	851	861	1020	1000	1010	839	824	831	1020	1000	1010
30	872	861	865	1030	998	1020	836	824	829	1030	1010	1020
31	---	---	---	1020	994	1010	836	822	830	---	---	---
MONTH	---	---	---	1240	860	1050	1470	822	1050	1030	824	905



RED RIVER OF THE NORTH BASIN  
05114000 SOURIS RIVER NEAR SHERWOOD, ND--Continued

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PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	8.2	7.9	8.5	8.4	---	---	---	---	---	---	---	---
2	8.2	8.0	8.5	8.4	---	---	---	---	---	---	---	---
3	8.2	7.9	8.5	8.5	---	---	---	---	---	---	---	---
4	8.2	8.1	8.5	8.4	---	---	---	---	---	---	---	---
5	8.2	8.1	8.5	8.4	---	---	---	---	---	---	---	---
6	8.2	8.1	8.4	8.4	---	---	---	---	---	---	---	---
7	8.1	7.9	8.4	8.3	---	---	---	---	---	---	---	---
8	8.1	8.0	8.4	8.3	---	---	---	---	---	---	---	---
9	8.1	8.0	8.3	8.2	---	---	---	---	---	---	---	---
10	8.2	8.1	8.2	8.2	---	---	---	---	---	---	---	---
11	8.2	7.9	8.2	8.1	---	---	---	---	---	---	---	---
12	8.2	8.1	8.2	8.1	---	---	---	---	---	---	---	---
13	8.3	8.1	8.1	8.1	---	---	---	---	---	---	---	---
14	8.3	8.1	8.1	8.0	---	---	---	---	---	---	---	---
15	8.3	8.2	8.1	8.0	---	---	---	---	---	---	---	---
16	8.3	8.2	8.0	8.0	---	---	---	---	---	---	---	---
17	8.3	8.2	8.0	8.0	---	---	---	---	---	---	---	---
18	8.3	8.3	8.0	8.0	---	---	---	---	---	---	---	---
19	8.3	8.2	8.0	8.0	---	---	---	---	---	---	---	---
20	8.3	8.3	8.0	8.0	---	---	---	---	---	---	---	---
21	8.4	8.3	8.0	8.0	---	---	---	---	---	---	---	---
22	8.4	8.3	8.0	8.0	---	---	---	---	---	---	---	---
23	8.4	8.2	8.0	7.9	---	---	---	---	---	---	---	---
24	8.3	8.2	8.0	7.9	---	---	---	---	---	---	---	---
25	8.3	8.2	7.9	7.9	---	---	---	---	---	---	---	---
26	8.3	8.3	7.9	7.9	---	---	---	---	---	---	---	---
27	8.3	8.3	7.9	7.9	---	---	---	---	---	---	---	---
28	8.3	8.2	---	---	---	---	---	---	---	---	---	---
29	8.3	8.2	---	---	---	---	---	---	---	---	---	---
30	8.3	8.2	---	---	---	---	---	---	---	---	---	---
31	8.4	8.3	---	---	---	---	---	---	---	---	---	---
MONTH	8.4	7.9	---	---	---	---	---	---	---	---	---	---

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	8.4	8.3	8.5	8.3	---	---
2	---	---	---	---	---	---	8.5	8.3	8.7	8.3	---	---
3	---	---	---	---	---	---	8.5	8.3	8.6	8.3	---	---
4	---	---	---	---	---	---	8.4	8.3	8.6	8.4	---	---
5	---	---	---	---	---	---	8.4	8.3	8.8	8.4	---	---
6	---	---	---	---	---	---	8.5	8.3	8.7	8.5	---	---
7	---	---	---	---	---	---	8.7	8.4	8.8	8.5	---	---
8	---	---	---	---	---	---	8.7	8.4	8.8	8.6	---	---
9	---	---	---	---	---	---	8.8	8.5	8.8	8.6	---	---
10	---	---	---	---	---	---	8.8	8.7	8.8	8.6	---	---
11	---	---	---	---	---	---	8.7	8.6	8.6	8.4	---	---
12	---	---	---	---	---	---	8.8	8.5	8.7	8.4	---	---
13	---	---	---	---	---	---	8.7	8.5	8.6	8.4	---	---
14	---	---	---	---	---	---	8.5	8.1	8.6	8.4	---	---
15	---	---	---	---	---	---	8.4	8.1	8.7	8.3	---	---
16	---	---	---	---	---	---	8.6	8.3	---	---	---	---
17	---	---	---	---	---	---	8.6	8.4	---	---	---	---
18	---	---	---	---	---	---	8.6	8.4	---	---	---	---
19	---	---	---	---	---	---	8.6	8.4	---	---	---	---
20	---	---	---	---	---	---	8.6	8.4	---	---	---	---
21	---	---	---	---	---	---	8.7	8.4	---	---	---	---
22	---	---	---	---	---	---	8.8	8.5	---	---	---	---
23	---	---	---	---	---	---	8.8	8.5	---	---	---	---
24	---	---	---	---	---	---	8.7	8.5	---	---	---	---
25	---	---	---	---	---	---	8.7	8.5	---	---	---	---
26	---	---	---	---	8.5	8.5	8.6	8.4	---	---	---	---
27	---	---	---	---	8.5	8.3	8.7	8.4	---	---	---	---
28	---	---	---	---	8.4	8.3	8.7	8.5	---	---	---	---
29	---	---	---	---	8.4	8.2	8.7	8.5	---	---	---	---
30	---	---	---	---	8.4	8.3	8.7	8.5	---	---	---	---
31	---	---	---	---	---	---	8.6	8.4	---	---	---	---
MONTH	---	---	---	---	---	---	8.8	8.1	---	---	---	---

[illegible]

DAY	MAX	MIN	MEAN		MAX	MIN	MEAN		MAX	MIN	MEAN		MAX	MIN	MEAN
	FEBRUARY				MARCH				APRIL				MAY		
1	---	---	---		---	---	---		---	---	---		---	---	---
2	---	---	---		---	---	---		---	---	---		---	---	---
3	---	---	---		---	---	---		---	---	---		---	---	---
4	---	---	---		---	---	---		---	---	---		---	---	---
5	---	---	---		---	---	---		---	---	---		---	---	---
6	---	---	---		---	---	---		---	---	---		---	---	---
7	---	---	---		---	---	---		---	---	---		---	---	---
8	---	---	---		---	---	---		---	---	---		---	---	---
9	---	---	---		---	---	---		---	---	---		---	---	---
10	---	---	---		---	---	---		---	---	---		---	---	---
11	---	---	---		---	---	---		---	---	---		---	---	---
12	---	---	---		---	---	---		---	---	---		---	---	---
13	---	---	---		---	---	---		---	---	---		---	---	---
14	---	---	---		---	---	---		---	---	---		---	---	---
15	---	---	---		---	---	---		---	---	---		---	---	---
16	---	---	---		---	---	---		---	---	---		---	---	---
17	---	---	---		---	---	---		---	---	---		---	---	---
18	---	---	---		---	---	---		---	---	---		---	---	---
19	---	---	---		---	---	---		---	---	---		---	---	---
20	---	---	---		---	---	---		---	---	---		---	---	---
21	---	---	---		---	---	---		---	---	---		---	---	---
22	---	---	---		---	---	---		---	---	---		---	---	---
23	---	---	---		---	---	---		---	---	---		---	---	---
24	---	---	---		---	---	---		---	---	---		---	---	---
25	---	---	---		---	---	---		---	---	---		---	---	---
26	---	---	---		---	---	---		---	---	---		---	---	---
27	---	---	---		---	---	---		---	---	---		---	---	---
28	---	---	---		---	---	---		---	---	---		---	---	---
29	---	---	---		---	---	---		---	---	---		---	---	---
30	---	---	---		---	---	---		---	---	---		---	---	---
31	---	---	---		---	---	---		---	---	---		---	---	---
MONTH	---	---	---		---	---	---		---	---	---		---	---	---

RED RIVER OF THE NORTH BASIN  
05114000 SOURIS RIVER NEAR SHERWOOD, ND--Continued

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OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	---	---	---	8.6	5.5	6.8	13.6	6.2	9.4	14.3	10.3	12.0
2	---	---	---	8.8	5.1	6.7	12.6	6.2	9.0	15.4	10.7	12.7
3	---	---	---	8.9	5.0	6.7	12.1	5.4	8.5	15.3	11.5	13.1
4	---	---	---	7.6	4.9	6.0	12.2	5.7	8.6	14.4	11.1	12.8
5	---	---	---	8.4	4.7	6.2	---	---	---	14.3	12.1	13.2
6	---	---	---	10.4	5.3	7.5	---	---	---	---	---	---
7	---	---	---	10.2	5.7	7.8	---	---	---	---	---	---
8	---	---	---	10.7	6.3	8.3	---	---	---	---	---	---
9	---	---	---	11.4	6.8	8.9	---	---	---	---	---	---
10	---	---	---	9.7	7.0	8.3	---	---	---	---	---	---
11	---	---	---	9.3	6.3	7.6	---	---	---	---	---	---
12	---	---	---	10.5	6.5	8.3	---	---	---	---	---	---
13	---	---	---	10.8	6.6	8.5	---	---	---	---	---	---
14	---	---	---	10.3	6.4	8.2	---	---	---	---	---	---
15	---	---	---	10.6	6.1	8.0	---	---	---	---	---	---
16	---	---	---	11.7	5.8	8.5	---	---	---	---	---	---
17	---	---	---	9.5	5.8	7.6	---	---	---	---	---	---
18	---	---	---	12.4	5.3	8.2	---	---	---	---	---	---
19	---	---	---	11.8	5.6	8.2	---	---	---	---	---	---
20	---	---	---	12.8	6.6	9.0	---	---	---	---	---	---
21	---	---	---	12.9	6.4	9.3	---	---	---	---	---	---
22	---	---	---	14.1	7.4	10.3	---	---	---	---	---	---
23	---	---	---	13.2	7.3	10.1	---	---	---	---	---	---
24	---	---	---	14.2	7.3	10.5	---	---	---	---	---	---
25	---	---	---	13.9	7.5	10.4	---	---	---	---	---	---
26	9.4	7.9	8.5	12.5	7.3	9.4	---	---	---	---	---	---
27	10.3	7.2	8.6	14.3	7.2	10.5	---	---	---	---	---	---
28	9.2	6.5	7.6	14.3	7.6	10.5	17.0	11.9	14.0	---	---	---
29	8.9	5.4	7.0	13.6	7.3	10.0	16.7	11.9	14.0	---	---	---
30	8.6	5.6	7.0	13.9	7.0	10.0	15.8	11.4	13.3	---	---	---
31	---	---	---	12.0	6.5	9.1	15.5	11.1	12.8	---	---	---
MONTH	---	---	---	14.3	4.7	8.6	---	---	---	---	---	---

RED RIVER OF THE NORTH BASIN  
05115500 LAKE DARLING NEAR FOXHOLM, ND

LOCATION.--Lat 48°27'27", long 101°35'14", in NE<sup>1</sup>/<sub>4</sub> NE<sup>1</sup>/<sub>4</sub> sec.1, T.157 N., R.85 W., Ward County, Hydrologic Unit 09010001, on control structure of Lake Darling Dam, reservoir of Fish and Wildlife Service, on Souris River about 6 mi north of Foxholm, and at mile 430.0.

DRAINAGE AREA.--9,450 mi<sup>2</sup>, approximately, of which about 6,200 mi<sup>2</sup> is probably noncontributing.

MONTHEND-ELEVATION AND CONTENTS RECORDS

PERIOD OF RECORD.--April 1936 to current year (no winter records 1936-39).

REVISED RECORDS.--WSP 1338: 1942. WSP 2113: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,577.00 ft above sea level. April 1936 to Aug. 8, 1963, nonrecording gages at same site and datum.

REMARKS.--Reservoir is formed by earth dam; storage began in April 1936; dam completed in July 1936. Usable capacity, 118,500 acre-ft between gage heights of 0.0 ft, sill of control gages, and 21.0 ft, crest of spillway. Dead storage, 144 acre-ft. Figures given herein represent total contents based on capacity table dated April 12, 1995. Water is used during periods of low flow at wildlife refuges downstream. Elevations are adjusted for wind effect.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 145,400 acre-ft, Apr. 17, 1976, elevation, 1601.24 ft; minimum observed since April 1943 when reservoir was first filled to spillway level, 31,200 acre-ft, Feb. 18 and 25, 1963, elevation, 1587.04 ft.

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 99,700 acre-ft, July 23, elevation, 1596.04 ft; minimum daily contents, 68,100 acre-ft, Apr. 9, elevation, 1592.60 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30-----	1594.25	82,900	--
Oct. 31-----	1594.00	80,600	-2,300
Nov. 30-----	1594.06	81,200	+600
Dec. 31-----	1594.13	81,800	+600
CAL YR 1995-----	--	--	-3,500
Jan. 31-----	1594.26	83,000	+1,200
Feb. 29-----	1594.33	83,700	+700
Mar. 31-----	1594.91	89,100	+5,400
Apr. 30-----	1594.01	80,700	-8,400
May 31-----	1595.21	91,900	+11,200
June 30-----	1595.82	97,600	+5,700
July 31-----	1595.89	98,300	+700
Aug. 31-----	1595.48	94,400	-3,900
Sept. 30-----	1595.38	93,500	-900
WTR YR 1996-----	--	--	+10,600



RED RIVER OF THE NORTH BASIN  
05115500 LAKE DARLING NEAR FOXHOLM, ND--Continued

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WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1993 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	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)	SODIUM AD- SORP- TION RATIO (00931)
FEB											
22...	1300	1.0	2.0	1330	7.8	330	349	63	42	160	4
22...	1305	4.6	5.6	1360	7.9	340	358	64	43	160	4
22...	1310	0.0	1.4	--	--	--	--	--	--	--	--
MAY											
21...	1330	0.50	1.0	518	7.8	150	142	31	18	44	2
21...	1335	4.7	5.2	519	7.8	150	141	31	18	43	2
21...	1340	0.0	2.0	--	--	--	--	--	--	--	--
21...	1345	0.0	5.2	--	--	--	--	--	--	--	--
JUN											
11...	1145	0.0	0.50	539	8.1	160	151	32	19	42	1
11...	1150	5.2	5.7	547	7.8	170	154	35	20	43	1
JUL											
30...	1210	0.0	1.0	581	8.3	180	173	39	21	43	1
30...	1215	6.0	7.0	583	8.2	190	172	39	22	42	1
30...	1220	0.0	2.3	--	--	--	--	--	--	--	--
AUG											
28...	1420	0.50	1.0	587	8.8	190	184	39	23	46	1
28...	1425	3.3	3.8	583	8.8	190	183	39	23	46	1
28...	1430	0.0	3.8	--	--	--	--	--	--	--	--

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)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, NO2+NO3 TOTAL (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) (00608)	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)
FEB											
22...	280	49	0.30	5	912	0.070	0.070	0.300	1.6	1.9	2.0
22...	290	51	0.30	2	938	0.090	0.090	0.090	1.1	1.2	1.3
MAY											
21...	100	12	0.20	6	335	--	<0.050	<0.015	0.90	0.90	0.90
21...	100	12	0.20	7	335	--	<0.050	<0.015	1.3	1.3	1.3
JUN											
11...	110	11	0.10	7	339	--	<0.050	0.020	0.78	0.80	0.80
11...	110	11	0.10	10	344	--	<0.050	0.020	0.78	0.80	0.80
JUL											
30...	100	10	0.10	4	336	0.120	0.120	0.100	1.1	1.2	1.3
30...	110	11	0.10	7	376	0.120	0.120	0.100	0.70	0.80	0.92
AUG											
28...	110	11	0.10	9	350	--	<0.050	0.040	1.4	1.4	1.4
28...	110	11	0.10	8	370	--	<0.050	<0.015	1.2	1.2	1.2

DATE	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL) (01105)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BORON, TOTAL RECOV- ERABLE (UG/L AS B) (01022)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO) (01037)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)
FEB											
22...	0.340	30	6	100	<10	640	<1	<1	<1	3	110
22...	0.230	50	6	100	<10	640	<1	<1	<1	4	150
MAY											
21...	0.090	100	2	<100	<10	110	<1	<1	<1	3	160
21...	0.160	80	2	<100	<10	110	<1	<1	<1	3	150
JUN											
11...	0.110	--	--	--	--	--	--	--	--	--	--
11...	0.130	--	--	--	--	--	--	--	--	--	--
JUL											
30...	0.160	--	--	--	--	--	--	--	--	--	--
30...	0.140	--	--	--	--	--	--	--	--	--	--
AUG											
28...	0.160	30	8	<100	<10	150	<1	<1	<1	3	60
28...	0.150	50	8	<100	<10	150	<1	<1	<1	3	70

**RED RIVER OF THE NORTH BASIN**  
**05115500 LAKE DARLING NEAR FOXHOLM, ND--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

		LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	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 TOTAL (MG/L AS C) (00680)	PHENOLS TOTAL (UG/L) (32730)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)		
FEB													
22...		<1	<0.10	5	3	<1	20	25	3	--	--		
22...		<1	<0.10	6	4	<1	20	21	2	--	--		
MAY													
21...		<1	<0.10	2	2	<1	<10	14	<1	--	--		
21...		<1	<0.10	1	3	<1	<10	12	<1	--	--		
21...		--	--	--	--	--	--	--	--	0.400	<0.100		
JUL													
30...		--	--	--	--	--	--	12	<1	--	--		
30...		--	--	--	--	--	--	11	<1	--	--		
30...		--	--	--	--	--	--	--	--	16.0	<0.100		
AUG													
28...		<1	<0.10	2	2	<1	<10	10	5	--	--		
28...		<1	<0.10	3	2	<1	<10	11	1	--	--		
28...		--	--	--	--	--	--	--	--	23.0	<0.100		
DATE	TIME	ACIFL- UORFEN WATER, FLTRD, GF 0.7U REC (UG/L) (49315)	ALA- CHLOR, WATER, DISS, REC, (UG/L) (46342)	ALDI- CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (49312)	ALDI- CARB SULFONE WAT,FLT GF 0.7U REC (UG/L) (49313)	ALDICA- RB SUL- FOXIDE, WAT,FLT GF 0.7U REC (UG/L) (49314)	ALDRIN, TOTAL (UG/L) (39330)	CHLOR- AMBEN, WATER, FLTRD, GF 0.7U REC (UG/L) (49307)	ATRA- ZINE, WATER, DISS, REC, (UG/L) (39632)	TRIAZIN SCREEN (ELISA) WAT,WH REC,AS ATRAZIN (UG/L) (34757)	BEN- FLUR- ALIN WAT,FLT GF 0.7U REC (UG/L) (82673)	BENTA- ZON, WATER, FLTRD, GF 0.7U REC (UG/L) (38711)	
MAY													
21...	1345	--	<0.002	--	--	--	--	--	<0.001	<0.05	<0.002	--	
JUL													
30...	1210	<0.035	<0.002	<0.016	<0.016	<0.021	<0.010	<0.011	<0.001	--	<0.002	<0.014	
AUG													
28...	1430	<0.035	<0.002	<0.016	<0.016	<0.021	<0.010	<0.011	<0.001	<0.05	<0.002	<0.014	
DATE		BRO- MACIL, WATER, DISS, REC (UG/L) (04029)	BRO- MOXYNIL WATER, FLTRD, GF 0.7U REC (UG/L) (49311)	BUTYL- WATER, DISS, REC (UG/L) (04028)	CAR- BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	CARBO- FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	CARBO- FURAN SCREEN, TOTAL (UG/L) (99902)	CHLOR- DANE, TECH- NICAL TOTAL (UG/L) (39350)	CHLOR- PYRIFOS TOTAL RECOVER (UG/L) (38932)	CHLOR- PYRIFOS DIS- SOLVED REC (UG/L) (38933)	CLOPYR- ALID, WATER, FLTRD, GF 0.7U REC (UG/L) (49305)	CHLORO- THALO- NIL, WAT,FLT GF 0.7U REC (UG/L) (49306)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)
MAY													
21...	--	--	<0.002	<0.003	<0.003	--	--	--	<0.004	--	--	<0.004	
JUL													
30...	<0.035	<0.035	<0.002	<0.003	<0.003	--	<0.100	<0.010	0.007	<0.050	<0.035	<0.004	
AUG													
28...	<0.035	<0.035	<0.002	<0.003	<0.003	<0.06	<0.100	<0.010	<0.004	<0.050	<0.035	<0.004	
DATE		CYANA- ZINE SCREEN, TOTAL (UG/L) (99904)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	P,P'- DDD UNFILTR RECOVER (UG/L) (39360)	DDE, TOTAL (UG/L) (39365)	P,P' DDE DISSOLV WAT FLT (UG/L) (34653)	P,P'- DDT UNFILTR RECOVER (UG/L) (39370)	DEF TOTAL (UG/L) (39040)	DACTHAL MONO- ACID, WAT,FLT GF 0.7U REC (UG/L) (49304)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	DI- AZINON, TOTAL (UG/L) (39570)	DI- AZINON, DIS- SOLVED REC (UG/L) (39572)	DICAMBA WATER, FLTRD, GF 0.7U REC (UG/L) (38442)
MAY													
21...	<0.04	<0.002	--	--	<0.006	--	--	--	<0.002	--	<0.002	--	
JUL													
30...	--	<0.002	<0.010	<0.010	<0.006	<0.010	<0.010	<0.017	<0.002	<0.010	<0.002	<0.035	
AUG													
28...	<0.04	<0.002	<0.010	<0.010	<0.006	<0.010	<0.010	<0.017	<0.002	<0.010	<0.002	<0.035	
DATE		DICHLOR- BENIL, WATER, FLTRD, GF 0.7U REC (UG/L) (49303)	DICHLOR PROP, WATER, FLTRD, GF 0.7U REC (UG/L) (49302)	DI- ELDRIN DIS- SOLVED TOTAL (UG/L) (39380)	2,6-DI- ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	DINOSEB WATER, FLTRD, GF 0.7U REC (UG/L) (49301)	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	DISUL- FOTON UNFILTR RECOVER (UG/L) (39011)	DIURON, WATER, FLTRD, GF 0.7U REC (UG/L) (49300)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	ENDO- SULFAN, I TOTAL (UG/L) (39388)	ENDRIN WATER UNFLTRD REC (UG/L) (39390)	
MAY													
21...	--	--	--	<0.001	<0.003	--	<0.017	--	--	<0.002	--	--	
JUL													
30...	<0.020	<0.032	<0.010	<0.001	<0.003	<0.035	<0.017	--	<0.020	<0.002	<0.010	<0.010	
AUG													
28...	<0.020	<0.032	<0.010	<0.001	<0.003	<0.035	<0.017	<0.010	<0.020	<0.002	<0.010	<0.010	

RED RIVER OF THE NORTH BASIN  
05115500 LAKE DARLING NEAR FOXHOLM, ND--Continued

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WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	ESFEN- VAL- ERATE, WAT,FLT GF 0.7U REC (UG/L) (49298)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	ETHION, TOTAL (UG/L) (39398)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	FEN- URON, WATER, FLTRD, GF 0.7U REC (UG/L) (49297)	FLUO- METURON WATER, FLTRD, GF 0.7U REC (UG/L) (38811)	FONOFOS (DY- FONATE) WATER WHOLE TOT.REC (UG/L) (82614)	FONOFOS WATER DISS REC (UG/L) (04095)	HEPTA- CHLOR, TOTAL (UG/L) (39410)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L) (39420)	LINDANE TOTAL (UG/L) (39340)
MAY 21...	--	<0.004	--	<0.003	--	--	--	<0.003	--	--	--
JUL 30...	<0.019	<0.004	<0.010	<0.003	<0.013	<0.035	<0.010	<0.003	<0.010	<0.010	<0.010
AUG 28...	<0.019	<0.004	<0.010	<0.003	<0.013	<0.035	<0.010	<0.003	<0.010	<0.010	<0.010
DATE	LINDANE DIS- SOLVED (UG/L) (39341)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	MCPA, WATER, FLTRD, GF 0.7U REC (UG/L) (38482)	MCPB, WATER, FLTRD, GF 0.7U REC (UG/L) (38487)	MALA- THION, TOTAL (UG/L) (39530)	MALA- THION, DIS- SOLVED (UG/L) (39532)	METHIO- CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (38501)	METH- OMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49296)	METH- OXY- CHLOR, TOTAL (UG/L) (39480)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	METHYL PARA- THION, TOTAL (UG/L) (39600)
MAY 21...	<0.004	<0.002	--	--	--	<0.005	--	--	--	<0.001	--
JUL 30...	<0.004	<0.002	<0.050	<0.035	<0.010	<0.005	<0.026	<0.017	<0.010	<0.001	<0.010
AUG 28...	<0.004	<0.002	<0.050	<0.035	<0.010	<0.005	<0.026	<0.017	<0.010	<0.001	<0.010
DATE	METHYL PARA- THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	METRI- BUZIN SENCOR WATER DISSOLV (UG/L) (82630)	MIREX, TOTAL (UG/L) (39755)	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	NEB- URON, WATER, FLTRD, GF 0.7U REC (UG/L) (49294)	NORFLUR AZON, WATER, FLTRD, GF 0.7U REC (UG/L) (49293)	DNOC WAT,FLT GF 0.7U REC (UG/L) (49299)	ORY- ZALIN, WATER, FLTRD, GF 0.7U REC (UG/L) (49292)	PCB, TOTAL (UG/L) (39516)
MAY 21...	<0.006	<0.002	<0.004	--	<0.004	<0.003	--	--	--	--	--
JUL 30...	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.015	<0.024	<0.035	<0.019	<0.100
AUG 28...	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.015	<0.024	<0.035	<0.019	<0.100
DATE	PCNS UNFLT RECOVER (UG/L) (39250)	PARA- THION, TOTAL (UG/L) (39540)	PARA- THION, DIS- SOLVED (UG/L) (39542)	PEB- ULATE WATER FLTRD 0.7 U GF, REC (UG/L) (82669)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	PER- THANE TOTAL (UG/L) (39034)	PHORATE TOTAL (UG/L) (39023)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)
MAY 21...	--	--	<0.004	<0.004	<0.004	<0.005	--	--	<0.002	<0.018	<0.003
JUL 30...	<0.100	<0.010	<0.004	<0.004	<0.004	<0.005	<0.100	<0.010	<0.002	<0.018	<0.003
AUG 28...	<0.100	<0.010	<0.004	<0.004	<0.004	<0.005	<0.100	<0.010	<0.002	<0.018	<0.003
DATE	PROP- CHLOR, WATER, DISS, REC (UG/L) (04024)	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	PRO- PHAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49236)	PRO- POXUR, WATER, FLTRD, GF 0.7U REC (UG/L) (38538)	SILVEX, DIS- SOLVED (UG/L) (39762)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)
MAY 21...	<0.007	<0.004	<0.013	--	--	--	<0.005	<0.010	<0.007	<0.013	<0.002
JUL 30...	<0.007	<0.004	<0.013	<0.035	<0.035	<0.021	<0.005	<0.010	<0.007	<0.013	<0.002
AUG 28...	<0.007	<0.004	<0.013	<0.035	<0.035	<0.021	<0.005	<0.010	<0.007	<0.013	<0.002

RED RIVER OF THE NORTH BASIN  
05115500 LAKE DARLING NEAR FOXHOLM, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TOX- APHENE, TOTAL (UG/L) (39400)	TRIAL- LATE WATER FLTRD, 0.7 U GF, REC (82678)	TRI- CLOPYR, WATER, FLTRD, GF 0.7U REC (49235)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (82661)	TOTAL TRI- THION (UG/L) (39786)	1-NAPH THOL, WATER, FLTRD, GF 0.7U REC (49295)	2,4-D, DIS- SOLVED (UG/L) (39732)	2,4-D SCREEN, TOTAL (UG/L) (99906)	2,4-DB WATER, FLTRD, GF 0.7U REC (38746)	2,4,5-T DIS- SOLVED (UG/L) (39742)	3HYDRXY CARBO- FURAN WAT,FLT GF 0.7U REC (49308)
MAY 21...	--	0.016	--	e0.003	--	--	--	<0.700	--	--	--
JUL 30...	<1.00	<0.001	<0.050	<0.002	<0.010	<0.007	<0.035	--	<0.035	<0.035	<0.014
AUG 28...	<1.00	<0.001	<0.050	<0.002	<0.010	<0.007	<0.035	<0.700	<0.035	<0.035	<0.014

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
FEB							
22...	1250	21.7	0.0	1220	8.2	0.5	10.5
22...	1251	--	1.0	1240	8.2	1.5	9.7
22...	1252	--	2.0	1260	8.2	2.0	8.5
22...	1253	--	4.0	1280	8.0	2.0	6.1
22...	1254	--	6.0	1290	7.9	3.5	3.9
22...	1255	--	6.6	1290	7.8	3.5	3.2
MAY							
21...	1320	19.0	0.0	518	8.1	14.0	9.1
21...	1321	--	1.0	517	8.1	14.0	9.0
21...	1322	--	2.0	517	8.1	14.0	8.8
21...	1323	--	3.0	517	8.2	14.0	8.8
21...	1324	--	4.0	517	8.2	14.0	8.7
21...	1325	--	5.0	519	8.2	14.0	8.5
21...	1326	--	5.8	519	8.2	13.5	8.4
JUN							
11...	1130	21.7	0.0	537	8.3	22.0	8.2
11...	1131	--	1.0	537	8.3	20.5	8.1
11...	1132	--	2.0	536	8.3	20.5	7.8
11...	1133	--	3.0	532	8.2	19.5	7.4
11...	1134	--	4.0	537	8.2	18.5	6.3
11...	1135	--	5.0	541	8.0	18.0	5.6
11...	1136	--	6.0	544	8.0	17.5	4.0
11...	1137	--	6.6	547	8.0	17.5	3.8
JUL							
30...	1200	23.0	0.0	567	8.5	22.5	8.2
30...	1201	--	1.0	567	8.6	22.5	8.1
30...	1202	--	2.0	568	8.6	22.0	7.8
30...	1203	--	3.0	569	8.6	22.0	7.5
30...	1204	--	4.0	576	8.4	21.5	4.6
30...	1205	--	5.0	579	8.2	21.5	3.3
30...	1206	--	6.0	582	8.1	21.0	2.1
30...	1207	--	7.0	584	8.0	20.5	1.2
AUG							
28...	1400	12.5	0.0	592	9.1	22.0	11.0
28...	1402	--	0.50	591	9.1	21.5	11.0
28...	1404	--	1.1	591	9.1	21.5	10.9
28...	1406	--	1.6	591	9.1	21.5	10.7
28...	1408	--	2.1	591	9.1	21.5	10.5
28...	1410	--	2.6	593	9.1	21.5	10
28...	1412	--	3.1	596	9.0	21.0	8.7
28...	1414	--	3.6	596	9.0	21.0	8.3
28...	1416	--	3.8	599	9.0	21.0	7.8

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	ICE THICK- NESS (FEET) (82130)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
FEB 22...	80	700	2.60	27.6	7.5	180	5.0
MAY 21...	95	706	--	36.0	17.0	320	17
JUN 11...	101	707	--	92.0	29.0	30	<5.0
JUL 30...	101	718	--	45.0	21.0	30	<5.0
AUG 28...	134	712	--	78.0	30.0	40	7.0

e Estimated.



RED RIVER OF THE NORTH BASIN  
05116000 SOURIS (MOUSE) RIVER NEAR FOXHOLM, ND

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LOCATION.--Lat 48°22'20", long 101°30'18", in SW<sup>1</sup>/<sub>4</sub> SE<sup>1</sup>/<sub>4</sub> sec.34, T.157 N., R.84 W., Ward County, Hydrologic Unit 09010001, on left bank 30 ft upstream from county highway bridge, 3 mi east of Foxholm, 19 mi upstream from Des Lacs River, and at mile 414.5.

DRAINAGE AREA.--9,470 mi<sup>2</sup>, approximately, of which about 6,200 mi<sup>2</sup> is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1904 to November 1905, March to July 1906 (gage heights only), October 1936 to current year. Monthly discharge only for some periods, published in WSP 1308. Published as Mouse River near Foxholm, 1904-6.

REVISED RECORDS.--WSP 1308: 1905. WSP 2113: Drainage area.

GAGE.--Water-stage recorder and sheet piling weir. Datum of gage is 1,560.73 ft above sea level. June 23, 1904, to July 31, 1906, nonrecording gage at site 3.2 mi upstream at different datum. Apr. 1, 1937, to Mar. 25, 1938, nonrecording gage at site 600 ft downstream at datum about 0.5 ft higher.

REMARKS.--Records good except for periods of estimated daily discharges, which are poor. Flow almost completely regulated since 1936 by Lake Darling (station 05115500), 15 mi upstream, and several small reservoirs, combined capacity, about 184,000 acre-feet. Some small diversions for irrigation and municipal supply.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	.01	.00	.00	.00	.00	847	1210	12	.23	.01	.00
2	55	.03	.00	.00	.00	.00	830	851	14	.17	.00	.00
3	62	.02	.00	.00	.00	.00	813	444	10	.11	.00	.00
4	98	.01	.00	.00	.00	.00	801	382	7.2	.09	.00	.00
5	158	.00	.00	.00	.00	.00	791	355	9.5	.09	.00	.00
6	186	.00	.00	.00	.00	.00	782	432	10	.09	.00	.56
7	167	.00	.00	.00	.00	e15	773	495	5.7	.08	.00	19
8	149	.00	.00	.00	.00	e50	749	571	3.7	.09	.00	22
9	80	.00	.00	.00	.00	e100	746	913	2.7	.08	.00	24
10	34	.00	.00	.00	.00	e120	826	975	10	.06	.00	25
11	3.2	.00	.00	.00	.00	e180	176	976	13	.06	.00	25
12	.63	.00	.00	.00	.00	e220	258	966	13	.05	.00	24
13	.23	.00	.00	.00	.00	e280	823	879	7.2	.05	.00	24
14	.13	.00	.00	.00	.00	e450	949	857	4.3	.04	.00	24
15	.10	.00	.00	.00	.00	e500	e1020	854	3.4	.02	.00	23
16	.08	.00	.00	.00	.00	e540	e1300	859	2.2	.01	.00	24
17	.07	.00	.00	.00	.00	e660	1470	869	1.2	.00	.00	22
18	.06	.00	.00	.00	.00	e660	1520	875	.63	.00	.00	19
19	.06	.00	.00	.00	.00	e700	1550	879	.51	.00	.00	18
20	.05	.00	.00	.00	.00	e740	1590	882	.30	.08	.00	18
21	.05	.00	.00	.00	.00	e740	1590	884	.23	.19	.00	19
22	.02	.00	.00	.00	.00	e720	1560	886	.20	.14	.00	20
23	.02	.00	.00	.00	.00	e700	1550	888	.25	.11	.00	20
24	.01	.00	.00	.00	.00	e800	1540	894	.21	.10	.00	20
25	.01	.00	.00	.00	.00	e920	1500	895	.45	.06	.00	19
26	.01	.00	.00	.00	.00	e900	1400	609	.58	.06	.00	20
27	.04	.00	.00	.00	.00	e890	1370	51	.56	.09	.00	20
28	.03	.00	.00	.00	.00	e880	1270	29	.49	.07	.00	20
29	.02	.00	.00	.00	.00	e870	1260	22	.52	.06	.00	20
30	.01	.00	.00	.00	.00	e870	1250	16	.32	.03	.00	18
31	.00	---	.00	.00	---	870	---	15	---	.01	.00	---
TOTAL	1048.83	0.07	0.00	0.00	0.00	14375.00	32904	20713	134.35	2.32	0.01	507.56
MEAN	33.8	.002	.000	.000	.000	464	1097	668	4.48	.075	.000	16.9
MAX	186	.03	.00	.00	.00	920	1590	1210	14	.23	.01	25
MIN	.00	.00	.00	.00	.00	.00	176	15	.20	.00	.00	.00
AC-FT	2080	.1	.00	.00	.00	28510	65270	41080	266	4.6	.02	1010

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 1996, BY WATER YEAR (WY)

	MEAN	25.6	27.0	25.8	25.7	27.2	91.4	475	480	149	101	53.3	33.5
MAX	108	137	144	166	241	1058	5443	4242	1138	1238	435	162	
(WY)	1973	1952	1976	1976	1976	1976	1976	1975	1975	1953	1976	1955	
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.017	.010	.000	.000	
(WY)	1937	1937	1937	1937	1937	1937	1942	1942	1991	1991	1937	1937	

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR	FOR 1996 WATER YEAR	WATER YEARS 1937 - 1996
ANNUAL TOTAL	40484.58	69685.14	
ANNUAL MEAN	111	190	127
HIGHEST ANNUAL MEAN			948
LOWEST ANNUAL MEAN			1.13
HIGHEST DAILY MEAN	1400	Mar 24	8500
LOWEST DAILY MEAN	.00	Jan 21	a -5.0
ANNUAL SEVEN-DAY MINIMUM	.00	Jan 21	.00
INSTANTANEOUS PEAK FLOW		1590	Apr 20
INSTANTANEOUS PEAK STAGE		12.85	Apr 20
INSTANTANEOUS LOW FLOW			17.17
ANNUAL RUNOFF (AC-FT)	80300	138200	a,b -25
10 PERCENT EXCEEDS	380	870	91650
50 PERCENT EXCEEDS	1.9	.05	219
90 PERCENT EXCEEDS	.00	.00	13

a Reverse flow caused by backwater from Des Lacs River.  
b No flow at times in many years.  
e Estimated.

**RED RIVER OF THE NORTH BASIN**  
**05116000 SOURIS (MOUSE) RIVER NEAR FOXHOLM, ND--Continued**

**WATER-QUALITY RECORDS**

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)
MAR 13...	1200	260	260	--	--	--	--	--	--	--
a20...	1445	748	1000	8.5	--	738	3.0	1.0	17.0	124
APR 02...	1530	830	1220	--	--	--	-10.0	2.0	--	--
18...	1330	1530	800	8.0	7.7	705	10.0	6.0	14.2	124
30...	1500	1250	610	8.3	--	715	10.0	6.0	12.5	107
JUN 06...	1300	11	650	--	8.0	721	20.0	17.0	10.0	110

DATE	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)	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)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L) (00530)
MAR a20...	300	58	37	140	4	323	270	48	0.30	16
APR 18...	180	39	21	76	2	190	150	21	0.20	23
30...	170	35	20	57	2	159	120	16	0.10	2
JUN 06...	190	40	23	54	2	179	120	13	0.20	14

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, NO2+NO3 TOTAL (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) (00608)	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)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL) (01105)	ARSENIC TOTAL (UG/L AS AS) (01002)
MAR a20...	826	--	<0.050	0.040	1.4	1.4	1.4	0.220	80	6
APR 18...	469	0.200	0.200	0.140	1.4	1.5	1.7	0.270	--	2
30...	381	0.080	0.080	0.020	1.2	1.2	1.3	0.190	--	2
JUN 06...	372	--	<0.050	0.020	0.98	1.0	1.0	0.180	--	3

DATE	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BORON, TOTAL RECOV- ERABLE (UG/L AS B) (01022)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO) (01037)	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)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO) (01062)
MAR a20...	<100	<10	490	<1	<1	<1	3	170	<1	6
APR 18...	<100	<10	200	<1	<1	<1	2	460	<1	3
30...	<100	<10	150	<1	<1	<1	2	280	<1	2
JUN 06...	<100	<10	150	<1	<1	<1	2	210	<1	2

RED RIVER OF THE NORTH BASIN  
05116000 SOURIS (MOUSE) RIVER NEAR FOXHOLM, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	SELE- NIUM, TOTAL (UG/L AS SE) (01147)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	PHENOLS TOTAL (UG/L) (32730)	TRIAZIN SCREEN (ELISA) WAT,WH REC,AS ATRAZIN (UG/L) (34757)	CARBO- FURAN SCREEN, TOTAL (UG/L) (99902)	CYANA- ZINE SCREEN, TOTAL (UG/L) (99904)	2, 4-D SCREEN, TOTAL (UG/L) (99906)
MAR a20...	4	<1	<10	17	<1	--	--	--	--
APR 18...	3	<1	<10	15	3	<0.05	--	<0.04	<0.700
30...	3	<1	<10	14	<1	--	--	--	--
JUN 06...	3	<1	<10	--	--	<0.05	<0.06	<0.04	<0.700

a Replicate sample also collected for quality-assurance purposes.

RED RIVER OF THE NORTH BASIN  
05116500 DES LACS RIVER AT FOXHOLM, ND

LOCATION.--Lat 48°22'14", long 101°34'11", in NW<sup>1</sup>/<sub>4</sub> NE<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> sec 2, T.156 N., R.85 W., Ward County, Hydrologic Unit 09010002, on left bank 200 ft upstream from county highway bridge in Foxholm, and at mile 23.0.

DRAINAGE AREA.--939 mi<sup>2</sup>, of which about 400 mi<sup>2</sup> is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1904 to July 1906, October 1945 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,632.98 ft above sea level. June 14 to Oct. 23, 1955, non-recording gage at site 200 ft downstream from present gage at same datum. See WSP 1728 or 1913 for history of changes prior to June 14, 1955.

REMARKS.--Records good except for period of estimated daily discharges, which is fair.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	12	e15	e6.9	e5.0	e7.0	e78	243	76	63	29	4.2
2	10	9.2	e14	e6.9	e5.0	e7.0	e76	227	74	60	29	4.1
3	10	7.4	e14	e6.8	e5.0	e6.9	e74	213	73	58	29	4.0
4	9.7	7.7	e13	e6.8	e5.0	e6.8	e72	224	73	57	29	4.0
5	9.0	8.0	e13	e6.7	e5.0	e6.7	e70	231	74	56	28	4.2
6	8.3	8.0	e13	e6.7	e5.3	e6.6	e70	228	71	56	26	4.1
7	7.7	7.8	e12	e6.6	e5.6	e6.5	e70	224	72	55	25	3.9
8	6.9	7.3	e12	e6.5	e6.0	e6.4	e100	223	70	55	23	3.7
9	6.4	7.1	e12	e6.5	e6.5	e6.4	e200	216	68	52	22	3.7
10	8.4	7.2	e12	e6.4	e7.0	e30	e1200	207	74	51	18	3.4
11	12	7.1	e12	e6.4	e6.8	e50	e1800	201	72	51	15	3.3
12	13	7.7	e11	e6.4	e6.4	e200	927	199	72	51	13	3.4
13	14	8.5	e10	e6.4	e6.3	e700	492	198	70	51	12	3.5
14	14	11	e9.5	e6.3	e6.3	e650	425	196	66	50	10	3.3
15	14	25	e9.5	e6.2	e6.2	e450	371	193	63	49	9.0	3.1
16	14	33	e9.2	e6.1	e6.1	e400	331	192	60	48	8.2	3.1
17	14	34	e9.0	e6.1	e6.1	e250	314	198	58	47	7.6	3.1
18	14	33	e8.6	e6.0	e6.1	e150	310	253	56	47	7.0	3.2
19	14	32	e8.4	e6.0	e6.0	e120	296	232	55	48	6.8	3.4
20	14	30	e8.0	e6.0	e6.0	e140	283	199	54	51	6.5	3.5
21	14	26	e8.0	e5.8	e6.5	e160	277	187	60	55	6.2	3.6
22	14	26	e8.0	e5.6	e7.0	e180	276	178	61	66	5.9	3.7
23	14	26	e7.8	e5.4	e7.0	e90	274	172	61	60	5.7	3.6
24	14	24	e7.7	e5.3	e9.0	e30	290	167	65	47	5.4	3.5
25	14	23	e7.6	e5.2	e10	e28	298	164	79	41	5.2	3.3
26	14	21	e7.5	e5.2	e8.0	e25	290	164	82	39	5.0	3.4
27	15	21	e7.4	e5.2	e7.5	e25	275	162	79	38	4.8	3.5
28	15	e20	e7.3	e5.1	e7.0	e80	274	151	75	35	4.7	3.8
29	15	e19	e7.2	e5.1	e7.0	e100	271	142	70	33	4.6	3.4
30	14	e17	e7.1	e5.0	---	e90	254	136	66	31	4.4	3.6
31	13	---	e7.0	e5.0	---	e80	---	96	---	29	4.3	---
TOTAL	380.4	526.0	307.8	186.6	186.7	4088.3	10338	6016	2049	1530	409.3	107.6
MEAN	12.3	17.5	9.93	6.02	6.44	132	345	194	68.3	49.4	13.2	3.59
MAX	15	34	15	6.9	10	700	1800	253	82	66	29	4.2
MIN	6.4	7.1	7.0	5.0	5.0	6.4	70	96	54	29	4.3	3.1
AC-FT	755	1040	611	370	370	8110	20510	11930	4060	3030	812	213

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1904 - 1996, BY WATER YEAR (WY)

	9.28	5.70	2.47	1.14	4.47	46.2	119	60.6	37.2	19.9	11.8	10.8
MEAN	9.28	5.70	2.47	1.14	4.47	46.2	119	60.6	37.2	19.9	11.8	10.8
MAX	83.5	50.7	15.2	8.10	76.1	362	730	399	228	111	108	97.9
(WY)	1976	1976	1976	1951	1981	1976	1976	1975	1975	1975	1972	1975
MIN	.000	.000	.000	.000	.000	.10	1.77	.30	.020	.000	.000	.000
(WY)	1993	1993	1959	1946	1946	1948	1963	1993	1961	1961	1961	1958

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR	FOR 1996 WATER YEAR	WATER YEARS 1904 - 1996
ANNUAL TOTAL	9766.12	26125.7	
ANNUAL MEAN	26.8	71.4	27.4
HIGHEST ANNUAL MEAN			148
LOWEST ANNUAL MEAN			.44
HIGHEST DAILY MEAN	780	1800	3200
LOWEST DAILY MEAN	.20	3.1	.00
ANNUAL SEVEN-DAY MINIMUM	.21	3.2	.00
INSTANTANEOUS PEAK FLOW		2000	4260
INSTANTANEOUS PEAK STAGE		a 19.16	b 21.23
ANNUAL RUNOFF (AC-FT)	19370	51820	19840
10 PERCENT EXCEEDS	58	214	58
50 PERCENT EXCEEDS	8.6	14	2.5
90 PERCENT EXCEEDS	.43	5.0	.00

a Backwater from ice.  
b From high-water mark.  
e Estimated.



RED RIVER OF THE NORTH BASIN  
05116500 DES LACS RIVER AT FOXHOLM, ND--Continued

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WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1950-51, 1969-70, 1972 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
NOV 06...	1510	8.1	2050	--	0.0	0.5	--	--	--	--
JAN 02...	1610	6.9	2800	--	--	0.0	--	--	--	--
FEB 12...	1520	6.5	1350	--	5.0	0.5	--	--	--	--
MAR 13...	1110	683	320	8.1	0.0	0.5	63	62	13	7.5
APR 10...	1445	1500	230	--	18.0	1.5	--	--	--	--
12...	1800	737	300	--	5.0	1.0	--	--	--	--
18...	1545	311	480	--	15.0	9.0	--	--	--	--
JUN 05...	1600	75	1000	--	21.0	18.0	--	--	--	--
JUL 18...	0920	47	1280	--	20.0	22.5	--	--	--	--
AUG 15...	1130	8.8	1460	8.6	25.0	21.0	370	390	67	49
DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
MAR 13...	22	38	1	12	52	8.9	0.10	153	185	0.25
AUG 15...	180	50	4	22	380	27	0.20	960	986	1.34
DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAR 13...	341	1	70	<1	10	50	0.1	<1	<1	120
AUG 15...	23.4	9	50	<1	60	100	<0.1	<1	<1	460

**RED RIVER OF THE NORTH BASIN**  
**05117500 SOURIS (MOUSE) RIVER ABOVE MINOT, ND**

**LOCATION.**--Lat 48°14'45", long 101°22'15", in NW<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> SE<sup>1</sup>/<sub>4</sub> sec.17, T.155 N., R.83 W., Ward County, Hydrologic Unit 09010001, on right bank 180 ft downstream from county highway bridge, 3.5 mi west of Minot, 7 mi downstream from Des Lacs River, and at mile 388.5.

**DRAINAGE AREA.**--10,600 mi<sup>2</sup>, approximately, of which about 6,700 mi<sup>2</sup> is probably noncontributing.

**WATER-DISCHARGE RECORDS**

**PERIOD OF RECORD.**--May 1903 to current year. Monthly discharge only for some periods, published in WSP 1308. Published as Mouse River at Minot, 1903-24, Souris River at Minot, 1927-28, 1929-34, and Souris River near Minot, 1928-29.

**REVISED RECORDS.**--WSP 1308: 1905, 1909-14, 1918, 1924-25, 1927. WSP 1338: 1903-4, 1906, 1917, 1928, 1929(M). WSP 2113: Drainage area.

**GAGE.**--Water-stage recorder and concrete control. Datum of gage is 1,545.75 ft above sea level. May 5, 1903, to Sept. 30, 1928; Oct. 1, 1929, to Sept. 30, 1934; nonrecording gages at mile 377.6 in Minot, at datum 12.5 ft lower, Oct. 1, 1928, to Sept. 30, 1929, nonrecording gages at Saugstad bridge at mile 366.8, 5 mi southeast of Minot and at datum 19.2 ft lower than present datum. Records equivalent except those for periods of extreme low flow, as some industrial and sanitary waste enters the river between the sites.

**REMARKS.**--Records good except for period of estimated daily discharges, which is fair. Flow almost completely regulated by Lake Darling (station 05115500), 41 mi upstream, and several smaller reservoirs; combined capacity, about 248,000 acre-ft. Some small diversions for irrigation and municipal supply.

**EXTREMES OUTSIDE PERIOD OF RECORD.**--Maximum stage in Minot at least 3 ft higher than 1904 peak, in 1881, according to Apr. 20, 1904, issue of Minot Daily Optic. This peak probably occurred in 1882.

**DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996**  
**DAILY MEAN VALUES**

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	74	17	e20	e7.8	e6.4	e9.0	e980	1550	102	71	33	3.6
2	81	17	e20	e7.6	e6.4	e9.0	e950	1480	86	67	31	3.4
3	80	13	e20	e7.6	e6.4	e9.0	911	1030	84	62	32	3.4
4	88	11	e20	e7.6	e6.4	e9.0	890	705	80	60	35	4.1
5	128	11	e17	e7.4	e6.4	e9.0	873	624	89	58	32	5.8
6	173	10	e15	e7.2	e6.5	e9.0	862	595	84	58	29	6.3
7	194	10	e14	e7.2	e6.6	e9.0	858	695	82	58	27	5.2
8	184	9.9	e14	e7.0	e6.7	e10	887	751	79	55	26	4.0
9	169	9.9	e13	e7.0	e6.8	e12	1130	904	76	54	24	3.6
10	135	10	e12	e7.0	e6.9	e15	2080	1120	87	54	23	8.0
11	65	10	e12	e7.0	e7.0	e20	2210	1170	87	59	22	31
12	27	10	e11	e7.0	e7.2	e50	2170	1170	88	56	19	28
13	22	9.4	e11	e7.0	e7.5	e100	1700	1140	88	56	17	28
14	20	14	e11	e6.9	e7.8	e900	1490	1080	89	56	15	27
15	16	12	e10	e6.8	e8.0	e1000	1600	1050	82	52	12	27
16	15	20	e9.5	e6.8	e8.0	e950	1670	1040	74	49	12	22
17	15	41	e9.0	e6.8	e8.0	e900	1720	1050	69	48	10	24
18	14	46	e9.0	e6.7	e8.0	e850	1770	1070	61	50	9.2	27
19	14	45	e9.0	e6.7	e8.0	e820	1800	1110	60	50	8.1	29
20	14	46	e9.0	e6.7	e8.0	e800	1790	1090	56	71	6.6	29
21	16	40	e8.8	e6.6	e8.0	e850	1780	1070	54	63	5.9	29
22	17	35	e8.6	e6.6	e8.0	e900	1760	1050	59	59	5.9	29
23	19	34	e8.4	e6.6	e8.0	e950	1730	1040	72	66	4.9	27
24	19	31	e8.2	e6.6	e8.0	e1000	1740	1030	70	63	4.4	27
25	19	31	e8.0	e6.5	e8.2	e1100	1740	1030	82	52	3.9	25
26	19	31	e8.0	e6.5	e8.4	e1100	1720	988	90	49	3.8	25
27	22	27	e8.0	e6.5	e8.6	e1100	1660	671	87	48	3.8	24
28	21	e25	e8.0	e6.4	e8.8	e1080	1620	242	83	44	3.8	27
29	20	e23	e8.0	e6.4	e9.0	e1050	1570	143	79	40	3.9	29
30	20	e22	e8.0	e6.4	---	e1000	1550	132	71	39	3.8	33
31	19	---	e8.0	e6.4	---	e1000	---	126	---	36	3.7	---
TOTAL	1739	671.2	355.5	213.3	218.0	17620.0	45211	27946	2350	1703	470.7	594.4
MEAN	56.1	22.4	11.5	6.88	7.52	568	1507	901	78.3	54.9	15.2	19.8
MAX	194	46	20	7.8	9.0	1100	2210	1550	102	71	35	33
MIN	14	9.4	8.0	6.4	6.4	9.0	858	126	54	36	3.7	3.4
AC-FT	3450	1330	705	423	432	34950	89680	55430	4660	3380	934	1180

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1903 - 1996, BY WATER YEAR (WY)**

	MEAN	31.2	27.9	22.1	19.6	24.1	123	639	556	200	123	59.2	43.5
MAX	266	159	164	170	265	1272	6209	4916	1402	1393	435	748	
(WY)	1904	1952	1976	1976	1976	1976	1976	1904	1975	1953	1976	1903	
MIN	.000	.000	.000	.000	.000	.000	1.27	.31	.000	.000	.000	.000	
(WY)	1935	1935	1935	1935	1935	1936	1937	1993	1938	1937	1937	1935	

**SUMMARY STATISTICS**

**FOR 1995 CALENDAR YEAR**

**FOR 1996 WATER YEAR**

**WATER YEARS 1903 - 1996**

ANNUAL TOTAL	58709.65	99092.1	
ANNUAL MEAN	161	271	
HIGHEST ANNUAL MEAN			155
LOWEST ANNUAL MEAN			1105
HIGHEST DAILY MEAN	1700	Mar 25	11400
LOWEST DAILY MEAN	.90	Jan 5	.00
ANNUAL SEVEN-DAY MINIMUM	.90	Jan 5	.00
INSTANTANEOUS PEAK FLOW			2300
INSTANTANEOUS PEAK STAGE			13.18
ANNUAL RUNOFF (AC-FT)	116500	196500	112400
10 PERCENT EXCEEDS	505	1070	300
50 PERCENT EXCEEDS	46	27	21
90 PERCENT EXCEEDS	2.5	6.6	.20

- a At site in Minot, from rating curve extended above 8,000 ft<sup>3</sup>/s.  
b Maximum stage at present site about 23 ft in April 1904.  
c Estimated.

RED RIVER OF THE NORTH BASIN  
05117500 SOURIS (MOUSE) RIVER ABOVE MINOT, ND--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED AS CA (00915)	MAGNE- SIUM, DIS- SOLVED AS MG (00925)
NOV 08...	1430	9.5	1550	--	-8.0	0.5	--	--	--	--
APR 09...	1100	934	1070	8.2	--	--	290	290	57	35
10...	1640	2070	520	--	15.0	1.5	--	--	--	--
19...	0945	1800	730	--	0.0	5.0	--	--	--	--
JUN 06...	1420	82	1130	--	24.0	18.5	--	--	--	--
AUG 15...	0900	11	1410	8.5	20.0	21.0	340	381	60	46

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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 CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
APR 09...	120	46	3	17	240	35	0.20	679	712	0.97
AUG 15...	170	50	4	22	350	31	0.20	908	940	1.28

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
APR 09...	1800	4	50	<1	40	230	<0.1	3	<1	400
AUG 15...	28.2	10	50	<1	50	10	<0.1	<1	<1	440

RED RIVER OF THE NORTH BASIN  
05120000 SOURIS (MOUSE) RIVER NEAR VERENDRYE, ND

LOCATION.--Lat 48°09'35", long 100°43'45", in NW<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> sec.17, T.154 N., R.78 W., McHenry County, Hydrologic Unit 09010003, on left bank 2.7 mi north of Verendrye, 19 mi upstream from mouth of Wintering River, and at mile 302.0.

DRAINAGE AREA.--11,300 mi<sup>2</sup>, approximately, of which about 6,900 mi<sup>2</sup> is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February to June 1933 (gage heights only), April 1937 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 2113: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,464.87 ft above sea level. February to June 1933, at site 4 mi upstream at datum 1.65 ft higher. Apr. 1, 1937, to Mar. 3, 1938, nonrecording gage at present site, at datum 1.97 ft higher.

REMARKS.--Records good except for period of estimated daily discharges, which is fair. Flow regulated by reservoirs on Souris and Des Lacs Rivers, the largest of which is Lake Darling (station 05115500), 128 mi upstream, combined capacity about 248,000 acre-ft; some small diversions for irrigation and municipal supply.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	40	39	e24	e16	e150	e1100	1750	301	123	100	39
2	20	37	39	e24	e16	e120	e1150	1680	262	112	89	38
3	21	28	39	e23	e16	e100	e1200	1640	231	115	86	35
4	45	30	39	e23	e16	e90	e1200	1580	200	100	86	33
5	70	34	39	e23	e15	e80	e1180	1330	183	86	82	28
6	72	32	e37	e23	e15	e80	e1150	992	171	86	75	19
7	78	32	e37	e23	e15	e80	e1100	829	165	88	89	26
8	105	31	e36	e23	e15	e90	e1100	767	165	85	77	30
9	154	27	e34	e23	e15	e90	e1200	779	154	83	68	33
10	179	27	e33	e23	e15	e90	e1800	816	142	79	55	30
11	177	25	e33	e22	e16	e100	e3000	878	132	78	52	26
12	164	24	e33	e22	e17	e200	e4600	992	128	80	45	23
13	137	24	e32	e22	e70	e500	e4800	1070	137	82	43	21
14	100	24	e32	e22	e200	e1100	3370	1110	132	89	42	18
15	67	24	e31	e21	e180	e1000	2900	1120	135	83	41	11
16	54	24	e30	e21	e150	e1300	2410	1080	144	78	50	7.8
17	48	25	e29	e20	e120	e1500	2130	1060	138	73	46	9.7
18	44	27	e28	e19	e100	e1550	2030	1060	127	73	42	28
19	41	30	e28	e19	e90	e1600	1990	1070	120	74	42	35
20	39	32	e28	e18	e85	e1450	1960	1070	111	82	42	34
21	40	39	e28	e18	e82	e1300	1940	1090	109	86	42	33
22	42	49	e28	e18	e80	e1200	1940	1090	106	145	40	38
23	38	50	e28	e18	e90	e1150	1940	1070	99	179	39	39
24	35	47	e28	e18	e150	e1100	1960	1050	105	144	40	39
25	33	44	e26	e18	e450	e1080	1970	1030	137	121	40	39
26	33	43	e25	e18	e500	e1080	1940	1030	167	115	40	38
27	35	43	e25	e18	e400	e1050	1920	1020	207	115	40	37
28	37	43	e25	e18	e300	e1000	1900	1000	217	111	40	37
29	40	43	e25	e18	e200	e1040	1870	867	178	109	40	38
30	40	41	e25	e17	---	e1060	1820	614	152	108	40	38
31	42	---	e24	e17	---	e1080	---	396	---	102	39	---
TOTAL	2050	1019	963	634	3434	23410	60570	32930	4755	3084	1692	900.5
MEAN	66.1	34.0	31.1	20.5	118	755	2019	1062	158	99.5	54.6	30.0
MAX	179	50	39	24	500	1600	4800	1750	301	179	100	39
MIN	20	24	24	17	15	80	1100	396	99	73	39	7.8
AC-FT	4070	2020	1910	1260	6810	46430	120100	65320	9430	6120	3360	1790

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 1996, BY WATER YEAR (WY)

	MEAN	49.5	43.4	33.3	30.1	45.9	211	649	664	263	164	82.7	52.0
MAX	199	199	169	160	171	277	1209	6280	4918	2122	1599	512	208
(WY)	1976	1976	1976	1976	1976	1976	1976	1976	1975	1975	1953	1976	1955
MIN	1.50	1.00	1.00	1.00	.50	.50	2.25	11.7	6.80	2.33	.67	.42	.10
(WY)	1938	1938	1938	1938	1938	1938	1940	1937	1938	1938	1937	1937	1937

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR	FOR 1996 WATER YEAR	WATER YEARS 1937 - 1996
ANNUAL TOTAL	87845	135441.5	
ANNUAL MEAN	241	370	194
HIGHEST ANNUAL MEAN			1185
LOWEST ANNUAL MEAN			18.8
HIGHEST DAILY MEAN	2300	4800	9700
LOWEST DAILY MEAN	18	7.8	.10
ANNUAL SEVEN-DAY MINIMUM	18	15	.10
INSTANTANEOUS PEAK FLOW		5090	9900
INSTANTANEOUS PEAK STAGE		a 16.62	17.84
ANNUAL RUNOFF (AC-FT)	174200	268600	140200
10 PERCENT EXCEEDS	576	1190	395
50 PERCENT EXCEEDS	77	73	37
90 PERCENT EXCEEDS	20	21	3.5

a Backwater from ice.  
e Estimated.

RED RIVER OF THE NORTH BASIN  
05120000 SOURIS (MOUSE) RIVER NEAR VERENDRYE, ND--Continued

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WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1950-51, 1957 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00301)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)
NOV 08...	0930	32	1600	--	7.9	738	-11.0	0.0	10.8	77	460
FEB 13...	1430	69	2320	7.4	--	--	5.0	0.5	--	--	720
MAR a18...	1300	1550	550	8.0	--	736	-5.0	0.0	12.8	91	110
APR 15...	1430	2800	520	7.5	--	718	--	3.5	13.3	106	130
MAY 01...	0930	1760	700	8.5	--	718	2.0	6.5	13.5	117	180
JUN 03...	1300	225	1020	8.0	--	726	--	15.0	8.2	86	270
JUL 15...	1100	83	1430	8.0	--	719	--	21.5	6.6	80	360
SEP 30...	1045	38	1570	--	--	--	6.0	8.0	--	--	--

DATE	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	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)	SODIUM AD- SORP- TION RATIO (00931)	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)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
NOV 08...	K25	90	58	210	4	399	470	80	0.30	3	1250
FEB 13...	K2000	150	83	330	5	584	720	76	0.20	11	1830
MAR a18...	--	24	12	36	1	105	89	14	0.10	70	288
APR 15...	--	30	14	37	1	117	94	10	0.10	146	297
MAY 01...	--	37	21	64	2	163	140	16	0.10	64	414
JUN 03...	--	57	32	100	3	255	220	25	0.20	29	619
JUL 15...	--	68	45	170	4	340	340	45	0.30	39	932

DATE	NITRO- GEN, NO2+NO3 TOTAL (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) (00608)	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)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL) (01105)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)
NOV 08...	1.50	1.50	0.050	1.2	1.2	2.7	0.100	40	3	<100
FEB 13...	0.810	0.810	0.450	2.0	2.4	3.2	0.290	60	3	<100
MAR a18...	0.580	0.580	0.250	1.5	1.8	2.4	0.470	870	2	<100
APR 15...	0.640	0.640	0.320	1.6	1.9	2.5	0.380	--	2	<100
MAY 01...	0.080	0.080	0.020	1.1	1.1	1.2	0.260	--	2	<100
JUN 03...	0.100	0.100	0.150	1.2	1.4	1.5	0.240	--	3	<100
JUL 15...	0.130	0.130	0.080	1.8	1.9	2.0	0.370	--	8	<100



**RED RIVER OF THE NORTH BASIN**  
**05120000 SOURIS (MOUSE) RIVER NEAR VERENDRYE, ND--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BORON, TOTAL RECOV- ERABLE (UG/L AS B) (01022)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO) (01037)	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)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO) (01062)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)
NOV 08...	<10	410	<1	<1	<1	2	310	<1	5	4
FEB 13...	<10	240	<1	<1	<1	2	520	1	2	4
MAR a18...	<10	30	<1	2	<1	12	1600	10	2	1
APR 15...	<10	100	<1	3	3	9	4000	5	2	7
MAY 01...	<10	140	<1	1	2	3	1400	1	2	5
JUN 03...	<10	170	<1	<1	1	2	740	<1	2	4
JUL 15...	<10	200	<1	1	<1	3	900	1	2	5

DATE	SELE- NIUM, TOTAL (UG/L AS SE) (01147)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	PHENOLS TOTAL (UG/L) (32730)	TRIAZIN SCREEN (ELISA) WAT,WH REC,AS ATRAZIN (UG/L) (34757)	CARBO- FURAN SCREEN, TOTAL (UG/L) (99902)	CYANA- ZINE SCREEN, TOTAL (UG/L) (99904)	2, 4-D SCREEN, TOTAL (UG/L) (99906)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
NOV 08...	<1	<10	14	<1	--	--	--	--	--	--
FEB 13...	<1	<10	30	e5	--	--	--	--	--	--
MAR a18...	<1	10	20	2	--	--	--	--	--	--
APR 15...	<1	20	18	2	0.05	--	<0.04	<0.700	--	--
MAY 01...	<1	<10	16	<1	0.1	--	<0.04	<0.700	--	--
JUN 03...	<1	30	--	--	<0.05	<0.06	<0.04	1.00	--	--
JUL 15...	<1	<10	22	<1	<0.05	<0.06	<0.04	<0.700	1.80	0.100

a Replicate sample also collected for quality-assurance purposes.

e Estimated.

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

RED RIVER OF THE NORTH BASIN  
05120500 WINTERING RIVER NEAR KARLSRUHE, ND

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LOCATION.--Lat 48°08'18", long 100°32'22", SW<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> sec.23, T.154 N., R.77 W., McHenry County, Hydrologic Unit 09010003, on right bank downstream from county highway bridge, 9 mi upstream from mouth, and 5 mi northeast of Karlsruhe.

DRAINAGE AREA.--705 mi<sup>2</sup>, of which about 420 mi<sup>2</sup> is probably noncontributing. (Drainage area shown is for former location 5 river miles downstream. Total drainage area has been reduced about 10 percent, which mostly consists of noncontributing area. New drainage areas will be published, but have not been delineated.)

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1937 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,500 ft above sea level, from topographic map. Mar. 1937 to Sept. 30, 1994, at site 5 miles downstream, at datum 20 ft lower.

REMARKS.--Records fair except for periods of estimated discharges, which are poor. Some regulation by Fish and Wildlife Service dams on Cottonwood and Wintering Lakes, controlled capacity, about 850 acre-ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.9	8.6	e4.8	e2.4	e1.3	e.70	e37	123	50	51	18	4.3
2	4.0	6.6	e4.6	e2.3	e1.3	e.68	e33	114	48	49	17	4.1
3	4.5	6.5	e4.5	e2.3	e1.2	e.64	e31	109	47	43	17	3.3
4	5.8	6.8	e4.5	e2.3	e1.1	e.60	e29	103	42	36	18	3.3
5	5.9	6.1	e4.5	e2.3	e1.1	e.60	e27	99	44	30	18	3.6
6	6.2	e8.0	e4.5	e2.3	e1.0	e.60	e24	97	43	26	17	3.6
7	6.4	e8.2	e4.5	e2.3	e1.0	e.58	e22	96	37	25	16	3.6
8	6.2	e6.8	e4.4	e2.3	e1.0	e.54	e20	97	33	23	13	3.1
9	6.2	e6.6	e4.2	e2.3	e1.0	e.50	e50	94	30	19	12	2.9
10	6.1	e6.4	e4.0	e2.3	e1.0	e.50	e150	88	26	19	11	2.5
11	5.6	e6.2	e3.8	e2.3	e1.0	e.60	e450	83	24	37	11	2.5
12	8.2	e6.0	e3.6	e2.3	e1.0	e1.0	e300	77	25	27	10	2.6
13	9.2	e6.0	e3.4	e2.3	e1.0	e5.0	e400	73	19	23	10	2.9
14	8.7	e6.0	e3.2	e2.3	e1.0	e50	e800	71	17	24	9.4	3.0
15	8.9	e5.8	e3.0	e2.3	e1.0	e100	639	68	15	23	9.0	2.9
16	8.1	e5.8	e3.0	e2.2	e.96	e80	475	66	14	18	9.5	2.8
17	e7.8	e5.7	e2.8	e2.1	e.92	e90	400	78	13	16	9.1	3.0
18	e7.6	e5.6	e2.6	e2.0	e.88	e100	331	79	12	16	8.4	3.0
19	e7.4	e5.6	e2.5	e1.9	e.85	e150	254	76	16	16	8.0	3.9
20	e7.2	e5.4	e2.5	e1.9	e.80	e140	219	72	17	31	7.4	5.9
21	7.0	e5.4	e2.5	e1.8	e.75	e130	193	66	14	34	7.2	6.4
22	7.8	e5.4	e2.5	e1.8	e.70	e115	181	63	11	25	7.0	6.2
23	8.7	e5.3	e2.5	e1.7	e.70	e100	183	60	16	19	6.7	5.7
24	8.8	e5.2	e2.5	e1.7	e.70	e90	168	58	20	18	6.4	5.3
25	8.8	e5.0	e2.5	e1.6	e.70	e85	169	55	45	18	6.1	5.0
26	9.1	e5.0	e2.5	e1.6	e.70	e75	151	53	54	18	5.9	4.7
27	11	e5.0	e2.5	e1.6	e.70	e65	149	51	51	18	5.5	5.6
28	12	e5.0	e2.5	e1.5	e.70	e58	137	50	60	18	5.2	5.6
29	10	e5.0	e2.4	e1.5	e.70	e52	129	50	61	18	5.0	5.5
30	8.2	e5.0	e2.4	e1.5	---	e48	128	49	55	19	5.1	5.4
31	8.4	---	e2.4	e1.4	---	e42	---	51	---	20	4.9	---
TOTAL	233.7	180.0	102.1	62.4	26.76	1582.54	6279	2369	959	777	313.8	122.2
MEAN	7.54	6.00	3.29	2.01	.92	51.0	209	76.4	32.0	25.1	10.1	4.07
MAX	12	8.6	4.8	2.4	1.3	150	800	123	61	51	18	6.4
MIN	3.9	5.0	2.4	1.4	.70	.50	20	49	11	16	4.9	2.5
AC-FT	464	357	203	124	53	3140	12450	4700	1900	1540	622	242

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 1996, BY WATER YEAR (WY)

	MEAN	6.08	5.42	2.07	.97	1.24	23.4	63.1	27.7	14.7	9.98	6.67	4.37
MAX	109	98.8	9.45	4.51	9.13	343	386	183	92.4	46.9	87.3	29.7	
(WY)	1995	1995	1995	1976	1981	1995	1949	1970	1954	1954	1993	1952	
MIN	.034	.50	.000	.000	.000	.000	2.81	1.65	.43	.23	.006	.000	
(WY)	1993	1938	1938	1938	1938	1938	1992	1992	1992	1989	1989	1992	

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR	FOR 1996 WATER YEAR	WATER YEARS 1937 - 1996
ANNUAL TOTAL	23527.06	13007.50	
ANNUAL MEAN	64.5	35.5	14.0
HIGHEST ANNUAL MEAN			81.2
LOWEST ANNUAL MEAN			1.36
HIGHEST DAILY MEAN	1200	800	2500
LOWEST DAILY MEAN	.27	.50	.00
ANNUAL SEVEN-DAY MINIMUM	.45	.56	.00
INSTANTANEOUS PEAK FLOW		1050	b 3000
INSTANTANEOUS PEAK STAGE		a 8.90	c 12.00
ANNUAL RUNOFF (AC-FT)	46670	25800	10140
10 PERCENT EXCEEDS	208	95	26
50 PERCENT EXCEEDS	5.8	7.1	3.1
90 PERCENT EXCEEDS	2.0	1.1	.10

- a Backwater from ice.
- b By velocity-area study.
- c Channel choked by packed snow.
- e Estimated.

**RED RIVER OF THE NORTH BASIN**  
**05120500 WINTERING RIVER NEAR KARLSRUHE, ND--Continued**

**WATER-QUALITY RECORDS**

**PERIOD OF RECORD.--Water years 1954-56, 1972 to current year.**

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
NOV 08...	1140	6.8	830	--	-10.0	0.5	--	--	--	--
MAR 18...	1530	100	300	8.0	0.0	0.0	84	88	18	9.5
APR 15...	1630	582	350	--	9.0	1.0	--	--	--	--
24...	1500	165	560	--	10.0	9.0	--	--	--	--
JUN 03...	1500	46	1200	--	22.0	16.0	--	--	--	--
JUL 15...	1320	21	1260	--	25.0	23.0	--	--	--	--
AUG 12...	1330	10	1340	8.3	30.0	22.5	270	519	45	37
SEP 30...	1220	5.3	830	--	--	10.0	--	--	--	--

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
MAR 18...	26	36	1	12	69	6.9	0.10	195	226	0.31
AUG 12...	220	64	6	7.8	210	18	0.20	850	871	1.18

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAR 18...	61.0	1	100	1	10	80	0.1	<1	<1	140
AUG 12...	23.8	3	100	<1	60	50	<0.1	<1	<1	280

RED RIVER OF THE NORTH BASIN  
05122000 SOURIS (MOUSE) RIVER NEAR BANTRY, ND

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LOCATION.--Lat 48°30'20", long 100°26'04", in SE<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> SE<sup>1</sup>/<sub>4</sub> sec.14, T.158 N., R.76 W., McHenry County, Hydrologic Unit 09010003, on left bank 200 ft upstream from Nelson bridge, 8 mi east of Bantry, 18 mi upstream from Willow Creek, and at mile 228.0.

DRAINAGE AREA.--12,300 mi<sup>2</sup> approximately, of which about 7,600 mi<sup>2</sup> is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1937 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 2113: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,427.56 ft above sea level. Prior to Mar. 16, 1938, nonrecording gage at same site at datum 0.17 ft lower.

REMARKS.--Records fair except for periods of estimated daily discharges, which are poor. Flow regulated by reservoirs on Souris, Des Lacs, and Wintering Rivers, total capacity, about 249,000 acre-ft. Diversions for irrigation of about 7,600 acres at Eaton Dam about 42 mi above station and other small diversions for irrigation and municipal supply.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e38	e58	e52	e29	e21	e150	e1700	1900	976	e210	137	31
2	e36	e60	e50	e28	e21	e130	e1650	1830	917	e240	127	30
3	e34	e60	e48	e28	e21	e110	e1600	1780	853	e270	122	29
4	34	e58	e47	e28	e21	e100	e1550	1760	792	e300	114	29
5	33	e55	e47	e27	e21	e120	e1500	1730	747	e290	108	39
6	33	e54	e46	e27	e20	e140	e1450	1720	710	e250	102	48
7	34	e53	e46	e27	e20	e170	e1500	1720	672	e200	97	47
8	39	e50	e45	e26	e20	e200	e1600	1700	637	e170	92	45
9	51	e45	e45	e26	e20	e300	e1700	1580	602	e160	88	40
10	63	e40	e44	e25	e20	e500	e1800	1440	563	e150	86	36
11	75	e38	e43	e25	e19	e490	e1850	1300	521	e145	84	31
12	93	e40	e42	e25	e19	e480	e1750	1190	478	e140	83	9.5
13	119	e40	e42	e25	e18	e460	e1700	1130	432	e135	81	8.3
14	e150	e38	e41	e24	e18	e430	e1600	1090	398	e130	76	10
15	e180	e38	e40	e24	e18	e400	e1400	1090	371	e128	71	12
16	e190	e37	e39	e23	e18	e350	e1350	1080	347	e127	68	11
17	e180	e36	e38	e23	e18	e300	1650	1140	326	e127	65	9.9
18	e150	e35	e37	e23	e18	e250	2080	1180	e310	126	61	16
19	e120	e32	e36	e23	e18	e250	2690	1200	e280	122	60	22
20	e90	e30	e35	e23	e17	e300	2790	1190	e250	133	57	21
21	e75	e30	e35	e22	e50	e400	2610	1170	e240	136	57	20
22	e73	e30	e34	e22	e150	e500	2360	1150	e230	136	54	20
23	e70	e30	e34	e22	e230	e800	2130	1110	e220	137	52	26
24	e68	e30	e33	e22	e250	e1200	2060	1080	e210	138	48	32
25	e64	e35	e33	e22	e240	e1800	2070	1060	e200	142	45	36
26	e60	e40	e32	e22	e230	e2000	2040	1050	e195	160	41	e40
27	e60	e45	e32	e22	e200	e1950	2000	1040	e190	170	38	e44
28	e55	e50	e31	e22	e180	e1900	1960	1020	e185	168	34	e48
29	e52	e58	e30	e22	e160	e1850	1950	1000	e182	158	32	e50
30	e50	e60	e30	e21	---	e1800	1940	996	e180	148	32	e53
31	e55	---	e29	e21	---	e1750	---	996	---	140	32	---
TOTAL	2424	1305	1216	749	2076	21580	56030	40422	13214	5186	2244	893.7
MEAN	78.2	43.5	39.2	24.2	71.6	696	1868	1304	440	167	72.4	29.8
MAX	190	60	52	29	250	2000	2790	1900	976	300	137	53
MIN	33	30	29	21	17	100	1350	996	180	122	32	8.3
AC-FT	4810	2590	2410	1490	4120	42800	111100	80180	26210	10290	4450	1770

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 1996, BY WATER YEAR (WY)

MEAN	60.9	57.8	40.2	32.6	37.3	136	588	778	397	211	110	64.5
MAX	255	219	172	175	247	912	5666	5161	2821	1616	547	288
(WY)	1976	1976	1976	1976	1976	1995	1976	1979	1975	1953	1953	1975
MIN	.68	.50	1.00	.50	.000	.44	5.60	3.04	11.7	2.73	1.03	.010
(WY)	1941	1941	1938	1938	1938	1937	1990	1937	1992	1992	1992	1939

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR	FOR 1996 WATER YEAR	WATER YEARS 1937 - 1996
ANNUAL TOTAL	125019	147339.7	
ANNUAL MEAN	343	403	213
HIGHEST ANNUAL MEAN			1226
LOWEST ANNUAL MEAN			15.9
HIGHEST DAILY MEAN	3120	2790	9260
LOWEST DAILY MEAN	29	8.3	.00
ANNUAL SEVEN-DAY MINIMUM	30	11	.00
INSTANTANEOUS PEAK FLOW		2840	9330
INSTANTANEOUS PEAK STAGE		12.97	14.59
ANNUAL RUNOFF (AC-FT)	248000	292200	154400
10 PERCENT EXCEEDS	811	1610	493
50 PERCENT EXCEEDS	108	78	50
90 PERCENT EXCEEDS	33	22	4.5

e Estimated.

RED RIVER OF THE NORTH BASIN  
05122000 SOURIS (MOUSE) RIVER NEAR BANTRY, ND--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)
NOV 07...	1400	53	1120	--	8.0	738	-10.0	0.5	15.0	108	350
JAN 04...	1030	28	1750	--	--	--	-20.0	0.0	--	--	--
FEB 14...	1100	18	1750	7.0	--	--	0.0	0.5	--	--	520
APR a17...	1030	1660	720	7.8	--	708	5.0	3.0	12.1	97	160
23...	1230	2090	560	--	--	--	14.0	5.0	--	--	--
MAY 01...	1230	1910	730	8.7	--	720	--	9.0	14.0	129	180
JUN 05...	1000	749	780	--	7.7	714	18.0	15.5	6.5	70	210
JUL 17...	1000	127	1120	8.2	--	716	25.0	24.5	6.0	77	300
AUG 28...	1030	35	1360	8.3	--	722	20.0	21.0	7.9	94	320
SEP 30...	1445	53	1360	--	--	--	12.0	10.0	--	--	--

DATE	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	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)	SODIUM AD- SORP- TION RATIO (00931)	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)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
NOV 07...	K8	71	42	130	3	374	240	41	0.30	3	826
FEB 14...	K6	110	59	210	4	486	440	42	0.20	10	1250
APR a17...	--	34	18	56	2	158	120	17	0.20	28	394
MAY 01...	--	38	20	66	2	181	140	17	0.10	13	435
JUN 05...	--	43	26	72	2	227	140	16	0.20	25	463
JUL 17...	--	59	38	130	3	348	260	30	0.20	57	810
AUG 28...	100	59	43	160	4	393	290	44	0.30	45	900

DATE	NITRO- GEN, NO2+NO3 TOTAL (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) (00608)	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)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL) (01105)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)
NOV 07...	2.10	2.10	<0.015	1.1	1.1	3.2	0.160	140	3	100
FEB 14...	0.590	0.590	0.390	1.3	1.7	2.3	0.160	90	2	<100
APR a17...	0.170	0.170	0.040	1.2	1.2	1.4	0.190	--	1	<100
MAY 01...	--	<0.050	0.020	1.2	1.2	1.2	0.130	--	2	<100
JUN 05...	0.050	0.050	0.090	1.3	1.4	1.5	0.300	--	3	<100
JUL 17...	0.070	0.070	0.030	1.3	1.3	1.4	0.290	--	6	<100
AUG 28...	0.060	0.060	0.030	1.7	1.7	1.8	0.360	--	8	<100



**RED RIVER OF THE NORTH BASIN**  
**05122000 SOURIS (MOUSE) RIVER NEAR BANTRY, ND--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BORON, TOTAL RECOV- ERABLE (UG/L AS B) (01022)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO) (01037)	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)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO) (01062)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)
NOV 07...	<10	360	<1	<1	<1	2	350	<1	3	3
FEB 14...	<10	200	<1	<1	<1	3	530	<1	<1	3
APR a17...	<10	170	<1	<1	<1	3	790	1	3	3
MAY 01...	<10	150	<1	<1	<1	2	290	<1	2	3
JUN 05...	<10	140	<1	<1	<1	2	510	<1	1	3
JUL 17...	<10	210	<1	<1	<1	3	1100	1	1	5
AUG 28...	<10	250	<1	<1	<1	3	1100	2	2	4

DATE	SELE- NIUM, TOTAL (UG/L AS SE) (01147)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	PHENOLS TOTAL (UG/L) (32730)	TRIAZIN SCREEN (ELISA) WAT,WH REC,AS ATRAZIN (UG/L) (34757)	CARBO- FURAN SCREEN, TOTAL (UG/L) (99902)	CYANA- ZINE SCREEN, TOTAL (UG/L) (99904)	2, 4-D SCREEN, TOTAL (UG/L) (99906)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
NOV 07...	<1	<10	13	<1	--	--	--	--	--	--
FEB 14...	<1	<10	22	e4	--	--	--	--	--	--
APR a17...	<1	<10	16	2	0.1	--	<0.04	<0.700	--	--
MAY 01...	<1	<10	16	<1	0.1	--	<0.04	<0.700	--	--
JUN 05...	<1	<10	--	--	<0.05	<0.06	<0.04	<0.700	--	--
JUL 17...	<1	<10	21	1	<0.05	<0.06	<0.04	<0.700	3.00	0.200
AUG 28...	<1	<10	23	2	--	--	--	--	3.70	0.400

a Replicate sample also collected for quality-assurance purposes.

e Estimated.

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

RED RIVER OF THE NORTH BASIN  
05123000 LAKE METIGOSHE NEAR BOTTINEAU, ND

LOCATION.--Lat 48°59'05", long 100°20'52", in SE<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> sec.35, T.164 N., R.75 W., Bottineau County, Hydrologic Unit 09010004, on east bridge railing of bridge over Lake Metigoshe, and 11.7 mi northeast of Bottineau.

DRAINAGE AREA.--59 mi<sup>2</sup>.

GAGE-HEIGHT RECORDS

PERIOD OF RECORD.--June 1931 to September 1932, September 1953 to September 1987, August 1992 to September 1996 (discontinued).

GAGE.--Weekly observations of water level. Datum of gage is 2,130.00 ft above sea level. 1931-32, nonrecording gage on north abutment of bridge at datum 6.32 ft lower (reduced to elevations NGVD). September 1953 to January 1955, nonrecording gage at present datum on east end of south abutment of bridge. January 1955 to September 1987, water-stage recorder at current site and datum.

REMARKS.--Outlet of lake is a concrete dam with removable stoplogs; average crest elevation without stoplogs about 2,138.00 ft above sea level. Lake level regulated since 1959 by dam and control works in the outlet of Sharpe Lake located on the principal tributary in Manitoba.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 9.70 ft, May 3, 1975; minimum 4.28 ft, Sept. 17, 1932, present datum.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 9.15 ft, May 20; minimum observed, 7.97 ft, Oct. 31.

MONTHEND GAGE HEIGHT, IN FEET, OCTOBER 1995 TO SEPTEMBER 1996

Sept. 30, 1995..	8.01	Jan. 31.....	8.41	Apr. 30.....	9.02	July 31.....	8.69
Oct. 31.....	7.97	Feb. 29.....	8.46	May 31.....	9.08	Aug. 31.....	8.33
Nov. 30.....	8.00	Mar. 31.....	8.51	June 30.....	8.78	Sept. 30.....	8.07
Dec. 31.....	8.05						

RED RIVER OF THE NORTH BASIN  
05123400 WILLOW CREEK NEAR WILLOW CITY, ND

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LOCATION.--Lat 48°35'20", long 100°26'30", in NE<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> sec.23, T.159 N., R.76 W., McHenry County, Hydrologic Unit 09010004, on left bank 50 ft downstream from bridge on county road, 1.5 mi upstream from Snake Creek, and 7 mi west of Willow City.

DRAINAGE AREA.--1,160 mi<sup>2</sup>, approximately, of which about 430 mi<sup>2</sup> is probably noncontributing.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Elevation of gage is 1,430 ft above sea level, from topographic map. Prior to Oct. 5, 1956, nonrecording gage at site 50 ft upstream at same datum.

REMARKS.--Records fair except for period of estimated daily discharges, which is poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	1.7	e.08	e.00	e.00	e.00	e.15	464	135	85	74	19
2	.00	2.4	e.07	e.00	e.00	e.00	e.15	442	130	78	74	18
3	.00	1.8	e.06	e.00	e.00	e.00	e.15	421	124	73	75	17
4	.00	1.5	e.05	e.00	e.00	e.00	e.15	396	117	72	90	16
5	.00	1.1	e.04	e.00	e.00	e.00	e.20	362	115	75	98	16
6	.00	.86	e.03	e.00	e.00	e.00	e.30	322	108	79	98	15
7	.00	.62	e.02	e.00	e.00	e.00	e.50	285	98	80	102	13
8	.00	.58	e.01	e.00	e.00	e.00	e1.0	259	89	80	105	12
9	.00	.56	e.00	e.00	e.00	e.00	e2.0	240	80	78	104	12
10	.00	.54	e.00	e.00	e.00	e.00	e7.0	223	71	73	102	11
11	.00	.45	e.00	e.00	e.00	e.00	e15	209	65	78	97	11
12	.00	.42	e.00	e.00	e.00	e.00	e10	198	59	81	90	9.5
13	.00	.42	e.00	e.00	e.00	e.00	e200	188	50	77	84	8.9
14	.00	.42	e.00	e.00	e.00	e.20	e1600	180	46	78	78	6.7
15	.00	.42	e.00	e.00	e.00	e.30	e1500	178	42	78	74	5.6
16	.00	.42	e.00	e.00	e.00	e.50	1360	172	38	73	72	5.6
17	.00	.42	e.00	e.00	e.00	e.40	1090	199	28	68	68	5.9
18	.00	.42	e.00	e.00	e.00	e.30	911	204	21	69	62	6.3
19	.00	.36	e.00	e.00	e.00	e.25	815	203	34	66	58	4.7
20	.04	.42	e.00	e.00	e.00	e.20	775	197	42	81	54	2.7
21	.10	.41	e.00	e.00	e.00	e.18	728	190	70	91	52	2.5
22	.33	.42	e.00	e.00	e.00	e.30	684	187	87	88	49	3.6
23	.62	.42	e.00	e.00	e.00	e.25	658	189	88	86	46	4.1
24	.90	e.40	e.00	e.00	e.00	e.23	636	189	78	85	42	5.2
25	1.0	e.35	e.00	e.00	e.00	e.21	637	189	76	81	37	4.0
26	.95	e.30	e.00	e.00	e.00	e.20	600	186	78	80	33	4.8
27	1.6	e.24	e.00	e.00	e.00	e.19	566	179	84	81	30	5.1
28	1.6	e.18	e.00	e.00	e.00	e.17	539	168	88	79	27	3.3
29	1.3	e.14	e.00	e.00	e.00	e.16	509	154	90	78	24	3.6
30	1.7	e.10	e.00	e.00	---	e.15	484	140	89	78	22	4.1
31	1.6	---	e.00	e.00	---	e.15	---	137	---	75	21	---
TOTAL	11.74	18.79	0.36	0.00	0.00	4.34	14328.60	7250	2320	2424	2042	256.2
MEAN	.38	.63	.012	.000	.000	.14	478	234	77.3	78.2	65.9	8.54
MAX	1.7	2.4	.08	.00	.00	.50	1600	464	135	91	105	19
MIN	.00	.10	.00	.00	.00	.00	.15	137	21	66	21	2.5
AC-FT	23	37	.7	.00	.00	8.6	28420	14380	4600	4810	4050	508

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 1996, BY WATER YEAR (WY)

	MEAN	7.14	5.70	1.68	.26	.61	39.5	225	119	42.8	17.8	13.8	8.69
MAX	71.8	43.7	24.8	4.39	16.4	342	1242	787	350	128	146	75.5	
(WY)	1981	1995	1960	1960	1981	1995	1969	1975	1974	1974	1965	1980	
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	
(WY)	1957	1957	1957	1957	1958	1959	1977	1959	1959	1958	1957	1957	

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR	FOR 1996 WATER YEAR	WATER YEARS 1956 - 1996
ANNUAL TOTAL	44500.92	28656.03	
ANNUAL MEAN	122	78.3	40.1
HIGHEST ANNUAL MEAN			182
LOWEST ANNUAL MEAN			.005
HIGHEST DAILY MEAN	1950	1600	5310
LOWEST DAILY MEAN	.00 Aug 9	.00 Oct 1	.00 Sep 23 1956
ANNUAL SEVEN-DAY MINIMUM	.00 Aug 9	.00 Oct 1	.00 Sep 23 1956
INSTANTANEOUS PEAK FLOW		1770	5900
INSTANTANEOUS PEAK STAGE		a 14.88	16.76
ANNUAL RUNOFF (AC-FT)	88270	56840	29070
10 PERCENT EXCEEDS	448	189	82
50 PERCENT EXCEEDS	.95	1.4	.00
90 PERCENT EXCEEDS	.00	.00	.00

a Backwater from ice.  
e Estimated.

RED RIVER OF THE NORTH BASIN  
05123400 WILLOW CREEK NEAR WILLOW CITY, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1960-62, 1964-65, 1972 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
APR 17...	1300	1080	390	7.8	--	--	100	88	22	12
23...	1415	656	550	--	15.0	7.0	--	--	--	--
MAY 01...	1600	462	860	--	12.0	10.0	--	--	--	--
JUN 05...	1150	116	1070	--	18.0	17.0	--	--	--	--
JUL 17...	1110	68	1180	--	30.0	25.0	--	--	--	--
AUG 14...	1515	78	1200	8.2	25.0	22.5	390	458	56	61

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
APR 17...	27	34	1	9.3	77	10	0.10	210	250	0.34
AUG 14...	150	45	3	11	250	18	0.20	821	876	1.19

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
APR 17...	729	1	60	<1	20	20	0.1	<1	<1	150
AUG 14...	184	4	40	<1	110	20	<0.1	<1	<1	370

RED RIVER OF THE NORTH BASIN  
05123510 DEEP RIVER NEAR UPHAM, ND

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LOCATION.--Lat 48°35'03", long 100°51'44", in SW<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> sec.22, T.159 N., R.79 W., McHenry County, Hydrologic Unit 09010005, 60 ft downstream from county highway bridge, 0.8 mi downstream from Little Deep River, and 6.3 mi west of Upham.

DRAINAGE AREA.--975 mi<sup>2</sup>, of which about 605 mi<sup>2</sup> is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1957 to September 1980, March 1985 to current year (seasonal records only since 1985).

GAGE.--Water-stage recorder. Elevation of gage is 1,430 ft above sea level, from topographic map.

REMARKS.--Records good except for period of estimated daily discharge, which is fair.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in April 1951 reached a stage of about 16 ft, discharge, 2,700 ft<sup>3</sup>/s, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,600 ft<sup>3</sup>/s, Apr. 14, gage height, 16.71 ft; backwater from ice; no flow for several days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	e.00	e.00	e120	152	33	4.1	.13	.00
2	---	---	---	---	e.00	e.00	e100	142	32	3.4	.11	.00
3	---	---	---	---	e.00	e.00	e90	131	30	3.0	.10	.00
4	---	---	---	---	e.00	e.00	e80	121	28	2.8	.08	.00
5	---	---	---	---	e.00	e.00	e70	112	28	2.9	.07	.00
6	---	---	---	---	e.00	e.00	e60	105	27	2.9	.05	.00
7	---	---	---	---	e.00	e.00	e55	97	26	2.5	.04	.00
8	---	---	---	---	e.00	e.00	e50	93	25	2.2	.03	.00
9	---	---	---	---	e.00	e.00	e55	89	22	2.0	.02	.00
10	---	---	---	---	e.00	e.00	e100	83	21	1.6	.02	.00
11	---	---	---	---	e.00	e.00	e400	80	21	1.5	.01	.00
12	---	---	---	---	e.00	e.00	e450	76	20	1.4	.00	.00
13	---	---	---	---	e.00	e.00	e1000	72	18	1.3	.00	.00
14	---	---	---	---	e.00	e.50	e2000	66	17	1.0	.00	.00
15	---	---	---	---	e.00	e2.0	e1900	64	16	.88	.00	.00
16	---	---	---	---	e.00	e20	1810	63	14	.56	.00	.00
17	---	---	---	---	e.00	e15	1410	62	12	.41	.00	.00
18	---	---	---	---	e.00	e10	1130	62	10	.36	.00	.00
19	---	---	---	---	e.00	e7.0	907	62	11	.27	.00	.00
20	---	---	---	---	e.00	e25	764	65	8.7	.79	.00	.00
21	---	---	---	---	e.00	e100	638	64	7.5	.78	.00	.00
22	---	---	---	---	e.00	e130	525	59	5.9	.60	.00	.00
23	---	---	---	---	e.00	e200	446	55	6.7	.45	.00	.00
24	---	---	---	---	e.00	e180	366	51	6.4	.34	.00	.00
25	---	---	---	---	e.00	e150	316	48	7.9	.26	.00	.00
26	---	---	---	---	e.00	e150	266	46	8.4	.27	.00	.00
27	---	---	---	---	e.00	e120	235	43	8.3	.29	.00	.00
28	---	---	---	---	e.00	e100	207	41	7.5	.25	.00	.00
29	---	---	---	---	e.00	e80	184	38	5.7	.21	.00	.00
30	---	---	---	---	---	e60	169	36	4.5	.19	.00	.00
31	---	---	---	---	---	e150	---	35	---	.15	.00	---
TOTAL	---	---	---	---	0.00	1499.50	15903	2313	488.5	39.66	0.66	0.00
MEAN	---	---	---	---	.000	48.4	530	74.6	16.3	1.28	.021	.000
MAX	---	---	---	---	.00	200	2000	152	33	4.1	.13	.00
MIN	---	---	---	---	.00	.00	50	35	4.5	.15	.00	.00
AC-FT	---	---	---	---	.00	2970	31540	4590	969	79	1.3	.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1958 - 1996, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1958	.12	1.99	1976	.000	1958
1959	.72	16.1	1976	.000	1958
1960	.24	5.08	1976	.000	1958
1961	.034	.77	1976	.000	1958
1962	.11	2.37	1976	.000	1958
1963	29.7	276	1976	.000	1959
1964	141	1300	1976	.000	1959
1965	37.0	367	1975	.000	1959
1966	5.11	44.5	1975	.000	1958
1967	1.82	22.3	1975	.000	1958
1968	.63	8.37	1969	.000	1958
1969	.026	.39	1969	.000	1958

SUMMARY STATISTICS

WATER YEARS 1958 - 1996

ANNUAL MEAN	a 20.5
HIGHEST ANNUAL MEAN	a 140
LOWEST ANNUAL MEAN	a .000
HIGHEST DAILY MEAN	5700
LOWEST DAILY MEAN	.00
ANNUAL SEVEN-DAY MINIMUM	a .00
INSTANTANEOUS PEAK FLOW	6760
INSTANTANEOUS PEAK STAGE	18.18
ANNUAL RUNOFF (AC-FT)	a 14820
10 PERCENT EXCEEDS	11
50 PERCENT EXCEEDS	.00
90 PERCENT EXCEEDS	.00

a Based on complete water years.  
e Estimated.



RED RIVER OF THE NORTH BASIN  
05123510 DEEP RIVER NEAR UPHAM, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1972-80, 1985 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
APR 18...	1000	1160	330	7.4	--	--	120	92	26	13
24...	1100	369	450	--	5.0	7.0	--	--	--	--
MAY 02...	0910	143	560	--	1.0	10.0	--	--	--	--
JUN 05...	1330	28	880	--	20.0	17.0	--	--	--	--
JUL 15...	1500	0.83	970	--	28.0	24.5	--	--	--	--

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED PER (TONS AC-FT) (70303)
APR 18...	9.5	13	0.4	12	42	13	0.10	171	213	0.29

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
APR 18...	667	1	60	<1	10	20	0.1	<1	<1	140

RED RIVER OF THE NORTH BASIN  
05123990 J. CLARK SAYLER POOL 357 NEAR WESTHOPE, ND

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LOCATION.--Lat 48°58'40", long 100°57'45", in SW<sup>1</sup>/<sub>4</sub> sec.31, T.164 N., R.79 W., Bottineau County, Hydrologic Unit 09010003, just upstream from U.S. Fish and Wildlife Service Dam 357, 1.2 mi upstream of International border, 7 mi northeast of Westhope, 10 mi downstream from Boundary Creek and at mile 154.2.

DRAINAGE AREA.--16,900 mi<sup>2</sup>, of which about 10,300 mi<sup>2</sup> is probably noncontributing.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1994 to current year.

REVISED RECORDS.--WSP 1728: Drainage area.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LILITY LAB (MG/L AS CACO3) (90410)	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)	SODIUM AD- SORP- TION RATIO (00931)
FEB											
22...	1040	0.0	0.90	3140	7.4	1000	1090	180	140	420	6
22...	1045	0.0	0.20	--	--	--	--	--	--	--	--
MAY											
22...	0800	0.0	1.0	762	7.8	230	222	47	28	71	2
22...	0805	0.0	2.0	--	--	--	--	--	--	--	--
JUN											
11...	0910	0.0	0.50	876	8.1	260	268	50	34	86	2
11...	0915	1.9	2.4	878	8.0	260	268	49	34	87	2
JUL											
30...	0955	0.0	1.0	988	8.4	280	316	49	38	110	3
30...	1000	1.5	2.5	989	8.4	280	318	48	38	110	3
30...	1005	0.0	1.7	--	--	--	--	--	--	--	--
AUG											
27...	1505	0.50	1.0	1100	8.5	300	354	47	44	130	3
27...	1510	2.3	2.8	1110	8.5	300	358	47	44	130	3
27...	1515	0.0	1.3	--	--	--	--	--	--	--	--
27...	1520	0.0	2.8	--	--	--	--	--	--	--	--

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)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	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) (00608)	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)
FEB											
22...	620	130	0.50	17	2470	--	<0.050	2.30	2.8	5.1	5.1
MAY											
22...	150	20	0.20	2	515	--	<0.050	<0.015	1.2	1.2	1.2
JUN											
11...	170	19	0.20	3	586	--	<0.050	0.020	1.3	1.3	1.3
11...	170	19	0.20	7	588	--	<0.050	0.030	1.2	1.2	1.2
JUL											
30...	190	22	0.20	2	672	0.120	0.120	0.050	1.4	1.4	1.5
30...	190	22	0.20	3	564	0.120	0.120	0.050	1.5	1.5	1.6
AUG											
27...	220	26	0.20	10	750	--	<0.050	<0.020	2.1	2.1	2.1
27...	220	27	0.20	14	740	--	<0.050	0.020	1.8	1.8	1.8

DATE	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL) (01105)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BORON, TOTAL RECOV- ERABLE (UG/L AS B) (01022)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO) (01037)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)
FEB											
22...	1.70	210	9	400	<10	710	<1	<1	1	1	1200
MAY											
22...	0.150	30	2	<100	<10	150	<1	<1	<1	2	70
JUN											
11...	0.180	--	--	--	--	--	--	--	--	--	--
11...	0.180	--	--	--	--	--	--	--	--	--	--
JUL											
30...	0.300	--	--	--	--	--	--	--	--	--	--
30...	0.280	--	--	--	--	--	--	--	--	--	--
AUG											
27...	0.320	110	4	<100	<10	130	<1	<1	<1	2	200
27...	0.270	130	5	<100	<10	130	<1	<1	<1	2	280

**RED RIVER OF THE NORTH BASIN**  
**05123990 J. CLARK SAYLER POOL 357 NEAR WESTHOPE, ND--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE		LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	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 TOTAL (MG/L AS C) (00680)	PHENOLS TOTAL (UG/L) (32730)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
FEB	22...	<1	<0.10	<1	6	<1	10	56	8	--	--
	22...	--	--	--	--	--	--	--	--	1.90	<0.100
MAY	22...	<1	<0.10	1	2	<1	<10	18	2	--	--
	22...	--	--	--	--	--	--	--	--	0.600	<0.100
JUL	30...	--	--	--	--	--	--	18	2	--	--
	30...	--	--	--	--	--	--	22	<1	--	--
	30...	--	--	--	--	--	--	--	--	2.10	<0.100
AUG	27...	<1	<0.10	<1	2	<1	<10	28	5	--	--
	27...	<1	<0.10	2	2	<1	<10	25	3	--	--
	27...	--	--	--	--	--	--	--	--	15.0	1.30

DATE		TIME	ACIFL- UORFEN WATER, FLTRD, GF 0.7U REC (UG/L) (49315)	ALA- CHLOR, WATER, DISS, REC (UG/L) (46342)	ALDI- CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (49312)	ALDI- CARB SULFONE WAT,FLT GF 0.7U REC (UG/L) (49313)	ALDICA- RB SUL- FOXIDE, WAT,FLT GF 0.7U REC (UG/L) (49314)	ALDRIN, TOTAL (UG/L) (39330)	CHLOR- AMBEN, WATER, FLTRD, GF 0.7U REC (UG/L) (49307)	ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)	TRIAZIN SCREEN (ELISA) WAT,WH REC,AS ATRAZIN (UG/L) (34757)	BEN- FLUR- ALIN WAT FLD GF, REC (UG/L) (82673)	BENTA- ZON, WATER, FLTRD, GF 0.7U REC (UG/L) (38711)
MAY	22...	0800	--	<0.002	--	--	--	--	--	<0.001	0.1	<0.002	--
JUN	11...	0910	--	--	--	--	--	--	--	--	<0.05	--	--
JUL	30...	0950	--	--	--	--	--	--	--	--	<0.05	--	--
	30...	0955	<0.035	<0.002	<0.016	<0.016	<0.021	<0.010	<0.011	<0.001	--	<0.002	<0.014
AUG	27...	1505	--	--	--	--	--	--	--	--	<0.05	--	--
	27...	1520	<0.035	<0.002	<0.016	<0.016	<0.021	<0.010	<0.011	e0.002	--	<0.002	<0.014

DATE		BRO- MACIL, WATER, DISS, REC (UG/L) (04029)	BRO- MOXYNIL WATER, FLTRD, GF 0.7U REC (UG/L) (49311)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)	CAR- BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	CARBO- FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	CARBO- FURAN SCREEN, TOTAL (UG/L) (99902)	CHLOR- DANE, TECH- NICAL TOTAL (UG/L) (39350)	CHLOR- PYRIFOS TOTAL RECOVER (UG/L) (38932)	CHLOR- PYRIFOS DIS- SOLVED REC (UG/L) (38933)	CLOPYR- ALID, WATER, FLTRD, GF 0.7U REC (UG/L) (49305)	CHLORO- THALO- NIL, WAT,FLT GF 0.7U REC (UG/L) (49306)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)
MAY	22...	--	--	<0.002	<0.003	<0.003	--	--	--	<0.004	--	--	<0.004
JUN	11...	--	--	--	--	--	<0.06	--	--	--	--	--	--
JUL	30...	--	--	--	--	--	0.09	--	--	--	--	--	--
	30...	<0.035	<0.035	<0.002	<0.003	<0.003	--	<0.100	<0.010	<0.004	<0.050	<0.035	<0.004
AUG	27...	--	--	--	--	--	<0.06	--	--	--	--	--	--
	27...	<0.035	<0.035	<0.002	<0.003	<0.003	--	<0.100	<0.010	<0.004	<0.050	<0.035	<0.004

DATE		CYANA- ZINE SCREEN, TOTAL (UG/L) (99904)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	P,P'- DDD UNFILTR RECOVER (UG/L) (39360)	DDE, TOTAL (UG/L) (39365)	P,P'- DDE DISSOLV (UG/L) (34653)	P,P'- DDT UNFILTR RECOVER (UG/L) (39370)	DEF TOTAL (UG/L) (39040)	DACTHAL MONO- ACID, WAT,FLT GF 0.7U REC (UG/L) (49304)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	DI- AZINON, DIS- SOLVED TOTAL (UG/L) (39570)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	DICAMBA WATER, FLTRD, GF 0.7U REC (UG/L) (38442)
MAY	22...	<0.04	<0.002	--	--	<0.006	--	--	--	<0.002	--	<0.002	--
JUN	11...	<0.04	--	--	--	--	--	--	--	--	--	--	--
JUL	30...	<0.04	--	--	--	--	--	--	--	--	--	--	--
	30...	--	<0.002	<0.010	<0.010	<0.006	<0.010	<0.010	<0.017	<0.002	<0.010	<0.002	<0.035
AUG	27...	<0.04	--	--	--	--	--	--	--	--	--	--	--
	27...	--	<0.002	<0.010	<0.010	<0.006	<0.010	<0.010	<0.017	<0.002	<0.010	<0.002	<0.035

RED RIVER OF THE NORTH BASIN  
05123990 J. CLARK SAYLER POOL 357 NEAR WESTHOPE, ND--Continued

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WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	DICHLOR- BENIL, WATER, FLTRD, GF 0.7U REC (UG/L) (49303)	DICHLOR PROP, WATER, FLTRD, GF 0.7U REC (UG/L) (49302)	DI- ELDRIN DIS- SOLVED (UG/L) (39380)	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	2,6-DI- ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	DINOSEB WATER, FLTRD, GF 0.7U REC (UG/L) (49301)	DISUL- FOTON WATER, FLTRD 0.7 U GF, REC (UG/L) (82677)	DISUL- FOTON UNFILT RECOVER (UG/L) (39011)	DIURON, WATER, FLTRD, GF 0.7U REC (UG/L) (49300)	EPTC WATER, FLTRD 0.7 U GF, REC (UG/L) (82668)	ENDO- SULFAN, I TOTAL (UG/L) (39388)	ENDRIN WATER UNFLTRD REC (UG/L) (39390)
MAY 22...	--	--	--	<0.001	<0.003	--	<0.017	--	--	0.007	--	--
JUL 30...	<0.020	<0.032	<0.010	<0.001	<0.003	<0.035	<0.017	--	<0.020	<0.002	<0.010	<0.010
AUG 27...	<0.020	<0.032	<0.010	<0.001	<0.003	<0.035	<0.017	<0.010	<0.020	<0.002	<0.010	<0.010

DATE	ESFEN- VAL- ERATE, WAT,FLT GF 0.7U REC (UG/L) (49298)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	ETHION, TOTAL (UG/L) (39398)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	FEN- URON, WATER, FLTRD, GF 0.7U REC (UG/L) (49297)	FLUO- METURON WATER, FLTRD, GF 0.7U REC (UG/L) (38811)	FONOFOS (DY- FONATE) WATER WHOLE TOT.REC (UG/L) (82614)	FONOFOS WATER DISS REC (UG/L) (04095)	HEPTA- CHLOR, EPOXIDE TOTAL (UG/L) (39410)	HEPTA- CHLOR, EPOXIDE TOTAL (UG/L) (39420)	LINDANE TOTAL (UG/L) (39340)
MAY 22...	--	<0.004	--	<0.003	--	--	--	<0.003	--	--	--
JUL 30...	<0.019	<0.004	<0.010	<0.003	<0.013	<0.035	<0.010	<0.003	<0.010	<0.010	<0.010
AUG 27...	<0.019	<0.004	<0.010	<0.003	<0.013	<0.035	<0.010	<0.003	<0.010	<0.010	<0.010

DATE	LINDANE DIS- SOLVED (UG/L) (39341)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	MCPA, WATER, FLTRD, GF 0.7U REC (UG/L) (38482)	MCPB, WATER, FLTRD, GF 0.7U REC (UG/L) (38487)	MALA- THION, DIS- SOLVED (UG/L) (39530)	MALA- THION, DIS- SOLVED (UG/L) (39532)	METHIO- CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (38501)	METH- OMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49296)	METH- OXY- CHLOR, TOTAL (UG/L) (39480)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	METHYL PARA- THION, TOTAL (UG/L) (39600)
MAY 22...	<0.004	<0.002	--	--	--	<0.005	--	--	--	<0.001	--
JUL 30...	<0.004	<0.002	<0.050	<0.035	<0.010	<0.005	<0.026	<0.017	<0.010	<0.001	<0.010
AUG 27...	<0.004	<0.002	<0.050	<0.035	<0.010	<0.005	<0.026	<0.017	<0.010	<0.001	<0.010

DATE	METHYL PARA- THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	METRI- BUZIN SENCOR WATER DISSOLV (UG/L) (82630)	MIREX, TOTAL (UG/L) (39755)	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	NEB- URON, WATER, FLTRD, GF 0.7U REC (UG/L) (49294)	NORFLUR AZON, WATER, FLTRD, GF 0.7U REC (UG/L) (49293)	DNOC WAT,FLT GF 0.7U REC (UG/L) (49299)	ORY- ZALIN, WATER, FLTRD, GF 0.7U REC (UG/L) (49292)	PCB, TOTAL (UG/L) (39516)
MAY 22...	<0.006	<0.002	<0.004	--	<0.004	<0.003	--	--	--	--	--
JUL 30...	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.015	<0.024	<0.035	<0.019	<0.100
AUG 27...	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.015	<0.024	<0.035	<0.019	<0.100

DATE	PCNS UNFILT RECOVER (UG/L) (39250)	PARA- THION, TOTAL (UG/L) (39540)	PARA- THION, SOLVED (UG/L) (39542)	PEB- ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	PER- THANE TOTAL (UG/L) (39034)	PHORATE TOTAL (UG/L) (39023)	PHORATE FLTRD 0.7 U GF, REC (UG/L) (82664)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)
MAY 22...	--	--	<0.004	<0.004	<0.004	<0.005	--	--	<0.002	e0.005	<0.003
JUL 30...	<0.100	<0.010	<0.004	<0.004	<0.004	<0.005	<0.100	<0.010	<0.002	<0.018	<0.003
AUG 27...	<0.100	<0.010	<0.004	<0.004	<0.004	<0.005	<0.100	<0.010	<0.002	e0.011	<0.003

**RED RIVER OF THE NORTH BASIN**  
**05123990 J. CLARK SAYLER POOL 357 NEAR WESTHOPE, ND--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	PROP- CHLOR, WATER, DISS, REC (UG/L) (04024)	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	PRO- PHAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49236)	PRO- POXUR, WATER, FLTRD, GF 0.7U REC (UG/L) (38538)	SILVEX, DIS- SOLVED REC (UG/L) (39762)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)
MAY 22...	<0.007	<0.004	<0.013	--	--	--	<0.005	<0.010	<0.007	<0.013	<0.002
JUL 30...	<0.007	<0.004	<0.013	<0.035	<0.035	<0.021	<0.005	<0.010	<0.007	<0.013	<0.002
AUG 27...	<0.007	<0.004	<0.013	<0.035	<0.035	<0.021	<0.005	<0.010	e0.018	<0.013	<0.002

DATE	TOX- APHENE, TOTAL (UG/L) (39400)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRI- CLOPYR, WATER, FLTRD, GF 0.7U REC (UG/L) (49235)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	TOTAL TRI- THION (UG/L) (39786)	1-NAPH THOL, WATER, FLTRD, GF 0.7U REC (UG/L) (49295)	2,4-D, DIS- SOLVED TOTAL (UG/L) (39732)	2,4-D SCREEN, TOTAL (UG/L) (99906)	2,4-DB WATER, FLTRD, GF 0.7U REC (UG/L) (38746)	2,4,5-T DIS- SOLVED (UG/L) (39742)	3HYDRXY CARBO- FURAN WAT,FLT GF 0.7U REC (UG/L) (49308)
MAY 22...	--	0.011	--	<0.002	--	--	--	<0.700	--	--	--
JUN 11...	--	--	--	--	--	--	--	<0.700	--	--	--
JUL 30...	--	--	--	--	--	--	--	<0.700	--	--	--
30...	<1.00	<0.001	<0.050	<0.002	<0.010	<0.007	<0.035	--	<0.035	<0.035	<0.014
AUG 27...	--	--	--	--	--	--	--	<0.700	--	--	--
27...	<1.00	<0.001	<0.050	<0.002	<0.010	<0.007	<0.035	--	<0.035	<0.035	<0.014

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
FEB 22...	1035	2.9	0.0	3080	7.1	0.5	1
22...	1036	--	0.90	3080	7.1	0.0	0.6
MAY 22...	0752	6.6	0.0	784	7.7	14.0	9.0
22...	0753	--	0.90	782	7.8	14.5	8.8
22...	0754	--	2.0	781	7.8	14.5	8.5
JUN 11...	0850	7.9	0.0	883	8.0	22.5	7.7
11...	0851	--	0.50	883	8.1	22.5	7.7
11...	0852	--	1.0	883	8.1	22.5	7.7
11...	0853	--	1.5	884	8.1	22.5	7.6
11...	0854	--	2.0	884	8.1	22.5	7.6
11...	0855	--	2.4	884	8.1	22.5	7.6
JUL 30...	0945	8.2	0.0	983	8.3	21.0	6.6
30...	0948	--	1.0	983	8.3	21.0	6.7
30...	0949	--	2.0	983	8.4	21.0	6.3
30...	0950	--	2.5	983	8.4	21.0	6.1
AUG 27...	1455	9.2	0.0	1110	8.7	21.0	8.1
27...	1456	--	0.50	1110	8.7	21.0	7.6
27...	1457	--	1.1	1140	8.7	20.5	6.6
27...	1458	--	2.0	1150	8.7	20.5	6.5
27...	1459	--	2.8	1150	8.7	20.5	6.3

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	ICE THICK- NESS (FEET) (82130)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
FEB 22...	7	704	2.00	4.00	2.0	150	20
MAY 22...	93	715	--	72.0	9.0	--	<5.0
JUN 11...	96	714	--	42.0	22.0	180	<5.0
JUL 30...	79	722	--	34.0	18.0	50	<5.0
AUG 27...	98	713	--	25.0	--	150	10

e - Estimated.



RED RIVER OF THE NORTH BASIN  
05124000 SOURIS (MOUSE) RIVER NEAR WESTHOPE, ND  
(International gaging station)

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LOCATION.--Lat 48°59'47", long 100°57'29", in SW<sup>1</sup>/<sub>4</sub> SE<sup>1</sup>/<sub>4</sub> sec.30, T.164 N., R.79 W., Bottineau County, Hydrologic Unit 09010003, on left bank 1,200 ft upstream from second crossing of international boundary, 1 mi downstream from Fish and Wildlife Service Dam 357, 7 mi northeast of Westhope, 11 mi downstream from Boundary Creek, and at mile 154.5.

DRAINAGE AREA.--16,900 mi<sup>2</sup>, approximately, of which about 10,300 mi<sup>2</sup> is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July to October 1929, April 1930 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1338: 1932. WSP 2113: Drainage area.

GAGE.--Water-stage recorder and control. Datum of gage is 1,402.45 ft above sea level. Prior to Mar. 28, 1938, nonrecording gage at site 6.3 mi upstream at datum 2.52 ft higher.

REMARKS.--Records good except for periods of estimated discharges, which are fair.. Flow regulated by dams on Souris River and tributaries, combined capacity, about 321,000 acre-ft. Diversion at Eaton Dam for irrigation of about 7,600 acres and other small diversions for irrigation and municipal supply upstream from station.

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	104	103	71	25	20	20	e580	e3600	1320	274	e360	103
2	105	101	71	25	20	20	e600	e3300	1270	284	e350	e103
3	105	104	71	24	20	20	e620	3180	1190	310	e350	e90
4	104	104	71	24	20	20	e640	3090	e1100	316	e350	e62
5	104	104	76	24	20	19	e680	2980	e1050	321	e350	e60
6	104	70	73	24	21	19	e720	2870	e1000	325	e350	57
7	104	26	62	24	22	19	e760	2780	896	327	e350	55
8	104	85	61	24	23	20	e800	2740	845	305	e350	56
9	104	88	61	24	23	20	e850	2640	812	249	e320	56
10	103	89	61	24	23	21	917	2600	788	237	e300	55
11	102	88	61	24	23	28	1080	2550	742	234	e300	50
12	102	88	62	24	23	49	1190	2510	726	229	e300	39
13	105	88	58	24	22	66	1380	2460	687	227	e280	38
14	106	88	65	24	22	104	1690	2410	649	224	e250	39
15	106	88	64	24	21	101	2090	2380	556	224	247	39
16	106	90	64	24	21	108	2370	2310	500	224	222	39
17	105	91	64	24	21	114	2830	2280	470	226	211	39
18	104	90	49	23	21	112	3470	2210	545	224	203	39
19	104	91	26	22	21	147	4250	2160	420	234	199	39
20	104	91	25	21	21	247	4800	2100	e360	292	183	38
21	104	88	25	21	21	255	5130	2040	e300	302	144	39
22	104	90	25	20	21	300	5090	1970	e280	303	122	39
23	104	89	25	20	21	388	5240	1900	e260	308	114	38
24	104	90	25	20	20	421	5040	1830	e250	324	e110	34
25	104	90	25	20	20	453	e5000	1780	e250	330	e110	34
26	104	91	25	20	20	461	e4900	1730	e250	347	e110	33
27	104	86	25	20	20	479	e4800	1690	257	357	e108	32
28	104	72	25	20	20	507	e4700	1630	255	e360	106	e32
29	104	71	25	20	20	e520	e4600	1540	259	e360	104	e33
30	104	71	25	20	---	e540	e4000	1490	270	e360	104	e33
31	104	---	25	20	---	e560	---	1450	---	e360	103	---
TOTAL	3229	2605	1491	697	611	6158	80817	72200	18557	8997	7060	1443
MEAN	104	86.8	48.1	22.5	21.1	199	2694	2329	619	290	228	48.1
MAX	106	104	76	25	23	560	5240	3600	1320	360	360	103
MIN	102	26	25	20	20	19	580	1450	250	224	103	32
AC-FT	6400	5170	2960	1380	1210	12210	160300	143200	36810	17850	14000	2860

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 1996, BY WATER YEAR (WY)

	MEAN	62.8	52.6	29.7	24.4	25.2	70.3	786	923	529	257	114	63.9
MAX	473	387	201	191	190	779	8850	5967	4216	1682	1014	402	
(WY)	1976	1995	1976	1976	1976	1983	1976	1976	1975	1975	1953	1983	
MIN	.000	.000	.000	.000	.000	.000	.010	.000	.000	.000	.000	.000	
(WY)	1933	1935	1935	1935	1935	1936	1941	1937	1937	1937	1931	1931	

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR	FOR 1996 WATER YEAR	WATER YEARS 1929 - 1996
ANNUAL TOTAL	198488	203865	
ANNUAL MEAN	544	557	247
HIGHEST ANNUAL MEAN			1697
LOWEST ANNUAL MEAN			.15
HIGHEST DAILY MEAN	3770	5240	12400
LOWEST DAILY MEAN	25	19	.00
ANNUAL SEVEN-DAY MINIMUM	25	20	.00
INSTANTANEOUS PEAK FLOW		5510	12600
INSTANTANEOUS PEAK STAGE		15.81	19.16
INSTANTANEOUS LOW FLOW			a -35
ANNUAL RUNOFF (AC-FT)	393700	404400	179000
10 PERCENT EXCEEDS	1850	2050	551
50 PERCENT EXCEEDS	175	104	25
90 PERCENT EXCEEDS	60	21	.00

a Reverse flow caused by backwater from downstream tributary inflow.  
e Estimated.

RED RIVER OF THE NORTH BASIN  
05124000 SOURIS RIVER NEAR WESTHOPE, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1970, 1972 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: June 1992 to current year.

PH: June 1992 to current year.

WATER TEMPERATURE: June 1992 to current year.

DISSOLVED OXYGEN: May 1993 to current year.

INSTRUMENTATION.--Water-quality monitor since June 1992.

REMARKS.--Missing record is due to instrument malfunction.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 1,910 microsiemens, Dec. 31, 1995; minimum recorded, 644 microsiemens, April 20, 1994.

PH: Maximum recorded, 10.1 units, July 12, 1993; minimum recorded, 7.5 units, Sept. 12 and 13, 1994.

WATER TEMPERATURE: Maximum recorded, 27.9°C, July 12, 1995; minimum recorded, -0.4°C, Dec. 20, 1995.

DISSOLVED OXYGEN: Maximum recorded, 15.7 mg/L, July 5, 1995; minimum recorded, 2.4 mg/L, Aug. 8 and 9, 1995.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, (PER- CENT SATUR- ATION) (00301)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)
NOV 07...	0900	5.8	1440	8.2	--	--	1.0	7.8	--	--	--
JAN 03...	1030	26	2000	--	--	-10.0	0.0	--	--	--	--
JUL 17...	1320	229	930	8.9	--	--	25.0	10.7	--	--	--
AUG 14...	1030	247	1060	8.7	--	--	20.0	8.0	--	--	--
27...	1500	118	1130	8.9	721	30.0	21.0	11.0	131	280	43

DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)	ALKA- LINEITY 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)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)
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AUG 27...	41	120	3	353	220	26	0.20	15	734	<0.050	<0.015
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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)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BORON, TOTAL RECOV- ERABLE (UG/L AS B) (01022)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO) (01037)
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AUG 27...	2.0	2.0	2.0	0.290	4	<100	<10	130	<1	<1	<1
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DATE	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)	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 TOTAL (MG/L AS C) (00680)	PHENOLS TOTAL (UG/L) (32730)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
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AUG 27...	<1	280	<1	<1	2	<1	<10	28	2	6.20	0.700
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DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	12.9	11.9	12.5	2.8	.5	2.2	.9	.6	.8	---	---	---
2	12.8	11.8	12.3	.9	.5	.7	1.1	.5	.8	---	---	---
3	13.0	10.9	11.8	.5	.3	.5	1.0	.6	.9	---	---	---
4	12.7	10.8	11.6	.5	.2	.3	1.0	.3	.7	---	---	---
5	11.3	10.3	10.9	.5	.2	.3	.3	.0	.1	---	---	---
6	11.6	10.1	10.8	1.1	.2	.6	.0	-.1	.0	---	---	---
7	11.4	9.5	10.5	1.2	-.1	.6	.2	-.2	.0	---	---	---
8	11.1	10.0	10.5	.5	.0	.3	.0	-.1	.0	---	---	---
9	11.0	9.3	10.1	.4	.2	.3	.0	-.1	.0	---	---	---
10	10.8	8.9	9.9	.4	.3	.3	.0	.0	.0	---	---	---
11	11.5	9.8	10.6	.4	.2	.3	.0	-.1	.0	---	---	---
12	12.0	10.5	11.3	.7	.3	.5	.0	-.1	-.1	---	---	---
13	11.5	8.5	10.1	.9	.5	.6	.2	-.2	-.1	---	---	---
14	8.8	7.5	8.2	1.0	.6	.7	.3	-.3	-.1	---	---	---
15	8.7	7.4	8.1	1.2	.8	1.0	.2	-.3	-.2	---	---	---
16	9.3	7.4	8.3	1.2	.9	1.0	-.2	-.2	-.2	---	---	---
17	8.7	7.8	8.3	1.5	1.1	1.3	-.1	-.2	-.2	---	---	---
18	7.8	7.0	7.3	1.4	1.2	1.3	.2	-.3	-.2	---	---	---
19	7.1	6.2	6.7	1.7	1.3	1.5	-.2	-.3	-.3	---	---	---
20	6.3	5.4	5.8	1.5	1.1	1.3	-.3	-.4	-.3	---	---	---
21	6.1	4.9	5.5	1.4	1.0	1.3	-.2	-.4	-.3	---	---	---
22	5.6	4.9	5.3	1.1	.7	.9	-.3	-.4	-.3	---	---	---
23	5.4	4.3	4.8	1.2	1.0	1.1	-.3	-.4	-.4	---	---	---
24	5.2	4.3	4.8	1.1	.9	1.0	-.3	-.4	-.3	---	---	---
25	5.3	4.3	4.8	1.2	.9	1.1	-.3	-.4	-.3	---	---	---
26	4.7	4.1	4.5	.9	.6	.8	-.3	-.4	-.3	---	---	---
27	4.9	4.5	4.7	1.1	.7	.9	-.3	-.4	-.4	---	---	---
28	4.7	4.1	4.4	1.2	1.0	1.1	-.3	-.4	-.4	---	---	---
29	4.1	3.5	3.8	1.1	.8	1.0	-.4	-.4	-.4	---	---	---
30	3.7	3.2	3.4	1.0	.7	.9	-.4	-.4	-.4	---	---	---
31	3.2	2.8	3.0	---	---	---	-.4	-.4	-.4	---	---	---
MONTH	13.0	2.8	7.9	2.8	-.1	.9	1.1	-.4	-.1	---	---	---

DAY	MAX	MIN	MEAN		MAX	MIN	MEAN		MAX	MIN	MEAN		MAX	MIN	MEAN
	FEBRUARY				MARCH				APRIL				MAY		
1	---	---	---		---	---	---		---	---	---		---	---	---
2	---	---	---		---	---	---		---	---	---		---	---	---
3	---	---	---		---	---	---		---	---	---		---	---	---
4	---	---	---		---	---	---		---	---	---		---	---	---
5	---	---	---		---	---	---		---	---	---		---	---	---
6	---	---	---		---	---	---		---	---	---		---	---	---
7	---	---	---		---	---	---		---	---	---		---	---	---
8	---	---	---		---	---	---		---	---	---		---	---	---
9	---	---	---		---	---	---		---	---	---		---	---	---
10	---	---	---		---	---	---		---	---	---		---	---	---
11	---	---	---		---	---	---		---	---	---		---	---	---
12	---	---	---		---	---	---		---	---	---		---	---	---
13	---	---	---		---	---	---		---	---	---		---	---	---
14	---	---	---		---	---	---		---	---	---		---	---	---
15	---	---	---		---	---	---		---	---	---		---	---	---
16	---	---	---		---	---	---		---	---	---		---	---	---
17	---	---	---		---	---	---		---	---	---		---	---	---
18	---	---	---		---	---	---		---	---	---		---	---	---
19	---	---	---		---	---	---		---	---	---		---	---	---
20	---	---	---		---	---	---		---	---	---		---	---	---
21	---	---	---		---	---	---		---	---	---		---	---	---
22	---	---	---		---	---	---		---	---	---		---	---	---
23	---	---	---		---	---	---		---	---	---		---	---	---
24	---	---	---		---	---	---		---	---	---		---	---	---
25	---	---	---		---	---	---		---	---	---		---	---	---
26	---	---	---		---	---	---		---	---	---		---	---	---
27	---	---	---		---	---	---		---	---	---		---	---	---
28	---	---	---		---	---	---		---	---	---		---	---	---
29	---	---	---		---	---	---		---	---	---		---	---	---
30	---	---	---		---	---	---		---	---	---		---	---	---
31	---	---	---		---	---	---		---	---	---		---	---	---
MONTH	---	---	---		---	---	---		---	---	---		---	---	---

**RED RIVER OF THE NORTH BASIN**  
**05124000 SOURIS RIVER NEAR WESTHOPE, ND--Continued**

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	24.4	21.9	23.2	---	---	---	23.3	21.8	22.5
2	---	---	---	25.8	22.9	24.3	---	---	---	---	---	---
3	---	---	---	24.9	22.9	23.9	---	---	---	---	---	---
4	---	---	---	24.5	22.9	23.8	---	---	---	---	---	---
5	---	---	---	24.8	23.3	23.9	---	---	---	---	---	---
6	---	---	---	24.7	22.9	23.8	---	---	---	20.2	17.6	18.7
7	---	---	---	23.9	21.3	22.6	---	---	---	19.9	16.5	18.1
8	---	---	---	21.3	19.8	20.3	---	---	---	22.2	16.7	18.9
9	---	---	---	21.9	19.0	20.4	---	---	---	22.4	16.7	19.1
10	---	---	---	21.7	20.1	20.6	---	---	---	19.9	16.8	18.1
11	---	---	---	20.2	19.1	19.6	---	---	---	18.0	15.8	16.6
12	---	---	---	20.4	18.7	19.4	---	---	---	16.4	14.1	15.3
13	---	---	---	21.2	18.9	20.0	---	---	---	16.9	13.3	14.9
14	---	---	---	22.1	20.3	21.2	---	---	---	16.0	12.1	14.1
15	---	---	---	23.7	21.1	22.4	---	---	---	16.3	11.8	13.9
16	---	---	---	25.5	22.8	24.1	23.5	21.1	22.2	17.0	12.1	14.3
17	---	---	---	25.7	23.7	24.7	24.0	21.7	22.7	15.6	12.7	14.4
18	---	---	---	25.8	23.8	24.7	23.1	22.1	22.4	16.6	13.3	14.8
19	---	---	---	25.6	24.0	24.7	22.1	21.0	21.5	15.0	13.3	14.2
20	---	---	---	---	---	---	21.7	19.8	20.8	14.0	13.1	13.6
21	---	---	---	---	---	---	21.2	20.2	20.7	15.4	12.5	13.5
22	---	---	---	---	---	---	21.9	19.0	20.4	16.6	11.0	13.3
23	---	---	---	---	---	---	21.8	18.8	20.6	15.8	8.3	12.5
24	---	---	---	---	---	---	---	---	---	14.5	6.4	10.0
25	---	---	---	---	---	---	---	---	---	15.6	5.7	9.8
26	---	---	---	---	---	---	---	---	---	12.7	5.6	8.6
27	22.7	17.7	20.2	---	---	---	---	---	---	16.3	5.5	10.5
28	23.7	22.0	22.9	---	---	---	---	---	---	---	---	---
29	24.2	23.0	23.5	---	---	---	23.7	20.5	22.1	---	---	---
30	24.0	21.6	22.8	---	---	---	24.8	21.9	23.2	---	---	---
31	---	---	---	---	---	---	24.5	22.6	23.5	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	1250	1240	1250	1290	1270	1280	1630	1570	1610	---	---	---
2	1250	1230	1240	1320	1270	1290	1620	1580	1610	---	---	---
3	1240	1220	1230	1350	1320	1330	1630	1530	1610	---	---	---
4	1250	1220	1230	1370	1340	1360	1640	1520	1610	---	---	---
5	1250	1240	1240	1380	1350	1360	1670	1640	1660	---	---	---
6	1260	1240	1250	1400	1340	1370	1680	1650	1670	---	---	---
7	1260	1240	1250	1460	1390	1430	1760	1660	1700	---	---	---
8	1260	1240	1250	1420	1390	1400	1710	1690	1700	---	---	---
9	1260	1240	1250	1420	1410	1410	1730	1700	1720	---	---	---
10	1260	1240	1250	1460	1420	1430	1740	1710	1730	---	---	---
11	1260	1250	1250	1460	1420	1440	1750	740	1540	---	---	---
12	1260	1250	1260	1480	1430	1450	1770	1750	1760	---	---	---
13	1260	1250	1260	1480	1460	1470	1810	1760	1780	---	---	---
14	1270	1260	1260	1500	1460	1480	1850	1770	1800	---	---	---
15	1270	1260	1260	1520	1440	1490	1850	1760	1810	---	---	---
16	1280	1260	1270	1510	1480	1500	1820	1740	1810	---	---	---
17	1280	1250	1260	1520	1490	1510	1820	1760	1800	---	---	---
18	1280	1270	1280	1520	1490	1510	1830	1710	1810	---	---	---
19	1280	1260	1270	1540	1460	1520	1840	1640	1790	---	---	---
20	1290	1270	1280	1540	1490	1510	1860	1710	1800	---	---	---
21	1300	1270	1280	1540	1480	1520	1860	1570	1760	---	---	---
22	1290	1240	1270	1570	1510	1540	1850	1460	1780	---	---	---
23	1300	1270	1280	1520	1480	1510	1850	1540	1780	---	---	---
24	1290	1270	1290	1540	1470	1510	1850	1640	1790	---	---	---
25	1300	1270	1290	1590	1510	1550	1860	1680	1820	---	---	---
26	1290	1270	1280	1600	1430	1570	1860	1620	1820	---	---	---
27	1290	1270	1280	1620	1530	1590	1860	1710	1830	---	---	---
28	1280	1260	1270	1630	1560	1590	1870	1710	1840	---	---	---
29	1290	1270	1280	1600	1500	1570	1880	1750	1840	---	---	---
30	1290	1260	1280	1640	1520	1600	1900	1660	1860	---	---	---
31	1290	1280	1290	---	---	---	1910	1630	1860	---	---	---
MONTH	1300	1220	1260	1640	1270	1470	1910	740	1750	---	---	---

DAY	MAX	MIN	MEAN		MAX	MIN	MEAN		MAX	MIN	MEAN		MAX	MIN	MEAN
	FEBRUARY				MARCH				APRIL				MAY		
1	---	---	---		---	---	---		---	---	---		---	---	---
2	---	---	---		---	---	---		---	---	---		---	---	---
3	---	---	---		---	---	---		---	---	---		---	---	---
4	---	---	---		---	---	---		---	---	---		---	---	---
5	---	---	---		---	---	---		---	---	---		---	---	---
6	---	---	---		---	---	---		---	---	---		---	---	---
7	---	---	---		---	---	---		---	---	---		---	---	---
8	---	---	---		---	---	---		---	---	---		---	---	---
9	---	---	---		---	---	---		---	---	---		---	---	---
10	---	---	---		---	---	---		---	---	---		---	---	---
11	---	---	---		---	---	---		---	---	---		---	---	---
12	---	---	---		---	---	---		---	---	---		---	---	---
13	---	---	---		---	---	---		---	---	---		---	---	---
14	---	---	---		---	---	---		---	---	---		---	---	---
15	---	---	---		---	---	---		---	---	---		---	---	---
16	---	---	---		---	---	---		---	---	---		---	---	---
17	---	---	---		---	---	---		---	---	---		---	---	---
18	---	---	---		---	---	---		---	---	---		---	---	---
19	---	---	---		---	---	---		---	---	---		---	---	---
20	---	---	---		---	---	---		---	---	---		---	---	---
21	---	---	---		---	---	---		---	---	---		---	---	---
22	---	---	---		---	---	---		---	---	---		---	---	---
23	---	---	---		---	---	---		---	---	---		---	---	---
24	---	---	---		---	---	---		---	---	---		---	---	---
25	---	---	---		---	---	---		---	---	---		---	---	---
26	---	---	---		---	---	---		---	---	---		---	---	---
27	---	---	---		---	---	---		---	---	---		---	---	---
28	---	---	---		---	---	---		---	---	---		---	---	---
29	---	---	---		---	---	---		---	---	---		---	---	---
30	---	---	---		---	---	---		---	---	---		---	---	---
31	---	---	---		---	---	---		---	---	---		---	---	---
MONTH	---	---	---		---	---	---		---	---	---		---	---	---

[illegible]



[illegible][illegible]

## 191

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DAY	MAX	MIN	MEAN		MAX	MIN	MEAN		MAX	MIN	MEAN		MAX	MIN	MEAN
	FEBRUARY				MARCH				APRIL				MAY		
1	---	---	---		---	---	---		---	---	---		---	---	---
2	---	---	---		---	---	---		---	---	---		---	---	---
3	---	---	---		---	---	---		---	---	---		---	---	---
4	---	---	---		---	---	---		---	---	---		---	---	---
5	---	---	---		---	---	---		---	---	---		---	---	---
6	---	---	---		---	---	---		---	---	---		---	---	---
7	---	---	---		---	---	---		---	---	---		---	---	---
8	---	---	---		---	---	---		---	---	---		---	---	---
9	---	---	---		---	---	---		---	---	---		---	---	---
10	---	---	---		---	---	---		---	---	---		---	---	---
11	---	---	---		---	---	---		---	---	---		---	---	---
12	---	---	---		---	---	---		---	---	---		---	---	---
13	---	---	---		---	---	---		---	---	---		---	---	---
14	---	---	---		---	---	---		---	---	---		---	---	---
15	---	---	---		---	---	---		---	---	---		---	---	---
16	---	---	---		---	---	---		---	---	---		---	---	---
17	---	---	---		---	---	---		---	---	---		---	---	---
18	---	---	---		---	---	---		---	---	---		---	---	---
19	---	---	---		---	---	---		---	---	---		---	---	---
20	---	---	---		---	---	---		---	---	---		---	---	---
21	---	---	---		---	---	---		---	---	---		---	---	---
22	---	---	---		---	---	---		---	---	---		---	---	---
23	---	---	---		---	---	---		---	---	---		---	---	---
24	---	---	---		---	---	---		---	---	---		---	---	---
25	---	---	---		---	---	---		---	---	---		---	---	---
26	---	---	---		---	---	---		---	---	---		---	---	---
27	---	---	---		---	---	---		---	---	---		---	---	---
28	---	---	---		---	---	---		---	---	---		---	---	---
29	---	---	---		---	---	---		---	---	---		---	---	---
30	---	---	---		---	---	---		---	---	---		---	---	---
31	---	---	---		---	---	---		---	---	---		---	---	---
MONTH	---	---	---		---	---	---		---	---	---		---	---	---

[illegible]

MISSOURI RIVER MAIN STEM  
06185500 MISSOURI RIVER NEAR CULBERTSON, MT

193

LOCATION.--Lat 48°07'30", long 104°28'20", in SE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub> sec.3, T.27 N., R.56 E., Richland County, Hydrologic Unit 10060005, on right bank at upstream side of bridge on State Highway 16, 2.5 mi southeast of Culbertson, 10 mi downstream from Big Muddy Creek, and at river mile 1,620.76.

DRAINAGE AREA.--91,557 mi<sup>2</sup>.

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 above sea level (U.S. Army Corps of Engineers bench mark). July 1 to Nov. 6, 1941, water-stage recorder at site 400 ft upstream at datum 0.11 ft higher. Nov. 7, 1941, to Aug. 17, 1950, water-stage recorder at site 580 ft downstream at present datum. Aug. 18, 1950, to Dec. 31, 1951, nonrecording gage on bridge at present datum. Apr. 1, 1958, to Nov. 1, 1967, water-stage recorder at site 580 ft downstream at present datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow partly regulated by Fort Peck Lake (station number 06131500) and many other reservoirs upstream from station. Diversions for irrigation of about 1,030,400 acres upstream from station. U.S. Army Corps of Engineers satellite telemeter at stations. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13300	13200	12500	e12300	e14000	e17300	e14900	16800	16100	17100	16600	14800
2	13300	13400	11800	e13000	e14000	e15500	e16200	16700	16400	17300	16600	14700
3	13400	13500	10700	e13000	e14000	e14100	e15800	16900	16500	17300	16500	14300
4	13500	13600	10500	e13500	e14200	e14200	e15600	16900	16600	17300	15300	14000
5	13500	13700	10400	e13700	e13800	e13900	e15400	16800	16600	17100	14800	14000
6	13600	13500	10300	e13200	e14000	e13900	e14500	16700	16800	17100	14700	13700
7	13600	13600	e9900	e13700	e14000	e13300	e13400	16400	16900	17000	14700	13100
8	13500	13700	e10100	e14100	e14000	e12800	e11900	16000	16800	17000	14700	12900
9	13600	13600	e10100	e14200	e14000	e11800	e11100	16000	16900	17100	14500	12900
10	13700	13600	e10400	e14000	e14400	e10700	14500	15800	16900	16900	14600	12800
11	13800	13700	e10600	e14200	e14500	e10300	16300	14100	16800	17000	14900	12600
12	13700	13200	e10600	e14300	e15400	e9800	17000	15400	16700	17200	15000	12800
13	13700	13400	e10600	e14000	e16200	e9900	15800	16200	16500	17200	14900	12900
14	13700	13600	e10700	e13900	e15500	e9800	14800	16100	16300	17300	15000	13100
15	13800	13500	e10700	e13900	e15400	e11500	14500	16100	16200	17100	15000	13200
16	13600	11400	e10400	e14200	e13400	e13700	14200	16100	16200	16800	15100	13200
17	13600	10500	e10400	e14100	e13200	e15700	13800	16000	16300	16800	15000	13300
18	13800	11900	e10400	e14100	e13300	e15800	13700	16000	16200	16800	15000	13700
19	13700	12000	e10400	e14000	e13600	e15200	13700	16000	15900	16600	15000	14400
20	13700	11800	e10500	e12200	e14100	e14500	13600	15800	15500	16700	15000	14600
21	13900	11900	e10200	e12800	e15800	e15200	13700	15200	16000	16600	15000	14400
22	13800	11900	e9400	e13600	e16400	e14200	14100	15500	16100	16400	15200	14900
23	13900	12500	e10500	e14200	e16900	e13600	14800	15700	16400	16200	15100	15300
24	13700	13300	e10700	e14400	e15500	e13900	15600	15700	16400	16200	14900	15700
25	13500	13400	e11800	e13800	e15800	e13600	16200	15700	16300	16400	14600	15000
26	13700	13500	e11600	e13800	e16300	e14400	17400	15100	16200	16400	14700	14200
27	13800	13600	e12000	e14000	e16100	e15100	17000	15400	16700	16400	14700	12900
28	13900	13700	e11900	e14000	e16700	e15100	16100	15400	16800	16400	14700	12200
29	13600	13700	e12200	e14000	e16900	e15700	16400	15400	17000	16400	14700	13000
30	13500	13300	e12400	e14000	---	e15500	16800	15500	17100	16300	14800	13700
31	13500	---	e12300	e14000	---	e15000	---	15500	---	16500	14800	---
TOTAL	422900	391200	337000	426200	431400	425000	448800	492900	494100	520900	466100	412300
MEAN	13640	13040	10870	13750	14880	13710	14960	15900	16470	16800	15040	13740
MAX	13900	13700	12500	14400	16900	17300	17400	16900	17100	17300	16600	15700
MIN	13300	10500	9400	12200	13200	9800	11100	14100	15500	16200	14500	12200
AC-FT	838800	775900	668400	845400	855700	843000	890200	977700	980000	1033000	924500	817800

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 1996, BY WATER YEAR (WY)\*

MEAN	10790	9170	9096	9859	10530	10540	10810	9660	9659	10310	11480	11310
MAX	28570	22440	13280	14400	17450	20690	32840	26220	26650	37050	25300	26590
(WY)	1949	1952	1944	1986	1976	1976	1979	1979	1975	1975	1948	1948
MIN	1237	1126	1061	1010	1167	2674	1965	1353	1366	1273	3823	3771
(WY)	1942	1942	1942	1943	1942	1950	1945	1945	1945	1945	1963	1992

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR	FOR 1996 WATER YEAR	WATER YEARS 1941 - 1996*
ANNUAL TOTAL	3541510	5268800	
ANNUAL MEAN	9703	14400	10270
HIGHEST ANNUAL MEAN			16580
LOWEST ANNUAL MEAN			4083
HIGHEST DAILY MEAN	14200	Sep 6	69200
LOWEST DAILY MEAN	4940	Apr 8	575
ANNUAL SEVEN-DAY MINIMUM	5290	Apr 2	709
INSTANTANEOUS PEAK FLOW		a17700	c78200
INSTANTANEOUS PEAK STAGE		b11.85	b19.66
INSTANTANEOUS LOW FLOW			575
ANNUAL RUNOFF (AC-FT)	7025000	10450000	7440000
10 PERCENT EXCEEDS	13600	16800	16000
50 PERCENT EXCEEDS	9800	14200	9450
90 PERCENT EXCEEDS	6540	11900	4200

**MISSOURI RIVER MAIN STEM**  
**06185500 MISSOURI RIVER NEAR CULBERTSON, MT--Continued**

SUMMARY STATISTICS	FOR WATER YEARS 1941-51**		WATER YEARS 1958 - 1995***	
ANNUAL TOTAL				
ANNUAL MEAN	9245		10430	
HIGHEST ANNUAL MEAN	14520	1948	16580	1975
LOWEST ANNUAL MEAN	4083	1942	6121	1963
HIGHEST DAILY MEAN	69200	Mar 27 1943	52000	Apr 18 1979
LOWEST DAILY MEAN	575	Nov 22 1941	2000	Nov 20 1964
ANNUAL SEVEN-DAY MINIMUM	709	Nov 19 1941	2130	Nov 19 1964
INSTANTANEOUS PEAK FLOW	b78200	Mar 26 1943	78200	Mar 26 1943
INSTANTANEOUS PEAK STAGE	15.12	Mar 26 1943	19.66	Apr 14 1979
ANNUAL RUNOFF (AC-FT)	6698000		7650000	
10 PERCENT EXCEEDS	21000		15000	
50 PERCENT EXCEEDS	6910		9560	
90 PERCENT EXCEEDS	1400		5890	

\*--During period of operation (1941-52, 1958 to current year).

\*\*--Before operational level at Fort Peck Lake was reached.

\*\*\*--After operational level at Fort Peck Lake was reached.

a--Gage height, 8.20 ft.

b--Backwater from ice.

c--Gage height, 14.80 ft, from rating curve extended above 30,000 ft<sup>3</sup>/s.

e--Estimated.



MISSOURI RIVER MAIN STEM  
06185600 MISSOURI RIVER STAGE GAGE NO. 4 NEAR NOHLY, MT

195

LOCATION.--Lat 48°02'10", long 104°09'40", in NE<sup>1</sup>/<sub>4</sub> sec.1, T.26 N., R.58 E., Richland County, Hydrologic Unit 10060005, on right bank 4.5 mi northwest of Nohly, and at mile 1,595.7.

DRAINAGE AREA.--93,000 mi<sup>2</sup>, approximately.

GAGE-HEIGHT RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,860.00 ft above sea level. Prior to Apr. 18, 1962, at datum 60.00 ft lower.

REMARKS.--Stage regulated by Fort Peck Lake.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 21.20 ft, Mar. 23, 1960, present datum; minimum daily recorded, 6.87 ft, Apr. 18, 1963.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13.98	---	---	---	---	---	---	---	14.38	15.15	14.62	14.01
2	13.98	---	---	---	---	---	---	---	14.58	15.16	14.59	14.01
3	13.99	---	---	---	---	---	---	---	14.61	15.19	14.60	13.92
4	14.06	---	---	---	---	---	---	---	14.63	---	14.40	13.80
5	14.09	---	---	---	---	---	---	---	14.66	---	14.08	13.79
6	14.09	---	---	---	---	---	---	---	14.64	---	14.06	13.71
7	14.10	---	---	---	---	---	---	---	14.69	---	14.03	13.60
8	14.05	---	---	---	---	---	---	---	14.71	---	14.02	13.40
9	14.03	---	---	---	---	---	---	---	14.75	---	13.95	13.40
10	14.08	---	---	---	---	---	---	---	14.77	14.80	13.91	13.38
11	14.10	---	---	---	---	---	---	---	14.73	14.79	13.98	13.31
12	14.10	---	---	---	---	---	---	---	14.76	14.82	14.04	13.27
13	14.14	---	---	---	---	---	---	---	14.72	14.85	14.05	13.38
14	14.10	---	---	---	---	---	---	---	14.68	14.87	14.02	13.37
15	14.10	---	---	---	---	---	---	---	14.67	14.84	14.06	13.42
16	14.09	---	---	---	---	---	---	14.50	14.64	14.73	14.09	13.44
17	14.01	---	---	---	---	---	---	14.50	14.67	14.68	14.08	13.46
18	14.08	---	---	---	---	---	---	14.48	14.77	14.73	14.08	13.58
19	14.11	---	---	---	---	---	---	14.49	14.73	14.66	14.07	13.76
20	14.08	---	---	---	---	---	---	14.48	14.69	14.72	14.07	13.92
21	14.16	---	---	---	---	---	---	14.31	14.75	14.67	14.06	13.89
22	14.18	---	---	---	---	---	---	14.27	14.83	14.63	14.11	13.90
23	14.17	---	---	---	---	---	---	14.40	14.96	14.55	14.14	14.09
24	14.16	---	---	---	---	---	---	14.41	14.99	14.52	14.10	14.17
25	---	---	---	---	---	---	---	14.40	14.92	14.54	14.00	14.13
26	---	---	---	---	---	---	---	14.23	14.86	14.58	13.96	13.84
27	---	---	---	---	---	---	---	14.16	14.92	14.59	13.97	13.48
28	---	---	---	---	---	---	---	14.24	15.02	14.60	13.98	13.07
29	---	---	---	---	---	---	---	14.21	15.05	14.57	13.94	13.08
30	---	---	---	---	---	---	---	14.26	15.15	14.54	13.95	13.43
31	---	---	---	---	---	---	---	14.28	---	14.57	13.98	---
MEAN	---	---	---	---	---	---	---	---	14.76	---	14.10	13.63
MAX	---	---	---	---	---	---	---	---	15.15	---	14.62	14.17
MIN	---	---	---	---	---	---	---	---	14.38	---	13.91	13.07

MISSOURI RIVER MAIN STEM  
06185650 MISSOURI RIVER STAGE GAGE NO. 5 AT NOHLY, MT

LOCATION.--Lat 48°00'10", long 104°05'30", in SE<sup>1</sup>/<sub>4</sub> sec.16, T.26 N., R.59 E., Richland County, Hydrologic Unit 10060005, at downstream side of bridge, 0.2 mi northwest of Nohly, and at mile 1,587.7.

DRAINAGE AREA.--93,000 mi<sup>2</sup>, approximately.

GAGE-HEIGHT RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,800.00 ft above sea level.

REMARKS.--Stage regulated by Fort Peck Lake.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 77.22 ft, Mar. 15, 1972; minimum daily recorded, 59.12 ft, Nov. 22, 1964.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	66.63	---	---	---	---	---	---	---	68.28	69.21	67.74	67.06
2	66.62	---	---	---	---	---	---	67.81	68.54	69.13	67.70	67.07
3	66.61	---	---	---	---	---	---	67.79	68.73	68.92	67.73	66.98
4	66.66	---	---	---	---	---	---	67.83	68.73	68.76	67.59	66.87
5	66.70	---	---	---	---	---	---	67.84	68.59	68.65	67.29	66.85
6	66.68	---	---	---	---	---	---	67.83	68.55	68.64	67.21	66.78
7	66.68	---	---	---	---	---	---	67.79	68.71	68.65	67.18	66.69
8	66.66	---	---	---	---	---	---	67.68	68.98	68.66	67.15	66.53
9	66.64	---	---	---	---	---	---	67.56	69.30	68.69	67.10	66.52
10	66.65	---	---	---	---	---	---	67.58	69.56	68.60	67.07	66.50
11	66.66	---	---	---	---	---	---	67.24	69.65	68.40	67.12	66.45
12	66.68	---	---	---	---	---	---	67.07	69.67	68.32	67.16	66.39
13	66.69	---	---	---	---	---	---	67.44	69.74	68.26	67.16	66.49
14	66.70	---	---	---	---	---	---	67.57	69.89	68.23	67.13	66.49
15	66.69	---	---	---	---	---	---	67.53	70.09	68.17	67.14	66.55
16	66.68	---	---	---	---	---	---	67.53	70.27	68.05	67.16	66.63
17	66.69	---	---	---	---	---	---	67.53	70.40	67.97	67.15	66.68
18	---	---	---	---	---	---	---	67.61	70.34	67.99	67.17	---
19	---	---	---	---	---	---	---	67.79	70.19	67.91	67.16	---
20	---	---	---	---	---	---	---	68.01	70.12	67.96	67.14	---
21	---	---	---	---	---	---	---	68.19	70.00	67.90	67.12	66.88
22	---	---	---	---	---	---	---	68.23	70.02	67.84	67.16	66.84
23	---	---	---	---	---	---	---	68.16	69.95	67.78	67.17	67.02
24	---	---	---	---	---	---	---	67.93	69.51	67.73	67.14	67.10
25	---	---	---	---	---	---	---	67.83	69.22	67.73	67.06	67.11
26	---	---	---	---	---	---	---	67.81	69.21	67.76	67.05	66.90
27	---	---	---	---	---	---	---	67.87	69.29	67.74	67.04	66.61
28	---	---	---	---	---	---	---	68.05	69.13	67.77	67.04	66.25
29	---	---	---	---	---	---	---	68.05	69.08	67.74	67.02	66.19
30	---	---	---	---	---	---	---	68.13	69.22	67.68	67.02	66.45
31	---	---	---	---	---	---	---	68.22	---	67.69	67.10	---
MEAN	---	---	---	---	---	---	---	---	69.43	68.21	67.20	---
MAX	---	---	---	---	---	---	---	---	70.40	69.21	67.74	---
MIN	---	---	---	---	---	---	---	---	68.28	67.68	67.02	---

**YELLOWSTONE RIVER BASIN**  
**06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT**  
(National stream quality accounting network station)

197

**LOCATION.**--Lat 47°40'42", long 104°09'22", in SW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub> sec.9, T.22 N., R.59 E., Richland County, Hydrologic Unit 10100004, on left bank at Montana-Dakota Utilities Company powerplant, 0.2 mi downstream from bridge on State Highway 23, 2.5 mi south of Sidney, 3.0 mi downstream from Fox Creek, and at river mile 29.2.

**DRAINAGE AREA.**--69,103 mi<sup>2</sup>. Area at site 4.5 mi upstream, 68,812 mi<sup>2</sup>.

**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 above sea level (levels by U.S. Army Corps of Engineers). Jan. 1, 1911, to Sept. 30, 1931, nonrecording gage at site 32 miles upstream at different datum. Apr. 9, 1934, water-stage recorder at two sites within 500 ft of highway bridge 0.2 mi upstream and May 17, 1945, to Apr. 3, 1952, nonrecording gage on same bridge at datum 1.36 ft higher. Apr. 4, 1952, to Nov. 19, 1967, water-stage recorder at site 4.5 mi upstream at different datum.

**REMARKS.**--Water-discharge records good except those for estimated daily discharges, which are poor. Flow regulated to some extent by Bighorn Lake, usable capacity, 1,312,000 acre-ft, on the Bighorn River and on other tributary streams in Wyoming and Montana. Diversion for irrigation of about 1,250,000 acres upstream from station. Lower Yellowstone Project Main Canal diverts from left bank in NW<sup>1</sup>/<sub>4</sub> sec.36, T.18 N., R.56 E., at Lower Yellowstone diversion dam at Intake about 36.6 mi upstream for irrigation of about 52,000 acres of which about one-third lies upstream from station. U. S. Army Corps of Engineers satellite telemeter at station. Water-quality data are available from the U.S. Geological Survey, Montana District office.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10600	8870	8680	e7800	e5800	e5700	e14000	14200	37300	42800	12500	4900
2	10400	8960	8560	e7700	e5600	e5400	e15000	14300	40000	39500	11900	4990
3	10300	9050	8450	e7700	e5000	e5700	e13000	13900	40500	36700	12100	5080
4	10400	8680	8470	e7700	e4000	e6500	12000	13400	39000	35300	11900	5100
5	11000	9060	8770	e7700	e4500	e6900	11900	13300	36700	35400	11400	5120
6	10800	7830	e8800	e7200	e5000	e6900	13300	13600	37600	36100	11000	5150
7	10600	7620	e8200	e5500	e6000	e6800	14500	13800	41000	36200	10700	5040
8	10600	8060	e6200	e4700	e8000	e6400	15000	13500	45900	36200	10300	4990
9	10800	8190	e4000	e4500	e10000	e6400	14200	12800	50200	35500	9730	5390
10	10800	8420	e2800	e5000	e16000	e6400	13700	12300	52300	32700	9230	5500
11	10700	8500	e2600	e6300	e17200	e6600	14400	12100	51400	29800	8750	5460
12	10700	8850	e2300	e7300	e18000	e7800	15200	12000	52600	28000	8330	5390
13	10700	8610	e2000	e8300	e17000	e12000	16000	11900	55200	26900	7760	5340
14	10600	9090	e2500	e8400	e16100	e17500	16600	12300	58700	26100	7440	5280
15	10500	8910	e3000	e8400	e16300	e21000	17500	13000	62300	25300	7020	5270
16	10700	9110	e7000	e8300	e16200	e25000	17500	13900	64700	24500	6680	5350
17	8110	9070	e9000	e8000	e16200	e30000	16500	17800	65000	23600	6460	5470
18	10700	8910	e9800	e7700	e16200	e25000	15600	23700	63800	22600	6330	6770
19	10700	8640	e9800	e7700	e16100	e19000	14800	28000	63200	21300	6290	8950
20	10400	8390	e9600	e6700	e16000	e18200	14500	32400	61900	21500	6310	8160
21	10100	8240	e9200	e5300	e16000	e18000	14600	35600	60300	20700	6240	8080
22	9710	8140	e8900	e4300	e14100	e15000	14700	34700	59400	18300	6160	8150
23	9370	8150	e8800	e4000	e13500	e13000	14400	30700	54500	17000	6010	8120
24	9440	8210	e8700	e3500	e12800	e12200	14100	28200	46100	16200	5840	7950
25	9480	8170	e8600	e4000	e12400	e11500	13800	28300	45600	15400	5670	7890
26	9560	8090	e8500	e5000	e11400	e12400	13600	30500	47800	14500	5800	7780
27	9460	8110	e8300	e6300	e10100	e12200	13300	33000	45400	13900	5600	7680
28	9240	8160	e8100	e6200	e8900	e12800	13200	33700	42600	13600	5470	7660
29	9090	8160	e8100	e6100	e7200	e13000	13900	33400	43500	13200	5220	7720
30	9030	8380	e8100	e6100	---	e12000	14100	35900	43500	12900	4930	7970
31	8840	---	e7800	e6000	---	e13000	---	35900	---	12600	4850	---
TOTAL	313430	254630	223630	199400	341600	390300	434900	672100	1508000	784300	243920	191700
MEAN	10110	8488	7214	6432	11780	12590	14500	21680	50270	25300	7868	6390
MAX	11000	9110	9800	8400	18000	30000	17500	35900	65000	42800	12500	8950
MIN	8110	7620	2000	3500	4000	5400	11900	11900	36700	12600	4850	4900
AC-FT	621700	505100	443600	395500	677600	774200	862600	1333000	2991000	1556000	483800	380200

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1911 - 1996, BY WATER YEAR (WY)\*

MEAN	8306	7354	5958	5697	6815	11150	10440	18470	39270	23420	8766	7185
MAX	29130	12150	9594	13110	17750	25980	39160	38100	77280	55000	20470	16000
(WY)	1924	1924	1976	1925	1971	1972	1924	1928	1918	1917	1912	1941
MIN	3726	3700	3019	2087	2702	5191	2821	5409	11580	3311	1602	2389
(WY)	1922	1922	1961	1937	1936	1961	1961	1961	1919	1919	1961	1934

**YELLOWSTONE RIVER BASIN**  
**06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued**

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR		FOR 1996 WATER YEAR		WATER YEARS 1911 - 1996*	
ANNUAL TOTAL	5017380		5557910		12750	
ANNUAL MEAN	13750		15190		21250	1924
HIGHEST ANNUAL MEAN					5814	1934
LOWEST ANNUAL MEAN					142000	Jun 21 1921
HIGHEST DAILY MEAN	56600	Jun 19	65000	Jun 17	570	May 17 1961
LOWEST DAILY MEAN	2000	Dec 13	2000	Dec 13	1010	Aug 8 1961
ANNUAL SEVEN-DAY MINIMUM	2740	Dec 9	2740	Dec 9	c159000	Jun 21 1921
INSTANTANEOUS PEAK FLOW			a65300	Jun 17	b24.03	Mar 6 1994
INSTANTANEOUS PEAK STAGE			b19.48	Mar 14	f470	May 17 1961
INSTANTANEOUS LOW FLOW			2000	Dec 13	9238000	
ANNUAL RUNOFF (AC-FT)	9952000		11020000		28600	
10 PERCENT EXCEEDS	35600		36000		8060	
50 PERCENT EXCEEDS	8610		10300		4120	
90 PERCENT EXCEEDS	5330		5390			

SUMMARY STATISTICS	WATER YEARS 1911 - 1965**		WATER YEARS 1967 - 1996***	
ANNUAL TOTAL	12890		12660	
ANNUAL MEAN	21250	1924	17960	1975
HIGHEST ANNUAL MEAN	5814	1934	7319	1988
LOWEST ANNUAL MEAN	142000	Jun 21 1921	104000	May 23 1978
HIGHEST DAILY MEAN	570	May 17 1961	800	Jan 2 1989
LOWEST DAILY MEAN	1010	Aug 8 1961	1500	Aug 21 1988
ANNUAL SEVEN-DAY MINIMUM	c159000	Jun 21 1921	g111000	May 23 1978
INSTANTANEOUS PEAK FLOW	d21.85	Mar 22 1947	b24.03	Mar 6 1994
INSTANTANEOUS PEAK STAGE	f470	May 17 1961	f470	May 17 1961
INSTANTANEOUS LOW FLOW	9341000		9169000	
ANNUAL RUNOFF (AC-FT)	29900		27400	
10 PERCENT EXCEEDS	7690		8800	
50 PERCENT EXCEEDS	3820		5000	
90 PERCENT EXCEEDS				

\*--During period of operation 1911-31, 1934-current year. Published as "at Intake" 1911-31.

\*\*--Prior to Bighorn Lake reaching operational level.

\*\*\*-- After Bighorn Lake reached operational level.

a--Gage height, 16.47 ft.

b--Backwater from ice.

c--Gage height, 12.6 ft., site and datum then in use.

d--Backwater from ice, site and datum then in use.

e--Estimated.

f--Gage height, 2.73 ft., site and datum then in use.

g--Gage height, 20.02 ft.

## 199

**DRAINAGE AREA.**--70,000 mi<sup>2</sup>, approximately.

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

REVISÉD RECORDS.--WDR ND-82: 1980-81.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 23.78 ft, Mar. 21, 1960, present datum; minimum daily recorded, 7.92 ft, Aug. 17, 1988, present datum.

[illegible]



YELLOWSTONE RIVER BASIN  
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 200, 2 mi west of Cartwright, and at mile 8.6.

DRAINAGE AREA.--70,000 mi<sup>2</sup>, approximately.

GAGE-HEIGHT RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,800.00 ft above sea level.

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

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	65.94	---	---	---	---	---	---	---	72.75	73.90	66.63	64.34
2	65.93	---	---	---	---	---	---	67.71	73.20	73.52	66.47	64.37
3	65.82	---	---	---	---	---	---	67.60	73.44	72.93	66.39	64.38
4	65.81	---	---	---	---	---	---	67.42	73.30	72.60	66.53	64.43
5	65.91	---	---	---	---	---	---	67.37	72.94	72.53	66.30	64.39
6	66.03	---	---	---	---	---	---	67.41	72.96	72.65	66.12	64.40
7	65.94	---	---	---	---	---	---	67.46	73.43	72.68	66.02	64.39
8	65.91	---	---	---	---	---	---	67.43	74.16	72.63	65.91	64.37
9	65.94	---	---	---	---	---	---	67.22	74.85	72.57	65.76	64.45
10	65.95	---	---	---	---	---	---	67.02	75.21	72.10	65.63	64.51
11	65.95	---	---	---	---	---	---	66.94	75.14	71.43	65.48	64.51
12	65.92	---	---	---	---	---	---	66.91	75.21	70.91	65.35	64.50
13	65.88	---	---	---	---	---	---	66.87	75.44	70.62	65.15	64.51
14	65.85	---	---	---	---	---	---	66.96	75.83	70.40	65.02	64.51
15	65.85	---	---	---	---	---	---	67.18	76.20	70.23	64.92	64.52
16	65.87	---	---	---	---	---	---	67.34	76.44	70.00	64.82	64.56
17	65.87	---	---	---	---	---	---	68.14	76.51	69.77	64.75	64.57
18	65.92	---	---	---	---	---	---	69.96	76.46	69.51	64.68	64.78
19	65.97	---	---	---	---	---	---	71.11	76.33	69.22	64.63	65.59
20	65.90	---	---	---	---	---	---	71.96	76.20	69.10	64.65	65.58
21	65.79	---	---	---	---	---	---	72.69	75.99	69.19	64.64	65.43
22	65.73	---	---	---	---	---	---	72.57	75.80	68.40	64.61	65.42
23	65.58	---	---	---	---	---	---	71.87	75.50	68.02	64.60	65.41
24	65.60	---	---	---	---	---	---	71.23	74.42	67.75	64.59	65.34
25	---	---	---	---	---	---	---	71.08	74.13	67.53	64.57	65.30
26	---	---	---	---	---	---	---	71.41	74.40	67.26	64.57	65.26
27	---	---	---	---	---	---	---	71.98	74.35	67.04	64.55	65.22
28	---	---	---	---	---	---	---	72.22	73.83	66.99	64.51	65.22
29	---	---	---	---	---	---	---	72.02	73.90	66.85	64.46	65.20
30	---	---	---	---	---	---	---	72.51	74.01	66.74	64.39	65.29
31	---	---	---	---	---	---	---	72.57	---	66.63	64.35	---
MEAN	---	---	---	---	---	---	---	---	74.74	70.05	65.20	64.82
MAX	---	---	---	---	---	---	---	---	76.51	73.90	66.63	65.59
MIN	---	---	---	---	---	---	---	---	72.75	66.63	64.35	64.34

**DRAINAGE AREA.**--70,000 mi<sup>2</sup>, approximately.

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

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 36.20 ft from floodmark, probably occurred sometime between Mar. 3-10, 1994; minimum daily recorded, 6.18 ft, Aug. 24, 1961, present datum.

[illegible]

MISSOURI RIVER MAIN STEM  
06329640 MISSOURI RIVER STAGE GAGE NO. 5A AT BUFORD, ND

LOCATION.--Lat 47°59'06", long 103°59'05", in SE<sup>1</sup>/<sub>4</sub> sec.15, T.152 N., R.104 W., Williams County, Hydrologic Unit 10110101, on left bank 1.5 mi southwest of Buford, at confluence, and at mile 1,580.7.

DRAINAGE AREA.--164,000 mi<sup>2</sup>, approximately.

GAGE-HEIGHT RECORDS

PERIOD OF RECORD.--April 1960 to current year (seasonal).

GAGE.--Water-stage recorder. Datum of gage is 1,850.00 ft above sea level. Prior to Mar. 8, 1962, at datum 50.00 ft lower.

REMARKS.--Stage regulated by upstream reservoirs.

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

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10.82	---	---	---	---	---	---	---	16.04	17.36	11.21	8.94
2	10.79	---	---	---	---	---	---	---	16.34	17.17	11.06	9.02
3	10.71	---	---	---	---	---	---	---	16.66	16.75	10.95	8.99
4	10.73	---	---	---	---	---	---	---	16.64	16.44	10.99	8.95
5	10.83	---	---	---	---	---	---	---	16.45	16.29	10.62	8.93
6	10.97	---	---	---	---	---	---	12.63	16.39	16.35	10.41	8.91
7	10.89	---	---	---	---	---	---	12.63	16.62	16.40	10.31	8.90
8	10.84	---	---	---	---	---	---	12.56	17.19	16.38	10.24	8.74
9	10.83	---	---	---	---	---	---	12.38	17.70	16.38	10.12	8.76
10	10.88	---	---	---	---	---	---	12.23	18.07	16.10	10.06	8.85
11	10.89	---	---	---	---	---	---	11.95	18.16	15.53	---	8.85
12	10.86	---	---	---	---	---	---	11.74	18.17	15.07	---	8.78
13	10.85	---	---	---	---	---	---	11.95	18.29	14.78	---	8.86
14	10.86	---	---	---	---	---	---	12.06	18.58	14.57	---	8.88
15	10.81	---	---	---	---	---	---	12.19	18.90	14.41	---	8.94
16	10.81	---	---	---	---	---	---	12.30	19.12	14.15	---	9.04
17	10.75	---	---	---	---	---	---	---	19.24	13.91	---	9.09
18	10.81	---	---	---	---	---	---	---	19.17	13.70	---	9.30
19	10.86	---	---	---	---	---	---	---	19.02	13.42	9.17	9.98
20	10.87	---	---	---	---	---	---	---	18.93	13.37	9.18	10.27
21	10.77	---	---	---	---	---	---	16.14	18.75	13.44	9.20	10.11
22	10.71	---	---	---	---	---	---	16.21	18.69	12.88	9.26	10.10
23	10.59	---	---	---	---	---	---	15.81	18.53	12.45	9.29	10.22
24	10.55	---	---	---	---	---	---	15.21	17.76	12.19	9.26	10.24
25	---	---	---	---	---	---	---	14.87	17.38	11.98	9.13	10.24
26	---	---	---	---	---	---	---	14.96	17.46	11.77	9.09	10.10
27	---	---	---	---	---	---	---	15.27	17.58	11.58	9.05	9.86
28	---	---	---	---	---	---	---	15.63	17.26	11.54	9.03	9.58
29	---	---	---	---	---	---	---	15.61	17.22	11.40	8.98	9.50
30	---	---	---	---	---	---	---	15.74	17.38	11.27	8.91	9.73
31	---	---	---	---	---	---	---	15.95	---	11.19	8.91	---
MEAN	---	---	---	---	---	---	---	---	17.79	14.20	---	9.36
MAX	---	---	---	---	---	---	---	---	19.24	17.36	---	10.27
MIN	---	---	---	---	---	---	---	---	16.04	11.19	---	8.74

MISSOURI RIVER MAIN STEM  
06329650 MISSOURI RIVER STAGE GAGE NO. 6 NEAR BUFORD, ND

203

LOCATION.--Lat 47°57'18", long 103°54'36", in SE<sup>1</sup>/<sub>4</sub> sec.30, T.152 N., R.103 W., McKenzie County, Hydrologic Unit 10110101, on right bank 5 mi southeast of Buford, and at mile 1,576.0.

DRAINAGE AREA.--164,000 mi<sup>2</sup>, approximately.

GAGE-HEIGHT RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,840.00 ft above sea level. Prior to Apr. 17, 1962, at datum 40.00 ft lower.

REMARKS.--Stage regulated by upstream reservoirs.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 26.14 ft, June 17, 1996; minimum daily recorded, 8.23 ft, Aug. 15, 22, 1963.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17.95	---	---	---	---	---	---	---	23.29	24.81	18.81	16.38
2	17.95	---	---	---	---	---	---	---	23.63	24.67	18.68	16.43
3	17.88	---	---	---	---	---	---	---	23.87	24.32	18.58	16.41
4	17.91	---	---	---	---	---	---	---	23.88	24.03	18.61	16.35
5	17.98	---	---	---	---	---	---	---	23.67	23.90	18.27	16.33
6	18.12	---	---	---	---	---	---	---	23.63	23.94	18.04	16.29
7	18.05	---	---	---	---	---	---	---	23.88	23.99	17.92	16.25
8	18.03	---	---	---	---	---	---	---	24.39	23.97	17.83	16.10
9	18.01	---	---	---	---	---	---	---	24.90	23.96	17.71	16.03
10	18.06	---	---	---	---	---	---	---	25.27	23.73	17.57	16.11
11	18.09	---	---	---	---	---	---	---	25.33	23.20	17.47	16.10
12	18.08	---	---	---	---	---	---	---	25.32	22.73	17.40	16.02
13	18.08	---	---	---	---	---	---	---	25.40	22.44	17.28	16.06
14	18.08	---	---	---	---	---	---	---	25.64	22.21	17.14	16.07
15	18.05	---	---	---	---	---	---	---	25.92	22.05	17.06	16.09
16	18.06	---	---	---	---	---	---	---	26.07	21.79	16.97	16.13
17	18.02	---	---	---	---	---	---	19.52	26.14	21.53	16.90	16.14
18	18.06	---	---	---	---	---	---	20.89	26.09	21.33	16.87	16.32
19	18.14	---	---	---	---	---	---	21.99	25.98	21.06	16.83	16.96
20	18.12	---	---	---	---	---	---	22.74	25.89	21.00	16.81	17.32
21	18.06	---	---	---	---	---	---	23.31	25.73	21.06	16.84	17.19
22	18.02	---	---	---	---	---	---	23.36	25.66	20.53	16.83	17.14
23	17.90	---	---	---	---	---	---	22.97	25.54	20.11	16.86	17.26
24	17.86	---	---	---	---	---	---	22.43	24.98	19.84	16.82	17.28
25	---	---	---	---	---	---	---	22.18	24.70	19.61	16.72	17.27
26	---	---	---	---	---	---	---	22.29	24.78	19.41	16.63	17.12
27	---	---	---	---	---	---	---	22.62	24.92	19.20	16.61	16.87
28	---	---	---	---	---	---	---	22.89	24.69	19.16	16.56	16.55
29	---	---	---	---	---	---	---	22.87	24.65	19.01	16.49	16.42
30	---	---	---	---	---	---	---	23.07	24.81	18.87	16.42	16.63
31	---	---	---	---	---	---	---	23.19	---	18.78	16.37	---
MEAN	---	---	---	---	---	---	---	---	24.95	21.81	17.29	16.52
MAX	---	---	---	---	---	---	---	---	26.14	24.81	18.81	17.32
MIN	---	---	---	---	---	---	---	---	23.29	18.78	16.37	16.02

**DRAINAGE AREA.**--164,000 mi<sup>2</sup>, approximately.

### GAGE-HEIGHT RECORDS

REMARKS.--Stage regulated by upstream reservoirs.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 21.56 ft, July 10, 1975; minimum daily recorded, 4.34 ft, Aug. 19, 22, 1963.

[illegible]



MISSOURI RIVER MAIN STEM  
06330000 MISSOURI RIVER NEAR WILLISTON, ND

205

LOCATION.--Lat 48°06'45", long 103°43'04", in SE<sup>1</sup>/<sub>4</sub> sec.31, T.154 N., R.101 W., Williams County, Hydrologic Unit 10110101, at city waterplant on left bank, 5 mi southwest of Williston, 29.3 mi downstream from Yellowstone River, and at mile 1,552.7.

DRAINAGE AREA.--164,500 mi<sup>2</sup>, 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 above sea level. 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 observed, 26.60 ft, Mar. 8, 1994; minimum daily recorded, 7.80 ft, Nov. 2, 1966.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17.71	16.66	16.26	17.62	---	---	20.67	18.46	20.65	---	---	---
2	17.63	16.53	16.16	17.64	---	---	20.85	18.43	20.75	---	---	---
3	17.63	16.60	16.14	17.85	---	---	20.81	18.52	---	---	---	---
4	17.66	16.62	16.39	18.02	---	17.50	20.63	18.50	---	---	---	---
5	17.54	16.59	16.52	18.04	---	17.55	20.50	18.43	---	---	---	---
6	17.53	16.54	---	17.96	---	17.62	20.47	18.38	---	---	---	---
7	17.54	16.40	---	17.87	---	17.57	---	18.39	---	22.89	---	---
8	17.48	16.39	16.74	17.75	18.09	17.47	---	18.36	---	22.81	---	---
9	17.45	16.37	16.50	17.50	18.50	17.35	---	18.30	---	22.70	---	---
10	17.42	16.34	16.40	17.26	18.96	17.13	---	18.25	---	22.64	---	---
11	17.42	---	16.28	17.32	19.55	16.99	---	18.21	22.17	---	---	---
12	17.33	---	16.12	17.65	20.20	17.41	18.60	18.07	22.23	---	---	---
13	17.35	---	16.19	17.99	20.90	18.51	18.71	17.83	22.25	---	---	---
14	17.29	---	16.13	18.31	21.59	19.80	18.78	17.74	22.44	---	---	---
15	17.27	---	16.28	18.58	22.15	20.83	18.79	17.77	22.53	---	---	---
16	17.26	---	16.44	18.72	22.46	21.76	18.87	17.81	22.71	---	---	---
17	17.18	---	16.74	18.73	22.48	22.63	18.84	17.92	22.92	---	---	---
18	17.23	---	17.14	18.61	22.32	23.20	18.65	18.07	23.01	---	---	---
19	17.20	---	18.04	18.39	22.02	23.15	18.43	18.65	23.00	---	---	---
20	17.19	---	18.47	18.09	21.78	23.11	18.28	19.45	22.94	---	---	---
21	17.13	16.08	18.62	---	21.67	22.63	18.15	19.95	22.95	---	---	---
22	17.02	16.16	18.61	---	21.70	22.34	18.08	20.21	23.03	---	---	---
23	16.95	16.15	18.48	---	21.77	21.96	18.09	20.37	23.13	---	---	---
24	16.92	16.14	18.35	---	21.81	---	18.15	20.42	23.03	---	---	---
25	16.97	16.16	18.27	---	21.74	---	18.18	20.26	22.85	---	---	---
26	16.92	16.21	18.17	---	21.55	20.57	18.31	20.05	22.80	---	---	---
27	16.82	16.20	18.06	---	21.18	20.32	18.37	20.00	---	---	---	---
28	16.89	16.23	17.98	---	---	20.19	18.38	20.10	---	---	---	---
29	16.90	16.25	17.87	---	---	20.28	18.28	20.40	---	---	---	---
30	16.85	16.25	17.81	---	---	20.51	18.26	20.42	---	---	---	---
31	16.80	---	17.73	---	---	20.59	---	20.61	---	---	---	---
MEAN	17.24	---	---	---	---	---	---	18.98	---	---	---	---
MAX	17.71	---	---	---	---	---	---	20.61	---	---	---	---
MIN	16.80	---	---	---	---	---	---	17.74	---	---	---	---

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<sup>1</sup>/<sub>4</sub> NE<sup>1</sup>/<sub>4</sub> 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 upstream from Little Muddy Creek, and at mile 1,546.2.

DRAINAGE AREA.--164,500 mi, approximately.

GAGE-HEIGHT RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,820.00 ft above sea level. Prior to May 13, 1969, at site 900 ft downstream. At datum 20.00 ft 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, July 25, 28, 1975; minimum daily recorded, 5.44 ft, Aug. 20, 1961, present datum.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996 DAILY MEAN VALUES												
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26.18	24.17	23.65	25.29	25.20	26.55	26.86	25.43	27.15	30.02	29.29	26.13
2	26.00	23.85	23.57	25.27	25.20	25.97	26.99	25.50	27.13	30.16	29.28	25.99
3	25.99	24.00	23.39	25.37	25.11	25.55	27.11	25.55	27.36	30.26	29.08	25.88
4	26.18	24.08	23.24	25.50	25.35	25.30	27.26	25.51	27.57	30.21	28.97	26.23
5	25.85	24.04	23.72	25.57	25.39	25.29	27.50	25.43	27.52	30.06	28.90	26.34
6	25.74	23.94	23.76	25.50	25.40	25.32	27.66	25.41	27.33	30.00	28.60	25.57
7	25.74	23.81	24.19	25.45	25.46	25.27	27.94	25.44	27.48	29.94	28.45	25.59
8	25.65	23.93	24.65	25.38	25.59	25.18	28.77	25.42	27.68	29.97	28.64	25.44
9	25.53	23.97	24.37	25.20	25.83	25.04	27.89	25.30	27.97	30.19	28.72	25.35
10	25.51	24.22	24.18	25.01	26.17	24.93	26.55	25.28	28.29	30.40	28.47	25.25
11	25.51	24.62	24.13	24.99	26.51	25.04	25.97	25.18	28.55	29.93	28.35	25.20
12	25.40	25.93	23.94	25.17	26.97	25.93	25.76	25.01	28.68	29.98	28.38	25.34
13	25.01	26.21	23.82	25.38	27.37	26.69	25.78	24.92	28.82	30.06	27.96	25.77
14	25.23	26.44	23.90	25.59	27.83	26.99	25.78	24.96	28.98	30.02	28.03	25.59
15	25.25	26.52	24.10	25.79	28.41	27.30	25.73	24.95	29.08	30.06	28.01	25.31
16	25.37	27.39	24.20	25.94	28.84	28.01	25.87	24.99	29.35	30.15	27.90	25.21
17	24.90	28.37	24.32	25.99	29.03	28.83	25.86	25.06	29.59	30.04	27.84	25.38
18	25.25	26.82	24.76	25.88	29.04	29.43	25.65	25.26	29.73	29.91	27.74	25.10
19	24.66	24.63	25.28	25.72	28.89	29.64	25.47	25.65	29.62	30.09	27.27	25.06
20	24.94	23.71	25.66	25.54	28.74	29.50	25.36	26.06	29.68	30.03	27.57	24.92
21	25.05	23.64	25.86	25.17	28.66	29.06	25.25	26.49	29.69	29.79	27.21	24.80
22	24.78	23.41	25.96	24.82	28.60	28.72	25.31	26.72	29.85	29.68	27.19	24.71
23	24.74	23.38	25.95	24.64	28.62	28.50	25.34	26.90	30.06	29.55	27.05	24.70
24	24.67	23.39	25.87	24.71	28.66	28.12	25.50	26.88	29.94	29.56	26.96	24.76
25	24.57	23.51	25.80	24.88	28.54	27.41	25.19	26.71	29.96	29.64	26.89	24.73
26	24.56	23.59	25.71	25.01	28.36	26.89	25.38	26.65	29.65	29.63	26.86	24.65
27	24.23	23.55	25.63	25.07	28.17	26.57	25.45	26.68	29.83	29.56	26.79	24.55
28	24.33	23.65	25.55	25.16	27.83	26.41	25.42	26.80	29.82	29.37	26.66	24.43
29	24.39	23.68	25.49	25.32	27.24	26.47	25.40	26.97	29.72	29.26	26.74	24.35
30	24.38	23.65	25.43	25.38	---	26.57	25.38	27.08	29.86	29.31	26.42	24.34
31	24.34	---	25.37	25.37	---	26.71	---	27.10	---	29.49	26.33	---
MEAN	25.16	24.54	24.69	25.32	27.28	26.88	26.18	25.85	28.86	29.88	27.82	25.22
MAX	26.18	28.37	25.96	25.99	29.04	29.64	28.77	27.10	30.40	29.29	26.34	26.34
MIN	24.23	23.38	23.24	24.64	25.11	24.93	25.19	24.92	27.13	29.26	26.33	24.34

LITTLE MUDDY RIVER BASIN  
06331000 LITTLE MUDDY RIVER BELOW COW CREEK NEAR WILLISTON, ND

207

LOCATION.--Lat 48°17'04", long 103°34'21", in NE<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> sec.5, T.155 N., R.100 W., Williams County, Hydrologic Unit 10110102, on left bank 37 ft downstream from centerline of highway, 1 mi downstream from Cow Creek, 4 mi upstream from Camp Creek, 10 mi northeast of Williston, and 13 mi upstream from mouth.

DRAINAGE AREA.--875 mi<sup>2</sup>, approximately, of which about 100 mi<sup>2</sup> is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1954 to current year (seasonal records only since 1984).

GAGE.--Water-stage recorder. Datum of gage is 1,863.18 ft above sea level.

REMARKS.--Records good except for periods of estimated daily discharges, which are poor. Some small diversions for irrigation. Some regulation by Lake Zahl, Fish and Wildlife Service reservoir 22 mi upstream and Blacktail Dam about 15 mi upstream.

EXTREMES FOR CURRENT YEAR.--Maximum observed discharge, 1,530 ft<sup>3</sup>/s, Apr. 8, gage height, 9.01 ft; maximum gage height, 9.69 ft, Mar. 12, backwater from ice; minimum daily discharge, 4.4 ft<sup>3</sup>/s, Aug. 31, but may have been less during period of nonoperation.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	e7.0	e60	e50	e18	16	10	26	4.9
2	---	---	---	---	e8.0	e40	e48	e17	16	9.5	22	5.1
3	---	---	---	---	e8.0	e35	e48	e17	16	9.7	18	5.2
4	---	---	---	---	e9.0	e29	e50	e15	15	8.9	16	5.7
5	---	---	---	---	e10	e25	e54	e15	15	9.9	13	7.5
6	---	---	---	---	e20	e22	e60	e16	15	9.3	11	8.5
7	---	---	---	---	e50	e20	e66	e17	14	8.4	9.5	9.0
8	---	---	---	---	e250	e19	1370	e16	13	7.8	8.7	9.9
9	---	---	---	---	e600	e19	893	e16	13	7.2	8.6	8.5
10	---	---	---	---	e1100	e25	919	e16	14	6.7	8.3	7.4
11	---	---	---	---	e890	e130	557	e15	15	6.7	7.9	6.6
12	---	---	---	---	e690	e1200	295	e15	17	6.7	7.7	6.0
13	---	---	---	---	e520	e800	177	e14	13	6.6	6.9	5.7
14	---	---	---	---	404	534	121	e13	12	6.7	6.3	5.8
15	---	---	---	---	e250	626	87	e13	12	7.1	6.3	6.6
16	---	---	---	---	e200	744	68	e12	12	6.9	6.4	6.9
17	---	---	---	---	e220	413	56	e14	11	6.6	6.2	6.5
18	---	---	---	---	e250	433	50	e14	9.8	6.7	6.6	7.7
19	---	---	---	---	e370	e350	44	e22	9.2	6.5	6.8	8.6
20	---	---	---	---	e800	370	e40	e20	8.9	11	5.9	8.9
21	---	---	---	---	869	e250	e36	e18	9.1	78	5.4	9.0
22	---	---	---	---	770	e210	e32	e20	8.8	411	5.2	9.7
23	---	---	---	---	e640	e180	e31	e19	11	436	5.5	9.9
24	---	---	---	---	e510	e150	e29	e18	e13	232	5.6	9.5
25	---	---	---	---	e420	e120	e27	e18	e14	141	5.4	9.3
26	---	---	---	---	e260	e100	e25	e17	e15	97	5.2	8.8
27	---	---	---	---	e170	e80	e23	e17	e14	71	5.2	8.8
28	---	---	---	---	e140	e70	e21	e16	e13	57	5.0	8.3
29	---	---	---	---	e80	e60	e20	e17	11	45	4.8	9.2
30	---	---	---	---	---	e54	e19	16	10	37	4.5	9.4
31	---	---	---	---	---	e52	---	16	---	30	4.4	---
TOTAL	---	---	---	---	10515.0	7220	6116	507	385.8	1793.9	264.3	232.9
MEAN	---	---	---	---	363	233	204	16.4	12.9	57.9	8.53	7.76
MAX	---	---	---	---	1100	1200	1370	22	17	436	26	9.9
MIN	---	---	---	---	7.0	19	19	12	8.8	6.5	4.4	4.9
AC-FT	---	---	---	---	20860	14320	12130	1010	765	3560	524	462

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1954 - 1996, BY WATER YEAR (WY)

MEAN	10.2	11.0	8.62	6.98	27.7	161	112	26.5	19.1	20.3	8.08	7.60
MAX	17.4	17.7	12.1	24.5	363	1018	996	114	91.6	170	49.1	18.9
(WY)	1973	1973	1955	1974	1996	1976	1979	1965	1994	1978	1972	1954
MIN	5.28	4.66	3.55	2.33	.91	6.21	10.6	8.44	3.77	2.80	2.51	2.54
(WY)	1962	1961	1961	1962	1959	1965	1990	1958	1988	1988	1988	1990

SUMMARY STATISTICS

WATER YEARS 1954 - 1996

ANNUAL MEAN	a 38.8
HIGHEST ANNUAL MEAN	a 110 1976
LOWEST ANNUAL MEAN	a 9.24 1961
HIGHEST DAILY MEAN	6610 Apr 18 1979
LOWEST DAILY MEAN	.50 Feb 17 1959
ANNUAL SEVEN-DAY MINIMUM	.50 Feb 17 1959
INSTANTANEOUS PEAK FLOW	9180 Apr 18 1979
INSTANTANEOUS PEAK STAGE	13.57 Mar 27 1960
ANNUAL RUNOFF (AC-FT)	a 28120
10 PERCENT EXCEEDS	40
50 PERCENT EXCEEDS	9.5
90 PERCENT EXCEEDS	4.3

a Based on complete water years only (1954-83).  
e Estimated.

LITTLE MUDDY RIVER BASIN  
06331000 LITTLE MUDDY RIVER BELOW COW CREEK NEAR WILLISTON, ND--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
APR 10...	1505	918	320	8.7	18.0	4.0	100	113	23	11
MAY 29...	1700	17	2660	--	21.5	16.0	--	--	--	--
JUL 08...	1645	7.8	2080	8.4	24.0	19.5	400	590	52	66
AUG 28...	0800	4.9	2040	--	19.5	20.0	--	--	--	--

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
APR 10...	24	31	1	11	60	5.3	0.10	203	220	0.30
JUL 08...	350	65	8	10	610	8.5	0.30	1450	1450	1.97

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
APR 10...	545	2	80	<1	10	90	<0.1	1	1	180
JUL 08...	30.5	4	2	<1	80	10	<0.1	<1	1	710

MISSOURI RIVER MAIN STEM  
06331670 LAKE SAKAKAWEA AT LEWIS AND CLARK BAY NEAR WILLISTON, ND

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LOCATION.--Lat 48°05'42", long 103°14'40", in SE<sup>1</sup>/<sub>4</sub> sec.2, T.153 N., R.98 W., McKenzie County, Hydrologic Unit 10110101, near southeast corner of Lewis and Clark State Park, 17 mi east of Williston.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1992 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (90095)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	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)	SODIUM AD- SORP- TION RATIO SODIUM PERCENT (00932)	(00931)
JUL											
10...	1200	0.0	0.50	415	140	111	34	12	25	28	0.9
10...	1205	8.6	9.1	416	140	110	35	13	26	28	1

DATE	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	SOLIDS, SUM OF CONSTI- TUENTS, 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, 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)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)
JUL											
10...	2.8	92	6.8	242	0.33	0.070	<0.010	0.46	0.46	0.53	0.059
10...	2.9	94	5.6	244	0.33	0.060	<0.010	0.33	0.33	0.39	0.064

DATE	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	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)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	
	JUL											
	10...	0.015	3	65	<0.02	2	4	2100	3	18	<0.2	29
	10...	<0.010	3	70	<0.02	2	4	2500	1	26	<0.2	20

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
JUL							
10...	1150	29.8	0.0	416	8.2	21.0	7.0
10...	1151	--	1.0	416	8.2	21.0	7.0
10...	1152	--	2.0	417	8.2	21.0	6.9
10...	1153	--	3.0	418	8.2	21.5	6.9
10...	1154	--	4.1	416	8.2	21.0	6.8
10...	1155	--	5.0	416	8.2	21.0	6.8
10...	1156	--	6.1	418	8.2	21.0	6.8
10...	1157	--	6.9	415	8.2	21.0	6.8
10...	1158	--	7.9	419	8.2	21.0	6.8
10...	1159	--	9.0	420	8.2	21.0	6.8

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
JUL						
10...	86	701	8.00	20.5	150	10



MISSOURI RIVER MAIN STEM  
06332200 LAKE SAKAKAWEA AT WHITE EARTH BAY, ND

LOCATION.--Lat 48°06'46", long 102°44'12", in SW<sup>1</sup>/<sub>4</sub> sec.35, T.153 N., R.94 W., Mountrail County, Hydrologic Unit 10110101, south of White Earth Bay, 13 mi northeast of New Town.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1992 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
JUL							
10...	1010	53.5	0.0	391	8.2	20.5	6.0
10...	1011	--	3.0	390	8.2	20.5	5.9
10...	1012	--	6.0	391	8.3	20.5	5.8
10...	1013	--	8.9	390	8.3	20.5	5.8
10...	1014	--	11.9	390	8.3	20.5	5.7
10...	1015	--	15.0	391	8.3	20.5	5.7
10...	1016	--	16.3	390	8.3	20.5	5.7

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
JUL						
10...	72	703	22.8	19.0	140	14

MISSOURI RIVER MAIN STEM  
06332510 LAKE SAKAKAWEA NEAR NEW TOWN, ND

211

LOCATION.--Lat 47°58'47", long 102°33'12", SW<sup>1</sup>/<sub>4</sub> sec.15, T.152 N., R.93 W., McKenzie County, Hydrologic Unit 10110101,  
300 ft upstream from bridge 3 mi west of New Town.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1978-82, 1992 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	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)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)
JUL											
10...	0810	0.0	0.50	403	130	109	33	11	24	29	0.9
10...	0815	8.6	9.1	409	130	110	32	11	24	29	0.9
10...	0820	20.5	21.0	610	190	145	45	18	47	35	1
10...	0825	26.0	26.5	624	190	146	45	18	46	35	1

DATE	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L AS CL) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	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)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)
JUL											
10...	2.7	84	5.4	226	0.31	0.090	<0.010	0.39	0.39	0.48	0.060
10...	2.6	86	4.9	227	0.31	0.090	<0.010	0.46	0.46	0.56	0.034
10...	3.7	150	8.5	362	0.49	0.130	<0.010	0.47	0.47	0.60	0.025
10...	3.7	160	9.0	369	0.50	0.140	<0.010	0.59	0.59	0.73	0.033

DATE	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	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)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
JUL											
10...	0.017	2	44	<0.02	0.2	2	460	<0.2	<2	<0.2	18
10...	0.011	2	48	<0.02	0.3	3	460	3	<2	<0.2	21
10...	0.011	1	48	<0.02	<0.2	3	330	<0.2	<2	<0.2	12
10...	<0.010	1	48	<0.02	0.3	3	420	3	<2	0.3	12

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
JUL							
10...	0800	86.9	0.0	407	8.2	20.0	7.4
10...	0801	--	3.2	406	8.2	20.0	7.6
10...	0802	--	6.0	402	8.2	20.0	7.6
10...	0803	--	9.1	406	8.2	20.0	7.5
10...	0804	--	11.9	495	8.1	17.0	6.8
10...	0805	--	15.0	585	8.1	14.5	6.6
10...	0806	--	18.0	608	8.1	12.5	6.5
10...	0807	--	21.0	617	8.0	12.0	6.3
10...	0808	--	24.1	620	8.0	11.5	6.1
10...	0809	--	26.5	622	8.0	11.5	6.1

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
JUL						
10...	88	703	24.0	15.0	120	8.0

**BEAR DEN CREEK BASIN**  
**06332515 BEAR DEN CREEK NEAR MANDAREE, ND**  
 (Hydrologic benchmark network station and radiochemical program station)

**LOCATION.**--Lat 47°47'14", long 102°46'05", in NW<sup>1</sup>/<sub>4</sub> sec.30, T.150 N., R.94 W., McKenzie County, Hydrologic Unit 10110101, on right bank 0.5 mi upstream from county highway culvert, and 5.5 mi northwest of Mandaree.

**DRAINAGE AREA.**--74 mi<sup>2</sup>.

**WATER-DISCHARGE RECORDS**

**PERIOD OF RECORD.**--June 1966 to current year.

**GAGE.**--Water-stage recorder. Datum of gage is 1,947.58 ft above sea level.

**REMARKS.**--Records poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.31	.25	.33	e.00	e.00	e1.5	e.22	.94	e.37	e.16	e.27	.11
2	e.35	.24	.30	e.00	e.00	e1.0	e.20	1.4	e.41	e.16	e.50	.12
3	e.30	.24	.29	e.00	e.00	e.80	e.20	1.8	e.35	e.18	e1.2	.12
4	e.25	.24	.28	e.00	e.00	e.50	e1.0	2.0	e.32	e.17	e4.0	.12
5	.23	.24	.26	e.00	e.00	e.40	e8.0	1.9	e.36	e.16	e2.7	.13
6	.23	.23	.19	e.00	e.01	e.30	e200	1.4	e.38	e.17	e1.5	.13
7	.23	.24	e.12	e.00	e.05	e.27	e350	.94	e.30	e.16	e1.1	.12
8	e.28	.23	e.08	e.00	e2.0	e.24	e400	1.4	e.28	e.15	.48	.12
9	e.26	.24	e.07	e.00	e200	e.21	297	3.8	e.26	e.15	.37	.12
10	e.25	.22	e.06	e.01	e150	e.20	e125	2.1	e.25	e.16	.31	.12
11	e.30	.18	e.05	e.03	e100	e6.0	e80	1.3	e.32	e.16	.25	.12
12	e.35	.22	e.06	e.20	e60	e50	e40	1.2	e.35	e.16	.21	.13
13	e.34	.23	e.05	e.10	e20	e230	e20	1.4	e.31	e.16	.20	.13
14	e.33	.24	e.05	e.06	e10	e120	e10	.91	e.27	e.15	.18	.13
15	e.30	.24	e.04	e.03	e7.0	e80	e6.0	.99	e.23	e.15	.56	.13
16	e.30	.25	e.03	e.01	e7.2	e40	4.5	.77	e.21	e.14	.66	.13
17	e.29	.28	e.02	e.01	e8.0	e25	4.1	.74	e.20	e.14	.19	.13
18	e.29	.28	e.02	e.00	e9.0	e15	3.2	.64	e.19	e.14	.16	.68
19	e.29	.30	e.01	e.00	e10	e8.0	2.6	.83	e.18	e.18	.22	.45
20	e.30	.31	e.01	e.00	e12	e4.0	2.0	.69	e.19	e1.5	.18	1.0
21	e.29	.29	e.00	e.00	e17	e2.0	1.6	.93	e.18	e5.0	.15	.65
22	e.28	.26	e.00	e.00	e22	e1.2	1.3	.72	e.17	e.68	.14	.40
23	e.27	.25	e.00	e.00	e16	e.70	1.0	.62	e.19	e.45	.13	.28
24	e.26	.27	e.00	e.00	e10	e.52	.84	.65	e.20	e.35	.12	.27
25	e.25	.29	e.00	e.00	e7.0	e.40	.94	.52	e.19	e.28	.12	.23
26	e.25	.29	e.00	e.00	e5.0	e.33	1.2	.47	e.20	e.30	.12	.23
27	.24	.29	e.00	e.00	e3.0	e.27	1.3	.35	e.19	e.33	.11	.25
28	.24	.28	e.00	e.00	e2.8	e.22	1.3	.32	e.18	e.29	.11	.24
29	.22	.27	e.00	e.00	e2.0	e.18	1.1	e.33	e.18	e.25	.11	.24
30	.23	.38	e.00	e.00	---	e.16	1.0	e.32	e.17	e.23	.12	.25
31	.24	---	e.00	e.00	---	e.20	---	e.31	---	e.30	.12	---
TOTAL	8.55	7.77	2.32	0.45	680.06	589.60	1565.60	32.69	7.58	12.96	16.59	7.28
MEAN	.28	.26	.075	.015	23.5	19.0	52.2	1.05	.25	.42	.54	.24
MAX	.35	.38	.33	.20	200	230	400	3.8	.41	5.0	4.0	1.0
MIN	.22	.18	.00	.00	.00	.16	.20	.31	.17	.14	.11	.11
AC-FT	17	15	4.6	.9	1350	1170	3110	65	15	26	33	14

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 1992, BY WATER YEAR (WY)

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
MEAN	1.94	.31	.15	.18	8.28	39.6	22.8	4.91	1.95	1.38	.30	.79											
MAX	23.0	.95	.33	1.51	41.7	217	243	42.0	7.80	8.87	1.52	5.12											
(WY)	1983	1972	1974	1974	1983	1982	1975	1970	1970	1986	1974	1973											
MIN	.13	.16	.031	.000	.000	.51	.27	.15	.12	.092	.075	.091											
(WY)	1985	1991	1985	1971	1972	1991	1991	1981	1987	1984	1988	1990											

SUMMARY STATISTICS

FOR 1995 CALENDAR YEAR

FOR 1996 WATER YEAR

WATER YEARS 1970 - 1992

ANNUAL TOTAL	1376.50	2931.45	
ANNUAL MEAN	3.77	8.01	
HIGHEST ANNUAL MEAN			22.7 1982
LOWEST ANNUAL MEAN			.27 1988
HIGHEST DAILY MEAN	129 Mar 17	400 Apr 8	1110 Mar 14 1972
LOWEST DAILY MEAN	.00 Dec 21	.00 Dec 21	.00 Jan 21 1970
ANNUAL SEVEN-DAY MINIMUM	.00 Dec 21	.00 Dec 21	.00 Jan 21 1970
INSTANTANEOUS PEAK FLOW		470 Apr 8	2840 Mar 13 1972
INSTANTANEOUS PEAK STAGE		a 5.93 Apr 8	10.03 Apr 6 1969
ANNUAL RUNOFF (AC-FT)	2730	5810	4980
10 PERCENT EXCEEDS	4.6	6.0	4.5
50 PERCENT EXCEEDS	.30	.25	.24
90 PERCENT EXCEEDS	.14	.00	.00

a Backwater from ice.  
 e Estimated.

## BEAR DEN CREEK BASIN

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06332515 BEAR DEN CREEK NEAR MANDAREE, ND--Continued  
(Hydrologic benchmark network station and radiochemical program station)

## WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, (PER- CENT SATUR- ATION) (00301)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)
OCT											
04...	0900	0.25	2380	--	--	14.0	10.0	--	--	--	--
26...	0900	0.25	2720	8.6	695	4.5	4.0	32	12.2	103	180
NOV											
28...	0845	0.29	2610	--	--	-2.0	0.0	--	--	--	--
FEB											
12...	1530	57	2770	--	--	11.5	0.0	--	--	--	--
MAR											
13...	1800	231	--	--	--	--	0.0	--	--	--	--
19...	1400	8.0	770	--	--	3.0	0.0	--	--	--	--
APR											
09...	1550	257	--	--	--	22.0	3.0	--	--	--	--
MAY											
29...	1130	0.33	2710	--	--	17.0	16.0	--	--	--	--
JUL											
10...	0930	0.16	3070	--	--	20.0	16.5	--	--	--	--
AUG											
07...	0835	1.1	1790	8.2	712	21.0	16.5	360	7.2	79	94
28...	1045	0.12	2790	--	--	23.5	17.5	--	--	--	--

DATE	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOC- CI, FECAL, KF AGAR (COLS. PER 100 ML) (31673)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS NA) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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											
26...	100	86	30	25	600	88	20	5.8	796	690	2.5
AUG											
07...	730	980	21	10	340	88	15	8.0	374	510	3.1
DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	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, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 TOTAL (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) (00608)
OCT											
26...	0.30	11	1820	1870	2.54	1.26	<0.010	--	--	<0.050	<0.015
AUG											
07...	0.40	7.7	1110	1190	1.62	3.53	0.030	0.180	0.210	0.210	0.140
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)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)
OCT											
26...	0.30	0.30	0.30	0.020	<0.010	<0.010	<10	18	<1	36	64
AUG											
07...	1.9	2.0	2.2	0.460	<0.010	0.010	10	38	3	81	27
DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	RA-226 2 SIGMA WATER, DISS, (PCI/L) (76001)	RADIUM 226, DIS- SOLVED, RADON METHOD (PCI/L) (09511)	URANIUM NATURAL 2 SIGMA WATER, DISS, (UG/L) (75990)	URANIUM NATURAL DIS- SOLVED (UG/L AS U) (22703)
OCT											
26...	23	3	2	<1	<1.0	380	3	--	--	--	--
AUG											
07...	22	10	9	<1	<1.0	270	<6	0.030	0.12	0.0	2.3

## MISSOURI RIVER MAIN STEM

06332518 LAKE SAKAKAWEA ABOVE VAN HOOK ARM NEAR MANDAREE, ND

LOCATION.--Lat 47°45'35", long 102°25'21", in SW<sup>1</sup>/<sub>4</sub> sec.35, T.150 N., R.92 W., Mountrail County, Hydrologic Unit 10110101, upstream from Van Hook Arm, 11 mi east of Mandaree.

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1992 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
JUL							
09...	1625	90.5	0.0	465	8.5	21.0	7.4
09...	1626	--	2.9	444	8.4	20.0	6.5
09...	1627	--	5.6	441	8.3	19.5	6.1
09...	1628	--	8.8	444	8.3	19.5	6.1
09...	1629	--	11.7	483	8.2	19.0	6.0
09...	1630	--	14.8	612	8.1	12.0	5.9
09...	1631	--	17.8	625	8.1	9.5	6.1
09...	1632	--	21.0	624	8.1	9.0	6.1
09...	1633	--	23.9	624	8.0	9.0	6.0
09...	1634	--	27.0	625	8.0	9.0	6.0
09...	1635	--	27.6	625	8.0	9.0	5.9

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
JUL						
09...	90	708	36.0	27.0	135	7.0



SHELL CREEK BASIN  
06332523 EAST FORK SHELL CREEK NEAR PARSHALL, ND

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LOCATION.--Lat 47°56'55", long 102°12'52", in NW<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub> sec.33, T.152 N., R.90 W., Mountrail County, Hydrologic Unit 10110101, on right bank 10 ft upstream from bridge on county road, 4 mi west of Parshall.

DRAINAGE AREA.--360 mi<sup>2</sup>.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1991 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,890 ft above sea level, from topographic map.

REMARKS.--Records fair except for period of estimated discharge, which is poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996 DAILY MEAN VALUES												
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.60	e1.1	e1.2	e.57	e.07	e.13	e5.3	9.1	4.5	1.5	1.1	.02
2	.96	e1.4	e1.4	e.58	e.06	e.11	e4.8	8.4	4.7	1.4	1.1	.01
3	.85	e1.9	e1.4	e.50	e.06	e.10	4.6	7.9	4.6	1.3	.90	.01
4	.86	e1.6	e1.4	e.40	e.05	e.09	4.6	7.3	4.1	1.3	1.3	.18
5	.74	e1.5	e1.6	e.30	e.04	e.09	4.7	7.2	3.7	1.2	.97	.95
6	.76	e1.6	e1.4	e.23	e.04	e.08	7.2	8.3	3.4	1.1	.60	.41
7	.75	e1.5	e1.3	e.18	e.10	e.08	25	10	2.6	.92	.49	.37
8	.85	e1.6	e1.2	e.17	e.30	e.25	124	11	2.3	.81	.35	.27
9	1.6	e1.5	e1.0	e.22	e1.0	e1.0	313	11	1.9	.91	.30	.26
10	2.0	e1.5	e.90	e.28	e.85	e5.0	523	9.2	1.6	.82	.34	.25
11	1.4	e1.6	e.80	e.35	e.75	e20	246	7.8	1.5	.91	.30	.18
12	e1.6	e1.5	e.70	e.45	e.60	e50	176	8.4	1.7	1.1	.27	.20
13	e1.8	e1.4	e.64	e.60	e.50	e200	118	8.5	1.6	.99	.20	.22
14	e1.7	e1.4	e.63	e.45	e.55	e150	73	8.2	1.9	1.1	.16	.21
15	e1.5	e1.4	e.60	e.37	e.45	e100	53	9.0	1.9	1.2	.18	.19
16	e1.1	e1.5	e.58	e.32	e.35	e70	42	8.4	1.7	.81	.49	.17
17	e.98	e1.6	e.56	e.28	e.29	e60	35	7.5	1.5	.73	.44	.15
18	e.97	e1.7	e.50	e.24	e.25	e50	28	8.0	1.2	.91	.26	.65
19	e1.0	e1.8	e.48	e.20	e.38	e42	24	7.7	1.1	.88	.36	1.4
20	e1.1	e2.0	e.45	e.17	e.52	e36	19	6.7	.88	2.6	.29	1.6
21	e1.0	e1.9	e.44	e.16	e.70	e30	16	6.0	1.0	2.1	.18	1.2
22	e.94	e1.8	e.43	e.18	e.50	e25	14	5.6	1.1	1.7	.16	2.5
23	e.86	e1.7	e.45	e.15	e.38	e20	12	5.0	1.7	1.5	.08	2.6
24	e.80	e1.7	e.47	e.14	e.30	e17	12	4.8	1.6	2.0	.07	2.2
25	e.76	e1.6	e.49	e.16	e.25	e15	12	4.6	2.1	1.9	.08	2.0
26	e.70	e1.3	e.52	e.14	e.20	e13	11	4.7	2.0	1.8	.11	2.1
27	e.68	e1.2	e.52	e.10	e.15	e11	11	4.6	1.9	1.6	.08	2.1
28	e.68	e1.1	e.54	e.08	e.16	e10	10	4.3	1.9	1.4	.07	2.0
29	e.70	e1.1	e.54	e.08	e.14	e8.5	9.4	4.5	1.9	1.1	.08	2.1
30	e.74	e1.2	e.55	e.09	---	e7.2	9.3	4.6	1.6	.97	.07	2.2
31	e.86	---	e.56	e.08	---	e6.3	---	4.7	---	1.0	.03	---
TOTAL	31.84	45.7	24.25	8.22	9.99	947.93	1946.9	223.0	65.18	39.56	11.41	28.70
MEAN	1.03	1.52	.78	.27	.34	30.6	64.9	7.19	2.17	1.28	.37	.96
MAX	2.0	2.0	1.6	.60	1.0	200	523	11	4.7	2.6	1.3	2.6
MIN	.60	1.1	.43	.08	.04	.08	4.6	4.3	.88	.73	.03	.01
AC-FT	63	91	48	16	20	1880	3860	442	129	78	23	57

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 1996, BY WATER YEAR (WY)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
MEAN	1.83	1.89	1.07	.55	1.58	28.2	17.8	4.29	3.95	5.07	2.26	1.37
MAX	4.71	2.76	1.50	1.22	3.58	49.8	64.9	7.19	11.2	23.5	11.6	2.66
(WY)	1995	1995	1994	1995	1995	1994	1996	1996	1994	1993	1993	1991
MIN	.26	1.16	.67	.27	.34	10.1	4.00	1.64	.66	.42	.19	.34
(WY)	1993	1993	1993	1996	1996	1992	1993	1992	1992	1992	1992	1992

SUMMARY STATISTICS FOR 1995 CALENDAR YEAR FOR 1996 WATER YEAR WATER YEARS 1991 - 1996

	1995 CALENDAR YEAR	1996 WATER YEAR	1991 - 1996
ANNUAL TOTAL	2006.30	3382.68	
ANNUAL MEAN	5.50	9.24	5.93
HIGHEST ANNUAL MEAN			9.24
LOWEST ANNUAL MEAN			2.19
HIGHEST DAILY MEAN	300 Mar 13	523 Apr 10	523 Apr 10 1996
LOWEST DAILY MEAN	.10 Aug 23	.01 Sep 2	.00 Sep 2 1991
ANNUAL SEVEN-DAY MINIMUM	.30 Aug 19	.04 Aug 28	.00 Sep 2 1991
INSTANTANEOUS PEAK FLOW		741 Apr 10	741 Apr 10 1996
INSTANTANEOUS PEAK STAGE		6.14 Apr 10	6.14 Apr 10 1996
ANNUAL RUNOFF (AC-FT)	3980	6710	4300
10 PERCENT EXCEEDS	8.5	11	8.9
50 PERCENT EXCEEDS	1.4	1.1	1.4
90 PERCENT EXCEEDS	.52	.15	.25

e Estimated.

SHELL CREEK BASIN  
06332523 EAST FORK SHELL CREEK NEAR PARSHALL, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1991 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
JAN												
02...	1300	0.58	2170	--	--	-3.0	0.0	--	--	--	--	--
FEB												
12...	1130	0.60	--	--	--	-4.0	0.0	--	--	--	--	--
MAR												
09...	1230	204	540	--	--	18.0	3.0	--	--	--	--	--
14...	1200	151	--	--	--	30.0	1.0	--	--	--	--	--
20...	1630	36	950	8.2	699	0.0	0.5	10.3	78	220	41	29
MAY												
21...	1300	5.8	3360	8.5	708	24.0	17.0	9.3	105	590	86	90
JUL												
16...	1210	0.84	3100	8.5	710	23.0	21.0	--	--	360	41	62
SEP												
a04...	1325	0.20	3510	8.4	709	23.0	16.5	7.9	88	350	36	64

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINEITY 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)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
MAR												
20...	120	52	4	18	184	280	7.4	0.10	17	630	660	0.90
MAY												
21...	670	71	12	2.6	691	1200	19	0.30	6.1	2490	2520	3.43
JUL												
16...	630	79	14	9.5	674	1000	20	0.30	15	2190	2310	3.14
SEP												
a04...	720	81	17	12	768	1200	25	0.40	0.10	2520	2510	3.41

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 TOTAL (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) (00608)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)
MAR											
20...	63.6	0.080	1.02	1.10	1.10	0.360	0.360	2	100	110	<1
MAY											
21...	39.3	0.010	--	--	<0.050	0.020	0.210	3	520	41	<2
JUL											
16...	5.23	0.010	0.060	0.070	0.070	0.130	0.340	8	660	45	<1
SEP											
a04...	1.36	0.010	0.080	0.090	0.090	0.020	0.120	7	740	59	<2

DATE	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	ALA- CHLOR, WATER, DISS, REC, (UG/L) (46342)	ATRA- ZINE, WATER, DISS, REC, (UG/L) (39632)	TRIAZIN SCREEN (ELISA) WAT,WH REC,AS ATRAZIN (UG/L) (34757)	BEN- FLUR- ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)
MAR											
20...	34	110	<0.1	<1	<1	500	--	--	--	--	--
MAY											
21...	160	57	<0.1	2	<1	1700	<0.002	<0.001	0.2	<0.002	<0.002
JUL											
16...	120	110	<0.1	<1	<1	950	--	--	<0.05	--	--
SEP											
a04...	140	140	<0.1	2	<1	940	--	--	<0.05	--	--

SHELL CREEK BASIN  
06332523 EAST FORK SHELL CREEK NEAR PARSHALL, ND--Continued

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WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	CAR- BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	CARBO- FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	CARBO- FURAN SCREEN, TOTAL (UG/L) (99902)	CHLOR- PYRIFOS DIS- SOLVED (UG/L) (38933)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	CYANA- ZINE SCREEN, TOTAL (UG/L) (99904)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	P, P' DDE DISSOLV (UG/L) (34653)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	DI- ELDRIN DIS- SOLVED (UG/L) (39381)
MAY 21...	<0.003	<0.003	--	<0.004	<0.004	<0.04	<0.002	<0.006	<0.002	<0.002	<0.001
JUL 16...	--	--	<0.06	--	--	<0.04	--	--	--	--	--
SEP 04...	--	--	<0.06	--	--	<0.04	--	--	--	--	--

DATE	2,6-DI- ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	FONOFOS WATER DISS REC (UG/L) (04095)	LINDANE DIS- SOLVED (UG/L) (39341)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	MALA- THION, DIS- SOLVED (UG/L) (39532)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	METHYL PARA- THION WAT FLT 0.7 U GF, REC (UG/L) (82667)
MAY 21...	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.004	<0.002	<0.005	<0.001	<0.006

DATE	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	METRI- SENCOR WATER DISSOLV (UG/L) (82630)	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	PARA- THION, DIS- SOLVED (UG/L) (39542)	PEB- ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)
MAY 21...	<0.002	<0.004	<0.004	<0.003	<0.004	<0.004	<0.004	<0.005	<0.002	e0.014	<0.003

DATE	PROP- CHLOR, WATER, DISS, REC (UG/L) (04024)	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	2, 4-D SCREEN, TOTAL (UG/L) (99906)
MAY 21...	<0.007	<0.004	<0.013	<0.005	<0.010	<0.007	<0.013	<0.002	0.019	e0.003	<0.700
JUL 16...	--	--	--	--	--	--	--	--	--	--	<0.700
SEP 04...	--	--	--	--	--	--	--	--	--	--	2.10

a Replicate sample also collected for quality-assurance purposes.  
e Estimated.

**DEEPWATER CREEK BASIN**  
**06332770 DEEPWATER CREEK AT MOUTH NEAR RAUB, ND**

**LOCATION.**--Lat 47°44'16", long 102°06'26", in NW<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> sec.8, T.149 N., R.89 W., McLean County, Hydrologic Unit 10110101, on right bank 20 ft upstream from Highway 1804 bridge, 3 mi west and 0.6 mi south of Raub.

**DRAINAGE AREA.**--220 mi<sup>2</sup>.

**WATER-DISCHARGE RECORDS**

**PERIOD OF RECORD.**--July 1991 to current year.

**GAGE.**--Water-stage recorder. Elevation of gage is 1,832 ft above sea level, from topographic map.

**REMARKS.**--Records fair except for periods of estimated discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.00	2.2	e1.4	e.62	e.00	e.00	e7.5	e8.5	1.8	e.23	e.10	.06
2	e.00	2.0	e1.4	e.63	e.00	e.00	e7.0	e8.0	1.4	e.22	e.10	.07
3	e.00	1.6	e1.5	e.58	e.00	e.00	e8.0	e7.6	1.1	e.22	e.11	.07
4	e.00	2.0	e1.6	e.45	e.00	e.00	e9.0	e7.2	1.8	e.20	e.12	.10
5	e.00	1.7	e1.7	e.38	e.00	e.00	e10	e7.0	3.0	e.18	e.11	.10
6	e.00	2.0	e1.6	e.30	e.00	e.00	e15	e6.9	3.0	e.14	e.10	.09
7	e.00	1.8	e1.4	e.23	e.00	e.00	e35	e6.9	1.9	e.09	e.10	.09
8	e.00	1.8	e1.3	e.26	e.00	e.01	e70	e6.9	1.9	e.06	e.10	.08
9	e.00	1.8	e1.2	e.32	e.00	e.02	e290	e6.8	3.5	e.08	e.09	.07
10	e.00	e2.0	e1.1	e.40	e.00	e.50	e400	e6.5	2.0	e.07	e.09	.06
11	e.00	e1.8	e.90	e.50	e.00	e10	e300	e6.4	.96	e.07	e.09	.06
12	e.00	e1.6	e.80	e.60	e.00	e200	e200	e6.5	.81	e.08	e.08	.06
13	e.00	e1.5	e.72	e.80	e.00	e300	e150	e6.5	.45	e.08	e.07	.06
14	e.00	e1.5	e.68	e.70	e.00	e170	e110	e6.3	.25	e.08	e.07	.05
15	e.00	e1.6	e.65	e.50	e.00	e110	e80	e6.3	.22	e.08	e.06	.07
16	e.00	e1.8	e.62	e.35	e.00	e85	e60	e6.2	.23	e.09	e.09	.07
17	e.00	1.8	e.60	e.25	e.01	e60	e50	e5.8	.23	e.09	e.10	.06
18	.50	2.0	e.56	e.19	e.01	e50	e40	e5.3	.19	e.08	e.09	.12
19	.71	2.3	e.52	e.13	e.01	e40	e34	e5.0	.30	e.07	e.10	.15
20	.46	e2.5	e.52	e.10	e.02	e35	e27	e4.9	.65	e.15	e.09	.16
21	.30	e2.3	e.48	e.07	e.05	e31	e23	e4.8	.22	e.14	e.08	.10
22	.68	e2.1	e.46	e.05	e.10	e26	e20	4.8	.21	e.11	e.07	.09
23	.96	e1.9	e.49	e.03	e.07	e23	e18	4.0	e.18	e.11	e.07	.10
24	1.0	e1.8	e.52	e.03	e.04	e20	e16	3.1	e.20	e.12	e.06	.10
25	.84	e1.8	e.54	e.02	e.02	e18	e15	2.8	e.33	e.13	e.06	.07
26	.77	e1.7	e.60	e.01	e.02	e16	e13	2.3	e.30	e.12	e.05	.09
27	.88	e1.4	e.60	e.00	e.01	e14	e12	1.7	e.30	e.12	.05	.09
28	.80	e1.2	e.58	e.00	e.00	e12	e11	1.2	e.30	e.12	.06	.09
29	1.1	e1.3	e.58	e.00	e.00	e10	e10	1.0	e.28	e.11	.06	.09
30	2.0	e1.3	e.60	e.00	---	e9.5	e9.5	1.0	e.25	e.10	.08	.09
31	2.8	---	e.60	e.00	---	e8.5	---	1.3	---	e.10	.08	---
TOTAL	13.80	54.1	26.82	8.50	0.36	1248.53	2050.0	159.5	28.26	3.64	2.58	2.56
MEAN	.45	1.80	.87	.27	.012	40.3	68.3	5.15	.94	.12	.083	.085
MAX	2.8	2.5	1.7	.80	.10	300	400	8.5	3.5	.23	.12	.16
MIN	.00	1.2	.46	.00	.00	.00	7.0	1.0	.18	.06	.05	.05
AC-FT	27	107	53	17	.7	2480	4070	316	56	7.2	5.1	5.1

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 1996, BY WATER YEAR (WY)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
MEAN	1.17	1.56	1.11	.63	1.79	32.4	19.8	6.18	5.46	3.28	.97	.92
MAX	4.15	2.59	1.75	1.54	5.40	59.7	68.3	17.2	18.3	18.5	5.68	4.49
(WY)	1995	1992	1994	1995	1992	1994	1996	1995	1994	1993	1993	1991
MIN	.000	.16	.57	.000	.001	9.72	4.81	.80	.040	.009	.000	.000
(WY)	1993	1993	1992	1993	1993	1992	1992	1992	1992	1992	1994	1995

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR	FOR 1996 WATER YEAR	WATER YEARS 1991 - 1996
ANNUAL TOTAL	2244.19	3598.65	
ANNUAL MEAN	6.15	9.83	6.30
HIGHEST ANNUAL MEAN			9.83
LOWEST ANNUAL MEAN			2.04
HIGHEST DAILY MEAN	250	400	400
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00	.00
INSTANTANEOUS PEAK FLOW		a 500	450
INSTANTANEOUS PEAK STAGE		b 13.26	b 13.26
ANNUAL RUNOFF (AC-FT)	4450	7140	4560
10 PERCENT EXCEEDS	15	13	13
50 PERCENT EXCEEDS	1.4	.34	.72
90 PERCENT EXCEEDS	.00	.00	.00

a About.  
 b Backwater from ice.  
 e Estimated.

DEEPWATER CREEK BASIN  
06332770 DEEPWATER CREEK AT MOUTH NEAR RAUB, ND--Continued

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WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1991 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
JAN 02...	1300	0.63	3560	--	--	-3.0	0.0	--	--	--	--	--
MAR 15...	1200	120	270	--	--	3.0	1.0	--	--	--	--	--
21...	0915	31	580	8.2	715	-3.0	0.5	9.2	68	160	31	21
APR 09...	1100	286	630	--	--	10.0	3.0	--	--	--	--	--
MAY 21...	1030	4.9	1930	8.4	709	13.5	14.5	8.2	87	440	69	64
JUL 16...	1000	0.89	2270	9.3	702	23.0	21.0	7.6	93	380	36	70
SEP 04...	1230	0.15	2090	8.7	709	16.5	17.0	9.9	111	390	44	68

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
MAR 21...	59	41	2	15	156	140	4.8	0.20	14	383	408
MAY 21...	280	57	6	12	477	570	12	0.40	6.9	1300	1380
JUL 16...	400	69	9	10	454	760	14	0.40	4.2	1570	1660
SEP 04...	340	65	7	11	579	570	13	0.50	12	1410	1460

DATE	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, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 TOTAL (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) (00608)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)
MAR 21...	0.55	34.0	0.040	0.480	0.520	0.520	0.260	0.290	2	110	110
MAY 21...	1.88	18.1	0.020	0.040	0.060	--	0.030	0.040	3	380	22
JUL 16...	2.26	3.99	0.010	0.040	0.050	0.050	0.030	0.390	12	510	23
SEP 04...	1.99	0.59	<0.010	--	--	<0.050	<0.015	0.020	13	620	44

DATE	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)	TRIAZIN SCREEN (ELISA) WAT,WH REC,AS ATRAZIN (UG/L) (34757)	CARBO- FURAN SCREEN, TOTAL (UG/L) (99902)	CYANA- ZINE SCREEN, TOTAL (UG/L) (99904)	2, 4-D SCREEN, TOTAL (UG/L) (99906)
MAR 21...	<1	19	130	<0.1	<1	<1	340	--	--	--	--
MAY 21...	<2	76	36	<0.1	<1	<1	940	--	--	--	--
JUL 16...	<1	80	26	<0.1	2	<1	630	<0.05	<0.06	<0.04	2.26
SEP 04...	<1	80	92	<0.1	3	<1	730	<0.05	<0.06	<0.04	9.26



MISSOURI RIVER MAIN STEM  
06332780 LAKE SAKAKAWEA ABOVE LITTLE MISSOURI RIVER NEAR HALLIDAY, ND

LOCATION.--Lat 47°36'47", long 102°15'20", in NE<sup>1</sup>/<sub>4</sub> sec.27, T.148 N., R.91 W., Dunn County, Hydrologic Unit 10110101, upstream from mouth of Little Missouri River, 18 mi north of Halliday.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1992 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
JUL							
09...	0815	108	0.0	550	8.0	19.0	7.5
09...	0816	--	4.2	550	8.2	18.5	7.2
09...	0817	--	7.9	560	8.2	18.5	7.1
09...	0818	--	12.1	580	8.3	18.0	7.0
09...	0819	--	16.0	620	8.2	15.0	7.0
09...	0820	--	20.1	630	8.2	11.5	7.2
09...	0821	--	24.1	620	8.1	8.0	7.4
09...	0822	--	28.2	620	8.0	8.0	--
09...	0823	--	32.2	630	8.0	8.0	--
09...	0824	--	32.9	640	8.0	8.0	--

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
JUL						
09...	87	710	58.0	11.0	210	<5.0

DRAINAGE AREA.--4,640 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--March 1938 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,686.32 ft above sea level. Prior to June 23, 1950, various nonrecording gages on former highway bridge at present site and datum. June 23, 1950, to Sept. 2, 1957, nonrecording gage at site 90 ft upstream at present datum.

**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, 20.2 ft, and 19.7 ft, respectively. These stages are not comparable to stages during period of record, owing to construction of levees.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	40	46	e50	e22	e20	e450	378	163	3970	260	678	15
2	40	46	e45	e22	e20	e360	425	156	2770	427	340	15
3	38	46	e40	e21	e20	e320	540	164	2490	318	313	23
4	56	46	e35	e20	e20	e280	544	215	2560	276	322	28
5	181	46	e33	e20	e20	e260	859	284	1950	248	300	31
6	372	46	e30	e19	e100	e230	1670	540	1380	238	83	31
7	131	e46	e30	e19	e500	e200	1560	549	1170	213	60	31
8	100	e45	e29	e18	e1000	e180	1400	246	918	194	56	31
9	88	e44	e29	e18	e4000	e170	1410	192	624	145	53	31
10	132	e43	e28	e20	e5000	e170	1290	358	624	123	53	28
11	134	e42	e28	e25	e3000	e700	1040	350	636	113	52	28
12	106	e41	e27	e40	e2000	e5000	870	318	500	95	50	28
13	93	e40	e27	e50	e3800	e6000	757	390	353	72	58	26
14	89	e60	e27	e40	e6600	4880	642	444	268	72	48	26
15	88	e90	e27	e38	e4500	5400	561	425	256	72	44	e26
16	83	e100	e26	e35	e4300	5960	710	418	241	113	39	e26
17	69	e90	e26	e33	e4000	5850	1420	413	223	241	38	e26
18	69	e80	e26	e32	e3800	5070	1610	510	309	349	48	e300
19	64	e80	e26	e31	e3500	4310	1570	395	472	406	59	e900
20	64	e90	e26	e30	e3200	3850	1240	437	344	74	53	e500
21	64	e100	e26	e29	e3000	3180	897	516	280	71	50	e200
22	61	e140	e26	e28	e2700	2220	654	535	280	70	47	127
23	58	e160	e25	e27	e2300	1490	485	510	280	68	43	60
24	54	e200	e25	e26	e1700	1090	382	908	284	69	38	52
25	60	e90	e25	e25	e1300	262	308	1020	268	62	35	45
26	58	e85	e25	e24	e1000	263	258	1230	260	61	29	44
27	54	e80	e25	e23	e800	515	236	4500	260	59	29	44
28	54	e70	e24	e22	e650	485	210	4640	260	56	28	42
29	50	e65	e24	e21	e550	398	187	5160	268	59	20	40
30	46	e55	e23	e20	---	492	165	5170	268	54	20	39
31	46	---	e23	e20	---	463	---	4380	---	48	15	---
TOTAL	2642	2212	886	818	63400	60498	24278	35536	24766	4726	3101	2843
MEAN	85.2	73.7	28.6	26.4	2186	1952	809	1146	826	152	100	94.8
MAX	372	200	50	50	6600	6000	1670	5170	3970	427	678	900
MIN	38	40	23	18	20	170	165	156	223	48	15	15
AC-FT	5240	4390	1760	1620	125800	120000	48160	70490	49120	9370	6150	5640

MEAN	108	32.1	15.3	17.7	208	924	783	623	690	226	77.5	72.6
MAX	1489	241	107	260	2207	5079	6691	3840	4705	1917	400	526
(WY)	1972	1947	1952	1973	1943	1978	1952	1975	1944	1993	1993	1941
MIN	.87	.37	.000	.000	.000	23.1	10.7	4.75	3.51	.10	.16	.000
(WY)	1959	1956	1956	1939	1939	1992	1981	1980	1961	1980	1988	1955

a Backwater from ice.  
e Estimated.

LITTLE MISSOURI RIVER BASIN  
06335500 LITTLE MISSOURI RIVER AT MARMARTH, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1950-51, 1970 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT 03...	1645	39	1920	--	18.0	12.0	--	--	--	--
JAN 03...	1605	21	2590	--	-8.0	0.0	--	--	--	--
FEB 14...	1550	6630	--	--	1.0	0.5	--	--	--	--
FEB 22...	1128	2730	320	--	8.5	1.0	--	--	--	--
MAR 14...	1605	4950	286	7.5	13.5	0.5	60	88	14	6.0
MAR 20...	0955	3930	407	--	0.0	0.5	--	--	--	--
APR 11...	1446	1020	765	--	1.0	7.5	--	--	--	--
MAY 14...	1145	480	1500	--	22.5	14.5	--	--	--	--
JUN 26...	1405	229	1540	--	26.0	22.0	--	--	--	--
AUG 08...	1240	58	1170	7.4	23.0	21.0	120	203	29	12
SEP 19...	1200	991	1220	--	15.0	10.5	--	--	--	--

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
MAR 14...	39	57	2	4.1	73	4.5	0.10	194	184	0.25
AUG 08...	220	79	9	7.1	370	9.1	0.30	770	758	1.03

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAR 14...	2460	1	90	2	10	10	0.1	<1	<1	170
AUG 08...	120	2	20	<1	60	<10	0.1	6	<1	360

LITTLE MISSOURI RIVER BASIN  
06336600 BEAVER CREEK NEAR TROTTERS, ND

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LOCATION.--Lat 47°09'47", long 103°59'32", in SW<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> NE<sup>1</sup>/<sub>4</sub> sec.33, T.143 N., R.105 W., Golden Valley County, Hydrologic Unit 10110204, on left bank 100 ft upstream from bridge on county road, 2.4 mi east of Montana-North Dakota State line, 13 mi southwest of Trotters, 17 mi north of Beach, 20 mi upstream from Elk Creek, and 27 mi above mouth.

DRAINAGE AREA.--616 mi<sup>2</sup>.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1977 to current year (seasonal records only since 1984).

REVISED RECORDS.--1982: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,370 ft above sea level, from topographic map.

REMARKS.--Records good except for periods of estimated daily discharges, which are poor.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, about 750 ft<sup>3</sup>/s, Mar. 14, gage height, unknown, backwater from ice; no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	e.00	e22	21	20	15	5.9	1.2	e.00
2	---	---	---	---	e.00	e19	17	20	15	5.5	1.1	e.00
3	---	---	---	---	e.00	e15	12	19	17	5.0	1.2	e.00
4	---	---	---	---	e.00	e13	11	19	20	4.6	6.9	e.00
5	---	---	---	---	e.00	e11	21	20	18	4.2	13	e.00
6	---	---	---	---	e.04	e10	99	20	18	3.8	21	e.00
7	---	---	---	---	e.10	e9.0	174	20	17	3.4	11	e.00
8	---	---	---	---	e.30	e8.0	109	21	16	2.8	6.4	e.00
9	---	---	---	---	e1.0	e10	183	21	15	2.4	4.5	e.00
10	---	---	---	---	e2.5	e50	253	21	14	1.9	3.4	e.00
11	---	---	---	---	e7.0	e100	151	21	13	1.8	2.6	e.00
12	---	---	---	---	e20	e200	95	21	14	1.6	1.8	e.00
13	---	---	---	---	e50	e350	65	22	19	1.5	1.5	e.00
14	---	---	---	---	e120	e700	52	22	18	1.5	1.2	e.00
15	---	---	---	---	e160	e450	46	22	14	1.4	.99	e.00
16	---	---	---	---	e200	e380	40	21	12	1.4	.94	e.00
17	---	---	---	---	e130	e270	36	20	10	1.3	.87	e.00
18	---	---	---	---	e100	e160	35	19	9.1	1.2	.74	e.10
19	---	---	---	---	e80	e90	32	19	8.3	1.8	.68	e.40
20	---	---	---	---	e62	e80	30	18	9.1	13	.65	e.90
21	---	---	---	---	e54	57	29	17	9.2	22	.63	e1.0
22	---	---	---	---	e50	49	27	16	8.3	22	.54	e.90
23	---	---	---	---	e48	45	25	16	8.1	16	.43	e.80
24	---	---	---	---	e44	39	24	18	7.4	11	e.30	e.70
25	---	---	---	---	e40	37	23	19	9.1	6.3	e.20	e.50
26	---	---	---	---	e36	43	23	18	9.1	4.4	e.10	e.20
27	---	---	---	---	e33	37	22	18	7.8	2.8	e.00	e.10
28	---	---	---	---	e29	34	21	17	7.1	1.9	e.00	e.09
29	---	---	---	---	e25	32	20	16	7.0	1.5	e.00	e.08
30	---	---	---	---	---	30	20	16	6.2	1.4	e.00	e.08
31	---	---	---	---	---	25	---	16	---	1.2	e.00	---
TOTAL	---	---	---	---	1291.94	3375.0	1716	593	370.8	156.5	83.87	5.85
MEAN	---	---	---	---	44.5	109	57.2	19.1	12.4	5.05	2.71	.19
MAX	---	---	---	---	200	700	253	22	20	22	21	1.0
MIN	---	---	---	---	.00	8.0	11	16	6.2	1.2	.00	.00
AC-FT	---	---	---	---	2560	6690	3400	1180	735	310	166	12

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 1996, BY WATER YEAR (WY)

MEAN	1.10	2.62	2.59	4.40	32.0	110	51.2	15.6	18.0	8.73	2.20	.58
MAX	3.29	6.34	5.13	14.7	141	609	406	45.7	125	48.6	18.4	4.72
(WY)	1983	1983	1979	1983	1983	1978	1979	1979	1982	1993	1993	1986
MIN	.006	.010	.032	.000	.000	1.21	1.11	1.05	.12	.000	.000	.000
(WY)	1982	1982	1982	1982	1989	1991	1991	1981	1992	1988	1985	1981

SUMMARY STATISTICS

WATER YEARS 1978 - 1996

ANNUAL MEAN	a 33.3
HIGHEST ANNUAL MEAN	a 79.7 1978
LOWEST ANNUAL MEAN	a 2.77 1981
HIGHEST DAILY MEAN	2500 Mar 22 1978
LOWEST DAILY MEAN	.00 Aug 1 1981
ANNUAL SEVEN-DAY MINIMUM	.00 Aug 10 1981
INSTANTANEOUS PEAK FLOW	2720 Mar 29 1978
INSTANTANEOUS PEAK STAGE	b 19.27 Mar 22 1978
ANNUAL RUNOFF (AC-FT)	a 24110
10 PERCENT EXCEEDS	37
50 PERCENT EXCEEDS	2.7
90 PERCENT EXCEEDS	.00

- a Based on complete water years only (1978-83).
- b Backwater from ice.
- e Estimated.

LITTLE MISSOURI RIVER BASIN  
06336600 BEAVER CREEK NEAR TROTTERS, ND--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, CUBIC FEET PER SECOND (00061)	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
FEB 14...	1300	119	--	--	--	3.0	0.0	--	--	--	--
MAR 13...	1100	--	e350	310	8.2	5.0	0.0	95	96	20	11
MAR 20...	1030	81	--	--	--	4.0	0.5	--	--	--	--
APR 11...	1500	132	--	854	--	2.0	3.0	--	--	--	--
MAY 28...	1230	16	--	2390	--	20.0	14.5	--	--	--	--
JUL 11...	0920	1.5	--	2460	8.6	21.0	19.0	490	336	50	88

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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 CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED PER AC-FT) (70303)
MAR 13...	19	28	0.8	9.2	68	3.5	0.10	189	222	0.30
JUL 11...	400	63	8	14	1000	11	0.20	1770	1790	2.43

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAR 13...	210	1	210	1	10	40	0.1	<1	<1	210
JUL 11...	7.49	<1	20	<1	60	100	<0.1	<1	2	990

e Estimated.



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

225

LOCATION.--Lat 47° 35'45", long 103°15'45", in SE<sup>1</sup>/<sub>4</sub> SE<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> sec.35, T.148 N., R.99 W., McKenzie County, Hydrologic Unit 10110205, 0.8 mi upstream from U.S. Highway 85 crossing, 17 mi upstream from Cherry Creek, and 17.5 mi south of Watford City.

DRAINAGE AREA.--8,310 mi<sup>2</sup>, 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. Datum of gage is 1,929.03 ft above sea level. From Oct. 2, 1959, to June 17, 1963, and Nov. 28, 1964, to Sept. 30, 1990, water-stage recorder at site at U.S. Highway 85 crossing, 0.8 mi downstream. From June 18, 1963, to Nov. 28, 1964, at site 0.6 mi downstream at present datum. See WSP 1729 or 1917 for history of changes prior to Oct. 2, 1959.

REMARKS.--Records fair except for periods of estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	65	92	176	65	34	e1000	2830	437	4990	628	245	54
2	92	86	168	64	37	e850	2580	454	5330	555	144	52
3	100	96	206	63	40	e700	3400	451	4900	389	199	50
4	76	100	226	62	43	e600	3680	398	4250	339	328	48
5	69	97	199	60	47	e500	3950	370	3280	301	351	47
6	68	95	151	58	e60	e400	4140	370	2830	286	600	47
7	65	92	e102	57	e200	e350	4460	390	3020	327	557	45
8	64	93	e101	58	e500	e300	4030	569	2450	406	342	45
9	64	96	e100	58	e1500	e250	3460	648	1930	422	314	42
10	64	95	e98	58	e2500	e300	2650	733	1550	360	280	41
11	139	97	e90	60	e4500	e1000	2510	838	1330	297	222	40
12	148	101	e82	72	e5000	e4000	2320	667	1240	258	177	40
13	128	93	e76	113	e4000	e6000	1770	539	1050	236	146	39
14	124	102	e70	e180	e3000	e8000	1460	489	919	221	124	38
15	117	107	e69	e160	e2500	e9000	1180	552	825	204	114	38
16	120	111	e68	e140	e4000	e8000	1000	556	1200	188	113	38
17	130	117	e66	e120	e5000	6270	870	482	784	177	101	44
18	126	119	e66	e100	e6000	5240	794	508	586	170	90	381
19	117	124	e66	e85	e6500	4910	690	541	499	182	84	720
20	112	129	e66	79	e5500	4630	695	602	441	464	80	591
21	110	130	e66	68	e5000	4120	1170	549	403	1220	76	607
22	105	134	e66	61	e4500	3650	1600	556	387	884	72	675
23	98	145	e66	54	e4200	3510	1500	642	566	546	72	624
24	95	154	e66	51	e4000	2860	1220	1300	678	394	86	430
25	90	152	e66	47	e3200	3010	970	1040	849	317	82	305
26	98	152	e65	42	e2400	6400	812	768	904	248	77	211
27	102	155	e65	39	e1800	5040	683	806	643	195	69	159
28	98	168	e65	35	e1500	3690	596	1050	483	165	64	130
29	96	169	65	33	e1200	2660	513	1140	437	142	60	113
30	94	159	65	32	---	2800	464	3100	492	128	58	100
31	92	---	65	33	---	3010	---	3870	---	132	55	---
TOTAL	3066	3560	2966	2207	78761	103050	57997	25415	49246	10781	5382	5794
MEAN	98.9	119	95.7	71.2	2716	3324	1933	820	1642	348	174	193
MAX	148	169	226	180	6500	9000	4460	3870	5330	1220	600	720
MIN	64	86	65	32	34	250	464	370	387	128	55	38
AC-FT	6080	7060	5880	4380	156200	204400	115000	50410	97680	21380	10680	11490

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1935 - 1996, BY WATER YEAR (WY)

	MEAN	163	53.0	15.1	10.9	277	1849	1469	772	1110	521	224	171
MAX	2364	409	138	121	3023	10220	12170	4302	5646	2759	1405	1174	
(WY)	1972	1947	1947	1983	1943	1972	1952	1975	1944	1993	1937	1941	
MIN	.83	.33	.000	.000	.000	22.2	29.5	18.0	14.8	9.26	.023	1.38	
(WY)	1989	1989	1989	1935	1935	1964	1981	1981	1988	1980	1988	1936	

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR		FOR 1996 WATER YEAR		WATER YEARS 1935 - 1996	
ANNUAL TOTAL	254160.0		348225		554	
ANNUAL MEAN	696		951		1637	
HIGHEST ANNUAL MEAN					38.0	
LOWEST ANNUAL MEAN					1971	
HIGHEST DAILY MEAN	14400	May 16	9000	Mar 15	55000	Mar 25 1947
LOWEST DAILY MEAN	9.0	Jan 22	32	Jan 30	.00	Jan 1 1935
ANNUAL SEVEN-DAY MINIMUM	9.0	Jan 22	35	Jan 27	.00	Jan 1 1935
INSTANTANEOUS PEAK FLOW			10000	Mar 15	110000	Mar 25 1947
INSTANTANEOUS PEAK STAGE			a 17.23	Mar 15	24.00	Mar 25 1947
ANNUAL RUNOFF (AC-FT)	504100		690700		401000	
10 PERCENT EXCEEDS	1350		3550		1200	
50 PERCENT EXCEEDS	213		216		72	
90 PERCENT EXCEEDS	64		58		.20	

a Backwater from ice.  
e Estimated.

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

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT 03...	1700	91	1770	--	21.0	14.0	--	--	--	--
NOV 28...	1200	172	1620	--	-1.0	0.0	--	--	--	--
JAN 06...	0845	59	1290	--	-13.0	0.0	--	--	--	--
MAR 18...	1500	5000	410	8.5	0.0	0.5	76	139	18	7.5
MAR 18...	1715	5070	--	--	8.0	1.5	--	--	--	--
APR 30...	1645	460	1150	--	7.0	5.0	--	--	--	--
JUL 10...	1400	364	1620	--	27.0	20.0	--	--	--	--
AUG 28...	1400	65	2130	8.4	25.5	22.5	320	317	68	37
SEP 17...	1245	38	2470	--	13.0	13.5	--	--	--	--
DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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 CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
MAR 18...	54	59	3	4.4	110	3.6	0.10	281	284	0.39
AUG 28...	370	70	9	14	820	15	0.50	1520	1530	2.08
DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAR 18...	3840	<1	150	<1	10	10	0.1	<1	<1	180
AUG 28...	270	1	10	<1	90	10	<0.1	9	<1	720

## MISSOURI RIVER MAIN STEM

227

06337550 LAKE SAKAKAWEA AT BEAVER CREEK BAY NEAR WHITESHIELD, ND

LOCATION.--Lat 47°31'10", long 101°55'00", in NW<sup>1</sup>/<sub>4</sub> sec.32, T.147 N., R.88 W., Mercer County, Hydrologic Unit 10110101, near mouth of Beaver Creek Bay, 8 mi southwest of Whiteshield.

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1992 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LILITY LAB (MG/L AS CACO3) (90410)	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)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)
------	------	--	---	---	--	--	---	---	---	------------------------------	--	--

JUL												
08...	1145	0.0	0.50	635	180	150	44	18	48	36	2	3.6
08...	1150	19.7	20.2	634	190	148	45	18	49	35	2	3.7
08...	1155	23.9	24.4	650	200	158	48	19	48	34	1	3.6
08...	1200	37.8	38.3	649	200	159	49	20	50	34	2	3.6
SEP												
16...	1045	0.0	0.50	600	180	145	44	17	46	35	1	3.5
16...	1050	26.5	27.0	598	180	143	43	18	46	35	1	3.5
16...	1055	29.5	30.0	588	170	140	42	17	44	35	1	3.4

DATE	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	SOLIDS, SUM OF CONSTI- TUENTS, 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, 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)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)
------	--	--	--	--	---	---	---	---	--	---	--	--

JUL												
08...	170	9.0	380	0.52	<0.020	<0.010	0.65	0.65	0.65	<0.018	--	<0.010
08...	170	9.3	384	0.52	0.040	<0.010	0.48	0.48	0.52	0.020	--	<0.010
08...	170	11	392	0.53	0.090	<0.010	0.54	0.54	0.63	<0.018	--	<0.010
08...	170	9.2	393	0.53	0.090	<0.010	0.41	0.41	0.50	<0.018	--	<0.010
SEP												
16...	150	7.4	355	0.48	0.060	<0.010	0.35	0.35	0.41	<0.018	--	<0.010
16...	150	7.9	353	0.48	0.060	<0.010	0.24	0.24	0.30	0.154	--	<0.010
16...	140	6.9	340	0.46	0.110	<0.010	0.30	0.30	0.41	<0.018	<0.010	<0.010

DATE	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	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)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
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JUL												
08...	1	42	<0.02	<0.2	4	49	1	<2	0.3	19	--	--
08...	1	45	<0.02	<0.2	3	79	3	<2	<0.2	28	--	--
08...	1	45	<0.02	<0.2	4	38	<0.2	<2	<0.2	26	--	--
08...	1	46	<0.02	<0.2	3	22	<0.2	<2	<0.2	11	--	--
SEP												
16...	1	44	<0.02	<0.2	3	<7	3	<2	<0.2	15	<3.00	<1.00
16...	1	44	<0.02	<0.2	3	<7	<0.2	<2	<0.2	22	--	--
16...	1	42	<0.02	<0.2	3	<7	<0.2	<2	<0.2	20	--	--

**MISSOURI RIVER MAIN STEM**  
**06337550 LAKE SAKAKAWEA AT BEAVER CREEK BAY NEAR WHITESHIELD, ND--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
JUL							
08...	1130	126	0.0	637	8.3	19.5	8.2
08...	1131	--	4.0	635	8.4	19.5	8.0
08...	1132	--	8.2	635	8.4	19.5	7.9
08...	1133	--	11.9	634	8.4	18.5	7.8
08...	1134	--	16.0	640	8.3	17.0	7.7
08...	1135	--	20.2	635	8.3	16.5	7.7
08...	1136	--	23.9	650	8.3	7.5	8.9
08...	1137	--	28.2	640	8.2	7.5	9.0
08...	1138	--	32.0	640	8.2	7.5	9.0
08...	1139	--	36.1	630	8.2	7.5	8.9
08...	1140	--	38.3	640	8.1	7.5	8.9
SEP							
16...	1030	124	0.0	585	8.0	18.5	7.6
16...	1031	--	3.1	586	8.0	18.5	7.5
16...	1032	--	6.2	585	8.0	18.5	7.5
16...	1033	--	9.0	585	8.0	18.5	7.4
16...	1034	--	12.4	579	8.0	18.5	7.4
16...	1035	--	15.0	576	8.0	18.5	7.3
16...	1036	--	17.9	581	8.0	18.5	7.3
16...	1037	--	21.0	593	8.0	18.5	7.3
16...	1038	--	24.3	594	8.1	18.5	7.3
16...	1039	--	27.0	580	8.0	18.0	6.7
16...	1040	--	30.0	595	7.8	16.5	5.3
16...	1041	--	33.2	599	7.7	15.5	4.6
16...	1042	--	36.1	592	7.6	14.0	4.1
16...	1043	--	37.9	599	7.6	13.0	3.5

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
JUL						
08...	97	707	67.5	18.0	310	10
SEP						
16...	88	702	82.0	16.0	90	15

MISSOURI RIVER MAIN STEM  
06337580 LAKE SAKAKAWEA AT DOUGLAS CREEK BAY NEAR GARRISON, ND

LOCATION.--Lat 47°33'10", long 101°33'08", in NW<sup>1</sup>/<sub>4</sub> sec.7, T.147 N., R.85 W., McLean County, Hydrologic Unit 10110101, near mouth of Douglas Creek Bay, 8 mi southwest of Garrison.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1992 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
JUL							
08...	1600	135	0.0	643	8.4	17.5	6.7
08...	1601	--	4.5	643	8.4	17.5	6.7
08...	1602	--	10.0	641	8.4	16.5	6.6
08...	1603	--	15.0	636	8.4	15.5	6.6
08...	1604	--	18.6	648	8.3	14.0	6.8
08...	1605	--	20.2	650	8.3	13.0	6.9
08...	1606	--	25.0	638	8.3	12.0	6.9
08...	1607	--	28.4	637	8.3	11.5	6.9
08...	1608	--	33.1	640	8.3	9.5	7.1
08...	1609	--	37.6	650	8.3	9.0	7.2
08...	1610	--	41.2	621	8.2	8.0	7.3
SEP							
16...	1540	92.2	0.0	620	8.0	18.5	7.5
16...	1541	--	3.0	622	8.1	18.5	7.3
16...	1542	--	4.9	620	8.1	18.5	7.3
16...	1543	--	7.0	625	8.1	18.5	7.2
16...	1544	--	10.0	618	8.1	18.5	7.2
16...	1545	--	12.3	615	8.1	18.5	7.2
16...	1546	--	14.3	611	8.1	18.5	7.2
16...	1547	--	17.4	630	8.1	18.5	7.1
16...	1548	--	21.0	634	8.1	18.5	7.1
16...	1549	--	23.1	630	8.1	18.5	7.0
16...	1550	--	27.0	630	8.1	18.0	7.0
16...	1551	--	28.1	610	8.1	18.0	7.0

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
JUL						
08...	76	706	76.0	17.0	310	14
SEP						
16...	87	702	60.0	21.0	110	18



MISSOURI RIVER MAIN STEM  
06337995 LAKE SAKAKAWEA AT RIVERDALE, ND

LOCATION.--Lat 47°30'47", long 101°22'34", in NW<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> sec.34, T.147 N., R.84 W., Mercer County, Hydrologic Unit 10110101, 1.0 mi northwest of Riverdale.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1977-82, 1991 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

		DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	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)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)
JUL												
08...	1400	0.0	0.50	649	--	190	156	46	18	48	35	2
08...	1405	24.6	25.1	650	--	200	157	47	19	49	35	2
08...	1410	34.5	35.0	653	--	200	157	47	19	49	35	2
08...	1415	51.3	51.8	655	--	200	159	48	19	50	35	2
SEP												
16...	1315	0.0	0.50	638	8.0	190	154	46	19	48	34	1
16...	1320	17.8	18.3	636	7.9	190	152	45	18	47	35	1
16...	1325	21.3	21.8	637	7.7	190	154	46	19	48	34	1
16...	1330	47.3	47.8	646	7.3	190	156	47	18	46	34	1
	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	SOLIDS, SUM OF CONSTI- TUENTS, 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, 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)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)
JUL												
08...	3.4	130	9.2	349	0.47	<0.020	<0.010	0.41	0.41	0.41	<0.018	<0.010
08...	3.5	170	9.5	396	0.54	0.020	<0.010	0.47	0.47	0.49	<0.018	<0.010
08...	3.4	170	9.1	391	0.53	0.060	<0.010	0.47	0.47	0.53	<0.018	<0.010
08...	3.4	170	9.2	395	0.54	0.060	<0.010	0.37	0.37	0.43	<0.018	<0.010
SEP												
16...	3.4	160	8.0	378	0.51	0.050	0.023	0.17	0.19	0.24	<0.018	<0.010
16...	3.4	170	9.3	380	0.52	0.050	<0.010	0.25	0.25	0.30	<0.018	<0.010
16...	3.4	160	7.8	374	0.51	0.080	<0.010	0.27	0.27	0.35	<0.018	<0.010
16...	3.3	160	8.4	379	0.52	0.210	<0.010	0.26	0.26	0.47	<0.018	<0.010
	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	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)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
JUL												
08...	1	41	<0.02	0.3	3	260	4	<2	0.7	29	--	--
08...	1	49	<0.02	0.3	4	250	<0.2	<2	0.2	31	--	--
08...	1	46	<0.02	<0.2	2	63	3	<2	0.3	34	--	--
08...	1	47	<0.02	<0.2	3	59	<0.2	<2	0.4	14	--	--
SEP												
16...	1	46	<0.02	<0.2	3	<7	<0.2	<2	<0.2	17	<3.00	<1.00
16...	1	41	<0.02	<0.2	3	<7	2	<2	<0.2	20	--	--
16...	1	46	<0.02	<0.2	3	<7	1	<2	<0.2	21	--	--
16...	1	46	<0.02	<0.2	2	<7	<0.2	<2	<0.2	22	--	--

MISSOURI RIVER MAIN STEM  
06337995 LAKE SAKAKAWEA AT RIVERDALE, ND--Continued

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WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
JUL							
08...	1345	170	0.0	650	8.5	18.5	6.4
08...	1346	--	5.2	650	8.5	18.5	6.3
08...	1347	--	10.2	650	8.5	18.5	6.3
08...	1348	--	15.1	650	8.5	18.5	6.2
08...	1349	--	20.0	648	8.5	18.5	6.2
08...	1350	--	25.1	652	8.5	25.0	6.2
08...	1351	--	30.0	647	8.3	11.0	6.4
08...	1352	--	35.0	645	8.3	7.0	7.0
08...	1353	--	40.0	644	8.3	7.0	7.0
08...	1354	--	45.1	640	8.3	6.5	7.1
08...	1355	--	49.7	640	8.3	6.5	7.0
08...	1356	--	51.8	640	8.3	6.5	7.0
SEP							
16...	1300	157	0.0	623	7.9	18.0	8.4
16...	1301	--	3.0	623	8.0	18.0	8.1
16...	1302	--	6.1	623	8.0	18.5	8.0
16...	1303	--	10.0	623	8.0	18.5	7.9
16...	1304	--	14.3	623	8.1	18.0	7.8
16...	1305	--	18.3	621	8.0	18.0	7.4
16...	1306	--	21.8	615	7.9	16.5	6.5
16...	1307	--	25.2	611	7.8	13.0	5.6
16...	1308	--	29.1	614	7.7	12.0	5.0
16...	1309	--	34.0	616	7.6	11.0	5.0
16...	1310	--	38.4	617	7.6	11.0	4.9
16...	1311	--	43.1	620	7.6	10.5	5.1
16...	1312	--	47.2	626	7.6	9.0	5.3
16...	1313	--	47.8	621	7.6	9.0	5.2

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
JUL						
08...	74	706	27.0	19.0	300	12
SEP						
16...	97	702	118	19.0	110	18

MISSOURI RIVER MAIN STEM  
06338000 LAKE SAKAKAWEA NEAR RIVERDALE, ND

LOCATION.--Lat 47°30'10", long 101°25'50", in S<sup>1</sup>/<sub>2</sub> sec.31, T.147 N., R.84 W., Mercer County, Hydrologic Unit 10110101, in control structure of Garrison Dam, 2.5 mi west of Riverdale, 14 mi upstream from Knife River, and at mile 1,389.9.

DRAINAGE AREA.--181,400 mi<sup>2</sup>, approximately.

MONTHEND-ELEVATION AND CONTENTS RECORDS

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 sea level.

REMARKS.--Reservoir is formed by earth-fill dam; storage began in November 1953. Maximum capacity, 24,200,000 acre-ft below elevation 1,854.0 ft, top of 29-ft gates. Normal maximum, 22,700,000 acre-ft below elevation 1,850.0 ft, of which about 4,300,000 acre-ft is designated for flood control. Elevation of crest of spillway, 1,825.0 ft, surmounted by radial gates. Inactive storage, 5,000,000 acre-ft below elevation 1,775.0 ft. Dead storage, zero at elevation 1,672.0 ft. Snake Creek arm of the reservoir has connecting gate to main reservoir, with sill at elevation 1,810 ft. Figures herein represent total contents.

COOPERATION.--Records furnished by the U.S. Army 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, July 25, 1975, elevation, 1,854.6 ft; minimum since first reaching normal maximum level in July of 1969, 12,155,000 acre-ft, May 10, 1991, adjusted for wind effect; minimum elevation, 1,815.0 ft, May 14, 1991.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 22,137,000 acre-ft, July 21, adjusted for wind effect; maximum elevation, 1,849.6 ft, July 23; minimum contents, 18,091,000 acre-ft, Feb. 8, adjusted for wind effect; minimum elevation, 1,837.4 ft, Feb. 8.

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

Date		Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.	30-----	1,845.6	20,774,000	--
Oct.	31-----	1,842.8	19,802,000	-972,000
Nov.	30-----	1,840.4	18,988,000	-814,000
Dec.	31-----	1,838.9	18,523,000	-465,000
CAL YR 1995-----		--	--	+347,000
Jan.	31-----	1,837.8	18,203,000	-320,000
Feb.	29-----	1,839.5	18,718,000	+515,000
Mar.	31-----	1,841.8	19,487,000	+769,000
Apr.	30-----	1,842.9	19,860,000	+373,000
May	31-----	1,842.9	19,867,000	+7,000
June	30-----	1,848.2	21,726,000	+1,859,000
July	31-----	1,849.0	21,949,000	+223,000
Aug.	31-----	1,845.8	20,855,000	-1,094,000
Sept.	30-----	1,842.3	19,665,000	-1,190,000
WTR YR 1996-----		--	--	-1,109,000

MISSOURI RIVER MAIN STEM  
06338490 MISSOURI RIVER AT GARRISON DAM, ND

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LOCATION.--Lat 47°30'08", long 101°25'50", in S<sup>1</sup>/<sub>2</sub> 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 west of Riverdale, 14 mi upstream from Knife River, and at mile 1,389.9.

DRAINAGE AREA.--181,400 mi<sup>2</sup>, 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 downstream. Discharges at the downstream site were generally about 7 percent greater than those furnished by the U.S. Army Corps of Engineers for the present site.

COOPERATION.--Records furnished by the U.S. Army Corps of Engineers.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996 DAILY MEAN VALUES												
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37000	34500	20200	22200	23200	19700	18200	35500	36800	36300	36800	34300
2	37000	34900	19700	22100	23700	20000	18400	35500	37100	36500	35800	34500
3	37100	35000	19900	22900	24500	19900	19000	35500	36700	36700	35500	35100
4	37200	35500	20100	22600	23400	19700	20000	35500	37200	36700	35600	35300
5	35800	35200	19900	22500	23700	20200	20900	35600	37300	36600	35900	35200
6	35800	35200	20000	22700	23400	20000	21700	34900	37200	36600	36500	35100
7	35800	35100	20300	22600	23100	20500	23900	35600	36600	36500	36100	35300
8	35900	35400	18100	22600	22900	19700	24400	36500	37100	36500	36300	35200
9	35900	35200	17800	22000	21900	19900	25200	37000	36900	36800	36200	35200
10	35500	35200	18000	22300	22500	20100	23300	37000	36900	36100	36300	34600
11	36000	35400	17700	22400	22000	20000	23400	37100	36800	36700	36000	35200
12	35800	35400	17900	22400	22000	17400	24500	37100	36700	36800	36100	35900
13	35600	35400	18900	22400	19800	17000	26200	37100	36700	36800	36500	35800
14	35800	34700	19500	22100	19700	17000	27900	37100	36700	36800	35700	35800
15	35900	35000	19000	22600	20000	15500	29900	37000	36600	36400	36200	35500
16	36000	35000	19700	22200	20400	14400	30000	37100	36500	36800	36000	35800
17	35900	35000	20100	22500	19700	13900	30000	37100	36500	36400	35800	34400
18	36100	35000	20100	23000	19800	14700	30000	37100	36500	36700	36000	35200
19	36000	35000	20300	23700	20100	17300	30800	37100	36500	36700	36000	35200
20	36000	34900	20500	23400	19500	19200	30800	37100	36400	36600	36200	35400
21	36200	31600	21100	23100	19500	19000	30700	36200	31300	36600	35800	34900
22	36200	28800	20900	22900	19900	20000	32500	35900	30300	36600	36100	35000
23	35800	26600	21400	23600	19800	19900	35000	36200	30500	36600	36100	35400
24	36200	23100	21700	23400	19700	19700	35700	36900	30900	36700	36100	35300
25	36300	20500	21300	23200	19900	18100	35500	36900	30700	36700	35900	35200
26	36300	20600	21800	23300	19100	17900	35500	36900	31500	36700	36200	35300
27	36200	20600	22400	23600	19500	18000	35500	36700	33100	36700	36300	35100
28	35700	19800	22500	24000	19500	17900	35600	36600	34800	36700	36400	34300
29	33800	20400	22000	23700	19500	18000	35500	36800	36400	36700	36400	35300
30	34400	19900	22600	23800	---	17600	35500	36900	36400	36700	36300	34400
31	34500	---	22000	24700	---	17800	---	36900	---	36800	34900	---
TOTAL	1113700	933900	627400	710500	611700	570000	845500	1132400	1061600	1135500	1118000	1054200
MEAN	35930	31130	20240	22920	21090	18390	28180	36530	35390	36630	36060	35140
MAX	37200	35500	22600	24700	24500	20500	35700	37100	37300	36800	36800	35900
MIN	33800	19800	17700	22000	19100	13900	18200	34900	30300	36100	34900	34300
AC-FT	2209000	1852000	1244000	1409000	1213000	1131000	1677000	2246000	2106000	2252000	2218000	2091000
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 1996, BY WATER YEAR (WY)												
MEAN	18990	20570	21310	24250	25510	20630	19770	22120	23700	24910	24460	20680
MAX	35930	33240	29530	30500	31500	28210	37500	38490	40120	61800	54130	37230
(WY)	1996	1979	1970	1979	1976	1983	1972	1972	1975	1975	1975	1975
MIN	9945	10110	13550	14260	13490	10370	10280	10560	11080	13220	15790	10990
(WY)	1994	1993	1994	1994	1994	1993	1993	1986	1995	1995	1993	1990
SUMMARY STATISTICS												
FOR 1995 CALENDAR YEAR			FOR 1996 WATER YEAR			WATER YEARS 1970 - 1996						
ANNUAL TOTAL			7845900			10914400						
ANNUAL MEAN			21500			29820						
HIGHEST ANNUAL MEAN						22230						
LOWEST ANNUAL MEAN						33000						
HIGHEST DAILY MEAN			37500			Sep 18			13710			
LOWEST DAILY MEAN			9500			Jun 12			65200			
ANNUAL SEVEN-DAY MINIMUM			10600			May 9			6000			
ANNUAL RUNOFF (AC-FT)			15560000						9600			
10 PERCENT EXCEEDS			36900						21650000			
50 PERCENT EXCEEDS			19500						36800			
90 PERCENT EXCEEDS			11500						32200			
									20600			
									12900			

MISSOURI RIVER MAIN STEM  
06338490 MISSOURI RIVER AT GARRISON DAM, ND--Continued

LOCATION.--Samples collected at National Fish Hatchery's supply line from penstocks 4 and 5, in control structure of Garrison Dam.

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
MAR 26...	1430	17900	717	8.0	-3.0	5.0	220	177	52	22
SEP 03...	1350	35100	642	7.6	26.5	17.0	210	159	50	21

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
MAR 26...	64	38	2	4.0	190	11	0.60	450	461	0.63
SEP 03...	54	35	2	3.9	170	10	0.50	405	404	0.55

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAR 26...	22300	1	10	<1	40	10	<0.1	2	<1	540
SEP 03...	38300	1	20	<1	40	10	0.1	1	<1	500



MISSOURI RIVER MAIN STEM  
06339010 MISSOURI RIVER ABOVE STANTON, ND

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LOCATION.--Lat 47°21'45", long 101°21'25", SE<sup>1</sup>/<sub>4</sub> NE<sup>1</sup>/<sub>4</sub> SE<sup>1</sup>/<sub>4</sub> sec.22, T.14S N., R.84 W., McLean County, Hydrologic Unit 10130101, on left bank 9 mi south of Riverdale, and at mile 1,379.

DRAINAGE AREA.--181,400 mi<sup>2</sup>, approximately.

GAGE-HEIGHT RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,600.00 ft above sea level.

REMARKS.--Stage regulated completely by releases from Garrison Dam (station 06338490) 13 mi upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 72.24 ft, Jan. 29, 1977; minimum daily recorded, 62.07 ft, Sept. 18, 1991.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	68.48	---	68.17	---	---	68.11	67.71	69.02	69.30	68.95	69.13	---
2	68.70	68.76	68.24	---	---	68.04	67.74	69.01	69.56	69.04	68.88	---
3	68.87	68.66	68.18	---	---	68.16	67.84	69.01	69.52	68.93	68.98	---
4	68.92	68.66	68.26	---	---	68.05	67.95	68.89	69.52	69.03	69.02	---
5	68.67	68.78	68.22	---	---	68.07	68.26	69.04	69.52	69.14	68.95	---
6	68.61	68.73	68.05	68.23	---	67.97	68.21	69.07	69.56	69.01	68.93	---
7	68.46	68.64	68.14	68.24	---	68.12	68.79	69.16	69.43	68.75	68.82	---
8	68.65	68.61	---	68.61	---	68.14	68.72	69.26	69.50	68.41	68.86	---
9	68.59	68.61	---	68.59	---	68.23	68.91	69.14	69.43	68.29	68.94	---
10	68.48	68.50	---	68.52	---	68.19	68.82	69.07	69.39	68.33	68.91	---
11	68.58	68.48	---	68.50	---	---	68.97	69.12	68.92	68.51	68.81	---
12	---	68.54	---	68.48	---	67.96	69.01	69.10	68.95	68.79	68.93	---
13	---	68.57	---	---	---	67.93	69.07	69.05	68.80	68.75	68.88	---
14	68.67	68.66	---	---	---	67.94	68.93	69.28	68.66	68.72	68.88	---
15	68.87	68.73	---	---	---	67.62	69.10	69.36	69.34	68.61	68.89	---
16	68.82	68.83	---	---	67.94	67.22	69.10	69.41	69.38	---	68.88	---
17	68.84	68.85	---	---	68.24	67.13	69.18	69.59	69.26	68.90	69.09	---
18	68.87	68.90	---	---	67.94	66.93	69.19	69.55	69.23	68.96	69.20	---
19	68.92	68.87	---	---	68.13	67.23	69.13	69.52	69.17	68.98	---	---
20	68.87	68.81	---	---	68.16	67.75	69.01	69.29	69.09	68.98	---	---
21	68.77	68.71	---	---	68.07	68.09	69.02	69.06	68.95	68.94	---	---
22	68.83	68.61	---	---	68.12	68.11	69.00	69.04	68.73	68.93	---	---
23	68.66	68.57	---	---	68.10	68.18	69.10	---	68.81	68.97	---	---
24	68.50	68.59	---	---	68.05	67.99	69.15	---	68.94	68.94	---	---
25	68.57	68.50	---	---	67.91	68.05	69.15	69.05	69.14	68.94	---	---
26	68.73	68.36	---	---	67.83	67.83	69.10	68.82	69.13	69.01	---	---
27	68.69	68.37	---	---	68.07	67.80	69.13	68.71	69.47	68.99	---	---
28	68.63	68.21	---	---	68.13	67.73	69.03	68.56	69.07	68.95	---	---
29	68.56	68.24	---	---	68.12	67.68	69.05	68.95	69.10	68.93	---	---
30	68.60	68.18	---	---	---	67.78	69.09	69.05	68.92	69.04	---	---
31	68.73	---	---	---	---	67.72	---	69.45	---	69.05	---	---
MEAN	---	---	---	---	---	---	68.82	---	69.19	---	---	---
MAX	---	---	---	---	---	---	69.19	---	69.56	---	---	---
MIN	---	---	---	---	---	---	67.71	---	68.66	---	---	---

**KNIFE RIVER BASIN**  
**06339100 KNIFE RIVER AT MANNING, ND**

**LOCATION.**--Lat 47°14'10", long 102°46'10", in SE<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> sec.6, T.143 N., R.95 W., Dunn County, Hydrologic Unit 10130201, on left bank 50 ft downstream from bridge on State Highway 22, and 0.4 mi north of Manning.

**DRAINAGE AREA.**--205 mi<sup>2</sup>, approximately.

**WATER-DISCHARGE RECORDS**

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

**GAGE.**--Water-stage recorder. Datum of gage is 2,156.55 ft above sea level.

**REMARKS.**--Records poor.

**REVISIONS.**--Maximum discharge for water year 1970 was revised to 2,940 ft<sup>3</sup>/s, June 15, gage height, 16.20 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.04	1.2	1.7	e.25	e.07	e6.0	e2.9	3.7	5.3	1.2	.60	.19
2	.04	1.1	1.5	e.24	e.06	e4.7	e2.9	3.8	4.9	1.0	.54	.18
3	.06	.96	1.3	e.23	e.06	e3.6	e2.8	3.8	4.4	1.1	.67	.18
4	.11	.91	1.1	e.14	e.07	e2.8	e2.7	3.6	3.9	3.1	15	.17
5	.11	.93	.83	e.12	e.08	e2.2	e2.6	3.9	3.4	2.6	37	.16
6	.13	1.1	.77	e.10	e2.0	e1.7	e4.5	3.9	2.9	1.8	20	.15
7	.25	1.1	.65	e.30	e40	e1.3	e150	4.1	2.7	1.3	17	.18
8	.33	1.4	e.40	e.60	332	e1.1	618	4.2	2.1	.95	11	.15
9	.33	1.7	e.20	e1.0	654	e.82	351	4.6	1.5	.75	6.6	.13
10	.31	2.0	e.15	e1.5	602	e.70	91	5.0	1.3	.67	4.4	.11
11	.35	1.5	e.14	e2.2	209	e230	48	5.0	1.3	.54	3.2	.12
12	.61	1.2	e.13	e3.5	52	890	32	4.9	1.1	.46	2.3	.11
13	.88	1.3	e.30	e14	56	739	23	4.9	.92	.59	1.5	.12
14	.59	1.4	e.28	45	38	177	18	4.9	1.2	.76	1.0	.14
15	.58	1.7	e.25	23	e14	71	13	4.9	2.0	.60	.84	.14
16	.78	1.8	e.26	e20	12	53	10	4.9	1.8	.52	.79	.16
17	1.1	1.2	e.25	e2.0	14	34	8.4	4.9	2.2	.52	.65	.16
18	1.3	1.2	e.25	e1.2	11	22	7.6	4.7	2.4	.52	.54	.38
19	1.2	1.3	e.25	e.90	16	18	6.5	5.1	4.6	.53	.47	1.1
20	.56	1.4	e.26	e.70	31	15	5.8	4.5	5.6	1.0	.41	1.5
21	.73	1.2	e.23	e.54	36	12	5.2	4.3	3.7	1.9	.35	2.6
22	.39	.99	e.22	e.40	35	9.5	4.5	3.8	2.9	1.4	.35	4.2
23	.30	.91	e.23	e.30	29	7.8	4.1	3.4	3.2	1.1	.30	5.0
24	.32	.91	e.27	e.25	20	5.9	3.7	3.6	2.5	1.1	.29	3.0
25	.38	1.2	e.26	e.15	14	4.8	3.6	3.7	2.4	.93	.25	2.0
26	.53	1.7	e.25	e.11	e13	e4.0	3.8	4.9	2.8	.89	.26	1.6
27	.78	1.4	e.25	e.09	e10	e3.7	4.0	14	2.6	1.2	.23	1.3
28	.75	1.1	e.23	e.08	e7.8	e3.5	4.0	11	2.2	.95	.21	1.0
29	.77	.86	e.22	e.08	e7.0	e3.4	4.3	8.3	2.2	.71	.19	.80
30	.86	1.2	e.22	e.07	---	e3.3	4.1	6.4	1.6	.57	.20	.69
31	1.2	---	e.24	e.07	---	e3.1	---	5.5	---	.58	.21	---
TOTAL	16.67	37.87	13.59	119.12	2255.14	2334.92	1442.0	158.2	81.62	31.84	127.35	27.72
MEAN	.54	1.26	.44	3.84	77.8	75.3	48.1	5.10	2.72	1.03	4.11	.92
MAX	1.3	2.0	1.7	45	654	890	618	14	5.6	3.1	37	5.0
MIN	.04	.86	.13	.07	.06	.70	2.6	3.4	.92	.46	.19	.11
AC-FT	33	75	27	236	4470	4630	2860	314	162	63	253	55

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 1996, BY WATER YEAR (WY)

	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
MEAN	4.36	1.66	1.29	3.56	18.6	31.9	55.6	16.8	14.8	9.40	2.71	4.73																		
MAX	54.1	6.73	3.15	30.5	89.5	399	485	104	91.5	96.1	32.6	68.5																		
(WY)	1983	1983	1987	1974	1986	1972	1975	1970	1970	1969	1983	1978																		
MIN	.000	.057	.066	.000	.36	1.37	1.32	.45	.077	.018	.000	.000																		
(WY)	1991	1991	1991	1991	1994	1990	1990	1993	1992	1992	1988	1990																		

SUMMARY STATISTICS

FOR 1995 CALENDAR YEAR

FOR 1996 WATER YEAR

WATER YEARS 1967 - 1996

ANNUAL TOTAL	2543.39	6646.04	
ANNUAL MEAN	6.97	18.2	18.0
HIGHEST ANNUAL MEAN			48.1
LOWEST ANNUAL MEAN			.90
HIGHEST DAILY MEAN	186	Mar 12	2400
LOWEST DAILY MEAN	.04	Sep 30	.00
ANNUAL SEVEN-DAY MINIMUM	.06	Sep 27	.00
INSTANTANEOUS PEAK FLOW			.00
INSTANTANEOUS PEAK STAGE			.00
ANNUAL RUNOFF (AC-FT)	5040	13180	13010
10 PERCENT EXCEEDS	14	16	20
50 PERCENT EXCEEDS	1.3	1.3	1.4
90 PERCENT EXCEEDS	.25	.17	.10

e Estimated.

KNIFE RIVER BASIN  
06339100 KNIFE RIVER AT MANNING, ND--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
NOV 27...	1630	1.4	1820	--	-1.0	0.0	--	--	--	--
JAN 16...	1600	20	620	--	-1.5	0.0	--	--	--	--
FEB 15...	1030	22	3490	--	-10.0	0.0	--	--	--	--
MAR 12...	1730	1020	230	9.1	11.0	0.5	39	55	9.0	4.0
MAR 19...	1600	19	460	--	10.0	0.5	--	--	--	--
APR 11...	1215	50	371	--	2.0	4.0	--	--	--	--
MAY 28...	1650	9.8	1750	--	15.5	16.5	--	--	--	--
JUL 16...	1540	0.51	1930	8.5	29.5	24.5	190	571	33	25
SEP 05...	1100	0.15	1610	--	23.0	21.0	--	--	--	--

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
MAR 12...	24	50	2	11	45	5.6	0.0	132	191	0.26
JUL 16...	390	81	12	11	480	16	0.60	1300	1330	1.81

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAR 12...	525	<1	170	<1	2	50	0.1	<1	<1	120
JUL 16...	1.84	3	30	1	40	10	<0.1	<1	<1	450

KNIFE RIVER BASIN  
06339500 KNIFE RIVER NEAR GOLDEN VALLEY, ND

LOCATION.--Lat 47°09'40", long 102°03'39", in SE<sup>1</sup>/<sub>4</sub> sec.34, T.143 N., R.90 W., Mercer County, Hydrologic Unit 10130201, on left bank 6 ft downstream from highway bridge, 4.5 mi downstream from Elm Creek, and 9 mi south of Golden Valley.

DRAINAGE AREA.--1,230 mi<sup>2</sup>, approximately.

WATER-DISCHARGE RECORDS

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 1006:0 Drainage area. WSP 1279: 1904, 1914-19(M), 1922-24(M), 1944.

GAGE.--Water-stage recorder. Datum of gage is 1,847.13 ft above sea level. See WSP 1729 or 1917 for history of changes prior to May 1, 1946.

REMARKS.--Records fair except for period of estimated daily discharges, which is poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.9	7.0	6.1	e4.3	e1.0	e50	e16	e48	24	15	6.0	3.4
2	2.2	6.0	7.2	e4.0	e1.0	e40	e16	e48	27	13	6.2	3.3
3	2.7	6.1	6.5	e3.5	e1.0	e30	e16	e48	25	12	6.8	3.4
4	3.7	5.9	7.0	e3.0	e1.2	e21	e15	e49	23	10	7.2	3.3
5	4.8	5.8	e6.2	e2.6	e5.0	e15	e15	e50	21	9.6	7.0	3.3
6	4.3	5.8	e5.4	e2.4	e45	e12	e16	e53	20	10	5.7	3.3
7	4.9	5.8	e4.6	e8.0	e350	e10	e20	e52	19	10	5.5	3.4
8	4.9	5.6	e4.0	e15	e600	e7.6	e110	49	21	10	5.2	3.7
9	4.8	5.6	e3.5	e20	e1100	e6.0	e500	46	18	9.4	19	3.6
10	4.1	5.4	e3.0	e22	e1200	e5.0	e3000	44	16	8.8	34	3.3
11	4.4	4.7	e3.5	e23	e900	e70	e1000	43	15	8.3	24	3.3
12	4.5	4.5	e3.7	e24	e600	e250	e500	42	13	7.9	20	3.3
13	4.8	4.7	e3.8	e23	e440	e2100	e250	43	12	7.5	16	3.0
14	4.9	5.0	e3.9	e22	e200	e1000	e190	40	11	7.1	12	3.4
15	4.6	5.3	e4.0	e21	e100	e400	e150	39	13	7.4	9.9	3.5
16	4.6	5.8	e4.1	e8.0	e60	e200	e110	39	13	7.8	8.7	3.5
17	4.7	6.1	e4.2	e4.0	e40	e110	e90	38	12	8.6	7.2	3.3
18	5.2	6.1	e4.3	e3.3	e35	e80	e74	38	11	9.6	5.8	3.7
19	6.4	6.3	e4.4	e2.7	e40	e60	e62	40	14	8.6	5.5	5.1
20	5.5	6.3	e4.5	e2.5	e400	e50	e54	37	12	11	5.3	11
21	4.5	6.3	e4.6	e2.2	e380	e45	e50	37	10	13	4.8	14
22	6.4	6.3	e4.7	e1.9	e370	e39	e47	35	9.7	26	4.4	19
23	6.9	6.3	e5.0	e1.7	e340	e34	e46	31	13	21	4.3	25
24	6.1	6.2	e4.9	e1.6	e300	e30	e45	29	14	13	4.1	18
25	5.5	6.4	e5.0	e1.4	e200	e27	e45	27	17	9.9	3.7	13
26	5.5	6.5	e5.0	e1.3	e150	e24	e46	25	18	8.8	3.6	10
27	5.6	5.9	e5.0	e1.2	e100	e22	e46	24	16	7.8	3.4	10
28	6.3	6.1	e4.8	e1.2	e70	e20	e47	22	14	7.6	3.6	13
29	5.6	6.3	e4.7	e1.2	e60	e19	e48	21	18	6.8	3.5	14
30	6.3	6.2	e4.6	e1.1	---	e18	e48	20	15	6.1	3.4	13
31	7.0	---	e4.7	e1.0	---	e17	---	20	---	5.6	3.3	---
TOTAL	153.6	176.3	146.9	234.1	8089.2	4811.6	6672	1177	484.7	317.2	259.1	226.1
MEAN	4.95	5.88	4.74	7.55	279	155	222	38.0	16.2	10.2	8.36	7.54
MAX	7.0	7.0	7.2	24	1200	2100	3000	53	27	26	34	25
MIN	1.9	4.5	3.0	1.0	1.0	5.0	15	20	9.7	5.6	3.3	3.0
AC-FT	305	350	291	464	16040	9540	13230	2330	961	629	514	448

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1903 - 1996, BY WATER YEAR (WY)

	MEAN	16.6	10.8	6.94	9.10	43.0	339	314	90.9	143	47.7	34.5	15.5
MAX	245	69.7	23.0	140	299	1729	2448	1031	1193	255	725	97.5	
(WY)	1983	1983	1983	1974	1982	1972	1952	1970	1914	1969	1918	1978	
MIN	.46	1.93	.52	.026	.000	2.30	6.98	1.42	1.03	1.91	.28	.12	
(WY)	1993	1962	1962	1962	1959	1964	1981	1923	1961	1992	1959	1992	

SUMMARY STATISTICS

FOR 1995 CALENDAR YEAR

FOR 1996 WATER YEAR

WATER YEARS 1903 - 1996

ANNUAL TOTAL	20866.5	22747.8	
ANNUAL MEAN	57.2	62.2	89.0
HIGHEST ANNUAL MEAN			235
LOWEST ANNUAL MEAN			5.38
HIGHEST DAILY MEAN	1400	Feb 23	3000
LOWEST DAILY MEAN	1.9	Oct 1	1.0
ANNUAL SEVEN-DAY MINIMUM	2.6	Sep 27	1.1
INSTANTANEOUS PEAK FLOW			a 3000
INSTANTANEOUS PEAK STAGE			Unknown
ANNUAL RUNOFF (AC-FT)	41390		45120
10 PERCENT EXCEEDS	151		70
50 PERCENT EXCEEDS	7.8		9.6
90 PERCENT EXCEEDS	3.1		3.4
			2.1

a Maximum daily.  
b From floodmark.  
e Estimated.

KNIFE RIVER BASIN  
06339500 KNIFE RIVER NEAR GOLDEN VALLEY, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1950, 1964-65, 1972 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT 03...	1130	2.8	1550	--	17.0	10.5	--	--	--	--
NOV 27...	1315	5.7	3280	--	-1.0	0.0	--	--	--	--
JAN 16...	1300	8.1	3290	--	-4.0	0.0	--	--	--	--
APR 13...	1500	250	654	7.6	4.0	4.0	120	143	23	15
MAY 06...	1440	52	2300	--	9.0	9.0	--	--	--	--
JUN 25...	1300	17	2510	--	17.5	17.5	--	--	--	--
AUG 07...	1205	5.8	3000	8.8	21.0	20.0	500	496	71	77
SEP 26...	1430	9.2	2560	--	13.0	10.5	--	--	--	--

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
APR 13...	90	60	4	11	190	5.8	0.20	421	455	0.62
AUG 07...	530	69	10	14	1200	11	0.50	2200	2180	2.96

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
APR 13...	307	1	90	<1	10	130	0.2	1	<1	320
AUG 07...	34.4	<1	20	<1	50	40	0.2	2	<1	1200



**KNIFE RIVER BASIN**  
06340000 SPRING CREEK AT ZAP, ND

**LOCATION.**--Lat 47°17'10", long 101°55'31", in SW<sup>1</sup>/<sub>4</sub> sec.14, T.144 N., R.89 W., Mercer County, Hydrologic Unit 10130201, on right bank 250 ft downstream from Burlington Northern Railway bridge in Zap, and 9 mi upstream from mouth.

**DRAINAGE AREA.**--549 mi<sup>2</sup>.

**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 above sea level. Mar. 4 to Sept. 30, 1924, non-recording gage at site 250 ft upstream at different datum. Oct. 1, 1945, to Sept. 30, 1947, nonrecording gage 250 ft upstream at datum 1.12 ft higher.

**REMARKS.**--Records good except for periods of estimated daily discharges, which are poor. Flow slightly regulated by Lake Ilo, 56 mi upstream, capacity 7,130 acre-ft.

**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 and 19.5 ft, respectively, from information by local residents.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	12	e10	e6.8	e6.2	e95	e34	e29	e17	16	8.3	e5.6
2	20	e11	e10	e6.4	e5.6	e85	e32	e31	e18	15	8.0	e5.4
3	19	e10	e9.5	e4.8	e5.0	e75	e32	e33	e18	15	8.1	e5.4
4	17	e9.5	e8.5	e4.3	e5.2	e70	e31	e34	e17	11	11	e5.4
5	16	e9.8	e7.5	e4.0	e5.6	e60	e31	e35	e16	9.6	11	e5.4
6	15	e10	e6.2	e4.2	e6.2	e50	e31	e35	e15	9.5	9.5	e5.5
7	14	e10	e5.0	e5.0	e7.2	e45	e30	e35	e15	10	9.3	e5.5
8	14	e10	e4.8	e6.0	e9.0	e42	e30	e33	e14	9.4	8.8	e5.4
9	13	10	e4.5	e8.0	e35	e38	e110	e32	e13	8.7	8.6	e5.4
10	12	9.7	e4.0	e9.5	e100	e35	e300	e31	e13	9.1	8.7	e5.5
11	12	8.6	e4.5	e11	e600	e100	e200	e30	e13	10	9.0	e5.5
12	12	e8.2	e5.0	e12	e550	e400	e140	e30	e13	9.8	9.0	e5.6
13	12	e8.3	e5.5	e13	e400	e930	e100	e29	e13	9.5	9.2	e5.8
14	12	e8.8	e6.0	e12	e300	e600	e80	e28	e12	8.6	8.8	e5.8
15	12	e9.4	e6.4	e11	e220	e400	e70	e27	e50	7.7	8.4	e5.8
16	11	e9.8	e6.5	e11	e170	e280	e60	e27	e42	8.1	8.5	e5.8
17	11	e10	e6.6	e9.5	e130	e190	e52	27	e35	7.9	8.1	e5.6
18	13	e10	e6.8	e8.7	e100	e140	e45	27	e28	9.5	7.8	e6.5
19	11	e11	e6.9	e8.6	e400	e110	e40	33	e23	7.9	7.7	e8.0
20	11	e11	e7.0	e9.0	e380	e96	e37	29	e20	9.9	e7.5	e11
21	10	e10	e7.3	e9.2	e300	e80	e36	29	e17	11	e7.2	e15
22	10	e10	e7.5	e9.2	e320	e60	e35	27	e15	7.8	e6.8	e20
23	12	e10	e7.8	e9.0	e290	e45	e34	25	e14	8.3	e6.6	e18
24	11	e10	e7.8	e8.8	e240	e35	e34	24	e13	8.7	e6.4	e15
25	11	e10	e8.0	e8.6	e200	e38	e33	24	e12	12	e6.3	e13
26	11	e10	e8.0	e8.4	e150	e40	e32	23	e11	11	e6.2	e12
27	11	e9.0	e8.0	e8.0	e130	e45	e30	23	14	11	e6.2	e11
28	11	e9.0	e7.5	e7.5	e120	e50	e29	e21	13	9.7	e6.2	e11
29	11	e9.6	e7.6	e7.2	e110	e43	e29	e19	13	9.5	e6.2	e10
30	11	e10	e7.8	e6.7	---	e38	e28	e18	13	8.8	e6.2	e10
31	11	---	e7.6	e6.4	---	e35	---	e17	---	8.4	e6.0	---
TOTAL	399	294.7	216.1	253.8	5295.0	4350	1805	865	540	308.4	245.6	254.9
MEAN	12.9	9.82	6.97	8.19	183	140	60.2	27.9	18.0	9.95	7.92	8.50
MAX	22	12	10	13	600	930	300	35	50	16	11	20
MIN	10	8.2	4.0	4.0	5.0	35	28	17	11	7.7	6.0	5.4
AC-FT	791	585	429	503	10500	8630	3580	1720	1070	612	487	506

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1924 - 1996, BY WATER YEAR (WY)

MEAN	10.3	9.54	6.62	5.78	28.7	152	144	37.0	44.2	25.4	10.5	7.78
MAX	74.4	51.9	21.2	30.6	183	933	1044	292	290	178	53.2	16.5
(WY)	1983	1983	1973	1973	1996	1972	1952	1970	1971	1962	1990	1986
MIN	1.76	2.88	.80	.000	.000	3.39	9.41	5.77	3.10	1.84	.96	1.10
(WY)	1959	1962	1962	1959	1949	1949	1992	1992	1961	1961	1961	1958

SUMMARY STATISTICS

FOR 1995 CALENDAR YEAR

FOR 1996 WATER YEAR

WATER YEARS 1924 - 1996

ANNUAL TOTAL	11215.7	14827.5	
ANNUAL MEAN	30.7	40.5	40.2
HIGHEST ANNUAL MEAN			99.5
LOWEST ANNUAL MEAN			6.95
HIGHEST DAILY MEAN	800	930	5640
LOWEST DAILY MEAN	3.8	4.0	.00
ANNUAL SEVEN-DAY MINIMUM	4.0	4.8	.00
INSTANTANEOUS PEAK FLOW		a 933	6130
INSTANTANEOUS PEAK STAGE		a 10.77	20.70
ANNUAL RUNOFF (AC-FT)	22250	29410	29100
10 PERCENT EXCEEDS	62	88	54
50 PERCENT EXCEEDS	11	11	8.7
90 PERCENT EXCEEDS	5.2	6.1	2.9

a Maximum measured.  
e Estimated.

KNIFE RIVER BASIN  
06340000 SPRING CREEK AT ZAP, ND--Continued

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WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969-70, 1974 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996										
DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT 02...	1320	20	1720	--	10.0	11.0	--	--	--	--
NOV 08...	1415	9.7	1260	--	-6.0	0.5	--	--	--	--
JAN 02...	1230	6.5	1870	--	0.0	-1.0	--	--	--	--
FEB 22...	1510	294	263	7.9	12.0	0.5	67	67	15	7.0
MAR 13...	0920	933	200	--	3.0	0.5	--	--	--	--
MAR 18...	1700	138	388	--	-1.0	0.0	--	--	--	--
APR 08...	1535	30	1070	--	9.0	1.0	--	--	--	--
MAY 16...	1410	27	1700	--	20.0	17.0	--	--	--	--
JUN 26...	1505	11	1620	--	22.0	18.5	--	--	--	--
AUG 07...	0945	9.2	1420	7.8	14.5	17.5	310	388	49	46
SEP 26...	1145	12	1810	--	12.0	9.5	--	--	--	--

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
FEB 22...	19	34	1	12	49	4.1	0.10	147	182	0.25
AUG 07...	250	63	6	8.0	460	9.7	0.40	1060	1050	1.43

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
FEB 22...	144	<1	130	1	10	40	<0.1	<1	<1	220
AUG 07...	26.2	1	30	<1	50	60	0.2	<1	<1	1100

KNIFE RIVER BASIN  
06340500 KNIFE RIVER AT HAZEN, ND

LOCATION.--Lat 47°17'07", long 101°37'18", in SW<sup>1</sup>/<sub>4</sub> SE<sup>1</sup>/<sub>4</sub> SE<sup>1</sup>/<sub>4</sub> 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 south of Hazen, and 3 mi upstream from Antelope Creek.

DRAINAGE AREA.--2,240 mi<sup>2</sup>, 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 above sea level. Prior to Sept. 25, 1947, nonrecording gages at same site and datum.

REMARKS.--Records good except for periods of estimated daily discharges, which are poor. Slight regulation by Lake Ilo 81 mi upstream, capacity, 7,130 acre-ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--According to local residents, the floods of 1943 and 1950 were not exceeded during the period 1884 to 1942.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38	37	e38	e28	e13	e250	128	130	70	e130	33	18
2	38	e36	e38	e24	e13	e230	122	130	72	103	34	18
3	38	e35	e38	e21	e12	e200	118	142	77	69	35	18
4	36	e37	e38	e19	e13	e190	118	155	82	58	37	18
5	35	e38	e35	e17	e15	e170	118	155	80	52	51	18
6	34	e41	e31	e18	e17	e155	119	163	74	48	38	18
7	35	e42	e29	e21	e20	e140	115	158	70	46	35	19
8	35	e44	e27	e24	e25	e130	125	151	66	44	33	18
9	35	e44	e29	e26	e40	e120	904	143	64	43	30	18
10	34	e42	e30	e28	e2000	e115	5300	132	62	46	28	18
11	35	e39	e32	e31	e2300	e800	3760	130	59	58	36	18
12	38	e41	e32	e32	e1800	e3500	1630	130	65	45	49	18
13	37	e43	e33	e33	e1560	e3300	811	128	64	43	44	19
14	37	e44	e33	e31	e1100	2740	553	125	62	41	41	19
15	39	e44	e33	e28	e600	1990	429	120	96	40	38	19
16	38	e44	e34	e26	e400	1660	357	112	168	39	35	18
17	35	e44	e35	e22	e350	893	309	111	141	38	33	18
18	33	e44	e35	e18	e300	489	275	110	93	37	30	19
19	33	e44	e35	e15	e700	393	243	109	74	39	28	22
20	35	e43	e35	e17	e1600	315	217	107	76	52	27	26
21	35	e40	e36	e19	e1200	310	193	101	69	55	25	31
22	35	e40	e36	e21	e1000	269	174	95	59	58	24	38
23	34	e40	e36	e21	e1200	214	158	91	62	51	24	43
24	34	e43	e35	e20	e700	229	148	86	61	53	22	44
25	36	e40	e35	e19	e450	e200	148	83	65	53	21	48
26	35	e37	e35	e17	e400	e180	148	80	60	49	20	44
27	36	e37	e35	e16	e320	160	145	76	59	44	20	39
28	35	e37	e33	e16	e280	149	139	73	57	41	20	37
29	35	e37	e33	e15	e270	155	132	69	54	38	20	36
30	35	e37	e34	e15	---	160	128	68	54	35	20	36
31	37	---	e34	e14	---	138	---	68	---	34	21	---
TOTAL	1105	1214	1052	672	18698	19944	17264	3531	2215	1582	952	773
MEAN	35.6	40.5	33.9	21.7	645	643	575	114	73.8	51.0	30.7	25.8
MAX	39	44	38	33	2300	3500	5300	163	168	130	51	48
MIN	33	35	27	14	12	115	115	68	54	34	20	18

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 1996, BY WATER YEAR (WY)

	MEAN	38.5	30.7	21.2	19.6	99.7	673	525	165	230	119	47.6	34.4
MAX	365	223	83.1	145	927	3228	4293	1530	1041	979	215	143	
(WY)	1983	1983	1983	1974	1930	1943	1952	1970	1944	1938	1954	1978	
MIN	6.39	7.71	3.79	.70	.000	11.6	26.3	17.0	8.70	10.5	2.00	.50	
(WY)	1962	1962	1962	1962	1962	1965	1981	1931	1961	1961	1933	1933	

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR		FOR 1996 WATER YEAR		WATER YEARS 1929 - 1996	
ANNUAL TOTAL	57431		69002			
ANNUAL MEAN	157		189		168	
HIGHEST ANNUAL MEAN					441	
LOWEST ANNUAL MEAN					21.7	
HIGHEST DAILY MEAN	5040		5300		22400	
LOWEST DAILY MEAN	17		12		.00	
ANNUAL SEVEN-DAY MINIMUM	17		14		.00	
INSTANTANEOUS PEAK FLOW			5880		35300	
INSTANTANEOUS PEAK STAGE			20.85		27.01	
10 PERCENT EXCEEDS	285		309		250	
50 PERCENT EXCEEDS	45		41		31	
90 PERCENT EXCEEDS	21		19		9.2	

e Estimated.

KNIFE RIVER BASIN  
06340500 KNIFE RIVER AT HAZEN--Continued

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WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1950, 1951, 1969 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)
OCT 02...	1050	37	1660	--	12.0	11.0	--	--	--	--
NOV 08...	1245	44	1780	--	-5.0	1.0	--	--	--	--
JAN 02...	1600	24	1960	--	-5.0	0.0	--	--	--	--
FEB 22...	1215	945	308	8.0	6.5	0.0	73	16	8.0	25
APR 08...	1250	95	1140	--	5.0	2.0	--	--	--	--
13...	0945	837	1570	--	3.0	3.0	--	--	--	--
MAY 15...	1630	116	1920	--	18.0	21.0	--	--	--	--
JUN 27...	1220	59	1770	--	30.0	23.5	--	--	--	--
AUG 06...	1555	36	--	--	22.5	22.0	--	--	--	--
SEP 05...	1035	18	1650	7.6	25.5	22.0	340	61	45	290
DATE	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
FEB 22...	38	1	12	76	66	4.3	0.10	177	209	0.28
SEP 05...	64	7	10	508	480	8.2	0.50	1200	1190	1.62
DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
FEB 22...	533	1	150	1	10	50	<0.1	<1	1	200
SEP 05...	57.8	<1	20	<1	50	80	0.1	<1	<1	1000

**MISSOURI RIVER MAIN STEM**  
**06340700 MISSOURI RIVER NEAR STANTON, ND**

**LOCATION.**--Lat 47°17'14", long 101°20'25", in SW<sup>1</sup>/<sub>4</sub> sec.16, T.144 N., R.84 W., Mercer County, Hydrologic Unit 10130101, on right bank 3 mi southeast of Stanton, 0.1 mi below Ft. Clark irrigation pumping station, 0.4 mi above the United Power Association power plant, and at mile 1,372.

**DRAINAGE AREA.**--182,000 mi<sup>2</sup>, approximately.

**GAGE-HEIGHT RECORDS**

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

**GAGE.**--Water-stage recorder. Datum of gage is 1,650.00 ft above sea level (levels by U.S. Army Corps of Engineers). Prior to Sept. 30, 1964, at datum 50.00 ft lower.

**REMARKS.**--Stage regulated completely by releases from Garrison Dam (station 06338490) 18 mi upstream.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum daily gage height recorded, 24.56 ft, Feb. 22, 1965; minimum daily recorded, 8.92 ft, Nov. 3, 1991.

**GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996**  
**DAILY MEAN VALUES**

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15.80	15.29	---	---	---	---	11.17	15.02	15.17	15.25	15.29	14.89
2	15.80	15.27	---	---	---	---	11.28	15.04	15.23	15.27	15.13	14.84
3	15.82	15.30	---	---	---	---	---	15.04	15.42	15.33	15.06	14.79
4	15.85	15.39	---	---	---	---	---	15.02	15.32	15.32	15.06	15.01
5	15.63	15.43	---	---	---	---	11.02	15.03	15.46	15.31	15.09	15.04
6	15.58	15.38	---	---	---	---	11.73	14.95	15.41	15.27	15.19	14.94
7	15.59	15.36	---	---	---	---	12.39	15.00	15.30	15.27	15.13	14.96
8	15.60	15.37	---	---	---	---	12.47	15.12	15.44	15.24	15.18	14.98
9	15.60	15.40	---	---	---	---	12.66	15.22	15.39	15.30	15.16	15.01
10	15.53	15.29	---	---	---	11.82	13.73	15.24	15.39	15.23	15.19	14.80
11	15.62	---	---	---	---	11.67	14.32	15.25	15.39	15.28	15.13	14.89
12	15.64	---	---	---	---	11.76	13.55	15.26	15.34	15.28	15.18	15.14
13	15.54	---	---	---	---	11.87	13.45	15.26	15.34	15.30	15.25	15.10
14	15.57	---	---	---	---	11.84	13.77	15.27	15.35	15.30	15.12	15.02
15	15.61	---	---	---	---	11.47	14.19	15.25	15.34	15.26	15.19	15.03
16	15.64	---	---	---	---	10.78	14.22	15.26	15.32	15.30	15.18	15.21
17	15.58	---	---	---	12.10	10.63	14.24	15.25	15.33	15.22	15.14	14.93
18	15.64	---	---	---	11.81	10.48	14.19	15.25	15.32	15.27	15.18	14.88
19	15.59	---	---	---	11.96	10.88	14.22	15.23	15.30	15.29	15.13	15.05
20	15.58	---	---	---	12.08	11.34	14.25	15.21	15.28	15.30	15.20	14.88
21	15.64	---	---	---	11.97	11.48	14.25	15.20	14.69	15.25	15.18	14.92
22	15.64	---	---	---	12.04	11.61	14.44	14.91	14.08	15.24	15.20	---
23	15.57	---	---	---	11.94	11.72	14.88	15.11	14.14	15.24	15.13	---
24	15.64	---	---	---	11.86	---	15.09	15.20	14.35	15.24	15.17	---
25	15.65	---	---	---	---	---	14.98	15.21	14.27	15.27	15.18	---
26	15.67	---	---	---	---	---	14.99	15.22	14.30	15.29	15.08	---
27	15.61	---	---	---	---	---	15.03	15.22	14.59	15.26	15.18	---
28	15.52	---	---	---	---	---	15.03	15.17	14.91	15.27	15.19	---
29	15.27	---	---	---	---	---	15.03	15.15	15.18	15.26	15.20	---
30	15.23	---	---	---	---	---	15.03	15.23	15.25	15.26	15.18	---
31	15.36	---	---	---	---	---	---	15.19	---	15.28	15.03	---
MEAN	15.60	---	---	---	---	---	---	15.16	15.09	15.27	15.16	---
MAX	15.85	---	---	---	---	---	---	15.27	15.46	15.33	15.29	---
MIN	15.23	---	---	---	---	---	---	14.91	14.08	15.22	15.03	---



MISSOURI RIVER MAIN STEM  
06340900 MISSOURI RIVER NEAR HENSLER, ND

245

LOCATION.--Lat 47°16'45", long 101°11'03", in SW<sup>1</sup>/<sub>4</sub> sec.22, T.144 N., R.83 W., McLean County, Hydrologic Unit 10130101, on left bank about 7.5 mi west of Washburn, and at mile 1,362.

DRAINAGE AREA.--183,000 mi<sup>2</sup>, approximately.

GAGE-HEIGHT RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,640.00 ft above sea level (levels by U.S. Army Corps of Engineers). Prior to Sept. 30, 1964, at datum 40 ft lower.

REMARKS.--Stage regulated by releases from Garrison Dam (station 06338490) 28 mi upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 27.77 ft, Mar. 20, 1965; minimum daily recorded, 13.62 ft, Nov. 29, 1992.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996 DAILY MEAN VALUES												
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19.84	19.40	16.73	17.72	---	20.44	16.09	19.15	19.34	19.48	19.53	19.20
2	19.85	19.37	16.79	17.67	---	19.79	16.20	19.16	19.34	19.48	19.40	19.10
3	19.85	19.40	16.70	17.69	---	18.69	16.17	19.16	19.56	19.54	19.38	19.04
4	19.87	19.45	16.78	---	---	19.20	16.24	19.15	19.46	19.54	19.33	19.20
5	19.76	19.52	16.68	---	21.13	---	16.54	19.16	19.60	19.55	19.35	19.35
6	19.65	19.47	16.63	---	21.06	---	16.59	19.12	19.58	19.51	19.43	19.18
7	19.66	19.46	16.77	---	20.94	---	17.17	19.09	19.46	19.50	19.39	19.18
8	19.68	19.46	---	21.17	20.95	---	17.22	19.21	19.60	19.47	19.43	19.25
9	19.67	19.50	---	20.65	20.59	---	17.53	19.35	19.55	19.51	19.40	19.30
10	19.62	19.41	---	20.00	20.28	18.13	18.25	19.36	19.56	19.48	19.47	19.07
11	19.65	19.44	16.87	19.29	21.11	17.31	18.73	19.37	19.54	19.50	19.38	19.13
12	19.71	19.50	18.29	18.68	21.24	16.99	17.93	19.38	19.53	19.50	19.40	19.32
13	19.62	19.48	20.81	18.13	19.94	16.91	17.69	19.38	19.51	19.52	19.47	19.32
14	19.61	19.44	20.57	17.91	19.05	16.83	17.97	19.39	19.52	19.53	19.38	19.26
15	19.66	19.41	19.73	18.57	18.56	16.59	18.36	19.38	19.57	19.51	19.37	19.30
16	19.66	19.42	19.39	20.21	18.55	15.94	18.40	19.39	19.53	19.51	19.43	19.40
17	19.64	19.40	19.01	---	18.58	15.72	18.43	19.39	19.53	19.50	19.38	19.22
18	19.64	19.41	18.82	---	18.02	15.55	18.37	19.38	19.53	19.48	19.38	19.14
19	19.65	19.39	18.79	---	17.93	15.75	18.39	19.36	19.54	19.52	19.35	19.31
20	19.62	19.30	18.69	---	17.68	16.20	18.44	19.35	19.49	19.56	19.37	19.17
21	19.66	19.07	18.41	---	17.47	16.43	18.43	19.35	19.24	19.50	19.43	19.21
22	19.67	18.63	18.29	---	17.38	16.46	18.54	19.07	18.49	19.48	19.44	19.23
23	19.63	18.21	18.24	---	17.12	16.65	18.94	19.29	18.54	19.49	19.30	19.14
24	19.64	17.73	18.26	---	17.00	16.61	19.20	19.34	18.68	19.49	19.38	19.27
25	19.67	17.27	18.00	---	16.83	16.71	19.13	19.37	18.62	19.51	19.47	19.25
26	19.69	17.02	17.89	---	16.96	15.86	19.12	19.37	18.61	19.54	19.29	19.22
27	19.66	16.96	17.75	---	17.89	16.12	19.17	19.38	18.82	19.53	19.40	19.22
28	19.59	16.80	17.95	---	20.05	16.06	19.15	19.33	19.11	19.52	19.43	19.28
29	19.43	16.81	17.74	---	20.17	16.07	19.14	19.29	19.36	19.51	19.44	19.01
30	19.32	16.83	17.88	---	---	16.09	19.15	19.37	19.46	19.51	19.42	19.25
31	19.44	---	17.96	---	---	16.04	---	19.38	---	19.52	19.36	---
MEAN	19.66	18.80	---	---	---	---	18.02	19.30	19.31	19.51	19.40	19.22
MAX	19.87	19.52	---	---	---	---	19.20	19.39	19.60	19.56	19.53	19.40
MIN	19.32	16.80	---	---	---	---	16.09	19.07	18.49	19.47	19.29	19.01

MISSOURI RIVER MAIN STEM  
06341000 MISSOURI RIVER AT WASHBURN, ND

LOCATION.--Lat 47°17'20", long 101°02'15", in SE<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> sec.14, T.144 N., R.82 W., McLean County, Hydrologic Unit 10130101, on left bank near municipal waterplant in Washburn, and at mile 1,355.

DRAINAGE AREA.--184,000 mi<sup>2</sup>, approximately.

GAGE-HEIGHT RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,640.00 ft above sea level. Prior to Sept. 30, 1964, at datum 40 ft lower.

REMARKS.--Stage regulated by releases from Garrison Dam (station 06338490) 35 mi upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 22.76 ft, Jan. 11, 1964; minimum daily recorded, 9.44 ft, Sept. 25, 1991.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14.82	14.27	11.57	---	---	---	---	---	---	14.74	14.93	14.64
2	14.83	14.21	11.63	---	---	---	---	---	---	14.75	14.80	14.53
3	14.82	14.24	11.56	---	---	---	---	---	---	14.82	14.77	14.46
4	14.84	14.30	11.65	---	---	---	---	---	---	14.84	14.72	14.60
5	14.73	14.36	11.66	---	---	---	---	---	---	14.84	14.74	14.79
6	14.61	14.30	---	---	---	---	---	---	---	14.82	14.82	14.62
7	14.62	14.29	---	---	---	---	---	---	14.55	14.81	14.80	14.62
8	14.63	14.32	---	---	---	---	---	---	14.69	14.77	14.82	14.69
9	14.63	14.34	---	---	---	---	---	---	14.66	14.82	14.79	14.75
10	14.61	14.26	---	---	---	---	---	---	14.67	14.82	14.85	14.52
11	14.63	14.30	---	---	---	---	---	---	14.67	14.85	14.77	14.57
12	14.65	14.33	---	---	---	---	---	---	14.67	14.84	14.79	14.75
13	14.54	14.33	---	---	---	---	---	---	14.65	14.87	14.86	14.76
14	14.54	14.30	---	---	---	---	---	---	14.66	14.88	14.78	14.69
15	14.59	14.26	---	---	---	---	---	---	14.71	14.88	14.75	14.73
16	14.59	14.29	---	---	---	---	---	---	14.44	14.87	14.82	14.81
17	14.57	14.27	---	---	---	---	---	---	14.68	14.88	14.77	14.65
18	14.56	14.29	---	---	---	---	---	---	14.69	14.87	14.77	14.57
19	14.56	14.28	---	---	---	---	---	---	14.71	14.91	14.75	14.73
20	14.52	14.20	---	---	---	---	---	---	14.66	14.94	14.75	14.61
21	14.57	14.01	---	---	---	---	---	---	14.46	14.89	14.82	14.65
22	14.57	13.55	---	---	---	---	---	---	13.63	14.87	14.83	14.67
23	14.53	13.14	---	---	---	---	---	---	13.70	14.87	14.70	14.58
24	14.54	12.66	---	---	---	---	---	---	13.85	14.87	14.77	14.69
25	14.57	12.19	---	---	---	---	---	---	13.81	14.90	14.86	14.69
26	14.59	11.86	---	---	---	---	---	---	13.81	14.93	14.69	14.65
27	14.54	11.80	---	---	---	---	---	---	14.00	14.92	14.80	14.65
28	14.47	11.64	---	---	---	---	---	---	14.34	14.91	14.83	14.73
29	14.32	11.65	---	---	---	---	---	---	14.60	14.91	14.85	14.43
30	14.20	11.68	---	---	---	---	---	---	14.72	14.91	14.83	14.66
31	14.29	---	---	---	---	---	---	---	---	14.92	14.79	---
MEAN	14.58	13.66	---	---	---	---	---	---	---	14.86	14.79	14.65
MAX	14.84	14.36	---	---	---	---	---	---	---	14.94	14.93	14.81
MIN	14.20	11.64	---	---	---	---	---	---	---	14.74	14.69	14.43

TURTLE CREEK BASIN  
06341410 TURTLE CREEK ABOVE WASHBURN, ND

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LOCATION.--Lat 47°23'06", long 100°54'43", in NW<sup>1</sup>/<sub>4</sub> NE<sup>1</sup>/<sub>4</sub> NE<sup>1</sup>/<sub>4</sub> sec.18, T.14S N., R.80 W., McLean County, Hydrologic Unit 10130101, on right bank 250 ft downstream from bridge on county highway, 8.5 mi northeast of Washburn, and 8.8 mi south of Turtle Lake.

DRAINAGE AREA.--350 mi<sup>2</sup>, approximately, of which 195 mi<sup>2</sup> is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,780 ft above sea level, from topographic map.

REMARKS.--Records fair except for periods of estimated daily discharges, which are poor. Water from the McClusky Canal is sometimes diverted into the stream at a point upstream from the gage.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	e9.8	e5.6	e.02	e.03	.18	e.45	45	43	41	37	24
2	16	e9.5	e5.4	e.02	e.03	.12	e.40	50	42	40	33	28
3	16	e9.2	e5.4	.06	e.03	.09	e.38	57	44	39	37	28
4	16	e7.6	e5.2	.09	e.03	.07	e.37	57	44	39	34	27
5	16	e7.6	e5.0	.10	e.03	.06	e.35	57	59	38	30	27
6	16	e7.6	e4.9	.09	e.12	.05	e.80	58	47	38	28	25
7	16	e7.5	e4.7	.08	e1.0	.05	e3.5	59	47	37	27	24
8	16	e7.4	e3.8	.08	e10	.04	e15	59	46	35	25	23
9	17	e7.2	e3.1	.07	56	.04	e45	59	47	36	26	21
10	17	e7.2	e3.0	.08	106	9.4	e140	58	45	34	25	21
11	18	e6.0	e2.9	.09	163	326	e100	57	46	35	25	21
12	18	e6.0	e2.9	.14	165	550	e85	57	61	36	25	21
13	17	e5.8	e2.8	.63	141	470	70	58	56	35	24	19
14	18	e5.8	e2.8	.23	73	239	73	57	51	32	23	19
15	17	e5.8	e2.2	.11	19	e140	70	55	57	31	23	18
16	e16	e5.6	e2.1	.13	4.6	e100	71	54	53	30	23	18
17	e16	e5.6	e2.1	.12	1.4	e60	70	57	50	30	23	18
18	e16	e5.9	e2.0	.10	.32	e40	64	55	46	33	22	18
19	e15	e7.2	e1.9	.09	4.3	e28	56	51	46	34	22	19
20	e15	e6.9	e1.9	.08	74	e20	47	50	49	43	20	23
21	e14	e6.8	e1.8	.07	77	e15	43	50	51	43	21	27
22	e13	e6.4	e1.3	.07	e50	e13	41	47	47	38	21	24
23	e13	e6.2	e1.2	.07	e20	e16	41	45	54	36	21	23
24	e12	e6.6	e1.1	e.07	e10	e10	45	44	57	35	21	22
25	e12	e6.7	e.96	e.06	e5.0	e5.0	46	44	53	34	21	21
26	e12	e6.2	e.84	e.05	e3.0	e1.0	48	44	56	35	21	19
27	e11	e5.6	e.11	e.04	e1.2	e.72	47	44	53	38	21	20
28	e11	e6.2	e.03	e.04	e.50	e.63	44	42	49	35	22	20
29	e10	e5.0	e.02	e.04	e.30	e.56	44	41	47	33	23	20
30	e10	e5.8	e.02	e.03	---	e.52	44	42	43	30	23	19
31	e10	---	e.02	e.03	---	e.48	---	43	---	23	23	---
TOTAL	456	202.7	77.10	2.98	985.89	2046.01	1355.25	1596	1489	1096	770	657
MEAN	14.7	6.76	2.49	.096	34.0	66.0	45.2	51.5	49.6	35.4	24.8	21.9
MAX	18	9.8	5.6	.63	165	550	140	59	61	43	37	28
MIN	10	5.0	.02	.02	.03	.04	.35	41	42	23	20	18
AC-FT	904	402	153	5.9	1960	4060	2690	3170	2950	2170	1530	1300

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1987 - 1996, BY WATER YEAR (WY)

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
MEAN	13.8	6.63	.85	.27	5.45	32.3	18.0	14.0	12.2	12.2
MAX	54.3	30.9	4.18	2.18	34.0	116	54.8	51.5	49.6	35.4
(WY)	1994	1993	1995	1995	1996	1987	1987	1996	1996	1996
MIN	.092	.043	.000	.000	.000	.22	.28	.069	.009	.000
(WY)	1990	1990	1990	1989	1989	1990	1990	1992	1989	1988

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR	FOR 1996 WATER YEAR	WATER YEARS 1987 - 1996
ANNUAL TOTAL	7529.13	10733.93	
ANNUAL MEAN	20.6	29.3	11.5
HIGHEST ANNUAL MEAN			29.3
LOWEST ANNUAL MEAN			1.10
HIGHEST DAILY MEAN	425	550	767
LOWEST DAILY MEAN	.02	.02	.00
ANNUAL SEVEN-DAY MINIMUM	.29	.03	.00
INSTANTANEOUS PEAK FLOW		954	954
INSTANTANEOUS PEAK STAGE		7.28	7.28
ANNUAL RUNOFF (AC-FT)	14930	21290	8310
10 PERCENT EXCEEDS	35	57	32
50 PERCENT EXCEEDS	16	20	2.0
90 PERCENT EXCEEDS	1.4	.09	.00

e Estimated.

TURTLE CREEK BASIN  
06341410 TURTLE CREEK ABOVE WASHBURN, ND--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)
OCT 10...	1120	17	1170	8.6	706	24.0	9.0	51	7.7	72	300
NOV 21...	1110	6.8	1960	9.1	710	2.0	-1.0	33	7.2	52	510
JAN 03...	1140	0.02	--	--	--	-5.0	0.0	--	--	--	--
MAR 16...	1045	100	525	--	--	1.5	0.5	--	--	--	--
MAR 21...	1245	15	1460	8.1	709	4.5	0.0	4.4	5.4	40	300
APR 12...	1550	85	373	--	--	3.5	2.5	--	--	--	--
JUN 05...	1230	61	1190	8.0	700	17.0	18.0	29	8.9	102	270
JUL 02...	1205	41	1240	7.8	710	25.0	25.5	1.0	7.2	95	300
AUG 08...	1005	26	1190	7.7	--	19.5	20.0	1.2	8.1	--	290
SEP 18...	1250	17	1100	--	--	17.5	15.5	--	--	--	--

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)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)
OCT 10...	40	48	160	53	4	11	310	340	15	0.40	4.1
NOV 21...	49	93	340	58	7	26	687	550	16	0.30	10
MAR 21...	29	56	220	59	5	26	507	330	12	0.20	14
JUN 05...	32	46	160	55	4	12	370	270	8.5	0.30	6.7
JUL 02...	33	54	170	53	4	16	416	270	8.8	0.40	16
AUG 08...	34	49	150	52	4	14	351	270	12	0.40	3.2

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, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 TOTAL (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) (00608)	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)
OCT 10...	805	1.09	36.1	0.010	--	--	<0.050	0.230	0.030	330	14
NOV 21...	1500	2.04	27.3	0.010	--	--	<0.050	0.220	0.070	760	23
MAR 21...	994	1.35	40.8	0.050	0.150	0.200	0.200	0.270	0.490	450	98
JUN 05...	758	1.03	126	<0.010	--	--	<0.050	0.040	0.080	350	29
JUL 02...	818	1.11	89.7	<0.010	--	--	<0.050	0.030	0.100	480	28
AUG 08...	744	1.01	52.8	<0.010	--	0.060	0.060	0.030	0.110	370	15

PAINTED WOODS CREEK BASIN  
06341800 PAINTED WOODS CREEK NEAR WILTON, ND

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LOCATION.--Lat 47°16'30", long 100°47'30", in SW<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> sec.23, T.144 N., R.80 W., McLean County, Hydrologic Unit 10130101, on right bank 600 ft upstream from county highway bridge, 7 mi upstream from Yanktonai Creek, and 8 mi north of Wilton.

DRAINAGE AREA.--427 mi<sup>2</sup>, approximately, of which about 310 mi<sup>2</sup> is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1957 to September 1981, August 1982 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,764.93 ft above sea level (levels by U.S. Fish and Wildlife Service).

REMARKS.--Records good except for period of estimated daily discharges, which is poor. Since the fall of 1982, Missouri River basin water has been diverted into the stream at a point several miles upstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	9.9	e9.2	e10	e6.2	e30	e19	59	77	12	6.0	1.3
2	13	8.1	e9.4	e10	e6.0	e25	e17	56	101	10	6.7	1.4
3	13	e8.0	e9.4	e10	e6.2	e23	e16	52	76	7.6	6.9	1.4
4	24	e8.0	e10	e6.5	e21	e15	50	60	6.0	6.8	1.3	
5	26	e8.1	e6.2	e9.6	e7.0	e20	e15	47	59	4.9	7.7	1.1
6	13	e8.2	e6.4	e8.8	e7.6	e18	e15	43	53	4.4	7.3	1.1
7	9.4	e8.0	e6.6	e7.6	e8.6	e17	e16	41	46	4.1	6.2	1.1
8	9.4	e8.0	e6.6	e8.0	e10	e16	e35	41	33	3.7	5.2	1.1
9	9.7	e7.9	e6.8	e8.5	e15	e15	e200	40	26	3.5	5.1	1.0
10	9.7	e7.7	e7.0	e9.5	e22	e30	e900	38	23	3.2	5.0	1.0
11	9.3	e7.4	e7.0	e10	e35	e100	e700	37	21	3.0	3.6	.92
12	9.4	e7.6	e7.0	e11	e50	e200	e500	39	25	2.8	3.3	.95
13	9.5	e7.9	e7.2	e12	e40	e800	378	42	24	2.8	2.9	1.1
14	9.7	e8.0	e7.2	e12	e35	e650	303	43	22	2.8	2.6	1.0
15	8.9	e8.1	e7.4	e11	e25	e560	238	45	23	2.8	2.4	.90
16	9.3	e8.2	e7.6	e10	e20	e500	180	46	21	2.6	2.3	3.2
17	8.8	e8.5	e7.6	e9.0	e18	e350	136	55	20	3.2	2.1	9.2
18	12	e8.7	e7.8	e8.0	e17	e200	112	63	19	4.8	2.0	10
19	8.6	e9.6	e8.0	e7.0	e18	e170	101	72	19	8.3	2.1	11
20	9.7	e9.2	e8.4	e7.2	e25	e190	85	58	19	10	2.2	13
21	9.0	e8.9	e8.8	e8.0	e40	e140	74	43	18	8.6	1.9	12
22	8.9	e8.9	e9.5	e8.5	e60	e100	65	37	17	7.5	1.7	9.9
23	9.1	e8.8	e9.0	e8.4	e100	e75	57	38	19	6.0	1.5	9.4
24	9.0	e8.6	e9.4	e8.2	e95	e60	51	40	19	5.8	1.4	9.7
25	8.7	e8.2	e10	e8.0	e80	e45	51	41	18	5.3	1.4	9.1
26	9.2	e8.4	e10	e8.0	e60	e37	52	40	17	4.8	1.3	9.2
27	10	e8.6	e11	e7.8	e48	e31	48	39	13	5.1	1.3	9.8
28	11	e8.8	e10	e7.5	e40	e27	48	39	12	5.8	1.2	9.3
29	9.7	e8.8	e10	e7.2	e35	e25	47	41	13	5.6	1.3	8.6
30	9.3	e9.0	e10	e7.0	---	e22	50	42	12	5.2	1.2	8.5
31	9.7	---	e10	e6.6	---	e20	---	49	---	4.9	1.2	---
TOTAL	338.0	252.1	258.5	274.4	936.1	4517	4524	1416	925	167.1	103.8	158.57
MEAN	10.9	8.40	8.34	8.85	32.3	146	151	45.7	30.8	5.39	3.35	5.29
MAX	26	9.9	11	12	100	800	900	72	101	12	7.7	13
MIN	8.6	7.4	6.2	6.6	6.0	15	15	37	12	2.6	1.2	.90
AC-FT	670	500	513	544	1860	8960	8970	2810	1830	331	206	315

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1996, BY WATER YEAR (WY)

MEAN	24.5	23.9	21.2	19.9	26.0	80.2	47.7	36.2	23.4	39.4	25.4	21.0
MAX	38.4	33.3	33.9	30.5	36.2	162	151	98.6	42.6	281	70.1	43.2
(WY)	1987	1990	1987	1990	1992	1987	1996	1995	1984	1993	1993	1986
MIN	.16	5.45	6.24	3.42	7.15	18.2	8.20	1.08	2.37	1.43	.22	2.30
(WY)	1989	1989	1984	1984	1994	1989	1989	1990	1990	1990	1983	1995

SUMMARY STATISTICS FOR 1995 CALENDAR YEAR FOR 1996 WATER YEAR WATER YEARS 1983 - 1996

ANNUAL TOTAL	13640.79	13870.57	
ANNUAL MEAN	37.4	37.9	32.5
HIGHEST ANNUAL MEAN			55.6
LOWEST ANNUAL MEAN			19.3
HIGHEST DAILY MEAN	500 Mar 15	900 Apr 10	1230 Jul 23 1993
LOWEST DAILY MEAN	.28 Sep 4	.90 Sep 15	.06 Oct 14 1988
ANNUAL SEVEN-DAY MINIMUM	.45 Aug 31	.98 Sep 9	.08 Oct 12 1988
INSTANTANEOUS PEAK FLOW		1560 Apr 10	4050 Apr 19 1979
INSTANTANEOUS PEAK STAGE		a 8.21 Apr 10	9.64 Apr 19 1979
ANNUAL RUNOFF (AC-FT)	27060	27510	23540
10 PERCENT EXCEEDS	92	60	47
50 PERCENT EXCEEDS	13	9.7	26
90 PERCENT EXCEEDS	.98	2.8	3.8

a Backwater from ice.  
e Estimated.



PAINTED WOODS CREEK BASIN  
06341800 PAINTED WOODS CREEK NEAR WILTON, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959-64, 1970 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)
OCT 10...	1510	10	1780	7.6	705	19.0	13.0	6.9	10.9	113	590
NOV 21...	1510	8.9	1850	7.9	708	3.0	0.0	3.5	13.0	96	620
JAN 03...	1405	10	1760	--	--	-5.0	0.0	--	--	--	--
MAR 16...	1330	500	247	--	--	1.0	0.5	--	--	--	--
MAR 21...	1015	141	484	7.5	710	4.0	2.0	2.1	10.6	82	150
APR 15...	1015	245	474	--	--	9.0	4.0	--	--	--	--
JUN 05...	1445	56	1910	7.7	701	18.5	18.5	9.4	9.4	110	610
JUL 02...	1450	10	1890	7.5	710	28.5	28.0	6.4	6.9	96	610
AUG 08...	1420	5.1	2000	7.6	--	23.0	24.0	9.1	8.4	--	610
SEP 18...	0950	9.6	238	--	--	15.5	14.5	--	--	--	--

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)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)
OCT 10...	88	90	180	39	3	17	280	720	22	0.30	12
NOV 21...	98	92	200	40	3	17	307	730	18	0.30	12
MAR 21...	27	20	38	33	1	13	127	120	4.1	<0.10	12
JUN 05...	86	97	230	44	4	14	352	780	12	0.30	13
JUL 02...	83	97	220	43	4	15	383	660	10	0.30	14
AUG 08...	79	100	270	48	5	13	545	630	6.9	0.20	19

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, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 TOTAL (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) (00608)	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)
OCT 10...	1300	1.76	35.0	<0.010	--	--	<0.050	<0.015	0.010	380	4
NOV 21...	1350	1.84	32.6	<0.010	--	--	<0.050	0.020	0.010	390	4
MAR 21...	312	0.42	119	0.020	0.150	0.170	0.170	0.030	0.210	100	130
JUN 05...	1440	1.96	217	<0.010	--	--	<0.050	0.050	0.050	390	26
JUL 02...	1330	1.81	36.6	<0.010	--	--	<0.050	0.030	0.050	420	35
AUG 08...	1450	1.97	19.8	<0.010	--	0.050	0.050	0.020	0.070	610	30

MISSOURI RIVER MAIN STEM  
06342020 MISSOURI RIVER AT PRICE, ND

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LOCATION.--Lat 47°04'47", long 100°55'55", in NW<sup>1</sup>/<sub>4</sub> sec.34, T.142 N., R.81 W., Oliver County, Hydrologic Unit 10130101, on right bank 0.5 mi south of Price, and at mile 1,338.

DRAINAGE AREA.--185,000 mi<sup>2</sup>, approximately.

GAGE-HEIGHT RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,620.00 ft above sea level (levels by U.S. Army Corps of Engineers). Prior to Sept. 30, 1964, at datum 20 ft lower.

REMARKS.--Stage regulated by releases from Garrison Dam (station 06338490) 52 mi upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 30.12 ft, Jan. 22, 1967; minimum daily recorded, 17.07 ft, Mar. 11, 1993.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996 DAILY MEAN VALUES												
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23.28	22.93	20.20	24.95	---	23.41	19.73	23.02	23.33	23.36	23.39	23.18
2	23.31	22.87	20.26	24.86	---	23.40	19.67	23.03	23.31	23.36	23.30	23.04
3	23.31	22.91	20.23	24.64	---	23.34	19.74	23.04	23.48	23.44	23.23	22.97
4	23.33	23.00	20.26	24.40	---	23.41	19.80	23.04	23.50	23.48	23.16	23.07
5	23.28	23.09	20.25	24.25	24.89	23.33	20.06	23.06	23.60	23.48	23.18	23.27
6	23.10	23.06	20.31	24.45	24.83	23.28	20.27	23.05	23.57	23.45	23.22	23.13
7	23.09	23.04	20.28	24.60	24.88	23.17	20.64	22.96	23.50	23.42	23.25	23.08
8	23.11	23.07	19.97	24.91	24.85	23.01	20.98	23.07	23.59	23.38	23.27	23.14
9	23.11	23.12	21.02	25.16	24.80	23.24	21.34	23.19	23.59	23.38	23.27	23.18
10	23.10	23.05	24.09	24.98	24.58	23.32	22.22	23.25	23.57	23.42	23.34	23.02
11	23.06	23.08	24.08	24.90	24.55	23.62	22.82	23.27	23.55	23.35	23.27	22.97
12	23.15	23.13	23.36	24.76	25.01	24.12	22.25	23.31	23.56	23.37	23.24	23.14
13	23.08	23.16	23.72	24.74	25.00	24.41	21.68	23.30	23.51	23.38	23.34	23.25
14	23.06	23.16	24.81	24.63	24.41	23.82	21.77	23.32	23.54	23.38	23.34	23.21
15	23.11	23.07	25.18	23.99	24.19	22.60	22.06	23.30	23.58	23.38	23.21	23.21
16	23.13	23.11	25.07	24.06	23.90	20.80	22.22	23.32	23.52	23.34	23.31	23.24
17	23.14	23.09	25.03	24.23	24.03	19.86	22.25	23.34	23.50	23.36	23.31	23.20
18	23.10	23.10	24.95	---	23.99	19.29	22.23	23.32	23.49	23.31	23.34	23.07
19	23.12	23.11	24.83	---	24.02	19.26	22.19	23.32	23.51	23.34	23.31	23.13
20	23.06	23.01	24.93	---	24.14	19.71	22.26	23.29	23.46	23.40	23.27	23.10
21	23.11	22.91	24.97	24.78	24.17	20.10	22.25	23.30	23.37	23.34	23.32	23.07
22	23.14	22.44	24.95	24.91	24.21	20.11	22.27	23.09	22.47	23.29	23.32	23.08
23	23.13	21.96	24.90	24.70	24.36	20.32	22.63	23.17	22.38	23.29	23.27	23.02
24	23.11	21.49	24.97	---	24.35	20.49	23.01	23.23	22.45	23.29	23.29	23.10
25	23.17	20.96	24.96	---	24.05	20.57	23.03	23.30	22.47	23.30	23.37	23.13
26	23.19	20.52	24.92	---	23.19	21.41	22.98	23.31	22.44	23.32	23.25	23.08
27	23.20	20.43	24.95	24.65	22.60	21.92	23.02	23.32	22.58	23.33	23.33	23.08
28	23.14	20.31	24.99	24.56	22.54	21.20	23.00	23.31	22.87	23.31	23.37	23.16
29	23.02	20.27	24.99	---	23.18	20.47	23.01	23.28	23.13	23.29	23.39	22.88
30	22.82	20.35	24.71	---	---	20.41	23.02	23.36	23.33	23.30	23.38	23.07
31	22.91	---	24.82	---	---	20.04	---	23.39	---	23.33	23.37	---
MEAN	23.13	22.43	23.45	---	---	21.85	21.81	23.22	23.26	23.36	23.30	23.11
MAX	23.33	23.16	25.18	---	---	24.41	23.03	23.39	23.60	23.48	23.39	23.27
MIN	22.82	20.27	19.97	---	---	19.26	19.67	22.96	22.38	23.29	23.16	22.88

SQUARE BUTTE CREEK BASIN  
06342260 SQUARE BUTTE CREEK BELOW CENTER, ND

LOCATION.--Lat 47°03'25", long 101°11'35", in SE<sup>1</sup>/<sub>4</sub> sec.4, T.141 N., R.83 W., Oliver County, Hydrologic Unit 10130101, on right bank at southeast corner of farmyard, and 6 mi southeast of Center.

DRAINAGE AREA.--146 mi<sup>2</sup>.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Elevation of gage is 1,865 ft above sea level, from topographic map.

REMARKS.--Records good except for periods of estimated daily discharges, which are fair. Flow regulated by Nelson Lake 1.5 mi upstream beginning Aug. 24, 1967, capacity 5,000 acre-ft. The capacity of Nelson Lake was increased to 10,000 acre-ft in Aug. 1975.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	1.4	2.1	1.3	e.90	47	18	13	e5.0	270	1.2	1.6
2	1.6	1.4	2.2	1.3	e.90	45	4.2	13	e1.3	115	1.2	1.6
3	1.5	1.4	2.0	1.3	e.90	25	4.0	e9.1	e1.3	2.9	2.0	1.5
4	1.5	1.4	2.0	1.3	e.90	4.7	3.9	e5.4	e1.3	1.7	1.4	1.2
5	1.5	1.4	e1.8	1.1	e.90	4.1	3.5	e2.8	1.7	1.4	1.2	1.3
6	1.5	1.4	1.6	1.2	e.90	3.2	3.8	e1.3	1.8	1.5	1.2	1.5
7	1.3	1.4	1.6	1.2	e.90	3.2	96	e1.4	1.5	1.5	1.1	1.4
8	1.2	1.4	1.8	1.5	45	3.0	83	e1.5	1.5	1.1	1.1	1.4
9	1.2	1.4	1.4	1.2	71	2.7	545	e1.4	1.4	1.3	1.1	1.3
10	1.2	1.4	1.5	1.3	58	12	1300	e1.3	1.4	1.1	1.3	1.1
11	1.4	1.4	1.7	1.2	107	231	327	e1.3	1.5	1.0	1.3	1.1
12	1.2	1.4	2.0	2.0	66	1050	149	e1.5	1.9	1.0	1.4	1.2
13	1.2	1.4	2.3	3.3	101	327	36	e1.3	1.5	1.1	1.6	1.3
14	1.2	1.4	2.2	2.9	149	216	51	e1.5	1.5	1.2	1.4	1.3
15	1.2	1.4	1.9	1.3	142	215	77	e1.3	1.8	1.1	1.4	1.3
16	1.2	1.4	2.0	1.2	80	186	61	e1.7	1.2	.88	1.6	1.1
17	1.2	1.4	2.1	.91	77	32	11	e1.6	1.0	1.6	1.2	1.1
18	1.2	1.4	1.9	e.90	30	29	29	e1.5	1.0	1.8	1.3	2.0
19	1.2	1.4	1.9	e1.0	104	29	38	e1.4	1.1	1.1	1.6	2.4
20	1.2	1.4	1.7	e1.0	538	29	38	e1.4	1.1	2.1	1.4	3.3
21	1.2	1.4	1.7	e.95	204	75	38	e1.3	1.0	1.1	1.6	2.4
22	1.2	1.4	1.7	e.90	207	132	38	e1.3	.82	.81	1.3	1.9
23	1.2	1.4	1.7	e.90	520	36	e23	e1.3	1.3	.86	1.4	1.7
24	1.2	1.6	1.7	e.90	293	27	31	e1.3	1.1	.86	1.4	1.7
25	1.2	1.7	1.8	e.90	132	26	31	e1.3	1.2	.88	1.4	1.6
26	1.2	1.7	1.6	e.90	76	25	22	e1.3	1.2	1.2	1.5	2.0
27	1.5	1.5	1.5	e.90	50	25	15	e1.3	1.2	1.5	1.5	2.2
28	1.4	1.5	1.5	e.90	48	25	15	e1.3	.97	1.3	1.5	1.8
29	1.4	1.6	1.5	e.90	47	25	15	e1.5	.78	1.2	1.5	1.9
30	1.4	2.0	1.5	e.90	---	25	14	e100	16	1.1	1.5	1.7
31	1.4	---	1.4	e.90	---	25	---	e60	---	1.1	1.4	---
TOTAL	40.6	43.8	55.3	38.36	3151.30	2939.9	3120.4	236.6	57.37	422.29	43.0	48.9
MEAN	1.31	1.46	1.78	1.24	109	94.8	104	7.63	1.91	13.6	1.39	1.63
MAX	1.6	2.0	2.3	3.3	538	1050	1300	100	16	270	2.0	3.3
MIN	1.2	1.4	1.4	.90	.90	2.7	3.5	1.3	.78	.81	1.1	1.1
AC-FT	81	87	110	76	6250	5830	6190	469	114	838	85	97

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 1996, BY WATER YEAR (WY)

	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
MEAN	1.54	1.43	1.39	1.37	7.88	53.7	36.9	8.91	5.73	11.5	3.20	1.62
MAX	2.98	2.99	3.35	2.04	109	216	223	47.8	65.0	175	34.5	3.64
(WY)	1981	1983	1978	1983	1996	1987	1969	1995	1966	1993	1993	1980
MIN	.24	.19	.21	.20	.089	1.36	1.29	.79	.57	.71	.83	.35
(WY)	1968	1968	1968	1968	1966	1991	1991	1989	1989	1989	1982	1967

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR	FOR 1996 WATER YEAR	WATER YEARS 1965 - 1996
ANNUAL TOTAL	7426.85	10197.82	
ANNUAL MEAN	20.3	27.9	11.3
HIGHEST ANNUAL MEAN			30.0
LOWEST ANNUAL MEAN			.86
HIGHEST DAILY MEAN	809	Mar 12	2670
LOWEST DAILY MEAN	.57	Sep 1	.00
ANNUAL SEVEN-DAY MINIMUM	.73	Aug 30	.00
INSTANTANEOUS PEAK FLOW		2120	9700
INSTANTANEOUS PEAK STAGE		9.82	14.35
INSTANTANEOUS LOW FLOW			.00
ANNUAL RUNOFF (AC-FT)	14730	20230	8200
10 PERCENT EXCEEDS	53	59	6.9
50 PERCENT EXCEEDS	1.5	1.5	1.5
90 PERCENT EXCEEDS	.94	1.1	.90

e Estimated.

SQUARE BUTTE CREEK BASIN  
06342260 SQUARE BUTTE CREEK BELOW CENTER, ND--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (000061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (000095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (000020)	TEMPER- ATURE WATER (DEG C) (000010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT 11...	1355	1.5	1400	--	23.0	12.0	--	--	--	--
NOV 22...	1550	1.5	1270	--	-1.0	1.0	--	--	--	--
JAN 12...	1330	1.6	1370	--	3.5	2.5	--	--	--	--
FEB 16...	1225	126	1460	8.5	4.0	8.0	360	326	64	49
APR 04...	1210	4.1	910	--	-3.0	4.0	--	--	--	--
JUN 04...	1010	1.3	1300	--	18.0	16.0	--	--	--	--
24...	1225	1.3	1050	--	21.0	17.0	--	--	--	--
AUG 07...	1520	1.4	1420	--	24.0	21.5	--	--	--	--
SEP a05...	1315	1.4	1400	7.4	27.5	22.5	300	434	68	32

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEC. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
FEB 16...	190	52	4	16	460	14	0.40	990	971	1.32
SEP a05...	200	58	5	7.2	330	13	0.50	912	920	1.25

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
FEB 16...	330	1	40	<1	50	10	<0.1	7	1	1000
SEP a05...	3.43	<1	20	<1	40	40	0.1	<1	<1	900

a Replicate sample also collected for quality-assurance purposes.

BURNT CREEK BASIN  
06342450 BURNT CREEK NEAR BISMARCK, ND

LOCATION.--Lat 46°54'54", long 100°48'48", in SW<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> 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 northwest of Bismarck.

DRAINAGE AREA.--108 mi<sup>2</sup>.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1967 to current year (seasonal records only since 1982).

GAGE.--Water-stage recorder. Datum of gage is 1,690 ft above sea level, from topographic map.

REMARKS.--Records good except for periods of estimated daily discharge periods, which are poor.

EXTREMES FOR CURRENT YEAR.--Maximum discharge about 1,600 ft<sup>3</sup>/s, Apr. 10, gage height, 14.30 ft, from high-water mark; backwater from ice; no flow for several days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	e.00	e15	5.3	10	2.8	.72	4.4	.00
2	---	---	---	---	e.00	e8.0	5.1	9.7	2.7	.54	11	.01
3	---	---	---	---	e.00	e4.5	5.2	9.7	3.5	.61	12	.04
4	---	---	---	---	e.00	e2.5	5.3	9.7	5.3	.54	10	.00
5	---	---	---	---	e.00	e1.4	5.4	9.8	8.4	.46	13	.00
6	---	---	---	---	e.11	e.80	7.0	9.9	6.2	.39	8.5	.00
7	---	---	---	---	e.40	e.40	17	e9.6	4.5	.39	5.7	.00
8	---	---	---	---	e1.5	e.22	139	e9.3	3.7	.31	4.1	.00
9	---	---	---	---	e3.5	e.17	581	e9.1	3.0	.24	3.2	.00
10	---	---	---	---	e10	.11	891	e8.9	2.3	.24	2.6	.00
11	---	---	---	---	e30	34	188	e8.5	2.0	.39	1.8	.00
12	---	---	---	---	e80	514	58	e8.2	2.3	2.4	1.2	.00
13	---	---	---	---	e112	831	38	e7.8	2.1	2.2	.95	.00
14	---	---	---	---	e127	409	26	e7.6	1.9	1.2	.76	.00
15	---	---	---	---	e89	e240	23	e7.5	2.3	1.3	.60	.00
16	---	---	---	---	e70	e160	20	7.4	1.9	.92	.49	.00
17	---	---	---	---	e74	e100	19	14	1.7	.93	.39	.00
18	---	---	---	---	e110	e74	17	17	1.6	5.2	.31	.00
19	---	---	---	---	e130	e56	16	13	1.7	3.6	.28	.00
20	---	---	---	---	e140	e30	15	10	1.4	2.4	.22	.03
21	---	---	---	---	162	16	13	8.2	1.2	1.5	.20	.13
22	---	---	---	---	206	16	12	6.9	.97	.84	.15	.10
23	---	---	---	---	276	15	11	6.4	1.1	.59	.12	.07
24	---	---	---	---	e350	12	11	5.9	1.0	.43	.10	.06
25	---	---	---	---	e160	7.9	12	5.2	.90	.38	.06	.17
26	---	---	---	---	e84	9.0	12	4.8	.74	.31	.03	.42
27	---	---	---	---	e45	9.6	12	4.4	.66	.26	.00	.43
28	---	---	---	---	e25	7.3	11	3.8	.61	.22	.00	.40
29	---	---	---	---	e20	6.6	11	3.3	.53	6.7	.00	.35
30	---	---	---	---	---	6.1	10	3.0	.48	11	.00	.32
31	---	---	---	---	---	5.6	---	3.0	---	5.2	.00	---
TOTAL	---	---	---	---	2305.51	2592.20	2196.3	251.6	69.49	52.41	82.16	2.53
MEAN	---	---	---	---	79.5	83.6	73.2	8.12	2.32	1.69	2.65	.084
MAX	---	---	---	---	350	831	891	17	8.4	11	13	.43
MIN	---	---	---	---	.00	.11	5.1	3.0	.48	.22	.00	.00
AC-FT	---	---	---	---	4570	5140	4360	499	138	104	163	5.0

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 1996, BY WATER YEAR (WY)

	1968	1968	1968	1968	1968	1968	1968	1968	1968	1968	1968	1968
MEAN	.31	.26	.10	.054	9.65	38.6	32.3	4.39	2.35	3.22	.71	.27
MAX	1.97	1.19	.66	.45	79.5	170	256	15.0	13.6	72.0	10.2	3.45
(WY)	1981	1981	1978	1979	1996	1987	1969	1995	1971	1993	1993	1978
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1968	1968	1968	1968	1968	1990	1990	1990	1977	1973	1972	1970

SUMMARY STATISTICS

WATER YEARS 1968 - 1996

ANNUAL MEAN	7.57
HIGHEST ANNUAL MEAN	22.2
LOWEST ANNUAL MEAN	.55
HIGHEST DAILY MEAN	3900
LOWEST DAILY MEAN	.00
ANNUAL SEVEN-DAY MINIMUM	.00
INSTANTANEOUS PEAK FLOW	10000
INSTANTANEOUS PEAK STAGE	16.93
ANNUAL RUNOFF (AC-FT)	5490
10 PERCENT EXCEEDS	9.0
50 PERCENT EXCEEDS	.07
90 PERCENT EXCEEDS	.00

e Estimated.



BURNT CREEK BASIN  
06342450 BURNT CREEK NEAR BISMARCK, ND--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996										
DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
FEB 20...	1110	66	250	8.4	1.0	0.0	84	76	17	10
23...	1335	248	--	--	8.0	0.5	--	--	--	--
MAR 12...	1310	449	112	--	12.0	1.0	--	--	--	--
20...	1600	30	368	--	3.5	0.0	--	--	--	--
APR 11...	1010	297	218	--	3.0	2.0	--	--	--	--
MAY 14...	1500	7.6	1230	--	18.0	16.0	--	--	--	--
JUN 24...	1530	0.98	1560	--	23.0	20.5	--	--	--	--
AUG 01...	1405	4.1	1060	7.6	22.0	21.5	330	333	48	52

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
FEB 20...	14	23	0.7	14	39	5.5	0.10	146	180	0.24
AUG 01...	120	43	3	9.0	290	7.0	0.20	727	738	1.00

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
FEB 20...	32.0	1	190	2	10	50	0.1	<1	<1	180
AUG 01...	8.15	<1	30	2	80	20	0.6	<1	<1	540

MISSOURI RIVER MAIN STEM  
06342500 MISSOURI RIVER AT BISMARCK, ND

LOCATION.--Lat 46°48'51", long 100°49'12", in SE<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> SE<sup>1</sup>/<sub>4</sub> sec.31, T.139 N., R.80 W., Burleigh County, Hydrologic Unit 10130101, on left bank 40 ft upstream from Bismarck City waterplant, 2,100 ft downstream from Burlington Northern Railway bridge, 1.6 mi northwest of Bismarck Post Office, 3.5 mi upstream from Heart River, and at mi 1,314.5.

DRAINAGE AREA.--186,400 mi<sup>2</sup>, 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 above sea level, revised. See WSP 1729 or 1917 for history of changes prior to Sept. 30, 1937.

REMARKS.--Records good except for period of estimated daily discharges, which is fair. Flow regulated by Lake Sakakawea (station 06338000) 75.4 mi upstream since November 1953.

EXTREMES SINCE COMPLETION OF GARRISON DAM.--Since completion of Garrison Dam in 1953, maximum discharge, 68,900 ft<sup>3</sup>/s, July 13, 1975, gage height, 14.24 ft; maximum gage height, 14.58 ft, Dec. 18, 1979, backwater from ice.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known, 31.6 ft, Mar. 31, 1881, present site and datum.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41400	38300	22000	e23500	e26400	e21200	e19100	37800	40000	39000	40200	38900
2	41400	38300	21800	e23800	e24800	e21300	e19600	37900	39600	39000	40200	37900
3	41400	37900	22100	e23600	e25400	e21600	e19800	38000	39800	39200	39500	37200
4	41300	38100	21800	e24500	e26200	e21500	e20400	38000	40600	39500	38700	37000
5	41500	38500	22300	e24200	e25000	e21300	23400	38100	40800	39600	38500	38100
6	40500	38900	22000	e24100	e25400	e21800	23500	38000	41300	39500	38700	38900
7	39900	38700	e21400	e24300	e25000	e21600	23700	37700	40900	39400	39400	37800
8	39900	38500	e21700	e24200	e24700	e22000	26000	37700	40300	39200	39100	37800
9	39900	38700	e19400	e24200	e24500	e21200	28400	38500	41000	38900	39300	38300
10	39900	38900	e19000	e23500	e23600	e21400	34900	39200	40800	39200	39300	38300
11	39700	38300	e19300	e23900	e26300	e21600	39500	39500	40700	39400	39500	37100
12	39900	38500	e18900	e24000	e26100	e22800	37600	39700	40900	39300	39100	37500
13	40300	38800	e19200	e24000	e25700	e24300	32500	39700	40300	39300	39400	38600
14	39800	38700	e20200	e24000	e23100	e23900	30600	39700	40200	39500	39700	38600
15	39700	38400	e20900	e23600	e22500	e22300	31600	39800	40700	39500	38900	38300
16	39900	38200	e20300	e24200	e22200	e19700	33000	39600	40400	39200	39100	38400
17	40100	38400	e21100	e23800	e22400	e18100	33400	40000	40000	39700	39300	38900
18	39900	38200	e21500	e24100	e21600	e16300	33500	39900	40100	39800	39100	37900
19	40300	38400	e21500	e24600	e21600	e16500	33100	39900	40500	39400	39500	37800
20	40000	38500	e21700	e25400	e22400	e19200	33200	39800	40100	40000	38900	39000
21	39800	37700	e21900	e25000	e23200	e21000	33400	39600	39800	40100	39300	38100
22	40200	35900	e22600	e24700	e22600	e20800	33300	39000	35900	39600	39400	37900
23	40300	32900	e22400	e24500	e22800	e21900	34200	37600	32100	39500	39500	37900
24	40000	30400	e22900	e25300	e23300	e21600	36300	38400	32000	39500	38900	37700
25	40300	27400	e23200	e25000	e22500	e21400	38200	39000	32600	39400	39300	38300
26	40500	24800	e22800	e24800	e22100	e19600	37600	39200	32400	39600	39500	38300
27	40800	23500	e23300	e24900	e21100	e19400	37600	39200	32500	40000	38800	38200
28	40400	23000	e24000	e25300	e21200	e19500	37700	39200	34100	39800	39500	38100
29	39700	22300	e24100	e25700	e21200	e19300	37700	39000	35900	39900	39700	37900
30	38200	22400	e23500	e25400	---	e19500	37800	39000	37900	39800	39800	37000
31	37700	---	e24200	e25500	---	e19000	---	40200	---	39800	39700	---
TOTAL	1244600	1049500	673000	757600	684900	642600	940600	1207900	1154200	1224600	1218800	1141700
MEAN	40150	34980	21710	24440	23620	20730	31350	38960	38470	39500	39320	38060
MAX	41500	38900	24200	25700	26400	24300	39500	40200	41300	40100	40200	39000
MIN	37700	22300	18900	23500	21100	16300	19100	37600	32000	38900	38500	37000
AC-FT	2469000	2082000	1335000	1503000	1358000	1275000	1866000	2396000	2289000	2429000	2417000	2265000

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1954 - 1996, BY WATER YEAR (WY)

MEAN	21050	21120	20840	22990	25220	22890	21670	22930	24020	24860	24840	22040
MAX	40150	35040	31690	32350	34840	34370	40370	42030	43540	64610	57010	42670
(WY)	1996	1979	1970	1969	1969	1972	1972	1972	1975	1975	1975	1995
MIN	8399	8155	7890	6519	5883	6317	10420	9234	8445	10840	9271	8121
(WY)	1963	1963	1955	1955	1956	1955	1993	1963	1960	1960	1962	1962

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR	FOR 1996 WATER YEAR	WATER YEARS 1954 - 1996
ANNUAL TOTAL	8784000	11940000	
ANNUAL MEAN	24070	32620	22860
HIGHEST ANNUAL MEAN			35630
LOWEST ANNUAL MEAN			14320
HIGHEST DAILY MEAN	43300	Sep 6	68800
LOWEST DAILY MEAN	10400	Jun 29	4000
ANNUAL SEVEN-DAY MINIMUM	11300	Jun 8	4860
INSTANTANEOUS PEAK FLOW			500000
INSTANTANEOUS PEAK STAGE		a 12.02	27.90
ANNUAL RUNOFF (AC-FT)	17420000	23680000	16560000
10 PERCENT EXCEEDS	42200	40000	34000
50 PERCENT EXCEEDS	21500	37900	21900
90 PERCENT EXCEEDS	12400	21500	11700

a Backwater from ice.  
e Estimated.

MISSOURI RIVER MAIN STEM  
06342500 MISSOURI RIVER AT BISMARCK, ND--Continued

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WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, CUBIC FEET PER SECOND (00061)	DIS- CHARGE, CUBIC FEET PER SECOND (00060)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	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)
OCT											
02...	1200	--	41400	--	--	--	--	--	--	--	--
06...	1200	--	40500	--	--	--	--	--	--	--	--
10...	1200	--	39900	--	--	--	--	--	--	--	--
13...	1200	--	40300	--	--	--	--	--	--	--	--
16...	1200	--	39900	--	--	--	--	--	--	--	--
20...	1200	--	40000	--	--	--	--	--	--	--	--
23...	1200	--	40300	--	--	--	--	--	--	--	--
26...	1200	--	40500	--	--	--	--	--	--	--	--
31...	1200	--	37700	--	--	--	--	--	--	--	--
NOV											
06...	1200	--	38400	--	--	--	--	--	--	--	--
09...	1200	--	38700	--	--	--	--	--	--	--	--
13...	1200	--	38800	--	--	--	--	--	--	--	--
20...	1200	--	38500	--	--	--	--	--	--	--	--
MAY											
23...	1230	36400	--	680	11.0	8.0	210	168	49	21	57
JUL											
03...	1600	36600	--	590	25.5	15.5	--	--	--	--	--

DATE	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)
MAY										
23...	37	2	3.6	180	10	0.50	422	454	0.62	44600

DATE	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	SEDI- MENT, SUS- PENDE (MG/L) (80154)
OCT										
02...	--	--	--	--	--	--	--	--	--	211
06...	--	--	--	--	--	--	--	--	--	199
10...	--	--	--	--	--	--	--	--	--	216
13...	--	--	--	--	--	--	--	--	--	280
16...	--	--	--	--	--	--	--	--	--	180
20...	--	--	--	--	--	--	--	--	--	216
23...	--	--	--	--	--	--	--	--	--	211
26...	--	--	--	--	--	--	--	--	--	179
31...	--	--	--	--	--	--	--	--	--	170
NOV										
06...	--	--	--	--	--	--	--	--	--	238
09...	--	--	--	--	--	--	--	--	--	188
13...	--	--	--	--	--	--	--	--	--	290
20...	--	--	--	--	--	--	--	--	--	311
MAY										
23...	1	20	<1	40	10	0.1	2	1	490	--

HEART RIVER BASIN  
06343500 E.A. PATTERSON LAKE NEAR DICKINSON, ND

LOCATION.--Lat 46°52'11", long 102°49'37", in NE<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> sec.8, T.139 N., R.96 W., Stark County, Hydrologic Unit 10130202, at left edge of spillway, and 2 mi southwest of Dickinson.

DRAINAGE AREA.--400 mi<sup>2</sup>, approximately.

MONTHEND-ELEVATION AND CONTENTS RECORDS

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 at sea level (levels by Bureau of Reclamation). Prior to Jan. 4, 1961, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by earth-fill dam; storage began May 23, 1950; dam completed Aug. 9, 1950. Total capacity is 24,600 acre-ft at maximum pool, elevation, 2,428.9 ft. Dead storage is 1,000 acre-ft below lowest point of outlet, elevation, 2,404.0 ft. Conservation storage is 9,100 acre-ft between elevations 2,404.0 ft and 2,420.0 ft, crest of spillway. The crest of the spillway was raised 3.5 ft in 1981 from 2,416.5 ft. Figures given herein represent total contents based on capacity table dated 1991. The reservoir is for flood control, irrigation, and municipal supply.

COOPERATION.--Records furnished by U.S. Bureau of Reclamation. Extremes are those observed.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 11,590 acre-ft, June 9, 1982, elevation, 2,421.13 ft; minimum since initial filling of reservoir, 2,080 acre-ft, Feb. 8, 1993, elevation, 2,408.08 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents 9,460 acre-ft, Feb. 9, elevation, 2,420.69 ft; minimum, 5,890 acre-ft, Sept. 30, elevation 2,417.42 ft.

MONTHEND ELEVATION AND CONTENTS AT 0800, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30-----	2,420.30	8,980	--
Oct. 31-----	2,420.21	8,860	-120
Nov. 30-----	2,420.17	8,820	-40
Dec. 31-----	2,420.17	8,820	0
CAL YR 1995-----	--	--	+1,360
Jan. 31-----	2,420.21	8,860	+40
Feb. 29-----	2,420.55	9,280	+420
Mar. 31-----	2,420.29	8,960	-320
Apr. 30-----	2,419.64	8,190	-770
May 31-----	2,418.57	7,020	-1,170
June 30-----	2,417.94	6,380	-640
July 31-----	2,417.95	6,390	+10
Aug. 31-----	2,417.65	6,100	-290
Sept. 30-----	2,417.42	5,890	-210
WTR YR 1996-----	--	--	-3,090

HEART RIVER BASIN  
06343500 E.A. PATTERSON LAKE NEAR DICKINSON, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1971, 1975, 1980 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996										
DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	COLOR (PLAT- INUM- COBALT UNITS) (00080)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT 11...	1100	0.0	0.50	574	7.7	78	110	136	27	11
MAY 07...	1005	0.0	0.50	559	7.7	1000	110	111	24	11
SEP 11...	0900	0.0	1.0	1120	8.3	50	200	218	43	22

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
OCT 11...	74	56	3	10	140	5.9	0.20	10	363	376
MAY 07...	74	58	3	8.3	160	5.0	0.20	8.0	359	382
SEP 11...	160	62	5	12	340	8.9	0.30	6.7	725	738

DATE	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 TOTAL (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) (00608)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHOPHOS- PHATE, DIS- SOLVED (MG/L AS P) (00671)	BORON, DIS- SOLVED (UG/L AS B) (01020)
OCT 11...	0.51	0.020	0.590	0.610	0.610	0.180	0.090	0.100	130
MAY 07...	0.52	<0.010	--	0.330	0.330	0.280	0.070	0.060	100
SEP 11...	1.00	0.020	0.090	0.110	0.110	0.230	0.080	0.060	210



**HEART RIVER BASIN**  
**06343500 E.A. PATTERSON LAKE NEAR DICKINSON, ND--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
OCT							
11...	1040	20.7	0.0	575	7.6	11.0	10
11...	1042	--	0.50	575	7.6	10.5	9.8
11...	1044	--	1.0	576	7.7	10.5	9.7
11...	1046	--	2.0	575	7.7	10.5	9.7
11...	1048	--	3.0	575	7.7	10.5	9.7
11...	1050	--	4.0	575	7.7	10.5	9.6
11...	1052	--	5.0	575	7.7	10.5	9.6
11...	1054	--	6.1	576	7.7	10.5	9.6
MAY							
07...	0947	25.6	0.0	363	7.0	8.0	9.0
07...	0949	--	0.50	565	7.2	8.0	8.9
07...	0951	--	1.2	563	7.3	8.0	8.9
07...	0953	--	2.0	561	7.3	8.0	8.8
07...	0955	--	3.2	565	7.3	8.0	8.8
07...	0957	--	4.3	563	7.3	8.0	8.8
07...	0959	--	5.1	571	7.3	8.0	8.8
07...	1001	--	6.3	562	7.3	8.0	8.7
07...	1003	--	7.5	569	7.3	8.0	5.0
SEP							
11...	0853	17.7	0.0	1100	8.2	18.5	8.5
11...	0854	--	0.50	1100	8.2	18.5	8.3
11...	0855	--	1.1	1100	8.2	18.5	8.2
11...	0856	--	2.0	1100	8.2	18.5	8.2
11...	0857	--	4.0	1100	8.3	18.5	8.2
11...	0858	--	5.4	1100	8.3	18.5	8.3

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
OCT						
11...	100	694	7.00	13.0	--	<5.0
MAY						
07...	83	693	6.00	7.0	150	<5.0
SEP						
11...	97	713	17.0	14.0	--	<5.0

HEART RIVER BASIN  
06344300 HEART RIVER AT DICKINSON, ND

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LOCATION.--Lat 46°52'02", long 102°44'05", in SW<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> SE<sup>1</sup>/<sub>4</sub> sec.12, T.139 N., R.96 W., Stark County, Hydrologic Unit 10130202, on left bank near the southeast corner of Dickinson sewage lagoon cell No. 3, 1.9 mi southeast of Dickinson, and 9.5 mi downstream from Edward Arthur Patterson Lake.

DRAINAGE AREA.--440 mi<sup>2</sup>, approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1983 to September 1995, February to June 1996 (discontinued).

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 2,360 ft above sea level, from topographic map.

REMARKS.--Records poor. Flow regulated by Edward Arthur Patterson Lake (station 06343500) 10 mi upstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	e2.5	18	21	34	33	---	---	---
2	---	---	---	---	e2.5	16	20	43	30	---	---	---
3	---	---	---	---	e2.5	13	20	38	29	---	---	---
4	---	---	---	---	e2.5	14	19	34	29	---	---	---
5	---	---	---	---	e2.5	14	22	35	29	---	---	---
6	---	---	---	---	9.8	13	29	43	29	---	---	---
7	---	---	---	---	14	12	308	36	29	---	---	---
8	---	---	---	---	47	11	706	37	28	---	---	---
9	---	---	---	---	264	9.9	424	36	29	---	---	---
10	---	---	---	---	984	22	215	35	30	---	---	---
11	---	---	---	---	709	74	164	34	38	---	---	---
12	---	---	---	---	444	1130	116	34	51	---	---	---
13	---	---	---	---	218	1250	92	33	24	---	---	---
14	---	---	---	---	228	643	76	34	25	---	---	---
15	---	---	---	---	161	237	62	32	33	---	---	---
16	---	---	---	---	104	177	53	33	24	---	---	---
17	---	---	---	---	46	87	48	33	23	---	---	---
18	---	---	---	---	36	58	52	32	16	---	---	---
19	---	---	---	---	31	49	43	32	17	---	---	---
20	---	---	---	---	28	41	39	31	15	---	---	---
21	---	---	---	---	28	36	39	32	15	---	---	---
22	---	---	---	---	31	31	38	30	15	---	---	---
23	---	---	---	---	34	30	37	32	27	---	---	---
24	---	---	---	---	27	34	37	36	14	---	---	---
25	---	---	---	---	24	29	44	31	7.3	---	---	---
26	---	---	---	---	25	27	38	30	e7.0	---	---	---
27	---	---	---	---	25	26	36	30	e6.8	---	---	---
28	---	---	---	---	21	24	35	30	e6.5	---	---	---
29	---	---	---	---	17	24	35	29	e6.2	---	---	---
30	---	---	---	---	---	23	35	31	e6.0	---	---	---
31	---	---	---	---	---	22	---	55	---	---	---	---
TOTAL	---	---	---	---	3568.3	4194.9	2903	1065	671.8	---	---	---
MEAN	---	---	---	---	123	135	96.8	34.4	22.4	---	---	---
MAX	---	---	---	---	984	1250	706	55	51	---	---	---
MIN	---	---	---	---	2.5	9.9	19	29	6.0	---	---	---
AC-FT	---	---	---	---	7080	8320	5760	2110	1330	---	---	---

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1995, BY WATER YEAR (WY)

	5.45	3.03	2.59	2.21	5.38	51.1	38.5	17.1	27.3	26.3	11.5	5.38
MEAN	20.7	6.60	6.41	3.28	16.2	414	377	79.3	163	256	101	29.0
MAX	1987	1984	1987	1984	1987	1986	1987	1995	1984	1986	1995	1986
MIN	1.51	1.56	1.40	1.53	1.25	1.78	1.80	1.99	2.57	1.39	1.54	1.38
(WY)	1991	1991	1991	1993	1989	1990	1992	1992	1988	1991	1990	1990

SUMMARY STATISTICS

WATER YEARS 1984 - 1995

ANNUAL MEAN	15.8
HIGHEST ANNUAL MEAN	67.1
LOWEST ANNUAL MEAN	2.34
HIGHEST DAILY MEAN	3000
LOWEST DAILY MEAN	.10
ANNUAL SEVEN-DAY MINIMUM	.50
INSTANTANEOUS PEAK FLOW	3500
INSTANTANEOUS PEAK STAGE	10.93
ANNUAL RUNOFF (AC-FT)	11470
10 PERCENT EXCEEDS	15
50 PERCENT EXCEEDS	2.3
90 PERCENT EXCEEDS	1.5

e Estimated.

HEART RIVER BASIN  
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 above county highway bridge, and 8 mi west of New Hradec.

DRAINAGE AREA.--152 mi<sup>2</sup>, approximately.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Elevation of gage is 2,510 ft above sea level, from topographic map.

REMARKS--Records good except for periods of estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	1.5	2.4	.93	.17	3.1	2.5	4.1	6.9	.73	.37	.10
2	1.3	1.5	2.4	.93	.11	2.4	2.5	4.4	8.2	.63	.34	.08
3	1.4	1.5	2.2	1.3	.20	1.6	2.3	4.4	13	.64	.41	.08
4	1.2	1.5	2.2	1.3	.27	1.6	2.3	4.4	11	.62	1.1	.08
5	1.5	1.5	1.7	1.1	e5.0	1.7	3.0	4.3	8.5	.58	44	.07
6	1.4	1.5	1.6	.97	e15	1.4	40	4.3	7.0	.53	19	.06
7	1.5	1.5	1.6	.97	e150	1.3	387	5.4	5.7	.48	8.6	.06
8	1.9	1.5	1.3	.97	e250	1.0	444	7.1	4.5	.40	5.7	.05
9	1.8	1.6	.91	.98	e380	1.0	137	6.7	3.5	.37	3.6	.06
10	1.6	1.5	.82	1.4	e250	1.4	69	6.8	2.8	.32	2.4	.05
11	1.4	1.2	.80	2.0	e150	46	42	7.2	2.3	.28	1.5	.04
12	1.3	1.1	.80	3.2	e125	683	28	7.1	2.0	.21	.87	.03
13	1.3	1.2	.82	3.1	68	788	19	6.2	1.5	.20	.56	e.03
14	1.3	1.5	.88	2.3	46	211	15	6.3	1.6	.21	.40	e.02
15	1.3	e1.8	.88	1.9	20	132	12	6.4	1.5	.20	.29	e.01
16	1.3	e2.0	.88	1.8	26	93	9.9	6.2	1.2	.19	.24	e.01
17	1.3	2.3	.88	1.7	26	39	8.7	5.6	1.0	.19	.19	e.00
18	1.3	2.2	e.80	1.4	19	34	7.4	5.3	.79	.23	.15	.24
19	1.3	2.1	e.80	1.2	23	21	6.9	5.0	1.3	.26	.13	.78
20	1.3	1.9	e.80	1.1	38	15	6.0	4.3	4.5	.79	.10	2.0
21	1.5	2.0	e.80	1.1	55	9.9	5.3	3.7	3.6	3.5	.10	4.3
22	1.6	2.3	e.80	1.1	38	7.7	4.7	3.2	2.6	6.7	.11	4.4
23	1.5	2.3	e.80	.95	26	5.3	4.1	3.1	2.5	3.4	.12	2.7
24	1.5	2.2	e.80	.80	22	3.9	3.8	3.6	2.5	1.6	.14	1.8
25	1.8	2.3	e.80	.75	12	3.4	3.8	4.7	2.0	.89	.14	1.3
26	2.2	2.4	e.80	.66	17	2.7	3.9	4.9	1.6	1.1	.09	1.0
27	2.1	2.3	e.80	.57	23	2.5	4.1	4.4	1.5	.72	.07	.90
28	1.7	2.0	e.80	.48	11	2.4	4.0	4.8	1.4	.58	.05	.80
29	1.5	1.8	e.90	.41	4.3	2.3	3.9	3.9	1.2	.52	.05	.61
30	1.5	2.3	.97	.35	---	2.8	3.8	3.6	.98	.44	.11	.50
31	1.5	---	.92	.23	---	2.7	---	4.5	---	.36	.11	---
TOTAL	46.3	54.3	34.66	37.95	1800.05	2124.1	1285.9	155.9	108.67	27.87	91.04	22.16
MEAN	1.49	1.81	1.12	1.22	62.1	68.5	42.9	5.03	3.62	.90	2.94	.74
MAX	2.2	2.4	2.4	3.2	380	788	444	7.2	13	6.7	44	4.4
MIN	1.2	1.1	.80	.23	.11	1.0	2.3	3.1	.79	.19	.05	.00
AC-FT	92	108	69	75	3570	4210	2550	309	216	55	181	44

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1996, BY WATER YEAR (WY)

	MEAN	3.40	1.52	.93	1.41	9.81	57.8	42.0	18.2	19.8	12.9	3.92	1.85
MAX	47.7	8.89	2.74	14.3	67.4	323	314	141	101	123	29.5	21.1	
(WY)	1983	1983	1978	1974	1983	1972	1975	1970	1970	1964	1981	1986	
MIN	.076	.31	.13	.000	.000	.33	.71	.60	.067	.000	.000	.000	
(WY)	1993	1993	1993	1993	1993	1964	1990	1992	1988	1988	1988	1994	

SUMMARY STATISTICS

FOR 1995 CALENDAR YEAR

FOR 1996 WATER YEAR

WATER YEARS 1964 - 1996

ANNUAL TOTAL	2600.75	5788.90	
ANNUAL MEAN	7.13	15.8	14.4
HIGHEST ANNUAL MEAN			35.9
LOWEST ANNUAL MEAN			.74
HIGHEST DAILY MEAN	207	788	2700
LOWEST DAILY MEAN	.20	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.21	.02	.00
INSTANTANEOUS PEAK FLOW		1070	4120
INSTANTANEOUS PEAK STAGE		12.58	a 17.60
ANNUAL RUNOFF (AC-FT)	5160	11480	10430
10 PERCENT EXCEEDS	14	19	14
50 PERCENT EXCEEDS	1.5	1.6	1.0
90 PERCENT EXCEEDS	.44	.20	.15

a Backwater from ice.

e Estimated.

HEART RIVER BASIN  
06344600 GREEN RIVER NEAR NEW HRADEC, ND--Continued

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WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	HARD- NESS TOTAL (MG/L) AS CACO3 (00900)	ALKA- LINITY LAB (MG/L) AS CACO3 (90410)	CALCIUM DIS- SOLVED (MG/L) AS CA (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L) AS MG (00925)
OCT 04...	1425	1.4	950	--	11.0	10.5	--	--	--	--	--
NOV 22...	1050	2.2	1130	--	-1.5	1.5	--	--	--	--	--
JAN 04...	0900	1.3	1280	--	-2.0	0.0	--	--	--	--	--
FEB 12...	1255	129	232	--	8.5	0.5	--	--	--	--	--
MAR 12...	1645	923	210	7.4	9.0	0.5	10.3	46	48	10	5.0
21...	0900	9.6	364	--	2.5	0.0	--	--	--	--	--
APR 10...	1835	55	276	--	14.0	9.0	--	--	--	--	--
MAY 14...	1625	6.8	2060	--	15.0	16.0	--	--	--	--	--
JUN 25...	1505	2.0	1340	--	20.5	18.0	--	--	--	--	--
AUG 07...	0915	9.6	835	7.8	16.5	17.5	--	96	171	20	11

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
MAR 12...	23	46	1	10	51	5.3	0.10	134	146	0.20
AUG 07...	150	76	7	7.7	240	3.5	0.20	535	550	0.75

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAR 12...	364	<1	210	<1	3	80	0.1	<1	<1	120
AUG 07...	14.3	2	130	<1	10	30	<0.1	<1	<1	240

HEART RIVER BASIN  
06345500 HEART RIVER NEAR RICHARDTON, ND

LOCATION.--Lat 46°44'46", long 102°18'27", in NE<sup>1</sup>/<sub>4</sub> sec.29, T.138 N., R.92 W., Stark County, Hydrologic Unit 10130202, on right bank 5 ft upstream from bridge on State Highway 8, 0.5 mi downstream from Plum Creek, and 9.5 mi south of Richardton.

DRAINAGE AREA.--1,240 mi<sup>2</sup>, approximately.

WATER-DISCHARGE RECORDS

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 above sea level. May 18, 1903, to Sept. 30, 1922, nonrecording gage at 3 sites in 1 mi 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 for periods of estimated discharge, which are poor. Flow is regulated by E.A. Patterson Lake (station 06343500) 85 river miles upstream since 1950. Some diversions for irrigation and water supply at low flow.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 5, 1938, reached a stage of about 26 ft, from information by local residents, discharge, 16,000 ft<sup>3</sup>/s; flood of Mar. 25, 1943, reached a stage of 24.2 ft from floodmarks, discharge, 11,700 ft<sup>3</sup>/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	21	23	e20	e3.7	e25	e22	55	52	64	2.2	4.5
2	11	14	24	e19	e3.5	e22	e23	57	71	21	2.3	4.9
3	11	12	20	e18	e3.3	e19	e24	61	58	20	6.5	6.8
4	11	12	22	e17	e3.0	e17	e25	74	56	13	19	15
5	11	12	20	e15	e2.9	e16	e24	71	55	9.9	41	11
6	11	12	18	e14	e3.5	e17	e50	71	51	8.3	15	6.5
7	11	13	19	e13	e10	e13	e150	73	53	7.8	13	4.9
8	12	13	16	e13	e20	e11	e600	83	53	6.7	48	4.1
9	12	13	15	e14	e100	e9.5	e1500	77	51	5.9	36	3.5
10	12	13	15	e14	e250	e9.0	994	75	47	4.9	35	3.1
11	13	13	15	e13	e1000	e25	563	72	44	4.1	26	2.7
12	13	14	16	e13	e900	e150	e350	70	42	3.9	19	2.6
13	12	22	16	e13	e700	e350	e250	69	44	3.4	15	2.7
14	15	23	16	e14	e350	e1600	e180	68	57	4.4	12	2.6
15	17	23	17	e13	e200	e1100	e140	66	145	6.1	10	2.4
16	17	23	17	e12	e100	e750	e120	67	110	4.3	8.4	2.5
17	19	23	17	e11	e65	e400	113	67	75	5.5	7.0	2.6
18	19	24	e17	e8.0	e60	e300	101	67	73	18	6.0	5.3
19	19	24	e17	e6.8	e66	e210	91	65	55	17	5.2	8.6
20	18	22	e18	e5.8	e110	e120	86	61	39	12	5.0	13
21	19	23	e19	e5.2	e165	e80	75	58	32	11	4.5	28
22	19	25	e20	e5.0	e200	e50	68	55	28	8.8	3.8	19
23	20	21	e20	e5.2	e160	e35	65	52	26	12	3.4	21
24	21	21	e20	e5.2	e110	e25	63	52	26	6.8	3.3	14
25	21	21	e20	e5.2	e70	e19	63	55	30	4.6	2.9	11
26	22	21	e20	e5.0	e50	e20	62	58	23	3.2	2.5	10
27	22	19	e20	e4.8	e38	e21	67	53	20	2.3	3.3	9.6
28	22	21	e21	e4.6	e30	e23	61	51	18	1.6	3.8	9.4
29	22	21	e21	e4.3	e28	e22	57	48	15	.89	4.1	10
30	21	22	e21	e4.1	---	e21	55	47	14	.50	4.7	9.9
31	20	---	e20	e3.9	---	e20	---	47	---	1.8	4.5	---
TOTAL	504	561	580	319.1	4801.9	5499.5	6042	1945	1463	293.69	372.4	251.2
MEAN	16.3	18.7	18.7	10.3	166	177	201	62.7	48.8	9.47	12.0	8.37
MAX	22	25	24	20	1000	1600	1500	83	145	64	48	28
MIN	11	12	15	3.9	2.9	9.0	22	47	14	.50	2.2	2.4
AC-FT	1000	1110	1150	633	9520	10910	11980	3860	2900	583	739	498

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1903 - 1996, BY WATER YEAR (WY)

	MEAN	16.3	13.0	8.55	8.83	46.8	359	332	104	164	67.9	29.9	11.6
MAX	240	114	52.5	112	643	2125	2160	1318	1225	584	401	86.4	
(WY)	1983	1983	1983	1973	1982	1945	1950	1970	1906	1969	1909	1986	
MIN	1.10	1.93	1.00	.000	.000	1.66	5.77	2.78	.37	.40	.000	.000	
(WY)	1961	1961	1920	1962	1950	1964	1905	1992	1961	1919	1991	1958	

SUMMARY STATISTICS

FOR 1995 CALENDAR YEAR

FOR 1996 WATER YEAR

WATER YEARS 1903 - 1996

ANNUAL TOTAL	28059.7	22632.79	
ANNUAL MEAN	76.9	61.8	97.7
HIGHEST ANNUAL MEAN			316
LOWEST ANNUAL MEAN			5.18
HIGHEST DAILY MEAN	2340	1600	17000
LOWEST DAILY MEAN	2.9	.50	.00
ANNUAL SEVEN-DAY MINIMUM	3.0	1.7	.00
INSTANTANEOUS PEAK FLOW		a 1900	23400
INSTANTANEOUS PEAK STAGE		b 11.82	28.05
ANNUAL RUNOFF (AC-FT)	55660	44890	70760
10 PERCENT EXCEEDS	125	94	125
50 PERCENT EXCEEDS	21	20	11
90 PERCENT EXCEEDS	3.6	4.1	1.7

a About.  
b Backwater from ice.  
e Estimated.



HEART RIVER BASIN  
06345500 HEART RIVER NEAR RICHARDTON, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1950, 1972 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996										
DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT 05...	1325	11	1760	--	10.0	9.0	--	--	--	--
NOV 22...	1355	26	2140	--	-2.0	0.5	--	--	--	--
JAN 12...	1025	13	2190	--	7.0	0.0	--	--	--	--
FEB 13...	1000	711	625	--	5.0	1.0	--	--	--	--
21...	1240	165	665	--	9.5	1.5	--	--	--	--
MAR 14...	1025	1580	--	--	6.0	1.5	--	--	--	--
19...	1115	212	510	7.8	-2.0	2.5	130	107	27	14
APR 10...	1615	989	571	--	21.0	8.0	--	--	--	--
MAY 22...	1410	55	1920	--	20.5	15.0	--	--	--	--
JUN 24...	1345	26	1400	--	25.0	21.0	--	--	--	--
AUG 07...	1510	12	1540	8.0	26.0	22.5	340	314	67	42
SEP 16...	1455	2.7	1900	--	20.0	19.0	--	--	--	--
DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
MAR 19...	52	45	2	9.9	140	7.6	0.10	316	323	0.44
AUG 07...	230	59	5	11	500	27	0.40	1070	1070	1.46
DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAR 19...	185	1	290	2	10	100	0.6	<1	<1	340
AUG 07...	34.1	1	20	<1	30	30	<0.1	1	<1	930

**HEART RIVER BASIN**  
06345780 HEART RIVER ABOVE LAKE TSCHIDA NEAR GLEN ULLIN, ND

**LOCATION.**--Lat 46°39'24", Long 102°04'40", in SW<sup>1</sup>/<sub>4</sub> NE<sup>1</sup>/<sub>4</sub> NE<sup>1</sup>/<sub>4</sub> sec.30, T.137 N., R.90 W., Grant County, Hydrologic Unit 10130202, on right bank 100 ft downstream from bridge on county road, and 16 mi south and 1 mi west of Hebron.

**DRAINAGE AREA.**--1,530 mi<sup>2</sup>, approximately.

**WATER-DISCHARGE RECORDS**

**PERIOD OF RECORD.**--July 1988 to current year.

**GAGE.**--Water-stage recorder. Datum of gage is 2,090 ft above sea level, from topographic map.

**REMARKS.**--Records good except for periods of estimated daily discharges, which are poor. Flow is regulated by E.A. Patterson Lake (station 06343500) about 90 river mi upstream from station, and some diversions for irrigation and water supply at low flow.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	33	e18	e26	e8.2	e25	e120	73	63	361	12	4.0
2	22	e32	e21	e25	e7.8	e24	e125	73	67	168	14	4.3
3	17	32	e23	e24	e7.4	e23	e120	76	84	70	18	4.8
4	17	31	e24	e23	e7.0	e22	e115	82	73	57	20	4.9
5	17	e30	e25	e21	e6.4	e21	e110	95	76	43	40	7.1
6	19	e29	e25	e20	e6.3	e20	e109	95	73	34	66	19
7	20	e28	e24	e20	e12	e19	e180	98	68	30	41	14
8	20	e26	e24	27	e257	e18	e850	101	68	27	35	9.1
9	21	e24	e23	27	e1170	e17	2170	108	69	24	62	7.6
10	20	e22	e23	24	e1730	e50	1520	102	67	21	51	7.0
11	20	e25	e22	25	e1100	e150	790	96	64	18	47	5.9
12	23	e24	e21	28	e600	e500	487	92	60	17	39	5.3
13	22	e23	e20	31	e310	e1200	345	89	59	16	30	4.9
14	21	e22	e18	36	e120	e2400	243	87	112	15	24	4.5
15	20	e22	e17	54	e70	e1900	194	86	587	15	20	4.4
16	28	e23	e17	57	e54	e1300	166	84	365	18	17	4.0
17	29	e24	e18	36	e50	e900	147	87	184	32	14	4.5
18	29	e24	e18	39	e45	e600	131	86	131	92	11	8.1
19	31	e22	e18	36	e40	e400	119	95	107	94	10	13
20	30	e21	e19	33	e50	e300	109	87	82	81	8.8	26
21	30	e22	20	28	e45	e240	98	80	66	56	8.2	28
22	30	e24	26	e25	e40	e190	90	74	56	42	7.3	38
23	31	e25	25	e22	e36	164	85	69	52	32	7.1	32
24	32	e24	25	e17	e34	82	82	66	48	35	6.9	30
25	32	e23	26	e15	e30	121	81	68	47	27	6.5	25
26	33	e22	27	e13	e28	127	80	69	52	22	6.1	19
27	33	e21	26	e11	e27	156	81	73	46	19	5.3	16
28	34	e20	27	e10	e26	152	84	67	41	17	5.1	15
29	e35	e18	28	e9.9	e25	145	78	65	37	15	4.6	14
30	34	e17	e27	e9.2	---	146	75	64	33	15	4.4	14
31	34	---	e27	e8.7	---	e130	---	64	---	13	4.1	---
TOTAL	807	733	702	780.8	5942.1	11542	8984	2551	2937	1526	645.4	393.4
MEAN	26.0	24.4	22.6	25.2	205	372	299	82.3	97.9	49.2	20.8	13.1
MAX	35	33	28	57	1730	2400	2170	108	587	361	66	38
MIN	17	17	17	8.7	6.3	17	75	64	33	13	4.1	4.0
AC-FT	1600	1450	1390	1550	11790	22890	17820	5060	5830	3030	1280	780

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 1996, BY WATER YEAR (WY)

	1988	1989	1990	1991	1992	1993	1994	1995	1996
MEAN	13.9	11.8	8.77	7.63	46.3	141	71.7	78.8	71.6
MAX	49.9	24.4	22.6	25.2	205	372	299	391	240
(WY)	1995	1996	1996	1996	1996	1996	1996	1995	1995
MIN	2.23	6.52	4.14	.32	3.41	18.5	9.90	6.20	7.21
(WY)	1992	1991	1993	1991	1989	1990	1992	1992	1992

**SUMMARY STATISTICS**

FOR 1995 CALENDAR YEAR

FOR 1996 WATER YEAR

WATER YEARS 1988 - 1996

ANNUAL TOTAL	41527.7	37543.7	47.8
ANNUAL MEAN	114	103	114
HIGHEST ANNUAL MEAN			9.17
LOWEST ANNUAL MEAN			2700
HIGHEST DAILY MEAN	2030	Aug 26	2400
LOWEST DAILY MEAN	5.3	Aug 23	4.0
ANNUAL SEVEN-DAY MINIMUM	5.8	Aug 17	4.4
INSTANTANEOUS PEAK FLOW			2520
INSTANTANEOUS PEAK STAGE			11.89
ANNUAL RUNOFF (AC-FT)	82370	74470	15.56
10 PERCENT EXCEEDS	213	148	34660
50 PERCENT EXCEEDS	34	30	87
90 PERCENT EXCEEDS	9.6	9.7	10
			.84

e Estimated.

## HEART RIVER BASIN

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06345780 HEART RIVER ABOVE LAKE TSCHIDA NEAR GLEN ULLIN, ND--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1988 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT 05...	1000	17	1740	--	8.0	9.0	--	--	--	--
NOV 20...	1155	22	2190	--	3.0	0.5	--	--	--	--
JAN 02...	1215	25	2510	--	-7.0	0.0	--	--	--	--
MAR 22...	1145	203	--	--	-1.0	1.0	--	--	--	--
APR 09...	1430	2100	807	7.2	22.0	6.0	210	149	39	27
MAY 22...	1055	78	1880	--	17.5	15.5	--	--	--	--
JUN 24...	1040	49	1560	--	19.0	19.0	--	--	--	--
AUG 09...	1045	65	1600	7.7	23.0	21.0	340	332	64	44
SEP 16...	1230	4.5	1680	--	18.0	15.5	--	--	--	--

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
APR 09...	75	42	2	12	280	8.5	0.20	532	534	0.73
AUG 09...	240	59	6	12	520	19	0.40	1100	1090	1.48

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
APR 09...	3020	1	70	<1	10	160	0.1	<1	<1	500
AUG 09...	191	1	20	<1	30	10	0.1	3	<1	880

HEART RIVER BASIN  
06346000 LAKE TSCHIDA NEAR GLEN ULLIN, ND

LOCATION.--Lat 46°35'43", long 101°48'34", in SW<sup>1</sup>/<sub>4</sub> NE<sup>1</sup>/<sub>4</sub> sec.13, T.136 N., R.89 W., Grant County, Hydrologic Unit 10130202, 10 mi upstream from Heart Butte Creek, and 14 mi north of Elgin.

DRAINAGE AREA.--1,710 mi<sup>2</sup>, approximately.

MONTH-END-ELEVATION AND CONTENTS RECORDS

PERIOD OF RECORD.--August 1949 to current year. Prior to October 1957, published as Heart Butte Reservoir near Glen Ullin.

GAGE.--Water-stage recorder. Datum of gage is at sea level (levels by Bureau of Reclamation).

REMARKS.--Reservoir is formed by earth-fill dam; storage began Sept. 29, 1949; dam completed Dec. 9, 1949. Total capacity is 430,000 acre-ft at maximum pool, elevation, 2,118.2 ft. Dead storage is 6,750 acre-ft below lowest point of outlet, elevation, 2,030.0 ft. Active conservation storage is 69,030 acre-ft between elevations 2,030.0 ft and 2,064.5 ft, crest of spillway. Figures given herein represent total contents based on capacity table dated August 1992.

Controlled releases are through 4 by 5 ft slide gate. The spillway is uncontrolled "glory hole" type and discharges through a conduit 14 ft in diameter. The reservoir is for flood control, irrigation, and incidental water supply.

COOPERATION.--Records furnished by U.S. Bureau of Reclamation. Extremes are those observed.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 174,000 acre-ft, Apr. 9, 1952, elevation, 2,086.23 ft; minimum since first reaching spillway level, 32,820 acre-ft, Oct. 25, 1991, elevation, 2,049.00 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 76,820 acre-ft, Mar. 15, elevation, 2,067.33 ft; minimum, 56,790 acre-ft, Sept. 16, elevation, 2,061.22 ft.

MONTH-END ELEVATION AND CONTENTS AT 0800, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30-----	2,064.66	67,670	--
Oct. 31-----	2,063.88	65,110	-2,560
Nov. 30-----	2,063.77	64,760	-350
Dec. 31-----	2,063.48	63,820	-940
CAL YR 1995-----	--	--	+1,370
Jan. 31-----	2,063.31	63,280	-540
Feb. 29-----	2,065.30	69,810	+6,530
Mar. 31-----	2,064.18	66,090	-3,720
Apr. 30-----	2,065.06	69,000	+2,910
May 31-----	2,064.87	68,370	-630
June 30-----	2,064.88	68,400	+30
July 31-----	2,063.71	64,560	-3,840
Aug. 31-----	2,061.68	58,180	-6,380
Sept. 30-----	2,061.54	57,760	-420
WTR YR 1996-----	--	--	-9,910

HEART RIVER BASIN  
06346000 LAKE TSCHIDA NEAR GLEN ULLIN, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1971, 1980 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996										
DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	COLOR (PLAT- INUM- COBALT UNITS) (00080)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT 11...	1405	0.50	1.0	1280	8.3	16	320	246	59	43
MAY 07...	1230	0.0	0.50	1020	7.9	60	250	196	49	32
SEP 11...	1105	0.0	1.0	1200	8.2	40	280	228	53	37

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
OCT 11...	170	52	4	12	430	10	0.20	0.20	873	924
MAY 07...	130	51	4	12	320	9.5	0.30	5.2	678	700
SEP 11...	140	50	4	12	390	10	0.30	5.8	786	814

DATE	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 TOTAL (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) (00608)	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)
OCT 11...	1.26	<0.010	--	0.110	0.110	<0.015	<0.010	<0.010	290
MAY 07...	0.95	0.010	0.390	0.400	0.400	0.270	0.040	0.030	210
SEP 11...	1.11	0.020	0.200	0.220	0.220	<0.015	0.030	0.020	230



**HEART RIVER BASIN**  
**06346000 LAKE TSCHIDA NEAR GLEN ULLIN, ND--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
OCT							
11...	1345	53.5	0.0	1310	8.3	13.5	8.7
11...	1347	--	1.0	1310	8.4	13.5	8.4
11...	1349	--	2.1	1310	8.4	13.0	8.4
11...	1351	--	4.0	1310	8.4	13.0	8.3
11...	1353	--	6.0	1310	8.4	13.0	8.3
11...	1355	--	8.0	1310	8.4	13.0	8.2
11...	1357	--	10.0	1310	8.4	13.0	8.2
11...	1359	--	12.0	1310	8.4	13.0	8.2
11...	1400	--	14.0	1310	8.4	13.0	8.2
11...	1402	--	16.3	1310	8.4	13.0	8.1
MAY							
07...	1231	50.2	0.0	1050	7.3	6.0	10.5
07...	1232	--	0.50	1050	7.4	6.0	10.3
07...	1233	--	1.2	1050	7.5	6.0	10.2
07...	1235	--	2.0	1050	7.5	6.0	10.1
07...	1236	--	3.9	1050	7.5	6.0	10.1
07...	1237	--	5.7	1050	7.5	6.0	10.1
07...	1239	--	8.0	1050	7.6	6.0	10.0
07...	1241	--	9.9	1050	7.6	5.5	10
07...	1242	--	11.9	1050	7.6	5.5	9.9
07...	1243	--	14.0	1050	7.6	5.5	9.7
07...	1244	--	15.3	1050	7.6	5.5	9.7
SEP							
11...	1050	50.2	0.0	1190	8.1	20.5	7.8
11...	1051	--	0.70	1190	8.1	20.5	7.6
11...	1052	--	1.0	1190	8.1	20.5	7.5
11...	1053	--	2.0	1190	8.1	20.5	7.5
11...	1054	--	4.0	1190	8.1	20.5	7.4
11...	1055	--	6.1	1180	8.1	20.5	7.4
11...	1056	--	8.0	1190	8.1	20.5	7.4
11...	1057	--	10.0	1190	8.2	20.5	7.4
11...	1058	--	12.1	1190	8.1	20.5	6.4
11...	1059	--	14.2	1190	8.0	20.0	2.6
11...	1100	--	15.3	1190	7.9	20.0	1.2

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
OCT						
11...	92	702	60.0	25.5	180	<5.0
MAY						
07...	92	701	126	10.0	120	7.0
SEP						
11...	93	708	48.0	19.0	--	<5.0

HEART RIVER BASIN  
06347500 BIG MUDDY CREEK NEAR ALMONT, ND

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LOCATION.--Lat 46°41'40", long 101°28'01", in NE<sup>1</sup>/<sub>4</sub> NE<sup>1</sup>/<sub>4</sub> SE<sup>1</sup>/<sub>4</sub> sec.12, T.137 N., R.86 W., Morton County, Hydrologic Unit 10130203, on left bank 50 ft downstream from county highway bridge, 2 mi downstream from Hailstone Creek, 3 mi southeast of Almont, and 12 mi upstream from mouth.

DRAINAGE AREA.--456 mi<sup>2</sup>.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1945 to September 1970, October 1970 to September 1973 (annual maximum discharge), February 1991 to current year (seasonal records only since February 1991).

GAGE.--Water-stage recorder. Elevation of gage is 1,900 ft above sea level, from topographic map. Prior to Sept. 5, 1952, nonrecording gage at same site and datum.

REMARKS.--Records fair except for periods of estimated record, which are poor.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,190 ft<sup>3</sup>/s, Apr. 10, gage height, 21.10 ft; minimum daily discharge recorded, 1.3 ft<sup>3</sup>/s, Aug. 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	e2.0	e40	e21	e43	e11	7.7	7.3	2.2
2	---	---	---	---	e1.9	e30	e20	e50	e10	9.2	e8.5	2.4
3	---	---	---	---	e2.0	e20	e19	e40	e10	9.8	e8.0	2.5
4	---	---	---	---	e2.0	e15	e17	e35	11	12	e6.2	2.6
5	---	---	---	---	e2.1	e11	e16	e31	10	11	e4.0	2.8
6	---	---	---	---	e2.5	e9.0	e16	e28	10	9.3	e3.3	2.7
7	---	---	---	---	e15	e6.5	e15	e26	9.2	8.1	2.8	2.5
8	---	---	---	---	e80	e5.0	e70	e24	9.4	6.3	2.4	2.6
9	---	---	---	---	e380	e4.0	e600	e23	9.7	5.7	2.0	2.5
10	---	---	---	---	1100	e30	2810	e22	8.7	5.7	2.3	2.2
11	---	---	---	---	854	e300	2380	e20	8.2	5.7	2.3	2.3
12	---	---	---	---	471	e1050	746	e23	8.2	5.2	2.2	2.2
13	---	---	---	---	357	e800	287	e26	7.3	4.9	2.1	2.2
14	---	---	---	---	e250	e450	181	e36	6.6	4.9	1.9	2.2
15	---	---	---	---	e210	e250	137	e50	10	5.4	2.0	2.3
16	---	---	---	---	e180	e180	114	e40	436	5.4	1.9	2.3
17	---	---	---	---	e220	e140	95	e32	286	8.5	2.1	2.5
18	---	---	---	---	e270	e120	88	e27	65	11	1.9	3.0
19	---	---	---	---	e320	e100	74	e23	29	19	1.8	3.6
20	---	---	---	---	e350	e85	e65	e19	18	37	1.6	5.3
21	---	---	---	---	e260	e70	e60	e18	14	27	1.5	5.8
22	---	---	---	---	e200	e60	e54	e17	12	21	1.3	5.0
23	---	---	---	---	e170	e50	e50	e16	11	18	1.3	5.0
24	---	---	---	---	e140	e42	e45	e15	10	16	1.4	8.3
25	---	---	---	---	e120	e38	e45	e13	11	13	1.4	7.9
26	---	---	---	---	e90	e33	e46	e13	11	13	1.6	6.7
27	---	---	---	---	e70	e30	e43	e12	10	13	1.6	5.8
28	---	---	---	---	e60	e28	e41	e12	9.5	11	1.4	4.9
29	---	---	---	---	e50	e26	e40	e12	8.4	9.8	1.3	4.0
30	---	---	---	---	---	e24	e44	e11	7.2	8.9	1.6	3.6
31	---	---	---	---	---	e23	---	e11	---	7.9	2.1	---
TOTAL	---	---	---	---	6229.5	4069.5	8239	768	1077.4	350.4	83.1	109.9
MEAN	---	---	---	---	215	131	275	24.8	35.9	11.3	2.68	3.66
MAX	---	---	---	---	1100	1050	2810	50	436	37	8.5	8.3
MIN	---	---	---	---	1.9	4.0	15	11	6.6	4.9	1.3	2.2
AC-FT	---	---	---	---	12360	8070	16340	1520	2140	695	165	218

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 1996, BY WATER YEAR (WY)

MEAN	1.20	1.60	1.33	1.08	20.3	127	156	48.7	43.3	48.5	6.97	2.86
MAX	2.61	3.19	2.48	4.59	220	420	1160	540	405	1042	68.9	15.2
(WY)	1952	1952	1952	1947	1995	1948	1950	1970	1966	1993	1993	1953
MIN	.39	.58	.35	.065	.000	.73	1.48	1.01	.43	.042	.12	.35
(WY)	1962	1961	1949	1949	1966	1965	1992	1961	1961	1961	1961	1991

SUMMARY STATISTICS

WATER YEARS 1946 - 1996

ANNUAL MEAN	a 37.0
HIGHEST ANNUAL MEAN	a 112 1950
LOWEST ANNUAL MEAN	a 1.41 1961
HIGHEST DAILY MEAN	15000 Apr 17 1950
LOWEST DAILY MEAN	.00 Jan 28 1946
ANNUAL SEVEN-DAY MINIMUM	.00 Jan 28 1946
INSTANTANEOUS PEAK FLOW	20200 Apr 17 1950
INSTANTANEOUS PEAK STAGE	30.99 Jul 23 1993
ANNUAL RUNOFF (AC-FT)	a 26790
10 PERCENT EXCEEDS	41
50 PERCENT EXCEEDS	1.9
90 PERCENT EXCEEDS	.40

a Based on complete water years only (1946-70).

e Estimated.

HEART RIVER BASIN  
06347500 BIG MUDDY CREEK NEAR ALMONT, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1991 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
FEB 09...	1410	352	580	--	15.0	1.0	--	--	--	--
MAR 14...	1230	438	477	7.4	9.0	3.0	110	91	21	13
APR 10...	1315	3160	448	--	24.0	2.0	--	--	--	--
JUN 03...	1400	10	2830	--	18.0	17.0	--	--	--	--
JUN 27...	1445	10	1930	--	31.0	26.0	--	--	--	--
AUG 06...	1355	3.3	2060	7.7	21.0	21.5	280	567	50	38
SEP 16...	1350	2.2	161	--	22.5	16.0	--	--	--	--

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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 CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED PER (TONS AC-FT) (70303)
MAR 14...	53	48	2	13	130	5.5	0.10	291	343	0.47
AUG 06...	390	74	10	9.2	570	7.6	0.70	1410	1350	1.84

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAR 14...	406	1	130	<1	10	140	0.1	<1	<1	220
AUG 06...	12.2	3	30	<1	40	10	0.3	4	<1	690

HEART RIVER BASIN  
06348300 HEART RIVER AT STARK BRIDGE NEAR JUDSON, ND

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LOCATION.--Lat 46°42'11", long 101°12'37", in SE<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> sec.6, T.137 N., R.83 W., Morton County, Hydrologic Unit 10130203, on right bank 50 ft upstream from county bridge, and 9.5 mi southeast of Judson.

DRAINAGE AREA.--2,930 mi<sup>2</sup>, approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1986 to September 1988 (annual maximum discharges only), October 1988 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,720 ft above sea level, from topographic map.

REMARKS.--Records fair except for periods of estimated daily discharges, which are poor. Flow regulated by Lake Tschida (06346000) since 1949.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	94	e60	e58	e50	e170	e400	e390	105	82	57	75
2	37	86	e60	e58	e50	e160	e380	e380	104	72	59	86
3	39	87	e60	e58	e48	e150	e370	e400	112	62	111	97
4	41	109	e60	e57	e70	e140	e360	e420	117	82	141	89
5	49	122	e60	e57	e78	e120	e350	e440	150	101	119	79
6	52	e130	e60	e56	e85	e115	e350	e460	180	91	108	52
7	45	e125	e60	e55	e96	e112	e450	e480	136	88	100	41
8	79	e120	e60	e65	e120	e108	e700	e460	118	78	87	42
9	86	e110	e60	e80	e220	e105	1630	e440	103	65	81	40
10	e88	e100	e60	e75	e1200	e102	4340	e420	95	54	67	32
11	e90	95	e60	e70	e900	e350	3540	e400	94	48	62	35
12	87	102	e60	e70	e740	e2600	2570	e390	103	39	70	34
13	87	100	e60	e65	e600	e1900	1590	e380	107	17	80	33
14	89	103	e60	e65	e700	e1850	1130	e370	93	47	78	31
15	92	100	e60	e64	e820	e1800	988	e360	95	52	90	32
16	85	97	e60	e63	e760	e1700	855	e350	100	38	80	29
17	85	96	e60	e62	e720	e1600	780	537	533	44	73	31
18	86	94	e60	e60	e700	e1500	680	535	576	310	86	40
19	92	91	e60	e58	e950	1450	e600	412	374	381	90	47
20	88	e90	e60	e55	e820	1440	e500	381	284	101	80	75
21	95	e85	e60	e55	e750	1550	e440	336	244	98	83	87
22	90	e75	e60	e55	e640	1470	e440	282	203	98	79	79
23	89	e72	e60	e54	e620	1340	e460	313	185	111	73	70
24	88	e70	e60	e54	e520	1310	e480	283	153	101	66	61
25	89	e68	e60	e53	e380	e1200	e500	258	138	90	60	56
26	90	e66	e60	e52	e320	e1000	e480	236	117	91	61	65
27	94	e65	e60	e52	e250	e800	e460	218	105	131	66	58
28	90	e64	e60	e51	e200	e700	e440	201	99	102	79	49
29	90	e62	e60	e51	e180	e560	e420	187	91	85	87	43
30	88	e60	e60	e50	---	e500	e400	151	81	79	75	43
31	93	---	e59	e50	---	e450	---	111	---	63	75	---
TOTAL	2432	2738	1859	1828	13587	28352	27083	10981	4995	2901	2523	1631
MEAN	78.5	91.3	60.0	59.0	469	915	903	354	166	93.6	81.4	54.4
MAX	95	130	60	80	1200	2600	4340	537	576	381	141	97
MIN	37	60	59	50	48	102	350	111	81	17	57	29

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 1996, BY WATER YEAR (WY)

MEAN	55.4	33.3	19.0	18.1	142	379	196	175	108	263	88.7	57.1
MAX	254	91.3	60.0	59.0	578	915	903	800	296	1479	284	192
(WY)	1995	1996	1996	1996	1995	1996	1996	1995	1994	1993	1993	1995
MIN	12.3	14.1	7.07	.34	4.19	37.1	15.0	16.3	14.5	28.8	19.7	11.7
(WY)	1993	1989	1991	1991	1993	1990	1990	1992	1990	1990	1992	1992

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR	FOR 1996 WATER YEAR	WATER YEARS 1989 - 1996
ANNUAL TOTAL	107203	100910	
ANNUAL MEAN	294	276	128
HIGHEST ANNUAL MEAN			304
LOWEST ANNUAL MEAN			22.3
HIGHEST DAILY MEAN	3400	Feb 22	8010
LOWEST DAILY MEAN	26	Jan 5	.21
ANNUAL SEVEN-DAY MINIMUM	27	Jan 1	.22
INSTANTANEOUS PEAK FLOW		5840	9500
INSTANTANEOUS PEAK STAGE		a 13.92	16.70
10 PERCENT EXCEEDS	693	700	274
50 PERCENT EXCEEDS	133	91	28
90 PERCENT EXCEEDS	40	52	8.5

a Backwater from ice.  
e Estimated.

HEART RIVER BASIN  
06348300 HEART RIVER AT STARK BRIDGE NEAR JUDSON, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1988 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
NOV 06...	1145	127	1490	--	1.0	0.5	--	--	--	--
JAN 16...	1150	61	--	--	-4.5	0.0	--	--	--	--
APR 08...	1230	651	1290	--	13.0	6.5	--	--	--	--
MAY 21...	1205	346	1590	6.9	21.5	17.0	440	354	76	60
JUL 19...	1240	380	880	--	26.0	24.5	--	--	--	--
AUG 09...	1510	81	1300	7.1	29.5	24.5	320	291	61	40
SEP 25...	1215	56	1420	--	16.0	10.5	--	--	--	--

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
MAY 21...	210	50	4	12	540	12	0.30	1120	1090	1.48
AUG 09...	170	53	4	12	420	11	0.30	890	889	1.21

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAY 21...	1020	1	20	<1	50	10	<0.1	<1	1	920
AUG 09...	196	<1	20	<1	30	10	0.1	1	<1	760



HEART RIVER BASIN  
06349000 HEART RIVER NEAR MANDAN, ND

275

LOCATION.--Lat 46°50'02", long 100°58'27", in NW<sup>1</sup>/<sub>4</sub> NE<sup>1</sup>/<sub>4</sub> 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 west of Mandan, and 4 mi downstream from Sweetbriar Creek.

DRAINAGE AREA.--3,310 mi<sup>2</sup>, 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 above sea level and 1,623.03 ft above Burlington Northern Railway datum. See WSP 1729 or 1917 for history of changes prior to June 30, 1958.

REMARKS.--Records fair except for periods of estimated daily discharges, which are poor. Flow regulated by Lake Tschida (station 06346000) 105 mi upstream since 1949. Some diversions above station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59	128	e70	e68	e37	e130	e350	422	e210	e120	88	84
2	59	125	e70	e68	e36	e130	e330	421	e200	e115	79	100
3	58	e125	e70	e66	e35	e120	e320	429	e200	112	99	103
4	58	e125	e70	e66	e34	e120	e310	435	e200	102	130	117
5	58	e128	e70	e64	e33	e115	e300	452	e200	111	144	111
6	61	e130	e70	e64	e33	e110	e300	469	e200	120	132	106
7	64	e130	e70	e62	e32	e105	e1500	477	e200	117	122	76
8	62	e120	e70	e60	e32	e100	e5000	478	e200	106	115	72
9	85	e110	e70	e70	e170	e100	e13000	480	e200	99	108	66
10	106	e100	e70	e90	e1100	e100	e10500	475	e200	96	106	64
11	109	e95	e70	e160	e9600	e700	8420	462	e200	83	82	56
12	114	e90	e70	e130	e7000	e2500	e5000	452	e210	73	76	56
13	112	e90	e70	e100	e4000	e16000	e2600	438	e210	65	83	61
14	111	e90	e70	e84	e2500	e7000	1690	425	e220	56	88	61
15	115	e90	e70	e72	e1500	e2300	1360	414	e230	66	94	55
16	118	e92	e70	e66	e1000	e1800	1160	400	e300	77	102	53
17	113	e94	e70	e61	e600	e1500	1030	e390	e350	71	98	52
18	110	e96	e70	e59	e350	e1300	922	e380	429	83	86	60
19	114	e98	e70	e56	e230	e1100	831	e370	428	227	99	70
20	119	e100	e70	e54	e300	e950	768	e360	e300	250	105	88
21	118	e90	e70	e52	e260	e830	693	e350	e270	128	103	105
22	124	e80	e70	e50	e240	e740	632	e340	e250	109	99	97
23	122	e75	e70	e48	e210	e670	585	e320	e210	116	95	98
24	117	e74	e70	e47	e180	e620	544	e310	e190	124	84	87
25	117	e74	e70	e45	e170	e580	517	e290	e180	118	76	75
26	119	e73	e70	e44	e160	e540	505	e280	e170	113	72	65
27	124	e73	e70	e43	e150	e480	499	e270	e160	109	69	69
28	123	e72	e70	e42	e150	e440	480	e250	e150	130	68	66
29	126	e72	e70	e40	e140	e410	450	e240	e135	114	78	59
30	123	e72	e70	e39	---	e390	433	e230	e125	110	87	52
31	125	---	e70	e38	---	e370	---	e220	---	104	83	---
TOTAL	3143	2911	2170	2008	30282	42350	61029	11729	6727	3424	2950	2284
MEAN	101	97.0	70.0	64.8	1044	1366	2034	378	224	110	95.2	76.1
MAX	126	130	70	160	9600	16000	13000	480	429	250	144	117
MIN	58	72	70	38	32	100	300	220	125	56	68	52
AC-FT	6230	5770	4300	3980	60060	84000	121100	23260	13340	6790	5850	4530

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1924 - 1996, BY WATER YEAR (WY)

MEAN	53.2	40.4	22.7	15.5	114	903	878	328	342	236	81.3	60.9
MAX	337	383	155	145	1046	3987	5885	3610	1925	2433	361	231
(WY)	1995	1983	1983	1983	1930	1943	1950	1970	1941	1993	1993	1995
MIN	5.41	6.95	.21	.000	.000	.28	25.2	18.5	23.4	11.3	3.65	1.43
(WY)	1940	1938	1938	1938	1940	1965	1990	1992	1961	1990	1932	1932

SUMMARY STATISTICS

FOR 1995 CALENDAR YEAR

FOR 1996 WATER YEAR

WATER YEARS 1924 - 1996

ANNUAL TOTAL	159227	171007	
ANNUAL MEAN	436	467	
HIGHEST ANNUAL MEAN			258
LOWEST ANNUAL MEAN			898
HIGHEST DAILY MEAN	6800	Mar 14	19.2
LOWEST DAILY MEAN	30	Jan 4	28400
ANNUAL SEVEN-DAY MINIMUM	31	Jan 1	.00
INSTANTANEOUS PEAK FLOW			.00
INSTANTANEOUS PEAK STAGE		a 16000	30500
ANNUAL RUNOFF (AC-FT)	315800	b --	25.75
10 PERCENT EXCEEDS	1080		186900
50 PERCENT EXCEEDS	155		406
90 PERCENT EXCEEDS	48		47
			5.0

a Maximum daily.

b Unknown.

e Estimated.

HEART RIVER BASIN  
06349000 HEART RIVER NEAR MANDAN, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1946-50, 1971-76, 1978 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
NOV 06...	1345	132	1630	--	2.0	0.0	--	--	--	--
JAN 16...	1355	66	--	--	-5.0	0.0	--	--	--	--
MAR 15...	0900	2300	470	8.3	2.0	0.5	110	99	23	13
APR 13...	1150	2550	578	--	4.0	4.0	--	--	--	--
MAY 21...	1115	350	1140	--	15.0	15.0	--	--	--	--
JUL 11...	1545	83	1420	--	25.5	23.5	--	--	--	--
AUG 29...	1030	72	1330	8.4	20.0	22.5	340	312	65	43

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
MAR 15...	45	44	2	12	120	4.7	0.10	278	323	0.44
AUG 29...	210	56	5	11	430	15	0.30	962	980	1.33

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAR 15...	2010	1	120	<1	10	30	0.1	<1	1	270
AUG 29...	191	<1	10	<1	40	50	<0.1	2	<1	790

APPLE CREEK BASIN  
06349215 LONG LAKE CREEK ABOVE LONG LAKE NEAR MOFFIT, ND

277

LOCATION.--Lat 46°37'59", long 100°14'29", in NE<sup>1</sup>/<sub>4</sub> NE<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> sec.4, T.136 N., R.76 W., Emmons County, Hydrologic Unit 10130103, on left bank 2.5 mi upstream from Long Lake, and 4.5 mi southeast of Moffit.

DRAINAGE AREA.--280 mi<sup>2</sup> approximately, revised (based on information provided by U.S. Fish and Wildlife Service).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1988 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,720 ft above sea level, from topographic map.

REMARKS.--Records fair except for periods of estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.2	16	e8.6	e6.3	e5.0	e54	e62	e42	23	13	7.4	e4.8
2	8.3	23	e8.6	e6.2	e4.9	e45	e56	e45	26	12	9.8	e4.2
3	8.1	13	e8.6	e6.2	e4.9	e30	e52	e42	22	11	e200	e3.7
4	8.0	e12	e8.8	e6.1	e4.8	e20	e50	e40	17	11	e70	e3.3
5	11	e12	e8.8	e6.0	e4.8	e18	e49	e39	22	12	e50	e2.9
6	13	e12	e8.4	e5.6	e4.7	e17	e50	e37	21	13	39	e2.6
7	14	e12	e8.0	e5.4	e4.6	e16	56	e36	18	12	34	e2.3
8	14	e12	e7.8	e5.4	e4.5	e15	247	e34	16	11	29	e2.0
9	14	e12	e7.7	e5.6	e4.5	e15	1450	e33	16	8.4	26	e1.8
10	14	e11	e7.6	e5.8	e6.0	e14	1080	e32	16	7.9	25	e1.6
11	13	e11	e7.6	e6.2	e7.8	e50	688	e32	16	22	22	e1.4
12	14	e11	e7.5	e6.6	e10	e170	381	e39	18	28	22	e1.2
13	20	e11	e7.4	e7.0	e9.0	e450	254	e33	14	16	23	e1.1
14	12	e10	e7.3	e6.2	e13	e1300	180	e34	13	13	20	e.94
15	11	e10	e7.2	e6.2	e11	e1070	139	e30	18	12	18	e.86
16	11	e10	e7.2	e6.0	e9.6	e810	104	e33	16	9.7	17	e.60
17	13	e10	e7.1	e5.9	e9.2	e620	91	e35	22	11	15	e.41
18	9.8	e11	e7.1	e5.8	e9.0	e470	e82	e32	35	12	12	.88
19	19	e12	e7.0	e5.8	e9.0	e380	e76	e30	29	9.6	17	1.6
20	12	e13	e7.0	e5.7	e70	e280	e72	e28	20	10	11	3.5
21	9.4	e13	e7.0	e5.6	e54	e250	e68	e27	20	10	13	5.4
22	9.7	e11	e7.0	e5.6	e90	e240	e66	e26	15	9.9	11	5.8
23	11	e11	e6.9	e5.6	e150	e210	e62	e25	17	9.8	10	5.3
24	9.9	e10	e6.9	e5.5	e160	e180	e58	e24	16	9.0	9.7	6.1
25	10	e12	e6.8	e5.4	e180	e150	e54	e23	17	7.2	9.4	6.8
26	11	e10	e6.7	e5.3	e130	e130	e51	e23	16	7.1	8.4	7.0
27	22	e9.4	e6.6	e5.2	e96	e110	e48	e22	14	7.6	7.8	6.9
28	16	e9.0	e6.6	e5.2	e82	e94	e46	e21	15	8.2	8.4	7.0
29	12	e8.6	e6.4	e5.1	e70	e84	e45	e20	15	8.6	8.2	7.1
30	12	e9.0	e6.4	e5.0	---	e76	e44	e18	13	7.7	7.7	7.1
31	12	---	e6.3	e5.0	---	e68	---	23	---	7.1	6.6	---
TOTAL	382.4	347.0	228.9	178.5	1218.3	7436	5761	958	556	346.8	767.4	106.19
MEAN	12.3	11.6	7.38	5.76	42.0	240	192	30.9	18.5	11.2	24.8	3.54
MAX	22	23	8.8	7.0	180	1300	1450	45	35	28	200	7.1
MIN	8.0	8.6	6.3	5.0	4.5	14	44	18	13	7.1	6.6	.41
AC-FT	758	688	454	354	2420	14750	11430	1900	1100	688	1520	211

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 1996, BY WATER YEAR (WY)

	1989	1990	1991	1992	1993	1994	1995	1996
MEAN	4.28	4.11	3.02	2.48	8.18	116	43.7	22.2
MAX	14.2	11.6	7.38	6.02	42.0	312	192	84.9
(WY)	1995	1996	1996	1995	1996	1995	1996	1995
MIN	.24	.34	.22	.053	.51	3.67	5.74	2.19
(WY)	1993	1991	1991	1991	1989	1991	1990	1992

SUMMARY STATISTICS FOR 1995 CALENDAR YEAR FOR 1996 WATER YEAR WATER YEARS 1989 - 1996

ANNUAL TOTAL	22900.4	18286.49	
ANNUAL MEAN	62.7	50.0	23.9
HIGHEST ANNUAL MEAN			62.7
LOWEST ANNUAL MEAN			3.06
HIGHEST DAILY MEAN	2000	Mar 14	2000
LOWEST DAILY MEAN	4.6	Feb 12	.00
ANNUAL SEVEN-DAY MINIMUM	4.7	Feb 17	.03
INSTANTANEOUS PEAK FLOW			2120
INSTANTANEOUS PEAK STAGE			a 11.74
INSTANTANEOUS LOW FLOW			.00
ANNUAL RUNOFF (AC-FT)	45420	36270	17330
10 PERCENT EXCEEDS	100	82	46
50 PERCENT EXCEEDS	15	12	4.9
90 PERCENT EXCEEDS	5.6	5.4	.26

a Backwater from ice.  
e Estimated.

APPLE CREEK BASIN  
06349215 LONG LAKE CREEK ABOVE LONG LAKE NEAR MOFFIT, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1988 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT 03...	1335	8.1	1080	--	17.0	12.0	--	--	--	--
NOV 20...	1200	13	1440	--	10.0	1.0	--	--	--	--
JAN 04...	1115	6.1	1590	--	-5.0	0.0	--	--	--	--
MAR 08...	1200	15	457	--	-5.0	0.0	--	--	--	--
APR a11...	1430	646	272	8.0	0.0	1.0	69	94	15	7.5
MAY 30...	1430	18	1450	--	21.5	18.0	--	--	--	--
AUG 05...	1035	50	971	7.9	21.5	23.0	200	314	39	26

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
APR a11...	30	45	2	9.6	50	5.9	0.10	175	206	0.28
AUG 05...	140	58	4	12	220	5.2	0.20	631	655	0.89

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
APR a11...	359	2	140	12	30	260	0.1	<1	<1	140
AUG 05...	87.7	4	70	<1	140	90	0.2	<1	<1	320

a Replicate sample also collected for quality-assurance purposes.

APPLE CREEK BASIN  
06349500 APPLE CREEK NEAR MENOKEN, ND

279

LOCATION.--Lat 46°47'40", long 100°39'25", in NW<sup>1</sup>/<sub>4</sub> NE<sup>1</sup>/<sub>4</sub> sec.9, T.138 N., R.79 W., Burleigh County, Hydrologic Unit 10130103, on left bank 75 ft downstream from bridge on county highway, 4 mi upstream from Hay Creek, 6.3 mi west of Menoken, and 6.4 mi east of Bismarck.

DRAINAGE AREA.--1,680 mi<sup>2</sup>, approximately, of which about 500 mi<sup>2</sup> is probably noncontributing.

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 above sea level. See WSP 1729 or 1917 for history of changes prior to Sept. 30, 1953.

REMARKS.--Records fair except for periods of estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e26	19	e7.3	e4.4	e3.3	e60	e190	276	109	59	71	e40
2	e25	19	e7.3	e4.4	e3.2	e40	e170	254	108	57	70	e40
3	e25	18	e7.3	e4.4	e3.1	e20	e155	237	107	58	72	e39
4	e24	17	e7.3	e4.4	e3.2	e17	e140	219	108	59	69	e39
5	27	17	e7.2	e4.3	e3.2	e15	e130	202	112	58	69	38
6	28	e15	e7.2	e4.3	e3.3	e12	e110	188	111	56	65	39
7	26	e14	e7.0	e4.2	e3.4	e11	e100	180	111	54	62	37
8	25	e13	e7.0	e4.2	e3.5	e10	e105	173	113	50	59	37
9	24	e13	e6.2	e4.2	e3.5	e10	e220	164	112	48	59	38
10	24	e12	e5.8	e4.2	e3.5	e11	e500	151	110	48	60	36
11	23	e12	e5.4	e4.2	e3.7	e30	e1150	145	106	53	58	35
12	22	e11	e5.1	e4.2	e3.9	e450	e1320	143	105	52	55	34
13	21	e11	e5.0	e4.1	e4.3	e700	e1100	140	102	50	52	35
14	21	e10	e4.9	e4.1	e5.0	e1000	e950	137	100	51	51	37
15	19	e10	e4.9	e4.1	e6.0	e1250	e860	134	103	52	47	32
16	19	e9.7	e4.9	e4.1	e5.5	e1100	e910	128	105	51	46	33
17	20	e9.4	e4.8	e4.1	e4.7	e1080	940	132	106	57	45	31
18	19	e9.1	e4.8	e3.9	e4.5	e1050	910	131	103	69	44	32
19	18	e8.8	e4.7	e3.9	e5.0	e980	822	131	100	58	48	36
20	18	e8.7	e4.7	e3.8	e6.0	e760	740	124	92	56	45	50
21	18	e8.6	e4.7	e3.8	e14	e800	672	121	88	58	45	47
22	17	e8.6	e4.7	e3.8	e30	e820	621	116	83	58	45	41
23	17	e8.6	e4.6	e3.6	e70	e700	584	112	81	55	41	39
24	17	e8.5	e4.6	e3.6	e200	e600	551	109	79	52	40	40
25	17	e8.4	e4.6	e3.6	e250	e500	511	107	75	50	39	40
26	17	e7.8	e4.6	e3.6	e230	e430	427	107	75	51	e39	40
27	18	e7.4	e4.5	e3.5	e200	e380	408	109	70	53	e38	40
28	18	e7.4	e4.5	e3.5	e130	e330	381	108	67	61	e38	37
29	17	e7.4	e4.5	e3.5	e100	e290	339	105	63	72	e37	37
30	16	e7.3	e4.5	e3.5	---	e250	304	104	57	69	e37	38
31	18	---	e4.4	e3.4	---	e220	---	108	---	70	e38	---
TOTAL	644	336.7	169.0	122.9	1305.8	13926	16320	4595	2861	1745	1584	1137
MEAN	20.8	11.2	5.45	3.96	45.0	449	544	148	95.4	56.3	51.1	37.9
MAX	28	19	7.3	4.4	250	1250	1320	276	113	72	72	50
MIN	16	7.3	4.4	3.4	3.1	10	100	104	57	48	37	31
AC-FT	1280	668	335	244	2590	27620	32370	9110	5670	3460	3140	2260

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 1996, BY WATER YEAR (WY)

	3.82	2.70	2.01	1.42	6.81	96.8	179	60.5	34.8	23.0	10.4	6.08
MEAN	3.82	2.70	2.01	1.42	6.81	96.8	179	60.5	34.8	23.0	10.4	6.08
MAX	50.2	18.9	9.65	8.90	82.6	557	1498	1038	346	372	230	84.6
(WY)	1952	1952	1952	1987	1987	1987	1950	1950	1953	1993	1993	1951
MIN	.047	.062	.057	.040	.095	.99	.53	.23	.066	.025	.030	.030
(WY)	1991	1990	1992	1977	1975	1977	1990	1977	1977	1977	1991	1990

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR		FOR 1996 WATER YEAR		WATER YEARS 1946 - 1996	
ANNUAL TOTAL	37418.0		44746.4		35.6	
ANNUAL MEAN	103		122		243	
HIGHEST ANNUAL MEAN					.31	
LOWEST ANNUAL MEAN					1990	
HIGHEST DAILY MEAN	1500	Mar 16	1320	Apr 12	5590	Apr 18 1950
LOWEST DAILY MEAN	3.5	Feb 5	3.1	Feb 3	.00	Aug 25 1946
ANNUAL SEVEN-DAY MINIMUM	3.5	Feb 3	3.2	Jan 31	.00	Aug 25 1946
INSTANTANEOUS PEAK FLOW			1350	Apr 11	6750	Apr 18 1950
INSTANTANEOUS PEAK STAGE			a 16.04	Mar 14	17.46	Apr 19 1979
ANNUAL RUNOFF (AC-FT)	74220		88750		25800	
10 PERCENT EXCEEDS	244		333		58	
50 PERCENT EXCEEDS	36		40		1.8	
90 PERCENT EXCEEDS	4.1		4.2		.11	

a Backwater from ice.  
e Estimated



APPLE CREEK BASIN  
06349500 APPLE CREEK NEAR MENOKEN, ND--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT 04...	1145	24	1350	--	11.0	12.0	--	--	--	--
NOV 13...	1410	11	1560	--	5.0	2.0	--	--	--	--
JAN 04...	1505	4.4	1990	--	-5.0	0.0	--	--	--	--
MAR 12...	1715	521	202	--	15.0	1.0	--	--	--	--
15...	1130	1240	120	--	3.5	2.0	--	--	--	--
20...	1100	750	277	9.0	2.0	1.5	66	85	14	7.5
APR 12...	1030	1320	212	--	-1.0	2.0	--	--	--	--
MAY 30...	1420	108	1050	--	20.0	17.5	--	--	--	--
AUG 05...	1510	70	1500	8.0	24.5	25.0	230	452	35	35
SEP 19...	1400	30	1850	--	21.0	17.0	--	--	--	--

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
MAR 20...	26	41	1	11	50	4.7	0.10	165	199	0.27
AUG 05...	260	69	7	17	360	15	0.30	994	1010	1.37

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAR 20...	403	<1	120	1	20	140	0.1	<1	<1	150
AUG 05...	190	4	30	<1	170	10	0.3	<1	<1	350

MISSOURI RIVER MAIN STEM  
06349700 MISSOURI RIVER NEAR SCHMIDT, ND

281

LOCATION.--Lat 46°39'22", long 100°44'18", in SW<sup>1</sup>/<sub>4</sub> NE<sup>1</sup>/<sub>4</sub> sec.26, T.137 N., R.80 W., Morton County, Hydrologic Unit 10130102, on right bank 2 mi southeast of abandoned townsite of Schmidt, 13 mi southeast of Mandan, and at mile 1,298.

DRAINAGE AREA.--191,700 mi<sup>2</sup>, approximately.

GAGE-HEIGHT RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,600.00 ft above sea level.

REMARKS.--Stage regulated by releases from Garrison Dam (station 06338490) 91.1 mi upstream, and backwater from Lake Oahe.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 23.56 ft, Dec. 9, 1976; minimum daily recorded, 7.92 ft, May 30, 1967.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19.06	18.41	15.21	---	---	---	19.02	19.00	20.04	20.91	20.58	20.05
2	19.08	18.37	15.09	---	---	---	19.06	19.03	19.99	20.87	20.62	19.81
3	19.09	---	15.09	---	---	---	19.01	19.03	20.10	20.99	20.59	19.68
4	19.09	---	15.11	---	---	---	19.04	19.03	20.44	21.01	20.41	19.66
5	19.08	18.44	15.01	---	19.44	---	---	19.03	20.47	20.99	20.36	19.99
6	19.03	18.49	15.17	---	19.44	---	---	19.03	20.42	20.78	20.32	19.81
7	18.88	18.50	15.73	---	19.41	---	16.93	19.01	20.54	20.83	20.32	19.72
8	18.85	18.50	14.63	---	19.41	---	16.76	18.96	20.78	20.62	20.31	19.71
9	18.86	18.54	15.91	---	19.46	---	17.20	18.95	20.87	20.68	20.32	19.70
10	18.87	---	17.00	---	19.70	18.12	18.50	19.09	20.85	21.00	20.31	19.65
11	18.86	---	15.66	---	19.62	18.37	19.29	19.15	20.78	20.81	20.41	19.50
12	18.83	18.44	15.44	---	19.64	19.34	19.27	19.17	20.69	20.59	20.37	19.51
13	18.83	18.45	19.25	---	20.06	20.19	18.55	19.16	20.72	20.60	20.21	19.72
14	18.82	18.53	19.30	---	20.06	20.35	17.91	19.16	20.84	20.62	20.19	19.87
15	18.79	18.54	19.14	---	---	20.30	17.83	19.14	20.80	20.64	20.20	19.76
16	18.83	18.49	20.62	---	---	20.35	18.11	19.14	20.80	20.76	20.22	19.71
17	18.81	18.48	20.76	---	18.87	19.89	18.27	19.12	20.79	20.76	20.32	19.87
18	18.83	18.50	20.75	---	19.00	19.19	18.14	19.20	20.98	20.63	20.49	19.74
19	18.79	18.46	20.67	---	18.96	18.54	18.10	19.21	20.88	20.61	20.23	19.62
20	18.81	18.43	20.54	---	19.29	18.35	18.13	19.20	20.92	20.76	20.29	19.65
21	18.78	18.46	20.54	---	19.53	18.81	18.20	19.18	20.77	20.60	20.37	19.59
22	18.80	18.24	20.47	---	19.55	19.29	18.23	19.17	20.74	20.50	20.09	19.56
23	18.80	17.78	20.46	---	19.66	19.41	18.36	19.03	20.46	20.50	20.20	19.53
24	18.80	17.27	---	---	19.87	---	18.63	19.07	20.43	20.42	20.10	19.51
25	18.80	16.66	---	---	19.79	---	18.85	19.16	20.67	20.46	19.98	19.51
26	18.83	16.07	20.36	---	---	---	19.00	19.26	20.48	20.51	20.00	19.50
27	18.83	15.56	20.21	---	---	---	19.03	19.32	20.74	20.49	20.02	19.38
28	18.80	15.49	20.35	---	---	18.74	19.02	19.40	20.67	20.51	20.06	19.48
29	18.73	15.32	---	---	---	18.99	19.00	19.52	20.59	20.50	19.98	19.50
30	18.56	15.32	---	---	---	---	18.99	19.86	20.77	20.47	19.99	19.39
31	18.42	---	---	---	---	---	---	19.97	---	20.48	20.04	---
MEAN	18.85	---	---	---	---	---	---	19.19	20.63	20.67	20.25	19.66
MAX	19.09	---	---	---	---	---	---	19.97	20.98	21.01	20.62	20.05
MIN	18.42	---	---	---	---	---	---	18.95	19.99	20.42	19.98	19.38

CANNONBALL RIVER BASIN  
06350000 CANNONBALL RIVER AT REGENT, ND

LOCATION.--Lat 46°25'36", long 102°33'05", in NE<sup>1</sup>/<sub>4</sub> NE<sup>1</sup>/<sub>4</sub> sec.13, T.134 N., R.95 W., Hettinger County, Hydrologic Unit 10130204, on right bank 400 ft from bridge on county highway, and 0.3 mi north of Regent.

DRAINAGE AREA.--580 mi<sup>2</sup>, approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,422.90 ft above sea level.

REMARKS.--Records good except for periods of estimated discharges, which are poor.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known since 1914, 26.1 ft, Apr. 16, 1950, from floodmarks, discharge, 20,300 ft<sup>3</sup>/s, on basis of slope-area measurement at site 4 mi downstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.7	6.4	e5.8	e5.4	e3.8	e13	e12	17	22	5.0	3.4	2.5
2	4.7	e6.2	e5.5	e5.4	e3.8	e12	e12	17	21	4.5	3.5	2.6
3	4.9	6.1	e5.2	e5.4	e3.7	e10	e11	19	19	4.3	4.2	2.6
4	5.1	5.7	e5.0	e5.4	e3.6	e9.6	e11	23	20	4.3	4.6	3.0
5	5.3	e5.4	e4.7	e5.4	e3.5	e9.1	e10	25	21	4.3	4.7	3.3
6	5.3	e5.2	e4.6	e5.3	e3.5	e8.6	29	27	21	4.3	4.3	3.5
7	5.3	e5.0	e4.6	e5.2	e3.6	9.3	134	33	18	4.4	6.0	3.5
8	5.4	e4.8	e4.7	e5.4	e3.9	8.7	200	36	16	3.9	6.1	3.3
9	5.5	e4.7	e4.7	e5.5	e32	8	171	35	15	3.8	5.3	3.3
10	5.5	e4.5	e4.7	e5.5	e70	12	175	35	15	3.7	4.9	3.3
11	5.6	e4.4	e4.7	e5.4	e50	79	132	37	15	3.6	4.6	3.1
12	5.5	e4.3	e4.7	e5.4	e125	417	93	39	14	3.5	4.0	3.0
13	5.3	e4.2	e4.8	e5.3	e140	552	72	41	12	3.6	3.6	3.0
14	5.4	e4.1	e4.8	e5.3	e190	658	60	39	11	4.0	3.1	3.0
15	5.6	e4.3	e4.9	e5.2	e92	417	49	36	14	4.2	2.9	3.0
16	5.5	e4.5	e5.0	e5.1	e80	232	42	35	17	3.9	3.1	3.0
17	5.6	e4.8	e5.0	e5.1	e75	130	38	90	34	9.8	3.2	3.3
18	5.8	e5.0	e5.0	e5.0	e72	101	34	58	34	47	3.2	6.4
19	5.9	e5.3	e5.1	e4.9	e67	74	30	42	28	42	3.3	8.3
20	5.7	e5.5	e5.2	e4.8	e64	60	27	33	21	28	3.3	9.6
21	5.9	e5.6	e5.2	e4.7	e56	62	25	28	14	17	3.1	9.4
22	6.1	e5.7	e5.2	e4.6	e58	46	24	24	11	12	2.7	9.5
23	6.0	e5.8	e5.2	e4.6	e42	29	22	22	10	8.4	2.6	7.7
24	5.9	e5.9	e5.3	e4.5	e30	18	20	24	8.3	6.2	2.6	6.6
25	6.0	e5.9	e5.3	e4.4	e23	e17	20	26	7.6	4.8	2.6	5.8
26	6.2	e5.8	e5.3	e4.3	e20	e17	20	26	7.4	4.3	2.3	5.0
27	6.5	e5.6	e5.3	e4.2	e18	e16	19	26	7.3	4.3	2.3	4.5
28	6.5	e5.4	e5.3	e4.1	e16	e16	19	27	6.4	4.3	2.4	4.2
29	6.5	e5.5	e5.3	e4.0	e15	e15	17	25	6.3	3.8	2.4	4.0
30	6.3	e5.8	e5.4	e4.0	---	e14	17	23	5.4	3.6	2.3	3.9
31	6.4	---	e5.4	e3.9	---	e13	---	22	---	3.3	2.3	---
TOTAL	175.9	157.4	156.9	152.7	1364.4	3083.3	1545	990	471.7	264.1	108.9	137.2
MEAN	5.67	5.25	5.06	4.93	47.0	99.5	51.5	31.9	15.7	8.52	3.51	4.57
MAX	6.5	6.4	5.8	5.5	190	658	200	90	34	47	6.1	9.6
MIN	4.7	4.1	4.6	3.9	3.5	8.0	10	17	5.4	3.3	2.3	2.5
AC-FT	349	312	311	303	2710	6120	3060	1960	936	524	216	272

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 1996, BY WATER YEAR (WY)

	MEAN	9.15	5.94	4.09	5.01	23.3	133	119	66.6	83.1	26.8	18.5	5.11
MAX	124	51.6	15.7	63.2	393	963	1127	523	512	331	299	20.4	
(WY)	1983	1983	1983	1973	1982	1978	1952	1972	1957	1969	1981	1986	
MIN	1.25	1.87	.52	.000	.000	3.23	3.80	2.94	1.57	.78	.67	.70	
(WY)	1961	1961	1951	1952	1959	1964	1961	1992	1990	1989	1959	1960	

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR	FOR 1996 WATER YEAR	WATER YEARS 1951 - 1996
ANNUAL TOTAL	12373.5	8607.5	
ANNUAL MEAN	33.9	23.5	41.7
HIGHEST ANNUAL MEAN			168
LOWEST ANNUAL MEAN			3.11
HIGHEST DAILY MEAN	1660	May 13	7880
LOWEST DAILY MEAN	2.0	Jan 1	Dec 5 1950
ANNUAL SEVEN-DAY MINIMUM	2.0	Jan 12	Aug 26
INSTANTANEOUS PEAK FLOW			720
INSTANTANEOUS PEAK STAGE			7.55
ANNUAL RUNOFF (AC-FT)	24540	17070	30190
10 PERCENT EXCEEDS	50	46	45
50 PERCENT EXCEEDS	9.2	5.7	5.0
90 PERCENT EXCEEDS	4.4	3.5	1.4

e Estimated.

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 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT 06...	1005	5.3	1910	--	10.0	8.5	--	--	--	--
NOV 20...	1450	5.5	2100	--	4.0	1.0	--	--	--	--
JAN 02...	1445	5.4	2180	--	-5.0	0.0	--	--	--	--
FEB 21...	1510	56	1180	--	10.0	2.0	--	--	--	--
MAR 21...	1545	64	890	--	3.5	0.5	--	--	--	--
APR 10...	0940	166	1400	7.4	17.0	4.0	380	174	65	52
MAY 24...	1105	24	2780	--	9.5	11.5	--	--	--	--
JUN 25...	0945	7.6	3280	--	16.5	18.0	--	--	--	--
AUG 06...	1620	4.2	1840	7.7	19.5	21.0	430	328	73	59
SEP 18...	1155	6.2	2110	--	11.5	14.0	--	--	--	--
DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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 CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
APR 10...	160	47	4	12	570	11	0.20	976	1000	1.36
AUG 06...	270	57	6	9.0	690	11	0.40	1310	1290	1.75
DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
APR 10...	448	<1	50	<1	20	240	0.1	<1	1	870
AUG 06...	14.7	1	20	<1	40	80	<0.1	2	<1	1200

**CANNONBALL RIVER BASIN**  
06352000 CEDAR CREEK NEAR HAYNES, ND

LOCATION.--Lat 46°09'15", long 102°28'25", in W<sup>1</sup>/<sub>2</sub> sec.20, T.131 N., R.94 W., Adams County, Hydrologic Unit 10130205, on left bank 30 ft downstream from bridge on State Highway 8, and 12.5 mi north of Haynes.

DRAINAGE AREA.--553 mi<sup>2</sup>.

**WATER-DISCHARGE RECORDS**

PERIOD OF RECORD.--October 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,472.90 ft above sea level (North Dakota Highway Department bench mark). Prior to May 20, 1951, nonrecording gage on former bridge 400 ft upstream at same datum.

REMARKS.--Records good except for periods of estimated daily discharges, which are fair.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 17, 1950, reached a stage of about 23 ft, discharge, 26,900 ft<sup>3</sup>/s, by slope-area measurement at site 9 mi upstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e6.6	e7.6	e8.0	e6.5	e5.4	e60	47	23	92	10	2.7	2.7
2	e6.5	e7.5	e8.2	e6.3	e5.3	e55	45	23	80	9.2	2.7	2.9
3	6.3	e7.4	e8.1	e6.5	e5.3	e56	42	23	73	8.9	2.7	3.1
4	6.2	e7.2	e8.0	e6.3	e5.2	e52	39	26	60	9.0	2.7	3.3
5	6.4	e7.0	e7.8	e6.2	e5.1	e48	38	29	46	8.0	2.7	3.4
6	6.4	e6.8	e7.4	e6.2	e5.0	e45	41	33	34	7.9	2.6	3.9
7	6.3	e6.6	e6.4	e6.2	e6.5	e42	81	40	28	7.3	2.5	4.1
8	6.4	e6.4	e5.2	e6.2	e10	e42	337	46	21	6.5	2.3	4.4
9	6.5	e6.2	e5.1	e6.2	e18	e45	334	55	16	5.6	2.3	4.9
10	7.0	e6.0	e5.0	e6.2	e30	e55	245	64	15	5.4	3.0	5.0
11	6.8	e6.2	e5.0	e6.2	e52	e80	260	73	14	5.0	3.5	5.2
12	6.7	e6.5	e5.1	e6.2	e90	e190	185	80	15	4.4	3.5	4.8
13	7.0	e6.7	e5.2	e6.1	e140	e350	136	81	20	4.2	2.9	5.0
14	7.3	e7.0	e5.5	e6.1	e170	e490	107	76	71	3.9	2.5	5.2
15	7.1	e7.5	e5.8	e6.0	e160	e600	88	71	55	3.8	2.2	5.2
16	7.5	e8.0	e6.0	e6.0	e150	e340	76	66	33	3.8	2.3	5.5
17	7.5	e8.2	e6.0	e6.0	e130	e190	67	165	63	3.8	2.2	5.6
18	7.3	e8.4	e5.7	e6.0	e110	e159	57	155	49	3.8	2.2	7.6
19	7.1	e8.5	e5.5	e6.0	e100	e106	49	111	26	8.0	2.2	9.4
20	7.3	e8.6	e5.4	e6.0	e85	72	44	83	17	34	2.3	10
21	6.3	e8.7	e5.3	e5.9	e70	67	40	63	14	17	2.6	12
22	6.0	e8.6	e5.4	e5.9	e70	51	35	53	13	11	2.7	11
23	6.3	e8.5	e5.6	e5.8	e65	55	31	45	12	8.2	2.9	10
24	6.3	e8.4	e5.8	e5.8	e60	33	29	42	13	6.2	2.8	10
25	5.9	e8.3	e5.9	e5.8	e60	38	28	41	13	4.7	2.7	10
26	6.0	e8.2	e6.0	e5.7	e61	45	26	45	12	3.8	2.7	9.4
27	7.1	e8.0	e6.2	e5.6	e63	44	26	61	13	4.0	2.7	8.0
28	6.9	e7.9	e6.4	e5.6	e64	50	26	77	12	3.8	2.7	7.3
29	6.4	e7.8	e6.5	e5.5	e65	50	27	90	12	3.1	2.5	7.1
30	6.6	e7.8	e6.4	e5.5	---	55	25	101	11	2.7	2.7	6.6
31	7.2	---	e6.3	e5.5	---	48	---	109	---	2.7	2.8	---
TOTAL	207.2	226.5	190.2	186.0	1860.8	3613	2611	2050	953	219.7	81.8	192.6
MEAN	6.68	7.55	6.14	6.00	64.2	117	87.0	66.1	31.8	7.09	2.64	6.42
MAX	7.5	8.7	8.2	6.5	170	600	337	165	92	34	3.5	12
MIN	5.9	6.0	5.0	5.5	5.0	33	25	23	11	2.7	2.2	2.7
AC-FT	411	449	377	369	3690	7170	5180	4070	1890	436	162	382

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 1996, BY WATER YEAR (WY)

	4.70	4.77	3.35	4.31	15.2	111	111	59.1	56.1	17.1	10.6	3.67
MEAN	4.70	4.77	3.35	4.31	15.2	111	111	59.1	56.1	17.1	10.6	3.67
MAX	43.2	54.4	20.4	59.4	242	837	1159	522	339	177	94.1	21.7
(WY)	1983	1983	1983	1973	1982	1978	1952	1975	1964	1969	1981	1995
MIN	.25	.60	.22	.000	.000	1.05	1.58	1.66	.77	.000	.000	.000
(WY)	1961	1962	1962	1962	1962	1964	1961	1961	1956	1961	1959	1960

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR		FOR 1996 WATER YEAR		WATER YEARS 1951 - 1996	
ANNUAL TOTAL	15838.7		12391.8		33.4	
ANNUAL MEAN	43.4		33.9		122	
HIGHEST ANNUAL MEAN					1.04	
LOWEST ANNUAL MEAN					1972	
HIGHEST DAILY MEAN	1010	Mar 15	600	Mar 15	7060	Apr 8 1952
LOWEST DAILY MEAN	2.1	Aug 24	2.2	Aug 15	.00	Jan 29 1957
ANNUAL SEVEN-DAY MINIMUM	2.4	Aug 19	2.3	Aug 14	.00	Jul 26 1959
INSTANTANEOUS PEAK FLOW			a 710	Mar 15	7870	Apr 7 1952
INSTANTANEOUS PEAK STAGE			a 11.65	Mar 15	a 22.05	Mar 28 1978
ANNUAL RUNOFF (AC-FT)	31420		24580		24180	
10 PERCENT EXCEEDS	52		80		41	
50 PERCENT EXCEEDS	8.5		7.8		3.2	
90 PERCENT EXCEEDS	4.0		3.4		.60	

a Backwater from ice.  
e Estimated.



CANNONBALL RIVER BASIN  
06352000 CEDAR CREEK NEAR HAYNES, ND--Continued

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WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINEITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT 02...	1530	6.5	2230	--	14.5	11.5	--	--	--	--	--
NOV 21...	1000	8.7	3020	--	1.5	0.5	--	--	--	--	--
JAN 03...	0845	6.2	3480	--	-10.0	0.0	--	--	--	--	--
FEB 13...	1315	162	1710	--	6.5	0.5	--	--	--	--	--
21...	1655	75	960	--	7.5	1.0	--	--	--	--	--
MAR 13...	1135	328	1200	7.4	4.0	0.0	11.3	380	126	61	56
19...	1620	102	--	--	-1.0	2.0	--	--	--	--	--
APR 10...	1240	221	1370	--	24.0	7.0	--	--	--	--	--
MAY 13...	1650	80	305	--	15.0	12.0	--	--	--	--	--
JUN 27...	0935	13	3090	--	27.0	23.0	--	--	--	--	--
AUG 06...	0930	2.8	2300	7.9	18.0	19.0	--	650	258	78	110
SEP 18...	1450	7.2	1920	--	11.5	12.5	--	--	--	--	--

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
MAR 13...	120	39	3	17	530	11	0.20	872	909	1.24
AUG 06...	290	49	5	15	960	13	0.30	1620	1720	2.34

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAR 13...	805	1	80	<1	20	210	0.1	<1	2	800
AUG 06...	12.8	3	50	<1	50	50	0.1	1	<1	1200

CANNONBALL RIVER BASIN  
06353000 CEDAR CREEK NEAR RALEIGH, ND

LOCATION.--Lat 46°05'30", long 101°20'00", in NE<sup>1</sup>/<sub>4</sub> SE<sup>1</sup>/<sub>4</sub> 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 upstream from mouth, and 19 mi south of Raleigh.

DRAINAGE AREA.--1,750 mi<sup>2</sup>, approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April to September 1939, March 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,881.23 ft above sea level. Prior to June 6, 1962, nonrecording gage at same site and datum, and June 6, 1962, to Sept. 7, 1972, at site 1 mi upstream at datum 9.58 ft higher.

REMARKS.--Records fair except for estimated periods of estimated daily discharge, which are poor.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known since 1950, about 18 ft, Apr. 18, 1950; discharge 45,000 ft<sup>3</sup>/s, on basis of slope-area measurement 5 mi upstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	16	e13	e6.9	e5.3	e120	e56	e32	135	28	9.7	1.2
2	18	21	e12	e6.8	e5.1	e60	e54	e30	139	22	8.2	1.3
3	17	16	e11	e6.6	e4.9	e64	e52	e31	141	23	7.2	1.3
4	16	16	e12	e6.5	e4.8	e68	e51	e32	157	23	6.9	1.2
5	19	16	e11	e6.4	e4.7	e62	e52	e33	154	21	5.9	1.1
6	24	16	e10	e6.4	e4.7	e56	e62	e33	142	19	5.1	1.0
7	18	16	e9.8	e6.5	e4.7	e52	e120	e40	129	18	4.5	1.1
8	16	15	e9.5	e6.6	e10	e50	e450	e45	118	17	4.2	.96
9	15	15	e9.2	e6.8	e40	e48	e1600	e50	110	17	4.5	.77
10	14	14	e9.0	e6.8	e80	e51	e1300	e65	98	17	5.4	.67
11	14	15	e8.8	e6.8	e90	e60	e800	e75	86	14	6.0	.67
12	13	16	e8.7	e6.6	e160	e180	e600	e80	74	14	5.5	.90
13	13	15	e8.5	e6.6	e240	e300	481	e95	64	15	7.3	1.3
14	13	15	e8.4	e6.6	e300	e450	453	e100	57	15	5.6	1.5
15	12	17	e8.2	e6.6	e360	e700	384	e90	298	15	5.5	1.2
16	12	18	e8.0	e6.5	e380	e800	e340	e80	193	13	21	1.3
17	11	17	e7.9	e6.5	e400	e500	e220	e140	183	12	5.4	1.1
18	12	17	e7.8	e6.4	e500	e400	e170	e290	105	8.9	5.2	2.4
19	11	17	e7.6	e6.4	e600	e300	e120	530	75	7.6	5.1	6.9
20	12	19	e7.5	e6.3	e500	e210	e80	426	75	7.7	4.4	71
21	11	14	e7.5	e6.2	e350	e190	e65	383	76	6.8	3.8	68
22	14	15	e7.4	e6.2	e270	e160	e60	e280	63	5.8	3.1	50
23	18	13	e7.3	e6.2	e220	e130	e51	e240	56	5.2	2.9	21
24	17	16	e7.3	e6.1	e170	e120	e49	e220	67	5.0	2.9	12
25	16	16	e7.2	e6.0	e100	e112	e48	e200	56	5.0	3.1	9.5
26	15	e13	e7.2	e5.9	e90	e100	e44	e170	47	5.6	2.3	9.7
27	15	e12	e7.1	e5.8	e70	e88	e42	e140	42	5.1	2.1	11
28	16	e12	e7.1	e5.6	e75	e75	e40	e130	36	4.6	1.9	9.4
29	16	e12	e7.1	e5.5	e90	e65	e37	121	32	4.6	1.8	7.9
30	16	e14	e7.0	e5.5	---	e60	e35	119	28	4.3	1.7	8.2
31	15	---	e7.0	e5.4	---	e58	---	124	---	5.8	1.7	---
TOTAL	466	464	267.1	196.0	5129.2	5689	7916	4424	3036	385.0	159.9	305.57
MEAN	15.0	15.5	8.62	6.32	177	184	264	143	101	12.4	5.16	10.2
MAX	24	21	13	6.9	600	800	1600	530	298	28	21	71
MIN	11	12	7.0	5.4	4.7	48	35	30	28	4.3	1.7	.67
AC-FT	924	920	530	389	10170	11280	15700	8780	6020	764	317	606

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 1996, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1939	10.3	66.4	1978	.000	1965
1940	8.30	48.8	1983	.000	1964
1941	6.19	31.3	1983	.000	1964
1942	11.4	21.7	1973	.000	1964
1943	41.2	664	1982	.000	1964
1944	340	1640	1978	.25	1964
1945	240	1460	1982	.35	1991
1946	180	1043	1975	.89	1992
1947	104	605	1964	2.03	1992
1948	73.1	545	1993	.25	1990
1949	20.2	96.9	1984	.000	1974
1950	8.79	76.5	1995	.000	1939

SUMMARY STATISTICS

FOR 1995 CALENDAR YEAR

FOR 1996 WATER YEAR

WATER YEARS 1939 - 1996

ANNUAL TOTAL	39441.8	28437.77	89.0
ANNUAL MEAN	108	77.7	307
HIGHEST ANNUAL MEAN			1.91
LOWEST ANNUAL MEAN			1982
HIGHEST DAILY MEAN	2500	1600	10900
LOWEST DAILY MEAN	4.5	.67	.00
ANNUAL SEVEN-DAY MINIMUM	5.1	.87	.00
INSTANTANEOUS PEAK FLOW		a 1600	13400
INSTANTANEOUS PEAK STAGE		b --	13.70
ANNUAL RUNOFF (AC-FT)	78230	56410	64510
10 PERCENT EXCEEDS	227	213	156
50 PERCENT EXCEEDS	23	16	8.6
90 PERCENT EXCEEDS	7.0	4.7	.00

a About.  
b Unknown.  
e Estimated.

CANNONBALL RIVER BASIN  
06353000 CEDAR CREEK NEAR RALEIGH, ND--Continued

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WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996										
DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
NOV 07...	1000	15	2480	--	-3.0	0.0	--	--	--	--
JAN 22...	1050	6.2	--	--	-5.0	0.0	--	--	--	--
FEB 15...	1510	359	465	--	-8.0	0.5	--	--	--	--
APR 12...	1435	593	1070	--	5.0	4.0	--	--	--	--
MAY 28...	1435	131	1980	--	22.0	16.0	--	--	--	--
JUN 27...	1555	40	2990	--	30.5	28.0	--	--	--	--
AUG 05...	1405	5.9	3240	8.1	32.5	25.0	800	334	90	140
SEP 20...	1330	94	972	--	11.0	11.5	--	--	--	--

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
AUG 05...	500	57	8	17	1800	19	0.50	2770	2520	3.43

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
AUG 05...	40.1	<1	30	<1	100	100	0.1	3	<1	1500

**DRAINAGE AREA.**--4,100 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--August 1934 to current year.

REVISED RECORDS.--WSP 786: 1934. WSP 1146: 1943. WSP 1279: 1936-37(M), 1947(M). WSP 1509: 1955(M).

REMARKS.--Records fair except for periods of estimated daily discharges, which are poor. Some storage in several small lakes above station.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	53	e13	e6.8	e20	e500	e660	244	265	64	42	4.9
2	44	e52	e12	e6.6	e20	e450	e620	262	267	50	33	4.9
3	56	e52	e11	e6.4	e20	e430	e580	315	274	60	100	4.9
4	48	e52	e10	e6.2	e20	e400	e540	325	275	74	e50	4.8
5	64	e54	e10	e6.0	e20	e450	e500	361	288	66	e20	4.0
6	86	e54	e10	e6.0	e20	e450	e800	378	285	44	e18	4.4
7	88	e55	e9.8	e6.0	e20	e430	e1500	413	262	36	e15	5.6
8	69	e55	e9.6	e6.0	e100	e400	e2800	396	239	29	e14	5.4
9	62	e54	e9.3	e6.0	e500	e400	e2600	389	219	28	e13	4.2
10	85	e52	e9.0	e6.0	e800	e600	e2400	436	207	24	e13	3.5
11	72	e50	e8.8	e6.0	e750	e1000	e2200	436	195	19	e12	2.7
12	63	e48	e8.6	e7.0	e700	e1500	e1800	415	179	18	e12	2.4
13	58	e45	e8.4	e10	e800	e2000	1400	390	152	17	e11	2.4
14	54	e42	e8.2	e20	e900	e1800	1120	379	137	17	e11	2.3
15	49	e40	e8.0	e40	e1100	e1600	987	369	198	16	e10	1.8
16	53	e40	e8.0	e40	e1200	e1600	e700	e400	422	14	e10	1.9
17	43	e40	e8.0	e38	e1100	e1600	e500	e450	301	12	e50	1.6
18	42	e38	e8.0	e36	e1000	e1600	e450	482	266	14	e40	4.5
19	45	e35	e8.0	e36	e1500	e1500	e400	668	174	15	e25	14
20	46	e33	e8.0	e35	e2100	e1400	e380	966	134	12	e25	174
21	47	e32	e7.8	e34	e1700	e1300	e350	770	218	11	e30	316
22	54	e30	e7.8	e34	e1400	e1200	e320	667	231	7.5	e20	166
23	63	e28	e7.6	e32	e1000	e1100	e300	570	199	7.0	e18	115
24	80	e26	e7.6	e30	e800	e1000	e290	497	175	6.1	e15	79
25	66	e24	e7.4	e28	e600	e1000	e280	431	167	42	e12	61
26	63	e22	e7.4	e27	e500	e1000	e270	369	152	118	e12	53
27	55	e20	e7.2	e26	e400	e900	e260	326	132	99	e11	49
28	49	e18	e7.2	e24	e450	e850	e250	300	111	108	e10	46
29	47	e16	e7.0	e23	e500	e800	e245	275	96	135	e9.0	45
30	50	e14	e7.0	e22	---	e750	e240	265	88	78	e7.9	42
31	53	---	e7.0	e21	---	e700	---	256	---	55	6.4	---
TOTAL	1784	1174	266.7	631.0	20040	30710	25742	13200	6308	1295.6	675.3	1226.2
MEAN	57.5	39.1	8.60	20.4	691	991	858	426	210	41.8	21.8	40.9
MAX	88	55	13	40	2100	2000	2800	966	422	135	100	316
MIN	30	14	7.0	6.0	20	400	240	244	88	6.1	6.4	1.6
AC-FT	3540	2330	529	1250	39750	60910	51060	26180	12510	2570	1340	2430

MEAN	33.5	26.7	15.0	15.0	76.7	832	858	352	393	201	61.3	33.8
MAX	281	238	71.6	342	1058	4260	10070	2399	2384	1409	380	267
(WY)	1978	1983	1983	1973	1982	1943	1950	1975	1937	1969	1981	1977
MIN	.21	.63	.38	.000	.000	3.29	17.1	6.48	3.10	.17	.12	.010
(WY)	1961	1961	1935	1941	1935	1965	1961	1992	1936	1936	1974	1974

ANNUAL TOTAL	143999.6		103052.8				
ANNUAL MEAN	395		282		242		
HIGHEST ANNUAL MEAN					994		1950
LOWEST ANNUAL MEAN					9.90		1961
HIGHEST DAILY MEAN	7400	Mar 13	2800	Apr 8	63100		Apr 19 1950
LOWEST DAILY MEAN	5.5	Aug 19	1.6	Sep 17	.00		Jan 11 1935
ANNUAL SEVEN-DAY MINIMUM	7.1	Aug 13	2.2	Sep 11	.00		Jan 11 1935
INSTANTANEOUS PEAK FLOW			3000	Apr 8	b 94800		Apr 19 1950
INSTANTANEOUS PEAK STAGE			a 12.89	Feb 20	c 22.30		Apr 19 1950
ANNUAL RUNOFF (AC-FT)	285600		204400		175100		
10 PERCENT EXCEEDS	838		900		411		
50 PERCENT EXCEEDS	91		53		26		
90 PERCENT EXCEEDS	9.8		7.1		.70		

a Backwater from ice.  
b From rating extended above 16,000 ft<sup>3</sup>/s on basis of indirect measurement of peak flow.  
c From floodmark.  
e Estimated.

CANNONBALL RIVER BASIN  
06354000 CANNONBALL RIVER AT BREIEN, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1946-50, 1970-72, 1974 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
JAN 22...	1305	34	--	--	-5.0	0.0	--	--	--	--
FEB 20...	1800	2140	900	--	1.0	0.5	--	--	--	--
APR 12...	1930	1820	955	8.0	6.5	4.5	280	153	50	37
MAY 20...	1430	957	2140	--	21.0	18.0	--	--	--	--
JUN 28...	1640	110	2670	--	33.0	30.5	--	--	--	--
JUL 31...	1610	58	1690	--	29.5	25.5	--	--	--	--
AUG 30...	1305	7.9	1980	7.3	29.5	25.5	380	376	60	56
SEP 30...	1155	42	2200	--	14.5	9.5	--	--	--	--
DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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 CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED PER AC-FT) (70303)
APR 12...	91	40	2	11	340	8.1	0.20	630	626	0.85
AUG 30...	320	64	7	13	710	16	0.60	1400	1400	1.90
DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
APR 12...	3070	<1	40	<1	30	20	0.1	<1	1	640
AUG 30...	29.9	1	30	<1	70	30	<0.1	2	<1	910



BEAVER CREEK BASIN  
06354580 BEAVER CREEK BELOW LINTON, ND

LOCATION.--Lat 46°16'07", long 100°15'05", in NW<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> sec.7, T.132 N., R.76 W., Emmons County, Hydrologic Unit 10130104, on left bank 25 ft upstream from bridge on county road, 0.7 mi west of Linton, and 0.5 mi downstream from Spring Creek.

DRAINAGE AREA.--765 mi<sup>2</sup>, of which about 100 mi<sup>2</sup> is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1989 to current year. Records for August 1949 to September 1989 at site 1.5 mi upstream published as "at Linton, ND" (station 06354500) are not equivalent because of difference in drainage area.

GAGE.--Water-stage recorder and artificial control. Elevation of gage is 1,690 ft above sea level, from topographic map.

REMARKS.--Records poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e9.4	e20	e26	e14	8.4	e280	120	96	57	98	e65	e17
2	e11	e20	e26	e14	8.4	e220	109	95	60	95	e111	e16
3	e13	e20	e25	14	7.9	e150	101	93	62	90	e550	e15
4	e16	e17	e24	14	7.7	e100	96	90	65	91	e231	e14
5	e21	e19	e23	13	7.8	e90	94	87	65	94	e135	e13
6	e26	e22	e20	13	7.9	e83	140	87	62	87	e100	e12
7	e25	e21	e21	14	8.1	e78	339	85	61	88	e70	e12
8	e30	e20	e17	14	8.1	e75	738	85	58	89	e58	e11
9	e39	e18	e15	14	8.9	e150	1010	85	56	75	e50	e10
10	e43	e16	e16	15	e12	e250	1530	85	58	81	e47	e9.6
11	e39	e17	e16	15	e15	e500	1400	85	55	75	e42	e9.2
12	e32	e18	e16	16	e20	e900	842	85	53	84	e39	e8.8
13	e27	e18	e16	17	e30	e1500	468	85	54	124	e40	e8.4
14	e26	e20	e16	e16	e40	e2400	510	84	55	95	e36	e8.0
15	e24	e17	e16	e15	e35	e2800	358	82	238	77	e31	e7.5
16	e23	e17	e16	e15	e30	e2000	266	81	e1000	52	e28	e7.1
17	e22	e19	e15	e14	e26	e1400	218	157	e1200	42	e25	e7.6
18	e21	e21	e15	14	e26	e900	190	172	e900	39	e30	e8.2
19	e21	e23	e15	13	e100	e600	171	180	e400	28	e34	9.6
20	e22	e17	e15	13	e190	e491	155	143	e200	24	e26	17
21	e24	e17	e15	12	e167	e450	145	132	134	25	e22	20
22	e28	e24	e15	12	e475	e470	135	126	107	e26	e23	19
23	e27	e23	e15	11	e701	e350	128	103	108	e27	e21	20
24	e24	e26	e15	11	e1000	e260	118	94	107	e27	e20	33
25	e22	e29	e15	11	e950	e210	114	84	95	e26	e20	35
26	e23	e28	e15	9.9	e740	e170	110	79	93	e25	e19	28
27	e26	e24	e14	9.5	e550	e145	107	74	100	e24	e18	26
28	e28	e24	e14	9.4	e450	124	104	70	101	e29	e18	24
29	e26	e26	e14	8.8	e340	156	102	66	109	e37	e18	22
30	e22	e26	e14	8.7	---	137	102	59	102	e36	e18	21
31	e21	---	e14	8.6	---	129	---	55	---	e34	e18	---
TOTAL	761.4	627	529	398.9	5970.2	17568	10020	2984	5815	1844	1963	469.0
MEAN	24.6	20.9	17.1	12.9	206	567	334	96.3	194	59.5	63.3	15.6
MAX	43	29	26	17	1000	2800	1530	180	1200	124	550	35
MIN	9.4	16	14	8.6	7.7	75	94	55	53	24	18	7.1
AC-FT	1510	1240	1050	791	11840	34850	19870	5920	11530	3660	3890	930

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 1996, BY WATER YEAR (WY)

	1990	1991	1992	1993	1994	1995	1996
MEAN	10.3	9.11	6.33	4.96	37.0	262	126
MAX	25.0	22.4	17.1	12.9	206	690	334
(WY)	1995	1995	1996	1996	1996	1995	1996
MIN	.16	.31	.36	.30	1.32	5.05	6.32
(WY)	1991	1991	1991	1991	1991	1991	1992

SUMMARY STATISTICS

FOR 1995 CALENDAR YEAR

FOR 1996 WATER YEAR

WATER YEARS 1990 - 1996

ANNUAL TOTAL	48053.4	48949.5	61.4
ANNUAL MEAN	132	134	134
HIGHEST ANNUAL MEAN			134
LOWEST ANNUAL MEAN			4.76
HIGHEST DAILY MEAN	4600	Mar 14	4600
LOWEST DAILY MEAN	8.9	Sep 28	.00
ANNUAL SEVEN-DAY MINIMUM	9.5	Sep 25	.00
INSTANTANEOUS PEAK FLOW			5200
INSTANTANEOUS PEAK STAGE			14.77
ANNUAL RUNOFF (AC-FT)	95310	97090	44480
10 PERCENT EXCEEDS	204	270	134
50 PERCENT EXCEEDS	26	29	9.8
90 PERCENT EXCEEDS	12	12	.31

b Backwater from ice.  
e Estimated.

BEAVER CREEK BASIN  
06354580 BEAVER CREEK BELOW LINTON, ND--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996										
DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
NOV 30...	1115	26	1650	--	12.0	0.0	--	--	--	--
JAN 02...	1345	14	1590	--	-5.0	0.0	--	--	--	--
FEB 07...	1135	8.5	1200	--	2.0	0.5	--	--	--	--
FEB 21...	1400	167	--	--	4.0	--	--	--	--	--
FEB 23...	1100	701	300	7.6	4.5	0.5	82	74	18	9.0
AUG 26...	1115	18.8	1000	8.1	--	--	330	337	76	34
DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
FEB 23...	20	30	1	14	62	6.2	0.10	174	184	0.25
AUG 26...	130	45	3	14	260	13	0.20	730	751	1.02
DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
FEB 23...	348	1	140	<1	20	130	<0.1	<1	<1	170
AUG 26...	--	7	10	<1	130	360	0.1	<1	<1	430

PORCUPINE CREEK BASIN  
06354815 PORCUPINE CREEK NEAR FORT YATES, ND

LOCATION.--Lat 46°11'36", long 100°45'05", in NW<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> sec.6, T.131 N., R.80 W., Sioux County, Hydrologic Unit 10130102, on right bank at downstream side of bridge 8 mi northwest of Fort Yates.

DRAINAGE AREA.--220 mi<sup>2</sup>.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1991 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,640 ft above sea level, from topographic map.

REMARKS.--Records fair except for periods of estimated discharge, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e2.7	e4.5	e4.0	e2.7	e1.5	e98	e92	8.2	5.6	3.8	7.5	1.9
2	e3.1	e5.1	e4.6	e2.6	e1.4	e94	e89	8.0	5.5	3.7	5.5	1.9
3	e3.4	e5.8	e5.3	e2.5	e1.4	e90	e87	12	5.4	3.7	30	1.8
4	e3.1	e5.2	e5.2	e2.4	e1.3	e95	e84	26	5.0	4.5	30	1.8
5	e3.0	e4.7	e5.0	e2.4	e1.3	e91	e88	38	5.0	4.0	14	1.7
6	e3.6	e4.3	e5.0	e2.3	e2.7	e87	e190	51	5.0	4.0	5.6	1.7
7	e4.7	e4.0	e4.9	e2.2	e12	e84	e380	62	4.8	4.0	3.4	1.7
8	e6.5	e3.9	e4.7	e2.3	e23	e80	e590	48	4.4	4.1	2.9	1.8
9	e7.6	e3.8	e4.6	e2.5	e47	e78	e680	44	4.3	4.1	2.5	1.9
10	e6.8	e3.7	e4.5	e2.7	e85	e76	e810	60	4.1	4.1	2.5	1.9
11	e6.0	e3.8	e4.3	e3.0	e110	e73	e540	44	4.0	4.1	2.4	1.7
12	e5.3	e4.0	e4.2	e3.6	e160	e71	e210	36	4.1	4.1	2.4	1.7
13	e4.7	e4.2	e4.1	e4.2	e140	e70	e95	33	4.1	4.0	2.2	1.7
14	e5.4	e4.5	e3.9	e4.4	e120	e68	43	21	4.1	3.8	2.1	1.7
15	e4.9	e4.7	e3.8	e5.1	e110	e67	28	14	128	3.7	2.2	1.7
16	e4.5	e4.4	e3.5	e5.0	e140	e65	22	11	144	3.7	2.1	1.7
17	e4.1	e4.0	e3.4	e4.6	e170	e62	19	53	118	3.9	2.0	1.7
18	e3.8	e4.6	e3.2	e4.1	e200	e59	16	45	41	3.8	2.0	2.1
19	e3.6	e5.6	e3.1	e3.8	e180	e55	13	39	20	3.8	2.2	4.2
20	e3.8	e5.3	e3.1	e3.5	e150	e51	12	25	13	4.6	2.1	109
21	e3.6	e5.1	e2.9	e3.1	e140	e63	10	16	9.1	4.3	2.3	159
22	e3.4	e4.9	e2.8	e2.8	e130	e94	9.5	11	8.9	4.0	2.2	123
23	e5.1	e4.6	e2.7	e2.6	e120	e130	8.9	8.6	12	4.0	e2.3	62
24	e4.7	e4.5	e2.9	e2.3	e110	e150	8.8	7.3	8.6	3.9	e2.2	21
25	e4.2	e4.4	e3.0	e2.1	e105	e140	8.6	6.9	8.6	3.7	e2.1	11
26	e4.1	e4.3	e3.2	e1.9	e100	e130	8.2	6.4	7.3	4.3	e2.1	7.4
27	e4.8	e4.2	e3.1	e1.8	e98	e120	8.3	6.1	5.9	20	e2.0	5.7
28	e4.5	e4.0	e3.0	e1.7	e95	e110	8.1	5.8	5.0	15	e1.9	4.7
29	e3.9	e3.9	e3.0	e1.7	e92	e105	7.8	5.4	4.1	67	e1.8	4.1
30	e3.6	e3.8	e2.9	e1.6	---	e97	7.7	5.3	3.8	28	1.8	3.9
31	e4.0	---	e2.8	e1.5	---	e93	---	5.6	---	13	1.8	---
TOTAL	136.5	133.8	116.7	89.0	2646.6	2746	4173.9	762.6	602.7	246.7	148.1	547.1
MEAN	4.40	4.46	3.76	2.87	91.3	88.6	139	24.6	20.1	7.96	4.78	18.2
MAX	7.6	5.8	5.3	5.1	200	150	810	62	144	67	30	159
MIN	2.7	3.7	2.7	1.5	1.3	51	7.7	5.3	3.8	3.7	1.8	1.7
AC-FT	271	265	231	177	5250	5450	8280	1510	1200	489	294	1090

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 1996, BY WATER YEAR (WY)

	MEAN	6.85	2.61	2.10	2.16	42.4	100	46.0	85.7	14.6	40.4	4.01	5.20
MAX	25.5	4.46	3.76	2.87	102	194	139	378	20.1	131	5.77	18.2	
(WY)	1995	1996	1996	1996	1995	1995	1996	1995	1996	1993	1993	1996	
MIN	1.15	1.22	1.32	1.21	2.28	9.93	1.84	1.85	11.8	7.96	1.67	4.97	
(WY)	1993	1992	1992	1993	1994	1992	1992	1993	1994	1996	1994	1991	

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR	FOR 1996 WATER YEAR	WATER YEARS 1991 - 1996
ANNUAL TOTAL	24344.6	12349.7	
ANNUAL MEAN	66.7	33.7	29.6
HIGHEST ANNUAL MEAN			68.2
LOWEST ANNUAL MEAN			5.65
HIGHEST DAILY MEAN	2500	810	2500
LOWEST DAILY MEAN	1.9	1.3	.40
ANNUAL SEVEN-DAY MINIMUM	1.9	1.4	.46
INSTANTANEOUS PEAK FLOW		a 810	c 3050
INSTANTANEOUS PEAK STAGE		b --	d 18.65
ANNUAL RUNOFF (AC-FT)	48290	24500	21480
10 PERCENT EXCEEDS	100	99	62
50 PERCENT EXCEEDS	5.8	4.7	2.9
90 PERCENT EXCEEDS	2.4	2.1	1.3

a Maximum daily.

b Unknown.

c About.

d From high-water mark.

e Estimated.

PORCUPINE CREEK BASIN  
06354815 PORCUPINE CREEK NEAR FORT YATES, ND--Continued

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WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1991 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996												
DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, (PER-CENT SATUR-ATION) (00301)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)
NOV 07...	1300	4.0	--	--	--	-1.5	0.5	--	--	--	--	--
JAN 02...	1115	2.6	--	--	--	-5.0	0.0	--	--	--	--	--
MAR 16...	1250	64	206	--	--	5.0	1.5	--	--	--	--	--
APR 08...	1705	562	192	7.9	--	9.5	4.0	12.3	--	--	--	--
JUN 04...	1350	5.1	1360	7.4	--	24.0	17.0	7.6	--	120	33	9.7
JUL 02...	1155	3.9	1180	7.6	732	27.0	24.0	7.4	92	100	27	7.8
JUL 31...	1230	13	625	7.6	735	27.5	21.5	6.0	71	55	15	4.2
AUG 29...	1630	1.8	1940	7.5	--	32.0	25.5	7.8	--	120	30	10
SEP 24...	1340	19	707	7.7	--	17.5	12.0	9.3	--	49	13	4.0

DATE	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB 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)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
JUN 04...	270	82	11	6.9	457	250	16	0.80	13	875	906
JUL 02...	230	82	10	7.5	403	200	15	0.80	16	747	788
JUL 31...	110	79	6	6.7	209	99	5.6	0.40	13	380	390
AUG 29...	390	87	16	8.7	623	350	36	1.3	17	1220	1190
SEP 24...	130	83	8	6.0	209	140	4.0	0.30	10	434	454

DATE	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, NITRATE DIS-SOLVED (MG/L AS N) (00618)	NITRO-GEN, NO2+NO3 TOTAL (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) (00608)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	ARSENIC DIS-SOLVED (MG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
JUN 04...	1.23	12.5	--	--	--	--	--	--	1	920	15
JUL 02...	1.07	8.26	<0.010	--	0.050	0.050	0.030	<0.010	1	920	9
JUL 31...	0.53	13.5	--	--	--	--	--	--	3	300	11
AUG 29...	1.62	5.69	<0.010	--	--	<0.050	<0.015	0.010	2	1700	5
SEP 24...	0.62	23.2	0.010	0.070	0.080	0.080	0.030	0.020	1	360	31

DATE	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)	TRIAZIN SCREEN (ELISA) WAT, WH REC, AS ATRAZIN (UG/L) (34757)	CARBO-FURAN SCREEN, TOTAL (UG/L) (99902)	CYANA-ZINE SCREEN, TOTAL (UG/L) (99904)	2, 4-D SCREEN, TOTAL (UG/L) (99906)
JUN 04...	<1	82	130	<0.1	2	<1	240	<0.0	<0.06	<0.04	<0.700
JUL 02...	<1	73	65	<0.1	4	<1	220	--	--	--	7.70
JUL 31...	<1	36	2	<0.1	4	<1	130	<0.0	<0.06	<0.04	<0.700
AUG 29...	<1	120	33	<0.1	5	<1	260	<0.0	<0.06	<0.04	<0.700
SEP 24...	<1	36	1	<0.1	3	<1	140	<0.0	<0.06	<0.04	4.03

**MISSOURI-OAHE RIVER BASIN**  
06439980 LAKE OAHE NEAR PIERRE, SD

**LOCATION.**--Lat 44°27'30", long 100°23'29", in NE1/4 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 northwest of Pierre, 7.1 mi upstream from Bad River, and at mile 1,072.3.

**DRAINAGE AREA.**--243,500 mi<sup>2</sup>, approximately.

**MONTHEND-ELEVATION AND CONTENTS RECORDS**

**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 above sea level. Prior to Jan. 14, 1958, 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.

**REVISED RECORDS.**--WDR SD-88-1: September monthend elevation.

**REMARKS.**--Reservoir is formed by an earthfill dam; storage began in August 1958. Maximum capacity, 23,338,000 acre-ft below elevation 1,620.0 ft (top of spillway gates). Normal maximum, 22,240,000 acre-ft below 1,617.0 ft, of which about 2,390,000 acre-ft is designated for flood control. Inactive storage, 5,451,000 acre-ft below elevation 1,540.0 ft. Dead storage, 1,970 acre-ft below elevation 1,425.0 ft (invert of lowest outlet tunnel). Figures given herein represent elevations at powerhouse intake structure and total contents adjusted for wind effect.

The spillway consists of a gated chute with flat crest at elevation 1,596.5 ft, 8 gates, 50 by 23.5 ft each; design capacity, 300,000 ft<sup>3</sup>/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.**--Records of elevation and contents provided by U.S. Army Corps of Engineers.

**EXTREMES FOR PERIOD OF RECORD.**--Maximum contents, 22,764,000 acre-ft, May 14, 1986, affected by wind; maximum elevation, 1,618.71 ft, June 25, 1995; minimum since initial filling, 12,071,000 acre-ft, Oct. 30, 1989, Nov. 1, 1989.

**EXTREMES FOR CURRENT YEAR.**--Maximum contents, 22,594,000 acre-ft, June 25; minimum contents, 18,875,000 acre-ft, Dec. 22.

**MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996**

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30-----	1,612.29	20,372,000	--
Oct. 31-----	1,611.12	19,990,000	-382,000
Nov. 30-----	1,609.47	19,416,000	-574,000
Dec. 31-----	1,608.15	19,038,000	-378,000
CAL YR 1995-----	--	--	+1,379,000
Jan. 31-----	1,607.91	18,956,000	-82,000
Feb. 29-----	1,611.09	19,994,000	+1,038,000
Mar. 31-----	1,612.81	20,548,000	+554,000
Apr. 30-----	1,613.07	20,645,000	+97,000
May 31-----	1,616.87	21,979,000	+1,334,000
June 30-----	1,618.47	22,553,000	+574,000
July 31-----	1,617.45	22,235,000	-318,000
Aug. 31-----	1,615.97	21,751,000	-484,000
Sept. 30-----	1,615.29	21,421,000	-330,000
WTR YR 1996-----	--	--	+1,049,000



JAMES RIVER BASIN  
06468170 JAMES RIVER NEAR GRACE CITY, ND

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LOCATION.--Lat 47°33'29", long 98°51'45", in NW<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> sec.17, T.147 N., R.64 W., Foster County, Hydrologic Unit 10160001, on left bank on upstream side of county highway bridge, and 2.5 mi northwest of Grace City.

DRAINAGE AREA.--1,060 mi<sup>2</sup>, approximately, of which about 650 mi<sup>2</sup> is probably noncontributing.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,457.60 ft above sea level.

REMARKS.--Records good except for periods of estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.9	2.2	e1.7	e.00	e.00	e.00	e214	430	65	12	e18	1.4
2	e2.5	3.4	e1.6	e.00	e.00	e.00	e181	397	61	10	e21	1.2
3	e2.2	6.1	e1.3	e.00	e.00	e.00	e160	362	56	9.3	e23	1.3
4	e2.1	3.3	e1.1	e.00	e.00	e.00	e148	332	54	8.5	e23	1.6
5	2.5	2.9	e1.0	e.00	e.00	e.00	e137	304	51	9.2	e22	1.8
6	2.6	2.9	e.96	e.00	e.00	e.00	e125	283	53	11	e20	1.1
7	2.4	3.3	e.89	e.00	e.00	e.00	e119	261	54	11	e18	1.0
8	2.4	3.6	e.81	e.00	e.00	e.00	e124	240	53	9.6	14	.93
9	2.3	3.8	e.72	e.00	e.00	e.00	e205	221	48	9.5	12	.85
10	2.2	3.2	e.65	e.00	e.00	e2.8	e740	204	43	11	10	.81
11	2.0	2.9	e.53	e.00	e.00	e7.2	e1390	191	40	10	9.1	.76
12	2.0	2.9	e.47	e.00	e.00	e11	e1480	176	35	11	9.2	.77
13	1.8	2.8	e.41	e.00	e.00	e22	e1580	161	31	12	7.2	.82
14	1.7	2.7	e.34	e.00	e.00	e49	e2460	150	28	11	6.2	.76
15	1.9	2.7	e.29	e.00	e.00	e93	e3230	137	25	9.9	5.7	.68
16	2.2	2.5	e.26	e.00	e.00	e185	e3000	134	22	9.7	5.3	.64
17	1.7	2.5	e.24	e.00	e.00	e342	2580	133	20	9.2	5.3	.71
18	1.6	2.5	e.21	e.00	e.00	e656	e2000	130	17	11	5.4	.69
19	1.9	2.7	e.18	e.00	e.00	e875	1620	126	14	11	5.9	.70
20	2.0	2.6	e.15	e.00	e.00	e1210	1370	123	13	13	6.3	.69
21	2.0	2.2	e.12	e.00	e.00	e1430	1170	115	11	13	5.4	.78
22	1.8	e2.2	e.10	e.00	e.00	e1170	974	110	9.7	13	4.6	.73
23	1.8	e2.1	e.08	e.00	e.00	e1020	826	105	11	12	4.1	.65
24	1.8	e2.2	e.04	e.00	e.00	e842	724	94	11	11	3.6	.56
25	1.6	e2.3	e.01	e.00	e.00	e716	663	87	16	10	3.3	.48
26	1.7	e2.2	e.00	e.00	e.00	e640	651	82	16	e9.8	3.0	.59
27	2.0	e2.0	e.00	e.00	e.00	e538	611	77	17	e9.2	2.9	.78
28	2.0	e1.9	e.00	e.00	e.00	e410	560	70	15	e10	2.5	.83
29	2.0	e1.9	e.00	e.00	e.00	e320	526	64	13	e11	2.3	.84
30	2.0	e1.8	e.00	e.00	---	e285	481	61	12	e13	1.9	.83
31	2.1	---	e.00	e.00	---	e242	---	59	---	e16	1.7	---
TOTAL	63.7	82.3	14.16	0.00	0.00	11066.00	30049	5419	914.7	336.9	281.9	26.28
MEAN	2.05	2.74	.46	.000	.000	357	1002	175	30.5	10.9	9.09	.88
MAX	2.9	6.1	1.7	.00	.00	1430	3230	430	65	16	23	1.8
MIN	1.6	1.8	.00	.00	.00	.00	119	59	9.7	8.5	1.7	.48
AC-FT	126	163	28	.00	.00	21950	59600	10750	1810	668	559	52

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 1996, BY WATER YEAR (WY)

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
MEAN	4.62	5.95	1.64	.49	2.96	116	208	67.5	22.4	33.7	23.0	5.67																	
MAX	63.9	104	20.7	4.22	49.9	724	1002	377	99.9	563	498	86.8																	
(WY)	1995	1995	1995	1994	1981	1995	1996	1995	1980	1993	1993	1993																	
MIN	.000	.000	.000	.000	.000	.000	.29	.18	.11	.022	.000	.000																	
(WY)	1977	1977	1977	1969	1969	1969	1977	1991	1973	1973	1988	1976																	

SUMMARY STATISTICS

FOR 1995 CALENDAR YEAR

FOR 1996 WATER YEAR

WATER YEARS 1968 - 1996

ANNUAL TOTAL	55122.09	48253.94	
ANNUAL MEAN	151	132	41.3
HIGHEST ANNUAL MEAN			166
LOWEST ANNUAL MEAN			.21
HIGHEST DAILY MEAN	2500	3230	3430
LOWEST DAILY MEAN	.00 Dec 26	.00 Dec 26	.00 Jan 1 1969
ANNUAL SEVEN-DAY MINIMUM	.00 Dec 25	.00 Dec 26	.00 Jan 1 1969
INSTANTANEOUS PEAK FLOW		3470	3520
INSTANTANEOUS PEAK STAGE		a 16.18	a 16.18
ANNUAL RUNOFF (AC-FT)	109300	95710	29940
10 PERCENT EXCEEDS	517	335	68
50 PERCENT EXCEEDS	3.8	2.8	.70
90 PERCENT EXCEEDS	.34	.00	.00

a Ice jam.  
e Estimated.

JAMES RIVER BASIN  
06468170 JAMES RIVER NEAR GRACE CITY, ND--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT 24...	1230	1.7	1230	--	12.5	5.5	--	--	--	--
APR 11...	1800	1490	284	--	3.0	0.0	--	--	--	--
16...	1630	2870	302	--	10.0	1.0	--	--	--	--
17...	1415	2460	320	7.9	14.0	3.0	120	98	25	13
18...	1310	1980	340	--	14.5	7.5	--	--	--	--
MAY 09...	1245	220	596	--	3.5	8.5	--	--	--	--
JUN 05...	1345	51	--	--	22.5	18.0	--	--	--	--
JUL 16...	1615	10	860	--	31.0	27.5	--	--	--	--
AUG 27...	1715	2.9	880	9.1	27.5	23.5	250	248	29	43

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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 CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
APR 17...	14	19	0.6	9.8	59	6.9	0.10	187	208	0.28
AUG 27...	100	45	3	12	190	26	0.20	549	581	0.79

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
APR 17...	1380	6	40	<1	10	110	0.1	<1	<1	170
AUG 27...	4.61	5	20	<1	50	30	0.6	<1	<1	290

JAMES RIVER BASIN  
06468250 JAMES RIVER ABOVE ARROWWOOD LAKE NEAR KENSAL, ND

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LOCATION.--Lat 47°23'59", long 98°47'50", in SW<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> sec.2, T.14S N., R.64 W., Foster County, Hydrologic Unit 10160001, on left bank 20 ft upstream from bridge.

DRAINAGE AREA.--1,200 mi<sup>2</sup>, approximately, of which about 750 mi<sup>2</sup> is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1985 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,440 ft above sea level, from topographic map.

REMARKS.--Records good except for periods of estimated daily discharges, which are fair.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	6.2	4.0	e.59	e.04	e2.4	e410	e556	89	15	39	4.1
2	10	5.7	5.0	e.52	e.01	e2.3	e375	e540	87	13	43	3.7
3	9.3	5.6	6.0	e.47	e.00	e2.1	e340	e530	82	11	45	3.4
4	8.6	6.9	6.2	e.41	e.00	e2.0	e310	519	75	10	46	3.4
5	12	7.3	5.5	e.39	e.00	e1.9	e293	483	66	23	45	3.0
6	15	7.1	5.0	e.37	e.00	e1.8	e265	457	66	53	43	3.0
7	13	6.3	4.7	e.33	e.00	e1.7	e234	411	67	32	43	2.5
8	12	6.2	4.4	e.30	e.00	e1.6	e300	360	61	23	37	2.2
9	10	6.0	4.0	e.32	e.00	e2.3	e430	297	55	17	34	2.1
10	9.5	7.1	3.8	e.33	e.00	e4.7	e890	278	56	14	29	2.0
11	9.0	8.5	3.6	e.35	e.00	e8.5	e1120	268	54	18	25	1.8
12	8.0	6.3	3.4	e.36	e.00	e13	e1560	259	50	15	23	1.9
13	8.8	5.9	e3.3	e.37	e.00	e22	e2120	247	43	19	24	1.9
14	8.4	5.5	e2.9	e.36	e.00	e39	e2540	238	36	25	22	1.9
15	8.6	5.5	e2.5	e.34	e.05	e53	e2960	221	31	27	21	2.0
16	7.3	5.4	e2.3	e.31	e.11	e71	e3210	208	31	24	18	2.0
17	6.9	5.7	e2.1	e.29	e.21	e130	3580	207	26	23	14	2.1
18	6.0	5.9	e2.0	e.26	e.38	e215	3150	200	20	55	11	2.1
19	6.5	6.3	e1.8	e.22	e.53	e480	e2450	191	17	62	18	1.8
20	6.6	6.7	e1.6	e.21	e.72	e830	e1830	180	16	55	20	1.4
21	7.2	5.2	e1.5	e.18	e.98	e1060	1550	171	14	52	e19	1.9
22	6.1	7.3	e1.5	e.16	e1.4	e1430	1170	157	14	45	e17	1.9
23	5.7	11	e1.4	e.15	e2.2	e1620	1010	144	17	40	e16	1.8
24	5.4	6.7	e1.4	e.14	e2.8	e1390	890	132	17	36	e14	1.7
25	5.2	5.7	e1.3	e.13	e3.1	e1150	780	119	17	32	e11	1.6
26	4.9	5.0	e1.2	e.12	e2.9	e940	736	109	19	30	e9.3	1.7
27	5.4	4.5	e1.1	e.10	e2.8	e820	729	101	20	29	e7.8	2.0
28	6.0	4.2	e.95	e.10	e2.7	e730	684	92	17	29	e6.5	2.1
29	5.8	3.8	e.84	e.08	e2.6	e638	646	83	18	32	5.4	2.2
30	5.6	3.5	e.76	e.07	---	e562	603	76	17	33	5.2	2.4
31	5.6	---	e.67	e.05	---	e485	---	70	---	36	4.7	---
TOTAL	250.4	183.0	86.72	8.38	23.53	12709.3	37165	7904	1198	928	715.9	67.6
MEAN	8.08	6.10	2.80	.27	.81	410	1239	255	39.9	29.9	23.1	2.25
MAX	15	11	6.2	.59	3.1	1620	3580	556	89	62	46	4.1
MIN	4.9	3.5	.67	.05	.00	1.6	234	70	14	10	4.7	1.4
AC-FT	497	363	172	17	47	25210	73720	15680	2380	1840	1420	134

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 1996, BY WATER YEAR (WY)

	9.05	14.2	5.90	1.60	1.30	217	276	77.6	20.7	58.6	73.6	15.5
MEAN	9.05	14.2	5.90	1.60	1.30	217	276	77.6	20.7	58.6	73.6	15.5
MAX	58.4	133	47.5	10.6	3.68	781	1239	368	76.7	457	688	128
(WY)	1995	1995	1995	1995	1994	1995	1996	1995	1994	1993	1993	1993
MIN	.000	.000	.000	.000	.000	.21	2.59	2.24	.077	.000	.000	.000
(WY)	1989	1989	1989	1989	1989	1990	1991	1991	1991	1991	1988	1988

SUMMARY STATISTICS FOR 1995 CALENDAR YEAR FOR 1996 WATER YEAR WATER YEARS 1986 - 1996

ANNUAL TOTAL	59579.32	61239.83	
ANNUAL MEAN	163	167	64.5
HIGHEST ANNUAL MEAN			182
LOWEST ANNUAL MEAN			.52
HIGHEST DAILY MEAN	2610	Mar 21	3580
LOWEST DAILY MEAN	.67	Dec 31	.00
ANNUAL SEVEN-DAY MINIMUM	.97	Dec 25	.00
INSTANTANEOUS PEAK FLOW			4620
INSTANTANEOUS PEAK STAGE			9.05
ANNUAL RUNOFF (AC-FT)	118200	121500	46760
10 PERCENT EXCEEDS	603	495	110
50 PERCENT EXCEEDS	13	8.5	2.1
90 PERCENT EXCEEDS	2.0	.33	.00

e Estimated.

JAMES RIVER BASIN  
06468250 JAMES RIVER ABOVE ARROWWOOD LAKE NEAR KENSAL, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1985 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, (PER- CENT SATUR- ATION) (00301)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT 24...	1445	5.3	960	8.6	715	13.5	5.0	13.1	109	310	54	43
JAN 04...	1400	0.41	1950	--	--	-21.0	0.0	--	--	--	--	--
MAR 06...	1430	1.8	1520	7.4	736	-14.0	0.0	1.6	12	510	100	64
APR 11...	1545	1180	308	--	--	3.0	0.0	--	--	--	--	--
16...	1045	3240	297	7.8	722	4.5	0.5	10.4	76	110	23	12
22...	1845	1150	396	--	--	--	6.0	--	--	--	--	--
24...	1530	909	407	8.3	709	15.0	7.5	11.4	102	150	32	17
MAY 09...	1045	293	572	--	--	3.0	8.5	--	--	--	--	--
JUN 05...	1645	66	874	8.5	715	22.5	19.0	10.8	125	350	70	42
JUL 16...	1815	20	820	9.0	716	28.0	27.0	11.6	156	270	44	38
AUG 28...	1100	6.6	812	8.8	722	25.5	21.0	5.8	69	280	39	44
SEP 10...	1230	2.1	852	8.6	724	21.0	20.0	7.3	85	290	42	45

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
OCT 24...	84	36	2	12	326	170	22	0.20	5.6	29	587	614
MAR 06...	140	36	3	15	622	170	38	0.30	47	6	954	982
APR 16...	13	19	0.5	9.5	93	45	3.4	0.10	9.2	63	175	164
24...	20	21	0.7	11	128	69	4.6	0.10	14	18	245	278
JUN 05...	59	26	1	14	285	180	12	0.20	15	12	564	554
JUL 16...	69	35	2	10	257	170	16	0.20	4.9	5	507	548
AUG 28...	70	34	2	12	253	170	15	0.20	3.9	13	506	530
SEP 10...	78	36	2	12	276	170	17	0.20	5.4	7	536	546

DATE	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, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 TOTAL (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) (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)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO- GEN, TOTAL (MG/L AS N) (00600)
OCT 24...	0.84	8.79	<0.010	--	--	<0.050	<0.015	--	--	--	1.0	--
MAR 06...	1.34	4.75	0.010	--	--	<0.050	2.40	--	1.0	--	3.4	--
APR 16...	0.22	1430	0.050	0.550	0.600	0.600	0.310	1.3	0.79	1.6	1.1	2.2
24...	0.38	682	0.010	0.090	0.100	0.100	0.020	1.3	0.78	1.3	0.80	1.4
JUN 05...	0.75	98.4	<0.010	--	--	<0.050	0.030	--	0.97	--	1.0	--
JUL 16...	0.75	29.7	0.010	0.060	0.070	0.070	0.030	1.2	1.2	1.2	1.2	1.3
AUG 28...	0.72	9.46	<0.010	--	--	<0.050	0.020	--	1.2	--	1.2	--
SEP 10...	0.74	3.10	0.010	0.070	0.080	0.080	<0.015	--	--	--	1.2	--

## JAMES RIVER BASIN

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## 06468250 JAMES RIVER ABOVE ARROWWOOD LAKE NEAR KENSAL, ND--Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTH- DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHORUS ORGANIC TOTAL (MG/L AS P) (00670)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	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)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	SELE- NIUM, TOTAL (UG/L AS SE) (01147)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)
OCT 24...	--	<0.010	<0.010	--	--	2	100	21	120	<0.1	--	<1
MAR 06...	--	0.510	0.490	--	--	3	240	150	1400	<0.1	--	<1
APR 16...	0.350	0.200	0.190	0.06	2	1	30	40	58	<0.1	<1	<1
24...	0.220	0.110	0.100	0.03	2	2	40	25	40	<0.1	<1	<1
JUN 05...	--	0.160	0.130	--	--	5	100	24	74	<0.1	--	<1
JUL a16...	0.210	0.190	0.180	0.03	5	5	90	11	12	0.1	<1	<1
AUG 28...	--	0.060	0.060	--	--	4	90	18	36	<0.1	--	<1
SEP 10...	--	0.070	0.060	--	--	3	120	14	35	<0.1	--	<1
DATE	ACIFL- UORFEN WATER, FLTRD, GF 0.7U REC (UG/L) (49315)	ALDI- CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (49312)	ALDI- CARB SULFONE WAT,FLT GF 0.7U REC (UG/L) (49313)	ALDICA- RB SUL- FOXIDE, WAT,FLT GF 0.7U REC (UG/L) (49314)	CHLOR- AMBEN, WATER, FLTRD, GF 0.7U REC (UG/L) (49307)	TRIAZIN SCREEN (ELISA) WAT,WH REC,AS ATRAZIN (UG/L) (34757)	BENTA- ZON, WATER, FLTRD, GF 0.7U REC (UG/L) (38711)	BRO- MACIL, WATER, DISS, REC (UG/L) (04029)	BRO- MOXYNIL WATER, FLTRD, GF 0.7U REC (UG/L) (49311)	CAR- BARYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49310)	CARBO- FURAN, WATER, FLTRD, GF 0.7U REC (UG/L) (49309)	CARBO- FURAN SCREEN, TOTAL (UG/L) (99902)
APR 24...	--	--	--	--	--	0.1	--	--	--	--	--	--
JUN 05...	--	--	--	--	--	<0.05	--	--	--	--	--	<0.06
JUL a16...	<0.035	<0.016	<0.016	<0.021	<0.011	<0.05	<0.014	<0.035	<0.035	<0.008	<0.028	<0.06
AUG 28...	--	--	--	--	--	0.1	--	--	--	--	--	<0.06
SEP 10...	<0.035	<0.016	<0.016	<0.021	<0.011	<0.05	<0.014	<0.035	<0.035	<0.008	<0.028	<0.06
DATE	CLOPYR- ALID, WATER, FLTRD, GF 0.7U REC (UG/L) (49305)	CHLORO- THALO- NIL, WAT,FLT GF 0.7U REC (UG/L) (49306)	CYANA- ZINE SCREEN, TOTAL (UG/L) (99904)	DACTHAL MONO- ACID, WAT,FLT GF 0.7U REC (UG/L) (49304)	DICAMBA WATER, FLTRD, GF 0.7U REC (UG/L) (38442)	DICHLOR- BENIL, WATER, FLTRD, GF 0.7U REC (UG/L) (49303)	DICHLOR PROP, WATER, FLTRD, GF 0.7U REC (UG/L) (49302)	DINOSEB WATER, FLTRD, GF 0.7U REC (UG/L) (49301)	DIURON, WATER, FLTRD, GF 0.7U REC (UG/L) (49300)	ESFEN- VAL- ERATE, WAT,FLT GF 0.7U REC (UG/L) (49298)	FEN- URON, WATER, FLTRD, GF 0.7U REC (UG/L) (49297)	FLUO- METURON WATER, FLTRD, GF 0.7U REC (UG/L) (38811)
APR 24...	--	--	<0.04	--	--	--	--	--	--	--	--	--
JUN 05...	--	--	<0.04	--	--	--	--	--	--	--	--	--
JUL a16...	<0.050	<0.035	<0.04	<0.017	<0.035	<0.020	<0.032	<0.035	<0.020	<0.019	<0.013	<0.035
AUG 28...	--	--	<0.04	--	--	--	--	--	--	--	--	--
SEP 10...	<0.050	<0.035	<0.04	<0.017	<0.035	<0.020	<0.032	<0.035	<0.020	<0.019	<0.013	<0.035



**JAMES RIVER BASIN**  
**06468250 JAMES RIVER ABOVE ARROWWOOD LAKE NEAR KENSAL, ND--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	LINURON WATER, FLTRD, GF 0.7U REC (UG/L) (38478)	MCPA, WATER, FLTRD, GF 0.7U REC (UG/L) (38482)	MCPB, WATER, FLTRD, GF 0.7U REC (UG/L) (38487)	METHIO- CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (38501)	METH- OMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49296)	NEB- URON, WATER, FLTRD, GF 0.7U REC (UG/L) (49294)	NORFLUR AZON, WATER, FLTRD, GF 0.7U REC (UG/L) (49293)	DNOC WAT,FLT GF 0.7U REC (UG/L) (49299)	ORY- ZALIN, WATER, FLTRD, GF 0.7U REC (UG/L) (49292)	PRO- PHAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49236)	PRO- POXUR, WATER, FLTRD, GF 0.7U REC (UG/L) (38538)
JUL a16...	<0.018	<0.050	<0.035	<0.026	<0.017	<0.015	<0.024	<0.035	<0.019	<0.035	<0.035
SEP 10...	<0.018	<0.050	<0.035	<0.026	<0.017	<0.015	<0.024	<0.035	<0.019	<0.035	<0.035
DATE	SILVEX, DIS- SOLVED (UG/L) (39762)	TRI- CLOPYR, WATER, FLTRD, GF 0.7U REC (UG/L) (49235)	1-NAPH THOL, WATER, FLTRD, GF 0.7U REC (UG/L) (49295)	2,4-D, DIS- SOLVED (UG/L) (39732)	2,4-D SCREEN, TOTAL (UG/L) (99906)	2,4-DB WATER, FLTRD, GF 0.7U REC (UG/L) (38746)	2,4,5-T DIS- SOLVED (UG/L) (39742)	3HYDRXY CARBO- FURAN WAT,FLT GF 0.7U REC (UG/L) (49308)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 24...	--	--	--	--	--	--	--	--	94	1.3	79
MAR 06...	--	--	--	--	--	--	--	--	225	1.1	40
APR 16...	--	--	--	--	--	--	--	--	70	612	83
APR 24...	--	--	--	--	<0.700	--	--	--	21	52	94
JUN 05...	--	--	--	--	<0.700	--	--	--	39	6.9	77
JUL a16...	<0.021	<0.050	<0.007	<0.035	0.073	<0.035	<0.035	<0.014	6	0.33	95
AUG 28...	--	--	--	--	<0.070	--	--	--	10	0.18	94
SEP 10...	<0.021	<0.050	<0.007	<0.035	<0.700	<0.035	<0.035	<0.014	9	0.05	97

a Replicate sample also collected for quality-assurance purposes.

JAMES RIVER BASIN  
06468500 JAMES RIVER NEAR PINGREE, ND

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LOCATION.--Lat 47°08'30", long 98°47'00", in SW<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> sec.3, T.142 N., R.64 W., Stutsman County, Hydrologic Unit 10160001, on right bank 500 ft upstream from dam at outlet of DePuy Marsh, 6.5 mi southeast of Pingree, and 6.25 mi northeast of Buchanan.

DRAINAGE AREA.--1,670 mi<sup>2</sup>, approximately, of which about 900 mi<sup>2</sup> is probably noncontributing.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959-60, 1962, 1965, 1979-89, 1993 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	BAROMETRIC PRESSURE (MM OF HG) (00025)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATURATION) (00301)	HARDNESS TOTAL (MG/L AS CaCO3) (00900)	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 25...	1400	1030	8.5	716	13.0	5.0	11.1	93	350	60	49	82
APR 16...	1830	423	7.6	718	7.5	1.0	5.6	42	150	32	17	21
JUN 06...	1115	608	8.3	721	14.5	16.0	8.3	89	--	--	--	--
JUL a25...	1230	730	8.8	--	25.0	21.5	11.2	--	270	54	32	48
AUG 28...	1330	740	8.8	--	30.0	22.0	7.2	--	260	51	32	59
SEP 10...	1430	780	9.0	723	22.0	22.0	11.1	134	270	54	34	62

DATE	SODIUM PERCENT (00932)	SODIUM AD-SORPTION 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)	RESIDUE TOTAL AT 105 DEG. C, SUSPENDED (MG/L) (00530)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)
OCT 25...	33	2	14	307	240	16	0.20	19	23	665	694	0.94
APR 16...	22	0.7	9.7	125	70	5.1	0.10	11	13	245	246	0.33
JUL a25...	27	1	14	251	130	10	0.20	29	19	469	500	0.68
AUG 28...	32	2	15	237	150	11	0.20	32	20	495	508	0.69
SEP 10...	32	2	14	254	160	13	0.20	35	38	527	552	0.75

DATE	NITROGEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITROGEN, NITRATE DIS-SOLVED (MG/L AS N) (00618)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITROGEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, ORGANIC DIS-SOLVED (MG/L AS N) (00607)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, AMMONIA + ORGANIC DIS-SOLVED (MG/L AS N) (00623)	NITROGEN, TOTAL (MG/L AS N) (00600)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	PHOSPHORUS DIS-SOLVED (MG/L AS P) (00666)
OCT 25...	0.010	0.100	0.110	0.110	0.060	--	1.2	--	1.3	--	--	0.100
APR 16...	0.060	0.560	0.620	0.620	0.440	1.4	0.96	1.8	1.4	2.4	0.380	0.300
JUN 06...	<0.010	--	--	<0.050	0.030	1.5	0.87	1.5	0.90	1.5	0.190	0.070
JUL a25...	<0.010	--	0.060	0.060	0.020	2.8	0.88	2.8	0.90	2.9	0.380	0.220
AUG 28...	0.010	--	--	<0.050	0.040	--	1.3	--	1.3	--	--	0.480
SEP 10...	<0.010	--	0.070	0.070	<0.015	--	--	--	1.3	--	--	0.520

DATE	PHOSPHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	PHOSPHORUS ORGANIC TOTAL (MG/L AS P) (00670)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	MANGANESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELENIUM, TOTAL (UG/L AS SE) (01147)	SELENIUM, DIS-SOLVED (UG/L AS SE) (01145)	ACIFLUORFEN WATER, FLTRD, REC (UG/L) (49315)
OCT 25...	0.090	--	--	4	120	6	72	<0.1	--	<1	--
APR 16...	0.300	0.03	<1	2	40	72	300	<0.1	<1	<1	--
JUN 06...	0.050	0.06	--	--	--	--	--	--	--	--	--
JUL a25...	0.230	0.03	10	8	110	3	130	<0.1	<1	<1	<0.035
AUG 28...	0.500	--	--	13	100	13	940	<0.1	--	<1	--
SEP 10...	0.510	--	--	12	110	8	870	<0.1	--	<1	<0.035

**JAMES RIVER BASIN**  
**06468500 JAMES RIVER NEAR PINGREEE, ND--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	ALDI-CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (49312)	ALDI-CARB SULFONE, WAT, FLT GF 0.7U REC (UG/L) (49313)	ALDICA-RB SUL-FOXIDE, WAT, FLT GF 0.7U REC (UG/L) (49314)	CHLOR-AMBN, WATER, FLTRD, GF 0.7U REC (UG/L) (49307)	TRIAZIN SCREEN (ELISA) WAT, WH REC, AS ATRAZIN (UG/L) (34757)	BENTA-ZON, WATER, FLTRD, GF 0.7U REC (UG/L) (38711)	BRO-MACIL, WATER, DISS, REC (UG/L) (04029)	BRO-MOXYNIL, WATER, FLTRD, GF 0.7U REC (UG/L) (49311)	CAR-BARYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49310)	CARBO-FURAN, WATER, FLTRD, GF 0.7U REC (UG/L) (49309)	CARBO-FURAN SCREEN, TOTAL (UG/L) (99902)
APR 16...	--	--	--	--	0.1	--	--	--	--	--	--
JUN 06...	--	--	--	--	<0.05	--	--	--	--	--	<0.06
JUL a25...	<0.016	<0.016	<0.021	<0.011	<0.05	<0.014	<0.035	<0.035	<0.008	<0.028	<0.06
AUG 28...	--	--	--	--	<0.05	--	--	--	--	--	<0.06
SEP 10...	<0.016	<0.016	<0.021	<0.011	<0.05	<0.014	<0.035	<0.035	<0.008	<0.028	<0.06
DATE	CLOPYR-ALID, WATER, FLTRD, GF 0.7U REC (UG/L) (49305)	CHLORO-THALO-NIL, WAT, FLT GF 0.7U REC (UG/L) (49306)	CYANA-ZINE SCREEN, TOTAL (UG/L) (99904)	DACTHAL MONO-ACID, WAT, FLT GF 0.7U REC (UG/L) (49304)	DICAMBA WATER, FLTRD, GF 0.7U REC (UG/L) (38442)	DICHLO-BENIL, WATER, FLTRD, GF 0.7U REC (UG/L) (49303)	DICHLOR PROP, WATER, FLTRD, GF 0.7U REC (UG/L) (49302)	DINOSEB WATER, FLTRD, GF 0.7U REC (UG/L) (49301)	DIURON, WATER, FLTRD, GF 0.7U REC (UG/L) (49300)	ESFEN-VAL-ERATE, WAT, FLT GF 0.7U REC (UG/L) (49298)	FEN-URON, WATER, FLTRD, GF 0.7U REC (UG/L) (49297)
APR 16...	--	--	<0.04	--	--	--	--	--	--	--	--
JUN 06...	--	--	<0.04	--	--	--	--	--	--	--	--
JUL a25...	<0.050	<0.035	1.4	<0.017	<0.035	<0.020	<0.032	<0.035	<0.020	<0.019	<0.013
AUG 28...	--	--	<0.04	--	--	--	--	--	--	--	--
SEP 10...	<0.050	<0.035	<0.04	<0.017	<0.035	<0.020	<0.032	<0.035	<0.020	<0.019	<0.013
DATE	FLUO-METURON, WATER, FLTRD, GF 0.7U REC (UG/L) (38811)	LINURON, WATER, FLTRD, GF 0.7U REC (UG/L) (38478)	MCPA, WATER, FLTRD, GF 0.7U REC (UG/L) (38482)	MCPB, WATER, FLTRD, GF 0.7U REC (UG/L) (38487)	METHIO-CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (38501)	METH-OMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49296)	NEB-URON, WATER, FLTRD, GF 0.7U REC (UG/L) (49294)	NORFLUR AZON, WATER, FLTRD, GF 0.7U REC (UG/L) (49293)	DNOC, WAT, FLT GF 0.7U REC (UG/L) (49299)	ORY-ZALIN, WATER, FLTRD, GF 0.7U REC (UG/L) (49292)	PRO-PHAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49236)
JUL a25...	<0.035	<0.018	<0.050	<0.035	<0.026	<0.017	<0.015	<0.024	<0.035	<0.019	<0.035
SEP 10...	<0.035	<0.018	<0.050	<0.035	<0.026	<0.017	<0.015	<0.024	<0.035	<0.019	<0.035
DATE	PRO-POXUR, WATER, FLTRD, GF 0.7U REC (UG/L) (38538)	SILVEX, DIS-SOLVED (UG/L) (39762)	TRI-CLOPYR, WATER, FLTRD, GF 0.7U REC (UG/L) (49235)	1-NAPH THOL, WATER, FLTRD, GF 0.7U REC (UG/L) (49295)	2,4-D, DIS-SOLVED (UG/L) (39732)	2,4-D SCREEN, TOTAL (UG/L) (99906)	2,4-DB WATER, FLTRD, GF 0.7U REC (UG/L) (38746)	2,4,5-T DIS-SOLVED (UG/L) (39742)	3HYDRXY CARBO-FURAN, WAT, FLT GF 0.7U REC (UG/L) (49308)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SED. SUSP. SIEVE DIAM. # FINER THAN .062 MM (70331)
OCT 25...	--	--	--	--	--	--	--	--	--	93	86
APR 16...	--	--	--	--	--	<0.700	--	--	--	17	66
JUN 06...	--	--	--	--	--	<0.700	--	--	--	35	97
JUL a25...	<0.035	<0.021	<0.050	<0.007	<0.035	0.980	<0.035	<0.035	<0.014	21	98
AUG 28...	--	--	--	--	--	1.60	--	--	--	21	97
SEP 10...	<0.035	<0.021	<0.050	<0.007	<0.035	5.02	<0.035	<0.035	<0.014	34	93

a Replicate sample also collected for quality-assurance purposes.

JAMES RIVER BASIN  
06469000 JAMESTOWN RESERVOIR NEAR JAMESTOWN, ND

303

LOCATION.--Lat 46°55'50", long 98°42'23", in SE<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> 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 north of Jamestown Post Office, and 3.3 mi upstream from Pipestem Creek.

DRAINAGE AREA.--1,760 mi<sup>2</sup>, approximately, of which about 1,010 mi<sup>2</sup> is probably noncontributing.

MONTHEND-ELEVATION AND CONTENTS RECORDS

PERIOD OF RECORD.--November 1953 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,400.00 ft above sea level; gage readings have been converted to sea level. From June 22, 1959, to June 3, 1971, site was located 0.2 mi 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 between elevations 1,400 ft, sill of outlet, and 1,454 ft, crest of spillway. Dead storage below elevation 1,400 ft, 820 acre-ft. Maximum design pool, 389,000 acre-ft, elevation, 1,464.6 ft. 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, 113,500 acre-ft, Apr. 25, 1996, elevation, 1,444.67 ft; minimum since initial filling of reservoir, 14,420 acre-ft, Mar. 1, 1993, elevation, 1,420.90 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 113,500 acre-ft, Apr. 25, elevation, 1,444.67 ft; minimum, 28,560 acre-ft, Oct. 1, elevation, 1,429.63 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30-----	1,429.64	28,580	--
Oct. 31-----	1,430.48	30,370	+1,790
Nov. 30-----	1,429.92	29,160	-1,210
Dec. 31-----	1,430.22	29,800	+640
CAL YR 1995-----	--	--	-1,760
Jan. 31-----	1,430.41	30,220	+420
Feb. 29-----	1,430.57	30,570	+350
Mar. 31-----	1,437.55	53,430	+22,860
Apr. 30-----	1,444.31	110,000	+56,570
May 31-----	1,438.00	56,360	-53,640
June 30-----	1,436.56	47,300	-9,060
July 31-----	1,436.28	46,170	-1,130
Aug. 31-----	1,433.32	37,250	-8,920
Sept. 30-----	1,430.39	30,170	-7,080
WTR YR 1996-----	--	--	+1,590

**JAMES RIVER BASIN**  
**06469000 JAMESTOWN RESERVOIR NEAR JAMESTOWN, ND--Continued**

**WATER-QUALITY RECORDS**

**PERIOD OF RECORD.--Water year 1960 to current year.**

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	COLOR (PLAT- INUM- COBALT UNITS) (00080)	HARD- NESS TOTAL (MG/L AS CAC03) (00900)	ALKA- LITY LAB (MG/L AS CAC03) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT 04...	1050	0.0	1.0	977	8.3	42	350	310	67	45
FEB 29...	1055	0.0	1.0	1180	8.2	28	410	373	73	55
MAY 20...	1200	0.50	1.0	377	8.4	65	130	121	28	15
SEP 10...	0940	0.05	1.0	610	8.0	40	220	205	45	25

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
OCT 04...	86	33	2	16	230	14	0.20	24	670	694
FEB 29...	100	34	2	16	270	17	0.20	15	772	836
MAY 20...	22	25	0.8	9.8	65	5.3	0.10	0.20	218	248
SEP 10...	39	27	1	13	99	8.5	0.20	14	369	374

DATE	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 TOTAL (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) (00608)	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)
OCT 04...	0.94	<0.010	--	0.200	0.200	<0.015	0.280	0.260	130
FEB 29...	1.14	0.060	0.050	0.110	0.110	0.350	0.440	0.440	140
MAY 20...	0.34	<0.010	--	--	<0.050	0.030	0.060	0.050	50
SEP 10...	0.51	0.030	0.280	0.310	0.310	0.080	0.200	0.190	90



# JAMES RIVER BASIN

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06469000 JAMESTOWN RESERVOIR NEAR JAMESTOWN, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
OCT							
04...	1040	32.5	0.0	1000	8.1	13.5	9.5
04...	1041	--	0.50	1000	8.2	14.0	9.3
04...	1042	--	1.0	1000	8.2	13.5	9.2
04...	1043	--	2.0	1000	8.2	13.5	9.2
04...	1044	--	4.1	1010	8.2	13.5	9.1
04...	1045	--	6.0	1010	8.2	13.5	9.1
04...	1046	--	8.0	1010	8.2	13.5	9.1
04...	1047	--	9.9	1010	8.2	13.5	8.9
FEB							
29...	1045	31.2	0.0	1140	8.2	1.0	8.0
29...	1046	--	0.50	1120	8.2	2.0	5.6
29...	1047	--	1.0	1140	8.3	3.5	5.4
29...	1048	--	2.0	1140	8.3	3.5	5.1
29...	1049	--	4.0	1140	8.3	3.5	4.7
29...	1050	--	6.0	1170	8.2	4.0	3.0
29...	1051	--	8.0	1220	8.0	4.5	0.7
29...	1052	--	9.5	1430	7.8	4.5	0.6
MAY							
20...	1145	41.0	0.0	371	9.0	12.0	9.7
20...	1146	--	0.50	371	9.0	12.0	9.6
20...	1147	--	1.0	371	9.0	12.0	9.6
20...	1148	--	2.0	370	9.0	12.0	9.6
20...	1149	--	4.0	371	9.0	12.0	9.4
20...	1150	--	6.0	370	9.0	11.5	9.3
20...	1151	--	8.0	370	9.0	11.5	9.2
20...	1152	--	10.0	371	8.9	11.0	9.2
20...	1153	--	12.0	390	8.7	8.5	7.4
20...	1154	--	12.5	400	8.5	8.5	7.3
SEP							
10...	0930	29.2	0.0	598	8.0	22.0	7.9
10...	0931	--	0.50	598	8.0	22.0	7.9
10...	0932	--	1.0	598	8.0	22.0	7.6
10...	0933	--	2.0	598	8.0	22.0	7.7
10...	0934	--	4.0	600	8.0	22.0	7.3
10...	0935	--	6.1	600	7.9	22.0	6.7
10...	0936	--	8.0	600	7.9	21.5	5.0
10...	0937	--	8.9	599	7.8	21.5	4.2

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	ICE THICK- NESS (FEET) (82130)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
OCT							
04...	98	715	--	36.0	10.5	90	10
FEB							
29...	60	719	2.80	142	-5.0	270	10
MAY							
20...	97	707	--	38.0	18.0	315	8.0
SEP							
10...	97	717	--	29.0	17.0	330	12

JAMES RIVER BASIN  
06469400 PIPESTEM CREEK NEAR PINGREE, ND

LOCATION.--Lat 47°10'03", long 98°58'07", in NE<sup>1</sup>/<sub>4</sub> NE<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> 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 west of Pingree.

DRAINAGE AREA.--700 mi<sup>2</sup>, of which about 440 mi<sup>2</sup> is probably noncontributing.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,500.63 ft above sea level.

REMARKS.--Records good except for periods of estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.3	18	e11	e.47	e.16	e6.2	e180	172	201	23	46	5.1
2	4.3	15	e10	e.43	e.16	e4.9	e160	160	89	20	41	5.6
3	4.7	17	e10	e.38	e.15	e3.7	e140	149	72	19	37	5.2
4	4.3	16	e9.7	e.35	e.15	e2.6	e135	136	67	19	38	4.8
5	6.1	11	e9.5	e.33	e.14	e1.8	e130	125	71	23	46	3.8
6	9.2	11	e9.0	e.32	e.18	e1.6	e120	120	68	59	40	4.2
7	8.5	12	e8.6	e.31	e.72	e1.4	e120	113	64	32	39	4.1
8	11	12	e8.1	e.30	e1.4	e1.3	e200	103	58	28	41	3.7
9	10	12	e7.8	e.29	e4.9	e1.5	e700	102	52	26	41	3.7
10	9.0	12	e7.4	e.28	e9.3	e50	1960	97	46	24	39	3.4
11	11	e12	e6.9	e.27	e12	e300	2310	92	42	24	35	2.9
12	12	e12	e6.2	e.27	e10	e500	1590	88	38	20	32	2.4
13	12	e12	e5.6	e.26	e8.2	e650	1500	84	34	18	29	2.3
14	11	e12	e4.7	e.26	e6.9	e1000	1530	82	32	18	24	2.3
15	10	e11	e4.0	e.25	e7.2	e1500	1130	78	32	16	20	2.1
16	11	e11	e3.6	e.25	e7.9	e1300	868	78	30	13	17	1.9
17	11	11	e3.1	e.24	e8.6	e1100	720	83	28	17	14	1.5
18	11	11	e2.7	e.24	e9.0	e900	597	93	27	393	11	1.4
19	12	11	e2.2	e.23	e8.1	e800	514	100	26	765	31	2.0
20	11	11	e1.8	e.22	e8.6	e700	442	117	24	616	28	3.6
21	11	14	e1.5	e.21	e7.9	e600	399	123	23	448	20	4.8
22	11	e14	e1.2	e.21	e7.1	e500	345	105	18	269	16	4.6
23	11	e13	e1.0	e.20	e10	e450	306	93	23	136	14	4.3
24	10	e13	e.96	e.20	e16	e500	274	84	25	79	12	4.1
25	10	e12	e.90	e.19	e14	e450	257	79	28	59	10	3.9
26	10	e12	e.82	e.18	e13	e350	259	75	30	51	7.9	4.4
27	14	e11	e.73	e.18	e12	e250	239	70	29	50	6.9	5.2
28	23	e11	e.67	e.17	e11	e200	221	e60	29	49	7.0	4.4
29	20	e11	e.61	e.17	e8.7	e180	210	e50	27	51	6.4	4.2
30	17	e11	e.56	e.16	---	e180	187	e45	23	52	5.7	4.4
31	16	---	e.51	e.16	---	e200	---	100	---	49	4.9	---
TOTAL	336.4	372	141.36	7.98	203.46	12685.0	17743	3056	1356	3466	759.8	110.3
MEAN	10.9	12.4	4.56	.26	7.02	409	591	98.6	45.2	112	24.5	3.68
MAX	23	18	11	.47	16	1500	2310	172	201	765	46	5.6
MIN	4.3	11	.51	.16	.14	1.3	120	45	18	13	4.9	1.4
AC-FT	667	738	280	16	404	25160	35190	6060	2690	6870	1510	219

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1974 - 1996, BY WATER YEAR (WY)

	MEAN	7.63	5.32	2.06	.35	4.18	126	139	40.0	16.0	41.5	13.1	11.7
MAX	133	77.8	29.1	3.96	39.7	572	591	271	65.2	389	168	153	
(WY)	1995	1995	1995	1995	1981	1995	1996	1995	1995	1993	1993	1994	
MIN	.000	.000	.000	.000	.000	.000	.003	.096	.038	.017	.000	.000	.000
(WY)	1974	1977	1977	1974	1974	1974	1991	1991	1977	1977	1985	1976	1976

SUMMARY STATISTICS

FOR 1995 CALENDAR YEAR

FOR 1996 WATER YEAR

WATER YEARS 1974 - 1996

ANNUAL TOTAL	46972.46	40237.30	
ANNUAL MEAN	129	110	34.1
HIGHEST ANNUAL MEAN			146
LOWEST ANNUAL MEAN			.035
HIGHEST DAILY MEAN	2220	Mar 17	2310
LOWEST DAILY MEAN	.51	Dec 31	.14
ANNUAL SEVEN-DAY MINIMUM	.69	Dec 25	.15
INSTANTANEOUS PEAK FLOW			2560
INSTANTANEOUS PEAK STAGE			11.15
ANNUAL RUNOFF (AC-FT)	93170	79810	24690
10 PERCENT EXCEEDS	414	270	66
50 PERCENT EXCEEDS	14	12	.55
90 PERCENT EXCEEDS	1.8	.46	.00

e Estimated.

JAMES RIVER BASIN  
06469400 PIPESTEM CREEK NEAR PINGREE, ND--Continued

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WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)
OCT 25...	1300	10	1300	--	--	9.0	4.5	--	--	--	--
DEC 01...	1430	11	1640	--	--	-7.5	0.5	--	--	--	--
JAN 04...	1215	0.35	2080	--	--	-21.0	0.0	--	--	--	--
MAR 06...	1200	1.6	960	--	--	-19.0	0.0	--	--	--	--
13...	1230	642	188	--	--	4.5	0.0	--	--	--	--
APR all...	1215	2520	326	7.8	719	2.0	0.5	110	23	13	15
17...	0930	746	444	--	--	6.0	3.0	--	--	--	--
MAY 30...	1345	45	1260	--	--	22.5	18.0	--	--	--	--
JUL 10...	1300	24	1120	--	--	22.5	21.0	--	--	--	--
SEP 12...	1145	2.5	1060	8.5	--	14.0	16.5	400	76	50	90

DATE	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
APR all...	21	0.6	8.7	80	60	7.0	0.10	175	213	0.29
SEP 12...	32	2	12	384	210	14	0.20	683	736	1.00

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
APR all...	1450	6	60	<1	10	290	0.1	<1	<1	160
SEP 12...	4.89	6	20	<1	70	160	<0.1	<1	<1	400

a Replicate sample also collected for quality-assurance purposes.

JAMES RIVER BASIN  
06469820 PIPESTEM RESERVOIR NEAR JAMESTOWN, ND

LOCATION.--Lat 46°57'44", long 98°45'11", in NW<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> sec.10, T.140 N., R.64 W., Stutsman County, Hydrologic Unit 10160002, on left bank in control house above Pipestem Dam 2.5 mi northwest of Jamestown Post Office, and 3.5 mi upstream from James River.

DRAINAGE AREA.--1,010 mi<sup>2</sup>, approximately, of which about 610 mi<sup>2</sup> is probably noncontributing.

MONTHEND-ELEVATION AND CONTENTS RECORDS

PERIOD OF RECORD.--March 1974 to current year. Prior to October 1991, records are available from the U.S. Army Corps of Engineers.

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

REMARKS.--Reservoir is formed by earth-fill dam; storage began in July 1973; dam completed in 1973. Total capacity is 147,000 acre-ft at maximum pool, elevation 1,496.3 ft. Figures given herein represent total contents based on capacity table for the 1990 survey. The reservoir is used for flood control, fish and wildlife, and recreation.

COOPERATION.--Records furnished by U.S. Army Corps of Engineers. Elevations affected by wind.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 78,840 acre-ft, May 22, 1995, elevation, 1,479.54 ft; minimum contents, 6,730 acre-ft, Feb. 17, 1993, elevation, 1,439.65 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 68,220 acre-ft, May 8-9, elevation, 1,475.87 ft; minimum contents, 9,160 acre-ft, Dec. 19-22, elevation, 1,442.76 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30-----	1,442.92	9,300	--
Oct. 31-----	1,443.52	9,830	+530
Nov. 30-----	1,442.90	9,280	-550
Dec. 31-----	1,442.83	9,220	-60
CAL YR 1995-----	--	--	-100
Jan. 31-----	1,442.97	9,340	+120
Feb. 29-----	1,443.15	9,500	+160
Mar. 31-----	1,462.00	36,260	+26,760
Apr. 30-----	1,475.73	67,840	+31,580
May 31-----	1,474.93	65,660	-2,180
June 30-----	1,467.44	47,430	-18,230
July 31-----	1,463.39	38,960	-8,470
Aug. 31-----	1,460.86	34,130	-4,830
Sept. 30-----	1,454.93	24,030	-10,100
WTR YR 1996-----	--	--	+14,730

JAMES RIVER BASIN  
06470000 JAMES RIVER AT JAMESTOWN, ND

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LOCATION.--Lat 46°53'22", long 98°40'58", in NW<sup>1</sup>/<sub>4</sub> NE<sup>1</sup>/<sub>4</sub> sec.6, T.139 N., R.63 W., Stutsman County, Hydrologic Unit 10160003, on left bank 200 ft upstream from Interstate 94 bridge at southeast corner of Jamestown, and 3 mi downstream from Pipestem Creek.

DRAINAGE AREA.--2,820 mi<sup>2</sup>, approximately, of which about 1,650 mi<sup>2</sup> is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1928 to September 1933, March to May 1935, August 1937 to September 1939, April 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 above sea level. Oct. 1, 1949, to Sept. 30, 1965, at former bridge 0.5 mi upstream at datum 2.00 ft higher. See WSP 1729 or 1917 for history of changes prior to Oct. 1, 1949.

REMARKS.--Records good except for period of estimated daily discharges, which is fair. Flow regulated by Arrowwood, Jim, and Pipestem Lakes, and Jamestown Reservoir, combined capacity, 393,000 acre-ft. Regulation by Jamestown Reservoir (station 06469000) 6 mi upstream since 1953 and by Pipestem Lake, capacity 147,000 acre-ft, since 1973.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	6.5	e50	e6.8	e4.2	e94	e380	1340	1160	380	394	381
2	48	11	e40	e6.8	e3.9	e80	e395	1330	1150	382	392	380
3	44	92	e40	e6.8	e3.8	e77	e430	1340	1140	383	391	379
4	27	e120	e40	e6.8	e3.8	e75	e470	1330	1120	383	399	379
5	48	e148	e40	e6.8	e3.6	e66	476	1330	1140	397	393	377
6	45	e142	e38	e6.6	e4.8	e59	477	1340	1120	398	392	380
7	35	e135	e36	e6.6	e6.1	e58	492	1350	1120	387	391	378
8	31	e124	e34	e6.6	e9.8	e56	579	1350	1120	382	390	375
9	29	e120	e32	e6.6	e14	e55	534	1340	1110	383	387	374
10	26	e111	e30	e6.6	e18	e85	545	1330	1120	382	387	372
11	24	e104	e30	e6.4	e17	e150	514	1320	1080	391	388	371
12	24	e100	e30	e6.4	e17	e200	542	1340	825	381	388	371
13	24	e95	e30	e6.4	e19	e300	645	1340	648	379	388	345
14	25	e91	e30	e6.2	e21	e150	742	1350	501	379	387	361
15	19	e85	e30	e6.2	e22	e100	834	1350	519	378	383	365
16	18	e82	e28	e6.2	e22	e80	914	1320	509	376	383	366
17	21	e78	e28	e6.2	e21	e60	952	879	474	385	383	365
18	13	e75	e28	e6.1	e20	e40	1020	1040	390	420	381	366
19	5.4	e74	e28	e6.0	e19	e40	1060	1150	386	380	385	372
20	3.9	e71	e28	e5.8	e21	e45	1110	1340	383	382	379	379
21	3.2	e66	e28	e5.6	e23	e80	1110	1340	382	378	379	372
22	3.2	e65	e12	e5.5	e25	e150	1110	1350	380	375	378	369
23	3.0	e65	e11	e5.3	e29	e160	1120	1300	394	375	377	368
24	2.9	e65	e10	e5.2	e37	e200	1130	1170	394	373	376	365
25	2.8	e65	e9.0	e5.0	e45	e210	1110	1160	390	373	376	365
26	3.9	e65	e8.5	e4.9	e63	e220	1090	1160	383	383	375	373
27	6.1	e65	e8.2	e4.9	e89	e230	1170	1160	381	377	374	375
28	7.9	e65	e8.0	e4.7	e105	e250	1250	1160	387	379	372	366
29	5.9	e65	e7.6	e4.6	e115	e290	1340	1160	380	399	373	362
30	5.3	e60	e7.2	e4.4	---	e320	1330	1150	378	380	375	362
31	5.6	---	e7.0	e4.3	---	e365	---	1190	---	394	379	---
TOTAL	609.1	2510.5	786.5	183.3	802.0	4345	24871	39109	20864	11894	11895	11113
MEAN	19.6	83.7	25.4	5.91	27.7	140	829	1262	695	384	384	370
MAX	49	148	50	6.8	115	365	1340	1350	1160	420	399	381
MIN	2.8	6.5	7.0	4.3	3.6	40	380	879	378	373	372	345
AC-FT	1210	4980	1560	364	1590	8620	49330	77570	41380	23590	23590	22040

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 1996, BY WATER YEAR (WY)

	MEAN	50.6	24.7	8.08	4.55	10.1	82.7	250	189	131	89.7	70.6	55.5
MAX	946	276	82.4	47.9	111	731	2434	2559	1086	1024	761	908	
(WY)	1994	1994	1995	1995	1930	1966	1950	1950	1995	1995	1995	1993	
MIN	.29	.35	.66	.29	.60	1.74	1.00	1.06	1.27	.67	.23	.20	
(WY)	1990	1939	1939	1991	1939	1944	1939	1939	1931	1933	1933	1933	

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR	FOR 1996 WATER YEAR	WATER YEARS 1928 - 1996
ANNUAL TOTAL	165424.1	128982.4	
ANNUAL MEAN	453	352	80.1
HIGHEST ANNUAL MEAN			499
LOWEST ANNUAL MEAN			2.38
HIGHEST DAILY MEAN	1140	1350	6170
LOWEST DAILY MEAN	2.8	2.8	.00
ANNUAL SEVEN-DAY MINIMUM	3.3	3.3	.00
INSTANTANEOUS PEAK FLOW		1380	6390
INSTANTANEOUS PEAK STAGE		10.47	a 15.82
ANNUAL RUNOFF (AC-FT)	328100	255800	58030
10 PERCENT EXCEEDS	1090	1140	248
50 PERCENT EXCEEDS	160	353	6.5
90 PERCENT EXCEEDS	28	6.2	1.2

a Site and datum then in use.  
e Estimated



JAMES RIVER BASIN  
06470000 JAMES RIVER AT JAMESTOWN, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1950-51, 1958 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT 18...	1715	9.7	1200	--	11.5	8.5	--	--	--	--
NOV 21...	1630	66	1090	--	-2.5	1.0	--	--	--	--
DEC 22...	1515	12	1340	--	--	1.0	--	--	--	--
FEB 13...	1230	18	1190	--	4.5	1.0	--	--	--	--
MAR 20...	1015	41	732	--	-3.0	0.5	--	--	--	--
APR 18...	1645	1060	796	--	18.0	5.0	--	--	--	--
MAY 01...	1415	1290	497	--	13.5	5.0	--	--	--	--
JUN 08...	1730	1350	470	8.3	16.0	6.5	160	140	34	19
JUN 05...	1600	1120	412	--	22.0	15.5	--	--	--	--
JUL 17...	1745	376	547	--	15.0	22.0	--	--	--	--
SEP 12...	1615	371	632	8.2	18.0	20.0	230	210	47	27

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
MAY 08...	30	27	1	11	90	9.4	0.10	278	292	0.40
SEP 12...	40	26	1	12	120	9.9	0.10	382	402	0.55

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAY 08...	1060	1	30	<1	20	290	0.1	<1	<1	220
SEP 12...	403	3	10	<1	30	150	<0.1	14	<1	270

JAMES RIVER BASIN  
06470500 JAMES RIVER AT LAMOURE, ND

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LOCATION.--Lat 46°21'20", long 98°18'15", in NE<sup>1</sup>/<sub>4</sub> NE<sup>1</sup>/<sub>4</sub> sec.11, T.133 N., R.61 W., LaMoure County, Hydrologic Unit 10160003, on left bank 80 ft downstream from bridge on State Highway 13, 0.5 mi west of LaMoure, and 12 mi upstream from Cottonwood Creek.

DRAINAGE AREA.--4,390 mi<sup>2</sup>, approximately, of which about 2,600 mi<sup>2</sup> is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April to July 1903 (gage-height record only), April 1950 to current year. Gage-height records for 1902-11 are contained in reports of the National Oceanic and Atmospheric Administration.

REVISED RECORDS.--WSP 1917: Drainage area.

GAGE.--Water-stage recorder and rubble-masonry control. Datum of gage is 1,290.00 ft above sea level. See WSP 1729 or 1917 for history of changes prior to Apr. 19, 1950.

REMARKS.--Records good except for period of estimated daily discharge, which is fair. Flow regulated by Arrowwood, Jim, and Pipestem Lakes and Jamestown Reservoir, combined capacity, 393,000 acre-ft. Regulation by Jamestown Reservoir (station 06469000) 85 mi upstream since 1953 and by Pipestem Lake, capacity 147,000 acre-ft, since 1973.

EXTREMES OUTSIDE PERIOD OF RECORD.--Prior to flood of Apr. 14, 1969, a long-time resident said that the flood of May 16, 1950, was the highest since 1881, with stage in either 1942 or 1943 being almost as high owing to large ice jam.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	107	77	113	35	e18	e100	e495	1370	1140	430	453	409
2	110	83	110	34	e18	e95	e560	1420	1150	432	450	473
3	116	46	93	33	e18	e90	e630	1420	1140	430	455	467
4	110	58	76	33	e18	e85	e700	1410	1130	432	451	449
5	130	65	58	33	e18	e80	e770	1400	1120	428	456	417
6	142	72	55	33	e17	e75	e850	1390	1090	489	469	445
7	129	131	51	33	e17	e70	e970	1380	1080	485	459	434
8	135	179	49	33	e17	e68	e1160	1380	1080	506	443	429
9	135	186	48	30	e17	e65	e1480	1360	1080	476	432	418
10	123	173	51	27	e17	e62	e1890	1350	1070	441	430	415
11	122	156	47	27	e17	e60	e2760	1340	1060	453	435	405
12	111	158	46	27	e17	e80	e3350	1340	1050	454	432	405
13	119	155	48	26	e17	e190	e3420	1330	1030	447	434	401
14	101	154	45	e26	e17	e410	e2750	1340	937	444	419	399
15	94	150	37	e26	e17	e1020	e2330	1330	920	443	416	399
16	89	140	35	e26	e20	e1320	2080	1330	860	437	413	399
17	104	135	35	e25	e24	e1650	1860	1350	741	430	411	397
18	86	132	37	e25	e26	e1720	1660	1430	680	430	408	394
19	104	129	38	e24	e31	e1580	1540	1300	656	420	414	400
20	86	129	38	e24	e28	e1410	1470	1150	569	459	410	407
21	79	126	38	e23	e25	e1020	1460	1140	524	452	410	413
22	81	121	37	e23	e25	e860	1450	1220	492	427	415	416
23	77	117	35	e22	e26	e730	1440	1280	493	432	406	416
24	57	111	35	e22	e35	e695	1440	1300	493	421	407	409
25	71	114	35	e22	e50	e680	1380	1290	489	412	410	405
26	66	110	35	e21	e90	e630	1310	1230	488	414	410	407
27	75	112	35	e21	e120	e550	1330	1180	480	417	403	414
28	74	110	35	e20	e110	e480	1290	1140	473	418	399	419
29	70	111	35	e20	e110	e405	1280	1120	459	448	399	427
30	72	113	35	e19	---	e395	1330	1120	438	470	403	426
31	73	---	35	e19	---	e440	---	1140	---	483	403	---
TOTAL	3048	3653	1500	812	980	17115	46435	40280	24412	13760	13155	12514
MEAN	98.3	122	48.4	26.2	33.8	552	1548	1299	814	444	424	417
MAX	142	186	113	35	120	1720	3420	1430	1150	506	469	473
MIN	57	46	35	19	17	60	495	1120	438	412	399	394
AC-FT	6050	7250	2980	1610	1940	33950	92100	79900	48420	27290	26090	24820

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 1996, BY WATER YEAR (WY)

	MEAN	82.5	50.6	20.2	13.4	15.6	175	362	278	208	171	108	85.3
MAX	1008	399	116	75.1	65.3	1202	1697	3114	1187	1165	894	939	
(WY)	1994	1994	1995	1995	1995	1966	1969	1950	1995	1995	1995	1993	
MIN	5.32	8.42	6.83	3.69	1.90	4.57	18.0	12.4	8.10	1.93	3.20	2.56	
(WY)	1991	1962	1989	1959	1959	1969	1991	1977	1973	1973	1961	1990	

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR	FOR 1996 WATER YEAR	WATER YEARS 1950 - 1996
ANNUAL TOTAL	219043	177664	
ANNUAL MEAN	600	485	125
HIGHEST ANNUAL MEAN			649
LOWEST ANNUAL MEAN			11.7
HIGHEST DAILY MEAN	2290	3420	6420
LOWEST DAILY MEAN	35	17	.00
ANNUAL SEVEN-DAY MINIMUM	35	17	.01
INSTANTANEOUS PEAK FLOW		3500	6800
INSTANTANEOUS PEAK STAGE		a 14.67	16.17
ANNUAL RUNOFF (AC-FT)	434500	352400	90910
10 PERCENT EXCEEDS	1280	1330	360
50 PERCENT EXCEEDS	388	406	25
90 PERCENT EXCEEDS	55	26	7.2

a Backwater from ice.  
e Estimated.

JAMES RIVER BASIN  
06470500 JAMES RIVER AT LAMOURE, ND--Continued

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORDS.--

SPECIFIC CONDUCTANCE: October 1976 to current year.

WATER TEMPERATURE: June 1953 to September 1975, October 1976 to current year.

INSTRUMENTATION.--Temperature recorder from June 1953 to September 1978. Water-quality monitor since October 1982.

REMARKS.--Due to instrument malfunction, daily specific conductance and daily water temperature values are not available in the 1996 water year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 2,160 microsiemens, Jan. 9, 1990; minimum, 183 microsiemens, Mar. 30, 1989.

WATER TEMPERATURE: Maximum, 33.0 C, July 12 and 13 1957, and July 23, 1977; minimum, 0.0 C on many days during winter months.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT 18...	1100	82	1110	--	7.5	8.5	--	--	--	--	--
DEC 22...	1245	36	1350	--	--	0.0	--	--	--	--	--
MAR 20...	1330	1310	262	--	0.0	0.0	--	--	--	--	--
APR 12...	1115	3430	332	--	3.5	0.0	--	--	--	--	--
MAY 02...	1830	1430	536	8.2	11.0	7.5	--	190	158	39	23
JUN 20...	1245	552	588	--	26.5	23.0	--	--	--	--	--
AUG 29...	1415	418	640	8.2	32.5	24.0	7.2	230	210	49	26

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
MAY 02...	36	27	1	12	110	12	0.10	327	351	0.48
AUG 29...	42	27	1	13	120	12	0.20	389	415	0.56

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAY 02...	1360	2	30	<1	20	190	<0.1	<1	<1	250
AUG 29...	468	2	10	<1	30	120	<0.1	1	<1	280

JAMES RIVER BASIN  
06470800 BEAR CREEK NEAR OAKES, ND

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LOCATION.--Lat 46°13'31", long 98°04'17", in NE<sup>1</sup>/<sub>4</sub> NE<sup>1</sup>/<sub>4</sub> 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 north, and 1 mi east of Oakes.

DRAINAGE AREA.--357 mi<sup>2</sup>, of which about 255 mi<sup>2</sup> is noncontributing, revised.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,291.30 ft above sea level.

REMARKS.--Records good except for period of estimated daily discharges, which is poor.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 1, 1975, reached a stage of 15.00 ft present datum, from floodmark, discharge 4,590 ft<sup>3</sup>/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.63	1.4	e.51	e.09	e.00	e.02	e110	e36	32	14	6.1	.19
2	.64	1.5	e.49	e.08	e.00	e.01	e100	e35	32	12	4.5	.42
3	.65	1.4	e.46	e.08	e.00	e.01	e96	34	32	10	3.7	.49
4	.72	1.3	e.42	e.07	e.00	e.01	e90	33	31	14	16	.42
5	2.8	1.3	e.37	e.06	e.00	e.00	e84	33	30	26	45	.28
6	6.2	e1.3	e.35	e.06	e.00	e.00	e98	33	30	28	31	.28
7	5.5	e1.2	e.33	e.05	e.02	e.00	e140	32	29	28	27	.41
8	4.3	e1.2	e.31	e.06	e.03	e.00	e185	33	29	26	20	.30
9	4.3	e1.1	e.30	e.08	e.04	e.00	e260	33	28	23	12	.27
10	3.4	e1.0	e.27	e.10	e.06	e.15	e350	32	27	17	9.7	.26
11	2.7	e1.0	e.25	e.11	e.06	e.31	e435	31	27	15	7.7	.22
12	2.2	e.98	e.23	e.13	e.05	e.65	e540	30	26	14	6.5	.17
13	2.0	e.95	e.22	e.16	e.04	e1.4	e510	30	22	12	5.3	.16
14	1.8	e.93	e.20	e.16	e.03	e3.2	e465	31	20	11	3.8	.16
15	1.7	e.91	e.19	e.15	e.03	e7.1	e390	33	25	12	2.6	.15
16	2.0	e.88	e.18	e.14	e.04	e15	e330	31	26	12	2.1	.13
17	2.2	e.84	e.17	e.13	e.03	e33	e262	33	25	10	1.7	.11
18	1.9	e.82	e.17	e.13	e.02	e67	e205	48	23	9.9	1.5	.10
19	1.9	e.79	e.16	e.12	e.03	e160	e158	47	26	8.7	1.5	.13
20	1.6	e.77	e.15	e.12	e.05	e252	e115	40	27	8.0	1.3	.22
21	1.4	e.73	e.15	e.11	e.04	e310	e94	38	26	7.5	1.1	.37
22	1.4	e.72	e.14	e.10	e.05	e345	e81	68	21	6.5	1.2	.48
23	1.5	e.71	e.14	e.10	e.07	e320	e68	87	20	5.9	.84	.48
24	1.3	e.70	e.13	e.09	e.10	e295	e60	75	22	6.1	.75	.46
25	1.3	e.68	e.12	e.07	e.09	e260	e54	59	21	4.8	.71	.34
26	1.3	e.67	e.11	e.04	e.08	e231	e50	47	20	3.4	.57	.55
27	1.4	e.63	e.12	e.03	e.06	e205	e47	38	17	3.2	.34	.90
28	1.5	e.59	e.11	e.02	e.04	e175	e43	36	17	2.9	.29	1.3
29	1.4	e.56	e.11	e.02	e.03	e154	e40	34	17	7.9	.27	1.3
30	1.3	e.54	e.10	e.01	---	e130	e38	32	15	14	.24	.98
31	1.3	---	e.10	e.01	---	e119	---	32	---	9.4	.23	---
TOTAL	64.24	28.10	7.06	2.68	1.09	3083.86	5498	1234	743	382.2	215.54	12.03
MEAN	2.07	.94	.23	.086	.038	99.5	183	39.8	24.8	12.3	6.95	.40
MAX	6.2	1.5	.51	.16	.10	345	540	87	32	28	45	1.3
MIN	.63	.54	.10	.01	.00	.00	38	30	15	2.9	.23	.10
AC-FT	127	56	14	5.3	2.2	6120	10910	2450	1470	758	428	24

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1977 - 1996, BY WATER YEAR (WY)

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
MEAN	.95	.45	.29	.089	.15	38.6	55.9	13.1	5.93	14.0	3.79	2.00								
MAX	15.0	6.36	4.92	1.58	2.13	142	323	50.4	37.5	179	60.7	21.9								
(WY)	1995	1995	1995	1995	1992	1987	1979	1986	1993	1993	1993	1978								
MIN	.000	.000	.000	.000	.000	.032	.10	.000	.005	.000	.000	.000								
(WY)	1977	1977	1977	1977	1977	1981	1985	1981	1977	1977	1977	1977								

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR	FOR 1996 WATER YEAR	WATER YEARS 1977 - 1996
ANNUAL TOTAL	8882.92	11271.80	
ANNUAL MEAN	24.3	30.8	11.3
HIGHEST ANNUAL MEAN			32.2
LOWEST ANNUAL MEAN			.042
HIGHEST DAILY MEAN	270	540	1090
LOWEST DAILY MEAN	.03	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.05	.00	.00
INSTANTANEOUS PEAK FLOW		a 550	1170
INSTANTANEOUS PEAK STAGE		b 10.71	11.47
ANNUAL RUNOFF (AC-FT)	17620	22360	8190
10 PERCENT EXCEEDS	82	77	19
50 PERCENT EXCEEDS	2.0	1.4	.07
90 PERCENT EXCEEDS	.11	.05	.00

- a About.  
b Backwater from ice.  
e Estimated.

JAMES RIVER BASIN  
06470800 BEAR CREEK NEAR OAKES, ND--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)
OCT 17...	1415	2.2	1430	--	12.0	10.5	--	--	--	--
DEC 14...	1415	0.20	2550	--	-9.0	1.0	--	--	--	--
FEB 15...	1500	0.03	2490	--	-14.0	1.0	--	--	--	--
MAR 20...	1615	229	365	--	0.5	0.0	--	--	--	--
MAY 02...	1645	35	770	8.2	11.0	10.5	290	57	35	51
JUN 21...	1230	26	1290	--	22.5	22.5	--	--	--	--
AUG a28...	1830	0.29	1470	8.5	31.0	24.5	520	83	76	140

DATE	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
MAY 02...	27	1	14	217	170	31	0.20	489	500	0.68
AUG a28...	36	3	17	415	360	56	0.30	982	1030	1.40

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAY 02...	46.8	2	40	<1	40	110	<0.1	<1	<1	360
AUG a28...	0.80	8	10	<1	100	120	<0.1	<1	<1	580

a Replicate sample also collected for quality-assurance purposes.



JAMES RIVER BASIN  
06470830 JAMES RIVER AT OAKES, ND

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LOCATION.--Lat 46°08'20", long 98°06'55", in NW<sup>1</sup>/<sub>4</sub> NE<sup>1</sup>/<sub>4</sub> NE<sup>1</sup>/<sub>4</sub> sec.30, T.131 N., R.59 W., Dickey County, Hydrologic Unit 10160003, on left bank 10 ft downstream from bridge 1.0 mi west of Oakes.

DRAINAGE AREA.--5,320 mi<sup>2</sup>, of which about 3,300 mi<sup>2</sup> is probably noncontributing.

GAGE-HEIGHT RECORDS

PERIOD OF RECORD.--October 1982 to current year.

REMARKS.--Due to a programming error for the electronic data logger only partial days were stored for June 21 to Sept. 30. Gage heights shown are representative, but not true mean daily values.

GAGE.--Water-stage recorder. Datum of gage is 1,200.00 ft above sea level. Flow regulated by Jamestown Reservoir (station 06469000).

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 95.90 ft, Apr. 15-16, 1996; minimum, 88.11 ft, Sept. 4, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 95.90, Apr. 15-16; minimum recorded, 89.32 ft, Oct. 23.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	89.97	90.03	90.31	90.45	91.40	---	---	93.86	93.74	91.51	91.10	91.22
2	90.04	90.02	90.30	90.45	---	---	---	93.86	93.69	91.41	91.10	91.51
3	90.03	89.96	90.30	90.46	---	---	---	93.86	93.56	91.36	91.16	91.36
4	89.95	89.97	90.29	90.47	---	---	---	93.86	93.53	91.30	91.30	91.26
5	90.03	90.00	90.27	90.48	---	---	---	93.86	93.56	91.40	91.30	91.42
6	90.20	90.02	90.24	90.50	---	---	---	93.86	93.52	91.30	91.25	91.47
7	90.31	90.04	90.22	90.51	---	---	---	93.85	93.43	91.30	91.20	91.26
8	90.28	90.08	90.24	90.54	---	---	---	93.03	93.44	91.20	91.15	91.20
9	90.41	90.19	90.24	90.56	---	---	---	93.81	93.47	91.24	91.05	91.16
10	90.47	90.31	90.21	90.57	---	---	---	93.72	93.44	91.41	91.05	91.05
11	90.43	90.36	90.19	90.58	---	---	---	93.71	93.40	91.17	91.15	90.96
12	90.49	90.36	90.19	90.58	---	---	94.79	93.74	93.33	91.06	91.16	90.96
13	90.28	90.36	90.20	90.59	---	---	95.07	93.77	93.25	91.10	91.10	91.00
14	90.02	90.35	90.24	90.59	---	---	95.48	93.82	93.23	91.04	90.95	91.00
15	90.10	90.37	90.28	90.58	---	---	95.83	93.85	93.23	91.15	90.90	91.00
16	90.16	90.38	90.29	90.59	---	---	95.88	93.83	93.16	91.20	90.95	91.00
17	90.12	90.39	90.30	90.60	---	---	95.73	93.92	93.04	91.10	91.05	90.99
18	90.10	90.39	90.31	90.68	---	---	95.54	94.06	92.90	90.96	91.06	91.00
19	90.00	90.39	90.33	90.78	---	---	95.35	94.10	92.79	91.00	91.08	91.09
20	89.64	90.39	90.34	90.85	---	---	95.19	94.06	92.70	91.04	91.05	91.05
21	89.87	90.38	90.36	90.92	---	---	95.03	93.99	92.52	91.10	91.08	91.09
22	89.85	90.38	90.37	91.00	---	---	94.82	93.90	92.27	91.05	91.00	91.09
23	89.56	90.35	90.37	91.07	---	---	94.65	93.82	92.21	90.96	91.06	91.09
24	89.98	90.34	90.38	91.14	---	---	94.50	93.79	92.05	90.92	91.10	91.09
25	89.98	90.33	90.39	91.18	---	---	94.45	93.80	92.07	90.90	90.95	91.04
26	89.98	90.32	90.39	91.22	---	---	94.34	93.81	92.11	90.90	90.90	91.08
27	89.85	90.29	90.39	91.26	---	---	94.13	93.79	92.21	90.86	90.94	91.09
28	89.92	90.29	90.39	91.30	---	---	94.03	93.75	92.05	90.90	90.98	91.09
29	89.93	90.29	90.40	91.34	---	---	93.95	93.70	91.81	90.95	90.90	91.09
30	90.01	90.30	90.41	91.36	---	---	93.91	93.73	91.61	91.00	90.94	91.08
31	90.05	---	90.43	91.38	---	---	---	93.75	---	91.05	91.00	---
MEAN	90.06	90.25	90.31	90.79	---	---	---	93.81	92.91	91.12	91.06	91.13
MAX	90.49	90.39	90.43	91.38	---	---	---	94.10	93.74	91.51	91.30	91.51
MIN	89.56	89.96	90.19	90.45	---	---	---	93.03	91.61	90.86	90.90	90.96

JAMES RIVER BASIN  
06470830 JAMES RIVER AT OAKES, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1983 to current year.

PERIOD OF DAILY RECORDS.--

SPECIFIC CONDUCTANCE: Water year 1983 to current year.

WATER TEMPERATURE: Water year 1983 to current year.

INSTRUMENTATION.--Water-quality monitor since October 1982.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 5,830 microsiemens, Jan. 30, 1991; minimum 180, microsiemens, Mar. 23 and 24, 1991.

WATER TEMPERATURE: Maximum, 31.7°C, Aug. 15, 1988; minimum, 0.0°C on many days during the winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 1,190 microsiemens, December 23; minimum, 430 microsiemens, on many days in March.

WATER TEMPERATURE: Maximum, 25.5°C, June 18; minimum, 0.0°C, on many days during winter months.

REMARKS.--Recorder malfunctioned after June 20.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	13.6	10.2	12.0	2.7	1.3	2.3	.0	.0	.0	.0	.0	.0
2	13.7	12.3	12.9	1.3	.0	.1	.0	.0	.0	.0	.0	.0
3	13.5	10.8	12.3	.0	.0	.0	.0	.0	.0	.0	.0	.0
4	12.5	10.2	11.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
5	10.2	9.1	9.7	.0	.0	.0	.0	.0	.0	.0	.0	.0
6	9.6	8.3	8.9	.0	.0	.0	.0	.0	.0	.0	.0	.0
7	10.4	7.1	8.8	.0	.0	.0	.0	.0	.0	.0	.0	.0
8	9.8	8.3	9.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9	10.5	7.6	8.9	.0	.0	.0	.0	.0	.0	.0	.0	.0
10	11.6	8.3	9.9	.0	.0	.0	.0	.0	.0	.0	.0	.0
11	13.0	9.8	11.3	.0	.0	.0	.0	.0	.0	.0	.0	.0
12	14.5	11.9	13.1	.0	.0	.0	.0	.0	.0	.0	.0	.0
13	13.5	8.5	11.4	.0	.0	.0	.0	.0	.0	.0	.0	.0
14	9.0	6.1	7.7	.0	.0	.0	.0	.0	.0	.0	.0	.0
15	9.6	6.7	8.1	.0	.0	.0	.0	.0	.0	.0	.0	.0
16	10.3	7.1	8.7	.0	.0	.0	.0	.0	.0	.0	.0	.0
17	10.6	8.7	9.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
18	8.9	7.7	8.3	.0	.0	.0	.0	.0	.0	.0	.0	.0
19	7.7	5.6	7.1	.0	.0	.0	.0	.0	.0	.0	.0	.0
20	5.7	3.8	4.8	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	6.5	2.8	4.6	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	5.2	3.7	4.1	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	3.7	2.4	3.1	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	4.9	.8	2.9	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	6.2	2.8	4.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	6.2	4.8	5.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	6.2	5.0	5.7	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	5.4	3.6	4.7	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	5.1	2.3	3.7	.0	.0	.0	.0	.0	.0	.0	.0	.0
30	3.7	2.4	3.2	.0	.0	.0	.0	.0	.0	.0	.0	.0
31	3.0	2.4	2.6	---	---	---	.0	.0	.0	.0	.0	.0
MONTH	14.5	.8	7.7	2.7	.0	.1	.0	.0	.0	.0	.0	.0

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DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	.0	.0	.0	.0	.0	.0	.4	.3	.4	11.0	7.5	9.3
2	.0	.0	.0	.0	.0	.0	.4	.4	.4	10.4	8.1	8.8
3	.0	.0	.0	.1	.0	.0	.4	.4	.4	8.4	6.7	7.7
4	.0	.0	.0	.1	.1	.1	.4	.4	.4	8.9	7.0	8.0
5	.0	.0	.0	.1	.1	.1	.5	.4	.4	8.8	7.9	8.3
6	.0	.0	.0	.1	.1	.1	.5	.5	.5	8.5	7.5	7.9
7	.0	.0	.0	.1	.1	.1	.5	.5	.5	9.1	7.2	8.1
8	.0	.0	.0	.1	.1	.1	1.0	.5	.6	10.1	8.4	9.1
9	.0	.0	.0	.1	.1	.1	2.0	.5	1.1	9.8	6.7	8.4
10	.0	.0	.0	.1	.1	.1	3.3	.5	1.8	8.0	5.2	6.6
11	.0	.0	.0	.1	.1	.1	3.1	.6	1.7	9.1	6.7	7.9
12	.0	.0	.0	.1	.1	.1	2.7	.6	1.3	9.7	7.8	8.7
13	.0	.0	.0	.1	.1	.1	3.2	.8	1.9	11.7	8.3	9.8
14	.0	.0	.0	.1	.1	.1	3.5	2.4	3.0	11.7	10.3	10.9
15	.0	.0	.0	.1	.1	.1	5.5	2.3	3.8	16.5	11.4	13.5
16	.0	.0	.0	.1	.1	.1	6.7	3.7	5.1	17.0	14.4	15.7
17	.0	.0	.0	.1	.1	.1	8.4	5.4	6.7	17.2	16.2	16.7
18	.0	.0	.0	.1	.1	.1	10.8	8.4	9.4	17.2	15.6	16.5
19	.0	.0	.0	.1	.1	.1	10.6	5.0	8.5	18.0	15.5	16.8
20	.0	.0	.0	.1	.1	.1	6.5	4.4	5.5	18.0	15.5	16.9
21	.0	.0	.0	.1	.1	.1	6.4	4.8	5.5	17.5	15.5	16.6
22	.0	.0	.0	.1	.1	.1	7.8	4.0	5.8	17.0	15.3	16.2
23	.0	.0	.0	.2	.1	.2	9.4	6.0	7.6	16.2	14.3	15.1
24	.0	.0	.0	.2	.2	.2	9.6	7.5	8.6	16.7	13.8	15.1
25	.0	.0	.0	.2	.2	.2	9.6	6.1	8.6	15.9	14.6	15.1
26	.0	.0	.0	.2	.2	.2	7.3	4.3	5.7	16.1	13.7	14.9
27	.0	.0	.0	.3	.2	.2	8.0	5.9	6.9	15.7	14.1	14.9
28	.0	.0	.0	.3	.3	.3	7.5	6.0	6.5	17.2	13.5	15.2
29	.0	.0	.0	.3	.3	.3	9.5	5.1	7.0	18.4	15.4	16.9
30	---	---	---	.3	.3	.3	10.9	7.4	9.0	18.2	16.6	17.5
31	---	---	---	.3	.3	.3	---	---	---	17.9	16.7	17.3
MONTH	.0	.0	.0	.3	.0	.1	10.9	.3	4.2	18.4	5.2	12.6

[illegible]

**JAMES RIVER BASIN**  
**06470830 JAMES RIVER AT OAKES, ND--Continued**

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	1100	1080	1090	1110	1100	1100	1090	1080	1090	1160	1150	1150
2	1100	1080	1090	1100	1090	1090	1090	1080	1080	1150	1140	1150
3	1090	1080	1090	1100	1090	1090	1090	1070	1080	1150	1150	1150
4	1090	1080	1080	1100	1090	1090	1080	1070	1070	1150	1140	1140
5	1090	1070	1080	1100	1090	1090	1080	1060	1070	1140	1130	1130
6	1080	1070	1080	1110	1100	1100	1080	1060	1080	1140	1130	1130
7	1100	1070	1090	1110	1100	1110	1090	1070	1070	1140	1130	1130
8	1110	1090	1100	1120	1110	1110	1070	1060	1070	1140	1130	1140
9	1120	1100	1110	1120	1100	1110	1080	1070	1070	1140	1120	1130
10	1130	1110	1120	1120	1110	1110	1090	1070	1080	1130	1120	1120
11	1140	1120	1130	1120	1110	1120	1100	1080	1090	1130	1120	1120
12	1150	1130	1140	1130	1120	1130	1110	1090	1090	1120	1110	1120
13	1150	1130	1140	1130	1120	1120	1120	1100	1110	1120	1100	1110
14	1150	1130	1140	1130	1120	1120	1130	1120	1130	1110	1090	1100
15	1150	1140	1140	1140	1120	1130	1140	1120	1130	1100	1100	1100
16	1150	1140	1140	1140	1130	1140	1150	1130	1140	1100	1090	1090
17	1150	1140	1150	1140	1130	1140	1160	1140	1150	1100	1080	1090
18	1150	1140	1150	1140	1130	1140	1170	1150	1160	1080	1070	1080
19	1150	1130	1140	1140	1130	1130	1180	1160	1170	1090	1080	1090
20	1140	1130	1130	1130	1120	1130	1170	1160	1170	1090	1080	1090
21	1140	1130	1130	1130	1110	1120	1180	1170	1170	1100	1080	1090
22	1130	1120	1130	1120	1110	1110	1180	1170	1170	1100	1090	1090
23	1140	1120	1130	1120	1110	1110	1190	1180	1180	1100	1090	1100
24	1130	1120	1130	1120	1110	1120	1180	1170	1170	1100	1090	1100
25	1140	1120	1130	1120	1110	1110	1170	1170	1170	1110	1090	1100
26	1140	1130	1130	1110	1100	1110	1170	1170	1170	1100	1090	1100
27	1140	1110	1130	1110	1090	1100	1180	1170	1170	1100	1090	1100
28	1120	1110	1120	1110	1100	1100	1170	1160	1160	1110	1100	1100
29	1120	1110	1110	1110	1090	1100	1160	1150	1160	1110	1100	1100
30	1120	1110	1110	1100	1090	1090	1160	1150	1160	1100	1090	1100
31	1120	1100	1110	---	---	---	1160	1150	1160	1100	1100	1100
MONTH	1150	1070	1120	1140	1090	1110	1190	1060	1130	1160	1070	1110

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	1110	1100	1100	800	780	790	330	320	320	620	600	620
2	1110	1100	1100	780	750	770	330	330	330	610	600	600
3	1110	1090	1100	760	730	750	340	330	340	610	580	590
4	1110	1100	1100	730	690	710	360	340	350	600	590	590
5	1110	1100	1100	700	670	680	380	350	360	590	570	580
6	1120	1110	1110	670	640	660	410	380	390	580	560	570
7	1120	1100	1110	650	620	640	450	410	430	570	560	570
8	1120	1110	1110	630	610	620	490	450	480	570	550	560
9	1120	1110	1120	620	600	610	520	490	510	560	550	560
10	1130	1120	1120	610	580	600	520	510	520	560	550	550
11	1120	1110	1120	590	580	580	520	500	510	580	550	560
12	1120	1110	1120	590	570	580	520	450	490	570	560	570
13	1120	1100	1110	580	560	570	460	450	460	570	560	570
14	1110	1090	1100	570	520	550	460	440	450	580	560	570
15	1090	1060	1080	530	500	520	460	440	450	580	560	570
16	1070	1050	1060	510	490	500	470	450	460	580	560	570
17	1060	1040	1050	490	460	480	480	460	470	570	550	560
18	1040	1020	1030	470	440	450	520	470	500	570	550	560
19	1030	1000	1010	440	410	420	550	500	530	570	560	570
20	1010	990	1000	410	380	390	550	540	550	580	560	570
21	1000	980	990	380	360	370	560	460	540	580	570	570
22	990	970	980	370	350	350	570	550	560	580	560	570
23	980	950	960	350	330	340	590	550	580	580	570	580
24	960	940	950	340	310	320	600	540	590	590	570	580
25	950	910	930	320	310	310	630	590	600	590	570	580
26	910	870	890	310	300	310	630	620	630	590	580	580
27	870	820	840	310	300	300	630	610	620	600	580	590
28	830	810	820	310	290	300	630	620	620	600	580	590
29	810	790	800	310	300	300	630	620	620	590	580	590
30	---	---	---	310	300	310	630	610	620	610	590	600
31	---	---	---	320	300	310	---	---	---	600	590	590
MONTH	1130	790	1030	800	290	500	630	320	500	620	550	580

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[illegible]



**JAMES RIVER BASIN**  
**06470875 JAMES RIVER AT DAKOTA LAKE DAM NEAR LUDDEN, ND**

**LOCATION.**--Lat 45°56'52", long 98°10'29", in SE<sup>1</sup>/<sub>4</sub> NE<sup>1</sup>/<sub>4</sub> NE<sup>1</sup>/<sub>4</sub> sec.34, T.129 N., R.60 W., Dickey County, Hydrologic Unit 10160003, on left bank, 10 ft upstream from dam, 4.5 mi southwest of Ludden and .8 mi upstream from North Dakota-South Dakota state line.

**DRAINAGE AREA.**--5,480 mi<sup>2</sup>, of which about 3,300 mi<sup>2</sup> are probably noncontributing.

**WATER-DISCHARGE RECORDS**

**PERIOD OF RECORD.**--October 1981 to current year.

**GAGE.**--Water-stage recorder and concrete dam control. Datum of gage is 1,280.00 ft above sea level.

**REMARKS.**--Records good except for periods of estimated daily discharges, which are fair. Flow regulated by upstream reservoirs, Jamestown Reservoir (station 06469000), Pipestem Lake, capacity 147,000 acre-ft, and Lake LaMoure.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e148	66	105	e45	e36	e69	e995	1590	1430	656	393	333
2	e141	106	105	e45	e36	e83	e920	1530	1450	619	388	517
3	e144	55	105	e45	e35	e100	e880	1500	1460	572	398	530
4	e149	40	103	e45	e35	e130	e830	1490	1390	556	416	517
5	e152	40	96	e45	e35	e110	e790	1500	1370	540	445	355
6	e135	40	88	e45	e35	e100	e820	1520	1380	572	455	460
7	e138	44	85	e45	e35	e80	e910	1530	1360	566	458	484
8	e144	53	70	e45	e35	e75	e1130	1540	1300	577	466	456
9	e137	72	65	e45	e35	e70	e1250	1610	1270	545	433	443
10	e142	87	54	e45	e35	e65	e1490	1610	1270	471	413	450
11	e154	98	54	e44	e35	e60	e1620	1550	1270	460	417	444
12	e148	113	46	e43	e35	e75	1870	1520	1270	503	443	428
13	e150	121	43	e42	e35	e125	2080	1500	1250	481	486	407
14	e149	120	46	e41	e35	e180	2340	1530	1200	450	451	397
15	e140	127	51	e40	e35	e230	2670	1550	1220	434	403	397
16	e132	127	51	e40	e35	e305	2830	1560	1210	376	373	397
17	e124	120	51	e40	e34	e530	2840	1640	1170	391	374	380
18	120	120	51	e40	e33	e715	2840	1720	1100	402	348	366
19	186	120	51	e40	e36	e880	2800	1690	1030	374	410	396
20	218	115	51	e40	e38	e1010	2680	1670	962	346	381	424
21	71	126	e50	e40	e43	e1230	2550	1640	922	372	360	425
22	78	133	e50	e40	e47	e1490	2440	1620	861	405	425	423
23	167	124	e48	e40	e49	e1640	2270	1600	828	388	362	419
24	20	127	e46	e39	e46	e1750	2200	1560	800	389	336	396
25	25	130	e45	e38	e44	e1830	2120	1530	747	357	430	401
26	37	109	e45	e38	e42	e1690	2050	1530	709	348	412	433
27	104	96	e45	e37	e45	e1490	1920	1530	667	368	368	448
28	67	96	e45	e37	e48	e1380	1830	1490	660	368	361	425
29	44	100	e45	e36	e52	e1290	1740	1470	720	390	406	423
30	29	104	e45	e36	---	e1160	1660	1400	699	396	388	412
31	38	---	e45	e36	---	e1050	---	1400	---	404	353	---
TOTAL	3631	2929	1880	1277	1119	20992	55365	48120	32975	14076	12552	12786
MEAN	117	97.6	60.6	41.2	38.6	677	1845	1552	1099	454	405	426
MAX	218	133	105	45	52	1830	2840	1720	1460	656	486	530
MIN	20	40	43	36	33	60	790	1400	660	346	336	333
AC-FT	7200	5810	3730	2530	2220	41640	109800	95450	65410	27920	24900	25360

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 1996, BY WATER YEAR (WY)**

MEAN	139	99.5	38.9	19.7	19.7	318	589	402	293	261	239	172
MAX	867	512	136	77.1	68.5	853	1845	1552	1200	1181	1143	910
(WY)	1994	1994	1994	1995	1995	1995	1996	1996	1995	1995	1993	1993
MIN	1.86	.20	.28	.056	.62	26.0	33.4	9.92	2.12	.015	.000	.011
(WY)	1989	1991	1991	1991	1989	1990	1990	1990	1988	1988	1988	1990

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR		FOR 1996 WATER YEAR		WATER YEARS 1982 - 1996	
ANNUAL TOTAL	234149		207702		217	
ANNUAL MEAN	642		567		688	
HIGHEST ANNUAL MEAN					10.3	
LOWEST ANNUAL MEAN					2840	
HIGHEST DAILY MEAN	2180	Mar 22	2840	Apr 17	2840	Apr 17 1996
LOWEST DAILY MEAN	20	Oct 24	20	Oct 24	.00	Oct 8 1981
ANNUAL SEVEN-DAY MINIMUM	45	Dec 25	35	Feb 12	.00	Jul 10 1985
INSTANTANEOUS PEAK FLOW			2850	Apr 19	2850	Apr 19 1996
INSTANTANEOUS PEAK STAGE			13.97	Apr 19	13.97	Apr 19 1996
ANNUAL RUNOFF (AC-FT)	464400		412000		156900	
10 PERCENT EXCEEDS	1350		1550		780	
50 PERCENT EXCEEDS	351		370		50	
90 PERCENT EXCEEDS	54		40		.00	

e Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1983 to current year.

PERIOD OF DAILY RECORDS.--

SPECIFIC CONDUCTANCE: Water year 1983 to current year.

WATER TEMPERATURE: Water year 1983 to current year.

INSTRUMENTATION.--Water-quality monitor since October 1982.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 3,580 microsiemens, Mar. 17, 1993; minimum recorded, 217 microsiemens, July 13, 1983.

WATER TEMPERATURE: Maximum recorded, 31.3°C, July 16, 1991; minimum, 0.0°C, several days during winter months each year.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 1,730 microsiemens, Dec. 30 to Jan. 2; minimum recorded, 320 microsiemens, Mar. 22-25.

WATER TEMPERATURE: Maximum recorded, 28.9°C, July 2; minimum recorded, 0.0°C on several days.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT 17...	1815	124	1140	--	11.5	11.0	--	--	--	--
DEC 14...	1700	47	1400	--	-10.0	1.5	--	--	--	--
MAR 21...	1105	1230	360	--	1.0	0.0	--	--	--	--
APR 12...	1845	1940	595	--	3.0	2.5	--	--	--	--
APR 19...	1415	2810	470	--	4.5	9.0	--	--	--	--
MAY 02...	1445	1520	638	--	8.0	9.5	--	--	--	--
MAY 10...	1030	1620	570	9.1	5.5	7.0	200	164	41	24
JUN 21...	0845	925	585	--	21.0	22.0	--	--	--	--
JUL 17...	1215	397	677	--	30.0	24.0	--	--	--	--
AUG 29...	1015	383	673	8.2	27.0	23.0	240	213	51	27

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
MAY 10...	39	28	1	11	110	15	0.10	339	355	0.48
AUG 29...	43	27	1	13	130	14	0.20	406	412	0.56

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
MAY 10...	1550	2	20	<1	20	70	<0.1	<1	<1	260
AUG 29...	426	2	10	<1	30	30	<0.1	<1	<1	290

**JAMES RIVER BASIN**  
**06470875 JAMES RIVER AT DAKOTA LAKE DAM NEAR LUDDEN, ND--Continued**

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	14.9	11.6	13.2	3.6	2.6	3.2	2.5	1.1	1.9	.6	.3	.5
2	14.3	13.3	13.9	2.6	.1	.7	2.5	1.7	2.2	.6	.4	.5
3	14.3	12.3	13.4	.4	.1	.2	2.7	1.8	2.2	.6	.3	.5
4	13.4	11.3	12.4	1.4	.1	.7	2.7	1.9	2.5	.6	.3	.4
5	11.3	10.2	10.7	2.0	1.3	1.6	1.9	1.1	1.4	.5	.2	.3
6	10.3	9.2	9.7	2.2	1.7	1.9	2.4	1.7	2.0	.4	.2	.3
7	12.0	8.3	9.9	2.2	1.4	1.9	2.4	1.9	2.1	.4	.1	.2
8	10.2	9.2	9.7	2.8	1.7	2.3	2.3	.7	1.2	.4	.1	.2
9	10.6	8.7	9.6	2.8	2.1	2.5	2.0	.8	1.4	.4	.2	.3
10	11.3	9.2	10.2	2.5	1.6	2.1	2.3	1.6	1.8	.5	.2	.4
11	13.3	10.3	11.6	2.5	1.6	2.2	2.2	1.9	2.0	.6	.3	.5
12	14.4	11.9	13.0	2.4	1.6	1.8	2.2	1.7	1.9	1.0	.5	.7
13	14.1	9.5	11.8	2.4	1.4	2.0	2.1	1.7	1.9	1.1	.6	.8
14	9.7	7.6	8.8	2.2	1.6	2.0	1.9	1.3	1.7	1.1	.8	.9
15	11.1	8.4	9.5	2.0	.7	1.5	1.9	1.3	1.6	1.1	.7	.8
16	10.9	8.6	9.7	1.8	1.3	1.5	1.8	1.3	1.5	1.1	.7	.9
17	11.4	9.7	10.4	1.5	.5	.9	1.8	1.3	1.5	.9	.3	.5
18	10.2	8.7	9.2	1.8	1.3	1.5	1.6	1.2	1.4	.6	.2	.4
19	8.9	6.9	8.2	2.1	.9	1.6	1.4	1.2	1.3	.5	.1	.3
20	6.9	5.2	5.9	2.1	1.4	1.8	1.3	1.0	1.1	.5	.0	.1
21	6.9	4.3	5.5	2.8	1.0	2.1	1.2	.9	1.0	.7	.2	.4
22	5.8	4.3	4.9	2.7	1.1	2.1	1.1	.7	.9	.8	.4	.6
23	4.4	3.5	3.9	2.3	1.1	1.9	1.0	.7	.8	.8	.5	.6
24	5.2	3.0	3.9	2.3	1.0	1.8	.9	.6	.7	.9	.5	.7
25	6.1	3.8	4.9	1.9	1.0	1.6	.9	.6	.7	.9	.5	.7
26	6.1	5.1	5.5	1.9	.9	1.1	.8	.6	.7	.9	.5	.7
27	6.3	5.6	6.0	1.6	.5	.8	.9	.6	.7	1.0	.5	.7
28	6.5	4.6	5.4	2.1	1.6	1.9	.9	.6	.7	.8	.4	.6
29	5.6	3.9	4.7	2.0	1.6	1.8	.8	.4	.6	.7	.4	.5
30	4.7	3.9	4.3	1.9	1.0	1.6	.7	.4	.5	.7	.3	.5
31	4.2	3.2	3.5	---	---	---	.7	.3	.5	.6	.2	.4
MONTH	14.9	3.0	8.5	3.6	.1	1.7	2.7	.3	1.4	1.1	.0	.5

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	.5	.2	.3	.3	.0	.1	.3	-.1	.0	10.3	8.0	9.0
2	.5	.2	.3	.4	.0	.1	.2	-.1	.0	10.0	9.1	9.4
3	.4	.2	.3	.4	.0	.1	.1	-.1	.0	9.1	8.1	8.5
4	.6	.1	.3	.2	.0	.1	.3	-.1	.0	8.8	7.7	8.2
5	.5	.2	.3	.3	.0	.1	.2	-.2	-.1	8.7	7.7	8.2
6	.6	.2	.4	.3	.0	.1	.2	-.2	-.1	8.6	8.1	8.3
7	.7	.4	.5	.3	.0	.1	.2	-.2	-.1	9.0	7.8	8.4
8	.9	.4	.6	.3	.0	.1	.4	-.2	.0	9.9	8.6	9.1
9	1.0	.5	.7	.3	.0	.1	.3	-.2	-.1	9.6	7.8	8.9
10	.9	.3	.6	.3	.0	.1	.4	-.2	.0	8.1	6.6	7.4
11	1.2	.6	.8	.4	.0	.2	.0	-.2	-.1	8.3	6.9	7.6
12	1.4	.8	1.0	.4	.0	.2	.2	-.2	.0	9.0	7.4	8.0
13	1.5	1.0	1.3	.3	.0	.1	.1	-.2	-.1	11.1	8.2	9.2
14	1.5	.9	1.2	.3	.0	.1	.3	-.2	.0	11.7	9.9	10.7
15	1.3	.6	1.0	.6	.0	.2	4.8	.1	2.5	15.3	11.2	12.9
16	1.3	.8	1.0	.2	.0	.1	5.8	4.2	4.8	16.4	14.0	15.1
17	1.3	.5	.9	.4	.0	.1	7.7	5.3	6.2	17.3	16.1	16.7
18	.9	.6	.7	.3	.0	.1	9.4	7.4	8.3	17.4	16.2	16.8
19	1.1	.4	.7	.2	.0	.1	9.4	8.4	9.0	17.9	16.1	17.0
20	1.1	.4	.6	.2	.0	.1	8.4	7.2	7.6	18.0	16.5	17.2
21	.9	.4	.7	.3	.0	.1	7.3	6.2	6.6	17.5	16.2	16.8
22	.7	.2	.4	.2	.0	.1	6.8	5.2	6.0	17.0	15.9	16.4
23	.6	.1	.4	.2	.0	.1	7.6	5.8	6.7	16.2	15.1	15.5
24	.7	.0	.4	.2	.0	.1	9.2	7.2	8.0	16.0	14.4	15.1
25	.4	.0	.2	.2	.0	.1	9.2	7.7	8.7	15.3	14.7	14.9
26	---	---	.1	.2	-.1	.0	7.7	6.6	7.2	15.4	13.9	14.6
27	---	---	.1	.2	-.1	.0	8.0	6.3	7.0	15.0	13.9	14.4
28	---	---	.1	.1	-.1	.0	7.5	6.4	6.9	16.0	13.4	14.5
29	.4	.0	.1	.1	-.1	.0	8.5	6.3	7.3	16.9	14.7	15.7
30	---	---	---	.2	-.1	.0	9.1	7.1	8.1	17.4	16.0	16.7
31	---	---	---	.3	-.1	.0	---	---	---	17.7	16.7	17.2
MONTH	---	---	.6	.6	-.1	.1	9.4	-.2	3.7	18.0	6.6	12.5

## JAMES RIVER BASIN

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## 06470875 JAMES RIVER AT DAKOTA LAKE DAM NEAR LUDDEN, ND--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	19.1	16.4	17.6	27.8	24.6	26.3	24.5	21.8	23.3	24.9	23.0	23.9
2	18.2	15.5	16.8	28.9	24.7	26.8	25.1	22.6	23.8	26.7	22.5	24.2
3	15.6	14.4	15.1	27.8	23.0	24.8	25.1	23.5	24.2	26.1	22.8	24.1
4	15.8	14.2	15.0	25.7	22.2	23.6	26.2	23.4	24.5	25.4	23.3	24.3
5	18.0	15.1	16.3	25.3	23.3	24.4	27.0	24.8	25.7	26.0	23.3	24.6
6	17.7	16.6	17.2	24.7	23.6	24.1	26.4	24.5	25.5	25.1	21.4	23.1
7	19.4	16.4	17.5	25.2	22.5	23.7	25.4	23.3	24.4	24.4	20.7	22.3
8	20.2	17.8	18.7	24.0	20.4	21.6	25.2	22.5	23.9	22.8	20.6	21.6
9	21.5	19.2	20.2	22.4	18.9	20.5	24.3	22.3	23.4	24.4	20.3	22.0
10	23.3	20.4	21.5	21.7	20.1	20.9	24.4	22.2	23.2	23.7	21.3	22.3
11	25.3	21.7	23.1	22.2	19.7	21.1	24.6	21.8	23.3	21.4	18.9	19.9
12	25.0	23.1	24.2	22.7	20.2	21.3	25.0	22.1	23.6	18.9	17.4	18.1
13	24.3	22.8	23.6	23.5	20.4	21.8	25.6	23.1	24.4	19.0	16.6	17.7
14	24.1	22.5	23.2	24.4	20.9	22.5	24.6	22.4	23.6	18.7	16.4	17.5
15	25.4	22.2	23.6	25.9	21.4	23.5	25.2	22.2	23.5	18.7	16.1	17.3
16	24.0	22.5	23.1	25.9	23.1	24.6	25.2	22.2	23.7	18.7	16.6	17.6
17	24.7	22.1	23.3	25.8	23.7	24.6	25.7	22.7	24.2	18.0	16.2	17.1
18	25.1	22.5	23.6	26.9	23.8	25.3	24.6	22.7	23.7	17.3	15.8	16.5
19	24.0	22.7	23.4	26.1	24.8	25.5	24.2	22.5	23.2	16.5	15.5	15.9
20	23.4	21.6	22.5	25.2	23.7	24.4	23.7	21.3	22.5	15.6	14.8	15.2
21	23.2	22.0	22.6	26.9	23.6	25.1	24.8	21.9	23.1	15.8	14.4	14.9
22	22.6	20.9	21.5	25.5	23.2	24.3	24.7	21.5	23.0	16.2	13.5	14.9
23	21.0	19.5	20.0	24.3	22.3	23.3	23.5	21.3	22.4	16.0	14.4	15.2
24	21.2	18.7	19.8	22.9	20.7	21.7	24.0	20.7	22.3	15.2	13.1	14.3
25	21.8	18.7	20.0	24.0	20.2	22.1	23.8	21.9	22.9	14.4	13.1	13.8
26	25.0	21.3	22.7	23.6	21.5	22.5	23.3	20.6	21.9	13.7	12.1	12.7
27	27.3	23.6	25.2	24.5	21.9	23.0	23.2	20.8	21.9	12.4	11.1	11.7
28	28.0	25.7	26.7	25.6	21.7	23.4	24.3	21.3	22.5	11.5	10.0	10.8
29	28.3	26.4	27.4	23.9	21.7	22.8	26.8	22.7	24.3	11.0	9.7	10.4
30	28.7	25.2	26.7	25.2	21.2	23.2	26.3	23.5	24.7	12.4	9.4	10.7
31	---	---	---	25.1	22.1	23.6	26.1	23.7	24.8	---	---	---
MONTH	28.7	14.2	21.4	28.9	18.9	23.4	27.0	20.6	23.6	26.7	9.4	17.8

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	1150	1090	1120	---	---	---	1340	1230	1300	1730	1670	1700
2	1180	1070	1130	---	---	---	1400	1210	1290	1730	1640	1680
3	1190	1110	1140	---	---	---	1330	1160	1260	1690	1610	1660
4	1180	1070	1120	---	---	---	1360	1190	1280	1710	1630	1670
5	1120	1030	1080	---	---	---	1330	1200	1270	1720	1640	1670
6	1110	1030	1080	---	---	---	1320	1150	1250	1700	1630	1670
7	1150	1030	1080	---	---	---	1290	1140	1230	1720	1640	1680
8	1130	1020	1070	---	---	---	1330	1180	1270	1720	1640	1680
9	1130	1000	1080	1360	1250	1310	1390	1180	1280	1720	1630	1680
10	1160	1030	1080	1360	1280	1320	1350	1270	1310	1700	1620	1670
11	1160	1050	1100	1400	1310	1350	1380	1270	1330	1690	1620	1650
12	1180	1070	1120	1410	1330	1370	1410	1340	1370	1640	1560	1610
13	1200	1110	1140	1440	1330	1390	1410	1340	1370	1630	1470	1550
14	1260	1150	1200	1430	1310	1370	1430	1340	1390	1570	1470	1520
15	1260	1130	1190	1450	1250	1400	1470	1390	1430	1610	1510	1570
16	1260	1180	1220	1440	1330	1390	1500	1420	1450	1620	1530	1570
17	1270	1080	1210	1410	1250	1370	1520	1450	1490	1650	1540	1590
18	1300	1210	1240	1390	1250	1330	1550	1460	1510	1700	1550	1630
19	---	---	---	1400	1310	1330	1570	1490	1530	1700	1590	1650
20	1260	1170	1210	1330	1200	1280	1590	1510	1560	1710	1600	1660
21	---	---	---	1360	1190	1300	1610	1540	1570	1660	1600	1640
22	---	---	---	1370	1230	1310	1630	1550	1590	1660	1580	1620
23	---	---	---	1370	1280	1330	1630	1570	1600	1660	1570	1610
24	---	---	---	1340	1250	1290	1640	1570	1600	1640	1560	1590
25	---	---	---	1330	1250	1300	1660	1600	1620	1640	1560	1610
26	---	---	---	1300	1170	1240	1660	1600	1630	1640	1550	1590
27	---	---	---	1330	1200	1270	1690	1620	1650	1650	1550	1590
28	---	---	---	1330	1210	1280	1720	1620	1670	1630	1530	1580
29	---	---	---	1340	1260	1300	1700	1640	1680	1640	1530	1570
30	---	---	---	1370	1210	1280	1730	1660	1690	1610	1530	1580
31	---	---	---	---	---	---	1730	1670	1690	1670	1520	1590
MONTH	---	---	---	---	---	---	1730	1140	1460	1730	1470	1620



**JAMES RIVER BASIN**  
**06470875 JAMES RIVER AT DAKOTA LAKE DAM NEAR LUDDEN, ND--Continued**

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	1680	1550	1620	960	890	920	500	390	430	660	570	600
2	1710	1560	1640	980	900	930	500	390	440	690	570	610
3	1720	1620	1670	1000	890	940	490	410	450	630	530	580
4	1750	1640	1700	980	900	940	510	430	470	650	500	560
5	1760	1680	1710	1010	880	930	540	430	500	570	480	520
6	1760	1670	1710	960	890	940	540	450	490	580	490	530
7	1750	1640	1680	990	870	920	550	460	500	620	490	540
8	1670	1550	1620	890	800	860	620	490	540	660	510	590
9	1590	1470	1540	870	790	830	660	510	580	660	490	590
10	1680	1430	1570	880	820	840	660	540	600	680	510	590
11	1750	1650	1680	910	790	830	690	570	630	600	500	550
12	1750	1640	1690	860	780	810	650	530	580	630	490	540
13	1720	1640	1680	830	740	780	620	490	550	560	500	520
14	1780	1660	1710	820	660	750	570	440	490	650	510	560
15	1780	1670	1720	770	580	660	500	400	440	630	480	550
16	1710	1570	1650	660	570	610	470	390	420	600	500	530
17	1630	1490	1550	630	570	590	480	390	430	610	500	540
18	1540	1450	1500	640	560	590	500	430	470	570	500	520
19	1490	1410	1460	610	480	550	540	450	500	590	480	530
20	1480	1380	1420	530	400	450	580	480	520	630	510	560
21	1440	1310	1370	440	350	390	600	490	540	680	530	590
22	1370	1220	1280	410	320	370	600	500	550	660	540	600
23	1240	1110	1180	410	320	360	640	530	580	660	560	610
24	1140	1060	1100	370	320	350	640	560	600	700	560	620
25	1110	990	1060	400	320	350	660	570	620	700	570	620
26	---	---	---	400	340	370	680	580	620	660	560	620
27	---	---	---	440	340	370	690	600	640	690	530	600
28	---	---	---	460	350	390	670	580	630	660	520	580
29	970	890	930	460	340	400	660	580	600	630	520	580
30	---	---	---	460	380	410	660	570	610	630	520	560
31	---	---	---	460	370	410	---	---	---	630	520	560
MONTH	---	---	---	1010	320	640	690	390	530	700	480	570

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	660	520	580	770	720	750	740	630	680	740	620	680
2	650	530	590	800	710	750	750	640	700	760	630	670
3	630	530	590	810	720	760	740	640	690	760	610	670
4	630	530	580	800	720	750	750	630	680	730	610	660
5	700	570	620	810	720	770	750	630	680	720	610	660
6	780	590	660	790	710	750	710	630	670	720	600	650
7	750	620	690	810	710	750	740	620	670	770	610	680
8	750	630	680	800	670	730	790	630	700	760	640	690
9	750	630	700	770	670	710	790	670	720	750	640	690
10	830	660	750	770	680	720	780	680	720	800	640	710
11	790	680	720	760	680	730	780	680	710	800	680	710
12	740	640	700	790	690	730	780	660	710	810	720	750
13	750	660	710	720	630	690	750	660	700	810	690	750
14	830	720	760	720	630	680	780	660	700	800	690	730
15	840	730	800	740	630	680	760	640	700	780	680	730
16	880	770	820	740	640	700	760	670	710	820	700	750
17	860	750	820	720	640	690	760	640	710	810	690	740
18	840	710	780	750	680	710	780	670	710	770	690	720
19	790	640	710	760	670	710	780	670	700	770	680	720
20	720	600	640	760	660	710	750	660	710	770	660	720
21	640	570	600	750	670	710	760	640	690	770	660	710
22	600	540	570	760	670	710	760	640	690	780	660	710
23	690	540	590	760	670	710	760	640	700	770	660	720
24	720	630	680	720	640	700	750	630	680	790	660	720
25	730	650	690	740	640	690	750	640	690	770	670	710
26	760	610	660	740	640	690	740	630	690	790	670	720
27	750	680	710	750	640	700	750	640	690	790	650	710
28	830	710	750	750	630	690	750	640	690	770	650	690
29	790	690	740	740	630	680	760	640	690	790	670	720
30	800	720	760	720	630	680	760	640	690	760	670	720
31	---	---	---	750	640	690	750	630	690	---	---	---
MONTH	880	520	690	810	630	710	790	620	700	820	600	710



JAMES RIVER BASIN  
06470878 JAMES RIVER AT NORTH DAKOTA-SOUTH DAKOTA STATE LINE

LOCATION.--Lat 45°56'10", long 98°10'26", in SE<sup>1</sup>/<sub>4</sub> SE<sup>1</sup>/<sub>4</sub> 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 south, and 1 mi west from Ludden.

DRAINAGE AREA.--5,480 mi<sup>2</sup>, approximately, revised, of which about 3,300 mi<sup>2</sup> is probably noncontributing.

GAGE HEIGHT RECORDS

PERIOD OF RECORD.--October 1981 to current year (gage heights only).

GAGE.--Water-stage recorder. Datum of gage is 1,200 ft above sea level.

EXTREMES FOR PERIOD OF RECORD.--Maximum observed, 93.80 ft, Apr. 19, 1996; minimum observed, 86.45 ft, Oct. 3, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 93.80 ft, Apr. 19; minimum daily gage height recorded, 87.71 ft, Oct. 30-31.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	88.38	87.72	88.61	---	---	---	---	---	92.59	90.86	89.51	89.18
2	88.24	87.84	88.62	---	---	---	---	e92.84	92.64	90.77	89.49	89.59
3	88.21	88.08	88.61	---	---	---	---	92.84	92.65	90.63	89.52	89.93
4	88.20	88.01	88.63	---	---	---	---	92.84	92.53	90.55	89.61	89.90
5	88.48	87.96	88.65	---	---	---	---	92.84	92.48	90.44	89.75	89.65
6	88.89	87.94	88.68	---	---	---	---	92.84	92.49	90.37	89.78	89.55
7	88.83	87.91	88.57	---	---	---	---	92.84	92.49	90.37	89.80	89.78
8	88.74	87.90	88.52	---	---	---	---	92.85	92.38	90.36	89.78	89.78
9	88.72	87.95	---	---	---	---	---	92.85	92.32	90.34	89.73	89.67
10	88.68	88.01	---	---	---	---	---	92.86	92.30	90.24	89.62	89.64
11	88.64	88.09	---	---	---	---	---	92.86	92.30	90.07	89.46	89.58
12	88.62	88.38	---	---	---	---	e92.88	92.85	92.29	90.10	89.42	89.49
13	88.56	88.56	---	---	---	---	---	92.83	92.28	90.10	89.47	89.40
14	88.62	88.60	e88.42	---	---	---	---	92.82	92.23	90.04	89.54	89.37
15	88.38	88.63	---	---	---	---	---	92.79	92.20	89.99	89.46	89.35
16	88.27	88.63	---	---	---	---	---	92.79	92.20	89.90	89.36	89.35
17	88.17	88.62	---	---	---	---	---	92.88	92.17	89.75	89.28	89.32
18	88.14	88.60	---	---	---	---	---	93.04	92.10	89.74	89.28	89.27
19	88.12	88.57	---	---	---	---	93.78	93.00	91.97	89.72	89.32	89.30
20	88.25	88.45	---	---	---	---	---	92.97	91.86	89.65	89.44	89.45
21	88.02	88.54	---	---	---	---	---	92.93	91.77	89.59	89.30	89.55
22	87.86	88.58	---	---	---	---	---	92.91	91.69	89.58	89.42	89.55
23	87.91	88.64	---	---	---	---	---	92.88	91.56	89.57	89.36	89.52
24	87.93	88.62	---	---	---	---	---	92.83	91.46	89.55	89.20	89.49
25	87.85	88.58	---	---	---	---	---	92.79	91.34	89.52	89.29	89.46
26	87.74	88.55	---	---	---	---	---	92.77	91.15	89.43	89.42	89.52
27	87.74	88.67	---	---	---	---	---	92.76	91.03	89.37	89.32	89.59
28	87.80	88.59	---	---	---	---	---	92.73	90.93	89.36	89.21	89.64
29	87.74	88.59	---	---	---	---	---	92.69	90.97	89.37	89.25	89.59
30	87.71	88.63	---	---	---	---	---	92.58	90.94	89.42	89.27	89.54
31	87.71	---	---	---	---	---	---	92.53	---	89.48	89.21	---
MEAN	88.23	88.35	---	---	---	---	---	---	91.98	89.94	89.45	89.53
MAX	88.89	88.67	---	---	---	---	---	---	92.65	90.86	89.80	89.93
MIN	87.71	87.72	---	---	---	---	---	---	90.93	89.36	89.20	89.18

e Estimated.

DISCHARGE MEASUREMENTS AT PARTIAL-RECORD STATIONS  
AND MISCELLANEOUS SITES

As the number of streams on which streamflow information is likely to be desired far exceeds the number of stream-gaging stations feasible to operate at one time, the Geological Survey collects limited streamflow data at sites other than stream-gaging stations. When limited streamflow data are collected on a systematic basis over a period of years for use in hydrologic analyses, the site at which the data are collected is called a partial-record station. Data collected at these partial-record stations are usable in low-flow or flood-flow analyses, depending on the type of data collected. In addition, discharge measurements are made at other sites not included in the partial-record program. These measurements are generally made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Records collected at crest-stage partial-record stations are presented in a table of annual maximum stage and discharge. Discharge measurements made at miscellaneous sites for both low flows and high flows are given in a second table.

Crest-stage partial-record stations

The following table contains annual maximum discharges for crest-stage stations. A crest-stage gage is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the maximum discharge is not always certain but is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been obtained but is not published herein. The years given in the period of record represent water years for which the annual maximum has been determined.

Annual maximum discharge at crest-stage stations

Station number	Station name	Location	Drainage area (mi <sup>2</sup> )	Period of record	Water year 1996 maximum			Period of record maximum		
					Date	Gage height (feet)	Discharge (ft <sup>3</sup> /s)	Date	Gage height (ft)	Discharge (ft <sup>3</sup> /s)
RED RIVER OF THE NORTH BASIN										
05052500	Antelope Creek at Dwight, N. Dak.	Lat 46°18'52", long 97°03'10", in SE <sup>1</sup> / <sub>4</sub> sec.20, T.133 N., R.48 W., Richland County, Hydrologic Unit 09020105, at bridge on former U.S. Highway 81 about 0.5 mi north of Dwight.	293	1944-49# 1950-73 1975 1995-96	05-18-96	65.69	<sup>1</sup> 1,990	04-10-69	17.82	9,000
05056900	Sheyenne River tributary near Cooperstown, N. Dak.	Lat 47°27'25", long 98°00'25", in NW <sup>1</sup> / <sub>4</sub> NW <sup>1</sup> / <sub>4</sub> NW <sup>1</sup> / <sub>4</sub> sec.24, T.146 N., R.58 W., Griggs County, Hydrologic Unit 09020203, on county highway, 1.4 mi north of State Highway 200 and 5 mi east of Cooperstown.	15.2	1959-73 1995-96	04-10-96	3.50	<sup>2</sup> 120	04-01-69	9.80	1,000
05057100	Baldhill Creek near Binford, N. Dak.	Lat 47°33'56", long 98°22'56", in SE <sup>1</sup> / <sub>4</sub> SW <sup>1</sup> / <sub>4</sub> SE <sup>1</sup> / <sub>4</sub> sec.12, T.147 N., R.61 W., Griggs County, Hydrologic Unit 09020203, approximately 1.5 mi west of Binford on State Highway 65.	--	1996	04-18-96	17.28	69	--	--	--
05060470	Rush River near Hunter, N. Dak.	Lat 47°09'33", long 97°20'15", in SE <sup>1</sup> / <sub>4</sub> SW <sup>1</sup> / <sub>4</sub> SW <sup>1</sup> / <sub>4</sub> sec.36, T.143 N., R.53 W., Cass County, Hydrologic Unit 09020204, on county highway 2 mi south and 5.75 mi west of Hunter.	--	1996	04-12-96	17.28	92	--	--	--
05065810	Middle Branch Goose River tributary near Pickert, N. Dak.	Lat 47°26'54", long 97°44'22", in SW <sup>1</sup> / <sub>4</sub> SE <sup>1</sup> / <sub>4</sub> SE <sup>1</sup> / <sub>4</sub> sec.24, T.146 N., R.56 W., Steele County, Hydrologic Unit 09020109, on State Highway 200 4 mi east of Pickert.	--	1996	04-09-96	15.72	<sup>2</sup> 30	--	--	--
05082500	Red River of the North at Grand Forks, N. Dak.	Lat 47°56'34", long 97°03'10", in SW <sup>1</sup> / <sub>4</sub> NE <sup>1</sup> / <sub>4</sub> sec.33, T.152 N., R.50 W., Grand Forks County, Hydrologic Unit 09020301, on left bank 2.3 mi downstream from Red Lake River (previous site of Red River at Grand Forks.	30,100	1882-1983# 1987-96	04-22-96	45.30	58,400	04-10-1897	50.2	85,000

DISCHARGE MEASUREMENTS AT PARTIAL-RECORD STATIONS  
AND MISCELLANEOUS SITES

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Station number	Station name	Location	Drainage area (mi <sup>2</sup> )	Period of record	Water year 1996 maximum			Period of record maximum		
					Date	Gage height (feet)	Discharge (ft <sup>3</sup> /s)	Date	Gage height (ft)	Discharge (ft <sup>3</sup> /s)
RED RIVER OF THE NORTH BASIN--Continued										
05083500	Red River of the North at Oslo, Minn.	Lat 48°11'40", long 97°08'30", in SW <sup>1</sup> / <sub>4</sub> SW <sup>1</sup> / <sub>4</sub> sec.36, T.155 N., R.51 W., Walsh County, Hydrologic Unit 09020306, on bridge crossing the Red River 0.5 mi west of Oslo, Minn.	31,200	1936-37# 1941-43# 1945-60# 1974-76# 1985-96	04-22-96	36.95	59,200	05-10-50	31.83	63,000
05099300	Unnamed tributary near Langdon, N. Dak.	Lat 48°41'43", long 98°27'30", in NW <sup>1</sup> / <sub>4</sub> SW <sup>1</sup> / <sub>4</sub> NW <sup>1</sup> / <sub>4</sub> sec.12, T.160 N., R.61 W., Cavalier County, Hydrologic Unit 09020313, on county road 4.25 mi south and 5 mi west of Langdon.	--	1996	04-12-96	20.56	( <sup>3</sup> )	--	--	--
05100450	Tongue River near Osnabrock, N. Dak.	Lat 48°43'25", long 98°09'19", in SE <sup>1</sup> / <sub>4</sub> NE <sup>1</sup> / <sub>4</sub> SE <sup>1</sup> / <sub>4</sub> sec.33, T.161 N., R.58 W., Cavalier County, Hydrologic Unit 09020313, approximately 3.5 mi north of Osnabrock.	--	1996	04-18-96	15.90	123	--	--	--
05102490	Red River of the North at Pembina, N. Dak.	Lat 48°58'17", long 97°14'16", in NE <sup>1</sup> / <sub>4</sub> sec.4, T.163 N., R.51 W., Pembina County, Hydrologic Unit 09020311, on bridge crossing the Red River 0.2 mi north of Pembina.	40,200	1985-96	04-26-96	790.95	66,400	04-26-96	790.95	66,400
05113520	Long Creek tributary near Crosby, N. Dak.	Lat 48°50'11", long 103°19'19", on north line sec.30, T.162 N., R.97 W., Divide County, Hydrologic Unit 09010001, 0.5 mi west of State Highway 42 and 5 mi south of Crosby.	0.40	1960-73 1995-96	02-09-96	4.29	16	06-69	7.15	65
05116100	Souris River tributary near Burlington, N. Dak.	Lat 48°18'04", long 101°25'13", in SW <sup>1</sup> / <sub>4</sub> sec.25, T.156 N., R.84 W., Ward County, Hydrologic Unit 09010001, at culvert on county highway, 1.8 mi north of Burlington.	0.13	1959-73 1995-96	03-15-96	4.76	18	07-72	8.50	30
05116135	Tasker Coulee tributary near Kenaston, N. Dak.	Lat 46°38'00", long 102°07'30", in NE <sup>1</sup> / <sub>4</sub> NE <sup>1</sup> / <sub>4</sub> sec.2, T.159 N., R.89 W., Ward County, Hydrologic Unit 09010002, at culvert on gravel road 1.5 mi northwest of Kenaston.	<sup>2</sup> 5.0	1996	04-10-96	1,295.70	450	--	--	--
05119410	Bonnes Coulee near Velva, N. Dak.	Lat 48°03'30", long 100°57'00", in NE <sup>1</sup> / <sub>4</sub> SW <sup>1</sup> / <sub>4</sub> sec.21, T.153 N., R.80 W., McHenry County, Hydrologic Unit 09010001, at culvert on U.S. Highway 52, 0.5 mi west of Velva.	53.0	1962 1965 1971-73 1976-77 1987-96	03-13-96	<sup>2</sup> 5.16	<sup>4</sup> 200	07-27-93	6.71	<sup>4</sup> 1,000
05123300	Oak Creek tributary near Bottineau, N. Dak.	Lat 48°49'14", long 100°24'38", in SW <sup>1</sup> / <sub>4</sub> SW <sup>1</sup> / <sub>4</sub> SE <sup>1</sup> / <sub>4</sub> sec.29, T.162 N., R.75 W., Bottineau County, Hydrologic Unit 09010004, on State Highway 5, 1.5 mi east of Bottineau.	3.10	1955 1959-73 1995-96	04-96	10.81	<sup>4</sup> <10	07-06-55	16.52	851
05123350	Oak Creek tributary No. 5 near Bottineau, N. Dak.	Lat 48°49'14", long 100°20'42", on south lines sec.26, T.162 N., R.75 W., Bottineau County, Hydrologic Unit 09010004, 1 mi north of State Highway 5 and 4.5 mi east of Bottineau.	0.56	1959-73 1995-96	04-96	--	<sup>4</sup> <5	04-08-69	7.10	118

DISCHARGE MEASUREMENTS AT PARTIAL-RECORD STATIONS  
AND MISCELLANEOUS SITES

Station number	Station name	Location	Drainage area (mi <sup>2</sup> )	Period of record	Water year 1996 maximum			Period of record maximum		
					Date	Gage height (feet)	Discharge (ft <sup>3</sup> /s)	Date	Gage height (ft)	Discharge (ft <sup>3</sup> /s)
MISSOURI RIVER BASIN										
06332150	White Earth River tributary near White Earth, N. Dak.	Lat 48°19'55", long 102°45'10", in S <sup>1</sup> / <sub>2</sub> sec.15, T.156 N., R.94 W., Mountrail County, Hydrologic Unit 10110101, at culvert on U.S. Highway 2, 3 mi south of White Earth.	0.32	1960-73 1995-96	05-17-96	7.30	55	06-05-63	8.40	107
06336100	Sheep Creek tributary near Medora, N. Dak.	Lat 46°54'00", long 103°26'53", in SE <sup>1</sup> / <sub>4</sub> NW <sup>1</sup> / <sub>4</sub> SE <sup>1</sup> / <sub>4</sub> sec.29, T.140 N., R.101 W., Billings County, Hydrologic Unit 10110203, at culvert on Interstate Highway 94, 4.0 mi east of Medora.	0.29	1955-73 1995-96	03-12-96	8.26	21	06-20-60	6.55	147
06336300	Little Missouri River tributary near Medora, N. Dak.	Lat 46°57'05", long 103°30'20", in SE <sup>1</sup> / <sub>4</sub> sec.11, T.140 N., R.102 W., Billings County, Hydrologic Unit 10110203, at Culvert on Theodore Roosevelt National Park highway, 3 mi north of Medora.	0.32	1955-73 1995-96	1995 03-12-96	-- 3.85	0 12	06-20-60	10.90	200
06337900	Snake Creek tributary near Garrison, N. Dak.	Lat 47°37'55", long 101°21'00", on south line sec. 14, T.148 N., R.84 W., McLean County, Hydrologic Unit 10110101, at culvert on county highway, 1 mi south of State Highway 37 and 3 mi southeast of Garrison.	1.22	1959-73 1995-96	04-11-96	5.61	83	04-60	6.18	92
06342875	North Fork Bull Creek near Belfield, N. Dak.	Lat 46°11'48", long 103°13'54", in SE <sup>1</sup> / <sub>4</sub> NE <sup>1</sup> / <sub>4</sub> sec.12, T.137 N., R.100 W., Billings County, Hydrologic Unit 10130202, at culvert on gravel road 13.25 mi south of Belfield on U.S. Highway 85, 2 mi west of U.S. Highway 85 on gravel road and 0.25 mi south.	<sup>2</sup> 5.7	1996	04-11-96	1,392.08	30	--	--	--
06343000	Heart River near South Heart, N. Dak.	Lat 46°51'56", long 102°56'53", in NE <sup>1</sup> / <sub>4</sub> SE <sup>1</sup> / <sub>4</sub> SW <sup>1</sup> / <sub>4</sub> sec.8, T.139 N., R.97 W., Stark County, Hydrologic Unit 10130202, on left bank 1.7 mi downstream from North Creek, 2 mi east of South Heart and 5.5 mi upstream from Edward Arthur Patterson Lake.	311	1965-84# 1985-96	03-12-96	--	<sup>4</sup> 980	05-09-70	22.77	8,080
06346650	Heart Butte Creek near Hebron, N. Dak.	Lat 46°49'06", long 102°03'12", in SE <sup>1</sup> / <sub>4</sub> NE <sup>1</sup> / <sub>4</sub> sec.32, T.139 N., R.90 W., Morton County, Hydrologic Unit 10130203, at bridge on Morton County road 90, 3.25 mi south of Interstate 94.	<sup>2</sup> 1.6	1996	03-12-96	1,494.04	( <sup>3</sup> )	--	--	--
06349083	Southeast Branch Little Heart River at Saint Anthony, N. Dak.	Lat 46°37'12", long 100°54'12", in SW <sup>1</sup> / <sub>4</sub> SW <sup>1</sup> / <sub>4</sub> sec.5, T.136 N., R.81 W., Morton County, Hydrologic Unit 10130102, at culvert on State Highway 6, 0.75 mi northwest of St. Anthony	<sup>2</sup> 40.2	1996	03-12-96	1,692.03	88	--	--	--
06352380	Timber Creek tributary near New Leipzig, N. Dak.	Lat 46°12'36", long 101°57'36", in NW <sup>1</sup> / <sub>4</sub> SW <sup>1</sup> / <sub>4</sub> sec.33 T.132 N., R.90 W., Grant County, Hydrologic Unit 10130205, at culvert on State Highway 49, 11.75 mi south of New Leipzig.	<sup>2</sup> 2.8	1996	03-12-96	1,592.56	<sup>2</sup> 10	--	--	--

DISCHARGE MEASUREMENTS AT PARTIAL-RECORD STATIONS  
AND MISCELLANEOUS SITES

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Station number	Station name	Location	Drain- age area (mi <sup>2</sup> )	Period of record	Water year 1996 maximum			Period of record maximum		
					Date	Gage height (feet)	Dis- charge (ft <sup>3</sup> /s)	Date	Gage height (ft)	Dis- charge (ft <sup>3</sup> /s)
MISSOURI RIVER BASIN--Continued										
06470200	Beaver Creek tributary near Eldridge, N. Dak.	Lat 46°52'15", long 98°55'30", on east line sec.7, T.139 N., R. 65 W., Stutsman County, Hydrologic Unit 10160003, at culvert on county highway 4 mi southwest of Eldridge.	0.19	1955-73 1995-96	03-12-96	5.28	( <sup>3</sup> )	--	--	--
06471100	Maple Creek tributary near Edgeley, N. Dak.	Lat 46°25'00", long 98°49'42", in NE <sup>1</sup> / <sub>4</sub> SE <sup>1</sup> / <sub>4</sub> SE <sup>1</sup> / <sub>4</sub> sec.15, T.134 N., R.65 W., LaMoure County, Hydrologic Unit 10160004, at culvert on gravel road 10.25 mi northwest of Edgeley.	<sup>2</sup> 5.25	1996	03-12-96	1,099.31	( <sup>3</sup> )	--	--	--
06471150	South Fork Maple River tributary near Merricourt, N. Dak.	Lat 46°14'54", long 98°42'48", in NE <sup>1</sup> / <sub>4</sub> NE <sup>1</sup> / <sub>4</sub> SW <sup>1</sup> / <sub>4</sub> sec.17, T.132 N., R.64 W., Dickey County, Hydrologic Unit 10160004, at culvert on gravel road 5.5 mi northeast of Merricourt.	<sup>2</sup> 5.5	1996	03-12-96	1,196.84	( <sup>3</sup> )	--	--	--

<sup>#</sup>Operated as a continuous-record gaging station.

<sup>1</sup>Observed.

<sup>2</sup>Approximately.

<sup>3</sup>Additional culvert/channel geometry required prior to determination of maximum discharge. Actual value will be published next water year.

<sup>4</sup>Estimated.



Measurements of streamflow at points other than gaging stations are given in the following table.

Station number	Station name	Location	Drainage area (mi <sup>2</sup> )	Measured previously (water years)	Measurements	
					Date	Dis-charge (ft <sup>3</sup> /s)
RED RIVER OF THE NORTH BASIN						
--	Wild Rice River 3 miles above Highway 46	Lat 46°35'39", long 96°51'13", in SW <sup>1</sup> / <sub>4</sub> sec.16, T.136 N., R.49 W., Richland County, Hydrologic Unit 09020105, at bridge 1 mi north and 2 mi west of Christine.	--	--	05-01-96 05-03-96 05-07-96	415 363 264
--	Wild Rice River at Highway 16 bridge	Lat 46°43'30", long 96°49'48", in SW <sup>1</sup> / <sub>4</sub> sec.35, T.138 N., R.49 W., Cass County, Hydrologic Unit 09020105, at bridge 3 mi south and 4 mi west of Horace on County Highway 16.	--	--	04-29-96 05-01-96 05-03-96 05-07-96	586 621 528 318
--	Goose River near Northwood, N. Dak.	Lat 47°44'39", long 97°37'24", in SE <sup>1</sup> / <sub>4</sub> SE <sup>1</sup> / <sub>4</sub> sec.1, T.149 N., R.55 W., Grand Forks County, Hydrologic Unit 09020109, approximately 3 mi northwest of Northwood on Highway 15.	260	1993	04-17-96	1,100
--	Mauvais Coulee near Egeland, N. Dak.	Lat 48°37'54", long 99°12'06", in SW <sup>1</sup> / <sub>4</sub> SE <sup>1</sup> / <sub>4</sub> SW <sup>1</sup> / <sub>4</sub> sec.32, T.160 N., R.66 W., Towner County, Hydrologic Unit 09020201, approximately 5 mi west of Egeland on Highway 66.	<sup>1</sup> 64	1995	04-15-96 04-23-96	<sup>2</sup> 75 <sup>2</sup> 40
--	Big Coulee near Cando, N. Dak.	Lat 48°32'19", long 99°12'35", in NE <sup>1</sup> / <sub>4</sub> NE <sup>1</sup> / <sub>4</sub> NE <sup>1</sup> / <sub>4</sub> sec.6, T.158 N., R.60 W., Towner County, Hydrologic Unit 09020201, approximately 3 mi north of Cando on Highway 281.	122	1995	04-15-96	374
--	Sheyenne River 5 miles south of Maddock, N. Dak.	Lat 47°53'19", long 99°32'05", in SW <sup>1</sup> / <sub>4</sub> SW <sup>1</sup> / <sub>4</sub> sec.17, T.151 N., R.69 W., Benson County, Hydrologic Unit 09020202, at bridge crossing on State Highway 30, 5 mi south of Maddock.	--	--	04-22-96 04-26-96	482 352
--	Sheyenne River 3 miles south of Flora, N. Dak.	Lat 47°54'26", long 99°24'55", in SE <sup>1</sup> / <sub>4</sub> SW <sup>1</sup> / <sub>4</sub> sec.7, T.151 N., R.68 W., Benson County, Hydrologic Unit 09020202, at bridge crossing 3 mi south of Flora.	--	--	04-22-96 04-26-96	505 364
--	Sheyenne River 7.5 miles west of Sheyenne, N. Dak.	Lat 47°49'20", long 99°16'35", in SE <sup>1</sup> / <sub>4</sub> SE <sup>1</sup> / <sub>4</sub> sec.7, T.150 N., R.67 W., Eddy County, Hydrologic Unit 09020202, at bridge crossing 7.5 mi west of Sheyenne.	--	--	04-22-96 04-26-96	573 389

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Station number	Station name	Location	Drainage area (mi <sup>2</sup> )	Measured previously (water years)	Measurements	
					Date	Dis-charge (ft <sup>3</sup> /s)
RED RIVER OF THE NORTH BASIN--Continued						
--	Sheyenne River 4 miles west of Sheyenne, N. Dak.	Lat 47°49'57", long 99°12'27", in NW <sup>1</sup> / <sub>4</sub> NW <sup>1</sup> / <sub>4</sub> sec.11, T.150 N., R.67 W., Eddy County, Hydrologic Unit 09020202, at bridge crossing 4 mi west of Sheyenne.	--	--	04-22-96 04-26-96	552 409
--	Sheyenne River 1 mile north of Sheyenne, N. Dak.	Lat 47°50'20", long 99°07'31", in NW <sup>1</sup> / <sub>4</sub> SW <sup>1</sup> / <sub>4</sub> sec.4, T.150 N., R.66 W., Eddy County, Hydrologic Unit 09020202, at bridge crossing on U.S. Highway 281, 1 mi north of Sheyenne.	--	--	04-22-96 04-26-96	583 413
--	Sheyenne River 4 miles northeast of Sheyenne, N. Dak.	Lat 47°51'16", long 99°02'24", in NW <sup>1</sup> / <sub>4</sub> SW <sup>1</sup> / <sub>4</sub> sec.31, T.151 N., R.65 W., Benson County, Hydrologic Unit 09020202, at bridge crossing 4 mi northeast of Sheyenne.	--	--	04-22-96 04-26-96	609 442
--	Sheyenne River 7 miles southwest of Warwick, N. Dak.	Lat 47°45'01", long 98°50'25", in NE <sup>1</sup> / <sub>4</sub> SW <sup>1</sup> / <sub>4</sub> sec.3, T.149 N., R.64 W., Eddy County, Hydrologic Unit 09020203, at bridge crossing 7 mi southwest of Warwick.	--	--	04-22-96 04-26-96 05-03-96	912 580 339
--	Sheyenne River 3 miles south of Hamar, N. Dak.	Lat 47°47'42", long 98°35'17", in NW <sup>1</sup> / <sub>4</sub> SW <sup>1</sup> / <sub>4</sub> sec.22, T.150 N., R.62 W., Eddy County, Hydrologic Unit 09020203, at bridge crossing on State Highway 20, 3 mi south of Hamar.	--	--	04-26-96 05-03-96	696 345
--	Sheyenne River 2.5 miles southwest of Pekin, N. Dak.	Lat 47°46'52", long 98°22'46", in NE <sup>1</sup> / <sub>4</sub> SE <sup>1</sup> / <sub>4</sub> sec.30, T.150 N., R.60 W., Nelson County, Hydrologic Unit 09020203, at bridge crossing 2.5 mi southwest of Pekin.	--	--	04-26-96 05-03-96	908 500
--	Sheyenne River near Pekin, N. Dak.	Lat 47°45'48", long 98°18'55", in SW <sup>1</sup> / <sub>4</sub> NE <sup>1</sup> / <sub>4</sub> SE <sup>1</sup> / <sub>4</sub> sec.34, T.150 N., R.60 W., Nelson County, Hydrologic Unit 09020203, approximately 2.5 mi southeast of Pekin on Highway 1.	790	1995	04-17-96 04-26-96 05-03-96	4,320 1,040 559
--	Sheyenne River 3 miles southwest of McVile, N. Dak.	Lat 47°44'20", long 98°14'19", in SE <sup>1</sup> / <sub>4</sub> NW <sup>1</sup> / <sub>4</sub> sec.8, T.149 N., R.59 W., Nelson County, Hydrologic Unit 09020203, at bridge crossing 3 mi southwest of McVile.	--	--	04-26-96 05-03-96 05-07-96 05-13-96	1,140 604 437 320
--	Sheyenne River 3.5 miles south of McVile, N. Dak.	Lat 47°42'46", long 98°09'39", in NE <sup>1</sup> / <sub>4</sub> NE <sup>1</sup> / <sub>4</sub> sec.23, T.149 N., R.59 W., Nelson County, Hydrologic Unit 09020203, at bridge crossing 3.5 mi south of McVile.	--	--	05-07-96 05-13-96	521 408

DISCHARGE MEASUREMENTS AT PARTIAL-RECORD STATIONS  
AND MISCELLANEOUS SITES

Station number	Station name	Location	Drainage area (mi <sup>2</sup> )	Measured previously (water years)	Measurements	
					Date	Dis-charge (ft <sup>3</sup> /s)
RED RIVER OF THE NORTH BASIN--Continued						
--	Sheyenne River 6 miles southeast of McVile, N. Dak.	Lat 47°41'14", long 98°07'49", in NE <sup>1</sup> / <sub>4</sub> NW <sup>1</sup> / <sub>4</sub> sec.31, T.149 N., R.58 W., Nelson County, Hydrologic Unit 09020203, at bridge crossing 6 mi southeast of McVile.	--	--	05-07-96 05-13-96	490 356
--	Sheyenne River 10.5 miles north of Cooperstown, N. Dak.	Lat 47°35'50", long 98°07'15", in SW <sup>1</sup> / <sub>4</sub> NE <sup>1</sup> / <sub>4</sub> sec.36, T.148 N., R.58 W., Griggs County, Hydrologic Unit 09020203, at bridge crossing 10.5 mi north of Cooperstown.	--	--	05-07-96 05-13-96	561 417
--	Sheyenne River 7 miles northeast of Cooperstown, N. Dak.	Lat 47°32'40", long 98°03'12", in SE <sup>1</sup> / <sub>4</sub> SE <sup>1</sup> / <sub>4</sub> sec.16, T.147 N., R.58 W., Griggs County, Hydrologic Unit 09020203, at bridge crossing 7 mi northeast of Cooperstown.	--	--	05-07-96 05-13-96	611 458
--	Sheyenne River 5 miles northeast of Cooperstown, N. Dak.	Lat 47°30'02", long 97°59'36", in NW <sup>1</sup> / <sub>4</sub> NE <sup>1</sup> / <sub>4</sub> sec.1, T.146 N., R.58 W., Griggs County, Hydrologic Unit 09020203, at bridge crossing 5 mi northeast of Cooperstown.	--	--	05-07-96 05-13-96	623 457
--	Sheyenne River near Lisbon, N. Dak.	Lat 46°26'29", long 97°29'32", in SE <sup>1</sup> / <sub>4</sub> SE <sup>1</sup> / <sub>4</sub> SE <sup>1</sup> / <sub>4</sub> sec.5, T.134 N., R.54 W., Sargent County, Hydrologic Unit 09020204, approximately 9 mi east of Lisbon on Highway 27.	2,690	1993 1995	04-26-96	4,670
--	Sheyenne River at Owego Township	Lat 46°30'51", long 109°72'03", in SW <sup>1</sup> / <sub>4</sub> SW <sup>1</sup> / <sub>4</sub> SW <sup>1</sup> / <sub>4</sub> sec.10, T.135 N., R.53 W., Ransom County, Hydrologic Unit 09020204, on upstream side of bridge on county road 7 mi east and 5 mi south of Sheldon.	--	--	09-04-96	93.9
--	Sheyenne River tributary	Lat 46°43'28", long 96°59'59", in SW <sup>1</sup> / <sub>4</sub> sec.33, T.138 N., R.50 W., Cass County, Hydrologic Unit 09020204, 3 mi south and 4 mi west of Horace on County Highway 16.	--	--	04-30-96	20.4
--	Drain #21 off Sheyenne River Diversion near West Fargo, N. Dak.	Lat 46°53'55", long 96°54'52", in SW <sup>1</sup> / <sub>4</sub> NE <sup>1</sup> / <sub>4</sub> sec.31, T.140 N., R.49 W., Cass County, Hydrologic Unit 09020204, 0.5 mi west of West Fargo and 1 mi north of 12th Avenue.	--	--	05-03-96 05-06-96	1,210 955
05089000	South Branch Park River below Homme Dam, N. Dak.	Lat 48°24'07", long 97°46'55", in SE <sup>1</sup> / <sub>4</sub> sec.19, T.157 N., R.55 W., Walsh County, Hydrologic Unit 09020310, on right bank 0.5 mi downstream from Homme Dam and 2 mi west of Park River.	226	1950-94	05-17-96	3,750

DISCHARGE MEASUREMENTS AT PARTIAL-RECORD STATIONS  
AND MISCELLANEOUS SITES

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Station number	Station name	Location	Drainage area (mi <sup>2</sup> )	Measured previously (water years)	Measurements	
					Date	Dis-charge (ft <sup>3</sup> /s)
RED RIVER OF THE NORTH BASIN--Continued						
--	Middle Branch Park River near Hoople, N. Dak.	Lat 48°28'58", long 97°37'17", in NE <sup>1</sup> / <sub>4</sub> NE <sup>1</sup> / <sub>4</sub> sec.29, T.158 N., R.54 W., Walsh County, Hydrologic Unit 09020310, approximately 4 mi southeast of Hoople on Highway 18.	<sup>1</sup> 116	1993	05-17-96	651
MISSOURI RIVER BASIN						
06342890	South Branch Heart River below Bull Creek, N. Dak.	Lat 46°49'05", long 103°04'47", in SE <sup>1</sup> / <sub>4</sub> SW <sup>1</sup> / <sub>4</sub> SW <sup>1</sup> / <sub>4</sub> sec.29, T.138 N., R.98 W., Stark County, Hydrologic Unit 10130202, on upstream side of bridge on road, 4.0 mi southwest of South Heart.	--	--	03-11-96 03-12-96 03-14-96	56.8 360 55.5
06342900	South Branch Heart River near South Heart, N. Dak.	Lat 46°50'24", long 103°01'12", in NE <sup>1</sup> / <sub>4</sub> NE <sup>1</sup> / <sub>4</sub> SE <sup>1</sup> / <sub>4</sub> sec.22, T.139 N., R.98 W., Stark County, Hydrologic Unit 10130202, on upstream side of bridge on county road, 4.1 mi upstream from mouth and 2.1 mi southwest of South Heart.	132	1978-80	02-09-96 03-11-96 03-12-96 03-14-96	178 95.7 275 93.4
06342920	Heart River at South Heart, N. Dak.	Lat 46°52'09", long 102°59'42", in NW <sup>1</sup> / <sub>4</sub> NW <sup>1</sup> / <sub>4</sub> NW <sup>1</sup> / <sub>4</sub> sec.12, T.139 N., R.97 W., Stark County, Hydrologic Unit 10130202, on upstream side of bridge on county road, 0.5 mi north of South Heart.	--	--	10-13-95 11-30-95 02-09-96 03-11-96 03-12-96 03-14-96	0.60 0.82 344 10.7 842 162
06342970	North Creek near South Heart, N. Dak.	Lat 46°53'55", long 102°59'55" in SE <sup>1</sup> / <sub>4</sub> NE <sup>1</sup> / <sub>4</sub> SE <sup>1</sup> / <sub>4</sub> sec.35, T.140 N., R.98 W., Stark County, Hydrologic Unit 10130202, on upstream side of bridge on county road, 5.4 mi upstream from mouth and 2.2 mi north of South Heart.	40.8	1978-80	11-30-95 03-11-96 03-12-96	0.40 10.2 126
06343420	Ash Creek near South Heart, N. Dak.	Lat 46°49'01", long 102°53'35" in NE <sup>1</sup> / <sub>4</sub> NE <sup>1</sup> / <sub>4</sub> NE <sup>1</sup> / <sub>4</sub> sec.34, T.138 N., R.97 W., Stark County, Hydrologic Unit 10130202, on upstream side of bridge road, 2.5 mi south of E. A. Patterson Lake.	--	--	03-11-96 03-12-96	196 34.5
06344100	Heart River at State Avenue in Dickinson, N. Dak.	Lat 46°52'10", long 102°48'33" in SE <sup>1</sup> / <sub>4</sub> SE <sup>1</sup> / <sub>4</sub> NE <sup>1</sup> / <sub>4</sub> , sec.8, T.139 N., R.96 W., Stark County, Hydrologic Unit 10130202, on upstream side of bridge on State Avenue, 0.2 mi south of Dickinson.	--	--	10-13-95	3.07
--	Unnamed creek at Linton, N. Dak.	Lat 46°16'33", long 100°14'22", in SE <sup>1</sup> / <sub>4</sub> SW <sup>1</sup> / <sub>4</sub> sec.6, T.132 N., R.76 W., Emmons County, Hydrologic Unit 10130104, just north of Linton on U.S. Highway 83.	2.60	--	03-12-96	<sup>2</sup> 8

DISCHARGE MEASUREMENTS AT PARTIAL-RECORD STATIONS  
AND MISCELLANEOUS SITES

Station number	Station name	Location	Drainage area (mi <sup>2</sup> )	Measured previously (water years)	Measurements	
					Date	Dis-charge (ft <sup>3</sup> /s)
MISSOURI RIVER BASIN--Continued						
--	James River below Jamestown	Lat 46°54'44", long 98°43'06" in NE <sup>1</sup> / <sub>4</sub> NE <sup>1</sup> / <sub>4</sub> SE <sup>1</sup> / <sub>4</sub> sec.26, T.140 N., R.64 W.,	1,760	1993, 95	04-17-96	929
	Reservoir at Jamestown, N. Dak.	Stutsman County, Hydrologic Unit 10160001, at bridge on U.S. Highway 83, 1 mi downstream from Jamestown Dam.			05-03-96	1,260
					05-08-96	1,270
--	Bear Creek near Verona, N. Dak.	Lat 46°26'35", long 98°02'44", in SE <sup>1</sup> / <sub>4</sub> SW <sup>1</sup> / <sub>4</sub> sec.1, T.134 N., R.59 W., LaMoure County, Hydrologic Unit 10160003, 5.5 mi north of Verona on Highway 1 and 1.5 mi east on Highway 27.	<sup>1</sup> 47	1993	04-13-96	258

<sup>1</sup>Contributing drainage area.<sup>2</sup>Estimated.



## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

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Water-quality partial-record stations are particular sites where chemical-quality, biological and/or sediment data are collected systematically over a period of years for use in hydrologic analyses. These data are collected usually less than quarterly. Samples collected at sites other than gaging stations and partial-record stations to give better areal coverage in a river basin are referred to as miscellaneous sites.

## 463051097203300 SHEYENNE RIVER AT OWEGO TOWNSHIP, ND (LAT 46 30 51N LONG 097 20 33W)

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	HARD-NESS TOTAL (MG/L AS CAC03) (00900)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L AS CAC03) (39086)	
SEP 04...	1345	94	988	7.4	744	32.5	22.5	9.8	117	370	267	
DATE		ALKA-LINITY LAB (MG/L AS CAC03) (90410)	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)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE WATER DIS IT FIELD (MG/L AS HCO3) (00453)	CAR-BONATE WATER DIS IT FIELD (MG/L AS CO3) (00452)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	
SEP 04...	252		85	39	72	29	2	9.9	326	0	210	24
DATE		FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	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, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	
SEP 04...		0.20	19	620	634	0.86	161	<0.010	<0.050	<0.015	0.90	
DATE		NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO-GEN, TOTAL (MG/L AS N) (00600)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C) (00689)	
SEP 04...		0.90	0.40	0.90	0.130	0.050	0.030	<3	75	6.4	1.8	

## 05083500 RED RIVER OF THE NORTH AT OSLO, MN (LAT 48 11 35N LONG 097 08 25W)

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD) (00400)	HARD-NESS TOTAL (MG/L) AS (CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L) AS (CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L) AS (MG) (00925)	SODIUM, DIS-SOLVED (MG/L) AS (NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	
APR 22...	1725	59200	351	8.1	150	37	15	9.4	11	0.3
DATE		POTAS-SIUM, DIS-SOLVED (MG/L) AS (K) (00935)	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)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)
APR 22..	6.6	127	66	7.7	0.20	218	236	0.32	37700	
DATE		ARSENIC DIS-SOLVED (UG/L) AS (AS) (01000)	IRON, DIS-SOLVED (UG/L) AS (FE) (01046)	LEAD, DIS-SOLVED (UG/L) AS (PB) (01049)	LITHIUM DIS-SOLVED (UG/L) AS (LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L) AS (MN) (01056)	MERCURY DIS-SOLVED (UG/L) AS (HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L) AS (MO) (01060)	SELE-NIUM, DIS-SOLVED (UG/L) AS (SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L) AS (SR) (01080)
APR 22...	4	100	<1	10	50	0.1	<1	<1	140	

## 05119410 BONNES COULEE NEAR VELVA, ND (LAT 48 03 30N LONG 100 57 00W)

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD) (00400)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L) AS (CACO3) (00900)	ALKA-LINITY LAB (MG/L) AS (CACO3) (90410)	CALCIUM DIS-SOLVED (MG/L) AS (CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L) AS (MG) (00925)	
MAR 14...	1030	63	260	7.8	0.0	0.5	76	82	18	7.5	
DATE	TIME	SODIUM, DIS-SOLVED (MG/L) AS (NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L) AS (K) (00935)	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, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	
MAR 14...	17	29	0.8	12	51	3.4	0.10	159	196	0.27	
DATE	TIME	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L) AS (AS) (01000)	IRON, DIS-SOLVED (UG/L) AS (FE) (01046)	LEAD, DIS-SOLVED (UG/L) AS (PB) (01049)	LITHIUM DIS-SOLVED (UG/L) AS (LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L) AS (MN) (01056)	MERCURY DIS-SOLVED (UG/L) AS (HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L) AS (MO) (01060)	SELE-NIUM, DIS-SOLVED (UG/L) AS (SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L) AS (SR) (01080)
MAR 14...	33.1	1	90	<1	10	130	0.1	<1	<1	180	

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

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06343000 HEART RIVER NR SOUTH HEART, ND (LAT 46 51 56N LONG 102 56 53W)

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
AUG 07...	1135	5.5	3350	7.7	23.5	18.0	400	586	68	55
DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED PER AC-FT) (70303)
AUG 07...	670	78	15	12	1300	17	0.80	2480	2450	3.33
DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
AUG 07...	36.2	7	30	<1	50	170	<0.1	<1	<1	970

SITE IDENTIFIERS.--Site number, 481208101531700; local identifier, 155-087-32DBCA.

LOCATION.--Lat 48°12'08", long 101°53'17", sec.32, T.155 N., R.87 W., Ward County, Hydrologic unit 10110101, located approximately 8 mi southwest of Berthold.

PERIOD OF DAILY RECORDS.--

GAGE HEIGHT: May 1995 to September 1996 (seasonal).

WATER TEMPERATURE: May 1995 to September 1996 (seasonal).

SPECIFIC CONDUCTANCE: May 1995 to September 1996 (seasonal).

RAINFALL: May 1995 to September 1996 (seasonal).

INSTRUMENTATION.--Water-quality monitor and tipping bucket rain gage.

REMARKS.--Records good except for the specific-conductance record, which is poor.

EXTREMES FOR PERIOD OF RECORD.--

GAGE HEIGHT: Maximum recorded, 9.43 ft, July 21, 1996; minimum recorded, 6.49 ft, September 25, 1995.

WATER TEMPERATURE: Maximum recorded, 26.9°C, July 17, 1995; minimum recorded, 5.9°C, September 22, 1995.

SPECIFIC CONDUCTANCE: Maximum recorded, 1,590 microsiemens, August 23, 1995; minimum recorded, 875 microsiemens, July 20, 1996.

RAINFALL: Maximum recorded, 2.35 inches, July 20, 1996.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	9.40	9.29	8.80
2	---	---	---	---	---	---	---	---	---	9.39	9.28	8.78
3	---	---	---	---	---	---	---	---	---	9.36	9.28	8.76
4	---	---	---	---	---	---	---	---	---	9.35	9.28	8.75
5	---	---	---	---	---	---	---	---	---	9.35	9.27	8.75
6	---	---	---	---	---	---	---	---	---	9.33	9.24	8.74
7	---	---	---	---	---	---	---	---	---	9.31	9.23	8.73
8	---	---	---	---	---	---	---	---	---	9.28	9.20	8.72
9	---	---	---	---	---	---	---	---	---	9.27	9.19	8.70
10	---	---	---	---	---	---	---	---	---	9.25	9.19	8.68
11	---	---	---	---	---	---	---	---	---	9.23	9.17	8.66
12	---	---	---	---	---	---	---	---	---	9.21	9.15	8.64
13	---	---	---	---	---	---	---	---	---	9.20	9.13	8.62
14	---	---	---	---	---	---	---	---	---	9.22	9.12	8.59
15	---	---	---	---	---	---	---	---	---	9.25	9.11	8.57
16	---	---	---	---	---	---	---	---	---	9.24	9.10	8.56
17	---	---	---	---	---	---	---	---	---	9.23	9.09	8.53
18	---	---	---	---	---	---	---	---	---	9.22	9.06	8.53
19	---	---	---	---	---	---	---	---	---	9.20	9.04	8.53
20	---	---	---	---	---	---	---	---	---	9.41	9.02	8.54
21	---	---	---	---	---	---	---	---	---	9.43	9.00	8.55
22	---	---	---	---	---	---	---	---	---	9.41	8.99	8.56
23	---	---	---	---	---	---	---	---	---	9.39	8.97	8.55
24	---	---	---	---	---	---	---	---	---	9.38	8.95	8.54
25	---	---	---	---	---	---	---	---	---	9.37	8.93	8.53
26	---	---	---	---	---	---	---	---	---	9.36	8.92	---
27	---	---	---	---	---	---	---	---	---	9.36	8.90	---
28	---	---	---	---	---	---	---	---	---	9.34	8.88	---
29	---	---	---	---	---	---	---	---	---	9.33	8.86	---
30	---	---	---	---	---	---	---	---	---	9.39	8.85	---
31	---	---	---	---	---	---	---	---	---	9.30	8.82	---
MEAN	---	---	---	---	---	---	---	---	---	9.31	9.08	---
MAX	---	---	---	---	---	---	---	---	---	9.43	9.29	---
MIN	---	---	---	---	---	---	---	---	---	9.20	8.82	---

## ANALYSES OF SAMPLES COLLECTED AT WETLAND SITES

339

## Site number, 481208101531700--Continued

## WATER TEMPERATURE, DEGREES CELSIUS, JUNE TO SEPTEMBER 1996

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	24.2	21.4	22.6	24.2	20.5	22.1	23.0	21.0	22.0
2	---	---	---	25.1	22.9	24.1	23.8	21.9	22.9	22.9	19.5	21.1
3	---	---	---	25.6	23.1	24.2	23.5	20.8	22.0	21.8	19.2	20.5
4	---	---	---	25.3	23.7	24.6	23.9	22.3	23.0	20.1	17.5	18.9
5	---	---	---	24.8	23.8	24.2	24.1	21.1	22.6	20.7	17.8	19.1
6	---	---	---	25.1	22.9	24.0	23.2	20.9	21.5	20.3	18.2	19.2
7	---	---	---	24.7	22.6	23.6	21.6	19.5	20.5	19.8	16.3	18.0
8	---	---	---	22.7	20.5	21.1	21.8	18.9	20.3	20.2	16.4	18.3
9	---	---	---	24.8	19.1	21.1	21.4	19.2	20.5	20.1	17.0	18.6
10	---	---	---	22.1	21.1	21.5	23.3	19.6	21.3	19.5	17.2	18.4
11	---	---	---	21.6	19.8	20.4	23.0	21.3	22.2	18.0	15.4	16.8
12	---	---	---	20.4	19.3	19.7	23.0	20.9	22.0	18.0	14.6	16.1
13	---	---	---	21.8	19.3	20.3	22.7	20.5	21.8	17.6	13.8	15.7
14	---	---	---	22.1	20.5	21.2	23.2	20.2	21.7	17.4	13.3	15.2
15	---	---	---	22.8	20.3	21.4	23.5	20.9	22.3	16.0	13.5	14.8
16	---	---	---	24.4	22.6	23.5	23.8	21.3	22.6	15.9	12.9	14.5
17	---	---	---	24.3	23.6	24.0	24.2	22.2	23.3	14.4	13.2	13.7
18	---	---	---	25.0	23.1	23.8	23.0	21.4	22.2	14.4	13.0	13.5
19	---	---	---	25.5	24.2	24.8	22.3	20.2	21.2	13.3	12.2	12.7
20	---	---	---	25.2	22.4	23.8	22.0	19.0	20.6	12.8	12.1	12.4
21	---	---	---	24.6	22.8	23.6	21.8	20.4	21.2	13.7	11.8	12.6
22	---	---	---	23.4	21.8	22.7	22.7	19.1	20.7	13.4	10.7	12.1
23	---	---	---	23.1	21.6	22.2	22.5	19.7	21.2	12.9	10.9	11.8
24	---	---	---	21.9	20.4	21.2	22.6	19.9	21.2	13.1	10.1	11.4
25	---	---	---	22.3	20.5	21.5	22.7	19.4	21.0	12.0	9.9	11.0
26	---	---	---	22.4	21.3	21.7	22.6	19.8	21.3	---	---	---
27	---	---	---	22.7	20.5	21.3	22.6	19.2	21.0	---	---	---
28	---	---	---	22.7	21.5	22.2	23.4	20.5	21.9	---	---	---
29	23.7	22.5	23.0	22.7	21.2	22.0	24.0	20.9	22.5	---	---	---
30	24.7	20.7	22.1	23.6	21.1	22.3	25.7	21.6	23.4	---	---	---
31	---	---	---	23.2	21.4	22.0	24.2	21.7	23.1	---	---	---
MONTH	---	---	---	25.6	19.1	22.5	25.7	18.9	21.8	---	---	---

SPECIFIC CONDUCTANCE,  $\mu\text{S}/\text{CM}$  @ 25 DEGREES CENTIGRADE, JUNE TO SEPTEMBER 1996

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	972	950	960	1060	1050	1060	1130	1020	1070
2	---	---	---	1000	972	990	1090	1060	1070	1170	1040	1070
3	---	---	---	998	979	992	1070	1060	1060	1160	1030	1100
4	---	---	---	1000	991	996	1120	1060	1080	1240	1120	1170
5	---	---	---	1000	981	994	1140	1050	1070	1220	1140	1170
6	---	---	---	1000	992	996	1080	1070	1070	1180	1160	1170
7	---	---	---	1000	992	996	1090	1070	1080	1220	1140	1170
8	---	---	---	1010	992	1000	---	---	---	1190	1160	1180
9	---	---	---	1020	990	1000	---	---	---	1190	1170	1180
10	---	---	---	1010	1000	1010	1090	1080	1090	1210	1170	1190
11	---	---	---	1010	1000	1010	1090	1070	1080	1200	1180	1190
12	---	---	---	1020	977	1010	1090	1060	1070	1200	1180	1190
13	---	---	---	1010	997	1010	1100	1070	1080	1210	1190	1200
14	---	---	---	1020	976	997	1080	1070	1080	1290	1180	1210
15	---	---	---	992	958	974	1110	1050	1070	1330	1190	1240
16	---	---	---	1010	978	997	---	---	---	1260	1180	1210
17	---	---	---	1020	1000	1010	1070	1060	1060	1250	1190	1240
18	---	---	---	1030	1010	1020	1070	1010	1060	1260	1200	1230
19	---	---	---	1040	1030	1030	1070	1010	1060	1390	1220	1270
20	---	---	---	1030	875	942	1070	1030	1060	1360	1220	1290
21	---	---	---	999	983	990	1070	1040	1060	1380	1220	1270
22	---	---	---	997	988	994	1060	1020	1050	1420	1190	1310
23	---	---	---	1030	982	998	1050	997	1030	1390	1200	1270
24	---	---	---	1040	987	1010	1050	970	1020	1290	1220	1240
25	---	---	---	1030	990	1010	1040	932	987	1390	1180	1290
26	---	---	---	1050	999	1020	1010	921	976	---	---	---
27	---	---	---	1040	1030	1040	1100	951	1020	---	---	---
28	---	---	---	1050	1010	1040	1110	941	1010	---	---	---
29	962	945	950	1050	1040	1040	1050	966	1010	---	---	---
30	971	954	962	1050	1040	1050	1080	1000	1040	---	---	---
31	---	---	---	1060	1040	1050	1120	986	1040	---	---	---
MONTH	---	---	---	1060	875	1010	---	---	---	---	---	---



## ANALYSES OF SAMPLES COLLECTED AT WETLAND SITES

Site number, 481208101531700--Continued

 RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
 DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	.00	.00	.00
2	---	---	---	---	---	---	---	---	---	.00	.16	.00
3	---	---	---	---	---	---	---	---	---	.00	.00	.00
4	---	---	---	---	---	---	---	---	---	.02	.11	.52
5	---	---	---	---	---	---	---	---	---	.01	.00	.21
6	---	---	---	---	---	---	---	---	---	.00	.00	.00
7	---	---	---	---	---	---	---	---	---	.01	.04	.00
8	---	---	---	---	---	---	---	---	---	.00	.01	.00
9	---	---	---	---	---	---	---	---	---	.00	.00	.00
10	---	---	---	---	---	---	---	---	---	.00	.00	.00
11	---	---	---	---	---	---	---	---	---	.06	.00	.00
12	---	---	---	---	---	---	---	---	---	.02	.00	.00
13	---	---	---	---	---	---	---	---	---	.00	.00	.00
14	---	---	---	---	---	---	---	---	---	.72	.00	.00
15	---	---	---	---	---	---	---	---	---	.00	.17	.00
16	---	---	---	---	---	---	---	---	---	.00	.00	.00
17	---	---	---	---	---	---	---	---	---	.00	.00	.05
18	---	---	---	---	---	---	---	---	---	.00	.08	.26
19	---	---	---	---	---	---	---	---	---	.00	.00	.18
20	---	---	---	---	---	---	---	---	---	2.35	.00	.07
21	---	---	---	---	---	---	---	---	---	.00	.00	.12
22	---	---	---	---	---	---	---	---	---	.00	.00	.01
23	---	---	---	---	---	---	---	---	---	.00	.00	.04
24	---	---	---	---	---	---	---	---	---	.00	.00	.00
25	---	---	---	---	---	---	---	---	---	.00	.00	.00
26	---	---	---	---	---	---	---	---	---	.02	.00	---
27	---	---	---	---	---	---	---	---	---	.00	.00	---
28	---	---	---	---	---	---	---	---	---	.00	.00	---
29	---	---	---	---	---	---	---	---	.00	.00	.00	---
30	---	---	---	---	---	---	---	---	.39	.00	.00	---
31	---	---	---	---	---	---	---	---	---	.00	.00	---
TOTAL	---	---	---	---	---	---	---	---	---	3.21	0.57	---

## ANALYSES OF SAMPLES COLLECTED AT WETLAND SITES

341

SITE IDENTIFIERS.--Site number, 481152101525400; local identifier, 155-087-32DDDB.

LOCATION.--Lat 48°11'52", long 101°52'54", sec.32, T.155 N., R.87 W., Ward County, Hydrologic Unit 10110101, located approximately 8 mi southwest of Berthold.

## PERIOD OF DAILY RECORDS.--

GAGE HEIGHT: May 1995 to September 1996 (seasonal).

WATER TEMPERATURE: May 1995 to September 1996 (seasonal).

SPECIFIC CONDUCTANCE: May 1995 to September 1996 (seasonal).

RAINFALL: May 1995 to September 1996 (seasonal).

INSTRUMENTATION.--Water-quality monitor and tipping bucket rain gage.

REMARKS.--Records good.

## EXTREMES FOR PERIOD OF RECORD.--

GAGE HEIGHT: Maximum recorded, 9.88 ft, June 29, 1996; minimum recorded, 6.90 ft, September 24-25, 1995.

WATER TEMPERATURE: Maximum recorded, 27.2°C, June 17, 1995; minimum recorded, 3.9°C, September 22, 1995.

SPECIFIC CONDUCTANCE: Maximum recorded, 791 microsiemens, September 23, 1995; minimum recorded, 331 microsiemens, June 29, 1996.

RAINFALL: Maximum recorded, 2.26 inches, July 20, 1996.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	9.85	9.68	9.13
2	---	---	---	---	---	---	---	---	---	9.85	9.66	9.11
3	---	---	---	---	---	---	---	---	---	9.84	9.66	9.09
4	---	---	---	---	---	---	---	---	---	9.82	9.66	9.08
5	---	---	---	---	---	---	---	---	---	9.81	9.65	9.09
6	---	---	---	---	---	---	---	---	---	9.79	9.62	9.08
7	---	---	---	---	---	---	---	---	---	9.78	9.60	9.07
8	---	---	---	---	---	---	---	---	---	9.75	9.58	9.05
9	---	---	---	---	---	---	---	---	---	9.74	9.57	9.04
10	---	---	---	---	---	---	---	---	---	9.72	9.56	9.02
11	---	---	---	---	---	---	---	---	---	9.70	9.54	9.00
12	---	---	---	---	---	---	---	---	---	9.69	9.52	8.98
13	---	---	---	---	---	---	---	---	---	9.69	9.50	8.96
14	---	---	---	---	---	---	---	---	---	9.69	9.49	8.94
15	---	---	---	---	---	---	---	---	---	9.70	9.47	8.93
16	---	---	---	---	---	---	---	---	---	9.69	9.45	8.91
17	---	---	---	---	---	---	---	---	---	9.68	9.44	8.89
18	---	---	---	---	---	---	---	---	---	9.67	9.41	8.88
19	---	---	---	---	---	---	---	---	---	9.64	9.40	8.88
20	---	---	---	---	---	---	---	---	---	9.79	9.38	8.88
21	---	---	---	---	---	---	---	---	---	9.81	9.36	8.89
22	---	---	---	---	---	---	---	---	---	9.80	9.34	8.91
23	---	---	---	---	---	---	---	---	---	9.78	9.33	8.90
24	---	---	---	---	---	---	---	---	---	9.76	9.31	8.89
25	---	---	---	---	---	---	---	---	---	9.75	9.28	8.89
26	---	---	---	---	---	---	---	---	---	9.75	9.27	---
27	---	---	---	---	---	---	---	---	---	9.74	9.24	---
28	---	---	---	---	---	---	---	---	---	9.73	9.22	---
29	---	---	---	---	---	---	---	---	---	9.71	9.20	---
30	---	---	---	---	---	---	---	---	---	9.86	9.18	---
31	---	---	---	---	---	---	---	---	---	9.68	9.16	---
MEAN	---	---	---	---	---	---	---	---	---	9.75	9.44	---
MAX	---	---	---	---	---	---	---	---	---	9.85	9.68	---
MIN	---	---	---	---	---	---	---	---	---	9.64	9.16	---

## ANALYSES OF SAMPLES COLLECTED AT WETLAND SITES

Site number, 481152101525400--Continued

## WATER TEMPERATURE, DEGREES CELSIUS, JUNE TO SEPTEMBER 1996

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	24.4	22.8	23.8	21.2	19.5	20.4	22.8	21.0	21.8
2	---	---	---	25.1	23.7	24.5	22.1	21.0	21.4	21.4	18.9	20.4
3	---	---	---	25.3	23.5	24.4	21.5	19.9	20.7	21.2	19.0	19.9
4	---	---	---	25.2	23.7	24.4	22.1	21.4	21.7	19.7	17.5	18.5
5	---	---	---	24.9	23.9	24.4	21.9	20.0	21.1	20.2	18.0	18.9
6	---	---	---	24.9	23.0	24.0	21.9	19.5	20.2	19.9	18.2	19.2
7	---	---	---	24.8	22.0	23.4	21.3	18.5	19.9	19.3	16.6	18.0
8	---	---	---	22.2	19.9	20.6	20.3	18.2	19.4	19.7	16.5	18.1
9	---	---	---	20.6	18.5	19.7	20.4	18.6	19.7	19.3	16.8	18.1
10	---	---	---	20.7	19.3	20.0	21.2	18.9	20.0	19.1	17.2	18.2
11	---	---	---	20.4	18.4	19.1	22.0	20.3	21.0	17.6	15.3	16.5
12	---	---	---	19.5	17.9	18.6	22.0	20.4	21.1	16.9	14.6	15.8
13	---	---	---	19.9	18.5	19.3	22.6	19.9	21.3	16.7	14.1	15.4
14	---	---	---	21.0	19.4	20.1	21.7	19.7	20.8	16.7	13.9	15.2
15	---	---	---	21.1	19.5	20.5	21.9	20.1	21.1	15.9	14.2	15.1
16	---	---	---	22.8	20.8	21.6	22.2	20.6	21.5	15.8	13.8	14.9
17	---	---	---	22.8	22.2	22.5	23.5	21.6	22.5	15.3	14.2	14.6
18	---	---	---	23.2	21.9	22.6	22.6	20.9	21.6	15.0	14.2	14.5
19	---	---	---	23.7	22.9	23.3	21.7	19.4	20.6	14.3	13.5	13.8
20	---	---	---	23.5	21.3	22.5	21.4	18.5	19.9	13.6	13.0	13.3
21	---	---	---	24.1	21.6	22.9	21.1	20.1	20.7	14.7	12.7	13.6
22	---	---	---	23.0	20.7	22.0	20.5	18.1	19.5	14.5	11.9	13.3
23	---	---	---	22.6	20.5	21.4	20.9	19.0	20.1	13.9	12.1	13.0
24	---	---	---	21.0	19.3	20.2	21.4	19.2	20.3	14.0	11.2	12.6
25	---	---	---	21.0	19.2	20.3	21.2	19.0	20.3	13.0	11.1	12.1
26	---	---	---	20.8	20.3	20.6	21.9	19.1	20.6	---	---	---
27	---	---	---	20.9	19.4	20.1	21.2	18.9	20.1	---	---	---
28	---	---	---	22.0	20.3	21.1	21.8	20.0	20.7	---	---	---
29	26.1	23.1	24.6	22.0	20.3	21.2	22.5	20.4	21.5	---	---	---
30	25.0	22.5	23.6	21.8	20.0	21.0	22.9	21.5	22.3	---	---	---
31	---	---	---	21.7	20.3	20.8	23.2	21.4	22.4	---	---	---
MONTH	---	---	---	25.3	17.9	21.6	23.5	18.1	20.8	---	---	---

SPECIFIC CONDUCTANCE,  $\mu\text{S}/\text{CM}$  @ 25 DEGREES CENTIGRADE, JUNE TO SEPTEMBER 1996

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	354	339	344	427	404	411	546	505	516
2	---	---	---	359	342	350	422	406	413	538	508	518
3	---	---	---	354	347	350	437	411	419	533	512	519
4	---	---	---	358	351	354	423	411	415	530	508	516
5	---	---	---	363	353	357	429	409	417	522	502	506
6	---	---	---	363	356	358	431	417	421	513	505	507
7	---	---	---	364	357	361	428	418	421	512	506	509
8	---	---	---	371	363	368	431	412	423	521	503	512
9	---	---	---	380	371	374	428	412	423	518	512	515
10	---	---	---	382	375	378	435	414	426	520	514	516
11	---	---	---	387	380	384	435	430	432	521	512	518
12	---	---	---	392	385	388	435	432	434	522	517	519
13	---	---	---	393	387	390	444	429	437	525	520	522
14	---	---	---	392	389	391	459	442	446	527	519	524
15	---	---	---	393	382	385	454	443	447	530	524	528
16	---	---	---	395	384	389	460	445	449	531	517	529
17	---	---	---	401	390	399	471	448	453	532	528	530
18	---	---	---	403	391	394	485	453	470	535	525	531
19	---	---	---	407	391	398	474	458	464	533	527	531
20	---	---	---	404	351	367	478	460	468	531	527	530
21	---	---	---	376	367	373	492	469	473	535	531	532
22	---	---	---	383	375	378	485	471	475	533	529	531
23	---	---	---	387	380	382	487	477	481	538	532	536
24	---	---	---	397	384	388	488	482	485	539	536	537
25	---	---	---	395	388	390	497	485	489	542	538	540
26	---	---	---	413	389	397	500	489	494	---	---	---
27	---	---	---	406	391	396	527	493	502	---	---	---
28	---	---	---	406	395	398	505	495	499	---	---	---
29	372	331	350	401	396	399	504	493	495	---	---	---
30	351	338	344	404	401	402	497	492	494	---	---	---
31	---	---	---	416	399	406	508	494	502	---	---	---
MONTH	---	---	---	416	339	380	527	404	454	---	---	---

## ANALYSES OF SAMPLES COLLECTED AT WETLAND SITES

343

Site number, 481152101525400--Continued

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	.00	.00	.00
2	---	---	---	---	---	---	---	---	---	.00	.29	.00
3	---	---	---	---	---	---	---	---	---	.00	.00	.00
4	---	---	---	---	---	---	---	---	---	.02	.21	.49
5	---	---	---	---	---	---	---	---	---	.01	.00	.02
6	---	---	---	---	---	---	---	---	---	.07	.00	.00
7	---	---	---	---	---	---	---	---	---	.00	.09	.00
8	---	---	---	---	---	---	---	---	---	.00	.00	.00
9	---	---	---	---	---	---	---	---	---	.00	.00	.00
10	---	---	---	---	---	---	---	---	---	.00	.00	.00
11	---	---	---	---	---	---	---	---	---	.05	.00	.00
12	---	---	---	---	---	---	---	---	---	.03	.00	.00
13	---	---	---	---	---	---	---	---	---	.00	.00	.00
14	---	---	---	---	---	---	---	---	---	.47	.00	.00
15	---	---	---	---	---	---	---	---	---	.00	.17	.00
16	---	---	---	---	---	---	---	---	---	.00	.00	.00
17	---	---	---	---	---	---	---	---	---	.00	.00	.04
18	---	---	---	---	---	---	---	---	---	.00	.07	.23
19	---	---	---	---	---	---	---	---	---	.04	.00	.17
20	---	---	---	---	---	---	---	---	---	2.26	.00	.07
21	---	---	---	---	---	---	---	---	---	.00	.00	.18
22	---	---	---	---	---	---	---	---	---	.02	.00	.00
23	---	---	---	---	---	---	---	---	---	.01	.00	.05
24	---	---	---	---	---	---	---	---	---	.00	.00	.00
25	---	---	---	---	---	---	---	---	---	.00	.00	.00
26	---	---	---	---	---	---	---	---	---	.13	.00	---
27	---	---	---	---	---	---	---	---	---	.00	.00	---
28	---	---	---	---	---	---	---	---	---	.00	.00	---
29	---	---	---	---	---	---	---	---	.00	.00	.00	---
30	---	---	---	---	---	---	---	---	.25	.00	.00	---
31	---	---	---	---	---	---	---	---	---	.05	.00	---
TOTAL	---	---	---	---	---	---	---	---	---	3.16	0.83	---

SITE IDENTIFIERS.--Site number, 481250101524800; local identifier, 155-087-29DDAD.

LOCATION.--Lat 48°12'50", long 101°52'48", sec.29, T.155 N., R.87 W., Ward County, Hydrologic Unit 10110101, located approximately 8 mi southwest of Berthold.

PERIOD OF DAILY RECORDS.--

GAGE HEIGHT: May 1995 to September 1996 (seasonal).

WATER TEMPERATURE: May 1995 to September 1996 (seasonal).

SPECIFIC CONDUCTANCE: May 1995 to September 1996 (seasonal).

RAINFALL: May 1995 to July 1996 (seasonal).

INSTRUMENTATION.--Water-quality monitor and tipping bucket rain gage.

REMARKS.--Records good.

EXTREMES FOR PERIOD OF RECORD.--

GAGE HEIGHT: Maximum recorded, 8.89 ft, June 29, 1996; minimum recorded, 6.69 ft, September 23-25, 1995.

WATER TEMPERATURE: Maximum recorded, 27.2°C, June 17, 1995; minimum recorded, 3.8°C, September 22, 1995.

SPECIFIC CONDUCTANCE: Maximum recorded, 2,420 microsiemens, September 22, 1995; minimum recorded, 1,330 microsiemens, June 29 and July 1, 1996.

RAINFALL: Maximum recorded, 2.25 inches, July 20, 1996.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	8.88	8.70	8.13
2	---	---	---	---	---	---	---	---	---	8.88	8.69	8.12
3	---	---	---	---	---	---	---	---	---	8.86	8.68	8.09
4	---	---	---	---	---	---	---	---	---	8.84	8.68	8.09
5	---	---	---	---	---	---	---	---	---	8.83	8.68	8.09
6	---	---	---	---	---	---	---	---	---	8.82	8.65	8.08
7	---	---	---	---	---	---	---	---	---	8.79	8.63	8.07
8	---	---	---	---	---	---	---	---	---	8.76	8.61	8.05
9	---	---	---	---	---	---	---	---	---	8.75	8.59	8.03
10	---	---	---	---	---	---	---	---	---	8.74	8.57	8.01
11	---	---	---	---	---	---	---	---	---	8.72	8.56	7.99
12	---	---	---	---	---	---	---	---	---	8.71	8.54	7.98
13	---	---	---	---	---	---	---	---	---	8.71	8.51	7.96
14	---	---	---	---	---	---	---	---	---	8.71	8.49	7.93
15	---	---	---	---	---	---	---	---	---	8.73	8.47	7.92
16	---	---	---	---	---	---	---	---	---	8.71	8.46	7.91
17	---	---	---	---	---	---	---	---	---	8.70	8.45	7.89
18	---	---	---	---	---	---	---	---	---	8.69	8.41	7.88
19	---	---	---	---	---	---	---	---	---	8.67	8.41	7.89
20	---	---	---	---	---	---	---	---	---	8.82	8.38	7.89
21	---	---	---	---	---	---	---	---	---	8.84	8.36	7.90
22	---	---	---	---	---	---	---	---	---	8.83	8.34	7.91
23	---	---	---	---	---	---	---	---	---	8.81	8.33	7.90
24	---	---	---	---	---	---	---	---	---	8.79	8.31	7.89
25	---	---	---	---	---	---	---	---	---	8.79	8.28	7.88
26	---	---	---	---	---	---	---	---	---	8.78	8.27	---
27	---	---	---	---	---	---	---	---	---	8.77	8.24	---
28	---	---	---	---	---	---	---	---	---	8.76	8.22	---
29	---	---	---	---	---	---	---	---	---	8.89	8.19	---
30	---	---	---	---	---	---	---	---	---	8.88	8.18	---
31	---	---	---	---	---	---	---	---	---	8.72	8.16	---
MEAN	---	---	---	---	---	---	---	---	---	8.77	8.45	---
MAX	---	---	---	---	---	---	---	---	---	8.88	8.70	---
MIN	---	---	---	---	---	---	---	---	---	8.67	8.16	---



## Site number, 481250101524800--Continued

## WATER TEMPERATURE, DEGREES CELSIUS, JUNE TO SEPTEMBER 1996

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	25.4	21.8	23.4	23.0	20.2	21.3	22.9	21.0	22.1
2	---	---	---	24.9	22.9	23.9	23.0	21.5	22.1	22.5	19.1	20.8
3	---	---	---	24.5	22.8	23.6	26.0	20.7	22.8	22.1	19.2	20.5
4	---	---	---	24.2	22.6	23.5	24.0	22.4	23.3	19.7	17.3	18.6
5	---	---	---	25.3	22.9	23.8	23.0	21.1	22.2	19.9	17.4	18.6
6	---	---	---	25.4	22.6	23.9	22.6	20.2	20.9	19.3	17.5	18.4
7	---	---	---	23.9	20.9	22.6	21.0	19.3	20.2	19.0	15.9	17.4
8	---	---	---	20.9	18.7	19.9	22.9	18.5	20.5	19.4	15.8	17.7
9	---	---	---	21.3	18.0	19.8	21.9	19.3	20.6	19.8	16.4	18.1
10	---	---	---	20.8	18.8	19.9	23.5	19.4	21.4	19.0	16.9	18.0
11	---	---	---	20.3	18.6	19.1	25.9	21.1	23.2	17.7	15.0	16.2
12	---	---	---	20.9	18.2	19.2	23.9	21.4	22.5	16.6	14.1	15.3
13	---	---	---	22.9	18.8	20.6	23.2	21.0	22.1	16.1	13.3	14.7
14	---	---	---	22.7	20.1	21.4	25.1	20.0	22.3	16.1	13.1	14.6
15	---	---	---	23.1	20.2	21.7	23.3	20.7	22.2	15.3	13.3	14.3
16	---	---	---	23.5	21.2	22.3	25.6	21.2	22.9	15.5	13.0	14.3
17	---	---	---	24.1	22.7	23.4	24.3	21.9	23.2	14.4	13.4	13.8
18	---	---	---	25.1	22.5	23.8	23.1	21.5	22.2	14.0	13.0	13.4
19	---	---	---	24.9	23.4	24.1	22.0	20.0	20.9	13.0	12.1	12.6
20	---	---	---	25.4	21.8	23.6	21.9	18.8	20.3	12.3	11.9	12.1
21	---	---	---	24.4	22.1	23.1	21.7	20.2	21.0	13.0	11.5	12.2
22	---	---	---	22.8	20.5	21.7	22.2	18.3	20.2	12.8	10.6	11.8
23	---	---	---	22.0	20.5	21.1	22.7	19.2	20.9	12.4	10.6	11.4
24	---	---	---	22.5	19.1	20.7	24.6	19.5	21.7	12.0	9.5	10.8
25	---	---	---	22.3	19.8	21.2	23.8	19.7	21.7	11.2	9.2	10.3
26	---	---	---	22.1	20.9	21.3	22.7	19.7	21.3	---	---	---
27	---	---	---	22.6	20.1	21.3	22.1	19.2	20.7	---	---	---
28	---	---	---	25.2	20.6	22.8	23.8	20.2	21.9	---	---	---
29	24.1	22.4	23.2	23.9	21.2	22.6	24.2	21.0	22.6	---	---	---
30	24.4	21.0	22.6	23.1	20.9	22.0	24.4	21.9	23.3	---	---	---
31	---	---	---	22.8	20.9	21.5	24.3	22.0	23.2	---	---	---
MONTH	---	---	---	25.4	18.0	22.0	26.0	18.3	21.8	---	---	---

SPECIFIC CONDUCTANCE,  $\mu\text{S}/\text{CM}$  @ 25 DEGREES CENTIGRADE, JUNE TO SEPTEMBER 1996

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	1350	1330	1340	1470	1450	1460	1710	1680	1690
2	---	---	---	1360	1350	1350	1480	1450	1470	1710	1670	1690
3	---	---	---	1360	1340	1350	1490	1460	1470	1710	1670	1690
4	---	---	---	1360	1340	1350	1490	1450	1480	1710	1650	1680
5	---	---	---	1370	1350	1360	1500	1460	1470	1710	1660	1680
6	---	---	---	1380	1360	1370	1510	1460	1490	1690	1670	1680
7	---	---	---	1390	1370	1380	1510	1480	1500	1700	1620	1680
8	---	---	---	1390	1380	1390	1510	1460	1490	1730	1630	1700
9	---	---	---	1400	1380	1390	1530	1480	1510	1720	1650	1690
10	---	---	---	1400	1390	1400	1530	1490	1510	1720	1670	1710
11	---	---	---	1400	1390	1390	1530	1490	1510	1810	1650	1730
12	---	---	---	1410	1400	1400	1540	1490	1510	1740	1710	1720
13	---	---	---	1420	1360	1410	1540	1470	1510	1780	1730	1750
14	---	---	---	1420	1370	1400	1550	1460	1510	1790	1740	1760
15	---	---	---	1410	1370	1400	1550	1480	1520	1830	1750	1770
16	---	---	---	1410	1400	1410	1540	1490	1520	1800	1760	1780
17	---	---	---	1420	1400	1410	1530	1490	1510	1810	1770	1790
18	---	---	---	1430	1400	1420	1550	1500	1530	1810	1780	1790
19	---	---	---	1440	1420	1430	1590	1510	1550	1820	1800	1810
20	---	---	---	1440	1350	1380	1640	1550	1590	1820	1790	1800
21	---	---	---	1410	1360	1390	1630	1580	1610	1850	1800	1820
22	---	---	---	1400	1370	1390	1660	1590	1630	1850	1800	1830
23	---	---	---	1400	1370	1390	1680	1620	1650	1840	1820	1830
24	---	---	---	1420	1380	1400	1670	1630	1660	1860	1830	1850
25	---	---	---	1430	1400	1420	1690	1650	1670	1860	1840	1850
26	---	---	---	1440	1410	1430	1680	1640	1660	---	---	---
27	---	---	---	1450	1410	1430	1700	1630	1660	---	---	---
28	---	---	---	1460	1420	1440	1700	1600	1660	---	---	---
29	1360	1330	1350	1450	1430	1440	1710	1630	1660	---	---	---
30	1360	1340	1350	1460	1430	1450	1690	1640	1670	---	---	---
31	---	---	---	1460	1440	1450	1700	1640	1670	---	---	---
MONTH	---	---	---	1460	1330	1400	1710	1450	1560	---	---	---

## Site number, 481250101524800--Continued

[illegible]

## ANALYSES OF SAMPLES COLLECTED AT WETLAND SITES

347

SITE IDENTIFIERS.--Site number, 481251101530600; local identifier, 155-087-29DCAA.

LOCATION.--Lat 48°12'51", long 101°53'06", sec.29, T.155 N., R.87 W., Ward County, Hydrologic Unit 10110101, located approximately 8 mi southwest of Berthold.

## PERIOD OF DAILY RECORDS.--

GAGE HEIGHT: May 1995 to September 1996 (seasonal).

WATER TEMPERATURE: May 1995 to September 1996 (seasonal).

SPECIFIC CONDUCTANCE: May 1995 to September 1996 (seasonal).

RAINFALL: May 1995 to September 1996 (seasonal).

INSTRUMENTATION.--Water-quality monitor and tipping bucket rain gage.

REMARKS.--Records good except for the specific-conductance record, which is fair.

## EXTREMES FOR PERIOD OF RECORD.--

GAGE HEIGHT: Maximum recorded, 4.64 ft, June 26-27, 1996; minimum recorded, 3.01 ft, September 25, 1995.

WATER TEMPERATURE: Maximum recorded, 25.9°C, June 17, 1995; minimum recorded, 4.7°C, September 22, 1995.

SPECIFIC CONDUCTANCE: Maximum recorded, 395 microsiemens, August 15, 1995; minimum recorded, 150 microsiemens, July 8, 1996.

RAINFALL: Maximum recorded, 2.14 inches, July 20, 1996.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	4.59	4.38	3.78
2	---	---	---	---	---	---	---	---	---	4.58	4.36	3.76
3	---	---	---	---	---	---	---	---	---	4.56	4.35	3.74
4	---	---	---	---	---	---	---	---	---	4.55	4.35	3.72
5	---	---	---	---	---	---	---	---	---	4.53	4.34	3.72
6	---	---	---	---	---	---	---	---	---	4.52	4.30	3.71
7	---	---	---	---	---	---	---	---	---	4.49	4.29	3.70
8	---	---	---	---	---	---	---	---	---	4.48	4.27	3.68
9	---	---	---	---	---	---	---	---	---	4.48	4.26	3.66
10	---	---	---	---	---	---	---	---	---	4.45	4.25	3.64
11	---	---	---	---	---	---	---	---	---	4.42	4.22	3.63
12	---	---	---	---	---	---	---	---	---	4.42	4.19	3.61
13	---	---	---	---	---	---	---	---	---	4.41	4.16	3.59
14	---	---	---	---	---	---	---	---	---	4.40	4.14	3.57
15	---	---	---	---	---	---	---	---	---	4.41	4.14	3.56
16	---	---	---	---	---	---	---	---	---	4.40	4.14	3.53
17	---	---	---	---	---	---	---	---	---	4.38	4.12	3.51
18	---	---	---	---	---	---	---	---	---	4.38	4.10	3.51
19	---	---	---	---	---	---	---	---	---	4.35	4.07	3.51
20	---	---	---	---	---	---	---	---	---	4.53	4.05	3.51
21	---	---	---	---	---	---	---	---	---	4.55	4.03	3.52
22	---	---	---	---	---	---	---	---	---	4.41	4.01	3.52
23	---	---	---	---	---	---	---	---	---	4.44	4.51	3.99
24	---	---	---	---	---	---	---	---	---	4.45	4.49	3.96
25	---	---	---	---	---	---	---	---	---	4.61	4.48	3.94
26	---	---	---	---	---	---	---	---	---	4.64	4.47	3.92
27	---	---	---	---	---	---	---	---	---	4.64	4.46	3.89
28	---	---	---	---	---	---	---	---	---	4.63	4.45	3.87
29	---	---	---	---	---	---	---	---	---	4.61	4.43	3.84
30	---	---	---	---	---	---	---	---	---	4.59	4.41	3.83
31	---	---	---	---	---	---	---	---	---	4.39	3.81	---
MEAN	---	---	---	---	---	---	---	---	---	4.47	4.12	---
MAX	---	---	---	---	---	---	---	---	---	4.59	4.38	---
MIN	---	---	---	---	---	---	---	---	---	4.35	3.81	---

## ANALYSES OF SAMPLES COLLECTED AT WETLAND SITES

## Site number, 481251101530600--Continued

## WATER TEMPERATURE, DEGREES CELSIUS, JUNE TO SEPTEMBER 1996

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	16.9	16.6	16.8	16.4	16.2	16.3	16.8	16.7	16.8
2	---	---	---	17.0	16.7	16.8	16.8	16.3	16.4	16.7	15.0	15.4
3	---	---	---	17.2	16.9	17.1	17.1	16.8	17.0	15.1	14.2	14.5
4	---	---	---	17.5	17.2	17.3	17.1	17.0	17.1	14.4	13.3	13.6
5	---	---	---	17.8	17.4	17.5	17.1	16.9	17.0	14.7	13.8	14.5
6	---	---	---	17.8	17.7	17.7	17.1	16.9	17.0	14.8	14.5	14.7
7	---	---	---	18.3	17.7	18.0	17.2	16.7	16.9	14.5	12.7	13.1
8	---	---	---	18.2	16.8	17.3	17.2	16.4	16.6	13.2	12.6	12.9
9	---	---	---	16.8	16.0	16.2	16.4	16.0	16.1	13.0	12.2	12.5
10	---	---	---	16.0	15.6	15.7	16.0	15.9	16.0	12.9	12.4	12.6
11	---	---	---	16.2	15.8	16.0	16.1	15.9	16.0	12.4	10.3	10.9
12	---	---	---	16.2	15.9	16.0	16.4	16.1	16.2	10.8	9.5	9.9
13	---	---	---	16.1	16.0	16.0	17.0	16.3	16.7	10.7	9.8	10.2
14	---	---	---	16.1	16.0	16.0	17.0	16.5	16.8	11.2	10.3	10.7
15	---	---	---	16.0	16.0	16.0	16.5	16.4	16.5	11.3	10.7	11.0
16	---	---	---	16.2	15.9	16.0	16.5	16.4	16.4	11.5	10.9	11.1
17	---	---	---	16.6	16.2	16.4	16.7	16.5	16.6	11.8	11.5	11.7
18	---	---	---	16.9	16.6	16.8	17.1	16.7	17.0	11.9	11.8	11.9
19	---	---	---	17.2	16.9	17.0	17.2	16.9	17.1	12.0	11.4	11.6
20	---	---	---	17.4	17.2	17.4	16.9	16.2	16.4	11.4	10.7	10.9
21	---	---	---	18.0	17.4	17.6	16.6	16.2	16.4	11.0	10.5	10.8
22	16.3	15.6	15.9	17.9	17.7	17.8	16.6	15.6	15.9	10.5	9.0	9.5
23	15.6	14.5	14.8	17.9	17.6	17.7	15.7	15.5	15.6	9.7	8.9	9.2
24	14.5	14.4	14.5	17.7	17.0	17.3	15.6	15.3	15.4	9.3	8.0	8.4
25	14.6	14.4	14.5	17.0	16.7	16.8	15.5	15.3	15.4	8.2	7.1	7.6
26	14.5	14.4	14.5	16.7	16.5	16.6	15.4	15.1	15.2	---	---	---
27	14.8	14.4	14.5	16.6	16.6	16.6	15.4	15.2	15.3	---	---	---
28	15.4	14.8	15.1	16.8	16.6	16.7	15.6	15.3	15.4	---	---	---
29	16.3	15.4	15.8	16.8	16.7	16.7	16.1	15.6	15.9	---	---	---
30	16.7	16.2	16.5	16.7	16.5	16.6	16.5	16.1	16.3	---	---	---
31	---	---	---	16.5	16.3	16.4	16.7	16.5	16.6	---	---	---
MONTH	---	---	---	18.3	15.6	16.8	17.2	15.1	16.3	---	---	---

SPECIFIC CONDUCTANCE,  $\mu\text{S}/\text{CM}$  @ 25 DEGREES CENTIGRADE, JUNE TO SEPTEMBER 1996

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	226	210	215	327	302	315	349	330	344
2	---	---	---	231	220	227	333	287	317	330	259	281
3	---	---	---	245	228	236	293	287	290	263	240	252
4	---	---	---	246	235	241	307	293	300	254	239	245
5	---	---	---	247	240	244	312	306	309	305	242	279
6	---	---	---	254	244	249	309	279	297	313	260	302
7	---	---	---	262	212	246	289	243	268	260	247	255
8	---	---	---	227	150	173	280	237	260	267	256	261
9	---	---	---	213	166	188	286	268	274	276	253	266
10	---	---	---	230	200	216	290	269	276	274	250	264
11	---	---	---	227	192	208	293	276	286	265	247	259
12	---	---	---	221	207	213	291	281	286	282	260	272
13	---	---	---	253	221	241	299	245	273	284	268	279
14	---	---	---	262	252	257	266	253	263	309	283	298
15	---	---	---	265	256	261	286	266	279	318	303	310
16	---	---	---	270	256	263	297	285	293	333	310	324
17	---	---	---	274	268	271	307	286	299	384	333	369
18	---	---	---	276	272	274	294	287	292	386	364	375
19	---	---	---	280	271	276	292	244	264	387	363	379
20	---	---	---	273	250	258	278	253	262	367	342	350
21	---	---	---	270	259	266	274	248	262	356	348	352
22	205	177	189	276	264	272	262	244	255	350	327	332
23	183	162	166	279	241	268	271	262	268	334	328	332
24	166	163	164	246	232	239	273	258	268	335	329	333
25	168	158	163	269	244	254	270	264	267	336	329	332
26	171	166	168	289	269	276	275	265	270	---	---	---
27	189	171	176	295	289	292	330	275	303	---	---	---
28	209	178	189	316	295	307	334	301	318	---	---	---
29	198	170	185	319	311	315	328	301	317	---	---	---
30	215	180	194	324	318	321	336	315	330	---	---	---
31	---	---	---	325	307	318	347	332	340	---	---	---
MONTH	---	---	---	325	150	254	347	237	287	---	---	---

## ANALYSES OF SAMPLES COLLECTED AT WETLAND SITES

349

Site number, 481251101530600--Continued

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	.00	.00	.00
2	---	---	---	---	---	---	---	---	---	.00	.12	.00
3	---	---	---	---	---	---	---	---	---	.00	.00	.00
4	---	---	---	---	---	---	---	---	---	.01	.16	.40
5	---	---	---	---	---	---	---	---	---	.01	.00	.00
6	---	---	---	---	---	---	---	---	---	.00	.00	.00
7	---	---	---	---	---	---	---	---	---	.00	.04	.00
8	---	---	---	---	---	---	---	---	---	.00	.00	.00
9	---	---	---	---	---	---	---	---	---	.00	.00	.00
10	---	---	---	---	---	---	---	---	---	.00	.00	.00
11	---	---	---	---	---	---	---	---	---	.04	.00	.00
12	---	---	---	---	---	---	---	---	---	.03	.00	.00
13	---	---	---	---	---	---	---	---	---	.00	.00	.00
14	---	---	---	---	---	---	---	---	---	.59	.00	.00
15	---	---	---	---	---	---	---	---	---	.00	.15	.00
16	---	---	---	---	---	---	---	---	---	.00	.00	.00
17	---	---	---	---	---	---	---	---	---	.00	.00	.03
18	---	---	---	---	---	---	---	---	---	.00	.07	.18
19	---	---	---	---	---	---	---	---	---	.02	.00	.14
20	---	---	---	---	---	---	---	---	---	2.14	.00	.04
21	---	---	---	---	---	---	---	---	---	.00	.00	.04
22	---	---	---	---	---	---	---	---	.26	.02	.00	.01
23	---	---	---	---	---	---	---	---	.27	.00	.00	.03
24	---	---	---	---	---	---	---	---	.00	.00	.00	.00
25	---	---	---	---	---	---	---	---	1.47	.00	.00	.00
26	---	---	---	---	---	---	---	---	.00	.12	.00	---
27	---	---	---	---	---	---	---	---	.00	.00	.00	---
28	---	---	---	---	---	---	---	---	.00	.01	.00	---
29	---	---	---	---	---	---	---	---	.00	.00	.00	---
30	---	---	---	---	---	---	---	---	.39	.00	.00	---
31	---	---	---	---	---	---	---	---	---	.05	.00	---
TOTAL	---	---	---	---	---	---	---	---	---	3.04	0.54	---



SITE IDENTIFIERS.--Site number, 481247101532100; local identifier, 155-087-29DCCB.

LOCATION.--Lat 48°12'47", long 101°53'21", sec.29, T.155 N., R.87 W., Ward County, Hydrologic Unit 10110101, located approximately 8 mi southwest of Berthold.

PERIOD OF DAILY RECORDS.--

GAGE HEIGHT: May 1995 to September 1996 (seasonal).

WATER TEMPERATURE: May 1995 to September 1996 (seasonal).

SPECIFIC CONDUCTANCE: May 1995 to September 1996 (seasonal).

RAINFALL: May 1995 to September 1996 (seasonal).

INSTRUMENTATION.--Water-quality monitor and tipping bucket rain gage.

REMARKS.--Records good except for the specific-conductance record, which is poor. Wetland went dry on September 10, 1996.

EXTREMES FOR PERIOD OF RECORD.--

GAGE HEIGHT: Maximum recorded, 6.17 ft, May 18, 1995; minimum recorded, 4.13 ft, September 5 and 11, 1995.

WATER TEMPERATURE: Maximum recorded, 27.6°C, September 3, 1995; minimum recorded, 5.3°C, September 9, 1995.

SPECIFIC CONDUCTANCE: Maximum recorded, 482 microsiemens, September 7, 1996; minimum recorded, 114 microsiemens, June 25, 1996.

RAINFALL: Maximum recorded, 2.45 inches, July 20, 1996.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	5.56	5.20	4.31
2	---	---	---	---	---	---	---	---	---	5.55	5.17	4.29
3	---	---	---	---	---	---	---	---	---	5.51	5.15	4.27
4	---	---	---	---	---	---	---	---	---	5.49	5.14	4.25
5	---	---	---	---	---	---	---	---	---	5.47	5.13	4.24
6	---	---	---	---	---	---	---	---	---	5.46	5.08	4.23
7	---	---	---	---	---	---	---	---	---	5.43	5.06	4.23
8	---	---	---	---	---	---	---	---	---	5.39	5.02	4.23
9	---	---	---	---	---	---	---	---	---	5.38	5.00	4.22
10	---	---	---	---	---	---	---	---	---	5.36	4.98	---
11	---	---	---	---	---	---	---	---	---	5.33	4.95	---
12	---	---	---	---	---	---	---	---	---	5.31	4.92	---
13	---	---	---	---	---	---	---	---	---	5.30	4.88	---
14	---	---	---	---	---	---	---	---	---	5.29	4.85	---
15	---	---	---	---	---	---	---	---	---	5.28	4.83	---
16	---	---	---	---	---	---	---	---	---	5.26	4.82	---
17	---	---	---	---	---	---	---	---	---	5.24	4.78	---
18	---	---	---	---	---	---	---	---	---	5.23	4.74	---
19	---	---	---	---	---	---	---	---	---	5.20	4.72	---
20	---	---	---	---	---	---	---	---	---	5.38	4.69	---
21	---	---	---	---	---	---	---	---	---	5.41	4.65	---
22	---	---	---	---	---	---	---	---	---	5.45	5.39	---
23	---	---	---	---	---	---	---	---	---	5.46	5.36	---
24	---	---	---	---	---	---	---	---	---	5.47	5.34	---
25	---	---	---	---	---	---	---	---	---	5.61	5.32	---
26	---	---	---	---	---	---	---	---	---	5.63	5.31	---
27	---	---	---	---	---	---	---	---	---	5.63	5.30	---
28	---	---	---	---	---	---	---	---	---	5.61	5.28	---
29	---	---	---	---	---	---	---	---	---	5.59	5.25	---
30	---	---	---	---	---	---	---	---	---	5.56	5.24	---
31	---	---	---	---	---	---	---	---	---	5.22	4.35	---
MEAN	---	---	---	---	---	---	---	---	---	5.35	4.79	---
MAX	---	---	---	---	---	---	---	---	---	5.56	5.20	---
MIN	---	---	---	---	---	---	---	---	---	5.20	4.35	---

## Site number, 481247101532100--Continued

## WATER TEMPERATURE, DEGREES CELSIUS, JUNE TO SEPTEMBER 1996

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	20.5	18.4	19.5	19.8	17.6	18.4	---	---	---
2	---	---	---	21.3	19.6	20.5	20.8	19.2	19.8	---	---	---
3	---	---	---	21.3	19.6	20.4	20.7	18.6	19.4	---	---	---
4	---	---	---	21.0	19.7	20.5	20.7	19.6	20.1	---	---	---
5	---	---	---	21.4	20.4	20.5	20.3	17.9	18.9	---	---	---
6	---	---	---	21.5	19.6	20.7	20.3	17.5	18.3	19.8	11.3	16.0
7	---	---	---	21.5	18.6	19.9	19.7	16.7	18.2	20.5	8.1	13.6
8	---	---	---	18.8	16.2	17.2	18.6	15.9	17.2	23.6	9.7	14.9
9	---	---	---	18.1	15.2	16.6	18.3	15.7	16.9	24.7	9.2	15.1
10	---	---	---	18.3	16.0	17.3	20.0	16.6	18.0	---	---	---
11	---	---	---	18.2	16.4	17.3	21.4	18.1	19.6	---	---	---
12	---	---	---	18.4	16.5	17.4	20.9	18.2	19.4	---	---	---
13	---	---	---	18.9	16.7	17.9	21.0	17.5	19.4	---	---	---
14	---	---	---	19.4	17.5	18.5	20.7	16.6	18.5	---	---	---
15	---	---	---	20.3	17.6	18.9	20.5	16.9	18.7	---	---	---
16	---	---	---	21.0	18.9	20.0	22.7	17.9	20.0	---	---	---
17	---	---	---	21.5	20.6	21.0	22.3	19.0	20.8	---	---	---
18	---	---	---	22.3	20.2	21.1	20.8	19.0	19.9	---	---	---
19	---	---	---	22.8	21.2	21.9	19.7	17.3	18.5	---	---	---
20	---	---	---	22.6	19.8	20.8	20.3	14.8	17.5	---	---	---
21	---	---	---	21.3	19.5	20.4	20.0	17.1	18.8	---	---	---
22	17.2	14.5	15.8	20.5	18.3	19.2	20.5	14.1	17.1	---	---	---
23	15.2	13.0	13.7	19.8	18.1	18.8	21.3	15.1	17.9	---	---	---
24	16.4	13.3	14.5	18.8	16.9	17.7	23.1	14.6	18.3	---	---	---
25	16.4	13.7	14.4	18.7	16.9	17.7	21.9	14.7	17.8	---	---	---
26	15.2	14.4	14.8	18.9	18.4	18.7	21.3	13.7	17.2	---	---	---
27	17.5	15.2	16.3	19.4	17.8	18.5	22.9	13.6	18.0	---	---	---
28	19.3	17.5	18.3	20.3	18.5	19.3	24.9	16.3	20.3	---	---	---
29	21.3	19.3	20.2	20.3	18.2	19.1	---	---	---	---	---	---
30	20.8	18.3	19.5	19.7	17.9	18.7	---	---	---	---	---	---
31	---	---	---	19.5	18.0	18.5	---	---	---	---	---	---
MONTH	---	---	---	22.8	15.2	19.2	---	---	---	---	---	---

SPECIFIC CONDUCTANCE,  $\mu\text{S}/\text{CM}$  @ 25 DEGREES CENTIGRADE, JUNE TO SEPTEMBER 1996

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	211	138	173	276	233	248	---	---	---
2	---	---	---	258	147	210	286	244	270	---	---	---
3	---	---	---	248	157	195	294	243	257	---	---	---
4	---	---	---	250	171	210	295	258	280	---	---	---
5	---	---	---	261	201	234	289	241	257	---	---	---
6	---	---	---	263	183	225	276	249	259	458	445	454
7	---	---	---	256	190	200	269	255	259	482	426	455
8	---	---	---	230	195	212	270	253	261	454	402	433
9	---	---	---	226	198	210	267	254	258	471	412	437
10	---	---	---	230	208	214	274	255	262	---	---	---
11	---	---	---	237	214	219	284	257	269	---	---	---
12	---	---	---	230	215	220	293	260	275	---	---	---
13	---	---	---	231	199	206	292	270	277	---	---	---
14	---	---	---	217	196	206	278	271	275	---	---	---
15	---	---	---	219	192	201	289	271	275	---	---	---
16	---	---	---	217	199	204	295	272	276	---	---	---
17	---	---	---	253	207	226	295	274	278	---	---	---
18	---	---	---	254	211	226	300	282	289	---	---	---
19	---	---	---	244	210	225	314	297	303	---	---	---
20	---	---	---	313	189	225	301	289	297	---	---	---
21	---	---	---	238	193	200	300	285	293	---	---	---
22	172	154	164	225	201	213	303	291	297	---	---	---
23	154	144	146	234	205	216	303	291	297	---	---	---
24	146	121	131	240	211	221	303	292	299	---	---	---
25	182	114	131	246	225	231	306	291	301	---	---	---
26	153	120	136	259	219	236	324	299	311	---	---	---
27	190	132	151	249	221	231	325	307	317	---	---	---
28	189	154	168	256	218	236	320	308	314	---	---	---
29	208	119	170	257	223	234	---	---	---	---	---	---
30	219	125	172	257	224	237	---	---	---	---	---	---
31	---	---	---	277	231	248	---	---	---	---	---	---
MONTH	---	---	---	313	138	218	---	---	---	---	---	---

## ANALYSES OF SAMPLES COLLECTED AT WETLAND SITES

Site number, 481247101532100--Continued

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	.00	.00	.00
2	---	---	---	---	---	---	---	---	---	.00	.18	.00
3	---	---	---	---	---	---	---	---	---	.00	.00	.00
4	---	---	---	---	---	---	---	---	---	.02	.25	.59
5	---	---	---	---	---	---	---	---	---	.01	.00	.02
6	---	---	---	---	---	---	---	---	---	.00	.00	.00
7	---	---	---	---	---	---	---	---	---	.00	.05	.00
8	---	---	---	---	---	---	---	---	---	.00	.03	.00
9	---	---	---	---	---	---	---	---	---	.00	.00	.00
10	---	---	---	---	---	---	---	---	---	.00	.00	.00
11	---	---	---	---	---	---	---	---	---	.04	.00	.00
12	---	---	---	---	---	---	---	---	---	.01	.00	.00
13	---	---	---	---	---	---	---	---	---	.00	.00	.00
14	---	---	---	---	---	---	---	---	---	.49	.00	.00
15	---	---	---	---	---	---	---	---	---	.00	.21	.00
16	---	---	---	---	---	---	---	---	---	.00	.01	.00
17	---	---	---	---	---	---	---	---	---	.00	.00	.06
18	---	---	---	---	---	---	---	---	---	.00	.07	.19
19	---	---	---	---	---	---	---	---	---	.02	.00	.16
20	---	---	---	---	---	---	---	---	---	2.45	.00	.05
21	---	---	---	---	---	---	---	---	---	.00	.00	.07
22	---	---	---	---	---	---	---	---	.31	.02	.00	.00
23	---	---	---	---	---	---	---	---	.61	.00	.00	.05
24	---	---	---	---	---	---	---	---	.00	.00	.00	.00
25	---	---	---	---	---	---	---	---	1.54	.00	.00	.00
26	---	---	---	---	---	---	---	---	.00	.07	.00	---
27	---	---	---	---	---	---	---	---	.00	.01	.00	---
28	---	---	---	---	---	---	---	---	.01	.00	.00	---
29	---	---	---	---	---	---	---	---	.00	.00	.00	---
30	---	---	---	---	---	---	---	---	.48	.00	.00	---
31	---	---	---	---	---	---	---	---	---	.05	.00	---
TOTAL	---	---	---	---	---	---	---	---	---	3.19	0.80	---

GAGE HEIGHT: Maximum recorded, 2.88 ft, July 27, 1996; minimum recorded, 1.85 ft, on several days in September.  
 WATER TEMPERATURE: Maximum recorded, 30.7°C, August 30, 1996; minimum recorded, 4.4°C, September 7, 1996.  
 SPECIFIC CONDUCTANCE: Maximum recorded, 454 microsiemens, September 2, 1996; minimum recorded, 205 microsiemens, July 30, 1996.  
 RAINFALL: Maximum recorded, 0.37 inches, September 4, 1996.

[illegible]

## ANALYSES OF SAMPLES COLLECTED AT WETLAND SITES

Site number, 481233101542100--Continued

## WATER TEMPERATURE, DEGREES CELSIUS, JULY TO SEPTEMBER 1996

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	---	---	---	17.8	16.5	17.1	26.3	12.0	18.9
2	---	---	---	---	---	---	18.6	17.8	18.1	26.7	7.2	16.3
3	---	---	---	---	---	---	18.7	17.2	17.9	---	---	---
4	---	---	---	---	---	---	19.0	18.4	18.6	---	---	---
5	---	---	---	---	---	---	18.9	16.5	17.5	---	---	---
6	---	---	---	---	---	---	18.5	15.8	16.8	21.9	9.9	16.1
7	---	---	---	---	---	---	17.8	15.4	16.7	23.7	4.4	13.7
8	---	---	---	---	---	---	16.9	13.8	15.5	24.7	7.1	15.3
9	---	---	---	---	---	---	16.8	14.0	15.5	---	---	---
10	---	---	---	---	---	---	18.2	15.3	16.6	---	---	---
11	---	---	---	---	---	---	19.4	16.6	17.9	---	---	---
12	---	---	---	---	---	---	19.3	16.5	17.9	---	---	---
13	---	---	---	---	---	---	19.1	15.9	17.8	---	---	---
14	---	---	---	---	---	---	18.7	14.3	16.6	---	---	---
15	---	---	---	---	---	---	18.9	15.3	17.2	---	---	---
16	---	---	---	---	---	---	20.8	16.6	18.5	---	---	---
17	---	---	---	---	---	---	20.7	17.6	19.3	---	---	---
18	---	---	---	---	---	---	19.8	17.8	18.9	---	---	---
19	---	---	---	---	---	---	19.1	16.0	17.6	---	---	---
20	---	---	---	---	---	---	18.8	13.3	16.0	---	---	---
21	---	---	---	---	---	---	19.6	16.1	18.1	---	---	---
22	---	---	---	---	---	---	19.3	12.1	15.7	---	---	---
23	---	---	---	---	---	---	20.9	13.3	17.0	---	---	---
24	---	---	---	---	---	---	22.1	12.8	17.3	---	---	---
25	---	---	---	---	---	---	22.7	12.5	17.3	---	---	---
26	---	---	---	---	---	---	22.5	12.1	17.1	---	---	---
27	---	---	---	17.5	16.8	17.2	24.1	12.4	17.9	---	---	---
28	---	---	---	18.1	17.1	17.6	26.5	15.4	20.5	---	---	---
29	---	---	---	18.2	16.6	17.3	29.0	16.2	21.7	---	---	---
30	---	---	---	17.8	16.2	17.0	30.7	15.9	22.2	---	---	---
31	---	---	---	17.6	16.4	16.9	27.6	15.5	20.8	---	---	---
MONTH	---	---	---	---	---	---	30.7	12.1	17.9	---	---	---

SPECIFIC CONDUCTANCE,  $\mu\text{S}/\text{CM}$  @ 25 DEGREES CENTIGRADE, JULY TO SEPTEMBER 1996

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	---	---	---	244	219	233	441	365	412
2	---	---	---	---	---	---	267	243	261	454	410	428
3	---	---	---	---	---	---	263	246	252	---	---	---
4	---	---	---	---	---	---	266	249	260	---	---	---
5	---	---	---	---	---	---	261	242	250	---	---	---
6	---	---	---	---	---	---	263	233	251	435	416	425
7	---	---	---	---	---	---	263	224	243	436	396	416
8	---	---	---	---	---	---	276	224	252	429	392	412
9	---	---	---	---	---	---	284	252	263	---	---	---
10	---	---	---	---	---	---	301	264	275	---	---	---
11	---	---	---	---	---	---	309	265	283	---	---	---
12	---	---	---	---	---	---	307	253	279	---	---	---
13	---	---	---	---	---	---	306	256	280	---	---	---
14	---	---	---	---	---	---	310	259	287	---	---	---
15	---	---	---	---	---	---	331	266	302	---	---	---
16	---	---	---	---	---	---	358	276	310	---	---	---
17	---	---	---	---	---	---	356	305	325	---	---	---
18	---	---	---	---	---	---	351	296	325	---	---	---
19	---	---	---	---	---	---	342	296	322	---	---	---
20	---	---	---	---	---	---	354	305	333	---	---	---
21	---	---	---	---	---	---	360	295	332	---	---	---
22	---	---	---	---	---	---	359	307	337	---	---	---
23	---	---	---	---	---	---	353	311	337	---	---	---
24	---	---	---	---	---	---	366	316	347	---	---	---
25	---	---	---	---	---	---	376	322	354	---	---	---
26	---	---	---	---	---	---	390	331	362	---	---	---
27	---	---	---	244	207	225	381	344	367	---	---	---
28	---	---	---	246	206	225	415	356	385	---	---	---
29	---	---	---	235	206	219	421	373	394	---	---	---
30	---	---	---	243	205	219	434	365	400	---	---	---
31	---	---	---	235	220	229	453	378	413	---	---	---
MONTH	---	---	---	---	---	---	453	219	310	---	---	---



## 355

Site number, 481233101542100--Continued

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY SUM VALUES

[illegible]

**LOCATION.**--Lat 48°12'34", long 101°54'36", sec.31, T.155 N., R.87 W., Ward County, Hydrologic Unit 10110101, located approximately 8 mi southwest of Berthold.

**RAINFALL:** July to September 1996 (seasonal).

REMARKS.--Records good except for the specific-conductance record, which is fair. Wetland went dry on August 30.

**RAINFALL:** Maximum recorded, 0.40 inches, September 4, 1996.

[illegible]

## WATER TEMPERATURE, DEGREES CELSIUS, JULY TO SEPTEMBER 1996

SPECIFIC CONDUCTANCE,  $\mu\text{S}/\text{CM}$  @ 25 DEGREES CENTIGRADE, JULY TO SEPTEMBER 1996[illegible]

## ANALYSES OF SAMPLES COLLECTED AT WETLAND SITES

Site number, 481234101543600--Continued

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	---	.00	.00
2	---	---	---	---	---	---	---	---	---	---	.14	.00
3	---	---	---	---	---	---	---	---	---	---	.00	.00
4	---	---	---	---	---	---	---	---	---	---	.22	.40
5	---	---	---	---	---	---	---	---	---	---	.00	.00
6	---	---	---	---	---	---	---	---	---	---	.00	.00
7	---	---	---	---	---	---	---	---	---	---	.10	.00
8	---	---	---	---	---	---	---	---	---	---	.00	.00
9	---	---	---	---	---	---	---	---	---	---	.00	.00
10	---	---	---	---	---	---	---	---	---	---	.00	.00
11	---	---	---	---	---	---	---	---	---	---	.00	.00
12	---	---	---	---	---	---	---	---	---	---	.00	.00
13	---	---	---	---	---	---	---	---	---	---	.00	.00
14	---	---	---	---	---	---	---	---	---	---	.00	.00
15	---	---	---	---	---	---	---	---	---	---	.20	.00
16	---	---	---	---	---	---	---	---	---	---	.00	.00
17	---	---	---	---	---	---	---	---	---	---	.00	.07
18	---	---	---	---	---	---	---	---	---	---	.08	.20
19	---	---	---	---	---	---	---	---	---	---	.00	.15
20	---	---	---	---	---	---	---	---	---	---	.00	.08
21	---	---	---	---	---	---	---	---	---	---	.00	.20
22	---	---	---	---	---	---	---	---	---	---	.00	.00
23	---	---	---	---	---	---	---	---	---	---	.00	.04
24	---	---	---	---	---	---	---	---	---	---	.00	.00
25	---	---	---	---	---	---	---	---	---	---	.00	.00
26	---	---	---	---	---	---	---	---	---	---	.00	---
27	---	---	---	---	---	---	---	---	---	.00	.00	---
28	---	---	---	---	---	---	---	---	---	.00	.00	---
29	---	---	---	---	---	---	---	---	---	.00	.00	---
30	---	---	---	---	---	---	---	---	---	.00	.00	---
31	---	---	---	---	---	---	---	---	---	.05	.00	---

WATER HEIGHT: Maximum recorded, 4.34 ft, July 27, 1996; minimum recorded, 3.32 ft, September 18-19 and 25, 1996.  
WATER TEMPERATURE: Maximum recorded, 26.1°C, August 24, 1996; minimum recorded, 7.9°C, September 25, 1996.  
SPECIFIC CONDUCTANCE: Maximum recorded, 820 microsiemens, September 15-16, 1996; minimum recorded, 531 microsiemens, July 27, 1996.  
RAINFALL: Maximum recorded, 0.37 inches, September 4, 1996.

[illegible]



## ANALYSES OF SAMPLES COLLECTED AT WETLAND SITES

Site number, 481236101544700--Continued

## WATER TEMPERATURE, DEGREES CELSIUS, JULY TO SEPTEMBER 1996

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	---	---	---	22.3	18.5	20.0	23.0	19.5	21.0
2	---	---	---	---	---	---	22.2	19.9	21.0	23.2	16.0	19.6
3	---	---	---	---	---	---	23.9	19.2	21.0	21.4	16.4	18.9
4	---	---	---	---	---	---	23.4	21.1	22.2	18.8	14.7	17.0
5	---	---	---	---	---	---	22.3	19.2	21.0	21.5	16.0	18.3
6	---	---	---	---	---	---	21.1	18.2	19.4	19.6	16.5	18.1
7	---	---	---	---	---	---	20.9	17.4	19.1	19.8	13.3	16.5
8	---	---	---	---	---	---	23.0	16.3	19.5	20.3	13.7	17.0
9	---	---	---	---	---	---	20.9	17.8	19.2	21.3	14.5	17.9
10	---	---	---	---	---	---	23.2	17.6	20.2	20.0	16.0	17.8
11	---	---	---	---	---	---	25.2	19.8	22.3	17.8	11.7	14.8
12	---	---	---	---	---	---	23.3	20.4	21.7	16.7	11.4	13.8
13	---	---	---	---	---	---	23.0	19.3	21.3	17.2	11.0	13.9
14	---	---	---	---	---	---	24.1	18.0	21.1	17.4	10.8	13.9
15	---	---	---	---	---	---	22.8	19.3	21.2	15.6	11.6	13.6
16	---	---	---	---	---	---	25.0	19.7	22.0	15.8	11.1	13.5
17	---	---	---	---	---	---	24.3	20.7	22.6	13.4	11.9	12.8
18	---	---	---	---	---	---	22.1	19.9	21.0	14.4	12.2	12.9
19	---	---	---	---	---	---	20.9	18.2	19.6	12.5	11.0	11.7
20	---	---	---	---	---	---	21.7	16.1	18.8	12.0	10.9	11.5
21	---	---	---	---	---	---	21.7	19.3	20.3	14.1	10.7	12.1
22	---	---	---	---	---	---	22.4	15.8	19.1	13.8	9.0	11.5
23	---	---	---	---	---	---	24.1	17.3	20.6	13.0	9.7	11.2
24	---	---	---	---	---	---	26.1	17.9	21.5	13.6	8.1	10.7
25	---	---	---	---	---	---	23.9	18.3	21.0	11.8	7.9	10.0
26	---	---	---	---	---	---	22.7	17.9	20.3	---	---	---
27	---	---	---	21.5	18.7	20.0	21.9	17.0	19.6	---	---	---
28	---	---	---	25.3	19.4	21.7	24.4	19.0	21.5	---	---	---
29	---	---	---	23.5	19.8	21.8	24.4	19.6	22.0	---	---	---
30	---	---	---	22.3	19.2	20.8	25.0	20.2	22.6	---	---	---
31	---	---	---	21.5	19.0	19.9	24.5	20.0	22.2	---	---	---
MONTH	---	---	---	---	---	---	26.1	15.8	20.8	---	---	---

SPECIFIC CONDUCTANCE,  $\mu\text{S}/\text{CM}$  @ 25 DEGREES CENTIGRADE, JULY TO SEPTEMBER 1996

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	---	---	---	593	561	578	747	728	737
2	---	---	---	---	---	---	597	585	592	753	733	743
3	---	---	---	---	---	---	591	580	585	754	741	749
4	---	---	---	---	---	---	586	576	582	752	727	742
5	---	---	---	---	---	---	590	573	582	765	739	749
6	---	---	---	---	---	---	594	581	586	776	755	761
7	---	---	---	---	---	---	596	584	590	770	750	760
8	---	---	---	---	---	---	605	588	598	776	755	768
9	---	---	---	---	---	---	612	604	607	779	746	768
10	---	---	---	---	---	---	626	604	613	783	750	773
11	---	---	---	---	---	---	638	611	621	782	764	776
12	---	---	---	---	---	---	644	615	628	781	774	777
13	---	---	---	---	---	---	652	627	635	819	773	786
14	---	---	---	---	---	---	653	628	639	811	770	783
15	---	---	---	---	---	---	663	637	647	820	777	789
16	---	---	---	---	---	---	675	632	649	820	773	784
17	---	---	---	---	---	---	672	649	658	787	776	782
18	---	---	---	---	---	---	681	653	663	782	767	775
19	---	---	---	---	---	---	670	655	662	774	751	768
20	---	---	---	---	---	---	674	659	667	765	759	762
21	---	---	---	---	---	---	679	668	673	767	752	761
22	---	---	---	---	---	---	688	667	679	760	746	754
23	---	---	---	---	---	---	699	675	690	759	747	754
24	---	---	---	---	---	---	706	687	698	760	745	754
25	---	---	---	---	---	---	719	697	708	760	744	753
26	---	---	---	---	---	---	722	702	711	---	---	---
27	---	---	---	541	531	534	733	702	718	---	---	---
28	---	---	---	545	533	539	736	715	725	---	---	---
29	---	---	---	548	540	545	734	718	725	---	---	---
30	---	---	---	554	546	550	738	722	730	---	---	---
31	---	---	---	563	549	557	746	721	732	---	---	---
MONTH	---	---	---	---	---	---	746	561	651	---	---	---

## 361

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY SUM VALUES

[illegible]

**LOCATION.**--Lat 48°12'36", long 101°55'13", sec.31, T.155 N., R.87 W., Ward County, Hydrologic Unit 10110101, located approximately 8 mi southwest of Berthold.

**RAINFALL:** July to September 1996 (seasonal).

REMARKS.--Records good. Wetland went dry on August 15, 1996.

**RAINFALL:** Maximum recorded, 0.40 inches, September 4, 1996.

[illegible]

## 363

SPECIFIC CONDUCTANCE,  $\mu\text{S}/\text{CM}$  @ 25 DEGREES CENTIGRADE, JULY TO AUGUST 1996[illegible][illegible]

**LOCATION.**--Lat 48°13'13", long 101°53'21", sec.29, T.155 N., R.87 W., Ward County, Hydrologic Unit 10110101, located approximately 8 mi southwest of Berthold.

GAGE HEIGHT: July to September 1996 (seasonal).  
WATER TEMPERATURE: July to August 1996 (seasonal).  
SPECIFIC CONDUCTANCE: July to August 1996 (seasonal).  
RAINFALL: July to September 1996 (seasonal).

REMARKS.--Records good except for the water temperature record, which is poor. Wetland went dry on September 3, 1996.

GAGE HEIGHT: Maximum recorded, 6.76 ft, July 27, 1996; minimum recorded, 5.89 ft, September 2, 1996.  
WATER TEMPERATURE: Maximum recorded, 30.2°C, August 16, 1996; minimum recorded, 12.3°C, August 22, 1996.  
SPECIFIC CONDUCTANCE: Maximum recorded, 649 microsiemens, August 21, 1996; minimum recorded, 486 microsiemens, July 28, 1996.  
RAINFALL: Maximum recorded, 0.46 inches, September 4, 1996.

[illegible]



## 365

WATER TEMPERATURE, DEGREES CELSIUS, JULY TO SEPTEMBER 1996

SPECIFIC CONDUCTANCE,  $\mu\text{S}/\text{CM}$  @ 25 DEGREES CENTIGRADE, JULY TO AUGUST 1996[illegible]

## ANALYSES OF SAMPLES COLLECTED AT WETLAND SITES

Site number, 481313101532100--Continued

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996  
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	---	.00	.00
2	---	---	---	---	---	---	---	---	---	---	.11	.00
3	---	---	---	---	---	---	---	---	---	---	.00	.00
4	---	---	---	---	---	---	---	---	---	---	.18	.46
5	---	---	---	---	---	---	---	---	---	---	.00	.00
6	---	---	---	---	---	---	---	---	---	---	.00	.00
7	---	---	---	---	---	---	---	---	---	---	.04	.00
8	---	---	---	---	---	---	---	---	---	---	.00	.00
9	---	---	---	---	---	---	---	---	---	---	.00	.00
10	---	---	---	---	---	---	---	---	---	---	.00	.00
11	---	---	---	---	---	---	---	---	---	---	.00	.00
12	---	---	---	---	---	---	---	---	---	---	.00	.00
13	---	---	---	---	---	---	---	---	---	---	.00	.00
14	---	---	---	---	---	---	---	---	---	---	.00	.00
15	---	---	---	---	---	---	---	---	---	---	.14	.00
16	---	---	---	---	---	---	---	---	---	---	.01	.00
17	---	---	---	---	---	---	---	---	---	---	.00	.05
18	---	---	---	---	---	---	---	---	---	---	.06	.22
19	---	---	---	---	---	---	---	---	---	---	.01	.17
20	---	---	---	---	---	---	---	---	---	---	.00	.07
21	---	---	---	---	---	---	---	---	---	---	.00	.05
22	---	---	---	---	---	---	---	---	---	---	.00	.00
23	---	---	---	---	---	---	---	---	---	---	.00	.05
24	---	---	---	---	---	---	---	---	---	---	.00	.00
25	---	---	---	---	---	---	---	---	---	---	.00	.00
26	---	---	---	---	---	---	---	---	---	---	.00	---
27	---	---	---	---	---	---	---	---	---	.00	.00	---
28	---	---	---	---	---	---	---	---	---	.01	.00	---
29	---	---	---	---	---	---	---	---	---	.00	.00	---
30	---	---	---	---	---	---	---	---	---	.00	.00	---
31	---	---	---	---	---	---	---	---	---	.05	.00	---

## ANALYSES OF SAMPLES COLLECTED AT DEVILS LAKE BASIN WATER-QUALITY SITES

367

## 480146099134300 ROUND LAKE NEAR FORT TOTTEN, ND

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	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)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)
JUN 19...	1040	1260	8.0	520	261	92	71	110	30	20

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)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	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)
JUN 19...	490	19	0.10	959	995	1.35	0.020	0.011	1.4	1.5	1.5

DATE	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
JUN 19...	0.096	0.090	2	20	<1	80	10	<0.1	<1	<1	490

DATE	TIME	DEPTH OF LAKE MAXIMUM (FEET) (82016)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
JUN 19...	1030	7.90	0.0	1380	8.3	22.5	7.6
19...	1031	--	0.50	1380	8.3	22.5	7.3
19...	1032	--	1.0	1380	8.4	22.5	7.2
19...	1033	--	1.5	1380	8.4	22.5	7.1
19...	1034	--	2.0	1380	8.4	22.5	7.1
19...	1035	--	2.4	1380	8.4	22.5	7.1

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
JUN 19...	95	710	32.0	19.0	105	10

## ANALYSES OF SAMPLES COLLECTED AT DEVILS LAKE BASIN WATER-QUALITY SITES

## 475944099161600 LONG LAKE NEAR FORT TOTTEN, ND

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	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)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)
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JUN 19...	1120	0.0	1.3	1870	7.7	660	353	83	110	200	38	3
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DATE	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	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)
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JUN 19...	40	730	67	0.10	1440	1490	2.03	<0.020	0.087	2.7	2.8	2.8
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DATE	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
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JUN 19...	0.608	0.551	5	30	<1	120	160	<0.1	<1	<1	450
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DATE	TIME	DEPTH OF LAKE MAXIMUM (FEET) (82016)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
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JUN 19...	1115	4.30	0.0	2060	7.8	22.5	3.1
19...	1116	--	0.50	2060	7.8	22.5	3.0
19...	1117	--	1.0	2070	7.8	22.5	2.8
19...	1118	--	1.3	2090	7.8	22.5	2.5

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
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JUN 19...	38	709	45.0	19.0	135	<5.0
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## ANALYSES OF SAMPLES COLLECTED AT DEVILS LAKE BASIN WATER-QUALITY SITES

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## 475752099061000 TWIN LAKE NEAR FORT TOTTEN, ND

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	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)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)
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JUN 18...	1550	0.0	4.2	1420	8.1	470	366	47	86	160	41	3
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DATE	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	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)
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JUN 18...	24	430	59	0.10	1030	1090	1.48	<0.020	0.367	1.8	2.1	2.1
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DATE	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHOPHOS- PHATE, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
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JUN 18...	0.077	0.066	6	20	<1	150	110	<0.1	<1	<1	300
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DATE	TIME	DEPTH OF LAKE MAXIMUM (FEET) (82016)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
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JUN 18...	1540	13.8	0.0	1590	8.1	23.0	5.3
18...	1541	--	0.70	1580	8.1	23.0	5.2
18...	1542	--	1.5	1580	8.1	23.0	5.1
18...	1543	--	2.4	1580	8.1	23.0	5.1
18...	1544	--	3.0	1580	8.1	23.0	5.0
18...	1545	--	3.9	1590	8.1	23.0	4.8
18...	1546	--	4.2	1590	8.1	23.0	4.8

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
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JUN 18...	67	710	104	27.0	140	12
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## ANALYSES OF SAMPLES COLLECTED AT DEVILS LAKE BASIN WATER-QUALITY SITES

475717099064100 TWIN LAKE OUTLET 1 NEAR FORT TOTTEN, ND

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	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)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	
JUN 18...	1240	0.0	2.2	1330	450	326	59	73	150	41	3	21

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)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	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)
JUN 18...	410	51	0.10	960	1000	1.36	<0.020	0.043	1.6	1.7	1.7

DATE	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHOPHOS- PHATE, DIS- SOLVED (UG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
JUN 18...	0.048	0.051	4	20	<1	130	100	0.1	<1	2	370

DATE	TIME	DEPTH OF LAKE MAXIMUM (FEET) (82016)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
JUN 18...	1230	7.20	0.0	1460	8.1	24.0	7.1
18...	1231	--	0.50	1470	8.2	24.0	6.8
18...	1232	--	1.0	1470	8.2	24.0	6.7
18...	1233	--	1.5	1470	8.1	23.5	5.8
18...	1234	--	2.0	1480	8.0	23.0	3.2
18...	1235	--	2.2	1490	8.0	23.0	2.4

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
JUN 18...	91	711	43.3	27.0	140	8.0

## ANALYSES OF SAMPLES COLLECTED AT DEVILS LAKE BASIN WATER-QUALITY SITES

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## 475654099064300 TWIN LAKE OUTLET 2 NEAR FORT TOTTEN, ND

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	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)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)
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JUN 18...	1135	0.0	1.3	1530	460	309	43	85	200	47	4	19
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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)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	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)
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JUN 18...	520	62	0.20	1120	1130	1.54	<0.020	<0.010	1.7	1.7	1.7
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DATE	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
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JUN 18...	0.029	0.026	4	20	<1	160	80	0.1	<1	<1	360
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DATE	TIME	DEPTH OF LAKE MAXIMUM (FEET) (82016)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
JUN 18...	1130	4.20	0.0	1680	8.4	23.5	7.6
18...	1131	--	0.50	1680	8.4	23.5	7.6
18...	1132	--	0.90	1680	8.5	23.5	8.0
18...	1133	--	1.3	1680	8.5	23.5	8.0

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
JUN 18...	97	711	50.0	25.0	150	8.0

## ANALYSES OF SAMPLES COLLECTED AT DEVILS LAKE BASIN WATER-QUALITY SITES

## 475551099064700 TWIN LAKE OUTLET 3 AND 4 NEAR FORT TOTTEN, ND

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	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)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	
JUN 18...	1340	0.0	0.90	1770	530	365	56	95	230	47	4	29

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)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	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)
JUN 18...	610	81	0.10	1320	1380	1.88	<0.020	<0.010	1.8	1.8	1.8

DATE	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- ORTHOPHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
JUN 18...	0.041	0.039	6	10	<1	190	10	<0.1	<1	1	430

DATE	TIME	DEPTH OF LAKE MAXIMUM (FEET) (82016)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
JUN 18...	1240	6.20	0.0	1960	8.3	23.5	7.1
JUN 18...	1241	--	0.60	1950	8.3	23.5	7.0
JUN 18...	1242	--	1.0	1960	8.3	23.5	6.9
JUN 18...	1243	--	1.5	1960	8.3	23.5	6.8
JUN 18...	1244	--	1.9	1960	8.3	23.5	6.8

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
JUN 18...	91	711	63.0	26.0	140	10

## ANALYSES OF SAMPLES COLLECTED AT DEVILS LAKE BASIN WATER-QUALITY SITES

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## 475454099055500 TWIN LAKE OUTLET 5 NEAR FORT TOTTEN, ND

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CAC03) (00900)	ALKA- LINITY LAB (MG/L AS CAC03) (90410)	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)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)
JUN 18...	1445	0.0	0.80	1950	8.6	570	397	64	100	260	48	5

DATE	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	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)
JUN 18...	40	700	91	0.20	1490	1550	2.11	<0.020	0.038	2.0	2.0	2.0

DATE	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)
JUN 18...	0.201	0.181	12	20	1	210	10	<0.1	3	<1	550

DATE	TIME	DEPTH OF LAKE MAXIMUM (FEET) (82016)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
JUN 18...	1435	7.90	0.0	2150	8.7	23.5	7.3
18...	1436	--	0.50	2150	8.7	23.5	7.2
18...	1437	--	1.0	2160	8.7	23.5	7.2
18...	1438	--	1.5	2150	8.7	23.5	7.1
18...	1439	--	2.0	2150	8.7	23.5	7.0
18...	1440	--	2.4	2150	8.7	23.5	6.8

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
JUN 18...	94	710	14.0	27.0	150	10

## ANALYSES OF SAMPLES COLLECTED AT DEVILS LAKE WATER-QUALITY SITES

## 480438099091500 DEVILS LAKE, WEST BAY, EAST

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINEITY LAB (MG/L AS CACO3) (90410)	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)	SODIUM PERCENT (00932)
JUN											
04...	1535	0.0	3.2	1390	--	370	265	62	53	150	45
17...	1635	0.0	3.7	1220	8.2	360	263	63	50	140	44
JUL											
24...	0840	0.0	1.4	1340	8.6	410	311	69	57	190	48
31...	1120	4.2	4.4	1440	--	430	299	71	62	180	45
SEP											
24...	1100	3.5	4.0	1600	--	400	323	64	58	170	46

DATE	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	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)
JUN											
04...	3	27	370	66	--	886	--	1.21	0.100	0.144	1.5
17...	3	23	360	63	0.10	858	876	1.19	0.020	0.041	1.5
JUL											
24...	4	28	390	73	0.20	995	1000	1.36	<0.020	0.012	1.3
31...	4	31	570	77	--	1160	--	1.58	--	--	--
SEP											
24...	4	30	440	78	--	1040	--	1.41	--	--	--

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	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)
JUN										
04...	1.7	1.7	0.208	0.222	6	55	<0.02	0.4	3	82
17...	1.6	1.6	0.211	0.196	5	--	--	--	--	20
JUL										
24...	1.4	1.4	0.220	0.208	6	--	--	--	--	100
31...	--	--	--	--	--	--	--	--	--	74
SEP										
24...	--	--	--	--	--	--	--	--	--	110

DATE	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)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
JUN										
04...	2	--	12	--	--	3	--	8	<3.00	<1.00
17...	<1	70	110	<0.1	<1	<1	310	--	--	--
JUL										
24...	<1	83	50	<0.1	<1	<1	310	--	<3.00	<1.00
31...	--	--	240	--	--	--	--	--	--	--
SEP										
24...	--	--	38	--	--	--	--	--	--	--



## ANALYSES OF SAMPLES COLLECTED AT DEVILS LAKE WATER-QUALITY SITES

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## 480438099091500 DEVILS LAKE, WEST BAY, EAST--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH OF LAKE MAXIMUM (FEET) (82016)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
JUN							
04...	1525	12.1	0.0	1390	8.7	16.0	9.0
04...	1526	--	0.50	1390	8.7	16.0	9.0
04...	1527	--	1.0	1390	8.7	16.0	8.9
04...	1528	--	1.5	1380	8.7	16.0	8.9
04...	1529	--	2.0	1380	8.7	16.0	8.8
04...	1530	--	2.5	1380	8.7	16.0	8.8
04...	1531	--	3.0	1380	8.7	16.0	8.8
04...	1532	--	3.7	1380	8.7	16.0	8.8
17...	1630	12.1	0.0	1330	8.3	23.0	7.2
17...	1631	--	0.90	1340	8.4	23.0	7.1
17...	1632	--	1.9	1330	8.4	23.0	7.1
17...	1633	--	2.9	1340	8.4	23.0	7.0
17...	1634	--	3.7	1330	8.4	22.0	7.3
JUL							
24...	0830	10.2	0.0	1470	8.5	20.5	7.7
24...	0831	--	0.50	1470	8.5	20.5	7.6
24...	0832	--	1.0	1460	8.5	20.5	7.5
24...	0833	--	1.5	1460	8.5	20.5	7.5
24...	0834	--	2.0	1470	8.5	20.5	7.4
24...	0835	--	2.6	1470	8.5	20.5	7.4
24...	0836	--	3.1	1470	8.6	20.5	7.4
31...	1100	14.4	0.0	1430	8.6	21.5	7.8
31...	1102	--	0.70	1430	8.6	21.5	7.7
31...	1104	--	1.4	1430	8.6	21.0	7.7
31...	1106	--	2.1	1440	8.6	21.0	7.4
31...	1108	--	2.8	1440	8.6	21.0	7.0
31...	1110	--	3.5	1490	8.6	20.5	4.4
31...	1112	--	4.4	1500	8.5	20.0	3.2
SEP							
24...	1050	13.1	0.0	1630	8.3	13.0	9.3
24...	1052	--	1.0	1630	8.3	13.0	9.1
24...	1054	--	2.0	1630	8.3	13.0	9.0
24...	1056	--	3.0	1630	8.3	13.0	9.0
24...	1058	--	4.0	1630	8.3	13.0	9.0

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
JUN						
04...	98	713	63.0	18.0	150	14
17...	90	715	102	27.0	90	11
JUL						
24...	91	718	28.0	16.0	300	11
31...	93	729	--	26.0	0	<5.0

## ANALYSES OF SAMPLES COLLECTED AT DEVILS LAKE WATER-QUALITY SITES

## 480052099065400 DEVILS LAKE, WEST BAY 1

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	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)	SODIUM PERCENT (00932)
JUN											
04...	1610	0.0	4.0	1800	--	420	287	61	66	220	50
17...	1615	0.0	5.4	1690	8.3	440	314	65	68	230	51
JUL											
23...	1410	0.0	2.2	1630	8.6	440	325	66	67	250	53
31...	0820	5.8	6.0	1740	8.6	480	288	70	73	240	50
SEP											
24...	0845	5.2	5.7	1760	--	430	325	65	65	210	49

DATE	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	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)
JUN											
04...	5	34	480	99	--	1140	--	1.54	0.050	0.136	1.5
17...	5	32	530	100	0.10	1210	1250	1.70	<0.020	0.026	1.4
JUL											
23...	5	35	510	98	0.20	1220	1140	1.55	<0.020	0.021	1.3
31...	5	38	490	100	--	1180	--	1.61	--	--	--
SEP											
24...	4	34	510	97	--	1170	--	1.59	--	--	--

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	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)
JUN										
04...	1.6	1.6	0.215	0.222	7	51	<0.02	0.3	3	59
17...	1.5	1.5	0.184	0.196	6	--	--	--	--	20
JUL										
23...	1.3	1.3	0.250	0.266	9	--	--	--	--	100
31...	--	--	--	--	--	--	--	--	--	100
SEP										
24...	--	--	--	--	--	--	--	--	--	93

DATE	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)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
JUN										
04...	2	--	<2	--	--	3	--	9	<3.00	<1.00
17...	<1	100	50	<0.1	1	<1	330	--	--	--
JUL										
23...	<1	100	50	<0.1	1	<1	320	--	<3.00	<1.00
31...	--	--	95	--	--	--	--	--	--	--
SEP										
24...	--	--	24	--	--	--	--	--	--	--

## ANALYSES OF SAMPLES COLLECTED AT DEVILS LAKE WATER-QUALITY SITES

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## 480052099065400 DEVILS LAKE, WEST BAY 1--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH OF LAKE MAXIMUM (FEET) (82016)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
JUN							
04...	1600	17.4	0.0	1800	8.8	15.5	8.3
04...	1601	--	0.50	1800	8.8	15.5	8.3
04...	1602	--	1.0	1800	8.8	15.5	8.2
04...	1603	--	1.6	1800	8.8	15.5	8.1
04...	1604	--	2.2	1800	8.8	15.5	8.1
04...	1605	--	3.0	1800	8.8	15.5	8.1
04...	1606	--	3.7	1800	8.8	15.5	8.1
04...	1607	--	4.5	1800	8.8	15.5	8.0
04...	1608	--	5.3	1800	8.8	15.5	8.0
17...	1605	19.4	0.0	1840	8.4	22.5	7.9
17...	1606	--	1.0	1840	8.4	22.5	7.8
17...	1607	--	2.0	1850	8.4	22.5	7.8
17...	1608	--	2.9	1840	8.5	22.0	7.6
17...	1609	--	4.0	1850	8.5	21.5	7.4
17...	1610	--	4.9	1880	8.4	20.5	6.2
17...	1611	--	5.9	1920	8.3	19.5	3.7
JUL							
23...	1400	19.0	0.0	1780	8.4	21.5	7.1
23...	1401	--	1.0	1780	8.5	21.5	6.9
23...	1402	--	2.7	1780	8.5	21.5	6.8
23...	1403	--	3.3	1780	8.5	21.5	6.7
23...	1404	--	4.1	1780	8.5	21.5	6.7
23...	1405	--	5.1	1780	8.5	21.5	6.7
23...	1406	--	5.8	1780	8.5	21.5	6.6
31...	0800	19.7	0.0	1830	8.6	21.5	7.7
31...	0802	--	0.70	1810	8.6	21.5	7.7
31...	0804	--	1.5	1810	8.6	21.5	7.6
31...	0806	--	2.2	1820	8.6	21.5	7.5
31...	0808	--	3.0	1820	8.6	21.0	7.3
31...	0810	--	3.6	1820	8.6	21.0	6.4
31...	0812	--	4.5	1810	8.6	20.5	5.8
31...	0814	--	5.2	1810	8.6	20.5	5.7
31...	0816	--	6.0	1810	8.5	20.5	1.8
SEP							
24...	0830	18.7	0.0	1800	8.1	13.5	9.1
24...	0832	--	1.0	1800	8.1	13.5	8.9
24...	0834	--	2.0	1800	8.1	13.5	8.9
24...	0836	--	3.0	1800	8.1	13.5	8.8
24...	0838	--	4.0	1800	8.1	13.5	8.7
24...	0840	--	5.0	1800	8.1	13.5	8.7
24...	0842	--	5.7	1800	8.1	13.5	8.7

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
JUN						
04...	90	713	94.5	19.0	152	12
17...	98	715	106	27.0	125	5.0
JUL						
23...	87	714	43.0	22.0	285	15
31...	92	729	--	18.0	0	<5.0

## ANALYSES OF SAMPLES COLLECTED AT DEVILS LAKE WATER-QUALITY SITES

## 480118099065400 DEVILS LAKE, WEST BAY 2

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	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)
JUL 31...	0910	5.7	5.9	1750	8.6	480	310	70	73	240
SEP 24...	0945	4.7	5.2	1780	8.8	440	320	66	66	210

DATE	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
JUL 31...	50	5	38	500	100	1210	1.64	25	57
SEP 24...	49	4	35	360	100	1030	1.40	130	47

DATE	TIME	DEPTH OF LAKE MAXIMUM (FEET) (82016)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
JUL 31...	0850	19.4	0.0	1840	8.6	21.5	7.9	94	730	21.0	0	<5.0
31...	0852	--	1.0	1840	8.6	21.5	7.8	--	--	--	--	--
31...	0854	--	2.0	1840	8.6	21.5	7.7	--	--	--	--	--
31...	0856	--	3.0	1820	8.6	22.0	7.6	--	--	--	--	--
31...	0858	--	4.0	1820	8.6	20.5	5.9	--	--	--	--	--
31...	0900	--	5.0	1820	8.6	20.5	5.8	--	--	--	--	--
31...	0902	--	5.9	1830	8.5	20.5	0.9	--	--	--	--	--
SEP 24...	0930	17.1	0.0	1820	8.5	13.5	8.9	--	--	--	--	--
24...	0932	--	1.0	1820	8.5	13.5	8.8	--	--	--	--	--
24...	0934	--	2.0	1820	8.5	13.5	8.7	--	--	--	--	--
24...	0936	--	3.0	1820	8.4	13.5	8.6	--	--	--	--	--
24...	0938	--	4.0	1820	8.4	13.5	8.6	--	--	--	--	--
24...	0940	--	5.0	1820	8.4	13.5	8.6	--	--	--	--	--
24...	0942	--	5.2	1820	8.4	13.5	8.6	--	--	--	--	--

## ANALYSES OF SAMPLES COLLECTED AT DEVILS LAKE WATER-QUALITY SITES

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## 480144099065400 DEVILS LAKE, WEST BAY 3

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	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)
JUL 31...	1000	5.4	5.6	1710	8.6	420	304	63	64	200
SEP 24...	1015	4.4	4.9	1760	8.8	440	325	66	66	210

DATE	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
JUL 31...	49	4	33	510	91	1140	1.55	60	100
SEP 24...	49	4	34	420	93	1090	1.48	120	35

DATE	TIME	DEPTH OF LAKE MAXIMUM (FEET) (82016)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
JUL 31...	0940	18.4	0.0	1820	8.6	22.0	7.6	91	730	24.0	0	<5.0
31...	0942	--	1.0	1820	8.6	22.0	7.5	--	--	--	--	--
31...	0944	--	2.0	1830	8.6	21.5	7.5	--	--	--	--	--
31...	0946	--	3.0	1830	8.6	21.5	7.3	--	--	--	--	--
31...	0948	--	4.0	1820	8.6	21.0	6.0	--	--	--	--	--
31...	0950	--	5.0	1820	8.6	20.5	5.6	--	--	--	--	--
31...	0952	--	5.6	1830	8.5	20.5	1.4	--	--	--	--	--
SEP 24...	1000	16.1	0.0	1800	8.6	13.0	9.1	--	--	--	--	--
24...	1002	--	1.0	1800	8.6	13.0	9.1	--	--	--	--	--
24...	1004	--	2.0	1800	8.6	13.0	9.0	--	--	--	--	--
24...	1006	--	3.0	1800	8.6	13.0	9.0	--	--	--	--	--
24...	1008	--	4.0	1800	8.6	13.0	9.0	--	--	--	--	--
24...	1010	--	4.9	1800	8.6	13.0	9.0	--	--	--	--	--



## ANALYSES OF SAMPLES COLLECTED AT DEVILS LAKE WATER-QUALITY SITES

## 480623099013400 DEVILS LAKE, SIXMILE BAY

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LILITY LAB (MG/L AS CACO3) (90410)	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)	SODIUM PERCENT (00932)
JUN											
04...	1410	0.0	4.0	1740	8.5	420	258	61	66	220	51
17...	1515	0.0	6.0	1900	8.3	470	308	63	75	270	53
17...	1520	7.6	8.1	2170	--	520	331	65	86	320	55
JUL											
a23...	1100	0.0	3.0	1920	8.7	470	331	64	75	310	56

DATE	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	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)
JUN											
04...	5	36	470	96	--	1100	--	1.50	<0.020	0.085	1.4
17...	5	37	650	120	0.10	1400	1410	1.92	0.030	0.053	1.4
17...	6	44	750	150	0.10	1620	1620	2.20	0.060	0.228	1.5
JUL											
a23...	6	42	600	120	0.20	1410	1380	1.88	<0.020	0.033	1.3

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	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)
JUN										
04...	1.5	1.5	0.198	0.183	8	47	<0.02	0.2	3	53
17...	1.5	1.5	0.198	0.216	6	--	--	--	--	20
17...	1.7	1.8	0.350	0.351	9	--	--	--	--	20
JUL										
a23...	1.3	1.3	0.304	0.296	12	--	--	--	--	100

DATE	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)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
JUN										
04...	2	--	9	--	--	2	--	8	<3.00	<1.00
17...	<1	120	50	0.1	<1	<1	330	--	--	--
17...	<1	140	160	<0.1	1	<1	350	--	--	--
JUL										
a23...	<1	120	50	<0.1	2	<1	330	--	<3.00	<1.00

## ANALYSES OF SAMPLES COLLECTED AT DEVILS LAKE WATER-QUALITY SITES

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## 480623099013400 DEVILS LAKE, SIXMILE BAY--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH OF LAKE MAXIMUM (FEET) (82016)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
JUN							
04...	1400	24.6	0.0	1740	8.8	15.5	8.7
04...	1401	--	1.1	1730	8.8	15.5	8.5
04...	1402	--	2.0	1730	8.9	15.5	8.3
04...	1403	--	3.0	1730	8.9	15.5	8.3
04...	1404	--	3.9	1740	8.9	15.0	8.2
04...	1405	--	4.9	1790	8.9	15.0	8.0
04...	1406	--	6.0	2190	8.9	14.0	8.1
04...	1407	--	7.0	2240	8.9	14.0	7.8
04...	1408	--	7.5	2230	8.9	14.0	7.6
17...	1505	26.6	0.0	1960	8.4	21.0	8.1
17...	1506	--	1.0	1960	8.4	21.0	7.9
17...	1507	--	1.9	1960	8.4	21.0	7.9
17...	1508	--	3.0	2010	8.5	20.0	8.0
17...	1509	--	3.9	2020	8.5	19.5	7.8
17...	1510	--	5.0	2220	8.4	16.5	5.3
17...	1511	--	6.0	2310	8.3	15.5	3.8
17...	1512	--	7.0	2410	8.2	15.0	1.2
17...	1513	--	8.0	2410	8.2	15.0	0.7
17...	1514	--	8.1	2430	8.1	14.5	0.6
JUL							
23...	1050	25.6	0.0	2080	8.6	21.5	7.5
23...	1051	--	1.0	2080	8.6	21.5	7.4
23...	1052	--	2.0	2080	8.6	21.5	7.3
23...	1053	--	2.9	2070	8.6	21.5	7.3
23...	1054	--	4.0	2090	8.6	21.5	7.3
23...	1055	--	4.9	2090	8.6	21.5	7.2
23...	1056	--	5.8	2080	8.6	21.5	7.2
23...	1057	--	6.9	2080	8.6	21.5	7.2
23...	1058	--	7.8	2080	8.6	21.5	7.0

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
JUN						
04...	93	713	78.7	22.0	180	11
17...	97	716	118	26.0	120	10
JUL						
23...	92	714	61.0	20.0	290	10

a Replicate sample also collected for quality-assurance purposes.

## ANALYSES OF SAMPLES COLLECTED AT DEVILS LAKE WATER-QUALITY SITES

480500098561000 DEVILS LAKE, CREEL BAY

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	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)	SODIUM PERCENT (00932)
JUN											
04...	1300	0.0	7.3	2470	8.5	530	328	62	90	330	55
17...	1320	0.0	7.2	2250	8.4	520	347	64	88	330	55
JUL											
23...	0845	0.0	3.0	2200	8.8	530	358	65	88	330	55

DATE	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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 CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	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)
JUN											
04...	6	48	670	150	--	1550	--	2.11	0.020	0.062	1.6
17...	6	45	770	160	0.10	1670	1670	2.27	0.030	0.059	1.6
JUL											
23...	6	49	700	150	0.20	1600	1530	2.08	<0.020	0.014	1.4

DATE	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	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)
JUN										
04...	1.6	1.7	0.197	0.189	10	47	<0.02	0.2	4	<7
17...	1.6	1.6	0.207	0.225	10	--	--	--	--	20
JUL										
23...	1.5	1.5	0.246	0.248	15	--	--	--	--	100

DATE	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)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
JUN										
04...	4	--	<2	--	--	4	--	67	<3.00	<1.00
17...	<1	140	30	0.1	1	<1	360	--	--	--
JUL										
23...	<1	140	50	<0.1	2	<1	340	--	<3.00	<1.00

## ANALYSES OF SAMPLES COLLECTED AT DEVILS LAKE WATER-QUALITY SITES

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## 480500098561000 DEVILS LAKE, CREEL BAY--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH OF LAKE MAXIMUM (FEET) (82016)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
JUN							
04...	1245	30.8	0.0	2470	8.8	14.0	8.6
04...	1246	--	1.0	2470	8.8	14.0	8.5
04...	1247	--	2.0	2470	8.9	14.0	8.4
04...	1248	--	3.0	2470	8.9	14.0	8.4
04...	1249	--	4.0	2470	8.9	14.0	8.3
04...	1250	--	5.0	2470	8.9	13.5	8.2
04...	1251	--	6.0	2470	8.9	13.5	8.1
04...	1252	--	7.0	2480	8.9	13.5	7.8
04...	1253	--	8.0	2470	8.9	13.0	7.3
04...	1254	--	9.0	2470	8.8	12.5	5.0
04...	1255	--	9.4	2470	8.8	12.5	3.6
17...	1310	29.2	0.0	2440	8.5	20.0	8.3
17...	1311	--	1.3	2450	8.5	20.0	8.3
17...	1312	--	2.2	2440	8.5	20.0	8.4
17...	1313	--	2.8	2440	8.5	20.0	8.1
17...	1314	--	3.9	2440	8.5	18.0	7.6
17...	1315	--	5.1	2440	8.5	16.5	5.6
17...	1316	--	6.1	2440	8.4	15.5	4.7
17...	1317	--	7.0	2450	8.4	15.0	3.6
17...	1318	--	8.1	2450	8.3	14.5	2.5
17...	1319	--	8.9	2450	8.3	14.5	2.4
JUL							
23...	0830	32.5	0.0	2400	8.6	21.5	7.1
23...	0831	--	0.90	2400	8.7	21.5	7.0
23...	0832	--	2.0	2400	8.7	21.5	7.0
23...	0833	--	3.0	2400	8.7	21.5	6.9
23...	0834	--	3.9	2390	8.7	21.5	6.9
23...	0835	--	5.0	2400	8.7	21.5	6.9
23...	0836	--	6.1	2410	8.7	21.5	6.9
23...	0837	--	7.0	2410	8.7	21.5	6.8
23...	0838	--	8.1	2430	8.7	21.5	6.1
23...	0839	--	9.2	2400	8.6	21.0	4.0
23...	0840	--	9.9	2400	8.6	21.0	2.6

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
JUN						
04...	90	714	144	22.0	180	9.0
17...	98	716	142	27.0	125	7.0
JUL						
23...	86	714	57.0	19.0	270	8.0

## ANALYSES OF SAMPLES COLLECTED AT DEVILS LAKE WATER-QUALITY SITES

## 480147098572200 DEVILS LAKE, MAIN BAY

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINEITY LAB (MG/L AS CACO3) (90410)	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)	SODIUM PERCENT (00932)
JUN											
04...	1340	0.0	8.0	2440	8.6	560	325	65	97	360	56
17...	1425	0.0	8.3	2200	8.5	530	346	65	88	330	55
JUL											
23...	0945	0.0	3.4	2150	8.7	520	354	65	87	320	54
30...	1110	11.5	11.7	2310	8.5	560	332	67	95	350	55
SEP											
25...	0825	11.0	11.5	2360	8.7	510	337	61	85	310	55

DATE	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	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)
JUN											
04...	7	52	710	3.0	--	1480	--	2.02	<0.020	0.038	1.6
17...	6	45	770	150	0.10	1660	1650	2.24	<0.020	<0.010	1.5
JUL											
23...	6	49	680	150	0.20	1560	1570	2.14	<0.020	0.015	1.4
30...	6	51	760	150	--	1670	--	2.26	--	--	--
SEP											
25...	6	46	670	150	--	1530	--	2.08	--	--	--

DATE	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	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)
JUN										
04...	1.6	1.6	0.194	0.188	15	72	<0.02	0.5	7	48
17...	1.5	1.5	0.169	0.183	7	--	--	--	--	20
JUL										
23...	1.5	1.5	0.245	0.244	16	--	--	--	--	100
30...	--	--	--	--	--	--	--	--	--	<7
SEP										
25...	--	--	--	--	--	--	--	--	--	42

DATE	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)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
JUN										
04...	4	--	7	--	--	6	--	14	<3.00	<1.00
17...	<1	140	10	<0.1	<1	<1	340	--	--	--
JUL										
23...	<1	140	50	<0.1	2	<1	330	--	<3.00	<1.00
30...	--	--	32	--	--	--	--	--	--	--
SEP										
25...	--	--	<2	--	--	--	--	--	--	--



## ANALYSES OF SAMPLES COLLECTED AT DEVILS LAKE WATER-QUALITY SITES

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## 480147098572200 DEVILS LAKE, MAIN BAY--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH OF LAKE MAXIMUM (FEET) (82016)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
JUN							
04...	1325	37.1	0.0	2430	8.8	13.5	9.1
04...	1326	--	1.0	2430	8.9	13.5	9.0
04...	1327	--	2.0	2430	8.9	13.5	8.9
04...	1328	--	3.0	2430	8.9	13.5	8.9
04...	1329	--	4.1	2430	8.9	13.5	8.9
04...	1330	--	5.0	2430	8.9	13.0	8.9
04...	1331	--	6.0	2430	8.9	13.0	8.8
04...	1332	--	6.9	2430	8.9	13.0	8.8
04...	1333	--	8.0	2440	8.9	13.0	8.7
04...	1334	--	9.1	2440	8.9	13.0	8.7
04...	1335	--	10.2	2440	8.9	13.0	8.7
04...	1336	--	11.1	2440	8.9	12.5	7.7
04...	1337	--	11.3	2440	8.9	12.5	6.8
17...	1410	38.7	0.0	2420	8.5	21.5	7.8
17...	1411	--	1.0	2420	8.5	21.5	7.7
17...	1412	--	2.0	2410	8.5	19.5	7.9
17...	1413	--	3.0	2390	8.5	19.5	7.8
17...	1414	--	3.8	2400	8.5	19.0	7.7
17...	1415	--	5.0	2400	8.5	19.0	7.6
17...	1416	--	5.9	2400	8.5	19.0	7.5
17...	1417	--	7.0	2410	8.5	18.5	7.2
17...	1418	--	8.0	2410	8.5	17.5	6.6
17...	1419	--	9.0	2420	8.5	16.0	5.1
17...	1420	--	9.7	2430	8.4	15.5	4.7
17...	1421	--	10.9	2430	8.4	15.0	3.7
17...	1422	--	11.8	2430	8.4	15.0	3.2
JUL							
23...	0930	38.1	0.0	2340	8.5	21.0	7.8
23...	0931	--	1.0	2340	8.5	21.0	7.7
23...	0932	--	2.2	2340	8.6	21.0	7.6
23...	0933	--	2.9	2340	8.6	21.0	7.6
23...	0934	--	4.0	2340	8.6	21.0	7.6
23...	0935	--	4.9	2340	8.6	21.0	7.5
23...	0936	--	6.0	2340	8.6	21.0	7.5
23...	0937	--	7.2	2350	8.6	21.0	7.4
23...	0938	--	8.2	2360	8.6	21.0	7.4
23...	0939	--	9.1	2340	8.6	21.0	7.4
23...	0940	--	10.0	2340	8.6	21.0	7.4
23...	0941	--	11.1	2350	8.6	21.0	7.3
23...	0942	--	11.6	2350	8.6	21.0	7.1
30...	1040	38.4	0.0	2380	8.7	21.0	7.6
30...	1042	--	1.0	2380	8.7	21.0	7.5
30...	1044	--	2.0	2370	8.7	21.0	7.3
30...	1046	--	3.0	2370	8.7	20.5	6.8
30...	1048	--	3.9	2370	8.7	20.5	6.6
30...	1050	--	5.0	2370	8.7	20.5	6.6
30...	1052	--	6.0	2370	8.7	20.5	6.4
30...	1054	--	7.1	2370	8.7	20.5	6.1
30...	1056	--	8.0	2370	8.7	20.5	6.0
30...	1058	--	9.0	2370	8.7	20.5	6.0
30...	1100	--	10.0	2390	8.7	20.5	4.8
30...	1102	--	11.0	2400	8.6	20.5	4.1
30...	1104	--	11.7	2400	8.6	20.0	3.5
SEP							
25...	0800	37.7	0.0	2430	8.3	15.0	9.3
25...	0802	--	1.0	2430	8.3	15.0	9.1
25...	0804	--	2.0	2430	8.3	15.0	9.0
25...	0806	--	3.0	2430	8.3	15.0	8.8
25...	0808	--	4.0	2430	8.3	15.0	8.8
25...	0810	--	5.0	2430	8.3	15.0	8.7
25...	0812	--	6.0	2430	8.2	15.0	8.7
25...	0814	--	7.0	2430	8.2	15.0	8.7
25...	0816	--	8.0	2430	8.2	15.0	8.6
25...	0817	--	9.0	2430	8.2	15.0	8.5
25...	0818	--	10.0	2430	8.2	15.0	8.4
25...	0820	--	11.0	2430	8.2	15.0	8.4
25...	0822	--	11.5	2430	8.2	15.0	8.3

## ANALYSES OF SAMPLES COLLECTED AT DEVILS LAKE WATER-QUALITY SITES

480147098572200 DEVILS LAKE, MAIN BAY--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
JUN						
04...	93	714	157	20.0	180	8.0
17...	94	716	163	24.0	110	7.0
JUL						
23...	94	714	66.0	19.5	270	15
30...	90	731	--	25.0	5	<5.0

## ANALYSES OF SAMPLES COLLECTED AT DEVILS LAKE WATER-QUALITY SITES

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## 480220098563000 DEVILS LAKE, MAIN BAY 2

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	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)
JUL 30...	1210	11.5	11.7	2310	8.6	560	328	67	94	350
SEP 25...	0930	10.7	11.2	2360	--	490	332	60	83	310

DATE	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
JUL 30...	55	6	50	740	160	1650	2.25	<7	26
SEP 25...	55	6	45	650	150	1500	2.04	68	<2

DATE	TIME	DEPTH OF LAKE MAXIMUM (FEET) (82016)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE OF (MM HG) (00025)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
JUL												
30...	1140	38.4	0.0	2370	8.7	21.5	7.7	92	731	26.0	10	<5.0
30...	1142	--	1.1	2370	8.7	21.5	7.7	--	--	--	--	--
30...	1144	--	2.0	2370	8.7	21.5	7.5	--	--	--	--	--
30...	1146	--	3.0	2380	8.7	20.5	6.5	--	--	--	--	--
30...	1148	--	4.0	2370	8.7	20.5	6.3	--	--	--	--	--
30...	1150	--	5.0	2370	8.7	20.5	6.1	--	--	--	--	--
30...	1152	--	6.1	2380	8.7	20.5	6.1	--	--	--	--	--
30...	1154	--	7.0	2380	8.7	20.5	5.9	--	--	--	--	--
30...	1156	--	8.0	2380	8.7	20.5	5.8	--	--	--	--	--
30...	1158	--	9.0	2380	8.7	20.5	5.6	--	--	--	--	--
30...	1200	--	10.1	2380	8.7	20.5	5.3	--	--	--	--	--
30...	1202	--	11.0	2380	8.6	20.5	4.2	--	--	--	--	--
30...	1204	--	11.7	2390	8.6	20.5	5.7	--	--	--	--	--
SEP												
25...	0900	36.7	0.0	2430	8.3	15.0	9.3	--	--	--	--	--
25...	0902	--	1.0	2430	8.3	15.0	8.9	--	--	--	--	--
25...	0904	--	2.0	2430	8.3	15.0	8.8	--	--	--	--	--
25...	0906	--	3.0	2430	8.4	15.0	8.6	--	--	--	--	--
25...	0908	--	4.0	2430	8.4	15.0	8.6	--	--	--	--	--
25...	0910	--	5.0	2430	8.3	15.0	8.5	--	--	--	--	--
25...	0912	--	6.0	2430	8.3	15.0	8.4	--	--	--	--	--
25...	0914	--	7.0	2430	8.3	15.0	8.4	--	--	--	--	--
25...	0916	--	8.0	2430	8.3	15.0	8.3	--	--	--	--	--
25...	0918	--	9.0	2430	8.3	15.0	8.3	--	--	--	--	--
25...	0920	--	10.0	2430	8.3	15.0	8.3	--	--	--	--	--
25...	0922	--	11.0	2430	8.3	15.0	8.3	--	--	--	--	--
25...	0924	--	11.2	2390	8.3	15.0	8.3	--	--	--	--	--

## ANALYSES OF SAMPLES COLLECTED AT DEVILS LAKE WATER-QUALITY SITES

## 480245098555000 DEVILS LAKE, MAIN BAY 3

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	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)
JUL 30...	1250	11.3	11.5	2300	8.7	550	331	66	94	350
SEP 25...	1025	10.5	11.0	2360	--	490	335	60	83	300

DATE	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
JUL 30...	55	6	50	740	160	1660	2.25	<7	<2
SEP 25...	55	6	45	680	150	1520	2.07	100	<2

DATE	TIME	DEPTH OF LAKE MAXIMUM (FEET) (82016)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
JUL												
30...	1220	37.7	0.0	2380	8.6	21.0	7.6	89	731	23.0	0	<5.0
30...	1222	--	1.0	2380	8.7	21.0	7.5	--	--	--	--	--
30...	1224	--	2.0	2380	8.7	21.0	7.4	--	--	--	--	--
30...	1226	--	3.0	2370	8.7	21.0	7.3	--	--	--	--	--
30...	1228	--	4.1	2370	8.7	20.5	6.9	--	--	--	--	--
30...	1230	--	5.0	2370	8.7	20.5	6.7	--	--	--	--	--
30...	1232	--	6.0	2370	8.7	20.5	6.5	--	--	--	--	--
30...	1234	--	7.0	2380	8.7	20.5	6.3	--	--	--	--	--
30...	1236	--	8.0	2380	8.7	20.5	6.1	--	--	--	--	--
30...	1238	--	9.0	2380	8.7	20.5	6.0	--	--	--	--	--
30...	1240	--	10.0	2380	8.7	20.5	5.8	--	--	--	--	--
30...	1242	--	11.0	2370	8.6	20.5	4.5	--	--	--	--	--
SEP												
25...	1000	36.1	0.0	2420	8.3	15.0	8.4	--	--	--	--	--
25...	1002	--	1.0	2420	8.3	15.0	8.4	--	--	--	--	--
25...	1004	--	2.0	2420	8.3	15.0	8.3	--	--	--	--	--
25...	1006	--	3.0	2420	8.3	15.0	8.2	--	--	--	--	--
25...	1008	--	4.0	2420	8.3	15.0	8.2	--	--	--	--	--
25...	1010	--	5.0	2420	8.3	15.0	8.1	--	--	--	--	--
25...	1012	--	6.0	2420	8.3	15.0	8.1	--	--	--	--	--
25...	1014	--	7.0	2420	8.2	15.0	8.1	--	--	--	--	--
25...	1016	--	8.0	2410	8.2	15.0	8.0	--	--	--	--	--
25...	1018	--	9.0	2410	8.2	15.0	8.0	--	--	--	--	--
25...	1020	--	10.0	2410	8.2	15.0	8.0	--	--	--	--	--
25...	1022	--	11.0	2410	8.2	15.0	8.0	--	--	--	--	--

## ANALYSES OF SAMPLES COLLECTED AT DEVILS LAKE WATER-QUALITY SITES

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## 480407098491900 DEVILS LAKE, EAST BAY

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	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)	SODIUM PERCENT (00932)
JUN											
05...	0810	0.0	3.4	4270	8.7	800	408	65	150	680	62
18...	0740	0.0	5.8	3930	8.6	830	452	70	160	690	61
18...	0745	7.8	8.3	4000	8.5	830	453	68	160	690	61
JUL											
23...	1335	0.0	3.0	3960	8.8	830	472	67	160	810	65
30...	0845	8.4	8.6	4110	8.7	760	430	63	150	630	61
SEP											
23...	1550	7.7	8.2	4210	--	750	444	62	150	630	61

DATE	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	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)
JUN											
05...	10	85	1500	300	--	3040	--	4.13	0.020	0.101	2.3
18...	10	86	1600	320	0.10	3200	3100	4.22	0.030	0.023	2.3
18...	10	88	1600	330	0.10	3210	3190	4.34	0.040	0.148	2.3
JUL											
23...	12	83	1400	320	0.20	3120	3070	4.18	<0.020	0.074	2.0
30...	10	80	1400	270	--	2860	--	3.89	--	--	--
SEP											
23...	10	80	1500	350	--	3000	--	4.07	--	--	--

DATE	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	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)
JUN										
05...	2.5	2.5	0.262	0.241	18	39	<0.02	<0.2	4	67
18...	2.3	2.3	0.240	0.247	17	--	--	--	--	30
18...	2.5	2.5	0.303	0.307	16	--	--	--	--	30
JUL										
23...	2.1	2.1	0.283	0.288	24	--	--	--	--	100
30...	--	--	--	--	--	--	--	--	--	36
SEP										
23...	--	--	--	--	--	--	--	--	--	120

DATE	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)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
JUN										
05...	2	--	<2	--	--	7	--	19	<3.00	<1.00
18...	<1	260	10	<0.1	2	<1	440	--	--	--
18...	<1	260	20	<0.1	2	<1	450	--	--	--
JUL										
23...	<1	290	50	<0.1	3	<1	420	--	<3.00	<1.00
30...	--	--	<2	--	--	--	--	--	--	--
SEP										
23...	--	--	<2	--	--	--	--	--	--	--



## ANALYSES OF SAMPLES COLLECTED AT DEVILS LAKE WATER-QUALITY SITES

## 480407098491900 DEVILS LAKE, EAST BAY--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH OF LAKE MAXIMUM (FEET) (82016)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
JUN							
05...	0800	26.9	0.0	4250	8.8	14.0	8.1
05...	0801	--	1.0	4260	8.8	14.0	8.1
05...	0802	--	2.0	4250	8.9	14.0	8.0
05...	0803	--	2.8	4260	8.9	14.0	8.0
05...	0804	--	4.0	4260	8.9	14.0	7.9
05...	0805	--	5.2	4260	8.9	14.0	7.9
05...	0806	--	6.1	4260	8.9	14.0	7.9
05...	0807	--	7.2	4240	8.9	14.0	7.8
05...	0808	--	8.2	4270	8.9	14.0	7.8
18...	0730	27.2	0.0	4290	8.6	20.5	8.1
18...	0731	--	1.0	4300	8.6	20.5	8.0
18...	0732	--	1.9	4300	8.6	20.5	8.0
18...	0733	--	3.0	4290	8.6	20.5	8.0
18...	0734	--	3.9	4330	8.6	20.5	7.9
18...	0735	--	5.0	4300	7.9	20.5	7.8
18...	0736	--	6.1	4280	8.6	20.5	7.8
18...	0737	--	7.0	4280	8.6	20.5	7.8
18...	0738	--	7.9	4380	8.6	17.5	5.0
18...	0739	--	8.3	4450	8.5	16.0	2.0
JUL							
23...	1325	27.9	0.0	4330	8.6	21.5	6.9
23...	1326	--	1.0	4330	8.7	21.5	6.8
23...	1327	--	2.0	4330	8.7	21.5	6.8
23...	1328	--	2.9	4330	8.7	21.5	6.8
23...	1329	--	3.9	4330	8.7	21.5	6.7
23...	1330	--	5.1	4330	8.7	21.5	6.7
23...	1331	--	5.9	4320	8.7	21.5	6.7
23...	1332	--	7.0	4330	8.7	21.5	6.6
23...	1333	--	8.1	4330	8.7	21.5	6.6
23...	1334	--	8.5	4330	8.7	21.5	6.4
30...	0820	28.2	0.0	4250	8.6	20.5	5.5
30...	0822	--	1.0	4260	8.6	20.5	5.4
30...	0824	--	2.1	4260	8.7	20.5	5.3
30...	0826	--	3.0	4260	8.7	20.5	5.3
30...	0828	--	4.0	4260	8.7	20.5	5.2
30...	0830	--	5.0	4270	8.7	20.5	5.2
30...	0832	--	6.0	4280	8.7	20.5	5.1
30...	0834	--	6.9	4270	8.7	20.5	4.8
30...	0836	--	8.0	4280	8.7	20.5	4.5
30...	0838	--	8.6	4280	8.7	20.5	3.1
SEP							
23...	1530	26.9	0.0	4280	8.3	15.5	8.8
23...	1532	--	1.0	4280	8.3	15.5	8.6
23...	1534	--	2.0	4280	8.3	15.5	8.5
23...	1536	--	3.0	4290	8.3	15.5	8.3
23...	1538	--	4.0	4290	8.3	15.5	8.3
23...	1540	--	5.0	4290	8.3	15.5	8.3
23...	1542	--	6.0	4290	8.4	15.5	8.2
23...	1544	--	7.0	4290	8.4	15.5	8.1
23...	1546	--	8.0	4290	8.4	15.5	8.1
23...	1548	--	8.2	4290	8.4	15.5	8.0

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
JUN						
05...	87	708	66.9	14.0	180	8.0
18...	98	713	114	18.0	120	7.0
JUL						
23...	85	714	61.0	23.0	300	13
30...	65	730	--	--	335	<5.0

## ANALYSES OF SAMPLES COLLECTED AT DEVILS LAKE WATER-QUALITY SITES

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## 475740098381600 EAST DEVILS LAKE, MAIN BAY

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL AS CACO3 (00900)	ALKA- LINITY LAB AS CACO3 (90410)	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)	SODIUM PERCENT (00932)
JUN											
05...	0935	0.0	6.2	9170	--	1500	548	63	330	1700	68
18...	0905	0.0	10.0	8550	8.7	1500	617	75	330	1700	67
18...	0910	12.2	12.7	9030	8.5	1700	634	80	360	1800	67
JUL											
24...	1100	0.0	3.8	8580	--	1600	641	73	340	1900	69
24...	1105	12.2	12.7	8870	--	1600	645	74	350	2000	70

DATE	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	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)
JUN											
05...	19	170	4400	740	--	7750	--	10.5	0.030	0.062	3.5
18...	19	200	4000	800	0.10	7480	7380	10.0	0.060	0.107	3.4
18...	19	210	4200	850	0.10	7880	7760	10.6	0.070	0.259	3.5
JUL											
24...	21	240	3800	790	0.10	7530	7310	9.94	<0.020	0.031	3.2
24...	22	200	3900	840	0.10	7750	7230	9.83	<0.020	0.513	3.3

DATE	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	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)
JUN										
05...	3.6	3.6	0.168	0.167	33	32	<0.02	<0.2	19	<7
18...	3.5	3.6	0.173	0.162	20	--	--	--	--	60
18...	3.8	3.8	0.288	0.271	20	--	--	--	--	60
JUL										
24...	3.2	3.2	0.216	0.212	40	--	--	--	--	100
24...	3.9	3.9	0.437	0.442	34	--	--	--	--	100

DATE	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)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
JUN										
05...	2	--	<2	--	--	13	--	18	<3.00	<1.00
18...	<1	490	20	<0.1	1	<1	330	--	--	--
18...	<1	520	70	<0.1	1	<1	330	--	--	--
JUL										
24...	1	630	50	<0.1	2	9	310	--	<3.00	<1.00
24...	1	650	320	0.1	2	5	310	--	--	--

## ANALYSES OF SAMPLES COLLECTED AT DEVILS LAKE WATER-QUALITY SITES

475740098381600 EAST DEVILS LAKE, MAIN BAY--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH OF LAKE MAXIMUM (FEET) (82016)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
JUN							
05...	0920	41.0	0.0	8930	8.2	13.0	9.9
05...	0921	--	1.0	8970	8.2	13.0	9.9
05...	0922	--	2.0	9030	8.2	13.0	9.8
05...	0923	--	3.0	9190	8.2	13.0	9.9
05...	0924	--	4.0	9210	8.2	13.0	9.9
05...	0925	--	5.0	9220	8.2	13.0	9.9
05...	0926	--	6.0	9210	8.3	13.0	9.9
05...	0927	--	7.0	9210	8.3	13.0	9.8
05...	0928	--	8.0	9210	8.2	13.0	9.9
05...	0929	--	9.0	9210	8.3	13.0	9.9
05...	0930	--	10.0	9790	8.1	6.0	7.2
05...	0931	--	11.0	9900	8.1	5.0	5.7
05...	0932	--	12.0	10000	8.1	4.0	3.9
05...	0933	--	12.5	10000	8.1	3.5	3.0
18...	0850	41.6	0.0	9220	8.6	20.0	7.7
18...	0851	--	1.0	9220	8.7	20.0	7.6
18...	0852	--	1.9	9220	8.7	20.0	7.5
18...	0853	--	2.9	9220	8.7	20.0	7.5
18...	0854	--	4.0	9220	8.7	20.0	7.4
18...	0855	--	5.0	9230	8.7	19.5	7.4
18...	0856	--	5.9	9220	8.7	20.0	7.4
18...	0857	--	7.0	9220	8.7	19.5	7.3
18...	0858	--	7.9	9230	8.7	14.5	6.6
18...	0859	--	8.9	9270	8.7	13.0	5.6
18...	0900	--	10.1	9420	8.7	10.0	4.1
18...	0901	--	11.0	9710	8.7	7.0	1.3
18...	0902	--	12.0	9890	8.7	5.0	0.2
18...	0903	--	12.7	9910	8.6	5.0	0.1
JUL							
24...	1045	41.6	0.0	9220	8.1	20.0	8.5
24...	1046	--	1.0	9250	8.1	20.5	8.3
24...	1047	--	2.0	9240	8.1	20.5	8.2
24...	1048	--	3.0	9250	8.1	20.5	8.2
24...	1049	--	4.0	9240	8.2	20.5	8.1
24...	1050	--	5.0	9240	8.2	20.5	8.1
24...	1051	--	6.0	9240	8.2	20.5	8.1
24...	1052	--	7.0	9240	8.2	20.5	8.0
24...	1053	--	8.0	9230	8.2	20.5	8.0
24...	1054	--	9.0	9230	8.2	20.5	8.0
24...	1055	--	10.0	9240	8.2	20.5	7.9
24...	1056	--	11.0	9420	8.1	16.5	0.7
24...	1057	--	12.0	9600	8.0	12.0	0.4
24...	1058	--	12.7	9610	8.0	11.5	0.3

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
JUN						
05...	105	708	122	17.0	150	8.0
18...	93	713	197	19.0	135	8.0
JUL						
24...	103	720	74.0	17.0	320	20

## ANALYSES OF SAMPLES COLLECTED AT DEVILS LAKE WATER-QUALITY SITES

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## 480552098145300 McHUGH SLOUGH NEAR LAKOTA, ND

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	ELEV- ATION ABOVE NGVD (FEET) (72020)	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CAC03) (00900)	ALKA- LITY LAB (MG/L AS CAC03) (90410)	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)
OCT 16...	1610	1507.96	0.0	2.2	865	7.9	290	333	48	40	78
FEB 20...	1625	1508.21	0.0	2.1	1410	--	470	565	81	66	120
MAY 09...	1050	--	0.0	2.6	827	7.7	280	339	48	38	72
JUL 22...	1650	1508.80	0.0	1.1	807	8.6	280	346	48	38	82

DATE	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)
OCT 16...	35	2	26	130	26	0.10	549	600	0.82	0.010
FEB 20...	34	2	34	200	46	0.30	892	968	1.32	0.020
MAY 09...	34	2	27	100	27	0.10	518	549	0.75	<0.010
JUL 22...	37	2	23	100	26	0.10	526	587	0.80	0.010

DATE	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 TOTAL (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) (00608)	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)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)
OCT 16...	0.200	0.210	0.210	0.060	2.0	2.1	2.3	0.110	0.060	2
FEB 20...	--	--	<0.050	1.20	2.4	3.6	3.6	0.460	0.470	4
MAY 09...	--	0.060	0.060	0.280	2.5	2.8	2.9	0.360	0.220	2
JUL 22...	0.060	0.070	0.070	0.020	2.3	2.3	2.4	0.320	0.270	2

DATE	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
OCT 16...	10	<1	70	10	<0.1	<1	<1	360	6.80	2.60
FEB 20...	140	<1	110	1600	<0.1	<1	1	540	0.200	<0.100
MAY 09...	30	<1	60	570	<0.1	<1	<1	350	6.20	1.00
JUL 22...	30	<1	60	60	<0.1	<1	<1	360	31.0	1.60

## ANALYSES OF SAMPLES COLLECTED AT DEVILS LAKE WATER-QUALITY SITES

480552098145300 McHUGH SLOUGH NEAR LAKOTA, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH OF LAKE MAXIMUM (FEET) (82016)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
OCT							
16...	1605	7.20	0.0	924	7.7	8.0	10.4
16...	1606	--	1.0	925	7.8	8.0	9.8
16...	1607	--	2.0	925	7.8	8.0	9.7
FEB							
20...	1620	6.90	0.0	1390	7.0	0.0	2.5
20...	1621	--	1.0	1390	7.1	0.5	1.5
20...	1622	--	2.0	1390	7.0	2.0	1.0
20...	1623	--	2.1	1420	7.0	2.0	0
MAY							
09...	1041	8.50	0.0	850	7.8	6.0	11.4
09...	1042	--	0.50	849	7.8	6.0	11.4
09...	1043	--	1.0	850	7.8	6.0	11.3
09...	1044	--	1.5	849	7.8	6.0	11.3
09...	1045	--	2.0	849	7.8	6.0	11.3
09...	1046	--	2.6	846	7.8	6.0	11.2
JUL							
22...	1640	8.20	0.0	860	8.1	22.5	8.6
22...	1641	--	0.50	860	8.1	22.5	8.4
22...	1642	--	1.0	860	8.1	22.5	8.3
22...	1643	--	1.5	860	8.1	22.5	8.2
22...	1644	--	2.0	860	8.1	22.5	8.2
22...	1645	--	2.5	860	8.1	22.5	8.1

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	ICE THICK- NESS (FEET) (82130)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
OCT							
16...	94	712	--	24.0	13.0	140	30
FEB							
20...	18	717	2.70	32.0	-6.0	135	5.0
MAY							
09...	97	722	--	25.6	1.5	355	15
JUL							
22...	107	712	--	21.0	24.0	310	10



## ANALYSES OF SAMPLES COLLECTED AT DEVILS LAKE WATER-QUALITY SITES

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## 05056630 EASTERN STUMP LAKE NR LAKOTA, ND

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	ELEV- ATION ABOVE NGVD (FEET) (72020)	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CAC03) (00900)	ALKA- LITY LAB (MG/L AS CAC03) (90410)	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)
OCT 16...	1340	1401	0.0	7.0	19600	8.2	3700	364	140	810	4400
FEB 20...	1325	1401	0.0	6.5	20800	--	4300	391	160	940	4800
MAY 09...	0835	1404	0.0	8.5	15900	--	3200	318	120	700	3400
JUL 22...	1435	1404	0.0	2.4	14900	--	3100	359	120	690	3100

DATE	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)
OCT 16...	71	32	230	11000	1600	0.10	18100	18200	24.8	0.150
FEB 20...	69	32	250	12000	1800	0.20	20200	20000	27.1	<0.010
MAY 09...	68	26	200	9000	1300	0.10	14900	14900	20.3	0.010
JUL 22...	66	24	220	8400	1300	0.10	14000	14400	19.6	0.040

DATE	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, NO2+NO3 SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	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)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)
OCT 16...	0.380	0.530	0.530	0.680	4.0	4.7	5.2	0.320	0.230	10
FEB 20...	--	--	<0.050	0.820	1.8	2.6	2.6	0.300	0.280	14
MAY 09...	0.450	0.460	0.460	0.780	3.1	3.9	4.4	0.380	0.260	5
JUL 22...	0.070	0.110	0.110	<0.015	0.30	0.30	0.41	0.070	0.050	4

DATE	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM 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)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
OCT 16...	150	<1	1300	140	<0.1	<1	21	340	0.500	0.100
FEB 20...	150	1	1400	160	<0.1	1	5	770	--	--
MAY 09...	120	1	--	210	<0.1	<1	13	300	5.80	1.70
JUL 22...	50	4	950	80	0.2	<1	<1	350	4.70	<0.100

## ANALYSES OF SAMPLES COLLECTED AT DEVILS LAKE WATER-QUALITY SITES

## 05056630 EASTERN STUMP LAKE NR LAKOTA, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH OF LAKE MAXIMUM (FEET) (82016)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
OCT							
16...	1330	23.0	0.0	20400	7.8	10.0	9.4
16...	1331	--	1.0	20300	7.8	10.0	9.4
16...	1332	--	2.0	20300	7.8	10.0	9.4
16...	1333	--	3.0	20300	7.9	10.0	9.4
16...	1334	--	4.0	20300	7.9	10.0	9.4
16...	1335	--	5.0	20300	7.9	10.0	9.1
16...	1336	--	6.0	20300	7.9	10.0	9.0
16...	1337	--	7.0	20400	7.9	10.0	9.1
FEB							
20...	1315	21.3	0.0	20800	7.4	0.0	9.5
20...	1316	--	1.0	20200	7.5	0.0	8.3
20...	1317	--	2.0	20200	7.6	0.0	7.9
20...	1318	--	3.0	20300	7.5	0.0	7.8
20...	1319	--	4.0	20300	7.6	0.0	7.8
20...	1320	--	5.0	20300	7.6	0.0	7.8
20...	1321	--	6.0	20300	7.6	0.0	7.3
20...	1322	--	6.5	20500	7.6	0.5	1.9
MAY							
09...	0825	27.9	0.0	10000	8.8	8.0	15.1
09...	0826	--	2.0	10200	8.8	8.0	15.4
09...	0827	--	3.0	10500	8.8	8.0	15.6
09...	0828	--	4.0	10600	8.9	7.5	15.7
09...	0829	--	5.0	21100	8.1	2.5	13.0
09...	0830	--	6.0	21600	8.0	1.5	10.7
09...	0831	--	7.0	21800	7.9	0.5	8.3
09...	0832	--	8.0	22600	7.9	0.5	3.5
09...	0833	--	8.5	24000	7.8	0.5	1.7
JUL							
22...	1425	25.6	0.0	15500	8.0	22.5	8.0
22...	1426	--	1.0	15500	8.1	22.0	7.8
22...	1427	--	2.0	15500	8.1	22.0	7.7
22...	1428	--	3.0	15600	8.1	22.0	7.7
22...	1429	--	4.0	15600	8.1	22.0	7.4
22...	1430	--	5.0	15800	8.1	21.5	6.7
22...	1431	--	6.0	16700	8.0	21.0	1.6
22...	1432	--	7.0	20700	7.8	9.0	0.7
22...	1433	--	7.8	20900	7.6	7.5	0.6

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE OF (MM HG) (00025)	ICE THICK- NESS (FEET) (82130)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
OCT							
16...	95	720	--	48.0	14.0	120	20
FEB							
20...	75	720	2.40	47.2	-6.0	135	5.0
MAY							
09...	139	725	--	43.3	1.5	355	15
JUL							
22...	104	715	--	--	25.0	310	12

## ANALYSES OF SAMPLES COLLECTED AT DEVILS LAKE WATER-QUALITY SITES

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## 05056670 WESTERN STUMP LAKE NR LAKOTA, ND

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	ELEV- ATION ABOVE NGVD (72020)	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CAC03) (00900)	ALKA- LITY LAB (MG/L AS CAC03) (90410)	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)
OCT 16...	1440	1401	0.0	2.0	5250	8.5	1100	333	98	210	910
FEB 20...	1450	1401	0.0	2.0	6310	--	1500	491	150	270	1100
MAY 09...	0925	1404	0.0	2.9	3050	8.4	690	247	78	120	470
JUL 22...	1525	1403	0.0	0.90	7790	--	1700	358	110	340	1500

DATE	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)
OCT 16...	62	12	63	2400	360	0.10	4240	4210	5.73	<0.010
FEB 20...	60	12	79	2800	430	0.40	5130	5070	6.90	0.010
MAY 09...	58	8	31	1300	180	0.10	2330	2310	3.14	<0.010
JUL 22...	65	16	95	3900	600	0.10	6760	6820	9.28	<0.010

DATE	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, NO2+NO3 SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	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)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)
OCT 16...	--	--	<0.050	0.030	2.3	2.3	2.3	0.190	0.060	11
FEB 20...	0.070	0.080	0.080	0.320	2.0	2.3	2.4	0.190	0.170	13
MAY 09...	--	0.060	0.060	0.020	1.8	1.8	1.9	0.200	0.070	7
JUL 22...	--	0.060	0.060	<0.015	1.2	1.2	1.3	0.060	0.050	2

DATE	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
OCT 16...	30	<1	350	20	<0.1	4	4	650	6.30	--
FEB 20...	50	1	410	170	<0.1	8	3	1000	1.60	0.400
MAY 09...	30	<1	190	40	<0.1	2	2	550	4.70	1.00
JUL 22...	50	1	490	30	<0.1	1	<1	500	45.0	0.400

## ANALYSES OF SAMPLES COLLECTED AT DEVILS LAKE WATER-QUALITY SITES

## 05056670 WESTERN STUMP LAKE NR LAKOTA, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH OF LAKE MAXIMUM (FEET) (82016)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
OCT							
16...	1435	6.60	0.0	5500	8.2	9.0	12.1
16...	1436	--	1.0	5500	8.3	9.0	11.9
16...	1437	--	2.0	5700	8.3	9.0	11.3
FEB							
20...	1430	6.60	0.0	6180	7.4	0.0	12.8
20...	1431	--	1.0	6180	7.7	0.0	12.4
20...	1432	--	1.5	6180	7.7	0.0	12.0
20...	1433	--	2.0	--	7.6	0.5	7.4
MAY							
09...	0915	9.50	0.0	3290	8.7	7.5	14.6
09...	0916	--	0.50	3290	8.7	7.5	14.3
09...	0917	--	1.0	3290	8.7	7.5	14.2
09...	0918	--	1.5	3280	8.7	7.5	14.2
09...	0919	--	2.0	3360	8.7	7.5	13.5
09...	0920	--	2.5	3540	8.7	7.5	13.5
09...	0921	--	2.9	12900	7.8	5.0	3.2
JUL							
22...	1515	9.50	0.0	8210	8.3	22.5	9.5
22...	1516	--	0.50	8210	8.3	22.5	9.5
22...	1517	--	1.0	8210	8.4	22.5	9.3
22...	1518	--	1.5	8210	8.4	22.5	9.3
22...	1519	--	2.0	8200	8.3	22.5	9.3
22...	1520	--	2.5	8200	8.3	22.5	9.2
22...	1521	--	2.9	8220	8.4	22.5	9.1

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	ICE THICK- NESS (FEET) (82130)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
OCT							
16...	113	718	--	20.0	15.0	150	13
FEB							
20...	95	720	2.20	39.4	-5.0	135	8.0
MAY							
09...	130	725	--	39.4	0.5	360	9.0
JUL							
22...	120	716	--	18.0	23.0	300	10

## ANALYSES OF SAMPLES COLLECTED AT BELCOURT LAKE WATER-QUALITY SITES

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## 485312099453000 BELCOURT LAKE, SITE 1

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	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)
JUN 10...	1710	0.0	1.2	571	8.3	300	229	K11	44	45	7.3
JUL 29...	1305	0.0	1.0	538	8.0	270	208	52	34	44	7.4

DATE	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
JUN 10...	5	0.2	11	78	5.3	0.20	19	347	375	0.51
JUL 29...	5	0.2	12	74	5.6	0.20	10	313	326	0.44

DATE	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 TOTAL (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) (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)	NITRO- GEN,AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N) (00623)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)
JUN 10...	<0.010	0.060	0.060	0.040	1.4	1.1	1.4	1.1	1.5	0.060
JUL 29...	<0.010	0.110	0.110	0.040	2.0	1.5	2.0	1.5	2.1	0.030

DATE	PHOS- PHORUS ORTHOPHOS- PHATE, DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHOPHOS- PHATE, 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)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)
JUN 10...	0.020	<0.010	--	--	--	--	--	--	--	--
JUL 29...	<0.010	0.010	<1	2	45	<1	<1.0	6	<1	1

DATE	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
JUN 10...	4	--	2	--	--	--	--	--	--	--
JUL 29...	<3	<1	1	<1	2	<1	<1.0	2	24.0	<0.100



## ANALYSES OF SAMPLES COLLECTED AT BELCOURT LAKE WATER-QUALITY SITES

485312099453000 BELCOURT LAKE, SITE 1--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
JUN												
10...	1705	0.0	596	8.5	25.5	8.8	118	698	54.0	32.0	240	<5.0
10...	1706	0.50	562	8.4	20.5	7.3	--	--	--	--	--	--
10...	1707	1.0	559	8.4	20.0	8.2	--	--	--	--	--	--
10...	1708	1.2	556	8.5	20.0	8.5	--	--	--	--	--	--
JUL												
29...	1305	0.0	515	8.3	21.0	8.5	103	707	34.0	25.0	40	<5.0
29...	1307	1.0	515	8.4	19.5	8.4	--	--	--	--	--	--
29...	1308	1.5	508	8.4	19.5	8.5	--	--	--	--	--	--

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

## ANALYSES OF SAMPLES COLLECTED AT BELCOURT LAKE WATER-QUALITY SITES

401

## 485306099453500 BELCOURT LAKE, SITE 2

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	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)
		VAL (IN METERS) (82047)	VAL (IN METERS) (82048)	ANCE LAB (US/CM) (90095)	(STAND- ARD UNITS) (00403)	AS CACO3) (00900)	AS CACO3) (90410)	(COLS./ 100 ML) (31625)	(MG/L AS CA) (00915)	(MG/L AS MG) (00925)	(MG/L AS NA) (00930)
JUN 10...	1650	0.0	3.6	577	8.2	300	230	K10	44	46	7.7
JUL 29...	1325	0.0	1.0	550	8.1	280	220	K19	37	45	7.4
DATE	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	
JUN 10...	5	0.2	11	79	5.5	0.20	18	350	374	0.51	
JUL 29...	5	0.2	12	74	5.6	0.20	12	326	330	0.45	
DATE	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 TOTAL (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) (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)	NITRO- GEN,AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N) (00623)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	
JUN 10...	<0.010	0.060	0.060	0.040	1.4	1.1	1.4	1.1	1.5	0.050	
JUL 29...	<0.010	0.120	0.120	0.040	1.7	1.2	1.7	1.2	1.8	0.020	
DATE	PHOS- PHORUS ORTHOPHOS- PHATE, DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHOPHOS- PHATE, 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)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	
JUN 10...	0.020	<0.010	--	--	--	--	--	--	--	--	
JUL 29...	<0.010	0.010	4	2	52	<1	<1.0	3	<1	<1	
DATE	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)	
JUN 10...	<3	--	2	--	--	--	--	--	0.300	<0.100	
JUL 29...	<3	<1	2	<1	2	<1	<1.0	1	8.80	<0.100	

## ANALYSES OF SAMPLES COLLECTED AT BELCOURT LAKE WATER-QUALITY SITES

485306099453500 BELCOURT LAKE, SITE 2--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
JUN												
10...	1645	0.0	573	8.4	25.0	7.4	97	698	72.0	31.0	300	<5.0
10...	1646	1.0	563	8.3	19.0	6.6	--	--	--	--	--	--
10...	1647	2.0	563	8.3	19.0	6.0	--	--	--	--	--	--
10...	1648	3.0	562	8.3	18.5	5.7	--	--	--	--	--	--
10...	1649	3.6	565	8.3	18.5	5.7	--	--	--	--	--	--
JUL												
29...	1325	0.0	533	8.5	21.5	8.6	105	707	35.0	27.0	125	<5.0
29...	1327	1.0	532	8.5	20.5	8.3	--	--	--	--	--	--
29...	1328	2.0	535	8.4	20.0	6.6	--	--	--	--	--	--
29...	1329	2.5	534	8.4	20.0	6.3	--	--	--	--	--	--

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

## ANALYSES OF SAMPLES COLLECTED AT BELCOURT LAKE WATER-QUALITY SITES

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## 485255099453500 BELCOURT LAKE, SITE 3

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	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)
JUN 10...	1625	0.0	5.2	573	8.2	280	230	K1	41	44	7.4
JUL 29...	1345	0.0	1.0	550	8.1	280	220	K17	37	45	7.4

DATE	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L AS SIO2) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L AS SIO2) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)
JUN 10...	5	0.2	12	76	5.4	0.20	19	343	371	0.50	<0.010
JUL 29...	5	0.2	12	73	5.5	0.20	13	326	321	0.44	0.010

DATE	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, NO2+NO3 SOLVED (MG/L AS N) (00631)	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)	NITRO- GEN,AM- MONIA + ORGANIC DIS. TOTAL (MG/L AS N) (00623)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)
JUN 10...	--	0.060	0.060	0.040	1.3	1.1	1.3	1.1	1.4	0.050
JUL 29...	0.110	0.120	0.120	0.040	1.5	1.5	1.5	1.5	1.6	0.020

DATE	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, 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)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)
JUN 10...	0.020	<0.010	--	--	--	--	--	--	--	--
JUL 29...	<0.010	0.010	4	2	53	<1	<1.0	3	<1	<1

DATE	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
JUN 10...	<3	--	1	--	--	--	--	--	0.300	<0.100
JUL 29...	<3	<1	2	1	2	<1	<1.0	<1	20.0	<0.100

## ANALYSES OF SAMPLES COLLECTED AT BELCOURT LAKE WATER-QUALITY SITES

485255099453500 BELCOURT LAKE, SITE 3--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
JUN												
10...	1615	0.0	566	8.3	21.5	8.1	100	698	90.0	29.0	335	<5.0
10...	1616	1.0	565	8.2	19.0	7.9	--	--	--	--	--	--
10...	1617	2.0	565	8.2	19.0	7.8	--	--	--	--	--	--
10...	1618	3.0	564	8.2	18.5	7.6	--	--	--	--	--	--
10...	1619	4.0	563	8.2	18.5	7.4	--	--	--	--	--	--
10...	1620	5.0	565	8.2	17.5	6.3	--	--	--	--	--	--
JUL												
29...	1345	0.0	535	8.4	21.0	7.8	95	707	33.0	25.0	25	<5.0
29...	1346	1.0	533	8.4	20.5	7.3	--	--	--	--	--	--
29...	1347	2.0	534	8.4	20.0	6.7	--	--	--	--	--	--
29...	1348	3.0	533	8.4	20.0	6.7	--	--	--	--	--	--
29...	1349	4.0	533	8.4	20.0	5.7	--	--	--	--	--	--
29...	1350	4.5	534	8.4	20.0	5.3	--	--	--	--	--	--

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



## ANALYSES OF SAMPLES COLLECTED AT BELCOURT LAKE WATER-QUALITY SITES

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## 485226099451800 BELCOURT LAKE, SITE 4

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	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)
JUN 10...	1525	0.0	6.0	574	8.2	290	231	K2	43	45	7.4
JUL 29...	1430	0.0	1.0	545	8.2	280	221	<1	37	45	7.3
DATE	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	
JUN 10...	5	0.2	12	78	5.3	0.20	20	350	369	0.50	
JUL 29...	5	0.2	12	73	5.8	0.20	13	326	329	0.45	
DATE	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 TOTAL (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) (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)	NITRO- GEN,AM- MONIA + ORGANIC DIS. TOTAL (MG/L AS N) (00623)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	
JUN 10...	<0.010	0.060	0.060	0.050	1.2	1.2	1.3	1.2	1.4	0.040	
JUL 29...	<0.010	0.110	0.110	0.050	1.7	1.5	1.7	1.5	1.8	0.020	
DATE	PHOS- PHORUS ORTHOPHOS- PHATE, DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHOPHOS- PHATE, 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)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	
JUN 10...	0.020	<0.010	--	--	--	--	--	--	--	--	
JUL 29...	<0.010	<0.010	5	2	54	<1	<1.0	3	<1	<1	
DATE	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)	
JUN 10...	<3	--	1	--	--	--	--	--	0.300	<0.100	
JUL 29...	<3	<1	2	<1	2	<1	<1.0	1	17.0	0.200	

## ANALYSES OF SAMPLES COLLECTED AT BELCOURT LAKE WATER-QUALITY SITES

485226099451800 BELCOURT LAKE, SITE 4--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00300) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)	
JUN												
10...	1515	0.0	583	8.3	21.0	8.4	104	698	100	31.0	325	<5.0
10...	1516	1.0	582	8.3	20.5	8.1	--	--	--	--	--	--
10...	1517	2.1	580	8.2	19.0	8.2	--	--	--	--	--	--
10...	1518	3.1	580	8.1	18.5	8.2	--	--	--	--	--	--
10...	1519	4.1	579	8.1	18.5	7.9	--	--	--	--	--	--
10...	1520	5.3	580	8.0	18.0	7.1	--	--	--	--	--	--
10...	1521	6.0	580	8.0	17.5	6.5	--	--	--	--	--	--
JUL												
29...	1430	0.0	535	8.3	21.0	7.7	94	705	35.0	20.5	25	<5.0
29...	1431	1.0	534	8.4	20.5	7.6	--	--	--	--	--	--
29...	1432	2.0	534	8.4	20.5	7.3	--	--	--	--	--	--
29...	1433	3.0	533	8.4	20.0	7.0	--	--	--	--	--	--
29...	1434	4.0	533	8.5	20.0	6.8	--	--	--	--	--	--
29...	1435	5.0	533	8.5	19.5	6.2	--	--	--	--	--	--

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

## ANALYSES OF SAMPLES COLLECTED AT BELCOURT LAKE WATER-QUALITY SITES

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## 485215099455600 BELCOURT LAKE, SITE 5

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	COLI- FORM, FECAL, 0.7 UM-MF AS (COLS./ 100 ML) (31625)	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)
JUN 10...	1500	0.0	3.9	577	8.1	290	231	K7	43	45	7.5
JUL 29...	1510	0.0	1.0	546	8.2	280	218	<1	37	45	7.3

DATE	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
JUN 10...	5	0.2	12	77	5.9	0.20	20	349	376	0.51
JUL 29...	5	0.2	12	73	5.4	0.10	13	324	334	0.45

DATE	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 TOTAL (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) (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)	NITRO- GEN,AM- MONIA + ORGANIC DIS. TOTAL (MG/L AS N) (00623)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)
JUN 10...	<0.010	0.060	0.060	0.040	1.4	1.1	1.4	1.1	1.5	0.050
JUL 29...	<0.010	0.110	0.110	0.050	1.5	1.2	1.6	1.3	1.7	0.010

DATE	PHOS- PHORUS ORTHOPHOS- PHATE, DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHOPHOS- PHATE, 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)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)
JUN 10...	0.030	<0.010	--	--	--	--	--	--	--	--
JUL 29...	<0.010	0.010	4	2	54	<1	<1.0	3	<1	<1

DATE	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
JUN 10...	4	--	2	--	--	--	--	--	0.200	<0.100
JUL 29...	<3	<1	2	<1	2	<1	<1.0	2	20.0	<0.100

## ANALYSES OF SAMPLES COLLECTED AT BELCOURT LAKE WATER-QUALITY SITES

## 485215099455600 BELCOURT LAKE, SITE 5--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
JUN												
10...	1450	0.0	584	8.3	21.5	8.0	98	698	93.0	31.0	330	<5.0
10...	1451	0.70	582	8.3	21.0	7.9	--	--	--	--	--	--
10...	1452	1.4	580	8.4	18.5	8.1	--	--	--	--	--	--
10...	1453	2.2	580	8.3	18.5	7.7	--	--	--	--	--	--
10...	1454	2.9	578	8.2	17.5	7.2	--	--	--	--	--	--
10...	1455	3.7	578	8.1	17.0	5.7	--	--	--	--	--	--
JUL												
29...	1510	0.0	531	8.5	21.5	7.2	89	705	34.0	21.0	25	<5.0
29...	1511	1.0	531	8.5	20.5	7.1	--	--	--	--	--	--
29...	1512	2.0	530	8.5	20.0	7.1	--	--	--	--	--	--
29...	1513	3.0	529	8.5	19.5	6.1	--	--	--	--	--	--
29...	1514	3.5	529	8.5	19.5	6.0	--	--	--	--	--	--

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

## ANALYSES OF SAMPLES COLLECTED AT BELCOURT LAKE WATER-QUALITY SITES

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## 485211099450100 BELCOURT LAKE, SITE 6

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	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)
JUN 10...	1355	0.0	3.9	575	8.2	280	231	K2	41	44	7.3
JUL 29...	1545	0.0	1.0	544	8.2	280	220	K19	37	45	7.3

DATE	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, DIS- SOLVED (TOMS PER AC-FT) (70303)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)
JUN 10...	5	0.2	12	76	5.7	0.20	20	345	379	0.52	<0.010
JUL 29...	5	0.2	12	72	5.4	0.20	13	327	317	0.43	0.010

DATE	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, NO2+NO3 SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN, ORGANIC SOLVED (MG/L AS N) (00607)	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, TOTAL (MG/L AS N) (00600)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)
JUN 10...	--	0.060	0.060	0.060	1.1	1.0	1.2	1.1	1.3	0.040
JUL 29...	0.730	0.740	0.740	0.040	1.6	1.4	1.6	1.4	2.3	0.010

DATE	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, 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)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)
JUN 10...	0.020	<0.010	--	--	--	--	--	--	--	--
JUL 29...	<0.010	<0.010	5	2	56	<1	<1.0	3	<1	<1

DATE	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
JUN 10...	<3	--	1	--	--	--	--	--	0.200	<0.100
JUL 29...	<3	<1	2	1	2	<1	<1.0	<1	15.0	<0.100



## ANALYSES OF SAMPLES COLLECTED AT BELCOURT LAKE WATER-QUALITY SITES

## 485211099450100 BELCOURT LAKE, SITE 6--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
JUN												
10...	1350	0.0	581	8.4	20.0	8.1	98	698	73.0	28.0	300	<5.0
10...	1351	0.90	582	8.4	20.0	8.1	--	--	--	--	--	--
10...	1352	1.9	581	8.4	18.5	8.1	--	--	--	--	--	--
10...	1353	3.0	579	8.3	18.0	7.9	--	--	--	--	--	--
10...	1354	3.9	581	8.2	17.5	6.5	--	--	--	--	--	--
JUL												
29...	1545	0.0	531	8.4	21.0	7.9	96	705	34.0	22.0	25	<5.0
29...	1546	1.0	531	8.5	20.0	7.2	--	--	--	--	--	--
29...	1547	2.0	529	8.5	19.5	7.0	--	--	--	--	--	--
29...	1548	3.0	531	8.5	19.5	6.5	--	--	--	--	--	--
29...	1549	3.5	532	8.5	19.5	6.3	--	--	--	--	--	--

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

## ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

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## 475516102245900 LAKE SAKAKAWEA, VAN HOOK ARM 1

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
FEB							
06...	1135	25.6	0.0	632	7.7	0.0	10.5
06...	1136	--	0.90	630	7.8	0.0	10.3
06...	1137	--	2.2	628	7.9	0.0	10.2
06...	1138	--	3.6	627	7.9	0.0	10.1
06...	1139	--	4.7	626	7.9	0.5	10.0
06...	1140	--	6.0	630	7.9	0.5	10.0
06...	1141	--	7.5	630	7.9	0.5	9.8
06...	1142	--	7.8	630	7.9	0.5	9.7
JUL							
09...	1310	31.2	0.0	596	8.5	21.0	7.6
09...	1311	--	1.4	590	8.5	20.5	7.6
09...	1312	--	2.3	589	8.4	20.0	7.8
09...	1313	--	3.4	582	8.5	19.5	7.6
09...	1314	--	4.2	586	8.5	19.5	7.4
09...	1315	--	5.2	585	8.5	19.5	7.0
09...	1316	--	6.2	595	8.5	19.5	6.9
09...	1317	--	7.2	589	8.5	19.5	6.8
09...	1318	--	8.1	588	8.5	19.5	6.8
09...	1319	--	9.2	589	8.4	19.5	6.7
09...	1320	--	9.5	583	8.4	19.5	6.7
AUG							
12...	1315	31.2	0.30	512	8.4	22.0	7.0
12...	1316	--	1.9	513	8.5	22.0	6.8
12...	1317	--	3.9	517	8.5	21.5	6.7
12...	1318	--	6.2	520	8.4	21.0	6.4
12...	1319	--	8.2	513	8.4	21.0	6.3
12...	1320	--	9.6	518	8.4	21.0	6.1

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	ICE THICK- NESS (FEET) (82130)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
FEB							
06...	78	700	2.00	78.7	5.5	270	19
JUL							
09...	92	709	--	82.0	25.0	190	<5.0
AUG							
12...	87	703	--	58.0	22.0	155	5.0

## ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

## 475519102240300 LAKE SAKAKAWEA, VAN HOOK ARM 2

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L CACO3) (90410)	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)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)
FEB												
06...	1120	0.0	0.50	688	7.6	210	161	50	22	51	34	2
06...	1125	5.6	6.1	682	8.0	210	164	48	21	51	34	2
JUL												
09...	1305	0.0	0.50	594	--	180	141	44	18	45	34	1
09...	1310	8.3	8.8	590	--	180	141	45	18	45	34	1
AUG												
12...	1255	0.0	0.50	501	8.6	180	128	45	17	42	33	1
12...	1300	7.0	7.5	505	8.3	150	130	38	15	34	32	1

DATE	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	SOLIDS, SUM OF CONSTI- TUENTS, 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, 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)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)
FEB												
06...	3.6	150	10	385	0.52	0.040	0.020	0.35	0.37	0.41	0.039	0.012
06...	3.6	150	9.1	383	0.52	0.040	0.018	0.30	0.32	0.36	0.040	0.010
JUL												
09...	3.5	150	9.4	353	0.48	0.020	<0.010	0.42	0.42	0.44	0.020	0.017
09...	3.5	150	8.0	353	0.48	0.030	<0.010	0.56	0.56	0.59	0.022	<0.010
AUG												
12...	3.5	120	6.1	306	0.42	<0.020	<0.010	0.24	0.24	0.24	<0.081	<0.010
12...	2.9	120	6.0	293	0.40	0.020	<0.010	0.25	0.25	0.27	<0.018	<0.010

DATE	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	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)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
FEB												
06...	3	55	0.2	1	4	39	5	2	2	5	--	--
06...	3	57	0.1	0.3	3	34	1	2	2	0.4	--	--
JUL												
09...	3	45	<0.02	<0.2	4	60	2	<2	3	18	--	--
09...	3	46	<0.02	0.3	4	130	0.5	<2	3	34	--	--
AUG												
12...	2	43	<0.02	<0.2	3	<7	1	<2	1	24	5.00	<1.00
12...	2	47	<0.02	<0.2	4	<7	1	<2	1	23	--	--

## ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

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## 475519102240300 LAKE SAKAKAWEA, VAN HOOK ARM 2--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
FEB							
06...	1115	20.0	0.0	628	7.6	0.5	9.8
06...	1116	--	1.0	625	7.8	0.0	9.7
06...	1117	--	2.8	622	7.8	0.0	9.6
06...	1118	--	4.9	620	7.9	0.0	9.6
06...	1119	--	6.1	618	7.9	0.5	9.5
JUL							
09...	1255	28.9	0.0	598	8.5	20.5	7.9
09...	1256	--	1.9	600	8.4	19.5	7.4
09...	1257	--	3.8	594	8.4	19.5	7.3
09...	1258	--	5.5	594	8.4	19.5	7.3
09...	1259	--	6.9	593	8.4	19.5	7.2
09...	1300	--	8.5	592	8.4	19.5	7.2
09...	1301	--	8.8	590	8.4	19.5	7.0
AUG							
12...	1245	25.0	0.30	513	8.4	21.0	7.8
12...	1246	--	1.8	513	8.4	21.0	7.6
12...	1247	--	3.9	512	8.4	21.0	7.5
12...	1248	--	6.0	513	8.4	21.0	7.5
12...	1249	--	7.7	508	8.4	21.0	7.3

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	ICE THICK- NESS (FEET) (82130)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
FEB							
06...	74	700	2.30	102	5.0	285	<5.0
JUL							
09...	95	709	--	77.0	25.0	190	<5.0
AUG							
12...	95	703	--	76.0	22.0	160	<5.0

## ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

## 475530102225400 LAKE SAKAKAWEA, VAN HOOK ARM 3

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
FEB							
06...	1055	42.0	0.0	627	7.3	0.0	10.0
06...	1056	--	0.90	621	7.6	0.0	9.6
06...	1057	--	2.7	621	7.7	0.0	9.4
06...	1058	--	4.7	616	7.8	0.5	9.3
06...	1059	--	6.8	611	7.9	0.5	9.1
06...	1100	--	9.6	616	7.9	0.5	9.0
06...	1101	--	12.2	619	7.9	1.0	8.8
06...	1102	--	12.8	617	7.9	1.0	8.6
JUL							
09...	1230	63.0	0.0	591	8.4	21.0	7.6
09...	1231	--	1.8	593	8.5	19.5	7.5
09...	1232	--	4.0	595	8.4	19.5	7.1
09...	1233	--	5.8	589	8.4	19.5	7.0
09...	1234	--	8.0	590	8.4	19.5	7.0
09...	1235	--	9.9	588	8.4	19.5	7.0
09...	1236	--	12.1	622	8.3	17.0	5.5
09...	1237	--	13.9	606	8.2	15.5	5.5
09...	1238	--	16.0	631	8.2	14.5	5.5
09...	1239	--	17.9	629	8.1	14.0	5.5
09...	1240	--	19.2	624	8.1	13.0	5.4
AUG							
12...	1225	56.2	0.30	512	8.3	21.0	6.6
12...	1226	--	2.1	510	8.3	21.0	6.4
12...	1227	--	3.9	509	8.4	21.0	6.2
12...	1228	--	6.0	506	8.4	21.0	6.1
12...	1229	--	7.9	509	8.4	21.0	6.0
12...	1230	--	9.9	504	8.4	20.5	6.0
12...	1231	--	11.8	507	8.4	20.5	5.9
12...	1232	--	14.2	510	8.4	20.5	5.8
12...	1233	--	16.1	515	8.3	20.0	5.1
12...	1234	--	17.3	531	8.0	18.5	3.3

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	ICE THICK- NESS (FEET) (82130)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
FEB							
06...	75	700	2.00	98.4	4.0	285	5.0
JUL							
09...	91	710	--	88.0	24.0	190	<5.0
AUG							
12...	81	702	--	70.0	23.0	140	<5.0



## ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

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## 475524102213100 LAKE SAKAKAWEA, VAN HOOK ARM 4

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	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)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)
FEB												
06...	1030	0.0	0.50	682	7.9	210	163	51	20	50	34	2
06...	1035	11.4	11.9	673	8.0	210	161	52	21	53	34	2
JUL												
09...	1210	0.0	0.50	593	--	190	143	45	18	46	34	1
09...	1215	9.9	9.9	599	--	180	143	44	17	45	34	1
09...	1220	15.5	16.0	612	--	190	147	45	18	46	34	1
09...	1225	17.5	18.0	621	--	190	149	45	18	46	34	1
AUG												
12...	1210	0.0	0.50	499	8.3	150	129	37	14	33	32	1
12...	1215	11.5	12.0	497	8.5	150	129	37	14	34	32	1
							</					

## ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

## 475524102213100 LAKE SAKAKAWEA, VAN HOOK ARM 4--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
FEB							
06...	1020	39.0	0.0	625	7.5	0.5	12.5
06...	1021	--	0.70	622	7.7	0.5	12.1
06...	1022	--	2.7	624	7.8	0.0	12.1
06...	1023	--	4.4	624	7.8	0.0	12.0
06...	1024	--	6.2	612	7.9	0.5	11.7
06...	1025	--	7.6	611	7.9	0.5	11.5
06...	1026	--	9.8	611	7.9	1.0	11.4
06...	1027	--	11.8	614	7.9	1.0	11.2
JUL							
09...	1200	59.0	0.0	596	8.4	20.5	7.4
09...	1201	--	2.0	597	8.5	19.5	7.5
09...	1202	--	3.9	599	8.5	20.5	7.2
09...	1203	--	5.8	597	8.4	19.5	6.9
09...	1204	--	8.0	597	8.4	19.5	6.8
09...	1205	--	9.9	589	8.4	19.5	6.8
09...	1206	--	12.0	615	8.3	18.0	5.6
09...	1207	--	13.9	622	8.2	15.0	5.5
09...	1208	--	16.0	619	8.1	13.5	4.9
09...	1209	--	18.0	614	8.1	13.0	5.0
AUG							
12...	1155	39.3	0.30	505	8.3	21.0	7.9
12...	1156	--	1.9	504	8.4	21.0	7.8
12...	1157	--	3.8	504	8.4	21.0	7.8
12...	1158	--	5.8	505	8.4	21.0	7.7
12...	1159	--	8.0	504	8.4	21.0	7.6
12...	1200	--	10.0	505	8.4	21.0	7.6
12...	1201	--	11.9	511	8.3	20.0	6.6
12...	1202	--	12.1	511	8.3	20.0	6.5

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	ICE THICK- NESS (FEET) (82130)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
FEB							
06...	94	700	1.60	98.4	5.0	260	8.0
JUL							
09...	89	710	--	86.0	22.0	205	<5.0
AUG							
12...	97	702	--	65.0	21.0	200	<5.0

## ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

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## 475519102195500 LAKE SAKAKAWEA, VAN HOOK ARM 5

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
FEB							
06...	1005	30.8	0.0	638	7.4	0.5	11.2
06...	1006	--	0.80	626	7.6	0.5	11.0
06...	1007	--	2.0	627	7.8	0.0	11.0
06...	1008	--	3.8	621	7.8	0.5	10.8
06...	1009	--	6.0	626	7.9	0.5	10.8
06...	1010	--	8.1	633	7.9	0.5	10.6
06...	1011	--	9.4	628	7.9	1.0	10.2
JUL							
09...	1145	41.7	0.0	605	8.4	20.5	7.8
09...	1146	--	2.8	602	8.5	19.5	7.6
09...	1147	--	5.8	607	8.4	19.5	7.2
09...	1148	--	9.0	608	8.3	16.5	6.5
09...	1149	--	11.8	617	8.2	15.0	5.8
09...	1150	--	12.7	612	8.1	15.0	5.7
AUG							
12...	1135	42.6	0.30	519	8.5	21.5	8.1
12...	1136	--	3.1	504	8.5	21.0	7.7
12...	1137	--	6.0	507	8.4	21.0	7.5
12...	1138	--	8.8	520	8.3	20.5	6.4
12...	1139	--	11.6	518	8.1	20.0	4.9
12...	1140	--	13.1	512	8.1	20.0	4.8

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	ICE THICK- NESS (FEET) (82130)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
FEB							
06...	85	700	2.00	63.0	5.0	260	8.0
JUL							
09...	93	710	--	54.0	22.0	210	<5.0
AUG							
12...	100	702	--	66.0	21.0	200	<5.0

## ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

## 475304102195400 LAKE SAKAKAWEA, VAN HOOK ARM 6

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
FEB							
06...	1620	31.5	0.0	622	7.8	0.0	10.0
06...	1621	--	1.1	623	7.9	0.0	9.8
06...	1622	--	2.7	612	7.9	0.0	9.6
06...	1623	--	4.8	620	7.9	0.0	9.5
06...	1624	--	6.6	623	7.9	0.0	9.4
06...	1625	--	8.7	617	7.9	0.5	9.2
06...	1626	--	9.6	622	7.9	1.0	8.9
JUL							
09...	1400	52.2	0.0	598	8.5	21.0	8.0
09...	1401	--	2.8	597	8.5	19.5	7.5
09...	1402	--	5.7	595	8.4	19.5	7.0
09...	1403	--	9.2	593	8.4	19.5	6.8
09...	1404	--	12.0	601	8.3	17.0	6.3
09...	1405	--	14.9	607	8.3	14.5	6.3
09...	1406	--	15.9	612	8.2	14.0	6.1
AUG							
12...	1510	48.7	0.30	501	8.3	21.0	7.8
12...	1511	--	1.8	500	8.4	21.0	7.6
12...	1512	--	3.6	501	8.4	21.0	7.5
12...	1513	--	5.8	500	8.4	21.0	7.3
12...	1514	--	7.7	502	8.4	21.0	7.0
12...	1516	--	10.0	501	8.3	20.0	6.7
12...	1517	--	11.9	501	8.3	20.0	6.5
12...	1518	--	13.9	501	8.3	20.0	6.4
12...	1519	--	15.0	503	8.2	19.5	6.0

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	ICE THICK- NESS (FEET) (82130)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
FEB							
06...	75	700	2.60	94.5	5.0	270	20
JUL							
09...	97	710	--	73.0	25.0	180	<5.0
AUG							
12...	96	700	--	77.0	25.0	180	<5.0

## ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

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## 475301102220100 LAKE SAKAKAWEA, VAN HOOK ARM 7

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	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)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)
FEB												
06...	1610	0.0	0.50	683	7.9	220	162	53	21	54	34	2
06...	1615	11.0	11.5	669	7.9	210	158	52	21	53	35	2
JUL												
09...	1430	0.0	0.50	595	--	180	143	43	17	44	34	1
09...	1435	10.5	11.0	596	--	180	143	44	17	45	34	1
09...	1440	15.2	15.7	613	--	180	146	44	18	45	34	1
09...	1445	19.3	19.8	622	--	190	148	46	18	47	34	1
AUG												
12...	1545	0.0	0.50	486	8.3	150	128	37	14	33	32	1
12...	1550	18.5	19.0	539	7.6	200	134	48	19	46	33	1

DATE	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	SOLIDS, SUM OF CONSTI- TUENTS, 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, 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)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)
FEB												
06...	3.8	150	9.2	384	0.52	0.050	0.024	0.22	0.24	0.29	0.038	<0.010
06...	3.5	150	9.2	379	0.52	0.040	0.021	0.19	0.21	0.25	0.037	<0.010
JUL												
09...	3.4	130	8.7	337	0.46	0.020	<0.010	0.39	0.39	0.41	0.018	<0.010
09...	3.4	160	8.5	366	0.50	0.020	<0.010	0.70	0.70	0.72	0.038	<0.010
09...	3.6	150	8.7	357	0.49	0.100	0.022	0.46	0.48	0.58	0.044	<0.010
09...	3.7	160	9.2	369	0.50	0.110	0.055	0.64	0.70	0.81	0.040	<0.010
AUG												
12...	2.8	120	5.9	285	0.39	0.020	<0.010	0.23	0.23	0.25	<0.018	<0.010
12...	3.7	130	6.6	336	0.46	0.130	0.021	0.18	0.20	0.33	0.021	<0.010

DATE	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	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)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
FEB												
06...	3	54	0.07	0.3	3	29	<0.2	3	2	4	--	--
06...	3	52	0.2	0.4	3	37	<0.2	4	2	2	--	--
JUL												
09...	1	54	0.6	<0.2	3	69	27	<2	<0.2	41	--	--
09...	1	46	<0.02	<0.2	2	82	3	<2	<0.2	23	--	--
09...	1	47	<0.02	<0.2	3	180	4	<2	<0.2	22	--	--
09...	1	49	<0.02	<0.2	3	190	2	<2	<0.2	20	--	--
AUG												
12...	2	45	<0.02	<0.2	4	<7	3	<2	0.4	28	<3.00	<1.00
12...	2	45	<0.02	0.2	2	<7	2	<2	0.7	29	--	--



## ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

## 475301102220100 LAKE SAKAKAWEA, VAN HOOK ARM 7--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
FEB							
06...	1600	37.7	0.0	625	7.7	0.0	10.2
06...	1601	--	1.0	621	7.8	0.0	9.9
06...	1602	--	2.8	619	7.9	0.0	9.7
06...	1603	--	5.3	619	7.9	0.0	9.7
06...	1604	--	7.8	614	7.9	0.5	9.5
06...	1605	--	10.2	612	7.9	1.0	9.3
06...	1606	--	11.5	622	7.9	1.0	9.0
JUL							
09...	1420	64.9	0.0	597	8.5	21.0	8.0
09...	1421	--	3.0	594	8.5	19.5	7.6
09...	1422	--	6.2	600	8.5	19.5	7.2
09...	1423	--	9.0	600	8.4	19.5	7.1
09...	1424	--	11.0	598	8.4	19.5	7.0
09...	1425	--	12.8	592	8.4	15.5	6.6
09...	1426	--	15.7	604	8.2	12.5	6.4
09...	1427	--	17.9	628	8.2	12.0	6.4
09...	1428	--	19.8	624	8.1	11.5	6.3
AUG							
12...	1530	62.7	0.40	510	8.3	21.5	7.7
12...	1531	--	2.0	509	8.4	21.0	7.6
12...	1532	--	4.0	508	8.4	20.5	7.4
12...	1533	--	5.7	508	8.4	20.5	7.3
12...	1534	--	7.7	510	8.4	20.5	7.1
12...	1535	--	10.3	512	8.3	20.5	7.0
12...	1536	--	11.8	514	8.3	20.0	6.5
12...	1537	--	13.8	509	8.3	20.0	6.2
12...	1538	--	15.7	515	8.2	20.0	6.0
12...	1539	--	18.0	512	8.2	19.5	5.6
12...	1540	--	19.3	580	7.9	15.5	2.8

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	ICE THICK- NESS (FEET) (82130)	TRANS- PAR- ENCY (SECCHI DISK (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
FEB							
06...	77	700	2.30	98.4	4.0	270	20
JUL							
09...	97	709	--	79.0	26.0	180	<5.0
AUG							
12...	95	701	--	122	26.0	170	<5.0

## ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

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## 475303102233200 LAKE SAKAKAWEA, VAN HOOK ARM 8

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
JUL							
09...	1450	35.4	0.0	598	8.5	20.5	7.6
09...	1451	--	1.9	597	8.5	20.5	7.6
09...	1452	--	3.8	599	8.5	19.5	6.9
09...	1453	--	5.7	601	8.5	19.5	6.6
09...	1454	--	7.9	598	8.4	19.5	6.5
09...	1455	--	9.9	597	8.4	19.5	6.5
09...	1456	--	10.8	597	8.4	19.5	6.5
AUG							
12...	1600	36.4	0.30	514	8.4	22.0	7.6
12...	1601	--	1.7	514	8.5	21.5	7.6
12...	1602	--	3.1	515	8.5	21.5	7.4
12...	1603	--	4.8	513	8.4	21.0	7.0
12...	1604	--	6.0	512	8.4	20.5	6.9
12...	1605	--	8.0	511	8.4	20.5	6.9
12...	1606	--	9.9	519	8.3	20.5	6.2
12...	1607	--	11.2	505	8.3	20.0	5.8

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
JUL						
09...	92	709	82.0	26.0	150	7.0
AUG						
12...	94	702	93.0	26.0	170	<5.0

## ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

## 475054102213300 LAKE SAKAKAWEA, VAN HOOK ARM 9

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
FEB							
06...	1445	75.1	0.0	628	7.6	0.0	10.0
06...	1446	--	0.90	625	7.7	0.0	9.7
06...	1447	--	2.4	625	7.8	0.0	9.5
06...	1448	--	5.0	615	7.9	0.5	9.4
06...	1449	--	7.4	614	7.9	0.5	9.2
06...	1450	--	9.4	614	7.9	0.5	9.1
06...	1451	--	11.9	611	7.9	1.0	9.0
06...	1452	--	14.5	617	7.9	1.0	8.5
06...	1453	--	17.8	625	7.8	1.5	8.1
06...	1454	--	20.6	629	7.8	2.0	7.5
06...	1455	--	22.9	631	7.6	3.0	4.8
JUL							
09...	1510	86.9	0.0	585	8.5	20.5	7.9
09...	1511	--	2.7	571	8.4	19.5	7.4
09...	1512	--	5.8	570	8.4	19.5	7.0
09...	1513	--	9.1	584	8.4	19.5	6.8
09...	1514	--	11.7	594	8.3	18.5	6.5
09...	1515	--	14.8	609	8.2	13.0	6.4
09...	1516	--	18.0	620	8.1	10.5	6.6
09...	1517	--	20.7	629	8.1	10.0	6.6
09...	1518	--	24.1	618	8.1	10.0	6.5
09...	1519	--	26.5	627	8.0	10.0	6.4
AUG							
12...	1625	54.3	0.30	511	8.3	22.5	7.7
12...	1626	--	1.8	510	8.4	21.0	7.7
12...	1627	--	3.9	509	8.4	21.0	7.4
12...	1628	--	5.8	504	8.4	20.5	7.4
12...	1629	--	8.0	503	8.4	20.5	7.3
12...	1630	--	9.9	506	8.3	20.5	6.6
12...	1631	--	11.9	511	8.3	20.0	6.3
12...	1632	--	14.2	507	8.3	20.0	6.4
12...	1633	--	16.4	522	8.2	20.0	6.1
12...	1634	--	16.7	509	8.2	20.0	5.9

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM HG) (00025)	ICE THICK- NESS (FEET) (82130)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
FEB							
06...	75	700	2.00	82.7	5.0	270	15
JUL							
09...	94	710	--	68.0	26.0	150	7.0
AUG							
12...	97	702	--	94.0	27.0	170	<5.0

## ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

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## 475100102203300 LAKE SAKAKAWEA, VAN HOOK ARM 10

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	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)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	
FEB													
06...	1425	0.0	0.50	683	7.4	220	162	55	21	57	36	2	
06...	1430	16.1	16.6	672	7.5	210	161	50	20	59	38	2	
JUL													
09...	1540	0.0	0.50	575	--	180	139	44	17	44	34	1	
09...	1545	8.4	8.9	575	--	180	140	43	17	43	34	1	
09...	1550	17.8	18.3	624	--	200	149	47	19	48	34	1	
09...	1555	25.2	25.7	628	--	190	151	46	18	47	34	1	
AUG													
12...	1700	0.0	0.50	503	8.5	180	131	45	17	42	33	1	
12...	1705	20.0	20.5	513	8.3	190	132	45	17	43	33	1	
DATE		POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	SOLIDS, SUM OF CONSTI- TUENTS, 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, 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)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)
FEB													
06...	3.5	150	9.5	396	0.54	0.040	0.012	0.20	0.22	0.26	0.038	0.015	
06...	3.1	150	8.7	382	0.52	0.060	0.020	0.20	0.22	0.28	0.039	0.011	
JUL													
09...	3.4	140	8.8	344	0.47	0.020	<0.010	0.62	0.62	0.64	0.024	<0.010	
09...	3.3	140	8.1	339	0.46	0.050	<0.010	0.66	0.66	0.71	0.035	<0.010	
09...	3.8	160	9.1	376	0.51	0.110	0.045	0.66	0.71	0.82	0.026	<0.010	
09...	3.7	160	9.0	370	0.50	0.120	0.024	0.57	0.59	0.71	0.023	<0.010	
AUG													
12...	3.5	110	6.1	306	0.42	0.020	<0.010	0.33	0.33	0.35	<0.018	<0.010	
12...	3.6	120	6.1	311	0.42	0.050	0.019	0.24	0.26	0.31	<0.018	<0.010	
DATE		ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	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)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
FEB													
06...	3	56	0.1	0.4	3	48	0	5	2	10	--	--	
06...	2	51	0.2	0.4	3	46	<0.2	6	1	1	--	--	
JUL													
09...	1	49	<0.02	<0.2	3	81	6	<2	<0.3	17	--	--	
09...	1	46	<0.02	<0.2	2	84	2	<2	<0.3	19	--	--	
09...	1	49	<0.02	<0.2	3	200	3	<2	<0.3	20	--	--	
09...	1	51	<0.02	<0.2	3	260	1	<2	0.2	22	--	--	
AUG													
12...	2	48	<0.02	<0.2	3	<7	1	<2	<0.2	30	<3.00	<1.00	
12...	2	46	<0.02	<0.2	2	<7	1	<2	0.3	24	--	--	

## ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

## 475100102203300 LAKE SAKAKAWEA, VAN HOOK ARM 10--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
FEB							
06...	1415	54.4	0.0	622	7.6	0.0	13.4
06...	1416	--	1.1	624	7.8	0.0	13.5
06...	1417	--	2.9	624	7.8	0.0	13.5
06...	1418	--	4.9	622	7.9	0.0	13.6
06...	1419	--	6.9	623	7.9	0.0	13.5
06...	1420	--	9.0	622	7.9	0.5	13.4
06...	1421	--	11.4	619	7.9	1.0	12.9
06...	1422	--	13.3	619	7.9	1.0	12.5
06...	1423	--	15.4	615	7.9	1.5	12.0
06...	1424	--	16.6	614	7.8	2.0	11.8
JUL							
09...	1530	84.3	0.0	573	8.5	21.0	8.0
09...	1531	--	3.2	577	8.5	19.5	7.7
09...	1532	--	6.0	576	8.4	19.5	7.2
09...	1533	--	8.9	571	8.4	19.0	7.0
09...	1534	--	12.1	565	8.3	17.0	6.7
09...	1535	--	15.4	623	8.2	13.5	6.6
09...	1536	--	18.3	619	8.2	11.0	6.7
09...	1537	--	20.9	614	8.1	10.5	6.8
09...	1538	--	23.6	602	8.1	10.5	6.8
09...	1539	--	25.7	652	8.1	10.0	6.8
AUG							
12...	1645	67.6	0.30	492	8.4	21.5	7.5
12...	1646	--	2.2	492	8.4	21.0	7.6
12...	1647	--	4.0	500	8.4	21.0	7.5
12...	1648	--	6.0	499	8.4	20.5	7.4
12...	1649	--	7.9	500	8.4	20.5	7.3
12...	1650	--	9.8	501	8.4	20.5	7.2
12...	1651	--	11.9	508	8.4	20.5	6.7
12...	1652	--	13.7	515	8.3	20.0	6.1
12...	1653	--	15.9	512	8.2	19.5	6.1
12...	1654	--	17.9	511	8.2	19.5	5.7
12...	1655	--	19.8	571	7.9	15.0	4.4
12...	1656	--	20.8	590	7.9	13.5	4.1

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	ICE THICK- NESS (FEET) (82130)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
FEB							
06...	101	700	2.60	102	6.5	250	16
JUL							
09...	97	708	--	65.0	27.0	140	6.0
AUG							
12...	93	701	--	111	28.0	170	<5.0



## ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

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## 475054102193000 LAKE SAKAKAWEA, VAN HOOK ARM 11

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
FEB							
06...	1350	35.4	0.0	622	7.5	0.0	9.0
06...	1351	--	1.0	620	7.7	0.0	8.4
06...	1352	--	2.9	622	7.8	0.0	8.4
06...	1353	--	4.9	623	7.9	0.0	8.3
06...	1354	--	7.3	616	7.9	0.0	8.2
06...	1355	--	9.4	613	7.9	0.5	8.0
06...	1356	--	10.8	620	7.9	1.0	7.8
JUL							
09...	1555	47.6	0.0	565	8.4	20.5	7.3
09...	1556	--	1.7	567	8.5	20.5	7.3
09...	1557	--	4.2	577	8.4	19.0	6.5
09...	1558	--	5.8	586	8.4	19.0	6.5
09...	1559	--	7.6	587	8.4	19.0	6.4
09...	1600	--	10.2	585	8.4	19.0	6.4
09...	1601	--	12.1	598	8.3	16.5	6.2
09...	1602	--	13.8	611	8.3	14.5	6.1
09...	1603	--	14.5	613	8.2	14.5	5.9
AUG							
12...	1710	45.6	0.30	492	8.3	22.0	7.4
12...	1711	--	2.8	496	8.4	21.0	7.3
12...	1712	--	5.7	504	8.4	20.5	6.9
12...	1713	--	8.7	501	8.4	20.5	6.7
12...	1714	--	11.8	497	8.3	20.0	6.4
12...	1715	--	13.9	500	8.2	19.5	5.5

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	ICE THICK- NESS (FEET) (82130)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
FEB							
06...	67	700	2.60	106	6.0	270	13
JUL							
09...	88	708	--	--	27.0	140	6.0
AUG							
12...	92	701	--	121	28.0	180	<5.0

## ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

## 474335102113900 LAKE SAKAKAWEA, DEEPWATER BAY 1

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
FEB							
05...	1400	34.4	0.0	625	8.0	0.0	10.2
05...	1402	--	1.3	620	8.0	0.5	10.2
05...	1404	--	2.8	619	8.0	0.5	10.1
05...	1406	--	5.2	618	8.0	0.5	10.1
05...	1408	--	7.4	618	8.0	0.5	10.1
05...	1410	--	9.9	623	8.0	0.5	10.1
05...	1412	--	10.5	623	8.0	0.5	10.1
JUL							
09...	0900	54.8	0.0	608	8.4	19.5	8.1
09...	0901	--	3.0	610	8.4	19.5	8.0
09...	0902	--	6.0	607	8.3	16.5	7.7
09...	0903	--	9.0	614	8.3	15.0	7.7
09...	0904	--	11.9	621	8.2	14.5	7.7
09...	0905	--	14.8	620	8.2	13.0	7.4
09...	0906	--	16.7	643	8.2	12.5	7.2
AUG							
13...	0915	27.3	0.40	537	8.4	20.5	7.1
13...	0916	--	2.3	537	8.4	20.5	7.0
13...	0917	--	4.4	540	8.4	20.5	6.8
13...	0918	--	6.2	543	8.4	20.5	6.8
13...	0919	--	8.0	528	8.4	20.5	6.8
13...	0920	--	8.4	524	8.4	20.5	6.7

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	ICE THICK- NESS (FEET) (82130)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
FEB							
05...	75	714	3.00	94.5	-4.0	155	8.0
JUL							
09...	96	710	--	74.0	14.0	100	<5.0
AUG							
13...	86	706	--	81.0	20.0	290	10

## ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

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## 474330102113800 LAKE SAKAKAWEA, DEEPWATER BAY 2

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	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)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)
FEB												
05...	1355	0.0	0.50	679	7.6	210	168	50	20	51	34	2
05...	1400	15.9	16.4	693	--	220	167	53	22	54	34	2
JUL												
09...	0925	0.0	0.50	608	--	180	147	44	18	46	35	1
09...	0930	2.5	3.0	608	--	220	147	52	21	54	35	2
09...	0935	5.5	6.0	602	--	180	146	44	18	46	35	1
09...	0940	19.9	20.4	628	--	190	150	46	18	48	35	2
AUG												
13...	0945	0.0	0.50	531	8.5	160	134	39	15	37	33	1
13...	0950	18.5	19.0	550	8.3	160	139	40	16	38	33	1

DATE	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	SOLIDS, SUM OF CONSTI- TUENTS, 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, 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)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)
FEB												
05...	3.5	160	9.3	391	0.53	0.040	<0.010	0.34	0.34	0.38	0.039	0.014
05...	3.3	170	9.1	406	0.55	0.060	0.013	0.25	0.27	0.33	0.037	<0.010
JUL												
09...	3.5	160	8.9	368	0.50	<0.020	<0.010	0.81	0.81	0.81	0.022	<0.010
09...	4.1	160	9.6	387	0.53	<0.020	<0.010	0.34	0.34	0.34	<0.018	<0.010
09...	3.5	150	8.7	362	0.49	0.020	<0.010	0.39	0.39	0.41	<0.018	<0.010
09...	3.7	170	9.0	382	0.52	0.090	<0.010	0.44	0.44	0.53	0.018	<0.010
AUG												
13...	3.0	130	6.3	308	0.42	0.020	<0.010	0.27	0.27	0.29	<0.018	<0.010
13...	3.1	130	6.6	322	0.44	0.060	0.015	0.22	0.23	0.29	0.018	<0.010

DATE	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	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)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
FEB												
05...	1	57	<0.02	<0.2	4	51	0.3	3	<0.2	5	--	--
05...	2	58	<0.02	<0.2	3	72	<0.2	17	<0.2	5	--	--
JUL												
09...	1	46	<0.02	<0.2	3	110	0.7	<2	0.3	25	--	--
09...	1	45	<0.02	<0.2	3	100	<0.2	<2	0.4	29	--	--
09...	1	44	<0.02	<0.2	4	130	0.6	<2	0.3	24	--	--
09...	2	48	<0.02	0.5	4	490	0.5	2	0.6	25	--	--
AUG												
13...	2	48	<0.02	<0.2	5	<7	2	<2	<0.2	24	<3.00	<1.00
13...	2	47	<0.02	0.4	15	<7	2	<2	0.8	27	--	--

## ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

## 474330102113800 LAKE SAKAKAWEA, DEEPWATER BAY 2--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
FEB							
05...	1336	53.8	0.0	626	7.9	0.0	10.3
05...	1338	--	1.3	619	8.0	0.5	10.0
05...	1340	--	3.7	617	8.0	0.5	9.9
05...	1342	--	5.3	617	8.0	0.5	9.8
05...	1344	--	7.4	617	8.0	0.5	9.8
05...	1346	--	9.5	614	8.0	0.5	9.7
05...	1348	--	11.5	616	8.0	0.5	9.6
05...	1350	--	14.4	628	8.0	0.5	9.6
05...	1352	--	16.4	639	7.9	1.0	9.3
JUL							
09...	0915	66.9	0.0	616	8.4	20.0	6.7
09...	0916	--	3.0	615	8.4	19.5	6.5
09...	0917	--	6.0	600	8.3	16.5	6.4
09...	0918	--	9.0	615	8.3	16.0	6.4
09...	0919	--	12.2	620	8.3	14.5	6.3
09...	0920	--	14.9	621	8.2	13.5	6.3
09...	0921	--	18.1	630	8.2	12.0	6.0
09...	0922	--	20.4	627	8.1	11.5	5.8
AUG							
13...	0930	62.7	0.30	536	8.4	20.5	8.2
13...	0931	--	2.0	536	8.4	20.5	8.0
13...	0932	--	4.0	535	8.4	20.5	8.0
13...	0933	--	5.9	539	8.4	20.5	7.9
13...	0934	--	7.9	541	8.4	20.5	7.7
13...	0935	--	10.0	544	8.3	20.0	7.3
13...	0936	--	11.9	535	8.3	20.0	7.2
13...	0937	--	13.8	547	8.2	19.5	6.7
13...	0938	--	15.8	540	8.2	19.5	6.7
13...	0939	--	18.2	567	8.1	18.5	5.5
13...	0940	--	19.3	573	8.0	18.5	5.3

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	ICE THICK- NESS (FEET) (82130)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
FEB							
05...	76	714	2.80	130	-5.0	155	8.0
JUL							
09...	79	710	--	67.0	17.0	100	<5.0
AUG							
13...	98	706	--	75.0	20.0	280	15

## ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

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## 474323102114200 LAKE SAKAKAWEA, DEEPWATER BAY 3

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
FEB							
05...	1320	37.1	0.0	625	7.9	0.0	9.6
05...	1322	--	1.4	617	8.0	0.5	9.5
05...	1324	--	3.9	615	8.0	0.5	9.3
05...	1326	--	7.6	621	8.0	0.5	9.3
05...	1328	--	10.7	620	8.0	0.5	9.2
05...	1330	--	11.3	620	8.0	0.5	9.1
JUL							
09...	0945	72.2	0.0	616	8.5	20.0	7.4
09...	0946	--	3.0	610	8.4	18.0	7.1
09...	0947	--	6.0	608	8.4	17.0	7.1
09...	0948	--	8.9	610	8.3	16.0	6.9
09...	0949	--	12.0	623	8.3	15.0	7.0
09...	0950	--	15.1	633	8.2	13.5	7.1
09...	0951	--	18.1	625	8.2	12.0	6.8
09...	0952	--	21.2	638	8.1	11.0	6.5
09...	0953	--	22.0	631	8.1	11.0	6.2
AUG							
13...	0955	49.7	0.40	538	8.5	21.0	7.7
13...	0956	--	2.9	538	8.5	21.0	7.7
13...	0957	--	5.6	540	8.4	21.0	7.5
13...	0958	--	8.0	543	8.3	20.0	6.9
13...	0959	--	12.8	549	8.2	19.5	6.2
13...	1000	--	15.0	558	8.2	19.5	6.1
13...	1001	--	15.3	552	8.2	19.5	6.1

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	ICE THICK- NESS (FEET) (82130)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
FEB							
05...	70	714	3.00	138	-5.0	155	8.0
JUL							
09...	88	710	--	65.0	16.0	100	<5.0
AUG							
13...	94	707	--	74.0	19.5	290	12



## ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

## 474329102101800 LAKE SAKAKAWEA, DEEPWATER BAY 4

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
FEB							
05...	1210	40.0	0.0	631	7.4	0.5	10.1
05...	1212	--	1.2	612	7.7	0.5	9.5
05...	1214	--	2.5	605	7.8	0.5	9.3
05...	1216	--	4.7	612	7.9	0.5	9.5
05...	1218	--	6.5	618	7.9	0.5	9.6
05...	1220	--	8.6	618	7.9	0.5	9.7
05...	1222	--	10.7	624	7.9	1.0	9.6
05...	1224	--	12.2	643	7.9	1.0	9.1
JUL							
09...	1000	51.2	0.0	612	8.4	20.0	6.5
09...	1001	--	3.0	610	8.4	19.5	6.4
09...	1002	--	6.0	620	8.3	15.5	5.5
09...	1003	--	9.0	619	8.2	14.5	5.9
09...	1004	--	12.1	620	8.2	14.0	5.8
09...	1005	--	14.9	636	8.2	12.5	5.6
09...	1006	--	15.6	628	8.1	12.5	5.6
AUG							
13...	1050	46.5	0.30	548	8.4	20.5	7.8
13...	1051	--	1.9	549	8.4	20.5	7.7
13...	1052	--	3.6	550	8.4	20.5	7.6
13...	1053	--	5.4	550	8.4	20.5	7.5
13...	1054	--	7.4	550	8.4	20.5	7.4
13...	1055	--	9.0	552	8.3	20.0	7.0
13...	1056	--	12.5	553	8.2	19.5	6.4
13...	1057	--	14.1	557	8.2	19.5	6.1
13...	1058	--	14.3	557	8.2	19.5	6.0

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	ICE THICK- NESS (FEET) (82130)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
FEB							
05...	75	714	3.00	98.4	-9.0	160	<5.0
JUL							
09...	77	710	--	72.0	19.0	--	<5.0
AUG							
13...	94	706	--	71.0	20.0	285	8.0

## ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

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## 474323102101500 LAKE SAKAKAWEA, DEEPWATER BAY 5

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	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)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)
FEB												
05...	1255	0.0	0.50	685	--	210	165	51	21	52	34	2
05...	1300	13.2	13.7	688	7.6	210	165	51	21	53	34	2
JUL												
09...	1020	0.0	0.50	610	--	180	146	43	18	45	35	1
09...	1025	2.4	2.9	606	--	220	147	52	21	54	35	2
09...	1030	5.5	6.0	610	--	180	147	44	18	46	35	1
09...	1035	16.7	17.2	628	--	190	151	46	19	47	34	1
AUG												
13...	1035	0.0	0.50	542	8.5	200	138	48	19	47	34	1
13...	1040	16.5	17.0	550	7.9	200	138	48	19	47	34	1

DATE	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	SOLIDS, SUM OF CONSTI- TUENTS, 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, 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)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)
FEB												
05...	3.6	160	9.0	397	0.54	0.040	<0.010	0.26	0.26	0.30	0.039	0.015
05...	3.3	160	9.3	395	0.54	0.050	0.015	0.28	0.30	0.35	0.040	0.016
JUL												
09...	3.5	160	8.6	365	0.50	<0.020	<0.010	0.34	0.34	0.34	<0.018	<0.010
09...	4.1	160	8.8	388	0.53	<0.020	<0.010	0.34	0.34	0.34	<0.018	<0.010
09...	3.5	160	9.0	368	0.50	0.040	<0.010	0.30	0.30	0.34	<0.018	<0.010
09...	3.7	170	9.0	384	0.52	0.100	0.012	0.35	0.37	0.47	0.019	0.014
AUG												
13...	3.8	130	6.6	335	0.46	<0.020	<0.010	0.26	0.26	0.26	<0.018	<0.010
13...	3.8	130	6.6	338	0.46	0.040	0.022	0.26	0.28	0.32	0.022	<0.010

DATE	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	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)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
FEB												
05...	2	58	<0.02	<0.2	4	67	<0.2	4	<0.2	6	--	--
05...	2	57	<0.02	<0.2	3	49	<0.2	8	<0.2	1	--	--
JUL												
09...	1	46	<0.02	<0.2	3	75	<0.2	<2	0.2	18	--	--
09...	1	49	<0.02	<0.2	3	82	4	<2	<0.2	23	--	--
09...	1	46	<0.02	<0.2	3	120	<0.2	<2	<0.2	23	--	--
09...	1	52	<0.02	.5	5	510	1	13	<0.2	26	--	--
AUG												
13...	2	44	<0.02	0.2	3	<7	1	<2	0.7	28	<3.00	<1.00
13...	2	42	<0.02	0.2	2	<7	1	<2	0.8	27	--	--

## ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

## 474323102101500 LAKE SAKAKAWEA, DEEPWATER BAY 5--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
FEB							
05...	1240	44.9	0.0	626	8.0	0.5	10.7
05...	1242	--	1.7	618	8.0	0.5	10.6
05...	1244	--	4.1	619	8.0	0.5	10.5
05...	1246	--	6.6	618	8.0	0.5	10.3
05...	1248	--	8.6	620	8.0	0.5	10.4
05...	1250	--	10.6	620	8.0	0.5	10.4
05...	1252	--	12.9	654	7.9	1.0	9.5
05...	1254	--	13.7	650	7.9	1.5	9.0
JUL							
09...	1010	56.4	0.0	616	8.4	20.0	6.8
09...	1011	--	2.9	612	8.5	19.5	6.6
09...	1012	--	6.0	612	8.4	16.0	6.3
09...	1013	--	8.9	617	8.3	14.5	6.3
09...	1014	--	11.9	626	8.2	14.0	5.7
09...	1015	--	15.0	631	8.2	12.5	5.8
09...	1016	--	17.2	631	8.1	12.0	5.5
AUG							
13...	1025	55.2	0.40	547	8.4	20.5	7.8
13...	1026	--	2.2	549	8.4	20.5	7.7
13...	1027	--	4.0	550	8.4	20.5	7.6
13...	1028	--	5.9	550	8.4	20.5	7.6
13...	1029	--	8.0	552	8.4	20.5	7.4
13...	1030	--	10.6	552	8.3	20.0	6.4
13...	1031	--	11.9	556	8.2	19.5	6.4
13...	1032	--	13.9	551	8.2	19.5	6.0
13...	1033	--	15.8	547	8.1	19.5	5.4
13...	1034	--	17.0	569	8.0	19.0	4.6

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	ICE THICK- NESS (FEET) (82130)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
FEB							
05...	79	714	3.00	106	-9.0	160	<5.0
JUL							
09...	81	710	--	62.0	21.0	--	<5.0
AUG							
13...	94	708	--	65.0	21.0	290	13

## ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

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## 474317102100800 LAKE SAKAKAWEA, DEEPWATER BAY 6

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
FEB							
05...	1300	37.1	0.0	626	7.9	0.5	9.4
05...	1302	--	1.2	618	8.0	0.5	9.2
05...	1304	--	3.2	619	8.0	0.5	9.1
05...	1306	--	6.0	617	8.0	0.5	9.1
05...	1308	--	9.0	616	8.0	0.5	9.0
05...	1310	--	11.3	627	8.0	0.5	8.9
JUL							
09...	1036	36.1	0.0	625	8.4	20.0	6.5
09...	1037	--	2.9	620	8.4	19.5	6.4
09...	1038	--	6.0	623	8.3	15.5	6.2
09...	1039	--	8.8	619	8.3	15.0	6.2
09...	1040	--	11.0	623	8.2	14.5	6.0
AUG							
13...	1015	40.9	0.40	549	8.5	21.0	7.8
13...	1016	--	2.7	547	8.5	21.0	7.8
13...	1017	--	5.7	547	8.5	21.0	7.7
13...	1018	--	9.1	548	8.5	21.0	7.6
13...	1019	--	12.1	555	8.2	19.5	5.9
13...	1020	--	12.6	555	8.2	19.5	5.8

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	ICE THICK- NESS (FEET) (82130)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
FEB							
05...	69	714	3.10	110	-9.0	160	<5.0
JUL							
09...	78	710	--	52.0	23.0	--	<5.0
AUG							
13...	95	708	--	70.0	19.5	305	12

## ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

## 473557101202200 LAKE SAKAKAWEA, MALLARD ISLAND 1

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
FEB							
07...	1020	4.3	0.0	664	7.9	0.0	9.9
07...	1021	--	1.0	661	8.0	0.0	9.7
07...	1022	--	1.3	660	8.0	0.0	9.5
AUG							
14...	0945	25.0	0.40	650	8.2	19.5	7.7
14...	0946	--	1.9	650	8.2	19.5	7.6
14...	0947	--	3.6	651	8.3	19.5	7.4
14...	0948	--	5.9	646	8.3	19.5	7.3
14...	0949	--	7.7	646	8.3	19.5	7.1

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	ICE THICK- NESS (FEET) (82130)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
FEB							
07...	65	798	2.60	51.2	0.0	190	<5.0
AUG							
14...	91	710	--	84.0	18.0	320	<5.0



## ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

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## 473614101172100 LAKE SAKAKAWEA, MALLARD ISLAND 2

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
FEB							
07...	1045	23.3	0.0	668	7.8	0.0	9.0
07...	1046	--	1.0	668	7.9	0.0	8.8
07...	1047	--	1.8	664	7.9	0.0	8.6
07...	1048	--	2.7	665	8.0	0.0	8.4
07...	1049	--	3.9	663	8.0	0.0	8.4
07...	1050	--	5.1	660	8.0	0.5	8.3
07...	1051	--	6.4	662	8.0	0.5	8.3
07...	1052	--	7.1	665	8.0	0.5	8.3
AUG							
14...	0925	36.7	0.40	649	8.2	20.0	7.8
14...	0926	--	2.1	647	8.3	20.0	7.6
14...	0927	--	4.1	650	8.3	20.0	7.5
14...	0928	--	6.4	648	8.3	20.0	7.4
14...	0929	--	7.7	647	8.3	20.0	7.3
14...	0930	--	9.9	651	8.3	20.0	7.3
14...	0931	--	11.3	648	8.3	20.0	7.2

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	ICE THICK- NESS (FEET) (82130)	TRANS- PAR- ENCY (SECCHI DISK (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
FEB							
07...	68	698	2.60	63.0	0.5	190	<5.0
AUG							
14...	91	711	--	110	17.0	290	<5.0

## ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

## 473542101172800 LAKE SAKAKAWEA, MALLARD ISLAND 3

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	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)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	
FEB													
07...	1110	0.0	0.50	720	7.8	210	162	48	21	57	37	2	
07...	1115	14.2	14.7	728	--	220	166	51	23	60	37	2	
AUG													
14...	0915	0.0	0.50	646	--	230	155	55	22	59	35	2	
14...	0920	12.0	12.5	649	--	190	156	46	18	48	35	2	
14...	0925	18.0	18.5	647	8.0	230	156	55	22	58	35	2	
DATE		POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	SOLIDS, SUM OF CONSTI- TUENTS, 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, 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)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)
FEB													
07...	3.6	170	11	411	0.56	0.110	<0.010	0.25	0.25	0.36	0.037	0.012	
07...	3.5	180	10	426	0.58	0.110	<0.010	0.24	0.24	0.35	0.040	0.015	
AUG													
14...	4.2	160	8.1	405	0.55	0.020	0.010	0.13	0.14	0.16	<0.018	<0.010	
14...	3.5	160	8.0	381	0.52	<0.020	<0.010	0.14	0.14	0.14	<0.018	<0.010	
14...	4.2	160	8.2	401	0.55	0.040	<0.010	0.15	0.15	0.19	<0.018	<0.010	
DATE		ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	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)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
FEB													
07...	1	55	<0.02	<0.2	3	51	1	2	<0.2	4	--	--	
07...	1	55	<0.02	<0.2	2	38	<0.2	3	<0.2	<0.2	--	--	
AUG													
14...	1	42	<0.02	<0.2	3	<7	1	<2	1	21	<3.00	<1.00	
14...	1	46	<0.02	0.4	3	<7	1	<2	1	24	--	--	
14...	1	46	<0.02	0.3	5	<7	1	<2	1	29	--	--	

## ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

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## 473542101172800 LAKE SAKAKAWEA, MALLARD ISLAND 3--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
FEB							
07...	1100	48.2	0.0	671	7.9	0.0	8.9
07...	1101	--	0.90	665	7.9	0.0	8.7
07...	1102	--	1.6	663	8.0	0.0	8.5
07...	1103	--	3.4	665	8.0	0.0	8.4
07...	1104	--	5.2	665	8.0	0.0	8.4
07...	1105	--	7.0	665	8.0	0.0	8.4
07...	1106	--	9.1	668	8.0	0.5	8.4
07...	1107	--	11.3	673	8.0	0.5	8.3
07...	1108	--	13.2	674	8.0	0.5	8.3
07...	1109	--	14.8	675	8.0	0.5	8.3
AUG							
14...	0900	60.4	0.40	649	8.2	20.0	7.6
14...	0901	--	2.1	650	8.3	20.0	7.4
14...	0902	--	3.9	649	8.3	20.0	7.3
14...	0903	--	6.0	650	8.3	20.0	7.3
14...	0904	--	7.8	652	8.3	20.0	7.3
14...	0905	--	10.0	646	8.3	20.0	7.2
14...	0906	--	11.8	644	8.3	20.0	7.0
14...	0907	--	14.1	650	8.2	19.0	6.3
14...	0908	--	15.9	650	8.2	19.0	6.4
14...	0909	--	17.7	641	8.2	19.0	6.4
14...	0910	--	18.6	640	8.2	19.0	6.4

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	ICE THICK- NESS (FEET) (82130)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
FEB							
07...	67	698	2.30	43.3	1.0	190	<5.0
AUG							
14...	90	710	--	127	16.0	290	<5.0

## ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

## 473542101202300 LAKE SAKAKAWEA, MALLARD ISLAND 4

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	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)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	
FEB 07...	1000	0.0	0.50	722	7.8	210	163	48	21	57	37	2	
AUG 14...	1020	0.0	0.50	647	--	200	156	48	19	51	35	2	
14...	1025	27.0	27.5	645	--	190	155	46	19	48	35	2	
DATE		POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	SOLIDS, SUM OF CONSTI- TUENTS, 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, 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)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)
FEB 07...	3.7	3.0	9.9	241	0.33	0.020	<0.010	0.06	0.06	0.08	0.018	0.010	
AUG 14...	3.7	180	8.1	402	0.55	0.030	0.010	0.10	0.11	0.14	<0.018	<0.010	
14...	3.5	170	8.1	392	0.53	0.050	0.010	0.13	0.14	0.19	<0.018	<0.010	
DATE		ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	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)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
FEB 07...	2	53	<0.02	<0.2		4	69	4	5	2	5	--	--
AUG 14...	1	48	<0.02	<0.2		3	<7	2	<2	1	33	<3.00	<1.00
14...	1	46	<0.02	0.4		3	<7	2	<2	1	21	--	--

## ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

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## 473542101202300 LAKE SAKAKAWEA, MALLARD ISLAND 4--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD- UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
FEB							
07...	0955	18.0	0.0	660	7.8	0.0	9.5
07...	0956	--	0.90	664	7.9	0.0	9.4
07...	0957	--	2.8	659	7.9	0.5	9.0
07...	0958	--	4.7	660	8.0	0.5	8.8
07...	0959	--	5.5	655	8.0	0.5	8.6
AUG							
14...	1000	90.3	0.40	649	8.3	20.0	8.3
14...	1001	--	2.1	648	8.3	20.0	8.2
14...	1002	--	3.9	651	8.3	20.0	8.1
14...	1003	--	6.1	646	8.3	20.0	8.1
14...	1004	--	7.9	646	8.3	20.0	8.0
14...	1005	--	10.0	649	8.3	20.0	8.0
14...	1006	--	11.7	645	8.3	19.5	7.8
14...	1007	--	14.2	642	8.3	19.5	7.6
14...	1008	--	16.1	637	8.3	19.0	7.4
14...	1009	--	18.3	635	8.3	19.0	7.4
14...	1010	--	19.7	644	8.3	19.0	7.3
14...	1011	--	21.9	643	8.2	18.5	7.3
14...	1012	--	24.0	645	8.2	18.5	7.1
14...	1013	--	25.8	640	8.2	18.0	7.0
14...	1014	--	27.8	633	8.2	17.5	6.9

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	ICE THICK- NESS (FEET) (82130)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
FEB							
07...	72	698	2.30	106	0.0	190	<5.0
AUG							
14...	98	711	--	156	18.0	290	<5.0



## ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

## 473500101203700 LAKE SAKAKAWEA, MALLARD ISLAND 5

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
FEB							
07...	0930	75.4	0.0	649	7.8	0.0	8.8
07...	0931	--	0.90	645	7.9	0.5	8.6
07...	0932	--	2.6	647	7.9	0.0	8.4
07...	0933	--	4.3	641	8.0	0.5	8.3
07...	0934	--	6.3	642	8.0	0.5	8.2
07...	0935	--	8.4	647	8.0	0.5	5.0
07...	0936	--	10.3	649	8.0	0.5	7.9
07...	0937	--	12.4	648	8.0	0.5	7.8
07...	0938	--	14.5	646	8.0	0.5	7.8
07...	0939	--	17.1	646	8.0	0.5	7.8
07...	0940	--	19.6	647	8.0	0.5	7.8
07...	0941	--	22.2	650	8.0	0.5	7.8
07...	0942	--	23.0	657	8.0	0.5	7.8
AUG							
14...	1030	72.8	0.50	649	8.3	20.0	8.1
14...	1031	--	2.3	649	8.3	20.0	7.9
14...	1032	--	4.7	648	8.3	20.0	7.8
14...	1033	--	7.2	649	8.3	20.0	7.7
14...	1034	--	9.7	646	8.3	20.0	7.6
14...	1035	--	12.5	649	8.3	19.5	7.3
14...	1036	--	14.9	635	8.3	19.5	7.2
14...	1037	--	17.5	639	8.3	19.0	7.2
14...	1038	--	19.9	632	8.3	19.0	7.1
14...	1039	--	22.4	639	8.3	19.0	6.9

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	ICE THICK- NESS (FEET) (82130)	TRANS- PAR- ENCY (SECCHI DISK (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
FEB							
07...	67	698	2.30	94.5	0.0	190	<5.0
AUG							
14...	96	710	--	143	19.0	290	<5.0

## ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

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## 473537101173800 LAKE SAKAKAWEA, MALLARD ISLAND 6

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
FEB							
07...	0900	58.4	0.0	664	7.8	0.0	10.6
07...	0901	--	1.1	665	7.9	0.0	10.3
07...	0902	--	1.3	665	8.0	0.0	10.2
07...	0903	--	3.3	663	8.0	0.5	10.1
07...	0904	--	5.7	664	8.0	0.5	10.0
07...	0905	--	8.3	663	8.0	0.5	10
07...	0906	--	10.2	657	8.0	0.5	9.9
07...	0907	--	12.5	659	8.0	0.5	9.9
07...	0908	--	15.1	658	8.0	0.5	9.8
07...	0909	--	17.4	672	8.0	1.0	9.6
07...	0910	--	17.8	671	8.0	1.0	9.2
AUG							
14...	0840	52.6	0.40	649	8.1	20.0	8.0
14...	0841	--	2.0	649	8.2	20.0	7.7
14...	0842	--	3.9	647	8.3	20.0	7.6
14...	0843	--	6.2	643	8.3	20.0	7.6
14...	0844	--	7.9	642	8.3	20.0	7.5
14...	0845	--	9.8	653	8.3	20.0	7.5
14...	0846	--	11.6	647	8.3	20.0	7.0
14...	0847	--	14.0	644	8.3	19.0	6.7
14...	0848	--	16.2	647	8.1	18.5	4.8

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	ICE THICK- NESS (FEET) (82130)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
FEB							
07...	80	698	2.60	43.3	0.0	255	<5.0
AUG							
14...	95	710	--	122	16.0	290	<5.0

## ANALYSES OF SAMPLES COLLECTED AT E.A. PATTERSON LAKE WATER-QUALITY SITES

## 06342890 SOUTH BRANCH HEART RIVER BELOW BULL CREEK, ND

WATER-QUALITY DATA, JUNE 1995 TO MAY 1996

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, UM-MF (COLS./100 ML) (31625)	CALCIUM TOTAL (MG/L AS CAC03) (00910)
JUN 1995											
03...	1930	23	1130	7.9	--	20.5	21.5	--	--	--	39
JUL											
12...	1845	8.0	301	7.8	--	28.5	27.0	4.4	--	1600	60
13...	1640	11	390	7.5	--	27.0	25.0	6.6	--	16	43
14...	1315	13	415	7.9	--	21.0	22.0	3.7	--	16	24
18...	1350	1.0	1660	7.8	--	30.5	23.0	7.6	--	120	44
AUG											
24...	1700	172	200	7.5	--	28.5	21.0	4.2	--	--	15
25...	1600	533	202	7.4	693	--	20.5	4.0	49	--	9.2
MAR 1996											
11...	1415	57	227	7.7	705	14.0	2.0	11.2	88	70	14
12...	1150	360	227	7.4	703	13.0	1.0	10.9	83	380	14
14...	1330	56	313	7.7	705	13.0	1.5	11.5	89	110	14

DATE	MAGNE-SIUM, TOTAL RECOV-ERABLE (MG/L AS MG) (00927)	SODIUM, TOTAL RECOV-ERABLE (MG/L AS NA) (00929)	POTAS-SIUM, TOTAL RECOV-ERABLE (MG/L AS K) (00937)	ALKA-LINITY LAB (MG/L AS CAC03) (90410)	SULFATE AS (MG/L AS SO4) (00946)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	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)
JUN 1995											
03...	21	190	8.6	231	310	7.3	0.088	--	1.2	1.2	1.3
JUL											
12...	87	130	80	112	5.0	--	0.340	0.058	--	--	--
13...	68	140	49	104	70	3.5	0.449	0.068	0.43	0.50	0.95
14...	40	120	33	112	78	5.3	0.189	0.018	0.33	0.35	0.53
18...	29	240	7.0	331	480	8.3	--	0.027	1.4	1.4	1.4
AUG											
24...	4.3	24	7.9	79	26	<3.0	0.630	0.031	0.69	0.72	1.3
25...	2.7	32	6.5	69	31	3.5	0.506	0.066	0.89	0.95	1.5
MAR 1996											
11...	5.1	29	11	66	49	<3.0	0.760	0.344	1.2	1.6	2.4
12...	8.5	24	10	61	49	3.1	0.570	0.317	1.3	1.6	2.2
14...	8.2	42	9.3	69	95	3.8	0.450	0.192	1.1	1.3	1.7

DATE	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	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)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
JUN 1995											
03...	0.244	--	--	--	--	--	7900	--	210	--	--
JUL											
12...	1.88	56	3000	1	240	220	220000	200	2000	1	510
13...	1.82	--	--	--	--	--	73000	--	910	--	--
14...	1.32	--	--	--	--	--	170000	--	1400	--	--
18...	0.067	--	--	--	--	--	380	--	99	--	--
AUG											
24...	0.860	--	--	--	--	--	14000	--	1100	--	--
25...	0.275	--	--	--	--	--	550	--	7	--	--
MAR 1996											
11...	0.608	--	--	--	--	--	29000	--	460	--	--
12...	0.379	--	--	--	--	--	14000	--	280	--	--
14...	0.254	--	--	--	--	--	7700	--	200	--	--

## ANALYSES OF SAMPLES COLLECTED AT E.A. PATTERSON LAKE WATER-QUALITY SITES

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## 06342900 SOUTH BRANCH HEART RIVER NEAR SOUTH HEART, ND

WATER-QUALITY DATA, JUNE 1995 TO MAY 1996

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (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)	MAGNE-SIUM, TOTAL RECOV-ERABLE (MG/L AS MG) (00927)	SODIUM, TOTAL RECOV-ERABLE (MG/L AS NA) (00929)	
JUN 1995													
03...	1655	26	932	8.1	--	27.0	22.0	--	--	--	19	130	
JUL													
13...	1250	20	338	7.4	--	--	24.0	6.5	--	16	59	110	
13...	1810	47	381	8.7	--	25.0	27.0	6.7	--	16	30	46	
14...	1050	8.5	319	7.7	--	20.0	21.0	5.6	--	16	69	110	
18...	1550	1.7	1650	8.3	--	24.5	23.0	7.9	--	70	26	240	
AUG													
24...	1530	453	255	8.2	--	28.0	20.0	4.3	--	--	2.4	57	
25...	1345	486	251	7.7	692	--	19.5	5.5	66	--	6.8	24	
FEB 1996													
09...	1720	178	228	7.7	790	11.0	1.0	10.1	69	--	6.4	21	
MAR													
11...	1630	96	331	7.7	705	13.5	0.5	10.1	75	430	9.0	38	
12...	0900	275	336	7.5	705	12.0	0.5	11.1	83	--	12	36	
14...	1146	93	305	7.0	705	13.5	1.0	11.2	85	60	10	40	
DATE		POTAS-SIUM, TOTAL RECOV-ERABLE (MG/L AS K) (00937)	ALKA-LINITY LAB (MG/L AS CaCO3) (90410)	SULFATE (MG/L AS SO4) (00946)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	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)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)
JUN 1995													
03...	7.6	192	250	6.9	0.050	--	0.73	0.73	0.78	0.276	6700	180	
JUL													
13...	42	124	38	17	0.232	0.054	0.58	0.64	0.87	1.57	6300	760	
13...	14	200	53	47	0.371	0.025	0.66	0.68	1.1	3.37	76000	1200	
14...	48	142	29	15	0.285	0.054	0.35	0.41	0.69	1.56	160000	1500	
18...	8.6	252	520	5.0	--	0.051	1.0	1.1	1.1	0.073	450	75	
AUG													
24...	5.7	18	57	3.8	0.610	0.059	0.60	0.65	1.3	1.62	12000	1400	
25...	7.4	85	39	4.3	0.569	0.110	0.66	0.77	1.3	1.05	19000	2100	
FEB 1996													
09...	12	62	42	6.7	0.720	0.272	1.6	1.9	2.6	0.471	7000	170	
MAR													
11...	13	75	85	3.6	0.700	0.375	1.8	2.1	2.8	0.439	12000	210	
12...	14	75	83	3.7	0.980	0.447	1.5	2.0	3.0	0.474	15000	300	
14...	9.9	70	87	39	0.490	0.172	0.97	1.1	1.6	0.332	10000	240	

## ANALYSES OF SAMPLES COLLECTED AT E.A. PATTERSON LAKE WATER-QUALITY SITES

## 06342920 HEART RIVER AT SOUTH HEART, ND

WATER-QUALITY DATA, JUNE 1995 TO MAY 1996

		DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (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)	MAGNE- SIUM, TOTAL RECOV- ERABLE (MG/L AS MG) (00927)	SODIUM, TOTAL RECOV- ERABLE (MG/L AS NA) (00929)	
JUN 1995													
03...	1430	43	583	7.6	--	28.0	21.0	--	--	--	2.9	130	
22...	1215	0.18	2160	8.4	--	30.0	23.5	6.6	--	--	32	390	
JUL													
13...	1230	23	815	8.0	697	26.0	23.5	4.8	62	16	6.3	170	
13...	1625	24	805	7.9	698	25.5	25.0	4.9	65	16	5.1	170	
14...	0930	24	470	8.5	700	21.5	21.5	5.5	68	1600	1.1	110	
18...	1630	3.5	1770	8.3	--	27.0	24.0	9.5	--	650	24	320	
AUG													
17...	1115	0.25	3450	8.6	--	30.0	22.0	7.2	--	900	60	710	
24...	1650	1110	311	8.7	--	27.0	25.0	4.7	--	--	6.3	41	
25...	1730	910	316	7.0	693	28.0	22.0	4.5	57	--	8.5	36	
SEP													
20...	1042	0.56	2350	7.1	--	8.0	10.0	12.2	--	10	54	440	
OCT													
13...	1053	0.60	3280	7.9	--	7.0	8.5	7.5	--	--	47	670	
NOV													
30...	1615	0.82	3700	8.0	787	7.0	1.5	9.2	64	--	52	770	
FEB 1996													
09...	1500	344	295	7.4	695	15.0	0.0	8.9	67	--	7.9	36	
MAR													
11...	1430	11	1630	8.4	714	10.5	0.0	9.8	72	50	33	270	
12...	1238	842	424	8.4	718	11.0	0.5	12.2	90	180	13	49	
14...	1515	162	331	7.3	705	13.0	1.5	11.9	92	170	10	41	
DATE		POTAS- SIUM, TOTAL RECOV- ERABLE (MG/L AS K) (00937)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	SULFATE (MG/L AS SO4) (00946)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	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)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)
JUN 1995													
03...	4.4	137	150	4.5	0.190	--	0.60	0.60	0.79	1.05	81000	1100	
22...	8.7	459	720	20	--	0.049	--	--	--	0.198	710	94	
JUL													
13...	6.7	166	240	6.3	0.137	0.088	0.62	0.71	0.85	1.31	100000	1300	
13...	6.1	161	220	6.1	0.222	0.075	0.62	0.70	0.92	1.23	4900	690	
14...	3.4	196	91	<3.0	0.216	0.110	0.49	0.60	0.81	2.27	150000	2200	
18...	9.8	293	520	32	--	0.022	1.3	1.4	1.4	0.283	840	120	
AUG													
17...	17	494	1300	28	--	0.056	1.4	1.4	1.4	0.169	190	45	
24...	8.7	82	73	3.4	0.699	0.133	0.57	0.71	1.4	1.27	12000	1200	
25...	8.6	91	76	3.8	0.401	0.020	0.67	0.69	1.1	0.648	17000	940	
SEP													
20...	12	487	820	12	--	--	0.98	0.98	0.98	0.107	590	270	
OCT													
13...	10	627	1300	20	0.012	0.040	0.93	0.97	0.98	0.122	830	150	
NOV													
30...	9.6	852	1100	65	0.013	--	1.0	1.0	1.1	0.419	930	240	
FEB 1996													
09...	12	62	96	7.8	0.720	0.264	1.5	1.7	2.5	0.463	6000	170	
MAR													
11...	13	299	630	14	0.500	0.363	1.4	1.8	2.3	0.346	4500	420	
12...	13	75	110	5.3	0.840	0.310	1.4	1.7	2.6	0.421	12000	350	
14...	10	75	83	4.2	0.570	0.195	1.1	1.3	1.8	0.320	12000	260	



## ANALYSES OF SAMPLES COLLECTED AT E.A. PATTERSON LAKE WATER-QUALITY SITES

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## 06342970 NORTH CREEK NEAR SOUTH HEART, ND

WATER-QUALITY DATA, JUNE 1995 TO MAY 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00301)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	CALCIUM TOTAL (MG/L AS CACO3) (00910)
JUL 1995											
12...	1320	1.0	1950	8.1	--	30.5	25.5	7.1	--	--	30
13...	1335	5.0	1320	7.9	--	26.5	23.5	2.4	--	--	24
18...	1750	0.62	1780	7.6	--	27.0	25.0	6.2	--	80	31
AUG											
25...	1145	130	243	7.4	--	21.0	20.0	--	--	--	22
26...	1015	107	295	7.9	694	18.0	19.0	3.4	41	--	29
NOV											
30...	1345	0.40	4070	7.5	787	11.0	2.0	8.4	60	--	61
MAR 1996											
11...	1305	10	395	7.3	710	11.0	0.5	9.5	70	20	12
12...	1000	126	490	9.1	715	7.5	0.0	12.3	90	50	24

DATE	MAGNE- SIUM, TOTAL RECOV- ERABLE (MG/L AS MG) (00927)	SODIUM, TOTAL RECOV- ERABLE (MG/L AS NA) (00929)	POTAS- SIUM, TOTAL RECOV- ERABLE (MG/L AS K) (00937)	ALKA- LINEITY LAB (MG/L AS CACO3) (90410)	SULFATE (MG/L AS SO4) (00946)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	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)
JUL 1995											
12...	27	380	9.2	312	620	6.3	0.013	0.038	--	--	--
13...	22	270	11	218	470	5.0	0.507	0.082	1.3	1.3	1.8
18...	26	290	8.5	339	500	4.0	0.015	0.070	1.4	1.4	1.4
AUG											
25...	8.7	24	7.0	75	57	3.7	0.634	0.088	0.75	0.83	1.5
26...	15	22	9.1	93	62	4.0	0.320	0.040	0.73	0.77	1.1
NOV											
30...	48	910	11	814	1400	15	0.048	--	1.2	1.2	1.2
MAR 1996											
11...	10	40	20	60	100	6.4	0.760	0.505	2.5	3.0	3.8
12...	16	38	12	90	98	4.4	0.850	0.140	1.2	1.3	2.2

DATE	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	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)	SELE- NIUM, TOTAL (UG/L AS SE) (01147)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)
JUL 1995											
12...	0.373	9	90	<0.2	4	<14	3300	5	190	1	10
13...	0.520	--	--	--	--	--	18000	--	440	--	--
18...	0.399	--	--	--	--	--	990	--	110	--	--
AUG											
25...	0.905	--	--	--	--	--	21000	--	1700	--	--
26...	0.516	--	--	--	--	--	13000	--	760	--	--
NOV											
30...	0.125	--	--	--	--	--	1200	--	160	--	--
MAR 1996											
11...	0.330	--	--	--	--	--	1200	--	130	--	--
12...	0.363	--	--	--	--	--	21000	--	570	--	--

## ANALYSES OF SAMPLES COLLECTED AT E.A. PATTERSON LAKE WATER-QUALITY SITES

## 06343420 ASH CREEK NEAR SOUTH HEART, ND

WATER-QUALITY DATA, JUNE 1995 TO MAY 1996

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00301)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	MAGNE- SIUM, TOTAL RECOV- ERABLE (MG/L AS MG) (00927)
JUL 1995											
12...	1610	12	142	7.2	--	29.0	24.0	8.2	--	--	6.8
13...	1240	17	148	7.4	693	26.5	22.0	5.4	68	--	6.2
14...	0730	3.2	388	7.5	695	17.5	20.5	4.4	54	1600	8.0
18...	1120	0.49	494	7.8	--	26.0	25.0	--	--	1000	10
AUG											
25...	0955	212	217	7.0	692	24.5	18.5	6.0	71	--	15
26...	0930	19	230	7.3	695	--	20.0	6.5	79	--	7.2
MAR 1996											
11...	1700	196	403	8.4	714	14.0	0.5	12.4	91	680	4.0
12...	1345	35	173	7.5	703	15.0	0.5	13.7	103	280	4.8

DATE	SODIUM, TOTAL RECOV- ERABLE (MG/L AS NA) (00929)	POTAS- SIUM, TOTAL RECOV- ERABLE (MG/L AS K) (00937)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	SULFATE (MG/L AS SO4) (00946)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	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)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)
JUL 1995											
12...	19	7.4	51	23	5.5	0.130	0.018	--	--	--	0.249
13...	17	7.4	64	31	15	0.159	0.065	0.96	1.0	1.2	0.320
14...	45	8.9	146	43	5.7	0.130	0.149	0.95	1.1	1.2	0.406
18...	58	9.3	188	59	6.2	0.095	0.118	0.79	0.90	1.0	0.316
AUG											
25...	170	17	66	21	410	0.572	0.624	1.0	1.7	2.2	1.02
26...	20	8.0	107	27	7.4	0.301	0.050	0.75	0.80	1.1	0.586
MAR 1996											
11...	17	12	60	21	6.5	0.920	0.244	1.6	1.8	2.7	0.595
12...	18	11	71	14	5.5	1.20	0.422	1.6	2.0	3.2	0.547

DATE	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	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)	SELE- NIUM, TOTAL (UG/L AS SE) (01147)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)
JUL 1995										
12...	11	300	0.3	24	<14	20700	29	260	1	70
13...	--	--	--	--	--	19000	--	170	--	--
14...	--	--	--	--	--	9100	--	220	--	--
18...	--	--	--	--	--	3200	--	160	--	--
AUG										
25...	--	--	--	--	--	8800	--	860	--	--
26...	--	--	--	--	--	4700	--	320	--	--
MAR 1996										
11...	--	--	--	--	--	15000	--	240	--	--
12...	--	--	--	--	--	14000	--	260	--	--

## ANALYSES OF SAMPLES COLLECTED AT E.A. PATTERSON LAKE WATER-QUALITY SITES

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## 06344100 HEART RIVER AT STATE AVENUE IN DICKINSON, ND

WATER-QUALITY DATA, JUNE 1995 TO MAY 1996

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00301)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	MAGNE- SIUM, TOTAL RECOV- ERABLE (MG/L) (00927)	SODIUM, TOTAL RECOV- ERABLE (MG/L) (00929)
JUN 1995												
23...	1230	0.36	1360	8.0	--	23.0	21.5	7.2	--	--	--	--
JUL												
13...	1600	16	1550	8.0	692	27.5	28.5	6.8	97	40	49	240
27...	0930	19	1220	8.2	--	19.0	22.0	5.9	--	--	23	170
AUG												
17...	1340	1.8	1580	8.3	--	--	--	7.8	--	10	35	260
25...	1445	1400	961	8.3	633	25.0	24.0	7.9	114	--	22	170
SEP												
20...	1418	2.9	1130	7.5	--	5.5	12.0	11.0	--	20	25	190
OCT												
13...	1345	3.1	1740	6.7	--	10.5	8.5	9.1	--	--	39	260
APR 1996												
15...	1545	7.3	719	7.3	708	13.0	8.0	9.7	88	--	17	110

DATE	POTAS- SIUM, TOTAL RECOV- ERABLE (MG/L AS K) (00937)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	SULFATE (MG/L AS SO4) (00946)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	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)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)
JUL 1995												
13...	9.3	275	610	14	--	0.028	0.59	0.62	0.62	0.095	760	280
27...	8.6	246	350	9.9	--	--	0.76	0.76	0.76	0.090	1100	380
AUG												
17...	11	327	490	19	--	0.019	0.72	0.74	0.74	0.072	70	23
25...	11	221	280	14	0.058	0.083	0.87	0.95	1.0	0.250	2100	200
SEP												
20...	10	219	440	3.9	--	--	0.66	0.66	0.66	0.048	280	110
OCT												
13...	8.5	296	690	18	0.011	0.038	0.58	0.61	0.63	0.039	600	190
APR 1996												
15...	12	153	180	7.1	0.470	0.127	0.85	0.97	1.4	0.174	1700	260

## ANALYSES OF SAMPLES COLLECTED AT E.A. PATTERSON LAKE WATER-QUALITY SITES

## 465202102495200 E.A. PATTERSON LAKE, SITE 1

WATER-QUALITY DATA, JUNE 1995 TO MAY 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	ALKA- LINITY LAB (MG/L AS CAC03) (90410)	CALCIUM TOTAL (MG/L AS CAC03) (00910)	MAGNE- SIUM, TOTAL RECOV- ERABLE (MG/L AS MG) (00927)	SODIUM, TOTAL RECOV- ERABLE (MG/L AS NA) (00929)	POTAS- SIUM, TOTAL RECOV- ERABLE (MG/L AS K) (00937)	SULFATE (MG/L AS SO4) (00946)
JUN 1995											
21...	1245	0.50	1.0	1040	8.2	210	39	20	150	8.6	240
21...	1250	4.5	5.0	1050	8.2	211	36	19	140	8.7	230
21...	1255	5.5	6.0	1050	8.1	210	38	20	150	9.0	310
21...	1300	7.3	7.8	1040	7.8	214	38	19	150	9.4	300
JUL											
20...	1040	0.0	1.0	1060	8.8	220	42	22	170	11	320
20...	1045	4.0	5.0	1060	8.7	218	43	23	180	11	330
20...	1050	6.9	7.9	1060	8.4	222	39	20	150	9.1	310
AUG											
22...	1010	0.50	1.0	1130	8.2	247	47	24	200	12	320
22...	1015	5.7	6.3	1140	8.2	247	46	24	190	11	300
SEP											
18...	1120	0.0	0.50	581	7.9	141	30	12	81	9.8	150
18...	1125	7.1	7.6	585	7.6	132	28	12	71	9.0	160
OCT											
11...	1100	0.0	0.50	593	7.5	131	26	12	61	7.9	140
11...	1105	5.8	6.3	595	7.9	135	31	13	78	10	140
NOV											
01...	1105	0.0	0.50	625	8.1	145	32	13	76	9.1	170
01...	1110	3.5	4.0	623	8.1	151	32	13	72	8.6	170
MAY 1996											
07...	1005	0.0	0.50	567	7.5	111	25	13	76	9.2	160
07...	1010	7.0	7.5	570	7.5	112	22	12	65	8.6	160

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	NITRO- GEN, NO2+NO3 (MG/L AS N) (00630)	NITRO- GEN, AMMONIA (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)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	ARSENIC TOTAL (UG/L AS AS) (01002)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)
JUN 1995											
21...	10	0.139	0.109	1.0	1.1	1.3	0.106	5	730	74	--
21...	11	0.152	0.161	1.0	1.2	1.3	0.133	4	750	100	--
21...	11	0.149	0.247	0.90	1.2	1.3	0.116	5	790	160	--
21...	9.8	0.098	0.602	0.80	1.4	1.5	0.180	7	1000	810	--
JUL											
20...	9.9	0.006	0.042	1.0	1.0	1.0	0.127	--	270	64	68.0
20...	8.5	0.007	0.079	0.99	1.1	1.1	0.126	--	340	72	--
20...	9.0	0.028	0.411	0.95	1.4	1.4	0.203	--	510	460	--
AUG											
22...	15	0.040	0.332	0.98	1.3	1.3	0.159	--	230	140	10.0
22...	15	0.049	0.429	0.88	1.3	1.4	0.166	--	250	160	--
SEP											
18...	4.6	0.363	0.369	0.0	0.06	0.42	0.226	--	2200	150	<3.00
18...	5.5	0.373	0.326	0.60	0.93	1.3	0.227	--	2900	190	--
OCT											
11...	5.8	0.586	0.160	0.64	0.80	1.4	0.170	--	3300	100	<3.00
11...	5.7	0.573	0.152	0.66	0.81	1.4	0.182	--	3400	100	--
NOV											
01...	7.1	0.635	0.218	1.0	1.2	1.9	0.139	--	3000	71	<3.00
01...	6.4	0.624	0.124	0.59	0.72	1.3	0.139	--	2500	64	--
MAY 1996											
07...	5.8	0.440	0.279	0.94	1.2	1.7	0.139	--	3100	120	<3.00
07...	5.8	0.420	0.275	0.77	1.0	1.5	0.167	--	4900	260	<3.00

## ANALYSES OF SAMPLES COLLECTED AT E.A. PATTERSON LAKE WATER-QUALITY SITES

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## 465202102495200 E.A. PATTERSON LAKE, SITE 1--Continued

WATER-QUALITY DATA, JUNE 1995 TO MAY 1996

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
JUN 1995							
21...	1230	25.6	0.0	1040	8.0	21.5	8.7
21...	1231	--	0.50	1040	8.0	21.5	8.2
21...	1232	--	1.0	1040	8.0	21.5	8.1
21...	1233	--	2.0	1040	8.1	21.5	8.0
21...	1234	--	3.0	1040	8.1	21.5	7.9
21...	1235	--	4.0	1040	8.0	21.5	7.8
21...	1236	--	5.0	1040	8.0	20.5	6.0
21...	1237	--	6.0	1020	7.6	17.5	2.6
21...	1238	--	7.0	1020	7.4	15.0	1.0
21...	1239	--	7.8	1010	7.4	14.0	0.4
JUL							
20...	1030	26.6	0.0	1060	8.4	22.5	7.4
20...	1031	--	0.90	1060	8.4	22.5	7.0
20...	1032	--	3.4	1060	8.4	22.5	6.8
20...	1033	--	5.0	1060	8.4	22.0	6.7
20...	1034	--	5.9	1060	8.1	20.5	3.3
20...	1035	--	7.0	1060	7.7	18.5	0.2
20...	1036	--	7.9	1060	7.6	18.0	0.1
AUG							
22...	1000	20.7	0.0	1140	8.2	21.0	8.0
22...	1001	--	0.80	1140	8.2	20.5	7.8
22...	1002	--	1.1	1140	8.2	20.5	7.7
22...	1003	--	2.1	1140	8.2	20.5	7.7
22...	1004	--	3.1	1140	8.2	20.5	7.7
22...	1005	--	3.8	1140	8.2	20.5	7.6
22...	1006	--	4.8	1140	8.2	20.5	7.3
22...	1007	--	5.7	1140	8.1	20.5	6.8
22...	1008	--	6.0	1140	8.1	20.0	6.7
SEP							
18...	1106	24.9	0.0	578	7.5	17.0	5.5
18...	1108	--	1.0	575	7.5	17.0	5.4
18...	1109	--	2.2	575	7.5	17.0	5.4
18...	1110	--	3.0	575	7.5	17.0	5.4
18...	1111	--	4.0	575	7.5	17.0	5.4
18...	1112	--	5.0	575	7.5	17.0	5.3
18...	1113	--	6.0	575	7.5	17.0	5.4
18...	1114	--	7.1	575	7.5	16.5	5.4
18...	1115	--	7.6	575	7.5	16.5	5.4
OCT							
11...	1040	20.7	0.0	575	7.6	11.0	10
11...	1042	--	0.50	575	7.6	10.5	9.8
11...	1044	--	1.0	576	7.7	10.5	9.7
11...	1046	--	2.0	575	7.7	10.5	9.7
11...	1048	--	3.0	575	7.7	10.5	9.7
11...	1050	--	4.0	575	7.7	10.5	9.6
11...	1052	--	5.0	575	7.7	10.5	9.6
11...	1054	--	6.1	576	7.7	10.5	9.6
NOV							
01...	1055	13.1	0.0	594	7.8	4.0	10.3
01...	1056	--	1.0	596	8.0	4.0	10.2
01...	1057	--	2.0	597	8.0	4.0	10.1
01...	1059	--	3.0	593	8.0	4.0	10.1
01...	1101	--	4.0	598	8.0	4.0	10.0
MAY 1996							
07...	0947	25.6	0.0	563	7.0	8.0	9.0
07...	0949	--	0.50	565	7.2	8.0	8.9
07...	0951	--	1.2	563	7.3	8.0	8.9
07...	0953	--	2.0	561	7.3	8.0	8.8
07...	0955	--	3.2	566	7.3	8.0	8.8
07...	0957	--	4.3	563	7.3	8.0	8.8
07...	0959	--	5.1	571	7.3	8.0	8.8
07...	1001	--	6.3	562	7.3	8.0	8.7
07...	1003	--	7.5	569	7.3	8.0	5.0



## ANALYSES OF SAMPLES COLLECTED AT E.A. PATTERSON LAKE WATER-QUALITY SITES

465202102495200 E.A. PATTERSON LAKE, SITE 1--Continued

WATER-QUALITY DATA, JUNE 1995 TO MAY 1996

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
JUN 1995						
21...	109	695	2.00	20.0	90	8.0
JUL						
20...	95	697	3.60	23.0	235	<5.0
AUG						
22...	98	697	27.0	25.0	--	<5.0
SEP						
18...	62	698	6.00	22.0	270	<5.0
OCT						
11...	100	694	7.00	13.0	--	<5.0
NOV						
01...	86	699	9.00	-3.0	270	8.0
MAY 1996						
07...	84	693	0.60	7.0	150	<5.0

## ANALYSES OF SAMPLES COLLECTED AT E.A. PATTERSON LAKE WATER-QUALITY SITES

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## 465201102500800 E.A. PATTERSON LAKE, SITE 2

WATER-QUALITY DATA, JUNE 1995 TO MAY 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE (STAND- ARD UNITS) (00403)	ALKA- LITY LAB (MG/L AS CAC03) (90410)	CALCIUM TOTAL (MG/L AS CAC03) (00910)	MAGNE- SIUM, TOTAL RECOV- ERABLE (MG/L AS MG) (00927)	SODIUM, TOTAL RECOV- ERABLE (MG/L AS NA) (00929)	POTAS- SIUM, TOTAL RECOV- ERABLE (MG/L AS K) (00937)	SULFATE (MG/L AS SO4) (00946)
JUL 1995											
20...	1005	0.0	1.0	1060	8.8	219	43	23	170	11	320
20...	1010	3.5	4.5	1060	8.7	222	35	18	140	9.2	270
20...	1015	5.5	6.5	1060	8.5	222	44	23	180	11	310

DATE	TIME	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	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)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)
JUL 1995											
20...		8.4	0.006	0.068	0.98	1.0	1.1	0.125	250	68	13.0
20...		9.4	0.009	0.083	0.89	0.97	0.98	0.101	270	79	--
20...	12	<0.005	0.199	0.79	0.98	0.98	0.137	520	160	--	--

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND SPEED (MILES PER HOUR) (00035)
JUL 1995												
20...	0955	22.4	0.0	1060	8.4	22.5	7.7	98	697	4.20	22.0	<5.0
20...	0956	--	1.0	1060	8.4	22.5	7.2	--	--	--	--	--
20...	0957	--	1.9	1060	8.4	22.5	6.9	--	--	--	--	--
20...	0958	--	3.5	1060	8.4	22.5	6.7	--	--	--	--	--
20...	0959	--	4.8	1060	8.4	22.5	6.7	--	--	--	--	--
20...	1000	--	5.9	1060	7.9	21.0	1.7	--	--	--	--	--
20...	1001	--	6.5	1050	7.7	19.5	1	--	--	--	--	--

## ANALYSES OF SAMPLES COLLECTED AT E.A. PATTERSON LAKE WATER-QUALITY SITES

465152102505700 E.A. PATTERSON LAKE, SITE 3

WATER-QUALITY DATA, JUNE 1995 TO MAY 1996

DATE	TIME	DEPTH TO TOP OF SAMPLE INTER- VAL (IN METERS) (82047)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (IN METERS) (82048)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	ALKA- LINITY LAB (MG/L AS CAC03) (90410)	CALCIUM TOTAL (MG/L AS CAC03) (00910)	MAGNE- SIUM, TOTAL RECOV- ERABLE (MG/L AS MG) (00927)	SODIUM, TOTAL RECOV- ERABLE (MG/L AS NA) (00929)	POTAS- SIUM, TOTAL RECOV- ERABLE (MG/L AS K) (00937)	SULFATE (MG/L AS SO4) (00946)
JUN 1995											
21...	1220	0.0	0.50	1060	8.3	212	37	20	150	8.9	220
21...	1225	3.5	4.0	1060	8.3	211	40	21	150	9.2	330
JUL											
20...	0930	0.0	1.0	1060	8.7	222	35	18	140	8.3	310
20...	0935	2.6	3.6	1070	8.7	223	33	17	140	8.4	270
AUG											
22...	0950	0.50	1.0	1140	8.4	248	46	23	200	12	290
22...	0955	3.0	3.5	1140	8.4	248	42	22	170	9.8	380
SEP											
18...	1055	0.0	0.50	576	7.6	--	27	12	68	8.3	150
18...	1100	3.7	4.2	577	7.7	129	27	11	66	8.3	150
OCT											
11...	1015	0.0	0.50	602	8.0	141	28	12	66	9.0	140
11...	1025	3.5	4.0	598	8.0	139	29	12	67	8.9	140
NOV											
01...	1130	0.0	0.50	612	8.1	144	31	13	71	9.0	160
01...	1135	6.0	6.5	608	8.1	141	31	13	72	9.1	160
MAY 1996											
07...	0935	0.0	0.50	563	7.2	125	25	13	75	9.2	160
07...	0940	3.0	3.5	564	7.2	110	23	11	66	8.6	160

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	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)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)
JUN 1995											
21...	10	0.139	0.167	1.1	1.3	1.4	0.127	5	1100	130	--
21...	9.8	0.156	0.238	0.84	1.1	1.2	0.133	9	660	150	--
JUL											
20...	8.7	<0.005	0.097	1.0	1.1	1.1	0.143	--	540	120	<3.00
20...	9.3	<0.005	0.103	0.90	1.0	1.0	0.123	--	650	110	--
AUG											
22...	15	0.035	0.272	1.1	1.3	1.4	0.168	--	300	130	35.0
22...	10	0.042	0.375	0.81	1.2	1.2	0.148	--	420	150	--
SEP											
18...	4.7	0.330	0.354	0.59	0.95	1.3	0.226	--	2700	150	<3.00
18...	4.8	0.338	0.358	0.68	1.0	1.4	0.216	--	2500	140	--
OCT											
11...	6.3	0.525	0.202	0.79	0.99	1.5	0.181	--	4400	110	<3.00
11...	6.3	0.511	0.194	0.74	0.94	1.4	0.172	--	4500	120	--
NOV											
01...	6.4	0.677	0.109	0.56	0.67	1.3	0.150	--	2800	63	<3.00
01...	6.2	0.665	0.090	0.67	0.76	1.4	0.148	--	2600	63	--
MAY 1996											
07...	8.3	0.430	0.306	0.97	1.3	1.7	0.126	--	3000	130	7.00
07...	5.6	0.420	0.383	1.2	1.6	2.0	0.135	--	3000	140	<3.00

## 465152102505700 E.A. PATTERSON LAKE, SITE 3--Continued

WATER-QUALITY DATA, JUNE 1995 TO MAY 1996

DATE	TIME	RESER- VOIR DEPTH (FEET) (72025)	SAM- PLING DEPTH (M) (00098)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
JUN 1995							
21...	1210	13.1	0.0	1050	7.8	21.5	8.0
21...	1211	--	0.50	1050	8.0	21.5	7.6
21...	1212	--	1.0	1050	8.0	21.5	7.4
21...	1213	--	2.0	1050	8.0	21.5	7.4
21...	1214	--	3.0	1050	8.0	21.5	7.2
21...	1215	--	4.0	1050	8.0	21.5	7.0
JUL							
20...	0920	13.2	0.0	1060	8.4	22.5	7.7
20...	0921	--	1.0	1060	8.4	22.5	7.6
20...	0922	--	2.0	1060	8.4	22.5	7.4
20...	0923	--	3.0	1070	8.4	22.5	7.5
20...	0924	--	3.6	1070	8.4	22.5	7.2
AUG							
22...	0939	12.4	0.0	1150	8.3	21.5	8.0
22...	0940	--	0.90	1150	8.3	21.5	7.9
22...	0941	--	1.5	1150	8.3	21.5	7.7
22...	0942	--	2.1	1140	8.3	21.0	7.6
22...	0943	--	2.7	1140	8.2	21.0	7.0
22...	0944	--	3.4	1150	8.2	20.5	6.6
SEP							
18...	1045	13.8	0.0	566	7.4	17.0	6.1
18...	1046	--	0.60	566	7.4	17.0	6.0
18...	1047	--	1.3	566	7.5	17.0	5.9
18...	1048	--	2.0	566	7.5	16.5	5.9
18...	1049	--	2.7	565	7.5	16.5	5.9
18...	1050	--	3.2	565	7.5	16.5	5.9
18...	1051	--	3.7	562	7.5	16.5	5.9
18...	1052	--	4.0	560	7.5	16.5	5.8
OCT							
11...	1000	13.1	0.0	578	7.5	10.5	8.8
11...	1002	--	0.70	578	7.6	10.5	8.8
11...	1004	--	1.2	577	7.7	10.5	8.8
11...	1006	--	2.1	577	7.7	10.5	8.8
11...	1008	--	3.1	579	7.7	10.5	8.7
11...	1010	--	3.7	579	7.7	10.5	8.7
NOV							
01...	1114	21.3	0.0	587	7.9	5.0	9.9
01...	1116	--	1.0	587	8.0	4.5	9.9
01...	1117	--	2.1	587	8.0	5.0	9.8
01...	1119	--	3.1	588	8.0	4.5	9.8
01...	1121	--	4.0	586	8.0	4.5	9.8
01...	1123	--	5.1	586	8.0	4.5	9.8
01...	1125	--	6.2	584	8.0	4.5	9.7
MAY 1996							
07...	0920	12.8	0.0	559	6.7	8.0	9.4
07...	0922	--	0.50	560	7.0	8.0	9.0
07...	0924	--	1.1	560	7.1	8.0	8.9
07...	0926	--	1.9	560	7.1	8.0	8.9
07...	0928	--	2.8	560	7.2	8.0	8.8
07...	0930	--	3.6	560	7.2	8.0	8.7

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE OF HG) (00025)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	TEMPER- ATURE AIR (DEG C) (00020)	WIND DIREC- TION (DEG. FROM TRUE NORTH) (00036)	WIND SPEED (MILES PER HOUR) (00035)
JUN 1995						
21...	100	696	1.20	20.0	100	12
JUL						
20...	98	696	1.90	20.0	--	<5.0
AUG						
22...	100	697	17.0	24.5	--	<5.0
SEP						
18...	69	697	6.00	23.0	--	<5.0
OCT						
11...	87	694	7.00	12.0	--	<5.0
NOV						
01...	85	699	10.0	-3.0	270	10
MAY 1996						
07...	88	693	0.60	8.0	120	<5.0

## CHEMICAL QUALITY OF PRECIPITATION

## RED RIVER OF THE NORTH BASIN

484714097442301 ICELANDIC STATE PARK, ND  
(National Trends Network precipitation-quality station)

LOCATION.--Lat 48°47'14", long 97°44'23", in SW<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub> sec. 10, T.161 N., R.55 W., Pembina County, Hydrologic Unit 09020313, at Icelandic State Park 5.6 mi west of Cavalier.

PERIOD OF RECORD.--October 1983 to current year (weekly composite).

INSTRUMENTATION.--The composite sample collector is an Aerochem Metrics<sup>1</sup> model 301 wet/dry precipitation collector mounted on ground surface. Precipitation quantity is determined by a Belfort<sup>1</sup> model 5-780 recording rain gage equipped with an event recorder and an Alter-type wind screen. The recording rain gage is installed 20 ft east of the sample collector with gage mouth and collector bucket elevations of 50.75 in above land surface.

REMARKS.--Data presented are provisional analyses by the Central Analytical Laboratory of the Illinois State Water Survey and have not completed quality-assurance review by the National Atmospheric Deposition Program. Analyses are determined from water taken from the sample collector.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

PERIOD OF COLLECTION	PRECIP- ITATION TOTAL INCHES/ WEEK (00046)	COL- LECTOR EFFI- CIENCY WET DEPOS. PERCENT (82284)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
09/26 to 10/03	0.71	96	4	5	5.8	5.9	0.129	0.025
10/03 to 10/08	0.18	106	--	7	--	5.8	0.110	0.040
10/08 to 10/17	0.33	91	3	3	5.6	5.8	0.040	0.009
10/17 to 10/24	0.65	91	6	6	5.9	6.1	0.123	0.026
10/24 to 10/31	0.16	69	13	14	--	6.5	0.461	0.089
10/31 to 11/07	0.65	60	9	9	5.1	5.2	0.060	0.012
11/07 to 11/14	0.46	33	5	6	5.6	5.6	0.042	0.006
11/14 to 11/21	0.30	--	6	6	5.0	5.1	0.020	0.005
11/21 to 11/28	0.44	--	3	5	5.3	5.3	0.020	0.005
11/28 to 12/05	0.39	--	4	4	5.2	5.2	0.060	0.010
12/05 to 12/12	b0.16	--	--	--	--	--	--	--
12/12 to 12/20	b0.45	--	--	--	--	--	--	--
12/20 to 12/27	b0.0	--	--	--	--	--	--	--
12/27 to 01/02	0.13	--	16	16	4.5	4.5	0.020	0.007
01/02 to 01/09	0.08	--	3	3	5.4	5.4	0.020	0.004
01/09 to 01/16	0.33	--	5	5	5.1	5.2	0.060	0.019
01/16 to 01/23	0.33	--	4	4	5.1	5.1	0.040	0.008
01/23 to 01/30	b0.16	--	--	6	--	5.4	--	--
01/30 to 02/06	b0.0	--	--	--	--	--	--	--
02/06 to 02/13	0.22	--	--	a6	--	a5.1	a<0.030	a<0.009
02/13 to 02/20	b--	--	--	6	--	5.8	--	--
02/20 to 02/27	0.40	82	18	17	4.6	4.7	0.132	0.012
02/27 to 03/05	b0.03	<33	--	7	--	5.6	--	--
03/05 to 03/12	b<0.01	100	--	11	--	5.2	--	--
03/12 to 03/19	0.20	30	5	4	5.6	6.2	0.044	0.012
03/19 to 03/26	0.30	6.7	--	4	--	5.9	0.223	0.043
03/26 to 04/02	0.75	68	21	25	4.8	4.9	0.409	0.047
04/02 to 04/09	0.08	--	--	a8	--	a5.0	a0.090	a0.019
04/09 to 04/16	0.0	--	--	a10	--	a5.3	a0.320	a0.050
04/16 to 04/23	0.05	--	--	a9	--	a6.0	a0.090	a0.032
04/23 to 04/30	0.57	--	8	7	6.1	6.5	0.190	0.037
04/30 to 05/07	b0.0	--	--	--	--	--	--	--
05/07 to 05/14	0.0	--	--	a21	--	a5.4	a0.520	a0.127
05/14 to 05/21	1.36	--	9	10	6.3	6.5	0.150	0.028
05/21 to 05/28	0.0	--	12	12	6.1	5.4	0.340	0.077
05/28 to 06/04	0.85	--	8	7	6.3	6.1	0.120	0.026
06/04 to 06/11	0.40	--	8	8	6.1	5.9	0.110	0.026
06/11 to 06/18	0.05	--	--	--	--	--	--	--
06/18 to 06/25	1.29	102	6	6	5.4	5.7	0.120	0.022
06/25 to 07/02	0.83	102	7	7	5.8	5.4	0.129	0.027
07/02 to 07/09	0.56	91	11	9	6.1	5.8	0.231	0.045
07/09 to 07/16	0.71	97	6	6	5.5	5.6	0.170	0.045
07/16 to 07/23	2.20	101	5	6	5.7	5.1	0.088	0.019
07/23 to 07/30	0.23	122	4	5	6.0	5.8	0.218	0.069
07/30 to 08/06	0.20	115	11	11	6.7	6.6	0.688	0.217
08/06 to 08/13	0.0	--	--	a2	--	a5.8	a0.017	a0.006
08/13 to 08/20	0.87	95	9	7	5.1	5.6	0.094	0.019
08/20 to 08/27	0.30	83	11	11	6.1	5.9	0.376	0.056
08/27 to 09/03	0.02	50	--	a14	--	a6.1	a0.980	a0.130
09/03 to 09/10	--	--	18	19	6.4	6.4	0.448	0.063
09/10 to 09/16	b0.0	--	--	--	--	--	--	--
09/16 to 09/24	0.45	87	16	22	5.6	6.3	0.207	0.091

<sup>1</sup> The use of brand names in this report is for identification purposes only and does not imply endorsement by the U.S. Geological Survey.

a To provide for an adequate sample, 50 milliliters of dilution water was added.

b Trace of water collected in field sampler.



## CHEMICAL QUALITY OF PRECIPITATION

## RED RIVER OF THE NORTH BASIN

## 484714097442301 ICELANDIC STATE PARK, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

PERIOD OF COLLECTION	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)
09/26 to 10/03	0.023	0.016	0.43	0.04	0.140	0.280	<0.001
10/03 to 10/08	0.029	0.014	0.35	0.04	0.210	0.360	<0.001
10/08 to 10/17	0.018	0.008	0.30	<0.03	0.020	0.160	<0.001
10/17 to 10/24	0.049	0.020	0.64	0.05	0.130	0.400	<0.001
10/24 to 10/31	0.068	0.050	1.4	0.09	0.360	0.990	<0.001
10/31 to 11/07	0.033	0.012	0.99	<0.03	0.310	0.450	<0.001
11/07 to 11/14	0.067	0.086	0.34	0.09	0.130	0.270	<0.001
11/14 to 11/21	0.029	0.004	0.24	<0.03	0.140	0.100	--
11/21 to 11/28	0.043	0.004	0.18	0.03	0.060	0.060	--
11/28 to 12/05	0.088	0.019	0.12	0.07	0.150	0.080	--
12/05 to 12/12	--	--	--	--	--	--	--
12/12 to 12/20	--	--	--	--	--	--	--
12/20 to 12/27	--	--	--	--	--	--	--
12/27 to 01/02	0.090	0.019	0.37	0.12	0.570	0.200	--
01/02 to 01/09	0.075	0.010	0.06	0.06	0.070	0.020	--
01/09 to 01/16	0.125	0.022	0.14	0.18	0.190	0.120	--
01/16 to 01/23	0.026	0.006	0.15	<0.03	0.130	0.050	--
01/23 to 01/30	--	--	--	--	--	--	--
01/30 to 02/06	--	--	--	--	--	--	--
02/06 to 02/13	a0.183	a0.014	a0.37	a0.11	a0.190	a0.180	--
02/13 to 02/20	--	--	--	--	--	--	--
02/20 to 02/27	0.060	0.013	1.6	0.07	0.540	0.780	<0.001
02/27 to 03/05	--	--	--	--	--	--	--
03/05 to 03/12	--	--	--	--	--	--	--
03/12 to 03/19	0.048	0.011	0.32	0.05	0.110	0.230	<0.001
03/19 to 03/26	0.179	0.007	0.31	0.26	0.130	0.140	<0.001
03/26 to 04/02	0.103	0.016	1.8	0.10	1.36	1.16	<0.001
04/02 to 04/09	a0.090	a<0.008	a0.30	a0.11	a0.170	a0.150	--
04/09 to 04/16	a0.395	a<0.015	a0.75	a0.50	a0.370	a0.540	--
04/16 to 04/23	a0.207	a<0.010	a1.9	a0.25	a0.080	a0.590	--
04/23 to 04/30	0.058	0.012	0.58	0.08	0.200	0.520	--
04/30 to 05/07	--	--	--	--	--	--	--
05/07 to 05/14	a0.143	a<0.010	a1.8	a0.40	a1.14	a1.26	--
05/14 to 05/21	0.069	0.015	0.86	0.08	0.350	0.800	--
05/21 to 05/28	0.065	0.033	1.8	0.08	0.390	0.600	--
05/28 to 06/04	0.046	0.009	0.73	0.06	0.190	0.450	--
06/04 to 06/11	0.017	0.030	0.58	0.05	0.870	0.530	--
06/11 to 06/18	--	--	--	--	--	--	--
06/18 to 06/25	0.050	0.015	0.44	0.08	0.190	0.290	<0.001
06/25 to 07/02	0.068	0.013	0.57	0.09	0.230	0.320	<0.001
07/02 to 07/09	0.052	0.030	0.99	0.08	0.330	0.530	<0.001
07/09 to 07/16	0.020	0.023	0.35	0.04	0.150	0.180	<0.001
07/16 to 07/23	0.081	0.004	0.34	0.12	0.170	0.390	<0.001
07/23 to 07/30	0.023	0.032	0.29	0.04	0.100	0.120	<0.001
07/30 to 08/06	0.069	0.078	0.51	0.15	0.290	0.400	<0.001
08/06 to 08/13	a0.034	a0.017	a<0.03	a0.05	a0.040	a0.090	a<0.001
08/13 to 08/20	0.021	0.020	0.83	0.05	0.210	0.430	<0.001
08/20 to 08/27	0.084	0.104	0.91	0.15	0.410	0.640	<0.001
08/27 to 09/03	a0.261	a0.121	a1.4	a0.54	a0.470	a0.380	a<0.004
09/03 to 09/10	0.063	0.095	2.2	0.19	0.630	1.34	<0.001
09/10 to 09/16	--	--	--	--	--	--	--
09/16 to 09/24	0.117	0.799	1.9	0.26	0.260	1.51	0.300

a To provide for an adequate sample, 50 milliliters of dilution water was added.

## CHEMICAL QUALITY OF PRECIPITATION

## JAMES RIVER BASIN

470732099140204 WOODWORTH, ND

(National Trends Network precipitation-quality station)

LOCATION.--Lat 47°14'32", long 99°14'02", in SE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub> sec.12, T.142 N., R.68 W., Stutsman County, Hydrologic Unit 10160002, at U.S. Fish and Wildlife Service Northern Prairie Wildlife Research Center, at Woodworth Experiment Station 2.8 mi east and 1 mi south of Woodworth.

PERIOD OF RECORD.--November 1983 to current year (weekly composite).

INSTRUMENTATION.--The composite sample collector is an Aerograph Metrics<sup>1</sup> model 301 wet/dry precipitation collector mounted on ground surface. Precipitation quantity is determined by a Belfort<sup>1</sup> model 5-780 recording rain gage equipped with an event recorder and an Alter-type wind screen. The recording rain gage is installed 17 ft east of the sample collector with gage mouth and collector bucket elevations of 50.75 in above land surface.

REMARKS.--The station is located 300 ft west of an event sample-collection station which was operated by the North Dakota State Health Department (station discontinued 1987). Continuously recording meteorological instrumentation for air temperature, wind speed, and wind direction were installed 9.8 ft above land surface at the event station. Data presented are provisional analyses by the Central Analytical Laboratory of the Illinois State Water Survey and have not completed quality-assurance review by the National Atmospheric Deposition Program. Analyses are determined from water taken from the sample collector.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

PERIOD OF COLLECTION	PRECIP- ITATION TOTAL INCHES/ WEEK (00046)	COL- LECTOR EFFI- CIENCY WET DEPOS. PERCENT (82284)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
09/26 to 10/03	--	--	--	a12	--	a5.0	a0.695	a0.143
10/03 to 10/10	0.80	85	6	5	6.5	5.4	0.040	0.010
10/10 to 10/17	0.09	67	4	3	4.9	5.6	0.040	0.010
10/17 to 10/24	0.15	107	5	5	5.0	5.7	0.150	0.028
10/24 to 10/31	--	--	77	76	7.0	7.6	5.61	4.55
10/31 to 11/07	0.22	82	8	9	4.6	4.8	0.017	0.005
11/07 to 11/14	--	--	--	a7	--	a5.7	a0.689	a0.092
11/14 to 11/21	--	--	--	a4	--	a5.5	a0.041	a0.012
11/21 to 11/28	b0.0	--	--	--	--	--	--	--
11/28 to 12/05	b0.0	--	--	a7	--	a6.5	a0.661	a0.120
12/05 to 12/12	b--	--	--	--	--	--	--	--
12/12 to 12/19	b--	--	--	14	--	4.9	--	--
12/19 to 12/26	--	--	--	a2	--	a5.7	a0.012	a0.005
12/26 to 01/02	--	--	--	10	--	4.8	0.045	0.013
01/02 to 01/09	--	--	--	a4	--	a5.7	a0.131	a0.036
01/09 to 01/16	--	--	8	6	4.8	5.1	0.046	0.009
01/16 to 01/23	b--	--	--	22	--	6.3	--	--
01/23 to 01/30	b0.0	--	--	--	--	--	--	--
01/30 to 02/06	b0.0	--	--	--	--	--	--	--
02/06 to 02/13	b--	--	--	--	--	--	--	--
02/13 to 02/20	0.24	8.3	--	a11	--	a6.2	a0.922	a0.192
02/20 to 02/28	0.12	42	17	22	5.7	6.9	2.12	0.367
02/28 to 03/05	0.0	--	--	a16	--	a7.0	a1.811	a0.308
03/05 to 03/12	0.0	--	--	a4	--	a6.2	a0.289	a0.065
03/12 to 03/19	b0.04	<25	--	18	--	6.7	--	--
03/19 to 03/26	0.07	14	--	a67	--	a7.4	a8.251	a1.298
03/26 to 04/02	0.12	25	--	56	--	6.3	0.782	0.073
04/02 to 04/09	b0.03	--	--	--	--	--	--	--
04/09 to 04/16	b0.01	--	--	--	--	--	--	--
04/16 to 04/23	b0.01	--	--	--	--	--	--	--
04/23 to 05/02	--	--	12	11	5.6	6.5	0.360	0.076
05/02 to 05/07	0.05	80	--	7	5.2	6.0	0.049	0.009
05/07 to 05/14	--	--	24	20	5.5	6.5	0.189	0.029
05/14 to 05/21	0.50	62	23	21	6.4	6.5	0.554	0.088
05/21 to 05/28	0.0	--	--	a4	--	a5.2	a0.047	a0.012
05/28 to 06/04	0.70	104	23	33	5.6	6.9	0.161	0.043
06/04 to 06/11	0.43	109	5	6	4.7	5.5	0.119	0.026
06/11 to 06/18	0.35	97	19	14	6.3	6.5	0.566	0.118
06/18 to 06/25	1.83	102	8	7	5.5	5.9	0.171	0.029
06/25 to 07/02	0.58	93	5	6	6.1	5.7	0.118	0.017
07/02 to 07/09	0.06	100	13	13	5.5	5.1	0.368	0.061
07/09 to 07/16	0.70	107	5	4	5.7	5.7	0.151	0.037
07/16 to 07/23	2.85	104	5	6	5.6	6.1	0.129	0.027
07/23 to 07/30	1.15	95	5	6	5.8	6.0	0.158	0.038
07/30 to 08/06	0.40	90	7	8	5.6	5.9	0.248	0.045
08/06 to 08/13	0.0	--	--	a5	--	a6.2	a0.041	a0.008
08/13 to 08/27	--	--	--	a241	--	a5.6	a12.3	a3.77
08/27 to 09/03	--	--	23	24	5.5	6.7	1.173	0.279
09/03 to 09/10	--	--	--	a76	--	a6.6	a6.39	a1.38
09/10 to 09/17	0.0	--	--	a3	--	a5.7	a0.036	a0.011
09/17 to 09/24	--	--	9	10	5.1	5.1	0.210	0.055

1 The use of brand names in this report is for identification purposes only and does not imply endorsement by the U.S. Geological Survey.

a To provide for an adequate sample, 50 milliliters of dilution water was added.

b Trace of water collected in field sampler.

## CHEMICAL QUALITY OF PRECIPITATION

## JAMES RIVER BASIN

470732099140204 WOODWORTH, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

PERIOD OF COLLECTION	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)
09/26 to 10/03	a0.317	a0.056	a1.6	a0.35	a0.360	a<0.090	a<0.006
10/03 to 10/10	0.044	0.044	0.48	0.05	0.160	0.240	<0.001
10/10 to 10/17	0.021	0.031	0.18	0.05	0.060	0.160	<0.001
10/17 to 10/24	0.027	0.020	0.70	0.03	0.100	0.260	<0.001
10/24 to 10/31	1.11	0.419	10	0.27	0.520	0.270	0.017
10/31 to 11/07	0.017	0.004	0.15	<0.03	0.310	0.060	<0.001
11/07 to 11/14	a0.201	a0.483	a0.71	a0.36	a0.350	a0.470	a<0.005
11/14 to 11/21	a0.198	a0.016	a0.26	a0.16	a0.160	a0.290	a<0.004
11/21 to 11/28	--	--	--	--	--	--	--
11/28 to 12/05	a0.087	a0.155	a0.31	a0.14	a0.120	a0.070	a<0.001
12/05 to 12/12	--	--	--	--	--	--	--
12/12 to 12/19	--	--	--	--	--	--	--
12/19 to 12/26	a0.038	a0.014	a0.07	a0.05	a0.030	a0.050	a<0.001
12/26 to 01/02	0.056	0.020	0.45	0.08	0.340	0.170	<0.001
01/02 to 01/09	a0.093	a0.055	a0.30	a0.10	a0.140	a0.120	a0.004
01/09 to 01/16	0.013	<0.003	0.62	0.04	0.070	0.120	<0.001
01/16 to 01/23	--	--	--	--	--	--	--
01/23 to 01/30	--	--	--	--	--	--	--
01/30 to 02/06	--	--	--	--	--	--	--
02/06 to 02/13	--	--	--	--	--	--	--
02/13 to 02/20	a0.186	a0.148	a1.7	a0.26	a0.330	a0.180	a<0.003
02/20 to 02/28	0.188	0.284	2.1	0.18	0.490	0.420	0.002
02/28 to 03/05	a0.311	a0.205	a1.5	a0.34	a0.330	a0.280	a0.003
03/05 to 03/12	a0.140	a0.070	a0.36	a0.19	a0.070	a0.090	a<0.001
03/12 to 03/19	--	--	--	--	--	--	--
03/19 to 03/26	a0.596	a1.074	a6.9	a0.41	a<0.040	a<0.090	a0.018
03/26 to 04/02	0.235	0.063	5.2	0.32	3.44	4.55	<0.001
04/02 to 04/09	--	--	--	--	--	--	--
04/09 to 04/16	--	--	--	--	--	--	--
04/16 to 04/23	--	--	--	--	--	--	--
04/23 to 05/02	0.155	0.031	1.2	0.16	0.290	0.720	<0.001
05/02 to 05/07	0.150	0.009	0.64	0.20	0.250	0.560	<0.001
05/07 to 05/14	0.062	0.016	2.1	0.11	0.830	1.54	<0.001
05/14 to 05/21	0.215	0.068	2.7	0.23	0.800	1.50	<0.001
05/21 to 05/28	a0.071	a0.022	a0.08	a0.09	a0.030	a0.020	a0.007
05/28 to 06/04	0.144	1.33	1.4	0.25	0.190	3.18	0.623
06/04 to 06/11	0.071	<0.003	0.50	0.11	0.160	0.270	<0.001
06/11 to 06/18	0.135	0.061	1.0	0.21	0.630	0.920	<0.001
06/18 to 06/25	0.057	0.033	0.57	0.08	0.210	0.340	<0.001
06/25 to 07/02	0.063	0.087	0.42	0.09	0.160	0.210	<0.001
07/02 to 07/09	0.104	0.047	1.4	0.18	0.470	0.540	<0.001
07/09 to 07/16	0.026	0.025	0.23	0.06	0.320	0.160	<0.001
07/16 to 07/23	0.057	0.019	0.48	0.08	0.200	0.470	<0.001
07/23 to 07/30	0.041	0.015	0.58	0.05	0.130	0.300	<0.001
07/30 to 08/06	0.053	0.054	0.67	0.11	0.340	0.490	<0.001
08/06 to 08/13	a0.109	a0.058	a<0.03	a0.10	a<0.010	a<0.020	a0.002
08/13 to 08/27	a1.58	a2.84	a42	a1.7	a11.4	a7.50	a0.127
08/27 to 09/03	0.070	0.229	3.0	0.20	0.710	1.23	<0.001
09/03 to 09/10	a0.480	a1.91	a10	a0.72	a3.29	a0.640	a0.230
09/10 to 09/17	a0.062	a0.080	a<0.03	a0.17	a0.020	a0.070	a<0.001
09/17 to 09/24	0.170	0.012	1.3	0.06	0.240	0.360	<0.001

a To provide for an adequate sample, 50 milliliters of dilution water was added.



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## CONVERSION FACTORS AND VERTICAL DATUM

Multiply	By	To obtain
<i>Length</i>		
inch (in.)	$2.54 \times 10^1$	millimeter
	$2.54 \times 10^{-2}$	meter
foot (ft)	$3.048 \times 10^{-1}$	meter
mile (mi)	$1.609 \times 10^0$	kilometer
<i>Area</i>		
acre	$4.047 \times 10^3$	square meter
	$4.047 \times 10^{-1}$	square hectometer
	$4.047 \times 10^{-3}$	square kilometer
square mile (mi <sup>2</sup> )	$2.590 \times 10^0$	square kilometer
<i>Volume</i>		
gallon (gal)	$3.785 \times 10^0$	liter
	$3.785 \times 10^0$	cubic decimeter
	$3.785 \times 10^{-3}$	cubic meter
million gallons (Mgal)	$3.785 \times 10^3$	cubic meter
	$3.785 \times 10^{-3}$	cubic hectometer
cubic foot (ft <sup>3</sup> )	$2.832 \times 10^1$	cubic decimeter
	$2.832 \times 10^{-2}$	cubic meter
cubic-foot-per-second day [(ft <sup>3</sup> /s) d]	$2.447 \times 10^3$	cubic meter
	$2.447 \times 10^{-3}$	cubic hectometer
acre-foot (acre-ft)	$1.233 \times 10^3$	cubic meter
	$1.233 \times 10^{-3}$	cubic hectometer
	$1.233 \times 10^{-6}$	cubic kilometer
<i>Flow</i>		
cubic foot per second (ft <sup>3</sup> /s)	$2.832 \times 10^1$	liter per second
	$2.832 \times 10^1$	cubic decimeter per second
	$2.832 \times 10^{-2}$	cubic meter per second
gallon per minute (gal/min)	$6.309 \times 10^{-2}$	liter per second
	$6.309 \times 10^{-2}$	cubic decimeter per second
	$6.309 \times 10^{-5}$	cubic meter per second
million gallons per day (Mgal/d)	$4.381 \times 10^1$	cubic decimeter per second
	$4.381 \times 10^{-2}$	cubic meter per second
<i>Mass</i>		
ton (short)	$9.072 \times 10^{-1}$	megagram or metric ton

*Sea level:* In this report "sea level" refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)—a geodetic datum derived from a general adjustment for the first-order level nets of both the United States and Canada, formerly called Sea Level Datum of 1929.

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