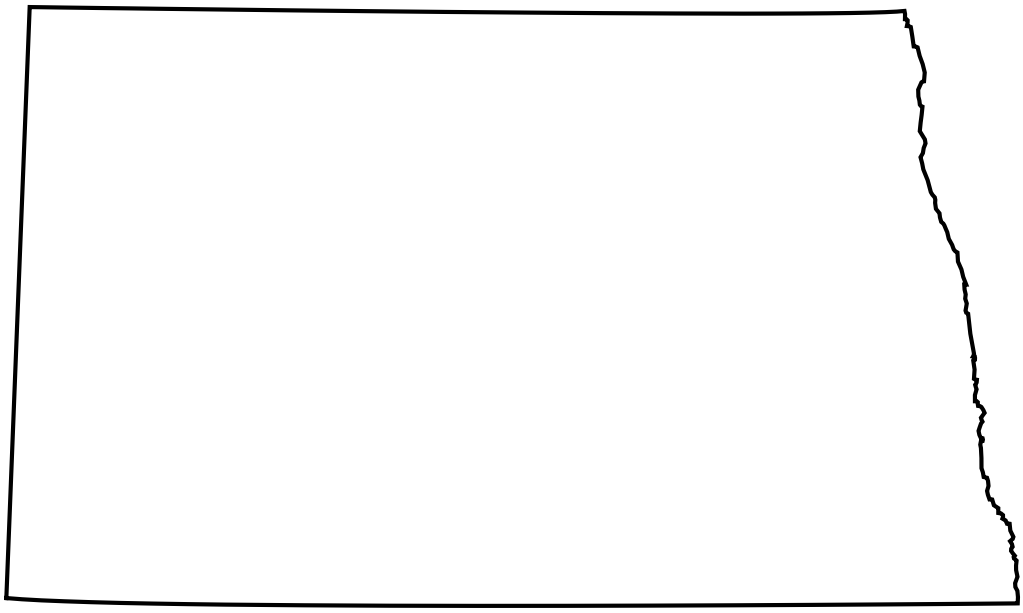
U.S. Department of the Interior
U.S. Geological Survey

# Water Resources Data
# North Dakota
# Water Year 2002

## Volume 1. Surface Water

By R.E. Harkness, R.F. Lundgren, S.W. Norbeck, S.M. Robinson, and B.A. Sether

Water-Data Report ND-02-1



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

# CALENDAR FOR WATER YEAR 2002

## 2001

### OCTOBER

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## 2002

### JANUARY

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### FEBRUARY

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### MARCH

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### JUNE

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### JULY

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### AUGUST

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### SEPTEMBER

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| 29 | 30 | | | | | |

UNITED STATES DEPARTMENT OF THE INTERIOR

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U.S. GEOLOGICAL SURVEY

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2003

## 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 North Dakota District personnel contributed significantly to the collection, processing, and tabulation of the data:

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Water-resources data for the 2002 water year for North Dakota consists of records of discharge, stage, and water quality for streams; contents, stage, and water quality for lakes and reservoirs; and water levels and water quality for ground-water wells. Volume 1 contains records of water discharge for 106 streamflow-gaging stations; stage only for 22 river-stage stations; contents and/or stage for 14 lake or reservoir stations; annual maximum discharge for 35 crest-stage stations; and water-quality for 96 streamflow-gaging stations, 3 river-stage stations, 11 lake or reservoir stations, 8 miscellaneous sample sites on rivers, and 63 miscellaneous sample sites on lakes and wetlands. Data are included for 7 water-quality monitor sites on streams and 2 precipitation-chemistry stations. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating Federal, State, and local agencies in North Dakota.

14. SUBJECT TERMS

*North Dakota, *Hydrologic data, *Surface water, *Water quality, Flow rate, Gaging stations, Lakes, Reservoirs, Chemical analyses, Sediments, Water temperature, Sampling sites, Water analyses, Floods, Drought

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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]


| | Station Number | Page |
|---|---|---|
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| Lake Winnipeg (head of Nelson River) | | |
| RED RIVER OF THE NORTH BASIN | | |
| Red River of the North at Wahpeton (dc) | 05051500 | 31 |
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PRECIPITATION SITES, FOR WHICH CHEMICAL-QUALITY DATA ARE PUBLISHED IN THIS VOLUME


PEMBINA COUNTY

Site 484714097442301, Icelandic State Park ..... 431

STUTSMAN COUNTY

Site 470732099140204, Woodworth ..... 433

# WATER RESOURCES DATA - NORTH DAKOTA, 2002

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

fsThe 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 ($mi^2$) | 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 |
| 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 |
| Big Coulee below Churchs Ferry, ND (d) | 05056270 | 1,260 | 1998-99 |
| Little Coulee at Leeds, ND (d) | 05056300 | 280 | 1956-67 |
| Little Coulee near Brinsmade, ND (d) | 05056390 | 350 | 1975-97 |
| Big Coulee near Churchs Ferry, ND (d) | 05056400 | 1,620 | 1951-97 |
| Comstock Coulee near Minnewaukan, ND (d) | 05056403 | 58 | 1986-88 (1), 1994 |
| Channel A near Penn, ND (d) | 05056410 | 930 | 1984-99 |
| Sheyenne River near Kathryn, ND (d) | 05058600 | -- | 1995-96 |
| 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 |

**WATER RESOURCES DATA - NORTH DAKOTA, 2002**

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

| Station name | Station number | Drainage area ($mi^2$) | Period of record |
|---|---|---|---|
| RED RIVER OF THE NORTH BASIN--Continued | | | |
| Goose River near Portland, ND (d) | 05065500 | 517 | 1940-75, 1981-86 |
| South Branch Goose River near Portland, ND (d) | 05066000 | 362 | 1940-42 |
| Turtle River at Manvel, ND (d) | 05083000 | 613 | 1946-70 (d), 1980-82 (e) |
| Middle Branch Forest River near Whitman, ND (d) | 05083600 | 47.7 | 1961-90 |
| Forest River near Minto, ND (d) | 05084500 | 578 | 1935-44 |
| 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 |
| 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 |
| Lake Metigoshe near Bottineau, ND (e) | 05123000 | 59 | 1931-32 1953-87 1992-96 |
| Oak Creek at Lake Metigoshe Outlet near Bottineau, ND (d) | 05123100 | 59 | 1954-81 |
| Stone Creek near Kramer, ND (d) | 05123500 | 168 | 1986-93, 1999-2000 |
| 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 near Upham, ND (d) | 05123750 | 722 | 1974-80, 1999-2000 |

# WATER RESOURCES DATA - NORTH DAKOTA, 2002

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

| Station name | Station number | Drainage area ($mi^2$) | Period of record |
|---|---|---|---|
| RED RIVER OF THE NORTH BASIN--Continued | | | |
| Boundary Creek near Landa, ND (d) | 05123900 | 230 | 1957-81<br>1985-94<br>1999-2000 |
| 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,<br>1932-33,<br>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 | 1977-82 |
| White Earth River at White Earth, ND (d) | 06332000 | 780 | 1954-82 |
| Missouri River at Sanish, ND (d) | 06332500 | 166,000 | 1928-32 |
| Shell Creek near Parshall, ND (d) | 06332520 | 465 | 1965-82 |
| Little Beaver Creek near Marmarth, ND (d) | 06335000 | 587 | 1938-79 |
| Deep Creek near Amidon, ND (d) | 06335750 | 250 | 1978-83 |
| Missouri River near Elbowwoods, ND (d) | 06337500 | 179,800 | 1940-54 |
| Missouri River below Garrison Dam, ND (d) | 06339000 | 181,400 | 1948-69,<br>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 | 1977-86 |
| 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 |

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

| Station name | Station number | Drainage area ($mi^2$) | 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 | 1978-84 |
| 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 | 1977-81 |
| 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 | 1977-82 |
| Hagel Creek near Center, ND (d) | 06342230 | 45.6 | 1977-82 |
| 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 Dickinson, ND (d) | 06344300 | 440 | 1983-96 |
| 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 |
| Wilson Creek near Glen Ullin, ND (d) | 06347100 | 41.4 | 1965-70 |
| Heart River near Lark, ND | 06348000 | 2,750 | 1946-95 |
| 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 | 1975-83 |
| 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 |
| Cannonball River near New Leipzig, ND (d) | --- | 1,180 | 1943-50 |

# WATER RESOURCES DATA - NORTH DAKOTA, 2002

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

| Station name | Station number | Drainage area ($mi^2$) | Period of record |
|---|---|---|---|
| MISSOURI RIVER BASIN--Continued | | | |
| 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 |
| Porcupine Ceek near Fort Yates, ND (d) | 06354815 | 220 | 1991-99 |
| 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 | 1958-94 |
| 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 |

## 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 ($mi^2$) | 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<br>specific conductance | 1967-81<br>1968-81 |
| Red River of the North below Fargo, ND | 05054020 | 6,820 | temperature<br>specific conductance | 1973-82<br>1973-82 |
| Sheyenne River above Harvey, ND | 05054500 | 424 | temperature | 1954 |
| Sheyenne River near Warwick, ND | 05056000 | 2,070 | temperature<br>specific conductance | 1951-53, 1955-62, 1964-80<br>1952-60, 1964-80 |
| Big Coulee near Churchs Ferry, ND | 05056400 | 2,510 | temperature<br>specific conductance | 1983-89<br>1983-89 |
| Channel A near Penn, ND | 05056410 | --- | temperature<br>specific conductance | 1983-89, 1991<br>1983-89 |
| Sheyenne River at Lisbon, ND | 05058700 | 8,190 | temperature<br>specific conductance<br>sediment | 1956-81<br>1964-80<br>1976-79 |
| Sheyenne River near Kindred, ND | 05059000 | 8,800 | temperature<br>specific conductance<br>sediment | 1971-81<br>1976-81<br>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<br>specific conductance | 1974-78<br>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<br>specific conductance<br>sediment | 1962-81<br>1965-81<br>1962-76 |
| Red River of the North at Emerson, Manitoba | 05102500 | 40,200 | temperature<br>specific conductance | 1978-96<br>1978-96 |
| Souris River near Sherwood, ND | 05114000 | 8,940 | sediment | 1975-81 |
| Souris River near Foxholm, ND | 05116000 | 9,470 | temperature<br>specific conductance | 1973-81<br>1973-81 |
| Souris River near Verendrye, ND | 05120000 | 11,300 | temperature<br>specific conductance | 1973-83<br>1973-83 |
| Deep River below Cut Bank Creek near Upham, ND | 05123760 | 1,722 | temperature<br>specific conductance<br>sediment | 1974-81, 1989<br>1974-81<br>1989 |
| Turtle River at Turtle River State Park near Arvilla, ND | 05082625 | 311 | temperature<br>specific conductance | 1993-97<br>1993-97 |
| Souris River near Westhope, ND | 05124000 | 16,900 | temperature<br>specific conductance<br>sediment | 1974-81<br>1974-81<br>1956-59, 1989 |
| Missouri River near Williston, ND | 06330000 | 164,500 | temperature<br>specific conductance | 1952-65<br>1952-60, 1965 |

**WATER RESOURCES DATA - NORTH DAKOTA, 2002**

DISCONTINUED CONTINUOUS-RECORD SURFACE-WATER-QUALITY STATIONS

| Station name | Station number | Drainage area ($mi^2$) | Type of record | Period of record (water years) |
|---|---|---|---|---|
| Bear Den Creek near Mandaree, ND | 06332515 | 74 | temperature<br>specific conductance | 1969-71, 1989-91<br>1969-71 |
| Little Missouri River at Marmarth, ND | 06335500 | 4,640 | temperature<br>sediment | 1952-54<br>1952-54 |
| Little Missouri River at Medora, ND | 06336000 | 6,190 | temperature<br>sediment | 1947-49<br>1946-51 |
| Little Missouri River near Watford City, ND | 06337000 | 8,310 | temperature<br>specific conductance<br>sediment | 1972-81<br>1972-81<br>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<br>sediment | 1964-65<br>1946-49, 1964-65 |
| Knife River at Hazen, ND | 06340500 | 2,240 | temperature<br>specific conductance | 1975-82<br>1975-82 |
| Missouri River near Hensler, ND | 06340900 | 183,000 | temperature | 1967-77 |
| Missouri River at Bismarck, ND | 06342500 | 186,400 | temperature<br>specific conductance<br>sediment | 1967-75<br>1972-75<br>1972-81 |
| Heart River near Richardton, ND | 06345500 | 1,240 | sediment | 1946-52 |
| Heart River near Mandan, ND | 06349000 | 3,310 | temperature<br>specific conductance<br>sediment | 1972-76, 1978-82<br>1972-76, 1978-82<br>1972-76 |
| Missouri River near Schmidt, ND | 06349700 | 191,700 | temperature | 1967-75 |
| Cannonball River at Regent, ND | 06350000 | 580 | temperature<br>specific conductance<br>sediment | 1965-66<br>1965-66<br>1965-66 |
| Cedar Creek near Pretty Rock, ND | 06352500 | 1,340 | sediment | 1946-49 |
| Cannonball River at Breien, ND | 06354000 | 4,100 | temperature<br>specific conductance<br>sediment | 1972-82, 1991<br>1972-82<br>1972-76 |
| North Fork Grand River at Haley, ND | 06355000 | 509 | temperature | 1951-52 |
| James River at LaMoure, ND | 06470500 | 4,390 | temperature<br>specific conductance | 1953-75, 1977-96<br>1976-96 |
| James River at Oakes, ND | 06470800 | 5,320 | temperature<br>specific conductance | 1983-99<br>1983-99 |
| James River at Dakota Lake Dam near Ludden, ND | 06470875 | 5,480 | temperature<br>specific conductance | 1983-99<br>1983-99 |
| Pilot Drain at Oakes, ND | 06470833 | 5.10 | temperature<br>specific conductance | 1972-80, 1982<br>1972-80, 1982 |
| James River at North Dakota-South Dakota State line | 06470878 | 6,650 | temperature<br>specific conductance | 1974-88<br>1974-88 |

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## 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 106 streamflow-gaging stations; stage only for 22 river-stage stations; contents and/or stage for 14 lake or reservoir stations; annual maximum discharge for 35 crest-stage stations; and water quality for 96 streamflow-gaging stations, 3 river-stage stations, 11 lake or reservoir stations, 8 miscellaneous sample sites on rivers, and 63 miscellaneous sample sites on lakes and 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 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 l975-95 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 have been 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, 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-2002-1." For archiving and general distribution, the reports for l971-74 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) 250-7406.

## 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, Dale Frink, State Engineer; North Dakota Department of Health, Terry L. Dwelle, M.D., State Health Officer; Devils Lake Basin Joint Water Resource Board, Mike Connor, Director; 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 Resource Board, Donald Elston, Chairman; Red River Watershed Management Board, Ronald Osowski, Chairman; Southeast Cass Water Resources District, Thomas L. Fischer, Chairman; City of Minot, Curt Zimbleman, Mayor; North Dakota Department of Transportation, D. A. Sprynczynatyk, P.E., Director; Cass County Joint Water Resource District, Thomas L. Fischer, Chairman; Nelson County Water Resource District, Ben Varnson, Chairman; Three Affiliated Tribes, Tex G. Hall, Tribal Chairman; Spirit Lake Sioux Nation, Phillip G. Longie, Tribal Chairman.

Assistance with funds or services was given by the U.S. Army Corps of Engineers for 20 streamflow-gaging stations, 17 river-stage stations, 2 reservoir stations, 1 crest-stage gage, and water quality for 2 streamflow-gaging stations; the U.S. Bureau of Reclamation for 4 streamflow-gaging stations, 1 river-stage station, 1 lake station, and water quality for 2 streamflow-gaging stations and for 2 lake or reservoir stations; International Joint Commission of the U.S. State Department for 3 streamflow-gaging stations and 1 reservoir

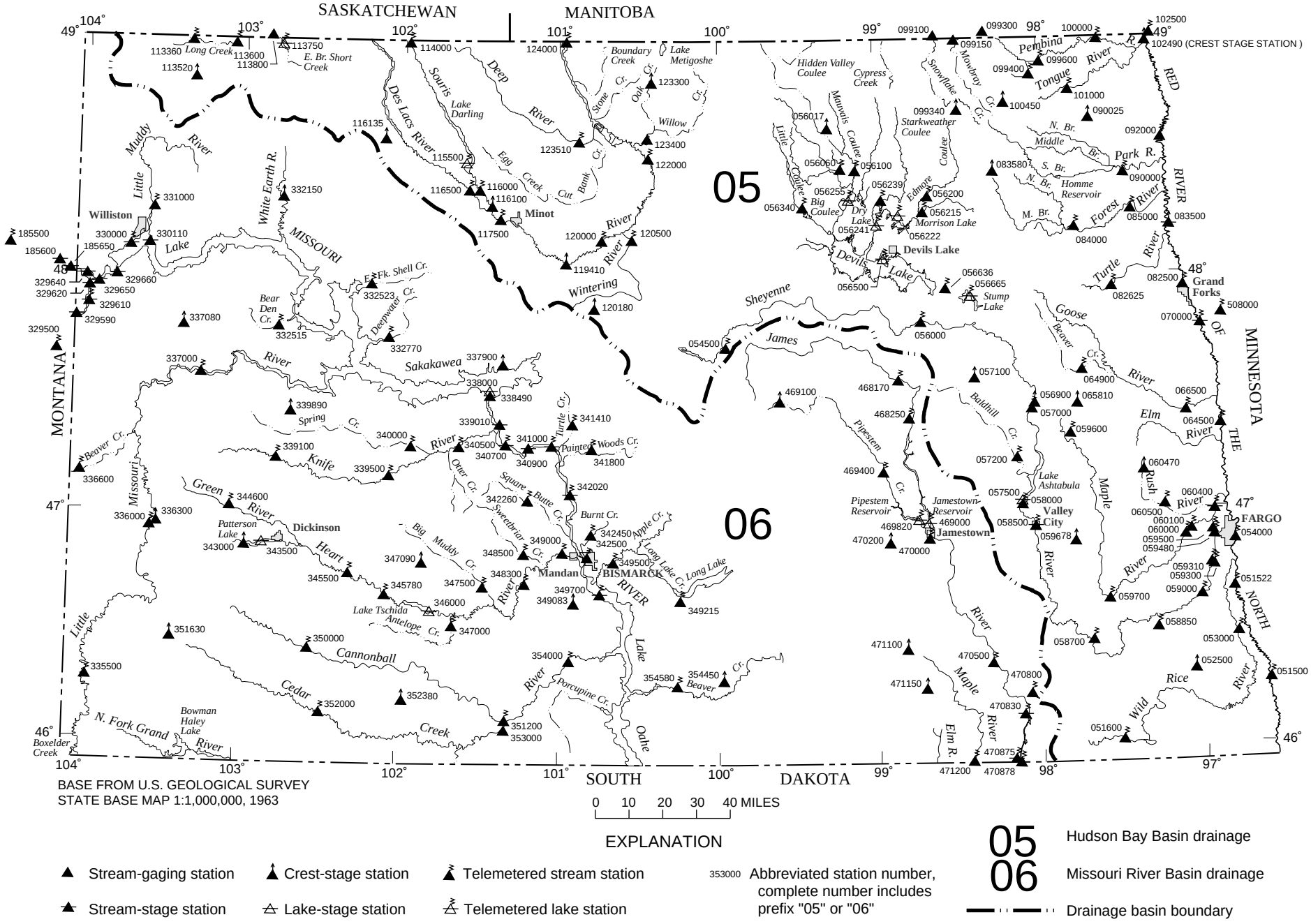


**Figure 1.** Location of active surface-water gaging stations.

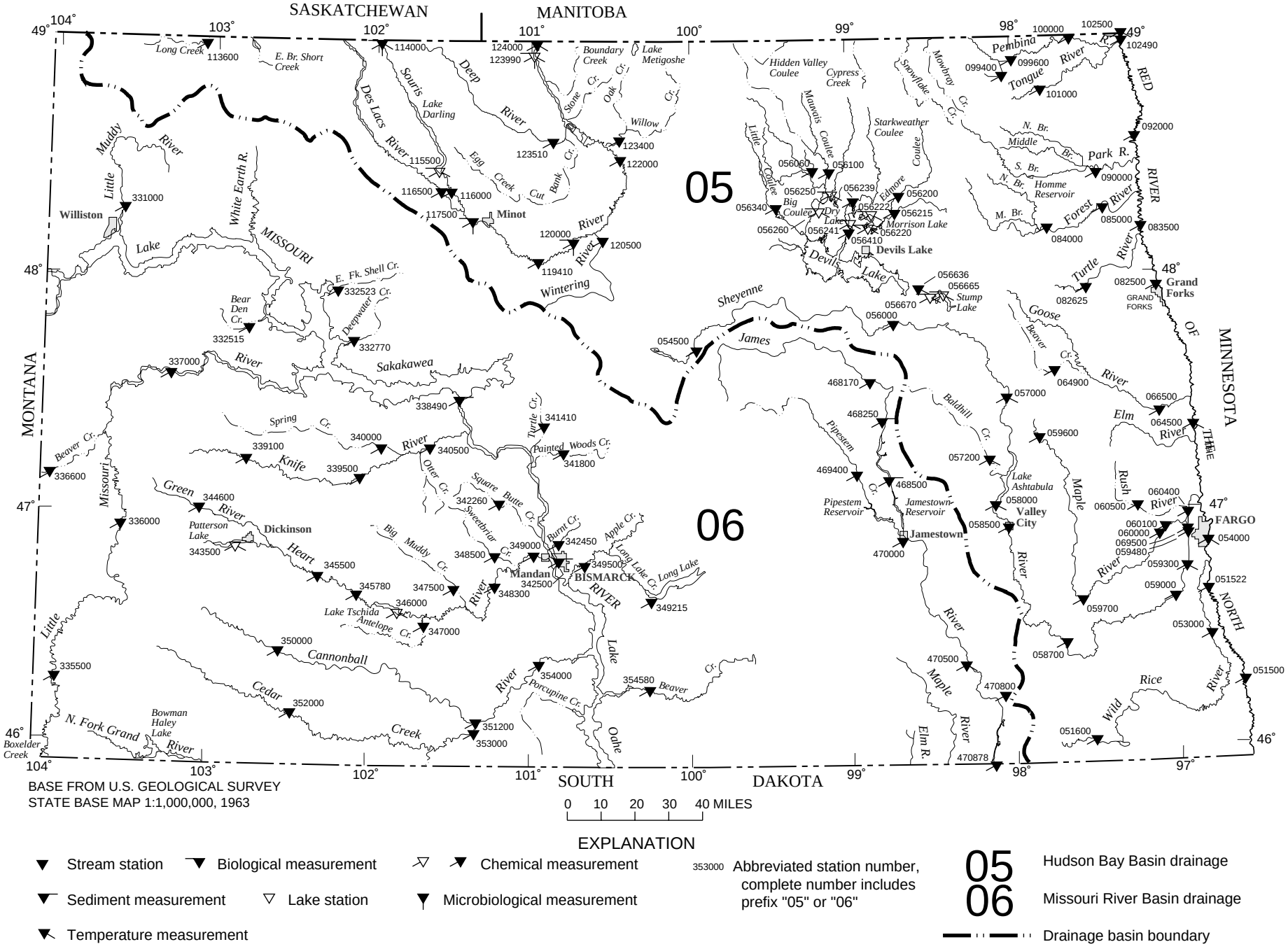


**Figure 2.** Location of active surface-water-quality stations.

station; the U.S. Fish and Wildlife Service for 7 streamflow-gaging stations and water quality for 2 reservoir stations; and the U.S. Forest Service for 1 streamflow-gaging station.

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, Climatography 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 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, 2001, 2002, Climatological data, North Dakota: Asheville, North Carolina, v. 110, no. 10-12, and v. 111, no. 1-9).

North Dakota is divided into nine climatological divisions (fig. 3). Precipitation during water year 2002 ranged from about 4.9 inches (30 percent) less than normal in the south-central division to about 4.2 inches (21 percent) greater than normal in the east-central division. A comparison of monthly precipitation for water year 2002 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.

Statewide monthly precipitation was less than normal from October through May and ranged from 16 percent less than normal in October to 68 percent less than normal in February. The largest deficit was in May when statewide precipitation was 1.0 inch less than the normal 2.3 inches. Precipitation was less than normal in all nine climatological divisions in November, February, April, and May.

During June, when statewide precipitation usually is greatest, five of the nine climatological divisions reported greater-than-normal precipitation. The central, southwest, south-central, and southeast divisions had less-than-normal precipitation. Statewide monthly mean precipitation was about 0.6 inch (20 percent) greater than normal, and total precipitation ranged from about 1.4 inches (46 percent) less than normal in the south-central division to about 3.2 inches (105 percent) greater than normal in the northeast division.

Statewide monthly mean precipitation during July was about 0.7 inch (27 percent) greater than normal. Total precipitation ranged from about 1.6 inches less than normal in the north-central division to about 3.4 inches (118 percent) greater than normal in the east-central division.

Statewide monthly mean precipitation during August was about 1.0 inch (46 percent) greater than normal, and total precipitation ranged from about 0.4 inch (23 percent) less than normal in the southwest division to about 3.3 inches (137 percent) greater than normal in the northeast division.

During September, all nine climatological divisions reported less-than-normal precipitation. Statewide monthly mean precipitation was about 0.7 inch (41 percent) less than normal.

Temperatures during October were slightly below normal statewide. November through February was particularly mild and had statewide monthly mean temperatures that averaged about 5°F to 10°F above normal. Statewide monthly mean temperature during March was about 16°F (10°F below normal) and April temperatures averaged about 38°F (4°F below normal). The influence of temperatures on streamflow in North Dakota is diminished substantially after the snowpack has melted, and temperatures have 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 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 discharges for the period of record for Bear Den Creek near Mandaree, which is in the west-central division, and for Cedar Creek near Haynes, which is in the southwest division, occur in March, whereas the largest mean monthly discharges for the remaining streamflow-gaging stations occur in April.

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

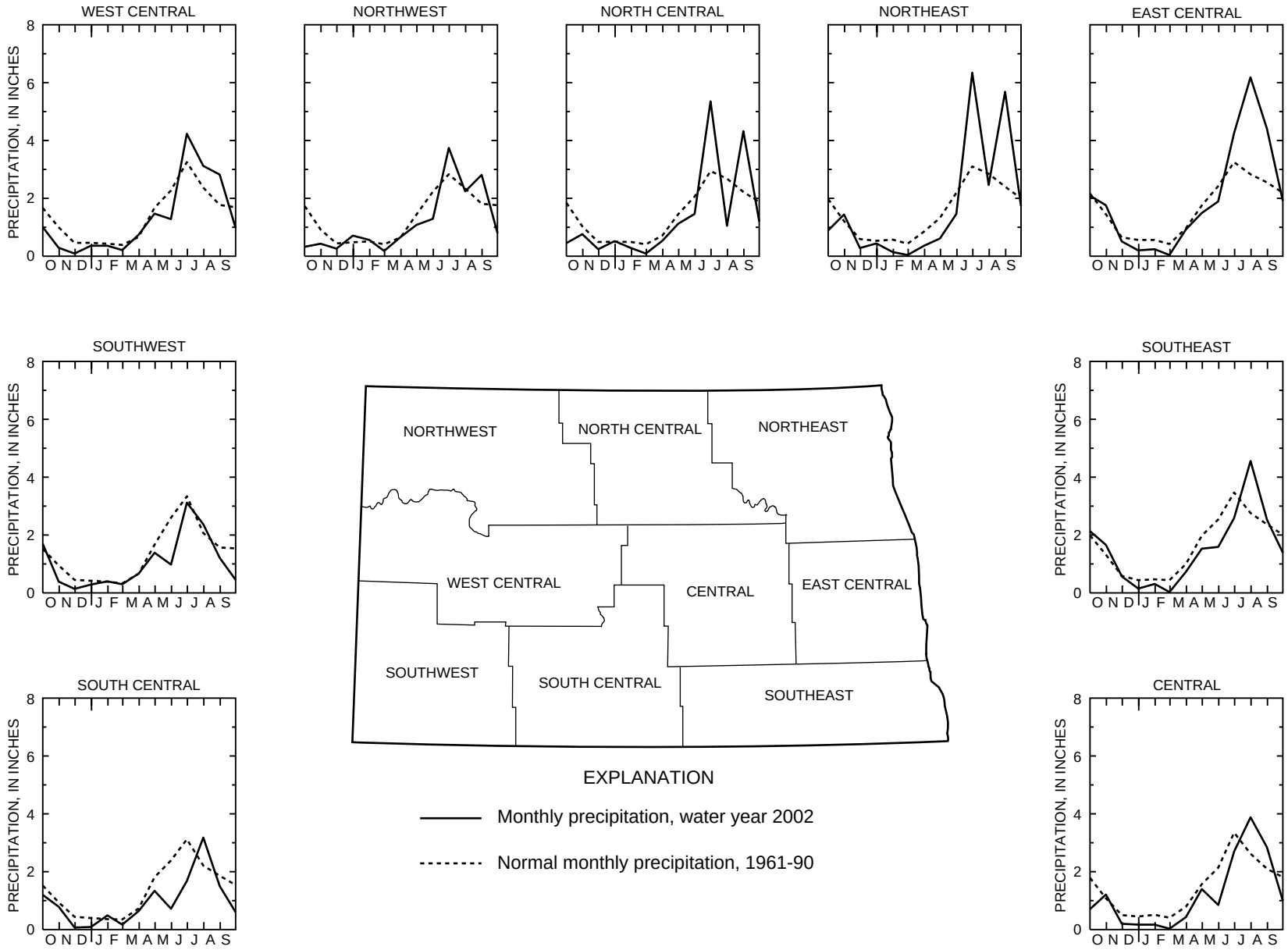


**Figure 3.** Comparison, by climatological division, of monthly precipitation, water year 2002, to normal monthly precipitation, 1961-90.

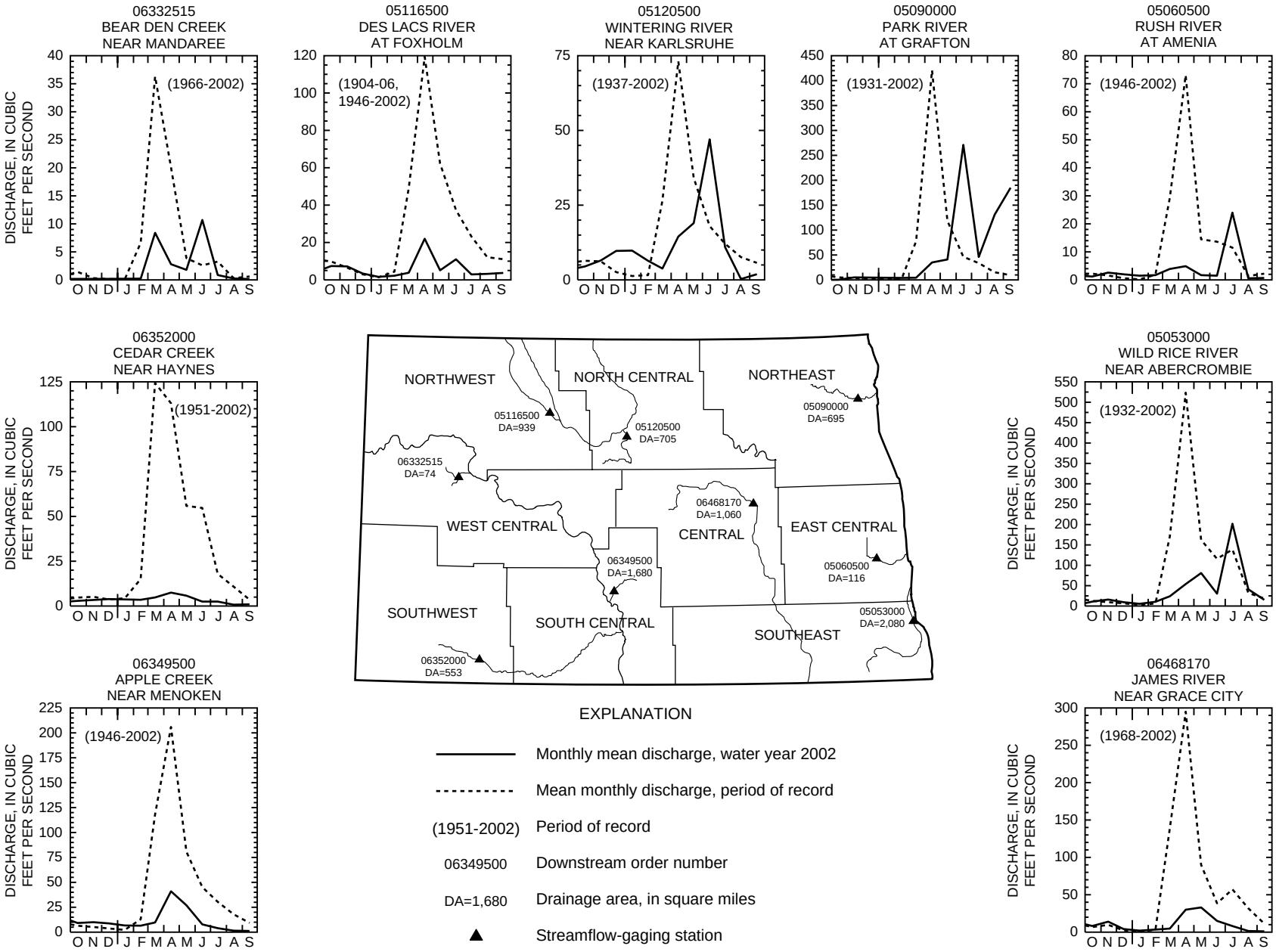


**Figure 4.** Comparison of monthly mean discharge during water year 2002 to mean monthly discharge for the period of record.

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--57 years (1946-2002) in the case of Apple Creek near Menoken.

According to the National Weather Service "Weekly Palmer Drought Index Report" (written commun., 2002), western North Dakota experienced drought conditions at the beginning of the water year while central and eastern North Dakota were moist. Conditions were classified as mild drought in the southwest and northwest climatological divisions; as extremely moist in the central division; and as very moist in the southeast, east-central and northeast divisions.

Because of less-than-normal precipitation from October through February and greater-than-normal temperatures from November through February, there was very little accumulation of snow and little potential for spring snowmelt flooding anywhere in the State. By early March the drought had intensified significantly. Conditions were classified as moderate drought in three western climatological divisions, as incipient drought in the central and south-central divisions, and as mild drought in the remaining divisions.

Normal or above normal March temperatures generally are coincident with spring breakup. However, the March temperatures averaged 10°F below normal statewide and no significant runoff occurred.

Spring peak discharges were much less than normal throughout North Dakota (fig. 4). Lack of precipitation in the southwest climatological division resulted in the annual peak discharge for Cedar Creek near Haynes to be the lowest recorded in the 52-year period of record (fig. 4), and the annual mean discharge to be the fourth lowest recorded for the period of record.

By July the drought was classified as extreme in the southwest climatological division (Weekly Palmer Drought Index Report, written commun., 2002). According to the "Monthly Report of River and Flood Conditions" (National Weather Service, written commun., 2002), "Governor Hoeven issued a state fire emergency declaration on May 30, 2002, and a state drought emergency declaration on July 1, 2002. . . . Approximately 12,300 acres have burned. The entire town of Shields was destroyed and the town of Porcupine had to be evacuated."

Although many summer peaks, particularly in the eastern part of the State, exceeded the snowmelt peaks, no peaks approached the peaks of record. Summer peaks that exceeded snow-melt peaks are shown in figure 4 in the hydrographs for Bear Den Creek near Mandaree, Wintering River near Karlsruhe, Park River at Grafton, Rush River at Amenia, and Wild Rice River near Abercrombie.

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 1999, the water level increased each year as a result of greater-than-normal precipitation and runoff in the basin. During 2000, for the first time since 1993, the maximum water level did not exceed the maximum from the previous year. In water year 2001, Devils Lake reached a new period-of-record maximum of 1,448 feet on July 22. However, during 2002 the lake did not set a new maximum level.

As Devils Lake rises, the surface area increases and requires greater volumes of inflow for each incremental increase in elevation. For example, at an elevation of 1,422.4 feet (the lake level at the end of the 1987-92 drought), the surface area of the lake is about 44,000 acres, whereas at an elevation of 1,447 feet, the surface area of the lake is about 124,000 acres.

During the 2001 water year, Devils Lake flowed over the divide into Stump Lake for the first time since records have been kept. The elevation of the divide is 1,446.5 feet (James Landenberger, North Dakota State Water Commission, oral commun., 2002). Although Stump Lake increased more than a foot during the water year, it remained almost 35 feet lower than Devils Lake.

## Chemical Quality of Streamflow

Chemical quality of streamflow at any particular site is dependent upon many factors, including source of streamflow, composition of soil over which water flows, location, and time of year; therefore, the quality of streamflow varies considerably across the State. 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 were selected to show the water-quality variability in rivers throughout the State. Specific conductance, an indicator of dissolved solids in water, is used to show the 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 2002 water year for each station are shown in table 1.

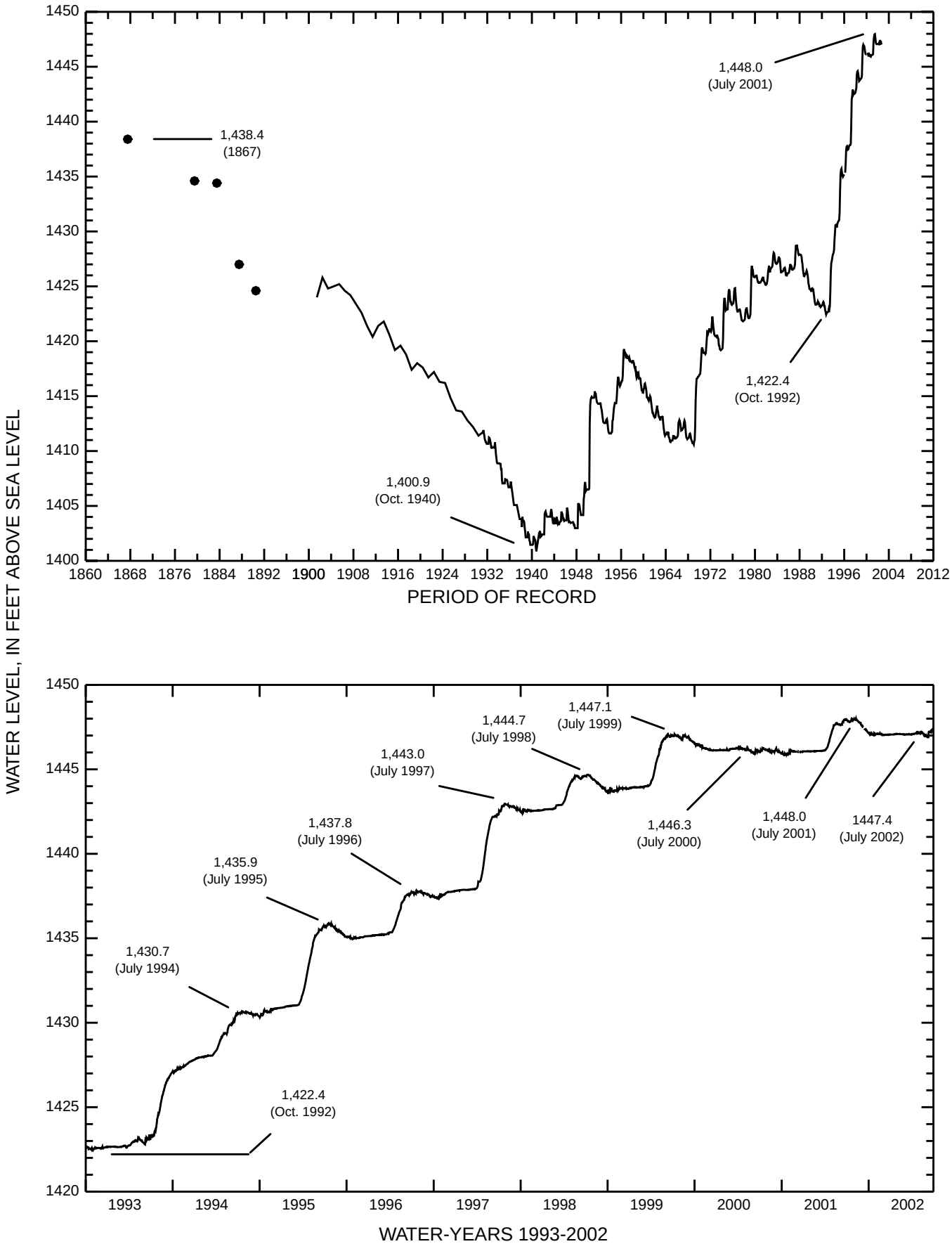


**Figure 5.** Devils Lake water levels for the period of record and for water years 1993-2002.

**Table 1.** Statistical summary of specific-conductance values for the period of record and listing of measured specific-conductance values for water year 2002

[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 2002 | Period of record |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **05082500 Red River of the North at Grand Forks (period of record, water years 1949, 1956-2002)** | | | | | | | | | | | | | | |
| Mean | 524 | 624 | 638 | 600 | 588 | 512 | 462 | 577 | 555 | 501 | 519 | 510 | 548 | 535 |
| Maximum | 700 | 925 | 985 | 1,040 | 900 | 910 | 757 | 856 | 829 | 675 | 753 | 674 | 830 | 1,040 |
| Minimum | 399 | 440 | 468 | 275 | 400 | 305 | 200 | 325 | 348 | 280 | 266 | 340 | 360 | 200 |
| Number of values | 72 | 45 | 50 | 55 | 52 | 78 | 181 | 98 | 81 | 86 | 67 | 56 | 8 | 921 |
| Measured values for water year 2002 | 534 | 830 | -- | 572 | 585 | -- | 453<br>496 | -- | 360 | -- | 554 | -- | -- | -- |
| **05114000 Souris River near Sherwood (period of record, water years 1970, 1972-2002)** | | | | | | | | | | | | | | |
| Mean | 1,238 | 1,382 | 1,631 | 1,761 | 1,790 | 1,132 | 788 | 925 | 1,049 | 1,088 | 1,098 | 1,100 | 1,156 | 1,172 |
| Maximum | 2,240 | 2,460 | 2,230 | 2,770 | 2,920 | 3,500 | 2,510 | 2,460 | 1,530 | 1,650 | 2,060 | 1,960 | 1,510 | 3,500 |
| Minimum | 710 | 925 | 1,250 | 1,280 | 540 | 200 | 277 | 345 | 310 | 540 | 128 | 720 | 860 | 128 |
| Number of values | 38 | 37 | 14 | 27 | 31 | 52 | 73 | 35 | 42 | 37 | 42 | 24 | 14 | 452 |
| Measured values for water year 2002 | 860 | 1,200 | -- | 1,480 | 1,440 | 1,070 | 1,270<br>1,030 | 1,060 | 920<br>1,010<br>1,050 | 1,510 | 1,260 | 1,020 | -- | -- |
| **06337000 Little Missouri River near Watford City (period of record, water years 1972-2002)** | | | | | | | | | | | | | | |
| Mean | 2,027 | 2,492 | 2,603 | 2,541 | 1,397 | 987 | 1,542 | 1,590 | 1,537 | 1,735 | 1,470 | 1,944 | 2,052 | 1,663 |
| Maximum | 3,100 | 4,000 | 5,000 | 3,600 | 3,020 | 2,000 | 2,700 | 3,100 | 2,780 | 3,000 | 2,550 | 2,570 | 3,110 | 5,000 |
| Minimum | 720 | 814 | 1,720 | 1,290 | 640 | 400 | 515 | 780 | 750 | 695 | 680 | 900 | 1,330 | 400 |
| Number of values | 85 | 52 | 22 | 15 | 8 | 100 | 69 | 67 | 69 | 40 | 121 | 16 | 8 | 664 |
| Measured values for water year 2002 | 2,050 | 2,390 | -- | 3,110 | -- | -- | 1,490 | 2,280 | 1,560 | 1,330 | 2,210 | -- | -- | -- |
| **06354000 Cannonball River at Breien (period of record, water years 1950, 1971-2002)** | | | | | | | | | | | | | | |
| Mean | 1,610 | 1,972 | 2,531 | 2,412 | 1,793 | 858 | 1,262 | 1,961 | 1,965 | 1,476 | 1,423 | 1,573 | 1,502 | 1,666 |
| 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 | 2,210 | 4,860 |
| Minimum | 650 | 1,240 | 284 | 680 | 190 | 190 | 300 | 481 | 288 | 440 | 500 | 730 | 672 | 190 |
| Number of values | 29 | 39 | 22 | 36 | 33 | 60 | 61 | 49 | 69 | 29 | 52 | 47 | 8 | 526 |
| Measured values for water year 2002 | 1,710 | -- | 2,210 | -- | -- | -- | 970<br>1,360 | 1,900 | -- | 672 | 1,420 | 1,770 | -- | -- |
| **06470500 James River at LaMoure (period of record, water years 1957-2002)** | | | | | | | | | | | | | | |
| Mean | 853 | 962 | 1,171 | 1,482 | 1,318 | 632 | 559 | 802 | 799 | 782 | 752 | 870 | 1,093 | 849 |
| Maximum | 1,210 | 1,300 | 1,550 | 2,580 | 1,780 | 1,350 | 940 | 1,210 | 1,250 | 1,280 | 1,180 | 1,210 | 1,250 | 2,580 |
| Minimum | 480 | 540 | 890 | 340 | 700 | 185 | 160 | 500 | 170 | 170 | 485 | 480 | 840 | 160 |
| Number of values | 38 | 25 | 11 | 32 | 20 | 41 | 61 | 36 | 31 | 26 | 52 | 27 | 3 | 400 |
| Measured values for water year 2002 | -- | -- | -- | -- | -- | -- | -- | 1,190 | 1,250 | 840 | -- | -- | -- | -- |

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 |

In the United States, 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 1, the Red River of the North at Grand Forks (05082500) has the smallest mean monthly 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 medium in the 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 near Sherwood (05114000) 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 high.

The Little Missouri River drains parts of southwestern North Dakota, northwestern South Dakota, northeastern Wyoming, and southeastern Montana. The Cannonball River drains parts of southwestern North Dakota and northwestern South Dakota. Of the five stations listed in table 1, the Little Missouri near Watford City (06337000) and the Cannonball River at Breien (06354000) have the largest mean specific-conductance values for the period of record. The salinity hazard of stream water for irrigation use during the irrigation season (April through October) generally was high in the months when measurements were made for each of these stations. However, in August the salinity hazard on the Cannonball River at Breien was medium.

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 during high flow or when the stored runoff water is released. The salinity hazard of stream water for irrigation use during the irrigation season (April through October) was high in the 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 streamflow representative of undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by human activities. At 10 of these sites, water-quality information is being gathered on major ions and nutrients, primarily to assess the effects of acid deposition on stream chemistry. Additional information on the Hydrologic Benchmark Program can be found at http://water.usgs.gov/hbn/.

National Stream-Quality Accounting Network (NASQAN) monitors the water quality of large rivers within the Nation's largest river basins. From 1995 through 1999, a network of approximately 40 stations was operated in the Mississippi, Columbia, Colorado, and Rio Grande basins. For the period 2000 through 2004, sampling was reduced to a few index stations on the Colorado and Columbia so that a network of 5 stations could be implemented on the Yukon River. Samples are collected with sufficient frequency that the flux of a wide range of constituents can be estimated. The objective of NASQAN is to characterize the water quality of these large rivers by measuring concentration and mass transport of a wide range of dissolved and suspended constituents, including nutrients, major ions, dissolved and sediment-bound heavy metals, common pesticides, and inorganic and organic forms of carbon. This information will be used (1) to describe the long-term trends and changes in concentration and transport of these constituents; (2) to test findings of the National Water-Quality Assessment Program (NAWQA); (3) to characterize processes unique to large-river systems such as storage and re-mobilization of sediments and associated contaminants; and (4) to refine existing estimates of off-continent transport of water, sediment, and chemicals for assessing human effects on the world's oceans and for determining global cycles of carbon, nutrients, and other chemicals. Additional information about the NASQAN Program can be found at http://water.usgs.gov/nasqan/.

The National Atmospheric Deposition Program/National Trends Network (NADP/NTN) provides continuous measurement and assessment of the chemical constituents in precipitation throughout the United States. As the lead federal agency, the USGS works together with over 100 organizations to provide a long-term, spatial and temporal record of

atmospheric deposition generated from a network of 225 precipitation chemistry monitoring sites. This long-term, nationally consistent monitoring program, coupled with ecosystem research, provides critical information toward a national scorecard to evaluate the effectiveness of ongoing and future regulations intended to reduce atmospheric emissions and subsequent impacts to the Nation's land and water resources. Reports and other information on the NADP/NTN Program, as well as all data from the individual sites, can be found at http://bqs.usgs.gov/acidrain/.

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

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

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

## EXPLANATION OF THE RECORDS

The surface-water records published in this report are for water year 2002 that began October 1, 2001, and ended September 30, 2002. A calendar of the water year is provided on the inside of the front cover. The records contain streamflow data 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 indention in the "List of Stations" in the front of this report. Each indention represents one rank. This downstream order and system of indention shows which stations are on tributaries between any two stations and the rank of the tributary on which each station is situated.

The station-identification number is assigned according to downstream order. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream-order position in a list made up of both types of stations. Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete eight-digit number for each station, such as 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$^1/_4$SE$^1/_4$NE$^1/_4$ 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 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 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

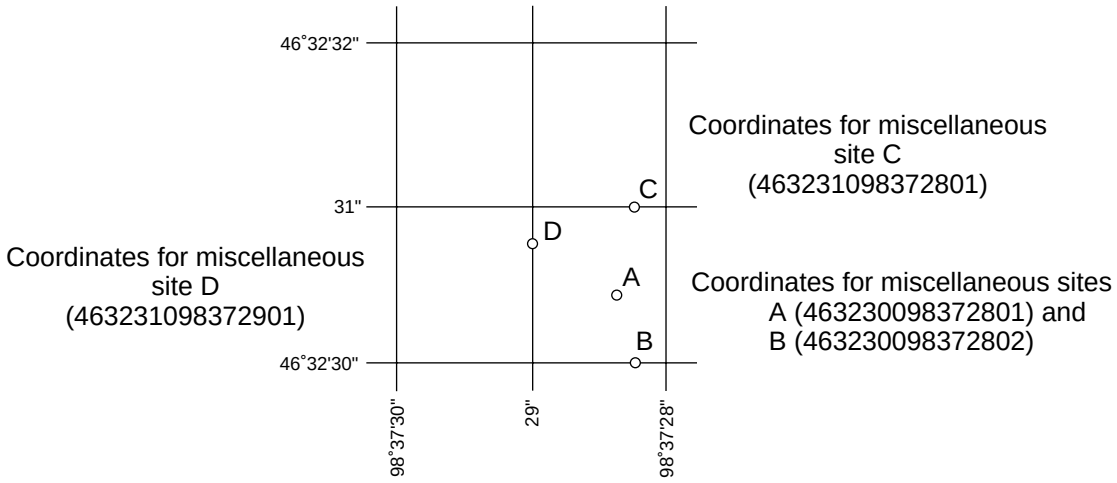


**Figure 6.** System for numbering miscellaneous sites (latitude and longitude).

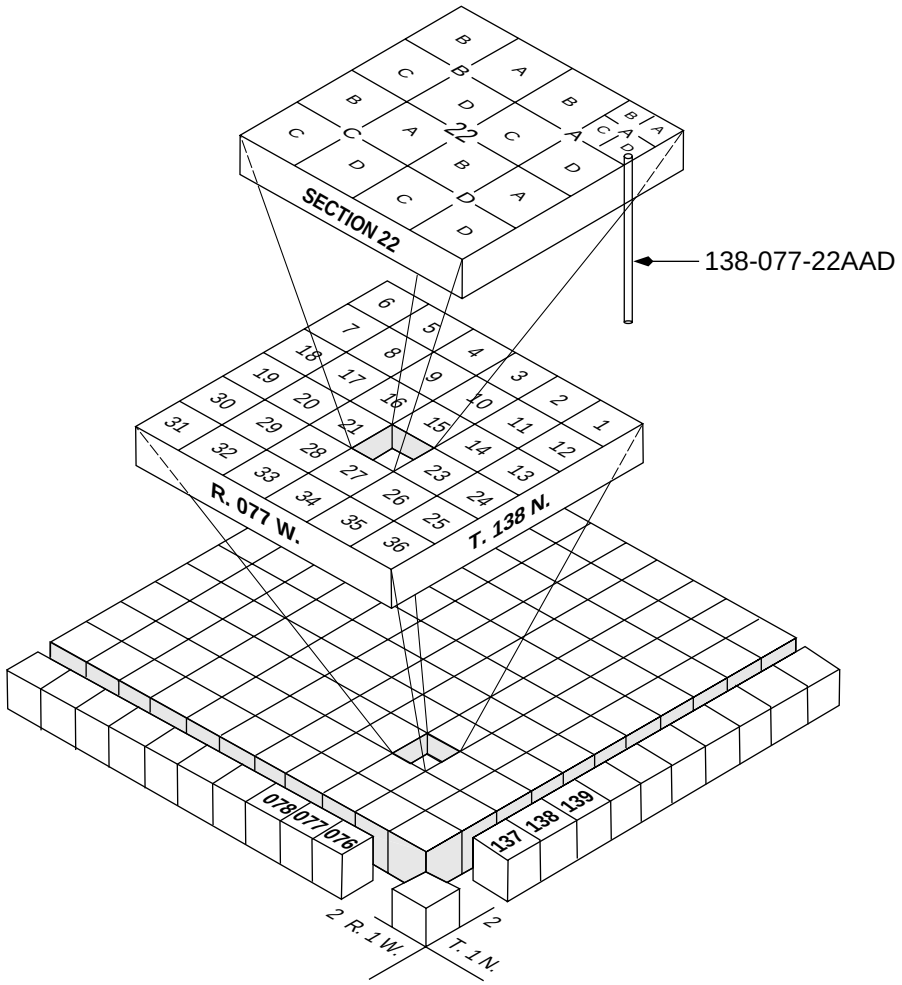


**Figure 7.** System for numbering miscellaneous sites (township and range).

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 sea level (see Definition of Terms), 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 errors in published water-quality records are discovered after publication, appropriate updates are made in the U.S. Geological Survey's distributed data system, NWIS, and subsequently to its web-based National data system, NWISWeb [http://water.usgs.gov/nwis/nwis]. 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 NWIS or NWISWeb to ensure the most recent updates. Updates to NWISWeb are currently made on an annual basis.

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.)

MAXIMUM PEAK FLOW.--The maximum instantaneous peak discharge occurring for the water year or designated period. Occasionally the maximum flow for a year may occur at midnight at the beginning or end of the year, on a recession from or rise toward a higher peak in the adjoining year. In this case, the maximum peak flow is given in the table and the maximum flow may be reported in a footnote or in the REMARKS paragraph in the manuscript.

MAXIMUM PEAK STAGE.--The maximum instantaneous peak stage occurring for the water year or designated period. Occasionally the maximum stage for a year may occur at midnight at the beginning or end of the year, on a recession from or rise toward a higher peak in the adjoining year. In this case, the maximum peak stage is given in the table and the maximum stage may be reported in the REMARKS paragraph in the manuscript or in a footnote. If the dates of occurrence of the maximum peak stage and maximum peak flow are different, the REMARKS paragraph in the manuscript or a footnote may be used to provide further information.

INSTANTANEOUS LOW FLOW.--The maximum 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 use the following unit 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.

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 $ft^3/s$; to the nearest tenth between 1.0 and 10 $ft^3/s$; to whole numbers between 10 and 1,000 $ft^3/s$; and to 3 significant figures for more than 1,000 $ft^3/s$. The number of significant figures used is based solely on the magnitude of the discharge value. 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 given in publications on "Techniques of Water-Resources Investigations," Book 1, Chapter D2; Book 3, Chapter A1, A3, and A4; and Book 9, Chapters A1-A9. 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 Definition of Terms) 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 the 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 (µg/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 (ng/L). Present data above the µg/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.

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. Al1 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 U.S. 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 data system, National Water Information System (NWIS), 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 USGS WATER DATA

The U.S. Geological Survey provides near real-time stage and discharge data for many of the gaging stations equipped with the necessary telemetry and historic daily-mean and peak-flow discharge data for most current or discontinued gaging stations through the World Wide Web (WWW). These data may be accessed at:

http://water.usgs.gov

Some water-quality and ground-water data also are available through the WWW. In addition, data can be provided in various machine-readable formats on magnetic tape or 3-1/2 inch floppy disk. Information about the availability of specific types of data or products, and user charges, can be obtained locally from each of the Water Resources Division District offices (See address on the back of the title page.)

## DEFINITION OF TERMS

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

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

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

**Annual runoff** is 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, acre-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, 325,851 gallons, or 1,233 cubic meters.

**Cubic foot per second per square mile** [CFSM, $(ft^3/s)/mi^2$] is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming the runoff is distributed uniformly in time and area.

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

**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 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 that are capable of growth in brain-heart infusion broth. In the laboratory, they are defined as all the organisms that produce red or pink colonies within 48 hours at 35 °C plus or minus 1.0 °C on KF-streptococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

**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.

**Base flow** is flow in a channel sustained by ground-water discharge in the absence of direct runoff.

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

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

**Bottom material:** See "Bed material."

**Cells/volume** refers to the number of plankton cells or natural units counted using a microscope and grid or counting cell. Results are generally reported as cells or units per milliliter.

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

**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 1 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.

**Continuous-record station** is a site that meets either of the following conditions:

1. Stage or streamflow are recorded at some interval on a continuous basis. The recording interval is usually 15 minutes, but may be less or more frequent.

2. Water-quality, sediment, or other hydrologic measurements are recorded at least daily.

**Control** designates a feature in the channel downstream from a gaging station that physically influences the water-surface elevation and thereby determines the stage-discharge relation at the station. This feature may be a constriction of the channel, a bedrock outcrop, a gravel bar, an artificial structure, or a uniform cross section over a long reach of the channel.

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

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

**Cubic foot per second** (CFS, $ft^3/s$) is the rate of discharge representing a volume of 1 cubic foot passing a given point in 1 second. It is equivalent to approximately 7.48 gallons per second, 448.8 gallons per minute, or 0.02832 cubic meters per second.

**Cubic foot per second-day** (CFS-DAY, Cfs-day, [($ft^3/s$)/d]) is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, 1.9835 acre-feet, 646,317 gallons, or 2,447 cubic meters.

**Daily record** is a summary of streamflow, sediment, or water-quality values computed from data collected with sufficient frequency to obtain reliable estimates of daily mean values.

**Daily record station** is a site for which daily records of streamflow, sediment, or water-quality values are computed.

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

**Discharge,** or flow, is the volume of water (or more broadly, volume of fluid including solid- and dissolved-phase material), that passes a given point in a given period of time.

**Annual 7-day minimum** is the lowest mean discharge for 7 consecutive days in a 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 that passes through a 0.45-micrometer membrane filter. This is a convenient operational definition used by Federal agencies that collect water data. Determinations of "dissolved" constituents are made on subsamples of the filtrate.

**Dissolved oxygen** (DO) content of water in equilibrium with air is a function of atmospheric pressure, temperature, and dissolved-solids concentration of the water. The ability of water to retain oxygen decreases with increasing temperature or dissolved solids, with small temperature changes having the more significant offset. Photosynthesis and respiration may cause diurnal variations in dissolved-oxygen concentration in water from some streams.

**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 that 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 0.4926 to reflect the change. Alternatively, alkalinity concentration (as mg/L $CaCO_3$) can be converted to carbonate concentration by multiplying by 0.60.

**Drainage area** of a site on a stream is that area, measured in a horizontal plane, that has a common outlet at the site for its surface runoff. 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 Earth's surface that is occupied by a drainage system with a common outlet for its surface runoff . (see "Drainage area")

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

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

**Gage height** (G.H.) is the water-surface elevation referenced to the 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 site on a stream, canal, lake, or reservoir where systematic observations of stage, discharge, or other hydrologic data are obtained. When used in connection with a discharge record, the term is applied only to those gaging stations where a continuous record of discharge is computed.

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

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

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

**Micrograms per gram** (UG/G, µg/g) is a unit expressing the concentration of a chemical constituent as the mass (micrograms) of the element per unit mass (gram) of material analyzed.

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

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

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

**Miscellaneous site,** or miscellaneous station, is a site where streamflow, sediment, and/or water-quality data are collected once, or more often on a random or discontinuous basis.

**National Geodetic Vertical Datum of 1929** (NGVD of 1929) is a fixed reference adopted as a standard geodetic datum for elevations determined by leveling. It was formerly called "Sea Level Datum of 1929" or "mean sea level." Although the datum was derived from the mean sea level at 26 tide stations**,** it does not necessarily represent local mean sea level at any

particular place. *See NOAA web site: http://www.ngs.noaa.gov/faq.shtml#WhatVD29VD88*

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

**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 average period is 1961 to 1990.

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

**Parameter Code** is a 5-digit number used in the U.S. Geological Survey computerized data system, National Water Information System (NWIS), to uniquely identify a specific constituent or property.

**Partial-record station** is a site where discrete measurements of one or more hydrologic parameters are obtained over a period of time without continuous data being recorded or computed. A common example is a crest-stage gage partial-record station at which only peak stages and flows are recorded.

**Particle size** is the diameter, in millimeters (mm), of a particle determined by sieve or sedimentation methods. The sedimentation method utilizes the principle of Stokes Law to calculate sediment particle sizes. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube, Sedigraph) determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

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

| Classification | Size (mm) | Method of analysis |
|---|---|---|
| Clay | 0.00024 - 0.004 | Sedimentation |
| Silt | 0.004 - 0.062 | Sedimentation |
| Sand | 0.062 - 2.0 | Sedimentation/sieve |
| Gravel | 2.0 - 64.0 | Sieve |

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** or **percent of total** is a unit for expressing the ratio of a particular part of a sample or population to the total sample or population, in terms of types, numbers, weight, or volume.

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

**pH** of water is the negative logarithm of the hydrogen-ion activity. Solutions with pH less than 7 are termed “acidic,” and solutions with a pH greater than 7 are termed “basic.” Solutions with a pH of 7 are neutral. The presence and concentration of many dissolved chemical constituents found in water are, in part, influenced by the hydrogen-ion activity of water. Biological processes including growth, distribution of organisms, and toxicity of the water to organisms are also influenced, in part, by the hydrogen-ion activity of water.

**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).

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

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

**Sea level** or "mean sea level" was formerly used in this series of reports to refer to the National Geodetic Vertical Datum of 1929 (NGVD of 1929).

**Sediment** is solid material that is transported by, suspended in, or deposited from water. It originates mostly from disintegrated rocks; it also 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 or very close to the bed. In this report, bed load is considered to consist of particles in transit from the bed to an elevation equal to the top of the bed-load sampler nozzle (usually within 0.25 ft of the streambed).

**Bed-load discharge** (tons per day) is the quantity of sediment moving as bed load, reported as dry weight, that passes a cross section in a given time.

**Suspended sediment** is the sediment that 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). The entire sample is used for the analysis.

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

**Suspended-sediment discharge** (tons/day) is the quantity of sediment moving in suspension, reported as dry weight, that passes a cross section in a given time. It is calculated in units of tons per day as follows: concentration (mg/L) x discharge ($ft^3/s$) x 0.0027.

**Suspended-sediment load** is a term that refers to material in suspension. The term needs to be qualified, such as “annual suspended-sediment load” or “sand-size suspended-sediment load,” and so on. It is not synonymous with either suspended-sediment discharge or concentration.

**Total sediment discharge** (tons/day) is the sum of the suspended-sediment discharge and the bed-load discharge. It is the total quantity of sediment, reported as dry weight, that passes a cross section in a given time.

**Total sediment load** or total load is a term that refers to the total sediment (bed load plus suspended-sediment load) that is in transport. The term needs to be qualified, such as “annual suspended-sediment load” or “sand-size suspended-sediment load,” and so on. It is not synonymous with total sediment discharge.

**Seven-day 10-year low flow** (7Q10, $7Q_{10}$) is the minimum flow averaged over 7 consecutive days that is expected to occur on average, once in any 10-year period. The 7Q10 has a 10-percent chance of occurring in any given year.

**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 °C. Specific conductance is related to the type and concentration of ions in solution and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is from 55 to 75 percent of the specific conductance (in microsiemens). This relation is not constant from stream to stream, and it may vary in the same source with changes in the composition of the water.

**Stage**: See “Gage height.”

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

**Streamflow** is the discharge that occurs in a natural channel. Although the term “discharge” can be applied to the flow of a canal, the word “streamflow” uniquely describes the discharge in a surface stream course. The term “streamflow” is more general than “runoff” as streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

**Surface area** of a lake or impoundment is that area encompassed by the boundary of the lake or impoundment as shown on U.S. Geological Survey topographic maps, or on other available maps or photographs. The computed surface areas reflect the water levels of the lakes or impoundments at the times when the information for the maps or photographs was obtained.

**Suspended** (as used in tables of 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 suspended-sediment sample that is retained on a 0.45-micrometer membrane filter has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete

dissolution of all the particulate matter is not achieved by the digestion treatment and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the sample. To achieve comparability of analytical data, equivalent digestion procedures are required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Determinations of "suspended, recoverable" constituents are made either by 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 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. 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 concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the year.

**Tons per acre-foot** is 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, tons/d) is the rate representing a mass of 1 ton of a constituent in streamflow passing a cross section in 1 day. It is equivalent to 2,000 pounds per day, or 0.9072 metric tons per day.

**Total** is the total amount of a given constituent in a representative 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 suspended-sediment mixture and that the analytical method determined all of the constituent in the sample.)

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

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

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

**Total recoverable** is the amount of a given constituent that is in solution after a representative 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** is a measurement of the collective optical properties of a water sample that cause light to be scattered and absorbed rather than transmitted in straight lines; the higher the intensity of scattered light, the higher the turbidity. Turbidity is expressed in nephelometric turbidity units (NTU) or Formazin turbidity units (FTU) depending on the method and equipment used.

**Water level** is the water-surface elevation or stage of the free surface of a body of water above or below any datum (see "Gage height"), or the surface of water standing in a well, usually indicative of the position of the water table or other potentiometric surface.

**Water table** is the surface of a ground-water body at which the water is at atmospheric pressure.

**Water year** in U.S. 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, 2001, is called the "2001 water year."

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

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

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

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

The USGS publishes a series of manuals titled the "Techniques of Water-Resources Investigations" that describe procedures for planning and conducting specialized work in water-resources investigations. The material in these manuals 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. Each chapter then is limited to a narrow field of the section subject matter. This publication format permits flexibility when revision or printing is required.

Manuals in the Techniques of Water-Resources Investigations series, which are listed below, are available online at http://water.usgs.gov/pubs/twri/. Printed copies are available for sale from the USGS, Information Services, Box 25286, Federal Center, Denver, Colorado 80225 (an authorized agent of the Superintendent of Documents, Government Printing Office). Please telephone "1-888-ASK-USGS" for current prices, and refer to the title, book number, section number, chapter number, and mention the "U.S. Geological Survey Techniques of Water-Resources Investigations." Other products can be viewed online at http://www.usgs.gov/sales.html, or ordered by telephone or by FAX to (303)236-4693. Order forms for FAX requests are available online at http://mac.usgs.gov/isb/pubs/forms/. Prepayment by major credit card or by a check or money order payable to the "U.S. Geological Survey" is required.

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***Section D. Water Quality***

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

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

**Book 2. Collection of Environmental Data**

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

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

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

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

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

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

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

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

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

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

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

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

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

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***Section B. Ground-Water Techniques***

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

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

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

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4–A3. *Statistical methods in water resources*, by D.R. Helsel and R.M. Hirsch: USGS–TWRI book 4, chap. A3. 1991. Available only online at http://water.usgs.gov/pubs/twri/twri4a3/. (Accessed August 30, 2002.)

***Section B. Surface Water***

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

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

**Book 5. Laboratory Analysis**

***Section A. Water Analysis***

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

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

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

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

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

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

***Section C. Sediment Analysis***

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

**Book 6. Modeling Techniques**

***Section A. Ground Water***

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

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

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

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

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

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

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

**Book 7. Automated Data Processing and Computations**

***Section C. Computer Programs***

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

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

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

**Book 8. Instrumentation**

***Section A. Instruments for Measurement of Water Level***

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

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

***Section B. Instruments for Measurement of Discharge***

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

**Book 9. Handbooks for Water-Resources Investigations**

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

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

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

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

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

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

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

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

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

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

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

### Water-Quality-Control Data

Data generated from quality-control (QC) samples are a requisite for evaluating the quality of the sampling and processing techniques as well as data from the actual samples themselves. Without QC data, environmental sample data cannot be adequately interpreted because the errors associated with the sample data are unknown. The various types of QC samples collected by this District are described in the following section. Procedures have been established for the storage of water-quality-control data within the U.S. Geological Survey. These procedures allow for storage of all derived QC data and are identified so that they can be related to corresponding environmental samples.

The dates and times of QC samples are noted in the water quality tables, but the QA data are not displayed. The various types of QA data are available upon request from the U.S. Geological Survey North Dakota District office (see address on back of the title page of this report).

#### Blank Samples

Blank samples are collected and analyzed to ensure that environmental samples have not been contaminated by the overall data-collection process. The blank solution used to develop specific types of blank samples is a solution that is free of the analytes of interest. Any measured value signal in a blank sample for an analyte (a specific component measured in a chemical analysis) that was absent in the blank solution is believed to be due to contamination. There are many types of blank samples possible, each designed to segregate a different part of the overall data-collection process. The types of blank samples collected in this District are:

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

Trip blank - a blank solution that is put in the same type of bottle used for an environmental sample and kept with the set of sample bottles before and after sample collection.

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

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

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

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

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

#### Reference Samples

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

#### Replicate Samples

Replicate samples are a set of environmental samples collected in a manner such that the samples are thought to be essentially identical in composition. Replicate samples are collected and analyzed to establish the amount of variability in the data contributed by some part of the collection and analytical process. There are many types of replicate samples possible, each of which may yield slightly different results in a dynamic hydrologic setting, such as a flowing stream. The types of replicate samples collected in this District are:

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

Split sample - a type of replicate sample in which a sample is split into subsamples contemporaneous in time and space.

Spike Samples

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

Dissolved Trace-Element Concentrations

*NOTE.--Traditionally, dissolved trace-element concentrations have been reported at the microgram per liter (µg/L) level. Recent evidence, mostly from large rivers, indicates that actual dissolved-phase concentrations for a number of trace elements are within the range of 10's to 100's of nanograms per liter (ng/L). Data above the µg/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 Program Office, Illinois State Water Survey, 2204 Griffith Drive, Champaign, IL 61820-7495 (217-333-7873).

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

LOCATION.--Lat 46°15'55", long 96°35'40", in NE$^{1}/_{4}$ 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$^2$, 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 National Geodetic Vertical Datum of 1929. 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 estimated daily discharges, which are poor. Flow regulated by; Orwell Reservoir, flood storage capacity, 13,300 acre-ft at elevation 1,070 ft above mean sea level, adjustment of 1912; Mud Lake, flood storage capacity, 78,600 acre-ft at elevation 981 ft above mean sea level, adjustment of 1912; Lake Traverse, flood storage capacity, 75,100 acre-ft at elevation 981 ft above mean sea level, adjustment of 1912; and numerous other controlled lakes and ponds and several powerplants.

EXTREMES OUTSIDE PERIOD OF RECORD.--A stage of 17.0 ft, discharge, 10,500 ft$^3$/s, occurred in the spring of 1897.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 385 | 469 | e550 | e540 | 572 | e470 | 901 | 999 | 809 | 477 | 903 | 571 |
| 2 | 404 | 497 | e480 | e600 | 529 | e510 | 774 | 931 | 737 | 444 | 871 | 585 |
| 3 | 429 | 496 | e470 | e640 | 499 | e540 | 647 | 946 | 700 | 411 | 863 | 553 |
| 4 | 397 | 483 | e470 | e650 | 435 | e565 | 606 | 978 | 670 | 410 | 806 | 572 |
| 5 | 366 | 469 | e500 | e640 | 509 | e590 | 624 | 909 | 623 | 406 | 730 | 594 |
| 6 | 366 | 461 | e560 | e620 | 574 | e630 | 613 | 904 | 595 | 402 | 666 | 588 |
| 7 | 368 | 455 | e600 | 587 | 610 | e680 | 657 | 838 | 582 | 430 | 626 | 585 |
| 8 | 367 | 439 | e670 | 627 | 608 | e730 | 744 | 909 | 568 | 491 | 630 | 585 |
| 9 | 375 | 407 | e740 | 640 | 607 | e780 | 724 | 1260 | 532 | 688 | 608 | 598 |
| 10 | 444 | 406 | e800 | 625 | 545 | e840 | 721 | 1440 | 529 | 1500 | 601 | 612 |
| 11 | 448 | 408 | e900 | 607 | 594 | e940 | 752 | 1390 | 574 | 2720 | 573 | 588 |
| 12 | 467 | 404 | e960 | 600 | 620 | e1050 | 874 | 1400 | 550 | 3300 | 554 | 562 |
| 13 | 519 | 406 | e950 | 595 | 650 | e1150 | 923 | 1460 | 540 | 2980 | 546 | 516 |
| 14 | 519 | 406 | e880 | 592 | 676 | e1100 | 807 | 1450 | 538 | 2370 | 605 | 479 |
| 15 | 513 | 403 | e730 | e610 | 665 | e1100 | 753 | 1440 | 529 | 2000 | 695 | 477 |
| 16 | 507 | 403 | e600 | e620 | 650 | e1140 | 789 | 1340 | 522 | 1780 | 721 | 476 |
| 17 | 498 | 402 | e530 | e610 | 668 | e1170 | 859 | 1230 | 521 | 1560 | 740 | 463 |
| 18 | 474 | 397 | e480 | 594 | 700 | e1160 | 874 | 1310 | 516 | 1500 | 727 | 449 |
| 19 | 446 | 401 | e410 | 571 | 707 | e1030 | 823 | 1340 | 523 | 1430 | 688 | 448 |
| 20 | 433 | 402 | e420 | 585 | 667 | e930 | 787 | 1320 | 506 | 1360 | 657 | 436 |
| 21 | 434 | 415 | e500 | e575 | 563 | e850 | 787 | 1290 | 474 | 1290 | 703 | 416 |
| 22 | 433 | 442 | e540 | e550 | 537 | e810 | 817 | 1260 | 484 | 1230 | 727 | 416 |
| 23 | 433 | 443 | e440 | e510 | 528 | e760 | 823 | 1210 | 546 | 1160 | 689 | 421 |
| 24 | 433 | 444 | e350 | e470 | 528 | e690 | 796 | 1120 | 538 | 1080 | 611 | 423 |
| 25 | 448 | 459 | e380 | e490 | e440 | 571 | 751 | 1090 | 508 | 982 | 544 | 409 |
| 26 | 455 | 455 | e440 | e495 | e400 | 524 | 763 | 1070 | 507 | 865 | 464 | 399 |
| 27 | 445 | 441 | e540 | e500 | e410 | 525 | 822 | 1030 | 516 | 848 | 278 | 373 |
| 28 | 441 | e280 | e560 | 513 | e440 | 836 | 805 | 977 | 497 | 894 | 299 | 348 |
| 29 | 448 | e240 | e530 | 528 | --- | 1080 | 855 | 1080 | 476 | 883 | 387 | 366 |
| 30 | 450 | e420 | e500 | 549 | --- | 1150 | 1000 | 1220 | 472 | 864 | 379 | 366 |
| 31 | 452 | --- | e500 | 568 | --- | 1060 | --- | 969 | --- | 881 | 493 | --- |
| TOTAL | 13597 | 12653 | 17980 | 17901 | 15931 | 25961 | 23471 | 36110 | 16682 | 37636 | 19384 | 14674 |
| MEAN | 438.6 | 421.8 | 580.0 | 577.5 | 569.0 | 837.5 | 782.4 | 1165 | 556.1 | 1214 | 625.3 | 489.1 |
| MAX | 519 | 497 | 960 | 650 | 707 | 1170 | 1000 | 1460 | 809 | 3300 | 903 | 612 |
| MIN | 366 | 240 | 350 | 470 | 400 | 470 | 606 | 838 | 472 | 402 | 278 | 348 |
| AC-FT | 26970 | 25100 | 35660 | 35510 | 31600 | 51490 | 46550 | 71620 | 33090 | 74650 | 38450 | 29110 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1942 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 347.5 | 327.8 | 306.8 | 291.4 | 313.5 | 714.9 | 1471 | 1153 | 1095 | 838.5 | 454.1 | 355.5 |
| MAX | 1599 | 952 | 967 | 678 | 868 | 2629 | 8717 | 3344 | 2981 | 2787 | 2496 | 2148 |
| (WY) | 1994 | 1987 | 1999 | 1986 | 1998 | 1995 | 1997 | 1997 | 2001 | 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 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1942 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 578631 | | 251980 | | | |
| ANNUAL MEAN | 1585 | | 690.4 | | 636.5 | |
| HIGHEST ANNUAL MEAN | | | | | 1600 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 54.0 | 1977 |
| HIGHEST DAILY MEAN | 9260 | Apr 9 | 3300 | Jul 12 | 12700 | Apr 15 1997 |
| LOWEST DAILY MEAN | 188 | Aug 16 | 240 | Nov 29 | 1.7 | Aug 28 1976 |
| ANNUAL SEVEN-DAY MINIMUM | 381 | Oct 3 | 381 | Oct 3 | 1.7 | Aug 28 1976 |
| MAXIMUM PEAK FLOW | | | 3350 | Jul 12 | 12800 | Apr 15 1997 |
| MAXIMUM PEAK STAGE | | | 10.09 | Jul 12 | a19.42 | Apr 6 1997 |
| INSTANTANEOUS LOW FLOW | | | | | 1.7 | Aug 28 1976 |
| ANNUAL RUNOFF (AC-FT) | 1148000 | | 499800 | | 461100 | |
| 10 PERCENT EXCEEDS | 3260 | | 1110 | | 1460 | |
| 50 PERCENT EXCEEDS | 650 | | 585 | | 398 | |
| 90 PERCENT EXCEEDS | 420 | | 409 | | 110 | |

a Backwater from ice, from floodmark
e Estimated

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

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 01... | 1000 | 472 | -- | -- | -- | 698 | 8.0 | 7.0 | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 07... | 1615 | 583 | -- | -- | -- | 640 | .5 | .0 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 02... | 1100 | 797 | 8.8 | -- | 561 | 543 | 3.0 | 3.5 | 250 | 46.0 | 33.0 | 3.80 | .4 |
| JUN | | | | | | | | | | | | | |
| 07... | 0805 | 583 | -- | -- | -- | 940 | 15.5 | 14.5 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 21... | 0955 | 682 | -- | -- | -- | -- | 15.5 | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 19... | 0815 | 460 | 8.4 | 8.3 | 414 | 412 | 14.0 | 19.0 | 210 | 36.0 | 28.0 | 3.30 | .3 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 01... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 07... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 02... | 15.0 | 11 | 203 | 10.0 | .10 | 95.0 | 699 | 325 | 325 | 2.0 | 20 | <1 | 20 |
| JUN | | | | | | | | | | | | | |
| 07... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 21... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 19... | 11.0 | 10 | 192 | 12.0 | .10 | 26.0 | 349 | 281 | 231 | 4.0 | 40 | 1 | 10 |

| Date | 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 | | | | | |
| 01... | -- | -- | -- | -- | -- |
| JAN | | | | | |
| 07... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 02... | 20 | <.10 | 1 | <1 | 100 |
| JUN | | | | | |
| 07... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 21... | -- | -- | -- | -- | -- |
| SEP | | | | | |
| 19... | 30 | <.10 | 1 | 1 | 160 |

< Less than

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

LOCATION.--Lat 46°39'35", long 96°47'44", in SW$^{1}/_{4}$ 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.

DRAINAGE AREA.--4,300 mi$^2$, 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 National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for estimated daily discharges, which are poor. Flow regulated by Orwell Reservoir, flood storage capacity, 13,300 acre-ft at elevation 1,070 ft above mean sea level, adjustment of 1912; Mud Lake, flood storage capacity, 78,600 acre-ft at elevation 981 ft above mean sea level, adjustment of 1912; Lake Traverse, flood storage capacity, 75,100 acre-ft at elevation 981 ft above mean sea level, adjustment of 1912; and numerous other controlled lakes and ponds and several powerplants.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 371 | 466 | 566 | e510 | 548 | e450 | 1980 | 1000 | 1110 | 488 | 872 | 562 |
| 2 | 376 | 485 | 611 | e530 | 578 | e480 | 1800 | 1060 | 930 | 485 | 894 | 588 |
| 3 | 376 | 510 | 559 | 605 | 547 | e510 | 1450 | 1030 | 815 | 477 | 877 | 605 |
| 4 | 396 | 523 | 520 | 640 | 519 | e540 | 1150 | 1010 | 758 | 435 | 873 | 585 |
| 5 | 407 | 513 | 562 | 661 | 471 | e570 | 957 | 1030 | 722 | 415 | 831 | 573 |
| 6 | 372 | 497 | 582 | 654 | 446 | e600 | 923 | 1020 | 676 | 412 | 763 | 597 |
| 7 | 352 | 482 | 599 | 640 | 520 | e640 | 919 | 984 | 630 | 414 | 693 | 602 |
| 8 | 350 | 470 | 672 | 610 | 584 | e700 | 787 | 989 | 610 | 511 | 638 | 591 |
| 9 | 353 | 454 | 717 | 597 | 608 | e760 | 878 | 1030 | 611 | 646 | 620 | 589 |
| 10 | 388 | 429 | 787 | 632 | 614 | e820 | 911 | 1310 | 592 | 881 | 615 | 587 |
| 11 | 426 | 405 | 833 | 640 | 604 | e870 | 904 | 1530 | 571 | 2160 | 593 | 601 |
| 12 | 454 | 403 | 982 | 633 | 577 | e930 | 924 | 1560 | 590 | 3110 | 570 | 596 |
| 13 | 451 | 405 | 1020 | 624 | 612 | e1050 | 961 | 1520 | 592 | 3600 | 536 | 577 |
| 14 | 490 | 403 | 1030 | 624 | 641 | e1140 | 1050 | 1520 | 572 | 3760 | 517 | 548 |
| 15 | 533 | 402 | 976 | 624 | 663 | e1200 | 986 | 1530 | 567 | 3470 | 545 | 506 |
| 16 | 531 | 402 | 924 | 630 | 678 | e1170 | 909 | 1500 | 549 | 2800 | 642 | 482 |
| 17 | 522 | 402 | 859 | e630 | 674 | e1170 | 882 | 1430 | 541 | 2190 | 702 | 482 |
| 18 | 513 | 410 | 732 | e630 | 677 | e1200 | 937 | 1300 | 549 | 1810 | 722 | 491 |
| 19 | 498 | 402 | 649 | e610 | e690 | e1250 | 975 | 1310 | 559 | 1600 | 720 | 478 |
| 20 | 468 | 397 | 573 | e590 | e700 | e1250 | 947 | 1350 | 607 | 1470 | 698 | 461 |
| 21 | 442 | 408 | 419 | e590 | e700 | e1180 | 906 | 1350 | 585 | 1380 | 667 | 454 |
| 22 | 432 | 419 | 503 | e585 | e670 | e1000 | 887 | 1330 | 522 | 1300 | 673 | 429 |
| 23 | 431 | 435 | 585 | e580 | e620 | e820 | 894 | 1300 | 516 | 1240 | 725 | 418 |
| 24 | 437 | 446 | 560 | e560 | e620 | e770 | 905 | 1260 | 594 | 1180 | 704 | 419 |
| 25 | 441 | 448 | 445 | e510 | e610 | e720 | 886 | 1200 | 610 | 1120 | 646 | 427 |
| 26 | 442 | 450 | 360 | e510 | e550 | e720 | 852 | 1160 | 586 | 1040 | 574 | 425 |
| 27 | 448 | 430 | 435 | e510 | e440 | e760 | 841 | 1130 | 553 | 952 | 535 | 409 |
| 28 | 442 | 198 | 532 | e510 | e410 | 826 | 878 | 1100 | 553 | 873 | 394 | 398 |
| 29 | 437 | 272 | e560 | e515 | --- | 993 | 901 | 1060 | 544 | 899 | 321 | 359 |
| 30 | 434 | 372 | e560 | 520 | --- | 1530 | 895 | 1060 | 509 | 898 | 650 | 349 |
| 31 | 449 | --- | e520 | 530 | --- | 1930 | --- | 1180 | --- | 873 | 666 | --- |
| TOTAL | 13462 | 12738 | 20232 | 18234 | 16571 | 28549 | 30075 | 38143 | 18723 | 42889 | 20476 | 15188 |
| MEAN | 434.3 | 424.6 | 652.6 | 588.2 | 591.8 | 920.9 | 1002 | 1230 | 624.1 | 1384 | 660.5 | 506.3 |
| MAX | 533 | 523 | 1030 | 661 | 700 | 1930 | 1980 | 1560 | 1110 | 3760 | 894 | 605 |
| MIN | 350 | 198 | 360 | 510 | 410 | 450 | 787 | 984 | 509 | 412 | 321 | 349 |
| AC-FT | 26700 | 25270 | 40130 | 36170 | 32870 | 56630 | 59650 | 75660 | 37140 | 85070 | 40610 | 30130 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 427.5 | 373.6 | 356.1 | 335.2 | 399.2 | 1014 | 2220 | 1377 | 1148 | 986.7 | 573.3 | 465.3 |
| MAX | 1558 | 900 | 932 | 747 | 1058 | 2687 | 9864 | 3925 | 3264 | 2674 | 2674 | 2135 |
| (WY) | 1994 | 1987 | 1999 | 1986 | 1998 | 1995 | 1997 | 1997 | 2001 | 1993 | 1993 | 1993 |
| MIN | 2.02 | 0.000 | 0.000 | 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 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1975 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 642904 | | 275280 | | | |
| ANNUAL MEAN | 1761 | | 754.2 | | 806.7 | |
| HIGHEST ANNUAL MEAN | | | | | 1772 | 2001 |
| LOWEST ANNUAL MEAN | | | | | 53.1 | 1977 |
| HIGHEST DAILY MEAN | 11400 | Apr 12 | 3760 | Jul 14 | 13100 | Apr 15 1997 |
| LOWEST DAILY MEAN | 188 | Aug 18 | 198 | Nov 28 | 0.00 | Oct 26 1976 |
| ANNUAL SEVEN-DAY MINIMUM | 365 | Sep 28 | 372 | Oct 3 | 0.00 | Oct 26 1976 |
| MAXIMUM PEAK FLOW | | | 3780 | Jul 14 | 13300 | Apr 14 1997 |
| MAXIMUM PEAK STAGE | | | 18.75 | Jul 14 | 37.60 | Apr 16 1997 |
| ANNUAL RUNOFF (AC-FT) | 1275000 | | 546000 | | 584400 | |
| 10 PERCENT EXCEEDS | 3770 | | 1200 | | 1840 | |
| 50 PERCENT EXCEEDS | 690 | | 610 | | 467 | |
| 90 PERCENT EXCEEDS | 420 | | 419 | | 100 | |

e Estimated

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

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 04... | 1345 | 369 | --e | 8.1 | 559 | 509 | 11.0 | 14.0 | 230 | 42.0 | 31.0 | 5.30 | .6 |
| NOV | | | | | | | | | | | | | |
| 02... | 1200 | 485 | -- | -- | -- | -- | 10.5 | 8.0 | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 25... | 1300 | 622 | -- | -- | -- | 350 | -- | .5 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 08... | 1315 | 771 | 8.0 | 8.0 | 540 | 528 | 4.0 | 3.0 | 240 | 45.0 | 32.0 | 4.10 | .4 |
| 11... | 0840 | 877 | -- | -- | -- | 996 | 4.5 | 3.0 | -- | -- | -- | -- | -- |
| 25... | 1235 | 865 | -- | -- | -- | 932 | 3.5 | 5.5 | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 07... | 1105 | 626 | -- | -- | -- | 1100 | 15.0 | 15.0 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 20... | 1450 | 702 | -- | -- | -- | -- | 17.5 | 18.0 | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 19... | 1730 | 469 | 8.3 | 8.2 | 448 | 450 | 18.0 | 20.5 | 210 | 37.0 | 28.0 | 4.20 | .4 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 04... | 22.0 | 17 | 216 | 27.0 | .20 | 41.0 | 455 | 457 | 300 | 3.0 | 50 | 2 | 100 |
| NOV | | | | | | | | | | | | | |
| 02... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 08... | 16.0 | 12 | 198 | 15.0 | .10 | 74.0 | 446 | 332 | 305 | 2.0 | 40 | <1 | 20 |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 07... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 20... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 19... | 14.0 | 13 | 191 | 16.0 | .10 | 31.0 | 371 | 293 | 245 | 5.0 | 30 | 1 | 20 |

| Date | 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 | | | | | |
| 04... | 20 | <.10 | 3 | 3 | 180 |
| NOV | | | | | |
| 02... | -- | -- | -- | -- | -- |
| FEB | | | | | |
| 25... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 08... | 20 | <.10 | 0 | 2 | 190 |
| 11... | -- | -- | -- | -- | -- |
| 25... | -- | -- | -- | -- | -- |
| JUN | | | | | |
| 07... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 20... | -- | -- | -- | -- | -- |
| SEP | | | | | |
| 19... | 20 | <.10 | 1 | <1 | 190 |

< Less than
e Required equipment not functional/available

## 05051600 WILD RICE RIVER NEAR RUTLAND, ND

LOCATION.--Lat 46°01'20", long 97°30'40", in SE$^1/_4$SE$^1/_4$ sec.36, T.130 N., R.55 W., Sargent County, Hydrologic Unit 09020105, on right bank 1,000 ft upstream from bridge on county highway, 2 mi south of Rutland, and 10 mi upstream from Lake Tewaukon.

DRAINAGE AREA.--546 mi$^2$, of which about 250 mi$^2$ is probably noncontributing.

### WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,197.73 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 11, 1960, nonrecording gage at same site and datum.

REMARKS.--Records poor.

EXTREMES FOR CURRENT YEAR.-- Maximum discharge, 87 ft$^3$/s, June 24, gage height, 3.41 ft; minimum daily discharge, no flow many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | --- | --- | --- | --- | --- | e0.00 | 64 | 11 | 7.2 | 21 | 11 | 13 |
| 2 | --- | --- | --- | --- | --- | e0.00 | 62 | 9.9 | 6.1 | 19 | 8.1 | 13 |
| 3 | --- | --- | --- | --- | --- | e0.00 | 43 | 11 | 4.4 | 17 | 8.7 | 12 |
| 4 | --- | --- | --- | --- | --- | e0.00 | 38 | 7.3 | 2.5 | 15 | 8.6 | 12 |
| 5 | --- | --- | --- | --- | --- | e0.00 | 39 | 8.0 | 2.7 | 12 | 7.5 | 12 |
| 6 | --- | --- | --- | --- | --- | e0.00 | 27 | 7.4 | 3.5 | 7.7 | 8.4 | 11 |
| 7 | --- | --- | --- | --- | --- | e0.00 | 9.3 | 7.2 | 2.8 | 11 | 8.3 | 11 |
| 8 | --- | --- | --- | --- | --- | e0.00 | 7.9 | 13 | 2.6 | 16 | 9.0 | 9.0 |
| 9 | --- | --- | --- | --- | --- | e0.00 | 7.1 | 18 | 4.1 | 14 | 8.6 | 3.4 |
| 10 | --- | --- | --- | --- | --- | e0.00 | 8.9 | 23 | 3.6 | 47 | 12 | 1.9 |
| 11 | --- | --- | --- | --- | --- | e0.00 | 8.4 | 25 | 1.5 | 21 | 11 | 2.1 |
| 12 | --- | --- | --- | --- | --- | e0.10 | 6.8 | 30 | 0.64 | 14 | 9.8 | 1.8 |
| 13 | --- | --- | --- | --- | --- | e0.15 | 5.6 | 29 | 0.72 | 12 | 9.4 | 2.3 |
| 14 | --- | --- | --- | --- | --- | e0.25 | 4.7 | 29 | 0.41 | 12 | 10 | 2.1 |
| 15 | --- | --- | --- | --- | --- | e0.50 | 4.5 | 26 | 0.19 | 11 | 9.5 | 1.3 |
| 16 | --- | --- | --- | --- | --- | e0.75 | 5.7 | 23 | 0.13 | 9.5 | 8.1 | 0.80 |
| 17 | --- | --- | --- | --- | --- | e1.0 | 4.7 | 21 | 0.54 | 8.1 | 7.1 | 0.50 |
| 18 | --- | --- | --- | --- | --- | e0.75 | 8.3 | 20 | 0.58 | 15 | 4.0 | 0.41 |
| 19 | --- | --- | --- | --- | --- | e0.50 | 11 | 17 | 2.6 | 14 | 3.5 | 0.36 |
| 20 | --- | --- | --- | --- | --- | e0.75 | 11 | 14 | 4.5 | 10 | 6.1 | 0.24 |
| 21 | --- | --- | --- | --- | --- | e1.0 | 9.0 | 15 | 4.2 | 8.6 | 7.6 | 0.08 |
| 22 | --- | --- | --- | --- | --- | e1.0 | 8.5 | 11 | 3.7 | 5.6 | 8.9 | 0.01 |
| 23 | --- | --- | --- | --- | --- | e0.75 | 7.4 | 7.4 | 28 | 4.7 | 12 | 0.00 |
| 24 | --- | --- | --- | --- | --- | e1.1 | 6.0 | 8.2 | 73 | 6.4 | 9.2 | 0.00 |
| 25 | --- | --- | --- | --- | --- | e1.3 | 5.6 | 7.6 | 56 | 7.1 | 7.3 | 0.00 |
| 26 | --- | --- | --- | --- | --- | e1.8 | 6.6 | 6.6 | 42 | 6.2 | 5.9 | 0.00 |
| 27 | --- | --- | --- | --- | --- | e5.0 | 7.5 | 5.6 | 35 | 7.0 | 4.4 | 0.00 |
| 28 | --- | --- | --- | --- | --- | e10 | 8.9 | 5.1 | 31 | 6.2 | 4.1 | 0.00 |
| 29 | --- | --- | --- | --- | --- | e25 | 11 | 11 | 27 | 7.0 | 3.0 | 0.00 |
| 30 | --- | --- | --- | --- | --- | e45 | 12 | 11 | 22 | 5.6 | 3.0 | 0.00 |
| 31 | --- | --- | --- | --- | --- | 66 | --- | 8.5 | --- | 9.2 | 5.7 | --- |
| TOTAL | --- | --- | --- | --- | --- | 162.70 | 459.4 | 446.8 | 373.21 | 379.9 | 239.8 | 110.30 |
| MEAN | --- | --- | --- | --- | --- | 5.248 | 15.31 | 14.41 | 12.44 | 12.25 | 7.735 | 3.677 |
| MAX | --- | --- | --- | --- | --- | 66 | 64 | 30 | 73 | 47 | 12 | 13 |
| MIN | --- | --- | --- | --- | --- | 0.00 | 4.5 | 5.1 | 0.13 | 4.7 | 3.0 | 0.00 |
| AC-FT | --- | --- | --- | --- | --- | 323 | 911 | 886 | 740 | 754 | 476 | 219 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 0.538 | 0.358 | 0.141 | 0.004 | 0.068 | 25.58 | 72.55 | 38.83 | 22.02 | 26.50 | 7.980 | 7.094 |
| MAX | 4.81 | 5.87 | 2.90 | 0.10 | 1.00 | 138 | 756 | 419 | 263 | 379 | 105 | 146 |
| (WY) | 1963 | 1963 | 1963 | 1963 | 1976 | 1966 | 1997 | 1998 | 1998 | 1998 | 1998 | 1999 |
| MIN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| (WY) | 1960 | 1960 | 1960 | 1960 | 1960 | 1965 | 1977 | 1977 | 1973 | 1961 | 1960 | 1960 |

| SUMMARY STATISTICS | WATER YEARS 1960 - 2002 | | |
|---|---|---|---|
| ANNUAL MEAN | a8.356 | | |
| HIGHEST ANNUAL MEAN | a44.8 | | 1969 |
| LOWEST ANNUAL MEAN | a0.000 | | 1977 |
| HIGHEST DAILY MEAN | 2540 | Apr 4 | 1997 |
| LOWEST DAILY MEAN | 0.00 | Oct 1 | 1959 |
| ANNUAL SEVEN-DAY MINIMUM | 0.00 | Oct 1 | 1959 |
| MAXIMUM PEAK FLOW | 2700 | Apr 3 | 1997 |
| MAXIMUM PEAK STAGE | 10.11 | Apr 3 | 1997 |
| ANNUAL RUNOFF (AC-FT) | a6050 | | |
| 10 PERCENT EXCEEDS | 18 | | |
| 50 PERCENT EXCEEDS | 0.00 | | |
| 90 PERCENT EXCEEDS | 0.00 | | |

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

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1997 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MAR | | | | | | | | | | | | | |
| 26... | 1135 | 1.7 | -- | -- | -- | 1710 | 1.5 | .0 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 09... | 0900 | 9.5 | 8.1 | 7.9 | 2340 | --e | .5 | 1.5 | 1000 | 140 | 160 | 24.0 | 3 |
| 24... | 0955 | 5.7 | -- | -- | -- | 1500 | 2.0 | 5.0 | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 06... | 1315 | 2.9 | -- | -- | -- | 1490 | 15.5 | 13.5 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 21... | 1255 | 9.4 | -- | -- | -- | -- | 16.0 | 15.0 | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 18... | 1150 | .60 | 8.2 | 7.8 | 2530 | 2490 | 28.0 | 19.5 | 1100 | 150 | 180 | 28.0 | 3 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MAR | | | | | | | | | | | | | |
| 26... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 09... | 220 | 32 | 313 | 99.0 | .20 | 1100 | 52.1 | 2030 | 1930 | 2.0 | 30 | <1 | 230 |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 06... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 21... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 18... | 200 | 27 | 222 | 79.0 | .20 | 1300 | 3.56 | 2200 | 2070 | 5.0 | 40 | <1 | 190 |

| Date | 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... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 09... | 180 | <.10 | 2 | <1 | 900 |
| 24... | -- | -- | -- | -- | -- |
| JUN | | | | | |
| 06... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 21... | -- | -- | -- | -- | -- |
| SEP | | | | | |
| 18... | 270 | <.10 | 5 | 1 | 980 |

< Less than
e Required equipment not functional/available

## 05053000 WILD RICE RIVER NEAR ABERCROMBIE, ND

LOCATION.--Lat 46°28'05", long 96°47'00", in NE$^1/_4$NE$^1/_4$ 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$^2$, of which about 590 mi$^2$ 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 National Geodetic Vertical Datum of 1929. 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 fair except for estimated daily discharges, which are poor. Some regulation by Fish and Wildlife Service reservoirs, of which Lake Tewaukon is the largest. Some small diversioins 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.3 | 24 | 12 | e5.4 | e4.1 | e13 | e88 | 33 | 41 | 69 | 35 | 83 |
| 2 | 3.3 | 24 | 15 | e5.4 | e4.0 | e12 | e70 | 37 | 33 | 51 | 32 | 72 |
| 3 | 3.4 | 24 | 13 | e5.5 | e3.9 | e11 | e60 | 36 | 28 | 41 | 33 | 57 |
| 4 | 3.6 | 20 | 11 | e5.5 | e3.9 | e11 | e45 | 33 | 27 | 35 | 37 | 42 |
| 5 | 3.6 | 18 | 10 | e5.5 | e3.8 | e9.9 | e39 | 31 | 25 | 31 | 32 | 37 |
| 6 | 3.9 | 20 | 9.6 | e5.5 | e3.9 | e9.2 | e36 | 28 | 23 | 30 | 25 | 31 |
| 7 | 3.7 | 23 | 8.5 | e5.6 | e3.9 | e8.6 | 42 | 26 | 20 | 34 | 20 | 24 |
| 8 | 3.2 | 23 | 8.1 | e5.8 | e4.0 | e8.3 | 69 | 34 | 18 | 98 | 16 | 18 |
| 9 | 3.0 | e22 | 8.9 | e5.8 | e4.1 | e8.0 | 86 | 74 | 16 | 174 | 15 | 14 |
| 10 | 5.6 | e22 | 11 | e5.8 | e4.2 | e8.0 | 123 | 87 | 15 | 356 | 14 | 12 |
| 11 | 9.6 | 21 | 11 | e5.9 | e4.9 | e8.2 | 133 | 129 | 16 | 819 | 12 | 9.7 |
| 12 | 5.4 | 17 | 11 | e5.9 | e6.1 | e9.4 | 116 | 164 | 16 | 989 | 14 | 8.1 |
| 13 | 5.4 | 16 | 11 | e5.9 | e7.1 | e13 | 82 | 151 | 15 | 777 | 24 | 7.8 |
| 14 | 11 | 15 | 10 | e6.1 | e8.9 | e15 | 58 | 138 | 16 | 442 | 31 | 7.1 |
| 15 | 31 | 13 | 9.8 | e6.3 | e10 | e16 | 48 | 139 | 14 | 372 | 39 | 6.0 |
| 16 | 22 | 12 | 11 | e6.4 | e13 | e22 | 40 | 126 | 13 | 341 | 39 | 5.0 |
| 17 | 18 | 12 | 12 | e6.3 | e14 | e28 | 35 | 106 | 12 | 300 | 40 | 3.8 |
| 18 | 16 | 12 | 12 | e6.2 | e15 | e28 | 37 | 96 | 12 | 251 | 36 | 2.7 |
| 19 | 13 | 12 | 12 | e6.0 | e17 | e29 | 35 | 91 | 14 | 188 | 33 | 2.1 |
| 20 | 10 | 11 | e11 | e5.8 | e18 | e28 | 33 | 85 | 32 | 139 | 32 | 1.9 |
| 21 | 7.9 | 10 | e10 | e5.6 | e18 | e27 | 32 | 95 | 26 | 107 | 35 | 2.1 |
| 22 | 6.3 | 11 | e9.3 | e5.5 | e19 | e26 | 33 | 97 | 17 | 89 | 37 | 1.8 |
| 23 | 13 | 12 | e8.3 | e5.3 | e19 | e26 | 37 | 92 | 17 | 80 | 36 | 1.7 |
| 24 | 14 | 13 | e7.7 | e5.2 | e18 | e25 | 39 | 89 | 39 | 74 | 33 | 1.6 |
| 25 | 13 | 14 | e7.2 | e5.0 | e18 | e25 | 36 | 85 | 43 | 69 | 28 | 1.4 |
| 26 | 17 | 13 | e6.7 | e4.9 | e17 | e24 | 34 | 83 | 45 | 64 | 23 | 1.2 |
| 27 | 18 | e12 | e6.2 | e4.7 | e16 | e26 | 33 | 79 | 60 | 56 | 18 | 1.1 |
| 28 | 15 | e12 | e5.8 | e4.6 | e15 | e44 | 34 | 73 | 88 | 50 | 15 | 0.96 |
| 29 | 16 | 12 | e5.5 | e4.5 | --- | e65 | 34 | 70 | 87 | 46 | 82 | 0.96 |
| 30 | 20 | 12 | e5.4 | e4.4 | --- | e80 | 32 | 65 | 84 | 40 | 276 | 0.80 |
| 31 | 19 | --- | e5.3 | e4.3 | --- | e84 | --- | 52 | --- | 37 | 123 | --- |
| TOTAL | 337.2 | 482 | 295.3 | 170.6 | 293.8 | 747.6 | 1619 | 2524 | 912 | 6249 | 1265 | 457.82 |
| MEAN | 10.88 | 16.07 | 9.526 | 5.503 | 10.49 | 24.12 | 53.97 | 81.42 | 30.40 | 201.6 | 40.81 | 15.26 |
| MAX | 31 | 24 | 15 | 6.4 | 19 | 84 | 133 | 164 | 88 | 989 | 276 | 83 |
| MIN | 3.0 | 10 | 5.3 | 4.3 | 3.8 | 8.0 | 32 | 26 | 12 | 30 | 12 | 0.80 |
| AC-FT | 669 | 956 | 586 | 338 | 583 | 1480 | 3210 | 5010 | 1810 | 12390 | 2510 | 908 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1932 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 12.86 | 9.589 | 6.780 | 2.744 | 6.450 | 168.5 | 516.7 | 161.1 | 114.7 | 139.8 | 32.21 | 18.58 |
| MAX | 146 | 111 | 188 | 72.8 | 210 | 1195 | 5510 | 1246 | 929 | 1787 | 462 | 438 |
| (WY) | 1999 | 1999 | 1999 | 1999 | 1998 | 1995 | 1997 | 1998 | 1962 | 1962 | 1993 | 1999 |
| MIN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 2.81 | 0.11 | 0.085 | 0.000 | 0.000 | 0.000 |
| (WY) | 1933 | 1933 | 1933 | 1933 | 1934 | 1937 | 1991 | 1934 | 1988 | 1933 | 1932 | 1932 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1932 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 116546.01 | | 15353.32 | | | |
| ANNUAL MEAN | 319.3 | | 42.06 | | 99.69 | |
| HIGHEST ANNUAL MEAN | | | | | 560 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 0.48 | 1934 |
| HIGHEST DAILY MEAN | 9160 | Apr 9 | 989 | Jul 12 | 9450 | Apr 16 1997 |
| LOWEST DAILY MEAN | 0.94 | Sep 19 | 0.80 | Sep 30 | 0.00 | Jul 26 1932 |
| ANNUAL SEVEN-DAY MINIMUM | 1.0 | Feb 27 | 1.1 | Sep 24 | 0.00 | Jul 26 1932 |
| MAXIMUM PEAK FLOW | | | 1010 | Jul 12 | 9540 | Apr 11 1969 |
| MAXIMUM PEAK STAGE | | | 6.11 | Jul 12 | a26.59 | Apr 6 1997 |
| ANNUAL RUNOFF (AC-FT) | 231200 | | 30450 | | 72220 | |
| 10 PERCENT EXCEEDS | 608 | | 87 | | 189 | |
| 50 PERCENT EXCEEDS | 12 | | 17 | | 3.0 | |
| 90 PERCENT EXCEEDS | 1.1 | | 4.6 | | 0.00 | |

a Backwater from ice
e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 02... | 0940 | 3.3 | --e | 8.2 | 1380 | --e | 9.0 | 11.5 | 540 | 100 | 70.0 | 15.0 | 2 |
| NOV | | | | | | | | | | | | | |
| 01... | 1340 | 25 | -- | -- | -- | -- | 10.0 | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 08... | 1135 | 5.8 | -- | -- | -- | 1110 | 3.0 | 1.5 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 14... | 1500 | 16 | -- | -- | -- | 1110 | -- | .5 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 16... | 1225 | 1.2 | 8.1 | 7.8 | 757 | 719 | 16.0 | 7.0 | 280 | 59.0 | 33.0 | 5.80 | 1 |
| 24... | 1410 | 40 | -- | -- | -- | 847 | 2.0 | 4.0 | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 06... | 1545 | 22 | -- | -- | -- | 1040 | 22.0 | 17.0 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 16... | 1035 | -- | 8.2 | -- | -- | 1540 | 14.5 | 16.0 | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 18... | 1620 | 2.2 | 8.3 | 8.0 | 1200 | 1180 | 23.5 | 21.0 | 500 | 87.0 | 68.0 | 15.0 | 2 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 02... | 100 | 28 | 361 | 31.0 | .30 | 320 | 7.61 | 854 | 865 | 10.0 | 70 | 2 | 100 |
| NOV | | | | | | | | | | | | | |
| 01... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 14... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 16... | 42.0 | 24 | 160 | 17.0 | .20 | 200 | 1.62 | 500 | 453 | 4.0 | 70 | <1 | 50 |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 06... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 16... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 18... | 78.0 | 25 | 245 | 33.0 | .20 | 400 | 5.29 | 891 | 829 | 6.0 | 80 | <1 | 90 |

| Date | 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 | | | | | |
| 02... | 20 | <.10 | 14 | 4 | 530 |
| NOV | | | | | |
| 01... | -- | -- | -- | -- | -- |
| JAN | | | | | |
| 08... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 14... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 16... | 40 | <.10 | 1 | <1 | 260 |
| 24... | -- | -- | -- | -- | -- |
| JUN | | | | | |
| 06... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 16... | -- | -- | -- | -- | -- |
| SEP | | | | | |
| 18... | 330 | <.10 | 3 | 1 | 560 |

< Less than
e Required equipment not functional/available

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

LOCATION.--Lat 46°51'40", long 96°47'00", in NW$^1/_4$NE$^1/_4$ sec.18, T.139 N., R.48 W., Cass County, Hydrologic Unit 09020104, at waterplant on 4th Street South in Fargo, 25 mi upstream from mouth of Sheyenne River, and at mile 453.

DRAINAGE AREA.--6,800 mi$^2$, approximately.

### WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1901 to current year. Published as "at Moorhead, MN.", 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 National Geodetic Vertical Datum of 1929. 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 fair except for estimated daily discharges, which are poor. Flow regulated by; Orwell Reservoir, flood storage capacity, 13,300 acre-ft at elevation 1,070 ft above mean sea level, adjustment of 1912; Mud Lake, flood storage capacity, 78,600 acre-ft at elevation 981 ft above mean sea level, adjustment of 1912; Lake Traverse, flood storage capacity, 75,100 acre-ft at elevation 981 ft above mean sea level, adjustment of 1912; and numerous other controlled lakes and ponds and several powerplants. Figures of daily discharge do not include diversions to cities of Fargo and Moorhead, MN, from the 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$^3$/s at site 1.5 mi downstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 430 | 655 | 561 | e590 | 614 | e520 | 1940 | 1220 | 1550 | 829 | 1230 | 1100 |
| 2 | 451 | 709 | 736 | e570 | 640 | e550 | 1910 | 1350 | 1380 | 796 | 1200 | 1010 |
| 3 | 452 | 736 | 783 | e550 | 643 | e580 | 1680 | 1380 | 1200 | 781 | 1200 | 935 |
| 4 | 459 | 758 | 723 | e550 | e590 | e600 | 1410 | 1330 | 1090 | 755 | 1180 | 903 |
| 5 | 484 | 743 | 696 | e650 | e560 | e640 | 1180 | 1340 | 1020 | 697 | 1150 | 846 |
| 6 | 488 | 719 | 715 | e690 | e530 | e700 | 1050 | 1360 | 975 | 661 | 1090 | 830 |
| 7 | 452 | 689 | 731 | e680 | e510 | e730 | 1050 | 1310 | 922 | 792 | 1010 | 848 |
| 8 | 430 | 660 | 777 | e660 | e530 | e770 | 1100 | 1480 | 878 | 808 | 926 | 830 |
| 9 | 432 | 633 | 839 | e650 | e570 | e830 | 1190 | 1400 | 2020 | 894 | 868 | 812 |
| 10 | 588 | 611 | 870 | e650 | e610 | e880 | 1350 | 1580 | 1520 | 1920 | 874 | 805 |
| 11 | 527 | 579 | 904 | e670 | e620 | e930 | 1320 | 1940 | 966 | 3200 | 851 | 799 |
| 12 | 545 | 545 | e1050 | 684 | e610 | e990 | 1300 | 2100 | 846 | 3720 | 817 | 802 |
| 13 | 566 | 540 | 1150 | 672 | 624 | e1080 | 1330 | 2100 | 850 | 4210 | 763 | 766 |
| 14 | 581 | 538 | 1170 | 665 | 660 | e1160 | 1430 | 2070 | 829 | e4200 | 728 | 723 |
| 15 | 639 | 533 | 1160 | 665 | 688 | e1260 | 1440 | 2050 | 809 | e3700 | 727 | 652 |
| 16 | 655 | 530 | 1080 | 663 | e700 | e1280 | 1290 | 2010 | 791 | e3000 | 820 | 577 |
| 17 | 656 | 524 | 1040 | 676 | e700 | e1280 | 1180 | 1950 | 768 | e2300 | 977 | 554 |
| 18 | 671 | 524 | 926 | e670 | e710 | e1300 | 1190 | 1810 | 791 | e2050 | 1000 | 590 |
| 19 | 666 | 535 | 792 | e660 | e720 | e1350 | 1240 | 1700 | 810 | e1900 | 1020 | 615 |
| 20 | 647 | 522 | 711 | e650 | e730 | e1350 | 1250 | 1720 | 822 | e1780 | 1010 | 551 |
| 21 | 609 | 554 | 588 | e650 | e720 | e1300 | 1210 | 1760 | 990 | e1660 | 973 | 515 |
| 22 | 576 | 577 | 501 | e650 | e690 | e1200 | 1170 | 1740 | 905 | e1600 | 944 | 492 |
| 23 | 565 | 597 | 592 | e640 | e650 | 979 | 1150 | 1700 | 967 | e1510 | 995 | 482 |
| 24 | 598 | 605 | 646 | e620 | e645 | 762 | 1170 | 1650 | 898 | e1470 | 1020 | 464 |
| 25 | 590 | 623 | 591 | e580 | e640 | 830 | 1180 | 1600 | 1150 | e1400 | 978 | 457 |
| 26 | 578 | 616 | 469 | e550 | e600 | 903 | 1150 | 1520 | 1060 | e1350 | 866 | 469 |
| 27 | 598 | 650 | 438 | e560 | e540 | 840 | 1130 | 1470 | 957 | e1300 | 756 | 457 |
| 28 | 601 | 487 | 520 | e560 | e510 | 874 | 1130 | 1480 | 890 | 1260 | 670 | 445 |
| 29 | 599 | 325 | e585 | e570 | --- | 986 | 1170 | 1470 | 882 | 1220 | 506 | 426 |
| 30 | 594 | 398 | e610 | e580 | --- | 1300 | 1170 | 1450 | 870 | 1240 | 583 | 383 |
| 31 | 608 | --- | e600 | 600 | --- | 1670 | --- | 1470 | --- | 1210 | 1040 | --- |
| TOTAL | 17335 | 17715 | 23554 | 19475 | 17554 | 30424 | 38460 | 50510 | 30406 | 54213 | 28772 | 20138 |
| MEAN | 559.2 | 590.5 | 759.8 | 628.2 | 626.9 | 981.4 | 1282 | 1629 | 1014 | 1749 | 928.1 | 671.3 |
| MAX | 671 | 758 | 1170 | 690 | 730 | 1670 | 1940 | 2100 | 2020 | 4210 | 1230 | 1100 |
| MIN | 430 | 325 | 438 | 550 | 510 | 520 | 1050 | 1220 | 768 | 661 | 506 | 383 |
| AC-FT | 34380 | 35140 | 46720 | 38630 | 34820 | 60350 | 76290 | 100200 | 60310 | 107500 | 57070 | 39940 |

| | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| + | 1290 | 1180 | 1180 | 1210 | 1120 | 1160 | 1150 | 1320 | 1420 | 1580 | 1570 | 1440 |
| * | 35670 | 36320 | 47900 | 39840 | 35940 | 61510 | 77440 | 101500 | 61740 | 109100 | 58640 | 41380 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1901 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 334.6 | 296.0 | 253.4 | 229.3 | 240.7 | 790.0 | 2013 | 1168 | 1095 | 930.0 | 448.7 | 344.4 |
| MAX | 1741 | 942 | 1261 | 740 | 1353 | 4722 | 17920 | 5365 | 5122 | 5692 | 3293 | 2280 |
| (WY) | 1994 | 1907 | 1999 | 1986 | 1998 | 1995 | 1997 | 1997 | 1962 | 1962 | 1993 | 1993 |
| MIN | 0.000 | 0.000 | 0.000 | 0.000 | 0.18 | 26.8 | 102 | 8.12 | 2.87 | 0.000 | 0.000 | 0.000 |
| (WY) | 1935 | 1937 | 1938 | 1933 | 1933 | 1937 | 1934 | 1934 | 1936 | 1934 | 1932 | 1934 |

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

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1901 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 807908 | | 348556 | | | |
| ANNUAL MEAN | 2213 | *(2217) | 954.9 | *(975.9) | 679.9 | |
| HIGHEST ANNUAL MEAN | | | | | 2619 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 17.5 | 1934 |
| HIGHEST DAILY MEAN | 20200 | Apr 14 | 4210 | Jul 13 | 27800 | Apr 17 1997 |
| LOWEST DAILY MEAN | 293 | Aug 19 | 325 | Nov 29 | 0.00 | Jul 25 1932 |
| ANNUAL SEVEN-DAY MINIMUM | 449 | Sep 29 | 443 | Sep 24 | 0.00 | Jul 25 1932 |
| MAXIMUM PEAK FLOW | | | 4250 | Jul 13 | 28000 | Apr 17 1997 |
| MAXIMUM PEAK STAGE | | | 19.17 | Jul 14 | 39.72 | Apr 18 1997 |
| ANNUAL RUNOFF (AC-FT) | 1602000 | *(1606000) | 691400 | *(707,000) | 492600 | |
| 10 PERCENT EXCEEDS | 4370 | | 1520 | | 1520 | |
| 50 PERCENT EXCEEDS | 777 | | 792 | | 332 | |
| 90 PERCENT EXCEEDS | 545 | | 530 | | 42 | |

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

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

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: September 1998 to current year.

SPECIFIC CONDUCTANCE: September 1998 to current year.

INSTRUMENTATION.--Water-quality sensors since September 1998.

REMARKS.--Records good.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 30.1°C, Aug. 6-7, 2001; minimum recorded, -0.4°C on many days.

SPECIFIC CONDUCTANCE: Maximum recorded, 1,330 microsiemens, July 19, 2001; minimum recorded, 315 microsiemens, June 20 and 22, 2000.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maxmimum recorded, 29.1°C, June 30 and July 1; minimum recorded, -0.4°C on many days.

SPECIFIC CONDUCTANCE: Maximum recorded, 861 microsiemens, Jan. 3; minimum recorded, 325 microsiemens, July 14.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 09... | 1100 | 437 | -- | -- | -- | 682 | 8.0 | 10.5 | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 06... | 1000 | 719 | -- | -- | -- | 670 | 8.0 | 6.0 | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 04... | 1115 | 548 | -- | -- | -- | 805 | -2.0 | .5 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 27... | 1250 | 799 | -- | -- | -- | 727 | 6.5 | 1.0 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 18... | 0855 | 1170 | --e | 7.9 | 575 | 556 | 5.5 | -- | 240 | 47.0 | 30.0 | 4.40 | .6 |
| MAY | | | | | | | | | | | | | |
| 01... | 1250 | 1220 | -- | -- | -- | 613 | 9.5 | 9.0 | -- | -- | -- | -- | -- |
| 21... | 1040 | 1760 | -- | -- | -- | 799 | 17.0 | 14.5 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 03... | 1030 | 781 | -- | -- | -- | 787 | 26.0 | 28.0 | -- | -- | -- | -- | -- |
| 17... | 1435 | 2230 | -- | -- | -- | 485 | -- | -- | -- | -- | -- | -- | -- |
| 31... | 1240 | 1210 | -- | -- | -- | 668 | -- | 26.5 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 30... | 1455 | 583 | -- | -- | -- | 615 | 21.5 | 24.5 | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 11... | 1230 | 799 | -- | -- | -- | 584 | -- | 23.5 | -- | -- | -- | -- | -- |
| 20... | 0740 | 551 | 8.0 | 8.0 | 555 | 568 | 10.5 | 16.5 | 220 | 41.0 | 29.0 | 13.0 | .8 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 06... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 04... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 27... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 18... | 21.0 | 16 | 181 | 15.0 | .20 | 93.0 | 1120 | 355 | 319 | 2.0 | 60 | <1 | 30 |
| MAY | | | | | | | | | | | | | |
| 01... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 21... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 03... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 31... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 30... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 20... | 26.0 | 19 | 183 | 28.0 | .20 | 63.0 | 556 | 374 | 310 | 6.0 | 40 | 1 | 20 |

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | MANGANESE, DISSOLVED (UG/L AS MN) (01056) | MERCURY DISSOLVED (UG/L AS HG) (71890) | MOLYBDENUM, DISSOLVED (UG/L AS MO) (01060) | SELENIUM, DISSOLVED (UG/L AS SE) (01145) | STRONTIUM, DISSOLVED (UG/L AS SR) (01080) |
|---|---|---|---|---|---|
| OCT | | | | | |
| 09... | -- | -- | -- | -- | -- |
| NOV | | | | | |
| 06... | -- | -- | -- | -- | -- |
| JAN | | | | | |
| 04... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 27... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 18... | 10 | <.10 | 1 | <1 | 210 |
| MAY | | | | | |
| 01... | -- | -- | -- | -- | -- |
| 21... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 03... | -- | -- | -- | -- | -- |
| 17... | -- | -- | -- | -- | -- |
| 31... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 30... | -- | -- | -- | -- | -- |
| SEP | | | | | |
| 11... | -- | -- | -- | -- | -- |
| 20... | 20 | <.10 | 1 | <1 | 180 |

| Date | Time | OXYGEN, DISSOLVED (MG/L) (00300) | PH WATER WHOLE FIELD (STANDARD UNITS) (00400) | SPECIFIC CONDUCTANCE (US/CM) (00095) | TEMPERATURE WATER (DEG C) (00010) | TURBIDITY FIELD WATER UNFLTRD (NTU) (61028) |
|---|---|---|---|---|---|---|
| APR | | | | | | |
| 18... | 0920 | 10.0 | 7.9 | 537 | 13.7 | 45 |
| 18... | 0921 | 9.9 | 7.5 | 536 | 13.7 | 51 |
| 18... | 0922 | 9.9 | 8.3 | 537 | 13.7 | 53 |
| 18... | 0930 | 9.8 | 7.7 | 508 | 13.7 | 57 |
| 18... | 0931 | 9.8 | 7.6 | 528 | 13.7 | 53 |
| 18... | 0932 | 9.8 | 7.5 | 530 | 13.7 | 56 |
| 18... | 0933 | 9.8 | 7.4 | 533 | 13.7 | 54 |
| 18... | 0934 | 9.8 | 7.2 | 532 | 13.7 | 58 |
| 18... | 0940 | 9.9 | 7.8 | 514 | 13.7 | 53 |
| 18... | 0941 | 9.8 | 7.6 | 528 | 13.7 | 54 |
| 18... | 0942 | 9.8 | 7.5 | 534 | 13.7 | 56 |
| 18... | 0943 | 9.8 | 7.4 | 534 | 13.7 | 60 |
| 18... | 0944 | 9.7 | 7.6 | 527 | 13.7 | 64 |
| 18... | 0950 | 9.9 | 7.8 | 536 | 13.7 | -- |
| 18... | 0951 | 9.8 | 7.6 | 536 | 13.7 | 56 |
| 18... | 0952 | 9.8 | 7.5 | 538 | 13.7 | 54 |
| 18... | 0953 | 9.7 | 7.3 | 538 | 13.7 | 62 |
| 18... | 0954 | 9.7 | 7.6 | 537 | 13.7 | 61 |
| 18... | 1000 | 9.9 | 8.2 | 535 | 13.6 | 53 |
| 18... | 1001 | 9.8 | 8.0 | 533 | 13.6 | 52 |

< Less than
e Required equipment not functional/available

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

WATER TEMPERATURE from datalogger, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | OCTOBER | | | NOVEMBER | | | DECEMBER | | | JANUARY | |
| 1 | 15.3 | 14.7 | 15.1 | 4.7 | 4.1 | 4.4 | 0.0 | -0.1 | 0.0 | -0.3 | -0.3 | -0.3 |
| 2 | 15.5 | 15.0 | 15.2 | 4.9 | 4.3 | 4.6 | 0.0 | -0.1 | 0 | -0.3 | -0.3 | -0.3 |
| 3 | 15.4 | 14.8 | 15.1 | 5.4 | 4.6 | 5.0 | 0.0 | -0.1 | 0 | -0.2 | -0.3 | -0.3 |
| 4 | 15.1 | 14.4 | 14.6 | 5.8 | 5.3 | 5.5 | 0.0 | -0.1 | 0 | -0.3 | -0.3 | -0.3 |
| 5 | 14.5 | 13.2 | 13.8 | 6.2 | 5.6 | 5.9 | -0.1 | -0.1 | -0.1 | -0.3 | -0.3 | -0.3 |
| 6 | 13.2 | 12.4 | 12.7 | 6.4 | 6.1 | 6.2 | 0.0 | -0.1 | 0 | -0.3 | -0.3 | -0.3 |
| 7 | 12.4 | 11.5 | 11.8 | 6.3 | 6.1 | 6.2 | 0.0 | -0.1 | 0 | -0.3 | -0.3 | -0.3 |
| 8 | 11.5 | 11.0 | 11.1 | 6.2 | 5.7 | 6.0 | 0.0 | -0.1 | 0 | -0.3 | -0.3 | -0.3 |
| 9 | 11.2 | 10.6 | 10.9 | 5.9 | 5.5 | 5.7 | 0.0 | -0.1 | 0 | -0.2 | -0.3 | -0.2 |
| 10 | 11.0 | 10.4 | 10.8 | 5.6 | 5.2 | 5.4 | -0.1 | -0.2 | -0.1 | -0.2 | -0.3 | -0.3 |
| 11 | 10.6 | 10.0 | 10.3 | 5.4 | 4.8 | 5.2 | -0.1 | -0.2 | -0.1 | -0.2 | -0.3 | -0.3 |
| 12 | 10.4 | 10.1 | 10.2 | 5.4 | 4.9 | 5.2 | -0.1 | -0.2 | -0.2 | -0.2 | -0.3 | -0.3 |
| 13 | 10.4 | 9.9 | 10.2 | 5.3 | 4.8 | 5.0 | -0.1 | -0.2 | -0.2 | -0.2 | -0.3 | -0.3 |
| 14 | 10.2 | 10.0 | 10.1 | 5.2 | 4.9 | 5.0 | -0.2 | -0.2 | -0.2 | -0.2 | -0.3 | -0.3 |
| 15 | 10.0 | 9.7 | 9.9 | 5.2 | 4.9 | 5.0 | -0.2 | -0.2 | -0.2 | -0.3 | -0.3 | -0.3 |
| 16 | 9.8 | 9.3 | 9.5 | 5.3 | 4.8 | 5.1 | -0.1 | -0.2 | -0.2 | -0.3 | -0.3 | -0.3 |
| 17 | 9.5 | 9.0 | 9.3 | 5.7 | 5.3 | 5.5 | -0.1 | -0.2 | -0.2 | -0.3 | -0.3 | -0.3 |
| 18 | 9.4 | 9.1 | 9.2 | 5.8 | 5.5 | 5.7 | -0.1 | -0.2 | -0.2 | -0.3 | -0.3 | -0.3 |
| 19 | 9.1 | 8.8 | 8.9 | 5.5 | 4.9 | 5.1 | -0.1 | -0.2 | -0.2 | -0.3 | -0.3 | -0.3 |
| 20 | 9.0 | 8.5 | 8.7 | 5.0 | 4.6 | 4.8 | -0.1 | -0.2 | -0.2 | -0.3 | -0.3 | -0.3 |
| 21 | 8.6 | 8.1 | 8.4 | 5.0 | 4.7 | 4.8 | -0.1 | -0.2 | -0.2 | -0.3 | -0.3 | -0.3 |
| 22 | 8.5 | 7.9 | 8.2 | 4.7 | 4.4 | 4.6 | -0.1 | -0.2 | -0.2 | -0.3 | -0.3 | -0.3 |
| 23 | 8.4 | 7.9 | 8.2 | 4.6 | 4.4 | 4.5 | -0.2 | -0.2 | -0.2 | -0.3 | -0.3 | -0.3 |
| 24 | 8.2 | 6.5 | 7.3 | 4.6 | 4.3 | 4.6 | -0.2 | -0.2 | -0.2 | -0.3 | -0.3 | -0.3 |
| 25 | 6.5 | 5.6 | 5.9 | 4.3 | 3.2 | 3.8 | -0.2 | -0.3 | -0.2 | -0.3 | -0.3 | -0.3 |
| 26 | 5.6 | 5.0 | 5.2 | 3.2 | 1.7 | 2.6 | -0.2 | -0.3 | -0.2 | -0.2 | -0.3 | -0.3 |
| 27 | 5.1 | 4.4 | 4.7 | 1.7 | 0.3 | 0.9 | -0.2 | -0.3 | -0.2 | -0.3 | -0.3 | -0.3 |
| 28 | 4.4 | 4.0 | 4.2 | 0.3 | 0.1 | 0.2 | -0.2 | -0.3 | -0.2 | -0.3 | -0.3 | -0.3 |
| 29 | 4.5 | 3.9 | 4.3 | 0.2 | 0.0 | 0.1 | -0.2 | -0.3 | -0.3 | -0.3 | -0.4 | -0.3 |
| 30 | 4.4 | 4.1 | 4.2 | 0.1 | 0.0 | 0.0 | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 |
| 31 | 4.3 | 3.9 | 4.1 | --- | --- | --- | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 |
| MONTH | 15.5 | 3.9 | 9.4 | 6.4 | 0.0 | 4.4 | 0.0 | -0.3 | -0.1 | -0.2 | -0.4 | -0.3 |

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | FEBRUARY | | | MARCH | | | APRIL | | | MAY | |
| 1 | -0.3 | -0.4 | -0.3 | -0.2 | -0.4 | -0.3 | -0.4 | -0.4 | -0.4 | 8.6 | 8.3 | 8.5 |
| 2 | -0.3 | -0.3 | -0.3 | -0.2 | -0.4 | -0.3 | -0.4 | -0.4 | -0.4 | 8.9 | 8.1 | 8.5 |
| 3 | -0.3 | -0.3 | -0.3 | -0.2 | -0.4 | -0.3 | -0.3 | -0.4 | -0.4 | 10.7 | 8.5 | 9.4 |
| 4 | -0.3 | -0.4 | -0.3 | -0.3 | -0.4 | -0.3 | -0.3 | -0.4 | -0.4 | 11.6 | 10.0 | 10.8 |
| 5 | -0.3 | -0.4 | -0.3 | -0.3 | -0.4 | -0.4 | -0.3 | -0.4 | -0.3 | 11.5 | 10.4 | 10.9 |
| 6 | -0.3 | -0.4 | -0.3 | -0.3 | -0.4 | -0.4 | -0.3 | -0.4 | -0.3 | 11.0 | 10.2 | 10.5 |
| 7 | -0.3 | -0.3 | -0.3 | -0.4 | -0.4 | -0.4 | -0.1 | -0.4 | -0.3 | 10.5 | 9.8 | 10.1 |
| 8 | -0.3 | -0.3 | -0.3 | -0.4 | -0.4 | -0.4 | -0.1 | -0.4 | -0.3 | 10.3 | 9.1 | 9.5 |
| 9 | -0.3 | -0.3 | -0.3 | -0.4 | -0.4 | -0.4 | 0.0 | -0.4 | -0.2 | 9.2 | 8.3 | 8.6 |
| 10 | -0.3 | -0.4 | -0.3 | -0.4 | -0.4 | -0.4 | -0.1 | -0.3 | -0.2 | 9.1 | 7.8 | 8.5 |
| 11 | -0.3 | -0.4 | -0.3 | -0.4 | -0.4 | -0.4 | 3.9 | -0.2 | 1.6 | 9.3 | 8.6 | 9.0 |
| 12 | -0.3 | -0.3 | -0.3 | -0.3 | -0.4 | -0.4 | 5.7 | 3.9 | 4.7 | 9.6 | 8.6 | 9.1 |
| 13 | -0.3 | -0.3 | -0.3 | -0.2 | -0.4 | -0.3 | 6.8 | 5.7 | 6.1 | 11.1 | 9.3 | 10.1 |
| 14 | -0.3 | -0.3 | -0.3 | -0.3 | -0.4 | -0.4 | 8.4 | 6.7 | 7.3 | 12.3 | 10.5 | 11.3 |
| 15 | -0.3 | -0.3 | -0.3 | -0.2 | -0.4 | -0.3 | 10.5 | 8.3 | 9.1 | 13.4 | 12.0 | 12.7 |
| 16 | -0.3 | -0.4 | -0.3 | -0.2 | -0.4 | -0.3 | 12.9 | 10.5 | 11.4 | 13.9 | 12.6 | 13.2 |
| 17 | -0.2 | -0.3 | -0.3 | -0.3 | -0.4 | -0.3 | 13.8 | 12.3 | 12.9 | 14.0 | 13.0 | 13.5 |
| 18 | -0.2 | -0.3 | -0.3 | -0.3 | -0.4 | -0.4 | 14.0 | 12.8 | 13.4 | 14.1 | 13.1 | 13.7 |
| 19 | -0.2 | -0.3 | -0.3 | -0.3 | -0.4 | -0.4 | 12.8 | 12.1 | 12.3 | 14.2 | 13.2 | 13.7 |
| 20 | -0.2 | -0.3 | -0.3 | -0.3 | -0.4 | -0.4 | 12.1 | 11.4 | 11.8 | 14.5 | 13.4 | 13.9 |
| 21 | -0.1 | -0.4 | -0.2 | -0.4 | -0.4 | -0.4 | 11.9 | 10.7 | 11.1 | 14.8 | 13.6 | 14.2 |
| 22 | -0.3 | -0.4 | -0.3 | -0.4 | -0.4 | -0.4 | 10.7 | 9.5 | 10.0 | 15.1 | 14.3 | 14.7 |
| 23 | -0.2 | -0.4 | -0.3 | -0.3 | -0.4 | -0.4 | 10.0 | 8.9 | 9.4 | 15.1 | 14.2 | 14.6 |
| 24 | -0.2 | -0.3 | -0.3 | -0.3 | -0.4 | -0.4 | 10.0 | 9.2 | 9.5 | 14.8 | 13.9 | 14.3 |
| 25 | -0.3 | -0.4 | -0.3 | -0.3 | -0.4 | -0.3 | 9.3 | 8.8 | 9.0 | 15.1 | 14.2 | 14.7 |
| 26 | -0.2 | -0.4 | -0.3 | -0.3 | -0.4 | -0.3 | 9.0 | 8.5 | 8.8 | 15.8 | 14.6 | 15.2 |
| 27 | -0.2 | -0.4 | -0.3 | -0.2 | -0.4 | -0.3 | 8.9 | 8.1 | 8.5 | 16.6 | 14.8 | 15.7 |
| 28 | -0.2 | -0.4 | -0.3 | -0.1 | -0.4 | -0.3 | 8.4 | 7.7 | 8.1 | 17.8 | 16.0 | 16.9 |
| 29 | --- | --- | --- | -0.2 | -0.4 | -0.3 | 8.3 | 7.6 | 7.9 | 19.4 | 17.5 | 18.4 |
| 30 | --- | --- | --- | -0.2 | -0.4 | -0.3 | 8.6 | 8.0 | 8.3 | 20.3 | 18.7 | 19.5 |
| 31 | --- | --- | --- | -0.2 | -0.4 | -0.4 | --- | --- | --- | 21.4 | 19.7 | 20.6 |
| MONTH | -0.1 | -0.4 | -0.3 | -0.1 | -0.4 | -0.4 | 14.0 | -0.4 | 5.9 | 21.4 | 7.8 | 12.7 |

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

WATER TEMPERATURE from datalogger, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | JUNE | | | JULY | | | AUGUST | | | SEPTEMBER | |
| 1 | 22.2 | 20.6 | 21.4 | 29.1 | 27.9 | 28.5 | 26.8 | 25.1 | 25.6 | 24.4 | 23.7 | 24.1 |
| 2 | 21.6 | 20.1 | 20.9 | 28.6 | 27.9 | 28.2 | 25.4 | 24.6 | 25.1 | 24.1 | 23.1 | 23.8 |
| 3 | 20.2 | 19.5 | 19.9 | 28.4 | 27.2 | 27.8 | 25.2 | 24.0 | 24.5 | 23.3 | 22.4 | 22.9 |
| 4 | 20.2 | 19.2 | 19.7 | 27.8 | 26.4 | 26.9 | 24.6 | 23.9 | 24.3 | 22.7 | 22.3 | 22.5 |
| 5 | 20.1 | 19.5 | 19.8 | 27.2 | 25.7 | 26.5 | 24.4 | 23.4 | 24.0 | 23.7 | 22.3 | 23.0 |
| 6 | 20.5 | 19.8 | 20.1 | 27.6 | 26.6 | 27.1 | 24.2 | 23.0 | 23.4 | 24.0 | 22.9 | 23.5 |
| 7 | 20.1 | 19.5 | 19.9 | 27.3 | 25.4 | 26.9 | 23.3 | 22.4 | 22.9 | 24.7 | 23.6 | 24.1 |
| 8 | 20.5 | 19.3 | 19.9 | 26.8 | 25.1 | 25.9 | 24.2 | 23.3 | 23.7 | 24.8 | 24.0 | 24.4 |
| 9 | 20.3 | 19.9 | 20.0 | 27.1 | 26.4 | 26.7 | 24.7 | 24.0 | 24.2 | 24.6 | 23.5 | 24.0 |
| 10 | 21.5 | 20.3 | 21.0 | 26.9 | 23.4 | 25.2 | 24.3 | 23.6 | 23.9 | 23.7 | 22.8 | 23.3 |
| 11 | 22.1 | 20.6 | 21.3 | 24.4 | 21.3 | 22.6 | 24.7 | 23.2 | 23.9 | 23.4 | 22.5 | 23.0 |
| 12 | 21.9 | 21.2 | 21.6 | 23.9 | 22.6 | 23.3 | 24.1 | 23.7 | 23.9 | 23.1 | 22.4 | 22.8 |
| 13 | 21.5 | 20.9 | 21.2 | 23.4 | 22.6 | 22.9 | 24.1 | 22.9 | 23.6 | 22.8 | 22.1 | 22.5 |
| 14 | 21.5 | 20.2 | 20.9 | 23.8 | 22.5 | 23.1 | 23.8 | 22.8 | 23.1 | 22.4 | 21.1 | 21.5 |
| 15 | 22.0 | 20.7 | 21.3 | 25.0 | 23.5 | 24.2 | 23.0 | 22.4 | 22.7 | 21.1 | 19.9 | 20.4 |
| 16 | 22.3 | 21.2 | 21.7 | 26.1 | 24.8 | 25.4 | 22.8 | 22.0 | 22.2 | 20.4 | 19.7 | 20.1 |
| 17 | 22.2 | 21.2 | 21.7 | 26.7 | 26.1 | 26.5 | 22.0 | 20.9 | 21.3 | 20.4 | 19.7 | 20.0 |
| 18 | 22.2 | 21.3 | 21.8 | 27.5 | 26.4 | 26.9 | 20.9 | 20.3 | 20.6 | 20.4 | 19.8 | 20.0 |
| 19 | 22.7 | 21.8 | 22.3 | 28.3 | 27.0 | 27.6 | 20.8 | 19.8 | 20.3 | 20.0 | 19.4 | 19.8 |
| 20 | 22.8 | 21.8 | 22.4 | 28.4 | 27.5 | 28.0 | 20.5 | 20.1 | 20.3 | 19.4 | 18.7 | 19.1 |
| 21 | 22.7 | 22.4 | 22.6 | 28.4 | 27.7 | 28.0 | 20.6 | 20.1 | 20.4 | 18.7 | 17.6 | 18.1 |
| 22 | 23.0 | 22.3 | 22.5 | 27.9 | 26.4 | 27.0 | 21.0 | 20.3 | 20.7 | 17.6 | 16.6 | 17.0 |
| 23 | 23.6 | 22.0 | 22.7 | 26.4 | 25.0 | 25.6 | 21.9 | 20.6 | 21.2 | 16.6 | 15.7 | 16.1 |
| 24 | 25.1 | 23.2 | 24.1 | 25.0 | 24.3 | 24.6 | 22.5 | 21.5 | 22.0 | 15.7 | 14.9 | 15.2 |
| 25 | 26.2 | 24.9 | 25.5 | 24.8 | 23.8 | 24.3 | 23.2 | 22.1 | 22.6 | 15.1 | 14.3 | 14.6 |
| 26 | 26.4 | 25.6 | 26.0 | 25.2 | 24.0 | 24.6 | 24.2 | 23.0 | 23.6 | 14.4 | 13.4 | 13.9 |
| 27 | 27.8 | 26.2 | 26.9 | 25.5 | 24.6 | 25.0 | 24.7 | 23.6 | 24.1 | 13.8 | 13.1 | 13.4 |
| 28 | 28.1 | 26.9 | 27.5 | 25.5 | 25.0 | 25.2 | 25.3 | 24.0 | 24.6 | 13.3 | 12.4 | 12.8 |
| 29 | 28.9 | 27.3 | 28.1 | 26.0 | 24.6 | 25.3 | 24.9 | 24.2 | 24.5 | 12.9 | 12.3 | 12.6 |
| 30 | 29.1 | 28.0 | 28.5 | 26.6 | 25.2 | 25.9 | 24.4 | 24.0 | 24.3 | 13.3 | 12.6 | 12.9 |
| 31 | --- | --- | --- | 26.8 | 25.5 | 26.3 | 24.5 | 23.6 | 24.1 | --- | --- | --- |
| MONTH | 29.1 | 19.2 | 22.4 | 29.1 | 21.3 | 25.9 | 26.8 | 19.8 | 23.1 | 24.8 | 12.3 | 19.7 |
| YEAR | 29.1 | -0.4 | 10.3 | | | | | | | | | |

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | OCTOBER | | | NOVEMBER | | | DECEMBER | | | JANUARY | |
| 1 | --- | --- | --- | 603 | 597 | 600 | 624 | 623 | 623 | 858 | 854 | 857 |
| 2 | --- | --- | --- | 598 | 595 | 596 | 624 | 623 | 624 | 860 | 858 | 859 |
| 3 | --- | --- | --- | 595 | 590 | 593 | 624 | 622 | 623 | 861 | 859 | 860 |
| 4 | --- | --- | --- | 590 | 588 | 589 | 622 | 621 | 622 | 860 | 859 | 859 |
| 5 | --- | --- | --- | 588 | 585 | 587 | 622 | 620 | 621 | 859 | 855 | 857 |
| 6 | --- | --- | --- | 587 | 584 | 585 | 620 | 618 | 619 | 856 | 854 | 855 |
| 7 | --- | --- | --- | 587 | 586 | 586 | 619 | 617 | 618 | 854 | 851 | 852 |
| 8 | --- | --- | --- | 587 | 584 | 585 | 617 | 614 | 615 | 852 | 847 | 850 |
| 9 | --- | --- | --- | 604 | 586 | 597 | 615 | 613 | 614 | 847 | 844 | 845 |
| 10 | --- | --- | --- | 604 | 602 | 603 | 613 | 611 | 612 | 844 | 839 | 842 |
| 11 | --- | --- | --- | 604 | 603 | 604 | 622 | 610 | 614 | 839 | 835 | 837 |
| 12 | --- | --- | --- | 607 | 604 | 606 | 649 | 622 | 632 | 835 | 829 | 832 |
| 13 | --- | --- | --- | 608 | 606 | 608 | 685 | 649 | 669 | 830 | 824 | 827 |
| 14 | --- | --- | --- | 609 | 608 | 609 | 722 | 685 | 703 | 824 | 819 | 821 |
| 15 | --- | --- | --- | 609 | 608 | 608 | 755 | 722 | 740 | 819 | 813 | 816 |
| 16 | --- | --- | --- | 608 | 607 | 608 | 774 | 755 | 764 | 814 | 808 | 812 |
| 17 | --- | --- | --- | 607 | 605 | 606 | 789 | 774 | 782 | 809 | 804 | 806 |
| 18 | --- | --- | --- | 607 | 605 | 606 | 798 | 789 | 793 | 804 | 798 | 801 |
| 19 | --- | --- | --- | 609 | 607 | 608 | 810 | 798 | 803 | 798 | 793 | 795 |
| 20 | 607 | 604 | 605 | 608 | 607 | 608 | 826 | 810 | 817 | 793 | 788 | 790 |
| 21 | 610 | 604 | 607 | 609 | 608 | 608 | 831 | 826 | 829 | 789 | 785 | 787 |
| 22 | 613 | 610 | 611 | 609 | 608 | 609 | 836 | 831 | 834 | 785 | 781 | 783 |
| 23 | 614 | 612 | 613 | 610 | 609 | 609 | 840 | 836 | 838 | 782 | 777 | 779 |
| 24 | 618 | 614 | 616 | 610 | 608 | 608 | 842 | 840 | 841 | 777 | 774 | 776 |
| 25 | 619 | 616 | 617 | 612 | 609 | 610 | 845 | 842 | 843 | 774 | 768 | 771 |
| 26 | 618 | 616 | 617 | 616 | 612 | 614 | 846 | 844 | 845 | 770 | 765 | 767 |
| 27 | 617 | 614 | 616 | 622 | 616 | 620 | 847 | 845 | 846 | 765 | 762 | 763 |
| 28 | 615 | 612 | 613 | 624 | 622 | 623 | 850 | 847 | 848 | 762 | 758 | 760 |
| 29 | 613 | 608 | 611 | 624 | 623 | 623 | 851 | 850 | 851 | 758 | 754 | 756 |
| 30 | 608 | 606 | 607 | 625 | 623 | 624 | 854 | 851 | 852 | 754 | 751 | 752 |
| 31 | 606 | 602 | 604 | --- | --- | --- | 855 | 854 | 855 | 751 | 747 | 749 |
| MONTH | --- | --- | --- | 625 | 584 | 605 | 855 | 610 | 735 | 861 | 747 | 810 |

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

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | FEBRUARY | | | MARCH | | | APRIL | | | MAY | |
| 1 | 747 | 744 | 746 | 709 | 707 | 708 | 768 | 749 | 756 | 595 | 555 | 578 |
| 2 | 744 | 741 | 743 | 709 | 708 | 709 | 755 | 749 | 753 | 620 | 591 | 611 |
| 3 | 741 | 737 | 739 | 710 | 709 | 709 | 756 | 754 | 755 | 614 | 595 | 605 |
| 4 | 737 | 734 | 736 | 710 | 709 | 709 | 756 | 755 | 755 | 649 | 605 | 629 |
| 5 | 735 | 731 | 733 | 710 | 709 | 710 | 755 | 744 | 750 | 654 | 630 | 638 |
| 6 | 731 | 729 | 730 | 710 | 709 | 709 | 744 | 732 | 738 | 663 | 652 | 657 |
| 7 | 729 | 726 | 727 | 710 | 708 | 709 | 732 | 717 | 725 | 662 | 648 | 651 |
| 8 | 727 | 725 | 726 | 708 | 707 | 708 | 717 | 695 | 706 | 691 | 626 | 661 |
| 9 | 725 | 724 | 724 | 707 | 705 | 706 | 695 | 683 | 690 | 695 | 646 | 680 |
| 10 | 725 | 723 | 724 | 706 | 703 | 704 | 683 | 666 | 675 | 719 | 670 | 690 |
| 11 | 723 | 722 | 723 | 716 | 703 | 709 | 666 | 641 | 653 | 721 | 648 | 684 |
| 12 | 722 | 720 | 721 | 733 | 716 | 724 | 641 | 626 | 635 | 719 | 634 | 663 |
| 13 | 722 | 720 | 721 | 756 | 733 | 744 | 626 | 607 | 614 | 788 | 719 | 756 |
| 14 | 721 | 719 | 720 | 774 | 756 | 765 | 607 | 588 | 599 | 839 | 788 | 826 |
| 15 | 720 | 718 | 719 | 791 | 774 | 783 | 588 | 578 | 582 | 830 | 791 | 806 |
| 16 | 718 | 717 | 718 | 806 | 791 | 799 | 578 | 572 | 576 | 808 | 787 | 796 |
| 17 | 717 | 714 | 715 | 816 | 806 | 811 | 572 | 559 | 565 | 835 | 808 | 819 |
| 18 | 716 | 714 | 715 | 824 | 816 | 821 | --- | --- | --- | 823 | 818 | 820 |
| 19 | 715 | 713 | 714 | 831 | 824 | 827 | --- | --- | --- | 822 | 797 | 810 |
| 20 | 714 | 712 | 713 | 836 | 831 | 833 | 515 | 511 | 513 | 810 | 786 | 797 |
| 21 | 713 | 711 | 712 | 834 | 831 | 832 | 513 | 501 | 505 | 808 | 775 | 789 |
| 22 | 712 | 710 | 711 | 835 | 830 | 832 | 531 | 508 | 519 | 787 | 772 | 778 |
| 23 | 712 | 710 | 711 | 836 | 834 | 835 | 540 | 529 | 534 | 783 | 777 | 780 |
| 24 | 711 | 709 | 710 | 837 | 835 | 836 | 541 | 529 | 535 | 790 | 780 | 785 |
| 25 | 710 | 708 | 709 | 836 | 835 | 836 | 534 | 522 | 526 | 798 | 781 | 792 |
| 26 | 709 | 708 | 708 | 836 | 831 | 834 | 531 | 521 | 525 | 827 | 795 | 814 |
| 27 | 709 | 707 | 708 | 834 | 829 | 831 | 555 | 528 | 540 | 832 | 820 | 827 |
| 28 | 709 | 707 | 708 | 834 | 827 | 831 | 611 | 555 | 588 | 832 | 794 | 819 |
| 29 | --- | --- | --- | 827 | 809 | 819 | 611 | 584 | 596 | 824 | 774 | 799 |
| 30 | --- | --- | --- | 809 | 790 | 799 | 589 | 551 | 568 | 802 | 766 | 785 |
| 31 | --- | --- | --- | 790 | 768 | 780 | --- | --- | --- | 791 | 745 | 758 |
| MONTH | 747 | 707 | 721 | 837 | 703 | 773 | --- | --- | --- | 839 | 555 | 739 |

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | JUNE | | | JULY | | | AUGUST | | | SEPTEMBER | |
| 1 | 748 | 727 | 741 | 793 | 769 | 775 | 645 | 602 | 619 | --- | --- | --- |
| 2 | 729 | 614 | 685 | 806 | 790 | 801 | 629 | 603 | 620 | --- | --- | --- |
| 3 | 802 | 616 | 724 | --- | --- | --- | 603 | 589 | 596 | --- | --- | --- |
| 4 | 866 | 692 | 808 | --- | --- | --- | 595 | 587 | 592 | --- | --- | --- |
| 5 | 692 | 616 | 633 | --- | --- | --- | 616 | 594 | 603 | --- | --- | --- |
| 6 | 618 | 596 | 607 | --- | --- | --- | 652 | 607 | 627 | --- | --- | --- |
| 7 | 611 | 565 | 580 | --- | --- | --- | 659 | 643 | 652 | --- | --- | --- |
| 8 | 565 | 541 | 554 | --- | --- | --- | 699 | 643 | 669 | --- | --- | --- |
| 9 | 543 | 360 | 449 | --- | --- | --- | 719 | 699 | 710 | --- | --- | --- |
| 10 | 416 | 367 | 397 | --- | --- | --- | 719 | 703 | 712 | --- | --- | --- |
| 11 | 564 | 399 | 475 | 587 | 365 | 449 | 714 | 632 | 683 | --- | --- | --- |
| 12 | 700 | 562 | 634 | 395 | 368 | 383 | 632 | 599 | 612 | --- | --- | --- |
| 13 | 813 | 697 | 773 | 456 | 343 | 397 | 604 | 582 | 589 | --- | --- | --- |
| 14 | 813 | 759 | 782 | 343 | 325 | 330 | 602 | 581 | 591 | --- | --- | --- |
| 15 | 760 | 738 | 750 | 378 | 340 | 363 | 597 | 569 | 581 | --- | --- | --- |
| 16 | 738 | 701 | 713 | 412 | 378 | 393 | 569 | 529 | 550 | --- | --- | --- |
| 17 | 719 | 704 | 710 | 535 | 412 | 455 | 529 | 504 | 515 | --- | --- | --- |
| 18 | 705 | 690 | 696 | 579 | 523 | 554 | 530 | 513 | 520 | --- | --- | --- |
| 19 | 695 | 680 | 688 | 530 | 501 | 510 | 664 | 530 | 592 | --- | --- | --- |
| 20 | 718 | 690 | 708 | 596 | 530 | 572 | 760 | 664 | 714 | --- | --- | --- |
| 21 | 718 | 691 | 706 | 597 | 586 | 592 | 776 | 760 | 769 | --- | --- | --- |
| 22 | 731 | 710 | 723 | 640 | 590 | 616 | 778 | 776 | 777 | --- | --- | --- |
| 23 | 720 | 649 | 678 | 640 | 626 | 633 | 780 | 777 | 778 | --- | --- | --- |
| 24 | 724 | 669 | 704 | 640 | 626 | 629 | 780 | 765 | 773 | --- | --- | --- |
| 25 | 736 | 723 | 730 | 634 | 620 | 623 | 765 | 754 | 758 | --- | --- | --- |
| 26 | 735 | 721 | 729 | 620 | 607 | 613 | 755 | 679 | 723 | --- | --- | --- |
| 27 | 749 | 718 | 736 | 620 | 611 | 614 | 679 | 657 | 671 | --- | --- | --- |
| 28 | 769 | 749 | 758 | 631 | 614 | 622 | 657 | 608 | 636 | --- | --- | --- |
| 29 | 774 | 763 | 768 | 632 | 622 | 629 | 608 | 561 | 583 | --- | --- | --- |
| 30 | 779 | 774 | 777 | 625 | 619 | 622 | --- | --- | --- | --- | --- | --- |
| 31 | --- | --- | --- | 629 | 624 | 626 | --- | --- | --- | --- | --- | --- |
| MONTH | 866 | 360 | 681 | --- | --- | --- | --- | --- | --- | --- | --- | --- |

## 05054500 SHEYENNE RIVER ABOVE HARVEY, ND

LOCATION.--Lat 47°42'10", long 99°56'55", in SW$^1/_4$SE$^1/_4$ sec.24, T.149 N., R.73 W., Wells County, Hydrologic Unit 09020202, on right bank just downstream from county road and 4.5 mi south of Harvey.

DRAINAGE AREA.--424 mi$^2$, of which about 270 mi$^2$ is probably noncontributing.

### WATER-DISCHARGE RECORDS

PERIOD OF RECORD.- October 1955 to current year.

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,547.30 ft above National Geodetic Vertical Datum of 1929.

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.3 | 6.2 | e3.0 | e0.63 | e0.00 | e0.00 | e9.5 | 28 | 9.4 | 5.3 | 2.6 | 3.1 |
| 2 | 2.2 | 5.5 | e2.8 | e0.70 | e0.00 | e0.00 | e10 | 27 | 9.3 | 4.6 | 1.7 | 2.8 |
| 3 | 2.1 | 5.3 | e2.6 | e0.80 | e0.00 | e0.00 | e12 | 26 | 9.8 | 4.3 | 1.7 | 2.4 |
| 4 | 2.2 | 5.1 | e2.6 | e0.72 | e0.00 | e0.00 | e12 | 23 | 9.8 | 4.0 | 1.5 | 2.2 |
| 5 | 2.1 | e5.0 | e2.4 | e0.67 | e0.00 | e0.00 | e13 | 22 | 9.2 | 3.7 | 1.4 | 2.2 |
| 6 | 2.2 | e4.8 | e2.2 | e0.62 | e0.05 | e0.00 | e14 | 22 | 8.0 | 3.7 | 1.5 | 2.3 |
| 7 | 1.9 | e4.8 | e1.9 | e0.59 | e0.05 | e0.00 | e14 | 23 | 7.6 | 3.7 | 1.6 | 2.2 |
| 8 | 2.0 | e4.5 | e1.8 | e0.56 | e0.10 | e0.02 | e15 | 25 | 7.3 | 3.4 | 1.6 | 2.9 |
| 9 | 2.4 | e4.6 | e1.7 | e0.55 | e0.10 | e0.10 | e15 | 30 | 12 | 6.1 | 3.3 | 2.5 |
| 10 | 3.1 | e4.5 | e1.7 | e0.52 | e0.12 | e0.15 | e16 | 30 | 24 | 9.9 | 1.8 | 2.3 |
| 11 | 2.8 | e4.4 | e1.6 | e0.50 | e0.15 | e0.25 | e16 | 29 | 26 | 7.9 | 1.7 | 2.1 |
| 12 | 2.9 | e4.3 | e1.5 | e0.49 | e0.20 | e0.35 | 16 | 29 | 25 | 7.4 | 1.6 | 2.2 |
| 13 | 2.9 | e4.5 | e1.5 | e0.47 | e0.22 | e0.45 | 17 | 27 | 19 | 6.5 | 1.5 | 2.1 |
| 14 | 3.0 | e4.4 | e1.5 | e0.46 | e0.20 | e0.53 | 17 | 26 | 15 | 5.5 | 1.5 | 2.2 |
| 15 | 3.1 | e4.3 | e1.5 | e0.44 | e0.22 | e0.61 | 16 | 23 | 12 | 4.6 | 1.5 | 2.0 |
| 16 | 3.2 | e4.4 | e1.5 | e0.42 | e0.25 | e0.65 | 15 | 22 | 9.2 | 4.0 | 1.6 | 1.9 |
| 17 | 3.8 | e4.3 | e1.4 | e0.41 | e0.25 | e0.81 | 14 | 21 | 7.5 | 8.0 | 2.3 | 1.9 |
| 18 | 3.2 | e4.2 | e1.3 | e0.40 | e0.24 | e0.98 | 18 | 20 | 7.0 | 6.0 | 1.7 | 2.1 |
| 19 | 3.3 | e4.0 | e1.4 | e0.38 | e0.22 | e1.2 | 20 | 18 | 7.2 | 5.8 | 1.6 | 2.1 |
| 20 | 3.1 | e4.2 | e1.3 | e0.38 | e0.20 | e1.6 | 18 | 17 | 7.1 | 6.1 | 1.5 | 1.9 |
| 21 | 3.0 | e4.3 | e1.3 | e0.35 | e0.22 | e1.7 | 17 | 16 | 7.0 | 5.3 | 1.6 | 1.9 |
| 22 | 3.1 | e4.2 | e1.3 | e0.32 | e0.20 | e2.0 | 16 | 14 | 7.4 | 5.1 | 1.7 | 1.9 |
| 23 | 3.3 | e4.1 | e1.2 | e0.28 | e0.15 | e2.3 | 18 | 13 | 8.0 | 4.6 | 1.6 | 2.0 |
| 24 | 6.2 | e4.0 | e1.2 | e0.20 | e0.12 | e2.7 | 21 | 13 | 10 | 4.0 | 1.5 | 1.7 |
| 25 | 12 | e3.8 | e1.1 | e0.12 | e0.10 | e3.8 | 21 | 13 | 9.6 | 3.6 | 1.5 | 1.8 |
| 26 | 8.5 | e3.6 | e1.0 | e0.05 | e0.05 | e4.8 | 23 | 13 | 8.3 | 3.1 | 2.8 | 1.7 |
| 27 | 7.2 | e3.4 | e0.96 | e0.00 | e0.05 | e5.6 | 26 | 12 | 7.3 | 2.6 | 3.3 | 1.6 |
| 28 | 7.0 | e3.2 | e0.81 | e0.00 | e0.00 | e6.1 | 28 | 11 | 7.1 | 2.4 | 3.4 | 1.8 |
| 29 | 6.1 | e3.2 | e0.67 | e0.00 | --- | e6.9 | 29 | 11 | 7.3 | 2.1 | 3.2 | 1.8 |
| 30 | 6.1 | e3.1 | e0.59 | e0.00 | --- | e7.4 | 28 | 11 | 6.2 | 2.0 | 3.4 | 1.8 |
| 31 | 6.0 | --- | e0.63 | e0.00 | --- | e8.5 | --- | 9.9 | --- | 2.1 | 3.4 | --- |
| TOTAL | 122.3 | 130.2 | 47.96 | 12.03 | 3.46 | 59.50 | 524.5 | 624.9 | 319.6 | 147.4 | 62.6 | 63.4 |
| MEAN | 3.945 | 4.340 | 1.547 | 0.388 | 0.124 | 1.919 | 17.48 | 20.16 | 10.65 | 4.755 | 2.019 | 2.113 |
| MAX | 12 | 6.2 | 3.0 | 0.80 | 0.25 | 8.5 | 29 | 30 | 26 | 9.9 | 3.4 | 3.1 |
| MIN | 1.9 | 3.1 | 0.59 | 0.00 | 0.00 | 0.00 | 9.5 | 9.9 | 6.2 | 2.0 | 1.4 | 1.6 |
| AC-FT | 243 | 258 | 95 | 24 | 6.9 | 118 | 1040 | 1240 | 634 | 292 | 124 | 126 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 3.656 | 3.852 | 1.963 | 0.943 | 3.072 | 35.28 | 43.91 | 21.10 | 11.45 | 9.625 | 4.531 | 3.083 |
| MAX | 34.5 | 39.0 | 21.2 | 6.73 | 26.8 | 207 | 324 | 117 | 77.3 | 67.4 | 59.4 | 48.4 |
| (WY) | 1995 | 1995 | 1995 | 2000 | 1983 | 2001 | 1997 | 1995 | 2000 | 2000 | 1999 | 1999 |
| MIN | 0.43 | 0.26 | 0.034 | 0.000 | 0.000 | 0.000 | 2.13 | 1.59 | 0.30 | 0.071 | 0.000 | 0.061 |
| (WY) | 1991 | 1977 | 1996 | 1959 | 1956 | 1969 | 1991 | 1977 | 1961 | 1961 | 1959 | 1976 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1956 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 15435.36 | | 2117.85 | | | |
| ANNUAL MEAN | 42.29 | | 5.802 | | 11.90 | |
| HIGHEST ANNUAL MEAN | | | | | 44.3 | 2001 |
| LOWEST ANNUAL MEAN | | | | | 0.76 | 1961 |
| HIGHEST DAILY MEAN | 900 | Mar 24 | 30 | May 9 | 900 | Mar 24 2001 |
| LOWEST DAILY MEAN | 0.59 | Dec 30 | 0.00 | Jan 27 | 0.00 | Jan 21 1956 |
| ANNUAL SEVEN-DAY MINIMUM | 0.82 | Dec 25 | 0.00 | Jan 27 | 0.00 | Jan 21 1956 |
| MAXIMUM PEAK FLOW | | | a33 | Jun 10 | 1000 | Apr 20 1979 |
| MAXIMUM PEAK STAGE | | | b7.16 | Apr 6 | b10.76 | Apr 6 1997 |
| INSTANTANEOUS LOW FLOW | | | | | 0.00 | Jan 21 1956 |
| ANNUAL RUNOFF (AC-FT) | 30620 | | 4200 | | 8620 | |
| 10 PERCENT EXCEEDS | 104 | | 17 | | 28 | |
| 50 PERCENT EXCEEDS | 4.6 | | 2.9 | | 1.9 | |
| 90 PERCENT EXCEEDS | 2.4 | | 0.20 | | 0.01 | |

a Gage height, 5.61 ft
b Backwater from ice
e Estimated

05054500 SHEYENNE RIVER ABOVE HARVEY, ND--Continued

WATER-QUALITY RECORDS

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

REMARKS.--Quality assurance sample also collected at this location.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 05... | 1005 | 5.2 | -- | -- | -- | 1630 | 13.0 | 4.5 | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 11... | 1150 | 1.6 | -- | -- | -- | 1720 | -4.0 | .0 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 20... | 0920 | 1.5 | -- | -- | -- | 1300 | -5.0 | .0 | -- | -- | -- | -- | -- |
| 28... | 1100 | 5.8 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 02... | 1145 | 28 | 8.5 | 8.3 | 1820 | --e | 6.5 | 7.4 | 530 | 74.0 | 83.0 | 16.0 | 4 |
| JUN | | | | | | | | | | | | | |
| 19... | 1600 | 7.5 | -- | -- | -- | 1590 | 23.0 | 20.4 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 16... | 1315 | 4.1 | 8.7 | 8.4 | 1640 | 1700 | 35.0 | 28.2 | 330 | 42.0 | 55.0 | 13.0 | 6 |
| AUG | | | | | | | | | | | | | |
| 20... | 1155 | 1.5 | -- | -- | -- | 1310 | 29.0 | 17.0 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 05... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 20... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 28... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 02... | 220 | 47 | 432 | 20.0 | .30 | 610 | 101 | 1340 | 1280 | 5.0 | 60 | <1 | 140 |
| JUN | | | | | | | | | | | | | |
| 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 16... | 270 | 63 | 506 | 19.0 | .30 | 440 | 13.1 | 1180 | 1140 | 7.0 | 40 | <1 | 140 |
| AUG | | | | | | | | | | | | | |
| 20... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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 | | | | | |
| 05... | -- | -- | -- | -- | -- |
| DEC | | | | | |
| 11... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 20... | -- | -- | -- | -- | -- |
| 28... | -- | -- | -- | -- | -- |
| MAY | | | | | |
| 02... | 110 | <.10 | 1 | <1 | 560 |
| JUN | | | | | |
| 19... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 16... | 80 | .20 | 6 | 1 | 610 |
| AUG | | | | | |
| 20... | -- | -- | -- | -- | -- |

< Less than
e Required equipment not functional/available

## 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 $mi^2$, approximately, of which about 1,310 $mi^2$ is probably noncontributing, including 227 $mi^2$ 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. Datum of gage is 1,376.34 ft above National Geodetic Vertical Datum of 1929 (GPS survey by North Dakota State Water Commission).

REMARKS.--Records good except for periods where discharge is less than 40 $ft^3/s$, which are fair and for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 29 | 80 | 54 | 18 | 15 | 29 | e75 | 130 | 70 | 311 | 19 | 27 |
| 2 | 28 | 95 | 53 | 17 | 15 | 26 | e68 | 129 | 59 | 218 | 18 | 29 |
| 3 | 27 | 108 | 51 | 16 | 15 | 23 | e67 | 132 | 53 | 149 | 20 | 29 |
| 4 | 20 | 86 | 50 | 16 | 15 | 22 | e70 | 125 | 55 | 110 | 17 | 34 |
| 5 | 21 | 85 | 51 | 16 | 14 | 22 | e76 | 128 | 58 | 83 | 13 | 23 |
| 6 | 24 | 82 | 50 | 16 | 14 | 22 | e88 | 121 | 56 | 69 | 11 | 18 |
| 7 | 22 | 82 | 50 | 16 | 15 | 20 | e120 | 112 | 53 | 66 | 8.6 | 18 |
| 8 | 22 | 76 | 48 | 17 | 17 | 20 | e146 | 124 | 49 | 56 | 7.6 | 19 |
| 9 | 23 | 79 | 43 | 20 | 18 | 19 | 140 | 132 | 62 | 52 | 7.4 | 24 |
| 10 | 33 | 70 | 38 | 23 | 19 | 19 | 144 | 177 | 113 | 51 | 8.0 | 23 |
| 11 | 48 | 65 | 34 | 26 | 19 | 18 | 149 | 173 | 183 | 56 | 11 | 21 |
| 12 | 50 | 60 | 32 | 29 | 21 | 22 | 163 | 153 | 216 | 55 | 12 | 18 |
| 13 | 41 | 58 | 30 | 31 | 22 | 26 | 185 | 156 | 293 | 51 | 18 | 17 |
| 14 | 39 | 61 | 29 | 32 | 24 | 27 | 194 | 158 | 396 | 43 | 39 | 15 |
| 15 | 39 | 60 | 27 | 31 | 25 | 32 | 219 | 145 | 422 | 40 | 34 | 15 |
| 16 | 41 | 60 | 27 | 30 | 26 | 42 | 240 | 140 | 389 | 37 | 30 | 13 |
| 17 | 37 | 59 | 29 | 29 | 28 | 45 | 231 | 135 | 341 | 39 | 32 | 13 |
| 18 | 30 | 58 | 29 | 28 | 30 | 44 | 226 | 129 | 287 | 48 | 30 | 15 |
| 19 | 28 | 57 | 28 | 26 | 33 | 41 | 197 | e125 | 233 | 53 | 35 | 15 |
| 20 | 30 | 57 | 26 | 24 | e35 | 37 | 188 | e115 | 196 | 47 | 21 | 22 |
| 21 | 31 | 54 | 24 | 23 | e36 | 33 | 172 | e105 | 160 | 37 | 15 | 33 |
| 22 | 30 | 54 | 23 | 22 | e36 | 32 | 161 | 94 | 128 | 34 | 16 | 30 |
| 23 | 31 | 55 | 22 | 22 | e37 | 29 | 151 | 88 | 140 | 33 | 27 | 31 |
| 24 | 40 | 54 | 22 | 22 | e36 | 28 | 155 | 89 | 174 | 28 | 38 | 25 |
| 25 | 43 | 55 | 22 | 20 | e35 | 27 | 174 | 89 | 164 | 24 | 36 | 19 |
| 26 | 60 | 42 | 20 | 20 | 33 | 26 | 156 | 82 | 146 | 23 | 30 | 16 |
| 27 | 46 | 30 | 19 | 19 | 32 | 31 | 118 | 84 | 190 | 22 | 30 | 14 |
| 28 | 36 | 50 | 19 | 19 | 31 | e43 | 116 | 78 | 343 | 19 | 28 | 14 |
| 29 | 41 | 54 | 19 | 19 | --- | e55 | 132 | 75 | 431 | 18 | 26 | 13 |
| 30 | 54 | 56 | 19 | 17 | --- | e73 | 139 | 73 | 398 | 17 | 27 | 14 |
| 31 | 64 | --- | 18 | 16 | --- | e83 | --- | 74 | --- | 17 | 28 | --- |
| TOTAL | 1108 | 1942 | 1006 | 680 | 696 | 1016 | 4460 | 3670 | 5858 | 1906 | 692.6 | 617 |
| MEAN | 35.74 | 64.73 | 32.45 | 21.94 | 24.86 | 32.77 | 148.7 | 118.4 | 195.3 | 61.48 | 22.34 | 20.57 |
| MAX | 64 | 108 | 54 | 32 | 37 | 83 | 240 | 177 | 431 | 311 | 39 | 34 |
| MIN | 20 | 30 | 18 | 16 | 14 | 18 | 67 | 73 | 49 | 17 | 7.4 | 13 |
| AC-FT | 2200 | 3850 | 2000 | 1350 | 1380 | 2020 | 8850 | 7280 | 11620 | 3780 | 1370 | 1220 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 17.40 | 18.53 | 10.57 | 6.922 | 11.97 | 133.2 | 345.7 | 122.8 | 69.23 | 56.44 | 32.11 | 17.40 |
| MAX | 136 | 233 | 93.4 | 55.2 | 154 | 793 | 1794 | 854 | 326 | 441 | 423 | 154 |
| (WY) | 2001 | 2001 | 2001 | 2001 | 1981 | 1983 | 1997 | 1950 | 1954 | 2000 | 1993 | 2000 |
| MIN | 1.16 | 1.28 | 0.76 | 0.47 | 0.75 | 1.46 | 15.8 | 10.4 | 1.75 | 0.36 | 0.090 | 0.71 |
| (WY) | 1953 | 1961 | 1961 | 1990 | 1990 | 1964 | 1977 | 1990 | 1961 | 1989 | 1961 | 1961 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1950 - 2002 | | |
|---|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 72456 | | 23651.6 | | | | |
| ANNUAL MEAN | 198.5 | | 64.80 | | 70.17 | | |
| HIGHEST ANNUAL MEAN | | | | | 226 | | 2001 |
| LOWEST ANNUAL MEAN | | | | | 5.31 | | 1977 |
| HIGHEST DAILY MEAN | 1870 | Apr 8 | 431 | Jun 29 | 4370 | Apr 14 | 1969 |
| LOWEST DAILY MEAN | 18 | Dec 31 | 7.4 | Aug 9 | 0.00 | Aug 7 | 1961 |
| ANNUAL SEVEN-DAY MINIMUM | 19 | Dec 25 | 9.4 | Aug 6 | 0.00 | Aug 7 | 1961 |
| MAXIMUM PEAK FLOW | | | 442 | Jun 29 | a4660 | Apr 14 | 1969 |
| MAXIMUM PEAK STAGE | | | 3.61 | Jun 29 | 8.08 | Apr 21 | 1997 |
| INSTANTANEOUS LOW FLOW | | | | | 0.00 | Aug 7 | 1961 |
| ANNUAL RUNOFF (AC-FT) | 143700 | | 46910 | | 50830 | | |
| 10 PERCENT EXCEEDS | 462 | | 155 | | 140 | | |
| 50 PERCENT EXCEEDS | 62 | | 35 | | 12 | | |
| 90 PERCENT EXCEEDS | 33 | | 17 | | 1.6 | | |

a Gage height, 7.51 ft
e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 04... | 1340 | 20 | -- | -- | -- | 981 | 11.5 | 12.5 | -- | -- | -- | -- | -- |
| 29... | 1130 | 41 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 28... | 1650 | 53 | -- | -- | -- | 1100 | -7.0 | .5 | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 18... | 1410 | 29 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 23... | 1140 | 22 | -- | -- | -- | 1630 | -7.0 | .0 | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 22... | 0940 | 36 | -- | -- | -- | 1360 | 2.5 | .5 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 25... | 1305 | 27 | -- | -- | -- | 1060 | -1.0 | 1.0 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 12... | 1010 | 162 | 8.2 | --e | 718 | 680 | 20.0 | 2.0 | 220 | 42.0 | 27.0 | 11.0 | 2 |
| MAY | | | | | | | | | | | | | |
| 08... | 1040 | 124 | -- | -- | -- | 1390 | 2.5 | 6.0 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 02... | 1240 | 219 | -- | -- | -- | 1070 | 23.5 | 26.0 | -- | -- | -- | -- | -- |
| 09... | 1215 | 52 | --e | 8.2 | 1140 | --e | --e | --e | 320 | 53.5 | 44.4 | 12.3 | 4 |
| 24... | 1625 | 27 | 7.7 | 8.0 | 1190 | 1200 | 23.5 | 22.5 | 360 | 61.0 | 50.0 | 13.0 | 3 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | 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) (00631) | NITRO-GEN, TOTAL (MG/L AS N) (00600) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 04... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 29... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 28... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 23... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 22... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 12... | 69.0 | 39 | 226 | 11.0 | .10 | -- | 150 | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 02... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 09... | 146 | 49 | 416 | 11.8 | .2 | 33.2 | 239 | 2.2 | E.04 | .047 | .51 | .56 | 2.8 |
| 24... | 150 | 47 | 470 | 18.0 | .20 | -- | 220 | -- | -- | -- | -- | -- | -- |

05056000 SHEYENNE RIVER NEAR WARWICK, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 04... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 29... | -- | -- | -- | -- | -- | <.1 | <.1 | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 28... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 23... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 22... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 12... | -- | -- | 202 | 461 | 446 | -- | -- | 4.0 | 130 | <1 | 50 | 120 | <.10 |
| MAY | | | | | | | | | | | | | |
| 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 02... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 09... | .12 | .57 | 121 | 862 | 793 | E6.5 | E1.1 | -- | 17 | -- | -- | 383 | -- |
| 24... | -- | -- | 62.6 | 859 | 795 | -- | -- | 13.0 | 70 | 1 | 100 | 410 | .10 |

| Date | 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) | 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 SULFONE WAT,FLT GF 0.7U REC (UG/L) (49313) | ALDICA-RB SUL-FOXIDE, WAT,FLT GF 0.7U REC (UG/L) (49314) | ALDI-CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (49312) | ALPHA BHC DIS-SOLVED (UG/L) (34253) | ATRA-ZINE, WATER, DISS, REC (UG/L) (39632) | METHYL AZIN-PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686) | BENDIO-CARB, WATER FLTRD REC (UG/L) (50299) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 04... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 29... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 28... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 18... | -- | -- | -- | <.004 | <.007 | <.002 | <.02 | <.008 | <.04 | <.005 | <.007 | <.050 | <.03 |
| JAN | | | | | | | | | | | | | |
| 23... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 22... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 12... | <1 | <1 | 220 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 02... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 24... | 1 | <1 | 330 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | BEN-FLUR-ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673) | BENOMYL WATER FLTRD REC (UG/L) (50300) | BEN-SUL-FURON METHYL WAT FLT REC (UG/L) (61693) | BENTA-ZON, WATER, FLTRD, GF 0.7U REC (UG/L) (38711) | BUTYL-ATE, WATER, DISS, REC (UG/L) (04028) | CAF-FEINE, WATER FLTRD REC (UG/L) (50305) | CAR-BARYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49310) | CAR-BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680) | CARBO-FURAN, WATER, FLTRD, GF 0.7U REC (UG/L) (49309) | CARBO-FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674) | 3HYDRXY CARBO-FURAN WAT,FLT GF 0.7U REC (UG/L) (49308) | 3-KETO CARBO-FURAN WATER FLTRD REC (UG/L) (50295) | CHLOR-AMBEN, METHYL ESTER WATER FLTRD (UG/L) (61188) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 04... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 29... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 28... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 18... | <.010 | <.004 | <.02 | E.03 | <.002 | <.010 | <.03 | <.041 | <.006 | <.020 | <.006 | <2 | <.02 |
| JAN | | | | | | | | | | | | | |
| 23... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 22... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 12... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 02... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

05056000 SHEYENNE RIVER NEAR WARWICK, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | CHLORI-MURON, WATER FLTRD REC (UG/L) (50306) | CHLORO-THALO-NIL, WAT,FLT GF 0.7U REC (UG/L) (49306) | CHLOR-PYRIFOS DIS-SOLVED (UG/L) (38933) | CLOPYR-ALID, WATER, FLTRD, GF 0.7U REC (UG/L) (49305) | CYANA-ZINE, WATER, DISS, REC (UG/L) (04041) | CY-CLOATE, WATER, DISS, REC (UG/L) (04031) | DACTHAL MONO-ACID, WAT,FLT GF 0.7U REC (UG/L) (49304) | DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682) | DEETHYL ATRA-ZINE, WATER, DISS, REC (UG/L) (04040) | DEETHYL DEISO-PROPYL ATRAZIN DISS, REC (UG/L) (04039) | DEISO-PROPYL ATRAZIN WATER, DISS, REC (UG/L) (04038) | DI-AZINON, DIS-SOLVED (UG/L) (39572) | DICAMBA WATER, FLTRD, GF 0.7U REC (UG/L) (38442) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 04... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 29... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 28... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 18... | <.010 | <.04 | <.005 | <.01 | <.018 | <.01 | <.01 | <.003 | <.006 | <.01 | <.04 | <.005 | <.01 |
| JAN | | | | | | | | | | | | | |
| 23... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 22... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 12... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 02... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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) | DIPHEN-AMID, WATER, DISS, REC (UG/L) (04033) | 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) | 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) | FLUMET-SULAM WATER FLTRD REC (UG/L) (61694) | FLUO-METURON WATER, FLTRD, GF 0.7U REC (UG/L) (38811) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 04... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 29... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 28... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 18... | <.01 | <.005 | <.002 | <.01 | <.03 | <.02 | <.01 | <.002 | <.009 | <.005 | <.03 | <.01 | <.03 |
| JAN | | | | | | | | | | | | | |
| 23... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 22... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 12... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 02... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | FONOFOS WATER DISS REC (UG/L) (04095) | HYDROXY ATRA-ZINE WATER FLTRD REC (UG/L) (50355) | IMAZ-AQUIN WATER FLTRD REC (UG/L) (50356) | IMAZE-THAPYR WATER FLTRD REC (UG/L) (50407) | IMID-ACLOP-RID WATER FLTRD REC (UG/L) (61695) | LINDANE DIS-SOLVED (UG/L) (39341) | LINURON WATER, FLTRD, GF 0.7U REC (UG/L) (38478) | LIN-URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666) | MALA-THION, DIS-SOLVED (UG/L) (39532) | MCPA, WATER, FLTRD, GF 0.7U REC (UG/L) (38482) | MCPB, WATER, FLTRD, GF 0.7U REC (UG/L) (38487) | METAL-AXYL WATER FLTRD REC (UG/L) (50359) | METHIO-CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (38501) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 04... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 29... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 28... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 18... | <.003 | <.008 | <.02 | <.02 | <.007 | <.004 | <.01 | <.035 | <.027 | <.02 | <.01 | <.02 | <.008 |
| JAN | | | | | | | | | | | | | |
| 23... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 22... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 12... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 02... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

05056000 SHEYENNE RIVER NEAR WARWICK, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | METH-OMYL OXIME WATER FLTRD REC (UG/L) (61696) | METH-OMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49296) | 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) | MET-SUL-FURON METHYL WAT FLT REC (UG/L) (61697) | 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) | NICOSUL FURON WATER FLTRD REC (UG/L) (50364) | NORFLUR AZON, WATER, FLTRD, GF 0.7U REC (UG/L) (49293) | ORY-ZALIN, WATER, FLTRD, GF 0.7U REC (UG/L) (49292) | OXAMYL OXIME WATER FLTRD REC (UG/L) (50410) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 04... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 29... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 28... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 18... | --q | <.004 | <.006 | <.013 | <.006 | <.03 | <.002 | <.007 | <.01 | <.01 | <.02 | <.02 | --q |
| JAN | | | | | | | | | | | | | |
| 23... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 22... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 12... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 02... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | OXAMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (38866) | P,P' DDE DISSOLV (UG/L) (34653) | PARA-THION, DIS-SOLVED (UG/L) (39542) | PEB-ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669) | PENDI-METH-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683) | PER-METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687) | PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664) | PIC-LORAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49291) | PRON-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676) | PROPA-CHLOR, WATER, DISS, REC (UG/L) (04024) | PRO-PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679) | PRO-PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685) | PRO-PHAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49236) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 04... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 29... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 28... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 18... | <.01 | <.003 | <.007 | <.002 | <.010 | <.006 | <.011 | <.02 | <.004 | <.010 | <.011 | <.02 | <.010 |
| JAN | | | | | | | | | | | | | |
| 23... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 22... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 12... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 02... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | PROP-ICONA-ZOLE , WATER FLTRD REC (UG/L) (50471) | PRO-POXUR, WATER, FLTRD, GF 0.7U REC (UG/L) (38538) | SIDURON WATER FLTRD REC (UG/L) (38548) | SI-MAZINE, WATER, DISS, REC (UG/L) (04035) | SULFO-MET-RURON METHYL WTR FLT REC (UG/L) (50337) | TEBU-THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670) | TER-BACIL, WATER, DISS, REC (UG/L) (04032) | 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-BENURON METHYL WATER FLTRD (UG/L) (61159) | TRI-CLOPYR, WATER, FLTRD, GF 0.7U REC (UG/L) (49235) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 04... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 29... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 28... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 18... | <.02 | <.008 | <.02 | <.011 | <.009 | <.02 | <.010 | <.034 | <.02 | <.005 | <.002 | --u | <.02 |
| JAN | | | | | | | | | | | | | |
| 23... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 22... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 12... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 02... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

05056000 SHEYENNE RIVER NEAR WARWICK, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | TRI-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661) | UREA 3(4-CHLOR OPHENYL METHYL WAT FLT REC (UG/L) (61692) | 2,4-D METHYL ESTER, WATER FLTRD REC (UG/L) (50470) | 2,4-D, DIS-SOLVED (UG/L) (39732) | 2,4-DB WATER, FLTRD, GF 0.7U REC (UG/L) (38746) |
|---|---|---|---|---|---|
| OCT | | | | | |
| 04... | -- | -- | -- | -- | -- |
| 29... | -- | -- | -- | -- | -- |
| NOV | | | | | |
| 28... | -- | -- | -- | -- | -- |
| DEC | | | | | |
| 18... | <.009 | <.02 | <.009 | <.02 | <.02 |
| JAN | | | | | |
| 23... | -- | -- | -- | -- | -- |
| FEB | | | | | |
| 22... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 25... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 12... | -- | -- | -- | -- | -- |
| MAY | | | | | |
| 08... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 02... | -- | -- | -- | -- | -- |
| 09... | -- | -- | -- | -- | -- |
| 24... | -- | -- | -- | -- | -- |

< Less than
E Estimated value
e Required equipment not functional/available
q Sample discarded: holding time exceeded
u Unable to determine-matrix interference

## 05056060 MAUVAIS COULEE TRIBUTARY NO. 3 NEAR CANDO, ND

LOCATION.--Lat 48°27'28", long 99°13'24", in NE$^1/_4$NW$^1/_4$ sec.6, T.157 N., R.66 W., Towner County, Hydrologic Unit 09020201, at bridge 2.1 mi southwest of Cando.

DRAINAGE AREA.--60.2 mi$^2$.

### WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--1955-73 (annual maximum discharges only), 1986-88 (discharge measurements only), March 1989 to current year (seasonal records only since 1989).

GAGE.--Water-stage recorder. Datum of gage is 1,460 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to 1986 gage was at different datum.

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

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

EXTREMES FOR CURRENT PERIOD.--Maximum discharge, 43 ft$^3$/s, June 15, gage height, 4.64 ft; no flow much of the time.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.00 | 0.00 | 2.5 | 0.00 | 13 |
| 2 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.00 | 0.00 | 1.8 | 0.00 | 13 |
| 3 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.00 | 0.00 | 1.4 | 0.00 | 8.9 |
| 4 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.00 | 0.00 | 1.1 | 0.00 | 5.4 |
| 5 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.00 | 0.00 | 0.99 | 0.00 | 3.9 |
| 6 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.00 | 0.00 | 0.91 | 0.00 | 3.0 |
| 7 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.00 | 0.00 | 0.84 | 0.00 | 2.5 |
| 8 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.00 | 0.00 | 0.77 | 0.00 | 2.5 |
| 9 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.00 | 0.12 | 1.8 | 11 | 2.3 |
| 10 | --- | --- | --- | --- | --- | e0.00 | e0.04 | 0.00 | 14 | 1.5 | 30 | 2.3 |
| 11 | --- | --- | --- | --- | --- | e0.00 | 0.07 | 0.00 | 8.6 | 0.91 | 13 | 2.0 |
| 12 | --- | --- | --- | --- | --- | e0.00 | 0.07 | 0.00 | 3.9 | 0.76 | 5.7 | 1.7 |
| 13 | --- | --- | --- | --- | --- | e0.00 | 0.13 | 0.00 | 4.5 | 0.64 | 3.3 | 1.5 |
| 14 | --- | --- | --- | --- | --- | e0.00 | 0.21 | 0.00 | 27 | 0.56 | 2.4 | 1.3 |
| 15 | --- | --- | --- | --- | --- | e0.00 | 0.03 | 0.00 | 42 | 0.47 | 2.0 | 1.3 |
| 16 | --- | --- | --- | --- | --- | e0.00 | 0.05 | 0.00 | 39 | 0.40 | 1.9 | 1.2 |
| 17 | --- | --- | --- | --- | --- | e0.00 | 0.0 | 0.00 | 30 | 0.35 | 2.6 | 1.0 |
| 18 | --- | --- | --- | --- | --- | e0.00 | 0.00 | 0.00 | 21 | 0.32 | 2.4 | 1.4 |
| 19 | --- | --- | --- | --- | --- | e0.00 | 0.00 | 0.00 | 15 | 0.26 | 2.0 | 2.4 |
| 20 | --- | --- | --- | --- | --- | e0.00 | 0.00 | 0.00 | 10 | 0.22 | 1.5 | 2.6 |
| 21 | --- | --- | --- | --- | --- | e0.00 | 0.00 | 0.00 | 7.3 | 0.14 | 1.3 | 1.8 |
| 22 | --- | --- | --- | --- | --- | e0.00 | 0.00 | 0.00 | 17 | 0.04 | 1.2 | 1.6 |
| 23 | --- | --- | --- | --- | --- | e0.00 | 0.00 | 0.00 | 21 | 0.00 | 1.2 | 1.9 |
| 24 | --- | --- | --- | --- | --- | e0.00 | 0.00 | 0.00 | 19 | 0.00 | 1.1 | 1.6 |
| 25 | --- | --- | --- | --- | --- | 0.00 | 0.00 | 0.00 | 14 | 0.00 | 1.0 | 1.5 |
| 26 | --- | --- | --- | --- | --- | e0.00 | 0.00 | 0.00 | 13 | 0.00 | 1.7 | 1.4 |
| 27 | --- | --- | --- | --- | --- | e0.01 | 0.00 | 0.00 | 10 | 0.00 | 2.4 | 1.2 |
| 28 | --- | --- | --- | --- | --- | e0.01 | 0.00 | 0.00 | 7.5 | 0.00 | 7.7 | 1.2 |
| 29 | --- | --- | --- | --- | --- | e0.00 | 0.00 | 0.00 | 5.3 | 0.00 | 14 | 1.2 |
| 30 | --- | --- | --- | --- | --- | e0.00 | 0.00 | 0.00 | 3.7 | 0.00 | 10 | 1.1 |
| 31 | --- | --- | --- | --- | --- | e0.00 | --- | 0.00 | --- | 0.00 | 7.1 | --- |
| TOTAL | --- | --- | --- | --- | --- | 0.02 | 0.60 | 0.00 | 332.92 | 18.68 | 126.50 | 87.7 |
| MEAN | --- | --- | --- | --- | --- | 0.001 | 0.020 | 0.000 | 11.10 | 0.603 | 4.081 | 2.923 |
| MAX | --- | --- | --- | --- | --- | 0.01 | 0.21 | 0.00 | 42 | 2.5 | 30 | 13 |
| MIN | --- | --- | --- | --- | --- | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.0 |
| AC-FT | --- | --- | --- | --- | --- | 0.04 | 1.2 | 0.00 | 660 | 37 | 251 | 174 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | --- | --- | --- | --- | --- | 21.84 | 82.36 | 15.05 | 5.526 | 12.51 | 9.013 | 1.358 |
| MAX | --- | --- | --- | --- | --- | 141 | 252 | 94.5 | 40.0 | 93.6 | 59.7 | 13.9 |
| (WY) | --- | --- | --- | --- | --- | 1992 | 1999 | 1999 | 1996 | 1997 | 1996 | 1993 |
| MIN | --- | --- | --- | --- | --- | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| (WY) | --- | --- | --- | --- | --- | 1989 | 1990 | 1988 | 1988 | 1988 | 1988 | 1988 |

e Estimated

05056060 MAUVAIS COULEE TRIBUTARY NO. 3 NEAR CANDO, ND--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FEB | | | | | | | | | | | | | |
| 21... | 1520 | .0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 25... | 1630 | .0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 11... | 1410 | .06 | 7.8 | --e | 910 | 875 | 15.5 | 5.0 | 320 | 62.0 | 40.0 | 7.70 | 2 |
| MAY | | | | | | | | | | | | | |
| 03... | 1150 | .0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 22... | 1200 | .0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 19... | 1235 | 15 | -- | -- | -- | 1450 | -- | 21.5 | -- | -- | -- | -- | -- |
| 24... | 2015 | 15 | -- | -- | -- | 1160 | -- | 25.0 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 24... | 1145 | .0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FEB | | | | | | | | | | | | | |
| 21... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 11... | 66.0 | 30 | 103 | 29.0 | .10 | 320 | .10 | 624 | 588 | 4.0 | 60 | <1 | 40 |
| MAY | | | | | | | | | | | | | |
| 03... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 22... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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 | | | | | |
| 21... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 25... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 11... | 920 | <.10 | <1 | <1 | 300 |
| MAY | | | | | |
| 03... | -- | -- | -- | -- | -- |
| 22... | -- | -- | -- | -- | -- |
| JUN | | | | | |
| 19... | -- | -- | -- | -- | -- |
| 24... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 24... | -- | -- | -- | -- | -- |

< Less than
e Required equipment not functional/available

## 05056100 MAUVAIS COULEE NEAR CANDO, ND

LOCATION.--Lat 48°26'53", long 99°06'08", in SE$^1/_4$NE$^1/_4$SE$^1/_4$ sec.1, T.157 N., R.66 W., Towner County, Hydrologic Unit 09020201, on left bank 0.3 mi upstream from highway bridge, about 4 mi upstream from West Fork Mauvais Coulee, and 5.5 mi southeast of Cando.

DRAINAGE AREA.--387 mi$^2$, of which about 10 mi$^2$ is probably noncontributing.

### WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Elevation of gage is 1,445 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to July 2, 1957, nonrecording gage at present site and datum.

REMARKS.--Records good except for estimated daily 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, 180 ft$^3$/s, June 16, gage height, 5.02 ft; minimum recorded daily discharge, 0.03 ft$^3$/s, on several days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | --- | --- | --- | --- | --- | 0.04 | 0.04 | 0.31 | 0.48 | e22 | 0.27 | 22 |
| 2 | --- | --- | --- | --- | --- | 0.04 | 0.04 | 0.30 | 0.40 | 19 | 0.21 | 26 |
| 3 | --- | --- | --- | --- | --- | 0.03 | 0.04 | e0.10 | 0.36 | 14 | 0.20 | 24 |
| 4 | --- | --- | --- | --- | --- | 0.03 | 0.04 | 0.36 | 0.35 | 11 | 0.15 | 24 |
| 5 | --- | --- | --- | --- | --- | 0.04 | 0.04 | 0.40 | 0.32 | 9.2 | 0.11 | 27 |
| 6 | --- | --- | --- | --- | --- | 0.03 | 0.05 | 0.39 | 0.27 | 6.7 | 0.11 | 26 |
| 7 | --- | --- | --- | --- | --- | 0.03 | 0.04 | 0.40 | 0.23 | 5.6 | 0.17 | 22 |
| 8 | --- | --- | --- | --- | --- | 0.03 | 0.04 | 0.60 | 0.23 | 4.6 | 0.18 | 18 |
| 9 | --- | --- | --- | --- | --- | 0.03 | 0.04 | 1.6 | 2.0 | 4.1 | 0.42 | 14 |
| 10 | --- | --- | --- | --- | --- | 0.03 | 0.04 | 1.4 | 21 | 4.7 | 0.43 | 11 |
| 11 | --- | --- | --- | --- | --- | 0.04 | 0.06 | 2.1 | 48 | 3.3 | 0.34 | 9.3 |
| 12 | --- | --- | --- | --- | --- | 0.06 | 0.09 | 3.1 | 54 | 3.0 | 0.25 | 7.8 |
| 13 | --- | --- | --- | --- | --- | 0.05 | 0.13 | 3.5 | 78 | 2.6 | 3.0 | 6.7 |
| 14 | --- | --- | --- | --- | --- | 0.04 | 0.16 | 3.7 | 96 | 2.3 | 12 | 5.8 |
| 15 | --- | --- | --- | --- | --- | 0.04 | 0.25 | 2.6 | 116 | 2.1 | 10 | 5.1 |
| 16 | --- | --- | --- | --- | --- | 0.04 | 0.24 | 1.8 | 166 | 1.8 | 8.6 | 4.4 |
| 17 | --- | --- | --- | --- | --- | 0.04 | 0.32 | 1.1 | 170 | 1.7 | 8.9 | 3.9 |
| 18 | --- | --- | --- | --- | --- | 0.04 | 0.54 | 1.1 | 136 | 1.7 | 7.3 | 4.8 |
| 19 | --- | --- | --- | --- | --- | 0.04 | 0.55 | 0.95 | 108 | 1.5 | 6.3 | 5.4 |
| 20 | --- | --- | --- | --- | --- | 0.04 | 0.45 | 0.71 | 93 | 1.3 | 5.6 | 4.5 |
| 21 | --- | --- | --- | --- | --- | 0.04 | 0.39 | 0.96 | 94 | 1.0 | 5.2 | 4.0 |
| 22 | --- | --- | --- | --- | --- | 0.04 | 0.36 | 0.71 | e97 | 0.90 | 4.9 | 4.2 |
| 23 | --- | --- | --- | --- | --- | 0.04 | 0.34 | 0.82 | e96 | 0.96 | 4.7 | 4.9 |
| 24 | --- | --- | --- | --- | --- | 0.03 | 0.35 | 0.56 | e95 | 0.82 | 4.7 | 4.8 |
| 25 | --- | --- | --- | --- | --- | 0.03 | 0.29 | 0.47 | e91 | 0.70 | 4.0 | e4.6 |
| 26 | --- | --- | --- | --- | --- | 0.04 | 0.24 | 0.57 | e85 | 0.59 | 5.2 | e4.5 |
| 27 | --- | --- | --- | --- | --- | 0.11 | 0.22 | 0.55 | e75 | 0.46 | 9.8 | e4.5 |
| 28 | --- | --- | --- | --- | --- | 0.12 | 0.21 | 0.54 | e63 | 0.40 | 16 | e4.4 |
| 29 | --- | --- | --- | --- | --- | 0.08 | 0.24 | 0.69 | e46 | 0.37 | 12 | e4.2 |
| 30 | --- | --- | --- | --- | --- | 0.05 | 0.25 | 0.90 | e30 | 0.29 | 11 | e4.0 |
| 31 | --- | --- | --- | --- | --- | 0.05 | --- | 0.68 | --- | 0.29 | 14 | --- |
| TOTAL | --- | --- | --- | --- | --- | 1.39 | 6.09 | 33.97 | 1862.64 | 128.98 | 156.04 | 315.8 |
| MEAN | --- | --- | --- | --- | --- | 0.045 | 0.203 | 1.096 | 62.09 | 4.161 | 5.034 | 10.53 |
| MAX | --- | --- | --- | --- | --- | 0.12 | 0.55 | 3.7 | 170 | 22 | 16 | 27 |
| MIN | --- | --- | --- | --- | --- | 0.03 | 0.04 | 0.10 | 0.23 | 0.29 | 0.11 | 3.9 |
| AC-FT | --- | --- | --- | --- | --- | 2.8 | 12 | 67 | 3690 | 256 | 310 | 626 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 2.409 | 1.177 | 0.279 | 0.020 | 0.183 | 22.21 | 196.8 | 58.53 | 12.99 | 15.96 | 14.32 | 4.552 |
| MAX | 27.1 | 10.4 | 3.86 | 0.34 | 5.01 | 198 | 946 | 527 | 87.6 | 226 | 274 | 62.3 |
| (WY) | 1966 | 1981 | 1981 | 1981 | 1981 | 1992 | 1997 | 1999 | 1999 | 1997 | 1993 | 1965 |
| MIN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| (WY) | 1959 | 1960 | 1957 | 1957 | 1957 | 1958 | 1991 | 1961 | 1961 | 1959 | 1959 | 1959 |

SUMMARY STATISTICS WATER YEARS 1956 - 2002

| | | |
|---|---|---|
| ANNUAL MEAN | a19.68 | |
| HIGHEST ANNUAL MEAN | a71.7 | 1974 |
| LOWEST ANNUAL MEAN | a0.004 | 1961 |
| HIGHEST DAILY MEAN | 2980 | Apr 21 1997 |
| LOWEST DAILY MEAN | 0.00 | Aug 21 1956 |
| ANNUAL SEVEN-DAY MINIMUM | 0.00 | Aug 21 1956 |
| MAXIMUM PEAK FLOW | 3000 | Apr 21 1997 |
| MAXIMUM PEAK STAGE | 11.68 | Apr 21 1997 |
| ANNUAL RUNOFF (AC-FT) | a14260 | |
| 10 PERCENT EXCEEDS | 25 | |
| 50 PERCENT EXCEEDS | 0.06 | |
| 90 PERCENT EXCEEDS | 0.00 | |

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

05056100 MAUVAIS COULEE NEAR CANDO, ND--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 03... | 1740 | .10 | -- | -- | -- | 1610 | 15.5 | 13.0 | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 21... | 1450 | .05 | -- | -- | -- | 2110 | 9.0 | 1.5 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 25... | 1600 | .03 | -- | -- | -- | 1890 | -- | 1.0 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 11... | 1215 | .06 | 8.1 | 7.8 | 1260 | 1210 | 13.5 | 4.0 | 590 | 130 | 65.0 | 7.00 | 1 |
| MAY | | | | | | | | | | | | | |
| 22... | 1400 | .68 | -- | -- | -- | 2220 | -- | 15.0 | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 19... | 1110 | 107 | -- | -- | -- | 1450 | -- | 21.5 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 24... | 1110 | .81 | 8.5 | 8.2 | 1460 | 1440 | 18.0 | 19.5 | 640 | 120 | 82.0 | 15.0 | 2 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 03... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 21... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 11... | 62.0 | 18 | 218 | 29.0 | .20 | 460 | .15 | 927 | 885 | 1.0 | 60 | <1 | 80 |
| MAY | | | | | | | | | | | | | |
| 22... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 24... | 110 | 27 | 313 | 39.0 | .20 | 500 | 2.47 | 1130 | 1050 | 8.0 | 20 | 1 | 90 |

| Date | 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... | -- | -- | -- | -- | -- |
| FEB | | | | | |
| 21... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 25... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 11... | 570 | <.10 | <1 | <1 | 520 |
| MAY | | | | | |
| 22... | -- | -- | -- | -- | -- |
| JUN | | | | | |
| 19... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 24... | 310 | .10 | 2 | 1 | 510 |

< Less than

## 05056200 EDMORE COULEE NEAR EDMORE, ND

LOCATION.--Lat 48°20'14", long 98°39'33", in NW$^1/_4$NW$^1/_4$ 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$^2$, of which about 100 mi$^2$ 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 National Geodetic Vertical Datum of 1929. June 26, 1957, to Sept. 30, 1985, water-stage recorder at same site at a datum of 1,479.79 ft above National Geodetic Vertical Datum of 1929. Prior to June 26, 1957, nonrecording gage at same site and datum.

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 436 ft$^3$/s, June 28, gage height, 85.18 ft; no flow several days during year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.63 | 2.4 | e295 | 4.9 | e1.4 |
| 2 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.61 | 2.0 | 233 | 4.2 | e1.2 |
| 3 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.45 | 2.0 | 191 | 3.9 | e1.1 |
| 4 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.43 | 2.1 | 142 | 3.5 | e0.95 |
| 5 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.46 | 2.3 | 108 | 3.0 | e0.65 |
| 6 | --- | --- | --- | --- | --- | e0.00 | e0.50 | 0.35 | 2.2 | 80 | 2.9 | e0.50 |
| 7 | --- | --- | --- | --- | --- | e0.00 | e7.0 | 0.33 | 1.9 | 60 | 3.2 | e0.30 |
| 8 | --- | --- | --- | --- | --- | e0.00 | e10 | 1.1 | 1.7 | 45 | 2.7 | e0.30 |
| 9 | --- | --- | --- | --- | --- | e0.00 | 10 | 5.3 | 29 | 34 | 4.2 | e0.20 |
| 10 | --- | --- | --- | --- | --- | e0.00 | 9.9 | 4.6 | 50 | 30 | 3.3 | e0.14 |
| 11 | --- | --- | --- | --- | --- | e0.00 | 5.7 | 5.9 | 75 | 25 | 3.1 | e0.13 |
| 12 | --- | --- | --- | --- | --- | e0.00 | 4.5 | 9.1 | 44 | 21 | 3.0 | e0.07 |
| 13 | --- | --- | --- | --- | --- | 0.00 | 3.8 | 9.3 | 72 | 17 | 2.6 | e0.05 |
| 14 | --- | --- | --- | --- | --- | e0.00 | 4.6 | 6.8 | 161 | 14 | 2.3 | e0.00 |
| 15 | --- | --- | --- | --- | --- | e0.00 | 3.9 | 7.8 | 269 | 12 | 2.0 | e0.00 |
| 16 | --- | --- | --- | --- | --- | e0.00 | 3.4 | 11 | 346 | 10 | 1.9 | e0.00 |
| 17 | --- | --- | --- | --- | --- | e0.00 | 3.1 | 9.8 | 371 | 9.5 | 2.0 | e0.00 |
| 18 | --- | --- | --- | --- | --- | e0.00 | 2.1 | 8.6 | 344 | 9.7 | 1.8 | e0.10 |
| 19 | --- | --- | --- | --- | --- | e0.00 | 2.0 | 7.6 | 297 | 8.9 | 1.6 | e0.20 |
| 20 | --- | --- | --- | --- | --- | e0.00 | 2.0 | 6.9 | 266 | 8.1 | 1.3 | e0.15 |
| 21 | --- | --- | --- | --- | --- | e0.00 | 2.1 | 6.0 | 237 | 7.7 | 1.2 | e0.15 |
| 22 | --- | --- | --- | --- | --- | e0.00 | 1.7 | 5.5 | 255 | 7.2 | 1.0 | e0.15 |
| 23 | --- | --- | --- | --- | --- | e0.00 | 1.4 | 5.3 | 270 | 6.9 | 0.86 | e0.18 |
| 24 | --- | --- | --- | --- | --- | e0.00 | 1.7 | 4.3 | 313 | 6.5 | 0.94 | e0.15 |
| 25 | --- | --- | --- | --- | --- | 0.00 | 1.4 | 4.6 | 303 | 6.2 | 0.71 | e0.10 |
| 26 | --- | --- | --- | --- | --- | e0.00 | 0.71 | 3.7 | 332 | 5.8 | 0.66 | e0.08 |
| 27 | --- | --- | --- | --- | --- | e0.00 | 1.2 | 2.8 | 400 | 5.5 | 0.88 | e0.07 |
| 28 | --- | --- | --- | --- | --- | e0.00 | 1.2 | 3.5 | 430 | 5.4 | 0.88 | e0.05 |
| 29 | --- | --- | --- | --- | --- | e0.00 | 1.0 | 3.8 | 405 | 5.1 | 0.73 | e0.03 |
| 30 | --- | --- | --- | --- | --- | e0.00 | 0.77 | 3.7 | 354 | 4.7 | 0.72 | e0.05 |
| 31 | --- | --- | --- | --- | --- | e0.00 | --- | 2.9 | --- | 5.0 | 1.2 | --- |
| TOTAL | --- | --- | --- | --- | --- | 0.00 | 85.68 | 143.16 | 5639.6 | 1419.2 | 67.18 | 8.45 |
| MEAN | --- | --- | --- | --- | --- | 0.000 | 2.856 | 4.618 | 188.0 | 45.78 | 2.167 | 0.282 |
| MAX | --- | --- | --- | --- | --- | 0.00 | 10 | 11 | 430 | 295 | 4.9 | 1.4 |
| MIN | --- | --- | --- | --- | --- | 0.00 | 0.00 | 0.33 | 1.7 | 4.7 | 0.66 | 0.00 |
| AC-FT | --- | --- | --- | --- | --- | 0.00 | 170 | 284 | 11190 | 2810 | 133 | 17 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 0.967 | 0.321 | 0.055 | 0.000 | 0.445 | 26.36 | 121.2 | 35.86 | 15.22 | 20.75 | 15.34 | 2.238 |
| MAX | 9.79 | 5.73 | 0.98 | 0.000 | 11.6 | 232 | 529 | 309 | 188 | 306 | 437 | 45.4 |
| (WY) | 1986 | 1981 | 1981 | 1958 | 1981 | 1995 | 1997 | 1997 | 2002 | 1993 | 1993 | 1993 |
| MIN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| (WY) | 1959 | 1959 | 1958 | 1958 | 1959 | 1960 | 1991 | 1958 | 1958 | 1958 | 1958 | 1958 |

| SUMMARY STATISTICS | WATER YEARS 1957 - 2002 | |
|---|---|---|
| ANNUAL MEAN | a14.20 | |
| HIGHEST ANNUAL MEAN | a47.7 | 1974 |
| LOWEST ANNUAL MEAN | a0.028 | 1958 |
| HIGHEST DAILY MEAN | 1770 | Apr 24 1997 |
| LOWEST DAILY MEAN | 0.00 | Jul 1 1957 |
| ANNUAL SEVEN-DAY MINIMUM | 0.00 | Jul 1 1957 |
| MAXIMUM PEAK FLOW | 1830 | Apr 24 1997 |
| MAXIMUM PEAK STAGE | 87.95 | Apr 24 1997 |
| ANNUAL RUNOFF (AC-FT) | a10280 | |
| 10 PERCENT EXCEEDS | 18 | |
| 50 PERCENT EXCEEDS | 0.00 | |
| 90 PERCENT EXCEEDS | 0.00 | |

a Based on complete water years only (1953-82, 1994)
e Estimated

05056200 EDMORE COULEE NEAR EDMORE, ND--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 03... | 1230 | .19 | -- | -- | -- | 1320 | 15.5 | 11.0 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 13... | 1043 | .0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 25... | 1820 | .0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 10... | 1520 | 8.1 | 8.1 | --e | 599 | 617 | 12.0 | 5.0 | 180 | 39.0 | 21.0 | 14.0 | 1 |
| MAY | | | | | | | | | | | | | |
| 15... | 1335 | 7.4 | -- | -- | -- | 1280 | -- | 11.5 | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 18... | 1340 | 340 | -- | -- | -- | 739 | -- | 22.0 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 23... | 1410 | 7.0 | 7.9 | 8.1 | 1130 | 1120 | 17.5 | 21.5 | 420 | 92.0 | 47.0 | 15.0 | 2 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 03... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 10... | 44.0 | 32 | 117 | 18.0 | .10 | 160 | 8.47 | 386 | 367 | 4.0 | 80 | <1 | 30 |
| MAY | | | | | | | | | | | | | |
| 15... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 23... | 100 | 33 | 360 | 28.0 | .20 | 280 | 15.7 | 829 | 778 | 9.0 | 60 | 1 | 60 |

| Date | 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... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 13... | -- | -- | -- | -- | -- |
| 25... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 10... | 780 | <.10 | <1 | <1 | 180 |
| MAY | | | | | |
| 15... | -- | -- | -- | -- | -- |
| JUN | | | | | |
| 18... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 23... | 90 | <.10 | 1 | <1 | 420 |

< Less than
e Required equipment not functional/available

## 05056215 EDMORE COULEE TRIBUTARY NEAR WEBSTER, ND

LOCATION.--Lat 48°15'59", long 98°40'50", in NW$^1/_4$NW$^1/_4$ sec.7, T.155 N., R.62 W., Ramsey County, Hydrologic Unit 09020201, on upstream side of bridge on county road, 9 mi east and 1.1 mi south of Webster.

DRAINAGE AREA.--148 mi$^2$, approximately, of which about 44 mi$^2$ 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 1,400 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to October 1986 nonrecording gage at present site and datum.

REMARKS.--Records fair except for periods where discharge is less than 5.0 ft$^3$/s and for estimated daily discharges, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,390 ft$^3$/s, Apr. 25, 1997, gage height, 74.41 ft; maximum gage height, 75.06 ft, Aug. 2, 1993.

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 recorded discharge, 358 ft$^3$/s, June 24, gage height, 72.12 ft, may have been slightly higher on June 24; no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.46 | 0.49 | 204 | 9.3 | 22 |
| 2 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.43 | 0.41 | 197 | 5.8 | 23 |
| 3 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.36 | 0.37 | 179 | 4.6 | 20 |
| 4 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.34 | 0.32 | 154 | 3.3 | 17 |
| 5 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.32 | 0.29 | 138 | 2.3 | 16 |
| 6 | --- | --- | --- | --- | --- | e0.00 | e0.40 | 0.32 | 0.24 | 118 | 1.6 | 16 |
| 7 | --- | --- | --- | --- | --- | e0.00 | e0.60 | 0.28 | 0.18 | 98 | 1.5 | 16 |
| 8 | --- | --- | --- | --- | --- | e0.00 | e0.60 | 0.43 | 0.13 | 85 | 1.3 | 16 |
| 9 | --- | --- | --- | --- | --- | e0.00 | e0.40 | 4.0 | 55 | 72 | 3.3 | 16 |
| 10 | --- | --- | --- | --- | --- | e0.00 | 0.24 | 4.0 | 102 | 65 | 3.6 | 16 |
| 11 | --- | --- | --- | --- | --- | e0.00 | 0.22 | 4.0 | 70 | 52 | 6.4 | 16 |
| 12 | --- | --- | --- | --- | --- | e0.00 | 0.53 | 1.8 | 53 | 42 | 5.2 | 15 |
| 13 | --- | --- | --- | --- | --- | 0.00 | 1.3 | 5.5 | 41 | 34 | 4.2 | 15 |
| 14 | --- | --- | --- | --- | --- | e0.00 | e2.3 | 3.7 | 46 | 26 | 3.8 | 16 |
| 15 | --- | --- | --- | --- | --- | e0.00 | e2.3 | 2.9 | 49 | 20 | 3.4 | 16 |
| 16 | --- | --- | --- | --- | --- | e0.00 | e2.2 | 3.8 | 49 | 15 | 3.5 | 16 |
| 17 | --- | --- | --- | --- | --- | e0.00 | e2.1 | 4.2 | 49 | 13 | 4.8 | 16 |
| 18 | --- | --- | --- | --- | --- | e0.00 | 1.5 | 4.0 | 53 | 13 | 5.0 | 17 |
| 19 | --- | --- | --- | --- | --- | e0.00 | 1.3 | 3.8 | 75 | 13 | 5.0 | 19 |
| 20 | --- | --- | --- | --- | --- | e0.00 | 1.1 | 3.5 | 86 | 11 | 5.0 | 18 |
| 21 | --- | --- | --- | --- | --- | e0.00 | e0.94 | 2.8 | 64 | 10 | 5.1 | 16 |
| 22 | --- | --- | --- | --- | --- | e0.00 | e0.82 | 2.5 | 144 | 8.7 | 5.5 | 16 |
| 23 | --- | --- | --- | --- | --- | e0.00 | e0.58 | 2.4 | 260 | 8.8 | 6.0 | 16 |
| 24 | --- | --- | --- | --- | --- | e0.00 | e0.89 | 1.9 | 304 | 8.9 | 7.0 | 16 |
| 25 | --- | --- | --- | --- | --- | 0.00 | e0.60 | 1.6 | 325 | 10 | 6.9 | 16 |
| 26 | --- | --- | --- | --- | --- | e0.00 | 0.47 | 1.2 | 238 | 11 | 8.5 | 15 |
| 27 | --- | --- | --- | --- | --- | e0.00 | 0.47 | 0.90 | 224 | 12 | 16 | e15 |
| 28 | --- | --- | --- | --- | --- | e0.00 | 0.48 | 0.80 | 228 | 12 | 24 | 14 |
| 29 | --- | --- | --- | --- | --- | e0.00 | 0.48 | 0.77 | 229 | 11 | 27 | 14 |
| 30 | --- | --- | --- | --- | --- | e0.00 | 0.47 | 0.73 | 228 | 8.3 | 21 | 14 |
| 31 | --- | --- | --- | --- | --- | e0.00 | --- | 0.63 | --- | 9.1 | 21 | --- |
| TOTAL | --- | --- | --- | --- | --- | 0.00 | 23.29 | 64.37 | 2974.43 | 1658.8 | 230.9 | 494 |
| MEAN | --- | --- | --- | --- | --- | 0.000 | 0.776 | 2.076 | 99.15 | 53.51 | 7.448 | 16.47 |
| MAX | --- | --- | --- | --- | --- | 0.00 | 2.3 | 5.5 | 325 | 204 | 27 | 23 |
| MIN | --- | --- | --- | --- | --- | 0.00 | 0.00 | 0.28 | 0.13 | 8.3 | 1.3 | 14 |
| AC-FT | --- | --- | --- | --- | --- | 0.00 | 46 | 128 | 5900 | 3290 | 458 | 980 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | --- | --- | --- | --- | --- | 30.62 | 141.6 | 44.59 | 16.22 | 29.23 | 55.76 | 9.965 |
| MAX | --- | --- | --- | --- | --- | 233 | 493 | 303 | 99.1 | 226 | 858 | 134 |
| (WY) | --- | --- | --- | --- | --- | 1995 | 1997 | 1997 | 2002 | 1993 | 1993 | 1993 |
| MIN | --- | --- | --- | --- | --- | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| (WY) | --- | --- | --- | --- | --- | 1989 | 1990 | 1990 | 1988 | 1988 | 1988 | 1987 |

SUMMARY STATISTICS WATER YEARS 1986 - 2002

| | | |
|---|---|---|
| HIGHEST DAILY MEAN | 1390 | Apr 25 1997 |
| LOWEST DAILY MEAN | 0.00 | Mar 1 1986 |
| ANNUAL SEVEN-DAY MINIMUM | 0.00 | Mar 1 1986 |
| MAXIMUM PEAK FLOW | 1390 | Apr 25 1997 |
| MAXIMUM PEAK STAGE | 75.06 | Aug 2 1993 |

e Estimated

05056215 EDMORE COULEE TRIBUTARY NEAR WEBSTER, ND--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 03... | 1110 | .17 | -- | -- | -- | 1760 | 16.0 | 9.5 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 13... | 1010 | .0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 25... | 1835 | .0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 10... | 1335 | .24 | 7.7 | --e | 423 | 425 | 15.0 | 6.0 | 140 | 32.0 | 15.0 | 10.0 | 1 |
| 18... | 1150 | 1.6 | -- | -- | -- | 860 | -- | 6.0 | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 15... | 1450 | 2.9 | -- | -- | -- | 1320 | 8.0 | 11.0 | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 18... | 1615 | 52 | -- | -- | -- | 737 | -- | 22.5 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 23... | 1515 | 8.8 | 7.4 | 7.8 | 955 | 957 | 17.5 | 21.0 | 360 | 82.0 | 38.0 | 10.0 | 2 |
| SEP | | | | | | | | | | | | | |
| 04... | 1040 | 18 | -- | -- | -- | 860 | 23.5 | 19.0 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 03... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 10... | 26.0 | 27 | 107 | 17.0 | .10 | 89.0 | .17 | 264 | 255 | 3.0 | 150 | <1 | 20 |
| 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 15... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 23... | 83.0 | 33 | 344 | 21.0 | .20 | 190 | 16.2 | 687 | 631 | 7.0 | 50 | 2 | 50 |
| SEP | | | | | | | | | | | | | |
| 04... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 13... | -- | -- | -- | -- | -- |
| 25... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 10... | 2000 | <.10 | <1 | <1 | 150 |
| 18... | -- | -- | -- | -- | -- |
| MAY | | | | | |
| 15... | -- | -- | -- | -- | -- |
| JUN | | | | | |
| 18... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 23... | 50 | .10 | <1 | <1 | 320 |
| SEP | | | | | |
| 04... | -- | -- | -- | -- | -- |

< Less than
e Required equipment not functional/available

## 05056220 SWEETWATER LAKE AT SWEETWATER, ND

LOCATION.--Lat 48°12'39", long 98°52'15", in NE$^1/_4$SW$^1/_4$SW$^1/_4$ 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$^2$ of which about 290 mi$^2$ is probably noncontributing.

### WATER-QUALITY RECORDS

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

REMARKS.--Quality assurance sample also collected at this location.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DEPTH TO TOP OF SAMPLE INTERVAL(IN METERS) (82047) | DEPTH TO BOTTOM OF SAMPLE INTERVAL(IN METERS) (82048) | SPECIFIC CONDUCTANCE LAB (US/CM) (90095) | PH WATER WHOLE LAB (STANDARD UNITS) (00403) | HARDNESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DISSOLVED (MG/L AS CA) (00915) | MAGNESIUM, DISSOLVED (MG/L AS MG) (00925) | POTASSIUM, DISSOLVED (MG/L AS K) (00935) | SODIUM ADSORPTION RATIO (00931) | SODIUM, DISSOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 01... | 1455 | .0 | 1.7 | 1250 | --e | 430 | 85.0 | 52.0 | 20.0 | 3 | 130 | 39 | 304 |
| FEB | | | | | | | | | | | | | |
| 04... | 1501 | .70 | 1.5 | 1820 | -- | 650 | 130 | 78.0 | 25.0 | 3 | 180 | 37 | 460 |
| MAY | | | | | | | | | | | | | |
| 06... | 1535 | .0 | 1.5 | 1270 | 7.6 | 400 | 81.0 | 49.0 | 19.0 | 2 | 110 | 36 | 272 |
| JUL | | | | | | | | | | | | | |
| 29... | 1510 | .0 | 1.7 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | CHLORIDE, DISSOLVED (MG/L AS CL) (00940) | FLUORIDE, DISSOLVED (MG/L AS F) (00950) | SULFATE DISSOLVED (MG/L AS SO4) (00945) | NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608) | NITROGEN, NITRITE DISSOLVED (MG/L AS N) (00613) | NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631) | NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605) | NITROGEN, TOTAL (MG/L AS N) (00600) | ORTHOPHOSPHATE, DISSOLVED (MG/L AS P) (00671) | PHOSPHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 01... | 32.0 | .20 | 370 | 1.9 | <.04 | E.005 | E.04 | -- | -- | .43 | .55 | 938 | 873 |
| FEB | | | | | | | | | | | | | |
| 04... | 49.0 | .20 | 570 | 3.2 | .09 | E.004 | .07 | 3.1 | 3.2 | .32 | .47 | 1390 | 1310 |
| MAY | | | | | | | | | | | | | |
| 06... | 29.0 | .20 | 350 | 2.7 | .05 | E.004 | E.05n | 2.6 | -- | .02 | .53 | 859 | 801 |
| JUL | | | | | | | | | | | | | |
| 29... | -- | -- | -- | 2.5 | <.04 | <.008 | E.03 | -- | -- | .68 | .82 | -- | -- |

| Date | CHLOR-A PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70954) | ARSENIC DISSOLVED (UG/L AS AS) (01000) | IRON, DISSOLVED (UG/L AS FE) (01046) | LEAD, DISSOLVED (UG/L AS PB) (01049) | LITHIUM DISSOLVED (UG/L AS LI) (01130) | MANGANESE, DISSOLVED (UG/L AS MN) (01056) | MERCURY DISSOLVED (UG/L AS HG) (71890) | MOLYBDENUM, DISSOLVED (UG/L AS MO) (01060) | SELENIUM, DISSOLVED (UG/L AS SE) (01145) | STRONTIUM, DISSOLVED (UG/L AS SR) (01080) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | |
| 01... | 17.1 | .6 | 8.0 | 60 | 2 | 100 | 30 | <.10 | 2 | 3 | 350 |
| FEB | | | | | | | | | | | |
| 04... | E25.3 | E9.2 | 7.0 | 70 | 1 | 100 | 290 | <.10 | 4 | 1 | 480 |
| MAY | | | | | | | | | | | |
| 06... | E26.6 | E3.1 | 4.0 | 80 | 1 | 60 | 10 | <.10 | 4 | 1 | 360 |
| JUL | | | | | | | | | | | |
| 29... | E28.3 | <.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- |

05056220 SWEETWATER LAKE AT SWEETWATER, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DEPTH OF LAKE MAX. METERS (85310) | 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) | ICE THICK-NESS METERS (82131) | TRANS-PAR-ENCY (SECCHI DISK) (IN) (00077) | TEMPER-ATURE AIR (DEG C) (00020) | WIND DIREC-TION (DEG. FROM TRUE NORTH) (00036) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 01... | 1450 | 1.7 | .0 | 1290 | 8.7 | 14.9 | 9.1 | 95 | 724 | -- | 16.8 | 24.0 | 90 |
| 01... | 1451 | -- | .50 | 1290 | 8.7 | 14.9 | 8.9 | -- | -- | -- | -- | -- | -- |
| 01... | 1452 | -- | 1.0 | 1290 | 8.7 | 14.8 | 9.0 | -- | -- | -- | -- | -- | -- |
| 01... | 1453 | -- | 1.5 | 1290 | 8.7 | 14.6 | 8.5 | -- | -- | -- | -- | -- | -- |
| 01... | 1454 | -- | 1.7 | 1290 | 8.7 | 14.2 | 6.6 | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 04... | 1455 | 1.5 | .70 | 1870 | 7.4 | .8 | 9.5 | 70 | 730 | .55 | 18.0 | 5.0 | 225 |
| 04... | 1457 | -- | 1.5 | 1850 | 7.4 | 2.5 | 6.9 | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 06... | 1530 | 1.5 | .0 | 1270 | 7.9 | 4.8 | 11.8 | 96 | 730 | -- | 3.60 | 5.0 | 45 |
| 06... | 1531 | -- | 1.0 | 1270 | 8.1 | 4.8 | 11.6 | -- | -- | -- | -- | -- | -- |
| 06... | 1532 | -- | 1.5 | 1270 | 8.1 | 4.8 | 11.5 | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 29... | 1505 | 1.7 | .0 | 924 | 8.9 | 27.4 | -- | -- | 720 | -- | 16.8 | 30.5 | 225 |
| 29... | 1506 | -- | .50 | 941 | 8.7 | 24.4 | 14.2 | -- | -- | -- | -- | -- | -- |
| 29... | 1507 | -- | 1.0 | 953 | 8.5 | 22.8 | 10.9 | -- | -- | -- | -- | -- | -- |
| 29... | 1508 | -- | 1.5 | 957 | 8.4 | 22.6 | 9.6 | -- | -- | -- | -- | -- | -- |
| 29... | 1509 | -- | 1.7 | 956 | 8.4 | 22.6 | 9.3 | -- | -- | -- | -- | -- | -- |

| Date | WIND SPEED (MILES PER HOUR) (00035) |
|---|---|
| OCT | |
| 01... | <5.0 |
| 01... | -- |
| 01... | -- |
| 01... | -- |
| 01... | -- |
| FEB | |
| 04... | 9.0 |
| 04... | -- |
| MAY | |
| 06... | 14 |
| 06... | -- |
| 06... | -- |
| JUL | |
| 29... | <5.0 |
| 29... | -- |
| 29... | -- |
| 29... | -- |
| 29... | -- |

< Less than
E Estimated value
n Below the non-detection value
e Required equipment not functional/available

## 05056222 MORRISON LAKE NEAR WEBSTER, ND

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

DRAINAGE AREA.--501 mi$^{2}$, 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 National Geodetic Vertical Datum of 1929.

REMARKS.--Stage frequently affected by wind. Gage heights for Jan. 22, Feb. 6, Mar. 13, and Apr. 10, from once daily observation of gage height.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height recorded, 62.60 ft, Apr. 27-28, 1997; minimum recorded, 53.35 ft, Sept. 17, 1991.

EXTREMES FOR CURRENT YEAR.--Maximum gage height recorded, 60.46 ft, July 2, may have been higher between June 29 through July 1; minimum recorded, 57.78 ft, June 8.

GAGE HEIGHT, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 59.20 | 58.32 | 58.20 | --- | --- | --- | --- | 58.06 | 57.93 | 60.43 | 59.61 | 59.86 |
| 2 | 59.17 | 58.31 | 58.20 | --- | --- | --- | --- | 58.06 | 57.94 | 60.44 | 59.66 | 59.74 |
| 3 | 59.14 | 58.33 | 58.19 | --- | --- | --- | --- | 58.07 | 57.93 | 60.41 | 59.65 | 59.74 |
| 4 | 59.09 | 58.35 | 58.18 | --- | --- | --- | --- | 58.07 | 57.92 | 60.32 | 59.63 | 59.72 |
| 5 | 59.05 | 58.34 | 58.20 | --- | --- | --- | --- | 58.06 | 57.92 | 60.36 | 59.63 | 59.68 |
| 6 | 59.00 | 58.30 | 58.20 | --- | 58.09 | --- | --- | 58.05 | 57.91 | 60.31 | 59.63 | 59.64 |
| 7 | 58.93 | 58.30 | 58.20 | --- | --- | --- | --- | 58.07 | 57.85 | --- | 59.64 | 59.61 |
| 8 | 58.89 | 58.29 | 58.21 | --- | --- | --- | --- | 58.09 | 57.85 | --- | 59.63 | 59.58 |
| 9 | 58.84 | 58.30 | 58.23 | --- | --- | --- | --- | 58.03 | 58.07 | --- | 59.69 | 59.57 |
| 10 | 58.83 | 58.29 | 58.27 | --- | --- | --- | 58.05 | 58.12 | 58.22 | 60.14 | 59.68 | 59.54 |
| 11 | 58.79 | 58.30 | 58.29 | --- | --- | --- | --- | 58.16 | 58.34 | 60.11 | 59.68 | 59.52 |
| 12 | 58.74 | 58.28 | 58.31 | --- | --- | --- | --- | 58.15 | 58.42 | 60.06 | 59.61 | 59.48 |
| 13 | 58.71 | 58.28 | 58.36 | --- | --- | 58.06 | --- | 58.12 | 58.45 | 60.00 | 59.62 | 59.45 |
| 14 | 58.63 | 58.29 | 58.40 | --- | --- | --- | --- | 58.16 | 58.54 | 59.95 | 59.61 | 59.40 |
| 15 | 58.57 | 58.28 | 58.45 | --- | --- | --- | --- | 58.15 | 58.61 | 59.89 | 59.59 | 59.40 |
| 16 | 58.58 | 58.28 | 58.45 | --- | --- | --- | --- | 58.11 | 58.70 | 59.81 | 59.62 | 59.38 |
| 17 | 58.56 | 58.27 | --- | --- | --- | --- | --- | 58.12 | 58.82 | 59.81 | 59.57 | 59.35 |
| 18 | 58.52 | 58.18 | --- | --- | --- | --- | 58.09 | 58.12 | 58.95 | 59.82 | 59.65 | 59.38 |
| 19 | 58.49 | 58.20 | --- | --- | --- | --- | 58.12 | 58.12 | 59.13 | 59.81 | 59.65 | 59.38 |
| 20 | 58.47 | 58.23 | --- | --- | --- | --- | 58.15 | 58.15 | 59.27 | 59.79 | 59.66 | 59.36 |
| 21 | 58.46 | 58.22 | --- | --- | --- | --- | 58.13 | 58.14 | 59.41 | 59.72 | 59.63 | 59.30 |
| 22 | 58.45 | 58.22 | --- | 58.10 | --- | --- | 58.13 | 58.11 | 59.62 | 59.68 | 59.63 | 59.30 |
| 23 | 58.42 | 58.22 | --- | --- | --- | --- | 58.14 | 57.98 | 59.79 | 59.71 | 59.63 | 59.32 |
| 24 | 58.35 | 58.17 | --- | --- | --- | --- | 57.94 | 58.03 | 60.05 | 59.70 | 59.62 | 59.36 |
| 25 | 58.26 | 58.11 | --- | --- | --- | --- | 57.93 | 58.00 | 60.15 | 59.67 | 59.62 | 59.34 |
| 26 | 58.37 | 58.16 | --- | --- | --- | --- | 58.06 | 57.98 | 60.23 | 59.69 | 59.67 | 59.31 |
| 27 | 58.36 | 58.19 | --- | --- | --- | --- | 58.10 | 58.00 | 60.26 | 59.66 | 59.93 | 59.31 |
| 28 | 58.38 | 58.20 | --- | --- | --- | --- | 58.13 | 58.03 | 60.31 | 59.63 | 60.02 | 59.31 |
| 29 | 58.39 | 58.20 | --- | --- | --- | --- | 58.08 | 58.02 | --- | 59.63 | 59.98 | 59.25 |
| 30 | 58.40 | 58.20 | --- | --- | --- | --- | 58.10 | 57.95 | --- | 59.61 | 59.93 | 59.30 |
| 31 | 58.38 | --- | --- | --- | --- | --- | --- | 57.95 | --- | 59.63 | 59.91 | --- |
| MEAN | 58.66 | 58.25 | --- | --- | --- | --- | --- | 58.07 | --- | --- | 59.69 | 59.46 |
| MAX | 59.20 | 58.35 | --- | --- | --- | --- | --- | 58.16 | --- | --- | 60.02 | 59.86 |
| MIN | 58.26 | 58.11 | --- | --- | --- | --- | --- | 57.95 | --- | --- | 59.57 | 59.25 |

05056222 MORRISON LAKE NEAR WEBSTER, ND--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| 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) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 01... | 1605 | .0 | 2.3 | 1080 | 8.1 | 370 | 79.0 | 43.0 | 21.0 | 2 | 88.0 | 32 | 244 |
| FEB | | | | | | | | | | | | | |
| 04... | 1533 | .70 | 2.2 | 1540 | -- | 560 | 120 | 64.0 | 24.0 | 2 | 130 | 32 | 358 |
| MAY | | | | | | | | | | | | | |
| 06... | 1605 | .0 | 2.0 | 1220 | 7.8 | 400 | 86.0 | 46.0 | 20.0 | 2 | 100 | 34 | 244 |
| JUL | | | | | | | | | | | | | |
| 29... | 1620 | .0 | 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605) | NITRO-GEN, TOTAL (MG/L AS N) (00600) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 01... | 27.0 | .20 | 340 | 1.4 | <.04 | <.008 | E.02 | -- | -- | .10 | .19 | 778 | 130 |
| FEB | | | | | | | | | | | | | |
| 04... | 39.0 | .20 | 510 | 2.4 | .10 | <.008 | .05 | 2.3 | 2.4 | .13 | .23 | 1170 | 1100 |
| MAY | | | | | | | | | | | | | |
| 06... | 31.0 | .20 | 350 | 1.7 | <.04 | <.008 | <.09 | -- | -- | .07 | .38 | 842 | 780 |
| JUL | | | | | | | | | | | | | |
| 29... | -- | -- | -- | 2.4 | <.04 | <.008 | E.03 | -- | -- | .40 | .54 | -- | -- |

| Date | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | 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 | | | | | | | | | | | |
| 01... | 17.6 | .9 | 7.0 | 40 | 2 | 100 | 10 | <.10 | 4 | 3 | 320 |
| FEB | | | | | | | | | | | |
| 04... | 6.3 | .7 | 7.0 | 80 | <1 | 80 | 120 | <.10 | 5 | <1 | 490 |
| MAY | | | | | | | | | | | |
| 06... | E9.0 | E.7 | 3.0 | 80 | <1 | 50 | 10 | <.10 | 4 | <1 | 370 |
| JUL | | | | | | | | | | | |
| 29... | E24.2 | E1.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- |

05056222 MORRISON LAKE NEAR WEBSTER, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DEPTH OF LAKE MAX. METERS (85310) | 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) | ICE THICK-NESS METERS (82131) | TRANS-PAR-ENCY (SECCHI DISK) (IN) (00077) | TEMPER-ATURE AIR (DEG C) (00020) | WIND DIREC-TION (DEG. FROM TRUE NORTH) (00036) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 01... | 1600 | 2.3 | .0 | 1120 | 7.9 | 15.2 | 8.9 | 94 | 724 | -- | 10.8 | 24.0 | 90 |
| 01... | 1601 | -- | .70 | 1120 | 8.0 | 15.1 | 8.7 | -- | -- | -- | -- | -- | -- |
| 01... | 1602 | -- | 1.4 | 1120 | 8.0 | 15.1 | 8.6 | -- | -- | -- | -- | -- | -- |
| 01... | 1603 | -- | 2.3 | 1120 | 8.0 | 14.8 | 7.1 | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 04... | 1525 | 2.2 | .70 | 1600 | 7.6 | 1.7 | 10.7 | 80 | 732 | .60 | 14.4 | 5.0 | 225 |
| 04... | 1527 | -- | 1.5 | 1590 | 7.6 | 2.4 | 10.7 | -- | -- | -- | -- | -- | -- |
| 04... | 1529 | -- | 2.0 | 1590 | 7.6 | 2.5 | 10.5 | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 06... | 1600 | 2.0 | .0 | 1220 | 8.2 | 5.2 | 11.9 | 98 | 731 | -- | 3.00 | 6.0 | 60 |
| 06... | 1601 | -- | .70 | 1220 | 8.2 | 5.3 | 11.8 | -- | -- | -- | -- | -- | -- |
| 06... | 1602 | -- | 1.4 | 1220 | 8.2 | 5.3 | 11.7 | -- | -- | -- | -- | -- | -- |
| 06... | 1603 | -- | 2.0 | 1220 | 8.2 | 5.3 | 11.6 | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 29... | 1610 | 2.2 | .0 | 1080 | 8.8 | 25.2 | 13.9 | 180 | 719 | -- | 18.0 | 30.0 | 225 |
| 29... | 1611 | -- | .50 | 1080 | 8.8 | 24.6 | 13.4 | -- | -- | -- | -- | -- | -- |
| 29... | 1612 | -- | 1.0 | 1080 | 8.7 | 23.8 | 10.5 | -- | -- | -- | -- | -- | -- |
| 29... | 1613 | -- | 1.5 | 1080 | 8.6 | 22.9 | 8.4 | -- | -- | -- | -- | -- | -- |
| 29... | 1614 | -- | 2.0 | 1080 | 8.6 | 22.6 | 7.8 | -- | -- | -- | -- | -- | -- |
| 29... | 1615 | -- | 2.2 | 1080 | 8.6 | 22.6 | 7.7 | -- | -- | -- | -- | -- | -- |

| Date | WIND SPEED (MILES PER HOUR) (00035) |
|---|---|
| OCT | |
| 01... | 7.0 |
| 01... | -- |
| 01... | -- |
| 01... | -- |
| FEB | |
| 04... | 9.0 |
| 04... | -- |
| 04... | -- |
| MAY | |
| 06... | 12 |
| 06... | -- |
| 06... | -- |
| 06... | -- |
| JUL | |
| 29... | <5.0 |
| 29... | -- |
| 29... | -- |
| 29... | -- |
| 29... | -- |
| 29... | -- |

< Less than
E Estimated value

## 05056239 STARKWEATHER COULEE NEAR WEBSTER, ND

LOCATION.--Lat 48°19'13", long 98°56'23", in NW$^1/_4$SW$^1/_4$NW$^1/_4$ sec.19, T.156 N., R.64 W., Ramsey County, Hydrologic Unit 09020201, on right bank 100 ft upstream from bridge on township road and 3.8 mi northwest of Webster.

DRAINAGE AREA.--About 310 mi$^2$, of which about 100 mi$^2$ 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 National Geodetic Vertical Datum of 1929, from topographic map. Prior to July 23, 1986, nonrecording gage 100 ft downstream at same datum.

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 528 ft$^3$/s, June 24, gage height, 6.67 ft; no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.16 | 0.00 | 166 | 0.60 | 5.5 |
| 2 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.01 | 0.00 | 128 | 0.48 | 3.2 |
| 3 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.0 | 0.00 | 97 | 0.90 | 1.9 |
| 4 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.74 | 0.00 | 76 | 0.39 | 1.4 |
| 5 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.36 | 0.00 | e65 | 0.19 | 1.1 |
| 6 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.16 | 0.00 | e54 | 0.10 | 0.53 |
| 7 | --- | --- | --- | --- | --- | e0.00 | e0.25 | 0.05 | 0.00 | e43 | 0.59 | 0.58 |
| 8 | --- | --- | --- | --- | --- | e0.00 | e0.50 | 0.25 | 0.00 | e35 | 1.1 | 0.18 |
| 9 | --- | --- | --- | --- | --- | e0.00 | e1.0 | 0.67 | 6.8 | e27 | 1.7 | 0.03 |
| 10 | --- | --- | --- | --- | --- | e0.00 | e2.0 | 1.3 | e28 | e21 | 1.4 | 0.14 |
| 11 | --- | --- | --- | --- | --- | e0.00 | e2.8 | 9.7 | e41 | e19 | 1.6 | 0.13 |
| 12 | --- | --- | --- | --- | --- | e0.00 | e3.5 | 13 | e20 | e15 | 0.65 | 0.07 |
| 13 | --- | --- | --- | --- | --- | 0.00 | e3.2 | 13 | e46 | e12 | 0.76 | 0.05 |
| 14 | --- | --- | --- | --- | --- | e0.00 | e3.0 | 11 | e74 | e8.7 | 0.87 | 0.00 |
| 15 | --- | --- | --- | --- | --- | e0.00 | e2.6 | 7.1 | e158 | e6.4 | 0.44 | 0.00 |
| 16 | --- | --- | --- | --- | --- | e0.00 | e2.4 | 5.2 | e194 | e5.3 | 0.33 | 0.00 |
| 17 | --- | --- | --- | --- | --- | e0.00 | e2.2 | 2.8 | e210 | e4.7 | 0.47 | 0.00 |
| 18 | --- | --- | --- | --- | --- | e0.00 | e2.0 | 0.82 | 157 | e4.4 | 0.37 | 0.00 |
| 19 | --- | --- | --- | --- | --- | e0.00 | 1.9 | 0.23 | 140 | e4.1 | 0.36 | 0.20 |
| 20 | --- | --- | --- | --- | --- | e0.00 | 1.6 | 0.09 | 121 | e3.8 | 0.46 | 0.06 |
| 21 | --- | --- | --- | --- | --- | e0.00 | 0.89 | 0.02 | 103 | e2.9 | 0.10 | 0.00 |
| 22 | --- | --- | --- | --- | --- | e0.00 | 5.5 | 0.01 | 222 | e2.1 | 0.15 | 0.00 |
| 23 | --- | --- | --- | --- | --- | e0.00 | 7.7 | 0.00 | 338 | 1.4 | 0.18 | 0.00 |
| 24 | --- | --- | --- | --- | --- | e0.00 | 9.4 | 0.03 | 485 | 1.6 | 0.15 | 0.00 |
| 25 | --- | --- | --- | --- | --- | 0.00 | 9.0 | 0.02 | 485 | 2.0 | 0.16 | 0.00 |
| 26 | --- | --- | --- | --- | --- | e0.00 | 6.8 | 0.00 | 485 | 1.6 | 0.18 | 0.00 |
| 27 | --- | --- | --- | --- | --- | e0.00 | 3.1 | 0.00 | 471 | 1.8 | 3.2 | 0.00 |
| 28 | --- | --- | --- | --- | --- | e0.00 | 1.2 | 0.00 | 442 | 0.84 | 5.7 | 0.00 |
| 29 | --- | --- | --- | --- | --- | e0.00 | 0.74 | 0.00 | 381 | 1.2 | 2.3 | 0.00 |
| 30 | --- | --- | --- | --- | --- | e0.00 | 0.23 | 0.00 | 249 | 0.87 | 0.47 | 0.00 |
| 31 | --- | --- | --- | --- | --- | e0.00 | --- | 0.00 | --- | 1.3 | 0.54 | --- |
| TOTAL | --- | --- | --- | --- | --- | 0.00 | 73.51 | 66.72 | 4856.80 | 813.01 | 26.89 | 15.07 |
| MEAN | --- | --- | --- | --- | --- | 0.000 | 2.450 | 2.152 | 161.9 | 26.23 | 0.867 | 0.502 |
| MAX | --- | --- | --- | --- | --- | 0.00 | 9.4 | 13 | 485 | 166 | 5.7 | 5.5 |
| MIN | --- | --- | --- | --- | --- | 0.00 | 0.00 | 0.00 | 0.00 | 0.84 | 0.10 | 0.00 |
| AC-FT | --- | --- | --- | --- | --- | 0.00 | 146 | 132 | 9630 | 1610 | 53 | 30 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 1.296 | 0.122 | 0.010 | 0.000 | 0.694 | 23.69 | 117.8 | 32.74 | 17.22 | 23.08 | 16.43 | 2.939 |
| MAX | 5.53 | 1.09 | 0.092 | 0.000 | 6.61 | 180 | 357 | 284 | 162 | 119 | 138 | 22.0 |
| (WY) | 1983 | 1981 | 1983 | 1980 | 1981 | 1992 | 2001 | 1997 | 2002 | 1993 | 1993 | 1993 |
| MIN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.92 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| (WY) | 1980 | 1980 | 1980 | 1980 | 1980 | 1980 | 2000 | 1980 | 1980 | 1980 | 1980 | 1981 |

| SUMMARY STATISTICS | WATER YEARS 1980 - 2002 | |
|---|---|---|
| ANNUAL MEAN | a12.14 | |
| HIGHEST ANNUAL MEAN | a24.5 | 1987 |
| LOWEST ANNUAL MEAN | a0.88 | 1980 |
| HIGHEST DAILY MEAN | 779 | Apr 27 1997 |
| LOWEST DAILY MEAN | 0.00 | Oct 1 1979 |
| ANNUAL SEVEN-DAY MINIMUM | 0.00 | Oct 1 1979 |
| MAXIMUM PEAK FLOW | 782 | Apr 27 1997 |
| MAXIMUM PEAK STAGE | b10.05 | Apr 6 1989 |
| ANNUAL RUNOFF (AC-FT) | a8790 | |
| 10 PERCENT EXCEEDS | 27 | |
| 50 PERCENT EXCEEDS | 0.00 | |
| 90 PERCENT EXCEEDS | 0.00 | |

a Based on complete water years only (1980-87, 1994)
b Backwater from ice
e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 03... | 1355 | .23 | -- | -- | -- | 1820 | 15.5 | 13.5 | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 21... | 1205 | .0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 13... | 1125 | .0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 25... | 1855 | .0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 10... | 1850 | 1.9 | 8.2 | --e | 563 | 574 | 9.5 | 5.5 | 220 | 45.0 | 25.0 | 7.70 | .8 |
| MAY | | | | | | | | | | | | | |
| 15... | 1640 | 6.1 | -- | -- | -- | 1210 | 7.0 | 9.0 | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 18... | 1130 | 157 | -- | -- | -- | 730 | -- | 20.5 | -- | -- | -- | -- | -- |
| 24... | 1725 | 495 | -- | -- | -- | 361 | 21.7 | 25.5 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 23... | 1740 | 1.4 | 8.0 | -- | 1010 | 999 | 17.5 | 22.0 | 410 | 67.0 | 59.0 | 11.0 | 2 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 03... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 21... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 10... | 28.0 | 21 | 111 | 16.0 | .10 | 160 | 1.86 | 356 | 349 | 6.0 | 50 | 2 | 20 |
| MAY | | | | | | | | | | | | | |
| 15... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 23... | 70.0 | 26 | 210 | 37.0 | .20 | 320 | 2.72 | 742 | 684 | 12.0 | 40 | 1 | 60 |

| Date | 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... | -- | -- | -- | -- | -- |
| FEB | | | | | |
| 21... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 13... | -- | -- | -- | -- | -- |
| 25... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 10... | 630 | <.10 | 1 | <1 | 200 |
| MAY | | | | | |
| 15... | -- | -- | -- | -- | -- |
| JUN | | | | | |
| 18... | -- | -- | -- | -- | -- |
| 24... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 23... | 20 | .10 | 4 | 1 | 340 |

< Less than
e Required equipment not functional/available

## 05056241 DRY LAKE NEAR PENN, ND

LOCATION.--Lat 48°13'52", long 98°58'59", in NW$^1/_4$NW$^1/_4$SW$^1/_4$ sec.23, T.155 N., R.65 W., Ramsey County, Hydrologic Unit 09020201, on west shoreline of Dry Lake and 6 mi east of Penn.

DRAINAGE AREA.--920 mi$^2$, 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 National Geodetic Vertical Datum of 1929.

REMARKS.--Stage is affected by wind at times. Gage heights for Feb. 21, Mar. 13, Apr. 18, 25, May 3, 21, and June 3 from once daily observations of gage height.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height recorded, 52.02 ft, May 2, 1997; minimum recorded, 41.80 ft, Sept. 14 and Oct. 1-20, 1991.

EXTREMES FOR CURRENT YEAR.--Maximum gage height recorded, 48.92 ft, June 30; minimum recorded, 46.68 ft, Jan. 13, may have been lower during period of no record, May 1 to June 20.

GAGE HEIGHT, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 47.25 | 47.12 | 47.09 | 46.82 | 47.01 | --- | 47.08 | --- | --- | 48.77 | 47.40 | 47.55 |
| 2 | 47.25 | 47.12 | 47.08 | 46.82 | 47.03 | --- | 47.09 | --- | --- | 48.63 | 47.33 | 47.54 |
| 3 | 47.16 | 47.12 | 47.08 | 46.80 | 47.03 | --- | 47.10 | 46.97 | 47.00 | 48.56 | 47.35 | 47.50 |
| 4 | 47.15 | 47.12 | 47.07 | 46.78 | 47.05 | --- | 47.09 | --- | --- | 48.44 | 47.32 | 47.47 |
| 5 | 47.08 | 47.15 | 47.08 | 46.76 | 47.05 | --- | 47.09 | --- | --- | 48.42 | 47.28 | 47.49 |
| 6 | 47.07 | 47.16 | 47.08 | 46.75 | 47.06 | --- | 47.09 | --- | --- | 48.40 | 47.28 | 47.45 |
| 7 | 47.13 | 47.16 | 47.07 | 46.74 | 47.06 | --- | 47.09 | --- | --- | 48.33 | 47.34 | 47.42 |
| 8 | 47.22 | 47.08 | 47.07 | 46.71 | 47.05 | --- | 47.09 | --- | --- | 48.29 | 47.32 | 47.40 |
| 9 | 47.24 | 47.14 | 47.05 | 46.72 | 47.06 | --- | 47.08 | --- | --- | 48.23 | 47.36 | 47.36 |
| 10 | 47.27 | 47.14 | 47.05 | 46.71 | 47.06 | --- | 47.07 | --- | --- | 48.24 | 47.37 | 47.35 |
| 11 | 47.23 | 47.14 | 47.04 | 46.71 | 47.06 | --- | --- | --- | --- | 48.15 | 47.34 | 47.33 |
| 12 | 47.27 | 47.13 | 47.04 | 46.70 | --- | --- | --- | --- | --- | 48.09 | 47.31 | 47.34 |
| 13 | 47.25 | 47.12 | 47.02 | 46.70 | --- | 47.09 | --- | --- | --- | 48.05 | 47.25 | 47.28 |
| 14 | 47.24 | 47.13 | 47.01 | 46.73 | --- | --- | --- | --- | --- | 48.00 | 47.25 | 47.34 |
| 15 | 47.20 | 47.14 | 46.99 | 46.76 | --- | --- | --- | --- | --- | 47.94 | 47.23 | 47.23 |
| 16 | 47.12 | 47.14 | 46.97 | 46.78 | --- | --- | --- | --- | --- | 47.94 | 47.23 | 47.30 |
| 17 | 47.12 | 47.15 | 46.97 | 46.79 | --- | --- | --- | --- | --- | 47.89 | 47.26 | 47.26 |
| 18 | 47.16 | 47.15 | 46.97 | 46.81 | --- | --- | 47.17 | --- | --- | 47.84 | 47.19 | 47.39 |
| 19 | 47.14 | 47.05 | 46.96 | 46.83 | --- | --- | --- | --- | --- | 47.77 | 47.21 | 47.35 |
| 20 | 47.12 | 47.08 | 46.95 | 46.86 | --- | --- | --- | --- | --- | 47.72 | 47.20 | 47.30 |
| 21 | 47.08 | 47.11 | 46.94 | 46.87 | 47.09 | --- | --- | 46.88 | 48.50 | 47.68 | 47.26 | 47.24 |
| 22 | 47.08 | 47.09 | 46.93 | 46.90 | --- | --- | --- | --- | 48.50 | 47.60 | 47.20 | 47.19 |
| 23 | 47.11 | 47.09 | 46.92 | 46.92 | --- | --- | --- | --- | 48.50 | 47.51 | 47.20 | 47.18 |
| 24 | 47.19 | 47.15 | 46.91 | 46.92 | --- | --- | --- | --- | 48.70 | 47.51 | 47.20 | 47.17 |
| 25 | 47.07 | 47.15 | 46.90 | 46.93 | --- | --- | 47.08 | --- | 48.77 | 47.49 | 47.19 | 47.15 |
| 26 | 46.94 | --- | 46.88 | 46.92 | --- | 47.08 | --- | --- | 48.85 | 47.45 | 47.21 | 47.15 |
| 27 | 46.93 | --- | 46.84 | 46.93 | --- | 47.09 | --- | --- | 48.85 | 47.47 | 47.37 | 47.15 |
| 28 | 47.08 | --- | 46.85 | 46.94 | --- | 47.09 | --- | --- | 48.85 | 47.44 | 47.45 | 47.11 |
| 29 | 47.06 | 47.09 | 46.85 | 46.96 | --- | 47.09 | --- | --- | 48.84 | 47.41 | 47.45 | 47.08 |
| 30 | 47.08 | 47.09 | 46.85 | 46.98 | --- | 47.08 | --- | --- | 48.83 | 47.39 | 47.43 | 47.16 |
| 31 | 47.14 | --- | 46.84 | 47.00 | --- | 47.08 | --- | --- | --- | 47.41 | 47.55 | --- |
| MEAN | 47.14 | --- | 46.98 | 46.82 | --- | --- | --- | --- | --- | 47.94 | 47.30 | 47.31 |
| MAX | 47.27 | --- | 47.09 | 47.00 | --- | --- | --- | --- | --- | 48.77 | 47.55 | 47.55 |
| MIN | 46.93 | --- | 46.84 | 46.70 | --- | --- | --- | --- | --- | 47.39 | 47.19 | 47.08 |

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 2001 TO SEPTEMBER 2002

| 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) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 01... | 1335 | .0 | .70 | 1090 | -- | 380 | 72.0 | 48.0 | 24.0 | 2 | 84.0 | 31 | 249 |
| FEB | | | | | | | | | | | | | |
| 04... | 1336 | .70 | 1.2 | 1740 | -- | 660 | 130 | 81.0 | 32.0 | 2 | 150 | 32 | 428 |
| MAY | | | | | | | | | | | | | |
| 07... | 1355 | .0 | 1.4 | 1200 | 8.0 | 390 | 74.0 | 51.0 | 22.0 | 2 | 98.0 | 34 | 253 |
| JUL | | | | | | | | | | | | | |
| 29... | 1400 | .0 | 1.0 | 888 | -- | 280 | 46.0 | 41.0 | 19.0 | 2 | 78.0 | 35 | 160 |

| Date | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | 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) (00631) | NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605) | NITRO-GEN, TOTAL (MG/L AS N) (00600) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 01... | 31.0 | .20 | 300 | 3.8 | .08 | .018 | -- | E.05 | 3.7 | -- | .24 | .47 | 769 |
| FEB | | | | | | | | | | | | | |
| 04... | 50.0 | .30 | 530 | 3.6 | .58 | .016 | 1.18 | 1.20 | 3.0 | 4.8 | .62 | .68 | 1330 |
| MAY | | | | | | | | | | | | | |
| 07... | 33.0 | .20 | 330 | 1.8 | <.04 | <.008 | -- | <.05 | -- | -- | .16 | .26 | 814 |
| JUL | | | | | | | | | | | | | |
| 29... | 31.0 | .20 | 270 | 2.9 | <.04 | <.008 | -- | E.04 | -- | -- | .03 | .22 | 595 |

| Date | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | 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 | | | | | | | | | | | | |
| 01... | 721 | 61.2 | <.1 | 9.0 | 70 | 2 | 100 | 50 | <.10 | 2 | 3 | 320 |
| FEB | | | | | | | | | | | | |
| 04... | 1240 | .9 | .2 | 11.0 | 70 | <1 | 100 | 270 | <.10 | 4 | <1 | 540 |
| MAY | | | | | | | | | | | | |
| 07... | 760 | E1.8 | E.1 | 5.0 | 90 | 1 | 60 | 20 | <.10 | 3 | 1 | 360 |
| JUL | | | | | | | | | | | | |
| 29... | 581 | E63.3 | <.1 | 7.0 | 50 | 1 | 50 | 20 | <.10 | 2 | <1 | 220 |

05056241 DRY LAKE NEAR PENN, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DEPTH OF LAKE MAX. METERS (85310) | 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) | ICE THICK-NESS METERS (82131) | TRANS-PAR-ENCY (SECCHI DISK) (IN) (00077) | TEMPER-ATURE AIR (DEG C) (00020) | WIND DIREC-TION (DEG. FROM TRUE NORTH) (00036) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 01... | 1330 | .70 | .0 | 1080 | 8.6 | 15.3 | 11.4 | 120 | 725 | -- | 26.4 | 21.0 | 30 |
| 01... | 1331 | -- | .70 | 1080 | 8.7 | 15.3 | 11.0 | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 04... | 1330 | 1.2 | .70 | 1770 | 7.1 | 1.2 | 5.2 | 39 | 730 | .50 | 43.2 | 3.0 | -- |
| 04... | 1332 | -- | 1.2 | 1760 | 7.1 | 1.9 | 4.6 | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 07... | 1350 | 1.4 | .0 | 1200 | 8.2 | 4.9 | 11.9 | 97 | 733 | -- | 6.00 | 6.0 | 90 |
| 07... | 1351 | -- | .50 | 1190 | 8.2 | 4.9 | 11.7 | -- | -- | -- | -- | -- | -- |
| 07... | 1352 | -- | 1.0 | 1200 | 8.2 | 4.9 | 11.6 | -- | -- | -- | -- | -- | -- |
| 07... | 1353 | -- | 1.4 | 1210 | 8.2 | 4.9 | 11.6 | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 29... | 1355 | 1.0 | .0 | 906 | 9.1 | 25.3 | -- | -- | 720 | -- | 18.0 | 30.0 | 225 |
| 29... | 1356 | -- | .50 | 902 | 9.1 | 23.3 | 15.8 | -- | -- | -- | -- | -- | -- |
| 29... | 1357 | -- | 1.0 | 915 | 8.9 | 22.4 | 9.6 | -- | -- | -- | -- | -- | -- |

| Date | WIND SPEED (MILES PER HOUR) (00035) |
|---|---|
| OCT | |
| 01... | 10 |
| 01... | -- |
| FEB | |
| 04... | 10 |
| 04... | -- |
| MAY | |
| 07... | <5.0 |
| 07... | -- |
| 07... | -- |
| 07... | -- |
| JUL | |
| 29... | <5.0 |
| 29... | -- |
| 29... | -- |

< Less than
E Estimated value

## 05056250 LAKE ALICE NEAR CHURCHS FERRY, ND

LOCATION.--Lat 48°19'33", long 99°05'42", in SE$^1/_4$NE$^1/_4$NE$^1/_4$ 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$^2$, approximately, of which about 500 mi$^2$ 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 2001 TO SEPTEMBER 2002

| 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) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 01... | 1155 | .0 | 2.4 | 1150 | -- | 480 | 95.0 | 58.0 | 18.0 | 1 | 70.0 | 23 | 314 |
| FEB | | | | | | | | | | | | | |
| 04... | 1140 | .70 | 2.3 | 1430 | -- | 630 | 130 | 73.0 | 23.0 | 2 | 92.0 | 23 | 405 |
| MAY | | | | | | | | | | | | | |
| 07... | 1515 | .0 | 2.5 | 1200 | 8.2 | 470 | 93.0 | 58.0 | 18.0 | 2 | 75.0 | 25 | 312 |
| JUL | | | | | | | | | | | | | |
| 29... | 1220 | .0 | 2.2 | 1250 | 8.2 | 520 | 100 | 65.0 | 21.0 | 2 | 87.0 | 26 | 331 |

| Date | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | 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) (00631) | NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605) | NITRO-GEN, TOTAL (MG/L AS N) (00600) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 01... | 27.0 | .20 | 320 | 1.7 | .11 | .012 | .10 | .12 | 1.6 | 1.8 | .21 | .32 | 831 |
| FEB | | | | | | | | | | | | | |
| 04... | 32.0 | .20 | 410 | 2.8 | .62 | E.004 | -- | .15 | 2.2 | 3.0 | .44 | .49 | 1090 |
| MAY | | | | | | | | | | | | | |
| 07... | 28.0 | .20 | 300 | 2.1 | .15 | .009 | .13 | .14 | 1.9 | 2.2 | .22 | .31 | 830 |
| JUL | | | | | | | | | | | | | |
| 29... | 34.0 | .20 | 350 | 2.3 | <.04 | <.008 | -- | E.02 | -- | -- | .46 | .57 | 940 |

| Date | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | 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 | | | | | | | | | | | | |
| 01... | 778 | 15.7 | 1.1 | 7.0 | 40 | 2 | 100 | 10 | <.10 | 2 | 3 | 370 |
| FEB | | | | | | | | | | | | |
| 04... | 1010 | <.1 | <.1 | 8.0 | 70 | <1 | 90 | 730 | <.10 | 3 | <1 | 470 |
| MAY | | | | | | | | | | | | |
| 07... | 760 | E1.2 | E.2 | 5.0 | 80 | 1 | 60 | 20 | <.10 | 2 | <1 | 400 |
| JUL | | | | | | | | | | | | |
| 29... | 856 | E25.5 | <.1 | 10.0 | 90 | <1.0 | 70 | 60 | .10 | 3 | <1 | 360 |

05056250 LAKE ALICE NEAR CHURCHS FERRY, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DEPTH OF LAKE MAX. METERS (85310) | 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) | ICE THICK-NESS METERS (82131) | TRANS-PAR-ENCY (SECCHI DISK) (IN) (00077) | TEMPER-ATURE AIR (DEG C) (00020) | WIND DIREC-TION (DEG. FROM TRUE NORTH) (00036) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 01... | 1150 | 2.4 | .0 | 1190 | 7.6 | 13.9 | 8.2 | 84 | 725 | -- | 15.6 | 19.0 | 15 |
| 01... | 1151 | -- | 1.0 | 1190 | 7.7 | 13.8 | 8.0 | -- | -- | -- | -- | -- | -- |
| 01... | 1152 | -- | 2.0 | 1190 | 7.7 | 13.7 | 8.0 | -- | -- | -- | -- | -- | -- |
| 01... | 1153 | -- | 2.4 | 1190 | 7.7 | 13.7 | 7.7 | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 04... | 1130 | 2.3 | .70 | 1500 | 7.0 | .7 | 4.3 | 31 | 732 | .55 | 73.2 | <-5.0 | 225 |
| 04... | 1132 | -- | 1.4 | 1470 | 7.1 | 2.3 | 3.1 | -- | -- | -- | -- | -- | -- |
| 04... | 1134 | -- | 2.1 | 1470 | 7.1 | 2.8 | 4.0 | -- | -- | -- | -- | -- | -- |
| 04... | 1136 | -- | 2.3 | 1460 | 7.1 | 3.1 | 3.1 | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 07... | 1510 | 2.5 | .0 | 1200 | 8.2 | 5.3 | 11.8 | 97 | 734 | -- | 13.2 | 10.0 | 90 |
| 07... | 1511 | -- | .70 | 1200 | 8.3 | 5.3 | 11.6 | -- | -- | -- | -- | -- | -- |
| 07... | 1512 | -- | 1.4 | 1200 | 8.3 | 5.3 | 11.5 | -- | -- | -- | -- | -- | -- |
| 07... | 1513 | -- | 2.1 | 1200 | 8.3 | 5.3 | 11.4 | -- | -- | -- | -- | -- | -- |
| 07... | 1514 | -- | 2.5 | 1200 | 8.3 | 5.3 | 11.4 | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 29... | 1210 | 2.2 | .0 | 1300 | 8.3 | 22.9 | 7.4 | 92 | 720 | -- | 20.4 | 24.5 | 220 |
| 29... | 1211 | -- | .50 | 1300 | 8.3 | 22.8 | 7.2 | -- | -- | -- | -- | -- | -- |
| 29... | 1212 | -- | 1.0 | 1300 | 8.3 | 22.2 | 6.2 | -- | -- | -- | -- | -- | -- |
| 29... | 1213 | -- | 1.5 | 1300 | 8.2 | 21.9 | 5.1 | -- | -- | -- | -- | -- | -- |
| 29... | 1214 | -- | 2.0 | 1300 | 8.2 | 21.9 | 3.9 | -- | -- | -- | -- | -- | -- |
| 29... | 1215 | -- | 2.2 | 1300 | 8.2 | 21.9 | 3.7 | -- | -- | -- | -- | -- | -- |

| Date | WIND SPEED (MILES PER HOUR) (00035) |
|---|---|
| OCT | |
| 01... | 7.0 |
| 01... | -- |
| 01... | -- |
| 01... | -- |
| FEB | |
| 04... | 15 |
| 04... | -- |
| 04... | -- |
| 04... | -- |
| MAY | |
| 07... | <5.0 |
| 07... | -- |
| 07... | -- |
| 07... | -- |
| 07... | -- |
| JUL | |
| 29... | <5.0 |
| 29... | -- |
| 29... | -- |
| 29... | -- |
| 29... | -- |
| 29... | -- |

< Less than
E Estimated value

## 05056255 LAKE ALICE-IRVINE CHANNEL NEAR CHURCHS FERRY, ND

LOCATION.--Lat 48°19'25", long 99°08'41", in NW$^1/_4$NE$^1/_4$ sec.21, T.156 N., R.66 W., Ramsey County, Hydrologic Unit 09020201, on downstream side of control structure between Lake Alice and Lake Irvine, 5 mi northwest of Churchs Ferry.

DRAINAGE AREA.--999 mi$^2$, approximately.

### GAGE-HEIGHT RECORDS

PERIOD OF RECORD.--March 1985 to September 1987 (seasonal records only) and April 1998 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,400.00 ft above National Geodetic Vertical Datum of 1929.

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

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 48.63 ft, Apr. 25-27 2001; minimum recorded, 39.51 ft, Oct. 7, 1985.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 47.83 ft, June 30; minimum, 47.07 ft, June 7.

GAGE HEIGHT from dcp, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 47.58 | 47.37 | 47.17 | 47.21 | 47.23 | 47.21 | 47.24 | 47.24 | 47.13 | 47.73 | 47.45 | 47.53 |
| 2 | 47.55 | 47.37 | 47.18 | 47.21 | 47.23 | 47.21 | 47.25 | 47.22 | 47.13 | 47.69 | 47.44 | 47.46 |
| 3 | 47.51 | 47.36 | 47.18 | 47.22 | 47.23 | --- | 47.26 | 47.27 | 47.12 | 47.67 | 47.45 | 47.46 |
| 4 | 47.48 | 47.35 | 47.19 | 47.22 | 47.23 | --- | 47.26 | 47.24 | 47.11 | 47.69 | 47.42 | 47.47 |
| 5 | 47.46 | 47.34 | 47.20 | 47.21 | 47.23 | --- | 47.26 | 47.25 | 47.11 | 47.70 | 47.40 | 47.45 |
| 6 | 47.47 | 47.32 | 47.21 | 47.21 | 47.24 | --- | 47.27 | 47.20 | 47.12 | 47.66 | 47.43 | 47.42 |
| 7 | 47.50 | 47.30 | 47.21 | 47.22 | 47.24 | --- | 47.27 | 47.19 | 47.09 | 47.64 | 47.47 | 47.40 |
| 8 | 47.51 | 47.28 | 47.21 | 47.22 | 47.23 | --- | 47.26 | 47.23 | 47.10 | 47.63 | 47.45 | 47.38 |
| 9 | 47.50 | 47.29 | 47.21 | 47.22 | 47.23 | 47.23 | 47.26 | 47.20 | 47.21 | 47.61 | 47.47 | 47.38 |
| 10 | 47.49 | 47.28 | 47.21 | 47.21 | 47.23 | --- | 47.26 | 47.23 | 47.26 | 47.62 | 47.46 | 47.39 |
| 11 | 47.50 | 47.28 | 47.20 | 47.22 | 47.25 | --- | 47.27 | 47.27 | 47.31 | 47.61 | 47.45 | 47.38 |
| 12 | 47.49 | 47.26 | 47.21 | 47.21 | 47.24 | 47.25 | 47.28 | 47.29 | 47.35 | 47.62 | 47.39 | 47.38 |
| 13 | 47.49 | 47.26 | 47.21 | 47.21 | 47.24 | 47.23 | 47.28 | 47.28 | 47.38 | 47.63 | 47.37 | 47.38 |
| 14 | 47.45 | 47.27 | 47.21 | 47.21 | 47.23 | 47.22 | 47.29 | 47.31 | 47.41 | 47.64 | 47.36 | 47.34 |
| 15 | 47.42 | 47.27 | 47.21 | 47.21 | 47.24 | 47.23 | 47.29 | 47.31 | 47.43 | 47.65 | 47.34 | 47.34 |
| 16 | 47.44 | 47.28 | 47.21 | 47.22 | 47.23 | 47.22 | 47.28 | 47.24 | 47.45 | 47.64 | 47.35 | 47.35 |
| 17 | 47.48 | 47.27 | 47.21 | 47.21 | 47.23 | 47.23 | 47.29 | 47.22 | 47.48 | 47.63 | 47.32 | 47.36 |
| 18 | 47.45 | 47.21 | 47.21 | 47.22 | 47.23 | 47.23 | 47.27 | 47.21 | 47.52 | 47.63 | 47.33 | 47.37 |
| 19 | 47.44 | 47.19 | 47.21 | 47.22 | 47.22 | 47.23 | 47.27 | 47.20 | 47.54 | 47.64 | 47.34 | 47.35 |
| 20 | 47.43 | 47.21 | 47.20 | 47.22 | 47.22 | 47.24 | 47.29 | 47.21 | 47.54 | 47.65 | 47.35 | 47.32 |
| 21 | 47.42 | 47.22 | 47.20 | 47.22 | 47.22 | 47.26 | 47.30 | 47.27 | 47.55 | 47.61 | 47.34 | 47.27 |
| 22 | 47.43 | 47.21 | 47.21 | 47.23 | 47.23 | 47.25 | 47.33 | 47.31 | 47.66 | 47.56 | 47.32 | 47.25 |
| 23 | 47.42 | 47.22 | 47.21 | 47.23 | 47.23 | 47.24 | 47.35 | 47.21 | 47.71 | 47.56 | 47.31 | 47.25 |
| 24 | 47.38 | 47.20 | 47.20 | 47.23 | 47.22 | 47.23 | 47.25 | 47.20 | 47.79 | 47.57 | 47.31 | 47.26 |
| 25 | 47.33 | 47.13 | 47.21 | 47.24 | 47.22 | 47.23 | 47.19 | 47.19 | 47.80 | 47.56 | 47.30 | 47.25 |
| 26 | 47.38 | 47.10 | 47.21 | 47.23 | 47.21 | 47.24 | 47.23 | 47.18 | 47.79 | 47.55 | 47.34 | 47.24 |
| 27 | 47.44 | 47.08 | 47.21 | 47.22 | 47.22 | 47.25 | 47.27 | 47.18 | 47.78 | 47.55 | 47.48 | 47.23 |
| 28 | 47.45 | 47.11 | 47.21 | 47.22 | 47.21 | 47.26 | 47.27 | 47.21 | 47.80 | 47.52 | 47.49 | 47.22 |
| 29 | 47.45 | 47.13 | 47.21 | 47.23 | --- | 47.26 | 47.27 | 47.21 | 47.80 | 47.51 | 47.47 | 47.24 |
| 30 | 47.46 | 47.15 | 47.21 | 47.23 | --- | 47.25 | 47.26 | 47.17 | 47.76 | 47.49 | 47.49 | 47.25 |
| 31 | 47.44 | --- | 47.21 | 47.23 | --- | 47.24 | --- | 47.16 | --- | 47.51 | 47.52 | --- |
| TOTAL | 1471.24 | 1417.31 | 1463.34 | 1463.81 | 1322.41 | --- | 1418.12 | 1464.10 | 1423.23 | 1475.97 | 1469.41 | 1420.37 |
| MEAN | 47.46 | 47.24 | 47.20 | 47.22 | 47.23 | --- | 47.27 | 47.23 | 47.44 | 47.61 | 47.40 | 47.35 |
| MAX | 47.58 | 47.37 | 47.21 | 47.24 | 47.25 | --- | 47.35 | 47.31 | 47.80 | 47.73 | 47.52 | 47.53 |
| MIN | 47.33 | 47.08 | 47.17 | 47.21 | 47.21 | --- | 47.19 | 47.16 | 47.09 | 47.49 | 47.30 | 47.22 |

## 05056260 LAKE IRVINE NEAR CHURCHS FERRY, ND

LOCATION.--Lat 48°16'57", long 99°10'25", in SE$^1/_4$SW$^1/_4$SW$^1/_4$ sec.32, T.156 N., R.66 W., Ramsey County, Hydrologic Unit 09020201, at south end of lake 1$^1/_4$ mi northwest of Churchs Ferry.

DRAINAGE AREA.--2,120 mi$^2$, approximately, of which about 500 mi$^2$ is probably noncontributing.

### WATER-QUALITY RECORDS

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

REMARKS.--Quality assurance sample also collected at this location.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DEPTH TO TOP OF SAMPLE INTERVAL(IN METERS) (82047) | DEPTH TO BOTTOM OF SAMPLE INTERVAL(IN METERS) (82048) | SPECIFIC CONDUCTANCE LAB (US/CM) (90095) | PH WATER WHOLE LAB (STANDARD UNITS) (00403) | HARDNESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DISSOLVED (MG/L AS CA) (00915) | MAGNESIUM, DISSOLVED (MG/L AS MG) (00925) | POTASSIUM, DISSOLVED (MG/L AS K) (00935) | SODIUM ADSORPTION RATIO (00931) | SODIUM, DISSOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 01... | 1215 | .0 | 2.7 | 1010 | 8.3 | 420 | 84.0 | 51.0 | 19.0 | 1 | 63.0 | 24 | 299 |
| FEB | | | | | | | | | | | | | |
| 04... | 1220 | .70 | 2.9 | 1320 | -- | 230 | 120 | 69.0 | 24.0 | 2 | 88.0 | 24 | 389 |
| MAY | | | | | | | | | | | | | |
| 07... | 1535 | .0 | 3.0 | 1170 | 8.2 | 450 | 88.0 | 55.0 | 18.0 | 2 | 73.0 | 25 | 303 |
| JUL | | | | | | | | | | | | | |
| 29... | 1240 | .0 | 2.7 | 1170 | 8.3 | 470 | 88.0 | 61.0 | 21.0 | 2 | 83.0 | 27 | 311 |

| Date | CHLORIDE, DISSOLVED (MG/L AS CL) (00940) | FLUORIDE, DISSOLVED (MG/L AS F) (00950) | SULFATE DISSOLVED (MG/L AS SO4) (00945) | NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608) | NITROGEN, NITRITE DISSOLVED (MG/L AS N) (00613) | NITROGEN, NITRATE DISSOLVED (MG/L AS N) (00618) | NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631) | NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605) | NITROGEN, TOTAL (MG/L AS N) (00600) | ORTHOPHOSPHATE, DISSOLVED (MG/L AS P) (00671) | PHOSPHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 01... | 28.0 | .20 | 270 | 1.6 | .13 | .015 | .10 | .11 | 1.5 | 1.7 | .33 | .40 | 710 |
| FEB | | | | | | | | | | | | | |
| 04... | 37.0 | -- | 370 | 2.3 | .29 | E.006 | -- | .39 | 2.0 | 2.7 | .36 | .40 | 984 |
| MAY | | | | | | | | | | | | | |
| 07... | 28.0 | .20 | 290 | 1.9 | .14 | E.005 | -- | .10 | 1.8 | 2.0 | .21 | .32 | 803 |
| JUL | | | | | | | | | | | | | |
| 29... | 32.0 | .10 | 320 | 1.8 | <.04 | <.008 | -- | .03 | -- | 1.8 | .26 | .33 | 858 |

| Date | SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301) | CHLOR-A PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70954) | ARSENIC DISSOLVED (UG/L AS AS) (01000) | IRON, DISSOLVED (UG/L AS FE) (01046) | LEAD, DISSOLVED (UG/L AS PB) (01049) | LITHIUM DISSOLVED (UG/L AS LI) (01130) | MANGANESE, DISSOLVED (UG/L AS MN) (01056) | MERCURY DISSOLVED (UG/L AS HG) (71890) | MOLYBDENUM, DISSOLVED (UG/L AS MO) (01060) | SELENIUM, DISSOLVED (UG/L AS SE) (01145) | STRONTIUM, DISSOLVED (UG/L AS SR) (01080) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | |
| 01... | 697 | 3.3 | <.1 | 9.0 | 60 | 2 | 100 | 50 | <.10 | 4 | 3 | 360 |
| FEB | | | | | | | | | | | | |
| 04... | 945 | E.1 | <.1 | 9.0 | 60 | <1 | 80 | 280 | <.10 | 3 | <1 | 450 |
| MAY | | | | | | | | | | | | |
| 07... | 734 | E.6 | <.1 | 5.0 | 70 | 1 | 60 | 10 | <.10 | 2 | 1 | 380 |
| JUL | | | | | | | | | | | | |
| 29... | 792 | E13.7 | <.1 | 8.0 | 70 | 1 | 70 | 60 | .20 | 3 | <1 | 350 |

05056260 LAKE IRVINE NEAR CHURCHS FERRY, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DEPTH OF LAKE MAX. METERS (85310) | 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) | ICE THICK-NESS METERS (82131) | TRANS-PAR-ENCY (SECCHI DISK) (IN) (00077) | TEMPER-ATURE AIR (DEG C) (00020) | WIND DIREC-TION (DEG. FROM TRUE NORTH) (00036) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 01... | 1210 | 2.7 | .0 | 1050 | 8.0 | 14.6 | 7.6 | 79 | 726 | -- | 7.20 | 18.5 | 20 |
| 01... | 1211 | -- | 1.0 | 1050 | 8.0 | 14.4 | 7.2 | -- | -- | -- | -- | -- | -- |
| 01... | 1212 | -- | 2.0 | 1050 | 8.0 | 14.1 | 7.0 | -- | -- | -- | -- | -- | -- |
| 01... | 1213 | -- | 2.7 | 1050 | 8.0 | 14.0 | 6.9 | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 04... | 1210 | 2.9 | .70 | 1380 | 7.3 | .5 | 8.9 | 65 | 733 | .60 | 64.8 | <-5.0 | -- |
| 04... | 1212 | -- | 1.3 | 1360 | 7.4 | 1.4 | 8.6 | -- | -- | -- | -- | -- | -- |
| 04... | 1214 | -- | 2.0 | 1350 | 7.4 | 2.1 | 8.3 | -- | -- | -- | -- | -- | -- |
| 04... | 1216 | -- | 2.7 | 1350 | 7.4 | 2.5 | 2.7 | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 07... | 1530 | 3.0 | .0 | 1160 | 8.3 | 5.6 | 11.5 | 95 | 734 | -- | 21.6 | 9.0 | 30 |
| 07... | 1531 | -- | .70 | 1160 | 8.3 | 5.6 | 11.4 | -- | -- | -- | -- | -- | -- |
| 07... | 1532 | -- | 1.4 | 1160 | 8.3 | 5.5 | 11.3 | -- | -- | -- | -- | -- | -- |
| 07... | 1533 | -- | 2.1 | 1160 | 8.3 | 5.5 | 11.2 | -- | -- | -- | -- | -- | -- |
| 07... | 1534 | -- | 3.0 | 1160 | 8.3 | 5.5 | 11.2 | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 29... | 1230 | 2.7 | .0 | 1220 | 8.3 | 23.9 | 7.8 | 98 | 720 | -- | 22.8 | 25.5 | 225 |
| 29... | 1231 | -- | .50 | 1220 | 8.3 | 23.0 | 7.7 | -- | -- | -- | -- | -- | -- |
| 29... | 1232 | -- | 1.0 | 1220 | 8.3 | 22.5 | 7.6 | -- | -- | -- | -- | -- | -- |
| 29... | 1233 | -- | 1.5 | 1220 | 8.3 | 22.3 | 6.8 | -- | -- | -- | -- | -- | -- |
| 29... | 1234 | -- | 2.0 | 1220 | 8.3 | 22.1 | 6.4 | -- | -- | -- | -- | -- | -- |
| 29... | 1235 | -- | 2.5 | 1220 | 8.3 | 22.0 | 5.6 | -- | -- | -- | -- | -- | -- |
| 29... | 1236 | -- | 2.7 | 1220 | 8.2 | 22.0 | 5.3 | -- | -- | -- | -- | -- | -- |

| Date | WIND SPEED (MILES PER HOUR) (00035) |
|---|---|
| OCT | |
| 01... | 5.0 |
| 01... | -- |
| 01... | -- |
| 01... | -- |
| FEB | |
| 04... | 15 |
| 04... | -- |
| 04... | -- |
| 04... | -- |
| MAY | |
| 07... | 5.0 |
| 07... | -- |
| 07... | -- |
| 07... | -- |
| 07... | -- |
| JUL | |
| 29... | <5.0 |
| 29... | -- |
| 29... | -- |
| 29... | -- |
| 29... | -- |
| 29... | -- |
| 29... | -- |

< Less than
E Estimated value

## 05056270 BIG COULEE BELOW CHURCHS FERRY, ND

LOCATION.--Lat 48°15'33", long 99°12'00", in NE$^{1}/_{4}$SE$^{1}/_{4}$ sec.12, T. 155 N., R.67 W., Benson County, Hydrologic Unit 09020201, on downstream side of bridge 1 mi south of Churchs Ferry.

DRAINAGE AREA.--1,260 mi$^{2}$, approximately, of which about 140 mi$^{2}$ is probably noncontributing, drainage area reduced from approximately 2,510 mi$^{2}$ with the completion of Channel A in March 1979.

### WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1998 to current year.

Miscellaneous discharge measurements for Big Coulee below Churchs Ferry

| Date | Discharge |
|---|---|
| October 3, 2001 | 0 |
| February 21, 2002 | 0 |
| March 25, 2002 | 0 |
| April 11, 2002 | 0 |
| April 25, 2002 | 591 |
| June 25, 2002 | 474 |
| July 24, 2002 | 0 |

05056270 BIG COULEE BELOW CHURCHS FERRY, ND

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1958, 1961-99, 2001 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APR | | | | | | | | | | | | | |
| 25... | 1200 | 591 | 8.6 | --e | 1050 | 1040 | 9.0 | 3.5 | 420 | 84.0 | 50.0 | 17.0 | 1 |
| JUN | | | | | | | | | | | | | |
| 25... | 1325 | 474 | -- | -- | -- | 1110 | 29.5 | 23.5 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 24... | 1102 | .0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APR | | | | | | | | | | | | | |
| 25... | 67.0 | 25 | 287 | 21.0 | .10 | 270 | 1170 | 736 | 681 | 5.0 | 40 | <1 | 60 |
| JUN | | | | | | | | | | | | | |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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 | | | | | |
| 25... | 10 | <.10 | <1 | 1 | 340 |
| JUN | | | | | |
| 25... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 24... | -- | -- | -- | -- | -- |

< Less than
e Required equipment not functional/available

## 05056340 LITTLE COULEE NEAR LEEDS, ND

LOCATION.--Lat 48°14'37", long 99°22'23", in NE$^1/_4$NE$^1/_4$SE$^1/_4$ sec.15, T.155 N., R.68 W., Benson County, Hydrologic Unit 09020201, at bridge 3.5 miles southeast of Leeds.

DRAINAGE AREA.--320 mi$^2$, of which about 150 mi$^2$ is probably noncontributing.

### WATER-DISCHARGE RECORDS

PERIOD OF RECORD.-- March 1998 to current year.

GAGE.--Water-stage recorder. This station was moved upstream from 05056390 Little Coulee near Brinsmade due to rising water from Devils Lake. Records may not be equivalent to prior locations due to change in drainage area. Datum of gage is 1,480 ft above National Geodetic Vertical Datum of 1929, from topographic map.

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

EXTREMES FOR PERIOD OF RECORD.--Maximum observed discharge, 269 ft$^3$/s, Apr. 23, 1999, gage height, 66.30 ft; maximum gage height observed 66.41 ft, Apr. 13, 16, 18 and 19, 1999; no flow for several days.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14 ft$^3$/s, Sept. 20, gage height, 64.01 ft; no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | --- | --- | --- | --- | --- | e0.00 | e0.00 | e0.00 | 0.03 | 3.3 | 0.00 | 0.93 |
| 2 | --- | --- | --- | --- | --- | e0.00 | e0.00 | e0.00 | 0.00 | 2.4 | 0.00 | 4.9 |
| 3 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.00 | 0.00 | 1.9 | 0.00 | 4.9 |
| 4 | --- | --- | --- | --- | --- | e0.00 | e0.00 | e0.00 | 0.00 | 1.6 | 0.00 | 5.9 |
| 5 | --- | --- | --- | --- | --- | e0.00 | e0.00 | e0.00 | 0.00 | 1.5 | 0.00 | 6.8 |
| 6 | --- | --- | --- | --- | --- | e0.00 | e0.00 | e0.00 | 0.00 | 1.0 | 0.00 | 7.4 |
| 7 | --- | --- | --- | --- | --- | e0.00 | e0.00 | e0.00 | 0.00 | 0.77 | 0.00 | 7.1 |
| 8 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.00 | e0.00 | 0.57 | 0.00 | 8.1 |
| 9 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.00 | 0.21 | 0.50 | 0.00 | 9.3 |
| 10 | --- | --- | --- | --- | --- | e0.00 | e0.03 | 0.03 | 0.03 | 0.74 | 0.00 | 9.9 |
| 11 | --- | --- | --- | --- | --- | e0.00 | 0.05 | 0.13 | 0.00 | 0.59 | 0.00 | 9.5 |
| 12 | --- | --- | --- | --- | --- | e0.00 | 0.02 | 0.20 | 0.00 | 0.43 | 0.00 | 9.9 |
| 13 | --- | --- | --- | --- | --- | e0.00 | 0.00 | 0.23 | 0.00 | 0.31 | 0.00 | 9.2 |
| 14 | --- | --- | --- | --- | --- | e0.00 | 0.00 | 0.25 | 0.00 | 0.21 | 0.00 | 9.2 |
| 15 | --- | --- | --- | --- | --- | e0.00 | 0.00 | 0.25 | 0.00 | 0.13 | 0.00 | 7.2 |
| 16 | --- | --- | --- | --- | --- | e0.00 | 0.00 | 0.26 | 0.00 | 0.06 | 0.00 | 6.4 |
| 17 | --- | --- | --- | --- | --- | e0.00 | 0.00 | 0.26 | 0.00 | 0.06 | 0.00 | 5.9 |
| 18 | --- | --- | --- | --- | --- | e0.00 | 0.00 | 0.26 | 0.00 | 0.11 | 0.00 | 9.1 |
| 19 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.24 | 0.00 | 0.06 | 0.00 | 11 |
| 20 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.23 | 0.00 | 0.02 | 0.00 | 11 |
| 21 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.22 | 0.00 | 0.00 | 0.00 | 11 |
| 22 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.21 | 0.31 | 0.00 | 0.00 | 7.3 |
| 23 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.21 | 0.18 | 0.00 | 0.00 | 8.4 |
| 24 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.20 | 0.59 | 0.00 | 0.00 | 7.1 |
| 25 | --- | --- | --- | --- | --- | 0.00 | e0.00 | 0.20 | 1.5 | 0.00 | 0.00 | 8.5 |
| 26 | --- | --- | --- | --- | --- | e0.00 | e0.00 | 0.17 | 3.9 | 0.00 | 0.00 | 11 |
| 27 | --- | --- | --- | --- | --- | e0.01 | e0.00 | 0.15 | 5.6 | 0.00 | 0.18 | 12 |
| 28 | --- | --- | --- | --- | --- | e0.10 | e0.00 | 0.15 | 5.4 | 0.00 | 0.38 | 11 |
| 29 | --- | --- | --- | --- | --- | e0.05 | e0.00 | 0.15 | 4.8 | 0.00 | 0.38 | 9.6 |
| 30 | --- | --- | --- | --- | --- | e0.02 | e0.00 | 0.14 | 3.8 | 0.00 | 0.36 | 12 |
| 31 | --- | --- | --- | --- | --- | e0.01 | --- | 0.09 | --- | 0.00 | 0.38 | --- |
| TOTAL | --- | --- | --- | --- | --- | 0.19 | 0.10 | 4.23 | 26.35 | 16.26 | 1.68 | 251.53 |
| MEAN | --- | --- | --- | --- | --- | 0.006 | 0.003 | 0.136 | 0.878 | 0.525 | 0.054 | 8.384 |
| MAX | --- | --- | --- | --- | --- | 0.10 | 0.05 | 0.26 | 5.6 | 3.3 | 0.38 | 12 |
| MIN | --- | --- | --- | --- | --- | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.93 |
| AC-FT | --- | --- | --- | --- | --- | 0.4 | 0.2 | 8.4 | 52 | 32 | 3.3 | 499 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1998 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | --- | --- | --- | --- | --- | 6.715 | 96.04 | 69.98 | 32.66 | 11.31 | 1.461 | 2.630 |
| MAX | --- | --- | --- | --- | --- | 24.8 | 217 | 207 | 110 | 28.2 | 6.51 | 8.38 |
| (WY) | --- | --- | --- | --- | --- | 1998 | 1999 | 1999 | 1999 | 1999 | 1999 | 2002 |
| MIN | --- | --- | --- | --- | --- | 0.000 | 0.003 | 0.041 | 0.040 | 0.52 | 0.005 | 0.000 |
| (WY) | --- | --- | --- | --- | --- | 2001 | 2002 | 2000 | 2000 | 2002 | 1998 | 1998 |

SUMMARY STATISTICS WATER YEARS 1998 - 2002

| | | |
|---|---|---|
| HIGHEST DAILY MEAN | 267 | Apr 23 1999 |
| LOWEST DAILY MEAN | 0.00 | Jul 31 1998 |
| ANNUAL SEVEN-DAY MINIMUM | 0.00 | Aug 6 1998 |
| MAXIMUM PEAK FLOW | a269 | Apr 23 1999 |
| MAXIMUM PEAK STAGE | 66.41 | Apr 13 1999 |

a Observed gage height, 66.30 ft
e Estimated

05056340 LITTLE COULEE NEAR LEEDS, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1998 to current year.

REMARKS.--Quality assurance sample also collected at this location.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 03... | 1830 | .0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 21... | 1730 | .0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 25... | 1430 | .0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 11... | 0955 | .04 | --e | 7.1 | 822 | 775 | 11.0 | 4.0 | 280 | 58.0 | 34.0 | 21.0 | 1 |
| MAY | | | | | | | | | | | | | |
| 03... | 1015 | .0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 25... | 1435 | 1.6 | -- | -- | -- | 805 | 25.5 | 25.5 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 24... | 0915 | .0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 03... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 21... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 11... | 54.0 | 27 | 127 | 18.0 | .10 | 280 | .06 | 574 | 542 | 4.0 | 70 | 1 | 40 |
| MAY | | | | | | | | | | | | | |
| 03... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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... | -- | -- | -- | -- | -- |
| FEB | | | | | |
| 21... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 25... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 11... | 310 | <.10 | <1 | <1 | 240 |
| MAY | | | | | |
| 03... | -- | -- | -- | -- | -- |
| JUN | | | | | |
| 25... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 24... | -- | -- | -- | -- | -- |

< Less than
e Required equipment not functional/available

## 05056410 CHANNEL A NEAR PENN, ND

LOCATION.--Lat 48°10'00", long 98°58'47", in SE$^1/_4$SW$^1/_4$SW$^1/_4$ 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$^2$, approximately, of which about 140 mi$^2$ is probably noncontributing. Drainage area reduced from approximately 2,510 mi$^2$ with the completion of Channel A in March 1979.

### WATER-DISCHARGE RECORDS

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

Miscellaneous discharge measurements for Channel A near Penn

| Date | Discharge |
|---|---|
| October 4, 2001 | 0 |
| March 26, 2002 | 0 |
| April 11, 2002 | 0 |
| April 25, 2002 | 157 |
| June 25, 2002 | 774 |
| July 23, 2002 | 0 |

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1984-99, 2001 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APR | | | | | | | | | | | | | |
| 25... | 1410 | 157 | 8.4 | -- | 1150 | 1120 | 6.0 | 4.0 | 370 | 71.0 | 47.0 | 22.0 | 2 |
| JUN | | | | | | | | | | | | | |
| 25... | 1125 | 774 | -- | -- | -- | 1260 | 30.5 | 23.5 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 24... | 1925 | .0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APR | | | | | | | | | | | | | |
| 25... | 92.0 | 33 | 233 | 16.0 | .20 | 320 | 331 | 780 | 708 | 5.0 | 90 | <1 | 60 |
| JUN | | | | | | | | | | | | | |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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 | | | | | |
| 25... | 10 | <.10 | 1 | <1 | 260 |
| JUN | | | | | |
| 25... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 24... | -- | -- | -- | -- | -- |

< Less than

## 05056500 DEVILS LAKE NEAR DEVILS LAKE, ND

LOCATION.--Lat 48°04'00", long 98°56'07", in SW$^{1}/_{4}$ 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$^{2}$, approximately, of which about 1,000 mi$^{2}$ 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 National Geodetic Vertical Datum of 1929. 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, 1,448.33 ft, July 21, 2001, affected by wind, 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 daily mean elevation, 1,447.56 ft, July 17, affected by wind; minimum daily mean 1,446.69 ft, June 9, affected by wind.

GAGE HEIGHT, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 47.17 | 47.15 | 47.04 | 47.06 | 47.09 | 47.06 | 47.08 | 47.17 | 46.95 | 47.41 | 47.35 | 47.27 |
| 2 | 47.14 | 47.09 | 47.03 | 47.06 | 47.09 | 47.06 | 47.10 | 47.15 | 46.93 | 47.42 | 47.27 | 47.32 |
| 3 | 47.15 | 47.09 | 47.02 | 47.06 | 47.09 | 47.05 | 47.10 | 47.13 | 46.93 | 47.40 | 47.24 | 47.21 |
| 4 | 47.13 | 47.09 | 47.02 | 47.06 | 47.09 | 47.06 | 47.10 | 47.12 | 46.93 | 47.33 | 47.24 | 47.21 |
| 5 | 47.09 | 47.09 | 47.04 | 47.06 | 47.09 | 47.06 | 47.09 | 47.11 | 46.92 | 47.38 | 47.20 | 47.22 |
| 6 | 47.06 | 47.09 | 47.04 | 47.06 | 47.09 | 47.06 | 47.09 | 47.13 | 46.91 | 47.38 | 47.18 | 47.22 |
| 7 | 47.03 | 47.12 | 47.04 | 47.06 | 47.09 | 47.06 | 47.09 | 47.12 | 46.90 | 47.37 | 47.19 | 47.22 |
| 8 | 47.04 | 47.12 | 47.04 | 47.06 | 47.09 | 47.07 | 47.10 | 47.14 | 46.85 | 47.37 | 47.21 | 47.23 |
| 9 | 47.06 | 47.10 | 47.05 | 47.06 | 47.10 | 47.08 | 47.09 | 47.28 | 47.06 | 47.38 | 47.27 | 47.23 |
| 10 | 47.12 | 47.10 | 47.04 | 47.06 | 47.09 | 47.07 | 47.10 | 47.20 | 47.20 | 47.42 | 47.24 | 47.21 |
| 11 | 47.10 | 47.09 | 47.05 | 47.06 | 47.09 | 47.07 | 47.10 | 47.18 | 47.23 | 47.42 | 47.22 | 47.20 |
| 12 | 47.10 | 47.10 | 47.05 | 47.06 | 47.08 | 47.07 | 47.10 | 47.18 | 47.23 | 47.40 | 47.23 | 47.19 |
| 13 | 47.10 | 47.10 | 47.04 | 47.06 | 47.08 | 47.07 | 47.11 | 47.18 | 47.23 | 47.39 | 47.19 | 47.17 |
| 14 | 47.13 | 47.09 | 47.04 | 47.07 | 47.08 | 47.07 | 47.11 | 47.14 | 47.23 | 47.37 | 47.17 | 47.16 |
| 15 | 47.10 | 47.09 | 47.05 | 47.07 | 47.08 | 47.06 | 47.12 | 47.14 | 47.23 | 47.36 | 47.17 | 47.13 |
| 16 | 47.05 | 47.09 | 47.04 | 47.07 | 47.08 | 47.06 | 47.13 | 47.15 | 47.22 | 47.36 | 47.13 | 47.09 |
| 17 | 47.05 | 47.09 | 47.04 | 47.08 | 47.08 | 47.07 | 47.13 | 47.13 | 47.20 | 47.38 | 47.29 | 47.07 |
| 18 | 47.06 | 47.13 | 47.04 | 47.07 | 47.08 | 47.07 | 47.16 | 47.11 | 47.21 | 47.40 | 47.17 | 47.13 |
| 19 | 47.05 | 47.10 | 47.04 | 47.07 | 47.08 | 47.07 | 47.17 | 47.10 | 47.25 | 47.39 | 47.16 | 47.17 |
| 20 | 47.03 | 47.08 | 47.05 | 47.08 | 47.08 | 47.09 | 47.16 | 47.07 | 47.23 | 47.39 | 47.14 | 47.17 |
| 21 | 47.02 | 47.08 | 47.04 | 47.08 | 47.08 | 47.08 | 47.16 | 47.02 | 47.20 | 47.40 | 47.13 | 47.15 |
| 22 | 47.01 | 47.07 | 47.06 | 47.09 | 47.07 | 47.07 | 47.13 | 47.00 | 47.23 | 47.36 | 47.13 | 47.08 |
| 23 | 47.02 | 47.07 | 47.06 | 47.10 | 47.08 | 47.07 | 47.15 | 47.04 | 47.28 | 47.33 | 47.12 | 47.11 |
| 24 | 47.16 | 47.09 | 47.05 | 47.10 | 47.07 | 47.07 | 47.27 | 47.01 | 47.35 | 47.38 | 47.12 | 47.08 |
| 25 | 47.15 | 47.07 | 47.05 | 47.10 | 47.07 | 47.07 | 47.20 | 47.02 | 47.37 | 47.40 | 47.11 | 47.07 |
| 26 | 47.07 | 47.05 | 47.05 | 47.09 | 47.06 | 47.07 | 47.13 | 46.99 | 47.39 | 47.38 | 47.13 | 47.05 |
| 27 | 47.04 | 47.07 | 47.06 | 47.10 | 47.06 | 47.06 | 47.13 | 46.97 | 47.40 | 47.36 | 47.19 | 47.03 |
| 28 | 47.06 | 47.06 | 47.07 | 47.09 | 47.07 | 47.07 | 47.16 | 46.98 | 47.40 | 47.35 | 47.24 | 47.03 |
| 29 | 47.05 | 47.04 | 47.06 | 47.09 | --- | 47.07 | 47.17 | 46.98 | 47.41 | 47.34 | 47.25 | 47.01 |
| 30 | 47.06 | 47.05 | 47.06 | 47.09 | --- | 47.07 | 47.16 | 47.01 | 47.43 | 47.32 | 47.24 | 47.02 |
| 31 | 47.08 | --- | 47.06 | 47.09 | --- | 47.06 | --- | 46.97 | --- | 47.30 | 47.28 | --- |
| MEAN | 47.08 | 47.09 | 47.05 | 47.07 | 47.08 | 47.07 | 47.13 | 47.09 | 47.18 | 47.38 | 47.20 | 47.15 |
| MAX | 47.17 | 47.15 | 47.07 | 47.10 | 47.10 | 47.09 | 47.27 | 47.28 | 47.43 | 47.42 | 47.35 | 47.32 |
| MIN | 47.01 | 47.04 | 47.02 | 47.06 | 47.06 | 47.05 | 47.08 | 46.97 | 46.85 | 47.30 | 47.11 | 47.01 |

## 05056636 DEVILS LAKE OUTLET TO STUMP LAKE NEAR LAKOTA, ND

LOCATION.--Lat 47°57'29", long 98°29'00", in NE$^{1}/_{4}$SE$^{1}/_{4}$NE$^{1}/_{4}$ sec.29, T.152 N., R.61 W., Nelson County, Hydrologic Unit 09020201, on right bank, 3 mi upstream of Stump Lake.

DRAINAGE AREA.--Not determined.

### WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1999 to current year.

GAGE.--Water stage recorder. Datum of gage is 1,400.00 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1999, at datum 37.73 ft higher.

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 13 | 13 | e7.6 | e0.07 | e0.00 | e0.00 | e0.00 | 25 | 14 | 25 | 21 | 21 |
| 2 | 12 | 13 | e7.7 | e0.12 | e0.00 | e0.00 | e0.00 | 24 | 13 | 25 | 21 | 22 |
| 3 | 12 | 13 | e7.7 | e0.11 | e0.00 | e0.00 | e0.00 | 23 | 13 | 24 | 21 | 22 |
| 4 | 12 | 13 | e7.7 | e0.10 | e0.00 | e0.00 | e0.00 | 23 | 12 | 22 | 20 | 21 |
| 5 | 8.6 | 13 | e7.6 | e0.11 | e0.00 | e0.00 | e0.02 | 22 | 12 | 21 | 19 | 20 |
| 6 | 6.3 | 12 | e7.6 | e0.11 | e0.00 | e0.00 | e0.10 | 20 | 12 | 21 | 18 | 20 |
| 7 | 5.7 | 12 | e7.4 | e0.13 | e0.01 | e0.00 | e0.28 | 19 | 12 | 23 | 17 | 20 |
| 8 | 7.0 | 12 | e7.2 | e0.15 | e0.00 | e0.00 | e0.30 | 19 | 11 | 22 | 17 | 20 |
| 9 | 6.8 | 12 | e7.0 | e0.17 | e0.00 | e0.00 | e0.36 | 22 | 19 | 22 | 17 | 20 |
| 10 | 5.9 | 12 | e6.8 | e0.22 | e0.00 | e0.00 | e0.38 | 21 | 15 | 23 | 17 | 20 |
| 11 | 3.3 | 12 | e6.5 | e0.24 | e0.00 | e0.00 | e3.5 | 20 | 15 | 22 | 17 | 20 |
| 12 | 2.5 | 12 | e6.2 | e0.26 | e0.00 | e0.00 | e12 | 20 | 16 | 23 | 18 | 21 |
| 13 | 2.0 | 12 | e6.0 | e0.28 | e0.00 | e0.00 | e13 | 20 | 17 | 23 | 18 | 20 |
| 14 | 1.8 | 12 | e5.7 | e0.30 | e0.01 | e0.00 | 16 | 19 | 17 | 23 | 18 | 20 |
| 15 | 1.5 | 12 | e5.4 | e0.30 | e0.01 | e0.00 | 18 | 19 | 18 | 23 | 18 | 20 |
| 16 | 1.3 | 12 | e5.0 | e0.28 | e0.01 | e0.01 | 20 | 19 | 18 | 23 | 19 | 20 |
| 17 | 1.1 | 12 | e4.7 | e0.27 | e0.01 | e0.02 | 23 | 18 | 18 | 24 | 21 | 19 |
| 18 | 1.1 | 12 | e4.4 | e0.26 | e0.01 | e0.03 | 23 | 18 | 19 | 23 | 20 | 19 |
| 19 | 1.1 | 12 | e4.2 | e0.28 | e0.01 | e0.02 | 23 | 17 | 20 | 24 | 20 | 19 |
| 20 | 1.1 | 12 | e3.8 | e0.29 | e0.01 | e0.01 | 23 | 16 | 21 | 24 | 20 | 18 |
| 21 | 1.1 | 12 | e3.3 | e0.24 | e0.01 | e0.01 | 23 | 16 | 21 | 24 | 20 | 20 |
| 22 | 1.2 | 12 | e2.7 | e0.20 | e0.01 | e0.00 | 23 | 15 | 31 | 23 | 19 | 20 |
| 23 | 12 | 12 | e2.3 | e0.10 | e0.00 | e0.00 | 23 | 15 | 22 | 23 | 19 | 21 |
| 24 | 18 | 12 | e1.9 | e0.01 | e0.00 | e0.00 | 27 | 15 | 28 | 23 | 18 | 20 |
| 25 | 18 | 11 | e1.3 | e0.01 | e0.00 | e0.00 | 28 | 15 | 25 | 23 | 18 | 20 |
| 26 | 12 | 7.5 | e0.80 | e0.00 | e0.00 | e0.01 | 25 | 15 | 25 | 22 | 17 | 20 |
| 27 | 10 | e13 | e0.25 | e0.00 | e0.00 | e0.01 | 24 | 14 | 26 | 22 | 23 | 19 |
| 28 | 8.9 | e11 | e0.15 | e0.00 | e0.00 | e0.00 | 24 | 14 | 26 | 22 | 22 | 19 |
| 29 | 9.0 | e9.0 | e0.10 | e0.00 | --- | e0.00 | 25 | 14 | 26 | 21 | 22 | 18 |
| 30 | 10 | e8.1 | e0.08 | e0.00 | --- | e0.00 | 25 | 15 | 26 | 21 | 22 | 18 |
| 31 | 11 | --- | e0.07 | e0.00 | --- | e0.00 | --- | 14 | --- | 20 | 22 | --- |
| TOTAL | 217.3 | 352.6 | 139.15 | 4.61 | 0.10 | 0.12 | 422.94 | 566 | 568 | 704 | 599 | 597 |
| MEAN | 7.010 | 11.75 | 4.489 | 0.149 | 0.004 | 0.004 | 14.10 | 18.26 | 18.93 | 22.71 | 19.32 | 19.90 |
| MAX | 18 | 13 | 7.7 | 0.30 | 0.01 | 0.03 | 28 | 25 | 31 | 25 | 23 | 22 |
| MIN | 1.1 | 7.5 | 0.07 | 0.00 | 0.00 | 0.00 | 0.00 | 14 | 11 | 20 | 17 | 18 |
| AC-FT | 431 | 699 | 276 | 9.1 | 0.2 | 0.2 | 839 | 1120 | 1130 | 1400 | 1190 | 1180 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2000 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 3.646 | 6.582 | 2.244 | 0.074 | 0.002 | 0.944 | 10.15 | 13.63 | 21.20 | 24.31 | 24.27 | 19.53 |
| MAX | 7.01 | 11.8 | 4.49 | 0.15 | 0.004 | 1.88 | 14.1 | 18.3 | 23.5 | 25.9 | 29.2 | 19.9 |
| (WY) | 2002 | 2002 | 2002 | 2002 | 2002 | 2001 | 2002 | 2002 | 2001 | 2001 | 2001 | 2002 |
| MIN | 0.28 | 1.41 | 0.000 | 0.000 | 0.000 | 0.004 | 6.21 | 9.00 | 18.9 | 22.7 | 19.3 | 19.2 |
| (WY) | 2001 | 2001 | 2001 | 2001 | 2001 | 2002 | 2001 | 2001 | 2002 | 2002 | 2002 | 2001 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 2000 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 4220.74 | | 4170.82 | | | |
| ANNUAL MEAN | 11.56 | | 11.43 | | 10.59 | |
| HIGHEST ANNUAL MEAN | | | | | 11.4 | 2002 |
| LOWEST ANNUAL MEAN | | | | | 9.76 | 2001 |
| HIGHEST DAILY MEAN | 39 | Jul 31 | 31 | Jun 22 | 39 | Jul 31 2001 |
| LOWEST DAILY MEAN | 0.00 | Jan 1 | 0.00 | Jan 26 | 0.00 | Oct 1 1999 |
| ANNUAL SEVEN-DAY MINIMUM | 0.00 | Jan 1 | 0.00 | Jan 26 | 0.00 | Oct 1 1999 |
| MAXIMUM PEAK FLOW | | | 79 | Jun 22 | a79 | Jun 22 2002 |
| MAXIMUM PEAK STAGE | | | 39.94 | Jun 22 | b40.44 | Mar 21 2001 |
| ANNUAL RUNOFF (AC-FT) | 8370 | | 8270 | | 7670 | |
| 10 PERCENT EXCEEDS | 27 | | 23 | | 25 | |
| 50 PERCENT EXCEEDS | 8.6 | | 12 | | 7.6 | |
| 90 PERCENT EXCEEDS | 0.00 | | 0.00 | | 0.00 | |

a Gage height, 39.94 ft
b Backwater from ice
e Estimated

05056636 DEVILS LAKE OUTLET TO STUMP LAKE NEAR LAKOTA, ND

WATER QUALITY RECORDS

PERIOD OF RECORD.--Water year 1999 to current year.

REMARKS.--Quality assurance sample also collected at this location.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 29... | 1415 | 9.3 | -- | -- | -- | 6300 | 4.0 | .5 | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 29... | 1410 | 9.0 | -- | -- | -- | 6760 | 6.5 | .0 | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 22... | 1210 | .20 | -- | -- | -- | 6660 | -9.5 | .0 | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 21... | 1000 | .01 | -- | -- | -- | --e | .0 | .0 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 25... | 1100 | .0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 10... | 1130 | .40 | -- | -- | -- | --e | 6.5 | .0 | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 08... | 1320 | 19 | 8.3 | 8.2 | 5200 | 5310 | 5.5 | 2.5 | 1100 | 110 | 200 | 83.0 | 11 |
| JUN | | | | | | | | | | | | | |
| 24... | 1405 | 23 | -- | -- | -- | 5500 | 23.5 | 26.5 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 23... | 1235 | 23 | --e | 8.0 | 6110 | 6190 | 17.0 | 19.5 | 1400 | 130 | 250 | 126 | 13 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 29... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 29... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 22... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 21... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 10... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 08... | 830 | 60 | 506 | 320 | .10 | 2000 | 200 | 3970 | 3850 | 6.0 | 60 | <1 | 320 |
| JUN | | | | | | | | | | | | | |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 23... | 1100 | 61 | 647 | 480 | .20 | 2500 | 312 | 4980 | 4980 | 22.0 | 90 | 1 | 400 |

05056636 DEVILS LAKE OUTLET TO STUMP LAKE NEAR LAKOTA, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | 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 | | | | | |
| 29... | -- | -- | -- | -- | -- |
| NOV | | | | | |
| 29... | -- | -- | -- | -- | -- |
| JAN | | | | | |
| 22... | -- | -- | -- | -- | -- |
| FEB | | | | | |
| 21... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 25... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 10... | -- | -- | -- | -- | -- |
| MAY | | | | | |
| 08... | 30 | <.10 | 1 | 2 | 500 |
| JUN | | | | | |
| 24... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 23... | 200 | .20 | <1 | 1 | 410 |

< Less than
e Required equipment not functional/available

## 05056665 EASTERN STUMP LAKE NEAR LAKOTA, ND

LOCATION.--Lat 47°52'07", long 98°21'27", in SW$^1/_4$SE$^1/_4$NE$^1/_4$ sec.29, T.151 N., R.60 W., Nelson County, Hydrologic Unit 09020201, on north shore in southwest corner of Nelson County Old Settlers Park.

DRAINAGE AREA.--Not determined.

### GAGE-HEIGHT RECORDS

PERIOD OF RECORD.--June 1999 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,400 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Gage heights are frequently affected by wind.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 13.68 ft, July 21; minimum gage height, 11.71 ft, Oct. 22.

GAGE HEIGHT, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 11.85 | 11.87 | 11.91 | 11.92 | 11.92 | 11.91 | 11.99 | 12.28 | 12.38 | 13.47 | 13.54 | 13.49 |
| 2 | 11.84 | 11.85 | 11.90 | 11.92 | 11.92 | 11.91 | 12.01 | 12.26 | 12.36 | 13.47 | 13.48 | 13.51 |
| 3 | 11.84 | 11.84 | 11.90 | 11.92 | 11.93 | 11.90 | 12.01 | 12.25 | 12.36 | 13.47 | 13.46 | 13.46 |
| 4 | 11.84 | 11.84 | 11.91 | 11.92 | 11.92 | 11.91 | 12.01 | 12.29 | 12.36 | 13.44 | 13.45 | 13.44 |
| 5 | 11.81 | 11.85 | 11.94 | 11.92 | 11.92 | 11.91 | 12.01 | 12.29 | 12.37 | 13.46 | 13.42 | 13.45 |
| 6 | 11.77 | 11.86 | 11.94 | 11.92 | 11.93 | 11.91 | 12.01 | 12.30 | 12.36 | 13.47 | 13.40 | 13.45 |
| 7 | 11.75 | 11.88 | 11.94 | 11.91 | 11.92 | 11.92 | 12.02 | 12.30 | 12.37 | 13.48 | 13.39 | 13.45 |
| 8 | 11.77 | 11.87 | 11.93 | 11.92 | 11.93 | 11.93 | 12.03 | 12.31 | 12.34 | 13.50 | 13.40 | 13.45 |
| 9 | 11.78 | 11.87 | 11.92 | 11.92 | 11.93 | 11.96 | 12.03 | 12.39 | 12.45 | 13.50 | 13.42 | 13.45 |
| 10 | 11.84 | 11.87 | 11.93 | 11.92 | 11.92 | 11.94 | 12.05 | 12.39 | 12.53 | 13.57 | 13.42 | 13.45 |
| 11 | 11.81 | 11.87 | 11.93 | 11.92 | 11.93 | 11.95 | 12.06 | 12.39 | 12.56 | 13.58 | 13.40 | 13.44 |
| 12 | 11.83 | 11.88 | 11.93 | 11.92 | 11.93 | 11.95 | 12.06 | 12.40 | 12.57 | 13.58 | 13.41 | 13.44 |
| 13 | 11.82 | 11.88 | 11.93 | 11.91 | 11.92 | 11.95 | 12.07 | 12.41 | 12.60 | 13.58 | 13.37 | 13.42 |
| 14 | 11.85 | 11.89 | 11.93 | 11.91 | 11.92 | 11.95 | 12.08 | 12.38 | 12.61 | 13.58 | 13.37 | 13.41 |
| 15 | 11.84 | 11.89 | 11.92 | 11.91 | 11.92 | 11.94 | 12.09 | 12.40 | 12.62 | 13.58 | 13.36 | 13.37 |
| 16 | 11.80 | 11.89 | 11.93 | 11.92 | 11.92 | 11.94 | 12.11 | 12.38 | 12.63 | 13.59 | 13.36 | 13.36 |
| 17 | 11.77 | 11.90 | 11.93 | 11.92 | 11.92 | 11.95 | 12.12 | 12.36 | 12.62 | 13.61 | 13.47 | 13.34 |
| 18 | 11.79 | 11.93 | 11.93 | 11.91 | 11.92 | 11.96 | 12.15 | 12.36 | 12.64 | 13.63 | 13.38 | 13.37 |
| 19 | 11.78 | 11.91 | 11.93 | 11.91 | 11.92 | 11.96 | 12.16 | 12.34 | 12.71 | 13.62 | 13.37 | 13.40 |
| 20 | 11.77 | 11.90 | 11.93 | 11.91 | 11.92 | 11.97 | 12.16 | 12.32 | 12.72 | 13.63 | 13.39 | 13.38 |
| 21 | 11.76 | 11.90 | 11.93 | 11.91 | 11.92 | 11.97 | 12.16 | 12.30 | 12.71 | 13.65 | 13.40 | 13.36 |
| 22 | 11.74 | 11.90 | 11.93 | 11.92 | 11.91 | 11.97 | 12.16 | 12.31 | 12.88 | 13.63 | 13.40 | 13.32 |
| 23 | 11.75 | 11.91 | 11.94 | --- | 11.92 | 11.97 | 12.18 | 12.35 | 13.05 | 13.59 | 13.40 | 13.33 |
| 24 | 11.91 | 11.93 | 11.94 | 11.93 | 11.92 | 11.97 | 12.30 | 12.33 | 13.21 | 13.57 | 13.40 | 13.30 |
| 25 | 11.95 | 11.92 | 11.93 | 11.93 | 11.92 | 11.96 | 12.26 | 12.34 | 13.28 | 13.57 | 13.40 | 13.29 |
| 26 | 11.86 | 11.90 | 11.93 | 11.93 | 11.91 | 11.96 | 12.20 | 12.34 | 13.34 | 13.56 | 13.40 | 13.29 |
| 27 | 11.81 | 11.90 | 11.93 | 11.93 | 11.91 | 11.96 | 12.21 | 12.32 | 13.38 | 13.56 | 13.42 | 13.28 |
| 28 | 11.83 | 11.89 | 11.93 | 11.93 | 11.92 | 11.97 | 12.23 | 12.35 | 13.39 | 13.55 | 13.45 | 13.26 |
| 29 | 11.82 | 11.88 | 11.93 | 11.93 | --- | 11.98 | 12.27 | 12.36 | 13.42 | 13.54 | 13.46 | 13.25 |
| 30 | 11.82 | 11.92 | 11.93 | 11.91 | --- | 11.98 | 12.26 | 12.40 | 13.47 | 13.53 | 13.44 | 13.26 |
| 31 | 11.83 | --- | 11.93 | 11.92 | --- | 11.98 | --- | 12.38 | --- | 13.51 | 13.49 | --- |
| MEAN | 11.81 | 11.89 | 11.93 | --- | 11.92 | 11.95 | 12.12 | 12.34 | 12.74 | 13.55 | 13.42 | 13.38 |
| MAX | 11.95 | 11.93 | 11.94 | --- | 11.93 | 11.98 | 12.30 | 12.41 | 13.47 | 13.65 | 13.54 | 13.51 |
| MIN | 11.74 | 11.84 | 11.90 | --- | 11.91 | 11.90 | 11.99 | 12.25 | 12.34 | 13.44 | 13.36 | 13.25 |

05056665 EASTERN STUMP LAKE NEAR LAKOTA, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--1958-79, 1993 to present.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| 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) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 02... | 1300 | .0 | 9.6 | 10700 | 8.6 | 2200 | 140 | 450 | 132 | 19 | 2100 | 66 | 394 |
| FEB | | | | | | | | | | | | | |
| 05... | 1250 | .0 | 9.9 | 11100 | 8.3 | 2200 | 140 | 450 | 132 | 20 | 2200 | 67 | 417 |
| MAY | | | | | | | | | | | | | |
| 07... | 1130 | .0 | 10.0 | 11100 | 8.3 | 2200 | 140 | 440 | 130 | 19 | 2100 | 66 | 404 |
| JUL | | | | | | | | | | | | | |
| 30... | 1210 | .0 | 10.3 | 10200 | 8.1 | 2100 | 140 | 420 | 132 | 19 | 2000 | 66 | 408 |

| Date | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | 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) (00631) | NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605) | NITRO-GEN, TOTAL (MG/L AS N) (00600) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 02... | 820 | .20 | 5400 | 1.7 | E.02 | <.008 | -- | <.05 | -- | -- | .15 | .20 | 9370 |
| FEB | | | | | | | | | | | | | |
| 05... | 790 | .10 | 5700 | 2.7 | .28 | .008 | .06 | .07 | 2.5 | 2.8 | .18 | .23 | 9660 |
| MAY | | | | | | | | | | | | | |
| 07... | 780 | .10 | 5300 | 2.2 | .25 | .009 | .08 | .09 | 1.9 | 2.3 | .16 | .21 | 9360 |
| JUL | | | | | | | | | | | | | |
| 30... | 810 | .10 | 5100 | 2.8 | .22 | <.008 | -- | E.03 | 2.6 | -- | .21 | .26 | 8890 |

| Date | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | 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 | | | | | | | | | | | | |
| 02... | 9280 | E9.9 | <.1 | 26.0 | 150 | 2 | 590 | 110 | <.10 | 5 | 27 | 660 |
| FEB | | | | | | | | | | | | |
| 05... | 9660 | .5 | <.1 | 6.0 | 240 | <1 | 680 | 120 | <.10 | <1 | 2 | 450 |
| MAY | | | | | | | | | | | | |
| 07... | 9130 | E8.3 | E3.9 | 4.0 | 180 | <1 | 650 | 130 | <.10 | 1 | <1 | 410 |
| JUL | | | | | | | | | | | | |
| 30... | 8850 | E55.2 | <.1 | 16.0 | 90 | 1 | 610 | 660 | .10 | <1 | 5 | 330 |

05056665 EASTERN STUMP LAKE NEAR LAKOTA, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DEPTH OF LAKE MAX. METERS (85310) | 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) | ICE THICK-NESS METERS (82131) | TRANS-PAR-ENCY (SECCHI DISK) (IN) (00077) | TEMPER-ATURE AIR (DEG C) (00020) | WIND DIREC-TION (DEG. FROM TRUE NORTH) (00036) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 02... | 1245 | 9.6 | .0 | 11100 | 8.4 | 15.3 | 9.5 | 104 | 720 | -- | 50.4 | 18.0 | 30 |
| 02... | 1246 | -- | 1.0 | 11100 | 8.4 | 15.3 | 9.5 | -- | -- | -- | -- | -- | -- |
| 02... | 1247 | -- | 2.1 | 11100 | 8.5 | 15.3 | 9.4 | -- | -- | -- | -- | -- | -- |
| 02... | 1248 | -- | 3.0 | 11100 | 8.5 | 15.3 | 9.3 | -- | -- | -- | -- | -- | -- |
| 02... | 1249 | -- | 4.0 | 11100 | 8.5 | 15.3 | 9.3 | -- | -- | -- | -- | -- | -- |
| 02... | 1250 | -- | 5.2 | 11100 | 8.5 | 15.3 | 9.3 | -- | -- | -- | -- | -- | -- |
| 02... | 1251 | -- | 6.1 | 11100 | 8.5 | 15.3 | 9.2 | -- | -- | -- | -- | -- | -- |
| 02... | 1252 | -- | 7.5 | 11100 | 8.5 | 15.3 | 9.2 | -- | -- | -- | -- | -- | -- |
| 02... | 1253 | -- | 9.6 | 11100 | 8.5 | 15.3 | 9.1 | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 05... | 1230 | 9.9 | .70 | 11400 | 8.5 | -.1 | 10.1 | 75 | 733 | .50 | 80.4 | -3.0 | -- |
| 05... | 1232 | -- | 2.0 | 11400 | 8.5 | -.3 | 10.9 | -- | -- | -- | -- | -- | -- |
| 05... | 1234 | -- | 3.0 | 11400 | 8.5 | -.3 | 11.0 | -- | -- | -- | -- | -- | -- |
| 05... | 1236 | -- | 4.0 | 11400 | 8.5 | -.3 | 11.1 | -- | -- | -- | -- | -- | -- |
| 05... | 1238 | -- | 5.0 | 11400 | 8.5 | -.3 | 11.0 | -- | -- | -- | -- | -- | -- |
| 05... | 1240 | -- | 6.0 | 11300 | 8.5 | -.3 | 11.1 | -- | -- | -- | -- | -- | -- |
| 05... | 1242 | -- | 7.0 | 11400 | 8.5 | -.3 | 11.1 | -- | -- | -- | -- | -- | -- |
| 05... | 1244 | -- | 8.0 | 11400 | 8.5 | -.3 | 11.1 | -- | -- | -- | -- | -- | -- |
| 05... | 1246 | -- | 9.0 | 11400 | 8.0 | -.3 | 11.1 | -- | -- | -- | -- | -- | -- |
| 05... | 1248 | -- | 9.9 | 11400 | 8.5 | 1.2 | .9 | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 07... | 1115 | 10 | .0 | 11200 | 8.4 | 4.0 | 12.8 | 105 | 738 | -- | 61.2 | 5.0 | 90 |
| 07... | 1116 | -- | 1.0 | 11200 | 8.4 | 4.0 | 12.7 | -- | -- | -- | -- | -- | -- |
| 07... | 1117 | -- | 2.0 | 11200 | 8.4 | 4.0 | 12.6 | -- | -- | -- | -- | -- | -- |
| 07... | 1118 | -- | 3.0 | 11200 | 8.4 | 4.0 | 12.6 | -- | -- | -- | -- | -- | -- |
| 07... | 1119 | -- | 4.0 | 11200 | 8.4 | 4.0 | 12.5 | -- | -- | -- | -- | -- | -- |
| 07... | 1120 | -- | 5.0 | 11200 | 8.4 | 4.0 | 12.5 | -- | -- | -- | -- | -- | -- |
| 07... | 1121 | -- | 6.0 | 11200 | 8.4 | 4.0 | 12.4 | -- | -- | -- | -- | -- | -- |
| 07... | 1122 | -- | 7.0 | 11200 | 8.4 | 4.0 | 12.4 | -- | -- | -- | -- | -- | -- |
| 07... | 1123 | -- | 8.0 | 11300 | 8.4 | 4.0 | 12.4 | -- | -- | -- | -- | -- | -- |
| 07... | 1124 | -- | 9.0 | 11300 | 8.4 | 4.0 | 12.4 | -- | -- | -- | -- | -- | -- |
| 07... | 1125 | -- | 10.0 | 11300 | 8.4 | 4.0 | 12.4 | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 30... | 1155 | 10 | .0 | 10600 | 8.5 | 24.0 | 11.9 | 153 | 727 | -- | 19.2 | 24.0 | 330 |
| 30... | 1156 | -- | 1.0 | 10700 | 8.5 | 23.9 | 11.8 | -- | -- | -- | -- | -- | -- |
| 30... | 1157 | -- | 2.0 | 10700 | 8.5 | 23.9 | 11.4 | -- | -- | -- | -- | -- | -- |
| 30... | 1158 | -- | 3.0 | 10700 | 8.5 | 23.9 | 11.2 | -- | -- | -- | -- | -- | -- |
| 30... | 1159 | -- | 4.0 | 10700 | 8.5 | 23.7 | 10.2 | -- | -- | -- | -- | -- | -- |
| 30... | 1200 | -- | 5.0 | 10700 | 8.4 | 23.4 | 8.7 | -- | -- | -- | -- | -- | -- |
| 30... | 1201 | -- | 6.0 | 10700 | 8.4 | 23.2 | 7.9 | -- | -- | -- | -- | -- | -- |
| 30... | 1202 | -- | 7.0 | 10700 | 8.3 | 22.4 | 4.8 | -- | -- | -- | -- | -- | -- |
| 30... | 1203 | -- | 8.0 | 10700 | 8.3 | 21.6 | 1.2 | -- | -- | -- | -- | -- | -- |
| 30... | 1204 | -- | 9.0 | 10800 | 8.2 | 20.0 | .3 | -- | -- | -- | -- | -- | -- |
| 30... | 1205 | -- | 10.0 | 10800 | 8.0 | 18.7 | .2 | -- | -- | -- | -- | -- | -- |
| 30... | 1206 | -- | 10.3 | 11000 | 7.9 | 17.9 | .1 | -- | -- | -- | -- | -- | -- |

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | WIND SPEED (MILES PER HOUR) (00035) |
|---|---|
| OCT | |
| 02... | 20 |
| 02... | -- |
| 02... | -- |
| 02... | -- |
| 02... | -- |
| 02... | -- |
| 02... | -- |
| 02... | -- |
| 02... | -- |
| FEB | |
| 05... | 7.0 |
| 05... | -- |
| 05... | -- |
| 05... | -- |
| 05... | -- |
| 05... | -- |
| 05... | -- |
| 05... | -- |
| 05... | -- |
| 05... | -- |
| MAY | |
| 07... | 6.0 |
| 07... | -- |
| 07... | -- |
| 07... | -- |
| 07... | -- |
| 07... | -- |
| 07... | -- |
| 07... | -- |
| 07... | -- |
| 07... | -- |
| 07... | -- |
| JUL | |
| 30... | 6.0 |
| 30... | -- |
| 30... | -- |
| 30... | -- |
| 30... | -- |
| 30... | -- |
| 30... | -- |
| 30... | -- |
| 30... | -- |
| 30... | -- |
| 30... | -- |
| 30... | -- |

< Less than
E Estimated value

## 05056670 WESTERN STUMP LAKE NEAR LAKOTA, ND

LOCATION.--Lat 47°54'48", long 98°23'26", in SE$^1/_4$NE$^1/_4$NW$^1/_4$ sec.7, T.151 N., R.60 W., Nelson County, Hydrologic Unit 09020201, at southeast arm of lake.

DRAINAGE AREA.--Not determined.

### WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1958-79, 1993 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| 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) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 02... | 1230 | .0 | 5.1 | 10600 | 8.5 | 2200 | 140 | 440 | 130 | 20 | 2100 | 66 | 404 |
| FEB | | | | | | | | | | | | | |
| 05... | 1145 | .70 | 5.4 | 11200 | 8.2 | 2300 | 150 | 460 | 140 | 20 | 2200 | 66 | 432 |
| MAY | | | | | | | | | | | | | |
| 07... | 1100 | .0 | 5.5 | 10900 | 8.3 | 2100 | 140 | 430 | 130 | 19 | 2000 | 66 | 399 |
| JUL | | | | | | | | | | | | | |
| 30... | 1140 | .0 | 5.9 | 10000 | 8.4 | 2000 | 140 | 410 | 132 | 19 | 2000 | 66 | 416 |

| Date | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | 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) (00631) | NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605) | NITRO-GEN, TOTAL (MG/L AS N) (00600) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 02... | 780 | .20 | 5300 | 1.4 | <.04 | <.008 | -- | <.05 | -- | -- | .11 | .13 | 9220 |
| FEB | | | | | | | | | | | | | |
| 05... | 820 | .10 | 5800 | 2.8 | .27 | .008 | .08 | .09 | 2.6 | 2.9 | .16 | .21 | 9840 |
| MAY | | | | | | | | | | | | | |
| 07... | 800 | .10 | 5200 | 1.1 | <.04 | .008 | -- | E.08n | -- | -- | .12 | .11 | 9280 |
| JUL | | | | | | | | | | | | | |
| 30... | 800 | .10 | 5000 | 1.6 | .11 | <.008 | -- | E.04 | 1.5 | -- | .28 | .27 | 8840 |

| Date | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | 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 | | | | | | | | | | | | |
| 02... | 9130 | 12.0 | <.1 | 22.0 | 140 | 2 | 580 | 70 | <.10 | 3 | 23 | 670 |
| FEB | | | | | | | | | | | | |
| 05... | 9830 | .8 | .2 | 5.0 | 220 | <1 | 690 | 110 | 3.00 | <1 | <1 | 440 |
| MAY | | | | | | | | | | | | |
| 07... | 8940 | E23.6 | E11.3 | 4.0 | 160 | <1 | 640 | 110 | <.10 | 2 | <1 | 420 |
| JUL | | | | | | | | | | | | |
| 30... | 8730 | E13.5 | <.1 | 17.0 | 100 | 1 | 610 | 450 | .20 | 1 | 4 | 330 |

05056670 WESTERN STUMP LAKE NEAR LAKOTA, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DEPTH OF LAKE MAX. METERS (85310) | 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) | ICE THICK-NESS METERS (82131) | TRANS-PAR-ENCY (SECCHI DISK) (IN) (00077) | TEMPER-ATURE AIR (DEG C) (00020) | WIND DIREC-TION (DEG. FROM TRUE NORTH) (00036) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 02... | 1220 | 5.1 | .0 | 10900 | 8.4 | 14.9 | 9.1 | 99 | 720 | -- | 39.6 | 18.0 | 30 |
| 02... | 1221 | -- | 1.1 | 10900 | 8.5 | 14.9 | 9.2 | -- | -- | -- | -- | -- | -- |
| 02... | 1222 | -- | 2.1 | 10900 | 8.5 | 14.9 | 9.1 | -- | -- | -- | -- | -- | -- |
| 02... | 1223 | -- | 3.1 | 10900 | 8.5 | 14.9 | 9.0 | -- | -- | -- | -- | -- | -- |
| 02... | 1224 | -- | 4.0 | 10900 | 8.5 | 14.9 | 9.1 | -- | -- | -- | -- | -- | -- |
| 02... | 1225 | -- | 5.1 | 10900 | 8.5 | 14.9 | 8.8 | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 05... | 1130 | 5.4 | .70 | 11600 | 8.5 | -.1 | 10.9 | 81 | 734 | .55 | 75.6 | .0 | 270 |
| 05... | 1132 | -- | 1.7 | 11500 | 8.5 | -.2 | 10.8 | -- | -- | -- | -- | -- | -- |
| 05... | 1134 | -- | 2.8 | 11500 | 8.5 | -.2 | 10.9 | -- | -- | -- | -- | -- | -- |
| 05... | 1136 | -- | 3.7 | 11500 | 8.5 | -.2 | 10.9 | -- | -- | -- | -- | -- | -- |
| 05... | 1138 | -- | 4.7 | 11500 | 8.4 | .4 | 9.4 | -- | -- | -- | -- | -- | -- |
| 05... | 1140 | -- | 5.4 | 11500 | 8.4 | .1 | 8.8 | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 07... | 1050 | 5.5 | .0 | 11000 | 8.5 | 4.6 | 14.2 | 118 | 738 | -- | 32.4 | 5.0 | 90 |
| 07... | 1051 | -- | 1.0 | 11000 | 8.5 | 4.6 | 14.1 | -- | -- | -- | -- | -- | -- |
| 07... | 1052 | -- | 2.0 | 11000 | 8.5 | 4.6 | 14.0 | -- | -- | -- | -- | -- | -- |
| 07... | 1053 | -- | 3.0 | 11000 | 8.5 | 4.6 | 13.9 | -- | -- | -- | -- | -- | -- |
| 07... | 1054 | -- | 4.0 | 11000 | 8.5 | 4.6 | 13.9 | -- | -- | -- | -- | -- | -- |
| 07... | 1055 | -- | 5.0 | 11100 | 8.5 | 4.5 | 13.4 | -- | -- | -- | -- | -- | -- |
| 07... | 1056 | -- | 5.5 | 11200 | 8.4 | 4.1 | 12.5 | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 30... | 1130 | 5.9 | .0 | 10600 | 8.5 | 24.1 | 11.3 | 146 | 727 | -- | 51.6 | 23.0 | 330 |
| 30... | 1131 | -- | 1.0 | 10600 | 8.5 | 24.0 | 11.2 | -- | -- | -- | -- | -- | -- |
| 30... | 1132 | -- | 2.0 | 10600 | 8.5 | 23.9 | 11.0 | -- | -- | -- | -- | -- | -- |
| 30... | 1133 | -- | 3.0 | 10600 | 8.5 | 23.7 | 10.4 | -- | -- | -- | -- | -- | -- |
| 30... | 1134 | -- | 4.0 | 10600 | 8.5 | 23.5 | 8.9 | -- | -- | -- | -- | -- | -- |
| 30... | 1135 | -- | 5.0 | 10600 | 8.3 | 22.2 | .6 | -- | -- | -- | -- | -- | -- |
| 30... | 1136 | -- | 5.9 | 10600 | 8.2 | 21.9 | .3 | -- | -- | -- | -- | -- | -- |

| Date | WIND SPEED (MILES PER HOUR) (00035) |
|---|---|
| OCT | |
| 02... | 30 |
| 02... | -- |
| 02... | -- |
| 02... | -- |
| 02... | -- |
| 02... | -- |
| FEB | |
| 05... | 5.0 |
| 05... | -- |
| 05... | -- |
| 05... | -- |
| 05... | -- |
| 05... | -- |
| MAY | |
| 07... | 5.0 |
| 07... | -- |
| 07... | -- |
| 07... | -- |
| 07... | -- |
| 07... | -- |
| 07... | -- |
| JUL | |
| 30... | 6.0 |
| 30... | -- |
| 30... | -- |
| 30... | -- |
| 30... | -- |
| 30... | -- |
| 30... | -- |

< Less than
E Estimated value
n Below the non-detection value

## 05057000 SHEYENNE RIVER NEAR COOPERSTOWN, ND

LOCATION.--Lat 47°25'58", long 98°01'38", in NW$^1/_4$NW$^1/_4$SW$^1/_4$ 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$^2$, approximately, of which about 5,200 mi$^2$ is probably noncontributing, includes 3,800 mi$^2$ 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 National Geodetic Vertical Datum of 1929 (Coast and Geodetic Survey benchmark). Aug. 3, 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 fair except for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | e60 | 116 | e79 | e33 | e31 | e52 | e45 | 237 | 155 | 265 | 54 | 101 |
| 2 | e56 | 125 | e80 | e32 | e30 | e50 | e59 | 223 | 152 | 300 | 48 | 106 |
| 3 | e54 | 130 | e78 | e31 | e30 | e46 | e79 | 216 | 148 | 362 | 44 | 83 |
| 4 | e52 | 137 | e76 | e29 | e29 | e41 | e104 | 220 | 138 | 399 | 41 | e71 |
| 5 | 50 | 148 | e72 | e28 | e29 | e39 | e122 | 216 | 133 | 398 | 38 | e62 |
| 6 | 50 | 157 | e71 | e27 | e27 | e37 | e141 | 212 | 130 | 352 | 36 | e57 |
| 7 | 51 | 164 | e69 | e27 | e26 | e37 | e141 | 216 | 128 | 284 | 35 | e56 |
| 8 | 52 | 163 | e68 | e26 | e24 | e37 | e146 | 224 | 121 | 226 | 34 | e55 |
| 9 | 51 | 154 | e67 | e26 | e24 | e36 | e161 | 243 | 131 | 189 | e37 | e56 |
| 10 | 50 | 146 | e66 | e26 | e23 | e36 | e192 | 266 | 146 | 192 | e35 | 55 |
| 11 | 55 | 142 | e65 | e26 | e23 | e35 | e213 | 284 | 165 | 223 | e35 | 51 |
| 12 | 62 | 135 | e63 | e27 | e23 | e37 | e250 | 303 | 161 | 224 | 43 | 49 |
| 13 | 67 | 130 | e61 | e28 | e24 | e36 | e324 | 321 | 162 | 200 | 36 | 46 |
| 14 | 69 | 127 | e58 | e31 | e28 | e36 | e349 | 336 | 182 | 164 | 33 | 45 |
| 15 | 67 | 123 | e56 | e34 | e29 | e36 | e360 | 339 | 229 | 139 | 31 | 44 |
| 16 | 70 | 122 | e53 | e38 | e31 | e37 | 338 | 334 | 267 | 123 | 30 | 44 |
| 17 | 73 | 120 | e51 | e42 | e32 | e38 | 335 | 318 | 305 | 108 | 34 | 40 |
| 18 | 76 | 117 | e48 | e47 | e35 | e42 | 354 | 301 | 351 | 103 | e35 | 38 |
| 19 | 73 | 114 | e46 | e48 | e37 | e45 | 373 | 285 | 392 | 96 | e42 | 38 |
| 20 | 72 | 110 | e43 | e47 | e39 | e49 | 381 | 267 | 410 | 91 | e53 | 36 |
| 21 | 70 | 110 | e43 | e45 | e41 | e58 | 372 | 250 | 410 | 89 | e52 | 36 |
| 22 | 69 | 110 | e45 | e43 | e43 | e66 | 357 | 237 | 392 | 86 | e47 | 41 |
| 23 | 68 | 107 | e47 | e41 | e45 | e69 | 329 | 220 | 361 | 86 | e47 | 52 |
| 24 | 78 | 106 | e47 | e39 | e48 | e63 | 308 | 208 | 308 | 86 | e47 | 41 |
| 25 | 86 | 107 | e46 | e38 | e50 | e59 | 289 | 196 | 268 | 90 | e48 | 37 |
| 26 | e90 | 69 | e44 | e36 | e53 | e56 | 273 | 193 | 264 | 80 | e33 | 39 |
| 27 | e95 | 28 | e41 | e35 | e54 | e53 | 270 | 184 | 304 | 74 | 39 | 45 |
| 28 | 98 | 63 | e37 | e34 | e52 | e50 | 264 | 175 | 341 | 72 | 40 | 46 |
| 29 | 93 | e75 | e35 | e33 | --- | e47 | 258 | 170 | 330 | 69 | 47 | 47 |
| 30 | 98 | e78 | e35 | e32 | --- | e45 | 253 | 162 | 290 | 62 | 55 | 46 |
| 31 | 109 | --- | e34 | e31 | --- | e42 | --- | 158 | --- | 52 | 73 | --- |
| TOTAL | 2164 | 3533 | 1724 | 1060 | 960 | 1410 | 7440 | 7514 | 7274 | 5284 | 1302 | 1563 |
| MEAN | 69.81 | 117.8 | 55.61 | 34.19 | 34.29 | 45.48 | 248.0 | 242.4 | 242.5 | 170.5 | 42.00 | 52.10 |
| MAX | 109 | 164 | 80 | 48 | 54 | 69 | 381 | 339 | 410 | 399 | 73 | 106 |
| MIN | 50 | 28 | 34 | 26 | 23 | 35 | 45 | 158 | 121 | 52 | 30 | 36 |
| AC-FT | 4290 | 7010 | 3420 | 2100 | 1900 | 2800 | 14760 | 14900 | 14430 | 10480 | 2580 | 3100 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 39.43 | 39.71 | 23.00 | 14.65 | 16.50 | 185.0 | 666.6 | 253.7 | 146.3 | 112.2 | 64.86 | 40.85 |
| MAX | 392 | 375 | 144 | 68.2 | 112 | 1381 | 2623 | 1953 | 873 | 722 | 1033 | 321 |
| (WY) | 1995 | 2001 | 2001 | 1995 | 1998 | 1995 | 1996 | 1950 | 2000 | 2000 | 1993 | 1994 |
| MIN | 0.83 | 2.83 | 3.14 | 1.94 | 0.000 | 2.14 | 42.4 | 37.3 | 6.66 | 3.84 | 0.68 | 0.000 |
| (WY) | 1964 | 1977 | 1977 | 1964 | 1963 | 1964 | 1991 | 1961 | 1961 | 1961 | 1961 | 1959 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1945 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 121746 | | 41228 | | | |
| ANNUAL MEAN | 333.6 | | 113.0 | | 133.5 | |
| HIGHEST ANNUAL MEAN | | | | | 399 | 1950 |
| LOWEST ANNUAL MEAN | | | | | 13.2 | 1977 |
| HIGHEST DAILY MEAN | 3110 | Apr 8 | 410 | Jun 20 | 7410 | Apr 17 1950 |
| LOWEST DAILY MEAN | 28 | Nov 27 | 23 | Feb 10 | 0.00 | Aug 29 1959 |
| ANNUAL SEVEN-DAY MINIMUM | 39 | Dec 25 | 24 | Feb 7 | 0.00 | Aug 29 1959 |
| MAXIMUM PEAK FLOW | | | 418 | Jun 20 | a7830 | Apr 17 1950 |
| MAXIMUM PEAK STAGE | | | 11.08 | Jun 20 | 19.13 | Apr 18 1996 |
| ANNUAL RUNOFF (AC-FT) | 241500 | | 81780 | | 96690 | |
| 10 PERCENT EXCEEDS | 688 | | 289 | | 294 | |
| 50 PERCENT EXCEEDS | 107 | | 65 | | 29 | |
| 90 PERCENT EXCEEDS | 47 | | 33 | | 4.5 | |

a Gage height, 18.69 ft.
e Estimated

05057000 SHEYENNE RIVER NEAR COOPERSTOWN, ND--Continued

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: June 1997 to current year.

SPECIFIC CONDUCTANCE: June 1997 to current year.

INSTRUMENTATION.--Water-quality sensors since June 1997.

REMARKS.--Records good.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 29.5°C, July 20,2002; minimum recorded, -0.2°C, on many days in November 2000, December 2000, and January 2001.

SPECIFIC CONDUCTANCE: Maximum recorded, 2,230 microsiemens, Feb. 15-17, 2002; minimum recorded, 539 microsiemens, June 16, 2000.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 29.5°C, July 20; minimum recorded, 0.1°C, on many days.

SPECIFIC CONDUCTANCE: Maximum recorded, 2,230 microsiemens, Feb. 15-17; minimum recorded, 591 microsiemens, April 13.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 09... | 1655 | 54 | -- | -- | -- | *718 | 15.5 | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 28... | 1305 | 65 | -- | -- | -- | *1090 | -4.5 | .5 | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 24... | 1120 | 38 | -- | -- | -- | 2000 | -11.5 | -.5 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 04... | 1125 | 40 | -- | -- | -- | *1350 | -7.5 | .0 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 10... | 0920 | 186 | 8.2 | 7.8 | 840 | *818 | -5.0 | 1.5 | 270 | 53.0 | 33.0 | 9.60 | 2 |
| MAY | | | | | | | | | | | | | |
| 07... | 1730 | 219 | -- | -- | -- | 1100 | 4.5 | 7.0 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 01... | 1545 | 260 | -- | -- | -- | -- | -- | 27.5 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 06... | 1110 | 36 | 7.6 | --e | 1100 | 1110 | 18.0 | 21.0 | 360 | 71.0 | 45.0 | 12.0 | 3 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 28... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 04... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 10... | 74.0 | 36 | 258 | 13.0 | .20 | 170 | 274 | 546 | 508 | 2.0 | 30 | <1 | 60 |
| MAY | | | | | | | | | | | | | |
| 07... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 01... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 06... | 120 | 41 | 414 | 7.9 | .20 | 220 | 75.9 | 774 | 726 | 11.0 | 50 | 1 | 80 |

05057000 SHEYENNE RIVER NEAR COOPERSTOWN, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | 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 | | | | | |
| 09... | -- | -- | -- | -- | -- |
| NOV | | | | | |
| 28... | -- | -- | -- | -- | -- |
| JAN | | | | | |
| 24... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 04... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 10... | 40 | <.10 | <1 | <1 | 200 |
| MAY | | | | | |
| 07... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 01... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 06... | 400 | <.10 | 2 | 1 | 390 |

* Not at water-quality monitor probe location
< Less than
e Required equipment not functional/available

WATER TEMPERATURE from datalogger, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | OCTOBER | | | NOVEMBER | | | DECEMBER | | | JANUARY | | |
| 1 | 17.3 | 14.6 | 15.6 | 4.7 | 3.9 | 4.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 |
| 2 | 16.5 | 14.5 | 15.3 | 4.9 | 4.0 | 4.4 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 |
| 3 | 15.2 | 13.9 | 14.5 | 5.0 | 4.0 | 4.4 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 |
| 4 | 14.0 | 12.0 | 12.7 | 4.9 | 3.9 | 4.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 |
| 5 | 12.0 | 9.5 | 10.4 | 5.3 | 4.3 | 4.7 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 |
| 6 | 9.5 | 7.7 | 8.4 | 5.2 | 4.5 | 4.7 | 0.3 | 0.2 | 0.3 | 0.2 | 0.1 | 0.2 |
| 7 | 8.1 | 6.9 | 7.6 | 4.7 | 4.2 | 4.5 | 0.3 | 0.2 | 0.3 | 0.2 | 0.1 | 0.2 |
| 8 | 9.0 | 7.2 | 8.0 | 4.3 | 3.5 | 3.9 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 |
| 9 | 9.2 | 7.7 | 8.4 | 3.7 | 3.1 | 3.4 | 0.3 | 0.2 | 0.2 | 0.3 | 0.1 | 0.2 |
| 10 | 9.7 | 8.8 | 9.1 | 3.7 | 3.0 | 3.3 | 0.3 | 0.2 | 0.2 | 0.3 | 0.1 | 0.2 |
| 11 | 10.0 | 8.4 | 9.2 | 3.4 | 2.8 | 3.0 | 0.3 | 0.2 | 0.2 | 0.3 | 0.1 | 0.2 |
| 12 | 10.6 | 9.3 | 9.9 | 3.5 | 2.7 | 2.9 | 0.3 | 0.2 | 0.2 | 0.3 | 0.1 | 0.2 |
| 13 | 10.1 | 9.2 | 9.7 | 3.2 | 2.3 | 2.7 | 0.3 | 0.2 | 0.2 | 0.3 | 0.1 | 0.2 |
| 14 | 9.2 | 8.3 | 8.9 | 3.2 | 2.3 | 2.7 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 |
| 15 | 8.3 | 6.9 | 7.8 | 4.2 | 2.7 | 3.5 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 |
| 16 | 6.9 | 5.9 | 6.5 | 4.9 | 3.7 | 4.2 | 0.3 | 0.2 | 0.3 | 0.3 | 0.1 | 0.3 |
| 17 | 6.8 | 5.6 | 6.2 | 5.2 | 4.2 | 4.5 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 | 0.3 |
| 18 | 7.5 | 6.3 | 6.8 | 4.6 | 3.3 | 4.2 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 |
| 19 | 7.6 | 6.9 | 7.2 | 3.3 | 1.5 | 2.6 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 |
| 20 | 7.7 | 6.7 | 7.1 | 1.8 | 1.1 | 1.4 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 |
| 21 | 7.3 | 6.2 | 6.8 | 1.8 | 1.1 | 1.4 | 0.3 | 0.2 | 0.3 | 0.3 | 0.2 | 0.2 |
| 22 | 7.3 | 6.1 | 6.7 | 2.4 | 1.4 | 1.9 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 |
| 23 | 7.2 | 6.1 | 6.7 | 3.0 | 2.2 | 2.5 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 |
| 24 | 6.1 | 2.1 | 4.1 | 3.0 | 2.6 | 2.7 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 |
| 25 | 2.1 | 0.7 | 1.2 | 2.6 | 1.2 | 2.0 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 |
| 26 | 1.6 | 0.5 | 0.9 | 1.2 | 0.3 | 0.5 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 |
| 27 | 1.2 | 0.5 | 0.8 | 0.5 | 0.2 | 0.4 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 |
| 28 | 1.4 | 0.4 | 0.8 | 0.4 | 0.2 | 0.3 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 |
| 29 | 2.1 | 1.0 | 1.7 | 0.3 | 0.2 | 0.3 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 |
| 30 | 3.2 | 2.0 | 2.6 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 |
| 31 | 4.0 | 3.0 | 3.5 | --- | --- | --- | 0.3 | 0.1 | 0.2 | 0.2 | 0.1 | 0.2 |
| MONTH | 17.3 | 0.4 | 7.3 | 5.3 | 0.2 | 2.9 | 0.3 | 0.1 | 0.2 | 0.3 | 0.1 | 0.2 |

05057000 SHEYENNE RIVER NEAR COOPERSTOWN, ND--Continued

WATER TEMPERATURE from datalogger, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | FEBRUARY | | | MARCH | | | APRIL | | | MAY | |
| 1 | 0.2 | 0.1 | 0.2 | 0.4 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 8.5 | 7.3 | 7.8 |
| 2 | 0.2 | 0.1 | 0.1 | 0.4 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 9.3 | 6.5 | 7.8 |
| 3 | 0.2 | 0.1 | 0.1 | 0.5 | 0.1 | 0.3 | 0.3 | 0.2 | 0.2 | 11.7 | 8.0 | 9.6 |
| 4 | 0.2 | 0.1 | 0.2 | 0.4 | 0.1 | 0.2 | 0.3 | 0.2 | 0.2 | 12.6 | 10.2 | 11.4 |
| 5 | 0.2 | 0.1 | 0.2 | 0.3 | 0.1 | 0.2 | 0.3 | 0.2 | 0.2 | 12.5 | 10.5 | 11.1 |
| 6 | 0.2 | 0.1 | 0.2 | 0.3 | 0.1 | 0.2 | 0.3 | 0.1 | 0.2 | 10.6 | 8.0 | 8.8 |
| 7 | 0.3 | 0.1 | 0.2 | 0.2 | 0.1 | 0.2 | 0.6 | 0.2 | 0.3 | 8.0 | 6.9 | 7.1 |
| 8 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.6 | 0.1 | 0.3 | 7.0 | 6.2 | 6.5 |
| 9 | 0.3 | 0.1 | 0.2 | 0.2 | 0.1 | 0.2 | 0.5 | 0.2 | 0.3 | 7.3 | 5.3 | 6.2 |
| 10 | 0.3 | 0.1 | 0.2 | 0.2 | 0.1 | 0.2 | 0.4 | 0.2 | 0.3 | 10.0 | 6.5 | 8.0 |
| 11 | 0.4 | 0.1 | 0.2 | 0.2 | 0.1 | 0.2 | 0.7 | 0.2 | 0.3 | 10.0 | 9.1 | 9.6 |
| 12 | 0.4 | 0.2 | 0.3 | 0.3 | 0.1 | 0.2 | 0.7 | 0.2 | 0.4 | 11.3 | 8.7 | 10 |
| 13 | 0.4 | 0.1 | 0.3 | 0.6 | 0.2 | 0.3 | 6.0 | 0.2 | 2.6 | 13.3 | 9.9 | 11.5 |
| 14 | 0.4 | 0.2 | 0.3 | 0.4 | 0.2 | 0.3 | 7.4 | 3.8 | 5.4 | 14.6 | 11.3 | 12.9 |
| 15 | 0.4 | 0.2 | 0.3 | 0.6 | 0.2 | 0.3 | 9.4 | 6.0 | 7.6 | 15.0 | 13.2 | 14.1 |
| 16 | 0.5 | 0.2 | 0.3 | 0.7 | 0.2 | 0.4 | 11.2 | 8.3 | 9.5 | 14.0 | 11.7 | 13.0 |
| 17 | 0.5 | 0.2 | 0.3 | 0.5 | 0.2 | 0.3 | 12.9 | 9.4 | 11.0 | 13.4 | 11.5 | 12.6 |
| 18 | 0.6 | 0.2 | 0.3 | 0.3 | 0.2 | 0.3 | 12.4 | 8.5 | 10.8 | 14.0 | 11.2 | 12.6 |
| 19 | 0.6 | 0.2 | 0.3 | 0.3 | 0.2 | 0.2 | 8.5 | 7.2 | 7.9 | 14.5 | 11.7 | 13.1 |
| 20 | 0.6 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 9.0 | 7.2 | 8.0 | 15.3 | 12.4 | 13.8 |
| 21 | 0.5 | 0.2 | 0.3 | 0.3 | 0.1 | 0.2 | 7.9 | 6.8 | 7.2 | 16.1 | 13.2 | 14.7 |
| 22 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 7.4 | 6.2 | 6.7 | 16.4 | 14.7 | 15.6 |
| 23 | 0.5 | 0.2 | 0.3 | 0.3 | 0.2 | 0.2 | 9.0 | 6.3 | 7.6 | 16.3 | 13.3 | 14.2 |
| 24 | 0.4 | 0.2 | 0.3 | 0.4 | 0.2 | 0.2 | 8.8 | 7.4 | 8.0 | 13.8 | 11.9 | 12.9 |
| 25 | 0.5 | 0.2 | 0.3 | 0.4 | 0.1 | 0.2 | 7.6 | 5.2 | 6.3 | 15.4 | 13.2 | 14.1 |
| 26 | 0.6 | 0.2 | 0.3 | 0.4 | 0.1 | 0.2 | 7.5 | 5.1 | 6.3 | 16.1 | 14.1 | 15.1 |
| 27 | 0.5 | 0.1 | 0.3 | 0.6 | 0.2 | 0.3 | 7.4 | 5.9 | 6.3 | 18.2 | 15.0 | 16.3 |
| 28 | 0.4 | 0.1 | 0.3 | 0.8 | 0.2 | 0.4 | 6.6 | 5.5 | 6.1 | 20.2 | 17.7 | 18.6 |
| 29 | --- | --- | --- | 0.8 | 0.2 | 0.4 | 8.8 | 5.9 | 7.2 | 21.0 | 19.8 | 20.3 |
| 30 | --- | --- | --- | 0.7 | 0.2 | 0.4 | 8.7 | 7.3 | 8.0 | 21.2 | 20.0 | 20.7 |
| 31 | --- | --- | --- | 0.6 | 0.2 | 0.3 | --- | --- | --- | 21.6 | 20.2 | 21.0 |
| MONTH | 0.6 | 0.1 | 0.2 | 0.8 | 0.1 | 0.3 | 12.9 | 0.1 | 4.5 | 21.6 | 5.3 | 12.6 |

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | JUNE | | | JULY | | | AUGUST | | | SEPTEMBER | |
| 1 | 21.8 | 20.4 | 21.2 | 27.7 | 25.6 | 26.8 | 27.1 | 23.4 | 24.3 | 24.3 | 22.0 | 23.1 |
| 2 | 21.2 | 17.8 | 19.5 | 27.1 | 25.0 | 26.0 | 24.2 | 21.4 | 22.7 | 23.4 | 21.6 | 22.9 |
| 3 | 17.8 | 17.1 | 17.4 | 26.4 | 23.9 | 25.2 | 23.8 | 20.9 | 22.1 | 22.8 | 20.6 | 21.3 |
| 4 | 18.0 | 17.1 | 17.5 | 25.6 | 22.7 | 24.0 | 24.8 | 20.9 | 22.6 | 22.4 | 20.4 | 21.3 |
| 5 | 19.2 | 16.9 | 18.0 | 24.6 | 22.0 | 23.2 | 24.4 | 21.0 | 22.6 | 23.6 | 21.2 | 22.2 |
| 6 | 20.5 | 18.6 | 19.4 | 26.2 | 23.7 | 24.9 | 23.1 | 21.0 | 21.4 | 25.3 | 22.0 | 23.6 |
| 7 | 19.9 | 18.7 | 19.6 | 25.7 | 24.3 | 24.7 | 22.5 | 20.7 | 21.5 | 25.6 | 23.2 | 24.5 |
| 8 | 19.6 | 18.2 | 18.8 | 25.8 | 23.3 | 24.5 | 24.8 | 22.0 | 23.4 | 26.6 | 23.9 | 24.9 |
| 9 | 19.5 | 18.6 | 19.0 | 26.0 | 24.6 | 25.4 | 25.5 | 22.9 | 24.0 | 24.1 | 21.4 | 23.0 |
| 10 | 18.9 | 17.3 | 18.3 | 25.3 | 21.5 | 23.3 | 24.7 | 22.8 | 23.7 | 22.6 | 19.4 | 21.0 |
| 11 | 19.0 | 16.7 | 17.7 | 22.8 | 20.0 | 21.4 | 24.0 | 22.2 | 23.1 | 21.4 | 18.8 | 20.0 |
| 12 | 19.0 | 17.9 | 18.3 | 24.4 | 22.4 | 23.2 | 23.1 | 21.6 | 22.0 | 22.3 | 18.8 | 20.1 |
| 13 | 17.9 | 17.1 | 17.4 | 25.9 | 23.4 | 24.5 | 22.2 | 19.8 | 21.0 | 20.4 | 18.8 | 19.8 |
| 14 | 19.0 | 16.6 | 17.7 | 26.9 | 25.1 | 26.1 | 21.8 | 20.1 | 20.8 | 19.6 | 18.0 | 18.8 |
| 15 | 20.8 | 18.1 | 19.3 | 28.3 | 26.1 | 27.2 | 21.3 | 19.9 | 20.5 | 18.3 | 17.0 | 17.7 |
| 16 | 21.2 | 19.0 | 20.1 | 29.3 | 26.9 | 28.0 | 20.7 | 19.0 | 19.8 | 19.3 | 16.4 | 18.0 |
| 17 | 22.3 | 19.6 | 20.9 | 28.3 | 26.0 | 27.6 | 19.1 | 17.7 | 18.5 | 18.7 | 17.0 | 18.1 |
| 18 | 22.5 | 20.5 | 21.4 | 27.1 | 24.8 | 25.8 | 19.0 | 16.8 | 17.7 | 19.1 | 17.9 | 18.5 |
| 19 | 22.3 | 21.2 | 21.7 | 28.3 | 25.6 | 26.7 | 19.4 | 16.2 | 17.4 | 18.6 | 17.0 | 17.9 |
| 20 | 22.4 | 20.1 | 21.3 | 29.5 | 26.7 | 27.7 | 19.8 | 17.1 | 18.5 | 17.3 | 15.6 | 16.6 |
| 21 | 23.1 | 20.8 | 21.9 | 27.9 | 26.7 | 27.5 | 20.7 | 18.7 | 19.5 | 15.6 | 13.4 | 14.8 |
| 22 | 23.1 | 21.8 | 22.3 | 26.7 | 23.3 | 25.0 | 21.0 | 19.2 | 20.0 | 13.4 | 11.9 | 12.8 |
| 23 | 24.2 | 22.0 | 22.9 | 23.3 | 20.3 | 21.8 | 22.4 | 19.3 | 20.5 | 11.9 | 10.6 | 11.5 |
| 24 | 26.3 | 23.3 | 24.6 | 20.6 | 19.6 | 20.0 | 24.2 | 20.2 | 22.0 | 11.2 | 10.1 | 10.8 |
| 25 | 26.5 | 24.7 | 25.6 | 23.7 | 20.0 | 21.6 | 25.8 | 21.4 | 23.3 | 11.6 | 10.0 | 10.7 |
| 26 | 26.9 | 24.4 | 25.7 | 26.5 | 22.4 | 24.3 | 25.6 | 22.3 | 24.0 | 12.3 | 10.1 | 11.1 |
| 27 | 27.7 | 25.0 | 26.3 | 26.3 | 24.3 | 25.0 | 24.9 | 22.9 | 24.0 | 11.4 | 10.6 | 10.9 |
| 28 | 28.1 | 25.6 | 26.8 | 27.1 | 24.4 | 25.1 | 26.0 | 23.1 | 24.1 | 11.9 | 9.9 | 10.7 |
| 29 | 28.7 | 26.1 | 27.3 | 27.0 | 23.6 | 24.9 | 24.8 | 23.0 | 23.8 | 11.2 | 9.7 | 10.6 |
| 30 | 28.4 | 26.4 | 27.5 | 27.9 | 24.1 | 25.5 | 23.6 | 21.9 | 22.8 | 13.8 | 10.8 | 12.0 |
| 31 | --- | --- | --- | 27.9 | 24.1 | 25.6 | 24.4 | 21.2 | 22.5 | --- | --- | --- |
| MONTH | 28.7 | 16.6 | 21.2 | 29.5 | 19.6 | 24.9 | 27.1 | 16.2 | 21.7 | 26.6 | 9.7 | 17.6 |

05057000 SHEYENNE RIVER NEAR COOPERSTOWN, ND--Continued

SPECIFIC CONDUCTANCE from datalogger, in US/CM @ 25C, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | OCTOBER | | | NOVEMBER | | | DECEMBER | | | JANUARY | |
| 1 | 1140 | 1130 | 1140 | 1360 | 1350 | 1350 | 1430 | 1400 | 1410 | 2160 | 2150 | 2150 |
| 2 | 1150 | 1140 | 1140 | 1370 | 1310 | 1360 | 1490 | 1430 | 1460 | 2170 | 2160 | 2170 |
| 3 | 1150 | 1140 | 1140 | 1370 | 1360 | 1370 | 1540 | 1490 | 1510 | 2180 | 2170 | 2170 |
| 4 | 1140 | 1130 | 1130 | 1360 | 1300 | 1360 | 1590 | 1540 | 1570 | 2180 | 2170 | 2180 |
| 5 | 1130 | 1130 | 1130 | 1360 | 1300 | 1350 | 1640 | 1590 | 1620 | 2180 | 2160 | 2170 |
| 6 | 1130 | 1120 | 1120 | 1360 | 1290 | 1330 | 1690 | 1640 | 1670 | 2160 | 2140 | 2160 |
| 7 | 1120 | 1120 | 1120 | 1320 | 1310 | 1310 | 1700 | 1670 | 1700 | 2150 | 2130 | 2140 |
| 8 | 1120 | 1110 | 1120 | 1330 | 1320 | 1320 | 1670 | 1640 | 1660 | 2130 | 2110 | 2120 |
| 9 | 1120 | 1110 | 1120 | 1330 | 1330 | 1330 | 1640 | 1590 | 1620 | 2110 | 2090 | 2100 |
| 10 | 1120 | 1110 | 1110 | 1380 | 1330 | 1350 | 1590 | 1580 | 1590 | 2100 | 2080 | 2080 |
| 11 | 1110 | 1100 | 1100 | 1390 | 1320 | 1360 | 1580 | 1520 | 1540 | 2080 | 2060 | 2060 |
| 12 | 1100 | 1100 | 1100 | 1410 | 1340 | 1380 | 1550 | 1460 | 1530 | 2060 | 2040 | 2050 |
| 13 | 1100 | 1100 | 1100 | 1440 | 1410 | 1420 | 1510 | 1460 | 1480 | 2040 | 2010 | 2030 |
| 14 | 1110 | 1100 | 1100 | 1480 | 1430 | 1460 | 1530 | 1480 | 1500 | 2020 | 2000 | 2010 |
| 15 | 1120 | 1110 | 1120 | 1490 | 1470 | 1480 | 1580 | 1530 | 1550 | 2010 | 2000 | 2000 |
| 16 | 1140 | 1120 | 1130 | 1500 | 1490 | 1490 | 1600 | 1580 | 1590 | 2000 | 1990 | 1990 |
| 17 | 1150 | 1140 | 1140 | 1530 | 1500 | 1510 | 1590 | 1510 | 1550 | 1990 | 1990 | 1990 |
| 18 | 1160 | 1140 | 1140 | 1570 | 1530 | 1550 | 1600 | 1540 | 1570 | 1990 | 1990 | 1990 |
| 19 | 1170 | 1150 | 1160 | 1590 | 1570 | 1580 | 1660 | 1600 | 1630 | 1990 | 1980 | 1980 |
| 20 | 1180 | 1170 | 1170 | 1600 | 1590 | 1590 | 1740 | 1660 | 1700 | 1990 | 1980 | 1980 |
| 21 | 1230 | 1180 | 1190 | 1600 | 1580 | 1590 | 1780 | 1710 | 1750 | 1980 | 1980 | 1980 |
| 22 | 1240 | 1210 | 1230 | 1590 | 1580 | 1580 | 1860 | 1780 | 1820 | 1990 | 1980 | 1980 |
| 23 | 1230 | 1220 | 1230 | 1600 | 1580 | 1590 | 1910 | 1860 | 1880 | 1990 | 1990 | 1990 |
| 24 | 1250 | 1230 | 1240 | 1610 | 1590 | 1610 | 1940 | 1910 | 1930 | 2000 | 1980 | 1990 |
| 25 | 1260 | 1250 | 1260 | 1620 | 1610 | 1620 | 1980 | 1940 | 1960 | 2000 | 1990 | 1990 |
| 26 | 1270 | 1260 | 1260 | 1630 | 1620 | 1620 | 2020 | 1980 | 2000 | 2000 | 1990 | 2000 |
| 27 | 1300 | 1270 | 1280 | 1620 | 1420 | 1500 | 2060 | 2020 | 2040 | 2010 | 2000 | 2000 |
| 28 | 1320 | 1300 | 1310 | 1420 | 1370 | 1390 | 2090 | 2060 | 2070 | 2020 | 2010 | 2020 |
| 29 | 1320 | 1300 | 1320 | 1390 | 1370 | 1380 | 2110 | 2090 | 2100 | 2040 | 2020 | 2030 |
| 30 | 1340 | 1320 | 1330 | 1400 | 1370 | 1390 | 2130 | 2110 | 2120 | 2080 | 2040 | 2050 |
| 31 | 1350 | 1340 | 1340 | --- | --- | --- | 2150 | 2130 | 2140 | 2060 | 2050 | 2060 |
| MONTH | 1350 | 1100 | 1180 | 1630 | 1290 | 1450 | 2150 | 1400 | 1720 | 2180 | 1980 | 2050 |

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | FEBRUARY | | | MARCH | | | APRIL | | | MAY | |
| 1 | 2080 | 2060 | 2070 | 2130 | 2110 | 2120 | 1800 | 1780 | 1790 | 970 | 959 | 964 |
| 2 | 2090 | 2080 | 2080 | 2120 | 2100 | 2110 | 1780 | 1760 | 1770 | 982 | 964 | 976 |
| 3 | 2100 | 2090 | 2100 | 2100 | 2090 | 2090 | 1760 | 1740 | 1750 | 1000 | 982 | 994 |
| 4 | 2120 | 2100 | 2110 | 2090 | 2070 | 2080 | 1750 | 1730 | 1740 | 1000 | 997 | 1000 |
| 5 | 2130 | 2120 | 2120 | 2080 | 2060 | 2070 | 1730 | 1710 | 1720 | 997 | 987 | 992 |
| 6 | 2150 | 2130 | 2140 | 2070 | 2050 | 2060 | 1710 | 1690 | 1700 | 1010 | 991 | 1000 |
| 7 | 2160 | 2140 | 2150 | 2050 | 2040 | 2040 | 1700 | 1690 | 1700 | 1050 | 1010 | 1030 |
| 8 | 2180 | 2160 | 2160 | 2040 | 2030 | 2030 | 1700 | 727 | 1120 | 1080 | 1050 | 1060 |
| 9 | 2190 | 2170 | 2180 | 2030 | 2020 | 2030 | 727 | 684 | 696 | 1140 | 1080 | 1130 |
| 10 | 2200 | 2190 | 2200 | 2020 | 2010 | 2020 | 695 | 662 | 683 | 1150 | 1130 | 1140 |
| 11 | 2210 | 2200 | 2200 | 2020 | 2000 | 2010 | 704 | 640 | 668 | 1180 | 1140 | 1160 |
| 12 | 2210 | 2200 | 2210 | 2000 | 1990 | 2000 | 698 | 608 | 639 | 1180 | 1160 | 1170 |
| 13 | 2220 | 2210 | 2220 | 2000 | 1980 | 1990 | 667 | 591 | 630 | 1180 | 1180 | 1180 |
| 14 | 2220 | 2220 | 2220 | 1980 | 1970 | 1980 | 691 | 663 | 682 | 1200 | 1180 | 1190 |
| 15 | 2230 | 2220 | 2220 | 1980 | 1960 | 1970 | 679 | 651 | 667 | 1220 | 1200 | 1210 |
| 16 | 2230 | 2220 | 2230 | 1960 | 1950 | 1960 | 670 | 639 | 658 | 1220 | 1200 | 1220 |
| 17 | 2230 | 2220 | 2220 | 1960 | 1950 | 1950 | 675 | 639 | 660 | 1220 | 1200 | 1210 |
| 18 | 2220 | 2210 | 2220 | 1950 | 1940 | 1940 | 837 | 670 | 703 | 1210 | 1200 | 1200 |
| 19 | 2220 | 2210 | 2210 | 1940 | 1920 | 1930 | 813 | 724 | 760 | 1220 | 1210 | 1220 |
| 20 | 2220 | 2200 | 2210 | 1920 | 1900 | 1920 | 750 | 735 | 741 | 1210 | 1210 | 1210 |
| 21 | 2210 | 2200 | 2200 | 1910 | 1900 | 1910 | 758 | 742 | 752 | 1230 | 1210 | 1220 |
| 22 | 2200 | 2190 | 2200 | 1900 | 1890 | 1900 | 775 | 754 | 768 | 1240 | 1220 | 1230 |
| 23 | 2200 | 2180 | 2190 | 1890 | 1880 | 1890 | 792 | 775 | 782 | 1260 | 1240 | 1250 |
| 24 | 2180 | 2170 | 2180 | 1880 | 1870 | 1880 | 812 | 792 | 801 | 1260 | 1260 | 1260 |
| 25 | 2180 | 2160 | 2170 | 1870 | 1860 | 1870 | 843 | 812 | 825 | 1280 | 1260 | 1270 |
| 26 | 2160 | 2150 | 2150 | 1860 | 1850 | 1860 | 868 | 843 | 859 | 1290 | 1280 | 1290 |
| 27 | 2150 | 2140 | 2140 | 1860 | 1840 | 1850 | 900 | 868 | 887 | 1290 | 1290 | 1290 |
| 28 | 2140 | 2120 | 2130 | 1840 | 1830 | 1840 | 927 | 900 | 912 | 1290 | 1280 | 1290 |
| 29 | --- | --- | --- | 1840 | 1830 | 1830 | 960 | 927 | 947 | 1280 | 1260 | 1270 |
| 30 | --- | --- | --- | 1830 | 1820 | 1820 | 966 | 960 | 964 | 1280 | 1270 | 1280 |
| 31 | --- | --- | --- | 1820 | 1800 | 1810 | --- | --- | --- | 1280 | 1270 | 1280 |
| MONTH | 2230 | 2060 | 2170 | 2130 | 1800 | 1960 | 1800 | 591 | 999 | 1290 | 959 | 1170 |

05057000 SHEYENNE RIVER NEAR COOPERSTOWN, ND--Continued

SPECIFIC CONDUCTANCE from datalogger, in US/CM @ 25C, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | JUNE | | | JULY | | | AUGUST | | | SEPTEMBER | |
| 1 | 1280 | 1280 | 1280 | 1150 | 1100 | 1120 | 1100 | 1080 | 1090 | 1090 | 1070 | 1080 |
| 2 | 1280 | 1280 | 1280 | 1170 | 1140 | 1160 | 1080 | 1070 | 1070 | 1100 | 1080 | 1090 |
| 3 | 1280 | 1280 | 1280 | 1190 | 1130 | 1150 | 1080 | 1060 | 1070 | 1100 | 1040 | 1080 |
| 4 | 1290 | 1270 | 1280 | 1370 | 1190 | 1280 | 1070 | 1050 | 1060 | 1050 | 1020 | 1040 |
| 5 | 1270 | 1240 | 1260 | 1410 | 1320 | 1380 | 1090 | 1070 | 1080 | 1050 | 1030 | 1040 |
| 6 | 1250 | 1230 | 1240 | 1320 | 1130 | 1210 | 1090 | 1080 | 1090 | 1070 | 1050 | 1060 |
| 7 | 1240 | 1230 | 1240 | 1130 | 1060 | 1090 | 1090 | 1080 | 1090 | 1090 | 1060 | 1080 |
| 8 | 1240 | 1220 | 1230 | 1060 | 1060 | 1060 | 1090 | 1080 | 1090 | 1110 | 1090 | 1100 |
| 9 | 1260 | 1200 | 1210 | 1060 | 1050 | 1060 | 1090 | 1060 | 1070 | 1100 | 1060 | 1070 |
| 10 | 1300 | 1220 | 1250 | 1050 | 991 | 1020 | 1060 | 1050 | 1050 | 1100 | 1070 | 1080 |
| 11 | 1250 | 1220 | 1240 | 1190 | 1020 | 1110 | 1080 | 1060 | 1070 | 1140 | 1100 | 1120 |
| 12 | 1250 | 1230 | 1240 | 1110 | 1060 | 1090 | 1080 | 1040 | 1050 | 1140 | 1130 | 1140 |
| 13 | 1280 | 1230 | 1250 | 1060 | 1020 | 1040 | 1100 | 1030 | 1060 | 1150 | 1130 | 1140 |
| 14 | 1290 | 1270 | 1280 | 1090 | 1060 | 1080 | 1100 | 1080 | 1090 | 1170 | 1150 | 1160 |
| 15 | 1280 | 1210 | 1260 | 1100 | 1090 | 1100 | 1080 | 1060 | 1070 | 1170 | 1170 | 1170 |
| 16 | 1220 | 1210 | 1210 | 1130 | 1100 | 1120 | 1060 | 1040 | 1050 | 1170 | 1160 | 1160 |
| 17 | 1230 | 1200 | 1210 | 1140 | 1110 | 1130 | 1040 | 1030 | 1040 | 1190 | 1170 | 1180 |
| 18 | 1230 | 1180 | 1220 | 1110 | 1090 | 1100 | 1040 | 1030 | 1040 | 1200 | 1190 | 1190 |
| 19 | 1310 | 1160 | 1210 | 1110 | 1090 | 1100 | 1060 | 1040 | 1050 | 1200 | 1190 | 1190 |
| 20 | 1450 | 1310 | 1400 | 1110 | 1100 | 1110 | 1050 | 1040 | 1040 | 1190 | 1190 | 1190 |
| 21 | 1450 | 1360 | 1410 | 1110 | 1100 | 1110 | 1070 | 1050 | 1060 | 1190 | 1180 | 1190 |
| 22 | 1360 | 1280 | 1320 | 1100 | 1100 | 1100 | 1070 | 1060 | 1070 | 1200 | 1190 | 1200 |
| 23 | 1280 | 1230 | 1250 | 1100 | 1090 | 1100 | 1070 | 1060 | 1070 | 1200 | 1190 | 1190 |
| 24 | 1250 | 1240 | 1250 | 1100 | 1100 | 1100 | 1080 | 1060 | 1070 | 1210 | 1200 | 1200 |
| 25 | 1270 | 1250 | 1260 | 1100 | 1080 | 1090 | 1100 | 1080 | 1090 | 1210 | 1200 | 1210 |
| 26 | 1300 | 1270 | 1280 | 1110 | 1090 | 1100 | 1090 | 1080 | 1090 | 1210 | 1200 | 1210 |
| 27 | 1300 | 1260 | 1280 | 1110 | 1080 | 1090 | 1100 | 1090 | 1100 | 1230 | 1200 | 1220 |
| 28 | 1260 | 1120 | 1190 | 1100 | 1100 | 1100 | 1110 | 1100 | 1100 | 1230 | 1210 | 1220 |
| 29 | 1120 | 1090 | 1100 | 1110 | 1100 | 1100 | 1110 | 1100 | 1110 | 1260 | 1210 | 1230 |
| 30 | 1100 | 1090 | 1090 | 1110 | 1100 | 1100 | 1100 | 1060 | 1080 | 1390 | 1260 | 1320 |
| 31 | --- | --- | --- | 1110 | 1090 | 1100 | 1080 | 1060 | 1070 | --- | --- | --- |
| MONTH | 1450 | 1090 | 1250 | 1410 | 991 | 1120 | 1110 | 1030 | 1070 | 1390 | 1020 | 1150 |

## 05057200 BALDHILL CREEK NEAR DAZEY, ND

LOCATION.--Lat 47°13'45", long 98°07'28", in NW$^1/_4$SE$^1/_4$SW$^1/_4$ 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 Dazey, and 14 mi upstream from mouth.

DRAINAGE AREA.--691 mi$^2$, of which about 340 mi$^2$ is probably noncontributing.

### WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,330 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 9, 1956, nonrecording gage 500 ft downstream at same datum.

REMARKS.--Records good except for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7.2 | 35 | e16 | e3.2 | e2.2 | e4.5 | e19 | 34 | 20 | 5.9 | 11 | 2.9 |
| 2 | 6.8 | 38 | e15 | e3.1 | e2.2 | e3.7 | e19 | 31 | 18 | 5.0 | 8.9 | 5.2 |
| 3 | 6.3 | 40 | e15 | e3.1 | e2.2 | e3.4 | e19 | 38 | 17 | 3.4 | 8.0 | 5.9 |
| 4 | 5.9 | 41 | e15 | e3.1 | e2.2 | e3.5 | e18 | 33 | 17 | 3.6 | 7.5 | 3.6 |
| 5 | 5.0 | 41 | e15 | e3.2 | e2.2 | e3.5 | e16 | 28 | 17 | 3.9 | 6.7 | 2.0 |
| 6 | 5.2 | 43 | e14 | e3.3 | e2.3 | e3.3 | e18 | 28 | 16 | 2.2 | 5.6 | 1.3 |
| 7 | 4.8 | 44 | e14 | e3.5 | e3.1 | e3.1 | e29 | 29 | 16 | 6.3 | 5.4 | 1.4 |
| 8 | 5.2 | 42 | e12 | e3.8 | e3.7 | e3.1 | e31 | 35 | 16 | 9.1 | 5.1 | 1.4 |
| 9 | 6.2 | 40 | e11 | e5.3 | e3.7 | e3.1 | e35 | 44 | 15 | 7.5 | 8.0 | 1.7 |
| 10 | 10 | 38 | e8.9 | e7.3 | e3.6 | e3.2 | 36 | 47 | 16 | 35 | 7.0 | 2.8 |
| 11 | 9.1 | 35 | e7.8 | e7.6 | e4.4 | e3.2 | 39 | 54 | 18 | 42 | 6.7 | 4.1 |
| 12 | 12 | 32 | e7.6 | e7.7 | e4.6 | e4.7 | 42 | 58 | 19 | 39 | 7.0 | 3.6 |
| 13 | 12 | 30 | e7.4 | e7.7 | e4.5 | e8.3 | 46 | 57 | 26 | 27 | 6.5 | 2.7 |
| 14 | 16 | 28 | e7.2 | e7.3 | e4.6 | e9.3 | 51 | 55 | 32 | 32 | 5.6 | 2.4 |
| 15 | 15 | 32 | e7.0 | e6.8 | e5.0 | e8.7 | 46 | 55 | 34 | 39 | 5.2 | 2.3 |
| 16 | 12 | 27 | e6.9 | e6.0 | e5.4 | e9.0 | 41 | 52 | 32 | 39 | 4.9 | 3.3 |
| 17 | 8.5 | 26 | e6.5 | e5.6 | e6.2 | e10 | 38 | 49 | 28 | 42 | 6.3 | 3.3 |
| 18 | 6.4 | 26 | e6.2 | e5.4 | e6.9 | e11 | 44 | 46 | 22 | 42 | 4.8 | 2.5 |
| 19 | 7.0 | 23 | e5.9 | e4.9 | e7.0 | e9.6 | 47 | 44 | 20 | 37 | 4.7 | 1.9 |
| 20 | 9.9 | 22 | e5.6 | e4.6 | e6.8 | e7.8 | 49 | 40 | 16 | 28 | 4.4 | 1.3 |
| 21 | 11 | 21 | e5.4 | e4.6 | e6.9 | e8.2 | 46 | 35 | 14 | 23 | 4.4 | 1.2 |
| 22 | 10 | 23 | e5.2 | e4.6 | e7.3 | e8.1 | 42 | 33 | 13 | 23 | 3.9 | 1.3 |
| 23 | 11 | 23 | e4.7 | e4.1 | e7.5 | e8.0 | 40 | 32 | 18 | 21 | 3.7 | 1.7 |
| 24 | 17 | 24 | e4.7 | e4.0 | e7.4 | e6.7 | 42 | 29 | 15 | 21 | 3.3 | 1.7 |
| 25 | 13 | 22 | e4.2 | e4.3 | e7.2 | e6.6 | 37 | 29 | 13 | 22 | 2.8 | 2.0 |
| 26 | 13 | 15 | e3.9 | e4.3 | e7.6 | e6.4 | 31 | 27 | 12 | 28 | 2.6 | 2.1 |
| 27 | 16 | e16 | e3.7 | e3.3 | e5.4 | e9.4 | 32 | 26 | 11 | 20 | 2.4 | 1.8 |
| 28 | 14 | e16 | e3.6 | e2.7 | e5.1 | e20 | 35 | 25 | 8.8 | 16 | 2.3 | 2.0 |
| 29 | 21 | e16 | e3.4 | e2.4 | --- | e22 | 35 | 24 | 6.6 | 14 | 2.4 | 2.2 |
| 30 | 23 | e16 | e3.3 | e2.3 | --- | e21 | 35 | 23 | 6.9 | 12 | 2.3 | 2.3 |
| 31 | 28 | --- | e3.2 | e2.3 | --- | e19 | --- | 21 | --- | 10 | 2.3 | --- |
| TOTAL | 347.5 | 875 | 249.3 | 141.4 | 137.2 | 251.4 | 1058 | 1161 | 533.3 | 658.9 | 161.7 | 73.9 |
| MEAN | 11.21 | 29.17 | 8.042 | 4.561 | 4.900 | 8.110 | 35.27 | 37.45 | 17.78 | 21.25 | 5.216 | 2.463 |
| MAX | 28 | 44 | 16 | 7.7 | 7.6 | 22 | 51 | 58 | 34 | 42 | 11 | 5.9 |
| MIN | 4.8 | 15 | 3.2 | 2.3 | 2.2 | 3.1 | 16 | 21 | 6.6 | 2.2 | 2.3 | 1.2 |
| AC-FT | 689 | 1740 | 494 | 280 | 272 | 499 | 2100 | 2300 | 1060 | 1310 | 321 | 147 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 7.727 | 7.205 | 3.295 | 1.564 | 2.806 | 62.58 | 132.0 | 31.90 | 20.04 | 19.12 | 8.851 | 7.178 |
| MAX | 106 | 54.9 | 16.1 | 7.31 | 34.2 | 475 | 1040 | 220 | 180 | 273 | 133 | 58.5 |
| (WY) | 1995 | 2001 | 1995 | 1995 | 1998 | 1995 | 1997 | 1997 | 1999 | 1993 | 1993 | 1957 |
| MIN | 0.47 | 0.38 | 0.15 | 0.000 | 0.000 | 0.59 | 2.44 | 1.71 | 0.91 | 0.021 | 0.076 | 0.094 |
| (WY) | 1992 | 1960 | 1959 | 1959 | 1957 | 1964 | 1981 | 1981 | 1961 | 1989 | 1984 | 1984 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1956 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 15738.6 | | 5648.6 | | | |
| ANNUAL MEAN | 43.12 | | 15.48 | | 25.48 | |
| HIGHEST ANNUAL MEAN | | | | | 115 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 1.52 | 1981 |
| HIGHEST DAILY MEAN | 439 | Apr 12 | 58 | May 12 | 4500 | Apr 19 1979 |
| LOWEST DAILY MEAN | 2.2 | Feb 23 | 1.2 | Sep 21 | 0.00 | Jan 25 1957 |
| ANNUAL SEVEN-DAY MINIMUM | 2.2 | Feb 22 | 1.6 | Sep 19 | 0.00 | Jan 25 1957 |
| MAXIMUM PEAK FLOW | | | a58 | May 11 | b9000 | Apr 19 1979 |
| MAXIMUM PEAK STAGE | | | 6.93 | Apr 14 | 17.78 | Apr 19 1979 |
| ANNUAL RUNOFF (AC-FT) | 31220 | | 11200 | | 18460 | |
| 10 PERCENT EXCEEDS | 110 | | 39 | | 42 | |
| 50 PERCENT EXCEEDS | 16 | | 8.8 | | 3.7 | |
| 90 PERCENT EXCEEDS | 3.8 | | 2.7 | | 0.27 | |

a Gage height, 6.87 ft
b About
e Estimated

05057200 BALDHILL CREEK NEAR DAZEY, ND--Continued

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: April 1997 to Sept. 30, 2001.

SPECIFIC CONDUCTANCE: April 1997 Sept. 30, 2001.

INSTRUMENTATION.--Water-quality sensors April 1997 to Sept. 30, 2001.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 31.0°C, July 10, 1998; minimum recorded,-0.2°C, on many days in November and December 2000.

SPECIFIC CONDUCTANCE: Maximum recorded, 2,210 microsiemens, May 7-8, 1997; minimum recorded, 291 microsiemens, Mar. 31, 1999.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 10... | 1600 | 8.7 | -- | -- | -- | 1350 | -2.5 | .5 | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 23... | 1500 | 4.1 | -- | -- | -- | 1310 | -11.0 | .0 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 04... | 1355 | 3.5 | -- | -- | -- | 1270 | -3.5 | .5 | -- | -- | -- | -- | -- |
| 26... | 1230 | 6.5 | -- | -- | -- | 903 | -2.5 | .5 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 18... | 1840 | 45 | 8.1 | 7.7 | 732 | 703 | 6.0 | 8.0 | 280 | 61.0 | 32.0 | 9.70 | 1 |
| MAY | | | | | | | | | | | | | |
| 07... | 1650 | 30 | -- | -- | -- | 1180 | 9.0 | 5.5 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 02... | 1600 | 5.1 | -- | -- | -- | 1100 | 29.5 | 27.5 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 07... | 1335 | 5.6 | 8.2 | 8.2 | 1020 | 1020 | -- | 21.5 | 410 | 77.0 | 54.0 | 9.10 | 2 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 10... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 23... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 04... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 26... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 18... | 37.0 | 21 | 230 | 11.0 | .20 | 140 | 56.9 | 468 | 430 | 2.0 | 110 | <1 | 40 |
| MAY | | | | | | | | | | | | | |
| 07... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 02... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 07... | 76.0 | 28 | 323 | 15.0 | .20 | 250 | 11.1 | 738 | 675 | 4.0 | 70 | 1 | 70 |

| Date | 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) |
|---|---|---|---|---|---|
| DEC | | | | | |
| 10... | -- | -- | -- | -- | -- |
| JAN | | | | | |
| 23... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 04... | -- | -- | -- | -- | -- |
| 26... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 18... | 570 | <.10 | <1 | <1 | 250 |
| MAY | | | | | |
| 07... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 02... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 07... | 60 | <.10 | 1 | 1 | 420 |

< Less than

## 05057500 LAKE ASHTABULA AT BALDHILL DAM, ND

LOCATION.--Lat 47°02'00", long 98°05'00", in NW$^{1}/_{4}$ 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$^2$, approximately, of which about 5,560 mi$^2$ is probably noncontributing, including 3,800 mi$^2$ 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 1,200 ft above National Geodetic Vertical Datum of 1929.

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. Figures given for storage capacity (in acre-ft) based on capacity table dated 1978 (provided 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, 73,906 acre-ft, July 10, elevation, 1,266.58 ft; minimum, 52,385 acre-ft, January 8, elevation, 1,262.53 ft.

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Elevation (feet) | Contents (acre-feet) | Change in contents (acre-feet) |
|---|---|---|---|
| Sept. 30 | 1,266.06 | 70,940 | -- |
| Oct. 31 | 1,265.48 | 67,690 | -3,250 |
| Nov 30 | 1,264.63 | 62,960 | -4,730 |
| Dec. 31 | 1,262.63 | 52,840 | -10,120 |
| CAL YR 2001 | -- | -- | +1,980 |
| Jan. 31 | 1,262.67 | 53,020 | +180 |
| Feb. 28 | 1,262.72 | 53,240 | +220 |
| Mar. 31 | 1,263.07 | 54,850 | +1,610 |
| Apr. 30 | 1,266.07 | 71,000 | +16,150 |
| May 31 | 1,265.95 | 70,320 | -680 |
| June 30 | 1,266.09 | 71,110 | +790 |
| July 31 | 1,266.01 | 70,660 | -450 |
| Aug. 31 | 1,265.96 | 70,380 | -280 |
| Sept. 30 | 1,265.93 | 70,210 | -170 |
| WTR YR 2002 | -- | -- | -730 |

## 05058000 SHEYENNE RIVER BELOW BALDHILL DAM, ND

LOCATION.--Lat 47°01'50", long 98°05'50", in NW$^1/_4$NW$^1/_4$ sec.18, T.141 N., R.58 W., Barnes County, Hydrologic Unit 09020204, on right bank 0.1 mi downstream from Baldhill Dam, 8 mi northwest of Valley City, and at mile 270.5.

DRAINAGE AREA.--7,470 mi$^2$, approximately, of which about 5,560 mi$^2$ is probably noncontributing, including 3,800 mi$^2$ 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 National Geodetic Vertical Datum of 1929. From Dec. 29, 1994, to Sept. 18, 2000, at site 0.7 mi downstream at same datum.

REMARKS.--Records good for entire water year. 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. Daily discharges from Dec. 29, 1994, to current water year include releases through fish hatchery siphon.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 82 | 224 | 288 | 94 | 46 | 62 | 31 | 232 | 171 | 260 | 84 | 19 |
| 2 | 99 | 225 | 276 | 92 | 46 | 61 | 31 | 242 | 173 | 260 | 60 | 19 |
| 3 | 114 | 225 | 283 | 71 | 46 | 62 | 30 | 244 | 172 | 259 | 46 | 19 |
| 4 | 121 | 225 | 303 | 51 | 46 | 62 | 30 | 252 | 172 | 261 | 47 | 19 |
| 5 | 121 | 228 | 304 | 48 | 46 | 62 | 30 | 255 | 172 | 254 | 47 | 20 |
| 6 | 120 | 238 | 316 | 48 | 46 | 62 | 30 | 201 | 125 | 265 | 44 | 19 |
| 7 | 121 | 247 | 324 | 48 | 46 | 62 | 30 | 157 | 95 | 266 | 39 | 19 |
| 8 | 120 | 255 | 313 | 48 | 46 | 62 | 30 | 244 | 92 | 317 | 34 | 19 |
| 9 | 110 | 258 | 301 | 48 | 46 | 62 | 30 | 317 | 91 | 403 | 30 | 20 |
| 10 | 69 | 258 | 319 | 48 | 46 | 61 | 30 | 377 | 94 | 440 | 30 | 20 |
| 11 | 41 | 257 | 315 | 48 | 46 | 61 | 30 | 392 | 93 | 435 | 30 | 20 |
| 12 | 113 | 257 | 309 | 48 | 46 | 61 | 30 | 392 | 94 | 432 | 30 | 20 |
| 13 | 139 | 238 | 315 | 48 | 46 | 61 | 30 | 440 | 134 | 395 | 31 | 21 |
| 14 | 139 | 144 | 318 | 48 | 46 | 61 | 30 | 519 | 149 | 200 | 26 | 20 |
| 15 | 95 | 129 | 305 | 48 | 46 | 61 | 30 | 517 | 148 | 82 | 20 | 20 |
| 16 | 57 | 190 | 313 | 48 | 46 | 60 | 30 | 517 | 145 | 92 | 21 | 20 |
| 17 | 57 | 271 | 313 | 48 | 46 | 60 | 31 | 483 | 188 | 89 | 21 | 21 |
| 18 | 57 | 271 | 316 | 48 | 46 | 55 | 31 | 427 | 266 | 88 | 21 | 21 |
| 19 | 117 | 259 | 322 | 48 | 46 | 47 | 30 | 426 | 365 | 87 | 20 | 22 |
| 20 | 170 | 240 | 323 | 48 | 48 | 46 | 29 | 348 | 416 | 86 | 20 | 22 |
| 21 | 170 | 234 | 247 | 48 | 50 | 46 | 28 | 268 | 416 | 86 | 20 | 22 |
| 22 | 169 | 234 | 200 | 48 | 50 | 46 | 26 | 214 | 418 | 85 | 20 | 22 |
| 23 | 168 | 236 | 193 | 48 | 50 | 45 | 32 | 176 | 419 | 83 | 20 | 23 |
| 24 | 211 | 238 | 186 | 48 | 50 | 45 | 44 | 175 | 419 | 83 | 20 | 23 |
| 25 | 229 | 237 | 181 | 49 | 57 | 45 | 63 | 176 | 419 | 85 | 20 | 22 |
| 26 | 227 | 256 | 184 | 49 | 62 | 39 | 88 | 171 | 369 | 90 | 20 | 30 |
| 27 | 227 | 278 | 129 | 48 | 61 | 34 | 124 | 167 | 293 | 90 | 20 | 88 |
| 28 | 225 | 275 | 93 | 48 | 62 | 31 | 132 | 167 | 254 | 89 | 19 | 73 |
| 29 | 224 | 274 | 92 | 47 | --- | 30 | 146 | 168 | 255 | 87 | 19 | 73 |
| 30 | 230 | 279 | 94 | 46 | --- | 31 | 193 | 168 | 260 | 86 | 19 | 73 |
| 31 | 232 | --- | 91 | 46 | --- | 31 | --- | 167 | --- | 84 | 19 | --- |
| TOTAL | 4374 | 7180 | 7866 | 1601 | 1364 | 1614 | 1479 | 8999 | 6877 | 5919 | 917 | 849 |
| MEAN | 141.1 | 239.3 | 253.7 | 51.65 | 48.71 | 52.06 | 49.30 | 290.3 | 229.2 | 190.9 | 29.58 | 28.30 |
| MAX | 232 | 279 | 324 | 94 | 62 | 62 | 193 | 519 | 419 | 440 | 84 | 88 |
| MIN | 41 | 129 | 91 | 46 | 46 | 30 | 26 | 157 | 91 | 82 | 19 | 19 |
| AC-FT | 8680 | 14240 | 15600 | 3180 | 2710 | 3200 | 2930 | 17850 | 13640 | 11740 | 1820 | 1680 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 59.89 | 85.06 | 78.16 | 66.12 | 76.13 | 217.9 | 644.4 | 322.5 | 188.9 | 146.6 | 89.97 | 61.88 |
| MAX | 622 | 587 | 375 | 227 | 300 | 1567 | 3329 | 2906 | 1154 | 1272 | 1555 | 577 |
| (WY) | 1995 | 2001 | 2001 | 2001 | 1996 | 1995 | 1997 | 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 | 0.81 |
| (WY) | 1956 | 1956 | 1980 | 1956 | 1956 | 1955 | 1953 | 1959 | 1958 | 1959 | 1977 | 1955 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1950 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 153893 | | 49039 | | | |
| ANNUAL MEAN | 421.6 | | 134.4 | | 169.7 | |
| HIGHEST ANNUAL MEAN | | | | | 574 | 1995 |
| LOWEST ANNUAL MEAN | | | | | 12.8 | 1991 |
| HIGHEST DAILY MEAN | 2320 | Apr 13 | 519 | May 14 | 5410 | Apr 20 1996 |
| LOWEST DAILY MEAN | 41 | Oct 11 | 19 | Aug 28 | 0.00 | Sep 8 1950 |
| ANNUAL SEVEN-DAY MINIMUM | 55 | Sep 20 | 19 | Aug 28 | 0.00 | Aug 8 1952 |
| MAXIMUM PEAK FLOW | | | 569 | May 14 | 5460 | Apr 20 1996 |
| MAXIMUM PEAK STAGE | | | 25.66 | May 14 | 36.46 | Apr 20 1996 |
| ANNUAL RUNOFF (AC-FT) | 305200 | | 97270 | | 122900 | |
| 10 PERCENT EXCEEDS | 939 | | 313 | | 347 | |
| 50 PERCENT EXCEEDS | 279 | | 84 | | 49 | |
| 90 PERCENT EXCEEDS | 87 | | 22 | | 9.5 | |

05058000 SHEYENNE RIVER BELOW BALDHILL DAM, ND--Continued

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: April 1997 to current year.

SPECIFIC CONDUCTANCE: April 1997 to current year.

INSTRUMENTATION.--Water-quality sensors since April 1997.

REMARKS.--Records good. Missing data is result of equipment malfunction.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 28.3°C, July 20, 1998; minimum recorded, 0.3°C, Apr. 16, 1997, Nov. 20, 2000, and Dec. 1-2, 2001.

SPECIFIC CONDUCTANCE: Maximum recorded, 1,640 microsiemens, Feb. 27-28, 2001; minimum recorded, 401 microsiemens, Apr. 14, 1999.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 27.0°C, Aug. 24; minimum recorded, 0.3°C, Dec. 1-2.

SPECIFIC CONDUCTANCE: Maximum recorded, 1,440 microsiemens, Mar. 22; minimum recorded, 949 microsiemens, June 23.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 11... | 1250 | 12 | -- | -- | -- | 1220 | 16.0 | 13.5 | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 11... | 0855 | 313 | -- | -- | -- | 1350 | -2.5 | 1.0 | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 23... | 1600 | 49 | -- | -- | -- | 1370 | -8.5 | 2.5 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 04... | 1440 | 66 | -- | -- | -- | 1400 | .5 | 4.0 | -- | -- | -- | -- | -- |
| 26... | 1335 | 35 | -- | -- | -- | 1330 | -- | 5.0 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 19... | 1120 | 30 | 8.6 | 8.4 | 1280 | 1240 | 1.0 | 8.5 | 430 | 78.0 | 56.0 | 12.0 | 3 |
| MAY | | | | | | | | | | | | | |
| 07... | 1430 | 134 | -- | -- | -- | 1270 | 6.0 | 7.5 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 02... | 1720 | 264 | -- | -- | -- | 1060 | -- | 24.5 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 07... | 1535 | 37 | 7.8 | -- | 1050 | 1050 | 28.5 | 26.0 | 360 | 65.0 | 48.0 | 12.0 | 2 |
| 16... | 1215 | 20 | -- | -- | -- | 1030 | 22.0 | 21.5 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 23... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 04... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 26... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 19... | 130 | 39 | 413 | 19.0 | .20 | 290 | 69.7 | 861 | 834 | 4.0 | 100 | <1 | 80 |
| MAY | | | | | | | | | | | | | |
| 07... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 02... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 07... | 100 | 37 | 332 | 21.0 | .20 | 260 | 72.8 | 725 | 706 | 6.0 | 60 | 1 | 70 |
| 16... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

05058000 SHEYENNE RIVER BELOW BALDHILL DAM, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | 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 | | | | | |
| 11... | -- | -- | -- | -- | -- |
| DEC | | | | | |
| 11... | -- | -- | -- | -- | -- |
| JAN | | | | | |
| 23... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 04... | -- | -- | -- | -- | -- |
| 26... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 19... | 460 | <.10 | <1 | <1 | 360 |
| MAY | | | | | |
| 07... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 02... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 07... | 180 | .10 | 1 | <1 | 370 |
| 16... | -- | -- | -- | -- | -- |

< Less than

WATER TEMPERATURE, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | OCTOBER | | | NOVEMBER | | | DECEMBER | | | JANUARY | | |
| 1 | 17.6 | 15.4 | 16.2 | 6.5 | 5.9 | 6.1 | 0.5 | 0.3 | 0.4 | 2.0 | 1.5 | 1.7 |
| 2 | 17.6 | 15.5 | 16.4 | 6.5 | 5.8 | 6.0 | 0.8 | 0.3 | 0.4 | 1.9 | 1.2 | 1.5 |
| 3 | 16.8 | 15.3 | 15.9 | 6.6 | 5.9 | 6.1 | 0.8 | 0.4 | 0.5 | 2.2 | 1.0 | 1.5 |
| 4 | 16.1 | 14.7 | 15.3 | 6.6 | 5.8 | 6.1 | 0.9 | 0.5 | 0.6 | 2.6 | 1.5 | 1.9 |
| 5 | 14.8 | 13.6 | 14.3 | 6.7 | 5.9 | 6.2 | 0.7 | 0.6 | 0.7 | 2.9 | 1.6 | 2.0 |
| 6 | 14.5 | 13.1 | 13.6 | 6.6 | 5.9 | 6.2 | 0.9 | 0.6 | 0.7 | 2.6 | 1.1 | 1.7 |
| 7 | 14.2 | 12.8 | 13.2 | 6.2 | 5.9 | 6.0 | 1.0 | 0.7 | 0.8 | 2.8 | 1.1 | 1.8 |
| 8 | 14.2 | 12.8 | 13.2 | 6.0 | 5.6 | 5.7 | 1.1 | 0.7 | 0.9 | 3.3 | 2.0 | 2.4 |
| 9 | 13.2 | 12.6 | 12.8 | --- | --- | --- | 1.3 | 0.9 | 1.0 | 3.4 | 2.0 | 2.4 |
| 10 | 13.4 | 11.4 | 12.6 | --- | --- | --- | 1.3 | 1.0 | 1.1 | 3.0 | 2.0 | 2.4 |
| 11 | 15.9 | 9.9 | 12.0 | --- | --- | --- | 1.4 | 1.1 | 1.2 | 3.2 | 1.9 | 2.3 |
| 12 | 12.9 | 11.9 | 12.4 | --- | --- | --- | 1.2 | 1.1 | 1.2 | 3.2 | 1.8 | 2.3 |
| 13 | 12.7 | 12.0 | 12.2 | --- | --- | --- | 1.4 | 1.1 | 1.2 | 3.2 | 2.0 | 2.4 |
| 14 | 12.0 | 11.5 | 11.8 | --- | --- | --- | 1.5 | 1.2 | 1.3 | 2.8 | 1.9 | 2.3 |
| 15 | 11.6 | 10.1 | 11.2 | 6.1 | 5.2 | 5.6 | 1.5 | 1.4 | 1.5 | 3.1 | 1.7 | 2.1 |
| 16 | 12.3 | 9.6 | 10.4 | 6.4 | 5.4 | 5.9 | 1.6 | 1.4 | 1.5 | 2.8 | 1.8 | 2.1 |
| 17 | 11.6 | 9.3 | 10.2 | 6.0 | 5.4 | 5.6 | 1.7 | 1.4 | 1.5 | 2.7 | 1.7 | 2.1 |
| 18 | 11.9 | 9.5 | 10.4 | 5.7 | 5.3 | 5.6 | 1.7 | 1.5 | 1.5 | 2.2 | 1.6 | 1.8 |
| 19 | 10.8 | 9.3 | 9.9 | 5.3 | 4.7 | 5.0 | 1.7 | 1.4 | 1.6 | 2.7 | 1.7 | 2.1 |
| 20 | 10.4 | 9.7 | 10 | 5.3 | 4.7 | 4.9 | 1.8 | 1.5 | 1.6 | 2.8 | 1.7 | 2.2 |
| 21 | 10.4 | 9.6 | 9.8 | 5.3 | 4.7 | 4.9 | 1.8 | 1.5 | 1.6 | 3.6 | 1.9 | 2.5 |
| 22 | 10.2 | 9.6 | 9.8 | 5.0 | 4.6 | 4.8 | 1.8 | 1.4 | 1.6 | 2.9 | 1.4 | 2.0 |
| 23 | 9.7 | 8.6 | 9.4 | 5.1 | 4.6 | 4.9 | 1.8 | 1.4 | 1.5 | 3.0 | 1.6 | 2.1 |
| 24 | 8.6 | 7.5 | 8.2 | 4.9 | 4.3 | 4.6 | 1.9 | 1.5 | 1.6 | 3.5 | 1.9 | 2.4 |
| 25 | 7.5 | 6.6 | 7.0 | 4.3 | 3.2 | 3.8 | 1.8 | 1.5 | 1.6 | 4.1 | 1.8 | 2.7 |
| 26 | 6.8 | 5.9 | 6.4 | 3.2 | 1.8 | 2.6 | 2.0 | 1.5 | 1.7 | 2.7 | 1.5 | 1.9 |
| 27 | 6.6 | 5.8 | 6.1 | 1.8 | 0.8 | 1.2 | 1.9 | 1.6 | 1.8 | 2.2 | 1.4 | 1.7 |
| 28 | 6.7 | 5.9 | 6.1 | 0.8 | 0.5 | 0.7 | 1.8 | 1.4 | 1.5 | 1.6 | 0.9 | 1.2 |
| 29 | 6.4 | 5.9 | 6.1 | 1.0 | 0.6 | 0.8 | 1.9 | 1.4 | 1.6 | 2.7 | 0.9 | 1.7 |
| 30 | 6.3 | 5.8 | 6.0 | 0.7 | 0.4 | 0.6 | 1.9 | 1.3 | 1.6 | 3.0 | 1.6 | 2.1 |
| 31 | 6.4 | 5.9 | 6.1 | --- | --- | --- | 2.0 | 1.3 | 1.5 | 3.4 | 1.8 | 2.3 |
| MONTH | 17.6 | 5.8 | 10.8 | --- | --- | --- | 2.0 | 0.3 | 1.3 | 4.1 | 0.9 | 2.1 |

05058000 SHEYENNE RIVER BELOW BALDHILL DAM, ND--Continued

WATER TEMPERATURE, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | FEBRUARY | | | MARCH | | | APRIL | | | MAY | |
| 1 | 3.1 | 1.8 | 2.3 | 4.8 | 2.1 | 3.0 | 5.7 | 2.0 | 3.9 | 8.1 | 7.2 | 7.6 |
| 2 | 3.7 | 2.1 | 2.6 | 4.1 | 1.9 | 2.7 | 8.1 | 2.0 | 4.3 | 8.0 | 6.8 | 7.4 |
| 3 | 3.2 | 1.8 | 2.4 | 4.4 | 1.9 | 2.8 | 9.2 | 1.9 | 4.6 | 9.0 | 7.6 | 8.2 |
| 4 | 2.8 | 1.6 | 2.2 | 4.2 | 2.3 | 3.1 | 9.7 | 2.4 | 5.1 | 9.4 | 7.7 | 8.5 |
| 5 | 3.5 | 2.2 | 2.6 | 4.0 | 2.0 | 3.0 | 10.1 | 2.9 | 5.6 | 9.5 | 8.0 | 8.6 |
| 6 | 4.5 | 2.5 | 3.1 | 5.2 | 2.0 | 3.1 | 10.6 | 2.1 | 5.6 | 8.6 | 7.5 | 7.9 |
| 7 | 4.7 | 2.6 | 3.2 | 2.8 | 1.9 | 2.4 | 9.2 | 3.3 | 5.6 | 7.8 | 7.0 | 7.4 |
| 8 | 3.7 | 2.3 | 2.8 | 4.4 | 1.7 | 2.7 | 9.1 | 3.2 | 5.5 | 7.3 | 7.0 | 7.1 |
| 9 | 3.6 | 1.8 | 2.3 | 4.5 | 1.7 | 2.7 | 9.3 | 3.4 | 5.8 | 7.7 | 6.9 | 7.2 |
| 10 | 3.7 | 2.0 | 2.7 | 3.9 | 1.8 | 2.7 | 5.7 | 3.8 | 4.7 | 8.0 | 6.8 | 7.3 |
| 11 | 4.6 | 2.4 | 3.0 | 5.2 | 2.2 | 3.2 | 8.9 | 4.2 | 6.0 | 7.7 | 7.1 | 7.4 |
| 12 | 4.4 | 2.3 | 3.1 | 6.2 | 2.8 | 4.0 | 11.6 | 4.0 | 7.1 | 8.6 | 7.4 | 7.8 |
| 13 | 5.4 | 2.4 | 3.4 | 5.9 | 2.6 | 3.7 | 11.6 | 5.7 | 7.6 | 9.5 | 7.5 | 8.4 |
| 14 | 4.8 | 2.8 | 3.4 | 3.5 | 2.8 | 3.1 | 12.8 | 5.2 | 8.5 | 9.6 | 8.8 | 9.1 |
| 15 | 4.7 | 2.5 | 3.3 | 6.5 | 2.5 | 3.8 | 14.5 | 7.0 | 10 | 10.5 | 9.0 | 9.7 |
| 16 | 6.2 | 2.7 | 3.7 | 7.4 | 2.8 | 4.2 | 16.3 | 7.8 | 11.0 | 10.6 | 9.3 | 10.0 |
| 17 | 5.8 | 2.4 | 3.6 | 5.6 | 3.0 | 4.0 | 15.1 | 7.6 | 10.9 | 11.4 | 9.7 | 10.5 |
| 18 | 5.0 | 2.5 | 3.5 | 4.6 | 3.2 | 3.8 | 10.2 | 5.9 | 7.9 | 11.6 | 10.1 | 10.8 |
| 19 | 5.2 | 2.2 | 3.1 | 6.3 | 2.6 | 3.7 | 11.2 | 5.3 | 8.0 | 11.9 | 10.5 | 11.2 |
| 20 | 5.3 | 2.5 | 3.3 | 3.6 | 1.8 | 2.6 | 13.3 | 5.6 | 8.9 | 12.2 | 10.7 | 11.4 |
| 21 | 5.8 | 2.6 | 3.6 | 3.9 | 1.8 | 2.8 | 9.6 | 6.6 | 7.9 | 12.2 | 10.5 | 11.3 |
| 22 | 4.0 | 2.8 | 3.3 | 3.7 | 1.3 | 2.6 | 12.3 | 5.5 | 8.5 | 12.7 | 11.4 | 11.8 |
| 23 | 5.4 | 3.1 | 3.8 | 5.4 | 2.5 | 3.5 | 14.1 | 5.8 | 9.5 | 12.2 | 11.3 | 11.6 |
| 24 | 4.0 | 2.3 | 2.9 | 5.3 | 1.8 | 3.1 | 10.5 | 6.9 | 8.2 | 13.2 | 11.0 | 11.7 |
| 25 | 3.4 | 1.9 | 2.5 | 5.1 | 2.2 | 3.4 | 8.7 | 6.5 | 7.4 | 12.2 | 10.9 | 11.5 |
| 26 | 4.0 | 1.8 | 2.6 | 5.3 | 2.9 | 4.1 | 8.6 | 6.6 | 7.4 | 12.9 | 11.5 | 12.1 |
| 27 | 4.4 | 2.2 | 3.0 | 8.2 | 3.6 | 5.6 | 7.2 | 6.7 | 6.9 | 14.0 | 12.1 | 12.9 |
| 28 | 3.7 | 2.1 | 2.5 | 9.8 | 5.3 | 7.0 | 7.2 | 6.6 | 6.8 | 13.5 | 12.3 | 12.8 |
| 29 | --- | --- | --- | 8.5 | 4.8 | 6.3 | 7.8 | 6.5 | 7.1 | 15.3 | 13.0 | 13.7 |
| 30 | --- | --- | --- | 8.4 | 3.9 | 5.6 | 8.3 | 7.1 | 7.7 | 13.8 | 12.9 | 13.3 |
| 31 | --- | --- | --- | 7.9 | 2.9 | 4.9 | --- | --- | --- | 15.4 | 13.3 | 14.5 |
| MONTH | 6.2 | 1.6 | 3.0 | 9.8 | 1.3 | 3.7 | 16.3 | 1.9 | 7.1 | 15.4 | 6.8 | 10.0 |

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | JUNE | | | JULY | | | AUGUST | | | SEPTEMBER | |
| 1 | 17.0 | 13.9 | 15.5 | 23.4 | 22.3 | 22.8 | 25.0 | 22.6 | 23.6 | --- | --- | --- |
| 2 | 16.7 | 15.6 | 16.2 | 24.5 | 22.7 | 23.4 | 25.8 | 21.9 | 23.4 | --- | --- | --- |
| 3 | 16.5 | 15.5 | 16.0 | 25.6 | 23.4 | 24.4 | 24.4 | 21.6 | 22.8 | --- | --- | --- |
| 4 | 16.7 | 15.8 | 16.2 | 25.4 | 23.8 | 24.7 | 25.1 | 21.5 | 22.8 | --- | --- | --- |
| 5 | 17.1 | 15.6 | 16.2 | 24.1 | 23.0 | 23.6 | 25.1 | 21.1 | 22.8 | --- | --- | --- |
| 6 | 16.9 | 15.6 | 16.0 | 24.8 | 22.9 | 23.9 | 22.3 | 21.4 | 21.8 | --- | --- | --- |
| 7 | 17.4 | 15.7 | 16.4 | 24.2 | 23.6 | 23.9 | 25.8 | 21.5 | 23.2 | --- | --- | --- |
| 8 | 18.6 | 16.3 | 17.3 | 25.3 | 23.4 | 24.3 | 26.9 | 22.2 | 23.9 | --- | --- | --- |
| 9 | 18.7 | 17.1 | 17.7 | 25.0 | 23.9 | 24.4 | 26.4 | 20.8 | 22.8 | --- | --- | --- |
| 10 | 18.3 | 17.2 | 17.9 | 24.9 | 22.5 | 23.7 | 25.2 | 19.9 | 22.1 | --- | --- | --- |
| 11 | 18.8 | 17.1 | 17.7 | 23.9 | 22.3 | 22.9 | 26.4 | 20.1 | 22.6 | --- | --- | --- |
| 12 | 17.9 | 16.8 | 17.2 | 22.9 | 22.1 | 22.4 | 23.4 | 20.2 | 21.6 | --- | --- | --- |
| 13 | 17.4 | 16.6 | 17.0 | 22.9 | 21.9 | 22.3 | 25.2 | 19.0 | 21.8 | --- | --- | --- |
| 14 | 18.2 | 16.9 | 17.6 | 23.8 | 21.7 | 22.5 | 22.9 | 19.5 | 21.2 | --- | --- | --- |
| 15 | 19.9 | 17.8 | 18.7 | 24.2 | 21.2 | 22.5 | 24.1 | 19.6 | 21.4 | --- | --- | --- |
| 16 | 19.2 | 18.1 | 18.6 | 24.0 | 21.5 | 22.7 | 21.7 | 18.2 | 19.8 | --- | --- | --- |
| 17 | 19.8 | 18.3 | 19.0 | 25.6 | 22.3 | 23.5 | 22.8 | 16.9 | 19.6 | --- | --- | --- |
| 18 | 18.6 | 17.6 | 18.0 | 25.6 | 23.3 | 24.3 | 22.4 | 16.5 | 19.1 | 21.7 | 18.5 | 19.8 |
| 19 | 19.7 | 18.5 | 19.1 | 25.6 | 23.1 | 24.1 | 24.5 | 16.4 | 20.0 | 22.8 | 17.3 | 19.5 |
| 20 | 20.2 | 17.7 | 18.8 | 25.7 | 23.3 | 24.0 | 21.8 | 17.3 | 19.6 | 21.4 | 16.0 | 17.9 |
| 21 | 19.8 | 18.6 | 19.1 | 25.1 | 23.2 | 23.9 | 22.1 | 19.0 | 20.1 | 18.2 | 14.3 | 15.9 |
| 22 | 21.0 | 19.3 | 20.0 | 24.7 | 22.6 | 23.5 | 21.4 | 18.1 | 19.8 | 17.3 | 12.9 | 15.0 |
| 23 | 22.0 | 20.4 | 21.1 | 23.2 | 22.3 | 22.8 | 26.3 | 19.1 | 21.9 | 17.6 | 12.9 | 14.8 |
| 24 | 21.5 | 20.4 | 21.0 | 23.8 | 22.1 | 22.9 | 27.0 | 19.4 | 22.7 | 17.1 | 11.8 | 14.1 |
| 25 | 21.8 | 20.4 | 20.9 | 24.9 | 22.3 | 23.4 | 26.5 | 19.4 | 22.7 | 18.6 | 12.7 | 14.8 |
| 26 | 24.1 | 21.1 | 22.5 | 25.1 | 22.3 | 23.3 | 26.9 | 19.8 | 22.9 | 17.9 | 11.6 | 14.2 |
| 27 | 24.2 | 22.0 | 23.4 | 24.6 | 22.4 | 23.1 | 26.3 | 20.0 | 22.6 | 16.1 | 13.4 | 14.5 |
| 28 | 22.0 | 20.0 | 20.8 | 24.9 | 22.5 | 23.2 | 26.3 | 20.5 | 22.7 | 16.1 | 13.0 | 14.1 |
| 29 | 21.5 | 18.9 | 20.3 | 25.2 | 22.3 | 23.5 | 25.8 | 20.2 | 22.4 | 16.1 | 13.7 | 14.5 |
| 30 | 22.7 | 20.2 | 21.7 | 25.9 | 22.6 | 24.0 | --- | --- | --- | 16.8 | 14.1 | 14.9 |
| 31 | --- | --- | --- | 26.4 | 23.0 | 24.4 | --- | --- | --- | --- | --- | --- |
| MONTH | 24.2 | 13.9 | 18.6 | 26.4 | 21.2 | 23.5 | --- | --- | --- | --- | --- | --- |

05058000 SHEYENNE RIVER BELOW BALDHILL DAM, ND--Continued

SPECIFIC CONDUCTANCE, in US/CM @ 25C, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | OCTOBER | | | NOVEMBER | | | DECEMBER | | | JANUARY | |
| 1 | 1210 | 1200 | 1200 | 1230 | 1220 | 1220 | 1270 | 1260 | 1260 | 1280 | 1270 | 1280 |
| 2 | 1230 | 1200 | 1220 | 1230 | 1220 | 1230 | 1270 | 1260 | 1270 | 1280 | 1270 | 1280 |
| 3 | 1220 | 1170 | 1190 | 1230 | 1230 | 1230 | 1270 | 1270 | 1270 | 1290 | 1270 | 1280 |
| 4 | 1200 | 1170 | 1190 | 1230 | 1220 | 1230 | 1270 | 1270 | 1270 | 1280 | 1270 | 1280 |
| 5 | 1200 | 1180 | 1190 | 1230 | 1230 | 1230 | 1270 | 1270 | 1270 | 1280 | 1260 | 1280 |
| 6 | 1200 | 1180 | 1190 | 1230 | 1220 | 1230 | 1280 | 1270 | 1280 | 1290 | 1270 | 1280 |
| 7 | 1200 | 1170 | 1190 | 1230 | 1220 | 1230 | 1280 | 1280 | 1280 | 1290 | 1260 | 1280 |
| 8 | 1200 | 1170 | 1190 | 1230 | 1220 | 1230 | 1280 | 1280 | 1280 | 1280 | 1260 | 1280 |
| 9 | 1200 | 1180 | 1200 | 1240 | 1230 | 1230 | 1280 | 1280 | 1280 | 1280 | 1260 | 1280 |
| 10 | 1200 | 1170 | 1200 | 1240 | 1220 | 1230 | 1290 | 1280 | 1280 | 1280 | 1270 | 1280 |
| 11 | 1210 | 1180 | 1200 | 1230 | 1220 | 1230 | 1290 | 1280 | 1280 | 1290 | 1270 | 1280 |
| 12 | 1200 | 1180 | 1200 | 1240 | 1220 | 1230 | 1280 | 1270 | 1270 | 1280 | 1270 | 1280 |
| 13 | 1200 | 1180 | 1190 | --- | --- | --- | 1270 | 1270 | 1270 | 1280 | 1270 | 1280 |
| 14 | 1200 | 1180 | 1200 | --- | --- | --- | 1270 | 1270 | 1270 | 1290 | 1270 | 1280 |
| 15 | 1210 | 1180 | 1200 | 1240 | 1230 | 1240 | 1270 | 1260 | 1270 | 1290 | 1280 | 1280 |
| 16 | 1210 | 1190 | 1200 | 1230 | 1220 | 1230 | 1270 | 1260 | 1260 | 1300 | 1280 | 1290 |
| 17 | 1210 | 1190 | 1210 | 1240 | 1230 | 1230 | 1260 | 1260 | 1260 | 1300 | 1290 | 1300 |
| 18 | 1210 | 1180 | 1210 | 1240 | 1230 | 1230 | 1260 | 1260 | 1260 | 1300 | 1280 | 1300 |
| 19 | 1210 | 1190 | 1210 | 1240 | 1230 | 1240 | 1260 | 1260 | 1260 | 1290 | 1280 | 1290 |
| 20 | 1210 | 1200 | 1210 | 1240 | 1240 | 1240 | 1260 | 1260 | 1260 | 1290 | 1290 | 1290 |
| 21 | 1210 | 1190 | 1210 | 1250 | 1240 | 1240 | 1260 | 1260 | 1260 | 1300 | 1280 | 1290 |
| 22 | 1210 | 1190 | 1210 | 1250 | 1240 | 1240 | 1270 | 1260 | 1260 | 1300 | 1280 | 1290 |
| 23 | 1220 | 1190 | 1210 | 1240 | 1230 | 1240 | 1270 | 1260 | 1270 | 1330 | 1290 | 1310 |
| 24 | 1210 | 1190 | 1200 | 1240 | 1240 | 1240 | 1270 | 1260 | 1270 | 1330 | 1300 | 1320 |
| 25 | 1220 | 1190 | 1210 | 1250 | 1240 | 1240 | 1270 | 1260 | 1270 | 1320 | 1300 | 1310 |
| 26 | 1230 | 1200 | 1210 | 1250 | 1240 | 1250 | 1270 | 1270 | 1270 | 1330 | 1310 | 1320 |
| 27 | 1230 | 1200 | 1220 | 1260 | 1250 | 1250 | 1270 | 1270 | 1270 | 1330 | 1320 | 1320 |
| 28 | 1230 | 1220 | 1220 | 1260 | 1260 | 1260 | 1270 | 1260 | 1270 | 1330 | 1320 | 1330 |
| 29 | 1230 | 1220 | 1220 | 1260 | 1260 | 1260 | 1270 | 1270 | 1270 | 1340 | 1310 | 1320 |
| 30 | 1230 | 1220 | 1220 | 1260 | 1260 | 1260 | 1280 | 1270 | 1270 | 1330 | 1310 | 1320 |
| 31 | 1230 | 1220 | 1230 | --- | --- | --- | 1280 | 1270 | 1280 | 1330 | 1300 | 1320 |
| MONTH | 1230 | 1170 | 1200 | --- | --- | --- | 1290 | 1260 | 1270 | 1340 | 1260 | 1290 |

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | FEBRUARY | | | MARCH | | | APRIL | | | MAY | |
| 1 | 1330 | 1300 | 1320 | 1350 | 1310 | 1340 | 1380 | 1340 | 1360 | 1210 | 1170 | 1190 |
| 2 | 1330 | 1300 | 1320 | 1350 | 1320 | 1340 | 1380 | 1320 | 1360 | 1170 | 1160 | 1170 |
| 3 | 1330 | 1310 | 1320 | 1360 | 1310 | 1340 | 1400 | 1320 | 1360 | 1170 | 1160 | 1160 |
| 4 | 1330 | 1300 | 1320 | 1360 | 1320 | 1340 | 1410 | 1330 | 1370 | 1160 | 1150 | 1160 |
| 5 | 1330 | 1300 | 1310 | 1360 | 1340 | 1350 | 1390 | 1320 | 1350 | 1160 | 1150 | 1150 |
| 6 | 1320 | 1290 | 1310 | 1370 | 1330 | 1350 | 1400 | 1320 | 1350 | 1150 | 1140 | 1150 |
| 7 | 1320 | 1290 | 1310 | 1360 | 1350 | 1360 | 1370 | 1330 | 1350 | 1150 | 1140 | 1140 |
| 8 | 1320 | 1300 | 1320 | 1360 | 1340 | 1350 | 1380 | 1330 | 1350 | 1140 | 1100 | 1130 |
| 9 | 1330 | 1300 | 1320 | 1360 | 1340 | 1350 | 1370 | 1310 | 1340 | 1120 | 1100 | 1110 |
| 10 | 1330 | 1310 | 1320 | 1390 | 1340 | 1360 | 1370 | 1340 | 1360 | 1120 | 1110 | 1110 |
| 11 | 1320 | 1290 | 1310 | 1380 | 1330 | 1360 | 1360 | 1300 | 1330 | 1120 | 1110 | 1110 |
| 12 | 1330 | 1310 | 1320 | 1360 | 1310 | 1340 | 1350 | 1300 | 1330 | 1120 | 1110 | 1120 |
| 13 | 1330 | 1300 | 1320 | 1360 | 1330 | 1350 | 1360 | 1320 | 1340 | 1120 | 1100 | 1110 |
| 14 | 1330 | 1300 | 1320 | 1360 | 1350 | 1360 | 1370 | 1320 | 1340 | 1100 | 1090 | 1100 |
| 15 | 1330 | 1310 | 1320 | 1370 | 1320 | 1350 | 1350 | 1240 | 1290 | 1100 | 1080 | 1090 |
| 16 | 1330 | 1290 | 1320 | 1370 | 1310 | 1350 | 1250 | 1200 | 1230 | 1080 | 1070 | 1080 |
| 17 | 1330 | 1300 | 1320 | 1360 | 1330 | 1350 | 1240 | 1200 | 1220 | 1090 | 1080 | 1090 |
| 18 | 1330 | 1300 | 1320 | 1360 | 1340 | 1350 | 1240 | 1180 | 1220 | 1090 | 1090 | 1090 |
| 19 | 1340 | 1300 | 1330 | 1380 | 1330 | 1360 | 1250 | 1190 | 1220 | 1090 | 1080 | 1090 |
| 20 | 1340 | 1300 | 1320 | 1380 | 1350 | 1370 | 1240 | 1190 | 1210 | 1110 | 1070 | 1090 |
| 21 | 1340 | 1300 | 1320 | 1400 | 1340 | 1370 | 1240 | 1210 | 1220 | 1140 | 1110 | 1120 |
| 22 | 1340 | 1320 | 1330 | 1440 | 1370 | 1400 | 1230 | 1200 | 1220 | 1110 | 1090 | 1100 |
| 23 | 1340 | 1310 | 1330 | 1390 | 1340 | 1370 | 1240 | 1200 | 1220 | 1090 | 1080 | 1080 |
| 24 | 1340 | 1310 | 1330 | 1380 | 1340 | 1360 | 1230 | 1210 | 1220 | 1130 | 1090 | 1110 |
| 25 | 1350 | 1320 | 1340 | 1400 | 1340 | 1370 | 1230 | 1220 | 1230 | 1150 | 1130 | 1140 |
| 26 | 1350 | 1320 | 1340 | 1390 | 1260 | 1330 | 1240 | 1230 | 1230 | 1160 | 1140 | 1150 |
| 27 | 1350 | 1310 | 1330 | 1340 | 1280 | 1310 | 1230 | 1210 | 1220 | 1150 | 1140 | 1140 |
| 28 | 1350 | 1320 | 1340 | 1350 | 1290 | 1330 | 1220 | 1190 | 1210 | 1140 | 1130 | 1140 |
| 29 | --- | --- | --- | 1360 | 1330 | 1340 | 1220 | 1210 | 1220 | 1140 | 1120 | 1130 |
| 30 | --- | --- | --- | 1360 | 1330 | 1350 | 1220 | 1210 | 1210 | 1130 | 1120 | 1120 |
| 31 | --- | --- | --- | 1390 | 1270 | 1360 | --- | --- | --- | 1130 | 1080 | 1110 |
| MONTH | 1350 | 1290 | 1320 | 1440 | 1260 | 1350 | 1410 | 1180 | 1280 | 1210 | 1070 | 1120 |

05058000 SHEYENNE RIVER BELOW BALDHILL DAM, ND--Continued

SPECIFIC CONDUCTANCE, in US/CM @ 25C, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | JUNE | | | JULY | | | AUGUST | | | SEPTEMBER | |
| 1 | 1120 | 1090 | 1120 | 962 | 953 | 957 | --- | --- | --- | --- | --- | --- |
| 2 | 1120 | 1100 | 1110 | 1060 | 961 | 1020 | --- | --- | --- | --- | --- | --- |
| 3 | 1110 | 1100 | 1100 | 1010 | 962 | 982 | --- | --- | --- | --- | --- | --- |
| 4 | 1110 | 1100 | 1110 | 991 | 970 | 978 | --- | --- | --- | --- | --- | --- |
| 5 | 1110 | 1080 | 1090 | 1000 | 975 | 988 | --- | --- | --- | --- | --- | --- |
| 6 | 1090 | 1080 | 1090 | 1030 | 1000 | 1020 | --- | --- | --- | --- | --- | --- |
| 7 | 1100 | 1090 | 1100 | 1040 | 1030 | 1040 | --- | --- | --- | --- | --- | --- |
| 8 | 1100 | 1080 | 1090 | 1040 | 1030 | 1030 | --- | --- | --- | --- | --- | --- |
| 9 | 1090 | 1080 | 1090 | 1050 | 1030 | 1040 | --- | --- | --- | --- | --- | --- |
| 10 | 1090 | 1080 | 1080 | 1050 | 1040 | 1040 | --- | --- | --- | --- | --- | --- |
| 11 | 1090 | 1080 | 1090 | 1060 | 1030 | 1040 | --- | --- | --- | --- | --- | --- |
| 12 | 1090 | 1090 | 1090 | 1060 | 1030 | 1040 | --- | --- | --- | --- | --- | --- |
| 13 | 1090 | 1080 | 1090 | 1050 | 1040 | 1040 | --- | --- | --- | --- | --- | --- |
| 14 | 1090 | 1080 | 1080 | 1040 | 1020 | 1030 | --- | --- | --- | --- | --- | --- |
| 15 | 1090 | 1080 | 1090 | 1040 | 1030 | 1040 | --- | --- | --- | --- | --- | --- |
| 16 | 1090 | 1080 | 1090 | 1040 | 1030 | 1030 | --- | --- | --- | --- | --- | --- |
| 17 | 1090 | 1030 | 1060 | 1040 | 1030 | 1040 | --- | --- | --- | --- | --- | --- |
| 18 | 1030 | 1000 | 1010 | 1040 | 1030 | 1040 | --- | --- | --- | --- | --- | --- |
| 19 | 1000 | 985 | 993 | 1040 | 1020 | 1040 | --- | --- | --- | --- | --- | --- |
| 20 | 987 | 978 | 984 | 1040 | 1020 | 1030 | --- | --- | --- | --- | --- | --- |
| 21 | 980 | 972 | 975 | 1040 | 1020 | 1040 | --- | --- | --- | --- | --- | --- |
| 22 | 976 | 970 | 973 | 1040 | 1030 | 1030 | --- | --- | --- | --- | --- | --- |
| 23 | 973 | 949 | 963 | 1030 | 1020 | 1030 | --- | --- | --- | --- | --- | --- |
| 24 | 966 | 960 | 963 | 1040 | 1030 | 1040 | --- | --- | --- | --- | --- | --- |
| 25 | 986 | 958 | 970 | 1040 | 1030 | 1040 | --- | --- | --- | --- | --- | --- |
| 26 | 976 | 963 | 972 | 1040 | 1030 | 1040 | --- | --- | --- | --- | --- | --- |
| 27 | 963 | 959 | 961 | 1040 | 1030 | 1040 | --- | --- | --- | --- | --- | --- |
| 28 | 968 | 955 | 961 | 1040 | 1020 | 1030 | --- | --- | --- | --- | --- | --- |
| 29 | 971 | 958 | 966 | 1060 | 1030 | 1040 | --- | --- | --- | --- | --- | --- |
| 30 | 966 | 955 | 961 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 31 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MONTH | 1120 | 949 | 1040 | --- | --- | --- | --- | --- | --- | --- | --- | --- |

## 05058500 SHEYENNE RIVER AT VALLEY CITY, ND

LOCATION.--Lat 46°54'50", long 98°00'30", in SE$^1/_4$NW$^1/_4$ 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$^2$, approximately, of which about 5,700 mi$^2$ is probably noncontributing, includes 3,800 mi$^2$ 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); seasonal discharge record for March to September 1995, 1996, and 2002. 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 National Geodetic Vertical Datum of 1929. March to August 1919, nonrecording gage at site 0.5 mi upstream at different datum. March 18, 1938, to Oct. 13, 1938, nonrecording gage at present site and datum.

REMARKS.--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$^3$/s, Apr. 21, 1996, gage height, 18.78 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 733 ft$^3$/s, May 14, gage height, 6.44 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | --- | --- | --- | --- | --- | 62 | 45 | 215 | 166 | 259 | 85 | 48 |
| 2 | --- | --- | --- | --- | --- | 62 | 40 | 225 | 169 | 258 | 76 | 40 |
| 3 | --- | --- | --- | --- | --- | 62 | 31 | 236 | 170 | 259 | 47 | 26 |
| 4 | --- | --- | --- | --- | --- | 63 | 30 | 240 | 169 | 271 | 42 | 24 |
| 5 | --- | --- | --- | --- | --- | 63 | 26 | 239 | 169 | 264 | 41 | 25 |
| 6 | --- | --- | --- | --- | --- | 63 | 48 | 234 | 158 | 259 | 42 | 25 |
| 7 | --- | --- | --- | --- | --- | 64 | 81 | 158 | 102 | 299 | 38 | 24 |
| 8 | --- | --- | --- | --- | --- | 65 | 68 | 214 | 87 | 335 | 33 | 25 |
| 9 | --- | --- | --- | --- | --- | 64 | 63 | 279 | 93 | 376 | 35 | 27 |
| 10 | --- | --- | --- | --- | --- | 62 | 78 | 387 | 93 | 448 | 29 | 33 |
| 11 | --- | --- | --- | --- | --- | 66 | 60 | 421 | 93 | 450 | 28 | 39 |
| 12 | --- | --- | --- | --- | --- | 95 | 51 | 424 | 93 | 445 | 27 | 40 |
| 13 | --- | --- | --- | --- | --- | 112 | 55 | 438 | 105 | 438 | 26 | 39 |
| 14 | --- | --- | --- | --- | --- | 97 | 57 | 614 | 146 | 307 | 25 | 37 |
| 15 | --- | --- | --- | --- | --- | 85 | 58 | 609 | 146 | 81 | 24 | 34 |
| 16 | --- | --- | --- | --- | --- | 89 | 51 | 592 | 144 | 86 | 22 | 33 |
| 17 | --- | --- | --- | --- | --- | 97 | 46 | 583 | 150 | 101 | 26 | 32 |
| 18 | --- | --- | --- | --- | --- | 96 | 56 | 490 | 208 | 91 | 20 | 34 |
| 19 | --- | --- | --- | --- | --- | 74 | 53 | 463 | 289 | 80 | 21 | 37 |
| 20 | --- | --- | --- | --- | --- | 68 | 46 | 444 | 484 | 85 | 20 | 36 |
| 21 | --- | --- | --- | --- | --- | 63 | 42 | 180 | 438 | 92 | 22 | 36 |
| 22 | --- | --- | --- | --- | --- | 61 | 39 | 214 | 438 | 83 | 22 | 34 |
| 23 | --- | --- | --- | --- | --- | 61 | 33 | 181 | 507 | 84 | 23 | 224 |
| 24 | --- | --- | --- | --- | --- | 61 | 40 | 171 | 488 | 85 | 25 | 46 |
| 25 | --- | --- | --- | --- | --- | 58 | 59 | 171 | 460 | 85 | 25 | 29 |
| 26 | --- | --- | --- | --- | --- | 56 | 81 | 170 | 431 | 81 | 28 | 22 |
| 27 | --- | --- | --- | --- | --- | 47 | 124 | 169 | 286 | 99 | 32 | 7.5 |
| 28 | --- | --- | --- | --- | --- | 69 | 141 | 169 | 247 | 88 | 34 | 11 |
| 29 | --- | --- | --- | --- | --- | 62 | 152 | 169 | 257 | 84 | 35 | 13 |
| 30 | --- | --- | --- | --- | --- | 52 | 170 | 168 | 260 | 82 | 37 | 13 |
| 31 | --- | --- | --- | --- | --- | 48 | --- | 164 | --- | 81 | 42 | --- |
| TOTAL | --- | --- | --- | --- | --- | 2147 | 1924 | 9431 | 7046 | 6136 | 1032 | 1093.5 |
| MEAN | --- | --- | --- | --- | --- | 69.26 | 64.13 | 304.2 | 234.9 | 197.9 | 33.29 | 36.45 |
| MAX | --- | --- | --- | --- | --- | 112 | 170 | 614 | 507 | 450 | 85 | 224 |
| MIN | --- | --- | --- | --- | --- | 47 | 26 | 158 | 87 | 80 | 20 | 7.5 |

05058500 SHEYENNE RIVER AT VALLEY CITY, ND--Continued

GAGE HEIGHT from dcp, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.41 | 4.29 | 4.41 | 3.57 | 3.17 | 3.23 | 3.06 | 4.66 | 4.41 | 4.87 | 3.98 | 3.76 |
| 2 | 3.47 | 4.26 | 4.46 | 3.59 | 3.17 | 3.23 | 3.04 | 4.71 | 4.42 | 4.87 | 3.94 | 3.71 |
| 3 | 3.55 | 4.26 | 4.39 | 3.55 | 3.16 | 3.24 | 3.00 | 4.76 | 4.43 | 4.87 | 3.80 | 3.58 |
| 4 | 3.61 | 4.25 | 4.44 | 3.37 | 3.15 | 3.24 | 3.00 | 4.78 | 4.42 | 4.91 | 3.76 | 3.55 |
| 5 | 3.62 | 4.25 | 4.50 | 3.25 | 3.17 | 3.24 | 2.97 | 4.77 | 4.43 | 4.89 | 3.74 | 3.57 |
| 6 | 3.62 | 4.23 | 4.53 | 3.20 | 3.17 | 3.24 | 3.08 | 4.75 | 4.37 | 4.87 | 3.74 | 3.57 |
| 7 | 3.63 | 4.25 | 4.58 | 3.19 | 3.17 | 3.25 | 3.24 | 4.37 | 4.09 | 4.99 | 3.71 | 3.56 |
| 8 | 3.63 | 4.27 | 4.63 | 3.21 | 3.16 | 3.25 | 3.17 | 4.65 | 4.02 | 5.13 | 3.67 | 3.56 |
| 9 | 3.64 | 4.32 | 4.55 | 3.22 | 3.15 | 3.25 | 3.15 | 4.94 | 4.04 | 5.26 | 3.68 | 3.59 |
| 10 | 3.63 | 4.32 | 4.54 | 3.22 | 3.14 | 3.24 | 3.23 | 5.30 | 4.04 | 5.50 | 3.62 | 3.67 |
| 11 | 3.31 | 4.32 | 4.58 | 3.20 | 3.15 | 3.25 | 3.37 | 5.41 | 4.05 | 5.51 | 3.60 | 3.72 |
| 12 | 3.34 | 4.32 | 4.53 | 3.19 | 3.15 | 3.32 | 3.73 | 5.42 | 4.05 | 5.49 | 3.61 | 3.73 |
| 13 | 3.72 | 4.32 | 4.59 | 3.19 | 3.13 | 3.38 | 3.86 | 5.47 | 4.10 | 5.47 | 3.59 | 3.72 |
| 14 | 3.80 | 4.04 | 4.58 | 3.18 | 3.13 | 3.31 | 3.87 | 6.05 | 4.31 | 5.02 | 3.57 | 3.70 |
| 15 | 3.76 | 3.73 | 4.57 | 3.18 | 3.12 | 3.25 | 3.87 | 6.03 | 4.31 | 3.92 | 3.55 | 3.67 |
| 16 | 3.43 | 3.77 | 4.53 | 3.17 | 3.12 | 3.27 | 3.84 | 5.98 | 4.30 | 3.99 | 3.53 | 3.67 |
| 17 | 3.34 | 4.23 | 4.58 | 3.17 | 3.13 | 3.31 | 3.79 | 5.95 | 4.33 | 4.05 | 3.58 | 3.65 |
| 18 | 3.34 | 4.36 | 4.55 | 3.17 | 3.14 | 3.31 | 3.86 | 5.64 | 4.62 | 4.01 | 3.51 | 3.67 |
| 19 | 3.37 | 4.33 | 4.63 | 3.17 | 3.14 | 3.21 | 3.84 | 5.55 | 4.97 | 3.96 | 3.52 | 3.70 |
| 20 | 3.82 | 4.25 | 4.61 | 3.18 | 3.14 | 3.17 | 3.79 | 5.49 | 5.62 | 3.98 | 3.51 | 3.69 |
| 21 | 3.93 | 4.18 | 4.50 | 3.18 | 3.16 | 3.15 | 3.76 | 4.39 | 5.47 | 4.01 | 3.53 | 3.69 |
| 22 | 3.93 | 4.17 | 4.02 | 3.17 | 3.17 | 3.14 | 3.72 | 4.65 | 5.47 | 3.97 | 3.54 | 3.68 |
| 23 | 3.93 | 4.17 | 4.00 | 3.16 | 3.19 | 3.14 | 3.67 | 4.48 | 5.70 | 3.98 | 3.55 | 4.55 |
| 24 | 4.04 | 4.18 | 4.00 | 3.18 | 3.19 | 3.14 | 3.73 | 4.44 | 5.64 | 3.98 | 3.56 | 3.77 |
| 25 | 4.17 | 4.17 | 3.96 | 3.20 | 3.18 | 3.13 | 3.87 | 4.44 | 5.54 | 3.98 | 3.57 | 3.62 |
| 26 | 4.18 | 4.19 | 3.93 | 3.19 | 3.22 | 3.12 | 3.99 | 4.43 | 5.45 | 3.97 | 3.62 | 3.54 |
| 27 | 4.19 | 4.31 | 3.89 | 3.18 | 3.24 | 3.08 | 4.20 | 4.43 | 4.91 | 4.04 | 3.65 | 3.36 |
| 28 | 4.22 | 4.42 | 3.53 | 3.14 | 3.24 | 3.18 | 4.28 | 4.42 | 4.82 | 3.99 | 3.67 | 3.41 |
| 29 | 4.23 | 4.37 | 3.48 | 3.19 | --- | 3.15 | 4.34 | 4.42 | 4.87 | 3.98 | 3.69 | 3.43 |
| 30 | 4.24 | 4.36 | 3.48 | 3.18 | --- | 3.11 | 4.43 | 4.42 | 4.88 | 3.97 | 3.71 | 3.43 |
| 31 | 4.29 | --- | 3.53 | 3.17 | --- | 3.08 | --- | 4.40 | --- | 3.97 | 3.73 | --- |
| MEAN | 3.75 | 4.23 | 4.29 | 3.23 | 3.16 | 3.21 | 3.62 | 4.95 | 4.67 | 4.50 | 3.65 | 3.65 |
| MAX | 4.29 | 4.42 | 4.63 | 3.59 | 3.24 | 3.38 | 4.43 | 6.05 | 5.70 | 5.51 | 3.98 | 4.55 |
| MIN | 3.31 | 3.73 | 3.48 | 3.14 | 3.12 | 3.08 | 2.97 | 4.37 | 4.02 | 3.92 | 3.51 | 3.36 |

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MAR | | | | | | | | | | | | | |
| 06... | 1455 | 62 | -- | -- | -- | 1480 | -5.0 | .5 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 02... | 1600 | 40 | -- | -- | -- | 1310 | -- | 2.5 | -- | -- | -- | -- | -- |
| 19... | 0915 | 50 | 8.5 | 8.1 | 1130 | 1110 | 2.0 | 7.5 | 390 | 76.0 | 48.0 | 9.50 | 2 |
| MAY | | | | | | | | | | | | | |
| 07... | 1340 | 141 | -- | -- | -- | 1300 | 7.0 | 9.0 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 03... | 0945 | 255 | -- | -- | -- | 1060 | 25.5 | 24.0 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 20... | 1730 | 20 | -- | -- | -- | 1080 | 24.5 | 20.0 | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 27... | 1400 | 7.7 | -- | -- | -- | 1420 | 16.0 | 13.0 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MAR | | | | | | | | | | | | | |
| 06... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 02... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 19... | 95.0 | 34 | 308 | 52.0 | .20 | 270 | 101 | 748 | 736 | 4.0 | 80 | <1 | 70 |
| MAY | | | | | | | | | | | | | |
| 07... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 03... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 20... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 27... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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 | | | | | |
| 06... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 02... | -- | -- | -- | -- | -- |
| 19... | 250 | <.10 | 1 | <1 | 370 |
| MAY | | | | | |
| 07... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 03... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 20... | -- | -- | -- | -- | -- |
| SEP | | | | | |
| 27... | -- | -- | -- | -- | -- |

< Less than

## 05058600 SHEYENNE RIVER NEAR KATHRYN, ND

LOCATION.--Lat 46°37'47", long 97°56'22", in NW$^1/_4$NW$^1/_4$NE$^1/_4$ 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$^2$, approximately, of which about 5,800 mi$^2$ is probably noncontributing, includes 3,800 mi$^2$ in closed basins.

### WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1995 to September 1996, March to September 2002 (discontinued).

GAGE.--Nonrecording gage March 1 to April 26, 2002. Recording gage April 27 to September 30, 2002. Datum of gage is 1,150 ft above National Geodetic Vertical Datum of 1929, from topographic map.

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 565 ft$^3$/s, May 15, gage height, 6.12 ft (recorded); minimum daily discharge 21 ft$^3$/s, Sept. 29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | --- | --- | --- | --- | --- | e62 | e81 | e175 | e144 | 235 | e87 | e40 |
| 2 | --- | --- | --- | --- | --- | e62 | e74 | e200 | e144 | 255 | e87 | e46 |
| 3 | --- | --- | --- | --- | --- | e62 | e67 | e216 | 145 | 247 | e84 | e53 |
| 4 | --- | --- | --- | --- | --- | e62 | e62 | e235 | 150 | 245 | e67 | e48 |
| 5 | --- | --- | --- | --- | --- | e63 | e58 | e244 | 147 | 254 | e56 | e38 |
| 6 | --- | --- | --- | --- | --- | e64 | e62 | e252 | 147 | 248 | e49 | e33 |
| 7 | --- | --- | --- | --- | --- | e64 | e78 | e241 | 143 | 247 | e53 | e31 |
| 8 | --- | --- | --- | --- | --- | e64 | e99 | e209 | 107 | 269 | e57 | e29 |
| 9 | --- | --- | --- | --- | --- | e70 | e140 | 190 | 145 | e289 | e56 | 28 |
| 10 | --- | --- | --- | --- | --- | e76 | e124 | 247 | 110 | e326 | e52 | 25 |
| 11 | --- | --- | --- | --- | --- | e78 | e117 | 315 | e103 | 370 | e46 | 26 |
| 12 | --- | --- | --- | --- | --- | e83 | e120 | 370 | e100 | 389 | e42 | 33 |
| 13 | --- | --- | --- | --- | --- | e91 | e107 | 370 | e99 | 378 | e40 | e37 |
| 14 | --- | --- | --- | --- | --- | e105 | e90 | 376 | e102 | 372 | e37 | e37 |
| 15 | --- | --- | --- | --- | --- | e113 | e90 | 503 | e127 | e195 | e36 | e36 |
| 16 | --- | --- | --- | --- | --- | e106 | e87 | 519 | e133 | 148 | e37 | e34 |
| 17 | --- | --- | --- | --- | --- | e98 | e79 | 514 | 123 | e87 | e37 | e32 |
| 18 | --- | --- | --- | --- | --- | e103 | e75 | 505 | 121 | 84 | e33 | e32 |
| 19 | --- | --- | --- | --- | --- | e105 | e81 | 441 | e127 | e93 | e32 | e30 |
| 20 | --- | --- | --- | --- | --- | e100 | e88 | 399 | e194 | e91 | e30 | e30 |
| 21 | --- | --- | --- | --- | --- | e88 | e82 | 380 | 368 | e83 | e28 | e30 |
| 22 | --- | --- | --- | --- | --- | e81 | e75 | 232 | 358 | e88 | e26 | e32 |
| 23 | --- | --- | --- | --- | --- | e77 | e69 | 169 | 364 | e91 | e26 | e32 |
| 24 | --- | --- | --- | --- | --- | e74 | e68 | 179 | 418 | e87 | e27 | e160 |
| 25 | --- | --- | --- | --- | --- | e72 | e72 | 156 | 410 | e87 | e28 | e107 |
| 26 | --- | --- | --- | --- | --- | e72 | e81 | 156 | 395 | e88 | e29 | e56 |
| 27 | --- | --- | --- | --- | --- | e76 | e100 | 155 | 368 | e86 | e30 | e39 |
| 28 | --- | --- | --- | --- | --- | e75 | e121 | 150 | 272 | e86 | e32 | e24 |
| 29 | --- | --- | --- | --- | --- | e86 | e150 | 148 | 213 | e96 | e34 | e21 |
| 30 | --- | --- | --- | --- | --- | e94 | e165 | 148 | 226 | e92 | e35 | e22 |
| 31 | --- | --- | --- | --- | --- | e93 | --- | 147 | --- | e87 | e36 | --- |
| TOTAL | --- | --- | --- | --- | --- | 2519 | 2762 | 8541 | 6003 | 5793 | 1349 | 1221 |
| MEAN | --- | --- | --- | --- | --- | 81.26 | 92.07 | 275.5 | 200.1 | 186.9 | 43.52 | 40.70 |
| MAX | --- | --- | --- | --- | --- | 113 | 165 | 519 | 418 | 389 | 87 | 160 |
| MIN | --- | --- | --- | --- | --- | 62 | 58 | 147 | 99 | 83 | 26 | 21 |
| AC-FT | --- | --- | --- | --- | --- | 5000 | 5480 | 16940 | 11910 | 11490 | 2680 | 2420 |

e Estimated

## 05058700 SHEYENNE RIVER AT LISBON, ND

LOCATION.--Lat 46°26'49", long 97°40'44", on line between secs.1 and 2, T.134 N., R.56 W., Ransom County, Hydrologic Unit 09020204, on left bank 150 ft 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 $mi^2$, approximately, of which about 5,700 $mi^2$ is probably noncontributing, including 3,800 $mi^2$ 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 National Geodetic Vertical Datum of 1929.

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 69 | 190 | 234 | 99 | 57 | 62 | 110 | 171 | 136 | 211 | 87 | e38 |
| 2 | e65 | 196 | 244 | e98 | 57 | 60 | 97 | 176 | 134 | 210 | 83 | e41 |
| 3 | e65 | 202 | 238 | e96 | 54 | 59 | 87 | 201 | 134 | 204 | 83 | e49 |
| 4 | e70 | 194 | 245 | e96 | 56 | 60 | 83 | 225 | 136 | 201 | 83 | 61 |
| 5 | e77 | 191 | 262 | e96 | 56 | 62 | 82 | 234 | 138 | 207 | 79 | 58 |
| 6 | e88 | 190 | 242 | e95 | 54 | 64 | 87 | 240 | 137 | 216 | 69 | 51 |
| 7 | e110 | 192 | 245 | e90 | 53 | 64 | 102 | 239 | 137 | 239 | 67 | 42 |
| 8 | e122 | 201 | 249 | e77 | 52 | 64 | 115 | 250 | 134 | e240 | 71 | 36 |
| 9 | e120 | 208 | 260 | e74 | 55 | 75 | 135 | 212 | 124 | e250 | 77 | 33 |
| 10 | e117 | 214 | 264 | e72 | 57 | 87 | 165 | 209 | 149 | e270 | 76 | 32 |
| 11 | e112 | 218 | 260 | e70 | 58 | 86 | 145 | 276 | 125 | e320 | 70 | 32 |
| 12 | e105 | 211 | 251 | e67 | 59 | 88 | 138 | 357 | 113 | e400 | 66 | 31 |
| 13 | e93 | 208 | 264 | e65 | 59 | 98 | 138 | 381 | 110 | e390 | 61 | 31 |
| 14 | e77 | 209 | 246 | e62 | 60 | 106 | 130 | 373 | 109 | e385 | 53 | 34 |
| 15 | e90 | 209 | 254 | e60 | 60 | 108 | 128 | 386 | 106 | e350 | 49 | 37 |
| 16 | 119 | 186 | 267 | e59 | 59 | 117 | 127 | 503 | 120 | e260 | 46 | 36 |
| 17 | 123 | 140 | 260 | e58 | 61 | 120 | 122 | 521 | 127 | 133 | 50 | 32 |
| 18 | 110 | 126 | 249 | 57 | 64 | 110 | 120 | 501 | 126 | 82 | 46 | 31 |
| 19 | 85 | 162 | 256 | 55 | 64 | 110 | 113 | 488 | 126 | 84 | 43 | 32 |
| 20 | 75 | 212 | 245 | 55 | 65 | 111 | 108 | 426 | 144 | 87 | 39 | e31 |
| 21 | 74 | 216 | 265 | 56 | 66 | 105 | 112 | 396 | 222 | 91 | 39 | e30 |
| 22 | 86 | 206 | 264 | 56 | 65 | 92 | 109 | 379 | 360 | 88 | 37 | e30 |
| 23 | 134 | 194 | 284 | 57 | 66 | 86 | 104 | 238 | 372 | 87 | 37 | e29 |
| 24 | 144 | 190 | 194 | 56 | 66 | 85 | 98 | 166 | 374 | 89 | 36 | e31 |
| 25 | 144 | 189 | 158 | 55 | 64 | 83 | 91 | 172 | 413 | 88 | 36 | 77 |
| 26 | 150 | 189 | 158 | 55 | 66 | 81 | 85 | 152 | 408 | 89 | 34 | 123 |
| 27 | 165 | 121 | 151 | 56 | 63 | 85 | 92 | 149 | 392 | 90 | 33 | 67 |
| 28 | 171 | 95 | 147 | 56 | 61 | 96 | 112 | 146 | 371 | 89 | 32 | 46 |
| 29 | 175 | 128 | 151 | 55 | --- | 105 | 136 | 143 | 288 | 90 | 32 | 37 |
| 30 | 181 | 203 | 129 | 52 | --- | 109 | 163 | 140 | 200 | 91 | 34 | 32 |
| 31 | 188 | --- | 117 | 54 | --- | 114 | --- | 137 | --- | 87 | e36 | --- |
| TOTAL | 3504 | 5590 | 7053 | 2109 | 1677 | 2752 | 3434 | 8587 | 5965 | 5718 | 1684 | 1270 |
| MEAN | 113.0 | 186.3 | 227.5 | 68.03 | 59.89 | 88.77 | 114.5 | 277.0 | 198.8 | 184.5 | 54.32 | 42.33 |
| MAX | 188 | 218 | 284 | 99 | 66 | 120 | 165 | 521 | 413 | 400 | 87 | 123 |
| MIN | 65 | 95 | 117 | 52 | 52 | 59 | 82 | 137 | 106 | 82 | 32 | 29 |
| AC-FT | 6950 | 11090 | 13990 | 4180 | 3330 | 5460 | 6810 | 17030 | 11830 | 11340 | 3340 | 2520 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 74.82 | 98.78 | 91.22 | 76.11 | 93.30 | 346.4 | 829.9 | 382.9 | 211.1 | 196.2 | 119.2 | 79.03 |
| MAX | 716 | 480 | 393 | 217 | 413 | 1525 | 4181 | 2394 | 970 | 1424 | 1945 | 561 |
| (WY) | 1995 | 2001 | 2001 | 2001 | 1996 | 1995 | 1997 | 1997 | 2000 | 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 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1957 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 155896 | | 49343 | | | |
| ANNUAL MEAN | 427.1 | | 135.2 | | 216.5 | |
| HIGHEST ANNUAL MEAN | | | | | 719 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 25.9 | 1991 |
| HIGHEST DAILY MEAN | 2800 | Apr 15 | 521 | May 17 | 5650 | Apr 23 1997 |
| LOWEST DAILY MEAN | 65 | Oct 2 | 29 | Sep 23 | 0.00 | Oct 23 1956 |
| ANNUAL SEVEN-DAY MINIMUM | 72 | Sep 29 | 31 | Sep 18 | 0.87 | Oct 1 1956 |
| MAXIMUM PEAK FLOW | | | 541 | May 16 | 5670 | Apr 23 1997 |
| MAXIMUM PEAK STAGE | | | 4.92 | May 16 | a19.29 | Apr 5 1997 |
| ANNUAL RUNOFF (AC-FT) | 309200 | | 97870 | | 156900 | |
| 10 PERCENT EXCEEDS | 966 | | 260 | | 467 | |
| 50 PERCENT EXCEEDS | 250 | | 106 | | 67 | |
| 90 PERCENT EXCEEDS | 89 | | 46 | | 16 | |

a Backwater from ice
e Estimated

05058700 SHEYENNE RIVER AT LISBON, ND--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 29... | 1445 | 168 | -- | -- | -- | -- | 8.0 | 7.5 | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 10... | 1020 | 69 | -- | -- | -- | 976 | 1.5 | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 13... | 1545 | 100 | -- | -- | -- | 1260 | -1.0 | .5 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 09... | 1220 | 122 | 8.5 | 8.1 | 1080 | 1060 | 5.0 | 2.0 | 360 | 76.0 | 42.0 | 9.70 | 2 |
| 23... | 1200 | 102 | -- | -- | -- | 749 | 11.0 | 6.0 | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 06... | 0715 | 136 | -- | -- | -- | 978 | 10.5 | 9.0 | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 18... | 0940 | 31 | 8.4 | 8.2 | 1270 | 1260 | 19.0 | 19.5 | 400 | 76.0 | 52.0 | 13.0 | 3 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 29... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 10... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 09... | 91.0 | 35 | 272 | 27.0 | .20 | 270 | 237 | 719 | 680 | 3.0 | 90 | <1 | 70 |
| 23... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 06... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 18... | 130 | 40 | 294 | 48.0 | .30 | 340 | 75.9 | 895 | 836 | 5.0 | 50 | <1 | 90 |

| Date | 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 | | | | | |
| 29... | -- | -- | -- | -- | -- |
| JAN | | | | | |
| 10... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 13... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 09... | 170 | <.10 | <1 | 2 | 380 |
| 23... | -- | -- | -- | -- | -- |
| JUN | | | | | |
| 06... | -- | -- | -- | -- | -- |
| SEP | | | | | |
| 18... | 390 | <.10 | 3 | 1 | 560 |

< Less than

## 05058810 SHEYENNE RIVER NEAR SHELDON, ND

LOCATION.--Lat 46°31'22", long 97°20'31", in SW$^1/_4$SW$^1/_4$ sec.10, T.135 N., R.53 W., Ransom County, Hydrologic Unit 09020204, on upstream side of Ylvisaker Bridge on county road, 7 mi east and 5 mi south of Sheldon.

DRAINAGE AREA.--Not determined.

### WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March to September 2002 (discontinued).

GAGE.--Nonrecording gage. Datum of gage is 950 ft above National Geodetic Vertical Datum of 1929, from topographic map.

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, about 530 ft$^3$/s, May 18, gage height, unknown; maximum observed, 4.78 ft, May 16; minimum daily discharge, 22 ft$^3$/s, Sept. 15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | --- | --- | --- | --- | --- | e91 | e123 | 142 | e200 | e330 | 96 | 37 |
| 2 | --- | --- | --- | --- | --- | e90 | e130 | e163 | e200 | 272 | 91 | 38 |
| 3 | --- | --- | --- | --- | --- | e88 | e116 | e190 | 204 | e250 | 86 | 40 |
| 4 | --- | --- | --- | --- | --- | e88 | e110 | e210 | e200 | e245 | 85 | 43 |
| 5 | --- | --- | --- | --- | --- | e86 | e100 | e235 | e200 | e240 | 80 | e57 |
| 6 | --- | --- | --- | --- | --- | e83 | 94 | e270 | 201 | e240 | 82 | e66 |
| 7 | --- | --- | --- | --- | --- | e82 | e108 | e343 | 192 | e270 | 80 | e72 |
| 8 | --- | --- | --- | --- | --- | e81 | 144 | e290 | e190 | e377 | 68 | e58 |
| 9 | --- | --- | --- | --- | --- | e82 | e140 | e270 | e190 | 373 | 62 | 45 |
| 10 | --- | --- | --- | --- | --- | e82 | e155 | e260 | e190 | e350 | 63 | 42 |
| 11 | --- | --- | --- | --- | --- | e93 | e171 | e260 | e190 | e350 | 67 | 40 |
| 12 | --- | --- | --- | --- | --- | e93 | e159 | e300 | e185 | e344 | 63 | 40 |
| 13 | --- | --- | --- | --- | --- | e97 | e156 | e360 | e150 | e369 | 60 | 35 |
| 14 | --- | --- | --- | --- | --- | e105 | e153 | e410 | 124 | e390 | 61 | 27 |
| 15 | --- | --- | --- | --- | --- | e110 | e145 | e420 | e116 | e391 | 59 | 22 |
| 16 | --- | --- | --- | --- | --- | e115 | e137 | e430 | e110 | e381 | 51 | 26 |
| 17 | --- | --- | --- | --- | --- | e120 | e132 | e450 | 105 | e350 | 59 | 34 |
| 18 | --- | --- | --- | --- | --- | e123 | e134 | e528 | 135 | e260 | 56 | 41 |
| 19 | --- | --- | --- | --- | --- | e135 | e135 | e521 | 149 | 183 | 50 | 37 |
| 20 | --- | --- | --- | --- | --- | e135 | e130 | e520 | 151 | e150 | 51 | 33 |
| 21 | --- | --- | --- | --- | --- | e129 | e125 | e500 | 164 | e120 | 51 | 36 |
| 22 | --- | --- | --- | --- | --- | e122 | e126 | e470 | 245 | 110 | 50 | 37 |
| 23 | --- | --- | --- | --- | --- | e110 | e128 | e430 | e290 | e103 | 50 | 36 |
| 24 | --- | --- | --- | --- | --- | e102 | e125 | e373 | e335 | e98 | 48 | 39 |
| 25 | --- | --- | --- | --- | --- | e101 | e119 | e290 | e400 | e97 | 46 | 38 |
| 26 | --- | --- | --- | --- | --- | e98 | e115 | e264 | e410 | 98 | 44 | 38 |
| 27 | --- | --- | --- | --- | --- | e97 | e110 | e242 | e405 | 103 | 41 | 83 |
| 28 | --- | --- | --- | --- | --- | e97 | e104 | 227 | e403 | 105 | 36 | 120 |
| 29 | --- | --- | --- | --- | --- | e99 | e106 | e220 | e403 | 103 | 34 | 82 |
| 30 | --- | --- | --- | --- | --- | e105 | e120 | e210 | e390 | 94 | 38 | 68 |
| 31 | --- | --- | --- | --- | --- | e115 | --- | e205 | --- | 96 | 37 | --- |
| MEAN | --- | --- | --- | --- | --- | 101.7 | 128.3 | 322.7 | 227.6 | 233.6 | 59.52 | 47.00 |
| MAX | --- | --- | --- | --- | --- | 135 | 171 | 528 | 410 | 391 | 96 | 120 |
| MIN | --- | --- | --- | --- | --- | 81 | 94 | 142 | 105 | 94 | 34 | 22 |
| AC-FT | --- | --- | --- | --- | --- | 6260 | 7640 | 19840 | 13540 | 14360 | 3660 | 2800 |

e Estimated

## 05058850 DITCH 10 ABOVE IRON SPRINGS CREEK NEAR McLEOD, ND

LOCATION.--Lat 46°29'07", long 97°16'03", in NW$^1/_4$NE$^1/_4$ sec.30, T.135 N., R.52 W., Richland County, Hydrologic Unit 09020204, in Sheyenne River Grasslands, 6.2 mi northeast of McLeod.

DRAINAGE AREA.--Not determined.

### WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 2 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,055 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6.2 ft$^3$/s, July 19, 2001, gage height, 7.24 ft.

EXTREMES FOR CURRENT YEAR.--Maximum recorded discharge, 3.9 ft$^3$/s, May 8, gage height, 6.74 ft; maximum gage height, 6.76 ft, May 13; no flow on many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | --- | --- | --- | --- | --- | 0.00 | 0.00 | 0.25 | 0.31 | e0.00 | e0.00 | 0.00 |
| 2 | --- | --- | --- | --- | --- | 0.00 | 0.00 | 0.33 | 0.24 | 0.00 | e0.00 | 0.00 |
| 3 | --- | --- | --- | --- | --- | 0.00 | 0.00 | 0.47 | 0.20 | 0.00 | 0.00 | 0.00 |
| 4 | --- | --- | --- | --- | --- | 0.00 | 0.00 | 0.54 | 0.18 | 0.00 | 0.00 | 0.00 |
| 5 | --- | --- | --- | --- | --- | 0.00 | 0.00 | 0.73 | 0.15 | 0.00 | 0.00 | 0.00 |
| 6 | --- | --- | --- | --- | --- | 0.00 | 0.00 | 0.91 | e0.15 | 0.00 | 0.00 | 0.00 |
| 7 | --- | --- | --- | --- | --- | 0.00 | 0.00 | 1.0 | e0.14 | 0.00 | 0.00 | 0.00 |
| 8 | --- | --- | --- | --- | --- | 0.00 | 0.00 | 2.7 | e0.13 | 0.00 | 0.00 | 0.00 |
| 9 | --- | --- | --- | --- | --- | 0.00 | 0.00 | 3.5 | e0.12 | 0.00 | 0.00 | 0.00 |
| 10 | --- | --- | --- | --- | --- | 0.00 | 0.00 | 3.2 | e0.11 | 0.00 | 0.00 | 0.00 |
| 11 | --- | --- | --- | --- | --- | 0.00 | 0.00 | 2.9 | e0.10 | 0.00 | 0.00 | 0.00 |
| 12 | --- | --- | --- | --- | --- | 0.00 | 0.00 | 3.6 | e0.09 | 0.00 | 0.00 | 0.00 |
| 13 | --- | --- | --- | --- | --- | 0.00 | 0.00 | 3.5 | e0.08 | 0.00 | 0.00 | 0.00 |
| 14 | --- | --- | --- | --- | --- | 0.00 | 0.00 | 3.4 | e0.07 | 0.00 | 0.00 | 0.00 |
| 15 | --- | --- | --- | --- | --- | 0.00 | 0.00 | 2.2 | e0.06 | 0.00 | 0.00 | 0.00 |
| 16 | --- | --- | --- | --- | --- | 0.00 | 0.00 | 1.8 | e0.05 | 0.00 | 0.00 | 0.00 |
| 17 | --- | --- | --- | --- | --- | 0.00 | 0.00 | 1.6 | e0.04 | 0.00 | 0.00 | 0.00 |
| 18 | --- | --- | --- | --- | --- | 0.00 | e0.25 | 1.3 | e0.03 | 0.00 | 0.00 | 0.00 |
| 19 | --- | --- | --- | --- | --- | 0.00 | e1.0 | 1.1 | e0.02 | 0.00 | 0.00 | 0.00 |
| 20 | --- | --- | --- | --- | --- | 0.00 | e2.0 | 1.1 | e0.01 | 0.00 | 0.00 | 0.00 |
| 21 | --- | --- | --- | --- | --- | 0.00 | e1.5 | 1.0 | e0.01 | 0.00 | 0.00 | 0.00 |
| 22 | --- | --- | --- | --- | --- | 0.00 | e1.0 | 1.0 | e0.01 | 0.00 | 0.00 | 0.00 |
| 23 | --- | --- | --- | --- | --- | 0.00 | e0.50 | 0.85 | e0.01 | 0.00 | 0.00 | 0.00 |
| 24 | --- | --- | --- | --- | --- | 0.00 | e0.45 | 0.80 | e0.00 | 0.00 | 0.00 | 0.00 |
| 25 | --- | --- | --- | --- | --- | 0.00 | e0.40 | 0.76 | e0.00 | 0.00 | 0.00 | 0.00 |
| 26 | --- | --- | --- | --- | --- | 0.00 | e0.50 | 0.73 | e0.00 | 0.00 | 0.00 | 0.00 |
| 27 | --- | --- | --- | --- | --- | 0.00 | e0.55 | 0.69 | e0.00 | 0.00 | 0.00 | 0.00 |
| 28 | --- | --- | --- | --- | --- | 0.00 | e0.60 | 0.65 | e0.00 | 0.00 | 0.00 | 0.00 |
| 29 | --- | --- | --- | --- | --- | 0.00 | e0.40 | 0.56 | e0.00 | 0.00 | 0.00 | 0.00 |
| 30 | --- | --- | --- | --- | --- | 0.00 | e0.30 | 0.45 | e0.00 | 0.00 | 0.00 | 0.00 |
| 31 | --- | --- | --- | --- | --- | 0.00 | --- | 0.39 | --- | 0.00 | 0.00 | --- |
| TOTAL | --- | --- | --- | --- | --- | 0.00 | 9.45 | 44.01 | 2.31 | 0.00 | 0.00 | 0.00 |
| MEAN | --- | --- | --- | --- | --- | 0.000 | 0.315 | 1.420 | 0.077 | 0.000 | 0.000 | 0.000 |
| MAX | --- | --- | --- | --- | --- | 0.00 | 2.0 | 3.6 | 0.31 | 0.00 | 0.00 | 0.00 |
| MIN | --- | --- | --- | --- | --- | 0.00 | 0.00 | 0.25 | 0.00 | 0.00 | 0.00 | 0.00 |
| AC-FT | --- | --- | --- | --- | --- | 0.00 | 19 | 87 | 4.6 | 0.00 | 0.00 | 0.00 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | --- | --- | --- | --- | --- | 0.000 | 0.315 | 1.218 | 0.073 | 0.815 | 0.114 | 0.000 |
| MAX | --- | --- | --- | --- | --- | 0.000 | 0.32 | 1.22 | 0.073 | 1.63 | 0.23 | 0.000 |
| (WY) | --- | --- | --- | --- | --- | 2002 | 2002 | 2002 | 2002 | 2001 | 2001 | 2001 |
| MIN | --- | --- | --- | --- | --- | 0.000 | 0.32 | 1.22 | 0.073 | 0.000 | 0.000 | 0.000 |
| (WY) | --- | --- | --- | --- | --- | 2002 | 2002 | 2002 | 2002 | 2002 | 2002 | 2001 |

| SUMMARY STATISTICS | WATER YEARS 2001 - 2002 | |
|---|---|---|
| HIGHEST DAILY MEAN | 5.3 | Jul 19 2001 |
| LOWEST DAILY MEAN | 0.00 | Aug 21 2001 |
| ANNUAL SEVEN-DAY MINIMUM | 0.00 | Aug 21 2001 |
| MAXIMUM PEAK FLOW | 6.2 | Jul 19 2001 |
| MAXIMUM PEAK STAGE | 7.24 | Jul 19 2001 |

e Estimated

Miscellaneous discharge measurements on Iron Springs Creek, 1.1 mile below gage

| Date | Discharge |
|---|---|
| April 17, 2002 | 0.06 |
| July 31, 2002 | 0.46 |

## 05059000 SHEYENNE RIVER NEAR KINDRED, ND

LOCATION.--Lat 46°37'54", long 97°00'01", in SE$^1/_4$SE$^1/_4$SW$^1/_4$ 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$^2$, approximately, of which about 5,780 mi$^2$ is probably noncontributing, including 3,800 mi$^2$ 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 National Geodetic Vertical Datum of 1929. 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 fair except for estimated daily discharges, which are poor. 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$^3$/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 62 | e175 | e215 | e210 | e84 | e138 | e143 | 158 | 232 | 366 | 133 | 61 |
| 2 | 60 | e180 | e220 | e190 | e83 | e137 | e164 | 178 | 226 | 292 | 133 | 61 |
| 3 | 58 | e187 | e270 | e183 | e83 | e135 | e168 | 204 | 223 | 266 | 128 | 56 |
| 4 | 58 | e191 | e280 | e179 | e82 | e130 | e165 | 216 | 223 | 267 | 124 | 56 |
| 5 | 61 | e200 | e290 | e179 | e82 | e128 | e155 | 222 | 221 | 273 | 118 | 56 |
| 6 | 65 | e210 | e290 | e179 | e81 | e128 | e143 | 247 | 219 | 273 | 114 | 52 |
| 7 | 68 | 209 | e292 | e179 | e81 | e125 | e126 | 264 | 220 | 279 | 114 | 49 |
| 8 | 70 | 206 | e292 | e175 | e81 | e120 | e120 | 312 | 218 | 363 | 115 | 62 |
| 9 | 82 | 207 | e292 | e145 | e83 | e119 | e124 | 390 | 218 | 372 | 107 | 69 |
| 10 | 120 | 211 | e292 | e130 | e84 | e118 | e134 | 361 | 221 | 360 | 100 | 64 |
| 11 | 147 | 216 | e295 | e120 | e86 | e115 | e150 | 329 | 219 | 364 | 95 | e60 |
| 12 | 147 | 222 | e295 | e115 | e88 | e115 | e163 | 305 | 205 | 358 | 99 | e55 |
| 13 | 136 | 227 | e295 | e110 | e93 | e118 | e172 | 331 | 217 | 359 | 96 | 52 |
| 14 | 126 | 230 | e296 | e108 | e97 | e125 | e162 | 383 | 203 | 378 | 93 | 48 |
| 15 | 124 | 227 | e298 | e105 | e105 | e130 | e154 | 431 | 188 | 396 | 91 | 48 |
| 16 | 114 | 225 | e296 | e104 | e108 | e137 | e140 | 435 | 176 | 393 | 90 | 49 |
| 17 | 93 | 227 | e294 | e102 | e114 | e143 | e136 | 433 | 166 | 387 | 86 | 48 |
| 18 | 81 | 225 | e292 | e100 | e118 | e160 | e138 | 490 | 159 | 372 | 80 | 49 |
| 19 | 110 | 201 | e292 | e97 | e123 | e175 | e142 | 546 | 174 | 303 | 79 | 57 |
| 20 | 123 | 167 | e292 | e95 | e129 | e180 | e145 | 544 | 186 | 219 | 76 | 62 |
| 21 | 115 | 156 | e290 | e94 | e131 | e180 | e155 | 540 | 185 | 164 | 73 | 63 |
| 22 | 94 | 189 | e290 | e93 | e135 | e178 | e158 | 513 | 191 | 144 | 70 | 58 |
| 23 | 80 | 224 | e290 | e92 | e138 | e163 | e160 | 471 | 232 | 143 | 74 | 59 |
| 24 | 79 | 229 | e290 | e91 | e143 | e150 | 166 | 452 | 345 | 146 | 68 | 57 |
| 25 | 88 | 223 | e290 | e90 | e145 | e135 | 161 | 403 | 415 | 143 | 68 | 54 |
| 26 | 124 | 216 | e285 | e89 | e145 | e128 | 151 | 301 | 406 | 138 | 62 | 53 |
| 27 | 147 | e170 | e240 | e88 | e142 | e125 | 152 | 277 | 418 | 138 | 59 | 52 |
| 28 | e150 | e125 | e230 | e87 | e140 | e123 | 162 | 264 | 431 | 138 | 57 | 53 |
| 29 | e151 | e190 | e228 | e86 | --- | e123 | 158 | 249 | 419 | 138 | 61 | 128 |
| 30 | e160 | e200 | e225 | e85 | --- | e125 | 153 | 243 | 404 | 137 | 57 | 124 |
| 31 | e170 | --- | e220 | e85 | --- | e136 | --- | 236 | --- | 132 | 60 | --- |
| TOTAL | 3263 | 6065 | 8556 | 3785 | 3004 | 4242 | 4520 | 10728 | 7560 | 8201 | 2780 | 1815 |
| MEAN | 105.3 | 202.2 | 276.0 | 122.1 | 107.3 | 136.8 | 150.7 | 346.1 | 252.0 | 264.5 | 89.68 | 60.50 |
| MAX | 170 | 230 | 298 | 210 | 145 | 180 | 172 | 546 | 431 | 396 | 133 | 128 |
| MIN | 58 | 125 | 215 | 85 | 81 | 115 | 120 | 158 | 159 | 132 | 57 | 48 |
| AC-FT | 6470 | 12030 | 16970 | 7510 | 5960 | 8410 | 8970 | 21280 | 15000 | 16270 | 5510 | 3600 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1949 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 96.77 | 116.7 | 101.7 | 85.69 | 96.18 | 337.7 | 875.3 | 537.1 | 305.6 | 268.5 | 151.7 | 102.5 |
| MAX | 693 | 589 | 400 | 242 | 317 | 1256 | 3957 | 3053 | 1938 | 1466 | 2231 | 528 |
| (WY) | 1995 | 1995 | 2001 | 2001 | 1996 | 1987 | 1997 | 1950 | 1950 | 1975 | 1993 | 1999 |
| 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 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1949 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 186134 | | 64519 | | | |
| ANNUAL MEAN | 510.0 | | 176.8 | | 256.7 | |
| HIGHEST ANNUAL MEAN | | | | | 770 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 48.0 | 1991 |
| HIGHEST DAILY MEAN | 3250 | Apr 10 | 546 | May 19 | 5610 | Apr 29 1997 |
| LOWEST DAILY MEAN | 58 | Oct 3 | 48 | Sep 14 | 9.2 | Aug 16 1990 |
| ANNUAL SEVEN-DAY MINIMUM | 61 | Sep 30 | 50 | Sep 12 | 11 | Dec 26 1990 |
| MAXIMUM PEAK FLOW | | | 549 | May 19 | 5970 | Apr 27 1997 |
| MAXIMUM PEAK STAGE | | | 5.26 | May 19 | a22.33 | Apr 8 1997 |
| ANNUAL RUNOFF (AC-FT) | 369200 | | 128000 | | 185900 | |
| 10 PERCENT EXCEEDS | 1130 | | 308 | | 544 | |
| 50 PERCENT EXCEEDS | 294 | | 147 | | 98 | |
| 90 PERCENT EXCEEDS | 105 | | 63 | | 35 | |

a Backwater from ice
e Estimated

05059000 SHEYENNE RIVER NEAR KINDRED, ND--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 05... | 0830 | 62 | -- | 8.1 | 1150 | 1170 | 5.5 | 9.5 | 430 | 91.0 | 50.0 | 10.0 | 2 |
| NOV | | | | | | | | | | | | | |
| 02... | 0945 | -- | -- | -- | -- | 820 | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 09... | 1035 | 142 | -- | -- | -- | 976 | 2.5 | .0 | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 25... | 1540 | 145 | -- | -- | -- | 661 | -- | .5 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 25... | 1300 | 133 | -- | -- | -- | -- | -- | .5 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 11... | 1020 | -- | 8.3 | -- | -- | 763 | 4.5 | 2.5 | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 07... | 1425 | -- | -- | -- | -- | 1090 | 19.5 | 18.5 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 16... | 1520 | -- | -- | -- | -- | 1110 | -- | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 19... | 1155 | 56 | 8.3 | 8.2 | 1040 | 1040 | 18.0 | 19.0 | 380 | 85.0 | 41.0 | 9.10 | 2 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 05... | 95.0 | 32 | 357 | 29.0 | .30 | 250 | 126 | 747 | 740 | 5.0 | 80 | 2 | 100 |
| NOV | | | | | | | | | | | | | |
| 02... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 07... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 16... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 19... | 86.0 | 32 | 299 | 38.0 | .30 | 220 | 102 | 678 | 660 | 8.0 | 20 | 1 | 70 |

| Date | 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 | | | | | |
| 05... | 90 | <.10 | 3 | 3 | 440 |
| NOV | | | | | |
| 02... | -- | -- | -- | -- | -- |
| JAN | | | | | |
| 09... | -- | -- | -- | -- | -- |
| FEB | | | | | |
| 25... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 25... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 11... | -- | -- | -- | -- | -- |
| JUN | | | | | |
| 07... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 16... | -- | -- | -- | -- | -- |
| SEP | | | | | |
| 19... | 140 | <.10 | 3 | <1 | 460 |

< Less than

## 05059300 SHEYENNE RIVER ABOVE SHEYENNE RIVER DIVERSION NEAR HORACE, ND

LOCATION.--Lat 46°45'01", long 96°55'35", in NE$^1/_4$SE$^1/_4$SE$^1/_4$ 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$^2$, approximately, of which about 7,580 mi$^2$ is probably noncontributing, including 3,800 mi$^2$ 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 National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair except for estimated daily 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 72 | 165 | 215 | e219 | e87 | e143 | e157 | 156 | 245 | 433 | 131 | 68 |
| 2 | 67 | 174 | 251 | e212 | e86 | e141 | e170 | e175 | 237 | 377 | 131 | 69 |
| 3 | 61 | 180 | 272 | e190 | e86 | e139 | e175 | e198 | 229 | 299 | 131 | e64 |
| 4 | 59 | 189 | e285 | e184 | e85 | e137 | e175 | e208 | 224 | 276 | 126 | e62 |
| 5 | 58 | 196 | e293 | e185 | e85 | e134 | e168 | e218 | 223 | 278 | 123 | e63 |
| 6 | 64 | 205 | e294 | e184 | e85 | e132 | e153 | e226 | 222 | 283 | 118 | e61 |
| 7 | 69 | 209 | e295 | e180 | e85 | e129 | e140 | e255 | 219 | 285 | 112 | e58 |
| 8 | 71 | 206 | e296 | e179 | e85 | e126 | e128 | e285 | 217 | 325 | 113 | e53 |
| 9 | 75 | 206 | e296 | e175 | e85 | e126 | e128 | e334 | 222 | 408 | 110 | e58 |
| 10 | 103 | 210 | e296 | e148 | e87 | e124 | e144 | e404 | 217 | 416 | 102 | 72 |
| 11 | 145 | 218 | e298 | e127 | e91 | e121 | e156 | 338 | 220 | 403 | 94 | e66 |
| 12 | 175 | 229 | e298 | e120 | e93 | e120 | e169 | 297 | 211 | 398 | 89 | e60 |
| 13 | 175 | 242 | e299 | e116 | e96 | e121 | 185 | 274 | 198 | 386 | 91 | e58 |
| 14 | 159 | 253 | e298 | e113 | e99 | e125 | 169 | 313 | 209 | 395 | 88 | e53 |
| 15 | 146 | 254 | e302 | e109 | e104 | e134 | 153 | 367 | 188 | 418 | 87 | e51 |
| 16 | 144 | 249 | e299 | e106 | e112 | e139 | 143 | 417 | e175 | 431 | 86 | e52 |
| 17 | 130 | 246 | e298 | e104 | e116 | e148 | e140 | 420 | e165 | 426 | 87 | e52 |
| 18 | 105 | 248 | e297 | e104 | e121 | e158 | e140 | 430 | e158 | 421 | 83 | 58 |
| 19 | 91 | 241 | e296 | e101 | e127 | e169 | e144 | 515 | e152 | 390 | 79 | 61 |
| 20 | 125 | 205 | e295 | e99 | e131 | e179 | e150 | 561 | e165 | 307 | 79 | 61 |
| 21 | 144 | 159 | e295 | e97 | e136 | e184 | e156 | 559 | e171 | 219 | 78 | 64 |
| 22 | 132 | 146 | e295 | e96 | e141 | e180 | e165 | 550 | e180 | 159 | 76 | 64 |
| 23 | 106 | 198 | e294 | e94 | e144 | e169 | e168 | 505 | e190 | 142 | 74 | 63 |
| 24 | 91 | 244 | e294 | e94 | e146 | e153 | e167 | 461 | 252 | 140 | 75 | 63 |
| 25 | 88 | 251 | e293 | e93 | e148 | e141 | e164 | 446 | 397 | 141 | 73 | 63 |
| 26 | 92 | 242 | e293 | e92 | e148 | e132 | e159 | 405 | 448 | 139 | 72 | 60 |
| 27 | 127 | 205 | e283 | e91 | e148 | e128 | 155 | 309 | 443 | 136 | 69 | 58 |
| 28 | 146 | 148 | e242 | e89 | e146 | e126 | 155 | 291 | 462 | 135 | e63 | 58 |
| 29 | 143 | 151 | e238 | e88 | --- | e125 | 154 | 286 | 466 | 135 | e64 | 59 |
| 30 | 144 | 163 | e233 | e87 | --- | e130 | 155 | 265 | 453 | 134 | 68 | 110 |
| 31 | 149 | --- | e226 | e87 | --- | e145 | --- | 255 | --- | 134 | e64 | --- |
| TOTAL | 3456 | 6232 | 8759 | 3963 | 3103 | 4358 | 4685 | 10723 | 7558 | 8969 | 2836 | 1862 |
| MEAN | 111.5 | 207.7 | 282.5 | 127.8 | 110.8 | 140.6 | 156.2 | 345.9 | 251.9 | 289.3 | 91.48 | 62.07 |
| MAX | 175 | 254 | 302 | 219 | 148 | 184 | 185 | 561 | 466 | 433 | 131 | 110 |
| MIN | 58 | 146 | 215 | 87 | 85 | 120 | 128 | 156 | 152 | 134 | 63 | 51 |
| AC-FT | 6850 | 12360 | 17370 | 7860 | 6150 | 8640 | 9290 | 21270 | 14990 | 17790 | 5630 | 3690 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 233.7 | 291.6 | 248.5 | 180.1 | 198.6 | 643.1 | 1691 | 1082 | 573.4 | 630.5 | 484.7 | 289.5 |
| MAX | 673 | 617 | 429 | 268 | 302 | 1214 | 2964 | 2737 | 946 | 1157 | 2221 | 582 |
| (WY) | 1995 | 1995 | 2001 | 1997 | 2001 | 1995 | 1997 | 1997 | 1999 | 1993 | 1993 | 1999 |
| MIN | 52.9 | 54.8 | 31.7 | 73.0 | 98.6 | 141 | 156 | 232 | 252 | 289 | 91.5 | 62.1 |
| (WY) | 1993 | 1993 | 1993 | 1993 | 1993 | 2002 | 2002 | 1993 | 2002 | 2002 | 2002 | 2002 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1993 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 206329 | | 66504 | | | |
| ANNUAL MEAN | 565.3 | | 182.2 | | 546.4 | |
| HIGHEST ANNUAL MEAN | | | | | 749 | 1999 |
| LOWEST ANNUAL MEAN | | | | | 182 | 2002 |
| HIGHEST DAILY MEAN | 3600 | Apr 11 | 561 | May 20 | 4480 | May 8 1997 |
| LOWEST DAILY MEAN | 58 | Oct 5 | 51 | Sep 15 | 13 | Dec 18 1992 |
| ANNUAL SEVEN-DAY MINIMUM | 64 | Oct 2 | 55 | Sep 12 | 16 | Dec 13 1992 |
| MAXIMUM PEAK FLOW | | | 564 | May 20 | a5210 | May 8 1997 |
| MAXIMUM PEAK STAGE | | | 15.85 | May 20 | b26.66 | Mar 25 1999 |
| ANNUAL RUNOFF (AC-FT) | 409300 | | 131900 | | 395800 | |
| 10 PERCENT EXCEEDS | 1260 | | 311 | | 1270 | |
| 50 PERCENT EXCEEDS | 298 | | 150 | | 290 | |
| 90 PERCENT EXCEEDS | 112 | | 69 | | 110 | |

a Gage height, 25.44 ft, backwater from ice
b From high-water mark, backwater from ice and closure of diversion channel
e Estimated

05059300 SHEYENNE RIVER ABOVE SHEYENNE RIVER DIVERSION NEAR HORACE, ND--Continued

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: June 1997 to current year.

SPECIFIC CONDUCTANCE: June 1997 to current year.

INSTRUMENTATION.--Water-quality sensors since June 1997.

REMARKS.--Records good. Missing data is result of sensor probe malfunction and probe being out of the water.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 29.8°C, Aug. 6, 2001; minimum recorded, -0.2°C, on many days in 2002.

SPECIFIC CONDUCTANCE: Maximum recorded, 1,610 microsiemens, May 7-8, 2000; minimum recorded, 658 microsiemens, Apr. 17, 1999.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum recorded, 29.0°C, June 30; minimum recorded, -0.2°C, on many days.

SPECIFIC CONDUCTANCE: Maximum recorded, 1,640 microsiemens, July 6; minimum recorded, 859 microsiemens, Apr. 12.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 03... | 0830 | 60 | --e | 8.2 | 1200 | 1100 | 11.5 | 13.0 | 440 | 94.0 | 49.0 | 11.0 | 2 |
| JAN | | | | | | | | | | | | | |
| 09... | 1300 | 179 | -- | -- | -- | *863 | 4.0 | .0 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 25... | 1530 | 134 | -- | -- | -- | 875 | -- | .5 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 16... | 0830 | 136 | -- | 8.0 | 928 | -- | 12.0 | 5.0 | 340 | 76.0 | 36.0 | 7.70 | 2 |
| 25... | 0950 | 161 | -- | -- | -- | 990 | -- | 6.0 | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 17... | 1110 | 153 | -- | -- | -- | 947 | -- | 19.5 | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 20... | 1225 | 63 | 8.2 | 8.2 | 1050 | 1030 | 25.0 | 19.0 | 390 | 86.0 | 42.0 | 9.10 | 2 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 03... | 94.0 | 31 | 349 | 29.0 | .30 | 300 | 135 | 832 | 787 | 6.0 | 70 | 2 | 100 |
| JAN | | | | | | | | | | | | | |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 16... | 68.0 | 30 | 280 | 26.0 | .20 | 210 | 229 | 623 | 592 | 4.0 | 50 | <1 | 60 |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 20... | 86.0 | 32 | 296 | 39.0 | .30 | 230 | 118 | 698 | 670 | 8.0 | 30 | 1 | 70 |

05059300 SHEYENNE RIVER ABOVE SHEYENNE RIVER DIVERSION NEAR HORACE, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | 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... | 100 | <.10 | 3 | 3 | 460 |
| JAN | | | | | |
| 09... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 25... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 16... | 90 | <.10 | <1 | <1 | 360 |
| 25... | -- | -- | -- | -- | -- |
| JUN | | | | | |
| 17... | -- | -- | -- | -- | -- |
| SEP | | | | | |
| 20... | 60 | <.10 | 3 | <1 | 460 |

< Less than
e Required equipment not functional/available
* Not at water-quality monitor probe location

WATER TEMPERATURE from Datalogger, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | OCTOBER | | | NOVEMBER | | | DECEMBER | | | JANUARY | | |
| 1 | 18.0 | 15.5 | 16.7 | 5.9 | 5.1 | 5.5 | 0.0 | -0.2 | 0 | 0.1 | 0.0 | 0 |
| 2 | --- | --- | --- | 6.0 | 5.3 | 5.6 | 0.0 | -0.2 | -0.1 | 0.1 | -0.1 | 0.0 |
| 3 | --- | --- | --- | 6.3 | 5.2 | 5.7 | 0.0 | -0.2 | -0.1 | 0.1 | -0.1 | 0.0 |
| 4 | 13.7 | 11.9 | 12.7 | 6.1 | 5.2 | 5.7 | 0.0 | -0.2 | -0.1 | 0.1 | -0.1 | 0.0 |
| 5 | 11.9 | 9.8 | 10.8 | 6.5 | 5.4 | 5.9 | 0.0 | -0.1 | 0 | 0.1 | -0.1 | 0.0 |
| 6 | 9.8 | 8.6 | 9.1 | 6.2 | 5.5 | 5.9 | 0.0 | -0.2 | -0.1 | 0.1 | -0.1 | 0.0 |
| 7 | 8.8 | 7.6 | 8.2 | 5.8 | 5.4 | 5.6 | 0.0 | -0.2 | -0.1 | 0.1 | -0.1 | 0.0 |
| 8 | 8.5 | 7.9 | 8.2 | 5.4 | 4.8 | 5.1 | 0.0 | -0.1 | 0.0 | 0.1 | -0.1 | 0.0 |
| 9 | 9.6 | 8.1 | 8.7 | 4.9 | 4.3 | 4.6 | 0.0 | -0.2 | 0 | 0.1 | -0.1 | 0.0 |
| 10 | 9.7 | 9.5 | 9.6 | 4.8 | 4.2 | 4.5 | 0.0 | -0.2 | 0 | 0.1 | 0.0 | 0.0 |
| 11 | 10.1 | 8.7 | 9.4 | 4.4 | 3.6 | 4.0 | 0.0 | -0.2 | 0.0 | 0.1 | -0.1 | 0.0 |
| 12 | 10.3 | 9.7 | 10.0 | 4.4 | 3.6 | 3.9 | 0.0 | -0.2 | 0 | 0.1 | -0.1 | 0.0 |
| 13 | 10.5 | 9.6 | 10.1 | 4.4 | 3.5 | 4.0 | 0.1 | -0.2 | 0.0 | 0.1 | 0.0 | 0.0 |
| 14 | 10.3 | 9.7 | 10 | 5.0 | 4.0 | 4.5 | 0.1 | -0.2 | 0.0 | 0.1 | -0.1 | 0.0 |
| 15 | 9.8 | 8.8 | 9.2 | 5.1 | 4.4 | 4.8 | 0.1 | -0.1 | 0.0 | 0.1 | -0.1 | 0.0 |
| 16 | 8.8 | 7.7 | 8.1 | 5.4 | 4.6 | 4.9 | 0.0 | -0.1 | 0.0 | 0.1 | -0.1 | 0.0 |
| 17 | 7.8 | 6.6 | 7.4 | 5.9 | 4.9 | 5.4 | 0.1 | -0.2 | 0 | 0.1 | -0.1 | 0.0 |
| 18 | 8.1 | 7.3 | 7.7 | 5.7 | 4.9 | 5.5 | 0.1 | -0.2 | 0.0 | 0.2 | -0.1 | 0 |
| 19 | 7.8 | 7.1 | 7.5 | 4.9 | 3.7 | 4.3 | 0.1 | -0.1 | 0.0 | 0.1 | -0.1 | 0.0 |
| 20 | 8.0 | 6.9 | 7.5 | 3.7 | 3.0 | 3.3 | 0.0 | -0.1 | 0.0 | 0.1 | -0.1 | 0.0 |
| 21 | 7.7 | 6.8 | 7.3 | 3.1 | 2.5 | 2.8 | 0.1 | -0.2 | 0.0 | 0.1 | -0.1 | 0.0 |
| 22 | 8.0 | 6.8 | 7.4 | 3.2 | 2.6 | 2.9 | 0.1 | -0.2 | 0 | 0.2 | 0.0 | 0.0 |
| 23 | 8.0 | 7.2 | 7.5 | 3.2 | 2.6 | 2.9 | 0.1 | -0.1 | 0.0 | 0.1 | 0.0 | 0 |
| 24 | 7.5 | 4.6 | 6.1 | 3.2 | 2.9 | 3.1 | 0.1 | -0.1 | 0.0 | 0.2 | 0.0 | 0.0 |
| 25 | 4.6 | 3.2 | 3.6 | --- | --- | --- | 0.1 | -0.1 | 0.0 | 0.1 | -0.1 | 0.0 |
| 26 | 3.3 | 2.2 | 2.6 | --- | --- | --- | 0.1 | -0.1 | 0.0 | 0.1 | -0.1 | 0.0 |
| 27 | 2.4 | 1.4 | 1.9 | --- | --- | --- | 0.0 | -0.2 | 0 | 0.1 | -0.1 | 0.0 |
| 28 | 2.7 | 1.9 | 2.3 | -0.1 | -0.2 | -0.1 | 0.1 | -0.2 | 0.0 | 0.2 | -0.1 | 0 |
| 29 | 3.1 | 2.2 | 2.6 | -0.1 | -0.2 | -0.1 | 0.1 | -0.1 | 0.0 | 0.1 | 0.0 | 0.0 |
| 30 | 3.8 | 2.9 | 3.3 | -0.1 | -0.2 | -0.1 | 0.2 | -0.1 | 0.0 | 0.1 | 0.0 | 0.0 |
| 31 | 5.2 | 3.7 | 4.5 | --- | --- | --- | 0.1 | -0.1 | 0.0 | 0.1 | 0.0 | 0.0 |
| MONTH | --- | --- | --- | --- | --- | --- | 0.2 | -0.2 | 0.0 | 0.2 | -0.1 | 0.0 |

05059300 SHEYENNE RIVER ABOVE SHEYENNE RIVER DIVERSION NEAR HORACE, ND--Continued

WATER TEMPERATURE from Datalogger, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | FEBRUARY | | | MARCH | | | APRIL | | | MAY | |
| 1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0 | 0.0 | -0.1 | 0.0 | 10.0 | 9.0 | 9.5 |
| 2 | 0.1 | -0.1 | 0.0 | 0.1 | -0.1 | 0.0 | 0.0 | -0.1 | 0.0 | 10.6 | 7.9 | 9.3 |
| 3 | 0.1 | 0.0 | 0.0 | 0.0 | -0.2 | 0 | 0.1 | -0.1 | 0.0 | 12.1 | 9.1 | 10.6 |
| 4 | 0.0 | -0.1 | 0.0 | 0.0 | -0.2 | -0.1 | 0.1 | -0.1 | 0.0 | 13.4 | 10.9 | 12.1 |
| 5 | 0.0 | -0.1 | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | -0.1 | 0.0 | 12.8 | 11.5 | 12.0 |
| 6 | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | 11.8 | 10.9 | 11.2 |
| 7 | 0.0 | -0.1 | 0 | 0.0 | -0.1 | 0.0 | 0.0 | -0.1 | 0.0 | 10.9 | 9.6 | 10.2 |
| 8 | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | 9.6 | 8.4 | 8.9 |
| 9 | 0.0 | -0.1 | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | 8.4 | 7.3 | 7.7 |
| 10 | 0.0 | -0.2 | 0 | 0.2 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 9.2 | 6.5 | 7.8 |
| 11 | 0.0 | -0.2 | 0 | 0.2 | 0.1 | 0.1 | 0.1 | -0.1 | 0.0 | 9.7 | 9.1 | 9.5 |
| 12 | 0.0 | -0.1 | 0 | 0.2 | 0.1 | 0.1 | 3.3 | -0.1 | 0.2 | 11.7 | 9.7 | 10.5 |
| 13 | 0.0 | -0.1 | 0 | 0.2 | 0.1 | 0.2 | 8.7 | 3.3 | 7.0 | 13.1 | 11.0 | 12.0 |
| 14 | 0.0 | -0.1 | 0 | 0.2 | 0.1 | 0.1 | 11.9 | 8.5 | 10.0 | 14.7 | 12.3 | 13.4 |
| 15 | 0.0 | -0.1 | 0 | 0.1 | 0.1 | 0.1 | 14.2 | 11.4 | 12.6 | 15.9 | 14.1 | 14.9 |
| 16 | 0.0 | -0.1 | 0 | 0.1 | 0.0 | 0 | 16.2 | 13.4 | 14.7 | 15.5 | 14.3 | 14.9 |
| 17 | 0.0 | -0.1 | 0 | 0.2 | 0.1 | 0.1 | 16.0 | 14.0 | 15.1 | 15.0 | 14.1 | 14.6 |
| 18 | 0.0 | -0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 15.5 | 12.0 | 14.0 | 14.9 | 13.3 | 14.1 |
| 19 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0 | 12.0 | 10.3 | 11.0 | 14.9 | 13.3 | 14.1 |
| 20 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0 | 10.7 | 9.0 | 9.9 | 15.7 | 13.9 | 14.7 |
| 21 | 0.1 | -0.1 | 0.0 | 0.1 | 0.0 | 0 | 10.0 | 8.6 | 9.1 | 16.3 | 14.6 | 15.4 |
| 22 | 0.1 | 0.0 | 0 | 0.1 | -0.1 | 0.0 | 9.1 | 7.5 | 8.3 | 16.8 | 15.4 | 16.1 |
| 23 | 0.1 | 0.0 | 0 | 0.1 | -0.1 | 0.0 | 11.2 | 7.8 | 9.4 | 16.7 | 15.0 | 15.8 |
| 24 | 0.1 | 0.0 | 0 | 0.1 | -0.1 | 0.0 | 11.1 | 9.1 | 10.0 | 15.7 | 14.2 | 14.9 |
| 25 | 0.2 | 0.0 | 0 | 0.0 | -0.1 | 0 | 9.1 | 7.3 | 8.1 | 15.7 | 14.5 | 15.2 |
| 26 | 0.2 | 0.0 | 0.1 | 0.0 | -0.1 | 0.0 | 8.6 | 6.8 | 7.8 | 17.0 | 15.2 | 16.1 |
| 27 | 0.2 | -0.1 | 0 | 0.0 | -0.1 | 0.0 | 8.1 | 6.9 | 7.3 | 18.8 | 16.1 | 17.3 |
| 28 | 0.2 | 0.0 | 0 | 0.0 | 0.0 | 0.0 | 7.4 | 6.3 | 6.9 | 20.6 | 18.1 | 19.3 |
| 29 | --- | --- | --- | 0.0 | 0.0 | 0.0 | 8.9 | 6.6 | 7.6 | 21.6 | 19.7 | 20.6 |
| 30 | --- | --- | --- | 0.0 | -0.1 | 0.0 | 10.2 | 7.9 | 9.0 | 22.6 | 20.6 | 21.5 |
| 31 | --- | --- | --- | 0.0 | -0.1 | 0.0 | --- | --- | --- | 23.0 | 20.9 | 21.9 |
| MONTH | 0.2 | -0.2 | 0.0 | 0.2 | -0.2 | 0.0 | 16.2 | -0.1 | 5.9 | 23.0 | 6.5 | 13.7 |

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | JUNE | | | JULY | | | AUGUST | | | SEPTEMBER | |
| 1 | 23.1 | 21.2 | 22.1 | 28.9 | 27.4 | 28.2 | 26.6 | 24.5 | 25.3 | 25.1 | 23.1 | 24.2 |
| 2 | 22.1 | 19.7 | 20.8 | 28.3 | 27.0 | 27.4 | 24.7 | 22.5 | 23.7 | 24.5 | 22.5 | 23.7 |
| 3 | 19.7 | 18.7 | 19.1 | 27.5 | 25.7 | 26.6 | 24.0 | 22.5 | 23.0 | 23.1 | 21.0 | 22.2 |
| 4 | 19.7 | 17.8 | 18.7 | 26.8 | 24.6 | 25.7 | 23.6 | 21.4 | 22.5 | 22.9 | 21.3 | 22.2 |
| 5 | 20.7 | 18.2 | 19.4 | 26.2 | 23.9 | 24.9 | 24.0 | 21.8 | 22.9 | 24.3 | 22.0 | 23.1 |
| 6 | 21.2 | 19.1 | 20.1 | 27.4 | 25.3 | 26.2 | 23.3 | 21.6 | 22.1 | 25.2 | 23.2 | 24.2 |
| 7 | 20.8 | 19.9 | 20.3 | 27.0 | 25.6 | 26.4 | 24.2 | 20.9 | 22.3 | 26.2 | 24.0 | 25.1 |
| 8 | 21.3 | 19.2 | 20.2 | 27.0 | 24.9 | 25.8 | 25.6 | 23.2 | 24.3 | 26.6 | 24.2 | 25.3 |
| 9 | 21.1 | 20.4 | 20.7 | 26.4 | 25.3 | 26.0 | 25.6 | 24.3 | 24.9 | 25.3 | 22.3 | 23.7 |
| 10 | 21.8 | 20.8 | 21.2 | 26.1 | 23.8 | 25.0 | --- | --- | --- | 22.4 | 20.8 | 21.8 |
| 11 | 22.5 | 20.1 | 21.2 | 24.7 | 23.1 | 23.8 | --- | --- | --- | 21.8 | 20.4 | 21.3 |
| 12 | 22.2 | 20.9 | 21.6 | 24.8 | 23.2 | 24.0 | --- | --- | --- | 21.7 | 20.3 | 21.1 |
| 13 | 21.3 | 19.8 | 20.4 | 25.5 | 23.7 | 24.6 | --- | --- | --- | 21.4 | 20.2 | 20.8 |
| 14 | 21.5 | 19.3 | 20.3 | 26.0 | 24.4 | 25.2 | --- | --- | --- | 21.0 | 19.3 | 19.9 |
| 15 | 22.2 | 20.0 | 21.0 | 27.2 | 25.3 | 26.2 | --- | --- | --- | 19.3 | 17.4 | 18.3 |
| 16 | 22.3 | 20.4 | 21.4 | 28.2 | 26.3 | 27.2 | --- | --- | --- | 19.3 | 16.9 | 18.2 |
| 17 | 22.7 | 20.6 | 21.7 | 28.2 | 27.7 | 28.0 | --- | --- | --- | 19.9 | 18.0 | 19.1 |
| 18 | 23.0 | 21.0 | 22.0 | 28.4 | 27.1 | 27.7 | --- | --- | --- | 20.4 | 18.8 | 19.6 |
| 19 | 23.7 | 22.2 | 23.0 | 28.4 | 27.1 | 27.7 | --- | --- | --- | 19.9 | 18.7 | 19.1 |
| 20 | 23.4 | 21.5 | 22.5 | 28.3 | 27.3 | 27.8 | --- | --- | --- | 18.8 | 17.1 | 17.8 |
| 21 | 22.9 | 21.9 | 22.2 | 28.0 | 27.1 | 27.6 | --- | --- | --- | 17.3 | 15.2 | 15.9 |
| 22 | 23.3 | 21.5 | 22.3 | 27.1 | 24.3 | 25.4 | --- | --- | --- | 15.2 | 13.5 | 14.0 |
| 23 | 25.2 | 22.4 | 23.7 | 24.3 | 22.2 | 22.9 | --- | --- | --- | 13.7 | 12.5 | 13.0 |
| 24 | 27.0 | 24.1 | 25.4 | 22.8 | 21.3 | 22.1 | --- | --- | --- | 12.5 | 11.1 | 11.9 |
| 25 | 27.2 | 26.1 | 26.6 | 24.7 | 21.8 | 23.1 | --- | --- | --- | 12.5 | 11.5 | 11.9 |
| 26 | 27.5 | 26.3 | 26.9 | 26.4 | 23.5 | 24.8 | --- | --- | --- | 12.1 | 10.5 | 11.5 |
| 27 | 28.0 | 26.3 | 27.1 | 27.0 | 25.0 | 26.0 | --- | --- | --- | 12.0 | 10.7 | 11.5 |
| 28 | 28.1 | 26.7 | 27.4 | 26.5 | 24.8 | 25.6 | --- | --- | --- | 12.1 | 10.8 | 11.5 |
| 29 | 28.6 | 26.8 | 27.6 | 26.3 | 23.5 | 24.8 | --- | --- | --- | 12.2 | 11.2 | 11.7 |
| 30 | 29.0 | 27.5 | 28.2 | 27.0 | 25.0 | 25.9 | --- | --- | --- | 13.9 | 12.2 | 13.0 |
| 31 | --- | --- | --- | 27.0 | 24.3 | 25.8 | 24.5 | 22.0 | 23.4 | --- | --- | --- |
| MONTH | 29.0 | 17.8 | 22.5 | 28.9 | 21.3 | 25.8 | --- | --- | --- | 26.6 | 10.5 | 18.6 |

05059300 SHEYENNE RIVER ABOVE SHEYENNE RIVER DIVERSION NEAR HORACE, ND--Continued

SPECIFIC CONDUCTANCE from Datalogger, in US/CM @ 25C, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | OCTOBER | | | NOVEMBER | | | DECEMBER | | | JANUARY | |
| 1 | --- | --- | --- | 1280 | 1250 | 1260 | 1310 | 1280 | 1290 | 1360 | 1350 | 1360 |
| 2 | --- | --- | --- | 1270 | 1250 | 1260 | 1280 | 1260 | 1270 | 1370 | 1350 | 1360 |
| 3 | --- | --- | --- | 1270 | 1250 | 1260 | 1300 | 1280 | 1280 | 1390 | 1370 | 1380 |
| 4 | 1180 | 1180 | 1180 | 1260 | 1250 | 1260 | 1300 | 1290 | 1300 | 1390 | 1380 | 1380 |
| 5 | 1180 | 1170 | 1180 | 1260 | 1230 | 1240 | 1340 | 1290 | 1320 | 1380 | 1360 | 1370 |
| 6 | 1170 | 1160 | 1170 | 1230 | 1220 | 1230 | 1370 | 1340 | 1360 | 1360 | 1340 | 1350 |
| 7 | 1170 | 1160 | 1170 | 1240 | 1230 | 1230 | 1380 | 1360 | 1370 | 1350 | 1340 | 1350 |
| 8 | 1190 | 1170 | 1190 | 1240 | 1230 | 1230 | 1380 | 1360 | 1360 | 1350 | 1320 | 1340 |
| 9 | 1200 | 1190 | 1190 | 1240 | 1230 | 1230 | 1380 | 1360 | 1370 | 1330 | 1320 | 1330 |
| 10 | 1190 | 1160 | 1170 | 1260 | 1240 | 1260 | 1370 | 1360 | 1370 | 1330 | 1320 | 1320 |
| 11 | 1180 | 1160 | 1170 | 1270 | 1260 | 1270 | 1380 | 1370 | 1370 | 1320 | 1310 | 1320 |
| 12 | 1170 | 1110 | 1140 | 1280 | 1270 | 1280 | 1370 | 1350 | 1360 | 1310 | 1300 | 1300 |
| 13 | 1130 | 1110 | 1120 | 1300 | 1280 | 1290 | 1370 | 1350 | 1360 | 1300 | 1290 | 1290 |
| 14 | 1180 | 1120 | 1150 | 1300 | 1280 | 1290 | 1370 | 1350 | 1360 | 1300 | 1290 | 1290 |
| 15 | 1200 | 1180 | 1190 | 1290 | 1280 | 1290 | 1360 | 1350 | 1360 | 1290 | 1280 | 1280 |
| 16 | 1230 | 1200 | 1210 | 1290 | 1270 | 1280 | 1360 | 1340 | 1350 | 1280 | 1270 | 1280 |
| 17 | 1250 | 1230 | 1240 | 1280 | 1260 | 1270 | 1350 | 1340 | 1340 | 1280 | 1270 | 1270 |
| 18 | 1260 | 1250 | 1250 | 1290 | 1260 | 1280 | 1340 | 1330 | 1340 | 1300 | 1280 | 1290 |
| 19 | 1250 | 1220 | 1240 | 1300 | 1290 | 1300 | 1350 | 1320 | 1340 | 1330 | 1300 | 1310 |
| 20 | 1220 | 1180 | 1200 | 1300 | 1300 | 1300 | 1340 | 1340 | 1340 | 1330 | 1320 | 1330 |
| 21 | 1230 | 1180 | 1210 | 1300 | 1280 | 1290 | 1360 | 1340 | 1360 | 1330 | 1320 | 1320 |
| 22 | 1240 | 1230 | 1240 | 1280 | 1250 | 1260 | 1360 | 1350 | 1360 | 1330 | 1310 | 1320 |
| 23 | 1230 | 1200 | 1220 | 1250 | 1240 | 1240 | 1370 | 1340 | 1360 | 1320 | 1310 | 1320 |
| 24 | 1200 | 1190 | 1200 | 1270 | 1240 | 1260 | 1370 | 1360 | 1360 | 1320 | 1310 | 1320 |
| 25 | 1190 | 1170 | 1180 | 1280 | 1270 | 1270 | 1370 | 1350 | 1360 | 1320 | 1310 | 1320 |
| 26 | 1170 | 1160 | 1170 | 1280 | 1270 | 1280 | 1370 | 1360 | 1370 | 1320 | 1300 | 1310 |
| 27 | 1170 | 1130 | 1150 | 1290 | 1270 | 1280 | 1380 | 1360 | 1370 | 1330 | 1310 | 1320 |
| 28 | 1240 | 1170 | 1210 | 1300 | 1280 | 1290 | 1370 | 1350 | 1360 | 1340 | 1320 | 1340 |
| 29 | 1260 | 1240 | 1260 | 1320 | 1300 | 1300 | 1360 | 1330 | 1350 | 1360 | 1340 | 1350 |
| 30 | 1280 | 1260 | 1270 | 1320 | 1300 | 1320 | 1340 | 1320 | 1330 | 1380 | 1360 | 1370 |
| 31 | 1270 | 1260 | 1260 | --- | --- | --- | 1360 | 1330 | 1350 | --- | --- | --- |
| MONTH | --- | --- | --- | 1320 | 1220 | 1270 | 1380 | 1260 | 1350 | --- | --- | --- |

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | FEBRUARY | | | MARCH | | | APRIL | | | MAY | |
| 1 | --- | --- | --- | --- | --- | --- | 967 | 938 | 951 | 985 | 969 | 978 |
| 2 | --- | --- | --- | --- | --- | --- | 976 | 934 | 952 | 983 | 973 | 977 |
| 3 | --- | --- | --- | --- | --- | --- | 990 | 945 | 973 | 1040 | 983 | 1010 |
| 4 | --- | --- | --- | --- | --- | --- | 1000 | 974 | 990 | 1130 | 1040 | 1080 |
| 5 | --- | --- | --- | --- | --- | --- | 1030 | 992 | 1010 | 1190 | 1130 | 1160 |
| 6 | --- | --- | --- | --- | --- | --- | 1070 | 1030 | 1060 | 1210 | 1190 | 1200 |
| 7 | --- | --- | --- | --- | --- | --- | 1070 | 1030 | 1060 | 1220 | 1190 | 1210 |
| 8 | --- | --- | --- | --- | --- | --- | 1030 | 962 | 1000 | 1250 | 1190 | 1210 |
| 9 | --- | --- | --- | --- | --- | --- | 962 | 892 | 927 | 1300 | 1250 | 1290 |
| 10 | --- | --- | --- | --- | --- | --- | 909 | 883 | 896 | 1270 | 1170 | 1210 |
| 11 | --- | --- | --- | --- | --- | --- | 902 | 876 | 889 | 1200 | 1170 | 1190 |
| 12 | --- | --- | --- | --- | --- | --- | 892 | 859 | 878 | 1200 | 1180 | 1190 |
| 13 | --- | --- | --- | --- | --- | --- | 945 | 873 | 912 | 1180 | 1140 | 1160 |
| 14 | --- | --- | --- | --- | --- | --- | 977 | 945 | 963 | 1140 | 1120 | 1130 |
| 15 | --- | --- | --- | --- | --- | --- | 977 | 953 | 970 | 1140 | 1120 | 1130 |
| 16 | --- | --- | --- | --- | --- | --- | 953 | 922 | 933 | 1160 | 1130 | 1140 |
| 17 | --- | --- | --- | --- | --- | --- | 934 | 902 | 916 | 1180 | 1150 | 1160 |
| 18 | --- | --- | --- | --- | --- | --- | 937 | 905 | 927 | 1250 | 1170 | 1220 |
| 19 | --- | --- | --- | --- | --- | --- | 938 | 899 | 924 | 1260 | 1220 | 1250 |
| 20 | --- | --- | --- | --- | --- | --- | 944 | 935 | 940 | 1260 | 1210 | 1220 |
| 21 | --- | --- | --- | --- | --- | --- | 991 | 925 | 966 | 1270 | 1210 | 1250 |
| 22 | --- | --- | --- | --- | --- | --- | 989 | 917 | 962 | 1260 | 1230 | 1250 |
| 23 | --- | --- | --- | --- | --- | --- | 997 | 986 | 992 | 1240 | 1230 | 1240 |
| 24 | 1160 | 1130 | 1140 | --- | --- | --- | 999 | 986 | 990 | 1240 | 1180 | 1210 |
| 25 | 1160 | 1140 | 1150 | --- | --- | --- | 1000 | 973 | 991 | 1180 | 1160 | 1170 |
| 26 | 1160 | 1150 | 1150 | --- | --- | --- | 980 | 968 | 973 | 1200 | 1140 | 1170 |
| 27 | 1190 | 1160 | 1170 | --- | --- | --- | 993 | 976 | 985 | 1140 | 1120 | 1140 |
| 28 | 1210 | 1170 | 1180 | --- | --- | --- | 1000 | 993 | 999 | 1130 | 1110 | 1120 |
| 29 | --- | --- | --- | --- | --- | --- | 1000 | 974 | 994 | 1160 | 1120 | 1140 |
| 30 | --- | --- | --- | --- | --- | --- | 980 | 967 | 973 | 1160 | 1110 | 1130 |
| 31 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 1140 | 1120 | 1130 |
| MONTH | --- | --- | --- | --- | --- | --- | 1070 | 859 | 963 | 1300 | 969 | 1160 |

05059300 SHEYENNE RIVER ABOVE SHEYENNE RIVER DIVERSION NEAR HORACE, ND--Continued

SPECIFIC CONDUCTANCE from Datalogger, in US/CM @ 25C, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | JUNE | | | JULY | | | AUGUST | | | SEPTEMBER | |
| 1 | 1170 | 1140 | 1160 | 1120 | 1070 | 1100 | 1020 | 1020 | 1020 | --- | --- | --- |
| 2 | 1170 | 1150 | 1160 | 1070 | 1060 | 1070 | 1030 | 1010 | 1020 | --- | --- | --- |
| 3 | 1160 | 1140 | 1150 | 1060 | 1040 | 1050 | 1020 | 993 | 1000 | --- | --- | --- |
| 4 | 1160 | 1140 | 1150 | 1130 | 1060 | 1080 | 1020 | 993 | 1010 | --- | --- | --- |
| 5 | 1170 | 1160 | 1160 | 1520 | 1130 | 1280 | 1030 | 1020 | 1020 | 995 | 980 | 986 |
| 6 | 1180 | 1150 | 1160 | 1640 | 1470 | 1560 | 1020 | 1020 | 1020 | 985 | 971 | 976 |
| 7 | 1190 | 1160 | 1170 | 1470 | 1420 | 1440 | 1030 | 1020 | 1030 | 1000 | 984 | 989 |
| 8 | 1200 | 1190 | 1190 | 1510 | 1430 | 1480 | 1040 | 1030 | 1030 | 1020 | 1000 | 1010 |
| 9 | 1200 | 1160 | 1180 | 1510 | 1470 | 1490 | 1040 | 1030 | 1040 | 1020 | 1000 | 1010 |
| 10 | 1180 | 1170 | 1180 | 1510 | 1350 | 1450 | --- | --- | --- | 1010 | 998 | 1000 |
| 11 | 1170 | 1170 | 1170 | 1350 | 1160 | 1230 | --- | --- | --- | 1060 | 1000 | 1030 |
| 12 | 1170 | 1140 | 1150 | 1210 | 1170 | 1190 | --- | --- | --- | 1100 | 1060 | 1090 |
| 13 | 1140 | 1120 | 1130 | 1200 | 1160 | 1190 | --- | --- | --- | 1100 | 1090 | 1100 |
| 14 | 1120 | 1110 | 1120 | 1160 | 1040 | 1100 | --- | --- | --- | 1090 | 1080 | 1080 |
| 15 | 1130 | 1120 | 1130 | 1080 | 973 | 1020 | --- | --- | --- | 1080 | 1080 | 1080 |
| 16 | 1120 | 1100 | 1110 | 1070 | 1050 | 1060 | --- | --- | --- | 1080 | 1080 | 1080 |
| 17 | 1100 | 1090 | 1090 | 1050 | 1010 | 1030 | --- | --- | --- | 1080 | 1070 | 1070 |
| 18 | 1090 | 1070 | 1080 | 1010 | 940 | 980 | --- | --- | --- | --- | --- | --- |
| 19 | 1080 | 1080 | 1080 | 940 | 903 | 912 | --- | --- | --- | --- | --- | --- |
| 20 | 1090 | 1070 | 1070 | 903 | 885 | 893 | --- | --- | --- | --- | --- | --- |
| 21 | 1070 | 1060 | 1070 | 901 | 887 | 893 | --- | --- | --- | --- | --- | --- |
| 22 | 1060 | 995 | 1020 | 965 | 900 | 930 | --- | --- | --- | --- | --- | --- |
| 23 | 1080 | 1010 | 1060 | 1000 | 965 | 983 | --- | --- | --- | 1110 | 1080 | 1100 |
| 24 | 1100 | 1080 | 1090 | 1030 | 1000 | 1010 | --- | --- | --- | 1130 | 1110 | 1120 |
| 25 | 1110 | 1080 | 1100 | 1050 | 1030 | 1040 | --- | --- | --- | 1130 | 1100 | 1110 |
| 26 | 1110 | 1080 | 1100 | 1060 | 1050 | 1060 | --- | --- | --- | 1100 | 1090 | 1100 |
| 27 | 1140 | 1100 | 1120 | 1070 | 1060 | 1060 | --- | --- | --- | 1120 | 1100 | 1110 |
| 28 | 1150 | 1120 | 1130 | 1070 | 1060 | 1060 | --- | --- | --- | 1120 | 1110 | 1120 |
| 29 | 1130 | 1100 | 1120 | 1060 | 1050 | 1060 | --- | --- | --- | 1110 | 1090 | 1100 |
| 30 | 1110 | 1100 | 1110 | 1060 | 1000 | 1040 | --- | --- | --- | 1090 | 1060 | 1080 |
| 31 | --- | --- | --- | 1020 | 1000 | 1020 | 987 | 967 | 975 | --- | --- | --- |
| MONTH | 1200 | 995 | 1120 | 1640 | 885 | 1120 | --- | --- | --- | --- | --- | --- |

## 05059310 SHEYENNE RIVER DIVERSION NEAR HORACE, ND

LOCATION.--Lat 46°45'06", long 96°55'33", in NE$^1/_4$SE$^1/_4$SE$^1/_4$ 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 National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. 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$^3$/s at Sheyenne River above Sheyenne River Diversion near Horace (05059300), 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 Sheyenne River Diversion at West Fargo (station 05059480) for return flows.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 15 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 18 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 19 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 21 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 22 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 23 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 24 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 28 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29 | 0.00 | 0.00 | 0.00 | 0.00 | --- | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30 | 0.00 | 0.00 | 0.00 | 0.00 | --- | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31 | 0.00 | --- | 0.00 | 0.00 | --- | 0.00 | --- | 0.00 | --- | 0.00 | 0.00 | --- |
| TOTAL | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| MEAN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| MAX | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| MIN | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| AC-FT | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 0.065 | 0.650 | 0.000 | 0.000 | 0.000 | 80.35 | 569.9 | 219.7 | 33.61 | 48.39 | 87.22 | 0.000 |
| MAX | 0.65 | 6.50 | 0.000 | 0.000 | 0.000 | 471 | 1507 | 1181 | 139 | 281 | 872 | 0.000 |
| (WY) | 1995 | 1995 | 1993 | 1993 | 1993 | 1995 | 1997 | 1997 | 2000 | 1993 | 1993 | 1993 |
| MIN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| (WY) | 1993 | 1993 | 1993 | 1993 | 1993 | 1997 | 2000 | 1993 | 1993 | 1996 | 1994 | 1993 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1993 - 2002 | | |
|---|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 29020.06 | | 0.00 | | | | |
| ANNUAL MEAN | 79.51 | | 0.000 | | 86.62 | | |
| HIGHEST ANNUAL MEAN | | | | | 226 | | 1997 |
| LOWEST ANNUAL MEAN | | | | | 0.000 | | 2002 |
| HIGHEST DAILY MEAN | 1990 | Apr 10 | 0.00 | Oct 1 | 2390 | Apr 26 | 1997 |
| LOWEST DAILY MEAN | 0.00 | Jan 1 | 0.00 | Oct 1 | 0.00 | Oct 1 | 1992 |
| ANNUAL SEVEN-DAY MINIMUM | 0.00 | Jan 1 | 0.00 | Oct 1 | 0.00 | Oct 1 | 1992 |
| MAXIMUM PEAK FLOW | | | (a) | | b2760 | Apr 10 | 2001 |
| MAXIMUM PEAK STAGE | | | (a) | | c26.66 | Mar 25 | 1999 |
| ANNUAL RUNOFF (AC-FT) | 57560 | | 0.00 | | 62750 | | |
| 10 PERCENT EXCEEDS | 74 | | 0.00 | | 101 | | |
| 50 PERCENT EXCEEDS | 0.00 | | 0.00 | | 0.00 | | |
| 90 PERCENT EXCEEDS | 0.00 | | 0.00 | | 0.00 | | |

a No flow routed through diversion channel
b Gage height, 25.01 ft
c From high-water mark, backwater from closure of diversion channel

## 05059480 SHEYENNE RIVER DIVERSION AT WEST FARGO, ND

LOCATION.--Lat 46°53'15", long 96°55'09", in NE$^1/_4$NE$^1/_4$NW$^1/_4$ 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, and 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 876.78 ft above National Geodetic Vertical Datum of 1929. Datum incorrectly set 13.56 ft lower from Oct. 1, 1996 to Sept. 30, 1999. Prior to Oct. 1, 1996, at datum 6.78 ft lower.

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | e0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 8.8 |
| 2 | 0.00 | 4.1 | 0.00 | e0.00 | e0.00 | e0.00 | e0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 9.1 |
| 3 | 0.00 | 35 | 0.00 | e0.00 | e0.00 | e0.00 | e0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6.8 |
| 4 | 0.00 | 34 | 0.00 | e0.00 | e0.00 | e0.00 | e0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6.7 |
| 5 | 0.00 | 27 | 0.00 | e0.00 | e0.00 | e0.00 | e0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 8.4 |
| 6 | 0.00 | 22 | e0.00 | e0.00 | e0.00 | e0.00 | e0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 8.9 |
| 7 | 0.00 | 18 | e0.00 | e0.00 | e0.00 | e0.00 | e0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 8.1 |
| 8 | 0.00 | 11 | e0.00 | e0.00 | e0.00 | e0.00 | e0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6.5 |
| 9 | 0.00 | 8.3 | e0.00 | e0.00 | e0.00 | e0.00 | e0.00 | 0.00 | 129 | 0.49 | 0.00 | 8.4 |
| 10 | 0.00 | 2.7 | e0.00 | e0.00 | e0.00 | e0.00 | e0.00 | 0.09 | 176 | 55 | 0.00 | 12 |
| 11 | 0.00 | 0.21 | e0.00 | e0.00 | e0.00 | e0.00 | e0.00 | 2.6 | 95 | 119 | 0.00 | e6.5 |
| 12 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | e0.00 | 3.4 | 36 | 96 | 0.00 | e3.0 |
| 13 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | e0.00 | e0.00 | 1.0 | 4.1 | 60 | 0.00 | e1.0 |
| 14 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | e0.00 | e0.00 | 0.00 | 0.00 | 29 | 0.00 | 0.00 |
| 15 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | e0.00 | e0.00 | 0.02 | 0.00 | 7.8 | 0.00 | 0.00 |
| 16 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | e0.00 | 0.12 | 0.00 | 0.08 | 0.27 | 0.00 |
| 17 | 16 | 0.00 | e0.00 | e0.00 | e0.00 | e0.00 | e0.00 | 25 | 0.00 | 0.00 | 2.0 | 0.00 |
| 18 | 13 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | e0.00 | 16 | 0.00 | 0.00 | 0.44 | 0.00 |
| 19 | 0.42 | 0.00 | e0.00 | e0.00 | e0.00 | e0.00 | e0.00 | 48 | 0.00 | 0.00 | 7.1 | 0.00 |
| 20 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | e0.00 | e0.00 | 116 | 0.00 | 0.00 | 25 | 0.00 |
| 21 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | e0.00 | 121 | 0.00 | 0.00 | 25 | 0.00 |
| 22 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | e0.00 | 117 | 0.00 | 0.00 | 16 | 0.00 |
| 23 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | e0.00 | e0.00 | 87 | 1.1 | 0.00 | 6.4 | 0.00 |
| 24 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | e0.00 | 24 | 15 | 0.00 | 0.65 | 0.00 |
| 25 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | e0.00 | 13 | 11 | 0.00 | 0.00 | 0.00 |
| 26 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | e0.00 | 6.8 | 2.8 | 0.00 | 0.00 | 0.00 |
| 27 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | 0.00 | 1.3 | 0.07 | 0.00 | 0.00 | 0.00 |
| 28 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29 | 0.00 | 0.00 | 0.00 | e0.00 | --- | e0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.74 | 0.00 |
| 30 | 0.00 | 0.00 | 0.00 | e0.00 | --- | e0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6.2 | 0.00 |
| 31 | 0.00 | --- | 0.00 | e0.00 | --- | e0.00 | --- | 0.00 | --- | 0.00 | 11 | --- |
| TOTAL | 29.42 | 162.31 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 582.33 | 470.08 | 367.37 | 100.80 | 94.20 |
| MEAN | 0.949 | 5.410 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 18.78 | 15.67 | 11.85 | 3.252 | 3.140 |
| MAX | 16 | 35 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 121 | 176 | 119 | 25 | 12 |
| MIN | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| AC-FT | 58 | 322 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1160 | 932 | 729 | 200 | 187 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 17.45 | 30.51 | 1.161 | 0.000 | 14.86 | 413.0 | 1522 | 811.6 | 259.1 | 334.7 | 267.7 | 52.66 |
| MAX | 127 | 138 | 11.6 | 0.000 | 90.2 | 1111 | 3288 | 2937 | 834 | 1000 | 2144 | 292 |
| (WY) | 1995 | 2001 | 1999 | 1993 | 1996 | 1995 | 1997 | 1997 | 2000 | 1993 | 1993 | 1995 |
| MIN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.97 | 0.000 | 0.000 |
| (WY) | 1993 | 1993 | 1993 | 1993 | 1993 | 2002 | 2000 | 1993 | 1993 | 1996 | 1994 | 1996 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1993 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 98185.58 | | 1806.51 | | | |
| ANNUAL MEAN | 269.0 | | 4.949 | | 310.9 | |
| HIGHEST ANNUAL MEAN | | | | | 549 | 1995 |
| LOWEST ANNUAL MEAN | | | | | 4.95 | 2002 |
| HIGHEST DAILY MEAN | 3510 | Apr 11 | 176 | Jun 10 | 4800 | Apr 19 1997 |
| LOWEST DAILY MEAN | 0.00 | Jan 1 | 0.00 | Oct 1 | 0.00 | Oct 1 1992 |
| ANNUAL SEVEN-DAY MINIMUM | 0.00 | Jan 1 | 0.00 | Oct 1 | 0.00 | Oct 1 1992 |
| MAXIMUM PEAK FLOW | | | 284 | Jun 9 | 4810 | Apr 19 1997 |
| MAXIMUM PEAK STAGE | | | 10.36 | Jun 9 | a22.90 | Apr 9 1997 |
| ANNUAL RUNOFF (AC-FT) | 194800 | | 3580 | | 225300 | |
| 10 PERCENT EXCEEDS | 711 | | 8.6 | | 950 | |
| 50 PERCENT EXCEEDS | 0.00 | | 0.00 | | 0.00 | |
| 90 PERCENT EXCEEDS | 0.00 | | 0.00 | | 0.00 | |

a Backwater from ice
e Estimated

## 05059500 SHEYENNE RIVER AT WEST FARGO, ND

LOCATION.--Lat 46°53'28", long 96°54'24", in SE$^1/_4$SE$^1/_4$ 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$^2$, approximately, of which about 5,780 mi$^2$ is probably noncontributing, including 3,800 mi$^2$ 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 National Geodetic Vertical Datum of 1929. 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 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 70 | e160 | e207 | e230 | e93 | e152 | e146 | e170 | e258 | e450 | 136 | 85 |
| 2 | 67 | e165 | e233 | e222 | e93 | e150 | e160 | e178 | e247 | e420 | 127 | 96 |
| 3 | 63 | e173 | e263 | e210 | e92 | e147 | e171 | e196 | e238 | e341 | 128 | 80 |
| 4 | 60 | e181 | e287 | e197 | e92 | e144 | e179 | e208 | e232 | e304 | 124 | 76 |
| 5 | 58 | e193 | e295 | e192 | e92 | e142 | e179 | e208 | e227 | e295 | 119 | 76 |
| 6 | 59 | e202 | e298 | e191 | e91 | e140 | e174 | e225 | e224 | e296 | 114 | 77 |
| 7 | 63 | e207 | e301 | e189 | e91 | e138 | e155 | e248 | e220 | e312 | 110 | 75 |
| 8 | 65 | e213 | e301 | e187 | e92 | e137 | e144 | e277 | e217 | e327 | 107 | 72 |
| 9 | 66 | e215 | e301 | e182 | e93 | e135 | e134 | e320 | 543 | e367 | 108 | 73 |
| 10 | 93 | e217 | e301 | e177 | e93 | e133 | e134 | e375 | 518 | 492 | 107 | 84 |
| 11 | e127 | e221 | e301 | e158 | e94 | e131 | e144 | e423 | 343 | 526 | 99 | 80 |
| 12 | e164 | e227 | e302 | e130 | e95 | e129 | e158 | 332 | 251 | 458 | 97 | 73 |
| 13 | e179 | e235 | e304 | e125 | e99 | e128 | e168 | e318 | 203 | 398 | 91 | 68 |
| 14 | e168 | e247 | e304 | e122 | e104 | e129 | e185 | e333 | 200 | e384 | 92 | 65 |
| 15 | e154 | e258 | e304 | e119 | e107 | e132 | 177 | e372 | 191 | e409 | 91 | 64 |
| 16 | e147 | e258 | e305 | e114 | e110 | e137 | 168 | e405 | 176 | e426 | 89 | 63 |
| 17 | e133 | e255 | e304 | e112 | e114 | e146 | 161 | e426 | 163 | e432 | 97 | 62 |
| 18 | e115 | e254 | e304 | e111 | e118 | e154 | e162 | e439 | e162 | e425 | 88 | 68 |
| 19 | e90 | e249 | e302 | e108 | e124 | e162 | e159 | e473 | e161 | e411 | 91 | 68 |
| 20 | e115 | e235 | e301 | e106 | e130 | e172 | e156 | 575 | e172 | e358 | 107 | 64 |
| 21 | e136 | e182 | e300 | e104 | e135 | e179 | e159 | 587 | e180 | e240 | 106 | 66 |
| 22 | e147 | e160 | e300 | e103 | e139 | e183 | e168 | 583 | e193 | 173 | 97 | 66 |
| 23 | e130 | e185 | e300 | e102 | e143 | e181 | e169 | 567 | e203 | e152 | 85 | 69 |
| 24 | e111 | e243 | e300 | e100 | e148 | e165 | e172 | 478 | 217 | 139 | 78 | 66 |
| 25 | e93 | e254 | e299 | e99 | e151 | e154 | e171 | 442 | e333 | 140 | 77 | 65 |
| 26 | e94 | e249 | e298 | e98 | e154 | e143 | e169 | 399 | e434 | 138 | 75 | 64 |
| 27 | e110 | e229 | e292 | e97 | e155 | e138 | e165 | 315 | e454 | 136 | 74 | 63 |
| 28 | e131 | e160 | e271 | e96 | e155 | e134 | e164 | e309 | e462 | 133 | 89 | 63 |
| 29 | e152 | e163 | e250 | e96 | --- | e131 | e163 | e294 | e473 | 132 | 102 | 63 |
| 30 | e155 | e175 | e242 | e95 | --- | e130 | e164 | e279 | e466 | 130 | 79 | 75 |
| 31 | e158 | --- | e236 | e94 | --- | e134 | --- | e269 | --- | 131 | 82 | --- |
| TOTAL | 3473 | 6365 | 8906 | 4266 | 3197 | 4510 | 4878 | 11023 | 8361 | 9475 | 3066 | 2129 |
| MEAN | 112.0 | 212.2 | 287.3 | 137.6 | 114.2 | 145.5 | 162.6 | 355.6 | 278.7 | 305.6 | 98.90 | 70.97 |
| MAX | 179 | 258 | 305 | 230 | 155 | 183 | 185 | 587 | 543 | 526 | 136 | 96 |
| MIN | 58 | 160 | 207 | 94 | 91 | 128 | 134 | 170 | 161 | 130 | 74 | 62 |
| AC-FT | 6890 | 12620 | 17670 | 8460 | 6340 | 8950 | 9680 | 21860 | 16580 | 18790 | 6080 | 4220 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1903 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 83.26 | 101.6 | 85.60 | 69.98 | 77.25 | 279.4 | 810.2 | 492.5 | 286.5 | 234.8 | 135.5 | 91.79 |
| MAX | 713 | 687 | 468 | 276 | 320 | 1184 | 3312 | 3235 | 1785 | 1373 | 2218 | 609 |
| (WY) | 1995 | 2001 | 2001 | 2001 | 2001 | 1999 | 1997 | 1997 | 1950 | 2000 | 1993 | 1999 |
| 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 |

05059500 SHEYENNE RIVER AT WEST FARGO, ND--Continued

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1903 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 219128 | | 69649 | | | |
| ANNUAL MEAN | 600.4 | | 190.8 | | 228.7 | |
| HIGHEST ANNUAL MEAN | | | | | 804 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 37.1 | 1934 |
| HIGHEST DAILY MEAN | 3510 | Apr 11 | 587 | May 21 | 4800 | Apr 19 1997 |
| LOWEST DAILY MEAN | 58 | Oct 5 | 58 | Oct 5 | a1.0 | Sep 23 1976 |
| ANNUAL SEVEN-DAY MINIMUM | 62 | Oct 3 | 62 | Oct 3 | 2.0 | Sep 17 1976 |
| MAXIMUM PEAK FLOW | | | b859 | Jun 9 | c4810 | Apr 19 1997 |
| MAXIMUM PEAK STAGE | | | d9.89 | Jun 9 | f22.90 | Apr 9 1997 |
| ANNUAL RUNOFF (AC-FT) | 434600 | | 138100 | | 165700 | |
| 10 PERCENT EXCEEDS | 1410 | | 342 | | 510 | |
| 50 PERCENT EXCEEDS | 323 | | 160 | | 82 | |
| 90 PERCENT EXCEEDS | 115 | | 77 | | 22 | |

a Caused by diversion to Red River of the North
b Combined flows from diversion channel and Sheyenne River
c All flow through diversion channel; gage height, 22.68 ft
d Maximum gage height in Sheyenne River
e Estimated
f Maximum gage height in diversion channel; backwater from ice

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1998 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 31... | 1335 | -- | -- | -- | -- | 1110 | 9.0 | 8.0 | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 08... | 0900 | -- | -- | -- | -- | 762 | 3.0 | .5 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 17... | 1500 | 161 | 8.2 | --e | 926 | 899 | -- | 6.0 | 340 | 78.0 | 36.0 | 7.70 | 2 |
| JUN | | | | | | | | | | | | | |
| 18... | 1140 | -- | -- | -- | -- | 1540 | 20.0 | 18.5 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 18... | 1035 | -- | -- | -- | -- | 1410 | 20.0 | 26.0 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 16... | 1510 | 86 | -- | -- | -- | -- | 16.0 | 16.5 | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 16... | 1140 | 60 | 8.3 | 8.3 | 1070 | 1060 | 26.0 | 21.5 | 390 | 85.0 | 44.0 | 9.80 | 2 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 31... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 17... | 69.0 | 30 | 272 | 22.0 | .20 | 210 | 228 | 612 | 586 | 3.0 | 40 | <1 | 60 |
| JUN | | | | | | | | | | | | | |
| 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 16... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 16... | 90.0 | 33 | 295 | 33.0 | .30 | 260 | 122 | 753 | 699 | 9.0 | 40 | 1 | 70 |

| Date | 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 | | | | | |
| 31... | -- | -- | -- | -- | -- |
| JAN | | | | | |
| 08... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 17... | 20 | <.10 | 2 | <1 | 380 |
| JUN | | | | | |
| 18... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 18... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 16... | -- | -- | -- | -- | -- |
| SEP | | | | | |
| 16... | 60 | <.10 | 4 | <1 | 490 |

< Less than
e Required equipment not functional/available

## 05059600 MAPLE RIVER NEAR HOPE, ND

LOCATION.--Lat 47°19'30", long 97°47'25", in NW$^1/_4$NW$^1/_4$ 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 Highways 32 and 38, and 3 mi west of Hope.

DRAINAGE AREA.--20.2 mi$^2$, of which about 2.8 mi$^2$ 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 National Geodetic Vertical Datum of 1929.

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 44 ft$^3$/s, July 13, gage height, 4.49 ft; maximum gage height, 4.65 ft, Mar. 31, backwater from ice; no flow many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | --- | --- | --- | --- | --- | e0.00 | e1.6 | 1.9 | 0.16 | 0.00 | 0.00 | 0.00 |
| 2 | --- | --- | --- | --- | --- | e0.00 | e1.5 | 1.8 | 0.08 | 0.00 | 0.00 | 0.00 |
| 3 | --- | --- | --- | --- | --- | e0.00 | e1.1 | 1.8 | 0.05 | 0.00 | 0.00 | 0.00 |
| 4 | --- | --- | --- | --- | --- | 0.00 | e0.90 | 1.7 | 0.12 | 0.00 | 0.00 | 0.00 |
| 5 | --- | --- | --- | --- | --- | e0.00 | e0.80 | 1.6 | 0.40 | 0.00 | 0.00 | 0.00 |
| 6 | --- | --- | --- | --- | --- | e0.00 | e0.60 | 1.7 | 0.03 | 0.00 | 0.00 | 0.00 |
| 7 | --- | --- | --- | --- | --- | e0.00 | e1.1 | 1.8 | 0.04 | 0.00 | 0.00 | 0.00 |
| 8 | --- | --- | --- | --- | --- | e0.00 | 1.5 | 4.8 | 0.03 | 0.00 | 0.00 | 0.00 |
| 9 | --- | --- | --- | --- | --- | e0.00 | e1.8 | 7.7 | 0.10 | 0.00 | 0.00 | 0.00 |
| 10 | --- | --- | --- | --- | --- | e0.00 | 2.5 | 6.6 | 0.18 | 0.55 | 0.00 | 0.00 |
| 11 | --- | --- | --- | --- | --- | e0.00 | 3.9 | 7.4 | 0.21 | 2.2 | 0.00 | 0.00 |
| 12 | --- | --- | --- | --- | --- | e0.00 | 3.7 | 7.5 | 0.19 | 5.5 | 0.00 | 0.00 |
| 13 | --- | --- | --- | --- | --- | e0.00 | 3.2 | 6.6 | 0.21 | 32 | 0.00 | 0.00 |
| 14 | --- | --- | --- | --- | --- | e0.00 | e3.0 | 6.0 | 0.21 | 8.2 | 0.00 | 0.00 |
| 15 | --- | --- | --- | --- | --- | e0.00 | 2.9 | 5.3 | 0.09 | 3.1 | 0.00 | 0.00 |
| 16 | --- | --- | --- | --- | --- | e0.00 | 2.7 | 4.3 | 0.0 | 1.7 | 0.00 | 0.00 |
| 17 | --- | --- | --- | --- | --- | e0.00 | 2.2 | 3.6 | 0.00 | 0.95 | 0.00 | 0.00 |
| 18 | --- | --- | --- | --- | --- | e0.00 | 5.2 | 3.1 | 0.04 | 1.0 | 0.00 | 0.00 |
| 19 | --- | --- | --- | --- | --- | e0.00 | 5.8 | 2.5 | 0.42 | 0.64 | 0.00 | 0.00 |
| 20 | --- | --- | --- | --- | --- | e0.00 | 4.9 | 2.0 | 0.49 | 0.26 | 0.00 | 0.00 |
| 21 | --- | --- | --- | --- | --- | e0.00 | 5.2 | 1.5 | 0.28 | 0.19 | 0.00 | 0.00 |
| 22 | --- | --- | --- | --- | --- | e0.00 | 5.2 | 1.4 | 0.21 | 0.05 | 0.00 | 0.00 |
| 23 | --- | --- | --- | --- | --- | e0.00 | 4.3 | 1.4 | 0.58 | 0.00 | e0.00 | 0.00 |
| 24 | --- | --- | --- | --- | --- | e0.00 | 3.8 | 0.80 | 0.33 | 0.00 | e0.00 | 0.00 |
| 25 | --- | --- | --- | --- | --- | e0.00 | 2.7 | 0.83 | 0.29 | 0.00 | e0.00 | 0.00 |
| 26 | --- | --- | --- | --- | --- | e0.20 | 2.2 | 0.75 | 0.28 | 0.00 | e0.00 | 0.00 |
| 27 | --- | --- | --- | --- | --- | e0.40 | 2.2 | 0.59 | 0.16 | 0.00 | e0.00 | 0.00 |
| 28 | --- | --- | --- | --- | --- | e0.70 | 2.1 | 0.45 | 0.02 | 0.00 | e0.00 | 0.00 |
| 29 | --- | --- | --- | --- | --- | e0.90 | 2.5 | 0.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30 | --- | --- | --- | --- | --- | e1.2 | 2.3 | 0.36 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31 | --- | --- | --- | --- | --- | e1.6 | --- | 0.20 | --- | 0.00 | 0.00 | --- |
| TOTAL | --- | --- | --- | --- | --- | 5.00 | 83.40 | 88.33 | 5.20 | 56.34 | 0.00 | 0.00 |
| MEAN | --- | --- | --- | --- | --- | 0.161 | 2.780 | 2.849 | 0.173 | 1.817 | 0.000 | 0.000 |
| MAX | --- | --- | --- | --- | --- | 1.6 | 5.8 | 7.7 | 0.58 | 32 | 0.00 | 0.00 |
| MIN | --- | --- | --- | --- | --- | 0.00 | 0.60 | 0.20 | 0.00 | 0.00 | 0.00 | 0.00 |
| AC-FT | --- | --- | --- | --- | --- | 9.9 | 165 | 175 | 10 | 112 | 0.00 | 0.00 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 0.060 | 0.003 | 0.000 | 0.000 | 0.000 | 10.77 | 15.58 | 3.508 | 2.892 | 4.682 | 0.855 | 0.473 |
| MAX | 1.07 | 0.054 | 0.000 | 0.000 | 0.006 | 41.8 | 63.8 | 44.0 | 34.5 | 65.3 | 13.7 | 15.3 |
| (WY) | 1966 | 1966 | 1965 | 1965 | 1981 | 1987 | 1997 | 1999 | 1968 | 1993 | 2001 | 1994 |
| MIN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.007 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| (WY) | 1965 | 1965 | 1965 | 1965 | 1965 | 1969 | 1991 | 1980 | 1973 | 1973 | 1967 | 1967 |

| SUMMARY STATISTICS | WATER YEARS 1965 - 2002 | |
|---|---|---|
| ANNUAL MEAN | a2.822 | |
| HIGHEST ANNUAL MEAN | a5.55 | 1969 |
| LOWEST ANNUAL MEAN | a0.002 | 1981 |
| HIGHEST DAILY MEAN | 560 | Mar 31 1997 |
| LOWEST DAILY MEAN | 0.00 | Oct 1 1964 |
| ANNUAL SEVEN-DAY MINIMUM | 0.00 | Oct 1 1964 |
| MAXIMUM PEAK FLOW | b900 | Apr 18 1979 |
| MAXIMUM PEAK STAGE | c8.83 | Mar 31 1997 |
| ANNUAL RUNOFF (AC-FT) | a2040 | |
| 10 PERCENT EXCEEDS | 2.5 | |
| 50 PERCENT EXCEEDS | 0.00 | |
| 90 PERCENT EXCEEDS | 0.00 | |

a Based on complete water years only (1965-82)
b Gage height, 5.86 ft; backwater from ice
c Backwater from ice
e Estimated

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APR | | | | | | | | | | | | | |
| 09... | 1130 | 1.7 | 7.8 | 7.4 | 865 | 777 | .5 | 6.5 | 300 | 61.0 | 36.0 | 11.0 | 1 |
| 19... | 1055 | 5.7 | -- | -- | -- | 2120 | .0 | 3.0 | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 07... | 1450 | 1.8 | -- | -- | -- | 2500 | 4.0 | 5.0 | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 05... | 1810 | .10 | -- | -- | -- | 1660 | -- | 25.5 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 06... | 0955 | .0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APR | | | | | | | | | | | | | |
| 09... | 56.0 | 28 | 163 | 21.0 | .10 | 250 | 2.74 | 608 | 534 | 3.0 | 50 | <1 | 40 |
| 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 07... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 05... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 06... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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... | 520 | <.10 | <1 | 1 | 240 |
| 19... | -- | -- | -- | -- | -- |
| MAY | | | | | |
| 07... | -- | -- | -- | -- | -- |
| JUN | | | | | |
| 05... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 06... | -- | -- | -- | -- | -- |

< Less than

## 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 $mi^2$, of which about 47 $mi^2$ 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 National Geodetic Vertical Datum of 1929. 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 fair except for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5.5 | 7.8 | e3.0 | e0.92 | e0.96 | e0.96 | e3.4 | 52 | 4.9 | 3.2 | 6.8 | 0.77 |
| 2 | 5.4 | 8.7 | e2.9 | e0.92 | e0.96 | e0.95 | e3.6 | 48 | 3.7 | 2.9 | 5.0 | 1.0 |
| 3 | 4.1 | 13 | e2.9 | e0.92 | e0.96 | e0.94 | e3.9 | 44 | 3.2 | 2.1 | 4.5 | 2.6 |
| 4 | 3.3 | 13 | e2.9 | e0.92 | e0.96 | e0.92 | e4.4 | 43 | 2.7 | 1.9 | 6.5 | 9.9 |
| 5 | 3.0 | 18 | e2.8 | e0.92 | e0.96 | e0.94 | e5.2 | 43 | 2.3 | 2.0 | 7.3 | 22 |
| 6 | 2.8 | 21 | e2.8 | e0.96 | e0.98 | e0.95 | 5.9 | 42 | 2.1 | 1.8 | 6.7 | 21 |
| 7 | 2.5 | 23 | e2.8 | e0.97 | e1.0 | e0.96 | 8.4 | 39 | 2.0 | 5.1 | 5.7 | 16 |
| 8 | 2.4 | 21 | e3.0 | e0.97 | e1.1 | e1.1 | 6.7 | 34 | 1.8 | 18 | 4.7 | 11 |
| 9 | 2.3 | 19 | e2.9 | e1.2 | e1.2 | e1.5 | 5.8 | 35 | 69 | 4.8 | 4.1 | 8.9 |
| 10 | 3.9 | 17 | e2.8 | e1.8 | e1.2 | e2.4 | 7.9 | 40 | 78 | 3.7 | 3.4 | 7.7 |
| 11 | 4.1 | 17 | e2.7 | e1.6 | e1.3 | e3.5 | 11 | 42 | 57 | 3.7 | 2.6 | 7.1 |
| 12 | 3.6 | 22 | e2.6 | e1.7 | e1.4 | e5.4 | 20 | 46 | 22 | 2.6 | 2.2 | 6.3 |
| 13 | 2.7 | 23 | e2.4 | e2.2 | e1.3 | e7.9 | 28 | 49 | 18 | 14 | 1.7 | 5.9 |
| 14 | 2.2 | 22 | e2.1 | e2.4 | e1.3 | e8.0 | 33 | 50 | 11 | 17 | 1.5 | 5.1 |
| 15 | 2.5 | 21 | e2.0 | e2.2 | e1.2 | e7.9 | 33 | 50 | 7.9 | e22 | 1.4 | 4.4 |
| 16 | 2.7 | 20 | e1.9 | e2.0 | e1.2 | e7.9 | 34 | 47 | e6.1 | 44 | 1.4 | 4.0 |
| 17 | 2.9 | 18 | e1.9 | e1.8 | e1.4 | e7.0 | 39 | 43 | e3.2 | 53 | 1.5 | 4.5 |
| 18 | 2.7 | 18 | e1.8 | e1.6 | e1.5 | e6.5 | 41 | 40 | e2.0 | 78 | 1.0 | 5.9 |
| 19 | 2.8 | 16 | e1.8 | e1.5 | e1.6 | e5.8 | 39 | 36 | e1.2 | 110 | 0.94 | 6.8 |
| 20 | 2.4 | 15 | e1.7 | e1.4 | e1.7 | e5.3 | 37 | 30 | 0.84 | 126 | 0.90 | 5.5 |
| 21 | 2.3 | 12 | e1.6 | e1.4 | e1.7 | e4.8 | 40 | 25 | 0.68 | 112 | 0.87 | 5.0 |
| 22 | 2.2 | 7.7 | e1.5 | e1.3 | e1.7 | e4.5 | 34 | 21 | 0.60 | 89 | 0.90 | 5.4 |
| 23 | 2.2 | 7.0 | e1.4 | e1.3 | e1.6 | e4.3 | 30 | 20 | 0.76 | 71 | 0.88 | 5.3 |
| 24 | 2.0 | 6.9 | e1.3 | e1.2 | e1.5 | e4.1 | 29 | 17 | 0.71 | 56 | 0.86 | 5.5 |
| 25 | 1.8 | 5.8 | e1.2 | e1.2 | e1.4 | e3.9 | 50 | 15 | 42 | 44 | 0.86 | 5.8 |
| 26 | 1.8 | 3.5 | e1.1 | e1.2 | e1.3 | e3.7 | 51 | 13 | 67 | 34 | 0.81 | 6.0 |
| 27 | 2.1 | e3.5 | e1.1 | e1.2 | e1.1 | e3.9 | 54 | 11 | 49 | 27 | 0.83 | 6.4 |
| 28 | 2.4 | e3.3 | e1.1 | e1.2 | e1.0 | e4.4 | 53 | 11 | 31 | 20 | 0.85 | 7.7 |
| 29 | 2.3 | e3.1 | e1.0 | e1.0 | --- | e4.3 | 54 | 9.1 | 18 | 16 | 0.84 | 7.1 |
| 30 | 4.7 | e3.0 | e0.98 | e1.0 | --- | e3.5 | 56 | 8.9 | e8.0 | 12 | 0.85 | 6.4 |
| 31 | 7.7 | --- | e0.95 | e0.98 | --- | e3.4 | --- | 6.0 | --- | 9.3 | 0.96 | --- |
| TOTAL | 95.3 | 409.3 | 62.93 | 41.88 | 35.48 | 121.62 | 821.2 | 1010.0 | 516.69 | 1006.1 | 79.35 | 216.97 |
| MEAN | 3.074 | 13.64 | 2.030 | 1.351 | 1.267 | 3.923 | 27.37 | 32.58 | 17.22 | 32.45 | 2.560 | 7.232 |
| MAX | 7.7 | 23 | 3.0 | 2.4 | 1.7 | 8.0 | 56 | 52 | 78 | 126 | 7.3 | 22 |
| MIN | 1.8 | 3.0 | 0.95 | 0.92 | 0.96 | 0.92 | 3.4 | 6.0 | 0.60 | 1.8 | 0.81 | 0.77 |
| AC-FT | 189 | 812 | 125 | 83 | 70 | 241 | 1630 | 2000 | 1020 | 2000 | 157 | 430 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 10.48 | 7.741 | 4.717 | 2.676 | 5.909 | 145.6 | 285.5 | 70.56 | 45.23 | 64.32 | 22.05 | 13.01 |
| MAX | 211 | 63.6 | 50.4 | 7.78 | 123 | 622 | 2162 | 669 | 424 | 875 | 506 | 122 |
| (WY) | 1995 | 1995 | 1999 | 1999 | 1998 | 1966 | 1997 | 1999 | 1975 | 1993 | 1993 | 1999 |
| MIN | 1.52 | 1.49 | 1.32 | 1.21 | 1.27 | 2.10 | 2.06 | 2.19 | 1.41 | 1.44 | 1.33 | 1.28 |
| (WY) | 1993 | 1961 | 1961 | 1969 | 2002 | 1969 | 1991 | 1992 | 1961 | 1961 | 1961 | 1984 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1956 - 2002 | | |
|---|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 32905.83 | | 4416.82 | | | | |
| ANNUAL MEAN | 90.15 | | 12.10 | | 56.74 | | |
| HIGHEST ANNUAL MEAN | | | | | 242 | | 1997 |
| LOWEST ANNUAL MEAN | | | | | 2.14 | | 1990 |
| HIGHEST DAILY MEAN | 1860 | Apr 10 | 126 | Jul 20 | 5450 | Jun 30 | 1975 |
| LOWEST DAILY MEAN | 0.95 | Dec 31 | 0.60 | Jun 22 | 0.10 | Dec 7 | 1963 |
| ANNUAL SEVEN-DAY MINIMUM | 1.1 | Dec 25 | 0.84 | Aug 24 | 0.67 | Dec 7 | 1963 |
| MAXIMUM PEAK FLOW | | | 186 | Jun 9 | 7610 | Jun 30 | 1975 |
| MAXIMUM PEAK STAGE | | | 4.74 | Jun 9 | 15.41 | Jun 30 | 1975 |
| ANNUAL RUNOFF (AC-FT) | 65270 | | 8760 | | 41110 | | |
| 10 PERCENT EXCEEDS | 232 | | 40 | | 87 | | |
| 50 PERCENT EXCEEDS | 9.1 | | 3.7 | | 3.9 | | |
| 90 PERCENT EXCEEDS | 2.1 | | 0.96 | | 1.8 | | |

e Estimated

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 03... | 1330 | 4.2 | --e | 8.0 | 1890 | 1800 | 11.5 | 13.0 | 730 | 160 | 80.0 | 15.0 | 2 |
| 29... | 1115 | 2.2 | -- | -- | -- | 1740 | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 10... | 1400 | 1.6 | -- | -- | -- | 847 | 1.5 | 2.0 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 13... | 1400 | 7.2 | -- | -- | -- | 1780 | -- | 2.0 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 10... | 1320 | 8.7 | 7.7 | 7.5 | 991 | 948 | 6.5 | 2.0 | 350 | 80.0 | 37.0 | 10.0 | 2 |
| JUN | | | | | | | | | | | | | |
| 05... | 1400 | 2.4 | -- | -- | -- | 947 | -- | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 17... | 1500 | 4.7 | 7.9 | 7.8 | 1770 | 1800 | 30.5 | 19.5 | 740 | 180 | 70.0 | 14.0 | 2 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 03... | 150 | 30 | 358 | 94.0 | .30 | 560 | 15.1 | 1330 | 1280 | 6.0 | 100 | 2 | 120 |
| 29... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 10... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 10... | 71.0 | 30 | 200 | 39.0 | .10 | 280 | 15.9 | 678 | 638 | 3.0 | 60 | <1 | 60 |
| JUN | | | | | | | | | | | | | |
| 05... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 17... | 140 | 29 | 364 | 110 | .20 | 540 | 15.6 | 1230 | 1270 | 4.0 | 120 | <1 | 110 |

| Date | 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... | 490 | <.10 | 2 | 4 | 680 |
| 29... | -- | -- | -- | -- | -- |
| JAN | | | | | |
| 10... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 13... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 10... | 350 | <.10 | <1 | <1 | 350 |
| JUN | | | | | |
| 05... | -- | -- | -- | -- | -- |
| SEP | | | | | |
| 17... | 1200 | .10 | 3 | 1 | 760 |

< Less than
e Required equipment not functional/available

## 05060000 MAPLE RIVER NEAR MAPLETON, ND

LOCATION.--Lat 46°52'00", long 97°06'20", in SW$^1/_4$NE$^1/_4$ sec.10, T.139 N., R.51 W., Cass County, Hydrologic Unit 09020204, on right bank upstream of county bridge and 3 mi southwest of Mapleton.

DRAINAGE AREA.-- 1,450 mi$^2$, approximately, of which 70 mi$^2$ is probably noncontributing.

### WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1958 to September 1975, March 1, 2001, to current year (seasonal).

GAGE.--Water-stage recorder and rubble masonary dam. Datum of gage is 885.20 ft above National Geodetic Vertical Datum of 1929, revised. Prior to Oct. 1, 2001, at datum 8.33 ft higher.

REMARKS.--Records poor.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 868 ft$^3$/s, June 10, gage height, 13.89 ft; minimum daily discharge, 8.0 ft$^3$/s, Mar. 14 and Sept. 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | --- | --- | --- | --- | --- | e12 | e107 | 86 | 23 | 146 | 101 | 18 |
| 2 | --- | --- | --- | --- | --- | e12 | e94 | 83 | 19 | 119 | 92 | 23 |
| 3 | --- | --- | --- | --- | --- | e11 | e84 | 84 | 18 | 98 | 83 | 31 |
| 4 | --- | --- | --- | --- | --- | e11 | e81 | 77 | 16 | 81 | 75 | 27 |
| 5 | --- | --- | --- | --- | --- | e10 | e79 | 73 | 14 | 78 | 70 | 28 |
| 6 | --- | --- | --- | --- | --- | e9.7 | e81 | 66 | 14 | 68 | 67 | 30 |
| 7 | --- | --- | --- | --- | --- | e8.9 | e99 | 67 | 11 | 74 | 74 | 24 |
| 8 | --- | --- | --- | --- | --- | e8.4 | 127 | 72 | 10 | 107 | 71 | 20 |
| 9 | --- | --- | --- | --- | --- | e7.8 | 154 | 85 | 77 | 198 | 71 | 37 |
| 10 | --- | --- | --- | --- | --- | e7.4 | 183 | 92 | 721 | 169 | 67 | 40 |
| 11 | --- | --- | --- | --- | --- | e6.9 | 163 | 88 | 673 | 230 | 62 | 43 |
| 12 | --- | --- | --- | --- | --- | e7.2 | 133 | 88 | 306 | 265 | 59 | 33 |
| 13 | --- | --- | --- | --- | --- | e7.5 | 134 | 89 | 198 | 219 | 56 | 25 |
| 14 | --- | --- | --- | --- | --- | e8.0 | e98 | 93 | e147 | 186 | 52 | 19 |
| 15 | --- | --- | --- | --- | --- | e9.3 | e81 | 89 | e131 | 166 | 48 | 13 |
| 16 | --- | --- | --- | --- | --- | e9.9 | e81 | 84 | e102 | 151 | 44 | 11 |
| 17 | --- | --- | --- | --- | --- | e14 | e92 | 85 | e82 | 150 | 45 | 12 |
| 18 | --- | --- | --- | --- | --- | e14 | 94 | 82 | e64 | 146 | 43 | 14 |
| 19 | --- | --- | --- | --- | --- | e14 | 96 | 78 | e57 | 167 | 41 | 24 |
| 20 | --- | --- | --- | --- | --- | e12 | 94 | 77 | e52 | 193 | 43 | 46 |
| 21 | --- | --- | --- | --- | --- | e11 | 91 | 73 | e50 | 187 | 39 | 33 |
| 22 | --- | --- | --- | --- | --- | e11 | 89 | 68 | 50 | 189 | 35 | 30 |
| 23 | --- | --- | --- | --- | --- | e11 | 87 | 59 | 91 | 198 | 34 | 22 |
| 24 | --- | --- | --- | --- | --- | e11 | 84 | 59 | 147 | 194 | 32 | 16 |
| 25 | --- | --- | --- | --- | --- | e12 | 80 | 52 | 142 | 182 | 32 | 16 |
| 26 | --- | --- | --- | --- | --- | e14 | 77 | 46 | 143 | 172 | 30 | 12 |
| 27 | --- | --- | --- | --- | --- | e20 | 78 | 43 | 127 | 165 | 29 | 11 |
| 28 | --- | --- | --- | --- | --- | e50 | 83 | 40 | 152 | 150 | 27 | 8.0 |
| 29 | --- | --- | --- | --- | --- | e79 | 88 | 37 | 183 | 135 | 30 | 9.9 |
| 30 | --- | --- | --- | --- | --- | e96 | 89 | 33 | 169 | 120 | 26 | 9.4 |
| 31 | --- | --- | --- | --- | --- | e102 | --- | 26 | --- | 109 | 20 | --- |
| TOTAL | --- | --- | --- | --- | --- | 618.0 | 3001 | 2174 | 3989 | 4812 | 1598 | 685.3 |
| MEAN | --- | --- | --- | --- | --- | 19.94 | 100.0 | 70.13 | 133.0 | 155.2 | 51.55 | 22.84 |
| MAX | --- | --- | --- | --- | --- | 102 | 183 | 93 | 721 | 265 | 101 | 46 |
| MIN | --- | --- | --- | --- | --- | 6.9 | 77 | 26 | 10 | 68 | 20 | 8.0 |
| AC-FT | --- | --- | --- | --- | --- | 1230 | 5950 | 4310 | 7910 | 9540 | 3170 | 1360 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1958 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 14.28 | 12.15 | 4.438 | 1.401 | 9.527 | 186.7 | 542.6 | 150.8 | 97.94 | 198.0 | 32.53 | 20.61 |
| MAX | 51.1 | 36.2 | 12.2 | 4.30 | 178 | 1040 | 1708 | 428 | 478 | 2375 | 267 | 65.8 |
| (WY) | 1996 | 1972 | 1963 | 1973 | 1997 | 1966 | 1969 | 1970 | 1970 | 1975 | 1962 | 1962 |
| MIN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 13.9 | 8.35 | 1.71 | 0.000 | 0.000 | 0.000 |
| (WY) | 1961 | 1961 | 1961 | 1959 | 1959 | 1969 | 1959 | 1959 | 1961 | 1961 | 1960 | 1959 |

| SUMMARY STATISTICS | WATER YEARS 1958 - 2002 | |
|---|---|---|
| ANNUAL MEAN | a97.69 | |
| HIGHEST ANNUAL MEAN | a374 | 1975 |
| LOWEST ANNUAL MEAN | a5.98 | 1961 |
| HIGHEST DAILY MEAN | 11300 | Jul 2 1975 |
| LOWEST DAILY MEAN | 0.00 | Dec 13 1958 |
| ANNUAL SEVEN-DAY MINIMUM | 0.00 | Dec 13 1958 |
| MAXIMUM PEAK FLOW | 11600 | Jul 2 1975 |
| MAXIMUM PEAK STAGE | 23.03 | Jul 2 1975 |
| ANNUAL RUNOFF (AC-FT) | a70770 | |
| 10 PERCENT EXCEEDS | 150 | |
| 50 PERCENT EXCEEDS | 8.0 | |
| 90 PERCENT EXCEEDS | 0.00 | |

a Based on complete water years only (1959-75)
e Estimated

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 04... | 0900 | 20 | --e | 8.2 | 1740 | 1630 | -- | -- | 600 | 130 | 67.0 | 13.0 | 3 |
| MAR | | | | | | | | | | | | | |
| 14... | 1040 | 7.9 | -- | -- | -- | 1370 | -- | .0 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 12... | 0845 | 138 | -- | -- | -- | 1070 | 6.0 | 2.5 | -- | -- | -- | -- | -- |
| 26... | 0845 | 77 | -- | -- | -- | 1100 | .0 | 3.0 | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 10... | 1640 | 852 | -- | -- | -- | --e | -- | 21.5 | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 17... | 1330 | 13 | -- | -- | -- | 1500 | 25.5 | 15.5 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 04... | 150 | 35 | 349 | 93.0 | .30 | 510 | 67.4 | 1260 | 1170 | 9.0 | 40 | 2 | 100 |
| MAR | | | | | | | | | | | | | |
| 14... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 12... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 26... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 10... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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 | | | | | |
| 04... | 20 | <.10 | 3 | 3 | 570 |
| MAR | | | | | |
| 14... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 12... | -- | -- | -- | -- | -- |
| 26... | -- | -- | -- | -- | -- |
| JUN | | | | | |
| 10... | -- | -- | -- | -- | -- |
| SEP | | | | | |
| 17... | -- | -- | -- | -- | -- |

< Less than
e Required equipment not functional/available

## 05060100 MAPLE RIVER BELOW MAPLETON, ND

LOCATION.--Lat 46°54'19", long 97°03'08", in NW$^1/_4$NW$^1/_4$NW$^1/_4$ sec.31, T.140 N., R.50 W., Cass County, Hydrologic Unit 09020205, on left bank just downstream from bridge on county highway 1.0 mi north of Mapleton.

DRAINAGE AREA.-- 1,480 mi$^2$, approximately, of which 70 mi$^2$ 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". Record not equivalent at extreme high flows to station 05060000 (site 9 mi upstream), which was operated for water years 1959 to 1975, and operated as a seasonal gage beginnning in March 2001.

GAGE.--Water-stage recorder. Datum of gage is 890.00 ft above National Geodetic Vertical Datum of 1929. Feb. 16, 1944, to Sept. 30, 1958, nonrecording gage at site 2 mi upstream at datum 3.33 ft lower.

REMARKS.--Records poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 29 | 29 | e13 | e14 | e10 | e14 | e110 | 96 | 30 | 175 | 113 | 28 |
| 2 | 30 | 41 | e13 | e14 | e10 | e13 | e95 | 90 | 30 | 146 | 102 | 26 |
| 3 | 29 | 46 | e14 | e14 | e10 | e13 | e90 | 89 | 29 | 118 | 94 | 28 |
| 4 | 21 | 43 | e18 | e14 | e10 | e12 | e85 | 85 | 26 | 101 | 86 | 32 |
| 5 | e20 | 41 | e18 | e14 | e10 | e12 | e82 | 81 | 23 | 89 | 80 | 30 |
| 6 | 19 | 39 | e18 | e14 | e10 | e11 | e82 | 79 | 21 | 80 | 75 | 31 |
| 7 | 20 | 36 | e18 | e15 | e11 | e10 | e90 | 74 | 20 | 77 | 76 | 29 |
| 8 | 20 | 34 | e18 | e15 | e12 | e9.0 | e120 | 81 | 21 | 91 | 74 | 25 |
| 9 | 18 | 34 | e18 | e16 | e12 | e9.0 | e155 | 78 | 38 | 195 | 72 | 29 |
| 10 | 23 | 35 | e17 | e17 | e13 | e8.0 | e195 | 96 | e680 | 241 | 71 | 40 |
| 11 | 31 | 37 | e17 | e18 | e13 | e8.0 | e175 | 101 | e710 | 235 | 69 | 45 |
| 12 | 43 | 37 | e17 | e19 | e14 | e8.0 | e160 | 98 | 364 | 305 | 65 | 42 |
| 13 | 42 | 36 | e17 | e20 | e14 | e8.0 | e140 | 98 | 211 | 255 | 57 | 33 |
| 14 | 33 | 34 | e17 | e20 | e14 | e9.0 | 104 | 100 | 154 | 210 | 50 | 26 |
| 15 | 27 | 34 | e17 | e20 | e14 | e11 | 86 | 102 | 149 | 185 | 45 | 20 |
| 16 | 24 | 35 | e17 | e19 | e15 | e12 | 87 | 96 | 106 | 166 | 43 | 15 |
| 17 | 23 | 38 | e17 | e19 | e15 | e16 | 92 | 91 | 83 | 164 | 39 | 11 |
| 18 | 21 | 40 | e17 | e19 | e16 | e17 | 111 | 89 | 70 | 161 | 38 | 14 |
| 19 | 19 | 37 | e17 | e19 | e16 | e16 | 109 | 87 | 65 | 167 | 38 | 19 |
| 20 | 19 | 37 | e17 | e18 | e16 | e14 | 106 | 83 | 58 | 207 | 37 | 31 |
| 21 | 19 | 38 | e17 | e18 | e16 | e13 | 102 | 77 | 58 | 213 | 38 | 41 |
| 22 | 21 | 43 | e16 | e18 | e18 | e13 | 99 | 71 | 59 | 208 | 35 | 34 |
| 23 | 23 | 39 | e16 | e17 | e18 | e13 | 94 | 65 | 97 | 220 | 32 | 31 |
| 24 | 21 | 35 | e15 | e17 | e18 | e13 | 87 | 61 | 154 | 222 | 30 | 26 |
| 25 | 21 | 32 | e15 | e17 | e17 | e14 | 85 | 53 | 158 | 208 | 28 | 21 |
| 26 | 24 | 29 | e15 | e17 | e16 | e16 | 85 | 47 | 173 | 194 | 28 | 17 |
| 27 | 22 | 18 | e14 | e14 | e15 | e20 | 92 | 46 | 154 | 183 | 25 | 14 |
| 28 | 22 | e13 | e14 | e12 | e14 | e60 | 87 | 46 | 162 | 173 | 24 | 11 |
| 29 | 22 | e13 | e14 | e12 | --- | e88 | 91 | 42 | 208 | 151 | 30 | 7.8 |
| 30 | 24 | e13 | e14 | e11 | --- | e95 | 95 | 34 | 203 | 136 | 34 | 7.1 |
| 31 | 28 | --- | e14 | e10 | --- | e110 | --- | 31 | --- | 123 | 29 | --- |
| TOTAL | 758 | 1016 | 499 | 501 | 387 | 685.0 | 3191 | 2367 | 4314 | 5399 | 1657 | 763.9 |
| MEAN | 24.45 | 33.87 | 16.10 | 16.16 | 13.82 | 22.10 | 106.4 | 76.35 | 143.8 | 174.2 | 53.45 | 25.46 |
| MAX | 43 | 46 | 18 | 20 | 18 | 110 | 195 | 102 | 710 | 305 | 113 | 45 |
| MIN | 18 | 13 | 13 | 10 | 10 | 8.0 | 82 | 31 | 20 | 77 | 24 | 7.1 |
| AC-FT | 1500 | 2020 | 990 | 994 | 768 | 1360 | 6330 | 4690 | 8560 | 10710 | 3290 | 1520 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 16.09 | 26.18 | 12.81 | 4.603 | 18.40 | 224.6 | 569.2 | 180.7 | 138.9 | 79.97 | 18.26 | 33.39 |
| MAX | 96.5 | 256 | 125 | 20.7 | 288 | 1376 | 2956 | 1035 | 867 | 373 | 57.0 | 401 |
| (WY) | 1999 | 2001 | 1999 | 1999 | 1998 | 1998 | 1997 | 1999 | 2000 | 2000 | 2001 | 1999 |
| MIN | 0.000 | 1.75 | 0.63 | 0.016 | 0.000 | 0.000 | 21.0 | 6.30 | 6.52 | 2.90 | 0.042 | 0.000 |
| (WY) | 1953 | 1953 | 1956 | 1956 | 1945 | 1956 | 1953 | 1955 | 1954 | 1956 | 1946 | 1949 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1944 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 85000 | | 21537.9 | | | |
| ANNUAL MEAN | 232.9 | | 59.01 | | 109.1 | |
| HIGHEST ANNUAL MEAN | | | | | 343 | 1999 |
| LOWEST ANNUAL MEAN | | | | | 11.1 | 1954 |
| HIGHEST DAILY MEAN | 6180 | Apr 9 | 710 | Jun 11 | 6620 | Apr 16 1997 |
| LOWEST DAILY MEAN | 13 | Feb 2 | 7.1 | Sep 30 | 0.00 | Jan 16 1945 |
| ANNUAL SEVEN-DAY MINIMUM | 13 | Feb 2 | 8.4 | Mar 8 | 0.00 | Jan 16 1945 |
| MAXIMUM PEAK FLOW | | | 746 | Jun 11 | a7150 | Apr 16 1997 |
| MAXIMUM PEAK STAGE | | | 14.02 | Jun 11 | b24.96 | Apr 8 1997 |
| INSTANTANEOUS LOW FLOW | | | 6.8 | Sep 30 | 0.00 | Jan 16 1945 |
| ANNUAL RUNOFF (AC-FT) | 168600 | | 42720 | | 79010 | |
| 10 PERCENT EXCEEDS | 509 | | 154 | | 170 | |
| 50 PERCENT EXCEEDS | 38 | | 30 | | 11 | |
| 90 PERCENT EXCEEDS | 14 | | 13 | | 0.10 | |

a Gage height, 23.76 ft
b Observed, backwater from ice, may have been higher during period of no gage-height record, April 6-9, 1997
e Estimated

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1995 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: April 1997 to September 30, 2001.

SPECIFIC CONDUCTANCE: April 1997 to September 30, 2001.

INSTRUMENTATION.--Water-quality sensors April 1997 to September 30, 2001.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 30.9°C, July 17, 2001; minimum recorded, less than 0.0°C, April 16, 1997.

SPECIFIC CONDUCTANCE: Maximum recorded, 2,180 microsiemens, Feb. 1-17, 2001; minimum recorded, 276 microsiemens, June 20, 2000.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 04... | 1040 | 21 | --e | 8.2 | 2070 | 1930 | 11.0 | 12.5 | 600 | 130 | 67.0 | 16.0 | 4 |
| 31... | 0830 | 27 | -- | -- | -- | 1740 | 7.5 | 8.0 | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 09... | 1525 | 16 | -- | -- | -- | 1320 | .5 | .0 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 15... | 1330 | 82 | 8.4 | --e | 905 | --e | 12.5 | 5.0 | 340 | 74.0 | 37.0 | 7.30 | 1 |
| 22... | 1510 | 99 | -- | -- | -- | 1200 | 7.5 | 4.0 | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 18... | 1525 | 67 | -- | -- | -- | 1100 | 17.0 | 15.0 | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 17... | 1030 | 11 | 8.2 | 8.1 | 1390 | 1390 | 20.5 | 18.0 | 570 | 110 | 71.0 | 12.0 | 2 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 04... | 230 | 45 | 368 | 93.0 | .30 | 630 | 82.8 | 1460 | 1390 | 12.0 | 30 | 2 | 100 |
| 31... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 15... | 59.0 | 27 | 191 | 37.0 | .20 | 240 | 133 | 602 | 570 | 3.0 | 40 | 1 | 60 |
| 22... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 17... | 100 | 27 | 290 | 70.0 | .30 | 410 | 30.6 | 1030 | 948 | 9.0 | 60 | <1 | 90 |

| Date | 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 | | | | | |
| 04... | 20 | <.10 | 4 | 5 | 550 |
| 31... | -- | -- | -- | -- | -- |
| JAN | | | | | |
| 09... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 15... | 130 | <.10 | <1 | 1 | 350 |
| 22... | -- | -- | -- | -- | -- |
| JUN | | | | | |
| 18... | -- | -- | -- | -- | -- |
| SEP | | | | | |
| 17... | 160 | .10 | 3 | <1 | 560 |

< Less than
e Required equipment not functional/available

## 05060400 SHEYENNE RIVER AT HARWOOD, ND

LOCATION.--Lat 46°58'38", long 96°53'36", in SW$^1/_4$SE$^1/_4$SW$^1/_4$ sec.33, T.141 N., R.49 W., Cass County, Hydrologic Unit 09020204, at bridge crossing 0.5 mi west of Harwood.

DRAINAGE AREA.--Revised drainage area will be published when available.

### GAGE HEIGHT RECORDS

PERIOD OF RECORD.--March 1995 to current year (gage heights and maximum discharge only).

GAGE.--Water stage recorder. Datum of gage is 800 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Flow regulated to a large degree by Lake Ashtabula (station 05057500), 255 mi upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 11,000 ft$^3$/s, Apr. 16, 1997, gage height, 92.02 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, about 1,300 ft$^3$/s, June 11, gage height, 74.57 ft.

GAGE HEIGHT from dcp, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 68.41 | 69.83 | 68.85 | 69.68 | 68.90 | 69.24 | 71.44 | 69.09 | 69.20 | 71.01 | --- | 67.48 |
| 2 | 68.37 | 69.95 | 69.42 | 69.63 | 68.93 | 69.20 | 71.11 | 69.02 | 69.11 | 70.74 | --- | 67.57 |
| 3 | 68.31 | 70.00 | 69.67 | 69.55 | 68.86 | 69.17 | 70.82 | 69.03 | 69.06 | 70.22 | 68.42 | 67.50 |
| 4 | 68.29 | 69.98 | 69.71 | 69.37 | 68.95 | 69.09 | 70.57 | 69.25 | 68.99 | 69.77 | 68.33 | 67.37 |
| 5 | 68.26 | 69.92 | 70.08 | 69.22 | 68.90 | 68.99 | 70.44 | 69.38 | 68.95 | 69.62 | 68.16 | 67.34 |
| 6 | 68.23 | 69.86 | 70.47 | 69.16 | 68.88 | 68.96 | 70.31 | 69.41 | 68.92 | 69.55 | 68.10 | 67.31 |
| 7 | 68.26 | 69.84 | 70.60 | 69.13 | 68.94 | 68.95 | 70.38 | 69.49 | 68.90 | 69.57 | --- | 67.31 |
| 8 | 68.31 | 69.80 | 70.56 | 69.11 | 68.94 | 69.01 | 70.60 | 69.83 | 68.87 | 70.00 | --- | 67.24 |
| 9 | 68.35 | 69.83 | 70.60 | 69.15 | 68.88 | 69.12 | 70.90 | 70.18 | 70.40 | 70.54 | --- | 67.19 |
| 10 | 68.69 | 69.73 | 70.41 | 69.18 | 68.89 | 69.12 | 71.30 | 70.53 | 73.94 | 72.11 | 68.12 | 67.34 |
| 11 | 68.82 | 69.72 | 70.38 | 69.16 | 68.96 | 69.11 | 71.42 | 70.73 | 74.25 | 73.11 | --- | 67.50 |
| 12 | 69.16 | 69.76 | 70.31 | 69.13 | 69.03 | 69.07 | 71.20 | 70.59 | 72.65 | 72.55 | --- | 67.39 |
| 13 | 69.41 | 69.80 | 70.40 | 69.09 | 69.05 | 69.26 | 70.84 | 70.37 | 70.94 | 71.96 | 67.89 | 67.24 |
| 14 | 69.37 | 69.83 | 70.41 | 69.06 | 69.09 | 69.35 | 70.47 | 70.30 | 70.18 | 71.38 | 67.96 | 67.13 |
| 15 | 69.20 | 69.86 | 70.39 | 69.03 | 69.11 | 69.34 | 70.06 | 70.68 | 69.93 | --- | 68.00 | --- |
| 16 | 69.06 | 69.85 | 70.35 | 69.01 | 69.14 | 69.42 | 69.90 | 70.80 | 69.52 | 71.06 | 67.91 | --- |
| 17 | 69.06 | 69.84 | 70.38 | 69.00 | 69.19 | 69.57 | 69.84 | 70.93 | 69.06 | 70.90 | 68.01 | --- |
| 18 | 69.01 | 69.84 | 70.38 | 69.00 | 69.29 | 69.76 | 69.74 | 70.97 | 68.83 | 70.83 | 67.86 | --- |
| 19 | 68.77 | 69.84 | 70.47 | 68.99 | 69.42 | 69.79 | 69.67 | 71.00 | 68.69 | 70.70 | 67.70 | 67.26 |
| 20 | 68.65 | 69.78 | 70.44 | 68.98 | 69.59 | 69.83 | 69.63 | 71.38 | 68.56 | 70.63 | 67.66 | 67.09 |
| 21 | 68.87 | 69.68 | 70.41 | 68.95 | 69.72 | 69.90 | 69.57 | 71.50 | 68.64 | 70.24 | 67.65 | 67.17 |
| 22 | 68.97 | 69.55 | 70.28 | 68.91 | 69.83 | 69.99 | 69.44 | 71.50 | 68.68 | --- | 67.62 | 67.21 |
| 23 | 68.91 | 69.50 | 70.42 | 68.87 | 69.85 | 70.02 | 69.31 | 71.45 | 69.30 | --- | 67.59 | 67.22 |
| 24 | 68.80 | 69.77 | 70.40 | 68.84 | 69.82 | 69.97 | 69.26 | 71.18 | 69.75 | 69.65 | 67.54 | 67.17 |
| 25 | 68.72 | 69.91 | 70.36 | 68.85 | 69.74 | 69.93 | 69.15 | 70.94 | 70.28 | 69.66 | 67.51 | 67.12 |
| 26 | 68.60 | 69.82 | 70.32 | 68.88 | 69.67 | 69.89 | 69.07 | 70.75 | 70.85 | 69.69 | 67.44 | 67.09 |
| 27 | 68.65 | 69.51 | 70.22 | 68.87 | 69.54 | 69.88 | 69.02 | 70.24 | 70.92 | 69.74 | 67.41 | 67.05 |
| 28 | 68.99 | 68.77 | 69.99 | 68.85 | 69.35 | 70.24 | 69.04 | 69.76 | 70.82 | 69.29 | 67.37 | 67.00 |
| 29 | 69.19 | 68.55 | 69.73 | 68.86 | --- | 70.87 | 69.07 | 69.48 | 71.09 | --- | 68.05 | 67.00 |
| 30 | 69.41 | 68.48 | 69.67 | 68.91 | --- | 71.57 | 69.12 | 69.48 | 71.18 | --- | 67.44 | 67.02 |
| 31 | 69.57 | --- | 69.73 | 68.89 | --- | 71.62 | --- | 69.30 | --- | 68.86 | 67.39 | --- |
| TOTAL | 2132.67 | 2090.40 | 2175.81 | 2141.31 | 1938.46 | 2159.23 | 2102.69 | 2178.54 | 2100.46 | --- | --- | --- |
| MEAN | 68.80 | 69.68 | 70.19 | 69.07 | 69.23 | 69.65 | 70.09 | 70.28 | 70.02 | --- | --- | --- |
| MAX | 69.57 | 70.00 | 70.60 | 69.68 | 69.85 | 71.62 | 71.44 | 71.50 | 74.25 | --- | --- | --- |
| MIN | 68.23 | 68.48 | 68.85 | 68.84 | 68.86 | 68.95 | 69.02 | 69.02 | 68.56 | --- | --- | --- |

Miscellaneous discharge measurements for Sheyenne River at Harwood

| Date | Discharge |
|---|---|
| April 19, 2002 | 311 |

05060400 SHEYENNE RIVER AT HARWOOD, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD -- Water year 1997 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APR | | | | | | | | | | | | | |
| 19... | 0945 | 311 | 8.3 | -- | 961 | 933 | .0 | 3.5 | 370 | 82.0 | 39.0 | 8.10 | 2 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APR | | | | | | | | | | | | | |
| 19... | 66.0 | 28 | 264 | 37.0 | .20 | 230 | 543 | 647 | 621 | 5.0 | 50 | <1 | 60 |

| Date | 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 | | | | | |
| 19... | 20 | <.10 | 1 | 8 | 400 |

< Less than

## 05060500 RUSH RIVER AT AMENIA, ND

LOCATION.--Lat 47°01'00", long 97°12'50", in SE$^1/_4$NW$^1/_4$ sec.24, T.141 N., R.52 W., Cass County, Hydrologic Unit 09020204, on left bank on downstream side of bridge on State Highway 18 and 0.6 mi north of Amenia.

DRAINAGE AREA.--116 mi$^2$.

### WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 943 ft above National Geodetic Vertical Datum of 1929, from topographic map. See WSP 1913 for history of changes prior to June 10, 1961.

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.0 | 1.8 | e2.2 | e1.3 | e0.91 | e1.4 | e11 | 2.0 | 0.15 | 0.12 | 0.94 | 2.4 |
| 2 | 0.77 | 1.9 | e2.3 | e1.3 | e0.91 | e1.2 | e8.4 | 1.8 | 0.14 | 0.0 | 0.63 | 2.5 |
| 3 | 0.63 | 1.8 | e2.4 | e1.2 | e0.97 | e1.1 | e8.4 | 1.7 | 0.26 | 0.00 | 0.54 | 2.5 |
| 4 | 1.4 | 2.0 | e2.5 | e1.2 | e0.87 | e1.1 | e8.7 | 1.4 | 0.27 | 0.00 | 0.50 | 2.0 |
| 5 | 1.4 | 5.2 | e2.5 | e1.2 | e0.83 | e1.2 | e6.7 | 1.2 | 0.23 | 0.04 | 0.65 | 1.6 |
| 6 | 0.33 | 3.8 | e2.6 | e1.2 | e0.88 | e1.2 | e6.2 | 1.2 | 0.17 | 0.03 | 0.60 | 1.3 |
| 7 | 0.16 | 3.0 | e2.5 | e1.2 | e1.0 | e1.2 | e5.6 | 1.3 | 0.17 | 0.0 | 0.52 | 0.93 |
| 8 | 0.37 | 2.7 | e2.4 | e1.4 | e1.1 | e1.2 | e5.7 | 1.7 | 0.29 | 0.19 | 0.48 | 0.79 |
| 9 | 0.74 | 2.5 | e2.3 | e1.6 | e1.2 | e1.3 | 5.5 | 2.0 | 0.71 | 0.13 | 0.48 | 0.66 |
| 10 | 1.0 | 2.6 | e2.3 | e1.7 | e1.1 | e1.4 | 6.5 | 5.1 | 1.2 | 243 | 0.43 | 0.57 |
| 11 | 0.54 | 2.9 | e2.2 | e2.0 | e1.2 | e1.4 | 6.0 | 5.3 | 0.76 | 152 | 0.43 | 0.54 |
| 12 | 0.86 | 2.8 | e2.2 | e2.5 | e1.4 | e1.8 | 5.4 | 4.4 | 0.61 | 30 | 0.68 | 0.29 |
| 13 | 0.77 | 3.2 | e2.1 | e2.4 | e1.4 | e2.5 | 6.0 | 3.6 | 0.69 | 14 | 0.80 | 0.13 |
| 14 | 1.0 | 2.9 | e2.1 | e2.4 | e1.5 | e3.2 | 6.3 | 3.6 | 0.66 | 9.3 | 0.86 | 0.06 |
| 15 | 1.6 | 2.4 | e2.1 | e2.4 | e1.5 | e3.0 | 7.1 | 3.0 | 0.50 | 5.6 | 0.48 | 0.04 |
| 16 | 1.4 | 2.7 | e2.1 | e2.0 | e1.7 | e3.5 | 6.3 | 2.5 | 0.31 | 3.7 | 0.26 | 0.28 |
| 17 | 1.4 | 3.2 | e2.1 | e1.9 | e2.0 | e4.4 | 5.1 | 2.0 | 0.19 | 2.3 | 0.34 | 0.44 |
| 18 | 1.2 | 2.6 | e2.1 | e1.8 | e2.2 | e4.6 | 4.6 | 1.7 | 0.10 | 1.6 | 0.33 | 0.30 |
| 19 | 1.1 | 2.3 | e2.1 | e1.5 | e2.2 | e4.8 | 4.0 | 1.5 | 0.08 | 1.2 | 0.40 | 0.41 |
| 20 | 1.0 | 2.3 | e2.1 | e1.5 | e2.2 | e4.5 | 4.1 | 1.2 | 0.05 | 0.84 | 0.64 | 0.30 |
| 21 | 1.2 | 2.3 | e2.0 | e1.5 | e2.4 | e4.1 | 3.6 | 0.96 | 0.03 | 0.83 | 0.62 | 0.23 |
| 22 | 1.2 | 2.4 | e2.0 | e1.5 | e2.7 | e3.8 | 2.8 | 0.78 | 0.02 | 0.80 | 0.66 | 0.20 |
| 23 | 1.1 | 2.3 | e1.9 | e1.4 | e2.8 | e3.7 | 2.1 | 0.64 | 21 | 0.71 | 0.64 | 0.28 |
| 24 | 2.4 | 2.5 | e1.7 | e1.4 | e2.9 | e3.6 | 1.6 | 0.64 | 7.9 | 0.66 | 0.68 | 0.32 |
| 25 | 1.4 | e2.5 | e1.6 | e1.4 | e2.8 | e3.3 | 1.3 | 0.63 | 3.4 | 120 | 0.72 | 0.33 |
| 26 | 1.2 | e2.5 | e1.6 | e1.5 | e2.7 | e3.2 | 1.2 | 0.51 | 2.1 | 118 | 0.43 | 0.33 |
| 27 | 1.6 | e2.5 | e1.5 | e1.3 | e2.0 | e4.3 | 1.4 | 0.41 | 1.3 | 15 | 0.27 | 0.31 |
| 28 | 1.9 | e2.4 | e1.5 | e1.1 | e1.7 | e7.7 | 1.5 | 0.36 | 0.90 | 5.1 | 0.26 | 0.36 |
| 29 | 1.7 | e2.4 | e1.4 | e1.0 | --- | e9.9 | 1.6 | 0.31 | 0.60 | 2.8 | 0.43 | 0.36 |
| 30 | 2.0 | e2.4 | e1.4 | e1.0 | --- | e17 | 2.0 | 0.24 | 0.34 | 1.6 | 0.57 | 0.35 |
| 31 | 2.1 | --- | e1.4 | e0.98 | --- | e14 | --- | 0.19 | --- | 1.2 | 1.8 | --- |
| TOTAL | 36.47 | 78.8 | 63.2 | 47.78 | 47.07 | 120.6 | 146.7 | 53.87 | 45.13 | 730.75 | 18.07 | 21.11 |
| MEAN | 1.176 | 2.627 | 2.039 | 1.541 | 1.681 | 3.890 | 4.890 | 1.738 | 1.504 | 23.57 | 0.583 | 0.704 |
| MAX | 2.4 | 5.2 | 2.6 | 2.5 | 2.9 | 17 | 11 | 5.3 | 21 | 243 | 1.8 | 2.5 |
| MIN | 0.16 | 1.8 | 1.4 | 0.98 | 0.83 | 1.1 | 1.2 | 0.19 | 0.02 | 0.00 | 0.26 | 0.04 |
| AC-FT | 72 | 156 | 125 | 95 | 93 | 239 | 291 | 107 | 90 | 1450 | 36 | 42 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 2.203 | 1.602 | 0.626 | 0.216 | 1.804 | 28.72 | 71.85 | 14.26 | 13.40 | 11.72 | 1.400 | 2.184 |
| MAX | 50.7 | 22.1 | 12.5 | 2.84 | 84.2 | 200 | 531 | 81.3 | 123 | 168 | 22.3 | 47.3 |
| (WY) | 1995 | 2001 | 1999 | 1997 | 1998 | 1999 | 1997 | 1950 | 1998 | 1993 | 1993 | 1996 |
| MIN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.12 | 0.12 | 0.009 | 0.000 | 0.000 | 0.000 |
| (WY) | 1949 | 1953 | 1950 | 1947 | 1947 | 1948 | 1981 | 1955 | 1988 | 1955 | 1946 | 1946 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1946 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 8188.87 | | 1409.55 | | | |
| ANNUAL MEAN | 22.44 | | 3.862 | | 12.48 | |
| HIGHEST ANNUAL MEAN | | | | | 62.9 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 0.68 | 1977 |
| HIGHEST DAILY MEAN | 1300 | Apr 8 | 243 | Jul 10 | 3160 | Apr 19 1979 |
| LOWEST DAILY MEAN | 0.16 | Oct 7 | 0.00 | Jul 2 | 0.00 | Aug 1 1946 |
| ANNUAL SEVEN-DAY MINIMUM | 0.57 | Oct 6 | 0.03 | Jul 1 | 0.00 | Aug 1 1946 |
| MAXIMUM PEAK FLOW | | | 457 | Jul 10 | 3490 | Apr 19 1979 |
| MAXIMUM PEAK STAGE | | | 7.07 | Jul 10 | a12.15 | Mar 23 1966 |
| ANNUAL RUNOFF (AC-FT) | 16240 | | 2800 | | 9040 | |
| 10 PERCENT EXCEEDS | 22 | | 4.9 | | 16 | |
| 50 PERCENT EXCEEDS | 2.3 | | 1.4 | | 0.16 | |
| 90 PERCENT EXCEEDS | 0.85 | | 0.29 | | 0.00 | |

a Backwater from ice
e Estimated

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 30... | 1345 | 1.7 | -- | -- | -- | 978 | 7.5 | 7.0 | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 11... | 1055 | 1.8 | -- | -- | -- | 984 | .5 | .5 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 12... | 1030 | 6.2 | 8.0 | 7.6 | 673 | 639 | 6.5 | 3.0 | 290 | 70.0 | 27.0 | 7.10 | .7 |
| 22... | 1330 | 3.6 | -- | -- | -- | 878 | 7.0 | 5.5 | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 07... | 1315 | .22 | -- | -- | -- | 1340 | 20.0 | 17.0 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 11... | 1140 | 99 | -- | -- | -- | 362 | 21.0 | 19.0 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 13... | 0935 | .89 | -- | -- | -- | -- | 14.0 | 16.0 | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 16... | 1500 | .09 | 8.1 | 7.9 | 1240 | 1240 | 28.0 | 20.5 | 590 | 130 | 65.0 | 12.0 | 1 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 30... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 12... | 27.0 | 96 | 190 | 10.0 | .10 | 170 | 7.60 | 454 | 426 | 5.0 | 60 | <1 | 60 |
| 22... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 07... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 16... | 59.0 | 17 | 282 | 21.0 | .20 | 430 | .23 | 960 | 887 | 8.0 | 70 | <1 | 110 |

| Date | 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 | | | | | |
| 30... | -- | -- | -- | -- | -- |
| JAN | | | | | |
| 11... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 12... | 150 | <.10 | <1 | 2 | 340 |
| 22... | -- | -- | -- | -- | -- |
| JUN | | | | | |
| 07... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 11... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 13... | -- | -- | -- | -- | -- |
| SEP | | | | | |
| 16... | 400 | <.10 | 3 | 2 | 640 |

< Less than

## 05064500 RED RIVER OF THE NORTH AT HALSTAD, MN

LOCATION.--Lat 47°21'07", long 96°50'36", sec.25, T.145 N., R.49 W., Traill County, Hydrologic Unit 09020107, on center pier on upstream side of highway bridge, 0.5 mi west of Halstad, MN, 2.5 mi downstream from Wild Rice River, and at mile 375.2.

DRAINAGE AREA.--21,800 $mi^2$, approximately, including 3,800 $mi^2$ 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 National Geodetic Vertical Datum of 1929. Prior to July 17, 1961, nonrecording gage at same site and datum.

REMARKS.--Records good except for estimated daily discharges, 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 921 | 1630 | e820 | e970 | e800 | e1000 | e2000 | 2220 | 2200 | 11800 | 3290 | 2550 |
| 2 | 854 | 1840 | e900 | e980 | e800 | e960 | e2100 | 2210 | 2260 | 10600 | 3060 | 2970 |
| 3 | 837 | 2110 | e1000 | e970 | e800 | e870 | e2130 | 2220 | 2240 | 9140 | 2860 | 3000 |
| 4 | 834 | 2220 | e1120 | e970 | e800 | e830 | e2130 | 2240 | 2130 | 7660 | 2700 | 2810 |
| 5 | 833 | 2220 | e1220 | e960 | e800 | e820 | e2050 | 2240 | 2010 | 6410 | 2570 | 2520 |
| 6 | 824 | 2160 | e1350 | e960 | e800 | e810 | e2000 | 2220 | 1880 | 5380 | 2460 | 2290 |
| 7 | 808 | 2090 | e1380 | e950 | e800 | e800 | e1920 | 2220 | 1790 | 4470 | 2330 | 2090 |
| 8 | 829 | 2000 | e1400 | e960 | e800 | e820 | e1900 | 2230 | 1710 | 3860 | 2210 | 1990 |
| 9 | 811 | 1910 | e1450 | e970 | e800 | e810 | e1950 | 2450 | 2120 | 4260 | 2090 | 1930 |
| 10 | 852 | 1820 | e1500 | e980 | e800 | e830 | e2100 | 3220 | 6580 | 6190 | 1960 | 1820 |
| 11 | 946 | 1730 | e1550 | e980 | e810 | e840 | e2500 | 3560 | 10800 | 10600 | 1890 | 1730 |
| 12 | 1240 | 1670 | e1600 | e980 | e810 | e870 | e2900 | 3980 | 12300 | 13200 | 1860 | 1690 |
| 13 | 1270 | 1610 | e1700 | e980 | e810 | e900 | 3210 | 4310 | 12400 | 14300 | 1830 | 1660 |
| 14 | 1350 | 1570 | e1800 | e980 | e800 | e950 | 3530 | 4410 | 11600 | 14900 | 1760 | 1600 |
| 15 | 1410 | 1540 | e1830 | e970 | e800 | e1000 | 3250 | 4140 | 10600 | 14800 | 1680 | 1530 |
| 16 | 1460 | 1540 | e1850 | e960 | e810 | e1100 | 3010 | 3770 | 9340 | 13600 | 1620 | 1450 |
| 17 | 1510 | 1530 | e1850 | e950 | e820 | e1230 | 2790 | 3400 | 7880 | 11800 | 1630 | 1350 |
| 18 | 1510 | 1510 | e1830 | e940 | e810 | e1380 | 2600 | 3240 | 6350 | 9650 | 1760 | 1240 |
| 19 | 1480 | 1500 | e1800 | e930 | e820 | e1480 | 2550 | 3110 | 4680 | 7830 | 1910 | 1170 |
| 20 | 1450 | 1470 | e1650 | e920 | e850 | e1650 | 2630 | 2930 | 3200 | 6470 | 1940 | 1270 |
| 21 | 1400 | 1460 | e1500 | e900 | e880 | e1700 | 2700 | 2850 | 2830 | 5650 | 1870 | 1320 |
| 22 | 1360 | 1440 | e1400 | e880 | e930 | e1700 | 2620 | 2840 | 3010 | 5260 | 1790 | 1290 |
| 23 | 1340 | 1410 | e1300 | e870 | e1000 | e1650 | 2460 | 2810 | 3890 | 5030 | 1720 | 1320 |
| 24 | 1340 | 1400 | e1200 | e860 | e1050 | e1500 | 2320 | 2760 | 6180 | 4700 | 1680 | 1270 |
| 25 | 1340 | 1420 | e1100 | e850 | e1100 | e1430 | 2280 | 2680 | 7740 | 4490 | 1680 | 1210 |
| 26 | 1370 | 1470 | e1050 | e840 | e1100 | e1280 | 2280 | 2590 | 9300 | 4720 | 1650 | 1140 |
| 27 | 1390 | 1440 | e1030 | e830 | e1100 | e1170 | 2270 | 2470 | 10700 | 4900 | 1610 | 1100 |
| 28 | 1350 | e1100 | e1000 | e820 | e1050 | e1150 | 2230 | 2340 | 11600 | 4860 | 1750 | 1080 |
| 29 | 1360 | e900 | e960 | e820 | --- | e1170 | 2220 | 2290 | 12000 | 4500 | 1770 | 1040 |
| 30 | 1410 | e1000 | e960 | e810 | --- | e1300 | 2210 | 2310 | 12100 | 4050 | 2010 | 993 |
| 31 | 1500 | --- | e960 | e810 | --- | e1700 | --- | 2220 | --- | 3630 | 2230 | --- |
| TOTAL | 37189 | 48710 | 42060 | 28550 | 24350 | 35700 | 72840 | 88480 | 193420 | 238710 | 63170 | 50423 |
| MEAN | 1200 | 1624 | 1357 | 921.0 | 869.6 | 1152 | 2428 | 2854 | 6447 | 7700 | 2038 | 1681 |
| MAX | 1510 | 2220 | 1850 | 980 | 1100 | 1700 | 3530 | 4410 | 12400 | 14900 | 3290 | 3000 |
| MIN | 808 | 900 | 820 | 810 | 800 | 800 | 1900 | 2210 | 1710 | 3630 | 1610 | 993 |
| AC-FT | 73760 | 96620 | 83430 | 56630 | 48300 | 70810 | 144500 | 175500 | 383600 | 473500 | 125300 | 100000 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 889.6 | 906.4 | 670.7 | 528.8 | 569.5 | 2617 | 8140 | 4066 | 3138 | 3048 | 1240 | 890.6 |
| MAX | 2875 | 5707 | 2413 | 1240 | 1952 | 9444 | 38460 | 15570 | 10480 | 20060 | 11700 | 4705 |
| (WY) | 1995 | 2001 | 2001 | 2001 | 1998 | 1995 | 1997 | 1997 | 2000 | 1975 | 1993 | 1999 |
| 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 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1961 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 1937589 | | 923602 | | | |
| ANNUAL MEAN | 5308 | | 2530 | | 2240 | |
| HIGHEST ANNUAL MEAN | | | | | 6028 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 214 | 1977 |
| HIGHEST DAILY MEAN | 37800 | Apr 14 | 14900 | Jul 14 | 69900 | Apr 19 1997 |
| LOWEST DAILY MEAN | 808 | Oct 7 | 800 | Feb 1 | 10 | Sep 2 1976 |
| ANNUAL SEVEN-DAY MINIMUM | 825 | Oct 3 | 800 | Feb 1 | 17 | Aug 28 1976 |
| MAXIMUM PEAK FLOW | | | 15000 | Jul 14 | 71500 | Apr 19 1997 |
| MAXIMUM PEAK STAGE | | | 21.99 | Jul 14 | 40.74 | Apr 19 1997 |
| INSTANTANEOUS LOW FLOW | | | | | 5.4 | Oct 8 1936 |
| ANNUAL RUNOFF (AC-FT) | 3843000 | | 1832000 | | 1623000 | |
| 10 PERCENT EXCEEDS | 15600 | | 4950 | | 5000 | |
| 50 PERCENT EXCEEDS | 1550 | | 1660 | | 903 | |
| 90 PERCENT EXCEEDS | 1100 | | 832 | | 230 | |

e Estimated

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

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1997 to current year.

SPECIFIC CONDUCTANCE: October 1997 to current year.

INSTRUMENTATION.--Water-quality sensors since October 1997.

REMARKS.--Records good except for specific conductance record, which is poor. Missing record is result of problems with circulation in well.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 29.0°C, Aug. 8, 2001; minimum recorded, -0.1°C, Feb. 7-15 and Mar. 17-18, 2002.

SPECIFIC CONDUCTANCE: Maximum recorded, 1,120 microsiemens, Dec. 31, 1998; minimum recorded, 235 microsiemens, June 21, 2000.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 18... | 1255 | 1500 | -- | -- | -- | 785 | 13.0 | 9.5 | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 08... | 1450 | 1990 | -- | -- | -- | 1120 | -- | 7.0 | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 04... | 1055 | 971 | -- | -- | -- | 951 | -4.0 | .0 | -- | -- | -- | -- | -- |
| 25... | 0935 | 842 | -- | -- | -- | 871 | -1.5 | .0 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 15... | 1315 | 993 | -- | -- | -- | 903 | .5 | .5 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 16... | 1240 | 3000 | 8.3 | -- | 558 | 518 | 27.5 | -- | 230 | 49.0 | 27.0 | 4.40 | .6 |
| MAY | | | | | | | | | | | | | |
| 01... | 1455 | 2220 | -- | -- | -- | 651 | 7.5 | 8.0 | -- | -- | -- | -- | -- |
| 21... | 0910 | 2850 | -- | -- | -- | 893 | 16.0 | 13.5 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 01... | 1230 | 11900 | -- | -- | -- | 471 | 30.0 | 28.5 | -- | -- | -- | -- | -- |
| 03... | 0905 | 9140 | -- | -- | -- | 545 | -- | 25.5 | -- | -- | -- | -- | -- |
| 08... | 1140 | 3790 | -- | -- | -- | 604 | -- | 25.5 | -- | -- | -- | -- | -- |
| 31... | 0925 | 3630 | -- | -- | -- | 636 | -- | 25.0 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 13... | 1240 | 1830 | --e | 8.3 | 709 | 717 | 22.0 | 23.5 | 330 | 66.0 | 40.0 | 5.50 | 16 |
| 29... | 1330 | 1770 | -- | -- | -- | 663 | -- | 23.3 | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 04... | 1230 | 2810 | -- | -- | -- | 614 | -- | 26.0 | -- | -- | -- | -- | -- |
| 11... | 1420 | 1730 | -- | -- | -- | 623 | -- | 24.5 | -- | -- | -- | -- | -- |
| 17... | 1015 | 1350 | -- | -- | -- | 628 | -- | 19.0 | -- | -- | -- | -- | -- |
| 20... | 1230 | 1270 | -- | -- | -- | 643 | -- | 19.0 | -- | -- | -- | -- | -- |
| 25... | 1520 | 1210 | -- | -- | -- | 599 | -- | 13.0 | -- | -- | -- | -- | -- |

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 04... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 15... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 16... | 21.0 | 16 | 182 | 15.0 | .20 | 90.0 | 2850 | 352 | 316 | 2.0 | 60 | <1 | 30 |
| MAY | | | | | | | | | | | | | |
| 01... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 21... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 01... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 03... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 31... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 13... | 29.0 | 16 | 242 | 14.0 | .20 | 150 | 2450 | 496 | 451 | 6.0 | 20 | 1 | 40 |
| 29... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 04... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 20... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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 | | | | | |
| 18... | -- | -- | -- | -- | -- |
| NOV | | | | | |
| 08... | -- | -- | -- | -- | -- |
| JAN | | | | | |
| 04... | -- | -- | -- | -- | -- |
| 25... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 15... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 16... | 10 | <.10 | 1 | <1 | 160 |
| MAY | | | | | |
| 01... | -- | -- | -- | -- | -- |
| 21... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 01... | -- | -- | -- | -- | -- |
| 03... | -- | -- | -- | -- | -- |
| 08... | -- | -- | -- | -- | -- |
| 31... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 13... | 20 | .10 | 3 | <1 | 330 |
| 29... | -- | -- | -- | -- | -- |
| SEP | | | | | |
| 04... | -- | -- | -- | -- | -- |
| 11... | -- | -- | -- | -- | -- |
| 17... | -- | -- | -- | -- | -- |
| 20... | -- | -- | -- | -- | -- |
| 25... | -- | -- | -- | -- | -- |

< Less than
e Required equipment not functional/available

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

WATER TEMPERATURE from datalogger, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | OCTOBER | | | NOVEMBER | | | DECEMBER | | | JANUARY | |
| 1 | 15.3 | 15.2 | 15.2 | 5.5 | 5.2 | 5.3 | 1.5 | 1.3 | 1.4 | 0.6 | 0.5 | 0.6 |
| 2 | 15.6 | 15.3 | 15.5 | 5.8 | 5.4 | 5.6 | 1.5 | 1.3 | 1.4 | 0.6 | 0.5 | 0.5 |
| 3 | 15.7 | 15.5 | 15.6 | 5.8 | 5.7 | 5.8 | 1.5 | 0.7 | 1.2 | 0.6 | 0.5 | 0.6 |
| 4 | 15.5 | 15.0 | 15.3 | 6.0 | 5.8 | 5.9 | 1.3 | 0.7 | 0.9 | 0.5 | 0.5 | 0.5 |
| 5 | 15.0 | 14.3 | 14.7 | 6.2 | 5.9 | 6.0 | 1.3 | 1.0 | 1.2 | 0.5 | 0.4 | 0.4 |
| 6 | 14.3 | 12.9 | 13.6 | 6.3 | 6.1 | 6.2 | 1.2 | 1.1 | 1.1 | 0.4 | 0.3 | 0.3 |
| 7 | 12.9 | 11.9 | 12.5 | 6.3 | 6.1 | 6.2 | 1.1 | 0.9 | 1.0 | 0.4 | 0.3 | 0.4 |
| 8 | 11.9 | 11.3 | 11.6 | 6.4 | 6.1 | 6.2 | 1.0 | 0.9 | 0.9 | 0.4 | 0.3 | 0.3 |
| 9 | 11.3 | 11.1 | 11.2 | 6.3 | 5.9 | 6.1 | 0.9 | 0.9 | 0.9 | 0.3 | 0.1 | 0.2 |
| 10 | 11.1 | 11.1 | 11.1 | 6.2 | 5.7 | 5.9 | 1.0 | 0.9 | 0.9 | 0.1 | 0.1 | 0.1 |
| 11 | 11.1 | 10.7 | 10.9 | 5.9 | 5.5 | 5.7 | 1.0 | 0.9 | 1.0 | 0.2 | 0.1 | 0.2 |
| 12 | 10.9 | 10.7 | 10.8 | 5.8 | 5.4 | 5.6 | 1.1 | 1.0 | 1.0 | 0.3 | 0.2 | 0.3 |
| 13 | 10.9 | 10.9 | 10.9 | 5.7 | 5.4 | 5.5 | 1.1 | 1.0 | 1.0 | 0.3 | 0.3 | 0.3 |
| 14 | 11.0 | 10.9 | 10.9 | 5.5 | 5.4 | 5.4 | 1.0 | 0.9 | 1.0 | 0.3 | 0.3 | 0.3 |
| 15 | 10.9 | 10.7 | 10.8 | 5.5 | 5.4 | 5.4 | 1.1 | 0.9 | 1.0 | 0.3 | 0.3 | 0.3 |
| 16 | 10.7 | 10.2 | 10.4 | 5.7 | 5.5 | 5.6 | 1.2 | 1.1 | 1.2 | 0.3 | 0.2 | 0.2 |
| 17 | 10.2 | 9.6 | 9.9 | 5.9 | 5.7 | 5.7 | 1.2 | 1.1 | 1.1 | 0.3 | 0.2 | 0.3 |
| 18 | 9.6 | 9.4 | 9.5 | 6.2 | 5.9 | 6.1 | 1.2 | 1.1 | 1.1 | 0.5 | 0.3 | 0.4 |
| 19 | 9.4 | 9.2 | 9.3 | 6.2 | 6.1 | 6.2 | 1.1 | 0.9 | 1.0 | 0.5 | 0.5 | 0.5 |
| 20 | 9.2 | 9.1 | 9.2 | 6.1 | 5.7 | 5.9 | 0.9 | 0.8 | 0.8 | 0.5 | 0.5 | 0.5 |
| 21 | 9.2 | 9.0 | 9.1 | 5.7 | 5.2 | 5.4 | 0.8 | 0.7 | 0.8 | 0.5 | 0.4 | 0.4 |
| 22 | 9.2 | 9.1 | 9.1 | 5.2 | 4.8 | 5.0 | 0.8 | 0.7 | 0.7 | 0.4 | 0.3 | 0.4 |
| 23 | 9.2 | 9.0 | 9.1 | 4.8 | 4.7 | 4.7 | 0.8 | 0.7 | 0.7 | 0.4 | 0.3 | 0.4 |
| 24 | 9.1 | 8.1 | 8.6 | 4.8 | 4.6 | 4.7 | 0.7 | 0.7 | 0.7 | 0.4 | 0.4 | 0.4 |
| 25 | 8.5 | 7.3 | 7.6 | 4.8 | 4.5 | 4.7 | 0.7 | 0.6 | 0.6 | 0.4 | 0.3 | 0.3 |
| 26 | 7.6 | 6.5 | 7.0 | 4.5 | 4.2 | 4.4 | 0.6 | 0.5 | 0.6 | 0.3 | 0.3 | 0.3 |
| 27 | 6.8 | 5.8 | 6.3 | 4.2 | 2.3 | 3.1 | 0.5 | 0.4 | 0.5 | 0.3 | 0.2 | 0.3 |
| 28 | 5.9 | 4.9 | 5.4 | 2.9 | 2.0 | 2.3 | 0.4 | 0.4 | 0.4 | 0.3 | 0.2 | 0.3 |
| 29 | 4.9 | 4.8 | 4.9 | 2.1 | 1.3 | 1.7 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 |
| 30 | 5.1 | 4.7 | 4.8 | 1.6 | 1.2 | 1.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 |
| 31 | 5.2 | 4.8 | 5.0 | --- | --- | --- | 0.6 | 0.4 | 0.5 | 0.3 | 0.2 | 0.2 |
| MONTH | 15.7 | 4.7 | 10.2 | 6.4 | 1.2 | 5.1 | 1.5 | 0.4 | 0.9 | 0.6 | 0.1 | 0.3 |

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | FEBRUARY | | | MARCH | | | APRIL | | | MAY | |
| 1 | 0.2 | 0.2 | 0.2 | 0.6 | 0.5 | 0.6 | 0.4 | 0.3 | 0.3 | 8.2 | 7.9 | 8.1 |
| 2 | 0.2 | 0.1 | 0.2 | 0.6 | 0.5 | 0.5 | 0.4 | 0.3 | 0.4 | 8.3 | 8.2 | 8.2 |
| 3 | 0.1 | 0.1 | 0.1 | 0.5 | 0.5 | 0.5 | 0.4 | 0.3 | 0.3 | 8.4 | 8.2 | 8.3 |
| 4 | 0.1 | 0.1 | 0.1 | 0.5 | 0.4 | 0.5 | 0.3 | 0.3 | 0.3 | 9.0 | 8.4 | 8.7 |
| 5 | 0.1 | 0.1 | 0.1 | 0.4 | 0.3 | 0.4 | 0.3 | 0.2 | 0.3 | 9.5 | 9.0 | 9.3 |
| 6 | 0.1 | 0.0 | 0.0 | 0.3 | 0.3 | 0.3 | 0.4 | 0.3 | 0.3 | 9.6 | 9.5 | 9.6 |
| 7 | 0.0 | -0.1 | 0.0 | 0.3 | 0.3 | 0.3 | 0.5 | 0.0 | 0.3 | 9.6 | 8.7 | 9.3 |
| 8 | 0.0 | -0.1 | 0.0 | 0.3 | 0.2 | 0.3 | 0.6 | 0.0 | 0.2 | 9.2 | 8.9 | 9.0 |
| 9 | -0.1 | -0.1 | -0.1 | 0.3 | 0.2 | 0.2 | 0.7 | 0.5 | 0.5 | 8.9 | 8.4 | 8.6 |
| 10 | -0.1 | -0.1 | -0.1 | 0.3 | 0.2 | 0.2 | 0.5 | 0.4 | 0.5 | 8.4 | 8.2 | 8.3 |
| 11 | 0.0 | -0.1 | 0.0 | 0.2 | 0.2 | 0.2 | --- | --- | --- | 8.2 | 8.1 | 8.2 |
| 12 | 0.0 | -0.1 | 0.0 | 0.2 | 0.1 | 0.2 | 1.7 | 1.0 | 1.3 | 8.6 | 8.2 | 8.4 |
| 13 | 0.0 | -0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 2.0 | 1.7 | 1.8 | 9.0 | 8.6 | 8.7 |
| 14 | 0.0 | -0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 2.5 | 2.0 | 2.3 | 9.7 | 9.0 | 9.3 |
| 15 | 0.0 | -0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 4.4 | 2.5 | 3.2 | 10.4 | 9.7 | 10.1 |
| 16 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 6.4 | 4.4 | 5.3 | 10.9 | 10.4 | 10.7 |
| 17 | 0.1 | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | 7.9 | 6.3 | 7.0 | 11.3 | 10.9 | 11.1 |
| 18 | 0.2 | 0.1 | 0.2 | 0.1 | -0.1 | 0.0 | 8.9 | 7.9 | 8.3 | 11.5 | 11.3 | 11.3 |
| 19 | 0.3 | 0.2 | 0.3 | 0.1 | 0.1 | 0.1 | 9.8 | 8.9 | 9.6 | 11.7 | 11.5 | 11.5 |
| 20 | 0.3 | 0.3 | 0.3 | 0.1 | 0.1 | 0.1 | 9.5 | 9.1 | 9.3 | 12.2 | 11.7 | 11.9 |
| 21 | 0.3 | 0.3 | 0.3 | 0.2 | 0.1 | 0.1 | 9.1 | 8.9 | 9.0 | 12.8 | 12.2 | 12.5 |
| 22 | 0.5 | 0.3 | 0.4 | 0.3 | 0.2 | 0.2 | 8.9 | 8.7 | 8.8 | 13.2 | 12.8 | 13.0 |
| 23 | 0.5 | 0.5 | 0.5 | 0.3 | 0.3 | 0.3 | 8.8 | 8.6 | 8.7 | 13.3 | 13.2 | 13.3 |
| 24 | 0.5 | 0.4 | 0.5 | 0.3 | 0.3 | 0.3 | 9.3 | 8.8 | 9.1 | 13.2 | 13.0 | 13.1 |
| 25 | 0.6 | 0.4 | 0.5 | 0.3 | 0.3 | 0.3 | 9.0 | 8.6 | 8.8 | 13.2 | 13.0 | 13.1 |
| 26 | 0.5 | 0.4 | 0.5 | 0.3 | 0.3 | 0.3 | 8.6 | 8.1 | 8.3 | 13.6 | 13.1 | 13.3 |
| 27 | 0.4 | 0.3 | 0.3 | 0.3 | 0.2 | 0.3 | 8.2 | 7.8 | 8.0 | 14.4 | 13.6 | 14.0 |
| 28 | 0.5 | 0.4 | 0.4 | 0.2 | 0.1 | 0.1 | 7.8 | 7.6 | 7.7 | 15.4 | 14.4 | 14.9 |
| 29 | --- | --- | --- | 0.3 | 0.1 | 0.3 | 7.6 | 7.5 | 7.6 | 16.7 | 15.4 | 15.9 |
| 30 | --- | --- | --- | 0.4 | 0.3 | 0.3 | 7.9 | 7.6 | 7.7 | 17.7 | 16.4 | 16.9 |
| 31 | --- | --- | --- | 0.3 | 0.3 | 0.3 | --- | --- | --- | 18.2 | 17.3 | 17.6 |
| MONTH | 0.6 | -0.1 | 0.2 | 0.6 | -0.1 | 0.2 | --- | --- | --- | 18.2 | 7.9 | 11.2 |

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

WATER TEMPERATURE from datalogger, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | JUNE | | | JULY | | | AUGUST | | | SEPTEMBER | |
| 1 | 18.6 | 17.9 | 18.2 | --- | --- | --- | 23.5 | 22.7 | 23.4 | --- | --- | --- |
| 2 | 18.5 | 18.4 | 18.5 | --- | --- | --- | 23.4 | 23.1 | 23.2 | --- | --- | --- |
| 3 | 18.5 | 18.3 | 18.4 | --- | --- | --- | 23.2 | 22.8 | 23.0 | --- | --- | --- |
| 4 | 18.3 | 18.1 | 18.1 | --- | --- | --- | 22.9 | 22.6 | 22.8 | --- | --- | --- |
| 5 | 18.9 | 18.2 | 18.4 | --- | --- | --- | 22.8 | 22.5 | 22.6 | --- | --- | --- |
| 6 | 19.6 | 18.9 | 19.2 | --- | --- | --- | 22.7 | 22.4 | 22.6 | --- | --- | --- |
| 7 | 19.7 | 19.5 | 19.6 | --- | --- | --- | 22.5 | 22.3 | 22.4 | --- | --- | --- |
| 8 | 20.0 | 19.5 | 19.8 | 23.0 | 23.1 | 23.2 | 23.0 | 22.4 | 22.6 | --- | --- | --- |
| 9 | 20.0 | 18.6 | 19.4 | 23.3 | 23.1 | 23.2 | 23.4 | 22.8 | 23.0 | --- | --- | --- |
| 10 | 18.6 | 16.2 | 17.9 | 23.1 | 21.4 | 22.5 | 23.4 | 23.0 | 23.2 | 23.6 | 23.3 | 23.4 |
| 11 | 17.0 | 15.5 | 16.0 | 21.4 | 20.4 | 20.7 | 23.5 | 23.0 | 23.2 | 23.3 | 23.1 | 23.2 |
| 12 | 18.2 | 17.0 | 17.7 | 20.9 | 20.6 | 20.7 | 23.2 | 22.9 | 23.1 | 23.1 | 22.7 | 22.9 |
| 13 | 19.0 | 18.1 | 18.6 | 20.9 | 20.8 | 20.9 | 22.9 | 22.7 | 22.8 | 22.7 | 22.4 | 22.5 |
| 14 | 19.0 | 16.6 | 17.4 | 21.0 | 20.6 | 20.8 | 22.8 | 22.4 | 22.5 | 22.4 | 21.9 | 22.2 |
| 15 | 18.5 | 17.3 | 17.9 | 21.2 | 20.8 | 21.0 | 22.4 | 22.2 | 22.3 | 21.9 | 21.2 | 21.6 |
| 16 | 19.2 | 18.5 | 19.0 | 21.6 | 21.1 | 21.3 | 22.2 | 21.8 | 22.0 | 21.2 | 20.5 | 20.9 |
| 17 | 19.6 | 19.2 | 19.4 | 22.0 | 21.5 | 21.7 | 21.8 | 21.3 | 21.5 | 20.5 | 20.2 | 20.4 |
| 18 | 19.8 | 19.6 | 19.7 | 22.7 | 21.5 | 21.9 | 21.3 | 20.7 | 21.0 | 20.2 | 19.8 | 20.1 |
| 19 | 20.1 | 19.6 | 19.8 | 25.3 | 22.7 | 23.9 | 20.7 | 20.3 | 20.5 | 20.1 | 20.0 | 20.1 |
| 20 | 20.4 | 19.5 | 20.2 | 26.4 | 25.3 | 25.9 | 20.3 | 20.1 | 20.2 | 20.0 | 19.6 | 19.8 |
| 21 | 19.5 | 19.2 | 19.3 | 26.5 | 26.1 | 26.3 | 20.2 | 20.1 | 20.1 | 19.6 | 19.0 | 19.3 |
| 22 | --- | --- | --- | 26.3 | 25.1 | 25.7 | 20.3 | 20.1 | 20.2 | 19.0 | 18.2 | 18.6 |
| 23 | --- | --- | --- | 25.1 | 24.7 | 24.9 | 20.8 | 20.3 | 20.5 | 18.2 | 17.2 | 17.6 |
| 24 | --- | --- | --- | 24.7 | 24.2 | 24.5 | 21.6 | 20.8 | 21.1 | 17.2 | 15.8 | 16.5 |
| 25 | --- | --- | --- | 24.2 | 23.7 | 23.8 | 22.2 | 21.5 | 21.7 | 15.8 | 15.0 | 15.4 |
| 26 | --- | --- | --- | 23.8 | 23.7 | 23.8 | 22.7 | 22.0 | 22.3 | 15.1 | 14.4 | 14.7 |
| 27 | --- | --- | --- | 24.0 | 23.8 | 23.8 | 23.0 | 22.6 | 22.7 | 14.4 | 14.0 | 14.2 |
| 28 | --- | --- | --- | 24.1 | 23.9 | 24.0 | 23.0 | 22.6 | 22.8 | 14.0 | 13.4 | 13.7 |
| 29 | --- | --- | --- | 24.3 | 24.1 | 24.2 | --- | --- | --- | 13.4 | 12.9 | 13.2 |
| 30 | --- | --- | --- | 24.3 | 23.4 | 23.9 | --- | --- | --- | 13.1 | 12.9 | 12.9 |
| 31 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MONTH | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

SPECIFIC CONDUCTANCE from datalogger, in US/CM @ 25C, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | OCTOBER | | | NOVEMBER | | | DECEMBER | | | JANUARY | |
| 1 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 3 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 1050 | 1040 | 1040 |
| 4 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 1040 | 1030 | 1040 |
| 5 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 1030 | 1020 | 1030 |
| 6 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 1020 | 1010 | 1010 |
| 7 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 1010 | 996 | 1000 |
| 8 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 997 | 989 | 992 |
| 9 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 989 | 979 | 984 |
| 10 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 979 | 964 | 971 |
| 11 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 964 | 953 | 958 |
| 12 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 953 | 944 | 947 |
| 13 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 944 | 933 | 939 |
| 14 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 933 | 921 | 926 |
| 15 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 921 | 918 | 919 |
| 16 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 920 | 918 | 919 |
| 17 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 918 | 910 | 915 |
| 18 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 910 | 900 | 904 |
| 19 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 900 | 893 | 897 |
| 20 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 893 | 887 | 890 |
| 21 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 887 | 885 | 886 |
| 22 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 886 | 879 | 883 |
| 23 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 880 | 873 | 876 |
| 24 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 891 | 879 | 886 |
| 25 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 899 | 891 | 895 |
| 26 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 904 | 899 | 902 |
| 27 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 903 | 894 | 901 |
| 28 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 894 | 889 | 890 |
| 29 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 891 | 888 | 889 |
| 30 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 895 | 890 | 892 |
| 31 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 901 | 895 | 898 |
| MONTH | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

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

SPECIFIC CONDUCTANCE from datalogger, in US/CM @ 25C, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | FEBRUARY | | | MARCH | | | APRIL | | | MAY | |
| 1 | 899 | 895 | 897 | --- | --- | --- | 797 | 793 | 795 | 660 | 656 | 658 |
| 2 | 896 | 887 | 892 | --- | --- | --- | --- | --- | --- | 663 | 660 | 661 |
| 3 | 887 | 877 | 881 | 846 | 831 | 838 | --- | --- | --- | 669 | 663 | 666 |
| 4 | 885 | 877 | 882 | 858 | 845 | 853 | --- | --- | --- | 670 | 667 | 668 |
| 5 | 880 | 872 | 876 | 864 | 858 | 862 | --- | --- | --- | 670 | 663 | 666 |
| 6 | 879 | 861 | 871 | 864 | 855 | 860 | --- | --- | --- | 683 | 670 | 678 |
| 7 | 862 | 855 | 861 | 855 | 848 | 852 | --- | --- | --- | 719 | 683 | 697 |
| 8 | 855 | 851 | 853 | 848 | 841 | 845 | --- | --- | --- | 739 | 719 | 730 |
| 9 | 854 | 851 | 853 | 841 | 832 | 838 | --- | --- | --- | --- | --- | --- |
| 10 | 855 | 849 | 852 | 832 | 827 | 828 | --- | --- | --- | --- | --- | --- |
| 11 | 850 | 848 | 849 | 830 | 822 | 827 | --- | --- | --- | --- | --- | --- |
| 12 | 853 | 850 | 852 | 822 | 813 | 819 | 589 | 547 | 564 | --- | --- | --- |
| 13 | 853 | 850 | 851 | 813 | 802 | 806 | 548 | 543 | 546 | --- | --- | --- |
| 14 | 850 | 847 | 849 | 802 | 796 | 799 | 553 | 544 | 549 | --- | --- | --- |
| 15 | 847 | 843 | 845 | 798 | 796 | 797 | 560 | 512 | 544 | --- | --- | --- |
| 16 | 843 | 836 | 840 | 802 | 798 | 800 | 515 | 492 | 506 | --- | --- | --- |
| 17 | 837 | 828 | 833 | 808 | 802 | 805 | 522 | 495 | 511 | --- | --- | --- |
| 18 | 829 | 822 | 825 | 808 | 804 | 807 | 561 | 522 | 537 | --- | --- | --- |
| 19 | 822 | 817 | 819 | 807 | 803 | 805 | 586 | 561 | 571 | --- | --- | --- |
| 20 | 818 | 814 | 816 | 808 | 807 | 808 | 615 | 586 | 604 | --- | --- | --- |
| 21 | 815 | 813 | 814 | 809 | 805 | 807 | 645 | 615 | 636 | --- | --- | --- |
| 22 | --- | --- | --- | 805 | 801 | 804 | 666 | 644 | 653 | --- | --- | --- |
| 23 | --- | --- | --- | 803 | 801 | 802 | 676 | 657 | 670 | --- | --- | --- |
| 24 | --- | --- | --- | 802 | 800 | 801 | --- | --- | --- | --- | --- | --- |
| 25 | --- | --- | --- | 800 | 798 | 799 | 666 | 658 | 662 | --- | --- | --- |
| 26 | --- | --- | --- | 799 | 797 | 797 | 673 | 661 | 666 | --- | --- | --- |
| 27 | --- | --- | --- | 801 | 797 | 799 | --- | --- | --- | --- | --- | --- |
| 28 | --- | --- | --- | 805 | 801 | 804 | --- | --- | --- | --- | --- | --- |
| 29 | --- | --- | --- | 803 | 795 | 797 | 686 | 651 | 659 | --- | --- | --- |
| 30 | --- | --- | --- | 796 | 794 | 795 | 656 | 651 | 653 | --- | --- | --- |
| 31 | --- | --- | --- | 797 | 795 | 796 | --- | --- | --- | --- | --- | --- |
| MONTH | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | JUNE | | | JULY | | | AUGUST | | | SEPTEMBER | |
| 1 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 839 | 721 | 781 |
| 2 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 781 | 718 | 748 |
| 3 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 766 | 703 | 738 |
| 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 | --- | --- | --- | --- | --- | --- | 888 | 783 | 835 | --- | --- | --- |
| 31 | --- | --- | --- | --- | --- | --- | 887 | 796 | 854 | --- | --- | --- |
| MONTH | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

## 05064900 BEAVER CREEK NEAR FINLEY, ND
(Hydrologic benchmark network station)

LOCATION.--Lat 47°35'40", long 97°42'18", in NE$^{1}/_{4}$ 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$^2$, 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 National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those below 1.0 ft$^3$/s and those for estimated daily discharges, which are poor. Since June 1987, some regulation by flood control dam 2.0 mi upstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.22 | 1.9 | e1.6 | e0.17 | e0.00 | e0.00 | e2.7 | 2.7 | 1.9 | 20 | 5.4 | 9.2 |
| 2 | 0.09 | e2.0 | e1.5 | e0.15 | e0.00 | e0.00 | e2.3 | 2.8 | 1.4 | 15 | 4.8 | 12 |
| 3 | 0.00 | e2.2 | e1.4 | e0.15 | e0.00 | e0.00 | e2.0 | 2.6 | 1.1 | 13 | 4.4 | 9.9 |
| 4 | 0.00 | e2.4 | e1.3 | e0.14 | e0.00 | e0.00 | e1.9 | 2.3 | 1.1 | 13 | 3.8 | 7.7 |
| 5 | 0.00 | 2.7 | e1.2 | e0.14 | e0.00 | e0.00 | e1.9 | 2.4 | 0.90 | 13 | 3.3 | 5.7 |
| 6 | 0.00 | 3.3 | e1.1 | e0.14 | e0.00 | e0.00 | e2.5 | 2.4 | 0.75 | 15 | 2.6 | 4.3 |
| 7 | 0.00 | 4.2 | e1.0 | e0.16 | e0.00 | e0.00 | e3.5 | 2.4 | 0.70 | 17 | 2.4 | 3.4 |
| 8 | 0.00 | 4.8 | e0.95 | e0.18 | e0.00 | e0.00 | 4.9 | 3.1 | 0.70 | 21 | 2.3 | 2.8 |
| 9 | e0.05 | 4.6 | e0.90 | e0.20 | e0.00 | e0.00 | 7.0 | 3.8 | 8.5 | 23 | 2.3 | 2.4 |
| 10 | e0.40 | 4.2 | e0.85 | e0.20 | e0.00 | e0.00 | 5.6 | 4.0 | 33 | 52 | 2.1 | 2.4 |
| 11 | 0.36 | 3.8 | e0.80 | e0.22 | e0.00 | e0.00 | 6.3 | 5.0 | 20 | 101 | 1.9 | 2.0 |
| 12 | 0.39 | 3.4 | e0.75 | e0.22 | e0.00 | e0.00 | 8.2 | 6.6 | 32 | 56 | 2.0 | 1.9 |
| 13 | 0.35 | 3.1 | e0.70 | e0.22 | e0.00 | e0.00 | 11 | 9.5 | 31 | 34 | 1.9 | 1.7 |
| 14 | 0.33 | 2.8 | e0.75 | e0.20 | e0.00 | e0.00 | 11 | 11 | 17 | 29 | 1.7 | 1.6 |
| 15 | 0.29 | 2.4 | e0.80 | e0.18 | e0.00 | e0.00 | 9.7 | 9.5 | 12 | 25 | 1.5 | 1.6 |
| 16 | 0.29 | 2.2 | e0.80 | e0.16 | e0.00 | e0.00 | 8.8 | 8.2 | 9.9 | 22 | 1.4 | 1.5 |
| 17 | 0.30 | 2.2 | e0.75 | e0.14 | e0.00 | e0.00 | 7.6 | 7.0 | 8.2 | 19 | 1.5 | 1.4 |
| 18 | 0.30 | 2.1 | e0.70 | e0.13 | e0.00 | e0.00 | 8.3 | 5.8 | 6.8 | 18 | 1.2 | 1.3 |
| 19 | 0.36 | e2.0 | e0.65 | e0.12 | e0.00 | e0.00 | 7.9 | 4.7 | 5.8 | 16 | 1.1 | 1.3 |
| 20 | 0.41 | 1.8 | e0.60 | e0.11 | e0.00 | e0.00 | 7.3 | 3.7 | 4.9 | 14 | 1.0 | 1.2 |
| 21 | 0.42 | 2.9 | e0.55 | e0.11 | e0.00 | e0.10 | 6.1 | 2.9 | 4.9 | 12 | 0.96 | 1.1 |
| 22 | 0.45 | 3.9 | e0.50 | e0.11 | e0.00 | e0.20 | 5.2 | 2.2 | 4.7 | 11 | 0.91 | 1.1 |
| 23 | 0.42 | 3.7 | e0.45 | e0.11 | e0.00 | e0.30 | 4.3 | 1.9 | 4.6 | 10 | 0.84 | 1.2 |
| 24 | 1.5 | 3.4 | e0.40 | e0.10 | e0.00 | e0.50 | 3.9 | 1.7 | 4.2 | 9.8 | 0.74 | 1.1 |
| 25 | 1.8 | 2.7 | e0.35 | e0.05 | e0.00 | e1.0 | 3.3 | 2.1 | 4.4 | 9.7 | 0.65 | 1.1 |
| 26 | 5.3 | 2.4 | e0.32 | e0.00 | e0.00 | e2.0 | 3.0 | 2.3 | 4.8 | 9.1 | 0.54 | 0.97 |
| 27 | 1.8 | 2.9 | e0.29 | e0.00 | e0.00 | e4.0 | 3.2 | 2.0 | 25 | 8.4 | 0.48 | 0.91 |
| 28 | 1.3 | 2.1 | e0.26 | e0.00 | e0.00 | e4.7 | 3.1 | 3.7 | 53 | 7.5 | 0.74 | 0.94 |
| 29 | 1.4 | 1.8 | e0.23 | e0.00 | --- | e4.7 | 2.9 | 3.9 | 41 | 6.8 | 0.88 | 0.91 |
| 30 | 1.6 | e1.7 | e0.21 | e0.00 | --- | e4.1 | 2.7 | 3.3 | 30 | 6.0 | 0.87 | 0.93 |
| 31 | 1.8 | --- | e0.19 | e0.00 | --- | e3.3 | --- | 2.5 | --- | 5.5 | 2.9 | --- |
| TOTAL | 21.93 | 85.6 | 22.85 | 3.81 | 0.00 | 24.90 | 158.1 | 128.0 | 374.25 | 631.8 | 59.11 | 85.56 |
| MEAN | 0.707 | 2.853 | 0.737 | 0.123 | 0.000 | 0.803 | 5.270 | 4.129 | 12.47 | 20.38 | 1.907 | 2.852 |
| MAX | 5.3 | 4.8 | 1.6 | 0.22 | 0.00 | 4.7 | 11 | 11 | 53 | 101 | 5.4 | 12 |
| MIN | 0.00 | 1.7 | 0.19 | 0.00 | 0.00 | 0.00 | 1.9 | 1.7 | 0.70 | 5.5 | 0.48 | 0.91 |
| AC-FT | 43 | 170 | 45 | 7.6 | 0.00 | 49 | 314 | 254 | 742 | 1250 | 117 | 170 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 1.829 | 1.677 | 0.311 | 0.089 | 0.577 | 26.23 | 60.19 | 15.43 | 11.77 | 13.21 | 4.059 | 2.179 |
| MAX | 30.3 | 25.4 | 4.33 | 1.06 | 7.90 | 151 | 252 | 89.1 | 150 | 116 | 43.4 | 21.2 |
| (WY) | 1995 | 1995 | 1995 | 1995 | 1998 | 1995 | 1996 | 1999 | 2000 | 2000 | 1994 | 1993 |
| MIN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.19 | 0.042 | 0.001 | 0.000 | 0.000 | 0.000 |
| (WY) | 1968 | 1968 | 1965 | 1965 | 1965 | 1965 | 1981 | 1977 | 1980 | 1972 | 1969 | 1967 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1965 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 5820.47 | | 1595.91 | | | |
| ANNUAL MEAN | 15.95 | | 4.372 | | 11.46 | |
| HIGHEST ANNUAL MEAN | | | | | 36.2 | 1995 |
| LOWEST ANNUAL MEAN | | | | | 0.12 | 1977 |
| HIGHEST DAILY MEAN | 230 | Apr 8 | 101 | Jul 11 | 1540 | Apr 19 1979 |
| LOWEST DAILY MEAN | 0.00 | Feb 15 | 0.00 | Oct 3 | 0.00 | Nov 21 1964 |
| ANNUAL SEVEN-DAY MINIMUM | 0.00 | Feb 15 | 0.00 | Jan 26 | 0.00 | Nov 21 1964 |
| MAXIMUM PEAK FLOW | | | 113 | Jul 11 | a1900 | Apr 19 1979 |
| MAXIMUM PEAK STAGE | | | 3.72 | Jul 11 | b10.79 | Apr 11 1996 |
| ANNUAL RUNOFF (AC-FT) | 11540 | | 3170 | | 8300 | |
| 10 PERCENT EXCEEDS | 43 | | 10 | | 23 | |
| 50 PERCENT EXCEEDS | 2.2 | | 1.7 | | 0.25 | |
| 90 PERCENT EXCEEDS | 0.23 | | 0.00 | | 0.00 | |

a Gage height, 8.35 ft; backwater from ice
b Backwater from ice
e Estimated

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 28... | 1050 | 2.7 | -- | -- | -- | 2410 | -8.0 | .0 | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 24... | 1245 | .09 | -- | -- | -- | 3650 | -9.0 | .0 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 09... | 1340 | 5.0 | 7.9 | 7.5 | 911 | 864 | -3.0 | 8.0 | 320 | 70.0 | 36.0 | 11.0 | 2 |
| 19... | 1310 | 7.8 | -- | -- | -- | 1010 | .0 | 6.0 | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 07... | 1030 | 2.4 | -- | -- | -- | 1620 | 5.0 | 4.0 | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 28... | 1355 | 53 | -- | -- | -- | 2050 | 31.5 | 25.5 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 11... | 1710 | 105 | -- | -- | -- | 1670 | -- | 23.5 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 07... | 1030 | 2.5 | 8.4 | 8.2 | -- | 1780 | 20.0 | 19.0 | 660 | 110 | 93.0 | 17.0 | 5 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 28... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 09... | 63.0 | 29 | 171 | 16.0 | .10 | 290 | 8.51 | 630 | 589 | 2.0 | 30 | <1 | 50 |
| 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 07... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 28... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 07... | 290 | 48 | 465 | 48.0 | .20 | 820 | 11.5 | 1710 | 1660 | 12.0 | 60 | 1 | 120 |

| Date | 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 | | | | | |
| 28... | -- | -- | -- | -- | -- |
| JAN | | | | | |
| 24... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 09... | 390 | <.10 | 1 | 3 | 310 |
| 19... | -- | -- | -- | -- | -- |
| MAY | | | | | |
| 07... | -- | -- | -- | -- | -- |
| JUN | | | | | |
| 28... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 11... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 07... | 310 | .10 | 1 | 1 | 640 |

< Less than

## 05066500 GOOSE RIVER AT HILLSBORO, ND

LOCATION.--Lat 47°24'34", long 97°03'39", in NW$^{1}/_{4}$ sec.5, T.145 N., R.50 W., Traill County, Hydrologic Unit 09020109, on right bank 600 ft upstream from Foogman Dam in Hillsboro and 27.5 mi upstream from mouth.

DRAINAGE AREA.--1,203 mi$^2$, of which about 110 mi$^2$ is probably noncontributing.

### WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder and masonry dam. Datum of gage is 879.52 ft above National Geodetic Vertical Datum of 1929. Sept. 26, 1941, to Oct. 27, 1965, at site 600 ft downstream at same datum. See WSP 1728 or 1913 for history of changes prior to Sept. 26, 1941.

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 14 | 69 | e43 | e21 | e20 | e21 | 106 | 59 | 59 | 276 | 66 | 280 |
| 2 | 14 | 74 | e42 | e20 | e19 | e21 | 88 | 56 | 65 | 222 | 55 | 224 |
| 3 | 14 | 90 | e41 | e20 | e19 | e20 | 96 | 56 | 58 | 177 | 48 | 112 |
| 4 | 12 | 104 | e40 | e19 | e18 | e20 | 87 | 59 | 55 | 141 | 50 | 66 |
| 5 | 12 | 135 | e39 | e19 | e18 | e19 | 78 | 55 | 53 | 118 | 50 | 49 |
| 6 | 12 | 145 | e38 | e19 | e17 | e19 | 83 | 44 | 49 | 105 | 50 | 48 |
| 7 | 8.9 | 158 | e37 | e20 | e17 | e18 | 93 | 37 | 49 | 99 | 49 | 42 |
| 8 | 10 | 156 | e36 | e21 | e18 | e18 | 101 | 47 | 44 | 95 | 50 | 34 |
| 9 | 11 | 149 | e35 | e21 | e18 | e17 | 93 | 60 | 52 | 90 | 161 | 29 |
| 10 | 15 | 139 | e34 | e22 | e19 | e17 | 96 | 91 | 615 | 1920 | 401 | 24 |
| 11 | 15 | 130 | e33 | e23 | e19 | e18 | 101 | 168 | 660 | 3920 | 173 | 22 |
| 12 | 19 | 127 | e33 | e24 | e19 | e18 | 111 | 194 | 734 | 4820 | 110 | 21 |
| 13 | 23 | 122 | e32 | e25 | e20 | e19 | 167 | 189 | 1120 | 4290 | 75 | 21 |
| 14 | 32 | 115 | e32 | e28 | e21 | e19 | 192 | 196 | 1020 | 2630 | 54 | 21 |
| 15 | 26 | 108 | e32 | e30 | e21 | e20 | 211 | 188 | 716 | 1360 | 44 | 21 |
| 16 | 30 | 108 | e32 | e30 | e22 | e21 | 196 | 173 | 513 | 831 | 42 | 20 |
| 17 | 28 | 107 | e32 | e30 | e23 | e22 | 175 | 168 | 342 | 499 | 46 | 25 |
| 18 | 29 | 108 | e31 | e29 | e24 | e23 | 166 | 155 | e250 | 468 | 44 | 27 |
| 19 | 29 | 100 | e30 | e28 | e25 | e23 | 169 | 134 | e200 | 414 | 41 | 18 |
| 20 | 29 | 91 | e29 | e28 | e25 | e23 | 157 | 122 | 172 | 475 | 38 | 14 |
| 21 | 28 | 84 | e28 | e27 | e25 | e23 | 160 | 112 | 161 | 266 | 37 | 14 |
| 22 | 29 | 83 | e28 | e27 | e25 | e24 | 160 | 96 | 145 | 190 | 34 | 18 |
| 23 | 30 | 81 | e27 | e27 | e25 | e25 | 141 | 84 | 141 | 150 | 35 | 27 |
| 24 | 38 | 81 | e26 | e27 | e24 | e29 | 114 | 78 | 326 | 127 | 32 | 42 |
| 25 | 37 | 81 | e25 | e26 | e25 | e37 | 102 | 73 | 281 | 170 | 31 | 47 |
| 26 | 41 | 73 | e24 | e25 | e23 | e43 | 89 | 72 | 171 | 157 | 30 | 40 |
| 27 | 41 | 54 | e23 | e24 | e22 | e50 | 79 | 68 | 129 | 158 | 32 | 36 |
| 28 | 36 | e51 | e22 | e23 | e21 | 63 | 75 | 66 | 122 | 574 | 36 | 33 |
| 29 | 32 | e48 | e22 | e23 | --- | 75 | 70 | 64 | 350 | 419 | 46 | 32 |
| 30 | 34 | e46 | e22 | e21 | --- | 93 | 63 | 61 | 338 | 187 | 145 | 32 |
| 31 | 43 | --- | e21 | e21 | --- | 110 | --- | 58 | --- | 116 | 69 | --- |
| TOTAL | 771.9 | 3017 | 969 | 748 | 592 | 968 | 3619 | 3083 | 8990 | 25464 | 2174 | 1439 |
| MEAN | 24.90 | 100.6 | 31.26 | 24.13 | 21.14 | 31.23 | 120.6 | 99.45 | 299.7 | 821.4 | 70.13 | 47.97 |
| MAX | 43 | 158 | 43 | 30 | 25 | 110 | 211 | 196 | 1120 | 4820 | 401 | 280 |
| MIN | 8.9 | 46 | 21 | 19 | 17 | 17 | 63 | 37 | 44 | 90 | 30 | 14 |
| AC-FT | 1530 | 5980 | 1920 | 1480 | 1170 | 1920 | 7180 | 6120 | 17830 | 50510 | 4310 | 2850 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 16.82 | 20.09 | 8.932 | 5.459 | 9.407 | 171.2 | 515.4 | 142.0 | 84.86 | 82.72 | 26.62 | 18.21 |
| MAX | 436 | 469 | 79.9 | 47.1 | 217 | 1220 | 3412 | 2275 | 954 | 821 | 515 | 326 |
| (WY) | 1995 | 2001 | 1995 | 2001 | 1998 | 1995 | 1997 | 1950 | 2000 | 2002 | 1993 | 1994 |
| MIN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 6.51 | 1.12 | 1.35 | 0.000 | 0.000 | 0.000 |
| (WY) | 1939 | 1939 | 1939 | 1939 | 1939 | 1940 | 1938 | 1939 | 1938 | 1940 | 1938 | 1938 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1931 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 78348.2 | | 51834.9 | | | |
| ANNUAL MEAN | 214.7 | | 142.0 | | 94.44 | |
| HIGHEST ANNUAL MEAN | | | | | 400 | 1999 |
| LOWEST ANNUAL MEAN | | | | | 3.47 | 1937 |
| HIGHEST DAILY MEAN | 3730 | Apr 9 | 4820 | Jul 12 | 14400 | Apr 21 1979 |
| LOWEST DAILY MEAN | 6.7 | Sep 18 | 8.9 | Oct 7 | 0.00 | Mar 1 1936 |
| ANNUAL SEVEN-DAY MINIMUM | 8.6 | Sep 13 | 11 | Oct 3 | 0.00 | Mar 1 1936 |
| MAXIMUM PEAK FLOW | | | 4940 | Jul 12 | 14800 | Apr 21 1979 |
| MAXIMUM PEAK STAGE | | | 12.24 | Jul 12 | 16.76 | Apr 21 1979 |
| ANNUAL RUNOFF (AC-FT) | 155400 | | 102800 | | 68420 | |
| 10 PERCENT EXCEEDS | 567 | | 195 | | 149 | |
| 50 PERCENT EXCEEDS | 48 | | 44 | | 6.8 | |
| 90 PERCENT EXCEEDS | 20 | | 19 | | 0.12 | |

e Estimated

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 15... | 1555 | 24 | -- | -- | -- | 1390 | 8.5 | 9.5 | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 10... | 1120 | 34 | -- | -- | -- | 1720 | -2.0 | .5 | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 24... | 1530 | 27 | -- | -- | -- | 2130 | -4.5 | .5 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 18... | 1010 | 23 | -- | -- | -- | 1520 | -1.0 | .1 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 10... | 0930 | 96 | 8.4 | -- | 864 | --e | 3.0 | 6.0 | 390 | 89.0 | 40.0 | 6.00 | .9 |
| MAY | | | | | | | | | | | | | |
| 06... | 1100 | 54 | -- | -- | -- | 985 | 1.5 | 7.0 | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 20... | 1100 | 170 | -- | -- | -- | 1310 | 16.0 | 20.0 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 13... | 0920 | 78 | 7.5 | 7.8 | 825 | 838 | 17.0 | 21.0 | 350 | 78.0 | 38.0 | 10.0 | .9 |
| SEP | | | | | | | | | | | | | |
| 27... | 0910 | 32 | -- | -- | -- | 1520 | -- | 12.5 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 15... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 10... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 10... | 40.0 | 18 | 186 | 19.0 | .20 | 270 | 151 | 581 | 576 | 4.0 | 60 | <1 | 50 |
| MAY | | | | | | | | | | | | | |
| 06... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 20... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 13... | 37.0 | 18 | 182 | 28.0 | .20 | 230 | 124 | 588 | 531 | 6.0 | 50 | 2 | 60 |
| SEP | | | | | | | | | | | | | |
| 27... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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 | | | | | |
| 15... | -- | -- | -- | -- | -- |
| DEC | | | | | |
| 10... | -- | -- | -- | -- | -- |
| JAN | | | | | |
| 24... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 18... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 10... | 210 | <.10 | 1 | <1 | 380 |
| MAY | | | | | |
| 06... | -- | -- | -- | -- | -- |
| JUN | | | | | |
| 20... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 13... | 260 | <.10 | 3 | 1 | 290 |
| SEP | | | | | |
| 27... | -- | -- | -- | -- | -- |

< Less than
e Required equipment not functional/available

## 05070000 RED RIVER OF THE NORTH NEAR THOMPSON, ND

LOCATION.--Lat 47°45'32", long 96°56'37", in NW$^1/_4$NE$^1/_4$ sec.5, T.149 N.,R.49 W., Grand Forks County, Hydrologic Unit 09020301, on left bank 50 ft upstream of county highway, 7.6 miles east of Thompson, and at river mile 317.7.

DRAINAGE AREA.--Not determined.

### GAGE-HEIGHT RECORDS

PERIOD OF RECORD.--March 1999 to current year; gage heights and maximum discharge only.

GAGE.--Water stage recorder. Datum of gage is 779.00 ft above National Geodetic Vertical Datum of 1929 (levels by Grand Forks County Highway Department).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 41,000 ft$^3$/s, Apr. 14, 2001, gage height, 57.66 ft; minimum recorded gage height, 16.75 ft., Oct. 6, 2001.

EXTREMES OUTSIDE PERIOD OF RECORD.--A peak stage from floodmarks of 67.74 ft for spring 1997 and 63.66 ft for spring 1979, from U.S. Army Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, about 22,000 ft$^3$/s, gage height, 47.10 ft on July 14; minimum gage height, 16.75 ft, Oct. 6.

GAGE HEIGHT from DCP, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 17.12 | 18.04 | 17.27 | 17.69 | 17.34 | 18.03 | 21.01 | 19.64 | 19.51 | --- | 22.32 | 26.04 |
| 2 | 17.03 | 18.27 | 16.98 | 17.73 | 17.33 | 17.91 | 21.47 | 19.66 | 19.56 | 34.70 | 21.66 | 26.94 |
| 3 | 16.93 | 18.64 | 16.86 | 17.75 | 17.31 | 17.66 | 21.70 | 19.56 | 19.66 | 32.54 | 21.15 | 27.55 |
| 4 | 16.85 | 19.10 | 17.23 | 17.74 | 17.25 | 17.44 | 21.82 | 19.59 | 19.57 | 30.35 | 20.79 | 26.55 |
| 5 | 16.84 | 19.38 | 17.81 | 17.73 | 17.26 | 17.41 | 21.80 | 19.62 | 19.22 | 28.35 | 20.47 | 24.02 |
| 6 | 16.78 | 19.48 | --- | 17.74 | 17.28 | 17.43 | --- | 19.64 | 18.82 | 26.57 | 20.22 | 21.55 |
| 7 | 16.77 | 19.43 | --- | 17.72 | 17.27 | 17.38 | 21.35 | 19.58 | 18.53 | 25.01 | 19.98 | 20.34 |
| 8 | 16.78 | 19.29 | 18.40 | 17.76 | 17.24 | 17.39 | 21.09 | 19.64 | 18.36 | 23.73 | 19.75 | 19.72 |
| 9 | 16.78 | 19.06 | 18.27 | 17.82 | 17.22 | 17.45 | 21.05 | 19.82 | 20.68 | 23.09 | 19.57 | 19.36 |
| 10 | 16.86 | 18.88 | 18.41 | 17.85 | 17.18 | 17.53 | 21.33 | 20.29 | 27.27 | 29.94 | 19.35 | 19.13 |
| 11 | 16.82 | 18.72 | 18.28 | 17.86 | 17.23 | 17.61 | 21.66 | 21.18 | 34.66 | 39.03 | 19.45 | 18.93 |
| 12 | 16.87 | 18.63 | 18.57 | 17.87 | 17.31 | 17.69 | 22.08 | 21.71 | 39.37 | 43.92 | 19.37 | 18.71 |
| 13 | 17.19 | 18.57 | 18.63 | 17.87 | 17.36 | 17.78 | 22.31 | 22.11 | 42.23 | 46.31 | 19.10 | 18.54 |
| 14 | 17.38 | 18.50 | 18.68 | 17.87 | 17.42 | 17.83 | 21.49 | 22.32 | 43.28 | 47.01 | 18.95 | 18.43 |
| 15 | 17.55 | 18.48 | 18.78 | 17.86 | 17.42 | 17.93 | 21.29 | 22.36 | 42.68 | 46.35 | 18.77 | 18.26 |
| 16 | 17.65 | 18.41 | 19.08 | 17.83 | 17.42 | 18.05 | 20.99 | 22.26 | 40.98 | 44.65 | 18.62 | 18.08 |
| 17 | 17.74 | 18.41 | 19.32 | 17.78 | 17.44 | 18.19 | 20.70 | 22.05 | 38.54 | 42.28 | 18.58 | 17.90 |
| 18 | 17.85 | 18.53 | 19.44 | 17.72 | 17.50 | 18.41 | 20.50 | 21.79 | 35.57 | 39.44 | 18.49 | 17.78 |
| 19 | 17.86 | 18.61 | 19.23 | 17.68 | 17.58 | 18.64 | 20.31 | 21.53 | 32.46 | 36.21 | 18.59 | 17.77 |
| 20 | 17.84 | 18.60 | 19.03 | 17.63 | 17.67 | 18.87 | 20.23 | 21.23 | 29.07 | 32.90 | 18.78 | 17.60 |
| 21 | 17.78 | 18.55 | 18.65 | 17.59 | 17.77 | 19.07 | 20.34 | 20.90 | 26.04 | 29.86 | 18.89 | 17.61 |
| 22 | 17.70 | 18.46 | 18.43 | 17.63 | 17.85 | 19.26 | 20.40 | 20.68 | 24.79 | 27.48 | 18.86 | 17.67 |
| 23 | 17.64 | 18.38 | 18.06 | 17.62 | 17.94 | 19.37 | 20.31 | 20.64 | 25.73 | 26.04 | 18.75 | 17.66 |
| 24 | 17.78 | 18.31 | 17.84 | 17.57 | 18.02 | 19.39 | 20.23 | 20.53 | 29.02 | 25.09 | 18.65 | 17.64 |
| 25 | 17.80 | 18.27 | 17.69 | 17.53 | 18.11 | 19.31 | 20.04 | 20.39 | 32.17 | 24.27 | 18.57 | 17.60 |
| 26 | 17.75 | 18.22 | 17.52 | 17.50 | 18.22 | 19.11 | 19.88 | 20.23 | 34.88 | 23.82 | 18.55 | 17.50 |
| 27 | 17.72 | 18.22 | 17.66 | 17.48 | 18.19 | 18.88 | 19.89 | 20.06 | 37.56 | 24.07 | 18.53 | 17.43 |
| 28 | 17.77 | 17.76 | 17.78 | 17.45 | 18.09 | 18.82 | 19.84 | 19.86 | 38.89 | 24.32 | 19.65 | 17.37 |
| 29 | 17.82 | 17.12 | 17.74 | 17.38 | --- | 19.11 | 19.75 | 19.63 | 38.74 | 24.31 | 21.63 | 17.31 |
| 30 | 17.84 | 17.20 | 17.69 | 17.31 | --- | 19.76 | 19.67 | 19.50 | 37.86 | 23.97 | 23.07 | 17.27 |
| 31 | 17.90 | --- | 17.63 | 17.31 | --- | 20.41 | --- | 19.50 | --- | 23.08 | 25.05 | --- |
| MEAN | 17.39 | 18.52 | --- | 17.67 | 17.54 | 18.36 | --- | 20.56 | 30.19 | --- | 19.81 | 19.61 |
| MAX | 17.90 | 19.48 | --- | 17.87 | 18.22 | 20.41 | --- | 22.36 | 43.28 | --- | 25.05 | 27.55 |
| MIN | 16.77 | 17.12 | --- | 17.31 | 17.18 | 17.38 | --- | 19.50 | 18.36 | --- | 18.49 | 17.27 |

## 05080000 RED LAKE RIVER AT FISHER, MN

LOCATION.--Lat 47°48'01", long 96°48'31", in SW$^1/_4$NE$^1/_4$ sec. 21, T.150 N., R.48 W., Polk County, Hydrologic Unit 09020303, on left bank 10 ft upstream from bridge on county highway, 0.3 mile west of Fisher, and at river mile 27.6.

DRAINAGE AREA.--5,678 mi$^2$.

PERIOD OF RECORD.--March to September 1999 (gage heights and maximum discharge only), October 1, 1999, to current year.

GAGE.--Water-stage recorder. Datum of gage is 800.00 ft above National Geodetic Vertical Datum of 1929 (levels by Minnesota Department of Transportation).

REMARKS.-- Records good except for estimated daily discharges, which are poor. Runoff from 1,950 mi$^2$ of Red Lake River basin above Lower Red Lake outlet is completely comtrolled by dam at outlet of Lower Red Lake. Flow partially affected by occasional runoff of Thief and Mud Lakes in Thief River basin.

EXTREMES OUTSIDE PERIOD OF RECORD.-- A stage of 41.00 ft occurred in spring of 1997 (from information provided by the National Weather Service).

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1180 | 1660 | 1290 | e1430 | e840 | e700 | e1300 | 2030 | 2220 | 5810 | 3280 | 9250 |
| 2 | 1190 | 1660 | 1230 | e1410 | e840 | e720 | e1350 | 1990 | 2170 | 5340 | 3150 | 10200 |
| 3 | 1170 | 1690 | e1250 | e1380 | e840 | e740 | e1400 | 1900 | 1920 | 5030 | 3050 | 9010 |
| 4 | 1140 | 1730 | e1300 | e1360 | e840 | e770 | e1450 | 1860 | 1750 | 4860 | 3070 | 6590 |
| 5 | 1100 | 1660 | e1400 | e1330 | e850 | e800 | e1460 | 1800 | 1660 | 4800 | 2990 | 4460 |
| 6 | 1120 | 1650 | e1550 | e1290 | e850 | e830 | e1500 | 1800 | 1660 | 4740 | 2890 | 3490 |
| 7 | 1110 | 1660 | e1650 | e1270 | e850 | e850 | e1530 | 1820 | 1640 | 4610 | 2690 | 3030 |
| 8 | 1050 | 1660 | e1750 | e1240 | e850 | e880 | e1570 | 1920 | 1660 | 4970 | 2490 | 2760 |
| 9 | 1010 | 1630 | e1730 | e1220 | e850 | e900 | e1580 | 2210 | 3170 | 5430 | 2510 | 2610 |
| 10 | 1050 | 1610 | e1680 | e1200 | e850 | e910 | e1600 | 3080 | 8740 | 7380 | 2400 | 2620 |
| 11 | 1050 | 1660 | e1650 | e1170 | e850 | e920 | e1610 | 3650 | 13600 | 11700 | 2310 | 2500 |
| 12 | 1000 | 1770 | e1450 | e1140 | e850 | e930 | e1650 | 3540 | 14200 | 14100 | 2210 | 2330 |
| 13 | 1030 | 1890 | e1450 | e1120 | e850 | e940 | e1700 | 3090 | 10700 | 12400 | 2200 | 2200 |
| 14 | 1170 | 1960 | e1580 | e1080 | e850 | e940 | e1750 | 2740 | 8830 | 10200 | 1880 | 2090 |
| 15 | 1130 | 1950 | e1600 | e1070 | e850 | e930 | 1810 | 2500 | 7900 | 8360 | 1890 | 1880 |
| 16 | 1230 | 1980 | e1600 | e1040 | e850 | e920 | 1740 | 2290 | 7320 | 7000 | 1820 | 1750 |
| 17 | 1280 | 2100 | e1600 | e1020 | e850 | e910 | 1670 | 2140 | 6750 | 6020 | 1740 | 1640 |
| 18 | 1290 | 2180 | e1750 | e982 | e830 | e900 | 1670 | 1950 | 6160 | 5330 | 1730 | 1660 |
| 19 | 1300 | e2600 | e2030 | e951 | e820 | e900 | 1750 | 1850 | 5650 | 4730 | 1710 | 1630 |
| 20 | 1270 | 2720 | 2140 | e923 | e820 | e880 | 2080 | 1780 | 5540 | 4330 | 1760 | 1550 |
| 21 | 1260 | 2550 | 1910 | e880 | e840 | e880 | 2250 | 1690 | 6300 | 4070 | 1810 | 1470 |
| 22 | 1240 | 2380 | 1690 | e860 | e860 | e880 | 2190 | 1660 | 6800 | 3920 | 1840 | 1420 |
| 23 | 1220 | 2240 | 1620 | e850 | e880 | e890 | 2110 | 1660 | 7540 | 3820 | 1810 | 1360 |
| 24 | 1270 | 2000 | e1620 | e850 | e880 | e910 | 2080 | 1610 | 9020 | 3740 | 1790 | 1330 |
| 25 | 1380 | 1980 | e1590 | e850 | e870 | e940 | 1990 | 1550 | 9660 | 3690 | 1780 | 1270 |
| 26 | 1410 | 2000 | e1560 | e840 | e850 | e970 | 2080 | 1550 | 9170 | 3610 | 1760 | 1250 |
| 27 | 1390 | 1940 | e1520 | e840 | e770 | e1020 | 2120 | 1540 | 8450 | 3550 | 1860 | 1270 |
| 28 | 1490 | 1470 | e1490 | e840 | e680 | e1080 | 2060 | 1510 | 7650 | 3480 | 3180 | 1260 |
| 29 | 1590 | 1350 | e1470 | e810 | --- | e1150 | 2020 | 1450 | 6990 | 3400 | 7920 | 1240 |
| 30 | 1600 | 1340 | e1470 | e840 | --- | e1200 | 2040 | 1500 | 6410 | 3330 | 9050 | 1210 |
| 31 | 1650 | --- | e1430 | e840 | --- | e1250 | --- | 1790 | --- | 3280 | 7970 | --- |
| TOTAL | 38370 | 56670 | 49050 | 32926 | 23510 | 28440 | 53110 | 63450 | 191230 | 177030 | 88540 | 86330 |
| MEAN | 1238 | 1889 | 1582 | 1062 | 839.6 | 917.4 | 1770 | 2047 | 6374 | 5711 | 2856 | 2878 |
| MAX | 1650 | 2720 | 2140 | 1430 | 880 | 1250 | 2250 | 3650 | 14200 | 14100 | 9050 | 10200 |
| MIN | 1000 | 1340 | 1230 | 810 | 680 | 700 | 1300 | 1450 | 1640 | 3280 | 1710 | 1210 |
| AC-FT | 76110 | 112400 | 97290 | 65310 | 46630 | 56410 | 105300 | 125900 | 379300 | 351100 | 175600 | 171200 |
| CFSM | 0.22 | 0.33 | 0.28 | 0.19 | 0.15 | 0.16 | 0.31 | 0.36 | 1.12 | 1.01 | 0.50 | 0.51 |
| IN. | 0.25 | 0.37 | 0.32 | 0.22 | 0.15 | 0.19 | 0.35 | 0.42 | 1.25 | 1.16 | 0.58 | 0.57 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2000 - 2002, BY WATER YEAR (WY)

| | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 1531 | 2645 | 1444 | 1106 | 1017 | 1443 | 4031 | 2423 | 4022 | 3334 | 2350 | 1735 |
| MAX | 2261 | 4103 | 1566 | 1187 | 1106 | 2280 | 8063 | 3666 | 6374 | 5711 | 3188 | 2878 |
| (WY) | 2000 | 2001 | 2002 | 2001 | 2001 | 2000 | 2001 | 2001 | 2002 | 2002 | 2001 | 2002 |
| MIN | 1095 | 1889 | 1324 | 1044 | 840 | 917 | 1770 | 1555 | 2770 | 1772 | 1006 | 858 |
| (WY) | 2001 | 2002 | 2000 | 2002 | 2002 | 2002 | 2002 | 2000 | 2000 | 2001 | 2000 | 2000 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 2000 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 888010 | | 888656 | | | |
| ANNUAL MEAN | 2433 | | 2435 | | 2257 | |
| HIGHEST ANNUAL MEAN | | | | | 2591 | 2001 |
| LOWEST ANNUAL MEAN | | | | | 1748 | 2000 |
| HIGHEST DAILY MEAN | 22200 | Apr 10 | 14200 | Jun 12 | 22200 | Apr 10 2001 |
| LOWEST DAILY MEAN | 1000 | Oct 12 | 680 | Feb 28 | 589 | Sep 21 2000 |
| ANNUAL SEVEN-DAY MINIMUM | 1030 | Mar 7 | 740 | Feb 27 | 613 | Sep 17 2000 |
| MAXIMUM PEAK FLOW | | | 15000 | Jun 12 | 24500 | Apr 10 2001 |
| MAXIMUM PEAK STAGE | | | 34.35 | Jun 12 | 38.00 | Apr 10 2001 |
| ANNUAL RUNOFF (AC-FT) | 1761000 | | 1763000 | | 1635000 | |
| ANNUAL RUNOFF (CFSM) | 0.43 | | 0.43 | | 0.40 | |
| ANNUAL RUNOFF (INCHES) | 5.82 | | 5.82 | | 5.40 | |
| 10 PERCENT EXCEEDS | 4540 | | 5580 | | 4380 | |
| 50 PERCENT EXCEEDS | 1640 | | 1650 | | 1610 | |
| 90 PERCENT EXCEEDS | 1100 | | 850 | | 940 | |

e Estimated.

## 05082500 RED RIVER OF THE NORTH AT GRAND FORKS, ND

LOCATION.--Lat 47°55'39", long 97°01'40", in sec.2, T.151 N., R.50 W., Polk County, MN, Hydrologic Unit 09020301, on right bank 30 ft downstream from the DeMers Avenue bridge, 0.4 mi downstream from Red Lake River, and at mile 297.6.

DRAINAGE AREA.--30,100 $mi^2$, approximately, including 3,800 $mi^2$ 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.--Acoustic doppler velocity meter and water stage recorder. Datum of gage is 779.00 ft above National Geodetic Vertical Datum of 1929. 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 estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2040 | 2980 | 1960 | 2010 | 1890 | 2050 | e3670 | 4490 | 4450 | 21300 | 7420 | 16600 |
| 2 | 1920 | 3130 | 1720 | 2000 | 1870 | 1940 | e3810 | 4480 | 4530 | 19200 | 6880 | 17000 |
| 3 | 1820 | 3440 | 1630 | 1990 | 1880 | 1880 | e3790 | e4400 | 4450 | 16800 | 6270 | 16600 |
| 4 | 1810 | 3730 | 1950 | 1980 | 1810 | 1730 | e3760 | e4300 | 4360 | 14600 | 6060 | 14300 |
| 5 | 1730 | 3930 | 2310 | 1950 | 1700 | e1710 | e3700 | e4310 | 4070 | 12900 | 5750 | 10600 |
| 6 | 1760 | 4030 | 2630 | 1980 | 1690 | 1710 | 3660 | e4300 | 3700 | 11400 | 5410 | 7460 |
| 7 | 1760 | 3930 | 2740 | 1940 | 1700 | 1670 | 3480 | e4300 | 3460 | 10200 | 5100 | 6200 |
| 8 | 1620 | 3860 | 2750 | 1970 | 1730 | 1670 | 3390 | 4360 | 3300 | 9240 | 5030 | 5580 |
| 9 | 1690 | 3670 | 2690 | 2160 | e1750 | 1700 | 3390 | 4580 | 6310 | 9090 | 5030 | 5200 |
| 10 | 1790 | 3530 | 2740 | 2190 | e1670 | e1750 | 3740 | 5280 | 13200 | 14900 | 4790 | 4980 |
| 11 | 1640 | 3400 | 2690 | 2170 | 1720 | e1670 | 4190 | 6330 | 20900 | 24700 | 4680 | 4780 |
| 12 | 1680 | 3460 | 2910 | 2170 | 1750 | e1750 | 4660 | 6870 | 26500 | 33200 | 4690 | 4580 |
| 13 | 1860 | 3500 | 2770 | 2160 | 1750 | 1730 | 5640 | 6940 | 28700 | 36600 | 4420 | 4300 |
| 14 | 2110 | 3470 | 2760 | 2130 | 1770 | 1840 | 5880 | 6730 | 29100 | 37400 | 4210 | 4200 |
| 15 | 2260 | 3560 | 2820 | 2150 | 1740 | 2010 | 5600 | 6670 | 27100 | 36000 | 3910 | 3970 |
| 16 | 2210 | 3420 | 3120 | 2160 | 1710 | 2060 | 5180 | 6500 | 25100 | 32900 | 3740 | 3720 |
| 17 | 2180 | 3500 | 3290 | 2130 | 1710 | 2020 | 5170 | 6300 | 22000 | 29300 | 3590 | 3520 |
| 18 | 2360 | 3720 | 3320 | 2110 | 1710 | e2200 | 5080 | 6020 | 18900 | 25100 | 3440 | 3390 |
| 19 | 2360 | 3960 | 3160 | 2060 | 1740 | e2460 | 4760 | 5710 | 15800 | 21300 | 3370 | 3440 |
| 20 | 2370 | 3940 | 3020 | 2020 | 1840 | e2580 | 4880 | 5400 | 12800 | 17500 | 3440 | 3140 |
| 21 | 2410 | 3910 | 2720 | 1960 | 1950 | e2710 | 5000 | 5120 | 10900 | 14200 | 3660 | 3050 |
| 22 | 2110 | 3750 | 2530 | 1960 | 2000 | e2760 | e5200 | 4880 | 10700 | 11800 | 3710 | 2990 |
| 23 | 2310 | 3630 | 2230 | 1980 | 2060 | e2750 | e5100 | 4870 | 12000 | e10600 | 3690 | 2950 |
| 24 | 2470 | 3430 | 2120 | 1950 | 2150 | e2660 | e4850 | 4730 | 15600 | e9700 | 3710 | 2800 |
| 25 | 2580 | 3350 | 2030 | 1900 | 2270 | e2500 | e4690 | 4600 | 19500 | 9170 | 3700 | 2530 |
| 26 | 2620 | 3280 | 1860 | 1880 | e2340 | e2490 | 4590 | 4520 | 22200 | 8630 | 3700 | 2450 |
| 27 | 2560 | 3320 | 1920 | 1870 | 2340 | e2480 | 4580 | 4390 | 24200 | 8700 | 3720 | 2380 |
| 28 | 2620 | 2550 | 2030 | 1970 | 2210 | e2420 | e4630 | 4210 | 25100 | 8910 | 5120 | 2320 |
| 29 | 2720 | 1900 | 2050 | 1960 | --- | e2540 | 4570 | 4040 | 24700 | 8890 | 8450 | 2230 |
| 30 | 2710 | 1910 | 2040 | 1920 | --- | e2940 | 4460 | 3970 | 22900 | 8610 | 13200 | 2270 |
| 31 | 2810 | --- | 2010 | 1860 | --- | e3380 | --- | 4110 | --- | 7880 | 15600 | --- |
| TOTAL | 66890 | 103190 | 76520 | 62640 | 52450 | 67760 | 135100 | 157710 | 466530 | 540720 | 165490 | 169530 |
| MEAN | 2158 | 3440 | 2468 | 2021 | 1873 | 2186 | 4503 | 5087 | 15550 | 17440 | 5338 | 5651 |
| MAX | 2810 | 4030 | 3320 | 2190 | 2340 | 3380 | 5880 | 6940 | 29100 | 37400 | 15600 | 17000 |
| MIN | 1620 | 1900 | 1630 | 1860 | 1670 | 1670 | 3390 | 3970 | 3300 | 7880 | 3370 | 2230 |
| AC-FT | 132700 | 204700 | 151800 | 124200 | 104000 | 134400 | 268000 | 312800 | 925400 | 1073000 | 328200 | 336300 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1904 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 1496 | 1377 | 1080 | 893.8 | 875.2 | 2789 | 10290 | 5595 | 4307 | 3752 | 1898 | 1615 |
| MAX | 5127 | 9971 | 3832 | 2656 | 3520 | 15370 | 56210 | 36510 | 19340 | 25270 | 17050 | 11340 |
| (WY) | 1995 | 2001 | 2001 | 2001 | 1998 | 1995 | 1997 | 1950 | 1962 | 1975 | 1993 | 1999 |
| 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 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1904 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 2785480 | | 2064530 | | | |
| ANNUAL MEAN | 7631 | | 5656 | | 2983 | |
| HIGHEST ANNUAL MEAN | | | | | 10070 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 244 | 1934 |
| HIGHEST DAILY MEAN | 57300 | Apr 14 | 37400 | Jul 14 | 127000 | Apr 18 1997 |
| LOWEST DAILY MEAN | 1620 | Oct 8 | 1620 | Oct 8 | 1.80 | Sep 2 1977 |
| ANNUAL SEVEN-DAY MINIMUM | 1710 | Oct 6 | 1700 | Mar 5 | 2.5 | Feb 12 1937 |
| MAXIMUM PEAK FLOW | | | a38000 | Jul 13 | b137000 | Apr 18 1997 |
| MAXIMUM PEAK STAGE | | | 38.67 | Jul 14 | c54.35 | Apr 22 1997 |
| ANNUAL RUNOFF (AC-FT) | 5525000 | | 4095000 | | 2161000 | |
| 10 PERCENT EXCEEDS | 17400 | | 14200 | | 6500 | |
| 50 PERCENT EXCEEDS | 3340 | | 3440 | | 1440 | |
| 90 PERCENT EXCEEDS | 2240 | | 1810 | | 284 | |

a Gage height, 38.14 ft
b Maximum observed, affected by breakout from Red River of the North about 20 mi upstream of gage that entered Red Lake River about 2 mi upstream of confluence with the Red River of the North
c From floodmark
e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 01... | 1505 | 2150 | -- | -- | -- | 534 | 27.5 | 16.5 | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 14... | 1355 | 3490 | -- | -- | -- | 830 | 13.5 | 5.0 | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 23... | 1655 | 2080 | -- | -- | -- | 572 | -- | .5 | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 11... | 1055 | 1720 | -- | -- | -- | 585 | .0 | .5 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 12... | 1435 | 4420 | -- | -- | -- | 453 | .0 | 1.5 | -- | -- | -- | -- | -- |
| 22... | 1050 | 5180 | --e | 8.0 | 520 | 496 | 5.0 | 9.5 | 240 | 53.0 | 25.0 | 4.10 | .4 |
| JUN | | | | | | | | | | | | | |
| 27... | 0910 | 24500 | -- | -- | -- | 360 | -- | 26.0 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 08... | 1255 | 5000 | 7.3 | -- | 541 | 554 | 28.5 | 24.0 | 260 | 60.0 | 28.0 | 4.20 | .5 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 01... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 14... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 23... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 12... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 22... | 16.0 | 13 | 197 | 10.0 | .1 | 74.0 | 4570 | 327 | 301 | 2.0 | 20 | <1 | 20.0 |
| JUN | | | | | | | | | | | | | |
| 27... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 08... | 18.0 | 13 | 218 | 5.7 | .1 | 83.0 | 5060 | 375 | 330 | 4.0 | 20 | 2 | 20 |

| Date | 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 | | | | | |
| 01... | -- | -- | -- | -- | -- |
| NOV | | | | | |
| 14... | -- | -- | -- | -- | -- |
| JAN | | | | | |
| 23... | -- | -- | -- | -- | -- |
| FEB | | | | | |
| 11... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 12... | -- | -- | -- | -- | -- |
| 22... | 20 | <.10 | <1 | 1.0 | 150 |
| JUN | | | | | |
| 27... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 08... | 10 | .1 | 2 | 1 | 380 |

< Less than
e Required equipment not functional/available

## 05082625 TURTLE RIVER AT TURTLE RIVER STATE PARK NEAR ARVILLA, ND

LOCATION.--Lat 47°55'55", long 97°30'51", in NE$^1/_4$NW$^1/_4$NW$^1/_4$ sec.1, T.l51 N., R.54 W., Grand Forks County, Hydrologic Unit 09020307, on right bank 200 ft upstream from U.S. Highway 2, 0.25 mi upstream from Turtle River State Park, 1 mi northwest of Arvilla, and 65 mi above mouth.

DRAINAGE AREA.--311 mi$^2$.

### WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Elevation of gage is 980 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except for estimated daily discharges, which are 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 9.0 | 15 | e13 | e12 | e15 | e15 | e27 | 18 | 18 | 132 | 13 | 13 |
| 2 | 9.1 | 18 | e13 | e12 | e16 | e15 | e27 | 18 | 17 | 97 | 13 | 13 |
| 3 | 9.2 | 19 | e13 | e12 | e17 | e15 | e27 | 18 | 17 | 76 | 13 | 12 |
| 4 | 9.3 | 18 | e13 | e12 | e18 | e15 | e26 | 18 | 16 | 61 | 12 | 11 |
| 5 | 9.3 | 16 | e13 | e12 | e18 | e15 | e27 | 20 | 16 | 51 | 12 | 10 |
| 6 | 9.4 | 15 | e13 | e12 | e18 | e15 | e26 | 21 | 16 | 43 | 12 | 10 |
| 7 | 9.6 | 15 | e12 | e13 | e18 | e15 | e25 | 22 | 15 | 36 | 11 | 10 |
| 8 | 10 | 15 | e13 | e13 | e18 | e15 | e24 | 24 | 14 | 32 | 11 | 9.9 |
| 9 | 10 | 16 | e12 | e13 | e18 | e16 | 23 | 28 | 132 | 29 | 13 | 10 |
| 10 | 12 | 16 | e12 | e13 | e19 | e16 | 22 | 29 | 397 | 31 | 12 | 10 |
| 11 | 12 | 16 | e12 | e13 | e19 | e16 | 24 | 30 | 696 | 30 | 11 | 10 |
| 12 | 12 | 16 | e12 | e12 | e19 | e16 | 23 | 33 | 346 | 29 | 11 | 9.8 |
| 13 | 11 | 17 | e13 | e12 | e19 | e16 | 24 | 34 | 235 | 27 | 11 | 9.8 |
| 14 | 11 | 18 | e15 | e11 | e19 | e16 | 23 | 35 | 182 | 26 | 11 | 9.6 |
| 15 | 11 | 17 | e15 | e11 | e18 | e16 | 23 | 33 | 140 | 24 | 11 | 9.5 |
| 16 | 11 | 17 | e16 | e11 | e18 | e16 | 22 | 31 | 111 | 22 | 11 | 9.4 |
| 17 | 11 | 18 | e15 | e11 | e19 | e16 | 22 | 29 | 91 | 22 | 13 | 9.3 |
| 18 | 11 | 17 | e15 | e11 | e18 | e16 | 22 | 26 | 71 | 21 | 13 | 9.6 |
| 19 | 11 | 16 | e13 | e11 | e18 | e16 | 22 | 24 | 59 | 20 | 13 | 10 |
| 20 | 11 | 18 | e13 | e11 | e17 | e16 | 20 | 24 | 50 | 19 | 12 | 10 |
| 21 | 11 | 15 | e14 | e10 | e17 | e16 | 19 | 23 | 40 | 18 | 11 | 11 |
| 22 | 11 | 14 | e14 | e10 | e16 | e15 | 18 | 22 | 39 | 18 | 11 | 10 |
| 23 | 11 | 14 | e14 | e10 | e15 | e14 | 18 | 22 | 82 | 16 | 11 | 10 |
| 24 | 13 | 14 | e14 | e10 | e15 | e15 | 21 | 21 | 426 | 16 | 11 | 10 |
| 25 | 14 | 14 | e14 | e10 | e14 | e15 | 19 | 21 | 612 | 16 | 10 | 10 |
| 26 | 12 | e15 | e14 | e11 | e15 | e16 | 18 | 20 | 631 | 15 | 9.9 | 10 |
| 27 | 12 | e14 | e13 | e11 | e15 | e17 | 18 | 19 | 423 | 15 | 10 | 9.7 |
| 28 | 13 | e13 | e13 | e11 | e15 | e19 | 18 | 19 | 323 | 14 | 13 | 9.9 |
| 29 | 13 | e13 | e13 | e11 | --- | e23 | 19 | 19 | 240 | 14 | 13 | 9.8 |
| 30 | 13 | e13 | e12 | e12 | --- | e25 | 18 | 19 | 173 | 13 | 13 | 9.9 |
| 31 | 13 | --- | e12 | e13 | --- | e26 | --- | 18 | --- | 13 | 14 | --- |
| TOTAL | 344.9 | 472 | 413 | 357 | 481 | 513 | 665 | 738 | 5628 | 996 | 365.9 | 306.2 |
| MEAN | 11.13 | 15.73 | 13.32 | 11.52 | 17.18 | 16.55 | 22.17 | 23.81 | 187.6 | 32.13 | 11.80 | 10.21 |
| MAX | 14 | 19 | 16 | 13 | 19 | 26 | 27 | 35 | 696 | 132 | 14 | 13 |
| MIN | 9.0 | 13 | 12 | 10 | 14 | 14 | 18 | 18 | 14 | 13 | 9.9 | 9.3 |
| AC-FT | 684 | 936 | 819 | 708 | 954 | 1020 | 1320 | 1460 | 11160 | 1980 | 726 | 607 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 17.09 | 19.98 | 11.87 | 9.580 | 12.72 | 92.63 | 173.9 | 59.18 | 133.4 | 55.35 | 27.49 | 22.14 |
| MAX | 70.0 | 58.3 | 18.2 | 13.5 | 32.3 | 250 | 525 | 192 | 923 | 168 | 84.4 | 74.7 |
| (WY) | 1995 | 2001 | 2001 | 2001 | 1998 | 1995 | 1997 | 1999 | 2000 | 1997 | 1993 | 1993 |
| MIN | 5.47 | 7.71 | 5.59 | 3.97 | 4.59 | 11.5 | 18.3 | 12.5 | 13.8 | 12.8 | 5.47 | 2.80 |
| (WY) | 1993 | 1993 | 1993 | 1993 | 1993 | 1996 | 2000 | 1993 | 1993 | 2001 | 1998 | 1998 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1993 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 12795.9 | | 11280.0 | | | |
| ANNUAL MEAN | 35.06 | | 30.90 | | 52.88 | |
| HIGHEST ANNUAL MEAN | | | | | 94.7 | 2000 |
| LOWEST ANNUAL MEAN | | | | | 30.8 | 1998 |
| HIGHEST DAILY MEAN | 648 | Apr 9 | 696 | Jun 11 | 5000 | Jun 13 2000 |
| LOWEST DAILY MEAN | 8.0 | Sep 6 | 9.0 | Oct 1 | 2.5 | Sep 25 1998 |
| ANNUAL SEVEN-DAY MINIMUM | 8.2 | Sep 3 | 9.3 | Oct 1 | 2.6 | Sep 19 1998 |
| MAXIMUM PEAK FLOW | | | 1030 | Jun 10 | 12400 | Jun 13 2000 |
| MAXIMUM PEAK STAGE | | | 7.15 | Jun 10 | a18.74 | Jun 13 2000 |
| ANNUAL RUNOFF (AC-FT) | 25380 | | 22370 | | 38310 | |
| 10 PERCENT EXCEEDS | 91 | | 30 | | 111 | |
| 50 PERCENT EXCEEDS | 13 | | 15 | | 15 | |
| 90 PERCENT EXCEEDS | 9.3 | | 10 | | 7.9 | |

a From floodmark
e Estimated

05082625 TURTLE RIVER AT TURTLE RIVER STATE PARK NEAR ARVILLA, ND--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 26... | 1300 | 15 | -- | -- | -- | 647 | -5.5 | .5 | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 09... | 1520 | 13 | -- | -- | -- | -- | 2.0 | .5 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 20... | 1130 | 16 | -- | -- | -- | 659 | -- | .0 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 10... | 1450 | 22 | 7.9 | 8.0 | 699 | 675 | -3.0 | 1.5 | 300 | 77.0 | 26.0 | 4.30 | .7 |
| 19... | 1525 | 23 | -- | -- | -- | 702 | 2.0 | 7.0 | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 08... | 1440 | 23 | -- | -- | -- | 767 | 1.0 | 5.5 | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 07... | 1310 | 15 | -- | -- | -- | 1010 | 17.5 | 18.0 | -- | -- | -- | -- | -- |
| 11... | 1125 | 676 | -- | -- | -- | 1010 | 17.0 | 17.5 | -- | -- | -- | -- | -- |
| 28... | 1110 | 337 | -- | -- | -- | 904 | 27.5 | 25.5 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 07... | 1445 | 11 | 8.2 | 8.3 | 955 | 956 | 24.0 | 22.0 | 420 | 99.0 | 41.0 | 5.70 | 1 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 26... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 20... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 10... | 26.0 | 16 | 203 | 15.0 | .20 | 130 | 26.7 | 447 | 401 | 2.0 | 50 | <1 | 30 |
| 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 07... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 28... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 07... | 54.0 | 3 | 280 | 26.0 | .20 | 240 | 19.7 | 681 | 634 | 7.0 | 60 | 1 | 50 |

| Date | 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 | | | | | |
| 26... | -- | -- | -- | -- | -- |
| JAN | | | | | |
| 09... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 20... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 10... | 150 | <.10 | 1 | 2 | 280 |
| 19... | -- | -- | -- | -- | -- |
| MAY | | | | | |
| 08... | -- | -- | -- | -- | -- |
| JUN | | | | | |
| 07... | -- | -- | -- | -- | -- |
| 11... | -- | -- | -- | -- | -- |
| 28... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 07... | 140 | .10 | 3 | 1 | 360 |

< Less than

## 05083500 RED RIVER OF THE NORTH AT OSLO, MN

LOCATION.--Lat 48°11'40", long 97°08'30", in SW$^1/_4$SW$^1/_4$ sec.36, T.154 N., R.50 W., Marshall County, MN, Hydrologic Unit 09020306, on bridge crossing the Red River of the North, 0.5 mi west of Oslo, and at mile 271.2.

DRAINAGE AREA.--31,200 mi$^2$, approximately, including 3,800 mi$^2$ in closed basins.

### GAGE-HEIGHT RECORDS

PERIOD OF RECORD.--1936-37, 1941-47 (high-water periods only), 1948 to March 1973 (spring and summer months only), October 1984 to September 2001 (peak gage height and discharge only), Apri1 to September 2002 (gage height and maximum discharge only).

GAGE.--Water stage recorder. Datum of gage is 772.79 ft above National Geodetic Vertical Datum of 1929. Prior to September 1959 at datum 5.00 ft higher.

REMARKS.--Gage heights for April 12, 24, June 11, August 28-30, September 18 and 24 based on once daily readings by U.S. Geological Survey personnel.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 120,000 ft$^3$/s, Apr. 23, 1997, gage height, 38.00 ft (observed).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, about 34,000 ft$^3$/s, gage height, 33.96 ft, July 15; minimum gage height, 7.53 ft, September 30.

GAGE HEIGHT FROM DCP, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | --- | --- | --- | --- | --- | --- | --- | 10.66 | 10.28 | 28.59 | 14.72 | 22.41 |
| 2 | --- | --- | --- | --- | --- | --- | --- | 10.62 | 10.66 | 27.61 | 14.08 | --- |
| 3 | --- | --- | --- | --- | --- | --- | --- | 10.61 | 10.75 | 26.31 | 13.48 | --- |
| 4 | --- | --- | --- | --- | --- | --- | --- | 10.48 | 10.65 | 24.81 | 13.00 | 23.64 |
| 5 | --- | --- | --- | --- | --- | --- | --- | 10.48 | 10.33 | 23.23 | 12.67 | 21.51 |
| 6 | --- | --- | --- | --- | --- | --- | --- | 10.47 | 9.93 | 21.63 | 12.37 | 18.56 |
| 7 | --- | --- | --- | --- | --- | --- | --- | 10.44 | 9.48 | 20.06 | 12.14 | --- |
| 8 | --- | --- | --- | --- | --- | --- | --- | 10.49 | 9.14 | 18.55 | 11.99 | --- |
| 9 | --- | --- | --- | --- | --- | --- | --- | 10.81 | 11.52 | 17.63 | 11.82 | --- |
| 10 | --- | --- | --- | --- | --- | --- | --- | 11.27 | --- | 19.64 | 11.53 | --- |
| 11 | --- | --- | --- | --- | --- | --- | --- | 12.44 | 26.92 | 25.48 | 11.26 | --- |
| 12 | --- | --- | --- | --- | --- | --- | 12.75 | 13.59 | --- | 29.69 | 11.23 | --- |
| 13 | --- | --- | --- | --- | --- | --- | --- | 14.02 | 32.24 | 32.25 | 10.99 | 10.45 |
| 14 | --- | --- | --- | --- | --- | --- | --- | 13.99 | 33.10 | 33.52 | --- | 10.11 |
| 15 | --- | --- | --- | --- | --- | --- | --- | 13.85 | 33.16 | 33.92 | --- | 9.84 |
| 16 | --- | --- | --- | --- | --- | --- | --- | 13.54 | 32.71 | 33.69 | --- | 9.46 |
| 17 | --- | --- | --- | --- | --- | --- | --- | 13.26 | 31.89 | 32.91 | --- | 9.15 |
| 18 | --- | --- | --- | --- | --- | --- | --- | 12.88 | 30.66 | 31.67 | --- | 8.74 |
| 19 | --- | --- | --- | --- | --- | --- | --- | 12.53 | 29.16 | 30.01 | --- | --- |
| 20 | --- | --- | --- | --- | --- | --- | --- | 12.17 | --- | 27.91 | --- | --- |
| 21 | --- | --- | --- | --- | --- | --- | --- | 11.91 | --- | 25.54 | --- | --- |
| 22 | --- | --- | --- | --- | --- | --- | --- | 11.56 | 23.35 | 23.17 | --- | --- |
| 23 | --- | --- | --- | --- | --- | --- | --- | 11.29 | 22.97 | 21.04 | --- | --- |
| 24 | --- | --- | --- | --- | --- | --- | 11.38 | 11.13 | 24.04 | 19.27 | --- | 8.15 |
| 25 | --- | --- | --- | --- | --- | --- | --- | 10.93 | 25.86 | 17.83 | --- | 8.02 |
| 26 | --- | --- | --- | --- | --- | --- | 10.93 | 10.73 | 27.34 | 16.68 | --- | 7.88 |
| 27 | --- | --- | --- | --- | --- | --- | 10.93 | 10.57 | 28.34 | 16.10 | --- | 7.81 |
| 28 | --- | --- | --- | --- | --- | --- | 10.95 | 10.42 | 29.13 | 16.02 | 10.87 | 7.74 |
| 29 | --- | --- | --- | --- | --- | --- | 10.86 | 10.27 | 29.45 | 15.97 | 16.06 | 7.68 |
| 30 | --- | --- | --- | --- | --- | --- | 10.73 | 10.05 | 29.23 | 15.82 | 19.89 | 7.59 |
| 31 | --- | --- | --- | --- | --- | --- | --- | 9.98 | --- | 15.36 | 21.49 | --- |
| MAX | --- | --- | --- | --- | --- | --- | --- | 14.02 | --- | 33.92 | --- | --- |
| MIN | --- | --- | --- | --- | --- | --- | --- | 9.98 | --- | 15.36 | --- | --- |

Miscellaneous discharge measurements for Red River of the North at Oslo, MN

| Date | Discharge | Gage height |
|---|---|---|
| April 24, 2002 | 5,050 | 11.38 |
| June 18, 2002 | 23,400 | 30.72 |
| July 16, 2002 | 33,200 | 33.68 |

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

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1973-77, 1986-96, 1998 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APR | | | | | | | | | | | | | |
| 24... | 1235 | 5050 | 7.5 | -- | 566 | 519 | 3.0 | 7.5 | 240 | 54.0 | 26.0 | 3.80 | .5 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APR | | | | | | | | | | | | | |
| 24... | 19.0 | 14 | 185 | 15.0 | .20 | 83.0 | 4690 | 344 | 312 | 2.0 | 50 | <1 | 20 |

| Date | 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... | 10 | <.10 | 1 | <1 | 170 |

< Less than

## 05084000 FOREST RIVER NEAR FORDVILLE, ND

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 $mi^2$, of which about 120 $mi^2$ 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 National Geodetic Vertical Datum of 1929, from topographic map. Prior to July 21, 1951, nonrecording gage at site 50 ft downstream at same datum.

REMARKS.--Records good except for estimated daily discharges, which are poor. 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | e8.0 | 14 | e11 | e10 | e9.0 | e8.0 | 33 | 15 | 14 | 166 | 26 | 105 |
| 2 | e7.8 | 14 | e11 | e10 | e9.0 | e8.0 | 31 | 14 | 13 | 141 | 23 | 100 |
| 3 | e7.6 | 14 | e11 | e10 | e9.0 | e8.0 | 32 | 13 | 12 | 117 | 19 | 72 |
| 4 | 7.7 | 14 | e11 | e10 | e9.0 | e8.0 | 28 | 13 | 12 | 104 | 17 | 54 |
| 5 | 7.6 | 14 | e11 | e10 | e9.0 | e8.0 | 26 | 14 | 11 | 100 | 15 | 44 |
| 6 | 7.7 | 14 | e11 | e10 | e9.0 | e8.0 | 25 | 15 | 10 | 90 | 14 | 39 |
| 7 | 9.1 | 14 | e11 | e10 | e9.0 | e8.0 | 26 | 14 | 9.4 | 80 | 14 | 35 |
| 8 | 9.1 | 14 | e11 | e10 | e9.0 | e8.0 | 27 | 17 | 8.4 | 72 | 15 | 33 |
| 9 | 9.6 | 14 | e11 | e11 | e9.0 | e8.0 | 26 | 22 | 36 | 68 | 19 | 30 |
| 10 | 13 | 14 | e11 | e11 | e10 | e8.0 | 27 | 24 | 75 | 75 | 16 | 29 |
| 11 | 12 | 14 | e11 | e10 | e10 | e9.0 | 28 | 26 | 88 | 70 | 14 | 27 |
| 12 | 11 | 14 | e11 | e10 | e11 | e9.0 | 26 | 27 | 113 | 65 | 14 | 25 |
| 13 | 12 | 13 | e11 | e9.0 | e11 | e9.0 | 29 | 36 | 120 | 62 | 12 | 23 |
| 14 | 12 | 13 | e11 | e9.0 | e11 | e9.0 | 29 | 37 | 117 | 59 | 12 | 20 |
| 15 | 12 | 12 | e11 | e9.0 | e11 | e9.0 | 29 | 34 | 109 | 53 | 11 | 18 |
| 16 | 11 | 12 | e11 | e9.0 | e11 | e9.0 | 28 | 31 | 105 | 50 | 12 | 16 |
| 17 | 11 | 12 | e11 | e9.0 | e11 | e9.0 | 27 | 29 | 95 | 48 | 15 | 16 |
| 18 | 11 | 12 | e11 | e9.0 | e11 | e9.0 | 26 | 28 | 80 | 48 | 13 | 17 |
| 19 | 11 | 12 | e11 | e9.0 | e11 | e9.0 | 23 | 25 | 73 | 45 | 12 | 25 |
| 20 | 11 | 12 | e11 | e9.0 | e11 | e9.0 | 21 | 23 | 65 | 43 | 11 | 21 |
| 21 | 11 | e12 | e11 | e9.0 | e10 | e10 | 20 | 22 | 57 | 41 | 11 | 22 |
| 22 | 10 | e12 | e11 | e9.0 | e9.0 | e10 | 18 | 20 | 211 | 38 | 11 | 20 |
| 23 | 11 | e11 | e11 | e9.0 | e9.0 | e10 | 18 | 22 | 452 | 35 | 11 | 19 |
| 24 | 15 | e12 | e11 | e9.0 | e9.0 | e10 | 19 | 20 | 299 | 33 | 11 | 17 |
| 25 | 14 | e12 | e11 | e9.0 | e9.0 | e10 | 18 | 20 | 286 | 31 | 9.2 | 16 |
| 26 | 12 | 12 | e11 | e9.0 | e9.0 | e11 | 16 | 19 | 252 | 29 | 9.8 | 16 |
| 27 | 11 | 11 | e11 | e9.0 | e8.0 | e12 | 16 | 18 | 232 | 28 | 19 | 15 |
| 28 | 10 | e11 | e11 | e9.0 | e8.0 | e13 | 16 | 18 | 215 | 27 | 51 | 15 |
| 29 | 11 | e11 | e11 | e9.0 | --- | 18 | 16 | 18 | 213 | 24 | 529 | 14 |
| 30 | 12 | e11 | e11 | e9.0 | --- | 31 | 15 | 18 | 189 | 23 | 190 | 15 |
| 31 | 14 | --- | e11 | e9.0 | --- | 38 | --- | 17 | --- | 22 | 114 | --- |
| TOTAL | 332.2 | 381 | 341 | 293.0 | 271.0 | 343.0 | 719 | 669 | 3571.8 | 1887 | 1270.0 | 918 |
| MEAN | 10.72 | 12.70 | 11.00 | 9.452 | 9.679 | 11.06 | 23.97 | 21.58 | 119.1 | 60.87 | 40.97 | 30.60 |
| MAX | 15 | 14 | 11 | 11 | 11 | 38 | 33 | 37 | 452 | 166 | 529 | 105 |
| MIN | 7.6 | 11 | 11 | 9.0 | 8.0 | 8.0 | 15 | 13 | 8.4 | 22 | 9.2 | 14 |
| AC-FT | 659 | 756 | 676 | 581 | 538 | 680 | 1430 | 1330 | 7080 | 3740 | 2520 | 1820 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 10.53 | 9.843 | 7.951 | 6.865 | 8.097 | 66.81 | 208.3 | 69.14 | 35.90 | 28.29 | 13.82 | 9.293 |
| MAX | 57.9 | 36.5 | 19.3 | 16.3 | 38.4 | 323 | 1182 | 1037 | 255 | 232 | 280 | 53.3 |
| (WY) | 1983 | 2001 | 1998 | 1986 | 1998 | 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 | 0.91 |
| (WY) | 1941 | 1941 | 1941 | 1941 | 1963 | 1941 | 1991 | 1961 | 1940 | 1941 | 1945 | 1940 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1940 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 15278.9 | | 10996.0 | | | |
| ANNUAL MEAN | 41.86 | | 30.13 | | 39.94 | |
| HIGHEST ANNUAL MEAN | | | | | 193 | 1950 |
| LOWEST ANNUAL MEAN | | | | | 6.37 | 1990 |
| HIGHEST DAILY MEAN | 607 | Apr 8 | 529 | Aug 29 | 10900 | Apr 18 1950 |
| LOWEST DAILY MEAN | 6.0 | Sep 14 | 7.6 | Oct 3 | 0.00 | Apr 1 1940 |
| ANNUAL SEVEN-DAY MINIMUM | 6.6 | Sep 13 | 7.9 | Oct 1 | 0.00 | Apr 1 1940 |
| MAXIMUM PEAK FLOW | | | 746 | Aug 29 | a16400 | Apr 18 1950 |
| MAXIMUM PEAK STAGE | | | 4.48 | Aug 29 | b14.48 | Apr 18 1950 |
| ANNUAL RUNOFF (AC-FT) | 30310 | | 21810 | | 28940 | |
| 10 PERCENT EXCEEDS | 90 | | 66 | | 55 | |
| 50 PERCENT EXCEEDS | 12 | | 13 | | 9.0 | |
| 90 PERCENT EXCEEDS | 8.3 | | 9.0 | | 3.8 | |

a From rating curve extended above 5,600 $ft^3/s$ on basis of indirect measurement
b From floodmark
e Estimated

WATER-QUALITY RECORDS

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

REMARKS.--Quality assurance sample also collected at this location.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 03... | 1150 | 7.5 | -- | -- | -- | 758 | 13.5 | 11.0 | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 26... | 1655 | 12 | -- | -- | -- | 757 | -6.0 | .5 | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 09... | 1210 | 12 | -- | -- | -- | -- | 1.5 | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 04... | 1440 | 7.9 | -- | -- | -- | 849 | -- | .5 | -- | -- | -- | -- | -- |
| 28... | 1025 | 13 | -- | -- | -- | 648 | .5 | 2.5 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 09... | 1320 | 30 | -- | -- | -- | 740 | -- | 2.0 | -- | -- | -- | -- | -- |
| 18... | 1155 | 25 | 7.8 | 7.9 | 787 | 745 | -1.0 | 7.7 | 300 | 72.0 | 30.0 | 5.50 | 1 |
| MAY | | | | | | | | | | | | | |
| 08... | 1235 | 18 | -- | -- | -- | 860 | .5 | 4.0 | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 27... | 1500 | 226 | -- | -- | -- | 956 | 29.5 | 26.5 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 02... | 1300 | 23 | 8.4 | -- | 864 | 845 | 22.0 | 22.0 | 340 | 80.0 | 35.0 | 6.70 | 1 |
| 20... | 1150 | 11 | -- | -- | -- | 829 | 21.0 | 19.0 | -- | -- | -- | -- | -- |
| 29... | 1115 | 656 | -- | -- | -- | 407 | 22.0 | 20.5 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 03... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 26... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 04... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 28... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 18... | 44.0 | 24 | 199 | 13.0 | .20 | 190 | 35.5 | 518 | 475 | 1.0 | 40 | <1 | 30 |
| MAY | | | | | | | | | | | | | |
| 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 27... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 02... | 57.0 | 20 | 235 | 20.0 | .20 | 220 | 37.5 | 614 | 560 | 5.0 | 50 | 2 | 40 |
| 20... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 29... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

05084000 FOREST RIVER NEAR FORDVILLE, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | 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... | -- | -- | -- | -- | -- |
| NOV | | | | | |
| 26... | -- | -- | -- | -- | -- |
| JAN | | | | | |
| 09... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 04... | -- | -- | -- | -- | -- |
| 28... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 09... | -- | -- | -- | -- | -- |
| 18... | 220 | <.10 | 1 | 1 | 310 |
| MAY | | | | | |
| 08... | -- | -- | -- | -- | -- |
| JUN | | | | | |
| 27... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 02... | 260 | .10 | 2 | <1 | 270 |
| 20... | -- | -- | -- | -- | -- |
| 29... | -- | -- | -- | -- | -- |

< Less than

## 05085000 FOREST RIVER AT MINTO, ND

LOCATION.--Lat 48°16'10", long 97°22'10", in SE$^{1}/_{4}$ sec.31, T.156 N., R.52 W., Walsh County, Hydrologic Unit 09020308, on right bank 30 ft upstream from dam in Minto, 150 ft upstream from Burlington Northern Railway bridge, and 900 ft east of U.S. Highway 81.

DRAINAGE AREA.--740 mi$^2$, of which about 120 mi$^2$ is probably noncontributing.

### WATER-DISCHARGE RECORDS

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

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

GAGE.--Water-stage recorder. Datum of gage is 806.95 ft above National Geodetic Vertical Datum of 1929. Prior to July 15, 1954, nonrecording gage at site 400 ft upstream at same datum.

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 10 | 18 | e12 | e11 | e9.3 | e8.0 | e41 | 16 | 19 | 199 | 30 | 239 |
| 2 | 8.4 | 20 | e12 | e11 | e9.3 | e8.0 | e36 | 19 | 20 | 170 | 28 | 192 |
| 3 | 8.2 | 20 | e13 | e10 | e9.5 | e8.0 | e33 | 21 | 16 | 144 | 26 | 154 |
| 4 | 7.4 | 21 | e12 | e9.8 | e9.3 | e8.0 | e32 | 20 | 19 | 127 | 25 | 124 |
| 5 | 10 | 19 | e12 | e10 | e9.5 | e8.0 | e30 | 17 | 18 | 113 | 22 | 103 |
| 6 | 9.8 | 18 | e12 | e9.8 | e9.6 | e8.0 | e29 | 12 | 15 | 102 | 21 | 86 |
| 7 | 9.8 | 18 | e12 | e9.8 | e9.6 | e8.0 | e28 | 17 | 18 | 93 | 20 | 70 |
| 8 | 9.7 | 17 | e12 | e10 | e10 | e8.0 | e26 | 19 | 18 | 87 | 22 | 60 |
| 9 | 12 | 18 | e12 | e11 | e10 | e8.0 | e22 | 21 | 29 | 84 | 22 | 54 |
| 10 | 12 | 17 | e12 | e12 | e11 | e8.0 | 26 | 29 | 63 | 88 | 20 | 48 |
| 11 | 13 | 17 | e12 | e11 | e11 | e9.0 | 30 | 28 | 69 | 85 | 19 | 42 |
| 12 | 13 | 16 | e12 | e10 | e12 | e9.0 | 37 | 28 | 73 | 78 | 18 | 38 |
| 13 | 16 | 17 | e12 | e9.8 | e12 | e9.0 | 49 | 31 | 91 | 73 | 16 | 35 |
| 14 | 14 | 17 | e13 | e8.6 | e12 | e9.0 | 55 | 28 | 98 | 68 | 16 | 31 |
| 15 | 12 | 17 | e13 | e8.7 | e12 | e9.0 | 52 | 32 | 99 | 65 | 15 | 29 |
| 16 | 12 | 15 | e13 | e8.9 | e13 | e9.6 | 42 | 32 | 95 | 60 | 15 | 26 |
| 17 | 12 | 14 | e13 | e9.0 | e13 | e9.6 | 37 | 31 | 89 | 57 | 16 | 25 |
| 18 | 13 | 14 | e13 | e9.5 | e13 | e9.6 | 33 | 29 | 94 | 55 | 16 | 22 |
| 19 | 16 | 14 | e13 | e9.3 | e12 | e9.6 | 33 | 26 | 85 | 53 | 16 | 26 |
| 20 | 16 | 9.9 | e12 | e9.0 | e12 | e9.6 | 29 | 26 | 72 | 52 | 15 | 37 |
| 21 | 16 | 12 | e12 | e8.9 | e11 | e10 | 26 | 25 | 69 | 48 | 14 | 64 |
| 22 | 16 | 17 | e12 | e9.2 | e10 | e10 | 29 | 23 | 123 | 42 | 12 | 62 |
| 23 | 16 | 15 | e12 | e9.5 | e9.9 | e10 | 25 | 20 | 237 | 40 | 14 | 51 |
| 24 | 19 | 14 | e12 | e9.5 | e9.4 | e10 | 22 | 21 | 758 | 39 | 14 | 44 |
| 25 | 15 | 11 | e12 | e9.2 | e9.0 | e10 | 25 | 23 | 616 | 37 | 13 | 39 |
| 26 | 8.5 | 11 | e12 | e9.0 | e9.0 | e11 | 21 | 20 | 448 | 36 | 14 | 35 |
| 27 | 11 | 8.8 | e12 | e9.2 | e8.0 | e12 | 22 | 21 | 372 | 34 | 53 | 30 |
| 28 | 19 | 8.6 | e12 | e9.2 | e8.0 | e13 | 20 | 21 | 303 | 31 | 168 | 27 |
| 29 | 18 | 8.9 | e12 | e9.2 | --- | e25 | 19 | 20 | 259 | 30 | 208 | 23 |
| 30 | 20 | 12 | e12 | e9.2 | --- | e34 | 20 | 22 | 225 | 27 | 517 | 25 |
| 31 | 19 | --- | e11 | e9.2 | --- | e42 | --- | 19 | --- | 29 | 358 | --- |
| TOTAL | 411.8 | 455.2 | 378 | 299.5 | 293.4 | 360.0 | 929 | 717 | 4510 | 2246 | 1783 | 1841 |
| MEAN | 13.28 | 15.17 | 12.19 | 9.661 | 10.48 | 11.61 | 30.97 | 23.13 | 150.3 | 72.45 | 57.52 | 61.37 |
| MAX | 20 | 21 | 13 | 12 | 13 | 42 | 55 | 32 | 758 | 199 | 517 | 239 |
| MIN | 7.4 | 8.6 | 11 | 8.6 | 8.0 | 8.0 | 19 | 12 | 15 | 27 | 12 | 22 |
| AC-FT | 817 | 903 | 750 | 594 | 582 | 714 | 1840 | 1420 | 8950 | 4450 | 3540 | 3650 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 9.948 | 9.952 | 5.916 | 3.432 | 3.561 | 70.40 | 300.9 | 99.98 | 49.29 | 34.89 | 17.28 | 10.06 |
| MAX | 59.1 | 32.4 | 20.9 | 15.8 | 50.2 | 438 | 1573 | 1515 | 267 | 348 | 328 | 69.0 |
| (WY) | 1983 | 2001 | 1998 | 1998 | 1998 | 1966 | 1950 | 1950 | 1964 | 1997 | 1993 | 1993 |
| MIN | 0.000 | 0.97 | 0.29 | 0.000 | 0.000 | 0.000 | 17.8 | 10.6 | 4.21 | 1.87 | 0.000 | 0.000 |
| (WY) | 1991 | 1991 | 1990 | 1977 | 1961 | 1962 | 2000 | 1946 | 1991 | 1980 | 1946 | 1961 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1944 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 17027.5 | | 14223.9 | | | |
| ANNUAL MEAN | 46.65 | | 38.97 | | 51.73 | |
| HIGHEST ANNUAL MEAN | | | | | 268 | 1950 |
| LOWEST ANNUAL MEAN | | | | | 4.36 | 1990 |
| HIGHEST DAILY MEAN | 690 | Apr 9 | 758 | Jun 24 | 11600 | Apr 19 1950 |
| LOWEST DAILY MEAN | 6.0 | Sep 12 | 7.4 | Oct 4 | 0.00 | Sep 5 1945 |
| ANNUAL SEVEN-DAY MINIMUM | 6.7 | Sep 10 | 8.0 | Feb 27 | 0.00 | Sep 5 1945 |
| MAXIMUM PEAK FLOW | | | 791 | Jun 24 | a16600 | Apr 18 1950 |
| MAXIMUM PEAK STAGE | | | 3.66 | Jun 24 | b11.80 | Apr 18 1950 |
| ANNUAL RUNOFF (AC-FT) | 33770 | | 28210 | | 37470 | |
| 10 PERCENT EXCEEDS | 97 | | 84 | | 78 | |
| 50 PERCENT EXCEEDS | 16 | | 17 | | 8.9 | |
| 90 PERCENT EXCEEDS | 10 | | 9.2 | | 0.50 | |

a From rating curve extended above 7,200 ft$^3$/s on basis of contracted opening measurement of peak flow
b From floodmark
e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 12... | 1035 | 10 | -- | -- | -- | 930 | 9.5 | 13.0 | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 27... | 1705 | 9.2 | -- | -- | -- | --e | -5.0 | .5 | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 15... | 1425 | 8.6 | -- | -- | -- | 856 | -6.5 | -.5 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 18... | 1320 | 9.6 | -- | -- | -- | 680 | -2.5 | .5 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 17... | 1435 | 39 | 7.5 | 7.9 | 677 | 651 | 14.5 | 7.6 | 270 | 65.0 | 26.0 | 5.20 | .8 |
| JUN | | | | | | | | | | | | | |
| 27... | 1200 | 397 | -- | -- | -- | 913 | 26.5 | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 05... | 1000 | 25 | 7.8 | 8.0 | 914 | 897 | 22.0 | 20.5 | 370 | 84.0 | 39.0 | 7.20 | 1 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 12... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 27... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 15... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 17... | 32.0 | 20 | 181 | 13.0 | .20 | 160 | 47.9 | 450 | 410 | 2.0 | 20 | 1 | 30 |
| JUN | | | | | | | | | | | | | |
| 27... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 05... | 58.0 | 25 | 242 | 26.0 | .20 | 230 | 24.6 | 363 | 590 | 7.0 | 50 | 1 | 40 |

| Date | 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 | | | | | |
| 12... | -- | -- | -- | -- | -- |
| NOV | | | | | |
| 27... | -- | -- | -- | -- | -- |
| JAN | | | | | |
| 15... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 18... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 17... | 280 | <.10 | 1 | 3 | 220 |
| JUN | | | | | |
| 27... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 05... | 260 | .10 | 2 | 1 | 280 |

< Less than
e Required equipment not functional/available

## 05090000 PARK RIVER AT GRAFTON, ND

LOCATION.--Lat 48°25'29", long 97°24'42", in NE$^{1}/_{4}$ 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$^2$, 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 National Geodetic Vertical Datum of 1929. 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 good except for periods where discharge is less than 3.0 ft$^3$/s and for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | e0.04 | 3.5 | e5.0 | e4.2 | e3.8 | e3.8 | e45 | 28 | 13 | 212 | 23 | 780 |
| 2 | e0.02 | 3.7 | e4.8 | e4.2 | e3.9 | e3.6 | 36 | 29 | 11 | 166 | 20 | 644 |
| 3 | e0.01 | 4.4 | e4.6 | e4.1 | e3.8 | e3.3 | 16 | 30 | 10 | 130 | 19 | 574 |
| 4 | e0.01 | 7.8 | e4.6 | e4.1 | e3.6 | e3.2 | 24 | 30 | 9.8 | 103 | 18 | 479 |
| 5 | e0.01 | 8.7 | e4.6 | e4.1 | e3.8 | e3.2 | 26 | 30 | 9.3 | 80 | 17 | 447 |
| 6 | e0.01 | 9.5 | e4.4 | e4.1 | e3.8 | e3.0 | 23 | 25 | 9.2 | 70 | 18 | 351 |
| 7 | e0.01 | 7.3 | e4.4 | e4.0 | e3.8 | e2.7 | 24 | 19 | 9.4 | 63 | 17 | 265 |
| 8 | e0.01 | 5.3 | e4.4 | e4.2 | e3.9 | e2.9 | 23 | 23 | 8.5 | 58 | 13 | 204 |
| 9 | e0.01 | 5.1 | e4.4 | e4.5 | e3.9 | e3.2 | 23 | 32 | 13 | 51 | 13 | 170 |
| 10 | e0.01 | 4.8 | e4.5 | e4.4 | e3.8 | e3.0 | 22 | 31 | 15 | 53 | 11 | 134 |
| 11 | e0.01 | 4.5 | e5.3 | e4.5 | e3.9 | e2.9 | 28 | 35 | 23 | 40 | 10 | 106 |
| 12 | e0.01 | 4.4 | e6.1 | e4.7 | e4.0 | e3.3 | 25 | 46 | 231 | 36 | 11 | 87 |
| 13 | e0.01 | 4.3 | e5.4 | e4.6 | e3.9 | e3.1 | 34 | 54 | 616 | 37 | 7.9 | 66 |
| 14 | e0.01 | 4.2 | e4.9 | e4.6 | e4.2 | e2.7 | 46 | 62 | 793 | 34 | 7.8 | 54 |
| 15 | e0.01 | 4.2 | e4.8 | e4.7 | e4.2 | e1.8 | 44 | 63 | 720 | 32 | 8.0 | 46 |
| 16 | e0.01 | 4.0 | e5.1 | e4.6 | e4.3 | e1.6 | 53 | 93 | 536 | 30 | 8.0 | 40 |
| 17 | e0.01 | 4.4 | e5.0 | e4.4 | e4.3 | e1.8 | 67 | 107 | 410 | 22 | 8.6 | 36 |
| 18 | e0.01 | 4.7 | e4.9 | e4.3 | e4.4 | e2.5 | 66 | 101 | 316 | 19 | 7.0 | 30 |
| 19 | e0.01 | 5.0 | e4.6 | e4.4 | e4.4 | e2.7 | 59 | 91 | 249 | 18 | 6.3 | 41 |
| 20 | e0.01 | 5.1 | e4.2 | e4.2 | e4.3 | e2.6 | 52 | 83 | 187 | 16 | 5.6 | 43 |
| 21 | e0.06 | 5.2 | e3.9 | e4.4 | e4.2 | e2.5 | 44 | 67 | 158 | 14 | 5.3 | 69 |
| 22 | e0.11 | 4.9 | e4.5 | e4.3 | e4.3 | e2.4 | 37 | 38 | 202 | 13 | 4.5 | 169 |
| 23 | e0.16 | 5.1 | e4.4 | e4.3 | e4.4 | e2.3 | 34 | 27 | 256 | 12 | 3.6 | 196 |
| 24 | e0.33 | 4.5 | e4.4 | e4.4 | e4.3 | e2.0 | 31 | 25 | 306 | 14 | 3.5 | 151 |
| 25 | e0.59 | 4.2 | e4.4 | e4.4 | e4.1 | e1.8 | 31 | 20 | 452 | 19 | 3.2 | 101 |
| 26 | e0.81 | 4.0 | e4.5 | e4.3 | e4.1 | e2.0 | 25 | 16 | 716 | 19 | 2.8 | 77 |
| 27 | 1.1 | 4.1 | e4.6 | e4.2 | e4.0 | e3.2 | 22 | 15 | 698 | 16 | 5.3 | 64 |
| 28 | 1.4 | 6.0 | e4.6 | e4.1 | e3.9 | e4.8 | 24 | 13 | 531 | 16 | 363 | 52 |
| 29 | 1.8 | e5.7 | e4.6 | e4.1 | --- | e8.0 | 27 | 13 | 361 | 15 | 1430 | 45 |
| 30 | 2.2 | e5.4 | e4.6 | e4.0 | --- | e15 | 26 | 12 | 267 | 14 | 1140 | 39 |
| 31 | 2.7 | --- | e4.3 | e4.2 | --- | e35 | --- | 15 | --- | 19 | 846 | --- |
| TOTAL | 11.50 | 154.0 | 144.8 | 133.6 | 113.3 | 135.9 | 1037 | 1273 | 8136.2 | 1441 | 4056.4 | 5560 |
| MEAN | 0.371 | 5.133 | 4.671 | 4.310 | 4.046 | 4.384 | 34.57 | 41.06 | 271.2 | 46.48 | 130.9 | 185.3 |
| MAX | 2.7 | 9.5 | 6.1 | 4.7 | 4.4 | 35 | 67 | 107 | 793 | 212 | 1430 | 780 |
| MIN | 0.01 | 3.5 | 3.9 | 4.0 | 3.6 | 1.6 | 16 | 12 | 8.5 | 12 | 2.8 | 30 |
| AC-FT | 23 | 305 | 287 | 265 | 225 | 270 | 2060 | 2520 | 16140 | 2860 | 8050 | 11030 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 4.978 | 3.687 | 2.502 | 1.481 | 2.620 | 76.62 | 415.2 | 117.2 | 49.47 | 33.87 | 15.32 | 9.475 |
| MAX | 69.9 | 31.3 | 17.4 | 13.9 | 45.7 | 654 | 2051 | 2071 | 576 | 441 | 569 | 185 |
| (WY) | 1983 | 1981 | 1983 | 1983 | 1981 | 1995 | 1950 | 1950 | 1964 | 1997 | 1993 | 2002 |
| MIN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 2.05 | 0.000 | 0.000 | 0.000 | 0.000 |
| (WY) | 1934 | 1934 | 1933 | 1932 | 1933 | 1936 | 1991 | 1939 | 1961 | 1990 | 1932 | 1932 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1931 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 31826.81 | | 22196.70 | | | |
| ANNUAL MEAN | 87.20 | | 60.81 | | 61.09 | |
| HIGHEST ANNUAL MEAN | | | | | 353 | 1950 |
| LOWEST ANNUAL MEAN | | | | | 1.38 | 1990 |
| HIGHEST DAILY MEAN | 1820 | Apr 10 | 1430 | Aug 29 | 11700 | Apr 19 1950 |
| LOWEST DAILY MEAN | 0.00 | Aug 29 | 0.00 | Oct 3 | 0.00 | Aug 10 1931 |
| ANNUAL SEVEN-DAY MINIMUM | 0.00 | Aug 29 | 0.01 | Oct 3 | 0.00 | Aug 21 1931 |
| MAXIMUM PEAK FLOW | | | 1610 | Aug 29 | a12600 | Apr 19 1950 |
| MAXIMUM PEAK STAGE | | | 10.81 | Aug 29 | b20.13 | Apr 19 1950 |
| ANNUAL RUNOFF (AC-FT) | 63130 | | 44030 | | 44260 | |
| 10 PERCENT EXCEEDS | 231 | | 154 | | 81 | |
| 50 PERCENT EXCEEDS | 5.0 | | 6.1 | | 2.0 | |
| 90 PERCENT EXCEEDS | 0.01 | | 2.3 | | 0.00 | |

a From rating curve extended above 9,000 ft$^3$/s
b Site and datum then in use
e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 27... | 1225 | 4.2 | -- | -- | -- | -- | -5.0 | .5 | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 16... | 0940 | 4.6 | -- | -- | -- | 1670 | 6.0 | -.5 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 19... | 1335 | 2.7 | -- | -- | -- | 1690 | -- | 1.0 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 11... | 1200 | 27 | -- | -- | -- | 1180 | 13.0 | 1.0 | -- | -- | -- | -- | -- |
| 15... | 1100 | 42 | --e | 7.8 | 1000 | 969 | 19.0 | 1.5 | 320 | 74.0 | 33.0 | 7.90 | 2 |
| MAY | | | | | | | | | | | | | |
| 06... | 1230 | 24 | -- | -- | -- | 1040 | 4.5 | 7.5 | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 14... | 1205 | 803 | -- | -- | -- | 743 | 21.5 | 17.0 | -- | -- | -- | -- | -- |
| 26... | 1520 | 743 | -- | -- | -- | 689 | 32.5 | 23.0 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 05... | 1325 | 19 | 8.1 | 8.1 | 948 | 1040 | 24.0 | 22.5 | 330 | 77.0 | 33.0 | 11.0 | 2 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 27... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 16... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 15... | 79.0 | 34 | 208 | 75.0 | .20 | 190 | 71.2 | 628 | 585 | 3.0 | 40 | <1 | 40 |
| MAY | | | | | | | | | | | | | |
| 06... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 14... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 26... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 05... | 81.0 | 34 | 246 | 39.0 | .30 | 240 | 33.1 | 660 | 630 | 8.0 | 50 | 2 | 50 |

| Date | 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 | | | | | |
| 27... | -- | -- | -- | -- | -- |
| JAN | | | | | |
| 16... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 19... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 11... | -- | -- | -- | -- | -- |
| 15... | 600 | <.10 | 1 | 3 | 330 |
| MAY | | | | | |
| 06... | -- | -- | -- | -- | -- |
| JUN | | | | | |
| 14... | -- | -- | -- | -- | -- |
| 26... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 05... | 470 | .10 | 4 | <1 | 350 |

< Less than
e Required equipment not functional/available

## 05092000 RED RIVER OF THE NORTH AT DRAYTON, ND

LOCATION.--Lat 48°34'20", long 97°08'50", in SE$^1/_4$SE$^1/_4$SE$^1/_4$ sec.24, T.159 N., R.51 W., Pembina County, Hydrologic Unit 09020311, on downstream side of bridge on North Dakota State Highway 66, at the North Dakota-Minnesota border, 1.5 mi northeast of Drayton, and at mile 206.7.

DRAINAGE AREA.--34,800 mi$^2$, approximately, includes 3,800 mi$^2$ 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 National Geodetic Vertical Datum of 1929 (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 except for estimated daily discharges, which are poor.

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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2460 | 3050 | 2410 | e2200 | e1900 | e2350 | e3500 | 4630 | 4030 | 25300 | 7870 | 17900 |
| 2 | 2460 | 3160 | 2130 | e2150 | e1900 | e2250 | e3900 | 4530 | 4230 | 24900 | 7480 | 18800 |
| 3 | 2430 | 3290 | 2060 | e2100 | e1900 | e2100 | e4300 | 4500 | 4440 | 24300 | 7100 | e19000 |
| 4 | 2390 | 3460 | 2120 | e2100 | e1900 | e2050 | e4700 | 4420 | 4510 | 23200 | 6620 | e19000 |
| 5 | 2330 | 3740 | 2130 | e2050 | e1900 | e1900 | e4750 | 4370 | 4460 | 21900 | 6090 | e18000 |
| 6 | 2280 | 4030 | 2100 | e2000 | e1800 | e1850 | e4700 | 4350 | 4270 | 20100 | 5690 | e15000 |
| 7 | 2250 | 4210 | 2350 | e2000 | e1750 | e1750 | e4500 | 4330 | 4030 | 18100 | 5360 | e11000 |
| 8 | 2220 | 4260 | 2740 | e2000 | e1750 | e1750 | e4400 | 4330 | 3840 | 16000 | 5110 | e9000 |
| 9 | 2190 | 4190 | 2930 | e2100 | e1700 | e1750 | e4200 | 4530 | 3850 | 13800 | 5000 | e7600 |
| 10 | 2160 | 4050 | 3080 | e2200 | e1700 | e1750 | e4200 | 5060 | 7240 | 12300 | e4850 | e6400 |
| 11 | 2140 | 3870 | 3180 | e2200 | e1700 | e1750 | e4500 | 5410 | 15500 | 13700 | e4800 | 5560 |
| 12 | 2120 | 3750 | 3180 | e2200 | e1750 | e1750 | e5300 | 6220 | 22000 | 17300 | e4800 | 4940 |
| 13 | 2110 | 3700 | 3230 | e2200 | e1750 | e1750 | e5800 | 7220 | 26900 | 21100 | e4750 | 4590 |
| 14 | 2100 | 3710 | 3260 | e2200 | e1750 | e1850 | e6150 | 7710 | 30200 | 24300 | e4650 | e4400 |
| 15 | 2090 | 3740 | 3240 | e2150 | e1750 | e1900 | 6220 | 7660 | e32000 | 26800 | e4500 | e4300 |
| 16 | 2250 | 3760 | e3250 | e2150 | e1750 | e1950 | 6030 | 7480 | e33500 | 28700 | e4300 | e4150 |
| 17 | 2420 | 3780 | e3280 | e2200 | e1700 | e2050 | 5730 | 7200 | e34500 | 30100 | e4100 | e4000 |
| 18 | 2490 | 3800 | e3300 | e2200 | e1700 | e2050 | 5350 | 6880 | 34700 | 31100 | e3950 | e3850 |
| 19 | 2600 | 3870 | e3300 | e2150 | e1750 | e2100 | 5040 | 6560 | 34700 | 30900 | e3800 | e3700 |
| 20 | 2670 | 3990 | e3300 | e2100 | e1850 | e2300 | 4820 | 6210 | 34200 | 30200 | e3600 | e3550 |
| 21 | 2720 | 4020 | e3280 | e2100 | e1900 | e2500 | 4710 | 5880 | 33200 | 28800 | e3600 | e3450 |
| 22 | 2750 | 4000 | e3180 | e2000 | e1950 | e2700 | 4800 | 5520 | 31900 | 27000 | e3600 | e3300 |
| 23 | 2750 | 3930 | 2940 | e2000 | e2050 | e2850 | 4900 | 5150 | 30800 | 24500 | e3700 | e3200 |
| 24 | 2740 | 3820 | 2750 | e2000 | e2150 | e2850 | 4930 | 4930 | 29200 | 21600 | e3800 | e3100 |
| 25 | 2720 | 3730 | 2570 | e2000 | e2250 | e2850 | 4870 | 4720 | 27800 | 18600 | e3800 | e2900 |
| 26 | 2730 | 3580 | 2420 | e1950 | e2300 | e2800 | 4740 | 4570 | 26300 | 15600 | e3800 | e2800 |
| 27 | 2780 | 3510 | 2300 | e1900 | e2400 | e2800 | 4700 | 4460 | 25100 | 12900 | e4000 | e2700 |
| 28 | 2790 | 3610 | 2190 | e1900 | e2400 | e2750 | 4860 | 4350 | 25200 | 10900 | 5840 | e2550 |
| 29 | 2790 | 3310 | e2010 | e1950 | --- | e2750 | 4900 | 4260 | 25400 | 9640 | 9140 | e2500 |
| 30 | 2860 | 2770 | e2180 | e1950 | --- | e2900 | 4790 | 4160 | 25400 | 8910 | 13300 | e2400 |
| 31 | 2950 | --- | e2180 | e1900 | --- | e3100 | --- | 4050 | --- | 8350 | 16100 | --- |
| TOTAL | 76740 | 111690 | 84570 | 64300 | 53050 | 69800 | 146290 | 165650 | 623400 | 640900 | 175100 | 213640 |
| MEAN | 2475 | 3723 | 2728 | 2074 | 1895 | 2252 | 4876 | 5344 | 20780 | 20670 | 5648 | 7121 |
| MAX | 2950 | 4260 | 3300 | 2200 | 2400 | 3100 | 6220 | 7710 | 34700 | 31100 | 16100 | 19000 |
| MIN | 2090 | 2770 | 2010 | 1900 | 1700 | 1750 | 3500 | 4050 | 3840 | 8350 | 3600 | 2400 |
| AC-FT | 152200 | 221500 | 167700 | 127500 | 105200 | 138400 | 290200 | 328600 | 1237000 | 1271000 | 347300 | 423800 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1949 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 1979 | 1905 | 1459 | 1200 | 1167 | 3389 | 15460 | 9651 | 6092 | 5550 | 2696 | 2186 |
| MAX | 5194 | 11840 | 4168 | 2679 | 2598 | 16290 | 54710 | 58890 | 23420 | 28240 | 21580 | 12140 |
| (WY) | 1995 | 2001 | 1999 | 2001 | 1998 | 1998 | 1997 | 1950 | 1962 | 1975 | 1993 | 1999 |
| 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 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1949 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 3181980 | | 2425130 | | | |
| ANNUAL MEAN | 8718 | | 6644 | | 4417 | |
| HIGHEST ANNUAL MEAN | | | | | 11280 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 536 | 1977 |
| HIGHEST DAILY MEAN | 55000 | Apr 18 | 34700 | Jun 18 | 124000 | Apr 24 1997 |
| LOWEST DAILY MEAN | 2010 | Dec 29 | 1700 | Feb 9 | 110 | Dec 23 1989 |
| ANNUAL SEVEN-DAY MINIMUM | 2130 | Oct 9 | 1730 | Feb 7 | 118 | Dec 28 1989 |
| MAXIMUM PEAK FLOW | | | 34800 | Jun 18 | 124000 | Apr 24 1997 |
| MAXIMUM PEAK STAGE | | | 35.86 | Jun 18 | 45.55 | Apr 24 1997 |
| INSTANTANEOUS LOW FLOW | | | | | 7.7 | Oct 16 1936 |
| ANNUAL RUNOFF (AC-FT) | 6311000 | | 4810000 | | 3200000 | |
| 10 PERCENT EXCEEDS | 28500 | | 20500 | | 10200 | |
| 50 PERCENT EXCEEDS | 3580 | | 3740 | | 1930 | |
| 90 PERCENT EXCEEDS | 2500 | | 1950 | | 495 | |

e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 02... | 1250 | 2620 | -- | -- | -- | 606 | 8.0 | 5.5 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 19... | 1105 | 2110 | -- | -- | -- | 530 | -- | .0 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 17... | 1530 | 5920 | 8.2 | 7.9 | 540 | 512 | 19.0 | 8.0 | 200 | 44.0 | 22.0 | 3.30 | .8 |
| MAY | | | | | | | | | | | | | |
| 09... | 1110 | 4250 | -- | -- | -- | 626 | 1.0 | 7.0 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 02... | 1135 | 25500 | -- | -- | -- | 428 | 27.0 | 26.0 | -- | -- | -- | -- | -- |
| 29... | 1135 | 9630 | -- | -- | -- | 572 | -- | 25.0 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 21... | 0935 | 3540 | 8.0 | 8.1 | 597 | 585 | 25.5 | 22.0 | 270 | 61.0 | 29.0 | 4.40 | .6 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 02... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 17... | 27.0 | 22 | 161 | 26.0 | .10 | 68.0 | 5070 | 317 | 287 | 2.0 | 70 | <1 | 20 |
| MAY | | | | | | | | | | | | | |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 02... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 29... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 21... | 23.0 | 15 | 203 | 22.0 | .20 | 92.0 | 3640 | 381 | 354 | 5.0 | 70 | 1 | 20 |

| Date | 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 | | | | | |
| 02... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 19... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 17... | 10 | <.10 | <1 | 1 | 160 |
| MAY | | | | | |
| 09... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 02... | -- | -- | -- | -- | -- |
| 29... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 21... | 10 | <.10 | 1 | <1 | 220 |

< Less than

## 05099100 SNOWFLAKE CREEK NEAR SNOWFLAKE, MANITOBA
(International gaging station)

LOCATION.--Lat 49°01'17", long 98°36'13", in SW$^{1}/_{4}$ 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$^{2}$.

### 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | e3.4 | 1.3 | e0.25 | e0.00 | e0.00 | e0.00 | e2.4 | 1.5 | 0.46 | 105 | 13 | 17 |
| 2 | e2.9 | 1.9 | e0.21 | e0.00 | e0.00 | e0.00 | e2.1 | 1.3 | 0.42 | 96 | 12 | 24 |
| 3 | e2.8 | 4.4 | e0.18 | e0.00 | e0.00 | e0.00 | e3.8 | 1.1 | 0.39 | 86 | 12 | 18 |
| 4 | e2.6 | 2.5 | e0.14 | e0.00 | e0.00 | e0.00 | e2.3 | 0.99 | 0.35 | 76 | 12 | 14 |
| 5 | e2.5 | 2.2 | e0.11 | e0.00 | e0.00 | e0.00 | e2.5 | 1.7 | 0.32 | 70 | 12 | 12 |
| 6 | e2.3 | 2.6 | e0.11 | e0.00 | e0.00 | e0.00 | e2.8 | 1.3 | 0.25 | 60 | 12 | 7.7 |
| 7 | e2.2 | 2.1 | e0.11 | e0.00 | e0.00 | e0.00 | e2.7 | 1.1 | 0.14 | 50 | 14 | 5.7 |
| 8 | e2.0 | 1.8 | e0.07 | e0.00 | e0.00 | e0.00 | e4.3 | 1.3 | 0.11 | 42 | 14 | 4.4 |
| 9 | e1.9 | 1.7 | e0.11 | e0.00 | e0.00 | e0.00 | e3.9 | 1.9 | 5.8 | 35 | 16 | 4.7 |
| 10 | e1.7 | 3.7 | e0.07 | e0.00 | e0.00 | e0.00 | e3.8 | 2.2 | 302 | 31 | 16 | 4.9 |
| 11 | 1.6 | 3.2 | e0.04 | e0.00 | e0.00 | e0.00 | e3.1 | 3.0 | 392 | 26 | 16 | 3.4 |
| 12 | 1.4 | 4.0 | e0.04 | e0.00 | e0.00 | e0.35 | e3.6 | 5.5 | 187 | 22 | 17 | 2.9 |
| 13 | 1.2 | 3.0 | e0.04 | e0.00 | e0.00 | e2.3 | e7.5 | 4.8 | 187 | 18 | 17 | 2.3 |
| 14 | 1.5 | 3.6 | e0.04 | e0.00 | e0.00 | e2.4 | 9.2 | 2.5 | 191 | 15 | 18 | 2.8 |
| 15 | 1.4 | 3.7 | e0.04 | e0.00 | e0.00 | e1.9 | 5.5 | 2.5 | 196 | 13 | 19 | 1.9 |
| 16 | 1.1 | 3.1 | e0.04 | e0.00 | e0.00 | e0.92 | 3.4 | 2.4 | 201 | 12 | 20 | 2.0 |
| 17 | 0.81 | 3.2 | e0.04 | e0.00 | e0.00 | e0.64 | 2.8 | 1.6 | 200 | 12 | 24 | 1.8 |
| 18 | 0.71 | 2.8 | e0.0 | e0.00 | e0.00 | e0.39 | 2.5 | 1.2 | 201 | 12 | 22 | 1.7 |
| 19 | 0.92 | e1.7 | e0.0 | e0.00 | e0.00 | e0.14 | 2.2 | 1.3 | 200 | 12 | 21 | 2.0 |
| 20 | 1.4 | e1.0 | e0.0 | e0.00 | e0.00 | e0.21 | 2.0 | 1.3 | 192 | 14 | 22 | 1.2 |
| 21 | 0.78 | e1.0 | e0.0 | e0.00 | e0.00 | e0.04 | 2.0 | 1.2 | 178 | 14 | 23 | 1.6 |
| 22 | 0.64 | e1.1 | e0.0 | e0.00 | e0.00 | e0.00 | 1.8 | 3.4 | 168 | 13 | 23 | 1.5 |
| 23 | 0.60 | e1.1 | e0.0 | e0.00 | e0.00 | e0.00 | 2.1 | 2.0 | 162 | 13 | 24 | 1.2 |
| 24 | 0.67 | e1.2 | e0.0 | e0.00 | e0.00 | e0.00 | 2.4 | 1.4 | 159 | 14 | 24 | 1.2 |
| 25 | 0.67 | e1.4 | e0.0 | e0.00 | e0.00 | e0.00 | e2.3 | 0.99 | 150 | 14 | 23 | 1.4 |
| 26 | 0.99 | e0.67 | e0.0 | e0.00 | e0.00 | e0.00 | 1.6 | 0.81 | 143 | 12 | 17 | 1.3 |
| 27 | 0.49 | e0.49 | e0.0 | e0.00 | e0.00 | e7.3 | 1.4 | 0.85 | 136 | 13 | 15 | 1.3 |
| 28 | 0.53 | e0.35 | e0.0 | e0.00 | e0.00 | e11 | 1.4 | 0.74 | 127 | 12 | 26 | 1.1 |
| 29 | 0.46 | e0.32 | e0.0 | e0.00 | --- | e11 | 1.7 | 0.71 | 122 | 12 | 30 | 0.92 |
| 30 | 0.46 | e0.28 | e0.0 | e0.00 | --- | e6.5 | 1.6 | 0.67 | 114 | 13 | 25 | 1.5 |
| 31 | 0.64 | --- | e0.0 | e0.00 | --- | e4.2 | --- | 0.53 | --- | 12 | 20 | --- |
| TOTAL | 43.27 | 61.41 | 1.64 | 0.00 | 0.00 | 49.29 | 90.7 | 53.79 | 3916.24 | 949 | 579 | 147.42 |
| MEAN | 1.396 | 2.047 | 0.053 | 0.000 | 0.000 | 1.590 | 3.023 | 1.735 | 130.5 | 30.61 | 18.68 | 4.914 |
| MAX | 3.4 | 4.4 | 0.25 | 0.00 | 0.00 | 11 | 9.2 | 5.5 | 392 | 105 | 30 | 24 |
| MIN | 0.46 | 0.28 | 0.00 | 0.00 | 0.00 | 0.00 | 1.4 | 0.53 | 0.11 | 12 | 12 | 0.92 |
| AC-FT | 86 | 122 | 3.3 | 0.00 | 0.00 | 98 | 180 | 107 | 7770 | 1880 | 1150 | 292 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 5.401 | 2.332 | 0.270 | 0.038 | 0.154 | 8.777 | 140.5 | 89.13 | 24.40 | 22.66 | 11.02 | 5.908 |
| MAX | 70.5 | 39.9 | 7.67 | 1.36 | 4.90 | 74.6 | 668 | 945 | 131 | 529 | 139 | 99.7 |
| (WY) | 1995 | 1995 | 1995 | 1995 | 1981 | 1995 | 1995 | 1997 | 2002 | 1997 | 1997 | 1993 |
| MIN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.22 | 0.061 | 0.000 | 0.000 | 0.000 | 0.000 |
| (WY) | 1962 | 1962 | 1962 | 1962 | 1962 | 1962 | 1973 | 1988 | 1962 | 1961 | 1961 | 1961 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1961 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 22783.66 | | 5891.76 | | | |
| ANNUAL MEAN | 62.42 | | 16.14 | | 26.49 | |
| HIGHEST ANNUAL MEAN | | | | | 197 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 0.14 | 2000 |
| HIGHEST DAILY MEAN | 968 | Apr 21 | 392 | Jun 11 | 2160 | Apr 30 1997 |
| LOWEST DAILY MEAN | 0.00 | Jan 1 | 0.00 | Dec 18 | 0.00 | Mar 1 1961 |
| ANNUAL SEVEN-DAY MINIMUM | 0.00 | Jan 1 | 0.00 | Dec 18 | 0.00 | Mar 1 1961 |
| MAXIMUM PEAK FLOW | | | 851 | Jun 10 | 2710 | Jul 12 1997 |
| MAXIMUM PEAK STAGE | | | 1227.10 | Jun 10 | 1232.08 | Apr 24 1997 |
| ANNUAL RUNOFF (AC-FT) | 45190 | | 11690 | | 19190 | |
| 10 PERCENT EXCEEDS | 123 | | 24 | | 47 | |
| 50 PERCENT EXCEEDS | 3.6 | | 1.5 | | 0.05 | |
| 90 PERCENT EXCEEDS | 0.00 | | 0.00 | | 0.00 | |

e Estimated

## 05099150 MOWBRAY CREEK NEAR MOWBRAY, MANITOBA
(International gaging station)

LOCATION.--Lat 49°00'00", long 98°27'15", in SE$^{1}/_{4}$ 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$^{2}$.

### 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.0 | 0.42 | 0.07 | e0.00 | e0.00 | e0.00 | e0.85 | 0.71 | 0.32 | 13 | 0.00 | 16 |
| 2 | 0.0 | 0.49 | 0.07 | e0.00 | e0.00 | e0.00 | e5.9 | 0.71 | 0.32 | 9.0 | 0.00 | 22 |
| 3 | 0.0 | 0.95 | 0.04 | e0.00 | e0.00 | e0.00 | e10 | 0.64 | 0.35 | 5.8 | 0.00 | 15 |
| 4 | 0.0 | 0.64 | 0.04 | e0.00 | e0.00 | e0.00 | e8.3 | 0.49 | 0.35 | 4.6 | 0.00 | 11 |
| 5 | 0.0 | 4.3 | 0.04 | e0.00 | e0.00 | e0.00 | e5.9 | 1.5 | 0.39 | 4.2 | 0.00 | 11 |
| 6 | 0.0 | 12 | 0.04 | e0.00 | e0.00 | e0.00 | e5.0 | 6.3 | 0.39 | 3.0 | 0.00 | 9.7 |
| 7 | 0.0 | 6.8 | 0.04 | e0.00 | e0.00 | e0.00 | e4.3 | 6.2 | 0.25 | 2.1 | 0.00 | 8.0 |
| 8 | 0.0 | 3.0 | e0.04 | e0.00 | e0.00 | e0.00 | e3.6 | 7.1 | 0.14 | 1.3 | 0.00 | 7.0 |
| 9 | 0.0 | 2.1 | e0.04 | e0.00 | e0.00 | e0.00 | e3.7 | 7.5 | 2.6 | 0.95 | 0.00 | 6.3 |
| 10 | 0.0 | 1.7 | e0.04 | e0.00 | e0.00 | e0.00 | e6.2 | 11 | 102 | 0.81 | 0.00 | 5.3 |
| 11 | 0.0 | 1.2 | e0.04 | e0.00 | e0.00 | e0.00 | e9.5 | 12 | 201 | 0.57 | 0.00 | 4.6 |
| 12 | 0.0 | 1.1 | e0.04 | e0.00 | e0.00 | e0.00 | e9.4 | 12 | 228 | 0.46 | 0.00 | 3.8 |
| 13 | 0.0 | 1.3 | e0.04 | e0.00 | e0.00 | e0.00 | e10 | 9.7 | 288 | 0.39 | 0.00 | 3.2 |
| 14 | 0.0 | 1.2 | e0.0 | e0.00 | e0.00 | e0.00 | e7.9 | 8.8 | 252 | 0.35 | 0.00 | 2.8 |
| 15 | 0.0 | 0.92 | e0.0 | e0.00 | e0.00 | e0.00 | e11 | 5.9 | 189 | 0.32 | 0.00 | 2.3 |
| 16 | 0.0 | 0.71 | e0.0 | e0.00 | e0.00 | e0.00 | 8.4 | 3.8 | 142 | 0.25 | 0.00 | 1.8 |
| 17 | 0.0 | 0.57 | e0.0 | e0.00 | e0.00 | e0.00 | 7.2 | 2.9 | 105 | 0.25 | 0.00 | 1.4 |
| 18 | 0.0 | 0.49 | e0.0 | e0.00 | e0.00 | e0.00 | 5.6 | 2.4 | 78 | 0.21 | 0.28 | 1.4 |
| 19 | 0.0 | 0.35 | e0.0 | e0.00 | e0.00 | e0.00 | 3.7 | 2.2 | 63 | 0.18 | 0.49 | 1.4 |
| 20 | 0.0 | 0.28 | e0.0 | e0.00 | e0.00 | e0.00 | 2.8 | 1.9 | 52 | 0.39 | 0.39 | 1.2 |
| 21 | 0.0 | 0.25 | e0.0 | e0.00 | e0.00 | e0.00 | 2.4 | 1.6 | 44 | 0.39 | 0.32 | 0.99 |
| 22 | 0.0 | 0.25 | e0.0 | e0.00 | e0.00 | e0.00 | 2.3 | 1.2 | 42 | 0.25 | 1.6 | 0.78 |
| 23 | 0.0 | 0.25 | e0.0 | e0.00 | e0.00 | e0.00 | 2.1 | 0.95 | 43 | 0.14 | 1.9 | 0.67 |
| 24 | 0.0 | 0.25 | e0.0 | e0.00 | e0.00 | e0.00 | 2.2 | 1.1 | 38 | 0.11 | 1.1 | 0.64 |
| 25 | 0.0 | 0.21 | e0.0 | e0.00 | e0.00 | e0.00 | 1.8 | 0.99 | 39 | 0.07 | 0.64 | 0.60 |
| 26 | 0.0 | 0.11 | e0.0 | e0.00 | e0.00 | e0.00 | 1.8 | 0.85 | 41 | 0.04 | 0.46 | 0.49 |
| 27 | 0.0 | 0.07 | e0.0 | e0.00 | e0.00 | e0.00 | 1.4 | 0.64 | 40 | 0.04 | 0.81 | 0.46 |
| 28 | 0.0 | 0.07 | e0.0 | e0.00 | e0.00 | e4.6 | 1.1 | 0.49 | 34 | 0.00 | 3.7 | 0.46 |
| 29 | 0.04 | 0.07 | e0.0 | e0.00 | --- | e5.7 | 0.88 | 0.49 | 27 | 0.00 | 6.0 | 0.49 |
| 30 | 0.07 | 0.07 | e0.0 | e0.00 | --- | e3.3 | 0.71 | 0.49 | 18 | 0.00 | 6.3 | 0.46 |
| 31 | 0.28 | --- | e0.0 | e0.00 | --- | e1.4 | --- | 0.39 | --- | 0.00 | 5.9 | --- |
| TOTAL | 0.39 | 42.12 | 0.58 | 0.00 | 0.00 | 15.00 | 145.94 | 112.94 | 2071.11 | 49.17 | 29.89 | 141.24 |
| MEAN | 0.013 | 1.404 | 0.019 | 0.000 | 0.000 | 0.484 | 4.865 | 3.643 | 69.04 | 1.586 | 0.964 | 4.708 |
| MAX | 0.28 | 12 | 0.07 | 0.00 | 0.00 | 5.7 | 11 | 12 | 288 | 13 | 6.3 | 22 |
| MIN | 0.00 | 0.07 | 0.00 | 0.00 | 0.00 | 0.00 | 0.71 | 0.39 | 0.14 | 0.00 | 0.00 | 0.46 |
| AC-FT | 0.8 | 84 | 1.2 | 0.00 | 0.00 | 30 | 289 | 224 | 4110 | 98 | 59 | 280 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 2.040 | 0.941 | 0.069 | 0.004 | 0.255 | 14.68 | 82.64 | 19.76 | 9.337 | 9.320 | 8.467 | 1.928 |
| MAX | 56.5 | 16.4 | 1.35 | 0.080 | 5.68 | 122 | 344 | 159 | 69.0 | 189 | 161 | 28.6 |
| (WY) | 1995 | 1995 | 1995 | 1995 | 1981 | 1995 | 1997 | 1974 | 2002 | 1997 | 1995 | 1995 |
| MIN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.41 | 0.009 | 0.000 | 0.000 | 0.000 | 0.000 |
| (WY) | 1963 | 1963 | 1963 | 1963 | 1963 | 1962 | 2000 | 1973 | 1968 | 1968 | 1962 | 1962 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1962 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 9359.72 | | 2608.38 | | | |
| ANNUAL MEAN | 25.64 | | 7.146 | | 15.63 | |
| HIGHEST ANNUAL MEAN | | | | | 57.9 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 0.59 | 1963 |
| HIGHEST DAILY MEAN | 961 | Apr 10 | 288 | Jun 13 | 1350 | Apr 24 1997 |
| LOWEST DAILY MEAN | 0.00 | Jan 1 | 0.00 | Oct 1 | 0.00 | Mar 1 1962 |
| ANNUAL SEVEN-DAY MINIMUM | 0.00 | Jan 1 | 0.00 | Oct 1 | 0.00 | Mar 1 1962 |
| MAXIMUM PEAK FLOW | | | 292 | Jun 13 | 1470 | Apr 23 1997 |
| MAXIMUM PEAK STAGE | | | 1532.22 | Jun 13 | 1534.83 | Apr 21 1997 |
| ANNUAL RUNOFF (AC-FT) | 18570 | | 5170 | | 11330 | |
| 10 PERCENT EXCEEDS | 32 | | 9.6 | | 20 | |
| 50 PERCENT EXCEEDS | 0.07 | | 0.25 | | 0.00 | |
| 90 PERCENT EXCEEDS | 0.00 | | 0.00 | | 0.00 | |

e Estimated

## 05099300 PEMBINA RIVER NEAR WINDYGATES, MANITOBA
(International gaging station)

LOCATION.--Lat 49°01'53", long 98°16'40", in SE$^{1}/_{4}$ 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$^{2}$.

### 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 39 | 22 | e17 | e16 | e5.8 | e3.1 | e31 | 41 | 13 | 232 | 40 | 162 |
| 2 | 37 | 20 | e17 | e9.1 | e10 | e4.3 | e36 | 43 | 12 | 218 | 33 | 143 |
| 3 | 33 | 19 | e17 | e7.9 | e10 | e4.3 | e31 | 47 | 13 | 205 | 30 | 137 |
| 4 | 31 | 19 | e18 | e11 | e8.1 | e4.4 | e21 | 42 | 12 | 194 | 26 | 126 |
| 5 | 30 | 19 | e17 | e13 | e8.9 | e4.3 | e24 | 43 | 13 | e182 | 26 | 115 |
| 6 | 28 | 23 | e17 | e15 | e10 | e4.2 | e25 | 40 | 12 | e170 | 29 | 108 |
| 7 | 27 | 25 | e17 | e15 | e10 | e4.1 | e29 | 40 | 7.8 | 158 | 29 | 103 |
| 8 | 30 | 24 | e17 | e14 | e9.7 | e4.3 | e30 | 53 | 5.4 | 142 | 27 | 98 |
| 9 | 33 | 22 | e17 | e11 | e9.2 | e4.6 | e38 | 66 | 18 | 128 | 32 | 98 |
| 10 | 30 | 20 | e17 | e14 | e7.7 | e5.1 | e38 | 62 | 717 | 117 | 28 | 94 |
| 11 | 29 | 20 | e17 | e15 | e8.4 | e5.3 | e37 | 60 | 1800 | 108 | 26 | 93 |
| 12 | 27 | 19 | e16 | e19 | e4.9 | e5.8 | e40 | 67 | 1600 | 100 | 24 | 92 |
| 13 | 26 | 20 | e16 | e15 | e6.2 | e6.3 | e50 | 71 | 1390 | 96 | 26 | 90 |
| 14 | 28 | 20 | e16 | e14 | e6.0 | e6.6 | e62 | 67 | 1030 | 103 | 28 | 86 |
| 15 | 30 | 20 | e16 | e14 | e5.8 | e7.0 | 62 | 61 | 756 | 100 | 31 | 89 |
| 16 | 28 | 20 | e16 | e14 | e4.8 | e7.4 | 63 | 55 | 607 | 95 | 30 | 85 |
| 17 | 30 | 21 | e16 | e14 | e5.3 | e7.3 | 70 | 49 | 533 | 88 | 47 | 84 |
| 18 | 30 | 18 | e16 | e14 | e5.1 | e7.8 | 65 | 42 | 473 | 78 | 46 | 84 |
| 19 | 31 | 17 | e16 | e14 | e5.2 | e8.3 | 64 | 41 | 427 | 75 | 41 | 82 |
| 20 | 31 | 19 | e16 | e13 | e4.9 | e8.8 | 60 | 34 | 381 | 72 | 44 | 73 |
| 21 | 28 | 19 | e15 | e13 | e4.5 | e8.8 | 58 | e30 | 353 | 73 | 49 | 72 |
| 22 | 27 | 16 | e15 | e13 | e4.7 | e8.7 | 56 | e27 | 347 | 69 | 44 | 74 |
| 23 | 26 | 17 | e15 | e14 | e5.0 | e8.1 | 51 | e24 | 335 | 65 | 38 | 75 |
| 24 | 29 | 18 | e15 | e15 | e4.9 | e7.3 | 52 | 22 | 331 | 63 | 35 | 81 |
| 25 | 33 | e12 | e15 | e16 | e4.1 | e7.1 | 47 | 20 | 319 | 60 | 36 | 79 |
| 26 | 28 | e11 | e15 | e16 | e3.6 | e7.3 | 46 | 18 | 308 | 56 | 37 | 78 |
| 27 | 31 | e17 | e15 | e16 | e3.6 | e7.8 | 62 | 15 | 304 | 49 | 194 | 76 |
| 28 | 27 | e15 | e15 | e15 | e3.6 | e11 | 65 | 16 | 290 | 45 | 848 | 74 |
| 29 | 26 | e15 | e15 | e13 | --- | e14 | 55 | 15 | 267 | 41 | 327 | 77 |
| 30 | 25 | e17 | e15 | e10 | --- | e13 | 45 | 13 | 245 | 46 | 198 | 77 |
| 31 | 23 | --- | e15 | e8.8 | --- | e27 | --- | 12 | --- | 44 | 166 | --- |
| TOTAL | 911 | 564 | 497 | 421.8 | 180.0 | 233.4 | 1413 | 1236 | 12919.2 | 3272 | 2615 | 2805 |
| MEAN | 29.39 | 18.80 | 16.03 | 13.61 | 6.429 | 7.529 | 47.10 | 39.87 | 430.6 | 105.5 | 84.35 | 93.50 |
| MAX | 39 | 25 | 18 | 19 | 10 | 27 | 70 | 71 | 1800 | 232 | 848 | 162 |
| MIN | 23 | 11 | 15 | 7.9 | 3.6 | 3.1 | 21 | 12 | 5.4 | 41 | 24 | 72 |
| AC-FT | 1810 | 1120 | 986 | 837 | 357 | 463 | 2800 | 2450 | 25630 | 6490 | 5190 | 5560 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 56.23 | 36.36 | 17.77 | 9.492 | 8.292 | 96.43 | 1107 | 857.6 | 363.1 | 176.3 | 113.7 | 74.75 |
| MAX | 343 | 391 | 195 | 82.7 | 64.9 | 949 | 4257 | 3616 | 1752 | 1128 | 719 | 543 |
| (WY) | 1969 | 1995 | 1995 | 1995 | 1995 | 1995 | 1998 | 1974 | 1999 | 1997 | 1993 | 1993 |
| MIN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 21.3 | 27.0 | 4.03 | 0.070 | 0.000 | 0.000 |
| (WY) | 1989 | 1989 | 1989 | 1965 | 1963 | 1964 | 1977 | 1988 | 1988 | 1988 | 1988 | 1988 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1962 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 145803.4 | | 27067.4 | | | |
| ANNUAL MEAN | 399.5 | | 74.16 | | 246.7 | |
| HIGHEST ANNUAL MEAN | | | | | 936 | 1995 |
| LOWEST ANNUAL MEAN | | | | | 9.61 | 1977 |
| HIGHEST DAILY MEAN | 3710 | Apr 21 | 1800 | Jun 11 | 13500 | Apr 26 1997 |
| LOWEST DAILY MEAN | 3.6 | Mar 7 | 3.1 | Mar 1 | 0.00 | Jan 29 1963 |
| ANNUAL SEVEN-DAY MINIMUM | 3.7 | Mar 4 | 3.8 | Feb 25 | 0.00 | Jan 29 1963 |
| MAXIMUM PEAK FLOW | | | 2690 | Jun 10 | 13700 | Apr 26 1997 |
| MAXIMUM PEAK STAGE | | | 1111.80 | Jun 10 | 1122.27 | Apr 26 1997 |
| ANNUAL RUNOFF (AC-FT) | 289200 | | 53690 | | 178700 | |
| 10 PERCENT EXCEEDS | 1460 | | 139 | | 609 | |
| 50 PERCENT EXCEEDS | 39 | | 27 | | 33 | |
| 90 PERCENT EXCEEDS | 6.0 | | 7.3 | | 0.00 | |

e Estimated

## 05099400 LITTLE SOUTH PEMBINA RIVER NEAR WALHALLA, ND

LOCATION.--Lat 48°51'55", long 98°00'20", in SE$^{1}/_{4}$SW$^{1}/_{4}$ sec.10, T.162 N., R.57 W., Cavalier County, Hydrologic Unit 09020313, on right bank 10 ft upstream from county bridge, 3.5 mi above mouth, and 6 mi southwest of Walhalla.

DRAINAGE AREA.--182 mi$^2$, of which 10 mi$^2$ is noncontributing.

### WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1956 to Sept. 1982, March 2001 to current year.

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage not yet determined. Datum of gage was 1,099.48 ft above National Geodetic Vertical Datum of 1929 from April 1956 to Sept. 1982. Prior to Sept. 10, 1956, nonrecording gage at bridge 25 ft downstream at same datum.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--A discharge of 5,080 ft$^3$/s, gage height, unknown, was measured on Apr. 24, 1997. A high-water mark 3 ft higher than gage height of measurement was observed.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.8 | 2.3 | e1.9 | e1.0 | e0.90 | e0.90 | e1.0 | 3.7 | 3.7 | e13 | 2.2 | 165 |
| 2 | 1.6 | 2.2 | e1.7 | e1.0 | e0.90 | e0.90 | e1.0 | 3.3 | 3.3 | e11 | 2.0 | 88 |
| 3 | 1.6 | 1.8 | e1.6 | e1.0 | e0.90 | e0.90 | e1.0 | 3.2 | 3.2 | 7.9 | 1.9 | 53 |
| 4 | 1.6 | 1.7 | e1.5 | e1.0 | e0.90 | e0.90 | e1.0 | 3.2 | 3.0 | 7.7 | 1.8 | 34 |
| 5 | 1.7 | 2.0 | e1.5 | e1.0 | e1.0 | e0.90 | e1.2 | 3.7 | 2.8 | 8.0 | 1.9 | 24 |
| 6 | 1.5 | 2.1 | e1.4 | e1.1 | e1.4 | e0.90 | e1.5 | 3.5 | 2.6 | 7.2 | 2.0 | 18 |
| 7 | 1.6 | 2.1 | e1.3 | e1.2 | e1.8 | e0.90 | e2.0 | 3.3 | 2.4 | 6.4 | 2.5 | 15 |
| 8 | 1.7 | 2.1 | e1.3 | e1.3 | e1.2 | e0.90 | e2.4 | 5.3 | 2.2 | 5.8 | 2.2 | 13 |
| 9 | 1.9 | 1.9 | e1.2 | e1.2 | e0.90 | e0.90 | e3.2 | 9.8 | 15 | 5.4 | 5.6 | 13 |
| 10 | 1.3 | 1.8 | e1.1 | e1.2 | e1.0 | e0.90 | e4.0 | 11 | e2000 | 5.1 | 3.5 | 10 |
| 11 | 0.84 | 2.1 | e1.1 | e1.2 | e1.2 | e1.0 | e5.2 | 17 | e750 | 4.8 | 2.9 | 8.4 |
| 12 | 0.82 | 2.2 | e1.0 | e1.2 | e1.1 | e1.6 | e6.1 | 20 | 377 | 4.5 | 2.7 | 7.1 |
| 13 | 0.87 | 2.1 | e1.0 | e1.2 | e1.8 | e1.2 | e14 | 26 | 241 | 4.3 | 2.2 | 6.8 |
| 14 | 0.99 | 2.1 | e1.0 | e1.0 | e1.6 | e1.0 | e28 | 19 | 181 | 4.0 | 2.1 | 6.6 |
| 15 | 1.1 | 2.4 | e1.2 | e0.90 | e1.6 | e1.0 | e23 | 15 | 141 | 3.8 | 2.3 | 6.3 |
| 16 | 1.1 | 2.1 | e1.2 | e0.90 | e1.6 | e1.4 | e18 | 11 | 105 | 3.7 | 2.6 | 6.5 |
| 17 | 0.95 | 2.2 | e1.2 | e0.90 | e1.6 | e1.2 | e16 | 8.6 | 90 | 3.9 | 3.9 | 6.5 |
| 18 | 1.0 | 1.9 | e1.0 | e0.90 | e2.0 | e1.0 | e14 | 7.0 | e78 | 3.8 | 3.1 | 11 |
| 19 | 1.1 | 1.8 | e1.0 | e0.90 | e1.4 | e0.90 | 12 | 5.9 | e67 | 3.5 | 2.8 | 20 |
| 20 | 1.2 | 1.7 | e1.0 | e0.90 | e1.2 | e0.90 | 9.3 | 5.4 | e59 | 3.4 | 2.4 | 14 |
| 21 | 1.2 | 2.0 | e1.0 | e0.90 | e1.2 | e0.90 | 7.6 | 5.0 | e44 | 3.2 | 2.3 | 14 |
| 22 | 1.2 | 2.3 | e1.0 | e0.90 | e1.2 | e0.90 | 6.6 | 4.9 | e200 | 2.8 | 2.2 | e11 |
| 23 | 1.3 | 2.6 | e1.0 | e0.90 | e1.0 | e0.90 | 6.3 | 5.2 | 140 | 2.5 | 3.3 | e10 |
| 24 | 1.9 | 2.6 | e1.0 | e0.90 | e0.90 | e0.90 | 7.1 | 4.7 | 108 | 2.4 | 5.1 | e9.5 |
| 25 | 2.2 | 2.9 | e1.0 | e0.90 | e0.90 | e1.0 | 4.8 | 4.7 | e83 | 2.4 | 2.5 | e9.1 |
| 26 | 2.0 | 2.6 | e1.0 | e0.90 | e0.90 | e1.4 | 3.5 | 4.2 | e59 | 2.2 | 2.3 | e8.8 |
| 27 | 2.6 | e2.4 | e1.0 | e0.90 | e0.90 | e1.8 | 3.5 | 4.0 | e41 | 2.1 | 41 | e8.5 |
| 28 | 2.1 | e2.3 | e1.0 | e0.90 | e0.90 | e1.4 | 3.9 | 4.6 | e31 | 2.1 | 430 | e8.2 |
| 29 | 2.1 | e2.1 | e1.0 | e0.90 | --- | e1.2 | 4.3 | 4.4 | e23 | 1.9 | 94 | e8.0 |
| 30 | 1.9 | e2.0 | e1.0 | e0.90 | --- | e1.0 | 3.8 | 4.2 | e17 | 2.4 | 42 | e7.7 |
| 31 | 1.9 | --- | e1.0 | e0.90 | --- | e1.0 | --- | 3.7 | --- | 2.4 | 38 | --- |
| TOTAL | 46.67 | 64.4 | 36.2 | 30.90 | 33.90 | 32.60 | 215.3 | 234.5 | 4873.2 | 143.6 | 715.3 | 621.0 |
| MEAN | 1.505 | 2.147 | 1.168 | 0.997 | 1.211 | 1.052 | 7.177 | 7.565 | 162.4 | 4.632 | 23.07 | 20.70 |
| MAX | 2.6 | 2.9 | 1.9 | 1.3 | 2.0 | 1.8 | 28 | 26 | 2000 | 13 | 430 | 165 |
| MIN | 0.82 | 1.7 | 1.0 | 0.90 | 0.90 | 0.90 | 1.0 | 3.2 | 2.2 | 1.9 | 1.8 | 6.3 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 1.594 | 1.248 | 0.605 | 0.371 | 1.427 | 22.34 | 177.6 | 41.37 | 22.29 | 9.499 | 3.848 | 3.218 |
| MAX | 5.45 | 3.94 | 1.29 | 1.00 | 30.1 | 139 | 461 | 255 | 162 | 62.6 | 23.1 | 20.7 |
| (WY) | 1981 | 1971 | 1971 | 2002 | 1981 | 1966 | 1970 | 1974 | 2002 | 1970 | 2002 | 2002 |
| MIN | 0.18 | 0.18 | 0.053 | 0.000 | 0.000 | 0.000 | 4.92 | 2.34 | 0.44 | 0.18 | 0.010 | 0.090 |
| (WY) | 1962 | 1962 | 1977 | 1973 | 1961 | 1962 | 1973 | 1958 | 1958 | 1961 | 1961 | 1961 |

| SUMMARY STATISTICS | FOR 2002 WATER YEAR | | WATER YEARS 1956 - 2002 | |
|---|---|---|---|---|
| ANNUAL TOTAL | 7047.57 | | | |
| ANNUAL MEAN | 19.31 | | 21.71 | |
| HIGHEST ANNUAL MEAN | | | 63.2 | 1974 |
| LOWEST ANNUAL MEAN | | | 1.78 | 1958 |
| HIGHEST DAILY MEAN | 2000 | Jun 10 | 3260 | Apr 10 1969 |
| LOWEST DAILY MEAN | 0.82 | Oct 12 | 0.00 | Jan 4 1958 |
| ANNUAL SEVEN-DAY MINIMUM | 0.90 | Jan 15 | 0.00 | Jan 4 1958 |
| MAXIMUM PEAK FLOW | 3000 | Jun 10 | 6600 | Apr 25 1970 |
| MAXIMUM PEAK STAGE | a88.75 | Jun 10 | b13.95 | Apr 25 1970 |
| 10 PERCENT EXCEEDS | 18 | | 25 | |
| 50 PERCENT EXCEEDS | 2.1 | | 1.0 | |
| 90 PERCENT EXCEEDS | 0.90 | | 0.12 | |

a From floodmark; datum of gage not yet determined
b Site and datum then in use
e Estimated

05099400 LITTLE SOUTH PEMBINA RIVER NEAR WALHALLA, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--April 2001 to present.

REMARKS.--Quality assurance sample also collected at this location.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 11... | 1340 | .93 | -- | -- | -- | 535 | 6.0 | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 30... | 1535 | 2.0 | -- | -- | -- | 381 | -- | .0 | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 18... | 1150 | .91 | -- | -- | -- | 1020 | -25.0 | .5 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 12... | 0900 | 6.2 | --e | 7.9 | 799 | 778 | 14.0 | 2.5 | 250 | 67.0 | 21.0 | 7.20 | 2 |
| 25... | 1040 | 3.5 | -- | -- | -- | 976 | 5.5 | 2.5 | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 10... | 1045 | 8.8 | -- | -- | -- | 932 | 6.0 | 8.0 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 03... | 0935 | 8.8 | -- | -- | -- | 951 | 23.3 | 18.0 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 09... | 0820 | 5.3 | 8.0 | 8.1 | 823 | 826 | 23.0 | 20.5 | 310 | 83.0 | 24.0 | 9.10 | 2 |
| 28... | 1120 | 629 | -- | -- | -- | 307 | 20.0 | 17.0 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 30... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 12... | 62.0 | 34 | 168 | 14.0 | .30 | 220 | 8.94 | 534 | 493 | 1.0 | 40 | <1 | 40 |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 10... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 03... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 09... | 59.0 | 29 | 209 | 15.0 | .40 | 210 | 8.29 | 579 | 527 | 3.0 | 20 | 1 | 50 |
| 28... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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 | | | | | |
| 11... | -- | -- | -- | -- | -- |
| NOV | | | | | |
| 30... | -- | -- | -- | -- | -- |
| JAN | | | | | |
| 18... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 12... | 70 | <.10 | 1 | 2 | 370 |
| 25... | -- | -- | -- | -- | -- |
| MAY | | | | | |
| 10... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 03... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 09... | 50 | .10 | 6 | 1 | 310 |
| 28... | -- | -- | -- | -- | -- |

< Less than
e Required equipment not functional/available

## 05099600 PEMBINA RIVER AT WALHALLA, ND

LOCATION.--Lat 48°54'48", long 97°55'00", in SW$^1/_4$NE$^1/_4$NE$^1/_4$ sec.29, T.163 N., R.56 W., Pembina County, Hydrologic Unit 09020313, on southeast corner of State Highway 32 bridge, 0.5 mi south of Walhalla, and 7 mi downstream from Little South Pembina River.

DRAINAGE AREA.--3,350 mi$^2$, approximately.

### WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1939 to September 1990, April 2000 to current year. Prior to October 1963, published as "near Walhalla".

REVISED RECORDS.--WSP 1388: 1943, 1950(P). WSP 1558: 1957. WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 933.34 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 10, 1943, nonrecording gage and Nov. 10, 1943, to Sept. 30, 1963, water stage recorder at site 5.5 mi upstream at different datum.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--A peak gage height of 16.53 ft (from floodmark), discharge not determined, occurred on Apr. 25 or 26, 1997. A measured discharge of 22,500 ft$^3$/s, gage height, 16.20 ft, occurred on Apr. 26, 1997.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 48 | 33 | e28 | e21 | e19 | e16 | e26 | 62 | 35 | 267 | 44 | 960 |
| 2 | 45 | 31 | e27 | e22 | e20 | e16 | e31 | 58 | 35 | 253 | 66 | 443 |
| 3 | 43 | 28 | e25 | e24 | e20 | e16 | e36 | 55 | 33 | 243 | 38 | 297 |
| 4 | 41 | 26 | e23 | e26 | e20 | e16 | e44 | 59 | 32 | 244 | 33 | 242 |
| 5 | 40 | 26 | e20 | e27 | e20 | e16 | e52 | 56 | 31 | 230 | 28 | 195 |
| 6 | 38 | 26 | e18 | e28 | e20 | e16 | e60 | 57 | 30 | 205 | 27 | 176 |
| 7 | 37 | 27 | e18 | e30 | e20 | e16 | e70 | 53 | 28 | 179 | 33 | 156 |
| 8 | 38 | 30 | e18 | e30 | e20 | e16 | e75 | 62 | 26 | 163 | 30 | 146 |
| 9 | 38 | 28 | e18 | e29 | e20 | e16 | e82 | 98 | 92 | 145 | 63 | 141 |
| 10 | 40 | 28 | e18 | e28 | e20 | e16 | e92 | 110 | 1450 | 136 | 51 | 128 |
| 11 | 39 | 26 | e18 | e27 | e20 | e16 | e110 | 140 | 2830 | 126 | 47 | 113 |
| 12 | 39 | 26 | e19 | e25 | e20 | e17 | 129 | 144 | 1940 | 114 | 44 | 118 |
| 13 | 37 | 25 | e20 | e24 | e20 | e16 | 153 | 174 | 1580 | 110 | 43 | 118 |
| 14 | 36 | 25 | e22 | e24 | e20 | e16 | 153 | 146 | 1210 | 108 | 46 | 113 |
| 15 | 37 | 25 | e24 | e24 | e20 | e16 | 135 | 117 | 906 | 85 | 50 | 108 |
| 16 | 36 | 25 | e24 | e23 | e20 | e17 | 115 | 99 | 715 | 74 | 54 | 104 |
| 17 | 35 | 27 | e24 | e22 | e20 | e17 | 109 | 85 | 602 | 67 | 65 | 100 |
| 18 | 35 | 27 | e22 | e21 | e20 | e16 | 106 | 74 | 522 | 72 | 68 | 113 |
| 19 | 34 | 31 | e20 | e20 | e20 | e15 | 92 | 65 | 499 | 68 | 68 | 157 |
| 20 | 34 | 33 | e20 | e19 | e20 | e14 | 87 | 61 | 455 | 58 | 56 | 125 |
| 21 | 35 | 53 | e19 | e18 | e20 | e14 | 78 | 54 | 413 | 60 | 62 | 109 |
| 22 | 34 | 40 | e18 | e18 | e20 | e14 | 74 | 51 | 453 | 49 | 71 | 106 |
| 23 | 33 | 30 | e18 | e18 | e19 | e14 | 72 | 51 | 500 | 49 | 55 | 104 |
| 24 | 39 | e28 | e18 | e18 | e18 | e14 | 76 | 45 | 436 | 48 | 48 | 104 |
| 25 | 40 | e22 | e18 | e18 | e18 | e14 | 71 | 43 | 419 | 43 | 47 | 106 |
| 26 | 38 | e16 | e18 | e18 | e17 | e14 | 67 | 41 | 383 | 52 | 43 | 103 |
| 27 | 30 | e18 | e18 | e18 | e17 | e15 | 63 | 38 | 368 | 51 | 71 | 98 |
| 28 | 38 | e20 | e19 | e18 | e17 | e16 | 76 | 39 | 360 | 34 | 1330 | 95 |
| 29 | 35 | e24 | e20 | e18 | --- | e18 | 86 | 39 | 339 | 28 | 840 | 93 |
| 30 | 33 | e27 | e20 | e18 | --- | e20 | 72 | 38 | 308 | 33 | 463 | 94 |
| 31 | 34 | --- | e20 | e18 | --- | e22 | --- | 35 | --- | 43 | 347 | --- |
| TOTAL | 1159 | 831 | 632 | 692 | 545 | 495 | 2492 | 2249 | 17030 | 3437 | 4331 | 5065 |
| MEAN | 37.39 | 27.70 | 20.39 | 22.32 | 19.46 | 15.97 | 83.07 | 72.55 | 567.7 | 110.9 | 139.7 | 168.8 |
| MAX | 48 | 53 | 28 | 30 | 20 | 22 | 153 | 174 | 2830 | 267 | 1330 | 960 |
| MIN | 30 | 16 | 18 | 18 | 17 | 14 | 26 | 35 | 26 | 28 | 27 | 93 |
| AC-FT | 2300 | 1650 | 1250 | 1370 | 1080 | 982 | 4940 | 4460 | 33780 | 6820 | 8590 | 10050 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 65.26 | 43.76 | 21.20 | 12.19 | 9.354 | 122.4 | 1076 | 782.7 | 351.6 | 170.4 | 116.7 | 77.13 |
| MAX | 600 | 454 | 216 | 120 | 68.9 | 1206 | 4950 | 4672 | 1933 | 814 | 960 | 432 |
| (WY) | 1995 | 1995 | 1995 | 1995 | 1995 | 1995 | 1995 | 1974 | 1974 | 1970 | 1995 | 1944 |
| MIN | 0.042 | 0.15 | 0.000 | 0.000 | 0.000 | 0.000 | 49.6 | 18.8 | 2.83 | 0.74 | 0.10 | 0.000 |
| (WY) | 1940 | 1941 | 1941 | 1940 | 1940 | 1940 | 1977 | 1940 | 1940 | 1940 | 1961 | 1940 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1940 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 171670.5 | | 38958 | | | |
| ANNUAL MEAN | 470.3 | | 106.7 | | 239.3 | |
| HIGHEST ANNUAL MEAN | | | | | 1146 | 1995 |
| LOWEST ANNUAL MEAN | | | | | 9.77 | 1940 |
| HIGHEST DAILY MEAN | 5300 | Apr 21 | 2830 | Jun 11 | 13800 | Apr 18 1950 |
| LOWEST DAILY MEAN | 9.0 | Feb 10 | 14 | Mar 20 | 0.00 | Oct 14 1939 |
| ANNUAL SEVEN-DAY MINIMUM | 9.0 | Feb 10 | 14 | Mar 20 | 0.00 | Oct 14 1939 |
| MAXIMUM PEAK FLOW | | | 3800 | Jun 10 | a20400 | Apr 18 1950 |
| MAXIMUM PEAK STAGE | | | 10.05 | Jun 10 | b16.20 | Apr 18 1950 |
| ANNUAL RUNOFF (AC-FT) | 340500 | | 77270 | | 173400 | |
| 10 PERCENT EXCEEDS | 1550 | | 185 | | 575 | |
| 50 PERCENT EXCEEDS | 51 | | 37 | | 39 | |
| 90 PERCENT EXCEEDS | 9.0 | | 18 | | 2.0 | |

a From rating curve extended above 7,000 ft$^3$/s on basis of contracted-opening measurement of discharge
b Present datum
e Estimated

05099600 PEMBINA RIVER AT WALHALLA, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1962-90, 1992-95, 2000 to current year.

REMARKS.--Quality assurance sample also collected at this location.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 11... | 1055 | 38 | -- | -- | -- | 562 | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 17... | 1605 | 22 | -- | -- | -- | --e | -12.5 | .0 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 27... | 1410 | 15 | -- | -- | -- | 1050 | 8.0 | .0 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 16... | 0840 | 110 | --e | 7.9 | 741 | 807 | 14.0 | 8.5 | 310 | 76.0 | 29.0 | 8.10 | 1 |
| 25... | 0910 | 72 | -- | -- | -- | -- | -2.5 | 2.5 | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 09... | 1455 | 105 | -- | -- | -- | 880 | 7.5 | 6.0 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 03... | 1240 | 242 | -- | -- | -- | 841 | -- | 23.5 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 09... | 1105 | 65 | 8.3 | 8.3 | 798 | 794 | 28.0 | 23.0 | 320 | 76.0 | 31.0 | 10.0 | 1 |
| 28... | 1420 | 1840 | -- | -- | -- | -- | 21.0 | -- | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 27... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 16... | 56.0 | 28 | 203 | 16.0 | .30 | 220 | 169 | 568 | 528 | 2.0 | 40 | <1 | 60 |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 03... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 09... | 51.0 | 25 | 243 | 15.0 | .20 | 190 | 101 | 579 | 519 | 4.0 | 20 | <1 | 60 |
| 28... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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 | | | | | |
| 11... | -- | -- | -- | -- | -- |
| JAN | | | | | |
| 17... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 27... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 16... | 100 | <.10 | 2 | 1 | 410 |
| 25... | -- | -- | -- | -- | -- |
| MAY | | | | | |
| 09... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 03... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 09... | 50 | <.10 | 5 | <1 | 350 |
| 28... | -- | -- | -- | -- | -- |

< Less than
e Required equipment not functional/available

## 05100000 PEMBINA RIVER AT NECHE, ND
(International gaging station)

LOCATION.--Lat 48°59'23", long 97°33'24", in NW$^1/_4$NW$^1/_4$ sec.31, T.164 N., R.53 W., Pembina County, Hydrologic Unit 09020313, on right bank at bridge on State Highway 18 and at northwest corner of Neche.

DRAINAGE AREA.--3,410 mi$^2$, 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. Datum of gage is 809.69 ft above National Geodetic Vertical Datum of 1929. From Apr. 18, 1939, to July 21, 1999, at site 0.8 miles downstream at same datum. May 25, 1932, to Apr. 17, 1939, nonrecording gage on bridge on State Highway 18 at same datum. Prior to May 24, 1932, nonrecording gage at Burlington Northern Railway bridge, 0.1 mi upstream, at same datum.

REMARKS.--Records fair except for estimated daily discharges, 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 75 | 56 | 29 | e28 | e20 | e17 | e58 | 90 | 35 | 358 | 75 | 519 |
| 2 | 68 | 47 | 30 | e28 | e20 | e16 | e78 | 78 | 35 | 322 | 74 | 1060 |
| 3 | 63 | 42 | 31 | e28 | e20 | e16 | e90 | 73 | 34 | 301 | 67 | 531 |
| 4 | 58 | 44 | 28 | e28 | e20 | e16 | e116 | 69 | 34 | 292 | 59 | 385 |
| 5 | 54 | 43 | 28 | e28 | e20 | e16 | e140 | 67 | 33 | 285 | 54 | 321 |
| 6 | 51 | 39 | 27 | e28 | e20 | e16 | e165 | 68 | 32 | 269 | 50 | 273 |
| 7 | 50 | 37 | 23 | e29 | e20 | e16 | e180 | 70 | 31 | 257 | 56 | 239 |
| 8 | 48 | 37 | 21 | e30 | e20 | e16 | e200 | 74 | 28 | 240 | 64 | 220 |
| 9 | 49 | 37 | e24 | e30 | e20 | e16 | e230 | 83 | 41 | 224 | 85 | 200 |
| 10 | 56 | 39 | e27 | e29 | e20 | e16 | e260 | 104 | 109 | 211 | 90 | 184 |
| 11 | 51 | 39 | e28 | e28 | e20 | e17 | e280 | 132 | 1830 | 203 | 92 | 172 |
| 12 | 49 | 37 | e29 | e27 | e20 | e18 | e310 | 157 | 3070 | 191 | 73 | 159 |
| 13 | 46 | 47 | e29 | e26 | e20 | e18 | 368 | 162 | 2320 | 180 | 66 | 148 |
| 14 | 45 | 39 | e29 | e26 | e20 | e18 | 279 | 171 | 1900 | 171 | 56 | 142 |
| 15 | 43 | 37 | e30 | e26 | e20 | e17 | 195 | 169 | 1380 | 159 | 60 | 133 |
| 16 | 42 | 36 | e30 | e25 | e20 | e18 | 159 | 140 | 1030 | 151 | 60 | 126 |
| 17 | 41 | 35 | e30 | e25 | e20 | e18 | 144 | 118 | 822 | 144 | 75 | 120 |
| 18 | 42 | 34 | e29 | e25 | e20 | e17 | 131 | 101 | 699 | 137 | 78 | 121 |
| 19 | 40 | 35 | e29 | e24 | e20 | e16 | 126 | 86 | 613 | 130 | 85 | 141 |
| 20 | 40 | 39 | e29 | e23 | e20 | e15 | 117 | 75 | 586 | 125 | 83 | 184 |
| 21 | 39 | 38 | e29 | e22 | e20 | e15 | 106 | 65 | 537 | 116 | 74 | 172 |
| 22 | 39 | 38 | e29 | e21 | e20 | e15 | 98 | 57 | 510 | 107 | 62 | 136 |
| 23 | 41 | 40 | e29 | e21 | e20 | e15 | 92 | 51 | 525 | 110 | 67 | 122 |
| 24 | 43 | 37 | e29 | e21 | e20 | e15 | 92 | 49 | 573 | 102 | 82 | 119 |
| 25 | e43 | 37 | e28 | e21 | e19 | e15 | 90 | 47 | 512 | 98 | 73 | 115 |
| 26 | e43 | 14 | e28 | e21 | e19 | e15 | 91 | 44 | 488 | 97 | 69 | 115 |
| 27 | e43 | 8.4 | e28 | e21 | e18 | e15 | 83 | 43 | 449 | 87 | 73 | 115 |
| 28 | e43 | 11 | e28 | e21 | e18 | e17 | 78 | 41 | 424 | 80 | 99 | 111 |
| 29 | e44 | 19 | e28 | e21 | --- | e21 | 79 | 40 | 409 | 74 | 981 | 107 |
| 30 | e44 | 27 | e28 | e21 | --- | e30 | 91 | 39 | 383 | 73 | 770 | 105 |
| 31 | 46 | --- | e28 | e21 | --- | e40 | --- | 37 | --- | 78 | 487 | --- |
| TOTAL | 1479 | 1068.4 | 872 | 773 | 554 | 546 | 4526 | 2600 | 19472 | 5372 | 4239 | 6595 |
| MEAN | 47.71 | 35.61 | 28.13 | 24.94 | 19.79 | 17.61 | 150.9 | 83.87 | 649.1 | 173.3 | 136.7 | 219.8 |
| MAX | 75 | 56 | 31 | 30 | 20 | 40 | 368 | 171 | 3070 | 358 | 981 | 1060 |
| MIN | 39 | 8.4 | 21 | 21 | 18 | 15 | 58 | 37 | 28 | 73 | 50 | 105 |
| AC-FT | 2930 | 2120 | 1730 | 1530 | 1100 | 1080 | 8980 | 5160 | 38620 | 10660 | 8410 | 13080 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1903 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 75.51 | 48.99 | 23.91 | 12.74 | 9.240 | 105.8 | 923.1 | 732.7 | 351.5 | 190.9 | 114.8 | 82.00 |
| MAX | 643 | 486 | 261 | 120 | 65.8 | 1216 | 4713 | 4770 | 1894 | 1509 | 946 | 648 |
| (WY) | 1995 | 1995 | 1995 | 1995 | 1995 | 1995 | 1998 | 1997 | 1999 | 1997 | 1993 | 1993 |
| MIN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 24.7 | 11.8 | 6.56 | 0.000 | 0.000 | 0.000 |
| (WY) | 1939 | 1939 | 1939 | 1933 | 1933 | 1936 | 1939 | 1939 | 1940 | 1940 | 1939 | 1938 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1903 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 184648.4 | | 48096.4 | | | |
| ANNUAL MEAN | 505.9 | | 131.8 | | 224.6 | |
| HIGHEST ANNUAL MEAN | | | | | 1116 | 1995 |
| LOWEST ANNUAL MEAN | | | | | 3.96 | 1939 |
| HIGHEST DAILY MEAN | 4370 | Apr 10 | 3070 | Jun 12 | 14300 | Apr 27 1997 |
| LOWEST DAILY MEAN | 8.4 | Nov 27 | 8.4 | Nov 27 | 0.00 | Feb 1 1932 |
| ANNUAL SEVEN-DAY MINIMUM | 11 | Mar 1 | 15 | Mar 20 | 0.00 | Feb 1 1932 |
| MAXIMUM PEAK FLOW | | | 3440 | Jun 12 | 15100 | Apr 27 1997 |
| MAXIMUM PEAK STAGE | | | 15.39 | Jun 12 | a24.51 | Apr 21 1997 |
| ANNUAL RUNOFF (AC-FT) | 366300 | | 95400 | | 162700 | |
| 10 PERCENT EXCEEDS | 1800 | | 279 | | 510 | |
| 50 PERCENT EXCEEDS | 70 | | 47 | | 43 | |
| 90 PERCENT EXCEEDS | 12 | | 20 | | 1.3 | |

a Backwater from ice
e Estimated

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| JAN | | | | | | | | | | | | | |
| 17... | 1135 | 25 | -- | -- | -- | -- | -11.5 | -.5 | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 13... | 1100 | 20 | -- | -- | -- | 891 | -2.0 | .5 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 27... | 1110 | 15 | -- | -- | -- | 650 | 7.0 | .0 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 03... | 1200 | 73 | -- | -- | -- | 642 | -2.0 | 1.0 | -- | -- | -- | -- | -- |
| 16... | 1320 | 154 | --e | 8.0 | 728 | 703 | 16.0 | 8.2 | 270 | 65.0 | 27.0 | 8.40 | 1 |
| MAY | | | | | | | | | | | | | |
| 09... | 1135 | 84 | -- | -- | -- | 860 | 2.0 | 3.5 | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 14... | 1510 | 1860 | -- | -- | -- | 565 | -- | 17.0 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 03... | 1615 | 290 | -- | -- | -- | 900 | -- | 25.0 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 08... | 1410 | 65 | 8.4 | 8.4 | 886 | 874 | 29.0 | 24.5 | 370 | 89.0 | 36.0 | 11.0 | 1 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| JAN | | | | | | | | | | | | | |
| 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 27... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 03... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 16... | 41.0 | 24 | 191 | 16.0 | .20 | 170 | 201 | 484 | 443 | 2.0 | 10 | <1 | 50 |
| MAY | | | | | | | | | | | | | |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 14... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 03... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 08... | 52.0 | 23 | 287 | 9.5 | .20 | 200 | 103 | 581 | 571 | 6.0 | 50 | 1 | 60 |

| Date | 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) |
|---|---|---|---|---|---|
| JAN | | | | | |
| 17... | -- | -- | -- | -- | -- |
| FEB | | | | | |
| 13... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 27... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 03... | -- | -- | -- | -- | -- |
| 16... | 40 | <.10 | 3 | 2 | 310 |
| MAY | | | | | |
| 09... | -- | -- | -- | -- | -- |
| JUN | | | | | |
| 14... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 03... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 08... | 30 | .10 | 6 | 1 | 400 |

< Less than
e Required equipment not functional/available

## 05101000 TONGUE RIVER AT AKRA, ND

LOCATION.--Lat 48°46'42", long 97°44'43", in SW$^{1}/_{4}$ 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$^{2}$.

### 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 National Geodetic Vertical Datum of 1929. 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 good except for estimated daily discharges, which are poor. 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 l955 to l961 and have a combined capacity of l9,245 acre-ft.

EXTREMES FOR CURRENT YEAR.--Maximum instantaneous discharge, 554 ft$^{3}$/s, June 11, gage height, 15.05 ft; minimum daily discharge, 0.75 ft$^{3}$/s, July 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | --- | --- | --- | --- | --- | 4.6 | 25 | 11 | 8.3 | 41 | 2.4 | 130 |
| 2 | --- | --- | --- | --- | --- | 4.2 | 26 | 9.9 | 7.5 | 31 | 2.4 | 170 |
| 3 | --- | --- | --- | --- | --- | 4.9 | 25 | 9.6 | 7.0 | 23 | 2.4 | 159 |
| 4 | --- | --- | --- | --- | --- | 4.6 | 24 | 9.8 | 6.6 | 17 | 2.4 | 119 |
| 5 | --- | --- | --- | --- | --- | 4.4 | 23 | 9.6 | 6.3 | 16 | 2.3 | 88 |
| 6 | --- | --- | --- | --- | --- | 4.4 | 21 | 9.3 | 6.0 | 14 | 2.3 | 68 |
| 7 | --- | --- | --- | --- | --- | 4.4 | 20 | 9.4 | 5.8 | 12 | 2.3 | 56 |
| 8 | --- | --- | --- | --- | --- | 4.1 | 20 | 11 | 5.6 | 10 | 2.4 | 47 |
| 9 | --- | --- | --- | --- | --- | e4.0 | 20 | 17 | 7.8 | 8.9 | 3.3 | 38 |
| 10 | --- | --- | --- | --- | --- | e4.0 | 20 | 25 | 79 | 8.2 | 4.2 | 30 |
| 11 | --- | --- | --- | --- | --- | e4.2 | 24 | 37 | 487 | 8.0 | 4.4 | 24 |
| 12 | --- | --- | --- | --- | --- | e5.2 | 27 | 41 | 546 | 8.3 | 4.2 | 20 |
| 13 | --- | --- | --- | --- | --- | e6.0 | 33 | 39 | 519 | 8.3 | 4.3 | 17 |
| 14 | --- | --- | --- | --- | --- | e6.9 | 37 | 39 | 489 | 8.1 | 4.1 | 14 |
| 15 | --- | --- | --- | --- | --- | 7.0 | 39 | 38 | 454 | 7.4 | 3.9 | 12 |
| 16 | --- | --- | --- | --- | --- | 6.8 | 39 | 34 | 417 | 7.1 | 3.9 | 11 |
| 17 | --- | --- | --- | --- | --- | 6.4 | 36 | 29 | 369 | 6.8 | 4.2 | 11 |
| 18 | --- | --- | --- | --- | --- | 6.2 | 31 | 25 | 312 | 6.2 | 4.3 | 13 |
| 19 | --- | --- | --- | --- | --- | 6.3 | 26 | 21 | 245 | 6.2 | 4.5 | 28 |
| 20 | --- | --- | --- | --- | --- | 6.3 | 22 | 17 | 204 | 6.3 | 4.5 | 39 |
| 21 | --- | --- | --- | --- | --- | 6.6 | 19 | 14 | 173 | 6.1 | 4.3 | 37 |
| 22 | --- | --- | --- | --- | --- | 5.8 | 17 | 13 | 153 | 5.7 | 4.2 | 30 |
| 23 | --- | --- | --- | --- | --- | e5.4 | 15 | 12 | 191 | 5.2 | 4.1 | 24 |
| 24 | --- | --- | --- | --- | --- | e4.8 | 15 | 11 | 273 | 5.0 | 4.0 | 20 |
| 25 | --- | --- | --- | --- | --- | e4.3 | 14 | 11 | 297 | 4.6 | 3.9 | 17 |
| 26 | --- | --- | --- | --- | --- | e4.1 | 13 | 9.8 | 231 | 4.2 | 4.0 | 15 |
| 27 | --- | --- | --- | --- | --- | e4.1 | 13 | 9.2 | 158 | 3.9 | 4.5 | 13 |
| 28 | --- | --- | --- | --- | --- | 4.1 | 12 | 9.2 | 107 | 3.5 | 22 | 12 |
| 29 | --- | --- | --- | --- | --- | 4.3 | 12 | 9.5 | 74 | 2.1 | 94 | 12 |
| 30 | --- | --- | --- | --- | --- | 7.7 | 11 | 9.5 | 54 | 0.75 | 140 | 11 |
| 31 | --- | --- | --- | --- | --- | 18 | --- | 9.0 | --- | 2.3 | 132 | --- |
| TOTAL | --- | --- | --- | --- | --- | 174.1 | 679 | 558.8 | 5892.9 | 297.15 | 485.7 | 1285 |
| MEAN | --- | --- | --- | --- | --- | 5.616 | 22.63 | 18.03 | 196.4 | 9.585 | 15.67 | 42.83 |
| MAX | --- | --- | --- | --- | --- | 18 | 39 | 41 | 546 | 41 | 140 | 170 |
| MIN | --- | --- | --- | --- | --- | 4.0 | 11 | 9.0 | 5.6 | 0.75 | 2.3 | 11 |
| AC-FT | --- | --- | --- | --- | --- | 345 | 1350 | 1110 | 11690 | 589 | 963 | 2550 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 6.292 | 6.757 | 4.464 | 3.162 | 3.599 | 23.68 | 120.4 | 62.41 | 22.34 | 15.23 | 7.720 | 7.114 |
| MAX | 30.1 | 22.7 | 12.9 | 7.27 | 18.7 | 135 | 451 | 587 | 196 | 216 | 144 | 42.8 |
| (WY) | 1981 | 1981 | 1971 | 1971 | 1981 | 1966 | 1950 | 1950 | 2002 | 1997 | 1993 | 2002 |
| MIN | 0.51 | 0.56 | 0.065 | 0.51 | 0.24 | 0.22 | 0.43 | 1.63 | 0.47 | 0.086 | 0.21 | 0.096 |
| (WY) | 1962 | 1976 | 1953 | 1953 | 1953 | 1964 | 1991 | 1980 | 1988 | 1978 | 1988 | 1989 |

| SUMMARY STATISTICS | WATER YEARS 1950 - 2002 | |
|---|---|---|
| ANNUAL MEAN | a21.37 | |
| HIGHEST ANNUAL MEAN | a50.1 | 1956 |
| LOWEST ANNUAL MEAN | a3.11 | 1961 |
| HIGHEST DAILY MEAN | 5240 | Apr 18 1950 |
| LOWEST DAILY MEAN | 0.00 | Dec 1 1952 |
| ANNUAL SEVEN-DAY MINIMUM | 0.00 | Dec 1 1952 |
| MAXIMUM PEAK FLOW | b11800 | Apr 18 1950 |
| MAXIMUM PEAK STAGE | c16.75 | Apr 22 1979 |
| ANNUAL RUNOFF (AC-FT) | a15480 | |
| 10 PERCENT EXCEEDS | 39 | |
| 50 PERCENT EXCEEDS | 4.1 | |
| 90 PERCENT EXCEEDS | 0.80 | |

a Based on complete water years only (1952-82)
b From indirect measurement of flow
c From floodmarks, site and datum then in use
e Estimated

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APR | | | | | | | | | | | | | |
| 15... | 1620 | 38 | --e | 7.7 | 512 | 474 | 17.5 | 6.0 | 200 | 54.0 | 15.0 | 4.10 | .7 |
| 25... | 1315 | 15 | -- | -- | -- | 527 | -- | 5.0 | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 09... | 1650 | 19 | -- | -- | -- | 591 | 7.0 | 6.5 | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 04... | 1610 | 6.6 | -- | -- | -- | 642 | -- | 18.5 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 02... | 1320 | 32 | -- | -- | -- | 489 | -- | 24.5 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 08... | 1055 | 1.4 | 8.0 | 7.8 | 592 | 594 | 25.5 | 22.0 | 250 | 70.0 | 19.0 | 6.60 | .8 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APR | | | | | | | | | | | | | |
| 15... | 23.0 | 20 | 167 | 9.2 | .20 | 86.0 | 33.0 | 322 | 292 | 1.0 | 30 | <1 | 20 |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 04... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 02... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 08... | 29.0 | 19 | 229 | 11.0 | .30 | 91.0 | 1.61 | 425 | 365 | 7.0 | 30 | 1 | 30 |

| Date | 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... | 220 | <.10 | 1 | 2 | 200 |
| 25... | -- | -- | -- | -- | -- |
| MAY | | | | | |
| 09... | -- | -- | -- | -- | -- |
| JUN | | | | | |
| 04... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 02... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 08... | 1300 | .10 | 4 | <1 | 270 |

< Less than
e Required equipment not functional/available

## 05102490 RED RIVER OF THE NORTH AT PEMBINA, ND

LOCATION.--Lat 48°58'17", long 97°14'16", in NE$^{1}/_{4}$ 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$^2$, includes 3,800 mi$^2$ in closed basins.

### WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APR | | | | | | | | | | | | | |
| 17... | 1035 | 6870 | 7.7 | 7.8 | 578 | 549 | .0 | 5.9 | 210 | 46.0 | 24.0 | 4.40 | .9 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APR | | | | | | | | | | | | | |
| 17... | 29.0 | 22 | 162 | 23.0 | .20 | 82.0 | 6700 | 361 | 306 | 2.0 | 40 | 2 | 30 |

| Date | 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... | 10 | <.10 | <1 | <1 | 230 |

< Less than

## 05102500 RED RIVER OF THE NORTH AT EMERSON, MANITOBA
(International gaging station)

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 $mi^2$, approximately, includes 3,800 $mi^2$ 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2340 | 2840 | e2780 | e2080 | e1800 | e1830 | e2650 | 5190 | 4270 | 31200 | 11400 | 15600 |
| 2 | 2300 | 2940 | e2170 | e2110 | e1740 | e1850 | e2910 | 5010 | 4380 | 31000 | 10700 | 17000 |
| 3 | 2250 | 3050 | e2340 | e2110 | e1720 | e1860 | e3280 | 4870 | 4550 | 30600 | 9950 | 18200 |
| 4 | 2200 | 3200 | e2390 | e2120 | e1710 | e1870 | e3670 | 4770 | 4690 | 30100 | 9250 | 18900 |
| 5 | 2130 | 3400 | e2360 | e2120 | e1700 | e1840 | e4060 | 4690 | 4770 | 29400 | 8580 | 19200 |
| 6 | 2080 | 3710 | e2340 | e2120 | e1680 | e1780 | e4310 | 4620 | 4690 | 28400 | 8010 | 18700 |
| 7 | 2040 | 4130 | e2300 | e2120 | e1670 | e1730 | e4450 | 4550 | 4520 | 27100 | 7520 | 17100 |
| 8 | 2010 | 4380 | e2290 | e2120 | e1680 | e1670 | e4730 | 4550 | 4240 | 25600 | 7100 | 14600 |
| 9 | 1980 | 4480 | e2310 | e2110 | e1680 | e1650 | e5050 | 4660 | 4170 | 24000 | 6740 | 11900 |
| 10 | 1980 | 4480 | e2300 | e2110 | e1680 | e1620 | e5330 | 5190 | 6180 | 22300 | 6420 | 9600 |
| 11 | 1980 | 4340 | e2230 | e2130 | e1690 | e1640 | e5720 | 5680 | 16600 | 21300 | 6180 | 7870 |
| 12 | 1970 | 4170 | e2200 | e2160 | e1690 | e1670 | e6640 | 6110 | 25100 | 21700 | 5970 | 6710 |
| 13 | 1960 | 4030 | e2160 | e2210 | e1690 | e1660 | e8400 | 6950 | 30500 | 23100 | 5720 | 5970 |
| 14 | 1960 | 3880 | e2160 | e2240 | e1680 | e1700 | 9320 | 7730 | 33000 | 24600 | 5440 | 5370 |
| 15 | 1970 | 3850 | e2160 | e2250 | e1690 | e1720 | 8580 | 8010 | 34300 | 26100 | 5150 | 4940 |
| 16 | 2040 | 3880 | e2130 | e2240 | e1700 | e1740 | 7380 | 7980 | 35100 | 27300 | 4870 | 4550 |
| 17 | 2160 | 3880 | e2110 | e2220 | e1700 | e1780 | 6640 | 7800 | 35300 | 28200 | 4590 | 4240 |
| 18 | 2270 | 3880 | e2120 | e2210 | e1700 | e1850 | 6110 | 7550 | 35700 | 28900 | 4340 | 3990 |
| 19 | 2370 | 3850 | e2140 | e2190 | e1690 | e1920 | 5750 | 7200 | 35300 | 29400 | 4200 | 4060 |
| 20 | 2460 | 3850 | e2160 | e2150 | e1680 | e2000 | 5440 | 6850 | 35200 | 29700 | 4090 | 3950 |
| 21 | 2540 | 3920 | e2210 | e2100 | e1660 | e2060 | 5220 | 6500 | 34600 | 29600 | 4020 | 3810 |
| 22 | 2590 | 4030 | e2190 | e2060 | e1650 | e2130 | 5080 | 6140 | 33700 | 28900 | 3990 | 3710 |
| 23 | 2610 | 4060 | e2150 | e2020 | e1660 | e2190 | 5080 | 5820 | 33000 | 27600 | 4020 | 3530 |
| 24 | 2610 | 4060 | e2130 | e1980 | e1660 | e2250 | 5120 | 5540 | 32300 | 25700 | 4020 | 3400 |
| 25 | 2620 | 3960 | e2100 | e1940 | e1670 | e2300 | 5150 | 5330 | 31900 | 23500 | 3950 | 3310 |
| 26 | 2660 | 3850 | e2090 | e1920 | e1700 | e2350 | 5120 | 5120 | 31600 | 21100 | 3850 | 3220 |
| 27 | 2690 | 3670 | e2060 | e1910 | e1750 | e2390 | 5010 | 4940 | 31400 | 18500 | 3780 | 3110 |
| 28 | 2710 | 3530 | e2010 | e1880 | e1800 | e2410 | 5120 | 4770 | 31300 | 16100 | 3950 | 2990 |
| 29 | 2710 | e3390 | e1990 | e1860 | --- | e2400 | 5300 | 4620 | 31300 | 14200 | 6040 | 2900 |
| 30 | 2730 | e3100 | e2010 | e1840 | --- | e2430 | 5300 | 4520 | 31300 | 13000 | 10100 | 2800 |
| 31 | 2760 | --- | e2040 | e1820 | --- | e2510 | --- | 4410 | --- | 12100 | 13400 | --- |
| TOTAL | 71680 | 113790 | 68130 | 64450 | 47520 | 60800 | 161920 | 177670 | 684960 | 770300 | 197340 | 245230 |
| MEAN | 2312 | 3793 | 2198 | 2079 | 1697 | 1961 | 5397 | 5731 | 22830 | 24850 | 6366 | 8174 |
| MAX | 2760 | 4480 | 2780 | 2250 | 1800 | 2510 | 9320 | 8010 | 35700 | 31200 | 13400 | 19200 |
| MIN | 1960 | 2840 | 1990 | 1820 | 1650 | 1620 | 2650 | 4410 | 4170 | 12100 | 3780 | 2800 |
| AC-FT | 142200 | 225700 | 135100 | 127800 | 94260 | 120600 | 321200 | 352400 | 1359000 | 1528000 | 391400 | 486400 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1912 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 1647 | 1605 | 1130 | 890.9 | 852.3 | 2586 | 14030 | 9679 | 5413 | 4519 | 2253 | 1790 |
| MAX | 6015 | 13780 | 4257 | 2684 | 2459 | 20490 | 48890 | 72820 | 25430 | 28020 | 27000 | 11480 |
| (WY) | 1995 | 2001 | 1999 | 2001 | 2001 | 1998 | 1997 | 1950 | 1962 | 1975 | 1993 | 1999 |
| MIN | 28.6 | 23.8 | 33.4 | 7.05 | 1.21 | 2.25 | 1282 | 663 | 196 | 121 | 46.6 | 23.8 |
| (WY) | 1937 | 1937 | 1937 | 1937 | 1937 | 1937 | 1938 | 1934 | 1934 | 1936 | 1934 | 1934 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1912 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 3579640 | | 2663790 | | | |
| ANNUAL MEAN | 9807 | | 7298 | | 3874 | |
| HIGHEST ANNUAL MEAN | | | | | 12830 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 333 | 1934 |
| HIGHEST DAILY MEAN | 57600 | Apr 25 | 35700 | Jun 18 | 133000 | Apr 26 1997 |
| LOWEST DAILY MEAN | 1960 | Oct 13 | 1620 | Mar 10 | 0.90 | Feb 6 1937 |
| ANNUAL SEVEN-DAY MINIMUM | 1970 | Oct 9 | 1660 | Mar 8 | 0.97 | Feb 4 1937 |
| MAXIMUM PEAK FLOW | | | 35700 | Jun 18 | 133000 | Apr 26 1997 |
| MAXIMUM PEAK STAGE | | | 780.66 | Jun 18 | 792.41 | Apr 26 1997 |
| INSTANTANEOUS LOW FLOW | | | | | 0.90 | Feb 6 1937 |
| ANNUAL RUNOFF (AC-FT) | 7100000 | | 5284000 | | 2806000 | |
| 10 PERCENT EXCEEDS | 33500 | | 25300 | | 8880 | |
| 50 PERCENT EXCEEDS | 3670 | | 3880 | | 1550 | |
| 90 PERCENT EXCEEDS | 2240 | | 1770 | | 280 | |

e Estimated

## 05113360 LONG CREEK AT WESTERN CROSSING OF INTERNATIONAL BOUNDARY, SASKATCHEWAN
(International gaging station)

LOCATION.--Lat 49°00'01", long 103°21'08", in SE$^{1}/_{4}$ 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$^{2}$.

### 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 Geodetic Survey of Canada Datum of 1929 (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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | e0.07 | 3.0 | 1.5 | 0.92 | 0.00 | 0.00 |
| 2 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | e0.14 | 2.1 | 1.8 | 0.74 | 0.00 | 0.00 |
| 3 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | e0.14 | 1.7 | 2.2 | 0.60 | 0.00 | 0.00 |
| 4 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | e0.14 | 1.5 | 2.4 | 0.56 | 0.00 | 0.00 |
| 5 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | e0.18 | 1.5 | 2.2 | 0.74 | 0.00 | 0.00 |
| 6 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | e0.35 | 1.5 | 1.8 | 0.56 | 0.00 | 0.00 |
| 7 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | e0.64 | 1.8 | 1.4 | 0.53 | 0.00 | 0.00 |
| 8 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | e0.85 | 2.7 | 1.2 | 0.53 | 0.00 | 0.00 |
| 9 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | e1.0 | 3.1 | 1.2 | 0.67 | 0.00 | 0.00 |
| 10 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | e1.4 | 3.0 | 1.8 | 0.60 | 0.00 | 0.00 |
| 11 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | e1.9 | 2.9 | 2.9 | 0.49 | 0.00 | 0.00 |
| 12 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | e2.2 | 2.6 | 3.9 | 0.42 | 0.00 | 0.00 |
| 13 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | e2.3 | 2.5 | 4.0 | 0.35 | 0.00 | 0.00 |
| 14 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | e2.5 | 3.4 | 3.8 | 0.21 | 0.00 | 0.00 |
| 15 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | e12 | 3.4 | 3.5 | 0.14 | 0.00 | 0.00 |
| 16 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | e24 | 2.9 | 2.9 | 0.07 | 0.00 | 0.00 |
| 17 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | e21 | 2.8 | 2.7 | 0.07 | 0.00 | 0.00 |
| 18 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | 18 | 2.6 | 2.7 | 0.04 | 0.00 | 0.00 |
| 19 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | 15 | 2.3 | 2.6 | 0.00 | 0.00 | 0.00 |
| 20 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | 12 | 2.0 | 2.3 | 0.00 | 0.00 | 0.00 |
| 21 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | 11 | 1.8 | 2.0 | 0.00 | 0.00 | 0.00 |
| 22 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | 9.8 | 2.2 | 1.7 | 0.00 | 0.00 | 0.00 |
| 23 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | 9.3 | 2.6 | 1.6 | 0.00 | 0.00 | 0.00 |
| 24 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | 7.9 | 2.7 | 1.7 | 0.00 | 0.00 | 0.00 |
| 25 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | 6.9 | 2.8 | 1.6 | 0.00 | 0.00 | 0.00 |
| 26 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | 6.0 | 2.6 | 1.6 | 0.00 | 0.00 | 0.00 |
| 27 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | 5.1 | 2.5 | 1.7 | 0.00 | 0.00 | 0.00 |
| 28 | 0.00 | 0.00 | 0.00 | e0.00 | e0.00 | e0.00 | 4.9 | 2.4 | 1.8 | 0.00 | 0.00 | 0.00 |
| 29 | 0.00 | 0.00 | 0.00 | e0.00 | --- | e0.00 | 4.5 | 2.3 | 1.6 | 0.00 | 0.00 | 0.00 |
| 30 | 0.00 | 0.00 | 0.00 | e0.00 | --- | e0.00 | 3.7 | 1.9 | 1.2 | 0.00 | 0.00 | 0.00 |
| 31 | 0.00 | --- | 0.00 | e0.00 | --- | e0.04 | --- | 1.6 | --- | 0.00 | 0.00 | --- |
| TOTAL | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.04 | 184.91 | 74.7 | 65.3 | 8.24 | 0.00 | 0.00 |
| MEAN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 6.164 | 2.410 | 2.177 | 0.266 | 0.000 | 0.000 |
| MAX | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.04 | 24 | 3.4 | 4.0 | 0.92 | 0.00 | 0.00 |
| MIN | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.07 | 1.5 | 1.2 | 0.00 | 0.00 | 0.00 |
| AC-FT | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.08 | 367 | 148 | 130 | 16 | 0.00 | 0.00 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 0.934 | 0.308 | 0.232 | 0.114 | 1.194 | 83.21 | 193.5 | 50.92 | 27.30 | 28.79 | 5.991 | 2.545 |
| MAX | 25.1 | 4.17 | 2.75 | 1.75 | 26.5 | 545 | 1052 | 578 | 360 | 415 | 115 | 61.4 |
| (WY) | 1979 | 1979 | 1994 | 2001 | 1981 | 1994 | 1979 | 1970 | 1976 | 1978 | 1993 | 1978 |
| MIN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| (WY) | 1960 | 1960 | 1960 | 1960 | 1960 | 1964 | 1961 | 1961 | 1961 | 1961 | 1960 | 1960 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1960 - 2002 | | |
|---|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 22438.18 | | 333.19 | | | | |
| ANNUAL MEAN | 61.47 | | 0.913 | | 32.91 | | |
| HIGHEST ANNUAL MEAN | | | | | 150 | | 1976 |
| LOWEST ANNUAL MEAN | | | | | 0.000 | | 1988 |
| HIGHEST DAILY MEAN | 1660 | Mar 22 | 24 | Apr 16 | 4350 | Apr 1 | 1976 |
| LOWEST DAILY MEAN | 0.00 | Aug 26 | 0.00 | Oct 1 | 0.00 | Oct 1 | 1959 |
| ANNUAL SEVEN-DAY MINIMUM | 0.00 | Aug 26 | 0.00 | Oct 1 | 0.00 | Oct 1 | 1959 |
| MAXIMUM PEAK FLOW | | | 27 | Apr 15 | 4690 | Apr 1 | 1976 |
| MAXIMUM PEAK STAGE | | | a2.65 | Apr 15 | 12.05 | Apr 1 | 1976 |
| ANNUAL RUNOFF (AC-FT) | 44510 | | 661 | | 23840 | | |
| 10 PERCENT EXCEEDS | 106 | | 2.6 | | 33 | | |
| 50 PERCENT EXCEEDS | 1.0 | | 0.00 | | 0.00 | | |
| 90 PERCENT EXCEEDS | 0.00 | | 0.00 | | 0.00 | | |

a Backwater from ice
e Estimated

## 05113600 LONG CREEK NEAR NOONAN, ND
(International gaging station)

LOCATION.--Lat 48°58'52", long 103°04'34", near north line of NE$^{1}/_{4}$ 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$^2$, approximately, of which about 1,160 mi$^2$ 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 National Geodetic Vertical Datum of 1929, from topographic map. Prior to Aug. 18, 1960, nonrecording gage at same site and datum.

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

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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.37 | 1.4 | e0.85 | e0.58 | e0.22 | e0.23 | 0.75 | 6.2 | 2.2 | 7.1 | 0.06 | 0.34 |
| 2 | 0.30 | 1.5 | e0.82 | e0.53 | 0.15 | e0.20 | 0.72 | 4.9 | 2.5 | 5.0 | 0.00 | 0.29 |
| 3 | 0.29 | 1.4 | e0.84 | 0.48 | 0.11 | e0.17 | 0.64 | 5.1 | 3.5 | 4.0 | 0.00 | 0.17 |
| 4 | 0.18 | 1.4 | e0.88 | 0.43 | e0.13 | 0.13 | e0.48 | 3.8 | 3.5 | 2.9 | 0.00 | 0.13 |
| 5 | 0.13 | e1.3 | 1.1 | 0.54 | e0.17 | 0.28 | 0.50 | 3.0 | 3.3 | 3.6 | 0.00 | 0.23 |
| 6 | 0.25 | e1.1 | 1.3 | 0.54 | 0.16 | e0.17 | e1.5 | 3.3 | 3.4 | 6.5 | 0.00 | 0.23 |
| 7 | 0.34 | 1.3 | 1.2 | 0.56 | e0.23 | e0.05 | 1.5 | 2.7 | 3.1 | 7.8 | 0.00 | 0.34 |
| 8 | 0.39 | 1.3 | 1.1 | 0.81 | 0.35 | e0.02 | 1.2 | 3.0 | 2.6 | 8.4 | 0.38 | 0.39 |
| 9 | 0.37 | 1.3 | 1.1 | 0.91 | 0.26 | e0.01 | 1.4 | 4.3 | 3.3 | 12 | 0.49 | 0.24 |
| 10 | 0.34 | 1.2 | 0.93 | 0.96 | 0.24 | e0.00 | 2.0 | 5.3 | 4.3 | 8.4 | 0.59 | 0.15 |
| 11 | 0.34 | 1.1 | 0.97 | 0.88 | 0.16 | e0.00 | 4.4 | 5.9 | 4.2 | 6.0 | 0.53 | 0.12 |
| 12 | 0.45 | 1.0 | 0.97 | 0.91 | 0.36 | 0.10 | 7.3 | 5.3 | 3.8 | 8.1 | 0.41 | 0.06 |
| 13 | 0.53 | 1.0 | 0.95 | 1.6 | 0.34 | 0.18 | 6.8 | 4.6 | 4.0 | 6.5 | 0.24 | 0.04 |
| 14 | 0.60 | 0.83 | 0.87 | 1.2 | 0.32 | 0.04 | 5.9 | 5.3 | 4.9 | 4.3 | 0.16 | 0.00 |
| 15 | 0.60 | 0.91 | 0.95 | 0.75 | 0.36 | 0.03 | 4.3 | 4.6 | 5.5 | 2.3 | 0.11 | 0.00 |
| 16 | 0.60 | 0.90 | 1.1 | 0.68 | 0.51 | 0.09 | 3.7 | 3.6 | 5.8 | 1.5 | 0.13 | 0.00 |
| 17 | 0.65 | 0.88 | 0.99 | 0.71 | 0.69 | 0.09 | 12 | 3.9 | 6.4 | 2.1 | 0.52 | 0.00 |
| 18 | 0.66 | 0.83 | 1.1 | e0.62 | 0.56 | 0.04 | 21 | 3.6 | 6.0 | 1.9 | 0.46 | 0.00 |
| 19 | e0.71 | 0.80 | 0.91 | 0.55 | 0.57 | 0.10 | 18 | 3.3 | 6.8 | 1.7 | 0.46 | 0.00 |
| 20 | 0.59 | 0.92 | e0.78 | 0.51 | 0.67 | e0.09 | 16 | 3.1 | 5.8 | 1.7 | 0.36 | 0.00 |
| 21 | 0.53 | 0.90 | 0.73 | 0.52 | 0.67 | e0.06 | 15 | 2.8 | 5.1 | 1.1 | 0.25 | 0.00 |
| 22 | 0.52 | 0.93 | 0.87 | 0.52 | 0.83 | e0.03 | 14 | 3.1 | 8.3 | 0.63 | 0.23 | 0.00 |
| 23 | 0.50 | 1.0 | 0.85 | 0.46 | 1.1 | 0.0 | 14 | 3.7 | 9.8 | 0.42 | 0.17 | 0.00 |
| 24 | 0.83 | 0.90 | e0.85 | 0.31 | 0.79 | 0.03 | 13 | 3.5 | 11 | 0.26 | 0.11 | 0.00 |
| 25 | 0.99 | 0.91 | e0.77 | 0.32 | 0.60 | 0.01 | 13 | 3.7 | 8.7 | 0.24 | 0.03 | 0.00 |
| 26 | e1.1 | 0.90 | 0.70 | 0.32 | 0.48 | 0.02 | 9.8 | 3.5 | 6.2 | 0.15 | 0.06 | 0.00 |
| 27 | 1.1 | 1.0 | 0.73 | e0.25 | 0.41 | 0.96 | 5.1 | 3.4 | 7.9 | 0.06 | 0.14 | 0.00 |
| 28 | 1.0 | 0.87 | 0.76 | e0.33 | e0.31 | 1.1 | 6.8 | 3.7 | 7.6 | 0.04 | 0.22 | 0.00 |
| 29 | 0.93 | 0.79 | 0.70 | e0.28 | --- | 0.87 | 7.4 | 3.3 | 7.3 | 0.23 | 0.13 | 0.00 |
| 30 | 0.88 | 0.81 | e0.68 | e0.24 | --- | 0.69 | 7.1 | 3.0 | 9.4 | 0.14 | 0.14 | 0.00 |
| 31 | 0.78 | --- | e0.62 | e0.22 | --- | 0.68 | --- | 2.5 | --- | 0.15 | 0.49 | --- |
| TOTAL | 17.85 | 31.38 | 27.97 | 18.52 | 11.75 | 6.47 | 215.29 | 121.0 | 166.2 | 105.22 | 6.87 | 2.73 |
| MEAN | 0.576 | 1.046 | 0.902 | 0.597 | 0.420 | 0.209 | 7.176 | 3.903 | 5.540 | 3.394 | 0.222 | 0.091 |
| MAX | 1.1 | 1.5 | 1.3 | 1.6 | 1.1 | 1.1 | 21 | 6.2 | 11 | 12 | 0.59 | 0.39 |
| MIN | 0.13 | 0.79 | 0.62 | 0.22 | 0.11 | 0.00 | 0.48 | 2.5 | 2.2 | 0.04 | 0.00 | 0.00 |
| AC-FT | 35 | 62 | 55 | 37 | 23 | 13 | 427 | 240 | 330 | 209 | 14 | 5.4 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 1.513 | 0.870 | 0.652 | 0.428 | 2.778 | 106.0 | 252.0 | 63.96 | 32.74 | 37.69 | 7.808 | 3.377 |
| MAX | 31.0 | 7.17 | 4.35 | 5.11 | 71.3 | 600 | 1396 | 728 | 376 | 452 | 131 | 77.2 |
| (WY) | 1979 | 1979 | 1976 | 1976 | 1981 | 1994 | 1979 | 1970 | 1976 | 1978 | 1993 | 1978 |
| MIN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| (WY) | 1960 | 1961 | 1961 | 1961 | 1961 | 1965 | 1990 | 1990 | 1961 | 1961 | 1960 | 1960 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1960 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 29777.79 | | 731.25 | | | |
| ANNUAL MEAN | 81.58 | | 2.003 | | 42.46 | |
| HIGHEST ANNUAL MEAN | | | | | 200 | 1976 |
| LOWEST ANNUAL MEAN | | | | | 0.017 | 1988 |
| HIGHEST DAILY MEAN | 2100 | Mar 22 | 21 | Apr 18 | 5710 | Apr 1 1976 |
| LOWEST DAILY MEAN | 0.00 | Aug 30 | 0.00 | Mar 10 | 0.00 | Oct 1 1959 |
| ANNUAL SEVEN-DAY MINIMUM | 0.00 | Aug 30 | 0.00 | Sep 14 | 0.00 | Oct 1 1959 |
| MAXIMUM PEAK FLOW | | | 23 | Apr 17 | 6310 | Mar 31 1976 |
| MAXIMUM PEAK STAGE | | | 3.96 | Apr 17 | 17.61 | Mar 31 1976 |
| ANNUAL RUNOFF (AC-FT) | 59060 | | 1450 | | 30760 | |
| 10 PERCENT EXCEEDS | 137 | | 6.0 | | 46 | |
| 50 PERCENT EXCEEDS | 1.8 | | 0.76 | | 0.40 | |
| 90 PERCENT EXCEEDS | 0.30 | | 0.04 | | 0.00 | |

e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 15... | 1545 | .88 | -- | -- | -- | 1130 | -- | 5.2 | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 03... | 1215 | .45 | -- | -- | -- | 1600 | -13.0 | .0 | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 13... | 1130 | .28 | -- | -- | -- | 1980 | -2.0 | .0 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 28... | 1615 | 1.5 | -- | -- | -- | -- | 7.0 | .8 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 25... | 1300 | 13 | 8.7 | --e | 1510 | 1490 | 1.0 | 3.2 | 440 | 77.0 | 61.0 | 17.0 | 3 |
| MAY | | | | | | | | | | | | | |
| 15... | 1630 | 4.1 | -- | -- | -- | 1460 | 8.0 | 14.7 | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 18... | 1800 | 5.7 | -- | -- | -- | 1570 | 22.0 | 21.4 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 01... | 1615 | .05 | 8.7 | --e | 2500 | 2540 | 18.0 | 19.3 | 570 | 78.0 | 90.0 | 23.0 | 7 |
| SEP | | | | | | | | | | | | | |
| 11... | 1245 | .10 | -- | -- | -- | 2460 | 25.0 | 20.7 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 15... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 03... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 28... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 25... | 160 | 43 | 277 | 23.0 | .20 | 530 | 38.3 | 1090 | 1040 | 2.0 | 20 | <1 | 70 |
| MAY | | | | | | | | | | | | | |
| 15... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 01... | 370 | 58 | 414 | 42.0 | .20 | 1000 | .26 | 1930 | 1850 | 10.0 | 90 | <1 | 120 |
| SEP | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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 | | | | | |
| 15... | -- | -- | -- | -- | -- |
| JAN | | | | | |
| 03... | -- | -- | -- | -- | -- |
| FEB | | | | | |
| 13... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 28... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 25... | 20 | <.10 | 1 | 1 | 490 |
| MAY | | | | | |
| 15... | -- | -- | -- | -- | -- |
| JUN | | | | | |
| 18... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 01... | 220 | .20 | 1 | 1 | 570 |
| SEP | | | | | |
| 11... | -- | -- | -- | -- | -- |

< Less than
e Required equipment not functional/available

## 05113750 EAST BRANCH SHORT CREEK RESERVOIR NEAR COLUMBUS, ND

LOCATION.--Lat 48°59'26", long 102°47'07", in SW$^{1}/_{4}$NW$^{1}/_{4}$ 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$^{2}$, of which 175 mi$^{2}$ 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 National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for estimated periods, which are fair. 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, 1,110 acre-ft, Apr. 22, gage height, 26.21 ft; minimum contents, 1,040 acre-ft, Sept. 30, gage height, 25.46 ft.

MONTHEND GAGE HEIGHT AND CONTENTS AT 2400, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Gage height (feet) | Contents (acre-feet) | Change in contents (acre-feet) |
|---|---|---|---|
| Sept. 30 | 25.96 | 1,090 | -- |
| Oct. 31 | 25.71 | 1,060 | -30 |
| Nov. 30 | 25.58 | 1,050 | -10 |
| Dec. 31 | *25.66 | 1,060 | +10 |
| CAL YR 2001 | -- | -- | -100 |
| Jan. 31 | 25.76 | 1,070 | +10 |
| Feb. 28 | 25.74 | 1,060 | -10 |
| Mar. 31 | 25.67 | 1,060 | 0 |
| Apr. 30 | 26.15 | 1,110 | +50 |
| May 31 | 25.95 | 1,080 | -30 |
| June 30 | 26.06 | 1,100 | +20 |
| July 31 | 25.79 | 1,070 | -30 |
| Aug. 31 | 25.90 | 1,080 | +10 |
| Sept. 30 | 25.46 | 1,040 | -40 |
| WTR YR 2002 | -- | -- | -50 |

* Estimated

## 05113800 SHORT CREEK BELOW INTERNATIONAL BOUNDARY NEAR ROCHE PERCEE, SASKATCHEWAN
(International gaging station)

LOCATION.--Lat 49°01'42", long 102°51'00", in SW$^{1}/_{4}$ 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$^{2}$.

### 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.04 | 0.04 | 0.04 | e0.00 | e0.00 | e0.00 | e0.04 | 1.2 | 0.04 | 18 | 0.25 | 0.07 |
| 2 | 0.04 | 0.04 | e0.04 | e0.00 | e0.00 | e0.00 | e0.04 | 0.85 | 0.04 | 15 | 0.25 | 0.04 |
| 3 | 0.04 | 0.04 | e0.04 | e0.00 | e0.00 | e0.00 | e0.04 | 0.64 | 0.04 | 12 | 0.18 | 0.04 |
| 4 | 0.04 | 0.04 | e0.04 | e0.00 | e0.00 | e0.00 | e0.04 | 0.39 | 0.04 | 7.8 | 0.14 | 0.04 |
| 5 | 0.04 | 0.04 | e0.04 | e0.00 | e0.00 | e0.00 | e0.04 | 0.25 | 0.04 | 8.9 | 0.11 | 0.04 |
| 6 | 0.04 | 0.04 | e0.04 | e0.00 | e0.00 | e0.00 | e0.11 | 0.18 | 0.04 | 6.8 | 0.11 | 0.04 |
| 7 | 0.04 | 0.04 | e0.04 | e0.00 | e0.00 | e0.00 | e0.04 | 0.11 | 0.04 | 7.1 | 0.11 | 0.04 |
| 8 | 0.04 | 0.04 | e0.04 | e0.00 | e0.00 | e0.00 | e0.04 | 0.18 | 0.04 | 5.5 | 0.11 | 0.04 |
| 9 | 0.04 | 0.04 | e0.04 | e0.00 | e0.00 | e0.00 | e0.04 | 0.25 | 0.04 | 4.9 | 0.11 | 0.04 |
| 10 | 0.04 | 0.04 | e0.04 | e0.00 | e0.00 | e0.00 | e0.04 | 0.25 | 0.11 | 5.0 | 0.14 | 0.04 |
| 11 | 0.04 | 0.04 | e0.04 | e0.00 | e0.00 | e0.00 | e12 | 0.25 | 0.11 | 4.8 | 0.14 | 0.04 |
| 12 | 0.04 | 0.04 | e0.04 | e0.00 | e0.00 | e0.00 | e27 | 0.25 | 0.04 | 7.0 | 0.11 | 0.04 |
| 13 | 0.04 | 0.04 | e0.04 | e0.00 | e0.00 | e0.00 | e29 | 0.21 | 0.04 | 9.1 | 0.11 | 0.04 |
| 14 | 0.04 | 0.04 | e0.04 | e0.00 | e0.00 | e0.00 | e31 | 0.18 | 0.04 | 9.4 | 0.11 | 0.04 |
| 15 | 0.04 | 0.04 | e0.04 | e0.00 | e0.00 | e0.00 | e34 | 0.21 | 0.04 | 7.5 | 0.11 | 0.04 |
| 16 | 0.04 | 0.04 | e0.04 | e0.00 | e0.00 | e0.00 | 31 | 0.21 | 0.56 | 5.5 | 0.11 | 0.04 |
| 17 | 0.04 | 0.04 | e0.04 | e0.00 | e0.00 | e0.00 | 28 | 0.18 | 4.3 | 4.1 | 0.14 | 0.04 |
| 18 | 0.04 | 0.04 | e0.04 | e0.00 | e0.00 | e0.00 | 24 | 0.14 | 5.9 | 3.1 | 0.11 | 0.04 |
| 19 | 0.04 | 0.04 | e0.04 | e0.00 | e0.00 | e0.00 | 20 | 0.11 | 4.9 | 2.5 | 0.07 | 0.04 |
| 20 | 0.04 | 0.04 | e0.04 | e0.00 | e0.00 | e0.00 | 16 | 0.32 | 2.7 | 2.2 | 0.04 | 0.04 |
| 21 | 0.04 | 0.04 | e0.04 | e0.00 | e0.00 | e0.00 | 12 | 0.49 | 1.5 | 1.8 | 0.04 | 0.04 |
| 22 | 0.04 | 0.04 | e0.04 | e0.00 | e0.04 | e0.00 | 8.8 | 0.46 | 1.7 | 1.4 | 0.04 | 0.04 |
| 23 | 0.04 | 0.04 | e0.04 | e0.00 | e0.00 | e0.00 | 6.2 | 0.53 | 7.5 | 1.1 | 0.04 | 0.04 |
| 24 | 0.04 | 0.04 | e0.04 | e0.00 | e0.00 | e0.00 | 4.9 | 0.42 | 19 | 0.81 | 0.04 | 0.04 |
| 25 | 0.04 | 0.04 | e0.04 | e0.00 | e0.00 | e0.00 | 3.3 | 0.32 | 29 | 0.74 | 0.04 | 0.04 |
| 26 | 0.04 | 0.04 | e0.04 | e0.00 | e0.00 | e0.00 | 2.7 | 0.21 | 36 | 0.56 | 0.07 | 0.04 |
| 27 | 0.04 | 0.04 | e0.04 | e0.00 | e0.00 | e0.07 | 2.4 | 0.11 | 30 | 0.42 | 0.07 | 0.04 |
| 28 | 0.04 | 0.04 | e0.00 | e0.00 | e0.00 | e0.14 | 2.0 | 0.04 | 26 | 0.42 | 0.07 | 0.04 |
| 29 | 0.04 | 0.04 | e0.00 | e0.00 | --- | e0.11 | 1.8 | 0.07 | 25 | 0.42 | 0.04 | 0.04 |
| 30 | 0.04 | 0.04 | e0.00 | e0.00 | --- | e0.07 | 1.6 | 0.04 | 21 | 0.35 | 0.04 | 0.04 |
| 31 | 0.04 | --- | e0.00 | e0.00 | --- | e0.04 | --- | 0.04 | --- | 0.28 | 0.11 | --- |
| TOTAL | 1.24 | 1.20 | 1.08 | 0.00 | 0.04 | 0.43 | 298.17 | 9.09 | 215.80 | 154.50 | 3.16 | 1.23 |
| MEAN | 0.040 | 0.040 | 0.035 | 0.000 | 0.001 | 0.014 | 9.939 | 0.293 | 7.193 | 4.984 | 0.102 | 0.041 |
| MAX | 0.04 | 0.04 | 0.04 | 0.00 | 0.04 | 0.14 | 34 | 1.2 | 36 | 18 | 0.25 | 0.07 |
| MIN | 0.04 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.04 | 0.04 | 0.04 | 0.28 | 0.04 | 0.04 |
| AC-FT | 2.5 | 2.4 | 2.1 | 0.00 | 0.08 | 0.9 | 591 | 18 | 428 | 306 | 6.3 | 2.4 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 0.786 | 0.332 | 0.086 | 0.028 | 1.309 | 37.03 | 61.51 | 19.17 | 8.215 | 6.268 | 3.975 | 1.221 |
| MAX | 10.9 | 6.00 | 1.42 | 0.28 | 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 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.016 | 0.010 | 0.000 | 0.000 | 0.000 | 0.000 |
| (WY) | 1962 | 1962 | 1961 | 1962 | 1962 | 1965 | 1991 | 1990 | 1980 | 1961 | 1961 | 1961 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1960 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 3501.70 | | 685.94 | | | |
| ANNUAL MEAN | 9.594 | | 1.879 | | 11.47 | |
| HIGHEST ANNUAL MEAN | | | | | 51.9 | 1976 |
| LOWEST ANNUAL MEAN | | | | | 0.029 | 1988 |
| HIGHEST DAILY MEAN | 385 | Mar 19 | 36 | Jun 26 | 1410 | Apr 7 1969 |
| LOWEST DAILY MEAN | 0.00 | Dec 28 | 0.00 | Dec 28 | 0.00 | Mar 1 1960 |
| ANNUAL SEVEN-DAY MINIMUM | 0.02 | Dec 25 | 0.00 | Dec 28 | 0.00 | Mar 1 1960 |
| MAXIMUM PEAK FLOW | | | 57 | Apr 12 | 1700 | Apr 7 1969 |
| MAXIMUM PEAK STAGE | | | a4.91 | Apr 12 | 14.39 | Mar 28 1960 |
| ANNUAL RUNOFF (AC-FT) | 6950 | | 1360 | | 8310 | |
| 10 PERCENT EXCEEDS | 22 | | 4.9 | | 14 | |
| 50 PERCENT EXCEEDS | 0.07 | | 0.04 | | 0.07 | |
| 90 PERCENT EXCEEDS | 0.04 | | 0.00 | | 0.00 | |

a Backwater from ice
e Estimated

## 05114000 SOURIS (MOUSE) RIVER NEAR SHERWOOD, ND
(International gaging station)

LOCATION.--Lat 48°59'24", long 101°57'28", in NW$^1/_4$SE$^1/_4$NE$^1/_4$ sec.33, T.164 N., R.87 W., Renville County, Hydrologic Unit 09010001, on right bank 0.8 mi downstream from international boundary, 16 mi northwest of Sherwood, and at mile 511.4.

DRAINAGE AREA.--8,940 mi$^2$, approximately, of which about 5,900 mi$^2$ is probably noncontributing.

### WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1930 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1934, 1945. WSP 2113: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,603.73 ft above National Geodetic Vertical Datum of 1929. Prior to Apr. 8, 1935, nonrecording gage at same site and datum.

REMARKS.--Records good except for estimated daily discharges, which are fair. Flow is regulated by reservoirs in Canada (Boundary Reservoir, 48,990 acre-ft - 1958; Rafferty Reservoir, 356,400 acre-ft - 1991; and Alameda Reservoir, 85,560 ac-ft - 1992). Total reservoir capacity is about 490,000 acre-ft. Some diversions for irrigation and municipal supply.

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

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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 92 | 15 | 9.4 | e3.3 | e5.5 | e4.2 | e9.0 | 25 | 37 | 49 | 12 | 27 |
| 2 | 91 | 14 | 9.7 | e3.2 | e5.4 | e4.1 | e9.0 | 22 | 23 | 43 | 12 | 24 |
| 3 | 89 | 14 | 10 | e3.2 | e5.3 | e4.1 | e10 | 18 | 19 | 39 | 11 | 21 |
| 4 | 89 | 14 | 10 | e3.3 | e5.2 | e4.0 | e12 | 17 | 16 | 36 | 11 | 19 |
| 5 | 87 | 13 | 10 | e3.5 | e5.1 | e3.9 | e11 | 14 | 13 | 34 | 11 | 20 |
| 6 | 87 | 13 | 11 | e4.2 | e5.0 | e3.8 | e10 | 13 | 12 | 36 | 9.9 | 19 |
| 7 | 88 | 13 | 9.9 | e5.0 | e4.9 | e3.9 | e10 | 13 | 11 | 38 | 11 | 20 |
| 8 | 88 | 13 | 9.1 | e5.5 | e4.8 | e4.0 | e12 | 13 | 10 | 48 | 14 | 20 |
| 9 | 89 | 13 | 9.6 | e6.0 | e4.8 | e3.8 | e15 | 13 | 10 | 45 | 35 | 19 |
| 10 | 87 | 13 | 9.4 | e6.1 | e4.7 | e3.7 | e18 | 13 | 11 | 57 | 29 | 21 |
| 11 | 86 | 13 | 8.8 | e6.2 | e4.7 | e3.6 | e23 | 14 | 12 | 62 | 21 | 22 |
| 12 | 85 | 14 | 8.7 | e6.3 | e4.6 | e3.6 | e25 | 53 | 12 | 54 | 18 | 22 |
| 13 | 86 | 13 | 8.0 | e6.5 | e4.6 | e3.6 | e35 | 74 | 12 | 48 | 17 | 22 |
| 14 | 87 | 13 | 7.7 | e6.2 | e4.6 | e3.7 | 79 | 74 | 13 | 42 | 16 | 22 |
| 15 | 87 | 12 | 8.3 | e6.0 | e4.7 | e3.8 | 73 | 76 | 13 | 37 | 15 | 20 |
| 16 | 85 | 12 | 8.3 | e5.9 | e4.7 | e3.9 | 57 | 77 | 13 | 33 | 15 | 18 |
| 17 | 85 | 12 | 8.2 | e5.8 | e4.8 | e4.0 | 61 | 74 | 12 | 29 | 16 | 18 |
| 18 | 73 | 12 | 7.5 | e5.5 | e5.0 | e4.0 | 81 | 75 | 12 | 25 | 17 | 17 |
| 19 | 84 | 11 | 7.0 | e5.1 | e5.2 | e4.1 | 69 | 75 | 12 | 22 | 18 | 17 |
| 20 | 86 | 11 | 6.9 | e5.0 | e5.4 | e4.1 | 65 | 74 | 12 | 19 | 18 | 17 |
| 21 | 87 | 11 | 6.7 | e4.9 | e5.7 | e4.1 | 64 | 76 | 12 | 17 | 17 | 16 |
| 22 | 87 | 11 | e6.3 | e4.8 | e5.9 | e4.1 | 57 | 79 | 13 | 16 | 16 | 15 |
| 23 | 87 | 11 | e6.0 | e4.7 | e6.0 | e4.1 | 53 | 80 | 12 | 15 | 17 | 15 |
| 24 | 70 | 11 | e5.6 | e4.6 | e5.8 | e4.1 | 47 | 79 | 12 | 14 | 19 | 16 |
| 25 | 37 | 11 | e5.2 | e4.5 | e5.2 | e4.1 | 40 | 78 | 13 | 14 | 18 | 15 |
| 26 | 26 | 10 | e4.9 | e5.0 | e4.8 | e4.1 | 34 | 78 | 16 | 15 | 17 | 15 |
| 27 | 22 | 9.8 | e4.6 | e5.8 | e4.4 | e4.2 | 30 | 79 | 20 | 14 | 17 | 16 |
| 28 | 19 | 9.5 | e4.2 | e5.8 | e4.2 | e5.0 | 30 | 79 | 17 | 12 | 19 | 15 |
| 29 | 17 | 9.9 | e3.8 | e5.7 | --- | e12 | 29 | 80 | 37 | 11 | 23 | 15 |
| 30 | 16 | 9.3 | e3.6 | e5.7 | --- | e16 | 26 | 79 | 55 | 9.3 | 26 | 15 |
| 31 | 15 | --- | e3.4 | e5.6 | --- | e12 | --- | 68 | --- | 11 | 33 | --- |
| TOTAL | 2214 | 361.5 | 231.8 | 158.9 | 141.0 | 151.7 | 1094.0 | 1682 | 492 | 944.3 | 548.9 | 558 |
| MEAN | 71.42 | 12.05 | 7.477 | 5.126 | 5.036 | 4.894 | 36.47 | 54.26 | 16.40 | 30.46 | 17.71 | 18.60 |
| MAX | 92 | 15 | 11 | 6.5 | 6.0 | 16 | 81 | 80 | 55 | 62 | 35 | 27 |
| MIN | 15 | 9.3 | 3.4 | 3.2 | 4.2 | 3.6 | 9.0 | 13 | 10 | 9.3 | 9.9 | 15 |
| AC-FT | 4390 | 717 | 460 | 315 | 280 | 301 | 2170 | 3340 | 976 | 1870 | 1090 | 1110 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 13.49 | 9.762 | 4.768 | 3.063 | 6.366 | 136.7 | 690.0 | 410.9 | 126.0 | 84.20 | 27.24 | 16.54 |
| MAX | 121 | 65.4 | 47.7 | 44.5 | 143 | 1148 | 6739 | 3995 | 954 | 1050 | 324 | 173 |
| (WY) | 1994 | 1955 | 1976 | 1976 | 1981 | 1972 | 1976 | 1975 | 1953 | 1953 | 1999 | 1999 |
| MIN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.82 | 2.63 | 0.17 | 0.000 | 0.000 | 0.000 |
| (WY) | 1932 | 1935 | 1932 | 1931 | 1931 | 1936 | 1988 | 1988 | 1988 | 1937 | 1931 | 1931 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1930 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 127799.6 | | 8578.1 | | | |
| ANNUAL MEAN | 350.1 | | 23.50 | | 128.3 | |
| HIGHEST ANNUAL MEAN | | | | | 878 | 1976 |
| LOWEST ANNUAL MEAN | | | | | 0.62 | 1988 |
| HIGHEST DAILY MEAN | 2200 | May 11 | 92 | Oct 1 | 13700 | Apr 10 1976 |
| LOWEST DAILY MEAN | 2.8 | Feb 18 | 3.2 | Jan 2 | 0.00 | Sep 4 1930 |
| ANNUAL SEVEN-DAY MINIMUM | 2.9 | Feb 13 | 3.4 | Dec 30 | 0.00 | Sep 4 1930 |
| MAXIMUM PEAK FLOW | | | 93 | Oct 1 | 14800 | Apr 10 1976 |
| MAXIMUM PEAK STAGE | | | 3.06 | Oct 1 | 25.15 | Apr 10 1976 |
| ANNUAL RUNOFF (AC-FT) | 253500 | | 17010 | | 92940 | |
| 10 PERCENT EXCEEDS | 1480 | | 75 | | 221 | |
| 50 PERCENT EXCEEDS | 105 | | 13 | | 6.3 | |
| 90 PERCENT EXCEEDS | 4.2 | | 4.2 | | 0.00 | |

e Estimated

05114000 SOURIS RIVER NEAR SHERWOOD, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1970, 1972 to current year.

REMARKS.-- Quality assurance samples also collected at this location. Environment Canada also collected a sample on Aug. 22.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August 1983 to current year.

SPECIFIC CONDUCTANCE: August 1983 to current year.

PH: August 1992 to current year.

DISSOLVED OXYGEN: May 1993 to current year.

INSTRUMENTATION.--Water-quality monitor since August 1983.

REMARKS.--Records good.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 31.3°C, June 29, 2002; minimum, 0.0°C several days during winter months each year.

SPECIFIC CONDUCTANCE: Maximum, 3,490 microsiemens, Apr. 28, 1991; minimum, 94 microsiemens, Apr. 5, 1990.

PH: Maximum, 9.8 units, Sept. 17, 21, 22, 1992 (revised); minimum, 7.3 units, Jan. 16-23, 2000, and Jan. 3, 2002

DISSOLVED OXYGEN: Maximum, 19.6 mg/L, Mar. 16-21, 2000; minimum, 1.3 mg/L, Jan. 27, 2000.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 31.3°C, June 29; minimum, 0.0°C, Feb. 1.

SPECIFIC CONDUCTANCE: Maximum, 1,840 microsiemens, Aug. 3-4; minimum, 819 microsiemens, Oct. 19.

PH: Maximum, 8.8 units, Oct. 10, 12, 13, and many days in November; minimum, 7.3 units, Jan. 3.

DISSOLVED OXYGEN: Maximum, 15.7 milligrams per liter, Dec. 4; minimum, 1.7 milligrams per liter, Feb. 4.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | BARO-METRIC PRES-SURE (MM OF HG) (00025) | OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301) | OXYGEN, DIS-SOLVED (MG/L) (00300) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 18... | 1500 | 68 | 711 | 95 | 11.1 | 8.5 | -- | -- | 860 | 11.0 | 5.8 | -- | -- |
| NOV | | | | | | | | | | | | | |
| 19... | 1500 | 11 | 726 | 103 | 14.1 | 8.3 | 8.3 | 1140 | 1200 | 7.0 | .6 | 390 | 79.3 |
| JAN | | | | | | | | | | | | | |
| 03... | 1515 | 3.2 | 710 | 16 | 2.1 | 7.4 | -- | -- | 1480 | -- | .0 | -- | -- |
| FEB | | | | | | | | | | | | | |
| 13... | 1415 | 4.6 | 710 | 24 | 3.2 | 7.5 | 7.7 | 1400 | 1440 | 5.5 | .0 | 430 | 96.1 |
| MAR | | | | | | | | | | | | | |
| 29... | 1350 | 13 | -- | -- | 9.9 | 7.6 | -- | -- | 1070 | -- | .1 | -- | -- |
| APR | | | | | | | | | | | | | |
| 17... | 1145 | 61 | -- | -- | -- | -- | -- | -- | 1270 | 9.5 | 2.2 | -- | -- |
| 25... | 1600 | 39 | 722 | 123 | 14.6 | 8.6 | 8.4 | 972 | 1030 | 4.0 | 5.5 | 230 | 49.9 |
| MAY | | | | | | | | | | | | | |
| 16... | 1045 | 77 | 724 | 82 | 8.6 | 8.3 | -- | -- | 1060 | -- | 10.9 | -- | -- |
| JUN | | | | | | | | | | | | | |
| 06... | 1130 | 13 | 708 | 59 | 5.0 | 8.0 | 8.0 | 885 | 920 | 23.0 | 19.9 | 340 | 62.3 |
| 18... | 1530 | 12 | -- | -- | -- | -- | -- | -- | 1010 | 22.5 | 22.1 | -- | -- |
| 27... | 1115 | 20 | 714 | 32 | 2.4 | 7.9 | 7.7 | 1020 | 1050 | 27.0 | 25.7 | 340 | 65.5 |
| JUL | | | | | | | | | | | | | |
| 18... | 1045 | 26 | -- | -- | 5.0 | 8.3 | 8.3 | 1490 | 1510 | 20.0 | 25.2 | 290 | 53.1 |
| AUG | | | | | | | | | | | | | |
| 22... | 1030 | 16 | 719 | 82 | 7.4 | 8.6 | 8.5 | 1230 | 1260 | 21.0 | 17.1 | 290 | 50.8 |
| SEP | | | | | | | | | | | | | |
| 11... | 1600 | 23 | 711 | 89 | 7.6 | 8.3 | -- | -- | 1020 | 27.0 | 19.2 | -- | -- |

05114000 SOURIS RIVER NEAR SHERWOOD, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605) | NITRO-GEN, TOTAL (MG/L AS N) (00600) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 19... | 46.6 | 2 | 93.6 | 225 | 68.0 | .1 | 205 | .79 | E.03 | <.05 | -- | -- | E.05 |
| JAN | | | | | | | | | | | | | |
| 03... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 13... | 44.9 | 3 | 128 | 444 | 65.7 | .2 | 229 | 1.7 | .81 | .32 | .86 | 2.0 | .06 |
| MAR | | | | | | | | | | | | | |
| 29... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 25... | 25.2 | 4 | 142 | 281 | 25.8 | .1 | 231 | 1.2 | <.04 | <.05 | -- | -- | .16 |
| MAY | | | | | | | | | | | | | |
| 16... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 06... | 45.7 | 2 | 68.3 | 296 | 21.8 | .1 | 174 | -- | -- | -- | -- | -- | -- |
| 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 27... | 42.5 | 2 | 94.6 | 321 | 51.7 | .1 | 170 | 2.3 | .39 | .17 | 1.9 | 2.4 | .35 |
| JUL | | | | | | | | | | | | | |
| 18... | 39.1 | 6 | 226 | 355 | 38.2 | .2 | 396 | 1.9 | E.04 | E.05 | -- | -- | .55 |
| AUG | | | | | | | | | | | | | |
| 22... | 40.3 | 4 | 174 | 342 | 37.0 | .2 | 290 | 1.2 | <.04 | <.05 | -- | -- | .34 |
| SEP | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | 1.2 | .05 | .08 | 1.2 | 1.3 | .19 |

| Date | CARBON, ORGANIC TOTAL (MG/L AS C) (00680) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | 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 WATER UNFLTRD TOTAL (UG/L AS CD) (01027) | CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034) | COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 19... | 11.0 | 764 | 13k | .5 | <.1 | 90 | E2 | 79.1 | <2 | 130 | <.1 | E.4 | E1.1 |
| JAN | | | | | | | | | | | | | |
| 03... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 13... | 10.2 | 896 | <2 | -- | -- | 40 | E1 | 90.8 | <2 | 230 | <.1 | <.8 | <2.0 |
| MAR | | | | | | | | | | | | | |
| 29... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 25... | 12.9 | 681 | <2 | --r | --r | 100 | 2 | 52.9 | <2 | 150 | <.1 | <.8 | <2.0 |
| MAY | | | | | | | | | | | | | |
| 16... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 06... | -- | 615 | 540 | 2.9 | .5 | 530 | 5 | 77.4 | <2 | 110 | <.1 | .8 | E1.1 |
| 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 27... | 15.5 | 683 | >1200 | E3.2 | E.6 | -- | 8 | 75.0 | E1 | 150 | <.1 | E.8 | <2.0 |
| JUL | | | | | | | | | | | | | |
| 18... | 21.9 | 1050 | 75 | E24.9 | E5.1 | 480 | 15 | 59.4 | <2 | 220 | <.1 | .8 | E1.0 |
| AUG | | | | | | | | | | | | | |
| 22... | 15.5 | 859 | 135 | 1.3 | <.1 | 90 | E8dn | 32.5 | <2 | 220 | <.1 | <.8 | <2.0 |
| SEP | | | | | | | | | | | | | |
| 11... | 14.9 | -- | 104 | .9 | <.1 | -- | -- | -- | -- | -- | -- | -- | -- |

05114000 SOURIS RIVER NEAR SHERWOOD, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| 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 (UG/L AS SE) (01147) | ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092) | TRIAZIN SCREEN (ELISA) WAT,WH REC,AS ATRAZIN (UG/L) (34757) | 2,4-D SCREEN TOTAL (UG/L) (99906) |
|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | |
| 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | |
| 19... | 1.8 | 450 | <1 | E1 | 2.0 | <2 | <20 | .1 | <.700 |
| JAN | | | | | | | | | |
| 03... | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | |
| 13... | 1.6 | 220 | <1 | 3 | 3.3 | <2 | <20 | -- | -- |
| MAR | | | | | | | | | |
| 29... | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | |
| 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 25... | 1.5 | 410 | <1 | 2 | 2.8 | <2 | <20 | <.1 | <.700 |
| MAY | | | | | | | | | |
| 16... | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | |
| 06... | 2.4 | 1460 | M | E2 | 5.9 | <2 | E30 | <.1 | <.700 |
| 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 27... | 2.9 | 1760 | 2 | 2 | 5.1 | <2 | <20 | -- | -- |
| JUL | | | | | | | | | |
| 18... | 3.6 | 1340 | M | 3 | 5.0 | <2 | <20 | .1 | <.700 |
| AUG | | | | | | | | | |
| 22... | 1.8 | 260 | <1 | 2 | 3.9 | <14d | <20 | -- | -- |
| SEP | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- |

< Less than
> Greater than
E Estimated value
M Presence verified, not quantified
d Diluted sample: method hi range exceeded
k Counts outside acceptable range
n Below the NDV
r Sample ruined in preparation

WATER TEMPERATURE, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | OCTOBER | | | NOVEMBER | | | DECEMBER | | | JANUARY | | |
| 1 | 16.3 | 13.9 | 15.1 | 4.2 | 3.3 | 3.8 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 |
| 2 | 15.4 | 13.5 | 14.4 | 3.9 | 2.6 | 3.3 | 0.3 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 |
| 3 | 14.0 | 11.8 | 12.7 | 4.0 | 2.5 | 3.3 | 0.4 | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 |
| 4 | 12.0 | 9.8 | 10.7 | 3.9 | 2.2 | 3.1 | 0.4 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 |
| 5 | 9.9 | 8.2 | 8.9 | 4.4 | 2.8 | 3.6 | 0.2 | 0.1 | 0.1 | 0.4 | 0.1 | 0.1 |
| 6 | 9.5 | 7.1 | 8.2 | 4.2 | 2.9 | 3.5 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 7 | 9.3 | 7.0 | 8.1 | 3.5 | 3.1 | 3.3 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 8 | 10.4 | 7.8 | 8.9 | 3.4 | 2.4 | 2.9 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 |
| 9 | 9.8 | 8.2 | 9.1 | 3.8 | 2.3 | 3.0 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 |
| 10 | 9.8 | 7.9 | 8.8 | 3.4 | 2.2 | 2.9 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 |
| 11 | 9.3 | 7.9 | 8.6 | 2.8 | 1.2 | 1.9 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 |
| 12 | 9.8 | 8.1 | 8.9 | 2.5 | 1.7 | 2.0 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 |
| 13 | 9.1 | 8.2 | 8.6 | 2.1 | 0.8 | 1.6 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 14 | 8.7 | 7.4 | 7.9 | 2.7 | 1.2 | 1.9 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 15 | --- | --- | --- | 4.0 | 2.7 | 3.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 16 | --- | --- | --- | 4.0 | 2.4 | 3.3 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 17 | --- | --- | --- | 4.6 | 3.2 | 3.8 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 18 | --- | --- | --- | 4.5 | 2.1 | 3.3 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 19 | 6.4 | 4.5 | 5.4 | 2.1 | 0.4 | 0.9 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 20 | 6.5 | 5.0 | 5.7 | 1.7 | 0.4 | 0.9 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 21 | 6.0 | 4.7 | 5.4 | 1.9 | 1.2 | 1.5 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 22 | 6.2 | 4.8 | 5.4 | 1.8 | 1.3 | 1.5 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 23 | 5.7 | 4.2 | 5.0 | 2.3 | 1.7 | 1.9 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 24 | 4.2 | 2.5 | 3.1 | 2.3 | 1.8 | 2.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 25 | 2.5 | 0.8 | 1.6 | 1.8 | 0.2 | 1.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 26 | 1.4 | 0.1 | 0.6 | 0.3 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 27 | 1.9 | 0.3 | 0.9 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 28 | 2.2 | 1.2 | 1.7 | 0.3 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 29 | 1.9 | 0.5 | 1.2 | 0.2 | 0.2 | 0.2 | --- | --- | --- | 0.1 | 0.1 | 0.1 |
| 30 | 2.5 | 1.5 | 1.9 | 0.2 | 0.2 | 0.2 | --- | --- | --- | 0.1 | 0.1 | 0.1 |
| 31 | 3.8 | 2.5 | 3.2 | --- | --- | --- | --- | --- | --- | 0.1 | 0.1 | 0.1 |
| MONTH | --- | --- | --- | 4.6 | 0.2 | 2.2 | --- | --- | --- | 0.4 | 0.1 | 0.1 |

05114000 SOURIS RIVER NEAR SHERWOOD, ND--Continued

WATER TEMPERATURE, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | FEBRUARY | | | MARCH | | | APRIL | | | MAY | |
| 1 | 0.1 | 0.0 | 0 | 0.3 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 11.0 | 7.1 | 8.9 |
| 2 | 0.1 | 0.1 | 0.1 | 0.3 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 10.0 | 5.5 | 7.9 |
| 3 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 11.4 | 7.1 | 9.1 |
| 4 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 10.8 | 7.2 | 9.0 |
| 5 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 11.7 | 8.8 | 10.2 |
| 6 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 10.9 | 8.0 | 9.1 |
| 7 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 9.2 | 6.4 | 7.7 |
| 8 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 7.7 | 5.8 | 6.6 |
| 9 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 10.2 | 4.4 | 6.7 |
| 10 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 12.8 | 7.6 | 9.8 |
| 11 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.3 | 0.1 | 0.1 | 13.1 | 10.2 | 11.6 |
| 12 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.4 | 0.1 | 0.2 | 14.8 | 10.5 | 12.5 |
| 13 | 0.1 | 0.1 | 0.1 | 0.3 | 0.1 | 0.1 | 0.6 | 0.1 | 0.2 | 15.9 | 11.2 | 13.2 |
| 14 | 0.1 | 0.1 | 0.1 | 0.9 | 0.1 | 0.2 | 0.8 | 0.1 | 0.3 | 16.2 | 12.3 | 14.2 |
| 15 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 1.1 | 0.1 | 0.5 | 15.6 | 13.3 | 14.1 |
| 16 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 2.2 | 0.8 | 1.5 | 14.8 | 10.6 | 12.8 |
| 17 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 5.9 | 1.2 | 3.0 | 15.5 | 11.0 | 13.0 |
| 18 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 5.2 | 3.8 | 4.4 | 15.9 | 11.7 | 13.6 |
| 19 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 4.8 | 1.7 | 3.2 | 16.2 | 12.1 | 14.0 |
| 20 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 4.9 | 1.9 | 3.1 | 16.5 | 12.5 | 14.4 |
| 21 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 5.4 | 3.4 | 4.2 | 18.1 | 13.3 | 15.4 |
| 22 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 9.1 | 4.1 | 6.1 | 17.2 | 13.8 | 15.7 |
| 23 | 0.3 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 10.0 | 6.9 | 8.3 | 14.4 | 11.5 | 12.8 |
| 24 | 0.3 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 8.5 | 5.8 | 6.8 | 13.9 | 11.0 | 12.5 |
| 25 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 7.5 | 2.4 | 4.8 | 14.8 | 11.6 | 13.1 |
| 26 | 0.3 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 8.1 | 2.7 | 5.4 | 16.8 | 12.0 | 14.1 |
| 27 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 7.8 | 5.0 | 6.2 | 18.4 | 13.7 | 15.7 |
| 28 | 0.2 | 0.1 | 0.1 | 0.3 | 0.1 | 0.1 | 7.8 | 5.7 | 6.7 | 21.0 | 16.1 | 18.3 |
| 29 | --- | --- | --- | 0.2 | 0.1 | 0.1 | 10.5 | 5.6 | 7.8 | 21.4 | 18.1 | 19.7 |
| 30 | --- | --- | --- | 0.2 | 0.1 | 0.1 | 11.1 | 6.8 | 9.1 | 21.7 | 18.3 | 19.9 |
| 31 | --- | --- | --- | 0.2 | 0.1 | 0.1 | --- | --- | --- | 22.5 | 18.4 | 20.2 |
| MONTH | 0.3 | 0.0 | 0.0 | 0.9 | 0.1 | 0.1 | 11.1 | 0.1 | 2.8 | 22.5 | 4.4 | 12.8 |

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | JUNE | | | JULY | | | AUGUST | | | SEPTEMBER | |
| 1 | 22.9 | 17.9 | 20.3 | 28.3 | 24.2 | 26.3 | 24.1 | 19.5 | 20.5 | --- | --- | --- |
| 2 | 22.5 | 16.6 | 18.6 | 27.0 | 22.2 | 24.7 | 21.2 | 16.4 | 18.6 | --- | --- | --- |
| 3 | 16.6 | 15.8 | 16.2 | 26.5 | 20.9 | 23.8 | 23.4 | 19.4 | 21.0 | --- | --- | --- |
| 4 | 18.0 | 15.0 | 16.2 | 26.1 | 21.0 | 23.0 | 22.5 | 19.1 | 20.2 | --- | --- | --- |
| 5 | 21.1 | 15.6 | 17.9 | 26.7 | 21.7 | 24.0 | 20.0 | 17.1 | 18.4 | --- | --- | --- |
| 6 | 22.1 | 18.5 | 20.1 | 26.1 | 21.1 | 23.4 | 21.6 | 18.8 | 19.8 | --- | --- | --- |
| 7 | 20.9 | 17.7 | 19.4 | 24.8 | 21.6 | 23.2 | 21.8 | 20.1 | 20.9 | --- | --- | --- |
| 8 | 20.4 | 16.9 | 18.3 | 26.2 | 22.2 | 24.1 | 23.2 | 21.0 | 21.8 | --- | --- | --- |
| 9 | 17.9 | 14.4 | 15.7 | 25.4 | 21.6 | 23.0 | 23.0 | 21.0 | 22.3 | --- | --- | --- |
| 10 | 14.4 | 12.8 | 13.4 | 26.2 | 21.2 | 23.5 | 23.7 | 20.3 | 21.9 | --- | --- | --- |
| 11 | 13.6 | 12.4 | 13.1 | 26.5 | 21.2 | 23.7 | 23.5 | 21.3 | 22.4 | --- | --- | --- |
| 12 | 15.3 | 12.1 | 13.4 | 28.4 | 22.5 | 25.1 | 22.4 | 19.5 | 20.7 | --- | --- | --- |
| 13 | 17.8 | 13.9 | 15.4 | 29.8 | 23.5 | 26.4 | 22.1 | 18.6 | 20.2 | --- | --- | --- |
| 14 | 20.9 | 15.7 | 17.7 | 30.1 | 24.7 | 27.4 | 21.8 | 20.0 | 21.0 | --- | --- | --- |
| 15 | 22.7 | 17.5 | 19.9 | 30.4 | 25.4 | 27.9 | 21.0 | 18.9 | 19.7 | --- | --- | --- |
| 16 | 21.8 | 18.6 | 20.4 | 30.1 | 26.5 | 28.3 | 19.7 | 16.8 | 18.0 | --- | --- | --- |
| 17 | 21.2 | 18.3 | 19.9 | 28.8 | 25.7 | 27.1 | 18.0 | 14.3 | 16.1 | --- | --- | --- |
| 18 | 22.0 | 19.0 | 20.3 | 28.9 | 24.6 | 26.8 | 18.6 | 14.8 | 16.6 | --- | --- | --- |
| 19 | 21.7 | 19.7 | 20.7 | 29.6 | 25.5 | 27.6 | 20.3 | 16.1 | 18.0 | --- | --- | --- |
| 20 | 23.1 | 17.5 | 19.9 | 30.0 | 26.4 | 28.2 | 21.1 | 17.3 | 19.1 | --- | --- | --- |
| 21 | 24.7 | 19.5 | 21.8 | 29.1 | 25.2 | 26.6 | 20.6 | 18.7 | 19.5 | --- | --- | --- |
| 22 | 26.0 | 21.6 | 23.7 | 25.7 | 22.1 | 24.0 | --- | --- | --- | --- | --- | --- |
| 23 | 25.1 | 22.4 | 23.1 | 24.6 | 21.0 | 22.7 | --- | --- | --- | --- | --- | --- |
| 24 | 25.6 | 21.2 | 22.8 | 25.2 | 21.1 | 22.8 | --- | --- | --- | --- | --- | --- |
| 25 | 27.4 | 22.5 | 24.7 | 27.1 | 22.4 | 24.4 | --- | --- | --- | --- | --- | --- |
| 26 | 28.8 | 23.8 | 26.0 | 26.4 | 23.7 | 24.9 | --- | --- | --- | --- | --- | --- |
| 27 | 29.4 | 25.2 | 27.2 | 26.6 | 23.5 | 25.0 | --- | --- | --- | --- | --- | --- |
| 28 | 30.2 | 25.9 | 27.9 | 25.8 | 22.9 | 24.5 | --- | --- | --- | --- | --- | --- |
| 29 | 31.3 | 27.2 | 29.1 | 26.5 | 22.1 | 24.2 | --- | --- | --- | --- | --- | --- |
| 30 | 29.8 | 25.4 | 27.5 | 26.4 | 22.3 | 24.3 | --- | --- | --- | --- | --- | --- |
| 31 | --- | --- | --- | 26.2 | 22.4 | 24.2 | --- | --- | --- | --- | --- | --- |
| MONTH | 31.3 | 12.1 | 20.4 | 30.4 | 20.9 | 25.0 | --- | --- | --- | --- | --- | --- |

05114000 SOURIS RIVER NEAR SHERWOOD, ND--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | OCTOBER | | | NOVEMBER | | | DECEMBER | | | JANUARY | |
| 1 | 854 | 848 | 851 | 932 | 916 | 924 | 1280 | 1280 | 1280 | --- | --- | --- |
| 2 | 857 | 851 | 855 | 949 | 932 | 939 | 1300 | 1280 | 1290 | 1490 | 1460 | 1480 |
| 3 | 863 | 854 | 859 | 972 | 949 | 960 | 1310 | 1290 | 1300 | 1500 | 1450 | 1480 |
| 4 | 866 | 857 | 862 | 991 | 972 | 982 | 1320 | 1310 | 1320 | 1450 | 1450 | 1450 |
| 5 | 867 | 857 | 862 | 1010 | 991 | 999 | 1320 | 1310 | 1320 | 1450 | 1440 | 1450 |
| 6 | 863 | 859 | 861 | 1020 | 1010 | 1010 | 1310 | 1310 | 1310 | 1440 | 1440 | 1440 |
| 7 | 872 | 860 | 866 | 1040 | 1020 | 1030 | 1310 | 1310 | 1310 | 1440 | 1440 | 1440 |
| 8 | 868 | 860 | 865 | 1060 | 1040 | 1050 | 1310 | 1310 | 1310 | 1440 | 1440 | 1440 |
| 9 | 868 | 863 | 866 | 1070 | 1060 | 1060 | 1310 | 1310 | 1310 | 1440 | 1430 | 1440 |
| 10 | 874 | 864 | 869 | 1080 | 1070 | 1080 | 1330 | 1310 | 1320 | 1430 | 1430 | 1430 |
| 11 | 871 | 864 | 867 | 1090 | 1080 | 1090 | 1340 | 1330 | 1330 | 1430 | 1430 | 1430 |
| 12 | 874 | 864 | 869 | 1110 | 1090 | 1100 | 1360 | 1340 | 1350 | 1450 | 1430 | 1440 |
| 13 | 883 | 865 | 872 | 1120 | 1110 | 1120 | 1380 | 1360 | 1370 | 1450 | 1440 | 1450 |
| 14 | 874 | 865 | 870 | 1140 | 1120 | 1130 | 1400 | 1380 | 1390 | 1450 | 1450 | 1450 |
| 15 | --- | --- | --- | 1150 | 1140 | 1140 | 1400 | 1400 | 1400 | 1460 | 1450 | 1460 |
| 16 | --- | --- | --- | 1160 | 1150 | 1150 | 1410 | 1400 | 1410 | 1460 | 1450 | 1460 |
| 17 | --- | --- | --- | 1170 | 1160 | 1170 | 1420 | 1410 | 1410 | 1450 | 1440 | 1440 |
| 18 | --- | --- | --- | 1180 | 1170 | 1180 | 1440 | 1420 | 1430 | 1440 | 1430 | 1430 |
| 19 | 825 | 819 | 823 | 1200 | 1180 | 1190 | 1460 | 1440 | 1450 | 1430 | 1430 | 1430 |
| 20 | 837 | 823 | 831 | 1200 | 1200 | 1200 | 1460 | 1460 | 1460 | 1430 | 1420 | 1420 |
| 21 | 839 | 825 | 832 | 1200 | 1190 | 1200 | 1460 | 1450 | 1460 | 1430 | 1420 | 1420 |
| 22 | 830 | 821 | 826 | 1190 | 1190 | 1190 | 1450 | 1450 | 1450 | 1460 | 1430 | 1440 |
| 23 | 836 | 826 | 832 | 1200 | 1190 | 1200 | 1460 | 1440 | 1450 | 1470 | 1460 | 1470 |
| 24 | 827 | 825 | 826 | 1210 | 1200 | 1210 | 1470 | 1430 | 1460 | 1480 | 1470 | 1480 |
| 25 | 837 | 826 | 830 | 1210 | 1200 | 1210 | 1490 | 1450 | 1480 | 1470 | 1450 | 1460 |
| 26 | 853 | 837 | 846 | 1220 | 1200 | 1210 | 1500 | 1460 | 1490 | 1450 | 1430 | 1440 |
| 27 | 863 | 845 | 857 | 1260 | 1220 | 1240 | 1490 | 1460 | 1480 | 1430 | 1410 | 1420 |
| 28 | 873 | 862 | 869 | 1280 | 1260 | 1270 | 1480 | 1460 | 1480 | 1410 | 1390 | 1400 |
| 29 | 884 | 873 | 879 | 1290 | 1280 | 1280 | --- | --- | --- | 1390 | 1390 | 1390 |
| 30 | 894 | 884 | 889 | 1280 | 1280 | 1280 | --- | --- | --- | 1400 | 1390 | 1400 |
| 31 | 916 | 894 | 905 | --- | --- | --- | --- | --- | --- | 1400 | 1400 | 1400 |
| MONTH | --- | --- | --- | 1290 | 916 | 1130 | --- | --- | --- | --- | --- | --- |

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | FEBRUARY | | | MARCH | | | APRIL | | | MAY | |
| 1 | 1410 | 1400 | 1400 | 1520 | 1480 | 1500 | 1250 | 1020 | 1170 | 1260 | 1230 | 1260 |
| 2 | 1410 | 1400 | 1400 | 1550 | 1520 | 1540 | 1400 | 1210 | 1330 | 1250 | 1220 | 1240 |
| 3 | 1400 | 1400 | 1400 | 1580 | 1550 | 1570 | 1540 | 1380 | 1480 | 1250 | 1240 | 1250 |
| 4 | 1400 | 1400 | 1400 | 1580 | 1560 | 1570 | 1610 | 1530 | 1580 | 1240 | 1220 | 1230 |
| 5 | 1410 | 1400 | 1400 | 1570 | 1560 | 1560 | 1580 | 1490 | 1540 | 1230 | 1220 | 1220 |
| 6 | 1400 | 1400 | 1400 | 1590 | 1560 | 1580 | 1540 | 1460 | 1510 | 1220 | 1210 | 1210 |
| 7 | 1400 | 1390 | 1390 | 1610 | 1580 | 1600 | 1460 | 1250 | 1370 | 1220 | 1200 | 1210 |
| 8 | 1390 | 1370 | 1380 | 1620 | 1610 | 1620 | 1250 | 1140 | 1190 | 1230 | 1220 | 1220 |
| 9 | 1390 | 1370 | 1380 | 1620 | 1620 | 1620 | 1260 | 1220 | 1250 | 1290 | 1230 | 1260 |
| 10 | 1400 | 1390 | 1390 | 1620 | 1610 | 1620 | 1290 | 1260 | 1270 | 1320 | 1280 | 1300 |
| 11 | 1400 | 1400 | 1400 | 1640 | 1620 | 1630 | 1440 | 1280 | 1400 | 1300 | 1280 | 1290 |
| 12 | 1400 | 1400 | 1400 | 1650 | 1630 | 1640 | 1520 | 1400 | 1460 | 1320 | 1270 | 1280 |
| 13 | 1400 | 1400 | 1400 | 1650 | 1620 | 1640 | 1640 | 1420 | 1540 | 1320 | 1280 | 1300 |
| 14 | --- | --- | --- | 1660 | 1620 | 1640 | 1420 | 1210 | 1290 | 1340 | 1310 | 1320 |
| 15 | 1400 | 1400 | 1400 | 1670 | 1650 | 1660 | 1320 | 1260 | 1290 | 1340 | 1130 | 1210 |
| 16 | 1410 | 1400 | 1400 | 1650 | 1630 | 1640 | 1370 | 1300 | 1340 | 1130 | 938 | 1050 |
| 17 | 1410 | 1400 | 1400 | 1660 | 1640 | 1650 | 1350 | 1250 | 1300 | 938 | 884 | 896 |
| 18 | 1410 | 1390 | 1400 | 1660 | 1640 | 1650 | 1260 | 1190 | 1220 | 885 | 874 | 879 |
| 19 | 1400 | 1380 | 1390 | 1680 | 1660 | 1670 | 1210 | 1150 | 1170 | 878 | 873 | 874 |
| 20 | 1390 | 1380 | 1390 | 1700 | 1680 | 1690 | 1310 | 1150 | 1220 | 879 | 871 | 875 |
| 21 | 1400 | 1390 | 1390 | 1710 | 1700 | 1710 | 1370 | 1290 | 1350 | 887 | 876 | 885 |
| 22 | 1400 | 1380 | 1390 | 1730 | 1710 | 1720 | 1330 | 1160 | 1260 | 887 | 874 | 880 |
| 23 | 1380 | 1350 | 1370 | 1740 | 1720 | 1740 | 1190 | 1060 | 1140 | 878 | 868 | 872 |
| 24 | 1370 | 1360 | 1360 | 1760 | 1740 | 1760 | 1090 | 1050 | 1080 | 873 | 868 | 869 |
| 25 | 1420 | 1370 | 1400 | 1780 | 1760 | 1770 | 1080 | 1050 | 1060 | 873 | 865 | 869 |
| 26 | 1450 | 1420 | 1440 | 1800 | 1780 | 1790 | 1110 | 1070 | 1080 | 869 | 863 | 866 |
| 27 | 1460 | 1450 | 1460 | 1800 | 1680 | 1780 | 1190 | 1090 | 1130 | 875 | 868 | 871 |
| 28 | 1480 | 1450 | 1470 | 1760 | 1300 | 1580 | 1260 | 1190 | 1240 | 877 | 872 | 875 |
| 29 | --- | --- | --- | 1320 | 1020 | 1150 | 1250 | 1200 | 1230 | 882 | 864 | 872 |
| 30 | --- | --- | --- | 1260 | 1110 | 1210 | 1250 | 1220 | 1240 | 881 | 871 | 877 |
| 31 | --- | --- | --- | 1280 | 1020 | 1190 | --- | --- | --- | 887 | 877 | 883 |
| MONTH | --- | --- | --- | 1800 | 1020 | 1600 | 1640 | 1020 | 1290 | 1340 | 863 | 1060 |

05114000 SOURIS RIVER NEAR SHERWOOD, ND--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | JUNE | | | JULY | | | AUGUST | | | SEPTEMBER | |
| 1 | 898 | 885 | 893 | 1150 | 1110 | 1120 | 1810 | 1770 | 1780 | --- | --- | --- |
| 2 | 903 | 894 | 898 | 1210 | 1150 | 1190 | 1820 | 1800 | 1810 | --- | --- | --- |
| 3 | 901 | 890 | 895 | 1220 | 1190 | 1200 | 1840 | 1820 | 1820 | --- | --- | --- |
| 4 | 914 | 900 | 906 | 1230 | 1210 | 1220 | 1840 | 1800 | 1820 | --- | --- | --- |
| 5 | 924 | 908 | 915 | 1220 | 1220 | 1220 | 1810 | 1800 | 1800 | --- | --- | --- |
| 6 | 929 | 916 | 923 | 1280 | 1220 | 1240 | 1820 | 1790 | 1800 | --- | --- | --- |
| 7 | 932 | 921 | 926 | 1320 | 1280 | 1300 | 1820 | 1720 | 1760 | --- | --- | --- |
| 8 | 944 | 926 | 933 | 1320 | 1310 | 1320 | 1730 | 1670 | 1690 | --- | --- | --- |
| 9 | 933 | 914 | 923 | 1330 | 1280 | 1300 | 1680 | 1640 | 1670 | --- | --- | --- |
| 10 | 925 | 892 | 907 | 1310 | 1280 | 1290 | 1640 | 1560 | 1580 | --- | --- | --- |
| 11 | 917 | 900 | 909 | 1290 | 1270 | 1280 | 1630 | 1560 | 1600 | --- | --- | --- |
| 12 | 919 | 906 | 913 | 1300 | 1180 | 1240 | 1650 | 1630 | 1640 | --- | --- | --- |
| 13 | 942 | 916 | 928 | 1380 | 1300 | 1350 | 1660 | 1640 | 1640 | --- | --- | --- |
| 14 | 985 | 939 | 949 | 1430 | 1380 | 1410 | 1640 | 1620 | 1630 | --- | --- | --- |
| 15 | 990 | 971 | 978 | 1470 | 1430 | 1450 | 1620 | 1580 | 1600 | --- | --- | --- |
| 16 | 1040 | 974 | 1000 | 1500 | 1470 | 1490 | 1580 | 1470 | 1530 | --- | --- | --- |
| 17 | 1040 | 1020 | 1030 | 1500 | 1480 | 1490 | 1470 | 1440 | 1450 | --- | --- | --- |
| 18 | 1070 | 1020 | 1050 | 1520 | 1500 | 1510 | 1450 | 1420 | 1430 | --- | --- | --- |
| 19 | 1070 | 1020 | 1030 | 1540 | 1520 | 1540 | 1440 | 1370 | 1410 | --- | --- | --- |
| 20 | 1050 | 1040 | 1040 | 1560 | 1540 | 1550 | 1400 | 1310 | 1340 | --- | --- | --- |
| 21 | 1060 | 1040 | 1040 | 1580 | 1550 | 1560 | 1310 | 1260 | 1280 | --- | --- | --- |
| 22 | 1040 | 983 | 1010 | 1600 | 1570 | 1590 | --- | --- | --- | --- | --- | --- |
| 23 | 1040 | 1010 | 1020 | 1620 | 1590 | 1610 | --- | --- | --- | --- | --- | --- |
| 24 | 1050 | 1030 | 1040 | 1640 | 1610 | 1620 | --- | --- | --- | --- | --- | --- |
| 25 | 1060 | 1040 | 1050 | 1650 | 1620 | 1640 | --- | --- | --- | --- | --- | --- |
| 26 | 1070 | 1040 | 1050 | 1700 | 1650 | 1680 | --- | --- | --- | --- | --- | --- |
| 27 | 1100 | 1050 | 1070 | 1730 | 1700 | 1710 | --- | --- | --- | --- | --- | --- |
| 28 | 1170 | 1100 | 1130 | 1750 | 1720 | 1730 | --- | --- | --- | --- | --- | --- |
| 29 | 1210 | 1170 | 1190 | 1740 | 1720 | 1730 | --- | --- | --- | --- | --- | --- |
| 30 | 1210 | 1110 | 1150 | 1760 | 1730 | 1740 | --- | --- | --- | --- | --- | --- |
| 31 | --- | --- | --- | 1770 | 1740 | 1750 | --- | --- | --- | --- | --- | --- |
| MONTH | 1210 | 885 | 990 | 1770 | 1110 | 1450 | --- | --- | --- | --- | --- | --- |

PH, WH, FIELD, in (STANDARD UNITS), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MAX | MIN | MAX | MIN | MAX | MIN | MAX | MIN | MAX | MIN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | OCTOBER | | NOVEMBER | | DECEMBER | | JANUARY | | FEBRUARY | | MARCH | |
| 1 | 8.4 | 7.7 | 8.3 | 8.3 | 8.1 | 8.0 | --- | --- | 7.4 | 7.4 | 7.6 | 7.5 |
| 2 | 8.4 | 8.2 | 8.3 | 8.3 | 8.2 | 8.1 | 7.4 | 7.4 | 7.4 | 7.4 | 7.6 | 7.5 |
| 3 | 8.5 | 8.3 | 8.3 | 8.3 | 8.2 | 8.1 | 7.4 | 7.3 | 7.5 | 7.4 | 7.6 | 7.5 |
| 4 | 8.6 | 8.4 | 8.3 | 8.3 | 8.3 | 8.2 | 7.4 | 7.4 | 7.5 | 7.5 | 7.6 | 7.6 |
| 5 | 8.7 | 8.4 | 8.3 | 8.3 | 8.3 | 8.1 | 7.4 | 7.4 | 7.5 | 7.5 | 7.6 | 7.6 |
| 6 | 8.7 | 8.5 | 8.3 | 8.3 | 8.1 | 8.1 | 7.4 | 7.4 | 7.5 | 7.5 | 7.6 | 7.6 |
| 7 | 8.7 | 8.5 | 8.3 | 8.3 | 8.1 | 8.0 | 7.4 | 7.4 | 7.5 | 7.5 | 7.6 | 7.6 |
| 8 | 8.7 | 8.5 | 8.3 | 8.3 | 8.0 | 7.9 | 7.4 | 7.4 | 7.5 | 7.5 | 7.6 | 7.6 |
| 9 | 8.7 | 8.5 | 8.3 | 8.3 | 7.9 | 7.9 | 7.4 | 7.4 | 7.5 | 7.5 | 7.6 | 7.6 |
| 10 | 8.8 | 8.6 | 8.3 | 8.3 | 7.9 | 7.8 | 7.4 | 7.4 | 7.5 | 7.5 | 7.6 | 7.6 |
| 11 | 8.7 | 8.6 | 8.4 | 8.3 | 7.8 | 7.7 | 7.4 | 7.4 | 7.5 | 7.5 | 7.6 | 7.5 |
| 12 | 8.8 | 8.6 | 8.3 | 8.3 | 7.7 | 7.7 | 7.4 | 7.4 | 7.5 | 7.5 | 7.5 | 7.5 |
| 13 | 8.8 | 8.6 | 8.3 | 8.3 | 7.7 | 7.6 | 7.5 | 7.4 | 7.5 | 7.5 | 7.6 | 7.5 |
| 14 | 8.7 | 8.6 | 8.3 | 8.3 | 7.6 | 7.6 | 7.4 | 7.4 | --- | --- | 7.6 | 7.5 |
| 15 | --- | --- | 8.3 | 8.3 | 7.6 | 7.6 | 7.5 | 7.5 | 7.5 | 7.5 | 7.6 | 7.6 |
| 16 | --- | --- | 8.3 | 8.3 | 7.6 | 7.6 | 7.5 | 7.5 | 7.5 | 7.5 | 7.6 | 7.6 |
| 17 | --- | --- | 8.3 | 8.2 | 7.6 | 7.6 | 7.5 | 7.5 | 7.6 | 7.5 | 7.6 | 7.6 |
| 18 | --- | --- | 8.3 | 8.2 | 7.6 | 7.6 | 7.5 | 7.5 | 7.6 | 7.5 | 7.6 | 7.5 |
| 19 | 8.7 | 8.6 | 8.3 | 8.3 | 7.6 | 7.6 | 7.5 | 7.5 | 7.6 | 7.6 | 7.5 | 7.5 |
| 20 | 8.7 | 8.6 | 8.3 | 8.3 | 7.6 | 7.5 | 7.5 | 7.5 | 7.6 | 7.6 | 7.5 | 7.5 |
| 21 | 8.7 | 8.6 | 8.3 | 8.3 | 7.5 | 7.5 | 7.5 | 7.5 | 7.6 | 7.6 | 7.5 | 7.4 |
| 22 | 8.7 | 8.6 | 8.3 | 8.3 | 7.5 | 7.5 | 7.5 | 7.5 | 7.6 | 7.6 | 7.4 | 7.4 |
| 23 | 8.7 | 8.6 | 8.3 | 8.2 | 7.5 | 7.5 | 7.5 | 7.5 | 7.6 | 7.6 | 7.4 | 7.4 |
| 24 | 8.7 | 8.6 | 8.3 | 8.2 | 7.5 | 7.5 | 7.5 | 7.5 | 7.6 | 7.5 | 7.4 | 7.4 |
| 25 | 8.7 | 8.6 | 8.3 | 8.2 | 7.5 | 7.4 | 7.5 | 7.5 | 7.6 | 7.5 | 7.4 | 7.4 |
| 26 | 8.6 | 8.5 | 8.3 | 8.2 | 7.4 | 7.4 | 7.5 | 7.4 | 7.6 | 7.6 | 7.4 | 7.4 |
| 27 | 8.6 | 8.6 | 8.2 | 8.2 | 7.4 | 7.4 | 7.4 | 7.4 | 7.6 | 7.5 | 7.4 | 7.4 |
| 28 | 8.6 | 8.5 | 8.2 | 8.1 | 7.4 | 7.4 | 7.4 | 7.4 | 7.6 | 7.6 | 7.6 | 7.4 |
| 29 | 8.6 | 8.4 | 8.1 | 8.1 | --- | --- | 7.4 | 7.4 | --- | --- | 7.6 | 7.5 |
| 30 | 8.4 | 8.4 | 8.1 | 8.0 | --- | --- | 7.4 | 7.4 | --- | --- | 7.6 | 7.6 |
| 31 | 8.4 | 8.3 | --- | --- | --- | --- | 7.4 | 7.4 | --- | --- | 7.7 | 7.6 |
| MONTH | --- | --- | 8.4 | 8.0 | --- | --- | --- | --- | --- | --- | 7.7 | 7.4 |

05114000 SOURIS RIVER NEAR SHERWOOD, ND--Continued

PH, WH, FIELD, in (STANDARD UNITS), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MAX | MIN | MAX | MIN | MAX | MIN | MAX | MIN | MAX | MIN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | APRIL | | MAY | | JUNE | | JULY | | AUGUST | | SEPTEMBER | |
| 1 | 7.6 | 7.6 | 8.5 | 8.4 | 8.4 | 8.2 | 8.0 | 8.0 | 8.7 | 8.6 | --- | --- |
| 2 | 7.6 | 7.6 | 8.5 | 8.4 | 8.4 | 8.1 | 8.1 | 8.0 | 8.8 | 8.7 | --- | --- |
| 3 | 7.6 | 7.6 | 8.4 | 8.3 | 8.2 | 8.2 | 8.1 | 8.0 | 8.8 | 8.7 | --- | --- |
| 4 | 7.7 | 7.6 | 8.4 | 8.3 | 8.2 | 8.1 | 8.1 | 8.1 | 8.8 | 8.6 | --- | --- |
| 5 | 7.7 | 7.6 | 8.3 | 8.2 | 8.1 | 8.0 | 8.5 | 8.1 | 8.7 | 8.6 | --- | --- |
| 6 | 7.7 | 7.6 | 8.3 | 8.2 | 8.1 | 8.0 | 8.6 | 8.4 | 8.7 | 8.6 | --- | --- |
| 7 | 7.7 | 7.6 | 8.3 | 8.3 | 8.1 | 8.0 | 8.5 | 8.3 | 8.7 | 8.6 | --- | --- |
| 8 | 7.6 | 7.5 | 8.3 | 8.3 | 8.1 | 8.0 | 8.3 | 8.1 | 8.6 | 8.6 | --- | --- |
| 9 | 7.8 | 7.6 | 8.3 | 8.3 | 8.2 | 8.0 | 8.2 | 8.1 | 8.7 | 8.6 | --- | --- |
| 10 | 7.9 | 7.7 | 8.3 | 8.2 | 8.1 | 8.0 | 8.2 | 8.1 | 8.7 | 8.5 | --- | --- |
| 11 | 8.0 | 7.8 | 8.3 | 8.2 | 8.2 | 8.1 | 8.2 | 8.1 | 8.6 | 8.5 | --- | --- |
| 12 | 8.0 | 7.9 | 8.3 | 8.2 | 8.2 | 8.2 | 8.2 | 8.0 | 8.7 | 8.6 | --- | --- |
| 13 | 8.1 | 8.0 | 8.3 | 8.3 | 8.2 | 8.1 | 8.3 | 8.1 | 8.8 | 8.6 | --- | --- |
| 14 | 8.2 | 8.1 | 8.3 | 8.3 | 8.1 | 8.1 | 8.4 | 8.2 | 8.7 | 8.6 | --- | --- |
| 15 | 8.3 | 8.2 | 8.3 | 8.2 | 8.1 | 8.1 | 8.5 | 8.3 | 8.8 | 8.6 | --- | --- |
| 16 | 8.3 | 8.2 | 8.2 | 8.1 | 8.2 | 8.0 | 8.5 | 8.3 | 8.8 | 8.7 | --- | --- |
| 17 | 8.3 | 8.2 | 8.4 | 8.2 | 8.0 | 8.0 | 8.4 | 8.2 | 8.7 | 8.7 | --- | --- |
| 18 | 8.3 | 8.2 | 8.3 | 8.3 | 8.0 | 8.0 | 8.4 | 8.3 | 8.8 | 8.6 | --- | --- |
| 19 | 8.3 | 8.2 | 8.4 | 8.2 | 8.0 | 7.9 | 8.4 | 8.3 | 8.8 | 8.6 | --- | --- |
| 20 | 8.3 | 8.2 | 8.5 | 8.3 | 8.0 | 8.0 | 8.4 | 8.2 | 8.8 | 8.5 | --- | --- |
| 21 | 8.3 | 8.3 | 8.5 | 8.3 | 8.0 | 8.0 | 8.4 | 8.3 | 8.7 | 8.5 | --- | --- |
| 22 | 8.3 | 8.2 | 8.4 | 8.3 | 8.0 | 7.9 | 8.6 | 8.4 | --- | --- | --- | --- |
| 23 | 8.3 | 8.2 | 8.5 | 8.3 | 7.9 | 7.8 | 8.6 | 8.5 | --- | --- | --- | --- |
| 24 | 8.3 | 8.2 | 8.5 | 8.4 | 7.8 | 7.7 | 8.6 | 8.5 | --- | --- | --- | --- |
| 25 | 8.4 | 8.3 | 8.5 | 8.3 | 7.8 | 7.7 | 8.5 | 8.4 | --- | --- | --- | --- |
| 26 | 8.5 | 8.4 | 8.6 | 8.4 | 7.8 | 7.7 | 8.6 | 8.4 | --- | --- | --- | --- |
| 27 | 8.5 | 8.4 | 8.6 | 8.4 | 7.8 | 7.8 | 8.5 | 8.5 | --- | --- | --- | --- |
| 28 | 8.5 | 8.4 | 8.6 | 8.4 | 7.9 | 7.8 | 8.6 | 8.5 | --- | --- | --- | --- |
| 29 | 8.5 | 8.4 | 8.5 | 8.3 | 8.0 | 7.8 | 8.6 | 8.5 | --- | --- | --- | --- |
| 30 | 8.5 | 8.4 | 8.5 | 8.3 | 8.0 | 8.0 | 8.6 | 8.5 | --- | --- | --- | --- |
| 31 | --- | --- | 8.5 | 8.3 | --- | --- | 8.6 | 8.5 | --- | --- | --- | --- |
| MONTH | 8.5 | 7.5 | 8.6 | 8.1 | 8.4 | 7.7 | 8.6 | 8.0 | --- | --- | --- | --- |

OXYGEN DISSOLVED, in (MG/L), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | OCTOBER | | | NOVEMBER | | | DECEMBER | | | JANUARY | | |
| 1 | 9.9 | 7.2 | 8.1 | 11.2 | 10.6 | 10.9 | 12.8 | 11.8 | 12.3 | --- | --- | --- |
| 2 | 10.1 | 7.2 | 8.3 | 11.8 | 10.6 | 11.1 | 13.6 | 12.0 | 12.7 | 2.7 | 2.3 | 2.4 |
| 3 | 10.5 | 7.8 | 8.8 | 12.1 | 11.2 | 11.6 | 14.9 | 12.8 | 13.7 | 2.4 | 2.1 | 2.2 |
| 4 | 11.2 | 8.3 | 9.4 | 12.3 | 11.4 | 11.9 | 15.7 | 13.6 | 14.6 | 2.4 | 2.1 | 2.2 |
| 5 | 11.9 | 9.2 | 10.1 | 12.3 | 11.4 | 11.9 | 15.2 | 12.8 | 14.0 | 2.2 | 1.9 | 2.1 |
| 6 | 12.4 | 9.5 | 10.6 | 12.5 | 11.4 | 11.9 | 12.8 | 11.7 | 12.3 | 2.0 | 1.9 | 2.0 |
| 7 | 12.3 | 9.9 | 10.7 | 12.2 | 11.5 | 11.9 | 11.7 | 10.8 | 11.2 | 2.3 | 1.9 | 2.0 |
| 8 | 12.2 | 9.8 | 10.6 | 12.8 | 11.4 | 12.0 | 10.8 | 10.3 | 10.5 | 2.4 | 2.0 | 2.2 |
| 9 | 11.4 | 9.6 | 10.3 | 12.9 | 12.1 | 12.5 | 10.4 | 9.8 | 10.0 | 3.2 | 2.3 | 2.5 |
| 10 | 12.3 | 9.7 | 10.6 | 13.0 | 12.1 | 12.6 | 9.9 | 8.9 | 9.3 | 3.7 | 3.1 | 3.3 |
| 11 | 11.9 | 9.7 | 10.3 | 13.3 | 12.6 | 12.9 | 8.9 | 8.0 | 8.3 | 3.9 | 3.2 | 3.5 |
| 12 | 12.5 | 9.7 | 10.6 | 13.2 | 12.4 | 12.9 | 8.0 | 7.3 | 7.5 | 3.9 | 3.4 | 3.7 |
| 13 | 11.8 | 9.5 | 10.2 | 13.2 | 12.7 | 13.0 | 7.4 | 6.9 | 7.1 | 3.8 | 3.3 | 3.6 |
| 14 | 10.9 | 9.6 | 10.1 | 13.5 | 12.6 | 13.0 | 7.1 | 6.4 | 6.6 | 3.9 | 3.6 | 3.7 |
| 15 | --- | --- | --- | 13.1 | 12.4 | 12.8 | 6.7 | 6.0 | 6.3 | 3.8 | 3.7 | 3.8 |
| 16 | --- | --- | --- | 13.1 | 12.4 | 12.7 | 6.6 | 6.0 | 6.3 | 4.0 | 3.7 | 3.9 |
| 17 | --- | --- | --- | 13.0 | 12.2 | 12.5 | 6.5 | 5.9 | 6.2 | 3.9 | 3.8 | 3.8 |
| 18 | --- | --- | --- | 13.0 | 11.8 | 12.4 | 6.4 | 5.8 | 6.0 | 3.9 | 3.5 | 3.7 |
| 19 | 11.3 | 10.6 | 10.9 | 13.9 | 12.6 | 13.1 | 6.2 | 5.3 | 5.6 | 3.7 | 3.4 | 3.6 |
| 20 | 11.4 | 10.3 | 10.7 | 13.9 | 13.1 | 13.5 | 5.5 | 4.7 | 5.0 | 3.7 | 3.4 | 3.5 |
| 21 | 11.7 | 10.4 | 10.9 | 13.8 | 12.7 | 13.3 | 5.1 | 4.4 | 4.7 | 3.4 | 3.2 | 3.3 |
| 22 | 11.6 | 10.6 | 11.0 | 13.8 | 12.8 | 13.3 | 4.6 | 4.0 | 4.3 | 3.4 | 3.1 | 3.3 |
| 23 | 11.2 | 10.4 | 10.8 | 13.4 | 12.4 | 12.9 | 4.1 | 3.6 | 3.8 | 3.5 | 3.3 | 3.4 |
| 24 | 11.9 | 10.6 | 11.1 | 13.0 | 12.0 | 12.5 | 3.8 | 3.5 | 3.6 | 3.4 | 3.0 | 3.2 |
| 25 | 12.3 | 11.3 | 11.8 | 13.1 | 11.8 | 12.3 | 3.6 | 3.2 | 3.4 | 3.0 | 2.5 | 2.7 |
| 26 | 12.6 | 11.9 | 12.2 | 13.4 | 12.3 | 12.9 | 3.4 | 3.1 | 3.2 | 2.5 | 2.2 | 2.3 |
| 27 | 12.7 | 12.1 | 12.4 | 13.4 | 12.4 | 12.9 | 3.2 | 2.9 | 3.0 | 2.3 | 2.1 | 2.1 |
| 28 | 12.5 | 11.7 | 12.0 | 13.3 | 12.4 | 12.8 | 3.0 | 2.6 | 2.7 | 2.1 | 1.9 | 2.0 |
| 29 | 12.2 | 11.8 | 12.1 | 13.1 | 11.9 | 12.4 | --- | --- | --- | 2.2 | 2.0 | 2.1 |
| 30 | 12.0 | 11.5 | 11.8 | 12.3 | 11.5 | 12.0 | --- | --- | --- | 2.4 | 2.1 | 2.2 |
| 31 | 11.8 | 11.0 | 11.4 | --- | --- | --- | --- | --- | --- | 2.5 | 2.4 | 2.4 |
| MONTH | --- | --- | --- | 13.9 | 10.6 | 12.5 | --- | --- | --- | --- | --- | --- |

05114000 SOURIS RIVER NEAR SHERWOOD, ND--Continued

OXYGEN DISSOLVED, in (MG/L), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | FEBRUARY | | | MARCH | | | APRIL | | | MAY | |
| 1 | 2.5 | 2.2 | 2.3 | 9.3 | 7.7 | 8.3 | 9.8 | 9.1 | 9.3 | 11.8 | 9.1 | 10.5 |
| 2 | 2.2 | 2.0 | 2.1 | 9.8 | 8.1 | 8.7 | 9.4 | 8.5 | 8.9 | 11.5 | 9.5 | 10.5 |
| 3 | 2.1 | 1.9 | 2.0 | 10.3 | 8.4 | 9.2 | 10.7 | 8.9 | 9.5 | 10.6 | 9.3 | 10.0 |
| 4 | 2.1 | 1.7 | 1.9 | 10.6 | 8.9 | 9.7 | 13.1 | 9.9 | 11.1 | 10.6 | 8.4 | 9.4 |
| 5 | 2.1 | 1.9 | 1.9 | 10.6 | 9.1 | 9.8 | 13.0 | 10.8 | 11.8 | 10.2 | 8.2 | 9.2 |
| 6 | 2.1 | 1.8 | 1.9 | 10.2 | 9.0 | 9.6 | 13.1 | 10.5 | 11.7 | 10.2 | 8.5 | 9.2 |
| 7 | 2.2 | 1.9 | 2.0 | 10.2 | 8.9 | 9.5 | 12.4 | 8.8 | 10.0 | 10.5 | 9.3 | 9.9 |
| 8 | 2.2 | 1.9 | 2.1 | 9.7 | 8.7 | 9.1 | 9.6 | 7.7 | 8.5 | 11.1 | 9.4 | 10.1 |
| 9 | 2.6 | 2.1 | 2.3 | 9.3 | 8.4 | 8.8 | 11.5 | 8.8 | 9.7 | 11.6 | 10.4 | 11.0 |
| 10 | 2.8 | 2.5 | 2.6 | 9.0 | 8.0 | 8.4 | 12.2 | 9.9 | 11.0 | 11.4 | 9.7 | 10.6 |
| 11 | 3.1 | 2.6 | 2.8 | 8.4 | 7.6 | 7.9 | 13.9 | 11.1 | 12.2 | 11.1 | 8.8 | 9.7 |
| 12 | 3.3 | 2.9 | 3.0 | 8.4 | 6.9 | 7.4 | 13.5 | 12.0 | 12.8 | 10.6 | 8.5 | 9.6 |
| 13 | 3.3 | 2.9 | 3.1 | 10.0 | 7.1 | 8.2 | 13.2 | 12.4 | 12.7 | 10.7 | 8.6 | 9.5 |
| 14 | --- | --- | --- | 11.0 | 8.1 | 9.3 | 12.8 | 12.0 | 12.4 | 10.0 | 8.3 | 9.1 |
| 15 | 3.6 | 3.2 | 3.4 | 11.0 | 8.9 | 9.9 | 13.2 | 12.2 | 12.6 | 8.8 | 7.5 | 8.0 |
| 16 | 3.8 | 3.3 | 3.5 | 11.6 | 8.6 | 10 | 12.6 | 12.0 | 12.3 | 10.3 | 7.8 | 8.8 |
| 17 | 3.7 | 3.4 | 3.5 | 11.6 | 9.6 | 10.4 | 13.5 | 11.7 | 12.4 | 11.3 | 8.2 | 9.5 |
| 18 | 3.8 | 3.4 | 3.5 | 10.5 | 9.0 | 9.5 | 13.1 | 11.2 | 12.1 | 11.2 | 8.3 | 9.6 |
| 19 | 4.1 | 3.5 | 3.7 | 9.0 | 7.8 | 8.1 | 13.7 | 11.8 | 12.7 | 11.0 | 8.0 | 9.3 |
| 20 | 4.5 | 3.9 | 4.1 | 7.8 | 6.8 | 7.1 | 14.3 | 12.4 | 13.2 | 10.8 | 7.5 | 8.9 |
| 21 | 5.1 | 4.3 | 4.5 | 7.0 | 5.7 | 6.0 | 13.5 | 11.8 | 12.7 | 10.3 | 7.1 | 8.5 |
| 22 | 5.5 | 4.7 | 5.0 | 5.8 | 5.0 | 5.4 | 13.0 | 11.0 | 12.0 | 8.4 | 6.4 | 7.0 |
| 23 | 6.4 | 5.2 | 5.6 | 5.4 | 4.4 | 5.0 | 11.9 | 10.1 | 11.0 | 10.1 | 6.8 | 8.2 |
| 24 | 7.1 | 6.1 | 6.4 | 5.6 | 4.4 | 5.0 | 11.9 | 9.6 | 10.7 | 10.5 | 7.9 | 9.1 |
| 25 | 7.6 | 6.8 | 7.0 | 6.3 | 4.7 | 5.5 | 13.3 | 10.8 | 11.9 | 10.8 | 7.8 | 9.2 |
| 26 | 8.0 | 7.1 | 7.4 | 6.3 | 5.1 | 5.8 | 13.6 | 11.4 | 12.4 | 11.1 | 7.8 | 9.2 |
| 27 | 8.0 | 7.1 | 7.5 | 7.8 | 5.0 | 6.0 | 13.4 | 10.7 | 12.0 | 10.5 | 7.4 | 8.8 |
| 28 | 8.5 | 7.3 | 7.8 | 10.1 | 5.8 | 7.8 | 13.0 | 10.4 | 11.7 | 9.7 | 6.5 | 7.9 |
| 29 | --- | --- | --- | 10.2 | 9.3 | 9.7 | 12.5 | 10.1 | 11.4 | 8.7 | 5.6 | 7.0 |
| 30 | --- | --- | --- | 10.5 | 9.6 | 10.1 | 12.8 | 9.6 | 11.1 | 8.9 | 5.5 | 7.0 |
| 31 | --- | --- | --- | 10.6 | 9.8 | 10.3 | --- | --- | --- | 8.7 | 5.7 | 7.0 |
| MONTH | --- | --- | --- | 11.6 | 4.4 | 8.2 | 14.3 | 7.7 | 11.5 | 11.8 | 5.5 | 9.1 |

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | JUNE | | | JULY | | | AUGUST | | | SEPTEMBER | |
| 1 | 8.1 | 4.9 | 6.5 | 4.2 | 3.2 | 3.7 | 7.0 | 5.2 | 5.9 | --- | --- | --- |
| 2 | 7.7 | 4.4 | 5.4 | 4.5 | 3.4 | 3.9 | 7.2 | 5.9 | 6.4 | --- | --- | --- |
| 3 | 5.4 | 4.5 | 5.0 | 4.5 | 3.5 | 4.1 | 7.0 | 5.8 | 6.3 | --- | --- | --- |
| 4 | 5.7 | 4.8 | 5.2 | 4.8 | 3.8 | 4.4 | 6.3 | 5.3 | 5.7 | --- | --- | --- |
| 5 | 5.9 | 4.9 | 5.4 | 8.3 | 4.4 | 5.8 | 6.3 | 5.0 | 5.5 | --- | --- | --- |
| 6 | 5.7 | 4.6 | 5.1 | 8.3 | 4.6 | 6.3 | 6.5 | 5.4 | 5.9 | --- | --- | --- |
| 7 | 5.4 | 4.3 | 4.8 | 7.4 | 4.6 | 5.7 | 6.1 | 5.4 | 5.7 | --- | --- | --- |
| 8 | 5.9 | 4.2 | 4.9 | 6.7 | 4.3 | 5.5 | 6.1 | 5.0 | 5.5 | --- | --- | --- |
| 9 | 6.0 | 5.4 | 5.7 | 6.1 | 4.6 | 5.3 | 7.4 | 4.8 | 6.0 | --- | --- | --- |
| 10 | 6.8 | 5.8 | 6.4 | 6.4 | 4.5 | 5.3 | 7.0 | 4.7 | 5.7 | --- | --- | --- |
| 11 | 7.5 | 6.4 | 6.9 | 6.4 | 4.7 | 5.3 | 6.1 | 4.7 | 5.4 | --- | --- | --- |
| 12 | 7.6 | 7.1 | 7.4 | 6.4 | 4.5 | 5.3 | 6.3 | 5.3 | 5.8 | --- | --- | --- |
| 13 | 7.5 | 7.0 | 7.2 | 6.7 | 4.4 | 5.5 | 6.2 | 5.6 | 6.0 | --- | --- | --- |
| 14 | 7.2 | 6.5 | 6.8 | 7.3 | 4.2 | 5.6 | 6.3 | 5.5 | 6.0 | --- | --- | --- |
| 15 | 6.8 | 6.2 | 6.5 | 7.3 | 4.2 | 5.7 | 6.3 | 5.7 | 6.0 | --- | --- | --- |
| 16 | 6.6 | 5.8 | 6.2 | 6.4 | 3.7 | 4.8 | 6.1 | 5.8 | 6.0 | --- | --- | --- |
| 17 | 5.9 | 5.3 | 5.5 | 5.9 | 3.5 | 4.6 | 7.2 | 5.9 | 6.3 | --- | --- | --- |
| 18 | 5.5 | 4.9 | 5.1 | 6.3 | 3.9 | 5.0 | 7.4 | 6.7 | 7.0 | --- | --- | --- |
| 19 | 5.5 | 4.4 | 4.9 | 6.0 | 3.9 | 4.8 | 7.5 | 6.4 | 7.0 | --- | --- | --- |
| 20 | 5.8 | 4.6 | 5.1 | 5.4 | 3.6 | 4.4 | 7.5 | 6.1 | 6.8 | --- | --- | --- |
| 21 | 5.6 | 4.8 | 5.1 | 5.7 | 3.8 | 4.6 | 7.2 | 6.0 | 6.6 | --- | --- | --- |
| 22 | 4.9 | 3.8 | 4.3 | 6.1 | 4.6 | 5.3 | --- | --- | --- | --- | --- | --- |
| 23 | 3.8 | 3.0 | 3.2 | 6.1 | 5.2 | 5.6 | --- | --- | --- | --- | --- | --- |
| 24 | 3.4 | 2.6 | 2.9 | 6.0 | 5.0 | 5.4 | --- | --- | --- | --- | --- | --- |
| 25 | 3.2 | 2.4 | 2.8 | 5.6 | 4.8 | 5.2 | --- | --- | --- | --- | --- | --- |
| 26 | 2.9 | 2.4 | 2.6 | 5.4 | 4.5 | 4.9 | --- | --- | --- | --- | --- | --- |
| 27 | 3.1 | 2.3 | 2.6 | 5.7 | 4.4 | 5.0 | --- | --- | --- | --- | --- | --- |
| 28 | 3.1 | 2.4 | 2.6 | 5.4 | 4.6 | 5.0 | --- | --- | --- | --- | --- | --- |
| 29 | 3.7 | 2.3 | 2.9 | 6.0 | 4.3 | 4.9 | --- | --- | --- | --- | --- | --- |
| 30 | 4.0 | 2.9 | 3.4 | 6.3 | 4.4 | 5.2 | --- | --- | --- | --- | --- | --- |
| 31 | --- | --- | --- | 6.4 | 4.6 | 5.4 | --- | --- | --- | --- | --- | --- |
| MONTH | 8.1 | 2.3 | 4.9 | 8.3 | 3.2 | 5.1 | --- | --- | --- | --- | --- | --- |

## 05115500 LAKE DARLING NEAR FOXHOLM, ND

LOCATION.--Lat 48°27'29", long 101°35'00", in NE$^{1}/_{4}$NE$^{1}/_{4}$ sec.1, T.157 N., R.85 W., Ward County, Hydrologic Unit 09010001, on embankment 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$^{2}$, approximately, of which about 6,200 mi$^{2}$ 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 National Geodetic Vertical Datum of 1929. April 1936 to Aug. 8, 1963, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by earth dam; storage began in April 1936; dam completed in July 1936. Usable capacity, 118,600 acre-ft between elevation of 1,577 ft, sill of control gages, and 1598 feet, legal full-capacity level. Flood-emergency maximum level is 1,601 ft (148,600 ac-ft). Dead storage below sill at control gages is 144 acre-ft. Figures given herein represent total contents based on capacity table dated April 12, 1995 (provided by U.S. Fish and Wildlife Service). 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, 105,050 acre-ft, May 23, elevation, 1,596.60 ft; minimum daily contents, 93,750 acre-ft, Sept. 29, elevation, 1,595.41 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Elevation (feet) | Contents (acre-feet) | Change in contents (acre-feet) |
|---|---|---|---|
| Sept. 30 | 1,595.97 | 99,040 | -- |
| Oct. 31 | 1,595.93 | 98,660 | -380 |
| Nov. 30 | 1,595.80 | 97,420 | -1,240 |
| Dec. 31 | 1,595.91 | 98,470 | +1,050 |
| CAL YR 2001 | -- | -- | -470 |
| Jan. 31 | 1,595.98 | 99,130 | -660 |
| Feb. 28 | 1,596.03 | 99,600 | +470 |
| Mar. 31 | 1,596.10 | 100,270 | +670 |
| Apr. 30 | *1,596.13 | 100,560 | +290 |
| May 31 | 1,596.10 | 100,270 | -290 |
| June 30 | 1,596.10 | 100,270 | 0 |
| July 31 | 1,595.94 | 98,750 | -1,520 |
| Aug. 31 | 1,595.68 | 96,290 | -2,460 |
| Sept. 30 | 1,595.51 | 94,690 | -1,600 |
| WTR YR 2002 | -- | -- | -4,350 |

* Estimated

WATER-QUALITY RECORDS

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

REMARKS.--Quality assurance sample also collected at this location.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| 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) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 31... | 0935 | 1.0 | -- | 800 | 8.3 | 240 | 47.8 | 28.6 | 2 | 70.5 | 237 | 19.1 | .2 |
| 31... | 0940 | .0 | 1.8 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 31... | 0945 | 5.9 | -- | 805 | 8.2 | 240 | 48.3 | 28.9 | 2 | 72.5 | 237 | 19.1 | .2 |
| APR | | | | | | | | | | | | | |
| 25... | 1520 | 1.0 | -- | 796 | 8.2 | 250 | 50.2 | 29.9 | 2 | 73.4 | 234 | 18.7 | .2 |
| 25... | 1530 | 6.0 | -- | 795 | 8.2 | 250 | 50.3 | 29.7 | 2 | 71.9 | 234 | 18.6 | .2 |
| 25... | 1540 | .0 | 1.5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 17... | 0930 | 1.0 | -- | 795 | 8.4 | 260 | 51.8 | 31.1 | 2 | 76.1 | 235 | 19.8 | .2 |
| 17... | 0935 | .0 | 1.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 17... | 0940 | 7.2 | -- | 787 | 8.3 | 270 | 54.3 | 32.1 | 2 | 78.2 | 235 | 19.8 | .2 |
| JUN | | | | | | | | | | | | | |
| 14... | 1045 | 1.0 | -- | 817 | 8.4 | 260 | 53.0 | 31.1 | 2 | 77.5 | 239 | 20.6 | .3 |
| 14... | 1050 | 6.0 | -- | 812 | 8.4 | 260 | 52.8 | 30.9 | 2 | 77.8 | 239 | 21.3 | .3 |
| 14... | 1055 | .0 | 4.5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 08... | 1250 | 1.0 | -- | 787 | 8.8 | 250 | 47.4 | 30.8 | 2 | 80.8 | 234 | 21.2 | .2 |
| 08... | 1255 | .0 | 1.6 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 08... | 1300 | 6.6 | -- | 787 | 8.8 | 250 | 47.4 | 31.0 | 2 | 81.4 | 233 | 21.4 | .2 |
| 21... | 0925 | 1.0 | -- | 805 | 8.4 | 230 | 41.2 | 31.5 | 2 | 85.2 | 218 | 22.6 | .2 |
| 21... | 0930 | .0 | 3.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 21... | 0935 | 6.5 | -- | 795 | 8.3 | 220 | 39.7 | 30.3 | 2 | 82.3 | 219 | 22.0 | .2 |
| SEP | | | | | | | | | | | | | |
| 03... | 1240 | .85 | 1.1 | 811 | 8.2 | 240 | 43.8 | 31.4 | 2 | 83.9 | 220 | 21.7 | .2 |
| 03... | 1245 | 6.7 | 7.0 | 814 | 8.1 | 240 | 44.3 | 31.4 | 2 | 84.5 | 220 | 21.0 | .2 |
| 03... | 1250 | .0 | 4.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605) | NITRO-GEN, TOTAL (MG/L AS N) (00600) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | CARBON, ORGANIC TOTAL (MG/L AS C) (00680) | PHENOLS TOTAL (UG/L) (32730) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 31... | 164 | 1.2 | <.04 | <.05 | -- | -- | .10 | 13.0 | <16 | 522 | <10 | -- | -- |
| 31... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | --r | --r |
| 31... | 164 | 1.1 | <.04 | <.05 | -- | -- | .11 | 15.2 | <16 | 520 | <10 | -- | -- |
| APR | | | | | | | | | | | | | |
| 25... | 163 | 1.0 | <.04 | <.05 | -- | -- | .10 | 11.3 | <17 | 531 | <10 | -- | -- |
| 25... | 165 | 1.1 | <.04 | E.03 | -- | -- | .09 | 10.3 | <16 | 535 | <10 | -- | -- |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | E2.7 | E.4 |
| MAY | | | | | | | | | | | | | |
| 17... | 174 | 1.2 | <.04 | <.05 | -- | -- | .09 | 13.1 | -- | 551 | 10 | -- | -- |
| 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 5.0 | .4 |
| 17... | 174 | 1.1 | <.04 | <.05 | -- | -- | .10 | 12.6 | -- | 552 | 14 | -- | -- |
| JUN | | | | | | | | | | | | | |
| 14... | 175 | 1.1 | <.04 | .05 | -- | 1.2 | .09 | 11.2 | <17 | 560 | <10 | -- | -- |
| 14... | 176 | 1.0 | <.04 | .05 | -- | 1.1 | .09 | 11.9 | <18 | 565 | <10 | -- | -- |
| 14... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 2.3 | .3 |
| AUG | | | | | | | | | | | | | |
| 08... | 183 | 2.1 | <.04 | <.05 | -- | -- | .22 | 14.0 | <18 | 555 | <10 | -- | -- |
| 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 47.6 | <.1 |
| 08... | 183 | 1.7 | <.04 | <.05 | -- | -- | .20 | 13.0 | <18 | 552 | <10 | -- | -- |
| 21... | 183 | 1.4 | .08 | .18 | 1.3 | 1.6 | .13 | 12.2 | <16 | 542 | <10 | -- | -- |
| 21... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1.9 | .2 |
| 21... | 183 | 1.2 | .13 | .14 | 1.1 | 1.4 | .12 | 11.0 | <16 | 560 | <10 | -- | -- |
| SEP | | | | | | | | | | | | | |
| 03... | 185 | 1.1 | <.04 | .07 | -- | 1.2 | .12 | 10.3 | <16 | 539 | <10 | -- | -- |
| 03... | 185 | 1.1 | E.03 | .08 | -- | 1.2 | .12 | 12.0 | <16 | 559 | <10 | -- | -- |
| 03... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 2.7 | <.1 |

05115500 LAKE DARLING NEAR FOXHOLM, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | 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 WATER UNFLTRD TOTAL (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) | MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900) | MOLYB-DENUM, TOTAL RECOV-ERABLE (UG/L AS MO) (01062) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 31... | 30 | 7 | 80.9 | <2 | 250 | <.1 | <.8 | <2.0 | 2.6 | 80 | <1 | E.01 | 6 |
| 31... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 31... | 40 | 5 | 79.7 | <2 | 240 | <.1 | E.7 | <2.0 | 1.7 | 90 | <1 | E.01 | 6 |
| APR | | | | | | | | | | | | | |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 17... | 60 | 3 | 83.8 | <2 | 230 | <.1 | <.8 | <2.0 | 1.6 | 70 | <1 | E.01n | 6 |
| 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 17... | 50 | 3 | 83.7 | <2 | 230 | <.1 | <.8 | <2.0 | 1.7 | 110 | <1 | E.01n | 6 |
| JUN | | | | | | | | | | | | | |
| 14... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 14... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 14... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 21... | 50 | 5 | 73.3 | <2 | 240 | <.1 | <.8 | <2.0 | 1.3 | 60 | <1 | .01 | 5 |
| 21... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 21... | 50 | 5 | 74.8 | <2 | 240 | <.1 | <.8 | <2.0 | E1.1 | 100 | <1 | E.01n | 6 |
| SEP | | | | | | | | | | | | | |
| 03... | E20 | 5 | 79.1 | <2 | 260 | .2 | <.8 | <2.0 | 1.7 | 40 | <1 | E.01n | 7 |
| 03... | 40 | 5 | 79.9 | E1 | 260 | E.1 | <.8 | <2.0 | 1.6 | 90 | <1 | E.01n | 6 |
| 03... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| 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) | TRIAZIN SCREEN (ELISA) WAT,WH REC,AS ATRAZIN (UG/L) (34757) | 2,4-D SCREEN TOTAL (UG/L) (99906) |
|---|---|---|---|---|---|
| OCT | | | | | |
| 31... | 3.0 | 2 | <20 | .1 | <.700 |
| 31... | -- | -- | -- | -- | -- |
| 31... | 3.1 | <2 | <20 | -- | -- |
| APR | | | | | |
| 25... | -- | -- | -- | <.1 | <.700 |
| 25... | -- | -- | -- | <.1 | <.700 |
| 25... | -- | -- | -- | -- | -- |
| MAY | | | | | |
| 17... | 2.9 | <2 | <20 | .2 | <.700 |
| 17... | -- | -- | -- | -- | -- |
| 17... | 2.5 | <2 | <20 | -- | -- |
| JUN | | | | | |
| 14... | -- | -- | -- | <.1 | <.700 |
| 14... | -- | -- | -- | -- | -- |
| 14... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 08... | -- | -- | -- | <.1 | <.700 |
| 08... | -- | -- | -- | -- | -- |
| 08... | -- | -- | -- | -- | -- |
| 21... | 2.6 | <2 | E20 | .1 | <.700 |
| 21... | -- | -- | -- | -- | -- |
| 21... | 2.2 | E1 | <20 | -- | -- |
| SEP | | | | | |
| 03... | E1.9 | <2 | <20 | .1 | <.700 |
| 03... | 3.1 | <2 | <20 | .1 | <.700 |
| 03... | -- | -- | -- | -- | -- |

05115500 LAKE DARLING NEAR FOXHOLM, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DEPTH OF LAKE MAX. METERS (85310) | 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) | TUR-BID-ITY FIELD WATER UNFLTRD (NTU) (61028) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 31... | 0925 | 5.9 | .0 | 812 | 8.1 | 2.8 | -- | 12.7 | 101 | 710 | 36.0 | 5.0 | 210 |
| 31... | 0926 | -- | 1.1 | 810 | 8.1 | 2.8 | -- | 12.2 | -- | -- | -- | -- | -- |
| 31... | 0927 | -- | 2.2 | 811 | 8.1 | 2.9 | -- | 11.9 | -- | -- | -- | -- | -- |
| 31... | 0928 | -- | 3.3 | 812 | 8.2 | 2.8 | -- | 12.0 | -- | -- | -- | -- | -- |
| 31... | 0929 | -- | 4.4 | 813 | 8.2 | 2.8 | -- | 12.0 | -- | -- | -- | -- | -- |
| 31... | 0930 | -- | 5.9 | 812 | 8.2 | 2.8 | -- | 11.8 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 25... | 1510 | 6.5 | .0 | 822 | 7.9 | 4.3 | 1.0 | 13.0 | 105 | 730 | 28.8 | 7.0 | 300 |
| 25... | 1511 | -- | 1.0 | 822 | 7.9 | 4.3 | 2.0 | 12.4 | -- | -- | -- | -- | -- |
| 25... | 1512 | -- | 2.0 | 822 | 7.9 | 4.3 | 1.0 | 12.3 | -- | -- | -- | -- | -- |
| 25... | 1513 | -- | 3.0 | 822 | 7.9 | 4.3 | 1.0 | 12.2 | -- | -- | -- | -- | -- |
| 25... | 1514 | -- | 4.0 | 821 | 7.9 | 4.3 | 2.0 | 12.1 | -- | -- | -- | -- | -- |
| 25... | 1515 | -- | 5.0 | 822 | 7.9 | 4.3 | 1.0 | 12.0 | -- | -- | -- | -- | -- |
| 25... | 1516 | -- | 6.0 | 822 | 7.9 | 4.3 | 1.0 | 12.0 | -- | -- | -- | -- | -- |
| 25... | 1517 | -- | 6.5 | 821 | 7.9 | 4.3 | 7.0 | 11.9 | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 17... | 0920 | 7.3 | 1.0 | 829 | 8.5 | 10.2 | -- | 9.8 | 91 | 735 | 24.0 | 7.0 | 0 |
| 17... | 0921 | -- | 2.0 | 830 | 8.5 | 10.1 | -- | 9.6 | -- | -- | -- | -- | -- |
| 17... | 0922 | -- | 3.0 | 830 | 8.5 | 10.1 | -- | 9.5 | -- | -- | -- | -- | -- |
| 17... | 0923 | -- | 4.0 | 831 | 8.5 | 10.1 | -- | 9.4 | -- | -- | -- | -- | -- |
| 17... | 0924 | -- | 5.0 | 830 | 8.5 | 10.0 | -- | 9.5 | -- | -- | -- | -- | -- |
| 17... | 0925 | -- | 6.0 | 831 | 8.5 | 10.0 | -- | 9.5 | -- | -- | -- | -- | -- |
| 17... | 0926 | -- | 7.0 | 831 | 8.5 | 10.0 | -- | 8.4 | -- | -- | -- | -- | -- |
| 17... | 0927 | -- | 7.3 | 832 | 8.4 | 9.9 | -- | 8.2 | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 14... | 1030 | 6.3 | .0 | 815 | 8.3 | 15.1 | -- | 9.1 | 96 | 723 | 82.0 | 21.5 | 250 |
| 14... | 1032 | -- | 1.0 | 817 | 8.3 | 15.1 | -- | 8.7 | -- | -- | -- | -- | -- |
| 14... | 1034 | -- | 2.0 | 818 | 8.3 | 15.1 | -- | 8.9 | -- | -- | -- | -- | -- |
| 14... | 1036 | -- | 3.0 | 818 | 8.3 | 15.0 | -- | 8.8 | -- | -- | -- | -- | -- |
| 14... | 1038 | -- | 4.0 | 819 | 8.3 | 15.0 | -- | 8.8 | -- | -- | -- | -- | -- |
| 14... | 1040 | -- | 5.0 | 819 | 8.3 | 14.9 | -- | 8.8 | -- | -- | -- | -- | -- |
| 14... | 1042 | -- | 6.0 | 820 | 8.3 | 14.9 | -- | 8.5 | -- | -- | -- | -- | -- |
| 14... | 1044 | -- | 6.3 | 815 | 8.3 | 14.9 | -- | 7.9 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 08... | 1240 | 6.6 | .0 | 837 | 8.7 | 21.0 | -- | 9.7 | 115 | 721 | 26.2 | 26.5 | 290 |
| 08... | 1241 | -- | .60 | 837 | 8.7 | 21.0 | -- | 9.6 | -- | -- | -- | -- | -- |
| 08... | 1242 | -- | 1.2 | 837 | 8.7 | 21.0 | -- | 9.3 | -- | -- | -- | -- | -- |
| 08... | 1243 | -- | 2.2 | 840 | 8.7 | 20.8 | -- | 8.6 | -- | -- | -- | -- | -- |
| 08... | 1244 | -- | 3.0 | 840 | 8.7 | 20.8 | -- | 8.5 | -- | -- | -- | -- | -- |
| 08... | 1245 | -- | 4.0 | 841 | 8.7 | 20.7 | -- | 7.9 | -- | -- | -- | -- | -- |
| 08... | 1246 | -- | 4.9 | 842 | 8.6 | 20.7 | -- | 7.3 | -- | -- | -- | -- | -- |
| 08... | 1247 | -- | 5.7 | 843 | 8.6 | 20.5 | -- | 6.6 | -- | -- | -- | -- | -- |
| 08... | 1248 | -- | 6.6 | 846 | 8.6 | 20.5 | -- | 5.7 | -- | -- | -- | -- | -- |
| 21... | 0915 | 6.5 | .0 | 845 | 8.2 | 18.8 | -- | 6.8 | 77 | 720 | 60.3 | 16.5 | 15 |
| 21... | 0916 | -- | 1.0 | 843 | 8.2 | 18.8 | -- | 6.7 | -- | -- | -- | -- | -- |
| 21... | 0917 | -- | 2.0 | 842 | 8.2 | 18.9 | -- | 6.8 | -- | -- | -- | -- | -- |
| 21... | 0918 | -- | 3.0 | 844 | 8.2 | 18.5 | -- | 6.8 | -- | -- | -- | -- | -- |
| 21... | 0919 | -- | 4.0 | 841 | 8.2 | 16.9 | -- | 4.5 | -- | -- | -- | -- | -- |
| 21... | 0920 | -- | 5.0 | 846 | 8.1 | 16.7 | -- | 3.3 | -- | -- | -- | -- | -- |
| 21... | 0921 | -- | 6.0 | 844 | 8.0 | 16.4 | -- | 2.2 | -- | -- | -- | -- | -- |
| 21... | 0922 | -- | 6.5 | 845 | 8.0 | 16.4 | -- | 1.8 | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 03... | 1230 | 7.1 | .0 | 842 | 7.9 | 19.4 | -- | 7.8 | 90 | 719 | 80.4 | 22.0 | 60 |
| 03... | 1231 | -- | .50 | 840 | 7.9 | 19.4 | -- | 7.8 | -- | -- | -- | -- | -- |
| 03... | 1232 | -- | 1.0 | 841 | 7.9 | 19.3 | -- | 7.6 | -- | -- | -- | -- | -- |
| 03... | 1233 | -- | 2.0 | 841 | 8.0 | 19.2 | -- | 7.4 | -- | -- | -- | -- | -- |
| 03... | 1234 | -- | 3.0 | 841 | 8.0 | 19.1 | -- | 7.0 | -- | -- | -- | -- | -- |
| 03... | 1235 | -- | 4.0 | 841 | 8.0 | 19.1 | -- | 6.7 | -- | -- | -- | -- | -- |
| 03... | 1236 | -- | 5.0 | 842 | 8.0 | 19.1 | -- | 6.6 | -- | -- | -- | -- | -- |
| 03... | 1237 | -- | 6.0 | 842 | 8.0 | 19.1 | -- | 6.6 | -- | -- | -- | -- | -- |
| 03... | 1238 | -- | 7.1 | 842 | 7.9 | 19.1 | -- | 6.3 | -- | -- | -- | -- | -- |

05115500 LAKE DARLING NEAR FOXHOLM, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | WIND SPEED (MILES PER HOUR) (00035) |
|---|---|
| OCT | |
| 31... | -- |
| 31... | -- |
| 31... | -- |
| 31... | -- |
| 31... | -- |
| 31... | -- |
| APR | |
| 25... | 15 |
| 25... | -- |
| 25... | -- |
| 25... | -- |
| 25... | -- |
| 25... | -- |
| 25... | -- |
| 25... | -- |
| MAY | |
| 17... | <5.0 |
| 17... | -- |
| 17... | -- |
| 17... | -- |
| 17... | -- |
| 17... | -- |
| 17... | -- |
| 17... | -- |
| JUN | |
| 14... | 10 |
| 14... | -- |
| 14... | -- |
| 14... | -- |
| 14... | -- |
| 14... | -- |
| 14... | -- |
| 14... | -- |
| AUG | |
| 08... | 8.0 |
| 08... | -- |
| 08... | -- |
| 08... | -- |
| 08... | -- |
| 08... | -- |
| 08... | -- |
| 08... | -- |
| 08... | -- |
| 21... | 10 |
| 21... | -- |
| 21... | -- |
| 21... | -- |
| 21... | -- |
| 21... | -- |
| 21... | -- |
| 21... | -- |
| SEP | |
| 03... | <5.0 |
| 03... | -- |
| 03... | -- |
| 03... | -- |
| 03... | -- |
| 03... | -- |
| 03... | -- |
| 03... | -- |
| 03... | -- |

< Less than
E Estimated value
n Below the non-detection value
r Sample ruined in preparation

## 05116000 SOURIS (MOUSE) RIVER NEAR FOXHOLM, ND

LOCATION.--Lat 48°22'20", long 101°30'18", in SW$^1/_4$SE$^1/_4$ 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$^2$, approximately, of which about 6,200 mi$^2$ 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, 1904-06.

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 National Geodetic Vertical Datum of 1929. 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. Flow almost completely regulated since 1936 by Lake Darling (station 05115500), 15 mi upstream, Canadian Reservoirs (Boundary Reservoir, 48,990 acre-ft - 1958; Rafferty Reservoir, 356,400 acre-ft - 1991; and Alameda Reservoir, 85,560 ac-ft - 1992) and several small reservoirs, combined capacity, about 646,000 acre-feet. Some small diversions for irrigation and municipal supply.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 121 | 50 | 0.20 | 0.05 | 0.06 | 0.06 | 0.08 | 2.3 | 0.00 | 0.20 | 5.1 | 0.42 |
| 2 | 121 | 49 | 0.19 | 0.06 | 0.06 | 0.06 | 0.09 | 0.40 | 0.00 | 0.18 | 2.2 | 0.32 |
| 3 | 121 | 49 | 0.18 | 0.05 | 0.06 | 0.05 | 0.08 | 0.17 | 0.02 | 0.17 | 0.90 | 0.19 |
| 4 | 121 | 49 | 0.18 | 0.05 | 0.06 | 0.05 | 0.08 | 0.10 | 0.72 | 0.16 | 0.40 | 0.11 |
| 5 | 121 | 49 | 0.25 | 0.06 | 0.06 | 0.05 | 0.08 | 0.08 | 2.0 | 0.16 | 0.17 | 0.08 |
| 6 | 120 | 49 | 0.26 | 0.06 | 0.06 | 0.06 | 0.08 | 0.07 | 2.1 | 0.15 | 0.10 | 0.06 |
| 7 | 120 | 49 | 0.23 | 0.06 | 0.07 | 0.06 | 0.09 | 0.06 | 1.3 | 0.15 | 0.08 | 0.05 |
| 8 | 120 | 49 | 0.22 | 0.06 | 0.08 | 0.06 | 0.09 | 0.11 | 0.95 | 0.17 | 0.10 | 0.06 |
| 9 | 98 | 49 | 0.21 | 0.08 | 0.08 | 0.06 | 0.09 | 0.16 | 3.8 | 0.19 | 0.08 | 0.04 |
| 10 | 73 | 49 | 0.19 | 0.08 | 0.08 | 0.07 | 0.10 | 0.11 | 3.3 | 0.19 | 0.08 | 0.03 |
| 11 | 67 | 49 | 0.17 | 0.08 | 0.07 | 0.07 | 0.10 | 0.09 | 1.2 | 0.20 | 0.06 | 0.02 |
| 12 | 56 | 49 | 0.17 | 0.08 | 0.07 | 0.06 | 0.11 | 0.08 | 1.0 | 0.21 | 0.07 | 0.02 |
| 13 | 56 | 49 | 0.17 | 0.08 | 0.08 | 0.08 | 0.10 | 0.06 | 0.90 | 0.21 | 0.05 | 0.02 |
| 14 | 56 | 49 | 0.15 | 0.08 | 0.07 | 0.08 | 0.10 | 0.05 | 0.49 | 0.22 | 0.02 | 0.01 |
| 15 | 53 | 49 | 0.13 | 0.08 | 0.07 | 0.07 | 0.12 | 0.04 | 0.38 | 0.23 | 0.00 | 0.01 |
| 16 | 50 | 43 | 0.12 | 0.08 | 0.06 | 0.06 | 0.12 | 0.03 | 0.34 | 0.24 | 0.02 | 0.0 |
| 17 | 50 | 6.1 | 0.11 | 0.07 | 0.07 | 0.06 | 3.3 | 0.02 | 0.36 | 0.23 | 0.08 | 0.00 |
| 18 | 50 | 1.8 | 0.11 | 0.07 | 0.07 | 0.07 | 67 | 0.02 | 0.33 | 0.17 | 0.07 | 0.03 |
| 19 | 42 | 0.94 | 0.10 | 0.07 | 0.07 | 0.07 | 92 | 0.02 | 0.30 | 0.11 | 38 | 0.03 |
| 20 | 6.3 | 0.66 | 0.09 | 0.07 | 0.08 | 0.07 | 100 | 0.0 | 0.30 | 0.08 | 81 | 0.02 |
| 21 | 2.1 | 0.53 | 0.09 | 0.07 | 0.07 | 0.07 | 100 | 0.00 | 0.27 | 0.05 | 77 | 0.02 |
| 22 | 1.3 | 0.44 | 0.09 | 0.07 | 0.06 | 0.07 | 100 | 0.00 | 0.28 | 0.02 | 75 | 0.02 |
| 23 | 1.0 | 0.37 | 0.08 | 0.07 | 0.07 | 0.06 | 100 | 0.01 | 0.31 | 0.0 | 75 | 0.02 |
| 24 | 0.99 | 0.32 | 0.08 | 0.07 | 0.08 | 0.06 | 101 | 0.00 | 0.78 | 0.00 | 74 | 0.02 |
| 25 | 0.88 | 0.29 | 0.08 | 0.05 | 0.08 | 0.06 | 100 | 0.00 | 1.1 | 0.00 | 76 | 0.02 |
| 26 | 0.72 | 0.26 | 0.08 | 0.07 | 0.07 | 0.05 | 99 | 0.00 | 0.88 | 0.00 | 75 | 0.02 |
| 27 | 0.61 | 0.24 | 0.07 | 0.07 | 0.07 | 0.05 | 98 | 0.00 | 0.50 | 0.00 | 74 | 0.02 |
| 28 | 0.55 | 0.22 | 0.07 | 0.07 | 0.07 | 0.08 | 98 | 0.00 | 0.25 | 0.15 | 71 | 0.02 |
| 29 | 0.49 | 0.21 | 0.07 | 0.07 | --- | 0.08 | 98 | 0.00 | 0.23 | 3.6 | 69 | 0.02 |
| 30 | 14 | 0.21 | 0.07 | 0.07 | --- | 0.08 | 63 | 0.00 | 0.22 | 5.9 | 25 | 0.04 |
| 31 | 49 | --- | 0.06 | 0.06 | --- | 0.07 | --- | 0.00 | --- | 5.7 | 0.72 | --- |
| TOTAL | 1693.94 | 791.59 | 4.27 | 2.11 | 1.95 | 2.00 | 1220.81 | 3.98 | 24.61 | 19.04 | 820.30 | 1.74 |
| MEAN | 54.64 | 26.39 | 0.138 | 0.068 | 0.070 | 0.065 | 40.69 | 0.128 | 0.820 | 0.614 | 26.46 | 0.058 |
| MAX | 121 | 50 | 0.26 | 0.08 | 0.08 | 0.08 | 101 | 2.3 | 3.8 | 5.9 | 81 | 0.42 |
| MIN | 0.49 | 0.21 | 0.06 | 0.05 | 0.06 | 0.05 | 0.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| AC-FT | 3360 | 1570 | 8.5 | 4.2 | 3.9 | 4.0 | 2420 | 7.9 | 49 | 38 | 1630 | 3.5 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 26.73 | 25.69 | 25.23 | 26.22 | 32.39 | 104.8 | 499.2 | 491.4 | 142.6 | 100.2 | 57.87 | 37.86 |
| MAX | 146 | 137 | 144 | 166 | 334 | 1058 | 5443 | 4242 | 1138 | 1238 | 440 | 345 |
| (WY) | 2000 | 1952 | 1976 | 1976 | 1997 | 1976 | 1976 | 1975 | 1975 | 1953 | 1999 | 1999 |
| MIN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.017 | 0.010 | 0.000 | 0.000 |
| (WY) | 1937 | 1937 | 1937 | 1937 | 1937 | 1937 | 1942 | 1942 | 1991 | 1991 | 1937 | 1937 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1937 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 125009.80 | | 4586.34 | | | |
| ANNUAL MEAN | 342.5 | | 12.57 | | 131.1 | |
| HIGHEST ANNUAL MEAN | | | | | 948 | 1976 |
| LOWEST ANNUAL MEAN | | | | | 1.13 | 1989 |
| HIGHEST DAILY MEAN | 2210 | May 7 | 121 | Oct 1 | 8500 | Apr 17 1976 |
| LOWEST DAILY MEAN | 0.06 | Dec 31 | 0.00 | May 20 | -5.0 | Apr 5 1949 |
| ANNUAL SEVEN-DAY MINIMUM | 0.07 | Dec 25 | 0.00 | May 24 | 0.00 | Oct 1 1936 |
| MAXIMUM PEAK FLOW | | | 121 | Oct 1 | 8600 | Apr 17 1976 |
| MAXIMUM PEAK STAGE | | | 6.53 | Oct 1 | 17.17 | Apr 17 1976 |
| INSTANTANEOUS LOW FLOW | | | | | a,b-25 | Apr 4 1949 |
| ANNUAL RUNOFF (AC-FT) | 248000 | | 9100 | | 94970 | |
| 10 PERCENT EXCEEDS | 1430 | | 56 | | 246 | |
| 50 PERCENT EXCEEDS | 119 | | 0.09 | | 12 | |
| 90 PERCENT EXCEEDS | 0.28 | | 0.02 | | 0.00 | |

a Reverse flow caused by backwater from Des Lacs River
b No flow at times in most years

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 19... | 1145 | 50 | -- | -- | -- | 830 | 7.0 | 5.5 | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 16... | 1000 | 48 | -- | -- | -- | 845 | 8.0 | 4.7 | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 02... | 1640 | .05 | -- | -- | -- | 1200 | -7.0 | .0 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 13... | 0930 | .08 | -- | -- | -- | 1540 | -- | .0 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 19... | 1250 | 88 | 8.5 | --e | 686 | 650 | 7.0 | 9.0 | 200 | 40.0 | 25.0 | 11.0 | 2 |
| MAY | | | | | | | | | | | | | |
| 17... | 1240 | .02 | -- | -- | -- | 910 | -- | 14.4 | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 28... | 1030 | .25 | -- | -- | -- | 948 | 27.0 | 25.1 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 17... | 1050 | .25 | 9.2 | --e | --e | 951 | 20.0 | 25.2 | 440 | 83.0 | 57.0 | 14.0 | 4 |
| AUG | | | | | | | | | | | | | |
| 02... | 1045 | 3.4 | -- | -- | -- | 1030 | -- | 19.5 | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 11... | 0905 | .03 | -- | -- | -- | 1100 | -- | 17.5 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 16... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 02... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 19... | 61.0 | 38 | 178 | 18.0 | .20 | 150 | 104 | 439 | 412 | 1.0 | 30 | <1 | 30 |
| MAY | | | | | | | | | | | | | |
| 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 28... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 17... | 180 | 46 | 365 | 25.0 | .30 | 470 | .74 | 1090 | 1050 | 16.0 | 50 | <1 | 70 |
| AUG | | | | | | | | | | | | | |
| 02... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

05116000 SOURIS (MOUSE) RIVER NEAR FOXHOLM, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | 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 | | | | | |
| 19... | -- | -- | -- | -- | -- |
| NOV | | | | | |
| 16... | -- | -- | -- | -- | -- |
| JAN | | | | | |
| 02... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 13... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 19... | 40 | <.10 | 1 | 1 | 260 |
| MAY | | | | | |
| 17... | -- | -- | -- | -- | -- |
| JUN | | | | | |
| 28... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 17... | 210 | <.10 | 3 | 1 | 420 |
| AUG | | | | | |
| 02... | -- | -- | -- | -- | -- |
| SEP | | | | | |
| 11... | -- | -- | -- | -- | -- |

< Less than
e Required equipment not functional/available

## 05116500 DES LACS RIVER AT FOXHOLM, ND

LOCATION.--Lat 48°22'14", long 101°34'11", in NW$^1/_4$NE$^1/_4$NW$^1/_4$ 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$^2$, of which about 400 mi$^2$ 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 National Geodetic Vertical Datum of 1929. 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 estimated daily discharges, which are fair. Flow is affected by reservoirs of Des Lacs National Wildlife Refuge. Combined reservoir capacity is about 54,000 acre-ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4.6 | 7.4 | 4.5 | e1.5 | e1.3 | 2.6 | 25 | 6.1 | 2.8 | 5.3 | 2.2 | 16 |
| 2 | 4.4 | 9.5 | 4.4 | e1.4 | e1.4 | 2.4 | 7.3 | 5.6 | 2.8 | 4.5 | 2.0 | 13 |
| 3 | 4.9 | 11 | 4.4 | e1.4 | e1.4 | 2.0 | 10 | 5.1 | 2.9 | 4.0 | 2.1 | 9.5 |
| 4 | 6.6 | 12 | 4.4 | e1.3 | e1.5 | 1.8 | 9.2 | 4.9 | 3.1 | 3.6 | 2.3 | 7.0 |
| 5 | 7.5 | 12 | 4.4 | e1.4 | e1.5 | 1.8 | 8.3 | 4.6 | 3.2 | 3.3 | 2.3 | 5.4 |
| 6 | 8.0 | 11 | 4.2 | e1.5 | e1.6 | 1.8 | 12 | 4.4 | 3.2 | 3.0 | 2.2 | 4.7 |
| 7 | 8.4 | 10 | e4.0 | e1.5 | e1.7 | 1.6 | 16 | 4.4 | 3.2 | 2.9 | 2.2 | 4.2 |
| 8 | 8.4 | 10 | e3.9 | e1.6 | e1.7 | 1.5 | 17 | 4.7 | 3.2 | 2.9 | 2.2 | 3.8 |
| 9 | 8.2 | 9.3 | e4.0 | e1.7 | e1.8 | 1.5 | 22 | 5.8 | 4.5 | 3.0 | 2.2 | 3.5 |
| 10 | 8.0 | 8.4 | e3.9 | e1.8 | e1.8 | 1.4 | 40 | 6.7 | 8.6 | 3.8 | 2.1 | 3.3 |
| 11 | 7.5 | 8.0 | e3.8 | e1.8 | e1.9 | 1.3 | 67 | 6.9 | 32 | 4.0 | 2.0 | 3.0 |
| 12 | 7.3 | 7.7 | e3.6 | e1.7 | e2.0 | 1.4 | 82 | 7.8 | 47 | 3.8 | 2.0 | 2.8 |
| 13 | 7.1 | 7.2 | e3.6 | e1.6 | e2.1 | 1.5 | 75 | 8.4 | 28 | 3.7 | 2.0 | 2.5 |
| 14 | 6.9 | 7.0 | e3.6 | e1.6 | e2.2 | 1.6 | 56 | 7.9 | 17 | 3.5 | 1.9 | 2.2 |
| 15 | 7.2 | 6.6 | e3.7 | e1.6 | e2.2 | 1.7 | 35 | 7.3 | 12 | 3.2 | 1.8 | 2.1 |
| 16 | 7.3 | 6.3 | e3.7 | e1.5 | e2.3 | 1.7 | 24 | 6.6 | 9.3 | 2.9 | 1.8 | 1.8 |
| 17 | 7.3 | 6.1 | e3.8 | e1.5 | e2.3 | 1.8 | 19 | 6.0 | 8.1 | 2.7 | 2.0 | 1.6 |
| 18 | 7.3 | 5.9 | e3.6 | e1.4 | e2.4 | 1.9 | 16 | 5.5 | 7.1 | 2.6 | 2.0 | 1.5 |
| 19 | 8.0 | 5.6 | e3.5 | e1.5 | e2.5 | 2.0 | 14 | 5.1 | 6.7 | 2.5 | 2.0 | 1.5 |
| 20 | 9.4 | 5.4 | e3.4 | e1.6 | e2.5 | 2.1 | 12 | 4.7 | 6.5 | 2.4 | 1.9 | 1.7 |
| 21 | 9.1 | 5.3 | e3.2 | e1.7 | e2.6 | 2.2 | 11 | 4.2 | 6.1 | 2.3 | 1.9 | 2.0 |
| 22 | 8.6 | 5.2 | e3.0 | e1.7 | e2.8 | 2.1 | 9.9 | 3.8 | 5.4 | 2.2 | 2.0 | 2.0 |
| 23 | 8.1 | 5.2 | e2.9 | e1.6 | e2.9 | 2.4 | 9.2 | 3.7 | 5.0 | 2.1 | 2.1 | 2.0 |
| 24 | e7.5 | 5.1 | e2.7 | e1.6 | e3.0 | 2.6 | 9.1 | 3.7 | 12 | 2.0 | 2.3 | 2.0 |
| 25 | 7.3 | 5.0 | e2.6 | e1.7 | e2.9 | 2.6 | 8.5 | 3.6 | 32 | 2.0 | 2.4 | 2.0 |
| 26 | 7.5 | 4.8 | e2.4 | e1.7 | 2.9 | 2.8 | 7.8 | 3.5 | 20 | 2.0 | 2.5 | 1.9 |
| 27 | 7.3 | 4.8 | e2.3 | e1.6 | 2.9 | 3.1 | 7.3 | 3.4 | 13 | 2.0 | 2.5 | 1.9 |
| 28 | 7.5 | 4.8 | e2.2 | e1.5 | 2.8 | 5.0 | 7.3 | 3.3 | 9.3 | 2.0 | 2.6 | 1.9 |
| 29 | 7.9 | 4.7 | e2.0 | e1.5 | --- | 5.8 | 7.0 | 3.3 | 7.7 | 2.1 | 5.2 | 1.9 |
| 30 | 7.7 | 4.6 | e1.8 | e1.4 | --- | 19 | 6.6 | 3.3 | 6.3 | 2.2 | 17 | 1.8 |
| 31 | 7.6 | --- | e1.7 | e1.4 | --- | 34 | --- | 3.1 | --- | 2.3 | 19 | --- |
| TOTAL | 230.4 | 215.9 | 105.2 | 48.3 | 60.9 | 117.0 | 650.5 | 157.4 | 328.0 | 90.8 | 100.7 | 110.5 |
| MEAN | 7.432 | 7.197 | 3.394 | 1.558 | 2.175 | 3.774 | 21.68 | 5.077 | 10.93 | 2.929 | 3.248 | 3.683 |
| MAX | 9.4 | 12 | 4.5 | 1.8 | 3.0 | 34 | 82 | 8.4 | 47 | 5.3 | 19 | 16 |
| MIN | 4.4 | 4.6 | 1.7 | 1.3 | 1.3 | 1.3 | 6.6 | 3.1 | 2.8 | 2.0 | 1.8 | 1.5 |
| AC-FT | 457 | 428 | 209 | 96 | 121 | 232 | 1290 | 312 | 651 | 180 | 200 | 219 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1904 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 9.768 | 6.508 | 2.969 | 1.370 | 4.331 | 48.41 | 117.8 | 61.24 | 36.87 | 22.85 | 11.94 | 10.93 |
| MAX | 83.5 | 50.7 | 16.3 | 8.52 | 76.1 | 362 | 730 | 399 | 228 | 216 | 108 | 97.9 |
| (WY) | 1976 | 1976 | 2000 | 2000 | 1981 | 1976 | 1976 | 1975 | 1975 | 1999 | 1972 | 1975 |
| MIN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.10 | 1.77 | 0.30 | 0.020 | 0.000 | 0.000 | 0.000 |
| (WY) | 1993 | 1993 | 1959 | 1946 | 1946 | 1948 | 1963 | 1993 | 1961 | 1961 | 1961 | 1958 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1904 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 4379.10 | | 2215.6 | | | |
| ANNUAL MEAN | 12.00 | | 6.070 | | 27.94 | |
| HIGHEST ANNUAL MEAN | | | | | 148 | 1976 |
| LOWEST ANNUAL MEAN | | | | | 0.44 | 1991 |
| HIGHEST DAILY MEAN | 147 | Mar 29 | 82 | Apr 12 | 3200 | Apr 30 1970 |
| LOWEST DAILY MEAN | 0.62 | Feb 26 | 1.3 | Jan 4 | 0.00 | Dec 11 1945 |
| ANNUAL SEVEN-DAY MINIMUM | 0.64 | Feb 21 | 1.4 | Jan 28 | 0.00 | Dec 11 1945 |
| MAXIMUM PEAK FLOW | | | 87 | Apr 12 | 4260 | Apr 19 1979 |
| MAXIMUM PEAK STAGE | | | 6.98 | Apr 12 | a21.23 | Apr 19 1979 |
| ANNUAL RUNOFF (AC-FT) | 8690 | | 4390 | | 20240 | |
| 10 PERCENT EXCEEDS | 28 | | 10 | | 59 | |
| 50 PERCENT EXCEEDS | 4.8 | | 3.5 | | 3.0 | |
| 90 PERCENT EXCEEDS | 0.80 | | 1.6 | | 0.01 | |

a From high-water mark
e Estimated

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1950-51, 1969-70, 1972 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 19... | 1045 | 7.8 | -- | -- | -- | 1830 | 5.5 | 4.6 | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 16... | 1115 | 6.4 | -- | -- | -- | 1830 | 13.0 | 4.7 | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 02... | 1600 | 1.4 | -- | -- | -- | 2690 | -7.0 | .0 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 13... | 1030 | 1.4 | -- | -- | -- | 2060 | -- | .0 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 17... | 1415 | 19 | 7.8 | 7.6 | 890 | 853 | 16.5 | 7.4 | 220 | 46.0 | 26.0 | 14.0 | 3 |
| MAY | | | | | | | | | | | | | |
| 17... | 1200 | 5.9 | -- | -- | -- | 1850 | -- | 12.0 | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 28... | 0945 | 10 | -- | -- | -- | 1270 | 26.5 | 25.5 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 17... | 0945 | 2.8 | 8.3 | --e | --e | 1510 | 20.0 | 25.0 | 250 | 35.0 | 39.0 | 17.0 | 3 |
| SEP | | | | | | | | | | | | | |
| 11... | 1015 | 3.1 | -- | -- | -- | 1550 | -- | -- | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 16... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 02... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 17... | 92.0 | 45 | 184 | 15.0 | .20 | 260 | 29.9 | 593 | 564 | 3.0 | 240 | <1 | 30 |
| MAY | | | | | | | | | | | | | |
| 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 28... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 17... | 110 | 47 | 244 | 34.0 | .30 | 230 | 4.78 | 639 | 611 | 15.0 | 40 | <1 | 50 |
| SEP | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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 | | | | | |
| 19... | -- | -- | -- | -- | -- |
| NOV | | | | | |
| 16... | -- | -- | -- | -- | -- |
| JAN | | | | | |
| 02... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 13... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 17... | 230 | <.10 | 1 | 2 | 260 |
| MAY | | | | | |
| 17... | -- | -- | -- | -- | -- |
| JUN | | | | | |
| 28... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 17... | 110 | .10 | 5 | <1 | 280 |
| SEP | | | | | |
| 11... | -- | -- | -- | -- | -- |

< Less than
e Required equipment not functional/available

## 05117500 SOURIS (MOUSE) RIVER ABOVE MINOT, ND

LOCATION.--Lat 48°14'45", long 101°22'15", in NW$^1/_4$NW$^1/_4$SE$^1/_4$ 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$^2$, approximately, of which about 6,700 mi$^2$ 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 National Geodetic Vertical Datum of 1929. 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 estimated daily discharges, which are fair. Flow regulated by reservoirs on Souris and Des Lacs Rivers, combined capacity, about 700,000 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 135 | 11 | 7.5 | 3.8 | 4.0 | 3.9 | 42 | 81 | 3.2 | 7.7 | 0.11 | 55 |
| 2 | 137 | 47 | 7.4 | 3.9 | 3.7 | 3.7 | 43 | 23 | 3.1 | 5.7 | 0.08 | 29 |
| 3 | 136 | 67 | 7.4 | 3.8 | 3.8 | 3.6 | 19 | 10 | 3.6 | 4.6 | 0.06 | 18 |
| 4 | 136 | 76 | 7.4 | 3.7 | 3.7 | 3.2 | 17 | 8.3 | e3.8 | 3.8 | 0.04 | 12 |
| 5 | 136 | 79 | 10 | 3.9 | 3.8 | 3.4 | 15 | 6.5 | e4.6 | 3.3 | 0.02 | 8.8 |
| 6 | 140 | 79 | 10 | 4.0 | 3.5 | 3.4 | 13 | 6.1 | 5.2 | 2.6 | 0.01 | 7.7 |
| 7 | 140 | 80 | 8.2 | 3.9 | 3.8 | 3.3 | 21 | 6.3 | 4.6 | 2.1 | 0.01 | 6.3 |
| 8 | 142 | 77 | 7.2 | 4.4 | 4.3 | 3.4 | 24 | 8.5 | 3.7 | e1.7 | 0.02 | 6.3 |
| 9 | 142 | 77 | 7.2 | 5.1 | 4.6 | 3.4 | 30 | 11 | 8.3 | e2.3 | 0.02 | 6.2 |
| 10 | 118 | 76 | 7.1 | 5.5 | 4.6 | 3.5 | 49 | 10 | 14 | e3.2 | e0.00 | 5.6 |
| 11 | 91 | 76 | 6.7 | 5.5 | 4.1 | 3.5 | 74 | 8.7 | 12 | e3.7 | e0.00 | 4.8 |
| 12 | 82 | 76 | 6.9 | 5.2 | 4.7 | 4.2 | 105 | 8.6 | 28 | e4.2 | e0.00 | 4.2 |
| 13 | 69 | 74 | 6.4 | 5.9 | 4.7 | 5.1 | 121 | 8.4 | 67 | e4.2 | e0.00 | 3.5 |
| 14 | 66 | 96 | 6.0 | 6.4 | 4.6 | 5.0 | 105 | 8.1 | 47 | e3.7 | e0.00 | 2.7 |
| 15 | 65 | 102 | 6.1 | 5.7 | 4.5 | 4.5 | 77 | 8.8 | 30 | e3.2 | e0.00 | 2.1 |
| 16 | 61 | 77 | 5.9 | 5.6 | 4.5 | 4.3 | 50 | 8.5 | 23 | e2.5 | e0.00 | 1.8 |
| 17 | 59 | 70 | 6.1 | 6.5 | 4.7 | 4.0 | 34 | 7.7 | 22 | 2.4 | e0.00 | 1.6 |
| 18 | 58 | 36 | 6.4 | 6.2 | 5.1 | 4.4 | 25 | 7.1 | 18 | 2.2 | e0.00 | 1.6 |
| 19 | 58 | 17 | 6.6 | 5.5 | 5.3 | 4.4 | 65 | 6.3 | 15 | 1.8 | e0.00 | 1.8 |
| 20 | 53 | 12 | 6.4 | 5.4 | 5.4 | 4.3 | 128 | 5.7 | 11 | 1.6 | e0.00 | 1.7 |
| 21 | 32 | 9.7 | 5.7 | 5.6 | 5.0 | 4.1 | 138 | 5.1 | 9.6 | 1.3 | e0.00 | 1.4 |
| 22 | 21 | 8.6 | 6.1 | 5.5 | 4.9 | 4.0 | 137 | 5.0 | 9.7 | 0.98 | 34 | 1.2 |
| 23 | 19 | 8.2 | 6.2 | 5.0 | 5.4 | 3.9 | 137 | 6.9 | 10 | 0.78 | 81 | 1.2 |
| 24 | 17 | 7.5 | 5.7 | 4.6 | 5.4 | 4.0 | 130 | 6.4 | 13 | 0.71 | 83 | 1.00 |
| 25 | 14 | 7.6 | 5.5 | 4.2 | 4.9 | 4.0 | 120 | 5.7 | 12 | 0.60 | 89 | 0.93 |
| 26 | 9.3 | 7.3 | 4.9 | 4.6 | 4.4 | 3.9 | 116 | 5.3 | 28 | 0.52 | 94 | 0.75 |
| 27 | 7.5 | 6.7 | 4.9 | 4.5 | 4.2 | 5.3 | 119 | 4.6 | 31 | 0.45 | 94 | 0.64 |
| 28 | 7.7 | 6.7 | 4.9 | 4.5 | 4.1 | 8.4 | 120 | 4.4 | 19 | 0.35 | 95 | 0.54 |
| 29 | 7.7 | 6.7 | 4.5 | 4.3 | --- | 13 | 120 | 4.2 | 13 | 0.29 | 92 | 0.48 |
| 30 | 7.4 | 7.5 | 4.5 | 4.4 | --- | 13 | 117 | 4.2 | 10 | 0.23 | 91 | 0.49 |
| 31 | 7.5 | --- | 4.2 | 4.2 | --- | 12 | --- | 3.8 | --- | 0.17 | 86 | --- |
| TOTAL | 2174.1 | 1381.5 | 200.0 | 151.3 | 125.7 | 154.1 | 2311 | 304.2 | 482.4 | 72.88 | 839.37 | 189.33 |
| MEAN | 70.13 | 46.05 | 6.452 | 4.881 | 4.489 | 4.971 | 77.03 | 9.813 | 16.08 | 2.351 | 27.08 | 6.311 |
| MAX | 142 | 102 | 10 | 6.5 | 5.4 | 13 | 138 | 81 | 67 | 7.7 | 95 | 55 |
| MIN | 7.4 | 6.7 | 4.2 | 3.7 | 3.5 | 3.2 | 13 | 3.8 | 3.1 | 0.17 | 0.00 | 0.48 |
| AC-FT | 4310 | 2740 | 397 | 300 | 249 | 306 | 4580 | 603 | 957 | 145 | 1660 | 376 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1903 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 32.99 | 28.13 | 22.77 | 20.93 | 28.53 | 138.3 | 650.6 | 563.8 | 195.1 | 124.0 | 62.56 | 46.30 |
| MAX | 266 | 159 | 164 | 170 | 399 | 1272 | 6209 | 4916 | 1402 | 1393 | 480 | 748 |
| (WY) | 1904 | 1952 | 1976 | 1976 | 1997 | 1976 | 1976 | 1904 | 1975 | 1953 | 1999 | 1903 |
| MIN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.27 | 0.31 | 0.000 | 0.000 | 0.000 | 0.000 |
| (WY) | 1935 | 1935 | 1935 | 1935 | 1935 | 1936 | 1937 | 1993 | 1938 | 1937 | 1937 | 1935 |

05117500 SOURIS (MOUSE) RIVER ABOVE MINOT, ND--Continued

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1903 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 126500.6 | | 8385.88 | | | |
| ANNUAL MEAN | 346.6 | | 22.98 | | 159.1 | |
| HIGHEST ANNUAL MEAN | | | | | 1105 | 1976 |
| LOWEST ANNUAL MEAN | | | | | 1.30 | 1931 |
| HIGHEST DAILY MEAN | 2060 | May 7 | 142 | Oct 8 | 11400 | Apr 22 1904 |
| LOWEST DAILY MEAN | 4.2 | Dec 31 | 0.00 | Aug 10 | 0.00 | Sep 26 1917 |
| ANNUAL SEVEN-DAY MINIMUM | 4.8 | Dec 25 | 0.00 | Aug 10 | 0.00 | Sep 26 1917 |
| MAXIMUM PEAK FLOW | | | 146 | Nov 14 | 12000 | Apr 20 1904 |
| MAXIMUM PEAK STAGE | | | 4.96 | Nov 14 | a,b21.90 | Apr 20 1904 |
| ANNUAL RUNOFF (AC-FT) | 250900 | | 16630 | | 115200 | |
| 10 PERCENT EXCEEDS | 1400 | | 81 | | 311 | |
| 50 PERCENT EXCEEDS | 119 | | 5.9 | | 21 | |
| 90 PERCENT EXCEEDS | 7.5 | | 0.96 | | 0.20 | |

a At site in Minot, from rating curve extended above 8,000 $ft^3/s$
b Maximum stage at present site about 23 ft in April 1904
e Estimated

05117500 SOURIS (MOUSE) RIVER ABOVE MINOT, ND--Continued

WATER-QUALITY RECORDS

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

REMARKS.--Quality assurance sample also collected at this location.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | BARO-METRIC PRES-SURE (MM OF HG) (00025) | OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301) | OXYGEN, DIS-SOLVED (MG/L) (00300) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 19... | 1200 | 57 | -- | -- | -- | -- | -- | -- | 960 | -- | 6.0 | -- | -- |
| NOV | | | | | | | | | | | | | |
| 20... | 0945 | 13 | 726 | 95 | 12.4 | 8.4 | 8.3 | 1020 | 1060 | 8.0 | 2.2 | 300 | 58.7 |
| JAN | | | | | | | | | | | | | |
| 16... | 1715 | 6.7 | -- | -- | -- | -- | -- | -- | 1990 | -7.0 | .0 | -- | -- |
| FEB | | | | | | | | | | | | | |
| 12... | 1630 | 4.2 | 721 | 105 | 14.3 | 7.9 | 7.8 | 2230 | 2340 | 1.0 | .1 | 650 | 127 |
| APR | | | | | | | | | | | | | |
| 17... | 1715 | 32 | -- | -- | -- | -- | -- | -- | 590 | 17.0 | 8.7 | -- | -- |
| 26... | 0900 | 112 | 725 | 109 | 13.1 | 8.6 | 8.3 | 828 | 870 | -2.0 | 5.4 | 260 | 54.2 |
| JUN | | | | | | | | | | | | | |
| 07... | 0930 | 4.8 | 715 | 85 | 7.4 | 8.2 | 8.1 | 1260 | 1310 | 18.0 | 18.7 | 370 | 69.2 |
| 27... | 1430 | 29 | 715 | 100 | 7.4 | 8.4 | 8.3 | 1660 | 1660 | 31.0 | 27.1 | 400 | 68.2 |
| JUL | | | | | | | | | | | | | |
| 16... | 1700 | 2.3 | 716 | 138 | 9.9 | 8.8 | 8.6 | 1610 | 1630 | 32.0 | 28.8 | 400 | 65.5 |
| AUG | | | | | | | | | | | | | |
| 08... | 1910 | .02 | -- | -- | -- | -- | -- | -- | 1680 | 27.0 | 26.1 | -- | -- |
| 21... | 1815 | .0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 12... | 0845 | 4.7 | 713 | 87 | 7.6 | 8.5 | -- | -- | 1560 | 15.0 | 18.1 | -- | -- |

| Date | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605) | NITRO-GEN, TOTAL (MG/L AS N) (00600) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 20... | 37.8 | 3 | 101 | 298 | 25.3 | .2 | 245 | 1.2 | E.02 | <.05 | -- | -- | .09 |
| JAN | | | | | | | | | | | | | |
| 16... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 12... | 81.5 | 4 | 255 | 592 | 59.5 | .3 | 620 | 2.5 | E.03 | .12 | -- | 2.7 | .20 |
| APR | | | | | | | | | | | | | |
| 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 26... | 31.4 | 2 | 79.0 | 238 | 21.9 | .2 | 188 | 1.2 | <.04 | <.05 | -- | -- | .15 |
| JUN | | | | | | | | | | | | | |
| 07... | 46.9 | 4 | 158 | 313 | 36.5 | .2 | 339 | -- | -- | -- | -- | -- | -- |
| 27... | 56.8 | 5 | 227 | 359 | 38.8 | .3 | 492 | 1.5 | .05 | <.05 | 1.4 | -- | .35 |
| JUL | | | | | | | | | | | | | |
| 16... | 56.8 | 5 | 221 | 339 | 37.9 | .2 | 504 | 1.7 | <.04 | <.05 | -- | -- | .64 |
| AUG | | | | | | | | | | | | | |
| 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 21... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 12... | -- | -- | -- | -- | -- | -- | -- | 2.0 | <.04 | <.05 | -- | -- | .56 |

05117500 SOURIS (MOUSE) RIVER ABOVE MINOT, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | CARBON, ORGANIC TOTAL (MG/L AS C) (00680) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | 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 WATER UNFLTRD TOTAL (UG/L AS CD) (01027) | CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034) | COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 20... | 13.2 | 706 | <2 | 5.2 | .9 | 50 | 3 | 82.5 | <2 | 240 | <.1 | <.8 | <2.0 |
| JAN | | | | | | | | | | | | | |
| 16... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 12... | 19.1 | 1620 | <4 | -- | -- | 30 | 3 | 108 | <2 | 210 | <.1 | <.8 | <2.0 |
| APR | | | | | | | | | | | | | |
| 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 26... | 13.4 | 566 | 6k | 15.0 | .9 | 90 | 2 | 68.0 | <2 | 210 | <.1 | <.8 | <2.0 |
| JUN | | | | | | | | | | | | | |
| 07... | -- | 908 | 20k | 3.5 | .5 | 40 | 6 | 69.8 | <2 | 120 | <.1 | <.8 | E1.1 |
| 27... | 16.6 | 1170 | 56 | E4.1 | E.9 | 80 | 9 | 56.9 | <2 | 170 | <.1 | <.8 | <2.0 |
| JUL | | | | | | | | | | | | | |
| 16... | 18.3 | 1170 | 55 | E19.6 | E6.4 | 70 | 14 | 54.4 | <2 | 150 | <.1 | <.8 | E1.1 |
| AUG | | | | | | | | | | | | | |
| 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 21... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 12... | 24.4 | -- | 17k | 37.1 | 5.2 | -- | -- | -- | -- | -- | -- | -- | -- |

| 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 (UG/L AS SE) (01147) | ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092) |
|---|---|---|---|---|---|---|---|
| OCT | | | | | | | |
| 19... | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | |
| 20... | 1.6 | 180 | M | 4 | 2.5 | <2 | <20 |
| JAN | | | | | | | |
| 16... | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | |
| 12... | 1.2 | 390 | <1 | 3 | 4.4 | <2 | <20 |
| APR | | | | | | | |
| 17... | -- | -- | -- | -- | -- | -- | -- |
| 26... | 1.3 | 230 | <1 | 4 | 2.9 | <2 | <20 |
| JUN | | | | | | | |
| 07... | E.9 | 230 | <1 | 3 | 5.0 | <2 | E20 |
| 27... | E.9 | 170 | 2 | 3 | 4.4 | <2 | E20 |
| JUL | | | | | | | |
| 16... | 1.6 | 200 | <1 | 2 | 3.4 | E1 | <20 |
| AUG | | | | | | | |
| 08... | -- | -- | -- | -- | -- | -- | -- |
| 21... | -- | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | |
| 12... | -- | -- | -- | -- | -- | -- | -- |

< Less than
E Estimated value
M Presence verified, not quantified
k Counts outside acceptable range

## 05120000 SOURIS (MOUSE) RIVER NEAR VERENDRYE, ND

LOCATION.--Lat 48°09'35", long 100°43'45", in NW$^1/_4$SW$^1/_4$ 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$^2$, approximately, of which about 6,900 mi$^2$ 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 National Geodetic Vertical Datum of 1929. 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 estimated daily discharges, which are fair. Flow regulated by reservoirs on Souris and Des Lacs Rivers, combined capacity about 700,000 acre-ft; some diversions for irrigation and municipal supply.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 121 | 33 | e19 | e15 | e20 | 11 | e100 | 132 | 19 | 60 | 18 | 118 |
| 2 | 121 | 30 | 20 | e15 | e21 | 11 | e90 | 129 | 17 | 48 | 23 | 146 |
| 3 | 121 | 28 | 20 | e16 | e21 | 9.7 | e80 | 126 | 17 | 38 | 18 | 127 |
| 4 | 122 | 27 | 20 | e16 | e21 | 9.0 | e70 | 110 | 17 | 32 | 12 | 92 |
| 5 | 122 | 27 | 21 | e17 | e21 | 8.8 | e65 | 82 | 17 | 29 | 7.3 | 73 |
| 6 | 121 | 33 | 21 | e17 | e21 | 8.8 | 68 | 64 | 16 | 25 | 5.3 | 57 |
| 7 | 121 | 59 | 20 | e18 | e21 | 9.7 | 71 | 53 | 19 | 23 | 5.2 | 41 |
| 8 | 121 | 67 | 21 | e18 | e21 | 11 | 68 | 49 | 19 | 22 | 7.5 | 31 |
| 9 | 123 | 69 | 21 | e18 | e21 | 13 | 82 | 52 | 29 | 23 | 10 | 29 |
| 10 | 125 | 70 | 22 | e17 | 21 | 17 | 124 | 56 | 70 | 23 | 12 | 25 |
| 11 | 125 | 70 | 23 | e17 | 20 | 21 | 140 | 62 | 119 | 22 | 16 | 21 |
| 12 | 125 | 69 | 24 | e18 | 20 | 23 | 156 | 79 | 235 | 26 | 17 | 19 |
| 13 | 124 | 69 | 24 | e17 | 19 | 22 | 180 | 76 | 247 | 37 | 15 | 19 |
| 14 | 109 | 70 | 23 | e19 | 18 | 18 | 199 | 69 | 153 | 29 | 13 | 21 |
| 15 | 94 | 71 | 23 | e20 | 17 | 15 | 178 | 61 | 103 | 24 | 12 | 26 |
| 16 | 86 | 70 | 23 | e20 | 16 | 13 | 170 | 52 | 91 | 22 | 12 | 24 |
| 17 | 80 | 73 | 23 | e20 | 17 | 15 | 153 | 44 | 89 | 21 | 14 | 22 |
| 18 | 76 | 89 | 23 | e21 | 17 | 19 | 140 | 39 | 73 | 21 | 15 | 20 |
| 19 | 75 | 83 | 23 | e23 | 17 | 23 | 107 | 35 | 66 | 18 | 16 | 18 |
| 20 | 71 | 71 | 22 | e23 | 17 | 28 | 89 | 32 | 74 | 17 | 15 | 13 |
| 21 | 68 | 63 | e21 | e23 | 17 | 31 | 83 | 30 | 55 | 16 | 15 | 9.5 |
| 22 | 65 | 51 | e20 | e23 | 17 | 26 | 79 | 29 | 45 | 15 | 16 | 8.1 |
| 23 | 65 | 41 | e20 | e23 | 17 | 23 | 110 | 29 | 43 | 14 | 17 | 8.7 |
| 24 | 65 | 35 | e20 | e23 | 17 | 22 | 132 | 27 | 79 | 14 | 17 | 13 |
| 25 | 58 | 32 | e19 | e23 | e17 | 21 | 135 | 25 | 497 | 14 | 17 | 25 |
| 26 | 49 | 29 | e17 | e22 | e16 | 21 | 136 | 26 | 562 | 8.8 | 16 | 13 |
| 27 | 41 | 22 | e18 | e21 | 15 | 20 | 132 | 31 | 308 | 6.3 | 16 | 9.6 |
| 28 | 46 | 19 | e18 | e21 | 13 | 23 | 129 | 33 | 144 | 5.2 | 52 | 9.0 |
| 29 | 42 | e18 | e17 | e20 | --- | 24 | 128 | 28 | 93 | 5.4 | 110 | 8.5 |
| 30 | 38 | e18 | e16 | e20 | --- | e30 | 131 | 23 | 71 | 7.5 | 104 | 11 |
| 31 | 34 | --- | e15 | e20 | --- | e70 | --- | 21 | --- | 9.2 | 106 | --- |
| TOTAL | 2754 | 1506 | 637 | 604 | 516 | 617.0 | 3525 | 1704 | 3387 | 675.4 | 749.3 | 1057.4 |
| MEAN | 88.84 | 50.20 | 20.55 | 19.48 | 18.43 | 19.90 | 117.5 | 54.97 | 112.9 | 21.79 | 24.17 | 35.25 |
| MAX | 125 | 89 | 24 | 23 | 21 | 70 | 199 | 132 | 562 | 60 | 110 | 146 |
| MIN | 34 | 18 | 15 | 15 | 13 | 8.8 | 65 | 21 | 16 | 5.2 | 5.2 | 8.1 |
| AC-FT | 5460 | 2990 | 1260 | 1200 | 1020 | 1220 | 6990 | 3380 | 6720 | 1340 | 1490 | 2100 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 52.21 | 43.58 | 34.38 | 30.73 | 48.75 | 230.9 | 683.6 | 682.1 | 259.4 | 164.2 | 86.87 | 56.29 |
| MAX | 225 | 169 | 160 | 171 | 277 | 1209 | 6280 | 4918 | 2122 | 1599 | 512 | 363 |
| (WY) | 2000 | 1976 | 1976 | 1976 | 1976 | 1976 | 1976 | 1975 | 1975 | 1953 | 1976 | 1999 |
| MIN | 1.50 | 1.00 | 1.00 | 0.50 | 0.50 | 2.25 | 11.7 | 6.80 | 2.33 | 0.67 | 0.42 | 0.10 |
| (WY) | 1938 | 1938 | 1938 | 1938 | 1938 | 1940 | 1937 | 1938 | 1938 | 1937 | 1937 | 1937 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1937 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 146797 | | 17732.1 | | | |
| ANNUAL MEAN | 402.2 | | 48.58 | | 200.6 | |
| HIGHEST ANNUAL MEAN | | | | | 1185 | 1976 |
| LOWEST ANNUAL MEAN | | | | | 18.8 | 1991 |
| HIGHEST DAILY MEAN | 2210 | May 13 | 562 | Jun 26 | 9700 | Apr 20 1976 |
| LOWEST DAILY MEAN | 15 | Dec 31 | 5.2 | Jul 28 | 0.10 | Sep 1 1937 |
| ANNUAL SEVEN-DAY MINIMUM | 17 | Dec 25 | 8.1 | Jul 25 | 0.10 | Sep 1 1937 |
| MAXIMUM PEAK FLOW | | | 631 | Jun 25 | 9900 | Apr 19 1976 |
| MAXIMUM PEAK STAGE | | | 7.92 | Jun 25 | 17.84 | Apr 19 1976 |
| ANNUAL RUNOFF (AC-FT) | 291200 | | 35170 | | 145300 | |
| 10 PERCENT EXCEEDS | 1610 | | 121 | | 431 | |
| 50 PERCENT EXCEEDS | 126 | | 23 | | 38 | |
| 90 PERCENT EXCEEDS | 27 | | 13 | | 4.0 | |

e Estimated

05120000 SOURIS (MOUSE) RIVER NEAR VERENDRYE, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1950-51, 1957 to current year.

REMARKS.--Quality assurance sample also collected at this location.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | BARO-METRIC PRES-SURE (MM OF HG) (00025) | OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301) | OXYGEN, DIS-SOLVED (MG/L) (00300) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 12... | 1500 | 124 | -- | -- | -- | -- | -- | -- | 940 | 11.0 | 10.0 | -- | -- |
| NOV | | | | | | | | | | | | | |
| 20... | 1515 | 68 | 726 | 109 | 14.2 | 8.5 | 8.4 | 1400 | 1400 | 16.0 | 2.2 | 380 | 73.9 |
| JAN | | | | | | | | | | | | | |
| 16... | 1335 | 20 | -- | -- | -- | -- | -- | -- | 2030 | -7.0 | .0 | -- | -- |
| FEB | | | | | | | | | | | | | |
| 12... | 1415 | 20 | 725 | 46 | 6.4 | 7.6 | 7.7 | 1810 | 1880 | -4.0 | .0 | 550 | 122 |
| APR | | | | | | | | | | | | | |
| 26... | 1215 | 141 | 726 | 127 | 14.9 | 9.1 | 8.8 | 938 | 990 | 3.0 | 6.3 | 270 | 56.7 |
| JUN | | | | | | | | | | | | | |
| 05... | 1600 | 16 | 718 | 166 | 14.4 | 8.3 | 8.1 | 1650 | 1650 | 24.0 | 18.9 | 500 | 104 |
| 26... | 1330 | 540 | 718 | 49 | 3.9 | 7.8 | 7.7 | 740 | 750 | 28.0 | 23.7 | 210 | 44.2 |
| JUL | | | | | | | | | | | | | |
| 16... | 1345 | 23 | 715 | 90 | 7.8 | 8.2 | 8.1 | 1430 | 1440 | 31.0 | 18.8 | 430 | 91.7 |
| AUG | | | | | | | | | | | | | |
| 21... | 1600 | 15 | 718 | 111 | 9.7 | 8.3 | 8.2 | 1500 | 1530 | -- | 18.6 | 430 | 89.6 |
| SEP | | | | | | | | | | | | | |
| 10... | 1315 | 24 | 724 | 65 | 5.7 | 8.1 | -- | -- | 1230 | 22.0 | 18.7 | -- | -- |

| Date | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605) | NITRO-GEN, TOTAL (MG/L AS N) (00600) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 12... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 20... | 47.7 | 3 | 146 | 348 | 46.0 | .2 | 373 | 1.1 | <.04 | <.05 | -- | -- | .08 |
| JAN | | | | | | | | | | | | | |
| 16... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 12... | 59.8 | 3 | 186 | 498 | 45.1 | .3 | 464 | 1.5 | .72 | .39 | .81 | 1.9 | .12 |
| APR | | | | | | | | | | | | | |
| 26... | 30.5 | 3 | 106 | 204 | 43.1 | E.1n | 254 | 1.6 | <.04 | <.05 | -- | -- | .28 |
| JUN | | | | | | | | | | | | | |
| 05... | 57.6 | 4 | 198 | 389 | 52.0 | .2 | 450 | -- | -- | -- | -- | -- | -- |
| 26... | 24.2 | 2 | 74.1 | 160 | 7.92 | .1 | 210 | 2.4 | .15 | .92 | 2.3 | 3.3 | .44 |
| JUL | | | | | | | | | | | | | |
| 16... | 48.2 | 3 | 162 | 360 | 38.3 | .2 | 384 | 1.3 | <.04 | <.05 | -- | -- | .36 |
| AUG | | | | | | | | | | | | | |
| 21... | 49.0 | 4 | 189 | 365 | 53.0 | .3 | 387 | 1.0 | <.04 | <.05 | -- | -- | .24 |
| SEP | | | | | | | | | | | | | |
| 10... | -- | -- | -- | -- | -- | -- | -- | 1.5 | .09 | .07 | 1.4 | 1.6 | .37 |

| Date | CARBON, ORGANIC TOTAL (MG/L AS C) (00680) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | 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 WATER UNFLTRD TOTAL (UG/L AS CD) (01027) | CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034) | COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 12... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 20... | 13.8 | 924 | -- | 5.1 | .6 | 100 | 2 | 67.6 | <2 | 240 | <.1 | <.8 | <2.0 |
| JAN | | | | | | | | | | | | | |
| 16... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 12... | 9.0 | 1280 | 196 | -- | -- | 70 | 2 | 87.4 | <2 | 270 | <.1 | <.8 | <2.0 |
| APR | | | | | | | | | | | | | |
| 26... | 20.3 | 666 | 4k | 28.7 | 3.0 | 260 | 3 | 45.2 | <2 | 90 | E.1 | E.5 | <2.0 |
| JUN | | | | | | | | | | | | | |
| 05... | -- | 1180 | 14k | 56.8 | 10.7 | 170 | 5 | 98.5 | <2 | 250 | <.1 | <.8 | E1.0 |
| 26... | 19.5 | 514 | 760 | E2.2 | E.2 | 2280 | 5 | 100 | E2 | 130 | .1 | 3.9 | 1.9 |
| JUL | | | | | | | | | | | | | |
| 16... | 13.0 | 988 | 21k | E27.0 | E6.6 | 140 | 13 | 79.4 | <2 | 240 | <.1 | <.8 | <2.0 |
| AUG | | | | | | | | | | | | | |
| 21... | 11.8 | 987 | 108 | 17.0 | 4.9 | 60 | E9dn | 64.7 | <2 | 280 | <.1 | <.8 | <2.0 |
| SEP | | | | | | | | | | | | | |
| 10... | 18.1 | -- | 50 | 4.7 | <.1 | -- | -- | -- | -- | -- | -- | -- | -- |

05120000 SOURIS (MOUSE) RIVER NEAR VERENDRYE, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| 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 (UG/L AS SE) (01147) | ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092) |
|---|---|---|---|---|---|---|---|
| OCT | | | | | | | |
| 12... | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | |
| 20... | 1.8 | 290 | <1 | 4 | 2.6 | <2 | <20 |
| JAN | | | | | | | |
| 16... | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | |
| 12... | 1.3 | 610 | <1 | 3 | 2.9 | 2 | <20 |
| APR | | | | | | | |
| 26... | 3.2 | 750 | M | E2 | 4.3 | <2 | E20n |
| JUN | | | | | | | |
| 05... | E.9 | 470 | <1 | 6 | 4.1 | <2 | <20 |
| 26... | 6.9 | 4270 | 4 | E1 | 9.9 | <2 | E20 |
| JUL | | | | | | | |
| 16... | 2.3 | 400 | M | 3 | 3.6 | E1 | <20 |
| AUG | | | | | | | |
| 21... | 1.4 | 210 | <1 | 3 | 3.5 | <14d | <20 |
| SEP | | | | | | | |
| 10... | -- | -- | -- | -- | -- | -- | -- |

< Less than
E Estimated value
M Presence verified, not quantified
d Diluted sample: method hi range exceeded
k Counts outside acceptable range
n Below the non-detection value

## 05120500 WINTERING RIVER NEAR KARLSRUHE, ND

LOCATION.--Lat 48°08'18", long 100°32'22", SW$^1/_4$SW$^1/_4$SW$^1/_4$ 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$^2$, of which about 420 mi$^2$ 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. Elevation of gage is 1,500 ft above National Geodetic Vertical Datum of 1929, from topographic map. Mar. 1937 to Sept. 30, 1994, at site 5 miles downstream, at datum 20 ft lower.

REMARKS.--Records good except for estimated daily discharges, which are fair. 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.4 | 8.6 | e9.6 | e9.5 | e7.0 | e4.3 | e4.2 | 20 | 7.3 | 38 | e0.00 | 0.51 |
| 2 | 3.7 | 7.3 | e9.8 | e9.6 | e6.7 | e4.1 | e4.2 | 19 | 7.5 | 34 | e0.00 | 0.45 |
| 3 | 3.7 | 7.1 | e9.8 | e9.8 | e6.3 | e3.9 | e4.3 | 19 | 8.3 | 31 | e0.00 | 0.47 |
| 4 | 3.5 | 7.0 | e9.6 | e10 | e6.2 | e3.6 | e4.4 | 19 | 8.4 | 28 | e0.00 | 0.73 |
| 5 | 3.7 | 6.6 | e9.5 | e10 | e6.2 | e3.5 | e4.4 | 19 | 7.0 | 26 | e0.00 | 0.93 |
| 6 | 3.4 | 5.7 | e9.6 | e10 | e6.3 | e3.5 | e4.5 | 19 | 6.3 | 22 | e0.00 | 1.0 |
| 7 | 3.4 | 6.1 | e9.7 | e11 | e6.3 | e3.5 | e4.7 | 19 | 5.7 | 20 | e0.00 | 1.0 |
| 8 | 7.6 | 5.6 | e9.8 | e12 | e6.4 | e3.5 | e4.7 | 20 | 5.2 | 19 | e0.10 | 1.3 |
| 9 | 2.8 | 5.2 | e9.9 | e12 | e6.4 | e3.4 | e4.8 | 23 | 24 | 18 | e0.14 | 1.3 |
| 10 | 2.5 | 4.3 | e9.8 | e11 | e6.5 | e3.5 | e5.5 | 24 | 36 | 17 | e0.17 | 1.3 |
| 11 | 4.1 | 4.3 | e9.7 | e11 | e6.5 | e3.6 | e6.0 | 23 | 51 | 14 | e0.22 | 1.5 |
| 12 | 1.3 | 4.2 | e9.6 | e11 | e6.5 | e3.6 | e12 | 23 | 52 | 12 | e0.26 | 1.5 |
| 13 | 3.8 | 4.2 | e9.6 | e11 | e6.5 | e3.7 | e17 | 23 | 38 | 9.9 | e0.25 | 1.8 |
| 14 | 3.3 | 4.3 | e9.7 | e10 | e6.5 | e3.7 | 20 | 23 | 40 | 8.4 | e0.27 | 1.8 |
| 15 | 3.3 | 5.0 | e9.8 | e10 | e6.5 | e3.7 | 21 | 23 | 45 | 8.6 | e0.32 | 1.8 |
| 16 | 3.4 | 5.3 | e9.9 | e10 | e6.6 | e3.7 | 19 | 22 | 47 | 3.7 | e0.58 | 2.1 |
| 17 | 3.3 | 5.0 | e9.9 | e10 | e6.6 | e3.7 | 18 | 22 | 48 | 6.0 | e0.52 | 2.1 |
| 18 | 3.1 | 5.3 | e9.8 | e9.8 | e6.6 | e3.7 | 18 | 21 | 53 | 6.2 | e0.48 | 2.4 |
| 19 | 3.3 | 5.5 | e9.7 | e9.6 | e6.8 | e3.6 | 19 | 21 | 64 | 5.4 | e0.44 | 1.4 |
| 20 | 4.2 | 6.5 | e9.7 | e9.5 | e6.9 | e3.5 | 22 | 21 | 78 | 4.8 | e0.38 | 1.8 |
| 21 | 2.5 | 6.4 | e9.8 | e9.4 | e7.0 | e3.5 | 23 | 20 | 87 | 5.8 | e0.32 | 2.1 |
| 22 | 2.7 | 6.7 | e9.8 | e9.3 | e7.0 | e3.5 | 24 | 20 | 96 | 5.0 | e0.27 | 2.1 |
| 23 | 3.5 | 6.8 | e9.7 | e9.2 | e6.8 | e3.6 | 24 | 20 | 98 | 3.6 | 0.24 | 2.3 |
| 24 | 5.1 | 6.7 | e9.6 | e9.1 | e6.2 | e3.7 | 23 | 19 | 101 | 2.2 | 0.27 | 2.5 |
| 25 | 7.0 | 7.8 | e9.6 | e9.1 | e6.0 | e3.8 | 21 | 18 | 89 | 1.7 | 0.50 | 2.5 |
| 26 | 4.9 | 10 | e9.7 | e9.0 | e5.5 | e4.0 | 20 | 16 | 79 | 0.67 | 0.77 | 2.5 |
| 27 | 6.0 | 9.6 | e9.9 | e9.0 | e5.0 | e4.4 | 21 | 15 | 67 | 0.21 | 0.78 | 3.2 |
| 28 | 10 | e9.5 | e9.8 | e8.8 | e4.8 | e5.0 | 21 | 14 | 57 | 0.00 | 0.33 | 4.2 |
| 29 | 9.8 | e9.4 | e9.7 | e8.2 | --- | e4.9 | 21 | 13 | 49 | e0.00 | 0.35 | 3.7 |
| 30 | 9.1 | e9.4 | e9.6 | e7.8 | --- | e4.7 | 20 | 11 | 43 | e0.00 | 0.33 | 4.2 |
| 31 | 9.2 | --- | e9.5 | e7.2 | --- | e4.3 | --- | 6.5 | --- | e0.00 | 0.59 | --- |
| TOTAL | 140.6 | 195.4 | 301.2 | 302.9 | 178.6 | 118.7 | 435.7 | 595.5 | 1397.7 | 351.18 | 8.88 | 56.49 |
| MEAN | 4.535 | 6.513 | 9.716 | 9.771 | 6.379 | 3.829 | 14.52 | 19.21 | 46.59 | 11.33 | 0.286 | 1.883 |
| MAX | 10 | 10 | 9.9 | 12 | 7.0 | 5.0 | 24 | 24 | 101 | 38 | 0.78 | 4.2 |
| MIN | 1.3 | 4.2 | 9.5 | 7.2 | 4.8 | 3.4 | 4.2 | 6.5 | 5.2 | 0.00 | 0.00 | 0.45 |
| AC-FT | 279 | 388 | 597 | 601 | 354 | 235 | 864 | 1180 | 2770 | 697 | 18 | 112 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 6.370 | 6.207 | 2.596 | 1.276 | 1.571 | 26.16 | 72.23 | 33.91 | 18.44 | 12.10 | 7.506 | 5.728 |
| MAX | 109 | 98.8 | 22.7 | 9.77 | 10.7 | 343 | 465 | 304 | 194 | 95.1 | 87.3 | 67.3 |
| (WY) | 1995 | 1995 | 2001 | 2002 | 2000 | 1995 | 1997 | 1999 | 1999 | 1999 | 1993 | 1999 |
| MIN | 0.034 | 0.50 | 0.000 | 0.000 | 0.000 | 0.000 | 2.81 | 1.65 | 0.43 | 0.23 | 0.006 | 0.000 |
| (WY) | 1993 | 1938 | 1938 | 1938 | 1938 | 1951 | 1992 | 1992 | 1992 | 1989 | 1989 | 1992 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1937 - 2002 | | |
|---|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 14253.6 | | 4082.85 | | | | |
| ANNUAL MEAN | 39.05 | | 11.19 | | 16.37 | | |
| HIGHEST ANNUAL MEAN | | | | | 82.0 | | 1999 |
| LOWEST ANNUAL MEAN | | | | | 1.36 | | 1992 |
| HIGHEST DAILY MEAN | 440 | Mar 25 | 101 | Jun 24 | 2500 | Apr 7 | 1949 |
| LOWEST DAILY MEAN | 1.3 | Oct 12 | 0.00 | Jul 28 | 0.00 | Mar 1 | 1937 |
| ANNUAL SEVEN-DAY MINIMUM | 2.5 | Aug 30 | 0.00 | Jul 28 | 0.00 | Mar 1 | 1937 |
| MAXIMUM PEAK FLOW | | | a108 | Jun 23 | 3000 | Apr 7 | 1949 |
| MAXIMUM PEAK STAGE | | | b6.59 | Aug 16 | c12.00 | Apr 7 | 1949 |
| ANNUAL RUNOFF (AC-FT) | 28270 | | 8100 | | 11860 | | |
| 10 PERCENT EXCEEDS | 147 | | 23 | | 33 | | |
| 50 PERCENT EXCEEDS | 9.6 | | 6.6 | | 3.5 | | |
| 90 PERCENT EXCEEDS | 3.6 | | 0.59 | | 0.10 | | |

a Gage height, 4.56 ft
b Backwater from beaver dam
c Backwater from ice
e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 12... | 1315 | 2.9 | -- | -- | -- | 763 | 10.0 | 8.8 | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 20... | 1245 | 6.3 | -- | -- | -- | 930 | 14.0 | 2.6 | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 16... | 1445 | 9.9 | -- | -- | -- | 835 | -7.0 | .0 | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 12... | 1220 | 6.5 | -- | -- | -- | 686 | -4.0 | .0 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 12... | 1245 | 3.6 | -- | -- | -- | 700 | 5.0 | .0 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 16... | 1400 | 19 | 8.4 | --e | 1810 | 1740 | 10.0 | 9.6 | 410 | 74.0 | 54.0 | 20.0 | 5 |
| JUN | | | | | | | | | | | | | |
| 05... | 1400 | 7.1 | -- | -- | -- | -- | 21.0 | 20.2 | -- | -- | -- | -- | -- |
| 26... | 1545 | 77 | -- | -- | -- | 1750 | 28.5 | 27.0 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 17... | 1715 | 7.7 | 8.4 | 8.5 | 1730 | 1750 | 26.0 | 28.6 | 390 | 70.0 | 53.0 | 13.0 | 6 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 12... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 20... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 16... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 12... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 12... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 16... | 250 | 56 | 351 | 38.0 | .20 | 570 | 67.2 | 1290 | 1220 | 4.0 | 150 | <1 | 70 |
| JUN | | | | | | | | | | | | | |
| 05... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 26... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 17... | 280 | 60 | 528 | 25.0 | .20 | 460 | 26.9 | 1300 | 1220 | 8.0 | 110 | <1 | 80 |

| Date | 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 | | | | | |
| 12... | -- | -- | -- | -- | -- |
| NOV | | | | | |
| 20... | -- | -- | -- | -- | -- |
| JAN | | | | | |
| 16... | -- | -- | -- | -- | -- |
| FEB | | | | | |
| 12... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 12... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 16... | 190 | <.10 | 3 | <1 | 220 |
| JUN | | | | | |
| 05... | -- | -- | -- | -- | -- |
| 26... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 17... | 150 | <.10 | 1 | 1 | 360 |

< Less than
e Required equipment not functional/available

## 05122000 SOURIS (MOUSE) RIVER NEAR BANTRY, ND

LOCATION.--Lat 48°30'20", long 100°26'04", in SE$^1/_4$NW$^1/_4$SE$^1/_4$ 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$^2$ approximately, of which about 7,600 mi$^2$ 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 National Geodetic Vertical Datum of 1929. Prior to Mar. 16, 1938, nonrecording gage at same site at datum 0.17 ft lower.

REMARKS.--Records good except for estimated daily discharges, which are fair. Flow regulated by reservoirs on Souris, Des Lacs, and Wintering Rivers, total capacity, about 700,800 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 122 | e75 | 65 | e56 | e28 | e19 | 32 | 17 | 159 | 373 | 28 | 52 |
| 2 | 120 | e73 | 62 | e55 | e27 | e17 | 29 | e16 | 171 | 280 | 23 | 77 |
| 3 | 120 | e71 | 61 | e54 | e27 | e17 | 26 | 16 | 221 | 210 | 22 | 90 |
| 4 | 121 | e68 | 61 | e52 | e27 | e16 | e23 | 16 | 253 | 165 | 20 | 100 |
| 5 | 119 | e65 | 62 | e51 | e26 | e16 | 21 | 16 | 249 | 137 | 22 | 114 |
| 6 | 117 | e63 | 62 | e50 | e26 | e15 | 20 | 17 | 227 | 114 | 25 | 120 |
| 7 | 118 | e61 | 62 | e50 | e26 | e14 | 20 | e18 | 193 | 98 | 28 | 113 |
| 8 | 119 | 61 | 63 | e49 | e26 | e13 | 19 | 21 | 155 | 87 | 26 | 98 |
| 9 | 120 | 60 | 63 | e47 | e25 | e14 | 20 | 26 | 139 | 80 | 25 | 81 |
| 10 | 122 | 62 | 64 | e45 | e25 | e16 | 24 | 28 | 144 | 74 | 23 | 66 |
| 11 | 123 | 70 | 64 | e43 | e25 | e18 | 35 | 29 | 182 | 70 | 20 | 53 |
| 12 | 126 | 79 | 64 | e41 | e24 | e19 | 42 | 26 | 226 | 67 | 19 | 44 |
| 13 | 129 | 86 | 65 | e40 | e24 | e24 | 43 | 24 | 275 | 63 | 18 | 38 |
| 14 | 132 | 90 | 67 | e39 | e24 | e25 | 33 | 23 | 333 | 59 | 19 | 32 |
| 15 | 134 | 92 | 69 | e37 | e23 | e24 | 28 | 24 | 386 | 56 | 21 | 28 |
| 16 | 133 | 92 | 70 | e36 | e23 | e23 | 25 | 23 | 382 | 55 | 24 | 25 |
| 17 | 132 | 92 | 71 | e34 | e23 | e21 | 26 | 23 | 334 | 54 | 29 | 22 |
| 18 | 124 | 92 | 72 | e33 | e23 | e20 | 35 | 23 | 275 | 53 | 28 | 22 |
| 19 | 114 | 92 | 71 | e32 | e22 | e19 | e40 | 23 | 229 | 50 | 28 | 23 |
| 20 | 104 | 93 | e71 | e31 | e23 | e18 | 47 | 23 | 197 | 47 | 26 | 23 |
| 21 | 96 | 96 | e71 | e31 | e23 | e17 | 49 | 38 | 174 | 44 | 26 | 23 |
| 22 | 92 | 100 | e69 | e30 | e23 | e23 | 48 | 289 | 166 | 40 | 26 | 23 |
| 23 | e89 | 102 | e68 | e30 | e23 | 25 | 43 | 438 | 182 | 38 | 26 | 24 |
| 24 | e87 | 99 | e66 | e31 | e22 | e24 | 35 | 457 | 194 | 36 | 26 | 22 |
| 25 | e85 | 93 | e65 | e31 | e22 | e24 | e30 | 420 | 197 | 37 | 25 | 20 |
| 26 | e82 | 82 | e64 | e32 | e22 | 23 | e25 | 352 | 201 | 34 | 24 | 19 |
| 27 | e79 | 76 | e63 | e32 | e22 | 25 | 21 | 281 | 311 | 32 | 25 | 18 |
| 28 | e76 | e72 | e62 | e31 | e20 | 30 | 20 | 235 | 460 | 30 | 26 | 16 |
| 29 | e74 | e69 | e61 | e30 | --- | 36 | 20 | 204 | 501 | 30 | 26 | 18 |
| 30 | e72 | e67 | e59 | e30 | --- | 38 | 19 | 181 | 458 | 28 | 27 | 22 |
| 31 | e71 | --- | e58 | e29 | --- | 35 | --- | 166 | --- | 25 | 30 | --- |
| TOTAL | 3352 | 2393 | 2015 | 1212 | 674 | 668 | 898 | 3493 | 7574 | 2566 | 761 | 1426 |
| MEAN | 108.1 | 79.77 | 65.00 | 39.10 | 24.07 | 21.55 | 29.93 | 112.7 | 252.5 | 82.77 | 24.55 | 47.53 |
| MAX | 134 | 102 | 72 | 56 | 28 | 38 | 49 | 457 | 501 | 373 | 30 | 120 |
| MIN | 71 | 60 | 58 | 29 | 20 | 13 | 19 | 16 | 139 | 25 | 18 | 16 |
| AC-FT | 6650 | 4750 | 4000 | 2400 | 1340 | 1320 | 1780 | 6930 | 15020 | 5090 | 1510 | 2830 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 67.27 | 59.58 | 42.68 | 33.65 | 42.74 | 144.4 | 634.9 | 810.1 | 410.6 | 220.5 | 122.9 | 72.69 |
| MAX | 421 | 219 | 172 | 175 | 388 | 912 | 5666 | 5161 | 2821 | 1616 | 1080 | 633 |
| (WY) | 2000 | 1976 | 1976 | 1976 | 1997 | 1995 | 1976 | 1979 | 1975 | 1953 | 1999 | 1999 |
| MIN | 0.68 | 0.50 | 1.00 | 0.50 | 0.000 | 0.44 | 5.60 | 3.04 | 11.7 | 2.73 | 1.03 | 0.010 |
| (WY) | 1941 | 1941 | 1938 | 1938 | 1938 | 1937 | 1990 | 1937 | 1992 | 1992 | 1992 | 1939 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1937 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 162493 | | 27032 | | | |
| ANNUAL MEAN | 445.2 | | 74.06 | | 225.4 | |
| HIGHEST ANNUAL MEAN | | | | | 1226 | 1976 |
| LOWEST ANNUAL MEAN | | | | | 15.9 | 1938 |
| HIGHEST DAILY MEAN | 2260 | Apr 6 | 501 | Jun 29 | 9260 | Apr 23 1976 |
| LOWEST DAILY MEAN | 45 | Feb 17 | 13 | Mar 8 | 0.00 | Mar 1 1937 |
| ANNUAL SEVEN-DAY MINIMUM | 46 | Feb 12 | 15 | Mar 4 | 0.00 | Mar 1 1937 |
| MAXIMUM PEAK FLOW | | | 506 | Jun 29 | 9330 | Apr 23 1976 |
| MAXIMUM PEAK STAGE | | | 7.23 | Jun 29 | 14.59 | Apr 23 1976 |
| ANNUAL RUNOFF (AC-FT) | 322300 | | 53620 | | 163300 | |
| 10 PERCENT EXCEEDS | 1610 | | 172 | | 540 | |
| 50 PERCENT EXCEEDS | 135 | | 41 | | 53 | |
| 90 PERCENT EXCEEDS | 60 | | 20 | | 5.4 | |

e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 12... | 1115 | 126 | -- | -- | -- | 952 | 8.0 | 9.6 | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 07... | 1615 | 60 | -- | -- | -- | 1140 | 4.5 | 4.4 | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 17... | 1245 | 34 | -- | -- | -- | 1760 | -- | .0 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 12... | 1530 | 19 | -- | -- | -- | 1400 | 7.0 | .0 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 16... | 1545 | 25 | -- | -- | -- | 760 | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 24... | 1430 | 438 | 8.2 | 8.2 | 1250 | 1230 | 14.2 | 13.7 | 350 | 66.0 | 46.0 | 13.0 | 3 |
| JUL | | | | | | | | | | | | | |
| 17... | 1515 | 55 | 8.2 | 8.4 | 1490 | 1520 | 24.0 | 26.1 | 380 | 70.0 | 49.0 | 15.0 | 5 |
| AUG | | | | | | | | | | | | | |
| 21... | 1300 | 26 | -- | -- | -- | 1360 | 16.0 | 19.7 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 12... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 07... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 12... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 16... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 24... | 140 | 45 | 308 | 28.0 | .20 | 340 | 992 | 839 | 818 | 3.0 | 30 | <1 | 60 |
| JUL | | | | | | | | | | | | | |
| 17... | 210 | 54 | 423 | 29.0 | .20 | 410 | 162 | 1100 | 1040 | 13.0 | 40 | <1 | 70 |
| AUG | | | | | | | | | | | | | |
| 21... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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 | | | | | |
| 12... | -- | -- | -- | -- | -- |
| NOV | | | | | |
| 07... | -- | -- | -- | -- | -- |
| JAN | | | | | |
| 17... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 12... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 16... | -- | -- | -- | -- | -- |
| MAY | | | | | |
| 24... | 70 | <.10 | 3 | <1 | 340 |
| JUL | | | | | |
| 17... | 180 | <.10 | 2 | 1 | 390 |
| AUG | | | | | |
| 21... | -- | -- | -- | -- | -- |

< Less than

## 05123400 WILLOW CREEK NEAR WILLOW CITY, ND

LOCATION.--Lat 48°35'20", long 100°26'30", in NE$^1/_4$NW$^1/_4$ sec.23, T.159 N., R.76 W., McHenry County, Hydrologic Unit 09010004, on left bank 50 ft downstream from culverts on county road, 1.5 mi upstream from Snake Creek, and 7 mi west of Willow City.

DRAINAGE AREA.--1,160 mi$^2$, approximately, of which about 430 mi$^2$ 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 National Geodetic Vertical Datum of 1929, from topographic map. Prior to Oct. 5, 1956, nonrecording gage at site 50 ft upstream at same datum.

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | e0.00 | e2.6 | e8.7 | e0.00 | e0.00 | e0.00 | e2.7 | 4.3 | e1.6 | 116 | e0.00 | 0.00 |
| 2 | e0.00 | e2.4 | e8.2 | e0.00 | e0.00 | e0.00 | e2.6 | 8.2 | e1.5 | 67 | e0.00 | 0.00 |
| 3 | e0.00 | e2.3 | e7.5 | e0.00 | e0.00 | e0.00 | e2.6 | 16 | e1.5 | 49 | e0.00 | 0.00 |
| 4 | e0.00 | e2.2 | e6.4 | e0.00 | e0.00 | e0.00 | e2.7 | 15 | e1.9 | e37 | e0.00 | 0.00 |
| 5 | e0.00 | e3.1 | e5.4 | e0.00 | e0.00 | e0.00 | e2.9 | 14 | 2.2 | e30 | e0.00 | 0.00 |
| 6 | e0.00 | e4.6 | e4.7 | e0.00 | e0.00 | e0.00 | e3.8 | 11 | 1.9 | e25 | e0.00 | 0.00 |
| 7 | e0.00 | e5.3 | e4.3 | e0.00 | e0.00 | e0.00 | e5.0 | 10 | 2.0 | e18 | e0.00 | 0.00 |
| 8 | e0.00 | 6.2 | e3.9 | e0.00 | e0.00 | e0.00 | e8.0 | 10 | 3.8 | e15 | e0.00 | 0.00 |
| 9 | e0.00 | 9.3 | e3.5 | e0.00 | e0.00 | e0.00 | e11 | 13 | 9.4 | e12 | e0.00 | 0.00 |
| 10 | e0.00 | 14 | e3.0 | e0.00 | e0.00 | e0.00 | e14 | 13 | 20 | e9.5 | e0.00 | 0.00 |
| 11 | e0.00 | 13 | e2.6 | e0.00 | e0.00 | e0.00 | e19 | 12 | 58 | e8.5 | e0.00 | 0.00 |
| 12 | e0.00 | 12 | e2.2 | e0.00 | e0.00 | e0.00 | e22 | 19 | 100 | e7.5 | e0.00 | 0.00 |
| 13 | e0.00 | 11 | e1.9 | e0.00 | e0.00 | e0.00 | e24 | 17 | 126 | e6.3 | e0.00 | 0.00 |
| 14 | e0.00 | 11 | e1.6 | e0.00 | e0.00 | e0.00 | e25 | 14 | 128 | e5.7 | e0.00 | 0.00 |
| 15 | e0.00 | 11 | e1.4 | e0.00 | e0.00 | e0.00 | e26 | 12 | 129 | e4.9 | e0.00 | 0.00 |
| 16 | e0.00 | 11 | e1.2 | e0.00 | e0.00 | e0.00 | 24 | 9.6 | 128 | e4.1 | e0.00 | 0.00 |
| 17 | e0.00 | 13 | e1.3 | e0.00 | e0.00 | e0.00 | 22 | 9.2 | 123 | e3.6 | e0.00 | 0.00 |
| 18 | e0.00 | 14 | e1.2 | e0.00 | e0.00 | e0.00 | 21 | 8.0 | 115 | e3.2 | e0.00 | 0.00 |
| 19 | e0.00 | 14 | e1.1 | e0.00 | e0.00 | e0.00 | 22 | 9.1 | 102 | e2.5 | e0.00 | 0.00 |
| 20 | e0.00 | 13 | e1.1 | e0.00 | e0.00 | e0.00 | 25 | 11 | 89 | e1.9 | e0.00 | 0.00 |
| 21 | e0.00 | e14 | e1.0 | e0.00 | e0.00 | e0.00 | 24 | 9.6 | 73 | e1.5 | 0.00 | 0.00 |
| 22 | e0.20 | e14 | e0.90 | e0.00 | e0.00 | e0.00 | 22 | 9.3 | 60 | e1.0 | 0.00 | 0.00 |
| 23 | e0.50 | e13 | e0.82 | e0.00 | e0.00 | e0.00 | 19 | 8.8 | 52 | e0.65 | 0.00 | 0.00 |
| 24 | e1.1 | e13 | e0.74 | e0.00 | e0.00 | e0.00 | 18 | 8.3 | 51 | e0.50 | 0.00 | 0.00 |
| 25 | e1.7 | e12 | e0.61 | e0.00 | e0.00 | e0.00 | 14 | 8.8 | 48 | e0.35 | 0.00 | 0.00 |
| 26 | e2.3 | e12 | e0.52 | e0.00 | e0.00 | e0.00 | 9.6 | 7.4 | 62 | e0.20 | 0.00 | 0.00 |
| 27 | e2.7 | e11 | e0.40 | e0.00 | e0.00 | e0.10 | 8.8 | 5.8 | 88 | e0.15 | 0.00 | 0.00 |
| 28 | e2.9 | e10 | e0.30 | e0.00 | e0.00 | e0.50 | 9.5 | 4.9 | 128 | e0.10 | 0.00 | 0.00 |
| 29 | e3.0 | e9.8 | e0.10 | e0.00 | --- | e1.0 | 7.7 | 2.7 | 153 | e0.05 | 0.00 | 0.00 |
| 30 | e2.9 | e9.2 | e0.10 | e0.00 | --- | e1.8 | 5.9 | e1.7 | 154 | e0.00 | 0.00 | 0.00 |
| 31 | e2.8 | --- | e0.00 | e0.00 | --- | e2.8 | --- | e1.4 | --- | e0.00 | 0.00 | --- |
| TOTAL | 20.10 | 293.0 | 76.69 | 0.00 | 0.00 | 6.20 | 423.8 | 304.1 | 2012.8 | 431.20 | 0.00 | 0.00 |
| MEAN | 0.648 | 9.767 | 2.474 | 0.000 | 0.000 | 0.200 | 14.13 | 9.810 | 67.09 | 13.91 | 0.000 | 0.000 |
| MAX | 3.0 | 14 | 8.7 | 0.00 | 0.00 | 2.8 | 26 | 19 | 154 | 116 | 0.00 | 0.00 |
| MIN | 0.00 | 2.2 | 0.00 | 0.00 | 0.00 | 0.00 | 2.6 | 1.4 | 1.5 | 0.00 | 0.00 | 0.00 |
| AC-FT | 40 | 581 | 152 | 0.00 | 0.00 | 12 | 841 | 603 | 3990 | 855 | 0.00 | 0.00 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 7.166 | 7.351 | 2.153 | 0.301 | 0.611 | 38.65 | 261.3 | 149.4 | 59.31 | 26.98 | 22.31 | 8.811 |
| MAX | 71.8 | 57.7 | 24.8 | 4.39 | 16.4 | 342 | 1242 | 1424 | 769 | 255 | 197 | 75.5 |
| (WY) | 1981 | 2001 | 1960 | 1960 | 1981 | 1995 | 1969 | 1999 | 1999 | 1999 | 2001 | 1980 |
| MIN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| (WY) | 1957 | 1957 | 1957 | 1957 | 1958 | 1959 | 1977 | 1959 | 1959 | 1958 | 1957 | 1957 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1956 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 43906.46 | | 3567.89 | | | |
| ANNUAL MEAN | 120.3 | | 9.775 | | 48.68 | |
| HIGHEST ANNUAL MEAN | | | | | 323 | 1999 |
| LOWEST ANNUAL MEAN | | | | | 0.005 | 1990 |
| HIGHEST DAILY MEAN | 1770 | Apr 11 | 154 | Jun 30 | 5310 | Apr 12 1969 |
| LOWEST DAILY MEAN | 0.00 | Sep 11 | 0.00 | Oct 1 | 0.00 | Sep 23 1956 |
| ANNUAL SEVEN-DAY MINIMUM | 0.00 | Sep 11 | 0.00 | Oct 1 | 0.00 | Sep 23 1956 |
| MAXIMUM PEAK FLOW | | | 159 | Jun 29 | 5900 | Apr 12 1969 |
| MAXIMUM PEAK STAGE | | | 7.78 | Jun 29 | 16.76 | Apr 12 1969 |
| INSTANTANEOUS LOW FLOW | | | 0.00 | Oct 1 | | |
| ANNUAL RUNOFF (AC-FT) | 87090 | | 7080 | | 35270 | |
| 10 PERCENT EXCEEDS | 445 | | 21 | | 98 | |
| 50 PERCENT EXCEEDS | 7.3 | | 0.50 | | 0.00 | |
| 90 PERCENT EXCEEDS | 0.00 | | 0.00 | | 0.00 | |

e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 12... | 0915 | .0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 07... | 1345 | 5.3 | -- | -- | -- | 2190 | 5.0 | 4.5 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 16... | 1730 | 24 | 8.6 | --e | 1600 | 1550 | 8.0 | 9.0 | 430 | 77.0 | 59.0 | 13.0 | 4 |
| JUN | | | | | | | | | | | | | |
| 07... | 1450 | 1.8 | -- | -- | -- | 1580 | 20.0 | 18.8 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 17... | 1400 | 3.6 | 8.5 | 8.5 | 2120 | 2160 | 23.0 | 26.0 | 580 | 77.0 | 95.0 | 21.0 | 5 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 12... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 07... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 16... | 170 | 45 | 203 | 68.0 | .20 | 550 | 72.9 | 1120 | 1060 | 2.0 | 90 | 1 | 100 |
| JUN | | | | | | | | | | | | | |
| 07... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 17... | 270 | 49 | 386 | 160 | .30 | 630 | 15.0 | 1560 | 1490 | 13.0 | 60 | <1 | 170 |

| Date | 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 | | | | | |
| 12... | -- | -- | -- | -- | -- |
| NOV | | | | | |
| 07... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 16... | 210 | <.10 | 2 | <1 | 370 |
| JUN | | | | | |
| 07... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 17... | 280 | .10 | <1 | <1 | 520 |

< Less than
e Required equipment not functional/available

## 05123510 DEEP RIVER NEAR UPHAM, ND

LOCATION.--Lat 48°35'03", long 100°51'44", in SW$^1/_4$NW$^1/_4$ 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$^2$, of which about 605 mi$^2$ is probably noncontributing.

### WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 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 National Geodetic Vertical Datum of 1929, from topographic map.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in April 1951 reached a stage of about 16 ft, discharge, 2,700 ft$^3$/s, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 11 ft$^3$/s, April 18, gage height, 7.29 ft, no flow for several days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | --- | --- | --- | --- | --- | e0.09 | 0.13 | 8.0 | 0.49 | e0.15 | e0.00 | e0.00 |
| 2 | --- | --- | --- | --- | --- | e0.09 | 0.17 | 8.0 | 0.25 | e0.10 | e0.00 | e0.00 |
| 3 | --- | --- | --- | --- | --- | e0.08 | 0.19 | 7.5 | 0.15 | e0.10 | e0.00 | e0.00 |
| 4 | --- | --- | --- | --- | --- | e0.08 | 0.18 | 6.7 | 0.09 | e0.00 | e0.00 | e0.00 |
| 5 | --- | --- | --- | --- | --- | e0.07 | 0.15 | 5.7 | 0.06 | e0.00 | e0.00 | e0.00 |
| 6 | --- | --- | --- | --- | --- | e0.07 | 0.14 | 4.9 | 0.03 | e0.00 | e0.00 | 0.00 |
| 7 | --- | --- | --- | --- | --- | e0.08 | 0.29 | 4.3 | e0.00 | e0.00 | e0.00 | 0.00 |
| 8 | --- | --- | --- | --- | --- | e0.08 | 0.61 | 3.9 | e0.00 | e0.00 | e0.00 | 0.00 |
| 9 | --- | --- | --- | --- | --- | e0.08 | 0.68 | 5.1 | e0.00 | e0.00 | e0.00 | 0.00 |
| 10 | --- | --- | --- | --- | --- | e0.08 | 0.64 | 5.9 | e0.00 | e0.00 | e0.00 | 0.00 |
| 11 | --- | --- | --- | --- | --- | e0.08 | 0.71 | 6.4 | e0.10 | e0.00 | e0.00 | 0.00 |
| 12 | --- | --- | --- | --- | --- | e0.08 | 1.1 | 7.1 | e0.10 | e0.00 | e0.00 | 0.00 |
| 13 | --- | --- | --- | --- | --- | 0.12 | 1.4 | 7.3 | e0.10 | e0.00 | e0.00 | 0.00 |
| 14 | --- | --- | --- | --- | --- | 0.12 | 1.8 | 7.0 | e0.10 | e0.00 | e0.00 | 0.00 |
| 15 | --- | --- | --- | --- | --- | 0.10 | 1.9 | 6.5 | e0.15 | e0.00 | e0.00 | 0.00 |
| 16 | --- | --- | --- | --- | --- | 0.09 | 2.1 | 5.7 | e0.25 | e0.00 | e0.00 | 0.00 |
| 17 | --- | --- | --- | --- | --- | 0.08 | 6.1 | 5.0 | e0.35 | e0.00 | e0.00 | 0.00 |
| 18 | --- | --- | --- | --- | --- | 0.07 | 10 | 4.9 | e0.45 | e0.00 | e0.00 | 0.00 |
| 19 | --- | --- | --- | --- | --- | 0.07 | 11 | 4.3 | e0.50 | e0.00 | e0.00 | 0.00 |
| 20 | --- | --- | --- | --- | --- | 0.07 | 11 | 3.8 | e0.40 | e0.00 | e0.00 | 0.00 |
| 21 | --- | --- | --- | --- | --- | 0.07 | 9.2 | 3.5 | e0.35 | e0.00 | e0.00 | 0.00 |
| 22 | --- | --- | --- | --- | --- | 0.07 | 7.9 | 3.2 | e0.30 | e0.00 | e0.00 | 0.00 |
| 23 | --- | --- | --- | --- | --- | 0.07 | 6.8 | 3.0 | e0.35 | e0.00 | e0.00 | 0.00 |
| 24 | --- | --- | --- | --- | --- | 0.06 | 5.7 | 3.0 | e0.38 | e0.00 | e0.00 | 0.00 |
| 25 | --- | --- | --- | --- | --- | 0.06 | 5.6 | 3.0 | e0.40 | e0.00 | e0.00 | 0.00 |
| 26 | --- | --- | --- | --- | --- | 0.06 | 5.6 | 2.9 | e0.35 | e0.00 | e0.00 | 0.00 |
| 27 | --- | --- | --- | --- | --- | 0.05 | 5.6 | 2.7 | e0.32 | e0.00 | e0.00 | 0.00 |
| 28 | --- | --- | --- | --- | --- | 0.09 | 6.2 | 2.4 | e0.30 | e0.00 | e0.00 | 0.00 |
| 29 | --- | --- | --- | --- | --- | 0.13 | 7.2 | 2.0 | e0.25 | e0.00 | e0.00 | 0.00 |
| 30 | --- | --- | --- | --- | --- | 0.13 | 7.7 | 1.5 | e0.20 | e0.00 | e0.00 | 0.00 |
| 31 | --- | --- | --- | --- | --- | 0.12 | --- | 0.92 | --- | e0.00 | e0.00 | --- |
| TOTAL | --- | --- | --- | --- | --- | 2.59 | 117.79 | 146.12 | 6.77 | 0.35 | 0.00 | 0.00 |
| MEAN | --- | --- | --- | --- | --- | 0.084 | 3.926 | 4.714 | 0.226 | 0.011 | 0.000 | 0.000 |
| MAX | --- | --- | --- | --- | --- | 0.13 | 11 | 8.0 | 0.50 | 0.15 | 0.00 | 0.00 |
| MIN | --- | --- | --- | --- | --- | 0.05 | 0.13 | 0.92 | 0.00 | 0.00 | 0.00 | 0.00 |
| AC-FT | --- | --- | --- | --- | --- | 5.1 | 234 | 290 | 13 | 0.7 | 0.00 | 0.00 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1958 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 0.122 | 0.724 | 0.245 | 0.034 | 0.102 | 28.09 | 145.1 | 44.99 | 8.003 | 4.684 | 3.413 | 0.224 |
| MAX | 1.99 | 16.1 | 5.08 | 0.77 | 2.37 | 276 | 1300 | 469 | 121 | 57.6 | 81.5 | 6.17 |
| (WY) | 1976 | 1976 | 1976 | 1976 | 1976 | 1976 | 1976 | 1999 | 1999 | 2000 | 2001 | 1999 |
| MIN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| (WY) | 1958 | 1958 | 1958 | 1958 | 1958 | 1959 | 1959 | 1959 | 1958 | 1958 | 1958 | 1958 |

| SUMMARY STATISTICS | WATER YEARS 1958 - 2002 | |
|---|---|---|
| ANNUAL MEAN | a20.45 | |
| HIGHEST ANNUAL MEAN | a140 | 1976 |
| LOWEST ANNUAL MEAN | a0.000 | 1959 |
| HIGHEST DAILY MEAN | 5700 | Apr 12 1969 |
| LOWEST DAILY MEAN | 0.00 | Oct 1 1957 |
| ANNUAL SEVEN-DAY MINIMUM | 0.00 | Oct 1 1957 |
| MAXIMUM PEAK FLOW | 6760 | Apr 12 1969 |
| MAXIMUM PEAK STAGE | 18.18 | Apr 12 1969 |
| ANNUAL RUNOFF (AC-FT) | a14820 | |
| 10 PERCENT EXCEEDS | 6.8 | |
| 50 PERCENT EXCEEDS | 0.00 | |
| 90 PERCENT EXCEEDS | 0.00 | |

a Based on complete water years only (1958-80)
e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 11... | 1340 | .01 | -- | -- | -- | 945 | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 12... | 1715 | .08 | -- | -- | -- | 1510 | .0 | .0 | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 17... | 1430 | 5.0 | 8.5 | 8.3 | 1260 | 1220 | 11.0 | 14.3 | 530 | 82.0 | 80.0 | 19.0 | 1 |
| JUN | | | | | | | | | | | | | |
| 07... | 1330 | .0 | -- | -- | -- | 1150 | 19.0 | 17.4 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 19... | 1030 | .0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 12... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 17... | 65.0 | 70 | 263 | 38.0 | .10 | 390 | 11.8 | 867 | 832 | 2.0 | 30 | <1 | 70 |
| JUN | | | | | | | | | | | | | |
| 07... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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 | | | | | |
| 11... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 12... | -- | -- | -- | -- | -- |
| MAY | | | | | |
| 17... | 30 | <.10 | 2 | <1 | 320 |
| JUN | | | | | |
| 07... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 19... | -- | -- | -- | -- | -- |

< Less than

## 05123990 J. CLARK SALYER POOL 357 NEAR WESTHOPE, ND

LOCATION.--Lat 48°58'40", long 100°57'45", in SW$^1/_4$ 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$^2$, of which about 10,300 mi$^2$ is probably noncontributing.

### WATER-QUALITY RECORDS

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

REVISED RECORDS.--WSP 1728: Drainage area.

REMARKS.--Quality assurance sample also collected at this location.

### WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DEPTH TO TOP OF SAMPLE INTERVAL(IN METERS) (82047) | DEPTH TO BOTTOM OF SAMPLE INTERVAL(IN METERS) (82048) | SPECIFIC CONDUCTANCE LAB (US/CM) (90095) | PH WATER WHOLE LAB (STANDARD UNITS) (00403) | HARDNESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DISSOLVED (MG/L AS CA) (00915) | MAGNESIUM, DISSOLVED (MG/L AS MG) (00925) | SODIUM ADSORPTION RATIO (00931) | SODIUM, DISSOLVED (MG/L AS NA) (00930) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLORIDE, DISSOLVED (MG/L AS CL) (00940) | FLUORIDE, DISSOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 11... | 1330 | -- | .50 | 1160 | 9.1 | 310 | 39.0 | 51.8 | 4 | 161 | 350 | 34.4 | .3 |
| 11... | 1335 | .0 | 1.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 11... | 1340 | -- | 2.0 | 1160 | 9.2 | 310 | 38.4 | 51.1 | 4 | 159 | 349 | 34.6 | .3 |
| APR | | | | | | | | | | | | | |
| 25... | 1230 | -- | 1.0 | 1160 | -- | 370 | 68.5 | 47.5 | 3 | 119 | 374 | 35.6 | .2 |
| 25... | 1240 | -- | 2.3 | 1150 | -- | 370 | 69.0 | 47.2 | 3 | 119 | 375 | 35.9 | .2 |
| 25... | 1250 | .0 | .20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 16... | 1135 | -- | .50 | 1070 | 8.4 | 360 | 65.4 | 46.8 | 3 | 118 | 356 | 34.7 | .2 |
| 16... | 1140 | .0 | .04 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 16... | 1145 | -- | 2.0 | 1070 | 8.3 | 360 | 66.3 | 47.9 | 3 | 121 | 356 | 35.0 | .2 |
| JUL | | | | | | | | | | | | | |
| 18... | 1450 | -- | .50 | 1440 | 9.0 | 400 | 59.2 | 60.9 | 4 | 178 | 340 | 39.0 | .1 |
| 18... | 1455 | .0 | 2.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 18... | 1500 | -- | 2.0 | 1420 | 9.0 | 390 | 56.3 | 60.4 | 4 | 175 | 336 | 39.4 | .1 |
| AUG | | | | | | | | | | | | | |
| 22... | 1710 | -- | .50 | 1470 | -- | 340 | 37.7 | 60.1 | 5 | 194 | 280 | 39.8 | .2 |
| 22... | 1715 | .0 | .80 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 22... | 1720 | -- | 2.0 | 1450 | 9.0 | 350 | 39.1 | 61.0 | 5 | 196 | 295 | 39.5 | .2 |
| SEP | | | | | | | | | | | | | |
| 03... | 1505 | -- | .50 | 1430 | -- | 310 | 31.5 | 56.9 | 5 | 193 | 253 | 39.8 | .2 |
| 03... | 1510 | -- | 2.5 | 1440 | -- | 310 | 31.5 | 56.7 | 5 | 193 | 256 | 39.5 | .2 |
| 03... | 1515 | .0 | .20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 10... | 1640 | -- | .50 | 1430 | 8.9 | 330 | 37.3 | 57.9 | 5 | 191 | 283 | 39.2 | .2 |
| 10... | 1645 | .0 | .60 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 10... | 1650 | -- | 2.0 | 1430 | 8.9 | 340 | 37.4 | 59.5 | 5 | 194 | 287 | 39.3 | .2 |

| Date | SULFATE DISSOLVED (MG/L AS SO4) (00945) | NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608) | NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631) | NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605) | NITROGEN, TOTAL (MG/L AS N) (00600) | PHOSPHORUS TOTAL (MG/L AS P) (00665) | CARBON, ORGANIC TOTAL (MG/L AS C) (00680) | PHENOLS TOTAL (UG/L) (32730) | SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300) | RESIDUE TOTAL AT 105 DEG. C, SUSPENDED (MG/L) (00530) | CHLOR-A PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70954) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 11... | 275 | 2.0 | <.04 | <.05 | -- | -- | .19 | 36.0 | <16 | 832 | <10 | -- | -- |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 11.8 | 1.8 |
| 11... | 272 | 2.1 | <.04 | <.05 | -- | -- | .16 | 32.2 | <16 | 824 | 16 | -- | -- |
| APR | | | | | | | | | | | | | |
| 25... | 230 | 1.7 | .08 | <.05 | 1.6 | -- | .33 | 38.0 | <16 | 792 | 216 | -- | -- |
| 25... | 231 | 1.6 | .10 | .10 | 1.5 | 1.7 | .34 | 34.8 | <17 | 777 | 220 | -- | -- |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 17.8 | 1.7 |
| MAY | | | | | | | | | | | | | |
| 16... | 223 | 1.9 | <.04 | <.05 | -- | -- | .19 | 15.7 | -- | 749 | 73 | -- | -- |
| 16... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 52.1 | 4.3 |
| 16... | 223 | 1.6 | <.04 | <.05 | -- | -- | .19 | 17.8 | -- | 775 | 83 | -- | -- |
| JUL | | | | | | | | | | | | | |
| 18... | 398 | 2.1 | .09 | E.03 | 2.0 | -- | .42 | 24.2 | 18 | 1050 | <10 | -- | -- |
| 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | E7.0 | E.8 |
| 18... | 392 | 2.1 | .15 | E.03 | 1.9 | -- | .36 | 23.0 | <18 | 1030 | <10 | -- | -- |
| AUG | | | | | | | | | | | | | |
| 22... | 430 | 7.5 | E.03 | <.05 | -- | -- | .59 | 33.0 | <16 | 1010 | 34 | -- | -- |
| 22... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | E395 | <.1 |
| 22... | 434 | 3.4 | .15 | .07 | 3.3 | 3.5 | .27 | 35.4 | <16 | 1050 | <10 | -- | -- |
| SEP | | | | | | | | | | | | | |
| 03... | 427 | 9.1 | .09 | E.03 | 9.0 | -- | .54 | 47.4 | <16 | 1000 | 80 | -- | -- |
| 03... | 421 | 7.2 | .15 | E.03 | 7.1 | -- | .44 | 43.7 | <16 | 1020 | 84 | -- | -- |
| 03... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1320 | <.1 |
| 10... | 422 | 4.9 | .06 | <.05 | 4.8 | -- | .35 | 42.1 | <16 | 1050 | 23 | -- | -- |
| 10... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 212 | <.1 |
| 10... | 427 | 3.7 | .10 | <.05 | 3.6 | -- | .26 | 35.9 | <16 | 1040 | 25 | -- | -- |

05123990 J. CLARK SALYER POOL 357 NEAR WESTHOPE, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | 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 WATER UNFLTRD TOTAL (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) | MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900) | MOLYB-DENUM, TOTAL RECOV-ERABLE (UG/L AS MO) (01062) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 11... | 280 | 9 | 57.5 | <2 | 240 | <.1 | E.5 | E1.1 | 2.4 | 320 | M | .02 | 2 |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 11... | 220 | 9 | 56.9 | <2 | 230 | <.1 | E.4 | 2.1 | 2.0 | 300 | 1 | E.01 | E2 |
| APR | | | | | | | | | | | | | |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 16... | 570 | 4 | 131 | <2 | 220 | <.1 | 1.5 | <2.0 | 3.2 | 1060 | 2 | E.01n | 5 |
| 16... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 16... | 600 | 4 | 131 | <2 | 220 | <.1 | 1.5 | E1.0 | 2.6 | 1090 | 2 | .01 | 5 |
| JUL | | | | | | | | | | | | | |
| 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 22... | 40 | E8dn | 53.5 | <2 | 250 | <.1 | <.8 | E.9 | 1.5 | 60 | <1 | E.01n | E2 |
| 22... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 22... | 110 | E8n | 57.6 | <2 | 260 | <.1 | <.8 | <2.0 | E1.1 | 180 | <1 | E.01n | E2 |
| SEP | | | | | | | | | | | | | |
| 03... | 420 | 8 | 69.8 | E2 | 240 | <.1 | 1.1 | E1.3 | 2.4 | 750 | M | .02 | 2 |
| 03... | 440 | 8 | 70.4 | <2 | 250 | <.1 | 1.0 | 2.3 | 2.8 | 800 | 1 | .02 | 2 |
| 03... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 10... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 10... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 10... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| 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) | TRIAZIN SCREEN (ELISA) WAT,WH REC,AS ATRAZIN (UG/L) (34757) | 2,4-D SCREEN TOTAL (UG/L) (99906) |
|---|---|---|---|---|---|
| OCT | | | | | |
| 11... | 2.6 | <2 | <20 | .4 | <.700 |
| 11... | -- | -- | -- | -- | -- |
| 11... | 3.2 | <2 | E10 | -- | -- |
| APR | | | | | |
| 25... | -- | -- | -- | -- | -- |
| 25... | -- | -- | -- | -- | -- |
| 25... | -- | -- | -- | -- | -- |
| MAY | | | | | |
| 16... | 4.5 | <2 | <20 | .1 | <.700 |
| 16... | -- | -- | -- | -- | -- |
| 16... | 4.8 | <2 | E20n | -- | -- |
| JUL | | | | | |
| 18... | -- | -- | -- | -- | -- |
| 18... | -- | -- | -- | -- | -- |
| 18... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 22... | 3.1 | <14d | <20 | .1 | <.700 |
| 22... | -- | -- | -- | -- | -- |
| 22... | 3.1 | <14 | <20 | -- | -- |
| SEP | | | | | |
| 03... | 5.0 | <2 | <20 | -- | -- |
| 03... | 4.2 | <2 | <20 | -- | -- |
| 03... | -- | -- | -- | -- | -- |
| 10... | -- | -- | -- | .2 | <.700 |
| 10... | -- | -- | -- | -- | -- |
| 10... | -- | -- | -- | -- | -- |

05123990 J. CLARK SALYER POOL 357 NEAR WESTHOPE, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DEPTH OF LAKE MAX. METERS (85310) | 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) | TUR-BID-ITY FIELD WATER UNFLTRD (NTU) (61028) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 11... | 1324 | 2.3 | .0 | 1250 | 8.8 | 8.2 | -- | 11.0 | 100 | 711 | 19.0 | 16.0 | 205 |
| 11... | 1325 | -- | .50 | 1240 | 8.9 | 8.2 | -- | 10.5 | -- | -- | -- | -- | -- |
| 11... | 1326 | -- | 1.0 | 1240 | 8.9 | 8.1 | -- | 10.6 | -- | -- | -- | -- | -- |
| 11... | 1327 | -- | 1.8 | 1240 | 8.9 | 8.1 | -- | 10.7 | -- | -- | -- | -- | -- |
| 11... | 1328 | -- | 2.3 | 1250 | 8.9 | 8.1 | -- | 10.6 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 25... | 1215 | 2.3 | .0 | 1190 | 7.4 | 1.4 | 72 | 12.1 | 90 | 733 | 4.20 | 2.5 | 30 |
| 25... | 1216 | -- | 1.0 | 1190 | 7.5 | 1.4 | 75 | 12.1 | -- | -- | -- | -- | -- |
| 25... | 1217 | -- | 2.0 | 1190 | 7.6 | 1.3 | 90 | 11.9 | -- | -- | -- | -- | -- |
| 25... | 1218 | -- | 2.3 | 1140 | 7.5 | 4.4 | -- | .5 | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 16... | 1125 | 2.1 | .0 | 1110 | 8.4 | 11.1 | -- | 9.9 | 95 | 731 | .70 | 11.0 | 30 |
| 16... | 1126 | -- | .50 | 1120 | 8.4 | 11.0 | -- | 9.8 | -- | -- | -- | -- | -- |
| 16... | 1127 | -- | 1.0 | 1110 | 8.4 | 10.8 | -- | 9.3 | -- | -- | -- | -- | -- |
| 16... | 1128 | -- | 1.6 | 1120 | 8.4 | 10.7 | -- | 9.4 | -- | -- | -- | -- | -- |
| 16... | 1129 | -- | 2.1 | 1120 | 8.4 | 10.6 | -- | 8.2 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 18... | 1540 | 2.5 | .0 | 1460 | 8.8 | 27.1 | -- | 8.2 | 110 | 724 | 48.0 | 27.0 | 120 |
| 18... | 1541 | -- | .50 | 1460 | 8.8 | 26.9 | -- | 8.0 | -- | -- | -- | -- | -- |
| 18... | 1542 | -- | 1.0 | 1460 | 8.8 | 26.5 | -- | 7.3 | -- | -- | -- | -- | -- |
| 18... | 1543 | -- | 1.6 | 1440 | 8.9 | 25.0 | -- | 8.2 | -- | -- | -- | -- | -- |
| 18... | 1544 | -- | 2.3 | 1450 | 8.8 | 24.8 | -- | 6.5 | -- | -- | -- | -- | -- |
| 18... | 1545 | -- | 2.5 | 1440 | 8.8 | 24.6 | -- | 6.4 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 22... | 1700 | 2.4 | .0 | 1440 | 9.3 | 21.6 | -- | -- | -- | 722 | 15.7 | 24.0 | 140 |
| 22... | 1701 | -- | .50 | 1440 | 9.3 | 21.5 | -- | -- | -- | -- | -- | -- | -- |
| 22... | 1702 | -- | 1.0 | 1470 | 9.1 | 19.0 | -- | 9.2 | -- | -- | -- | -- | -- |
| 22... | 1703 | -- | 1.6 | 1470 | 9.0 | 18.1 | -- | 8.8 | -- | -- | -- | -- | -- |
| 22... | 1704 | -- | 2.1 | 1460 | 8.9 | 17.6 | -- | 7.4 | -- | -- | -- | -- | -- |
| 22... | 1705 | -- | 2.4 | 1460 | 8.9 | 17.5 | -- | 6.8 | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 03... | 1500 | 2.6 | .0 | 1400 | 9.0 | 20.8 | -- | 13.8 | 163 | 724 | 3.60 | 25.5 | 115 |
| 03... | 1501 | -- | .50 | 1400 | 9.0 | 20.4 | -- | 12.7 | -- | -- | -- | -- | -- |
| 03... | 1502 | -- | 1.0 | 1400 | 9.0 | 19.7 | -- | 10.2 | -- | -- | -- | -- | -- |
| 03... | 1503 | -- | 2.0 | 1420 | 8.8 | 17.2 | -- | 3.1 | -- | -- | -- | -- | -- |
| 03... | 1504 | -- | 2.6 | 1410 | 8.8 | 17.2 | -- | 2.7 | -- | -- | -- | -- | -- |
| 10... | 1630 | 2.4 | .0 | 1440 | 9.1 | 18.3 | -- | 16.7 | 188 | 723 | 12.0 | 25.0 | 220 |
| 10... | 1631 | -- | .50 | 1450 | 9.1 | 17.9 | -- | 14.1 | -- | -- | -- | -- | -- |
| 10... | 1632 | -- | 1.0 | 1450 | 9.0 | 17.0 | -- | 10.2 | -- | -- | -- | -- | -- |
| 10... | 1633 | -- | 1.5 | 1450 | 9.0 | 16.9 | -- | 8.3 | -- | -- | -- | -- | -- |
| 10... | 1634 | -- | 2.0 | 1440 | 9.0 | 16.7 | -- | 8.1 | -- | -- | -- | -- | -- |
| 10... | 1635 | -- | 2.4 | 1440 | 8.9 | 16.7 | -- | 7.7 | -- | -- | -- | -- | -- |

05123990 J. CLARK SALYER POOL 357 NEAR WESTHOPE, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | WIND SPEED (MILES PER HOUR) (00035) |
|---|---|
| OCT | |
| 11... | 12 |
| 11... | -- |
| 11... | -- |
| 11... | -- |
| 11... | -- |
| APR | |
| 25... | 10 |
| 25... | -- |
| 25... | -- |
| 25... | -- |
| MAY | |
| 16... | 5.0 |
| 16... | -- |
| 16... | -- |
| 16... | -- |
| 16... | -- |
| JUL | |
| 18... | 5.0 |
| 18... | -- |
| 18... | -- |
| 18... | -- |
| 18... | -- |
| 18... | -- |
| AUG | |
| 22... | <5.0 |
| 22... | -- |
| 22... | -- |
| 22... | -- |
| 22... | -- |
| 22... | -- |
| SEP | |
| 03... | 5.0 |
| 03... | -- |
| 03... | -- |
| 03... | -- |
| 03... | -- |
| 10... | <5.0 |
| 10... | -- |
| 10... | -- |
| 10... | -- |
| 10... | -- |
| 10... | -- |

< Less than
E Estimated value
M Presence verified, not quantified
d Diluted sample: method hi range exceeded
n Below the non-detection value

## 05124000 SOURIS (MOUSE) RIVER NEAR WESTHOPE, ND
(International gaging station)

LOCATION.--Lat 48°59'47", long 100°57'29", in SW$^1/_4$SE$^1/_4$ 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$^2$, approximately, of which about 10,300 mi$^2$ 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 National Geodetic Vertical Datum of 1929. Prior to Mar. 28, 1938, nonrecording gage at site 6.3 mi upstream at datum 2.52 ft higher.

REMARKS.--Records good except for estimated daily 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 7,000 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 120 | 97 | 119 | 72 | 20 | 15 | 5.1 | 2.4 | 30 | 229 | 29 | 26 |
| 2 | 118 | 101 | 119 | 72 | 19 | 15 | 4.2 | 2.5 | 32 | 250 | 30 | 25 |
| 3 | 118 | 120 | 118 | 72 | 19 | 15 | 3.9 | 2.9 | 32 | 317 | 33 | 24 |
| 4 | 109 | 121 | 118 | 73 | 23 | 14 | 3.9 | 5.2 | 30 | 335 | 33 | 26 |
| 5 | 90 | 121 | 119 | 73 | 24 | 13 | 3.9 | 5.3 | 30 | 338 | 34 | 33 |
| 6 | 91 | 120 | 118 | 72 | 19 | 14 | 4.0 | 5.7 | 31 | 338 | 34 | 34 |
| 7 | 84 | 120 | 118 | 65 | 43 | 13 | 4.2 | 6.3 | 34 | 349 | 32 | 35 |
| 8 | 67 | 121 | 118 | 43 | 23 | 13 | 4.1 | 6.1 | 34 | 353 | 34 | 35 |
| 9 | 75 | 122 | 117 | 43 | 22 | 13 | 4.3 | 6.5 | 34 | 350 | 32 | 35 |
| 10 | 96 | 121 | 111 | 43 | 22 | 13 | 5.4 | 6.4 | 37 | 296 | 31 | 33 |
| 11 | 97 | 121 | 90 | 37 | 22 | 13 | 6.9 | 6.0 | 39 | 289 | 30 | 33 |
| 12 | 96 | 122 | 89 | 25 | 22 | 13 | 7.6 | 6.2 | 33 | 286 | 29 | 33 |
| 13 | 96 | 123 | 90 | 19 | 22 | 12 | 7.2 | 5.8 | 42 | 285 | 28 | 31 |
| 14 | 95 | 123 | 90 | 19 | 22 | 12 | 6.2 | 8.7 | 77 | 285 | 27 | 29 |
| 15 | 94 | 123 | 89 | 20 | 22 | 12 | 4.9 | 8.3 | 79 | 283 | 27 | 28 |
| 16 | 95 | 124 | 89 | 20 | 22 | 11 | 4.0 | 9.0 | 78 | 241 | 28 | 28 |
| 17 | 96 | 123 | 89 | 20 | 21 | 11 | 4.5 | 9.2 | 121 | 104 | 28 | 35 |
| 18 | 95 | 120 | 89 | 20 | 21 | 11 | 3.5 | 7.8 | 231 | 79 | 28 | 34 |
| 19 | 95 | 120 | 89 | 19 | 21 | 11 | 3.9 | 8.5 | 233 | 71 | 28 | 31 |
| 20 | 95 | 121 | 83 | 19 | 20 | 11 | 3.7 | 9.6 | 231 | 68 | 29 | 29 |
| 21 | 95 | 121 | 73 | 19 | 15 | 11 | 3.6 | 9.7 | 236 | 65 | 32 | 33 |
| 22 | 95 | 121 | 72 | 19 | 15 | 11 | 3.7 | 7.7 | 238 | 62 | 30 | 32 |
| 23 | 94 | 121 | 72 | 19 | 15 | 11 | 2.4 | 8.7 | 237 | 64 | 30 | 32 |
| 24 | 91 | 119 | 72 | 19 | 15 | 11 | 2.0 | 9.5 | 237 | 64 | 28 | 32 |
| 25 | 91 | e119 | 72 | 19 | 15 | 11 | 1.6 | 15 | 234 | 63 | 28 | 33 |
| 26 | 93 | e119 | 72 | 19 | 15 | 9.9 | 2.1 | 15 | 234 | 61 | 27 | 28 |
| 27 | 94 | 120 | 72 | 19 | 15 | 6.8 | 2.2 | 15 | 234 | 47 | 26 | 28 |
| 28 | 94 | 120 | 72 | 19 | 15 | 7.4 | 2.4 | 15 | 233 | 45 | 26 | 28 |
| 29 | 94 | 120 | 72 | 19 | --- | 7.5 | 2.4 | 14 | 232 | 40 | 27 | 26 |
| 30 | 95 | 120 | 72 | 19 | --- | 6.0 | 2.5 | 27 | 230 | 39 | 29 | 24 |
| 31 | 96 | --- | 72 | 20 | --- | 5.3 | --- | 30 | --- | 31 | 28 | --- |
| TOTAL | 2954 | 3584 | 2855 | 1056 | 569 | 352.9 | 120.3 | 295.0 | 3833 | 5727 | 915 | 913 |
| MEAN | 95.29 | 119.5 | 92.10 | 34.06 | 20.32 | 11.38 | 4.010 | 9.516 | 127.8 | 184.7 | 29.52 | 30.43 |
| MAX | 120 | 124 | 119 | 73 | 43 | 15 | 7.6 | 30 | 238 | 353 | 34 | 35 |
| MIN | 67 | 97 | 72 | 19 | 15 | 5.3 | 1.6 | 2.4 | 30 | 31 | 26 | 24 |
| AC-FT | 5860 | 7110 | 5660 | 2090 | 1130 | 700 | 239 | 585 | 7600 | 11360 | 1810 | 1810 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 68.28 | 55.92 | 34.88 | 28.17 | 26.80 | 72.59 | 867.1 | 1011 | 586.9 | 283.3 | 132.8 | 74.23 |
| MAX | 473 | 387 | 201 | 191 | 190 | 779 | 8850 | 5967 | 4919 | 1726 | 1014 | 657 |
| (WY) | 1976 | 1995 | 1976 | 1976 | 1976 | 1983 | 1976 | 1976 | 1999 | 1999 | 1953 | 1999 |
| MIN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.010 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| (WY) | 1933 | 1935 | 1935 | 1935 | 1935 | 1936 | 1941 | 1937 | 1937 | 1937 | 1931 | 1931 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1929 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 250819 | | 23174.2 | | | |
| ANNUAL MEAN | 687.2 | | 63.49 | | 272.7 | |
| HIGHEST ANNUAL MEAN | | | | | 1697 | 1976 |
| LOWEST ANNUAL MEAN | | | | | 0.15 | 1937 |
| HIGHEST DAILY MEAN | 3290 | Apr 11 | 353 | Jul 8 | 12400 | Apr 26 1976 |
| LOWEST DAILY MEAN | 51 | Jan 31 | 1.6 | Apr 25 | 0.00 | Jul 20 1931 |
| ANNUAL SEVEN-DAY MINIMUM | 51 | Feb 9 | 2.2 | Apr 23 | 0.00 | Jul 20 1931 |
| MAXIMUM PEAK FLOW | | | 368 | Jul 9 | 12600 | Apr 26 1976 |
| MAXIMUM PEAK STAGE | | | 7.55 | Jul 9 | 19.16 | Apr 26 1976 |
| INSTANTANEOUS LOW FLOW | | | | | a-35 | Apr 8 1943 |
| ANNUAL RUNOFF (AC-FT) | 497500 | | 45970 | | 197500 | |
| 10 PERCENT EXCEEDS | 2750 | | 121 | | 620 | |
| 50 PERCENT EXCEEDS | 203 | | 32 | | 27 | |
| 90 PERCENT EXCEEDS | 52 | | 6.1 | | 0.00 | |

a Reverse flow caused by backwater from downstream tributary inflow
e Estimated

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1970, 1972 to current year.

REMARKS.--Environment Canada also collected a sample on Aug. 22.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Water years 1974-81 and June 1992 to current year.

SPECIFIC CONDUCTANCE: Water years 1974-81 and June 1992 to current year.

PH: June 1992 to current year.

DISSOLVED OXYGEN: May 1993 to current year.

INSTRUMENTATION.--Water-quality monitor since June 1992.

REMARKS.--Records good. Quality assurance sample also collected at this location.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 28.5°C, July 11, 1998; minimum recorded, -0.4°C, Dec. 20, 1995, and Feb. 1, 2002.

SPECIFIC CONDUCTANCE: Maximum recorded, 3,250 microsiemens, Jan 3, 2001; minimum recorded, 512 microsiemens, Sept. 22, 2002.

PH: Maximum recorded, 10.1 units, July 12, 1993; minimum recorded, 7.3 units, on many days in February and March 2002.

DISSOLVED OXYGEN: Maximum recorded, 19.1 milligrams per liter, Dec. 29-31, 1999, Jan. 1-5, 2000; minimum recorded, 0.0 milligrams per liter, Feb. 17, 2002.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 19.7°C, Sept. 12-13; minimum recorded, -0.4°C, Feb. 1.

SPECIFIC CONDUCTANCE: Maximum recorded, 2,770 microsiemens, Mar. 15; minimum recorded, 512 microsiemens, Sept. 22.

PH: Maximum recorded, 9.5 units, Sept. 28-30; minimum recorded, 7.3 units, on many days in February and March.

DISSOLVED OXYGEN: Maximum recorded, 17.3 milligrams per liter, Sept. 11; minimum recorded, 0.0 milligrams per liter, Feb. 17.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | BARO-METRIC PRES-SURE (MM OF HG) (00025) | OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301) | OXYGEN, DIS-SOLVED (MG/L) (00300) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 11... | 1645 | 98 | 711 | 104 | 11.4 | 9.1 | -- | -- | 1210 | -- | 8.2 | -- | -- |
| NOV | | | | | | | | | | | | | |
| 19... | 1700 | 122 | -- | -- | 13.4 | 8.7 | -- | -- | 1110 | -- | 1.4 | -- | -- |
| JAN | | | | | | | | | | | | | |
| 04... | 1415 | 74 | 718 | 5 | .7 | 7.6 | -- | -- | 1810 | -- | .0 | -- | -- |
| MAR | | | | | | | | | | | | | |
| 07... | 1300 | 13 | -- | -- | -- | -- | -- | -- | -- | 2.0 | .0 | -- | -- |
| 29... | 1030 | 6.4 | -- | -- | .3 | 7.5 | -- | -- | 2430 | -- | 2.0 | -- | -- |
| MAY | | | | | | | | | | | | | |
| 16... | 1550 | 8.8 | -- | -- | 11.6 | 8.5 | -- | -- | 1150 | -- | 10.3 | -- | -- |
| JUL | | | | | | | | | | | | | |
| 18... | 1330 | 79 | -- | -- | -- | 8.9 | -- | -- | 1430 | 26.0 | 24.8 | -- | -- |
| AUG | | | | | | | | | | | | | |
| 22... | 1500 | 30 | 723 | 138 | 12.2 | 9.4 | 9.1 | 1420 | 1440 | 23.0 | 18.5 | 350 | 40.4 |
| SEP | | | | | | | | | | | | | |
| 10... | 1545 | 33 | -- | -- | 11.5 | 9.4 | -- | -- | 1430 | 25.0 | 16.9 | -- | -- |

05124000 SOURIS RIVER NEAR WESTHOPE, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | CARBON, ORGANIC TOTAL (MG/L AS C) (00680) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 04... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 07... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 29... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 16... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 22... | 60.3 | 5 | 195 | 292 | 39.6 | .2 | 426 | 3.3 | <.04 | <.05 | .24 | 30.8 | 1050 |
| SEP | | | | | | | | | | | | | |
| 10... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | 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 WATER UNFLTRD TOTAL (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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 04... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 07... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 29... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 16... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 22... | 9.8 | <.1 | 90 | E8dn | 55.2 | <2 | 250 | <.1 | <.8 | <2.0 | 1.2 | 160 | <1 |
| SEP | | | | | | | | | | | | | |
| 10... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | MOLYB-DENUM, TOTAL RECOV-ERABLE (UG/L AS MO) (01062) | 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) |
|---|---|---|---|---|
| OCT | | | | |
| 11... | -- | -- | -- | -- |
| NOV | | | | |
| 19... | -- | -- | -- | -- |
| JAN | | | | |
| 04... | -- | -- | -- | -- |
| MAR | | | | |
| 07... | -- | -- | -- | -- |
| 29... | -- | -- | -- | -- |
| MAY | | | | |
| 16... | -- | -- | -- | -- |
| JUL | | | | |
| 18... | -- | -- | -- | -- |
| AUG | | | | |
| 22... | E2 | 2.7 | <14d | <20 |
| SEP | | | | |
| 10... | -- | -- | -- | -- |

< Less than
E Estimated value
d Diluted sample: method hi range exceeded
n Below the non-detection value

05124000 SOURIS RIVER NEAR WESTHOPE, ND--Continued

WATER TEMPERATURE, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | OCTOBER | | | NOVEMBER | | | DECEMBER | | | JANUARY | |
| 1 | 15.6 | 13.9 | 14.7 | 3.1 | 2.3 | 2.7 | 0.2 | 0.0 | 0 | -0.1 | -0.1 | -0.1 |
| 2 | 14.4 | 12.8 | 13.5 | 3.8 | 2.3 | 3.0 | 0.2 | 0.1 | 0.1 | -0.1 | -0.1 | -0.1 |
| 3 | 13.0 | 11.3 | 12.1 | 3.8 | 2.4 | 3.1 | 0.2 | 0.1 | 0.1 | -0.1 | -0.1 | -0.1 |
| 4 | 11.3 | 8.4 | 9.9 | 4.0 | 2.6 | 3.3 | 0.3 | 0.1 | 0.1 | 0.0 | -0.1 | 0 |
| 5 | 8.4 | 6.7 | 7.6 | 4.3 | 2.8 | 3.5 | 0.1 | 0.1 | 0.1 | 0.0 | -0.1 | 0 |
| 6 | 7.7 | 5.5 | 6.6 | 4.0 | 3.1 | 3.5 | 0.1 | 0.0 | 0 | 0.0 | -0.1 | 0 |
| 7 | 8.4 | 5.5 | 6.8 | 3.4 | 2.7 | 3.2 | 0.1 | 0.1 | 0.1 | 0.0 | -0.1 | 0 |
| 8 | 9.2 | 6.6 | 7.6 | 3.0 | 2.0 | 2.5 | 0.1 | 0.0 | 0.0 | 0.1 | -0.1 | 0.0 |
| 9 | 8.7 | 7.1 | 7.9 | 2.8 | 1.8 | 2.3 | 0.1 | 0.0 | 0 | 0.2 | 0.0 | 0 |
| 10 | 9.1 | 7.3 | 8.1 | 3.0 | 1.9 | 2.4 | 0.1 | 0.0 | 0 | 0.3 | 0.1 | 0.2 |
| 11 | 8.2 | 6.8 | 7.6 | 2.9 | 1.7 | 2.2 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.1 |
| 12 | 9.0 | 7.6 | 8.1 | 2.4 | 1.7 | 2.1 | 0.1 | 0.0 | 0.0 | 0.3 | 0.0 | 0.1 |
| 13 | 8.5 | 7.2 | 7.8 | 2.4 | 1.1 | 1.7 | 0.0 | 0.0 | 0.0 | 0.4 | 0.0 | 0.2 |
| 14 | 7.8 | 6.6 | 7.2 | 2.4 | 1.3 | 1.9 | 0.0 | 0.0 | 0.0 | 0.4 | 0.3 | 0.3 |
| 15 | 6.6 | 4.9 | 5.8 | 3.4 | 2.1 | 2.7 | 0.1 | 0.0 | 0.0 | 0.4 | 0.0 | 0.1 |
| 16 | 5.6 | 3.9 | 4.7 | 4.2 | 2.8 | 3.4 | 0.2 | 0.1 | 0.1 | 0.1 | -0.1 | 0.0 |
| 17 | 4.9 | 3.5 | 4.3 | 4.6 | 3.0 | 3.7 | 0.1 | 0.0 | 0 | 0.1 | 0.0 | 0 |
| 18 | 5.2 | 3.8 | 4.4 | 4.0 | 2.4 | 3.3 | 0.1 | 0.0 | 0 | 0.0 | -0.1 | 0 |
| 19 | 5.7 | 4.2 | 4.9 | 2.4 | 0.8 | 1.4 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 |
| 20 | 5.8 | 4.8 | 5.1 | 1.7 | 0.6 | 1.1 | 0.1 | 0.0 | 0.0 | 0.0 | -0.1 | 0 |
| 21 | 5.9 | 4.6 | 5.2 | 1.9 | 1.0 | 1.4 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | 0 |
| 22 | 5.9 | 4.8 | 5.3 | 1.6 | 1.2 | 1.4 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | 0 |
| 23 | 5.2 | 3.4 | 4.6 | 1.8 | 1.3 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | 0 |
| 24 | 3.4 | 1.3 | 2.2 | 1.7 | 1.3 | 1.6 | 0.0 | -0.1 | 0.0 | 0.0 | -0.1 | 0 |
| 25 | 1.3 | 0.3 | 0.7 | 1.3 | -0.3 | 0.5 | 0.0 | -0.1 | 0 | 0.1 | -0.1 | 0.0 |
| 26 | 1.3 | 0.0 | 0.6 | 0.1 | -0.2 | 0 | 0.0 | -0.1 | 0 | 0.0 | -0.1 | 0.0 |
| 27 | 1.4 | 0.3 | 0.9 | 0.1 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 |
| 28 | 2.4 | 1.2 | 1.8 | 0.1 | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | -0.1 | 0.0 |
| 29 | 2.5 | 1.4 | 1.9 | 0.1 | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | -0.1 | 0 |
| 30 | 2.5 | 1.4 | 1.9 | 0.1 | 0.0 | 0 | 0.0 | -0.1 | 0 | 0.0 | -0.2 | -0.1 |
| 31 | 2.9 | 2.0 | 2.4 | --- | --- | --- | -0.1 | -0.1 | -0.1 | -0.1 | -0.3 | -0.2 |
| MONTH | 15.6 | 0.0 | 5.9 | 4.6 | -0.3 | 2.0 | 0.3 | -0.1 | 0.0 | 0.4 | -0.3 | 0.0 |

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | FEBRUARY | | | MARCH | | | APRIL | | | MAY | |
| 1 | -0.2 | -0.4 | -0.3 | 0.7 | 0.1 | 0.4 | --- | --- | --- | --- | --- | --- |
| 2 | 0.0 | -0.3 | -0.1 | 0.6 | 0.1 | 0.4 | --- | --- | --- | --- | --- | --- |
| 3 | 0.1 | 0.0 | 0.0 | 0.6 | 0.0 | 0.4 | --- | --- | --- | --- | --- | --- |
| 4 | 0.1 | 0.0 | 0.0 | 0.7 | 0.2 | 0.5 | --- | --- | --- | --- | --- | --- |
| 5 | 0.1 | 0.0 | 0.0 | 0.8 | 0.4 | 0.6 | --- | --- | --- | --- | --- | --- |
| 6 | 0.2 | 0.0 | 0 | 0.7 | 0.1 | 0.4 | --- | --- | --- | --- | --- | --- |
| 7 | 0.2 | 0.0 | 0 | 0.5 | 0.1 | 0.2 | --- | --- | --- | --- | --- | --- |
| 8 | 0.2 | 0.0 | 0.1 | 0.3 | 0.1 | 0.2 | --- | --- | --- | --- | --- | --- |
| 9 | 0.2 | 0.0 | 0 | 0.4 | 0.1 | 0.3 | --- | --- | --- | --- | --- | --- |
| 10 | 0.1 | 0.0 | 0 | 0.4 | 0.2 | 0.3 | --- | --- | --- | --- | --- | --- |
| 11 | 0.2 | 0.0 | 0 | 0.4 | 0.2 | 0.3 | --- | --- | --- | --- | --- | --- |
| 12 | 0.3 | 0.1 | 0.2 | 1.0 | 0.3 | 0.6 | --- | --- | --- | --- | --- | --- |
| 13 | 0.4 | 0.1 | 0.2 | 1.3 | 0.7 | 1.0 | --- | --- | --- | --- | --- | --- |
| 14 | 0.6 | 0.1 | 0.3 | 1.3 | 0.8 | 1.1 | --- | --- | --- | --- | --- | --- |
| 15 | 0.6 | 0.2 | 0.4 | 1.3 | 0.9 | 1.1 | --- | --- | --- | --- | --- | --- |
| 16 | 0.9 | 0.4 | 0.6 | 1.3 | 0.8 | 1.0 | --- | --- | --- | --- | --- | --- |
| 17 | 1.0 | 0.4 | 0.7 | 1.3 | 0.9 | 1.0 | --- | --- | --- | --- | --- | --- |
| 18 | 1.2 | 0.7 | 0.9 | 1.0 | 0.7 | 0.8 | --- | --- | --- | --- | --- | --- |
| 19 | 1.2 | 0.6 | 0.9 | 0.9 | 0.6 | 0.8 | --- | --- | --- | --- | --- | --- |
| 20 | 1.2 | 0.4 | 0.8 | 0.8 | 0.4 | 0.5 | --- | --- | --- | --- | --- | --- |
| 21 | 1.5 | 0.7 | 1.0 | 0.7 | 0.3 | 0.5 | --- | --- | --- | --- | --- | --- |
| 22 | 1.7 | 0.9 | 1.2 | 0.9 | 0.2 | 0.5 | --- | --- | --- | --- | --- | --- |
| 23 | 1.7 | 1.1 | 1.3 | 1.1 | 0.4 | 0.7 | --- | --- | --- | --- | --- | --- |
| 24 | 1.4 | 0.5 | 0.8 | 1.2 | 0.6 | 0.9 | --- | --- | --- | --- | --- | --- |
| 25 | 1.1 | 0.0 | 0.5 | 1.2 | 0.6 | 0.9 | --- | --- | --- | --- | --- | --- |
| 26 | 0.9 | 0.1 | 0.5 | 1.3 | 0.6 | 1.0 | --- | --- | --- | --- | --- | --- |
| 27 | 0.9 | 0.2 | 0.6 | 1.4 | 0.7 | 1.1 | --- | --- | --- | --- | --- | --- |
| 28 | 0.9 | 0.3 | 0.6 | 2.1 | 0.7 | 1.4 | --- | --- | --- | --- | --- | --- |
| 29 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 30 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 31 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MONTH | 1.7 | -0.4 | 0.4 | --- | --- | --- | --- | --- | --- | --- | --- | --- |

05124000 SOURIS RIVER NEAR WESTHOPE, ND--Continued

WATER TEMPERATURE, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | JUNE | | | JULY | | | AUGUST | | | SEPTEMBER | |
| 1 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 3 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 4 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 5 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 6 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 7 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 9 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 10 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 11 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 19.5 | 16.1 | 17.7 |
| 12 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 19.7 | 17.6 | 18.4 |
| 13 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 19.7 | 17.1 | 18.5 |
| 14 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 18.7 | 16.1 | 17.1 |
| 15 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 18.2 | 14.8 | 16.5 |
| 16 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 18.7 | 15.7 | 17.2 |
| 17 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 18.8 | 16.5 | 17.4 |
| 18 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 18.7 | 15.6 | 16.9 |
| 19 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 17.1 | 14.6 | 15.6 |
| 20 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 16.3 | 14.3 | 15.1 |
| 21 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 14.5 | 11.4 | 12.5 |
| 22 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 11.4 | 9.4 | 10.2 |
| 23 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 10.5 | 8.7 | 9.6 |
| 24 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 10.0 | 8.3 | 8.9 |
| 25 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.7 | 7.4 | 8.4 |
| 26 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.0 | 7.4 | 8.2 |
| 27 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.9 | 8.2 | 8.8 |
| 28 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.8 | 7.5 | 8.7 |
| 29 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.9 | 7.6 | 8.6 |
| 30 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 11.5 | 8.8 | 9.7 |
| 31 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MONTH | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | OCTOBER | | | NOVEMBER | | | DECEMBER | | | JANUARY | |
| 1 | 1160 | 948 | 1030 | 1330 | 1020 | 1170 | 1440 | 1260 | 1350 | 1850 | 1690 | 1740 |
| 2 | 1160 | 914 | 1010 | 1260 | 990 | 1110 | 1460 | 1310 | 1360 | 1860 | 1660 | 1730 |
| 3 | 1050 | 897 | 965 | 1310 | 1090 | 1180 | 1460 | 1290 | 1390 | 1860 | 1730 | 1800 |
| 4 | 1050 | 919 | 989 | 1300 | 1030 | 1180 | 1420 | 1340 | 1380 | 1860 | 1750 | 1800 |
| 5 | 1140 | 924 | 1030 | 1290 | 1150 | 1230 | 1410 | 1300 | 1370 | 1820 | 1790 | 1810 |
| 6 | 1030 | 872 | 983 | 1290 | 1140 | 1210 | 1460 | 1330 | 1380 | 1840 | 1820 | 1830 |
| 7 | 1100 | 872 | 953 | 1290 | 1170 | 1230 | 1480 | 1370 | 1430 | 1850 | 1840 | 1850 |
| 8 | 1170 | 988 | 1050 | 1280 | 1030 | 1180 | 1500 | 1350 | 1420 | 1850 | 1820 | 1840 |
| 9 | 1180 | 950 | 1040 | 1330 | 1070 | 1140 | 1580 | 1350 | 1430 | 1900 | 1820 | 1860 |
| 10 | 1130 | 890 | 1000 | 1350 | 1070 | 1210 | 1560 | 1340 | 1440 | 1910 | 1890 | 1900 |
| 11 | 1220 | 1060 | 1140 | 1300 | 1080 | 1170 | 1560 | 1220 | 1420 | 1910 | 1840 | 1890 |
| 12 | 1220 | 1160 | 1190 | 1330 | 1240 | 1300 | 1590 | 1250 | 1450 | 1950 | 1860 | 1890 |
| 13 | 1260 | 1170 | 1210 | 1380 | 1190 | 1300 | 1600 | 1410 | 1520 | 1950 | 1920 | 1950 |
| 14 | 1260 | 1120 | 1170 | 1390 | 1220 | 1310 | 1600 | 1220 | 1440 | 1960 | 1950 | 1950 |
| 15 | 1160 | 1020 | 1100 | 1380 | 1140 | 1270 | 1580 | 1460 | 1540 | 1990 | 1960 | 1980 |
| 16 | 1180 | 1060 | 1120 | 1340 | 1000 | 1170 | 1580 | 1460 | 1520 | 1990 | 1980 | 1990 |
| 17 | 1210 | 953 | 1110 | 1290 | 999 | 1090 | 1590 | 1430 | 1520 | 1990 | 1970 | 1980 |
| 18 | 1140 | 994 | 1060 | 1260 | 1110 | 1200 | 1580 | 1390 | 1470 | 2020 | 1980 | 2010 |
| 19 | 1190 | 1080 | 1150 | 1220 | 1030 | 1100 | 1570 | 1500 | 1540 | 2040 | 1960 | 2010 |
| 20 | 1230 | 1070 | 1130 | 1200 | 1020 | 1120 | 1560 | 1440 | 1490 | 2030 | 2020 | 2030 |
| 21 | 1180 | 1100 | 1130 | 1230 | 1060 | 1150 | 1560 | 1480 | 1520 | 2050 | 2020 | 2030 |
| 22 | 1210 | 1080 | 1150 | 1190 | 1060 | 1130 | 1600 | 1500 | 1550 | 2080 | 2040 | 2070 |
| 23 | 1240 | 1130 | 1190 | 1210 | 1060 | 1150 | 1650 | 1510 | 1570 | 2100 | 2060 | 2080 |
| 24 | 1240 | 1120 | 1180 | 1240 | 1060 | 1160 | 1700 | 1500 | 1560 | 2110 | 2070 | 2100 |
| 25 | 1260 | 1170 | 1210 | 1360 | 1130 | 1200 | 1720 | 1640 | 1670 | 2130 | 2040 | 2080 |
| 26 | 1310 | 1170 | 1260 | 1400 | 1300 | 1350 | 1710 | 1660 | 1690 | 2140 | 2080 | 2120 |
| 27 | 1280 | 1070 | 1200 | 1400 | 1280 | 1330 | 1770 | 1640 | 1700 | 2160 | 2130 | 2140 |
| 28 | 1330 | 1180 | 1260 | 1440 | 1320 | 1370 | 1770 | 1670 | 1710 | 2160 | 2140 | 2150 |
| 29 | 1340 | 1230 | 1270 | 1440 | 1140 | 1320 | 1760 | 1700 | 1730 | 2200 | 2160 | 2180 |
| 30 | 1320 | 1210 | 1260 | 1440 | 1240 | 1350 | 1760 | 1690 | 1720 | 2220 | 2200 | 2210 |
| 31 | 1340 | 1260 | 1290 | --- | --- | --- | 1830 | 1740 | 1800 | 2240 | 2210 | 2230 |
| MONTH | 1340 | 872 | 1120 | 1440 | 990 | 1210 | 1830 | 1220 | 1520 | 2240 | 1660 | 1980 |

05124000 SOURIS RIVER NEAR WESTHOPE, ND--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | FEBRUARY | | | MARCH | | | APRIL | | | MAY | |
| 1 | --- | --- | --- | 2520 | 2500 | 2510 | --- | --- | --- | --- | --- | --- |
| 2 | --- | --- | --- | 2530 | 2500 | 2520 | --- | --- | --- | --- | --- | --- |
| 3 | 2290 | 2250 | 2280 | 2550 | 2520 | 2540 | --- | --- | --- | --- | --- | --- |
| 4 | 2310 | 2290 | 2300 | 2540 | 2520 | 2530 | --- | --- | --- | --- | --- | --- |
| 5 | 2330 | 2310 | 2320 | 2550 | 2520 | 2540 | --- | --- | --- | --- | --- | --- |
| 6 | 2330 | 2270 | 2320 | 2580 | 2550 | 2570 | --- | --- | --- | --- | --- | --- |
| 7 | 2330 | 2300 | 2320 | 2590 | 2580 | 2590 | --- | --- | --- | --- | --- | --- |
| 8 | 2370 | 2330 | 2340 | 2590 | 2590 | 2590 | --- | --- | --- | --- | --- | --- |
| 9 | 2380 | 2370 | 2380 | 2600 | 2590 | 2590 | --- | --- | --- | --- | --- | --- |
| 10 | 2420 | 2380 | 2400 | 2620 | 2600 | 2610 | --- | --- | --- | --- | --- | --- |
| 11 | 2420 | 2380 | 2410 | 2630 | 2620 | 2630 | --- | --- | --- | --- | --- | --- |
| 12 | 2440 | 2400 | 2420 | 2650 | 2630 | 2640 | --- | --- | --- | --- | --- | --- |
| 13 | 2430 | 2400 | 2410 | 2660 | 2570 | 2620 | --- | --- | --- | --- | --- | --- |
| 14 | 2430 | 2410 | 2420 | 2610 | 2530 | 2580 | --- | --- | --- | --- | --- | --- |
| 15 | 2430 | 2400 | 2420 | 2770 | 2530 | 2620 | --- | --- | --- | --- | --- | --- |
| 16 | 2440 | 2410 | 2430 | 2630 | 2540 | 2590 | --- | --- | --- | --- | --- | --- |
| 17 | 2440 | 2420 | 2430 | 2640 | 2530 | 2580 | --- | --- | --- | --- | --- | --- |
| 18 | 2460 | 2420 | 2450 | 2700 | 2580 | 2620 | --- | --- | --- | --- | --- | --- |
| 19 | 2460 | 2440 | 2450 | 2640 | 2600 | 2620 | --- | --- | --- | --- | --- | --- |
| 20 | 2480 | 2430 | 2450 | 2670 | 2600 | 2620 | --- | --- | --- | --- | --- | --- |
| 21 | 2480 | 2440 | 2470 | 2700 | 2600 | 2660 | --- | --- | --- | --- | --- | --- |
| 22 | 2460 | 2450 | 2460 | 2640 | 2540 | 2610 | --- | --- | --- | --- | --- | --- |
| 23 | 2460 | 2440 | 2450 | 2650 | 2490 | 2540 | --- | --- | --- | --- | --- | --- |
| 24 | 2450 | 2430 | 2440 | 2580 | 2490 | 2510 | --- | --- | --- | --- | --- | --- |
| 25 | 2500 | 2450 | 2470 | 2650 | 2470 | 2540 | --- | --- | --- | --- | --- | --- |
| 26 | 2500 | 2480 | 2490 | 2620 | 2520 | 2550 | --- | --- | --- | --- | --- | --- |
| 27 | 2490 | 2470 | 2480 | 2560 | 2450 | 2520 | --- | --- | --- | --- | --- | --- |
| 28 | 2500 | 2470 | 2490 | 2540 | 2400 | 2470 | --- | --- | --- | --- | --- | --- |
| 29 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 30 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 31 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MONTH | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | JUNE | | | JULY | | | AUGUST | | | SEPTEMBER | |
| 1 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 3 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 4 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 5 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 6 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 7 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 9 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 10 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 11 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 1410 | 1370 | 1400 |
| 12 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 1410 | 1260 | 1390 |
| 13 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 1420 | 1180 | 1370 |
| 14 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 1410 | 1010 | 1310 |
| 15 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 1420 | 929 | 1290 |
| 16 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 1440 | 707 | 1260 |
| 17 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 1440 | 1380 | 1430 |
| 18 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 1460 | 752 | 1200 |
| 19 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 1430 | 640 | 1010 |
| 20 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 1430 | 607 | 914 |
| 21 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 1070 | 607 | 769 |
| 22 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 1240 | 512 | 692 |
| 23 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 1290 | 534 | 713 |
| 24 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 1160 | 561 | 799 |
| 25 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 999 | 569 | 742 |
| 26 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 1310 | 600 | 757 |
| 27 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 989 | 578 | 723 |
| 28 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 988 | 606 | 748 |
| 29 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 1380 | 623 | 893 |
| 30 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 1060 | 650 | 847 |
| 31 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MONTH | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

05124000 SOURIS RIVER NEAR WESTHOPE, ND--Continued

PH, WH, FIELD, in (STANDARD UNITS), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MAX | MIN | MAX | MIN | MAX | MIN | MAX | MIN | MAX | MIN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | OCTOBER | | NOVEMBER | | DECEMBER | | JANUARY | | FEBRUARY | | MARCH | |
| 1 | 9.1 | 9.1 | 8.8 | 8.7 | 8.6 | 8.5 | 7.7 | 7.7 | 7.4 | 7.3 | 7.4 | 7.3 |
| 2 | 9.1 | 9.0 | 8.8 | 8.7 | 8.6 | 8.5 | 7.7 | 7.7 | 7.3 | 7.3 | 7.3 | 7.3 |
| 3 | 9.0 | 9.0 | 8.8 | 8.7 | 8.6 | 8.5 | 7.7 | 7.7 | 7.4 | 7.3 | 7.3 | 7.3 |
| 4 | 9.1 | 9.0 | 8.8 | 8.7 | 8.6 | 8.5 | 7.7 | 7.3 | 7.4 | 7.3 | 7.3 | 7.3 |
| 5 | 9.1 | 9.0 | 8.8 | 8.7 | 8.5 | 8.4 | 7.5 | 7.4 | 7.4 | 7.3 | 7.3 | 7.3 |
| 6 | 9.1 | 9.0 | 8.7 | 8.7 | 8.4 | 8.4 | 7.5 | 7.5 | 7.4 | 7.4 | 7.3 | 7.3 |
| 7 | 9.2 | 9.1 | 8.8 | 8.6 | 8.4 | 8.4 | 7.5 | 7.5 | 7.4 | 7.4 | 7.3 | 7.3 |
| 8 | 9.3 | 9.2 | 8.7 | 8.6 | 8.4 | 8.3 | 7.5 | 7.5 | 7.4 | 7.4 | 7.3 | 7.3 |
| 9 | 9.2 | 9.1 | 8.7 | 8.6 | 8.3 | 8.3 | 7.5 | 7.5 | 7.4 | 7.4 | 7.3 | 7.3 |
| 10 | 9.1 | 9.0 | 8.7 | 8.6 | 8.3 | 8.2 | 7.5 | 7.5 | 7.4 | 7.4 | 7.3 | 7.3 |
| 11 | 9.1 | 8.9 | 8.7 | 8.7 | 8.2 | 8.2 | 7.5 | 7.5 | 7.4 | 7.4 | 7.3 | 7.3 |
| 12 | 8.9 | 8.9 | 8.7 | 8.6 | 8.2 | 8.2 | 7.5 | 7.5 | 7.4 | 7.4 | 7.3 | 7.3 |
| 13 | 8.9 | 8.9 | 8.8 | 8.7 | 8.2 | 8.2 | 7.5 | 7.5 | 7.4 | 7.4 | 7.4 | 7.3 |
| 14 | 8.9 | 8.8 | 8.8 | 8.8 | 8.2 | 8.1 | 7.5 | 7.5 | 7.4 | 7.4 | 7.3 | 7.3 |
| 15 | 8.8 | 8.8 | 8.8 | 8.8 | 8.1 | 8.1 | 7.5 | 7.4 | 7.4 | 7.4 | 7.4 | 7.3 |
| 16 | 8.9 | 8.8 | 8.9 | 8.8 | 8.1 | 8.1 | 7.5 | 7.4 | 7.4 | 7.4 | 7.4 | 7.3 |
| 17 | 9.2 | 8.8 | 8.9 | 8.8 | 8.1 | 8.0 | 7.5 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 |
| 18 | 9.1 | 8.8 | 8.8 | 8.8 | 8.0 | 8.0 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 |
| 19 | 8.9 | 8.9 | 8.8 | 8.7 | 8.0 | 8.0 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 |
| 20 | 8.9 | 8.9 | 8.7 | 8.7 | 8.0 | 8.0 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 |
| 21 | 8.9 | 8.8 | 8.7 | 8.7 | 8.0 | 7.9 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 |
| 22 | 9.0 | 8.8 | 8.7 | 8.7 | 7.9 | 7.9 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 |
| 23 | 8.9 | 8.8 | 8.8 | 8.7 | 7.9 | 7.9 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 |
| 24 | 8.8 | 8.8 | 8.8 | 8.7 | 7.9 | 7.9 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 |
| 25 | 8.8 | 8.6 | 8.7 | 8.6 | 7.9 | 7.8 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 |
| 26 | 8.6 | 8.5 | 8.6 | 8.6 | 7.8 | 7.8 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 |
| 27 | 8.7 | 8.6 | 8.6 | 8.6 | 7.8 | 7.8 | 7.4 | 7.4 | 7.4 | 7.3 | 7.4 | 7.4 |
| 28 | 8.8 | 8.7 | 8.6 | 8.6 | 7.8 | 7.8 | 7.4 | 7.4 | 7.3 | 7.3 | 7.4 | 7.4 |
| 29 | 8.8 | 8.7 | 8.6 | 8.6 | 7.8 | 7.8 | 7.4 | 7.4 | --- | --- | --- | --- |
| 30 | 8.7 | 8.6 | 8.6 | 8.6 | 7.8 | 7.7 | 7.4 | 7.4 | --- | --- | --- | --- |
| 31 | 8.8 | 8.6 | --- | --- | 7.7 | 7.7 | 7.4 | 7.3 | --- | --- | --- | --- |
| MONTH | 9.3 | 8.5 | 8.9 | 8.6 | 8.6 | 7.7 | 7.7 | 7.3 | 7.4 | 7.3 | --- | --- |

| DAY | MAX | MIN | MAX | MIN | MAX | MIN | MAX | MIN | MAX | MIN | MAX | MIN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | APRIL | | MAY | | JUNE | | JULY | | AUGUST | | SEPTEMBER | |
| 1 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 3 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 4 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 5 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 6 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 7 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 9 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 10 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 11 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.4 | 9.1 |
| 12 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.4 | 9.2 |
| 13 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.4 | 9.2 |
| 14 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.4 | 9.2 |
| 15 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.3 | 9.1 |
| 16 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.3 | 9.2 |
| 17 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.3 | 9.2 |
| 18 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.2 | 9.1 |
| 19 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.3 | 9.1 |
| 20 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.3 | 9.1 |
| 21 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.3 | 9.1 |
| 22 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.2 | 9.1 |
| 23 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.3 | 9.2 |
| 24 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.3 | 9.2 |
| 25 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.4 | 9.3 |
| 26 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.4 | 9.3 |
| 27 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.4 | 9.4 |
| 28 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.5 | 9.4 |
| 29 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.5 | 9.4 |
| 30 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.5 | 9.4 |
| 31 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MONTH | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

05124000 SOURIS RIVER NEAR WESTHOPE, ND--Continued

OXYGEN DISSOLVED, in (MG/L), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | OCTOBER | | | NOVEMBER | | | DECEMBER | | | JANUARY | |
| 1 | 10.0 | 7.7 | 8.7 | 13.3 | 11.5 | 12.6 | 13.3 | 12.5 | 12.9 | 1.7 | 1.4 | 1.6 |
| 2 | 9.9 | 8.1 | 8.8 | 11.8 | 10.5 | 11.3 | 12.9 | 12.2 | 12.6 | 1.4 | 1.1 | 1.3 |
| 3 | 10.0 | 7.7 | 8.7 | 12.3 | 10.6 | 11.4 | 12.8 | 12.1 | 12.4 | 1.1 | 0.8 | 0.9 |
| 4 | 10.8 | 8.2 | 9.3 | 11.8 | 11.1 | 11.5 | 12.7 | 11.9 | 12.2 | 0.9 | 0.6 | 0.8 |
| 5 | 11.2 | 9.0 | 10 | 12.4 | 11.3 | 11.7 | 12.2 | 11.4 | 11.9 | 0.7 | 0.6 | 0.7 |
| 6 | 11.6 | 9.9 | 10.7 | 13.3 | 11.9 | 12.5 | 11.4 | 10.7 | 11.1 | 0.6 | 0.4 | 0.5 |
| 7 | 12.2 | 10.4 | 11.2 | 13.1 | 11.8 | 12.3 | 10.7 | 10.0 | 10.4 | 0.5 | 0.3 | 0.4 |
| 8 | 11.5 | 9.4 | 10.4 | 12.4 | 11.4 | 12.1 | 10.1 | 9.1 | 9.6 | 0.7 | 0.2 | 0.4 |
| 9 | 11.4 | 9.6 | 10.4 | 12.8 | 11.3 | 12.1 | 9.1 | 8.4 | 8.8 | 0.9 | 0.4 | 0.7 |
| 10 | 11.4 | 9.9 | 10.6 | 13.0 | 11.3 | 12.2 | 8.4 | 7.9 | 8.1 | 1.2 | 0.7 | 0.9 |
| 11 | 11.4 | 9.9 | 10.5 | 13.5 | 12.3 | 12.8 | 7.9 | 7.6 | 7.8 | 1.9 | 0.9 | 1.4 |
| 12 | 11.7 | 9.5 | 10.5 | 13.4 | 12.3 | 13.0 | 7.6 | 6.9 | 7.2 | 2.1 | 1.2 | 1.7 |
| 13 | 11.8 | 9.7 | 10.6 | 13.4 | 12.4 | 12.9 | 7.0 | 6.7 | 6.8 | 3.0 | 1.5 | 1.8 |
| 14 | 10.9 | 9.3 | 10.3 | 13.6 | 12.6 | 13.2 | 6.9 | 6.4 | 6.5 | 4.3 | 3.0 | 3.7 |
| 15 | 11.6 | 9.6 | 10.6 | 13.8 | 12.8 | 13.3 | 6.4 | 5.9 | 6.1 | 6.2 | 3.9 | 4.9 |
| 16 | 12.9 | 10.4 | 11.4 | 13.1 | 12.0 | 12.4 | 6.0 | 5.6 | 5.7 | 5.5 | 4.4 | 5.0 |
| 17 | 12.5 | 11.4 | 11.9 | 13.5 | 11.9 | 12.6 | 5.6 | 5.3 | 5.5 | 4.8 | 1.8 | 2.4 |
| 18 | 12.5 | 10.7 | 11.6 | 13.2 | 12.4 | 12.8 | 5.5 | 5.2 | 5.3 | 4.6 | 2.3 | 3.4 |
| 19 | 12.4 | 10.9 | 11.6 | 13.4 | 11.9 | 12.8 | 5.2 | 4.9 | 5.1 | 4.2 | 2.3 | 3.2 |
| 20 | 12.5 | 10.7 | 11.6 | 13.3 | 12.5 | 12.9 | 5.0 | 4.7 | 4.8 | 4.5 | 1.5 | 3.0 |
| 21 | 12.8 | 10.9 | 11.8 | 13.4 | 12.7 | 13.0 | 4.7 | 4.5 | 4.6 | 3.7 | 1.7 | 2.6 |
| 22 | 12.4 | 11.5 | 12.0 | 13.2 | 12.4 | 12.8 | 4.6 | 4.4 | 4.5 | 2.2 | 0.7 | 1.3 |
| 23 | 12.2 | 11.0 | 11.7 | 13.0 | 12.3 | 12.6 | 4.5 | 4.1 | 4.3 | 1.3 | 0.3 | 0.8 |
| 24 | 12.6 | 11.5 | 12.0 | 12.6 | 12.1 | 12.4 | 4.2 | 3.9 | 4.1 | 1.0 | 0.2 | 0.5 |
| 25 | 13.1 | 11.8 | 12.4 | 12.9 | 11.9 | 12.4 | 4.0 | 3.7 | 3.8 | 0.7 | 0.2 | 0.3 |
| 26 | 13.8 | 12.3 | 13.1 | 13.4 | 12.1 | 13.0 | 3.7 | 3.2 | 3.5 | 0.4 | 0.1 | 0.2 |
| 27 | 14.5 | 13.4 | 13.8 | 13.7 | 12.8 | 13.3 | 3.3 | 3.0 | 3.2 | 0.1 | 0.1 | 0.1 |
| 28 | 14.2 | 13.6 | 13.9 | 13.5 | 13.1 | 13.3 | 3.1 | 2.8 | 2.9 | 0.2 | 0.1 | 0.1 |
| 29 | 15.1 | 13.9 | 14.3 | 13.8 | 12.9 | 13.3 | 2.8 | 2.4 | 2.6 | 0.1 | 0.1 | 0.1 |
| 30 | 14.1 | 13.4 | 13.7 | 13.6 | 13.0 | 13.3 | 2.5 | 2.0 | 2.2 | 0.1 | 0.1 | 0.1 |
| 31 | 14.0 | 13.0 | 13.4 | --- | --- | --- | 2.0 | 1.7 | 1.9 | 0.1 | 0.1 | 0.1 |
| MONTH | 15.1 | 7.7 | 11.3 | 13.8 | 10.5 | 12.6 | 13.3 | 1.7 | 6.7 | 6.2 | 0.1 | 1.4 |

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | FEBRUARY | | | MARCH | | | APRIL | | | MAY | |
| 1 | 0.2 | 0.1 | 0.1 | 0.3 | 0.1 | 0.2 | --- | --- | --- | --- | --- | --- |
| 2 | 0.2 | 0.1 | 0.1 | 0.4 | 0.3 | 0.3 | --- | --- | --- | --- | --- | --- |
| 3 | 0.2 | 0.1 | 0.1 | 0.6 | 0.3 | 0.4 | --- | --- | --- | --- | --- | --- |
| 4 | 0.2 | 0.1 | 0.1 | 0.7 | 0.5 | 0.6 | --- | --- | --- | --- | --- | --- |
| 5 | 0.1 | 0.1 | 0.1 | 0.6 | 0.1 | 0.4 | --- | --- | --- | --- | --- | --- |
| 6 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | --- | --- | --- | --- | --- | --- |
| 7 | 0.1 | 0.1 | 0.1 | 0.4 | 0.2 | 0.2 | --- | --- | --- | --- | --- | --- |
| 8 | 0.1 | 0.1 | 0.1 | 0.8 | 0.4 | 0.6 | --- | --- | --- | --- | --- | --- |
| 9 | 0.1 | 0.1 | 0.1 | 0.8 | 0.6 | 0.8 | --- | --- | --- | --- | --- | --- |
| 10 | 0.1 | 0.1 | 0.1 | 0.9 | 0.7 | 0.8 | --- | --- | --- | --- | --- | --- |
| 11 | 0.1 | 0.1 | 0.1 | 0.9 | 0.8 | 0.8 | --- | --- | --- | --- | --- | --- |
| 12 | 0.1 | 0.1 | 0.1 | 0.9 | 0.8 | 0.8 | --- | --- | --- | --- | --- | --- |
| 13 | 0.1 | 0.1 | 0.1 | 0.9 | 0.8 | 0.8 | --- | --- | --- | --- | --- | --- |
| 14 | 0.1 | 0.1 | 0.1 | 0.9 | 0.8 | 0.8 | --- | --- | --- | --- | --- | --- |
| 15 | 0.1 | 0.1 | 0.1 | 0.9 | 0.8 | 0.8 | --- | --- | --- | --- | --- | --- |
| 16 | 0.1 | 0.1 | 0.1 | 0.8 | 0.7 | 0.8 | --- | --- | --- | --- | --- | --- |
| 17 | 0.1 | 0.0 | 0 | 0.8 | 0.7 | 0.7 | --- | --- | --- | --- | --- | --- |
| 18 | 0.2 | 0.1 | 0.1 | 0.7 | 0.6 | 0.7 | --- | --- | --- | --- | --- | --- |
| 19 | 0.3 | 0.2 | 0.2 | 0.7 | 0.6 | 0.6 | --- | --- | --- | --- | --- | --- |
| 20 | 0.3 | 0.3 | 0.3 | 0.6 | 0.5 | 0.6 | --- | --- | --- | --- | --- | --- |
| 21 | 0.3 | 0.1 | 0.1 | 0.5 | 0.5 | 0.5 | --- | --- | --- | --- | --- | --- |
| 22 | 0.1 | 0.1 | 0.1 | 0.5 | 0.3 | 0.4 | --- | --- | --- | --- | --- | --- |
| 23 | 0.1 | 0.1 | 0.1 | 0.3 | 0.3 | 0.3 | --- | --- | --- | --- | --- | --- |
| 24 | 0.1 | 0.1 | 0.1 | 0.3 | 0.3 | 0.3 | --- | --- | --- | --- | --- | --- |
| 25 | 0.1 | 0.1 | 0.1 | 0.3 | 0.3 | 0.3 | --- | --- | --- | --- | --- | --- |
| 26 | 0.1 | 0.1 | 0.1 | 0.3 | 0.3 | 0.3 | --- | --- | --- | --- | --- | --- |
| 27 | 0.1 | 0.1 | 0.1 | 0.3 | 0.3 | 0.3 | --- | --- | --- | --- | --- | --- |
| 28 | 0.1 | 0.1 | 0.1 | 0.3 | 0.2 | 0.3 | --- | --- | --- | --- | --- | --- |
| 29 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 30 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 31 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MONTH | 0.3 | 0.0 | 0.1 | --- | --- | --- | --- | --- | --- | --- | --- | --- |

05124000 SOURIS RIVER NEAR WESTHOPE, ND--Continued

OXYGEN DISSOLVED, in (MG/L), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | JUNE | | | JULY | | | AUGUST | | | SEPTEMBER | |
| 1 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 3 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 4 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 5 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 6 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 7 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 9 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 10 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 11 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 17.3 | 6.7 | 11.5 |
| 12 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 14.8 | 8.0 | 10.6 |
| 13 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 14.3 | 6.8 | 10.5 |
| 14 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 10.3 | 3.8 | 5.6 |
| 15 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 12.1 | 3.1 | 7.6 |
| 16 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 10.6 | 3.4 | 7.1 |
| 17 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 8.2 | 3.9 | 5.3 |
| 18 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 7.2 | 5.0 | 5.8 |
| 19 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.7 | 3.0 | 5.8 |
| 20 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 12.1 | 4.8 | 8.3 |
| 21 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 10.4 | 5.8 | 8.2 |
| 22 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 11.2 | 6.8 | 8.3 |
| 23 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 13.4 | 8.3 | 10.1 |
| 24 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 13.7 | 9.9 | 11.6 |
| 25 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 15.1 | 10.8 | 12.7 |
| 26 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 14.5 | 11.0 | 12.6 |
| 27 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 15.5 | 11.1 | 13.0 |
| 28 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 16.6 | 11.9 | 14.2 |
| 29 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 15.3 | 11.2 | 12.5 |
| 30 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 11.6 | 7.1 | 8.6 |
| 31 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MONTH | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

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

LOCATION.--Lat 48 07'30",long 104 28'20"(NAD 27), in SE$^1/_4$NW$^1/_4$ sec.3, T.27 N., R.56 E., Richland County, Hydrologic Unit 10060005, on right bank at upstream side of bridge on State Highway 16, 2.5 mi southeast of Culbertson, 10 mi downstream from Big Muddy Creek, and at river mile 1,620.76.

DRAINAGE AREA.--91,557 mi$^2$.

### WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1941 to December 1951, April 1958 to current year.

REVISED RECORDS.--WSP 1729: Drainage area.

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

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are fair. Flow partly regulated by Fort Peck Lake (station number 06131500) and many other reservoirs upstream from station. Diversions for irrigation of about 1,030,400 acres upstream from station. U.S. Army Corps of Engineers satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3960 | 4470 | e5700 | e5800 | e5600 | e5600 | e4500 | 4620 | 8860 | 9760 | 8640 | 9570 |
| 2 | 4000 | 4620 | e5800 | e5600 | e5600 | e5600 | e4300 | 4590 | 9150 | 9440 | 8730 | 9280 |
| 3 | 4050 | 4440 | e6000 | e5400 | e5600 | e5600 | e4300 | 4560 | 9200 | 9290 | 8600 | 9320 |
| 4 | 4150 | 4350 | e6000 | e5100 | e5600 | e5700 | e4300 | 4590 | 9120 | 9050 | 8550 | 9190 |
| 5 | 4100 | 4360 | e5800 | e5200 | e5600 | e5500 | e4300 | 4600 | 9070 | 9270 | 8680 | 9160 |
| 6 | 4140 | 4390 | e5700 | e5200 | e5600 | e5500 | e4500 | 4630 | 8920 | 9390 | 8710 | 9070 |
| 7 | 4190 | 4390 | e5700 | e5300 | e5600 | e5500 | e4700 | 4470 | 8980 | 9520 | 8960 | 9250 |
| 8 | 4210 | 4390 | e5700 | e5400 | e5300 | e5500 | e4900 | 4550 | 9000 | 9410 | 9280 | 9240 |
| 9 | 4150 | 4390 | e5700 | e5300 | e5500 | e5500 | e5200 | 4790 | 8880 | 9440 | 9590 | 9330 |
| 10 | 4180 | 4390 | e5700 | e5400 | e5500 | e5600 | e5500 | 4830 | 8990 | 9560 | 9670 | 9350 |
| 11 | 4210 | 4420 | e5700 | e5200 | e5500 | e5600 | e5800 | 4780 | 9610 | 9710 | 9650 | 9190 |
| 12 | 4220 | 4430 | e5700 | e5100 | e5500 | e5600 | e6000 | 4790 | 9890 | 9360 | 9430 | 9310 |
| 13 | 4150 | 4450 | e5700 | e5100 | e5500 | e5500 | e5800 | 4930 | 9790 | 9290 | 9280 | 9460 |
| 14 | 4200 | 4520 | e5900 | e5000 | e5300 | e5500 | e5500 | 6790 | 9690 | 9240 | 9490 | 9240 |
| 15 | 4150 | 4540 | e5700 | e5000 | e5400 | e5400 | 5300 | 9080 | 9970 | 8930 | 9400 | 9230 |
| 16 | 4190 | 4470 | e5600 | e5100 | e5400 | e5200 | 5130 | 10600 | 10400 | 8700 | 9390 | 8980 |
| 17 | 4230 | 4440 | e5600 | e5100 | e5400 | e4900 | 5070 | 9210 | 10400 | 8860 | 9610 | 7680 |
| 18 | 4250 | 4420 | e5600 | e5100 | e5400 | e4900 | 5110 | 6920 | 10200 | e9000 | 9860 | 6370 |
| 19 | 4270 | 4450 | e5600 | e5100 | e5500 | e4800 | 5220 | 6830 | 9780 | e9100 | 10000 | 5980 |
| 20 | 4230 | 4460 | e5600 | e5400 | e5600 | e4800 | 5130 | 8500 | 9530 | e9100 | 10000 | 5750 |
| 21 | 4250 | 4460 | e5600 | e5600 | e5700 | e4600 | 5070 | 9200 | 9600 | e9000 | 10000 | 5550 |
| 22 | 4220 | 4500 | e5700 | e5400 | e5800 | e4600 | 5000 | 8940 | 9680 | e8900 | 10000 | 5560 |
| 23 | 4270 | 4480 | e5600 | e5200 | e5900 | e4300 | 4890 | 9250 | 9710 | e8900 | 10700 | 5490 |
| 24 | 4310 | 4460 | e5600 | e5200 | e5700 | e4300 | 4820 | 9760 | 9760 | 8730 | 10300 | 5570 |
| 25 | 4320 | 4470 | e5600 | e5200 | e5500 | e4300 | 4760 | 9410 | 9850 | 8670 | 10500 | 5530 |
| 26 | 4310 | 4460 | e5600 | e5100 | e5300 | e4300 | 4720 | 9040 | 9550 | 8660 | 11800 | 5530 |
| 27 | 4370 | 4490 | e5600 | e5200 | e5400 | e4400 | 4690 | 9020 | 9650 | 8600 | 11100 | 5550 |
| 28 | 4380 | 5070 | e5600 | e5500 | e5400 | e4600 | 4700 | 9080 | 10100 | 8710 | 10100 | 5460 |
| 29 | 4450 | e5600 | e5600 | e5600 | --- | e4800 | 4740 | 9080 | 10300 | 8700 | 9670 | 5390 |
| 30 | 4500 | e5400 | e5800 | e5800 | --- | e5000 | 4710 | 9050 | 10300 | 8710 | 9530 | 5320 |
| 31 | 4480 | --- | e5700 | e5900 | --- | e4800 | --- | 8920 | --- | 8700 | 9410 | --- |
| TOTAL | 131090 | 136180 | 176500 | 164600 | 154700 | 157800 | 148660 | 219410 | 287930 | 281700 | 298630 | 228900 |
| MEAN | 4229 | 4539 | 5694 | 5310 | 5525 | 5090 | 4955 | 7078 | 9598 | 9087 | 9633 | 7630 |
| MAX | 4500 | 5600 | 6000 | 5900 | 5900 | 5700 | 6000 | 10600 | 10400 | 9760 | 11800 | 9570 |
| MIN | 3960 | 4350 | 5600 | 5000 | 5300 | 4300 | 4300 | 4470 | 8860 | 8600 | 8550 | 5320 |
| AC-FT | 260000 | 270100 | 350100 | 326500 | 306800 | 313000 | 294900 | 435200 | 571100 | 558800 | 592300 | 454000 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 2002, BY WATER YEAR (WY)*

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 10700 | 9260 | 9143 | 9914 | 10520 | 10350 | 10540 | 9543 | 9737 | 10250 | 11370 | 11110 |
| MAX | 28570 | 22440 | 13280 | 14400 | 17450 | 20690 | 32840 | 26220 | 26650 | 37050 | 25300 | 26590 |
| (WY) | 1949 | 1952 | 1944 | 1986 | 1976 | 1976 | 1979 | 1979 | 1975 | 1975 | 1948 | 1948 |
| MIN | 1237 | 1126 | 1061 | 1010 | 1167 | 2674 | 1965 | 1353 | 1366 | 1273 | 3823 | 3771 |
| (WY) | 1942 | 1942 | 1942 | 1943 | 1942 | 1950 | 1945 | 1945 | 1945 | 1945 | 1963 | 1992 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1941 - 2002* | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 2437380 | | 2386100 | | | |
| ANNUAL MEAN | 6678 | | 6537 | | 10200 | |
| HIGHEST ANNUAL MEAN | | | | | 16580 | 1975 |
| LOWEST ANNUAL MEAN | | | | | 4083 | 1942 |
| HIGHEST DAILY MEAN | 12200 | Jan 28 | 11800 | Aug 26 | 69200 | Mar 27 1943 |
| LOWEST DAILY MEAN | 3870 | Sep 29 | 3960 | Oct 1 | 575 | Nov 22 1941 |
| ANNUAL SEVEN-DAY MINIMUM | 3930 | Sep 25 | 4080 | Oct 1 | 709 | Nov 19 1941 |
| MAXIMUM PEAK FLOW | | | 12000 | Aug 26 | a78200 | Mar 26 1943 |
| MAXIMUM PEAK STAGE | | | 6.23 | Aug 26 | b19.66 | Apr 14 1979 |
| INSTANTANEOUS LOW FLOW | | | 3920 | Oct 1 | 575 | Nov 22 1941 |
| ANNUAL RUNOFF (AC-FT) | 4835000 | | 4733000 | | 7391000 | |
| 10 PERCENT EXCEEDS | 10700 | | 9600 | | 15900 | |
| 50 PERCENT EXCEEDS | 6260 | | 5600 | | 9490 | |
| 90 PERCENT EXCEEDS | 4270 | | 4370 | | 4440 | |

06185500 MISSOURI RIVER NEAR CULBERTSON, MT--Continued

| SUMMARY STATISTICS | FOR WATER YEARS 1941-51** | | WATER YEARS 1958 - 2002*** | |
|---|---|---|---|---|
| ANNUAL TOTAL | | | | |
| ANNUAL MEAN | 9245 | | 10420 | |
| HIGHEST ANNUAL MEAN | 14520 | 1948 | 16580 | 1975 |
| LOWEST ANNUAL MEAN | 4083 | 1942 | 6121 | 1963 |
| HIGHEST DAILY MEAN | 69200 | Mar 27 1943 | 52000 | Apr 18 1979 |
| LOWEST DAILY MEAN | 575 | Nov 22 1941 | 2000 | Nov 20 1964 |
| ANNUAL SEVEN-DAY MINIMUM | 709 | Nov 19 1941 | 2130 | Nov 19 1964 |
| MAXIMUM PEAK FLOW | a78200 | Mar 26 1943 | c55000 | Mar 23 1960 |
| MAXIMUM PEAK STAGE | b15.12 | Mar 26 1943 | b19.66 | Apr 14 1979 |
| ANNUAL RUNOFF (AC-FT) | 6698000 | | 7550000 | |
| 10 PERCENT EXCEEDS | 21000 | | 15200 | |
| 50 PERCENT EXCEEDS | 6910 | | 9720 | |
| 90 PERCENT EXCEEDS | 1400 | | 5790 | |

* During period of operation (1941-52, 1958 to current year)
** Before operational level at Fort Peck Lake was reached
*** After operational level at Fort Peck Lake was reached
a Gage height, 14.80 ft, from rating curve extended above 30,000 $ft^3/s$
b Backwater from ice
c Gage height, 19.14 ft
e Estimated

## 06185600 MISSOURI RIVER STAGE GAGE NO. 4 NEAR NOHLY, MT

LOCATION.--Lat 48°02'10", long 104°09'40", in NE$^{1}/_{4}$ sec.1, T.26 N., R.58 E., Richland County, Hydrologic Unit 10060005, on right bank 4.5 mi northwest of Nohly, MT, and at mile 1,595.7.

DRAINAGE AREA.--93,000 mi$^{2}$, 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 National Geodetic Vertical Datum of 1929. 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, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | --- | --- | --- | --- | --- | --- | --- | 9.55 | 11.55 | 12.32 | 11.61 | 11.87 |
| 2 | --- | --- | --- | --- | --- | --- | --- | 9.49 | 11.72 | 12.07 | 11.66 | 11.84 |
| 3 | --- | --- | --- | --- | --- | --- | --- | 9.49 | 11.80 | 12.01 | 11.67 | 11.78 |
| 4 | --- | --- | --- | --- | --- | --- | --- | 9.45 | 11.80 | 11.96 | 11.64 | 11.81 |
| 5 | --- | --- | --- | --- | --- | --- | --- | 9.50 | 11.82 | 11.97 | 11.67 | 11.67 |
| 6 | --- | --- | --- | --- | --- | --- | --- | 9.55 | 11.77 | 12.07 | 11.66 | 11.69 |
| 7 | --- | --- | --- | --- | --- | --- | --- | 9.50 | 11.82 | 12.05 | 11.72 | 11.68 |
| 8 | --- | --- | --- | --- | --- | --- | --- | 9.48 | 11.84 | 12.10 | 11.96 | 11.66 |
| 9 | --- | --- | --- | --- | --- | --- | --- | 9.56 | 11.81 | 12.14 | 12.16 | 11.70 |
| 10 | --- | --- | --- | --- | --- | --- | --- | 9.63 | 11.85 | 12.10 | 12.17 | 11.77 |
| 11 | --- | --- | --- | --- | --- | --- | --- | 9.61 | 11.97 | 12.17 | 12.11 | 11.71 |
| 12 | --- | --- | --- | --- | --- | --- | --- | 9.59 | 12.24 | 12.12 | 12.03 | 11.69 |
| 13 | --- | --- | --- | --- | --- | --- | --- | 9.55 | 12.27 | 12.01 | 11.98 | 11.74 |
| 14 | --- | --- | --- | --- | --- | --- | --- | 9.96 | 12.22 | 12.03 | 12.06 | 11.73 |
| 15 | --- | --- | --- | --- | --- | --- | --- | 11.02 | 12.26 | 11.95 | 12.04 | 11.68 |
| 16 | --- | --- | --- | --- | --- | --- | --- | 11.82 | 12.42 | 11.80 | 12.03 | 11.82 |
| 17 | --- | --- | --- | --- | --- | --- | --- | 11.93 | 12.48 | 11.80 | 12.06 | 11.43 |
| 18 | --- | --- | --- | --- | --- | --- | --- | 10.98 | 12.48 | 11.86 | 12.19 | 10.77 |
| 19 | --- | --- | --- | --- | --- | --- | --- | 10.52 | 12.36 | 11.82 | 12.15 | 10.35 |
| 20 | --- | --- | --- | --- | --- | --- | --- | 10.86 | 12.15 | 11.88 | 12.20 | 10.27 |
| 21 | --- | --- | --- | --- | --- | --- | --- | 11.49 | 12.14 | 11.88 | 12.20 | 10.14 |
| 22 | --- | --- | --- | --- | --- | --- | --- | 11.61 | 12.23 | 11.79 | 12.26 | 10.09 |
| 23 | --- | --- | --- | --- | --- | --- | --- | 11.51 | 12.23 | 11.78 | 12.37 | 10.02 |
| 24 | --- | --- | --- | --- | --- | --- | --- | 11.76 | 12.22 | 11.79 | 12.39 | 10.03 |
| 25 | --- | --- | --- | --- | --- | --- | --- | 11.83 | 12.23 | 11.77 | 12.26 | 10.00 |
| 26 | --- | --- | --- | --- | --- | --- | --- | 11.66 | 12.19 | 11.72 | 12.60 | 9.93 |
| 27 | --- | --- | --- | --- | --- | --- | --- | 11.57 | 12.10 | 11.68 | 12.73 | 9.98 |
| 28 | --- | --- | --- | --- | --- | --- | --- | 11.62 | 12.25 | 11.74 | 12.29 | 9.86 |
| 29 | --- | --- | --- | --- | --- | --- | --- | 11.79 | 12.41 | 11.71 | 12.00 | 9.81 |
| 30 | --- | --- | --- | --- | --- | --- | --- | 11.64 | 12.43 | 11.71 | 11.94 | 9.76 |
| 31 | --- | --- | --- | --- | --- | --- | --- | 11.63 | --- | 11.67 | 11.84 | --- |
| MEAN | --- | --- | --- | --- | --- | --- | --- | 10.62 | 12.10 | 11.92 | 12.05 | 11.01 |
| MAX | --- | --- | --- | --- | --- | --- | --- | 11.93 | 12.48 | 12.32 | 12.73 | 11.87 |
| MIN | --- | --- | --- | --- | --- | --- | --- | 9.45 | 11.55 | 11.67 | 11.61 | 9.76 |

## 06185650 MISSOURI RIVER STAGE GAGE NO. 5 AT NOHLY, MT

LOCATION.--Lat 48°00'10", long 104°05'30", in SE$^{1}/_{4}$ sec.16, T.26 N., R.59 E., Richland County, Hydrologic Unit 10060005, at downstream side of bridge, 0.2 mi northwest of Nohly, MT, and at mile 1,587.7.

DRAINAGE AREA.--93,000 mi$^{2}$, 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 National Geodetic Vertical Datum of 1929.

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, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | --- | --- | --- | --- | --- | --- | --- | 62.39 | 64.75 | 65.74 | 64.74 | 65.07 |
| 2 | --- | --- | --- | --- | --- | --- | --- | 62.36 | 64.94 | 65.47 | 64.74 | 65.08 |
| 3 | --- | --- | --- | --- | --- | --- | --- | 62.35 | 65.39 | 65.35 | 64.76 | 64.95 |
| 4 | --- | --- | --- | --- | --- | --- | --- | 62.36 | 66.09 | 65.25 | 64.68 | 64.98 |
| 5 | --- | --- | --- | --- | --- | --- | --- | 62.37 | 66.67 | 65.20 | 64.73 | 64.92 |
| 6 | --- | --- | --- | --- | --- | --- | --- | 62.44 | 66.91 | 65.23 | 64.74 | 64.91 |
| 7 | --- | --- | --- | --- | --- | --- | --- | 62.39 | 66.67 | 65.25 | 64.78 | 64.90 |
| 8 | --- | --- | --- | --- | --- | --- | --- | 62.39 | 66.16 | 65.26 | 64.92 | 64.99 |
| 9 | --- | --- | --- | --- | --- | --- | --- | 62.47 | 65.76 | 65.28 | 65.11 | 64.98 |
| 10 | --- | --- | --- | --- | --- | --- | --- | 62.55 | 65.89 | 65.23 | 65.18 | 65.02 |
| 11 | --- | --- | --- | --- | --- | --- | --- | 62.55 | 66.15 | 65.29 | 65.19 | 64.99 |
| 12 | --- | --- | --- | --- | --- | --- | --- | 62.54 | 66.25 | 65.27 | 65.14 | 64.94 |
| 13 | --- | --- | --- | --- | --- | --- | --- | 62.50 | 66.10 | 65.11 | 65.02 | 65.02 |
| 14 | --- | --- | --- | --- | --- | --- | --- | 62.79 | 65.83 | 65.11 | 65.03 | 65.03 |
| 15 | --- | --- | --- | --- | --- | --- | --- | 63.84 | 65.66 | 65.04 | 65.09 | 64.89 |
| 16 | --- | --- | --- | --- | --- | --- | --- | 64.78 | 65.68 | 64.88 | 65.03 | 64.93 |
| 17 | --- | --- | --- | --- | --- | --- | --- | 65.12 | 65.74 | 64.86 | 65.09 | 64.62 |
| 18 | --- | --- | --- | --- | --- | --- | --- | 64.24 | 65.72 | 64.91 | 65.18 | 63.89 |
| 19 | --- | --- | --- | --- | --- | --- | --- | 63.58 | 65.60 | 64.91 | 65.26 | 63.42 |
| 20 | --- | --- | --- | --- | --- | --- | --- | 63.87 | 65.48 | 64.92 | 65.30 | 63.26 |
| 21 | --- | --- | --- | --- | --- | --- | --- | 64.55 | 65.60 | 64.93 | 65.29 | 63.08 |
| 22 | --- | --- | --- | --- | --- | --- | --- | 64.73 | 65.88 | 64.84 | 65.26 | 63.05 |
| 23 | --- | --- | --- | --- | --- | --- | --- | 64.66 | 66.14 | 64.84 | 65.37 | 63.01 |
| 24 | --- | --- | --- | --- | --- | --- | --- | 65.02 | 65.91 | 64.82 | 65.49 | 63.00 |
| 25 | --- | --- | --- | --- | --- | --- | --- | 65.40 | 65.73 | 64.82 | 65.33 | 63.02 |
| 26 | --- | --- | --- | --- | --- | --- | --- | 65.34 | 65.73 | 64.76 | 65.65 | 62.97 |
| 27 | --- | --- | --- | --- | --- | --- | --- | 65.07 | 65.63 | 64.76 | 65.89 | 63.01 |
| 28 | --- | --- | --- | --- | --- | --- | --- | 64.94 | 65.74 | 64.76 | 65.52 | 62.95 |
| 29 | --- | --- | --- | --- | --- | --- | --- | 64.88 | 65.83 | 64.77 | 65.22 | 62.90 |
| 30 | --- | --- | --- | --- | --- | --- | --- | 64.85 | 65.83 | 64.77 | 65.13 | 62.85 |
| 31 | --- | --- | --- | --- | --- | --- | --- | 64.83 | --- | 64.77 | 65.06 | --- |
| MEAN | --- | --- | --- | --- | --- | --- | --- | 63.68 | 65.85 | 65.05 | 65.13 | 64.15 |
| MAX | --- | --- | --- | --- | --- | --- | --- | 65.40 | 66.91 | 65.74 | 65.89 | 65.08 |
| MIN | --- | --- | --- | --- | --- | --- | --- | 62.35 | 64.75 | 64.76 | 64.68 | 62.85 |

## 06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT
(National water-quality assessment program)

LOCATION.--Lat 47°40'42", long 104°09'22" (NAD 27), in SW$^1/_4$NE$^1/_4$SW$^1/_4$ sec.9, T.22 N., R.59 E., Richland County, Hydrologic Unit 10100004, on left bank at Montana-Dakota Utilities Company powerplant, 0.2 mi downstream from bridge on State Highway 23, 2.5 mi south of Sidney, 3.0 mi downstream from Fox Creek, and at river mile 29.2.

DRAINAGE AREA.--69,103 mi$^2$. Area at site 4.5 mi upstream, 68,812 mi$^2$.

### WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,881.3 ft above National Geodetic Verticla Datum of 1929 (levels by U.S. Army Corps of Engineers). Jan. 1, 1911, to Sept. 30, 1931, nonrecording gage at site 32 miles upstream at different datum. Apr. 9, 1934, water-stage recorder at two sites within 500 ft of highway bridge 0.2 mi upstream and May 17, 1945, to Apr. 3, 1952, nonrecording gage on same bridge at datum 1.36 ft higher. Apr. 4, 1952, to Nov. 19, 1967, water-stage recorder at site 4.5 mi upstream at different datum.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Flow regulated to some extent by Bighorn Lake, usable capacity, 1,312,000 acre-ft, on the Bighorn River and on other tributary streams in Wyoming and Montana. Diversion for irrigation of about 1,250,000 acres upstream from station. Lower Yellowstone Project Main Canal diverts from left bank in NW$^1/_4$ sec.36, T.18 N., R.56 E., at Lower Yellowstone diversion dam at Intake about 36.6 mi upstream for irrigation of about 52,000 acres of which about one-third lies upstream from station. U. S. Army Corps of Engineers satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3460 | 4740 | e3600 | e2700 | e3400 | e3000 | e4400 | 5140 | 14200 | 21500 | 5630 | 3390 |
| 2 | 3500 | 4730 | e3800 | e2600 | e3000 | e2800 | e4600 | 4890 | 20600 | 19800 | 5520 | 3660 |
| 3 | 3580 | 4780 | e4000 | e2300 | e2900 | e2700 | e4500 | 5280 | 30200 | 18900 | 5090 | 4720 |
| 4 | 3480 | 4760 | e4200 | e2400 | e3500 | e3000 | e4800 | 5220 | 36800 | 18200 | 4680 | 4450 |
| 5 | 3450 | 4790 | e4400 | e2300 | e4000 | e3100 | e5200 | 5620 | 41300 | 16700 | 4530 | 4180 |
| 6 | 3450 | 4810 | e4400 | e2400 | e4200 | e3100 | e5200 | 6500 | 42600 | 14800 | 4580 | 4000 |
| 7 | 3470 | 4870 | e4300 | e3000 | e4200 | e3200 | e5200 | 6340 | 35200 | 13300 | 4670 | 3790 |
| 8 | 3490 | 4870 | e4500 | e4000 | e4200 | e3200 | e5400 | 6890 | 29000 | 12400 | 4670 | 3800 |
| 9 | 3590 | 4780 | e4500 | e4200 | e4200 | e3200 | e5500 | 7670 | 28300 | 11600 | 4740 | 4210 |
| 10 | 3710 | 4730 | e4500 | e4200 | e4200 | e3200 | e5600 | 8230 | 33200 | 10700 | 5020 | 4400 |
| 11 | 3810 | 4660 | e4500 | e4200 | e4400 | e3200 | e5600 | 7910 | 32700 | 9830 | 4800 | 4620 |
| 12 | 3850 | 4710 | e4500 | e4400 | e4400 | e2800 | e5600 | 7460 | 30300 | 9180 | 5000 | 4660 |
| 13 | 3940 | 4820 | e4400 | e4600 | e4400 | e2700 | 5610 | 7140 | 26500 | 8660 | 5000 | 4710 |
| 14 | 4020 | 4910 | e4300 | e4600 | e4400 | e3000 | 5500 | 6560 | 22500 | 8080 | 4890 | 4960 |
| 15 | 4090 | 4800 | e4300 | e4400 | e4400 | e3400 | 5350 | 6120 | 19200 | 7360 | 4510 | 4750 |
| 16 | 4110 | 4760 | e4200 | e4300 | e4300 | e3300 | 5140 | 5870 | 17100 | 6710 | 4140 | 4520 |
| 17 | 4140 | 4720 | e4400 | e4300 | e4400 | e3200 | 5120 | 5650 | 15800 | 6570 | 3790 | 4440 |
| 18 | 4160 | 4710 | e4300 | e4300 | e4500 | e3200 | 5240 | 6370 | 15600 | 7690 | 3400 | 4330 |
| 19 | 4390 | 4700 | e4200 | e4300 | e4600 | e3200 | 6080 | 8980 | 17600 | 6760 | 3220 | 4280 |
| 20 | 4530 | 4710 | e4200 | e4200 | e4600 | e3200 | 7660 | 10100 | 20700 | 6580 | 3000 | 4290 |
| 21 | 4560 | 4790 | e4200 | e4200 | e4600 | e3200 | 8000 | 9960 | 24200 | 6650 | 2880 | 4220 |
| 22 | 4460 | 4860 | e4100 | e4200 | e4600 | e3100 | 7580 | 10200 | 28700 | 6670 | 2810 | 4330 |
| 23 | 4420 | 4890 | e3800 | e4200 | e4700 | e3000 | 6720 | 14700 | 27100 | 6710 | 3910 | 4330 |
| 24 | 4580 | 4840 | e3600 | e4200 | e4800 | e3100 | 6250 | 21800 | 23600 | 6770 | 3400 | 4380 |
| 25 | 4660 | 4820 | e3100 | e4200 | e4800 | e3400 | 5860 | 25500 | 23800 | 6760 | 3290 | 4480 |
| 26 | 4620 | 4820 | e3100 | e4200 | e4400 | e3600 | 5630 | 22800 | 23900 | 6440 | 3590 | 4520 |
| 27 | 4580 | e4400 | e3000 | e4100 | e4000 | e3600 | 5510 | 18700 | 23800 | 6210 | 3260 | 4530 |
| 28 | 4540 | e3600 | e3100 | e4100 | e3400 | e3600 | 5500 | 15900 | 24100 | 6170 | 3400 | 4550 |
| 29 | 4650 | e3300 | e3200 | e4000 | --- | e3800 | 5410 | 13800 | 23600 | 5940 | 3460 | 4600 |
| 30 | 4820 | e3300 | e3300 | e3800 | --- | e4000 | 5270 | 12300 | 22800 | 5780 | 3360 | 4530 |
| 31 | 4780 | --- | e3100 | e3600 | --- | e4200 | --- | 12300 | --- | 5740 | 3340 | --- |
| TOTAL | 126890 | 138980 | 123100 | 118500 | 117500 | 100300 | 169030 | 311900 | 775000 | 305160 | 127580 | 130630 |
| MEAN | 4093 | 4633 | 3971 | 3823 | 4196 | 3235 | 5634 | 10060 | 25830 | 9844 | 4115 | 4354 |
| MAX | 4820 | 4910 | 4500 | 4600 | 4800 | 4200 | 8000 | 25500 | 42600 | 21500 | 5630 | 4960 |
| MIN | 3450 | 3300 | 3000 | 2300 | 2900 | 2700 | 4400 | 4890 | 14200 | 5740 | 2810 | 3390 |
| AC-FT | 251700 | 275700 | 244200 | 235000 | 233100 | 198900 | 335300 | 618700 | 1537000 | 605300 | 253100 | 259100 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1911 - 2002, BY WATER YEAR (WY)*

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 8304 | 7350 | 5961 | 5733 | 6867 | 10940 | 10330 | 18300 | 38840 | 23040 | 8725 | 7155 |
| MAX | 29130 | 12150 | 9594 | 13110 | 17750 | 25980 | 39160 | 38100 | 77280 | 55000 | 20470 | 16000 |
| (WY) | 1924 | 1924 | 1976 | 1925 | 1971 | 1972 | 1924 | 1928 | 1918 | 1917 | 1912 | 1941 |
| MIN | 3726 | 3700 | 3019 | 2087 | 2702 | 3235 | 2821 | 5409 | 11580 | 3311 | 1602 | 2389 |
| (WY) | 1922 | 1922 | 1961 | 1937 | 1936 | 2002 | 1961 | 1961 | 1919 | 1919 | 1961 | 1934 |

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1911 – 2002* | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 2208360 | | 2544570 | | | |
| ANNUAL MEAN | 6050 | | 6971 | | 12640 | |
| HIGHEST ANNUAL MEAN | | | | | 21250 | 1924 |
| LOWEST ANNUAL MEAN | | | | | 5814 | 1934 |
| HIGHEST DAILY MEAN | 23900 | Jun 17 | 42600 | Jun 6 | 142000 | Jun 21 1921 |
| LOWEST DAILY MEAN | 1010 | Aug 26 | 2300 | Jan 3 | 570 | May 17 1961 |
| ANNUAL SEVEN-DAY MINIMUM | 1060 | Aug 23 | 2530 | Jan 1 | 1010 | Aug 8 1961 |
| MAXIMUM PEAK FLOW | | | 43600 | Jun 6 | a159000 | Jun 21 1921 |
| MAXIMUM PEAK STAGE | | | 12.11 | Jun 6 | b24.03 | Mar 6 1994 |
| INSTANTANEOUS LOW FLOW | | | 2300 | Jan 3 | c470 | May 17 1961 |
| ANNUAL RUNOFF (AC-FT) | 4380000 | | 5047000 | | 9159000 | |
| 10 PERCENT EXCEEDS | 12300 | | 16200 | | 28400 | |
| 50 PERCENT EXCEEDS | 4820 | | 4560 | | 8060 | |
| 90 PERCENT EXCEEDS | 2920 | | 3200 | | 4130 | |
| 90 PERCENT EXCEEDS | 2920 | | 3200 | | 4120 | |

| SUMMARY STATISTICS | WATER YEARS 1911 – 1965** | | WATER YEARS 1967 – 2002*** | |
|---|---|---|---|---|
| ANNUAL MEAN | 12890 | | 12400 | |
| HIGHEST ANNUAL MEAN | 21250 | 1924 | 19150 | 1997 |
| LOWEST ANNUAL MEAN | 5814 | 1934 | 6387 | 2001 |
| HIGHEST DAILY MEAN | 142000 | Jun 21 1921 | 104000 | May 23 1978 |
| LOWEST DAILY MEAN | 570 | May 17 1961 | 800 | Jan 2 1989 |
| ANNUAL SEVEN-DAY MINIMUM | 1010 | Aug 8 1961 | 1060 | Aug 23 2001 |
| MAXIMUM PEAK FLOW | a159000 | Jun 21 1921 | f111000 | May 23 1978 |
| MAXIMUM PEAK STAGE | d21.85 | Mar 22 1947 | b24.03 | Mar 6 1994 |
| INSTANTANEOUS LOW FLOW | c470 | May 17 1961 | 470 | May 17 1961 |
| ANNUAL RUNOFF (AC-FT) | 9341000 | | 8983000 | |
| 10 PERCENT EXCEEDS | 29900 | | 26700 | |
| 50 PERCENT EXCEEDS | 7690 | | 8610 | |
| 90 PERCENT EXCEEDS | 3820 | | 4800 | |

* During period of operation 1911-31, 1934-current year; published as “at Intake” 1911-31
** Prior to Bighorn Lake reaching operational level
*** After Bighorn Lake reached operational level
a Gage height, 12.6 ft, site and datum then in use
b Backwater from ice
c Gage height, 2.73 ft, site and datum then in use
d Backwater from ice, site and datum then in use
e Estimated
f Gage height, 20.02 ft

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

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

DRAINAGE AREA.--70,000 $mi^2$, 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 National Geodetic Vertical Datum of 1929. Prior to Feb. 19, 1962, at datum 60.00 ft lower.

REVISED 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, 6.99 ft, Aug. 29, 2001, present datum.

GAGE HEIGHT, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | --- | --- | --- | --- | --- | --- | --- | 9.51 | --- | --- | --- | --- |
| 2 | --- | --- | --- | --- | --- | --- | --- | 9.35 | --- | --- | --- | --- |
| 3 | --- | --- | --- | --- | --- | --- | --- | 9.52 | --- | --- | --- | --- |
| 4 | --- | --- | --- | --- | --- | --- | --- | 9.55 | --- | --- | --- | --- |
| 5 | --- | --- | --- | --- | --- | --- | --- | 9.60 | --- | --- | --- | --- |
| 6 | --- | --- | --- | --- | --- | --- | --- | 10.02 | --- | --- | 9.43 | --- |
| 7 | --- | --- | --- | --- | --- | --- | --- | 10.0 | --- | --- | 9.50 | --- |
| 8 | --- | --- | --- | --- | --- | --- | --- | 10.14 | --- | --- | 9.44 | --- |
| 9 | --- | --- | --- | --- | --- | --- | --- | 10.41 | --- | --- | 9.48 | 9.35 |
| 10 | --- | --- | --- | --- | --- | --- | --- | 10.61 | --- | --- | 9.60 | 9.53 |
| 11 | --- | --- | --- | --- | --- | --- | --- | 10.61 | --- | --- | 9.53 | 9.59 |
| 12 | --- | --- | --- | --- | --- | --- | --- | 10.41 | --- | --- | 9.45 | 9.67 |
| 13 | --- | --- | --- | --- | --- | --- | --- | 10.31 | --- | --- | 9.40 | 9.64 |
| 14 | --- | --- | --- | --- | --- | --- | --- | 10.10 | --- | --- | 9.33 | 9.78 |
| 15 | --- | --- | --- | --- | --- | --- | --- | 9.88 | --- | --- | 9.07 | 9.72 |
| 16 | --- | --- | --- | --- | --- | --- | --- | 9.79 | --- | --- | 9.06 | 9.60 |
| 17 | --- | --- | --- | --- | --- | --- | --- | 9.67 | --- | --- | 9.03 | 9.53 |
| 18 | --- | --- | --- | --- | --- | --- | --- | 9.84 | 12.77 | --- | 8.92 | 9.46 |
| 19 | --- | --- | --- | --- | --- | --- | --- | 10.65 | 13.15 | --- | 8.82 | 9.44 |
| 20 | --- | --- | --- | --- | --- | --- | --- | 11.17 | 13.90 | --- | --- | 9.39 |
| 21 | --- | --- | --- | --- | --- | --- | --- | 11.21 | 14.74 | --- | --- | 9.37 |
| 22 | --- | --- | --- | --- | --- | --- | --- | --- | 15.64 | --- | 8.79 | 9.40 |
| 23 | --- | --- | --- | --- | --- | --- | --- | --- | 15.69 | --- | 9.17 | 9.41 |
| 24 | --- | --- | --- | --- | --- | --- | --- | --- | 14.78 | --- | --- | 9.43 |
| 25 | --- | --- | --- | --- | --- | --- | --- | --- | 14.64 | --- | --- | 9.47 |
| 26 | --- | --- | --- | --- | --- | --- | --- | --- | 14.71 | --- | --- | 9.50 |
| 27 | --- | --- | --- | --- | --- | --- | --- | --- | 14.63 | --- | --- | 9.51 |
| 28 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.51 |
| 29 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.53 |
| 30 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.48 |
| 31 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MEAN | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MAX | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MIN | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

## 06329610 YELLOWSTONE RIVER STAGE GAGE NO. 2 NEAR CARTWRIGHT, ND

LOCATION.--Lat 47°51'43", long 103°57'59", in NW$^1/_4$NW$^1/_4$NW$^1/_4$, sec. 35, 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 8.5.

DRAINAGE AREA.--70,000 mi$^2$, approximately.

### GAGE-HEIGHT RECORDS

PERIOD OF RECORD.--April 1959 to September 2001 (seasonal), October 2001 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,800.00 ft above National Geodetic Vertical Datum of 1929.

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, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | --- | 63.83 | 63.53 | 65.14 | 64.86 | 64.37 | 67.92 | 63.95 | 66.43 | 68.75 | 64.07 | 63.22 |
| 2 | --- | 63.81 | 63.55 | 65.09 | 64.64 | 64.13 | 67.26 | 63.81 | 67.55 | 68.33 | 64.02 | 63.23 |
| 3 | 63.48 | 63.82 | 63.58 | 64.75 | 64.35 | 63.98 | 67.18 | 63.94 | 69.85 | 67.99 | 63.91 | 63.53 |
| 4 | 63.44 | 63.82 | 63.84 | 64.64 | 64.44 | 64.96 | 67.23 | 63.97 | 71.67 | 67.82 | 63.72 | 63.66 |
| 5 | 63.42 | 63.81 | 64.67 | 64.55 | 64.75 | 65.17 | 67.04 | 63.98 | 72.51 | 67.53 | 63.62 | 63.55 |
| 6 | 63.40 | 63.82 | 65.01 | 64.49 | 65.04 | 65.09 | 67.03 | 64.33 | 72.90 | 67.06 | 63.59 | 63.47 |
| 7 | 63.41 | 63.84 | 65.00 | 64.46 | 65.25 | 65.35 | 66.62 | 64.33 | 72.00 | 66.63 | 63.67 | 63.38 |
| 8 | 63.41 | 63.85 | 64.89 | 64.98 | 65.34 | 65.92 | 66.98 | 64.44 | 70.71 | 66.37 | 63.62 | 63.35 |
| 9 | 63.44 | 63.82 | 64.91 | --- | 65.44 | 66.27 | 66.98 | 64.72 | 70.17 | 66.15 | 63.69 | 63.44 |
| 10 | 63.48 | 63.80 | 64.74 | --- | 65.38 | 65.92 | --- | 64.88 | 71.10 | 65.95 | 63.77 | 63.60 |
| 11 | 63.52 | 63.78 | 64.65 | 65.87 | 65.39 | 65.62 | 67.94 | 64.94 | 71.43 | 65.70 | 63.75 | 63.66 |
| 12 | 63.55 | 63.79 | 64.72 | 66.28 | 65.42 | 65.38 | 65.23 | 64.77 | 71.06 | 65.49 | 63.73 | 63.74 |
| 13 | 63.55 | 63.82 | 64.69 | 66.22 | 65.41 | 65.09 | 64.22 | 64.66 | 70.23 | 65.31 | 63.82 | 63.72 |
| 14 | 63.59 | 63.86 | 64.77 | --- | 65.54 | 65.07 | 64.14 | 64.49 | 69.52 | 65.13 | 63.77 | 63.82 |
| 15 | 63.63 | 63.84 | 64.62 | 66.06 | 65.44 | 65.78 | 64.07 | 64.31 | 68.67 | 64.89 | 63.65 | 63.79 |
| 16 | 63.63 | 63.82 | 64.39 | --- | 65.42 | 66.64 | 64.01 | 64.21 | 68.08 | 64.64 | 63.52 | 63.69 |
| 17 | 63.63 | 63.80 | 64.34 | --- | 65.47 | --- | 63.96 | 64.11 | 67.70 | 64.47 | 63.39 | 63.64 |
| 18 | 63.64 | 63.81 | 64.45 | --- | 65.43 | 67.41 | 63.97 | 64.20 | 67.53 | 64.73 | 63.25 | 63.60 |
| 19 | 63.69 | 63.81 | 64.32 | --- | 65.48 | 67.47 | 64.15 | 64.85 | 67.89 | 64.77 | 63.15 | 63.57 |
| 20 | 63.76 | 63.79 | 64.32 | --- | 65.56 | 67.24 | 64.62 | 65.41 | 68.64 | 64.49 | 63.04 | 63.55 |
| 21 | 63.78 | 63.81 | 64.41 | --- | 65.56 | 66.92 | 64.91 | 65.50 | 69.39 | 64.48 | 62.96 | 63.55 |
| 22 | 63.76 | 63.82 | 64.43 | 65.06 | 65.66 | 66.63 | 64.84 | 65.42 | 70.17 | 64.53 | 62.92 | 63.56 |
| 23 | 63.73 | 63.82 | 64.34 | 65.10 | 65.84 | 66.28 | 64.60 | 66.20 | 70.46 | 64.52 | 63.15 | 63.57 |
| 24 | 63.77 | 63.81 | 64.30 | --- | 65.66 | 65.73 | 64.37 | 68.13 | 69.45 | 64.53 | 63.27 | 63.58 |
| 25 | 63.80 | 63.78 | 63.99 | --- | 65.73 | 65.59 | 64.25 | 69.55 | 69.21 | 64.57 | 63.09 | 63.62 |
| 26 | 63.80 | 63.76 | 63.90 | --- | 65.59 | 65.55 | 64.12 | 69.32 | 69.29 | 64.46 | 63.29 | 63.64 |
| 27 | 63.78 | 63.77 | 63.86 | --- | 65.10 | 65.88 | 64.06 | 68.31 | 69.20 | 64.34 | 63.13 | 63.65 |
| 28 | 63.76 | 63.33 | 63.72 | 65.26 | 64.84 | 66.54 | 64.04 | 67.44 | 69.29 | 64.31 | 63.17 | 63.66 |
| 29 | 63.76 | 63.38 | --- | 65.32 | --- | 67.26 | 64.03 | 66.82 | 69.21 | 64.23 | 63.20 | 63.68 |
| 30 | 63.83 | 63.48 | 64.66 | 65.27 | --- | 67.66 | 63.98 | 66.36 | 69.03 | 64.13 | 63.20 | 63.66 |
| 31 | 63.84 | --- | 65.20 | 64.96 | --- | 67.94 | --- | 66.24 | --- | 64.14 | 63.11 | --- |
| MEAN | --- | 63.77 | --- | --- | 65.29 | --- | --- | 65.41 | 69.68 | 65.50 | 63.46 | 63.58 |
| MAX | --- | 63.86 | --- | --- | 65.84 | --- | --- | 69.55 | 72.90 | 68.75 | 64.07 | 63.82 |
| MIN | --- | 63.33 | --- | --- | 64.35 | --- | --- | 63.81 | 66.43 | 64.13 | 62.92 | 63.22 |

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

LOCATION.--Lat 47°55'14", long 103°57'56", in SW$^1/_4$ sec.2, T.151 N., R.104 W., McKenzie County, Hydrologic Unit 10100004, on left bank 4 mi south of Buford and 6.5 mi southeast of Nohly, MT.

DRAINAGE AREA.--70,000 mi$^2$, approximately.

### GAGE-HEIGHT RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,850.00 ft above National Geodetic Vertical Datum of 1929. Prior to Apr. 19, 1962, at datum 50.00 ft lower. Prior to Apr. 23, 1987, gage was located 1 mi downstream.

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.

GAGE HEIGHT, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.86 | --- | --- | --- | --- | --- | --- | 9.74 | --- | 15.52 | --- | 9.15 |
| 2 | --- | --- | --- | --- | --- | --- | --- | 9.57 | --- | 15.04 | --- | 9.16 |
| 3 | --- | --- | --- | --- | --- | --- | --- | 9.70 | --- | 14.63 | --- | 9.48 |
| 4 | --- | --- | --- | --- | --- | --- | --- | 9.77 | 17.91 | 14.42 | --- | 9.78 |
| 5 | --- | --- | --- | --- | --- | --- | --- | 9.78 | 18.85 | 14.10 | --- | 9.60 |
| 6 | --- | --- | --- | --- | --- | --- | --- | 10.20 | 19.13 | 13.59 | 9.59 | 9.44 |
| 7 | --- | --- | --- | --- | --- | --- | --- | 10.27 | 18.23 | 13.09 | 9.69 | 9.32 |
| 8 | --- | --- | --- | --- | --- | --- | --- | 10.38 | 16.99 | 12.78 | 9.67 | 9.30 |
| 9 | --- | --- | --- | --- | --- | --- | --- | 10.74 | 16.09 | 12.57 | 9.80 | 9.40 |
| 10 | --- | --- | --- | --- | --- | --- | --- | 10.93 | 17.00 | 12.35 | 9.92 | 9.66 |
| 11 | --- | --- | --- | --- | --- | --- | --- | 11.12 | 17.66 | 12.11 | 9.95 | 9.72 |
| 12 | --- | --- | --- | --- | --- | --- | --- | 10.89 | 17.12 | --- | 9.88 | 9.84 |
| 13 | --- | --- | --- | --- | --- | --- | --- | 10.72 | 16.23 | --- | 9.99 | 9.84 |
| 14 | --- | --- | --- | --- | --- | --- | --- | 10.56 | --- | --- | 9.94 | 9.97 |
| 15 | --- | --- | --- | --- | --- | --- | --- | 10.35 | --- | --- | 9.81 | 9.95 |
| 16 | --- | --- | --- | --- | --- | --- | --- | 10.33 | --- | --- | 9.64 | 9.82 |
| 17 | --- | --- | --- | --- | --- | --- | --- | 10.31 | --- | --- | 9.47 | 9.68 |
| 18 | --- | --- | --- | --- | --- | --- | --- | 10.25 | --- | --- | 9.27 | --- |
| 19 | --- | --- | --- | --- | --- | --- | --- | 10.86 | 14.20 | --- | 9.15 | --- |
| 20 | --- | --- | --- | --- | --- | --- | --- | 11.66 | 14.93 | --- | 9.02 | --- |
| 21 | --- | --- | --- | --- | --- | --- | --- | 11.94 | 15.88 | --- | 8.92 | --- |
| 22 | --- | --- | --- | --- | --- | --- | --- | 11.90 | 16.86 | --- | 8.83 | --- |
| 23 | --- | --- | --- | --- | --- | --- | --- | 12.57 | 17.28 | --- | 9.07 | --- |
| 24 | --- | --- | --- | --- | --- | --- | --- | --- | 16.35 | --- | 9.44 | --- |
| 25 | --- | --- | --- | --- | --- | --- | --- | --- | 15.98 | --- | 9.09 | --- |
| 26 | --- | --- | --- | --- | --- | --- | --- | --- | 16.07 | --- | 9.38 | --- |
| 27 | --- | --- | --- | --- | --- | --- | --- | --- | 15.97 | --- | 9.33 | --- |
| 28 | --- | --- | --- | --- | --- | --- | --- | --- | 16.07 | --- | 9.25 | --- |
| 29 | --- | --- | --- | --- | --- | --- | --- | --- | 16.01 | --- | 9.18 | --- |
| 30 | --- | --- | --- | --- | --- | --- | --- | --- | 15.82 | --- | 9.14 | --- |
| 31 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 8.99 | --- |
| MEAN | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MAX | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MIN | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

## 06329640 MISSOURI RIVER STAGE GAGE NO. 5A AT BUFORD, ND

LOCATION.--Lat 47°59'06", long 103°59'05", in SE$^{1}/_{4}$ 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$^{2}$, 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 National Geodetic Vertical Datum of 1929. 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, 20.37 ft, June 18, 1997; minimum daily recorded, 2.63 ft, Aug. 15, 16, 1966.

GAGE HEIGHT, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 12.67 | --- | --- |
| 2 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 12.21 | --- | --- |
| 3 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 11.79 | --- | --- |
| 4 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 11.56 | --- | --- |
| 5 | --- | --- | --- | --- | --- | --- | --- | --- | 15.66 | 11.29 | --- | --- |
| 6 | --- | --- | --- | --- | --- | --- | --- | --- | 16.09 | 10.92 | 7.62 | --- |
| 7 | --- | --- | --- | --- | --- | --- | --- | --- | 15.60 | 10.54 | 7.67 | --- |
| 8 | --- | --- | --- | --- | --- | --- | --- | --- | 14.58 | 10.28 | 7.73 | --- |
| 9 | --- | --- | --- | --- | --- | --- | --- | --- | 13.81 | 10.10 | 7.93 | --- |
| 10 | --- | --- | --- | --- | --- | --- | --- | --- | 14.23 | 9.89 | 8.03 | --- |
| 11 | --- | --- | --- | --- | --- | --- | --- | --- | 14.74 | 9.72 | 8.06 | --- |
| 12 | --- | --- | --- | --- | --- | --- | --- | --- | 14.63 | --- | 7.98 | --- |
| 13 | --- | --- | --- | --- | --- | --- | --- | --- | 14.16 | --- | 8.00 | --- |
| 14 | --- | --- | --- | --- | --- | --- | --- | --- | 13.43 | --- | --- | --- |
| 15 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 16 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 17 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18 | --- | --- | --- | --- | --- | --- | --- | --- | 11.46 | --- | --- | --- |
| 19 | --- | --- | --- | --- | --- | --- | --- | --- | 11.56 | --- | --- | --- |
| 20 | --- | --- | --- | --- | --- | --- | --- | --- | 12.00 | --- | --- | --- |
| 21 | --- | --- | --- | --- | --- | --- | --- | --- | 12.70 | --- | --- | --- |
| 22 | --- | --- | --- | --- | --- | --- | --- | --- | 13.49 | --- | --- | --- |
| 23 | --- | --- | --- | --- | --- | --- | --- | --- | 14.08 | --- | --- | --- |
| 24 | --- | --- | --- | --- | --- | --- | --- | --- | 13.48 | --- | --- | --- |
| 25 | --- | --- | --- | --- | --- | --- | --- | --- | 12.98 | --- | --- | --- |
| 26 | --- | --- | --- | --- | --- | --- | --- | --- | 13.02 | --- | --- | --- |
| 27 | --- | --- | --- | --- | --- | --- | --- | --- | 12.92 | --- | --- | --- |
| 28 | --- | --- | --- | --- | --- | --- | --- | --- | 12.97 | --- | --- | --- |
| 29 | --- | --- | --- | --- | --- | --- | --- | --- | 13.00 | --- | --- | --- |
| 30 | --- | --- | --- | --- | --- | --- | --- | --- | 12.89 | --- | --- | --- |
| 31 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MEAN | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MAX | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MIN | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

## 06329650 MISSOURI RIVER STAGE GAGE NO. 6 NEAR BUFORD, ND

LOCATION.--Lat 47°57'18", long 103°54'36", in SE$^{1}/_{4}$ 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$^{2}$, 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 National Geodetic Vertical Datum of 1929. 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, 27.39 ft, June 24, 1997; minimum daily recorded, 8.23 ft, Aug. 15, 22, 1963.

GAGE HEIGHT, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | --- | --- | --- | --- | --- | --- | --- | 13.68 | 17.31 | 20.09 | 15.42 | 14.89 |
| 2 | --- | --- | --- | --- | --- | --- | --- | 13.54 | 18.04 | 19.65 | 15.38 | 14.92 |
| 3 | --- | --- | --- | --- | --- | --- | --- | 13.51 | 19.99 | 19.21 | 15.36 | 14.99 |
| 4 | --- | --- | --- | --- | --- | --- | --- | 13.66 | 21.79 | 18.97 | 15.18 | 15.27 |
| 5 | --- | --- | --- | --- | --- | --- | --- | 13.66 | 22.64 | 18.72 | 15.09 | 15.17 |
| 6 | --- | --- | --- | --- | --- | --- | --- | 13.99 | 23.13 | 18.34 | 15.06 | 15.09 |
| 7 | --- | --- | --- | --- | --- | --- | --- | 14.20 | 22.78 | 17.97 | 15.10 | 15.00 |
| 8 | --- | --- | --- | --- | --- | --- | --- | 14.22 | 21.83 | 17.69 | 15.16 | 15.01 |
| 9 | --- | --- | --- | --- | --- | --- | --- | 14.49 | 21.08 | 17.54 | 15.33 | 15.04 |
| 10 | --- | --- | --- | --- | --- | --- | --- | 14.72 | 21.37 | 17.32 | 15.47 | 15.20 |
| 11 | --- | --- | --- | --- | --- | --- | --- | 14.91 | 21.93 | 17.15 | 15.51 | 15.26 |
| 12 | --- | --- | --- | --- | --- | --- | --- | 14.76 | 21.85 | 16.98 | 15.43 | 15.32 |
| 13 | --- | --- | --- | --- | --- | --- | --- | 14.66 | 21.43 | 16.74 | 15.45 | 15.35 |
| 14 | --- | --- | --- | --- | --- | --- | --- | 14.54 | 20.71 | 16.56 | 15.39 | 15.45 |
| 15 | --- | --- | --- | --- | --- | --- | --- | 14.80 | 19.95 | 16.35 | 15.36 | 15.41 |
| 16 | --- | --- | --- | --- | --- | --- | --- | 15.44 | 19.36 | 16.06 | 15.23 | 15.34 |
| 17 | --- | --- | --- | --- | --- | --- | --- | 15.78 | 19.03 | 15.84 | 15.16 | 15.16 |
| 18 | --- | --- | --- | --- | --- | --- | --- | 15.38 | 18.79 | 15.92 | 15.09 | 14.68 |
| 19 | --- | --- | --- | --- | --- | --- | --- | 15.16 | 18.86 | 16.17 | 15.05 | 14.21 |
| 20 | --- | --- | --- | --- | --- | --- | --- | 15.88 | 19.33 | 15.87 | 15.02 | 14.02 |
| 21 | --- | --- | --- | --- | --- | --- | --- | 16.50 | 20.04 | 15.85 | 14.96 | 13.93 |
| 22 | --- | --- | --- | --- | --- | --- | --- | 16.66 | 20.79 | 15.85 | 14.89 | 13.88 |
| 23 | --- | --- | --- | --- | --- | --- | --- | 16.96 | 21.49 | 15.82 | 14.95 | 13.90 |
| 24 | --- | --- | --- | --- | --- | --- | --- | 18.47 | 20.96 | 15.81 | 15.36 | 13.91 |
| 25 | --- | --- | --- | --- | --- | --- | --- | 20.04 | 20.39 | 15.89 | 15.07 | 13.97 |
| 26 | --- | --- | --- | --- | --- | --- | --- | 20.29 | 20.41 | 15.79 | 15.23 | 13.98 |
| 27 | --- | --- | --- | --- | --- | --- | --- | 19.61 | 20.31 | 15.70 | 15.49 | 14.01 |
| 28 | --- | --- | --- | --- | --- | --- | --- | 18.78 | 20.34 | 15.65 | 15.30 | 14.00 |
| 29 | --- | --- | --- | --- | --- | --- | --- | 18.07 | 20.39 | 15.64 | 15.06 | 13.97 |
| 30 | --- | --- | --- | --- | --- | --- | 13.73 | 17.53 | 20.29 | 15.53 | 14.97 | 13.94 |
| 31 | --- | --- | --- | --- | --- | --- | --- | 17.29 | --- | 15.48 | 14.86 | --- |
| MEAN | --- | --- | --- | --- | --- | --- | --- | 15.84 | 20.55 | 16.84 | 15.21 | 14.68 |
| MAX | --- | --- | --- | --- | --- | --- | --- | 20.29 | 23.13 | 20.09 | 15.51 | 15.45 |
| MIN | --- | --- | --- | --- | --- | --- | --- | 13.51 | 17.31 | 15.48 | 14.86 | 13.88 |

## 06329660 MISSOURI RIVER STAGE GAGE NO. 7 NEAR TRENTON, ND

LOCATION.--Lat 47°59'21", long 103°47'57", in NE$^{1}/_{4}$ sec.13, T.152 N., R.103 W., McKenzie County, Hydrologic Unit 10110101, on right bank 5 mi south of Trenton and at mile 1,566.7.

DRAINAGE AREA.--164,000 mi$^{2}$, approximately.

### GAGE-HEIGHT RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,840.00 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 7, 1962, at site 0.8 mi upstream. Prior to May 29, 1963, at datum 40.00 ft lower.

REMARKS.--Stage regulated by upstream reservoirs.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 23.46 ft, June 24, 1997; minimum daily recorded, 4.34 ft, Aug. 19, 22, 1963.

GAGE HEIGHT, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | --- | --- | --- | --- | --- | --- | --- | 10.11 | 13.53 | 16.45 | 11.66 | 11.09 |
| 2 | --- | --- | --- | --- | --- | --- | --- | 9.93 | 14.13 | 16.04 | 11.60 | 11.16 |
| 3 | --- | --- | --- | --- | --- | --- | --- | 9.90 | 15.91 | 15.60 | 11.59 | 11.20 |
| 4 | --- | --- | --- | --- | --- | --- | --- | 9.99 | 17.98 | 15.35 | 11.42 | 11.50 |
| 5 | --- | --- | --- | --- | --- | --- | --- | 10.00 | 18.98 | 15.11 | 11.30 | 11.40 |
| 6 | --- | --- | --- | --- | --- | --- | --- | 10.27 | 19.38 | 14.72 | 11.27 | 11.31 |
| 7 | --- | --- | --- | --- | --- | --- | --- | 10.50 | 19.06 | 14.35 | 11.31 | 11.22 |
| 8 | --- | --- | --- | --- | --- | --- | --- | 10.55 | 18.20 | 14.06 | 11.39 | 11.23 |
| 9 | --- | --- | --- | --- | --- | --- | --- | 10.80 | 17.59 | 13.92 | 11.57 | 11.26 |
| 10 | --- | --- | --- | --- | --- | --- | --- | 11.02 | 17.68 | 13.67 | 11.70 | 11.43 |
| 11 | --- | --- | --- | --- | --- | --- | --- | 11.19 | 18.14 | 13.48 | 11.77 | 11.50 |
| 12 | --- | --- | --- | --- | --- | --- | --- | 11.05 | 18.07 | 13.31 | 11.69 | 11.54 |
| 13 | --- | --- | --- | --- | --- | --- | --- | 10.88 | 17.69 | 13.06 | 11.69 | 11.59 |
| 14 | --- | --- | --- | --- | --- | --- | --- | 10.76 | 17.09 | 12.86 | 11.63 | 11.68 |
| 15 | --- | --- | --- | --- | --- | --- | --- | 11.02 | 16.42 | 12.66 | 11.62 | 11.66 |
| 16 | --- | --- | --- | --- | --- | --- | --- | 11.61 | 15.85 | 12.34 | 11.47 | 11.57 |
| 17 | --- | --- | --- | --- | --- | --- | --- | 11.97 | 15.49 | 12.10 | 11.40 | 11.41 |
| 18 | --- | --- | --- | --- | --- | --- | --- | 11.61 | 15.20 | 12.17 | 11.31 | 10.92 |
| 19 | --- | --- | --- | --- | --- | --- | --- | 11.33 | 15.22 | 12.46 | 11.26 | 10.42 |
| 20 | --- | --- | --- | --- | --- | --- | --- | 12.02 | 15.57 | 12.13 | 11.23 | 10.25 |
| 21 | --- | --- | --- | --- | --- | --- | --- | 12.66 | 16.19 | 12.10 | 11.17 | 10.15 |
| 22 | --- | --- | --- | --- | --- | --- | --- | 12.86 | 16.93 | 12.10 | 11.10 | 10.08 |
| 23 | --- | --- | --- | --- | --- | --- | --- | 13.12 | 17.60 | 12.06 | 11.13 | 10.10 |
| 24 | --- | --- | --- | --- | --- | --- | --- | 14.57 | 17.30 | 12.07 | 11.59 | 10.10 |
| 25 | --- | --- | --- | --- | --- | --- | --- | 16.25 | 16.79 | 12.15 | 11.30 | 10.16 |
| 26 | --- | --- | --- | --- | --- | --- | --- | 16.63 | 16.74 | 12.05 | 11.42 | 10.17 |
| 27 | --- | --- | --- | --- | --- | --- | --- | 15.99 | 16.66 | 11.95 | 11.75 | 10.19 |
| 28 | --- | --- | --- | --- | --- | --- | --- | 15.14 | 16.67 | 11.88 | 11.55 | 10.18 |
| 29 | --- | --- | --- | --- | --- | --- | --- | 14.43 | 16.72 | 11.88 | 11.28 | 10.16 |
| 30 | --- | --- | --- | --- | --- | --- | 10.18 | 13.85 | 16.64 | 11.76 | 11.18 | 10.14 |
| 31 | --- | --- | --- | --- | --- | --- | --- | 13.56 | --- | 11.71 | 11.09 | --- |
| MEAN | --- | --- | --- | --- | --- | --- | --- | 12.12 | 16.85 | 13.15 | 11.43 | 10.89 |
| MAX | --- | --- | --- | --- | --- | --- | --- | 16.63 | 19.38 | 16.45 | 11.77 | 11.68 |
| MIN | --- | --- | --- | --- | --- | --- | --- | 9.90 | 13.53 | 11.71 | 11.09 | 10.08 |

## 06330000 MISSOURI RIVER NEAR WILLISTON, ND

LOCATION.--Lat 48°06'29", long 103°42'51", in NW$^1/_4$NE$^1/_4$ sec.06, T.153 N., R.101 W., McKenzie County, Hydrologic Unit 10110101, on right bank, 5 mi southwest of Williston, 29.3 mi downstream from Yellowstone River, and at mile 1,552.7.

DRAINAGE AREA.--164,500 mi$^2$, 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 National Geodetic Vertical Datum of 1929. See WSP 1917 for history of changes prior to April 1966.

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

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height observed, 26.60 ft, Mar. 8, 1994; minimum daily recorded, 7.80 ft, Nov. 2, 1966.

GAGE HEIGHT, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 12.17 | 12.65 | --- | --- | 15.26 | 14.77 | 17.06 | 13.14 | 16.53 | 18.70 | --- | 14.09 |
| 2 | 12.09 | 12.70 | 12.93 | --- | 15.25 | 14.47 | 17.02 | 13.12 | 16.85 | 18.47 | --- | 14.12 |
| 3 | 12.10 | 12.72 | 13.28 | --- | 15.27 | 14.72 | 16.61 | 12.96 | 18.04 | 18.16 | --- | 14.20 |
| 4 | 12.15 | 12.71 | --- | --- | --- | 14.77 | 16.49 | 13.11 | 19.30 | 17.94 | --- | 14.43 |
| 5 | 12.15 | 12.66 | 14.06 | --- | --- | 14.67 | 16.38 | 13.12 | 19.75 | 17.68 | --- | 14.40 |
| 6 | 12.13 | 12.67 | --- | --- | --- | 14.70 | 16.13 | 13.36 | 19.75 | 17.43 | 14.38 | 14.31 |
| 7 | 12.12 | 12.66 | --- | --- | --- | 14.85 | 16.18 | 13.68 | 19.74 | 17.13 | 14.32 | 14.25 |
| 8 | 12.15 | 12.71 | --- | --- | 15.85 | 15.21 | 16.56 | 13.71 | 19.34 | 16.89 | 14.36 | 14.22 |
| 9 | 12.17 | 12.69 | 14.29 | 15.69 | 15.98 | 15.55 | 17.01 | 13.86 | 18.97 | 16.77 | 14.50 | 14.24 |
| 10 | 12.18 | 12.68 | --- | 16.03 | 16.02 | 15.50 | 17.20 | 14.11 | 18.86 | 16.55 | 14.64 | 14.35 |
| 11 | 12.23 | 12.65 | --- | 16.25 | 16.02 | 15.10 | 17.14 | 14.29 | 19.06 | 16.39 | 14.70 | 14.45 |
| 12 | 12.28 | 12.64 | --- | 16.54 | 16.05 | 14.96 | 17.03 | 14.24 | 19.10 | 16.23 | 14.65 | 14.48 |
| 13 | 12.26 | 12.67 | --- | 16.75 | 16.03 | 14.98 | --- | 14.15 | 18.96 | 16.01 | 14.68 | 14.52 |
| 14 | 12.23 | 12.72 | --- | 16.65 | 16.05 | 14.86 | --- | 14.09 | 18.63 | 15.81 | 14.63 | 14.58 |
| 15 | 12.30 | 12.78 | --- | 16.45 | 16.09 | 15.01 | --- | 14.16 | 18.30 | 15.61 | 14.61 | 14.62 |
| 16 | 12.37 | 12.77 | --- | 16.33 | 15.99 | 15.69 | --- | 14.67 | 17.95 | 14.94 | 14.53 | 14.52 |
| 17 | 12.34 | 12.72 | --- | 16.35 | 15.98 | 16.35 | 13.52 | 15.06 | 17.75 | 14.59 | 14.44 | 14.42 |
| 18 | 12.37 | 12.68 | --- | 16.40 | 16.00 | 16.65 | 13.39 | 15.03 | 17.60 | 14.57 | 14.37 | 14.04 |
| 19 | 12.40 | 12.67 | --- | 16.50 | 16.00 | 16.75 | 13.44 | 14.74 | 17.53 | 14.83 | 14.32 | 13.55 |
| 20 | 12.49 | 12.68 | --- | 16.63 | 16.03 | 16.66 | 13.71 | 15.21 | 17.74 | 14.58 | 14.28 | 13.24 |
| 21 | 12.55 | 12.69 | --- | 16.66 | 16.09 | 16.37 | 14.11 | 15.73 | 18.17 | 14.52 | 14.22 | 13.12 |
| 22 | 12.57 | 12.72 | --- | 16.63 | 16.12 | 16.09 | 14.23 | 15.91 | 18.71 | 14.55 | 14.16 | 13.04 |
| 23 | 12.55 | 12.77 | --- | 16.63 | 16.29 | 15.74 | --- | 15.94 | 19.26 | 14.57 | 14.11 | 13.07 |
| 24 | 12.51 | 12.77 | --- | 16.62 | 16.40 | 15.19 | --- | 16.89 | 19.36 | --- | 14.45 | 13.05 |
| 25 | 12.58 | 12.76 | --- | 16.68 | 16.38 | 14.74 | --- | 18.31 | 18.89 | --- | 14.32 | 13.09 |
| 26 | 12.63 | 12.74 | --- | 16.29 | 16.40 | 14.75 | --- | 18.81 | 18.81 | --- | 14.30 | 13.13 |
| 27 | 12.63 | 12.72 | --- | 15.44 | 16.18 | 14.86 | --- | 18.58 | 18.77 | --- | 14.62 | 13.14 |
| 28 | 12.61 | --- | --- | 15.58 | 15.45 | 15.21 | --- | 18.07 | 18.74 | --- | 14.54 | 13.18 |
| 29 | 12.64 | --- | --- | 15.88 | --- | 15.78 | --- | 17.52 | 18.79 | --- | 14.34 | 13.14 |
| 30 | 12.65 | 12.60 | --- | 15.84 | --- | 16.38 | 13.21 | 16.97 | 18.78 | --- | 14.24 | 13.08 |
| 31 | 12.74 | --- | --- | 15.52 | --- | 16.78 | --- | 16.63 | --- | --- | 14.14 | --- |
| MEAN | 12.37 | --- | --- | --- | --- | 15.42 | --- | 15.13 | 18.60 | --- | --- | 13.87 |
| MAX | 12.74 | --- | --- | --- | --- | 16.78 | --- | 18.81 | 19.75 | --- | --- | 14.62 |
| MIN | 12.09 | --- | --- | --- | --- | 14.47 | --- | 12.96 | 16.53 | --- | --- | 13.04 |

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

LOCATION.--Lat 48°08'13", long 103°36'16", in NE$^{1}/_{4}$NE$^{1}/_{4}$ 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 National Geodetic Vertical Datum of 1929. 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, 34.61 ft, July 6, 1997; minimum daily recorded, 5.44 ft, Aug. 20, 1961, present datum.

GAGE HEIGHT, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 22.04 | 22.59 | 22.78 | 23.43 | 23.61 | 23.88 | 25.58 | 22.57 | 24.57 | 26.32 | 22.98 | 22.61 |
| 2 | 22.01 | 22.53 | 22.73 | 23.39 | 23.53 | 23.64 | 25.53 | 22.56 | 24.77 | 26.21 | 23.02 | 22.54 |
| 3 | 22.02 | 22.55 | 22.70 | 23.32 | 23.50 | 23.51 | 25.30 | 22.54 | 25.53 | 26.02 | 23.00 | 22.56 |
| 4 | 22.02 | 22.51 | 22.84 | 23.45 | 23.48 | 23.44 | 25.07 | 22.50 | 26.37 | 25.88 | 22.88 | 22.70 |
| 5 | 22.03 | 22.50 | 23.05 | 23.43 | 23.49 | 23.43 | 24.94 | 22.49 | 26.77 | 25.63 | 22.88 | 22.81 |
| 6 | 22.02 | 22.61 | 23.16 | 23.41 | 23.58 | 23.39 | 24.79 | 22.49 | 27.11 | 25.41 | 22.90 | 22.78 |
| 7 | 22.01 | 22.66 | 23.22 | 23.41 | 23.77 | 23.40 | 24.73 | 22.50 | 27.14 | 25.19 | 22.85 | 22.74 |
| 8 | 22.03 | 22.65 | 23.30 | 23.51 | 23.99 | 23.45 | 24.84 | 22.54 | 26.86 | 24.96 | 22.85 | 22.66 |
| 9 | 22.02 | 22.58 | 23.34 | 23.74 | 24.17 | 23.49 | 25.06 | 22.62 | 26.56 | 24.93 | 22.96 | 22.67 |
| 10 | 22.02 | 22.54 | 23.38 | 24.00 | 24.30 | 23.62 | 25.23 | 22.77 | 26.41 | 24.74 | 23.04 | 22.70 |
| 11 | 22.09 | 22.51 | 23.43 | 24.22 | 24.37 | 23.61 | 25.28 | 22.88 | 26.57 | 24.62 | 23.06 | 22.77 |
| 12 | 22.06 | 22.51 | 23.54 | 24.43 | 24.42 | 23.57 | 25.22 | 22.88 | 26.61 | 24.53 | 23.01 | 22.79 |
| 13 | 22.07 | 22.50 | 23.55 | 24.67 | 24.45 | 23.56 | 24.86 | 22.78 | 26.52 | 24.30 | 23.04 | 22.82 |
| 14 | 22.03 | 22.57 | 23.50 | 24.75 | 24.44 | 23.57 | 24.55 | 22.81 | 26.28 | 24.11 | 23.06 | 22.83 |
| 15 | 21.99 | 22.54 | 23.46 | 24.69 | 24.45 | 23.62 | 23.58 | 22.75 | 26.06 | 23.97 | 22.99 | 22.89 |
| 16 | 22.16 | 22.48 | 23.39 | 24.58 | 24.43 | 23.75 | 23.15 | 22.92 | 25.85 | 23.76 | 23.00 | 22.88 |
| 17 | 22.14 | 22.47 | 23.39 | 24.55 | 24.39 | 24.11 | 23.02 | 23.33 | 25.76 | 23.58 | 22.89 | 22.85 |
| 18 | 22.09 | 22.40 | 23.48 | 24.43 | 24.39 | 24.57 | 22.91 | 23.38 | 25.69 | 23.47 | 22.86 | 22.64 |
| 19 | 22.07 | 22.43 | 23.58 | 24.23 | 24.39 | 24.83 | 22.85 | 23.14 | 25.63 | 23.56 | 22.80 | 22.39 |
| 20 | 22.09 | 22.35 | 23.73 | 24.12 | 24.39 | 24.90 | 22.81 | 23.36 | 25.66 | 23.51 | 22.74 | 22.27 |
| 21 | 22.13 | 22.39 | 23.69 | 24.05 | 24.42 | 24.78 | 22.95 | 23.90 | 25.94 | 23.39 | 22.72 | 22.22 |
| 22 | 22.13 | 22.41 | 23.67 | 23.89 | 24.47 | 24.56 | 23.04 | 24.03 | 26.27 | 23.39 | 22.70 | 22.16 |
| 23 | 22.15 | 22.34 | 23.57 | 23.76 | 24.52 | 24.33 | 23.06 | 24.05 | 26.61 | 23.44 | 22.64 | 22.15 |
| 24 | 22.32 | 22.33 | 23.38 | 23.75 | 24.64 | 24.05 | 22.83 | 24.59 | 26.74 | 23.45 | 22.73 | 22.27 |
| 25 | 22.35 | 22.36 | 23.21 | 23.83 | 24.64 | 23.85 | 22.63 | 25.57 | 26.57 | 23.45 | 22.78 | 22.21 |
| 26 | 22.43 | 22.40 | 23.10 | 23.92 | 24.64 | 23.75 | 22.65 | 25.99 | 26.45 | 23.41 | 22.69 | 22.17 |
| 27 | 22.50 | --- | 23.03 | 23.81 | 24.58 | 23.84 | 22.66 | 25.96 | 26.36 | 23.30 | 22.89 | 22.24 |
| 28 | 22.56 | --- | 22.93 | 23.68 | 24.26 | 24.42 | 22.58 | 25.79 | 26.34 | 23.23 | 22.93 | 22.19 |
| 29 | 22.54 | 22.71 | 22.95 | 23.68 | --- | 25.05 | 22.52 | 25.52 | 26.36 | 23.21 | 22.87 | 22.16 |
| 30 | 22.60 | 22.75 | 23.00 | 23.75 | --- | 25.49 | 22.61 | 25.06 | 26.34 | 23.14 | 22.80 | 22.12 |
| 31 | 22.60 | --- | 23.25 | 23.71 | --- | 25.62 | --- | 24.73 | --- | 23.08 | 22.70 | --- |
| MEAN | 22.17 | --- | 23.27 | 23.92 | 24.20 | 24.03 | 23.89 | 23.58 | 26.22 | 24.23 | 22.88 | 22.53 |
| MAX | 22.60 | --- | 23.73 | 24.75 | 24.64 | 25.62 | 25.58 | 25.99 | 27.14 | 26.32 | 23.06 | 22.89 |
| MIN | 21.99 | --- | 22.70 | 23.32 | 23.48 | 23.39 | 22.52 | 22.49 | 24.57 | 23.08 | 22.64 | 22.12 |

## 06331000 LITTLE MUDDY RIVER BELOW COW CREEK NEAR WILLISTON, ND

LOCATION.--Lat 48°17'04", long 103°34'21", in NE$^1/_4$NW$^1/_4$ 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$^2$, approximately, of which about 100 mi$^2$ is probably noncontributing.

### WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1954 to current year (seasonal records only 1984 to 2001).

GAGE.--Water-stage recorder. Datum of gage is 1,863.18 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for 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 by Blacktail Dam about 15 mi upstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.1 | 8.7 | e9.0 | e9.0 | e9.6 | e9.8 | e26 | 17 | 9.2 | 14 | 6.2 | 5.5 |
| 2 | 6.9 | 8.3 | e9.6 | e9.2 | e9.7 | e9.8 | e20 | 17 | 13 | 14 | 6.4 | 5.2 |
| 3 | 6.4 | 9.5 | e9.9 | e9.5 | e9.8 | e9.8 | e18 | 16 | 16 | 13 | 6.7 | 5.0 |
| 4 | 6.1 | 9.6 | e9.8 | e9.8 | e10 | e9.7 | e16 | 15 | 17 | 12 | 6.7 | 5.0 |
| 5 | 6.7 | 9.3 | e9.6 | e10 | e10 | e9.7 | e15 | 16 | 20 | 9.3 | 6.6 | 4.9 |
| 6 | 7.2 | 9.9 | e9.5 | e10 | e11 | e9.7 | 45 | 16 | 22 | 8.4 | 6.3 | 5.0 |
| 7 | 7.3 | 10 | e9.8 | e10 | e10 | e9.6 | 85 | 17 | 20 | 8.6 | 6.5 | 5.4 |
| 8 | 7.5 | 9.7 | e9.8 | e11 | e11 | e9.6 | 195 | 19 | 20 | 9.8 | 7.3 | 5.6 |
| 9 | 7.5 | 9.9 | e9.9 | e11 | e11 | e9.7 | 151 | 22 | 21 | 16 | 7.1 | 5.6 |
| 10 | 7.4 | 9.7 | e10 | e12 | e11 | e9.7 | 104 | 25 | 22 | 14 | 7.6 | 5.8 |
| 11 | 7.5 | 9.6 | e9.8 | e11 | e12 | e9.8 | 86 | 28 | 22 | 15 | 7.5 | 5.5 |
| 12 | 7.7 | 9.6 | e9.6 | e11 | e12 | e9.8 | 75 | 29 | 26 | 15 | 7.2 | 5.3 |
| 13 | 8.1 | 9.6 | e9.5 | e10 | e11 | e9.8 | 70 | 27 | 28 | 15 | 7.1 | 5.1 |
| 14 | 8.5 | 9.5 | e9.3 | e10 | e11 | e10 | 60 | 26 | 24 | 17 | 6.9 | 4.7 |
| 15 | 8.5 | 9.6 | e9.5 | e9.8 | e12 | e10 | 55 | 23 | 23 | 15 | 6.8 | 4.6 |
| 16 | 8.1 | 9.4 | e9.8 | e9.8 | e12 | e9.9 | 58 | 24 | 21 | 13 | 6.6 | 4.5 |
| 17 | 8.3 | 9.6 | e10 | e9.6 | e13 | e9.9 | 55 | 22 | 20 | 12 | 7.1 | 4.5 |
| 18 | 7.9 | 9.3 | e10 | e9.4 | e13 | e9.8 | 47 | 21 | 20 | 10 | 7.0 | 4.6 |
| 19 | 8.4 | 9.1 | e11 | e9.6 | e13 | e9.8 | 38 | 20 | 21 | 9.5 | 7.0 | 4.5 |
| 20 | 8.6 | 9.4 | e11 | e9.8 | e14 | e9.8 | 32 | 19 | 18 | 8.9 | 6.8 | 4.2 |
| 21 | 8.5 | 9.6 | e10 | e10 | e13 | e9.7 | 29 | 17 | 17 | 8.0 | 6.6 | 4.1 |
| 22 | 8.9 | 9.6 | e9.6 | e10 | e13 | e9.7 | 27 | 17 | 18 | 7.4 | 6.6 | 4.1 |
| 23 | 9.4 | 9.6 | e9.3 | e9.8 | e13 | e9.6 | 25 | 16 | 18 | 7.4 | 6.4 | 4.2 |
| 24 | 10 | e9.5 | e9.0 | e10 | e12 | e9.8 | 24 | 14 | 27 | 7.4 | 6.1 | 4.4 |
| 25 | 9.6 | e9.3 | e8.9 | e9.8 | e12 | e10 | 21 | 14 | 29 | 7.4 | 5.9 | 4.4 |
| 26 | 9.4 | e9.0 | e8.8 | e9.7 | e11 | e10 | 20 | 14 | 23 | 7.0 | 5.7 | 4.4 |
| 27 | 9.8 | e8.9 | e8.7 | e9.6 | e10 | e37 | 22 | 13 | 20 | 6.5 | 5.4 | 4.3 |
| 28 | 9.6 | e8.9 | e8.6 | e9.6 | e10 | e90 | 20 | 13 | 20 | 6.2 | 5.4 | 4.0 |
| 29 | 9.1 | e8.8 | e8.5 | e9.6 | --- | e75 | 18 | 11 | 19 | 6.4 | 5.4 | 4.1 |
| 30 | 8.9 | e8.8 | e8.4 | e9.5 | --- | e52 | 17 | 11 | 16 | 6.2 | 5.4 | 4.2 |
| 31 | 8.8 | --- | e8.8 | e9.5 | --- | e31 | --- | 9.9 | --- | 6.1 | 5.7 | --- |
| TOTAL | 252.7 | 281.3 | 295.0 | 308.6 | 320.1 | 539.5 | 1474 | 568.9 | 610.2 | 325.5 | 202.0 | 142.7 |
| MEAN | 8.152 | 9.377 | 9.516 | 9.955 | 11.43 | 17.40 | 49.13 | 18.35 | 20.34 | 10.50 | 6.516 | 4.757 |
| MAX | 10 | 10 | 11 | 12 | 14 | 90 | 195 | 29 | 29 | 17 | 7.6 | 5.8 |
| MIN | 6.1 | 8.3 | 8.4 | 9.0 | 9.6 | 9.6 | 15 | 9.9 | 9.2 | 6.1 | 5.4 | 4.0 |
| MED | 8.3 | 9.5 | 9.6 | 9.8 | 11 | 9.8 | 30 | 17 | 20 | 9.5 | 6.6 | 4.6 |
| AC-FT | 501 | 558 | 585 | 612 | 635 | 1070 | 2920 | 1130 | 1210 | 646 | 401 | 283 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1954 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 10.14 | 10.96 | 8.654 | 7.084 | 25.02 | 177.6 | 107.5 | 26.04 | 19.08 | 25.57 | 8.159 | 7.523 |
| 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 | 0.91 | 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 | FOR 2002 WATER YEAR | | WATER YEARS 1954 - 2002 | |
|---|---|---|---|---|
| ANNUAL TOTAL | 5320.5 | | | |
| ANNUAL MEAN | 14.58 | | a38.01 | |
| HIGHEST ANNUAL MEAN | | | a110 | 1976 |
| LOWEST ANNUAL MEAN | | | a9.24 | 1961 |
| HIGHEST DAILY MEAN | 195 | Apr 8 | 6610 | Apr 18 1979 |
| LOWEST DAILY MEAN | 4.0 | Sep 28 | 0.50 | Feb 17 1959 |
| ANNUAL SEVEN-DAY MINIMUM | 4.3 | Sep 20 | 0.50 | Feb 17 1959 |
| MAXIMUM PEAK FLOW | b243 | Apr 8 | 9180 | Apr 18 1979 |
| MAXIMUM PEAK STAGE | c7.69 | Mar 29 | 13.57 | Mar 27 1960 |
| ANNUAL RUNOFF (AC-FT) | 10550 | | a27540 | |
| 10 PERCENT EXCEEDS | 23 | | 39 | |
| 50 PERCENT EXCEEDS | 9.8 | | 9.6 | |
| 90 PERCENT EXCEEDS | 5.9 | | 4.6 | |

a Based on complete water years only (1954-83, 2002)
b Gage height, 6.47 ft
c Backwater from ice
e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 01... | 1615 | 5.8 | -- | -- | -- | 2300 | 27.0 | 16.0 | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 19... | 1440 | 9.0 | -- | -- | -- | 2330 | 5.0 | 5.0 | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 08... | 1250 | 11 | -- | -- | -- | 2450 | 8.0 | 1.0 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 15... | 1400 | 54 | 7.8 | 7.8 | 1090 | 1070 | 10.0 | 3.0 | 260 | 48.0 | 35.0 | 13.0 | 4 |
| JUN | | | | | | | | | | | | | |
| 04... | 1655 | 18 | -- | -- | -- | 2220 | 20.0 | 14.3 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 09... | 1620 | 15 | -- | -- | -- | 2150 | 32.0 | 23.7 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 19... | 1640 | 6.9 | 7.9 | 8.3 | 2160 | 2210 | 23.0 | 19.7 | 400 | 49.0 | 67.0 | 13.0 | 8 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 01... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 15... | 130 | 50 | 243 | 6.5 | .10 | 320 | 108 | 747 | 699 | 3.0 | 280 | 1 | 40 |
| JUN | | | | | | | | | | | | | |
| 04... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 19... | 390 | 67 | 600 | 13.0 | .40 | 670 | 28.8 | 1550 | 1560 | 7.0 | 50 | 1 | 80 |

| Date | 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 | | | | | |
| 01... | -- | -- | -- | -- | -- |
| NOV | | | | | |
| 19... | -- | -- | -- | -- | -- |
| JAN | | | | | |
| 08... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 15... | 120 | <.10 | <1 | <1 | 500 |
| JUN | | | | | |
| 04... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 09... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 19... | 20 | .10 | 2 | <1 | 740 |

< Less than

## 06332515 BEAR DEN CREEK NEAR MANDAREE, ND

LOCATION.--Lat 47°47'14", long 102°46'05", in NW$^{1}/_{4}$ 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$^{2}$.

### WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,947.58 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.13 | 0.19 | e0.20 | e0.19 | e0.23 | e0.23 | 4.4 | 1.5 | 0.34 | e0.66 | 0.31 | 0.16 |
| 2 | 0.16 | 0.19 | e0.20 | e0.19 | e0.23 | e0.20 | 1.7 | 1.4 | 0.33 | e0.52 | 0.31 | 0.17 |
| 3 | 0.15 | 0.19 | e0.20 | e0.19 | e0.23 | e0.18 | 1.8 | 1.2 | 0.34 | e0.48 | 0.31 | 0.15 |
| 4 | 0.16 | 0.19 | e0.20 | e0.19 | e0.23 | e0.20 | 1.0 | 1.1 | 0.32 | e0.47 | 0.30 | 0.11 |
| 5 | 0.16 | 0.19 | e0.21 | e0.19 | e0.23 | e0.23 | 1.2 | 1.1 | 0.30 | e0.45 | 0.30 | 0.12 |
| 6 | 0.17 | 0.19 | e0.20 | e0.20 | e0.23 | e0.26 | 6.0 | 1.3 | 0.31 | e0.47 | 0.29 | 0.15 |
| 7 | 0.17 | 0.19 | e0.20 | e0.20 | e0.23 | e0.27 | 9.9 | 1.3 | 0.31 | e0.46 | 0.30 | 0.16 |
| 8 | 0.17 | 0.19 | e0.20 | e0.20 | e0.23 | e0.25 | 5.5 | 1.6 | 0.32 | e0.47 | 0.29 | 0.20 |
| 9 | 0.17 | 0.19 | e0.19 | e0.20 | e0.23 | e0.30 | 5.4 | 3.1 | 3.4 | e0.48 | 0.29 | 0.19 |
| 10 | 0.17 | 0.19 | e0.20 | e0.20 | e0.23 | e0.34 | 4.8 | 9.1 | e47 | e0.77 | 0.29 | 0.15 |
| 11 | 0.17 | 0.19 | e0.19 | e0.20 | e0.23 | e0.35 | 4.0 | 17 | e38 | e3.6 | 0.28 | 0.12 |
| 12 | 0.17 | 0.19 | e0.20 | e0.20 | e0.23 | e0.68 | 4.2 | 5.2 | e27 | e8.0 | 0.27 | 0.11 |
| 13 | 0.17 | 0.19 | e0.19 | e0.20 | e0.23 | e0.68 | 2.6 | 1.9 | e19 | e2.4 | 0.26 | 0.11 |
| 14 | 0.17 | 0.19 | e0.20 | e0.20 | e0.22 | e0.76 | 1.7 | 1.2 | e11 | e1.6 | 0.25 | 0.10 |
| 15 | 0.17 | 0.19 | e0.20 | e0.21 | e0.22 | e0.68 | 1.7 | 0.91 | e6.0 | e0.87 | 0.25 | 0.10 |
| 16 | 0.18 | 0.20 | e0.19 | e0.21 | e0.22 | e2.0 | 1.4 | 0.64 | e5.0 | e0.52 | 0.25 | 0.09 |
| 17 | 0.18 | 0.20 | e0.19 | e0.21 | e0.22 | e1.9 | 1.0 | 0.59 | e2.6 | e0.48 | e0.26 | 0.09 |
| 18 | 0.18 | 0.20 | e0.20 | e0.21 | e0.22 | e1.3 | 0.93 | 0.54 | e1.5 | e0.47 | 0.24 | 0.21 |
| 19 | 0.18 | 0.19 | e0.19 | e0.21 | e0.22 | e0.30 | 1.9 | 0.49 | e1.0 | 0.36 | 0.23 | 0.24 |
| 20 | 0.18 | 0.19 | e0.20 | e0.22 | e0.22 | e0.20 | 2.8 | 0.46 | e0.78 | 0.35 | 0.22 | 0.23 |
| 21 | 0.18 | 0.20 | e0.19 | e0.22 | e0.23 | e0.18 | 2.5 | 0.41 | e1.4 | 0.31 | 0.39 | 0.19 |
| 22 | 0.18 | 0.21 | e0.18 | e0.22 | e0.23 | e0.20 | 2.1 | 0.41 | e1.6 | 0.26 | 0.31 | 0.17 |
| 23 | 0.19 | 0.20 | e0.18 | e0.22 | e0.23 | e0.20 | 2.3 | 0.46 | e3.2 | 0.29 | 0.28 | 0.17 |
| 24 | 0.19 | 0.20 | e0.17 | e0.22 | e0.23 | e0.22 | 2.0 | 0.45 | e22 | 0.32 | 0.24 | 0.17 |
| 25 | 0.19 | 0.19 | e0.18 | e0.22 | e0.24 | e0.23 | 1.6 | 0.44 | e50 | 0.35 | 0.22 | 0.17 |
| 26 | 0.19 | e0.20 | e0.17 | e0.23 | e0.24 | e0.20 | 1.8 | 0.40 | e37 | 0.29 | 0.21 | 0.16 |
| 27 | 0.19 | e0.20 | e0.18 | e0.23 | e0.26 | e40 | 1.8 | 0.38 | e23 | 0.25 | 0.19 | 0.16 |
| 28 | 0.19 | e0.19 | e0.17 | e0.23 | e0.25 | e110 | 1.8 | 0.38 | e12 | 0.27 | 0.19 | 0.16 |
| 29 | 0.19 | e0.18 | e0.18 | e0.23 | --- | e60 | 1.8 | 0.36 | e4.2 | 0.28 | 0.17 | 0.18 |
| 30 | 0.19 | e0.19 | e0.17 | e0.23 | --- | e30 | 1.6 | 0.34 | e1.0 | 0.25 | 0.19 | 0.21 |
| 31 | 0.19 | --- | e0.17 | e0.23 | --- | e10 | --- | 0.34 | --- | 0.30 | 0.19 | --- |
| TOTAL | 5.43 | 5.79 | 5.89 | 6.50 | 6.44 | 262.54 | 83.23 | 56.00 | 320.25 | 27.05 | 8.08 | 4.70 |
| MEAN | 0.175 | 0.193 | 0.190 | 0.210 | 0.230 | 8.469 | 2.774 | 1.806 | 10.68 | 0.873 | 0.261 | 0.157 |
| MAX | 0.19 | 0.21 | 0.21 | 0.23 | 0.26 | 110 | 9.9 | 17 | 50 | 8.0 | 0.39 | 0.24 |
| MIN | 0.13 | 0.18 | 0.17 | 0.19 | 0.22 | 0.18 | 0.93 | 0.34 | 0.30 | 0.25 | 0.17 | 0.09 |
| AC-FT | 11 | 11 | 12 | 13 | 13 | 521 | 165 | 111 | 635 | 54 | 16 | 9.3 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 1.398 | 0.316 | 0.139 | 0.146 | 6.459 | 35.53 | 19.60 | 3.822 | 2.826 | 3.293 | 0.304 | 0.619 |
| MAX | 23.0 | 1.45 | 0.33 | 1.51 | 41.7 | 217 | 243 | 42.0 | 21.0 | 40.5 | 1.52 | 5.12 |
| (WY) | 1983 | 2001 | 1974 | 1974 | 1983 | 1982 | 1975 | 1970 | 1994 | 1993 | 1974 | 1973 |
| MIN | 0.11 | 0.13 | 0.031 | 0.000 | 0.000 | 0.30 | 0.26 | 0.15 | 0.12 | 0.076 | 0.075 | 0.062 |
| (WY) | 2000 | 1968 | 1985 | 1967 | 1967 | 2000 | 2000 | 1981 | 1987 | 1968 | 1988 | 1999 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1967 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 1737.21 | | 791.90 | | | |
| ANNUAL MEAN | 4.759 | | 2.170 | | 6.207 | |
| HIGHEST ANNUAL MEAN | | | | | 22.7 | 1982 |
| LOWEST ANNUAL MEAN | | | | | 0.21 | 2000 |
| HIGHEST DAILY MEAN | 227 | Mar 13 | 110 | Mar 28 | 1110 | Mar 14 1972 |
| LOWEST DAILY MEAN | 0.00 | Jan 4 | 0.09 | Sep 16 | 0.00 | Dec 10 1966 |
| ANNUAL SEVEN-DAY MINIMUM | 0.00 | Jan 4 | 0.10 | Sep 11 | 0.00 | Dec 25 1966 |
| MAXIMUM PEAK FLOW | | | a200 | Mar 28 | 2840 | Mar 13 1972 |
| MAXIMUM PEAK STAGE | | | b6.19 | Mar 3 | 10.03 | Apr 6 1969 |
| ANNUAL RUNOFF (AC-FT) | 3450 | | 1570 | | 4500 | |
| 10 PERCENT EXCEEDS | 3.4 | | 2.6 | | 4.0 | |
| 50 PERCENT EXCEEDS | 0.19 | | 0.23 | | 0.22 | |
| 90 PERCENT EXCEEDS | 0.01 | | 0.17 | | 0.02 | |

a About
b Backwater from ice
e Estimated

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 03... | 1220 | .16 | -- | -- | -- | 2990 | 16.0 | 15.0 | -- | -- | -- | -- | -- |
| 09... | 1110 | .23 | -- | -- | -- | 2840 | 12.5 | -6.0 | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 20... | 1200 | .19 | -- | -- | -- | 2880 | 10.0 | 2.0 | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 06... | 1600 | .23 | -- | -- | -- | 2960 | 10.0 | .0 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 17... | 1320 | .97 | 8.1 | 8.0 | 1480 | 1470 | 15.0 | 5.0 | 150 | 31.0 | 17.0 | 11.0 | 10 |
| JUN | | | | | | | | | | | | | |
| 05... | 1015 | .30 | -- | -- | -- | 2730 | 16.9 | 13.2 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 18... | 1120 | .48 | -- | -- | -- | 1850 | 23.0 | 24.5 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 28... | 1120 | .19 | 8.4 | 8.6 | 2320 | 2430 | 18.2 | 20.2 | 150 | 25.0 | 21.0 | 12.0 | 18 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 03... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 20... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 06... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 17... | 280 | 79 | 362 | 4.2 | .30 | 410 | 2.63 | 1010 | 971 | 2.0 | 330 | <1 | 30 |
| JUN | | | | | | | | | | | | | |
| 05... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 28... | 520 | 87 | 654 | 7.6 | .40 | 680 | .86 | 1680 | 1660 | 3.0 | 70 | 1 | 50 |

| Date | 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... | -- | -- | -- | -- | -- |
| 09... | -- | -- | -- | -- | -- |
| NOV | | | | | |
| 20... | -- | -- | -- | -- | -- |
| FEB | | | | | |
| 06... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 17... | 130 | <.10 | <1 | <1 | 340 |
| JUN | | | | | |
| 05... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 18... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 28... | 10 | .10 | 3 | <1 | 310 |

< Less than

## 06332523 EAST FORK SHELL CREEK NEAR PARSHALL, ND

LOCATION.--Lat 47°56'55", long 102°12'52", in NW$^1/_4$NW$^1/_4$NW$^1/_4$ sec.33, T.152 N., R.90 W., Mountrail County, Hydrologic Unit 10110101, on right bank 10 ft upstream from bridge on county road and 4 mi west of Parshall.

DRAINAGE AREA.--360 mi$^2$.

### WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1991 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,890 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records poor due to beaver activity.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.00 | 0.72 | e1.3 | e0.35 | e0.15 | e0.12 | e20 | 4.6 | 1.1 | 1.2 | 0.36 | e0.13 |
| 2 | 0.00 | 0.83 | e1.3 | e0.32 | e0.13 | e0.11 | e15 | 4.1 | 1.3 | 1.1 | 0.32 | e0.10 |
| 3 | 0.00 | 0.97 | e1.3 | e0.29 | e0.13 | e0.11 | e11 | 4.0 | 2.4 | 0.94 | 0.21 | e0.11 |
| 4 | 0.00 | 1.0 | e1.5 | e0.32 | e0.10 | e0.10 | e10 | 3.1 | 2.1 | 0.93 | 0.19 | e0.11 |
| 5 | 0.00 | e1.5 | e1.6 | e0.39 | e0.10 | e0.10 | e10 | 3.3 | 1.8 | 0.89 | 0.18 | e0.12 |
| 6 | 0.00 | e1.5 | e1.6 | e0.46 | e0.12 | e0.10 | e11 | 4.0 | 1.8 | 0.78 | e0.17 | e0.13 |
| 7 | 0.00 | e1.4 | e1.6 | e0.46 | e0.14 | e0.11 | e12 | 4.6 | 1.7 | 0.78 | e0.16 | e0.15 |
| 8 | 0.00 | e1.5 | e1.6 | e0.43 | e0.17 | e0.10 | e12 | 6.3 | 1.8 | 0.79 | e0.15 | e0.17 |
| 9 | 0.02 | e1.4 | e1.6 | e0.47 | e0.19 | e0.11 | e12 | 10 | 7.1 | 2.6 | e0.14 | e0.15 |
| 10 | 0.02 | e1.5 | e1.6 | e0.47 | e0.20 | e0.10 | e13 | 11 | 64 | 3.2 | e0.14 | e0.16 |
| 11 | 0.00 | e1.4 | e1.6 | e0.41 | e0.20 | e0.14 | e14 | 9.8 | 37 | 2.4 | e0.13 | e0.14 |
| 12 | 0.00 | e1.5 | e1.6 | e0.38 | e0.21 | e0.11 | e15 | 7.9 | 20 | 1.8 | e0.12 | e0.15 |
| 13 | 0.07 | 2.3 | e1.5 | e0.37 | e0.21 | e0.11 | e15 | 4.0 | 19 | 1.7 | e0.11 | e0.16 |
| 14 | 0.06 | 3.6 | e1.5 | e0.37 | e0.21 | e0.12 | e14 | 3.8 | 14 | 1.4 | e0.10 | e0.17 |
| 15 | 0.04 | 2.9 | e1.3 | e0.37 | e0.20 | e0.12 | e14 | 3.6 | 10 | 1.0 | e0.10 | e0.17 |
| 16 | 0.09 | 2.4 | e1.1 | e0.35 | e0.20 | e0.13 | e13 | 3.9 | 7.1 | 1.1 | e0.55 | e0.18 |
| 17 | 0.10 | 1.8 | e1.0 | e0.35 | e0.18 | e0.13 | e13 | 3.6 | 4.9 | 1.3 | e0.85 | e0.20 |
| 18 | 0.14 | 1.8 | e1.0 | e0.36 | e0.17 | e0.13 | e12 | 3.3 | 4.0 | 1.3 | e0.48 | e0.23 |
| 19 | 0.18 | 1.7 | e0.95 | e0.36 | e0.16 | e0.13 | e11 | 3.0 | 4.6 | 1.1 | e0.25 | e0.25 |
| 20 | 0.25 | 1.6 | e0.92 | e0.35 | e0.18 | e0.13 | e10 | 2.7 | 4.6 | 1.1 | e0.15 | e0.28 |
| 21 | 0.28 | 1.6 | e0.91 | e0.34 | e0.20 | e0.13 | e9.0 | 2.5 | 3.6 | 0.89 | e0.10 | e0.30 |
| 22 | 0.30 | 1.6 | e0.85 | e0.34 | e0.20 | e0.11 | e8.0 | 2.2 | 4.0 | 0.79 | e0.10 | e0.33 |
| 23 | 0.50 | 1.6 | e0.74 | e0.31 | e0.21 | e0.10 | e7.1 | 2.5 | 4.3 | 0.81 | e0.11 | e0.38 |
| 24 | 0.57 | 1.6 | e0.68 | e0.28 | e0.18 | e0.10 | e6.5 | 2.5 | 4.1 | 0.76 | e0.11 | e0.40 |
| 25 | 0.47 | e1.5 | e0.61 | e0.26 | e0.14 | e0.10 | e6.1 | 2.4 | 4.3 | 0.73 | e0.10 | e0.45 |
| 26 | 0.48 | e1.5 | e0.59 | e0.26 | e0.14 | e0.16 | e5.8 | 2.2 | 3.3 | 0.66 | e0.10 | e0.48 |
| 27 | 0.52 | e1.4 | e0.56 | e0.23 | e0.13 | e4.1 | e5.6 | 1.9 | 2.8 | 0.60 | e0.13 | e0.53 |
| 28 | 0.51 | e1.3 | e0.54 | e0.22 | e0.13 | e11 | e5.2 | 1.6 | 2.2 | 0.53 | e0.13 | e0.55 |
| 29 | 0.51 | e1.3 | e0.51 | e0.20 | --- | e43 | e5.0 | 1.4 | 1.8 | 0.55 | e0.10 | e0.60 |
| 30 | 0.55 | e1.3 | e0.50 | e0.18 | --- | e39 | e4.8 | 1.2 | 1.4 | 0.52 | e0.10 | e0.65 |
| 31 | 0.67 | --- | e0.45 | e0.16 | --- | e25 | --- | 1.1 | --- | 0.49 | e0.12 | --- |
| TOTAL | 6.33 | 48.02 | 34.41 | 10.41 | 4.68 | 125.11 | 320.1 | 122.1 | 242.1 | 34.74 | 6.06 | 7.93 |
| MEAN | 0.204 | 1.601 | 1.110 | 0.336 | 0.167 | 4.036 | 10.67 | 3.939 | 8.070 | 1.121 | 0.195 | 0.264 |
| MAX | 0.67 | 3.6 | 1.6 | 0.47 | 0.21 | 43 | 20 | 11 | 64 | 3.2 | 0.85 | 0.65 |
| MIN | 0.00 | 0.72 | 0.45 | 0.16 | 0.10 | 0.10 | 4.8 | 1.1 | 1.1 | 0.49 | 0.10 | 0.10 |
| AC-FT | 13 | 95 | 68 | 21 | 9.3 | 248 | 635 | 242 | 480 | 69 | 12 | 16 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 1.443 | 1.755 | 0.995 | 0.379 | 0.856 | 38.73 | 16.40 | 5.165 | 5.223 | 3.318 | 1.451 | 0.803 |
| MAX | 4.71 | 3.10 | 1.54 | 1.22 | 3.58 | 134 | 64.9 | 16.0 | 16.4 | 23.5 | 11.6 | 2.66 |
| (WY) | 1995 | 2000 | 2000 | 1995 | 1995 | 1999 | 1996 | 1999 | 1998 | 1993 | 1993 | 1991 |
| MIN | 0.18 | 0.74 | 0.015 | 0.000 | 0.000 | 4.04 | 2.97 | 1.64 | 0.66 | 0.011 | 0.003 | 0.000 |
| (WY) | 2001 | 2001 | 2001 | 2001 | 2001 | 2002 | 2000 | 1992 | 1992 | 2001 | 2001 | 2001 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1991 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 1359.92 | | 961.99 | | | |
| ANNUAL MEAN | 3.726 | | 2.636 | | 6.437 | |
| HIGHEST ANNUAL MEAN | | | | | 15.1 | 1999 |
| LOWEST ANNUAL MEAN | | | | | 2.19 | 1992 |
| HIGHEST DAILY MEAN | 110 | Mar 14 | 64 | Jun 10 | 930 | Mar 27 1999 |
| LOWEST DAILY MEAN | 0.00 | Jan 1 | 0.00 | Oct 1 | 0.00 | Sep 2 1991 |
| ANNUAL SEVEN-DAY MINIMUM | 0.00 | Jan 1 | 0.00 | Oct 1 | 0.00 | Sep 10 1998 |
| MAXIMUM PEAK FLOW | | | a88 | Jun 10 | 1170 | Mar 27 1999 |
| MAXIMUM PEAK STAGE | | | b5.59 | Mar 28 | 6.46 | Mar 27 1997 |
| ANNUAL RUNOFF (AC-FT) | 2700 | | 1910 | | 4660 | |
| 10 PERCENT EXCEEDS | 11 | | 7.4 | | 9.0 | |
| 50 PERCENT EXCEEDS | 0.07 | | 0.59 | | 1.1 | |
| 90 PERCENT EXCEEDS | 0.00 | | 0.11 | | 0.10 | |

a Gage height, 4.86 ft
b Backwater from ice and/or beaver dams
e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 11... | 1245 | 1.5 | -- | -- | -- | 3470 | 5.0 | 4.0 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 11... | 1300 | 14 | 7.9 | 7.7 | 1380 | 1360 | 10.0 | 3.0 | 230 | 39.0 | 31.0 | 12.0 | 6 |
| MAY | | | | | | | | | | | | | |
| 24... | 1220 | 2.6 | -- | -- | -- | 3930 | 5.0 | 12.0 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 16... | 1145 | .95 | 8.8 | 8.9 | 3110 | 3210 | 23.0 | 23.5 | 420 | 40.0 | 78.0 | 15.0 | 14 |
| AUG | | | | | | | | | | | | | |
| 26... | 1250 | .10 | -- | -- | -- | 3130 | 21.0 | 19.5 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 11... | 220 | 67 | 301 | 9.7 | .20 | 420 | 35.8 | 948 | 913 | 2.0 | 210 | <1 | 50 |
| MAY | | | | | | | | | | | | | |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 16... | 650 | 76 | 600 | 23.0 | .30 | 1200 | 6.16 | 2410 | 2370 | 7.0 | 100 | <1 | 140 |
| AUG | | | | | | | | | | | | | |
| 26... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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 | | | | | |
| 11... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 11... | 80 | <.10 | <1 | <1 | 720 |
| MAY | | | | | |
| 24... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 16... | 90 | <.10 | 1 | 3 | 1000 |
| AUG | | | | | |
| 26... | -- | -- | -- | -- | -- |

< Less than

## 06332770 DEEPWATER CREEK AT MOUTH NEAR RAUB, ND

LOCATION.--Lat 47°44'16", long 102°06'26", in NW$^1/_4$NW$^1/_4$SW$^1/_4$ sec.8, T.149 N., R.89 W., McLean County, Hydrologic Unit 10110101, on right bank 20 ft upstream from Highway 1804 bridge, 0.6 mi south of junction of State Highway 37 and 1804, and 3 mi west and 0.6 mi south of Raub.

DRAINAGE AREA.--220 mi$^2$.

### WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1991 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,832 ft above National Geodetic Vertical Datum of 1929, from topographic map.

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | e0.00 | e0.00 | e1.2 | e0.68 | e0.50 | e0.51 | e36 | 4.1 | 1.0 | 4.3 | 2.0 | 0.22 |
| 2 | e0.00 | e0.00 | e1.3 | e0.63 | e0.52 | e0.50 | e25 | 4.0 | 0.96 | 3.4 | 1.7 | 0.18 |
| 3 | e0.00 | e0.00 | e1.4 | e0.56 | e0.53 | e0.49 | e17 | 4.2 | 1.2 | 2.5 | 2.4 | 0.16 |
| 4 | e0.00 | e0.00 | e1.3 | e0.58 | e0.54 | e0.48 | e11 | 4.1 | 1.5 | 2.5 | 2.3 | 0.17 |
| 5 | e0.00 | 1.1 | e1.4 | e0.60 | e0.55 | e0.47 | e13 | 3.2 | 2.0 | 2.2 | 1.9 | 0.17 |
| 6 | e0.00 | 1.4 | e1.5 | e0.59 | e0.54 | e0.46 | e14 | 3.2 | 1.7 | 2.1 | 1.4 | 0.18 |
| 7 | e0.00 | 1.2 | e1.6 | e0.57 | e0.52 | e0.45 | e14 | 3.3 | 1.6 | 2.1 | 0.96 | 0.22 |
| 8 | e0.00 | 1.3 | e1.6 | e0.60 | e0.54 | e0.44 | e13 | 4.2 | 1.9 | 1.8 | 0.71 | 0.24 |
| 9 | e0.00 | 1.4 | e1.6 | e0.62 | e0.55 | e0.44 | e13 | 4.7 | 25 | 2.6 | 0.54 | 0.19 |
| 10 | e0.00 | 1.4 | e1.6 | e0.61 | e0.56 | e0.47 | e14 | 9.3 | 52 | 3.3 | 0.45 | 0.17 |
| 11 | e0.00 | 1.5 | e1.6 | e0.59 | e0.57 | e0.48 | e15 | 13 | 45 | 8.0 | 0.38 | 0.15 |
| 12 | e0.00 | 1.4 | e1.7 | e0.57 | e0.57 | e0.49 | 16 | 12 | 37 | 13 | 1.2 | 0.14 |
| 13 | e0.00 | 1.2 | e1.8 | e0.54 | e0.57 | e0.50 | 20 | 9.0 | 26 | 8.0 | 1.2 | 0.13 |
| 14 | e0.00 | 3.3 | e1.8 | e0.52 | e0.56 | e0.51 | 19 | 7.1 | 20 | 5.1 | 0.76 | 0.10 |
| 15 | e0.00 | 2.0 | e1.7 | e0.50 | e0.55 | e0.50 | 19 | 6.0 | 11 | 3.6 | 0.55 | 0.09 |
| 16 | e0.00 | 1.1 | e1.7 | e0.48 | e0.54 | e0.49 | 17 | 5.1 | 9.4 | 2.8 | 0.34 | 0.08 |
| 17 | e0.00 | 0.66 | e1.7 | e0.46 | e0.54 | e0.47 | 15 | 3.9 | 6.7 | 2.5 | 0.30 | 0.06 |
| 18 | e0.00 | 0.64 | e1.7 | e0.47 | e0.52 | e0.46 | 13 | 2.9 | 7.0 | 1.8 | 0.29 | 0.06 |
| 19 | e0.00 | 0.83 | e1.7 | e0.49 | e0.51 | e0.45 | 12 | 2.5 | 6.6 | 1.7 | 0.24 | 0.06 |
| 20 | e0.00 | 0.85 | e1.6 | e0.51 | e0.54 | e0.44 | 11 | 2.5 | 5.8 | 1.7 | 0.21 | e0.05 |
| 21 | e0.00 | 0.75 | e1.5 | e0.50 | e0.58 | e0.45 | 10 | 2.5 | 5.2 | 1.4 | 0.26 | e0.03 |
| 22 | e0.00 | 0.68 | e1.4 | e0.49 | e0.62 | e0.46 | 10 | 2.2 | 4.5 | 1.2 | 0.29 | e0.01 |
| 23 | e0.00 | 0.81 | e1.4 | e0.47 | e0.60 | e0.47 | 8.3 | 2.1 | 5.1 | 1.3 | 0.23 | e0.00 |
| 24 | e0.00 | 1.0 | e1.3 | e0.46 | e0.59 | e0.48 | 7.3 | 2.3 | 27 | 2.0 | 0.24 | e0.00 |
| 25 | e0.00 | 1.2 | e1.2 | e0.46 | e0.57 | e0.47 | 6.8 | 2.2 | 51 | 2.8 | 0.27 | e0.00 |
| 26 | e0.00 | e1.3 | e1.1 | e0.45 | e0.56 | e0.80 | 6.5 | 2.1 | 40 | 2.2 | 0.31 | e0.00 |
| 27 | e0.00 | e1.2 | e1.0 | e0.45 | e0.54 | e3.0 | 7.5 | 1.8 | 27 | 1.9 | 0.30 | e0.00 |
| 28 | e0.00 | e1.2 | e0.90 | e0.44 | e0.52 | e11 | 7.1 | 1.7 | 16 | 1.2 | 0.27 | e0.00 |
| 29 | e0.00 | e1.2 | e0.83 | e0.45 | --- | e50 | 6.1 | 1.6 | 9.9 | 2.7 | 0.25 | e0.00 |
| 30 | e0.00 | e1.2 | e0.77 | e0.46 | --- | e48 | 4.6 | 1.5 | 6.5 | 2.3 | 0.27 | e0.00 |
| 31 | e0.00 | --- | e0.72 | e0.47 | --- | e41 | --- | 1.2 | --- | 2.7 | 0.23 | --- |
| TOTAL | 0.00 | 31.82 | 43.62 | 16.27 | 15.40 | 165.63 | 401.2 | 129.5 | 455.56 | 96.7 | 22.75 | 2.86 |
| MEAN | 0.000 | 1.061 | 1.407 | 0.525 | 0.550 | 5.343 | 13.37 | 4.177 | 15.19 | 3.119 | 0.734 | 0.095 |
| MAX | 0.00 | 3.3 | 1.8 | 0.68 | 0.62 | 50 | 36 | 13 | 52 | 13 | 2.4 | 0.24 |
| MIN | 0.00 | 0.00 | 0.72 | 0.44 | 0.50 | 0.44 | 4.6 | 1.2 | 0.96 | 1.2 | 0.21 | 0.00 |
| AC-FT | 0.00 | 63 | 87 | 32 | 31 | 329 | 796 | 257 | 904 | 192 | 45 | 5.7 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 1.210 | 1.821 | 1.138 | 0.597 | 1.233 | 67.67 | 21.77 | 6.497 | 5.675 | 2.469 | 0.955 | 0.521 |
| MAX | 4.15 | 3.97 | 2.01 | 1.81 | 5.40 | 279 | 68.3 | 21.8 | 18.3 | 18.5 | 5.68 | 4.49 |
| (WY) | 1995 | 2001 | 1999 | 2000 | 1992 | 1999 | 1996 | 1999 | 1994 | 1993 | 1993 | 1991 |
| MIN | 0.000 | 0.16 | 0.051 | 0.000 | 0.000 | 5.34 | 4.09 | 0.80 | 0.040 | 0.009 | 0.000 | 0.000 |
| (WY) | 2002 | 1993 | 2001 | 1993 | 2001 | 2002 | 2000 | 1992 | 1992 | 1992 | 1994 | 1995 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1991 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 3368.43 | | 1381.31 | | | |
| ANNUAL MEAN | 9.229 | | 3.784 | | 9.370 | |
| HIGHEST ANNUAL MEAN | | | | | 29.8 | 1999 |
| LOWEST ANNUAL MEAN | | | | | 2.04 | 1992 |
| HIGHEST DAILY MEAN | 310 | Mar 17 | 52 | Jun 10 | 1100 | Mar 27 1997 |
| LOWEST DAILY MEAN | 0.00 | Jan 1 | 0.00 | Oct 1 | 0.00 | Jul 27 1991 |
| ANNUAL SEVEN-DAY MINIMUM | 0.00 | Jan 1 | 0.00 | Oct 1 | 0.00 | Jul 27 1991 |
| MAXIMUM PEAK FLOW | | | 94 | Jun 10 | a1300 | Mar 27 1997 |
| MAXIMUM PEAK STAGE | | | 7.96 | Jun 10 | b13.26 | Mar 13 1996 |
| INSTANTANEOUS LOW FLOW | | | 0.00 | Oct 1 | | |
| ANNUAL RUNOFF (AC-FT) | 6680 | | 2740 | | 6790 | |
| 10 PERCENT EXCEEDS | 15 | | 11 | | 12 | |
| 50 PERCENT EXCEEDS | 0.77 | | 0.90 | | 0.90 | |
| 90 PERCENT EXCEEDS | 0.00 | | 0.00 | | 0.00 | |

a About
b Backwater from ice
e Estimated

06332770 DEEPWATER CREEK AT MOUTH NEAR RAUB, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1991 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 01... | 1230 | .0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 05... | 1105 | 1.4 | -- | -- | -- | 2150 | 3.0 | 4.2 | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 05... | 1115 | .55 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 01... | 1215 | 36 | -- | -- | -- | 860 | -3.0 | 1.0 | -- | -- | -- | -- | -- |
| 11... | 1100 | 14 | 7.8 | 7.8 | 941 | 920 | 5.0 | 3.0 | 210 | 38.0 | 29.0 | 15.0 | 4 |
| MAY | | | | | | | | | | | | | |
| 24... | 1045 | 2.2 | -- | -- | -- | 2250 | 1.0 | 12.5 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 16... | 1135 | 2.7 | 8.5 | 8.5 | 1820 | 1860 | 20.0 | 23.0 | 400 | 58.0 | 63.0 | 12.0 | 6 |
| AUG | | | | | | | | | | | | | |
| 26... | 1140 | .31 | -- | -- | -- | 2260 | 23.0 | 19.0 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 01... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 05... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 05... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 01... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 11... | 120 | 53 | 241 | 7.6 | .20 | 240 | 24.3 | 643 | 595 | 2.0 | 240 | <1 | 30 |
| MAY | | | | | | | | | | | | | |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 16... | 290 | 60 | 535 | 8.8 | .40 | 530 | 9.91 | 1350 | 1280 | 13.0 | 60 | <1 | 80 |
| AUG | | | | | | | | | | | | | |
| 26... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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 | | | | | |
| 01... | -- | -- | -- | -- | -- |
| NOV | | | | | |
| 05... | -- | -- | -- | -- | -- |
| FEB | | | | | |
| 05... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 01... | -- | -- | -- | -- | -- |
| 11... | 80 | <.10 | <1 | <1 | 530 |
| MAY | | | | | |
| 24... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 16... | 30 | .10 | 2 | <1 | 950 |
| AUG | | | | | |
| 26... | -- | -- | -- | -- | -- |

< Less than

## 06335500 LITTLE MISSOURI RIVER AT MARMARTH, ND

LOCATION.--Lat 46°17'44", long 103°55'06", in SW$^{1}/_{4}$ sec.30, T.133 N., R.105 W., Slope County, Hydrologic Unit 10110203, on left bank 90 ft downstream from bridge on U.S. Highway 12 in Marmarth and 1.5 mi downstream from Little Beaver Creek.

DRAINAGE AREA.--4,640 mi$^2$, approximately.

### WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1938 to current year.

REVISED RECORDS (WATER YEARS).--WSP 896: 1938-39. WSP 1086: 1943-44. WSP 1279: 1943(M), 1945-46, 1948. WSP 1439: 1950 (calendar year figures).

GAGE.--Water-stage recorder. Datum of gage is 2,686.32 ft above National Geodetic Vertical Datum of 1929. Prior to June 23, 1950, various nonrecording gages on former highway bridge at present site and datum. June 23, 1950, to Sept. 2, 1957, nonrecording gage at site 90 ft upstream at present datum.

REMARKS.--Records good except for estimated daily discharges, which are poor. Small diversions for irrigation upstream from station.

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 reached stages of about 21.5 ft in March 1913, 19.7 ft in March 1920, and 20.2 ft in May 1929. These stages are not comparable to stages during period of record, owing to construction of levees.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | e17 | 24 | e29 | e19 | e14 | e16 | e42 | 35 | 14 | 3.9 | 26 | 7.1 |
| 2 | e17 | 24 | e31 | e20 | e14 | e17 | e38 | 34 | 14 | 0.21 | 18 | 4.8 |
| 3 | e16 | 24 | e34 | e20 | e15 | e17 | e49 | 34 | 17 | e0.18 | 12 | 4.2 |
| 4 | e15 | 25 | e36 | e21 | e16 | e18 | e83 | 33 | 15 | e0.27 | 6.6 | 1.9 |
| 5 | 17 | 24 | e37 | e21 | e16 | e18 | e127 | 32 | 15 | e0.27 | 4.0 | 1.6 |
| 6 | 18 | 24 | e37 | e22 | e17 | e17 | e195 | 33 | 15 | e0.19 | 3.2 | 0.89 |
| 7 | 19 | 24 | e37 | e22 | e17 | e17 | e170 | 32 | 13 | e0.15 | 2.0 | 0.88 |
| 8 | 19 | 25 | e36 | e21 | e17 | e17 | e140 | 38 | 12 | e0.20 | 1.9 | 0.72 |
| 9 | 20 | 24 | e36 | e21 | e18 | e16 | 113 | 49 | 52 | e0.26 | 6.7 | 0.77 |
| 10 | 24 | 24 | e35 | e21 | e18 | e17 | 110 | 50 | 432 | e0.27 | 4.6 | 0.64 |
| 11 | 25 | 24 | e35 | e20 | e18 | e18 | 93 | 52 | 670 | e0.30 | 2.8 | 0.53 |
| 12 | 28 | 25 | e34 | e20 | e19 | e18 | 84 | 39 | 195 | e0.26 | 3.2 | 0.80 |
| 13 | 27 | 25 | e34 | e20 | e19 | e19 | 79 | 34 | 83 | e0.18 | 3.7 | 0.95 |
| 14 | 27 | 27 | e33 | e19 | e18 | e19 | 73 | 29 | 55 | e0.16 | 1.3 | 0.98 |
| 15 | 26 | 28 | e32 | e18 | e17 | e19 | 66 | 25 | 41 | e0.15 | e1.8 | 1.2 |
| 16 | 26 | 28 | e32 | e18 | e16 | e19 | 60 | 25 | 33 | e0.09 | e2.5 | 1.4 |
| 17 | 25 | 28 | e31 | e17 | e17 | e18 | 58 | 27 | 30 | e0.03 | 1.9 | 1.2 |
| 18 | 24 | 26 | e30 | e17 | e17 | e18 | 108 | 24 | 27 | 0.03 | 2.0 | 1.1 |
| 19 | 24 | 26 | e29 | e18 | e18 | e18 | 159 | 20 | 25 | 0.03 | 1.6 | 3.3 |
| 20 | 24 | e24 | e29 | e18 | e18 | e17 | 254 | 19 | 57 | 0.03 | 1.5 | 2.8 |
| 21 | 23 | e25 | e28 | e19 | e18 | e17 | 253 | 18 | 90 | 0.01 | 1.3 | 2.4 |
| 22 | 23 | e26 | e27 | e19 | e18 | e16 | 175 | 15 | 46 | 0.00 | e1.2 | 2.0 |
| 23 | 24 | e31 | e26 | e19 | e18 | e18 | 154 | 13 | 34 | 0.00 | e1.2 | 2.2 |
| 24 | 26 | e30 | e25 | e18 | e17 | e20 | 113 | 17 | 35 | 0.00 | e1.1 | 2.0 |
| 25 | 25 | e29 | e24 | e17 | e17 | e23 | 80 | 15 | 36 | 0.00 | e1.1 | 2.6 |
| 26 | 27 | e28 | e23 | e17 | e17 | e26 | 64 | 17 | 27 | 0.00 | e1.2 | 3.0 |
| 27 | 27 | e26 | e22 | e16 | e17 | e33 | 55 | 18 | 18 | 0.00 | e2.0 | 3.6 |
| 28 | 28 | e25 | e22 | e16 | e16 | e40 | 49 | 17 | 15 | 23 | e8.5 | 5.6 |
| 29 | 27 | e26 | e21 | e15 | --- | e45 | 45 | 15 | 11 | 201 | 8.4 | 6.5 |
| 30 | 26 | e27 | e20 | e14 | --- | e48 | 38 | 15 | 6.3 | 69 | 13 | 6.2 |
| 31 | 26 | --- | e19 | e14 | --- | e46 | --- | 15 | --- | 48 | 7.9 | --- |
| TOTAL | 720 | 776 | 924 | 577 | 477 | 685 | 3127 | 839 | 2133.3 | 348.17 | 154.2 | 73.86 |
| MEAN | 23.23 | 25.87 | 29.81 | 18.61 | 17.04 | 22.10 | 104.2 | 27.06 | 71.11 | 11.23 | 4.974 | 2.462 |
| MAX | 28 | 31 | 37 | 22 | 19 | 48 | 254 | 52 | 670 | 201 | 26 | 7.1 |
| MIN | 15 | 24 | 19 | 14 | 14 | 16 | 38 | 13 | 6.3 | 0.00 | 1.1 | 0.53 |
| AC-FT | 1430 | 1540 | 1830 | 1140 | 946 | 1360 | 6200 | 1660 | 4230 | 691 | 306 | 147 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 109.0 | 38.90 | 17.13 | 17.70 | 193.8 | 929.6 | 776.4 | 587.7 | 657.7 | 224.3 | 81.60 | 69.96 |
| MAX | 1489 | 250 | 107 | 260 | 2208 | 5079 | 6691 | 3840 | 4705 | 1917 | 400 | 526 |
| (WY) | 1972 | 1999 | 1952 | 1973 | 1943 | 1978 | 1952 | 1975 | 1944 | 1993 | 1993 | 1941 |
| MIN | 0.87 | 0.37 | 0.000 | 0.000 | 0.000 | 22.1 | 10.7 | 4.75 | 3.51 | 0.10 | 0.16 | 0.000 |
| (WY) | 1959 | 1956 | 1956 | 1939 | 1939 | 2002 | 1981 | 1980 | 1961 | 1980 | 1988 | 1955 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1938 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 123435 | | 10834.53 | | | |
| ANNUAL MEAN | 338.2 | | 29.68 | | 310.3 | |
| HIGHEST ANNUAL MEAN | | | | | 986 | 1944 |
| LOWEST ANNUAL MEAN | | | | | 20.5 | 1988 |
| HIGHEST DAILY MEAN | 5000 | Mar 10 | 670 | Jun 11 | 28600 | Apr 5 1944 |
| LOWEST DAILY MEAN | 15 | Jan 1 | 0.00 | Jul 22 | 0.00 | Dec 18 1938 |
| ANNUAL SEVEN-DAY MINIMUM | 17 | Sep 30 | 0.00 | Jul 21 | 0.00 | Dec 18 1938 |
| MAXIMUM PEAK FLOW | | | 948 | Jun 11 | 45000 | Mar 23 1947 |
| MAXIMUM PEAK STAGE | | | a3.66 | Mar 29 | 23.40 | Mar 31 1952 |
| INSTANTANEOUS LOW FLOW | | | 0.00 | Jul 21 | | |
| ANNUAL RUNOFF (AC-FT) | 244800 | | 21490 | | 224800 | |
| 10 PERCENT EXCEEDS | 978 | | 49 | | 638 | |
| 50 PERCENT EXCEEDS | 34 | | 19 | | 33 | |
| 90 PERCENT EXCEEDS | 20 | | 1.1 | | 1.0 | |

a Backwater from ice
e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 04... | 1150 | 15 | -- | -- | -- | 2080 | 6.5 | 9.2 | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 06... | 1240 | 22 | -- | -- | -- | 2020 | 9.0 | 5.2 | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 13... | 1335 | 34 | -- | -- | -- | 2620 | .5 | .2 | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 05... | 1425 | 16 | -- | -- | -- | 2480 | 1.5 | .1 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 09... | 1310 | 112 | 8.0 | 8.2 | 1170 | 1170 | 15.5 | 6.2 | 160 | 33.0 | 19.0 | 4.60 | 6 |
| MAY | | | | | | | | | | | | | |
| 16... | 1240 | 24 | -- | -- | -- | 2000 | 7.0 | 9.1 | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 11... | 1630 | 548 | -- | -- | -- | 890 | 20.0 | 16.5 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 17... | 1435 | .02 | -- | -- | -- | 3530 | 31.0 | 25.7 | -- | -- | -- | -- | -- |
| 31... | 1220 | 49 | 8.6 | -- | 1400 | 1430 | 25.5 | 25.2 | 76 | 17.0 | 8.00 | 9.30 | 14 |
| AUG | | | | | | | | | | | | | |
| 28... | 1135 | 8.5 | -- | -- | -- | 1410 | 23.0 | 20.3 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 04... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 06... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 05... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 09... | 190 | 71 | 238 | 8.7 | .20 | 350 | 230 | 762 | 749 | 1.0 | 80 | <1 | 50 |
| MAY | | | | | | | | | | | | | |
| 16... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 31... | 290 | 88 | 303 | 10.0 | .50 | 420 | 127 | 965 | 937 | 6.0 | 170 | 1 | 50 |
| AUG | | | | | | | | | | | | | |
| 28... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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 | | | | | |
| 04... | -- | -- | -- | -- | -- |
| NOV | | | | | |
| 06... | -- | -- | -- | -- | -- |
| DEC | | | | | |
| 13... | -- | -- | -- | -- | -- |
| FEB | | | | | |
| 05... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 09... | 30 | <.10 | 2 | <1 | 340 |
| MAY | | | | | |
| 16... | -- | -- | -- | -- | -- |
| JUN | | | | | |
| 11... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 17... | -- | -- | -- | -- | -- |
| 31... | 40 | <.10 | 8 | 1 | 260 |
| AUG | | | | | |
| 28... | -- | -- | -- | -- | -- |

< Less than

## 06336000 LITTLE MISSOURI RIVER AT MEDORA, ND

LOCATION.--Lat 46°55'10", long 103°31'40", in NE$^{1}/_{4}$ sec.27, T.140 N., R.102 W., Billings County, Hydrologic Unit 10110203, on left bank 50 ft upstream from bridge on county highway and 1 mi upstream from Andrews Creek and bridge on I-94.

DRAINAGE AREA.--6,190 mi$^{2}$, approximately.

### WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1903 to October 1908, October to November 1921, March to June and November to December 1922, May 1923 to September 1924, September 1928 to September 1934, October 1945 to September 1975, March 2001 to current year. Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Water-stage recorder on upstream side of highway bridge. Datum of gage is 2,246.75 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 9, 1945, nonrecording gages at several sites within 0.2 mi upstream from present site at various datums. Oct. 9, 1945, to Aug. 22, 1951, nonrecording gage at current location at current datum. Sept. 1951 to Sept. 1975 recording gage 600 ft downstream at current datum.

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

REVISIONS (WATER YEARS).--WSP 546: Drainage area. WSP 1279: 1903-7, 1923-24, 1930-31, 1934(M).

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 23 | 34 | e33 | e23 | e19 | e26 | e67 | 82 | 15 | 17 | 1.4 | 6.3 |
| 2 | 22 | 32 | e37 | e24 | e20 | e27 | e75 | 75 | 14 | 16 | 6.4 | 15 |
| 3 | 20 | 35 | e41 | e24 | e21 | e28 | e102 | 78 | 11 | 14 | 42 | 10 |
| 4 | 21 | 32 | e43 | e25 | e22 | e28 | e118 | 55 | 14 | 11 | 24 | 7.3 |
| 5 | 21 | 31 | e44 | e25 | e22 | e27 | e145 | 44 | 17 | 8.6 | 15 | 5.9 |
| 6 | 20 | 30 | e44 | e25 | e23 | e27 | e171 | 40 | 10 | 6.3 | 10 | 4.7 |
| 7 | 20 | 30 | e42 | e25 | e24 | e27 | e234 | 46 | 8.8 | 5.5 | 6.4 | 4.0 |
| 8 | 20 | 29 | e41 | e25 | e24 | e26 | e336 | 61 | 13 | 6.3 | 5.6 | 5.6 |
| 9 | 20 | 30 | e39 | e25 | e24 | e26 | e302 | 80 | 56 | 78 | 5.0 | 4.8 |
| 10 | 21 | 29 | e38 | e24 | e25 | e26 | e243 | 112 | 709 | 85 | 3.6 | 3.8 |
| 11 | 20 | 25 | e38 | e24 | e25 | e26 | e201 | 100 | 878 | 22 | 3.3 | 3.3 |
| 12 | 23 | 27 | e37 | e24 | e26 | e26 | 177 | 199 | 677 | 11 | 2.7 | 3.0 |
| 13 | 24 | 30 | e37 | e24 | e26 | e27 | 156 | 109 | 853 | 7.6 | 2.4 | 2.8 |
| 14 | 24 | 29 | e38 | e23 | e26 | e27 | 127 | 82 | 566 | 6.4 | 2.0 | 2.4 |
| 15 | 24 | 30 | e38 | e22 | e25 | e27 | 117 | 69 | 360 | 3.9 | 1.7 | 2.4 |
| 16 | 27 | 31 | e38 | e21 | e25 | e28 | 103 | 59 | 258 | 2.7 | 1.7 | 2.2 |
| 17 | 30 | 31 | e38 | e21 | e25 | e31 | 95 | 51 | 196 | 7.9 | 1.3 | 2.3 |
| 18 | 29 | 29 | e38 | e22 | e26 | e32 | 117 | 44 | 151 | 2.9 | 1.4 | 2.7 |
| 19 | 30 | 27 | e37 | e23 | e27 | e34 | 134 | 36 | 132 | 2.0 | 1.2 | 2.7 |
| 20 | 31 | 26 | e36 | e23 | e28 | e35 | 244 | 25 | 119 | 8.8 | 1.1 | 2.4 |
| 21 | 31 | 31 | e34 | e24 | e28 | e37 | 397 | 23 | 105 | 3.8 | 1.4 | 2.0 |
| 22 | 30 | 34 | e33 | e24 | e27 | e38 | 477 | 26 | 92 | 2.5 | 1.4 | 2.8 |
| 23 | 30 | 33 | e31 | e23 | e28 | e39 | 381 | 23 | 77 | 3.4 | 3.9 | 3.7 |
| 24 | 33 | 31 | e30 | e22 | e28 | e42 | 302 | 25 | 140 | 2.3 | 2.6 | 3.4 |
| 25 | 32 | e32 | e28 | e22 | e27 | e46 | 226 | 21 | 139 | 1.9 | 2.0 | 2.5 |
| 26 | 32 | e30 | e28 | e22 | e28 | e52 | 191 | 16 | 101 | 1.8 | 2.7 | 2.2 |
| 27 | 31 | e29 | e27 | e21 | e27 | e57 | 166 | 12 | 66 | 2.0 | 2.1 | 1.8 |
| 28 | 31 | e28 | e26 | e21 | e26 | e62 | 133 | 9.5 | 43 | 4.9 | 3.4 | 1.6 |
| 29 | 31 | e30 | e25 | e20 | --- | e66 | 105 | 8.9 | 37 | 2.4 | 3.1 | 1.6 |
| 30 | 35 | e31 | e24 | e20 | --- | e71 | 89 | 11 | 26 | 2.1 | 3.0 | 1.8 |
| 31 | 32 | --- | e23 | e19 | --- | e69 | --- | 11 | --- | 2.4 | 1.9 | --- |
| TOTAL | 818 | 906 | 1086 | 710 | 702 | 1140 | 5731 | 1633.4 | 5883.8 | 352.4 | 165.7 | 117.0 |
| MEAN | 26.39 | 30.20 | 35.03 | 22.90 | 25.07 | 36.77 | 191.0 | 52.69 | 196.1 | 11.37 | 5.345 | 3.900 |
| MAX | 35 | 35 | 44 | 25 | 28 | 71 | 477 | 199 | 878 | 85 | 42 | 15 |
| MIN | 20 | 25 | 23 | 19 | 19 | 26 | 67 | 8.9 | 8.8 | 1.8 | 1.1 | 1.6 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1903 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 158.8 | 50.03 | 20.57 | 15.54 | 160.6 | 1246 | 1269 | 774.3 | 1113 | 441.4 | 237.8 | 148.3 |
| MAX | 2226 | 369 | 127 | 213 | 1075 | 6831 | 9847 | 4077 | 4692 | 3541 | 2521 | 1314 |
| (WY) | 1924 | 1947 | 1947 | 1974 | 1947 | 1972 | 1952 | 1975 | 1929 | 1905 | 1903 | 1903 |
| MIN | 1.67 | 1.97 | 0.023 | 0.000 | 0.000 | 32.8 | 8.12 | 3.94 | 53.5 | 11.4 | 0.75 | 0.29 |
| (WY) | 1959 | 1956 | 1956 | 1950 | 1950 | 1964 | 1905 | 1931 | 1961 | 2002 | 1934 | 1934 |

| SUMMARY STATISTICS | FOR 2002 WATER YEAR | | WATER YEARS 1903 - 2002 | |
|---|---|---|---|---|
| ANNUAL TOTAL | 19245.3 | | | |
| ANNUAL MEAN | 52.73 | | 461.7 | |
| HIGHEST ANNUAL MEAN | | | 1329 | 1929 |
| LOWEST ANNUAL MEAN | | | 52.7 | 2002 |
| HIGHEST DAILY MEAN | 878 | Jun 11 | 39600 | Apr 8 1952 |
| LOWEST DAILY MEAN | 1.1 | Aug 20 | 0.00 | Feb 1 1932 |
| ANNUAL SEVEN-DAY MINIMUM | 1.4 | Aug 16 | 0.00 | Jan 21 1933 |
| MAXIMUM PEAK FLOW | 1680 | Jun 11 | | |
| MAXIMUM PEAK STAGE | 4.78 | Jun 11 | | |
| 10 PERCENT EXCEEDS | 117 | | 1030 | |
| 50 PERCENT EXCEEDS | 26 | | 51 | |
| 90 PERCENT EXCEEDS | 2.7 | | 1.0 | |

e Estimated

06336000 LITTLE MISSOURI RIVER AT MEDORA, ND

WATER-QUALITY RECORDS

PERIOD OF RECORD.--March 2001 to present.

REMARKS.--Quality assurance sample also collected at this location.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 11... | 1110 | 21 | -- | -- | -- | 2370 | 5.0 | 6.5 | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 07... | 1200 | 28 | -- | -- | -- | 2320 | 4.5 | 5.5 | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 11... | 1220 | 37 | -- | -- | -- | 2440 | -4.0 | .2 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 12... | 1045 | 176 | 7.7 | -- | 1380 | 1460 | 8.0 | 7.8 | 190 | 37.0 | 23.0 | 6.70 | 7 |
| MAY | | | | | | | | | | | | | |
| 17... | 1410 | 54 | -- | -- | -- | 2060 | 16.5 | 16.5 | -- | -- | -- | -- | -- |
| 21... | 1330 | 25 | 8.1 | -- | -- | 2560 | 19.0 | 13.5 | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 11... | 1240 | 819 | -- | -- | -- | 780 | 18.5 | 13.6 | -- | -- | -- | -- | -- |
| 13... | 1330 | 840 | -- | -- | -- | 1050 | 20.5 | 17.5 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 02... | 1340 | 16 | -- | -- | -- | 2650 | 28.0 | 26.5 | -- | -- | -- | -- | -- |
| 25... | 1420 | 1.9 | 8.2 | --e | 3210 | 3340 | 31.0 | 30.5 | 400 | 68.0 | 55.0 | 19.0 | 14 |
| AUG | | | | | | | | | | | | | |
| 22... | 1430 | 1.5 | 8.0 | -- | -- | 3380 | 26.0 | 23.5 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 07... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 12... | 230 | 72 | 259 | 9.7 | .30 | 420 | 430 | 905 | 883 | 1.0 | 100 | <1 | 40 |
| MAY | | | | | | | | | | | | | |
| 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 21... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 02... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 25... | 660 | 77 | 427 | 22.0 | .40 | 1300 | 12.2 | 2440 | 2380 | 2.0 | 80 | <1 | 90 |
| AUG | | | | | | | | | | | | | |
| 22... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

06336000 LITTLE MISSOURI RIVER AT MEDORA, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | 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) | HYDRO-CARBONS PET.WAT FREON CHR.IR. RECOV. (MG/L) (45501) |
|---|---|---|---|---|---|---|
| OCT | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | |
| 07... | -- | -- | -- | -- | -- | -- |
| DEC | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- |
| APR | | | | | | |
| 12... | 10 | <.10 | 4 | <1 | 390 | -- |
| MAY | | | | | | |
| 17... | -- | -- | -- | -- | -- | -- |
| 21... | -- | -- | -- | -- | -- | 2 |
| JUN | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- |
| 13... | -- | -- | -- | -- | -- | 3 |
| JUL | | | | | | |
| 02... | -- | -- | -- | -- | -- | -- |
| 25... | 40 | <.10 | 1 | 1 | 970 | 2 |
| AUG | | | | | | |
| 22... | -- | -- | -- | -- | -- | <2 |

< Less than
e Required equipment not functional/available

## 06336600 BEAVER CREEK NEAR TROTTERS, ND

LOCATION.--Lat 47°09'47", long 103°59'32", in SW$^1/_4$SW$^1/_4$NE$^1/_4$ sec.33, T.143 N., R.105 W., Golden Valley County, Hydrologic Unit 10110204, on left bank 100 ft upstream from bridge on county road, 2.4 mi east of Montana-North Dakota State line, 13 mi southwest of Trotters, 17 mi north of Beach, 20 mi upstream from Elk Creek, and 27 mi above mouth.

DRAINAGE AREA.--616 mi$^2$.

### 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 2,371.96 ft above National Geodetic Vertical Datum of 1929.

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,120 ft$^3$/s, June 9, gage height, 12.29 ft; minimum daily discharge, no flow, Sept. 24-30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | --- | --- | --- | --- | e1.4 | e2.3 | e20 | 7.0 | 2.6 | 15 | 2.7 | 0.10 |
| 2 | --- | --- | --- | --- | e1.5 | e1.9 | e12 | 6.7 | 2.5 | 14 | 1.9 | 0.10 |
| 3 | --- | --- | --- | --- | e1.7 | e1.9 | e10 | 6.6 | 2.7 | 13 | 1.2 | 0.14 |
| 4 | --- | --- | --- | --- | e1.7 | e2.0 | e13 | 6.5 | 2.7 | 12 | 1.1 | 0.15 |
| 5 | --- | --- | --- | --- | e1.8 | e2.0 | e14 | 6.5 | 2.8 | 12 | 0.90 | 0.13 |
| 6 | --- | --- | --- | --- | e1.7 | e2.1 | 19 | 6.5 | 2.6 | 10 | 1.0 | 0.13 |
| 7 | --- | --- | --- | --- | e1.6 | e2.1 | 17 | 6.6 | 2.1 | 11 | 0.97 | 0.15 |
| 8 | --- | --- | --- | --- | e1.7 | e2.2 | 17 | 7.0 | 1.9 | 15 | 0.93 | 0.17 |
| 9 | --- | --- | --- | --- | e1.8 | e2.1 | 19 | 7.7 | 439 | 70 | 0.74 | 0.19 |
| 10 | --- | --- | --- | --- | e1.6 | e2.3 | 14 | 8.1 | 293 | 84 | 0.63 | 0.20 |
| 11 | --- | --- | --- | --- | e1.5 | e2.5 | 11 | 7.7 | 132 | 36 | 0.44 | 0.20 |
| 12 | --- | --- | --- | --- | e1.7 | e2.7 | 11 | 7.4 | 87 | 23 | 0.31 | 0.15 |
| 13 | --- | --- | --- | --- | e1.5 | e4.2 | 10 | 7.1 | 70 | 16 | 0.28 | 0.13 |
| 14 | --- | --- | --- | --- | e1.6 | e5.3 | 9.5 | 6.5 | 62 | 12 | 0.25 | 0.30 |
| 15 | --- | --- | --- | --- | e1.5 | e7.0 | 9.6 | 6.1 | 56 | 9.2 | 0.19 | 0.40 |
| 16 | --- | --- | --- | --- | e1.5 | e8.3 | 9.4 | 5.5 | 49 | 7.7 | 0.14 | 0.18 |
| 17 | --- | --- | --- | --- | e1.6 | e7.5 | 9.1 | 5.3 | 44 | 25 | 0.08 | 0.10 |
| 18 | --- | --- | --- | --- | e1.6 | e5.9 | 9.8 | 5.1 | 39 | 24 | 0.24 | 0.13 |
| 19 | --- | --- | --- | --- | e1.5 | e3.9 | 10 | 4.6 | 37 | 15 | 0.31 | 0.14 |
| 20 | --- | --- | --- | --- | e1.6 | e3.2 | 9.7 | 4.3 | 33 | 9.2 | 0.27 | 0.04 |
| 21 | --- | --- | --- | --- | e1.7 | e4.7 | 9.7 | 4.0 | 30 | 7.0 | 0.23 | 0.08 |
| 22 | --- | --- | --- | --- | e1.9 | e5.9 | 9.1 | 3.8 | 29 | 5.8 | 0.16 | 0.09 |
| 23 | --- | --- | --- | --- | e2.2 | e4.4 | 8.9 | 3.8 | 28 | 5.1 | 0.13 | 0.08 |
| 24 | --- | --- | --- | --- | e2.7 | e3.4 | 8.6 | 3.9 | 33 | 4.2 | 0.09 | 0.0 |
| 25 | --- | --- | --- | --- | e3.0 | e2.9 | 7.9 | 3.6 | 29 | 3.7 | 0.06 | 0.00 |
| 26 | --- | --- | --- | --- | e3.0 | e2.5 | 7.6 | 3.7 | 24 | 3.4 | 0.12 | 0.00 |
| 27 | --- | --- | --- | --- | e2.8 | e15 | 7.3 | 3.6 | 21 | 3.1 | 0.17 | 0.00 |
| 28 | --- | --- | --- | --- | e2.5 | e61 | 7.3 | 3.4 | 19 | 3.1 | 0.13 | 0.00 |
| 29 | --- | --- | --- | --- | --- | e50 | 7.3 | 3.0 | 17 | 2.6 | 0.11 | 0.0 |
| 30 | --- | --- | --- | --- | --- | e38 | 7.2 | 2.7 | 17 | 2.5 | 0.13 | 0.0 |
| 31 | --- | --- | --- | --- | --- | e27 | --- | 2.7 | --- | 2.6 | 0.11 | --- |
| TOTAL | --- | --- | --- | --- | 51.9 | 286.2 | 335.0 | 167.0 | 1607.9 | 476.2 | 16.02 | 3.48 |
| MEAN | --- | --- | --- | --- | 1.854 | 9.232 | 11.17 | 5.387 | 53.60 | 15.36 | 0.517 | 0.116 |
| MAX | --- | --- | --- | --- | 3.0 | 61 | 20 | 8.1 | 439 | 84 | 2.7 | 0.40 |
| MIN | --- | --- | --- | --- | 1.4 | 1.9 | 7.2 | 2.7 | 1.9 | 2.5 | 0.06 | 0.00 |
| AC-FT | --- | --- | --- | --- | 103 | 568 | 664 | 331 | 3190 | 945 | 32 | 6.9 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 1.098 | 2.624 | 2.586 | 4.398 | 28.71 | 112.6 | 48.03 | 15.92 | 18.89 | 10.76 | 2.177 | 0.720 |
| MAX | 3.29 | 6.34 | 5.13 | 14.7 | 141 | 609 | 406 | 50.2 | 125 | 64.2 | 18.4 | 4.72 |
| (WY) | 1983 | 1983 | 1979 | 1983 | 1983 | 1978 | 1979 | 1999 | 1982 | 1997 | 1993 | 1986 |
| MIN | 0.006 | 0.010 | 0.032 | 0.000 | 0.000 | 1.21 | 1.11 | 1.05 | 0.12 | 0.000 | 0.000 | 0.000 |
| (WY) | 1982 | 1982 | 1982 | 1982 | 1989 | 1991 | 1991 | 1981 | 1992 | 1988 | 1985 | 1981 |

| SUMMARY STATISTICS | WATER YEARS 1978 - 2002 | |
|---|---|---|
| ANNUAL MEAN | a33.28 | |
| HIGHEST ANNUAL MEAN | a79.7 | 1978 |
| LOWEST ANNUAL MEAN | a2.77 | 1981 |
| HIGHEST DAILY MEAN | 2500 | Mar 22 1978 |
| LOWEST DAILY MEAN | 0.00 | Aug 1 1981 |
| ANNUAL SEVEN-DAY MINIMUM | 0.00 | Aug 10 1981 |
| MAXIMUM PEAK FLOW | 2720 | Mar 29 1978 |
| MAXIMUM PEAK STAGE | b19.27 | Mar 22 1978 |
| ANNUAL RUNOFF (AC-FT) | a24110 | |
| 10 PERCENT EXCEEDS | 51 | |
| 50 PERCENT EXCEEDS | 2.8 | |
| 90 PERCENT EXCEEDS | 0.03 | |

a Based on complete water years only (1978-83)
b Backwater from ice
e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MAR | | | | | | | | | | | | | |
| 05... | 1450 | 2.1 | -- | -- | -- | 2890 | -12.0 | .2 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 10... | 1130 | 15 | 7.8 | 7.8 | 1410 | 1420 | 4.5 | .5 | 320 | 56.0 | 44.0 | 9.70 | 4 |
| MAY | | | | | | | | | | | | | |
| 17... | 1120 | 5.4 | -- | -- | -- | 2430 | 10.0 | 10.5 | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 11... | 1240 | 133 | -- | -- | -- | -- | 16.5 | 14.5 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 30... | 1220 | 2.0 | 7.6 | --e | 1990 | 2050 | 26.0 | 23.2 | 490 | 69.0 | 78.0 | 15.0 | 6 |
| AUG | | | | | | | | | | | | | |
| 29... | 1105 | .15 | -- | -- | -- | 2470 | 24.0 | 18.7 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MAR | | | | | | | | | | | | | |
| 05... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 10... | 180 | 54 | 227 | 3.6 | .20 | 510 | 38.4 | 968 | 941 | <1.0 | 90 | <1 | 30 |
| MAY | | | | | | | | | | | | | |
| 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 30... | 290 | 55 | 330 | 14.0 | .30 | 810 | 8.18 | 1500 | 1470 | 1.0 | 90 | 1 | 50 |
| AUG | | | | | | | | | | | | | |
| 29... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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 | | | | | |
| 05... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 10... | 40 | <.10 | <1 | <1 | 740 |
| MAY | | | | | |
| 17... | -- | -- | -- | -- | -- |
| JUN | | | | | |
| 11... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 30... | 70 | <.10 | 2 | 2 | 980 |
| AUG | | | | | |
| 29... | -- | -- | -- | -- | -- |

< Less than
e Required equipment not functional/available

## 06337000 LITTLE MISSOURI RIVER NEAR WATFORD CITY, ND

LOCATION.--Lat 47°35'45", long 103°15'45", in SE$^1/_4$SE$^1/_4$NW$^1/_4$ 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$^2$, 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 National Geodetic Vertical Datum of 1929. 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 estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 40 | 35 | e32 | e10 | e1.2 | e0.59 | e530 | 159 | 30 | 95 | 39 | 15 |
| 2 | 38 | 34 | e33 | e8.1 | e1.1 | e0.43 | e450 | 145 | 37 | 85 | 34 | 12 |
| 3 | 36 | 35 | e36 | e7.4 | e1.00 | e0.51 | e410 | 128 | 40 | 78 | 29 | 8.2 |
| 4 | 36 | 35 | e38 | e4.6 | e0.88 | e0.74 | e420 | 114 | 39 | 75 | 26 | 9.2 |
| 5 | 35 | 35 | e38 | e3.3 | e0.57 | e1.7 | e380 | 102 | 34 | 69 | 27 | 8.9 |
| 6 | 36 | 35 | e38 | e2.5 | e0.39 | e1.7 | e350 | 109 | 28 | 64 | 28 | 8.4 |
| 7 | 36 | 37 | e38 | e2.2 | e0.76 | e1.6 | e360 | 110 | 25 | 61 | 27 | 8.0 |
| 8 | 35 | 38 | e37 | e2.1 | e0.88 | e1.6 | e420 | 125 | 24 | 76 | 33 | 25 |
| 9 | 35 | 36 | e37 | e2.2 | e1.1 | e1.8 | e450 | 204 | 165 | 279 | 64 | 23 |
| 10 | 35 | 36 | e36 | e2.3 | e1.2 | e2.0 | e440 | 372 | 1040 | 177 | 50 | 20 |
| 11 | 35 | 35 | e35 | e2.1 | e1.4 | e4.5 | e420 | 372 | 1530 | 92 | 40 | 27 |
| 12 | 36 | 33 | e35 | e2.0 | e1.6 | e9.7 | e380 | 276 | 1340 | 90 | 41 | 16 |
| 13 | 35 | 33 | e34 | e2.3 | e1.5 | e25 | e330 | 181 | 854 | 124 | 34 | 10 |
| 14 | 33 | 33 | e34 | e2.3 | e1.7 | e38 | e310 | 180 | 643 | 108 | 30 | 4.9 |
| 15 | 32 | 35 | e33 | e2.2 | e1.9 | e67 | e280 | 186 | 918 | 77 | 24 | 4.3 |
| 16 | 33 | 36 | e33 | e2.2 | e1.2 | e155 | 257 | 133 | 591 | 65 | 28 | 4.1 |
| 17 | 32 | 36 | e32 | e2.1 | e1.4 | e205 | 225 | 112 | 380 | 86 | 35 | 2.0 |
| 18 | 33 | 35 | e31 | e1.9 | e1.8 | e220 | 235 | 95 | 274 | 364 | 26 | 4.1 |
| 19 | 33 | 35 | e30 | e1.6 | e2.0 | e215 | 315 | 83 | 224 | 371 | 18 | 8.3 |
| 20 | 33 | 34 | e28 | e1.9 | e2.3 | e200 | 413 | 76 | 180 | 191 | 16 | 1.9 |
| 21 | 34 | 33 | e27 | e2.0 | e2.0 | e190 | 334 | 69 | 149 | 312 | 26 | 1.2 |
| 22 | 36 | 37 | e25 | e1.9 | e1.9 | e175 | 280 | 57 | 391 | 183 | 32 | 1.7 |
| 23 | 37 | 37 | e24 | e1.9 | e1.6 | e170 | 315 | 53 | 1490 | 83 | 19 | 1.6 |
| 24 | 38 | 37 | e23 | e2.0 | e1.5 | e165 | 401 | 91 | 520 | 123 | 24 | 1.7 |
| 25 | 38 | 36 | e22 | e2.3 | e1.4 | e175 | 368 | 89 | 249 | 377 | 17 | 1.8 |
| 26 | 39 | 33 | e21 | e2.2 | e1.1 | e250 | 356 | 73 | 179 | 139 | 10 | 1.6 |
| 27 | 38 | e30 | e19 | e2.4 | e1.1 | e280 | 288 | 55 | 148 | 75 | 13 | 2.2 |
| 28 | 37 | e29 | e19 | e2.3 | e0.66 | e330 | 244 | 52 | 155 | 52 | 12 | 2.3 |
| 29 | 38 | e29 | e16 | e1.8 | --- | e410 | 208 | 43 | 133 | 42 | 13 | 2.5 |
| 30 | 37 | e30 | e13 | e1.7 | --- | e490 | 180 | 36 | 110 | 45 | 17 | 1.4 |
| 31 | 37 | --- | e12 | e1.4 | --- | e550 | --- | 32 | --- | 50 | 14 | --- |
| TOTAL | 1106 | 1032 | 909 | 87.2 | 37.14 | 4336.87 | 10349 | 3912 | 11920 | 4108 | 846 | 238.3 |
| MEAN | 35.68 | 34.40 | 29.32 | 2.813 | 1.326 | 139.9 | 345.0 | 126.2 | 397.3 | 132.5 | 27.29 | 7.943 |
| MAX | 40 | 38 | 38 | 10 | 2.3 | 550 | 530 | 372 | 1530 | 377 | 64 | 27 |
| MIN | 32 | 29 | 12 | 1.4 | 0.39 | 0.43 | 180 | 32 | 24 | 42 | 10 | 1.2 |
| AC-FT | 2190 | 2050 | 1800 | 173 | 74 | 8600 | 20530 | 7760 | 23640 | 8150 | 1680 | 473 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1935 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 162.6 | 64.13 | 18.01 | 11.77 | 263.0 | 1856 | 1449 | 744.8 | 1061 | 515.9 | 220.7 | 163.2 |
| MAX | 2364 | 509 | 138 | 121 | 3023 | 10220 | 12170 | 4302 | 5646 | 2759 | 1405 | 1174 |
| (WY) | 1972 | 2001 | 1947 | 1983 | 1943 | 1972 | 1952 | 1975 | 1944 | 1993 | 1937 | 1941 |
| MIN | 0.83 | 0.33 | 0.000 | 0.000 | 0.000 | 22.2 | 29.5 | 18.0 | 14.8 | 9.26 | 0.023 | 1.38 |
| (WY) | 1989 | 1989 | 1989 | 1935 | 1935 | 1964 | 1981 | 1981 | 1988 | 1980 | 1988 | 1936 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1935 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 263111 | | 38881.51 | | | |
| ANNUAL MEAN | 720.9 | | 106.5 | | 544.8 | |
| HIGHEST ANNUAL MEAN | | | | | 1637 | 1971 |
| LOWEST ANNUAL MEAN | | | | | 38.0 | 1988 |
| HIGHEST DAILY MEAN | 11000 | Mar 13 | 1530 | Jun 11 | 55000 | Mar 25 1947 |
| LOWEST DAILY MEAN | 12 | Dec 31 | 0.39 | Feb 6 | 0.00 | Jan 1 1935 |
| ANNUAL SEVEN-DAY MINIMUM | 17 | Dec 25 | 0.73 | Feb 26 | 0.00 | Jan 1 1935 |
| MAXIMUM PEAK FLOW | | | a2360 | Jun 23 | 110000 | Mar 25 1947 |
| MAXIMUM PEAK STAGE | | | b5.79 | Mar 29 | 24.00 | Mar 25 1947 |
| ANNUAL RUNOFF (AC-FT) | 521900 | | 77120 | | 394700 | |
| 10 PERCENT EXCEEDS | 2260 | | 332 | | 1190 | |
| 50 PERCENT EXCEEDS | 95 | | 35 | | 74 | |
| 90 PERCENT EXCEEDS | 29 | | 1.7 | | 0.51 | |

a Gage height, 4.91 ft
b Backwater from ice
e Estimated

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

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 03... | 1200 | 37 | -- | -- | -- | 2050 | 10.5 | 11.5 | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 20... | 1025 | 33 | -- | -- | -- | 2390 | -3.0 | 5.0 | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 09... | 1050 | 2.3 | -- | -- | -- | 3110 | 3.0 | 1.0 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 17... | 1145 | 230 | 8.0 | 8.3 | 1500 | 1490 | 5.0 | 5.0 | 220 | 47.0 | 25.0 | 8.30 | 7 |
| MAY | | | | | | | | | | | | | |
| 21... | 1115 | 69 | 8.4 | -- | -- | 2280 | 10.0 | 12.0 | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 18... | 1530 | 262 | 7.8 | -- | -- | 1560 | 25.0 | 16.0 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 23... | 1130 | 83 | 7.9 | -- | 1370 | 1330 | 20.0 | 23.0 | 180 | 45.0 | 17.0 | 12.0 | 7 |
| AUG | | | | | | | | | | | | | |
| 19... | 1140 | 18 | 7.9 | -- | -- | 2210 | 20.0 | 16.5 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 03... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 20... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 17... | 250 | 70 | 272 | 8.7 | .30 | 500 | 640 | 1030 | 1000 | 1.0 | 140 | <1 | 40 |
| MAY | | | | | | | | | | | | | |
| 21... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 23... | 210 | 70 | 178 | 7.2 | .40 | 510 | 210 | 939 | 909 | 2.0 | 80 | 1 | 30 |
| AUG | | | | | | | | | | | | | |
| 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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) | HYDRO-CARBONS PET.WAT FREON CHR.IR. RECOV. (MG/L) (45501) |
|---|---|---|---|---|---|---|
| OCT | | | | | | |
| 03... | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | |
| 20... | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | |
| 09... | -- | -- | -- | -- | -- | -- |
| APR | | | | | | |
| 17... | 20 | <.10 | 2 | <1 | 480 | -- |
| MAY | | | | | | |
| 21... | -- | -- | -- | -- | -- | 3 |
| JUN | | | | | | |
| 18... | -- | -- | -- | -- | -- | 4 |
| JUL | | | | | | |
| 23... | 10 | <.10 | 6 | 1 | 410 | 6 |
| AUG | | | | | | |
| 19... | -- | -- | -- | -- | -- | <2 |

< Less than

## 06338000 LAKE SAKAKAWEA NEAR RIVERDALE, ND

LOCATION.--Lat 47°30'10", long 101°25'50", in S1/2 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 $mi^2$, 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 National Geodetic Vertical Datum of 1929.

REMARKS.--Reservoir is formed by earth-fill dam; storage began in November 1953. Maximum capacity, 24,200,000 acre-ft 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, 16,441,000 acre-ft, July 10, adjusted for wind effect, elevation, 1,831.9 ft, July 7; minimum contents, 15,075,000 acre-ft, Mar. 29, elevation, 1,826.9 ft, Mar. 31.

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Elevation (feet) | Contents (acre-feet) | Change in contents (acre-feet) |
|---|---|---|---|
| Sept. 30 | 1,831.8 | 16,409,000 | -- |
| Oct. 31 | 1,831.1 | 16,201,000 | -208,000 |
| Nov. 30 | 1,830.5 | 16,039,000 | -162,000 |
| Dec. 31 | 1,829.2 | 15,696,000 | -343,000 |
| CAL YR 2001 | -- | -- | +53,000 |
| Jan. 31 | 1,828.3 | 15,419,000 | -277,000 |
| Feb. 28 | 1,827.6 | 15,243,000 | -176,000 |
| Mar. 31 | 1,826.9 | 15,076,000 | -167,000 |
| Apr. 30 | 1,827.5 | 15,245,000 | +169,000 |
| May 31 | 1,828.3 | 15,450,000 | +205,000 |
| June 30 | 1,831.4 | 16,313,000 | +863,000 |
| July 31 | 1,831.4 | 16,236,000 | -77,000 |
| Aug. 31 | 1,829.2 | 15,681,000 | -555,000 |
| Sept. 30 | 1,827.5 | 15,239,000 | -442,000 |
| WTR YR 2002 | -- | -- | -1,170,000 |

## 06338490 MISSOURI RIVER AT GARRISON DAM, ND

LOCATION.--Lat 47°30'08", long 101°25'50", in S1/2 sec.31, T.147 N., R.84 W., Mercer County, Hydrologic Unit 10130101, 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 $mi^2$, 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 Garrison Dam. 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 10100 | 10000 | 13000 | 13000 | 13000 | 13400 | 11300 | 10900 | 21100 | 20800 | 21100 | 21400 |
| 2 | 10100 | 10000 | 13000 | 13000 | 13500 | 13000 | 11400 | 10800 | 21300 | 20500 | 20700 | 21300 |
| 3 | 10000 | 9900 | 12700 | 13000 | 13200 | 13000 | 11700 | 11200 | 21200 | 20900 | 21000 | 20700 |
| 4 | 10100 | 10200 | 12600 | 13000 | 12900 | 13500 | 11100 | 10700 | 20800 | 20800 | 20900 | 20900 |
| 5 | 10300 | 10300 | 12800 | 13100 | 13300 | 13700 | 11000 | 10700 | 21200 | 20700 | 21400 | 20800 |
| 6 | 10000 | 10200 | 12600 | 13100 | 13100 | 12900 | 11000 | 11200 | 21100 | 20600 | 21200 | 20900 |
| 7 | 10400 | 10200 | 13000 | 12900 | 13300 | 13200 | 11000 | 11600 | 20700 | 20900 | 21300 | 20900 |
| 8 | 10300 | 10100 | 12900 | 13300 | 13200 | 13300 | 10700 | 11200 | 21000 | 20900 | 21200 | 21300 |
| 9 | 10100 | 10200 | 13000 | 13400 | 13100 | 12900 | 10500 | 11500 | 20500 | 20400 | 21100 | 20900 |
| 10 | 10500 | 10100 | 13000 | 13000 | 13100 | 12900 | 10400 | 11700 | 20700 | 20500 | 20900 | 20700 |
| 11 | 10000 | 10000 | 13000 | 12900 | 13400 | 12900 | 10400 | 15900 | 20800 | 20600 | 21200 | 20400 |
| 12 | 10200 | 10000 | 12800 | 13100 | 13300 | 12600 | 10700 | 14700 | 20800 | 20800 | 21000 | 20900 |
| 13 | 10100 | 10200 | 12900 | 12500 | 12900 | 12700 | 10300 | 12000 | 20900 | 20800 | 21200 | 21000 |
| 14 | 10300 | 10200 | 12900 | 13000 | 12900 | 12300 | 10300 | 11300 | 20800 | 21000 | 21200 | 20600 |
| 15 | 10100 | 10100 | 13100 | 13200 | 13100 | 12300 | 10400 | 10500 | 20900 | 21100 | 21300 | 18700 |
| 16 | 10300 | 10400 | 13100 | 13000 | 13100 | 12200 | 10300 | 10500 | 20800 | 20900 | 21100 | 16500 |
| 17 | 10100 | 10300 | 12800 | 13400 | 13400 | 12100 | 10500 | 10400 | 20900 | 20800 | 21200 | 14000 |
| 18 | 10200 | 10200 | 12800 | 12700 | 13200 | 12200 | 10400 | 10200 | 21000 | 20900 | 21000 | 13900 |
| 19 | 10000 | 10500 | 12700 | 13000 | 13100 | 12400 | 10300 | 10100 | 20700 | 20900 | 20800 | 13800 |
| 20 | 10100 | 10200 | 12800 | 13300 | 13000 | 12100 | 10700 | 10400 | 20900 | 21200 | 21100 | 14100 |
| 21 | 10100 | 10100 | 12900 | 13100 | 13200 | 12900 | 10300 | 10300 | 21000 | 20300 | 21300 | 14100 |
| 22 | 10200 | 10700 | 13200 | 13100 | 13300 | 12200 | 10500 | 10300 | 21000 | 20800 | 20200 | 14200 |
| 23 | 10200 | 10100 | 13300 | 13000 | 13000 | 12200 | 10700 | 10100 | 20900 | 20500 | 21300 | 14000 |
| 24 | 10300 | 10400 | 12800 | 12900 | 13100 | 12200 | 10400 | 10100 | 21000 | 20900 | 21300 | 14500 |
| 25 | 10500 | 10600 | 13000 | 13200 | 13600 | 12500 | 11900 | 11700 | 20700 | 20900 | 20900 | 14200 |
| 26 | 10300 | 12200 | 13000 | 13100 | 13600 | 12200 | 11400 | 15000 | 21000 | 20900 | 21400 | 14400 |
| 27 | 10100 | 12400 | 13000 | 13200 | 13900 | 11900 | 11300 | 17800 | 20700 | 20900 | 21600 | 14000 |
| 28 | 10400 | 12500 | 12700 | 13000 | 13600 | 11500 | 11200 | 20600 | 20900 | 21000 | 21200 | 14100 |
| 29 | 10100 | 12800 | 12800 | 13300 | --- | 11400 | 11000 | 21100 | 20700 | 21000 | 21600 | 14200 |
| 30 | 10800 | 12700 | 12700 | 13100 | --- | 11400 | 10700 | 21000 | 20900 | 21100 | 21700 | 14200 |
| 31 | 9900 | --- | 12900 | 13200 | --- | 11200 | --- | 21100 | --- | 20600 | 21200 | --- |
| TOTAL | 316200 | 317800 | 399800 | 405100 | 370400 | 387200 | 323800 | 396600 | 626900 | 644900 | 655600 | 525600 |
| MEAN | 10200 | 10590 | 12900 | 13070 | 13230 | 12490 | 10790 | 12790 | 20900 | 20800 | 21150 | 17520 |
| MAX | 10800 | 12800 | 13300 | 13400 | 13900 | 13700 | 11900 | 21100 | 21300 | 21200 | 21700 | 21400 |
| MIN | 9900 | 9900 | 12600 | 12500 | 12900 | 11200 | 10300 | 10100 | 20500 | 20300 | 20200 | 13800 |
| AC-FT | 627200 | 630400 | 793000 | 803500 | 734700 | 768000 | 642300 | 786700 | 1243000 | 1279000 | 1300000 | 1043000 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 19660 | 20840 | 20840 | 23540 | 24710 | 19990 | 19370 | 22010 | 24150 | 25480 | 24860 | 21110 |
| MAX | 49450 | 42350 | 29530 | 30500 | 31500 | 28210 | 37500 | 38490 | 42430 | 61800 | 54130 | 46570 |
| (WY) | 1998 | 1998 | 1970 | 1979 | 1976 | 1983 | 1972 | 1972 | 1997 | 1975 | 1975 | 1997 |
| MIN | 9945 | 10110 | 12900 | 13070 | 13230 | 10370 | 10280 | 10560 | 11080 | 13220 | 13960 | 10990 |
| (WY) | 1994 | 1993 | 2002 | 2002 | 2002 | 1993 | 1993 | 1986 | 1995 | 1995 | 2001 | 1990 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1970 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 4863700 | | 5369900 | | | |
| ANNUAL MEAN | 13330 | | 14710 | | 22200 | |
| HIGHEST ANNUAL MEAN | | | | | 33000 | 1975 |
| LOWEST ANNUAL MEAN | | | | | 13710 | 1993 |
| HIGHEST DAILY MEAN | 19400 | Jan 24 | 21700 | Aug 30 | 65200 | Jul 25 1975 |
| LOWEST DAILY MEAN | 9900 | Oct 31 | 9900 | Oct 31 | 4100 | Mar 25 1997 |
| ANNUAL SEVEN-DAY MINIMUM | 10100 | Oct 31 | 10100 | Oct 31 | 7960 | Mar 22 1997 |
| MAXIMUM PEAK FLOW | | | 21700 | Aug 30 | | |
| INSTANTANEOUS LOW FLOW | | | 9900 | Oct 31 | | |
| ANNUAL RUNOFF (AC-FT) | 9647000 | | 10650000 | | 16090000 | |
| 10 PERCENT EXCEEDS | 17300 | | 21000 | | 31900 | |
| 50 PERCENT EXCEEDS | 13100 | | 13000 | | 20600 | |
| 90 PERCENT EXCEEDS | 10200 | | 10200 | | 12800 | |

06338490 MISSOURI RIVER AT GARRISON DAM, ND--Continued
(National Stream-Quality Accounting Network Station)

WATER-QUALITY RECORDS

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

REMARKS.--Quality assurance sample also collected at this location.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | BARO-METRIC PRES-SURE (MM OF HG) (00025) | OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301) | OXYGEN, DIS-SOLVED (MG/L) (00300) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | UV ABSORB-ANCE 254 NM, WTR FLT (UNITS /CM) (50624) | UV ABSORB-ANCE 280 NM, WTR FLT (UNITS /CM) (61726) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 19... | 1030 | 10000 | 720 | 108 | 11.9 | 7.3 | -- | 627 | 652 | 4.0 | 8.4 | .062 | .039 |
| FEB | | | | | | | | | | | | | |
| 20... | 1130 | 14000 | -- | -- | 8.8 | 8.1 | 8.2 | 651 | 670 | 5.0 | .8 | .070 | .048 |
| MAR | | | | | | | | | | | | | |
| 27... | 1030 | 12200 | 710 | 94 | 11.6 | 8.6 | 8.3 | 663 | 637 | 8.0 | 3.5 | .072 | .049 |
| APR | | | | | | | | | | | | | |
| 23... | 1030 | 10200 | 713 | 109 | 14.0 | 8.1 | 8.3 | 630 | 678 | 9.5 | 2.3 | .071 | .048 |
| MAY | | | | | | | | | | | | | |
| 20... | 1100 | 10000 | 722 | 112 | 13.8 | 7.8 | 8.2 | 621 | 665 | 12.0 | 4.3 | .066 | .043 |
| AUG | | | | | | | | | | | | | |
| 13... | 1000 | 21000 | 722 | 87 | 8.4 | 8.0 | 8.2 | 638 | 678 | 20.1 | 14.2 | .068 | .046 |

| Date | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ALKA-LINITY WAT.DIS FET LAB CACO3 (MG/L) (29801) | ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086) | BICAR-BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453) | CAR-BONATE WATER DIS IT FIELD MG/L AS CO3 (00452) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 19... | 210 | 51.0 | 20.9 | 3.85 | 2 | 53.2 | 35 | 175 | 172 | 210 | 0 | 8.91 | .6 |
| FEB | | | | | | | | | | | | | |
| 20... | 210 | 50.5 | 20.4 | 3.96 | 2 | 56.5 | 36 | 171 | 161 | 196 | 0 | 9.40 | .6 |
| MAR | | | | | | | | | | | | | |
| 27... | 210 | 49.5 | 20.2 | 3.88 | 2 | 55.9 | 36 | 170 | 165 | 201 | 0 | 9.05 | .6 |
| APR | | | | | | | | | | | | | |
| 23... | 210 | 49.3 | 20.4 | 3.78 | 2 | 58.2 | 37 | 171 | 166 | 203 | 0 | 8.20 | .6 |
| MAY | | | | | | | | | | | | | |
| 20... | 210 | 51.4 | 20.4 | 3.73 | 2 | 56.5 | 36 | 165 | 160 | 181 | 7 | 8.92 | .6 |
| AUG | | | | | | | | | | | | | |
| 13... | 200 | 49.5 | 19.6 | 4.20 | 2 | 57.8 | 37 | 168 | 157 | 190 | 0 | 9.30 | .5 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | 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) (00631) | NITRO-GEN, TOTAL (MG/L AS N) (00600) | NITRO-GEN DIS-SOLVED (MG/L AS N) (00602) | PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 19... | 6.35 | 153 | .17 | .18 | E.013 | <.002 | -- | .027 | .21 | .20 | <.004 | <.007 | .005 |
| FEB | | | | | | | | | | | | | |
| 20... | 6.29 | 159 | .16 | .18 | E.010 | .003 | .03 | .038 | .22 | .20 | <.004 | <.007 | .005 |
| MAR | | | | | | | | | | | | | |
| 27... | 6.39 | 160 | .18 | .22 | E.010 | E.002 | -- | .052 | .28 | .24 | <.004 | <.007 | <.004 |
| APR | | | | | | | | | | | | | |
| 23... | 6.29 | 161 | .20 | .18 | <.015 | E.002 | -- | .059 | .24 | .26 | <.004 | <.007 | .005 |
| MAY | | | | | | | | | | | | | |
| 20... | 6.41 | 158 | .13 | .18 | <.015 | <.002 | -- | .048 | .23 | .18 | E.004 | <.007 | .005 |
| AUG | | | | | | | | | | | | | |
| 13... | 5.68 | 161 | .21 | .20 | <.015 | E.002 | -- | .067 | .27 | .27 | .005 | <.007 | .006 |

06338490 MISSOURI RIVER AT GARRISON DAM, ND--Continued
(National Stream-Quality Accounting Network Station)

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681) | CARBON, ORGANIC PARTIC-ULATE TOTAL (MG/L AS C) (00689) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | TURBID-ITY LAB HACH 2100AN (NTU) (99872) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | ARSENIC DIS-SOLVED (UG/L AS AS) (01000) | BORON, DIS-SOLVED (UG/L AS B) (01020) | IRON, DIS-SOLVED (UG/L AS FE) (01046) | LITHIUM DIS-SOLVED (UG/L AS LI) (01130) | SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145) | STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 19... | 3.0 | .2 | 11100 | 410 | 402 | 5.0 | 1.2 | 1.7 | 99 | E5 | 43.4 | .6 | 467 |
| FEB | | | | | | | | | | | | | |
| 20... | 3.3 | <.1 | 15800 | 418 | 404 | 3.8 | .7 | 1.9 | 113 | <10 | 44.2 | .5 | 483 |
| MAR | | | | | | | | | | | | | |
| 27... | 3.7 | .2 | 14000 | 425 | 406 | 5.9 | .9 | 2.1 | 119 | <10 | 44.3 | 1.1 | 469 |
| APR | | | | | | | | | | | | | |
| 23... | 3.0 | .2 | 11700 | 425 | 409 | 3.4 | 1.0 | 1.8 | 129 | <10 | 44.8 | <.3 | 481 |
| MAY | | | | | | | | | | | | | |
| 20... | 3.1 | .2 | 11500 | 424 | 403 | 1.1 | 1.6 | 2.0 | 121 | <10 | 41.3 | .9 | 481 |
| AUG | | | | | | | | | | | | | |
| 13... | 2.9 | .2 | 24100 | 425 | 403 | 3.4 | 1.3 | 2.1 | 120 | <10 | 42.2 | 1.0 | 503 |

| Date | VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085) | ACETO-CHLOR, WATER FLTRD REC (UG/L) (49260) | ALA-CHLOR, WATER, DISS, REC, (UG/L) (46342) | ALPHA BHC DIS-SOLVED (UG/L) (34253) | ATRA-ZINE, WATER, DISS, REC (UG/L) (39632) | METHYL AZIN-PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686) | BEN-FLUR-ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673) | BUTYL-ATE, WATER, DISS, REC (UG/L) (04028) | CAR-BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680) | CARBO-FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674) | CHLOR-PYRIFOS DIS-SOLVED (UG/L) (38933) | CYANA-ZINE, WATER, DISS, REC (UG/L) (04041) | DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 19... | 1.0 | <.004 | <.002 | <.005 | E.005 | <.050 | <.010 | <.002 | <.041 | <.020 | <.005 | <.018 | <.003 |
| FEB | | | | | | | | | | | | | |
| 20... | .9 | <.006 | <.004 | <.005 | E.005n | <.050 | <.010 | <.002 | <.041 | <.020 | <.005 | <.018 | <.003 |
| MAR | | | | | | | | | | | | | |
| 27... | .9 | <.006 | <.004 | <.005 | E.006n | <.050 | <.010 | <.002 | <.041 | <.020 | <.005 | <.018 | <.003 |
| APR | | | | | | | | | | | | | |
| 23... | 1.7 | <.006 | <.004 | <.005 | E.007n | <.050 | <.010 | <.002 | <.041 | <.020 | <.005 | <.018 | <.003 |
| MAY | | | | | | | | | | | | | |
| 20... | 1.4 | <.006 | <.004 | <.005 | E.007n | <.050 | <.010 | <.002 | <.041 | <.020 | <.005 | <.018 | <.003 |
| AUG | | | | | | | | | | | | | |
| 13... | 2.1 | <.006 | <.004 | <.005 | .008 | <.050 | <.010 | <.002 | <.041 | <.020 | <.005 | <.018 | <.003 |

| Date | DEETHYL ATRA-ZINE, WATER, DISS, REC (UG/L) (04040) | DI-AZINON, DIS-SOLVED (UG/L) (39572) | DI-ELDRIN DIS-SOLVED (UG/L) (39381) | 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 PARA-THION WAT FLT 0.7 U GF, REC (UG/L) (82667) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 19... | <.006 | <.005 | <.005 | <.002 | <.02 | <.002 | <.009 | <.005 | <.003 | <.004 | <.035 | <.027 | <.006 |
| FEB | | | | | | | | | | | | | |
| 20... | <.006 | <.005 | <.005 | <.006 | <.02 | <.002 | <.009 | <.005 | <.003 | <.004 | <.035 | <.027 | <.006 |
| MAR | | | | | | | | | | | | | |
| 27... | <.006 | <.005 | <.005 | <.006 | <.02 | <.002 | <.009 | <.005 | <.003 | <.004 | <.035 | <.027 | <.006 |
| APR | | | | | | | | | | | | | |
| 23... | <.006 | <.005 | <.005 | <.006 | <.02 | <.002 | <.009 | <.005 | <.003 | <.004 | <.035 | <.027 | <.006 |
| MAY | | | | | | | | | | | | | |
| 20... | E.002 | <.005 | <.005 | <.006 | <.02 | <.002 | <.009 | <.005 | <.003 | <.004 | <.035 | <.027 | <.006 |
| AUG | | | | | | | | | | | | | |
| 13... | E.002 | <.005 | <.005 | <.006 | <.02 | <.002 | <.009 | <.005 | <.003 | <.004 | <.035 | <.027 | <.006 |

| Date | METO-LACHLOR WATER DISSOLV (UG/L) (39415) | METRI-BUZIN SENCOR WATER DISSOLV (UG/L) (82630) | MOL-INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671) | NAPROP-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684) | P,P' DDE DISSOLV (UG/L) (34653) | PARA-THION, DIS-SOLVED (UG/L) (39542) | 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) | PRON-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676) | PROPA-CHLOR, WATER, DISS, REC (UG/L) (04024) | PRO-PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 19... | E.001 | <.006 | <.002 | <.007 | <.003 | <.007 | <.002 | <.010 | <.006 | <.011 | <.004 | <.010 | <.011 |
| FEB | | | | | | | | | | | | | |
| 20... | <.013 | <.006 | <.002 | <.007 | <.003 | <.010 | <.004 | <.022 | <.006 | <.011 | <.004 | <.010 | <.011 |
| MAR | | | | | | | | | | | | | |
| 27... | <.013 | <.006 | <.002 | <.007 | <.003 | <.010 | <.004 | <.022 | <.006 | <.011 | <.004 | <.010 | <.011 |
| APR | | | | | | | | | | | | | |
| 23... | <.013 | <.006 | <.002 | <.007 | <.003 | <.010 | <.004 | <.022 | <.006 | <.011 | <.004 | <.010 | <.011 |
| MAY | | | | | | | | | | | | | |
| 20... | E.002n | <.006 | <.002 | <.007 | <.003 | <.010 | <.004 | <.022 | <.006 | <.011 | <.004 | <.010 | <.011 |
| AUG | | | | | | | | | | | | | |
| 13... | <.013 | <.006 | <.002 | <.007 | <.003 | <.010 | <.004 | <.022 | <.006 | <.011 | <.004 | <.010 | <.011 |

06338490 MISSOURI RIVER AT GARRISON DAM, ND--Continued
(National Stream-Quality Accounting Network Station)

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | PRO-PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685) | SI-MAZINE, WATER, DISS, REC (UG/L) (04035) | TEBU-THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670) | TER-BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665) | TER-BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675) | THIO-BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681) | TRIAL-LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678) | TRI-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661) | SEDI-MENT, SUS-PENDED (MG/L) (80154) | SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155) | SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | |
| 19... | <.02 | <.011 | <.02 | <.034 | <.02 | <.005 | <.002 | <.009 | 2.0 | 54.0 | 96 |
| FEB | | | | | | | | | | | |
| 20... | <.02 | <.005 | <.02 | <.034 | <.02 | <.005 | <.002 | <.009 | 1.0 | 37.8 | 71 |
| MAR | | | | | | | | | | | |
| 27... | <.02 | <.005 | <.02 | <.034 | <.02 | <.005 | <.002 | <.009 | 1.0 | 32.9 | 100 |
| APR | | | | | | | | | | | |
| 23... | <.02 | <.005 | <.02 | <.034 | <.02 | <.005 | <.002 | <.009 | .0 | .0 | 100 |
| MAY | | | | | | | | | | | |
| 20... | <.02 | <.005 | <.02 | <.034 | <.02 | <.005 | <.002 | <.009 | 1.0 | 27.0 | 94 |
| AUG | | | | | | | | | | | |
| 13... | <.02 | <.005 | <.02 | <.034 | <.02 | <.005 | <.002 | <.009 | 2.0 | 113 | 98 |

| Date | Time | SAMPLE LOC-ATION, CROSS SECTION (FT FM L BANK) (00009) | 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) |
|---|---|---|---|---|---|---|
| NOV | | | | | | |
| 19... | 1011 | 150 | 653 | 7.3 | 8.4 | 11.5 |
| 19... | 1012 | 300 | 652 | 7.3 | 8.4 | 11.9 |
| 19... | 1013 | 450 | 654 | 7.3 | 8.4 | 12.0 |
| FEB | | | | | | |
| 20... | 1142 | 150 | 669 | 8.1 | .8 | 7.7 |
| 20... | 1144 | 300 | 670 | 8.1 | .9 | 8.8 |
| 20... | 1146 | 450 | 671 | 8.1 | .9 | 9.2 |
| MAR | | | | | | |
| 27... | 1041 | 150 | 639 | 8.4 | 3.0 | 11.6 |
| 27... | 1042 | 300 | 637 | 8.6 | 4.0 | -- |
| 27... | 1043 | 450 | 634 | 8.4 | 3.0 | -- |
| APR | | | | | | |
| 23... | 1041 | 150 | 673 | 8.1 | 2.3 | 14.0 |
| 23... | 1042 | 300 | 677 | 7.8 | 2.3 | 14.0 |
| 23... | 1043 | 450 | 678 | 8.1 | 2.3 | 14.0 |
| MAY | | | | | | |
| 20... | 1111 | 150 | 670 | 7.7 | 4.3 | 13.5 |
| 20... | 1112 | 300 | 665 | 7.8 | 4.3 | 13.8 |
| 20... | 1113 | 450 | 670 | 7.7 | 4.3 | 13.1 |
| AUG | | | | | | |
| 13... | 1011 | 150 | 678 | 8.0 | 14.2 | 8.4 |
| 13... | 1012 | 300 | 678 | 8.0 | 14.3 | 8.7 |
| 13... | 1013 | 450 | 678 | 8.0 | 14.2 | 8.6 |

< Less than
E Estimated value
n Below the non-detection value

## 06339010 MISSOURI RIVER ABOVE STANTON, ND

LOCATION.--Lat 47°21'45", long 101°21'25", SE$^1/_4$NE$^1/_4$SE$^1/_4$ sec.22, T.145 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$^2$, 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 National Geodetic Vertical Datum of 1929.

REMARKS.--Stage regulated completely by releases from Garrison Dam (station 06338490) 13 mi upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 73.34 ft, Jan. 13, 2000; backwater from ice, may have been higher during subsequent period of missing winter record; minimum daily recorded, 62.07 ft, Sept. 18, 1991.

GAGE HEIGHT, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 63.27 | --- | 63.72 | --- | --- | 63.88 | 63.36 | --- | --- | --- | 65.29 | 65.30 |
| 2 | 63.30 | --- | 63.75 | --- | --- | 63.86 | 63.40 | --- | --- | --- | 65.16 | 65.24 |
| 3 | 63.30 | --- | 63.75 | --- | --- | 63.89 | 63.50 | --- | --- | --- | 65.26 | 65.23 |
| 4 | 63.26 | --- | 63.94 | --- | --- | 63.98 | 63.35 | --- | --- | 65.39 | 65.21 | 65.27 |
| 5 | 63.29 | --- | 63.80 | --- | --- | 63.94 | 63.33 | --- | --- | 65.36 | 65.33 | 65.23 |
| 6 | 63.34 | --- | 63.86 | --- | --- | --- | 63.49 | --- | --- | 65.30 | 65.24 | 65.22 |
| 7 | 63.28 | --- | 63.91 | --- | --- | 64.04 | 63.39 | --- | --- | 65.41 | 65.39 | 65.27 |
| 8 | 63.44 | --- | 63.84 | --- | --- | 63.99 | 63.40 | --- | --- | 65.37 | 65.36 | 65.40 |
| 9 | 63.28 | --- | 63.91 | --- | 63.90 | 63.98 | 64.35 | --- | --- | 65.35 | 65.34 | 65.30 |
| 10 | 63.27 | --- | 63.94 | --- | 63.71 | 64.07 | 64.13 | --- | --- | 65.32 | 65.33 | 65.29 |
| 11 | --- | --- | 63.94 | --- | 63.76 | 64.03 | 63.67 | --- | --- | 65.23 | 65.25 | 65.29 |
| 12 | --- | --- | 63.81 | 63.87 | 63.80 | 64.04 | 63.59 | --- | --- | 65.40 | 65.19 | 65.23 |
| 13 | --- | --- | 63.88 | 63.79 | 64.01 | 63.99 | 63.38 | --- | --- | 65.30 | 65.28 | 65.36 |
| 14 | --- | --- | --- | 63.74 | 63.82 | 63.98 | 63.39 | --- | --- | 65.28 | 65.23 | 65.29 |
| 15 | --- | 63.21 | --- | 63.74 | 63.89 | 63.91 | 63.39 | --- | --- | 65.37 | 65.32 | 65.04 |
| 16 | --- | 63.24 | --- | 63.85 | 63.91 | 63.90 | 63.30 | --- | --- | 65.25 | 65.27 | 64.57 |
| 17 | --- | 63.29 | --- | 63.92 | 63.87 | 63.97 | 63.36 | --- | --- | 65.42 | 65.28 | 63.95 |
| 18 | --- | 63.23 | --- | 63.86 | 64.00 | 64.00 | 63.29 | --- | --- | 65.35 | 65.28 | 64.08 |
| 19 | --- | 63.30 | --- | 63.94 | 63.99 | 63.85 | 63.34 | --- | --- | 65.41 | 65.18 | 63.85 |
| 20 | --- | 63.22 | --- | 63.81 | 63.91 | 63.91 | 63.25 | --- | --- | 65.42 | 65.28 | 63.98 |
| 21 | --- | 63.22 | --- | 63.89 | 63.85 | 64.00 | --- | --- | --- | 65.37 | 65.46 | 64.05 |
| 22 | --- | 63.33 | --- | 63.98 | 63.92 | 63.82 | --- | --- | --- | 65.23 | 65.12 | 63.99 |
| 23 | --- | 63.16 | --- | 63.97 | 63.86 | 63.88 | --- | --- | --- | 65.27 | 65.33 | 63.91 |
| 24 | --- | 63.24 | --- | 63.86 | 63.90 | --- | --- | --- | --- | 65.27 | 65.47 | 64.04 |
| 25 | --- | 63.30 | --- | 63.81 | 63.90 | 63.59 | --- | --- | --- | 65.23 | 65.37 | 63.96 |
| 26 | --- | 63.49 | --- | --- | 63.89 | 63.42 | --- | --- | --- | 65.25 | 65.50 | 64.04 |
| 27 | --- | 63.66 | --- | --- | 63.99 | 63.29 | --- | --- | --- | 65.36 | 65.43 | 63.97 |
| 28 | --- | 63.69 | --- | --- | 63.81 | 63.53 | --- | --- | --- | 65.21 | 65.16 | 63.99 |
| 29 | --- | 63.73 | --- | --- | --- | 63.34 | --- | --- | --- | 65.26 | 65.48 | 64.07 |
| 30 | --- | 63.87 | --- | --- | --- | 63.53 | --- | --- | --- | 65.26 | 65.38 | 63.96 |
| 31 | --- | --- | --- | --- | --- | 63.49 | --- | --- | --- | 65.29 | 65.36 | --- |
| MEAN | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 65.31 | 64.65 |
| MAX | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 65.50 | 65.40 |
| MIN | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 65.12 | 63.85 |

## 06339100 KNIFE RIVER AT MANNING, ND

LOCATION.--Lat 47°14'10", long 102°46'10", in SE$^1/_4$NW$^1/_4$ 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$^2$, 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 National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | e0.40 | 1.6 | e1.8 | e1.6 | e1.3 | e1.8 | e30 | 3.7 | 1.3 | 3.6 | 2.6 | 1.1 |
| 2 | e0.35 | 1.5 | e1.8 | e1.5 | e1.3 | e1.7 | e25 | 3.4 | 1.7 | 2.8 | 2.3 | 1.0 |
| 3 | e0.33 | 1.6 | e1.9 | e1.6 | e1.5 | e1.4 | e15 | 3.3 | 1.8 | 2.3 | 2.1 | 0.87 |
| 4 | 0.75 | 1.5 | e1.8 | e1.5 | e1.5 | e1.5 | e10 | 2.8 | 1.5 | 1.8 | 1.6 | 0.69 |
| 5 | 0.87 | 1.6 | e1.7 | e1.5 | e1.6 | e1.6 | e9.0 | 2.5 | 1.5 | 1.4 | 1.4 | 0.66 |
| 6 | 0.72 | 1.5 | e1.6 | e1.4 | e1.5 | e1.5 | e10 | 2.7 | 1.5 | 1.2 | 1.4 | 0.64 |
| 7 | 0.76 | 1.5 | e1.7 | e1.5 | e1.3 | e1.6 | e11 | 3.5 | 1.3 | 1.2 | 1.2 | 0.66 |
| 8 | 0.89 | 1.5 | e1.8 | e1.5 | e1.5 | e1.7 | e10 | 3.9 | 1.4 | 1.1 | 3.9 | 0.74 |
| 9 | 1.1 | 1.5 | e1.9 | e1.6 | e1.6 | e1.8 | e9.0 | 4.4 | 14 | 2.1 | 17 | 0.75 |
| 10 | 0.95 | 1.8 | e1.8 | e1.7 | e1.2 | e1.9 | 9.5 | 7.6 | 344 | 2.1 | 4.3 | 0.66 |
| 11 | 1.3 | 1.7 | e1.8 | e1.6 | e1.2 | e2.0 | 8.0 | 12 | 540 | 1.8 | 2.7 | 0.63 |
| 12 | 1.2 | 1.8 | e1.9 | e1.8 | e1.5 | e2.2 | 8.6 | 15 | 107 | 1.7 | 2.0 | 0.62 |
| 13 | 1.1 | 1.8 | e1.8 | e1.7 | e1.3 | e2.5 | 8.8 | 15 | 42 | 1.6 | 1.4 | 0.69 |
| 14 | 1.0 | 1.8 | e1.9 | e1.6 | e1.2 | e3.5 | 8.8 | 10 | 26 | 1.3 | 1.0 | 0.66 |
| 15 | 1.0 | 1.8 | e1.8 | e1.7 | e1.4 | e6.1 | 7.8 | 7.3 | 18 | 1.0 | 0.81 | 0.61 |
| 16 | 1.0 | 1.8 | e1.7 | e1.7 | e1.3 | e8.5 | 6.8 | 5.5 | 13 | 0.92 | 0.73 | 0.59 |
| 17 | 1.1 | 1.8 | e1.8 | e1.6 | e1.2 | e9.3 | 6.2 | 4.3 | 10 | 1.4 | 0.67 | 0.52 |
| 18 | 1.0 | 1.8 | e1.7 | e1.5 | e1.0 | e7.7 | 7.5 | 3.7 | 12 | 198 | 0.56 | 0.47 |
| 19 | 1.0 | 1.7 | e1.9 | e1.4 | e1.2 | e5.0 | 8.4 | 3.1 | 8.7 | 82 | 0.57 | 0.52 |
| 20 | 1.1 | 1.7 | e1.8 | e1.5 | e1.1 | e4.8 | 9.6 | 2.6 | 6.2 | 34 | 0.55 | 0.59 |
| 21 | 1.2 | 1.6 | e1.9 | e1.6 | e1.2 | e4.5 | 11 | 2.1 | 4.8 | 68 | 1.5 | 0.57 |
| 22 | 1.4 | 1.7 | e1.8 | e1.6 | e1.0 | e4.7 | 13 | 2.0 | 4.2 | 40 | 15 | 0.70 |
| 23 | 1.5 | 1.8 | e1.9 | e1.7 | e1.5 | e4.4 | 10 | 2.0 | 4.0 | 21 | 27 | 0.60 |
| 24 | 1.5 | e2.0 | e1.8 | e1.5 | e2.0 | e4.0 | 7.6 | 1.9 | 31 | 16 | 15 | 0.63 |
| 25 | 1.5 | e1.9 | e1.9 | e1.6 | e2.5 | e3.5 | 6.2 | 2.0 | 41 | 11 | 7.6 | 0.63 |
| 26 | 1.7 | e1.8 | e2.0 | e1.8 | e2.7 | e3.0 | 5.0 | 1.9 | 29 | 9.2 | 4.5 | 0.57 |
| 27 | 2.0 | e1.8 | e1.8 | e1.6 | e2.5 | e5.0 | 4.3 | 1.9 | 16 | 8.5 | 2.9 | 0.52 |
| 28 | 2.1 | e1.7 | e1.9 | e1.4 | e2.3 | e20 | 4.2 | 2.4 | 10 | 6.0 | 2.5 | 0.47 |
| 29 | 1.9 | e1.6 | e1.7 | e1.3 | --- | e85 | 3.8 | 2.5 | 7.1 | 5.0 | 2.0 | 0.44 |
| 30 | 1.6 | e1.7 | e1.6 | e1.3 | --- | e70 | 3.7 | 2.5 | 4.8 | 3.8 | 1.5 | 0.40 |
| 31 | 1.6 | --- | e1.7 | e1.2 | --- | e40 | --- | 2.1 | --- | 3.2 | 1.3 | --- |
| TOTAL | 35.92 | 50.9 | 55.9 | 48.1 | 42.4 | 312.2 | 287.8 | 139.6 | 1304.8 | 535.02 | 129.59 | 19.20 |
| MEAN | 1.159 | 1.697 | 1.803 | 1.552 | 1.514 | 10.07 | 9.593 | 4.503 | 43.49 | 17.26 | 4.180 | 0.640 |
| MAX | 2.1 | 2.0 | 2.0 | 1.8 | 2.7 | 85 | 30 | 15 | 540 | 198 | 27 | 1.1 |
| MIN | 0.33 | 1.5 | 1.6 | 1.2 | 1.0 | 1.4 | 3.7 | 1.9 | 1.3 | 0.92 | 0.55 | 0.40 |
| AC-FT | 71 | 101 | 111 | 95 | 84 | 619 | 571 | 277 | 2590 | 1060 | 257 | 38 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 3.925 | 1.875 | 1.371 | 3.114 | 16.51 | 83.98 | 49.25 | 15.57 | 17.23 | 12.12 | 2.891 | 4.087 |
| MAX | 54.1 | 8.43 | 3.39 | 30.5 | 89.5 | 399 | 485 | 104 | 91.5 | 100 | 32.6 | 68.5 |
| (WY) | 1983 | 1999 | 1999 | 1974 | 1986 | 1972 | 1975 | 1970 | 1970 | 1997 | 1983 | 1978 |
| MIN | 0.000 | 0.057 | 0.066 | 0.000 | 0.20 | 1.37 | 1.32 | 0.45 | 0.077 | 0.018 | 0.000 | 0.000 |
| (WY) | 1991 | 1991 | 1991 | 1991 | 2001 | 1990 | 1990 | 1993 | 1992 | 1992 | 1988 | 1990 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1967 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 7426.96 | | 2961.43 | | | |
| ANNUAL MEAN | 20.35 | | 8.114 | | 17.68 | |
| HIGHEST ANNUAL MEAN | | | | | 48.1 | 1975 |
| LOWEST ANNUAL MEAN | | | | | 0.90 | 1990 |
| HIGHEST DAILY MEAN | 1020 | Jun 15 | 540 | Jun 11 | 3500 | Mar 21 1997 |
| LOWEST DAILY MEAN | 0.10 | Feb 27 | 0.33 | Oct 3 | 0.00 | Sep 18 1972 |
| ANNUAL SEVEN-DAY MINIMUM | 0.12 | Feb 22 | 0.52 | Sep 24 | 0.00 | Aug 17 1973 |
| MAXIMUM PEAK FLOW | | | 798 | Jun 11 | a3600 | Mar 21 1997 |
| MAXIMUM PEAK STAGE | | | 11.70 | Jun 11 | b17.05 | Mar 21 1997 |
| ANNUAL RUNOFF (AC-FT) | 14730 | | 5870 | | 12810 | |
| 10 PERCENT EXCEEDS | 30 | | 11 | | 20 | |
| 50 PERCENT EXCEEDS | 1.7 | | 1.8 | | 1.5 | |
| 90 PERCENT EXCEEDS | 0.36 | | 0.75 | | 0.14 | |

a About
b Backwater from ice
e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 03... | 1440 | .33 | -- | -- | -- | 2070 | 18.0 | 17.0 | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 06... | 1215 | 1.5 | -- | -- | -- | 2250 | 7.5 | 4.0 | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 12... | 1135 | 1.9 | -- | -- | -- | 2590 | -10.0 | .0 | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 07... | 1100 | 1.3 | -- | -- | -- | 2890 | 3.0 | .0 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 09... | 1135 | 9.0 | -- | -- | -- | 750 | 10.0 | 3.0 | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 16... | 0915 | 5.6 | 8.2 | 8.4 | 2070 | 2010 | 2.0 | 10.0 | 220 | 42.0 | 28.0 | 9.90 | 11 |
| JUN | | | | | | | | | | | | | |
| 11... | 1545 | 717 | -- | -- | -- | 763 | 25.0 | 13.8 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 25... | 1100 | 11 | 8.0 | 7.6 | 642 | 646 | 20.0 | 23.0 | 100 | 24.0 | 10.0 | 10.0 | 4 |
| SEP | | | | | | | | | | | | | |
| 05... | 1120 | .70 | -- | -- | -- | 1460 | 20.0 | 19.6 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 03... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 06... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 12... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 07... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 16... | 380 | 78 | 489 | 16.0 | .50 | 600 | 21.4 | 1410 | 1370 | 1.0 | 170 | <1 | 40 |
| JUN | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 25... | 99.0 | 65 | 180 | 12.0 | .20 | 150 | 13.5 | 438 | 413 | 2.0 | 240 | <1 | 20 |
| SEP | | | | | | | | | | | | | |
| 05... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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... | -- | -- | -- | -- | -- |
| NOV | | | | | |
| 06... | -- | -- | -- | -- | -- |
| DEC | | | | | |
| 12... | -- | -- | -- | -- | -- |
| FEB | | | | | |
| 07... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 09... | -- | -- | -- | -- | -- |
| MAY | | | | | |
| 16... | 10 | <.10 | 2 | <1 | 640 |
| JUN | | | | | |
| 11... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 25... | 10 | <.10 | 2 | <1 | 220 |
| SEP | | | | | |
| 05... | -- | -- | -- | -- | -- |

< Less than

## 06339500 KNIFE RIVER NEAR GOLDEN VALLEY, ND

LOCATION.--Lat 47°09'40", long 102°03'39", in SE$^{1}/_{4}$ sec.34, T.143 N., R.90 W., Mercer County, Hydrologic Unit 10130201, on right 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$^{2}$, 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 National Geodetic Vertical Datum of 1929. See WSP 1729 or 1917 for history of changes prior to May 1, 1946.

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5.4 | 7.8 | e8.6 | e5.0 | e6.1 | e5.6 | e65 | 30 | 3.7 | 36 | 27 | 22 |
| 2 | 5.0 | 8.9 | e8.7 | e5.1 | e6.1 | e5.4 | e170 | 25 | 3.6 | 26 | 19 | 19 |
| 3 | 5.0 | 8.5 | e8.7 | e5.1 | e6.2 | e5.5 | e130 | 23 | 4.0 | 20 | 15 | 14 |
| 4 | 4.7 | 7.8 | e8.8 | e5.1 | e6.3 | e5.5 | e95 | 20 | 4.0 | 17 | 13 | 12 |
| 5 | 4.4 | 7.6 | e8.9 | e5.3 | e6.4 | e5.6 | e75 | 19 | 3.6 | 14 | 12 | 11 |
| 6 | 4.4 | 7.5 | e8.9 | e5.5 | e6.6 | e5.8 | e65 | 19 | 3.5 | 12 | 11 | 8.0 |
| 7 | 4.5 | 7.8 | e8.8 | e5.7 | e6.9 | e5.9 | e55 | 19 | 3.4 | 11 | 9.2 | 6.6 |
| 8 | 4.7 | 9.0 | e8.7 | e5.9 | e7.3 | e6.1 | e53 | 21 | 3.1 | 9.6 | 9.7 | 6.0 |
| 9 | 4.5 | 10 | e8.7 | e6.1 | e7.5 | e6.3 | e50 | 25 | 22 | 12 | 9.5 | 5.3 |
| 10 | 4.5 | 11 | e8.8 | e6.5 | e7.5 | e6.3 | e50 | 26 | 136 | 12 | 8.0 | 4.7 |
| 11 | 4.6 | 11 | e9.0 | e7.0 | e7.5 | e6.4 | e50 | 26 | 498 | 11 | 6.5 | 4.2 |
| 12 | 5.0 | 11 | e9.0 | e7.3 | e7.5 | e6.6 | e52 | 30 | 1210 | 10 | 5.5 | 3.7 |
| 13 | 5.2 | 9.9 | e8.8 | e7.5 | e7.4 | e6.9 | e53 | 35 | 737 | 12 | 7.7 | 3.3 |
| 14 | 5.5 | 9.6 | e8.7 | e7.7 | e7.3 | e7.4 | e52 | 37 | 373 | 12 | 23 | 3.1 |
| 15 | 5.5 | 9.4 | e8.8 | e7.7 | e7.3 | e7.7 | e50 | 45 | 208 | 10 | 23 | 2.9 |
| 16 | 5.5 | 9.1 | e8.8 | e7.8 | e7.3 | e8.0 | e45 | 45 | 148 | 8.3 | 16 | 2.7 |
| 17 | 5.2 | 8.9 | e8.9 | e7.8 | e7.2 | e8.6 | e45 | 42 | 111 | 13 | 12 | 2.4 |
| 18 | 5.4 | e8.7 | e8.9 | e7.8 | e7.1 | e7.5 | e48 | 37 | 85 | 16 | 11 | 2.2 |
| 19 | 5.5 | e8.6 | e8.8 | e7.7 | e7.1 | e8.0 | e50 | 31 | 66 | 12 | 13 | 2.4 |
| 20 | 5.7 | e8.8 | e8.3 | e7.7 | e7.0 | e9.1 | e49 | 24 | 57 | 23 | 11 | 2.3 |
| 21 | 6.2 | e9.1 | e8.0 | e7.8 | e6.8 | e9.9 | 50 | 18 | 45 | 62 | 8.6 | 2.2 |
| 22 | 6.4 | e9.3 | e7.9 | e7.8 | e6.6 | e10 | 56 | 14 | 38 | 144 | 7.6 | 2.3 |
| 23 | 6.2 | e9.6 | e7.2 | e7.8 | e6.5 | e9.4 | 60 | 13 | 34 | 95 | 6.2 | 2.5 |
| 24 | 6.5 | e9.7 | e6.3 | e7.8 | e6.1 | e8.4 | 55 | 11 | 31 | 76 | 5.6 | 3.0 |
| 25 | 6.6 | e9.6 | e5.8 | e7.7 | e6.0 | e8.8 | 55 | 9.2 | 31 | 84 | 5.4 | 3.0 |
| 26 | 6.5 | e9.4 | e5.4 | e7.6 | e5.9 | e9.4 | 58 | 7.8 | 32 | 54 | 19 | 3.4 |
| 27 | 6.7 | e8.6 | e5.3 | e7.6 | e5.8 | e17 | 50 | 7.0 | 37 | 38 | 33 | 3.1 |
| 28 | 7.0 | e8.6 | e5.2 | e7.4 | e5.7 | e40 | 44 | 6.5 | 43 | 33 | 41 | 3.3 |
| 29 | 7.2 | e8.6 | e5.1 | e7.0 | --- | e60 | 39 | 6.1 | 61 | 40 | 36 | 3.8 |
| 30 | 7.0 | e8.6 | e5.1 | e6.8 | --- | e58 | 35 | 5.2 | 44 | 43 | 25 | 4.1 |
| 31 | 7.4 | --- | e5.0 | e6.3 | --- | e55 | --- | 4.6 | --- | 34 | 24 | --- |
| TOTAL | 173.9 | 272.0 | 241.9 | 212.9 | 189.0 | 420.1 | 1804 | 681.4 | 4075.9 | 999.9 | 473.5 | 168.5 |
| MEAN | 5.610 | 9.067 | 7.803 | 6.868 | 6.750 | 13.55 | 60.13 | 21.98 | 135.9 | 32.25 | 15.27 | 5.617 |
| MAX | 7.4 | 11 | 9.0 | 7.8 | 7.5 | 60 | 170 | 45 | 1210 | 144 | 41 | 22 |
| MIN | 4.4 | 7.5 | 5.0 | 5.0 | 5.7 | 5.4 | 35 | 4.6 | 3.1 | 8.3 | 5.4 | 2.2 |
| AC-FT | 345 | 540 | 480 | 422 | 375 | 833 | 3580 | 1350 | 8080 | 1980 | 939 | 334 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1903 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 16.44 | 11.23 | 7.243 | 8.902 | 41.52 | 343.4 | 299.1 | 87.59 | 139.1 | 48.23 | 33.69 | 14.87 |
| 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 | 0.46 | 1.93 | 0.52 | 0.026 | 0.000 | 2.30 | 6.98 | 1.42 | 1.03 | 1.91 | 0.28 | 0.12 |
| (WY) | 1993 | 1962 | 1962 | 1962 | 1959 | 1964 | 1981 | 1923 | 1961 | 1992 | 1959 | 1992 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1903 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 31858.3 | | 9713.0 | | | |
| ANNUAL MEAN | 87.28 | | 26.61 | | 87.33 | |
| HIGHEST ANNUAL MEAN | | | | | 235 | 1982 |
| LOWEST ANNUAL MEAN | | | | | 5.38 | 1991 |
| HIGHEST DAILY MEAN | 1750 | Mar 14 | 1210 | Jun 12 | 10300 | Apr 17 1950 |
| LOWEST DAILY MEAN | 1.6 | Feb 26 | 2.2 | Sep 18 | 0.00 | Sep 6 1905 |
| ANNUAL SEVEN-DAY MINIMUM | 1.7 | Feb 23 | 2.3 | Sep 17 | 0.00 | Jan 22 1959 |
| MAXIMUM PEAK FLOW | | | 1380 | Jun 12 | 11200 | May 9 1970 |
| MAXIMUM PEAK STAGE | | | 10.53 | Jun 12 | a26.70 | Mar 26 1943 |
| ANNUAL RUNOFF (AC-FT) | 63190 | | 19270 | | 63270 | |
| 10 PERCENT EXCEEDS | 189 | | 52 | | 118 | |
| 50 PERCENT EXCEEDS | 8.5 | | 8.6 | | 10 | |
| 90 PERCENT EXCEEDS | 2.5 | | 4.7 | | 2.1 | |

a From floodmark
e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 25... | 1305 | 6.8 | -- | -- | -- | 2220 | -3.0 | 1.0 | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 19... | 1335 | 8.9 | -- | -- | -- | 2730 | -3.0 | .0 | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 13... | 1230 | 7.4 | -- | -- | -- | 3640 | 5.0 | .0 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 27... | 1220 | 17 | -- | -- | -- | 1780 | 5.0 | .0 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 09... | 1410 | 50 | -- | -- | -- | 1210 | 10.0 | 5.0 | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 20... | 1230 | 25 | 8.2 | 8.3 | 2670 | 2660 | 15.0 | 12.5 | 390 | 65.0 | 55.0 | 13.0 | 11 |
| JUN | | | | | | | | | | | | | |
| 09... | 1340 | 32 | -- | -- | -- | 2280 | 15.0 | 15.3 | -- | -- | -- | -- | -- |
| 12... | 1330 | 1320 | -- | -- | -- | 780 | 16.5 | 13.2 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 25... | 1400 | 81 | 8.2 | 7.9 | 1070 | 1080 | 25.0 | 24.0 | 140 | 28.0 | 16.0 | 12.0 | 7 |
| SEP | | | | | | | | | | | | | |
| 05... | 1330 | 10 | -- | -- | -- | 1440 | 23.0 | 22.5 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 27... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 20... | 500 | 73 | 588 | 9.4 | .60 | 930 | 127 | 1860 | 1930 | 1.0 | 50 | <1 | 50 |
| JUN | | | | | | | | | | | | | |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 12... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 25... | 190 | 73 | 238 | 8.2 | .30 | 320 | 163 | 745 | 718 | 3.0 | 140 | <1 | 20 |
| SEP | | | | | | | | | | | | | |
| 05... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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 | | | | | |
| 25... | -- | -- | -- | -- | -- |
| DEC | | | | | |
| 19... | -- | -- | -- | -- | -- |
| FEB | | | | | |
| 13... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 27... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 09... | -- | -- | -- | -- | -- |
| MAY | | | | | |
| 20... | 10 | <.10 | 3 | <1 | 860 |
| JUN | | | | | |
| 09... | -- | -- | -- | -- | -- |
| 12... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 25... | 10 | .10 | 1 | <1 | 330 |
| SEP | | | | | |
| 05... | -- | -- | -- | -- | -- |

< Less than

## 06340000 SPRING CREEK AT ZAP, ND

LOCATION.--Lat 47°17'10", long 101°55'31", in SE$^1/_4$SE$^1/_4$SW$^1/_4$ sec.14, T.144 N., R.89 W., Mercer County, Hydrologic Unit 10130201, on left bank 250 ft downstream from Burlington Northern Railway bridge in Zap and 9 mi upstream from mouth.

DRAINAGE AREA.--549 mi$^2$.

### 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 National Geodetic Vertical Datum of 1929. 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 estimated daily discharges, which are fair. 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 8.6 | 12 | e9.6 | e6.1 | e7.2 | e5.6 | e70 | 16 | 7.6 | 16 | 20 | 12 |
| 2 | 9.2 | 11 | e9.6 | e6.2 | e7.1 | e5.6 | e50 | 16 | 8.1 | 14 | 17 | 11 |
| 3 | 8.6 | 11 | e9.7 | e6.5 | e7.1 | e5.6 | e40 | 16 | 9.2 | 11 | 16 | 9.6 |
| 4 | 8.3 | 11 | e9.9 | e6.7 | e7.4 | e5.6 | e35 | 15 | 9.1 | 10 | 14 | 9.4 |
| 5 | 8.8 | 11 | e9.8 | e7.0 | e7.5 | e5.6 | e32 | 15 | 8.7 | 9.1 | 12 | 8.9 |
| 6 | 8.3 | 11 | e9.7 | e7.2 | e7.5 | e5.8 | e30 | 15 | 8.5 | 8.4 | 11 | 8.6 |
| 7 | 8.6 | 12 | e9.7 | e7.4 | e7.6 | e6.0 | e28 | 16 | 8.1 | 8.0 | 11 | 8.4 |
| 8 | 8.8 | 15 | e9.2 | e7.5 | e7.8 | e6.2 | e28 | 18 | 8.8 | 7.8 | 11 | 8.1 |
| 9 | 8.7 | 13 | e9.2 | e7.7 | e8.0 | e6.3 | e28 | 23 | 18 | 9.4 | 12 | 7.9 |
| 10 | 8.9 | 12 | e9.4 | e7.9 | e8.0 | e6.4 | e28 | 25 | 66 | 10 | 11 | 7.8 |
| 11 | 9.1 | 11 | e9.3 | e7.9 | e8.0 | e6.5 | 28 | 25 | 265 | 9.5 | 11 | 7.1 |
| 12 | 9.5 | 11 | e9.3 | e8.0 | e8.0 | e6.7 | 28 | 27 | 135 | 9.1 | 11 | 6.9 |
| 13 | 9.5 | 11 | e9.3 | e8.1 | e8.0 | e6.9 | 28 | 24 | 77 | 8.3 | 9.6 | 6.9 |
| 14 | 9.3 | 11 | e9.2 | e8.1 | e7.9 | e7.8 | 27 | 20 | 41 | 8.0 | 9.4 | 6.6 |
| 15 | 9.2 | 11 | e9.1 | e8.1 | e7.8 | e8.8 | 25 | 18 | 30 | 7.4 | 9.2 | 6.6 |
| 16 | 9.2 | 11 | e9.0 | e8.1 | e7.8 | e9.9 | 24 | 16 | 26 | 7.0 | 9.2 | 6.4 |
| 17 | 9.5 | 11 | e9.0 | e8.0 | e7.8 | e10 | 23 | 14 | 24 | 8.4 | 12 | 6.3 |
| 18 | 9.4 | 11 | e8.7 | e8.1 | e7.6 | e8.9 | 24 | 12 | 20 | 9.8 | 11 | 6.1 |
| 19 | 9.5 | e11 | e8.5 | e8.0 | e7.5 | e9.9 | 25 | 11 | 17 | 9.1 | 12 | 6.1 |
| 20 | 9.3 | e11 | e8.2 | e8.1 | e7.5 | e13 | 25 | 11 | 15 | 9.7 | 59 | 5.8 |
| 21 | 9.3 | e11 | e8.0 | e8.1 | e7.4 | e15 | 28 | 9.7 | 13 | 9.8 | 67 | 5.7 |
| 22 | 9.3 | e11 | e7.9 | e8.1 | e7.2 | e15 | 26 | 9.2 | 11 | 8.6 | 67 | 5.7 |
| 23 | 9.6 | e11 | e7.8 | e8.1 | e7.0 | e14 | 24 | 9.5 | 11 | 8.5 | 50 | 5.8 |
| 24 | 10 | e10 | e7.6 | e8.1 | e6.6 | e12 | 23 | 9.9 | 13 | 8.0 | 34 | 5.8 |
| 25 | 9.9 | e10 | e7.5 | e8.1 | e6.3 | e8.4 | 19 | 9.6 | 20 | 30 | 25 | 5.8 |
| 26 | 9.8 | e10 | e7.1 | e8.1 | e6.0 | e10 | 17 | 13 | 23 | 47 | 20 | 5.8 |
| 27 | 10 | e10 | e6.9 | e8.1 | e5.8 | e31 | 17 | 14 | 20 | 39 | 17 | 6.3 |
| 28 | 12 | e10 | e6.7 | e8.0 | e5.7 | e160 | 17 | 12 | 18 | 32 | 16 | 6.8 |
| 29 | 12 | e10 | e6.5 | e7.9 | --- | e215 | 17 | 10 | 19 | 28 | 15 | 7.0 |
| 30 | 13 | e9.6 | e6.3 | e7.6 | --- | e175 | 16 | 9.2 | 19 | 25 | 14 | 6.7 |
| 31 | 14 | --- | e6.1 | e7.4 | --- | e110 | --- | 8.2 | --- | 23 | 13 | --- |
| TOTAL | 299.2 | 331.6 | 263.8 | 238.3 | 205.1 | 912.5 | 830 | 467.3 | 969.1 | 448.9 | 626.4 | 217.9 |
| MEAN | 9.652 | 11.05 | 8.510 | 7.687 | 7.325 | 29.44 | 27.67 | 15.07 | 32.30 | 14.48 | 20.21 | 7.263 |
| MAX | 14 | 15 | 9.9 | 8.1 | 8.0 | 215 | 70 | 27 | 265 | 47 | 67 | 12 |
| MIN | 8.3 | 9.6 | 6.1 | 6.1 | 5.7 | 5.6 | 16 | 8.2 | 7.6 | 7.0 | 9.2 | 5.7 |
| AC-FT | 593 | 658 | 523 | 473 | 407 | 1810 | 1650 | 927 | 1920 | 890 | 1240 | 432 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1924 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 10.66 | 9.810 | 6.734 | 5.810 | 27.03 | 159.3 | 136.3 | 36.23 | 42.27 | 25.44 | 11.07 | 7.796 |
| 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 | 0.80 | 0.000 | 0.000 | 3.39 | 9.41 | 5.77 | 3.10 | 1.84 | 0.96 | 1.10 |
| (WY) | 1959 | 1962 | 1962 | 1959 | 1949 | 1949 | 1992 | 1992 | 1961 | 1961 | 1961 | 1958 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1924 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 14370.3 | | 5810.1 | | | |
| ANNUAL MEAN | 39.37 | | 15.92 | | 39.91 | |
| HIGHEST ANNUAL MEAN | | | | | 99.5 | 1972 |
| LOWEST ANNUAL MEAN | | | | | 6.95 | 1961 |
| HIGHEST DAILY MEAN | 1950 | Mar 14 | 265 | Jun 11 | 5640 | Apr 7 1952 |
| LOWEST DAILY MEAN | 4.5 | Jan 1 | 5.6 | Mar 1 | 0.00 | Jan 30 1946 |
| ANNUAL SEVEN-DAY MINIMUM | 5.4 | Jan 1 | 5.6 | Feb 27 | 0.00 | Jan 30 1946 |
| MAXIMUM PEAK FLOW | | | 361 | Jun 11 | 6130 | Apr 7 1952 |
| MAXIMUM PEAK STAGE | | | 7.28 | Jun 11 | 20.70 | Mar 15 1972 |
| INSTANTANEOUS LOW FLOW | | | | | 0.00 | Jan 30 1946 |
| ANNUAL RUNOFF (AC-FT) | 28500 | | 11520 | | 28910 | |
| 10 PERCENT EXCEEDS | 67 | | 27 | | 51 | |
| 50 PERCENT EXCEEDS | 11 | | 9.6 | | 9.0 | |
| 90 PERCENT EXCEEDS | 6.5 | | 6.7 | | 3.0 | |

e Estimated

06340000 SPRING CREEK AT ZAP, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969-70, 1974 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 22... | 1050 | 9.3 | -- | -- | -- | 1820 | 5.0 | 5.3 | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 12... | 1115 | 9.5 | -- | -- | -- | 2020 | -3.0 | .0 | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 24... | 1045 | 8.1 | -- | -- | -- | 2190 | -2.0 | .0 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 26... | 1145 | 10 | -- | -- | -- | 860 | -10.0 | .0 | -- | -- | -- | -- | -- |
| 28... | 1500 | 142 | -- | -- | -- | 680 | 21.0 | 2.0 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 23... | 1130 | 24 | 7.9 | 8.1 | 1420 | 1440 | 20.0 | 13.0 | 360 | 70.0 | 45.0 | 11.0 | 4 |
| JUN | | | | | | | | | | | | | |
| 10... | 1330 | 40 | -- | -- | -- | 1620 | 16.0 | 14.3 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 23... | 1430 | 8.6 | 8.2 | 8.4 | 1390 | 1410 | 25.0 | 24.0 | 280 | 43.0 | 41.0 | 9.80 | 6 |
| AUG | | | | | | | | | | | | | |
| 22... | 1115 | 68 | -- | -- | -- | 1490 | 16.0 | 19.5 | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 24... | 1105 | 5.8 | -- | -- | -- | 1550 | 12.8 | 9.6 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 22... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 12... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 26... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 28... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 23... | 180 | 51 | 320 | 8.5 | .30 | 460 | 65.3 | 1000 | 967 | 1.0 | 90 | <1 | 50 |
| JUN | | | | | | | | | | | | | |
| 10... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 23... | 230 | 63 | 357 | 8.2 | .40 | 430 | 22.8 | 982 | 977 | 3.0 | 100 | <1 | 50 |
| AUG | | | | | | | | | | | | | |
| 22... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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 | | | | | |
| 22... | -- | -- | -- | -- | -- |
| DEC | | | | | |
| 12... | -- | -- | -- | -- | -- |
| JAN | | | | | |
| 24... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 26... | -- | -- | -- | -- | -- |
| 28... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 23... | 40 | <.10 | <1 | <1 | 1600 |
| JUN | | | | | |
| 10... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 23... | 30 | <.10 | <1 | <1 | 990 |
| AUG | | | | | |
| 22... | -- | -- | -- | -- | -- |
| SEP | | | | | |
| 24... | -- | -- | -- | -- | -- |

< Less than

## 06340500 KNIFE RIVER AT HAZEN, ND

LOCATION.--Lat 47°17'07", long 101°37'18", in SW$^1/_4$SE$^1/_4$SE$^1/_4$ 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$^2$, 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 National Geodetic Vertical Datum of 1929. Prior to Sept. 25, 1947, nonrecording gages at same site and datum.

REMARKS.--Records good except for 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 30 | 38 | e31 | e20 | e21 | e20 | e200 | 93 | 40 | e85 | 56 | 118 |
| 2 | 29 | 36 | e31 | e20 | e20 | e20 | e170 | 87 | 44 | e68 | 49 | 68 |
| 3 | 31 | 36 | e33 | e20 | e21 | e20 | 227 | 79 | 46 | 52 | 43 | 53 |
| 4 | 30 | 36 | e34 | e21 | e21 | e19 | 236 | 75 | 45 | 45 | 38 | 44 |
| 5 | 28 | 37 | e35 | e21 | e22 | e19 | 193 | 71 | 45 | 41 | 35 | 37 |
| 6 | 29 | 37 | e35 | e22 | e23 | e19 | 173 | 72 | 45 | 38 | 32 | 35 |
| 7 | 30 | 36 | e33 | e24 | e24 | e20 | 176 | 73 | 44 | 36 | 31 | 33 |
| 8 | 29 | 36 | e33 | e25 | e25 | e20 | 170 | 77 | 44 | 33 | 30 | 30 |
| 9 | 30 | 38 | e33 | e26 | e26 | e21 | 139 | 84 | 206 | 37 | 35 | 29 |
| 10 | 30 | 38 | e35 | e26 | e26 | e21 | 141 | 94 | 368 | 38 | 29 | 28 |
| 11 | 31 | 38 | e34 | e26 | e27 | e22 | 137 | 99 | 563 | 36 | 28 | 26 |
| 12 | 31 | 38 | e34 | e26 | e27 | e22 | 138 | 95 | 998 | 34 | 26 | 25 |
| 13 | 31 | 39 | e35 | e26 | e26 | e23 | 138 | 92 | 1260 | 33 | 24 | 23 |
| 14 | 32 | 38 | e35 | e26 | e26 | e26 | 132 | 92 | 934 | 31 | 23 | 23 |
| 15 | 31 | 39 | e35 | e26 | e25 | e28 | 127 | 85 | 544 | 30 | 25 | 23 |
| 16 | 32 | 44 | e34 | e25 | e26 | e31 | 120 | 83 | 295 | 31 | 39 | 23 |
| 17 | 32 | 43 | e34 | e25 | e26 | e34 | 111 | 82 | 198 | 35 | 44 | 22 |
| 18 | 32 | 41 | e34 | e25 | e25 | e37 | 117 | 80 | 154 | 35 | 39 | 21 |
| 19 | 33 | 38 | e34 | e26 | e25 | e40 | 122 | 76 | 128 | 36 | 36 | 19 |
| 20 | 33 | 36 | e34 | e26 | e25 | e43 | 123 | 73 | 102 | 40 | 33 | 18 |
| 21 | 33 | 37 | e34 | e26 | e25 | e46 | 125 | 67 | 89 | 38 | 63 | 18 |
| 22 | 34 | 37 | e33 | e26 | e24 | e46 | 120 | 62 | 78 | 43 | 74 | 18 |
| 23 | 38 | 37 | e32 | e26 | e24 | e45 | 115 | 60 | 70 | 101 | 70 | 19 |
| 24 | 40 | 37 | e30 | e26 | e24 | e43 | 116 | 58 | 65 | 92 | 56 | 19 |
| 25 | 39 | 37 | e28 | e26 | e23 | e44 | 108 | 57 | 65 | 72 | 44 | 20 |
| 26 | 39 | e36 | e25 | e25 | e22 | e45 | 102 | 55 | 67 | 93 | 38 | 22 |
| 27 | 39 | e36 | e23 | e25 | e22 | e60 | 107 | 55 | 71 | 85 | 34 | 24 |
| 28 | 39 | e36 | e22 | e24 | e21 | e140 | 103 | 57 | 68 | 68 | 43 | 26 |
| 29 | 39 | e34 | e21 | e24 | --- | e230 | 99 | 52 | e78 | 58 | 56 | 26 |
| 30 | 40 | e32 | e21 | e23 | --- | e310 | 97 | 48 | e95 | 54 | 146 | 26 |
| 31 | 38 | --- | e20 | e22 | --- | e270 | --- | 44 | --- | 57 | 622 | --- |
| TOTAL | 1032 | 1121 | 965 | 755 | 672 | 1784 | 4182 | 2277 | 6849 | 1575 | 1941 | 916 |
| MEAN | 33.29 | 37.37 | 31.13 | 24.35 | 24.00 | 57.55 | 139.4 | 73.45 | 228.3 | 50.81 | 62.61 | 30.53 |
| MAX | 40 | 44 | 35 | 26 | 27 | 310 | 236 | 99 | 1260 | 101 | 622 | 118 |
| MIN | 28 | 32 | 20 | 20 | 20 | 19 | 97 | 44 | 40 | 30 | 23 | 18 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 38.87 | 32.04 | 22.56 | 20.23 | 96.17 | 692.0 | 505.3 | 162.1 | 224.4 | 117.5 | 49.04 | 34.29 |
| 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 | 0.70 | 0.000 | 11.6 | 26.3 | 17.0 | 8.70 | 10.5 | 2.00 | 0.50 |
| (WY) | 1962 | 1962 | 1962 | 1962 | 1962 | 1965 | 1981 | 1931 | 1961 | 1961 | 1933 | 1933 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1929 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 60713 | | 24069 | | | |
| ANNUAL MEAN | 166.3 | | 65.94 | | 167.1 | |
| HIGHEST ANNUAL MEAN | | | | | 441 | 1943 |
| LOWEST ANNUAL MEAN | | | | | 21.7 | 1991 |
| HIGHEST DAILY MEAN | 4710 | Mar 14 | 1260 | Jun 13 | 22400 | Mar 27 1943 |
| LOWEST DAILY MEAN | 17 | Feb 8 | 18 | Sep 20 | 0.00 | Jan 21 1933 |
| ANNUAL SEVEN-DAY MINIMUM | 17 | Feb 7 | 19 | Sep 19 | 0.00 | Jan 21 1933 |
| MAXIMUM PEAK FLOW | | | 1390 | Jun 13 | 35300 | Jun 24 1966 |
| MAXIMUM PEAK STAGE | | | 8.70 | Jun 13 | 27.01 | Jun 24 1966 |
| 10 PERCENT EXCEEDS | 312 | | 120 | | 250 | |
| 50 PERCENT EXCEEDS | 38 | | 36 | | 33 | |
| 90 PERCENT EXCEEDS | 20 | | 22 | | 10 | |

e Estimated

06340500 KNIFE RIVER AT HAZEN, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1950, 1951, 1969 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 22... | 1315 | 33 | -- | -- | -- | 1860 | 7.0 | 6.6 | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 10... | 1330 | 35 | -- | -- | -- | 2290 | -3.0 | .0 | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 24... | 1225 | 26 | -- | -- | -- | 2480 | 1.0 | .0 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 02... | 1645 | 162 | -- | -- | -- | 1830 | -10.0 | 1.0 | -- | -- | -- | -- | -- |
| 12... | 1145 | 141 | -- | -- | -- | 1220 | 10.0 | 3.0 | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 09... | 1130 | 83 | 8.3 | 8.3 | 1980 | 1950 | 3.0 | 10.0 | 440 | 81.0 | 57.0 | 11.0 | 6 |
| JUN | | | | | | | | | | | | | |
| 12... | 1035 | 863 | -- | -- | -- | 1870 | 14.5 | 15.4 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 12... | 1100 | 35 | -- | -- | -- | 1650 | 25.0 | 22.7 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 15... | 1115 | 23 | 7.9 | 8.2 | -- | 1170 | 21.0 | 19.0 | 270 | 53.0 | 33.0 | 12.0 | 6 |
| SEP | | | | | | | | | | | | | |
| 24... | 1340 | 19 | -- | -- | -- | 1710 | 11.5 | 9.9 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 22... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 10... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 02... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 12... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 09... | 290 | 58 | 430 | 9.3 | .30 | 670 | 312 | 1400 | 1380 | <1.0 | 90 | <1 | 50 |
| JUN | | | | | | | | | | | | | |
| 12... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 12... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 15... | 210 | 62 | 403 | 10.0 | .40 | 330 | 56.5 | 906 | 890 | 3.0 | 70 | 1 | 30 |
| SEP | | | | | | | | | | | | | |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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 | | | | | |
| 22... | -- | -- | -- | -- | -- |
| DEC | | | | | |
| 10... | -- | -- | -- | -- | -- |
| JAN | | | | | |
| 24... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 02... | -- | -- | -- | -- | -- |
| 12... | -- | -- | -- | -- | -- |
| MAY | | | | | |
| 09... | 40 | <.10 | 2 | <1 | 1500 |
| JUN | | | | | |
| 12... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 12... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 15... | 10 | <.10 | 3 | <1 | 830 |
| SEP | | | | | |
| 24... | -- | -- | -- | -- | -- |

< Less than

## 06340700 MISSOURI RIVER NEAR STANTON, ND

LOCATION.--Lat 47°17'14", long 101°20'25", in SW$^{1}/_{4}$ 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$^{2}$, 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 National Geodetic Vertical Datum of 1929 (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, 8.30 ft, Nov. 1, 2001.

GAGE HEIGHT FROM DCP, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 8.43 | 8.30 | 9.25 | --- | --- | --- | 8.99 | 8.75 | 11.35 | 11.34 | 11.38 | 11.60 |
| 2 | 8.48 | 8.41 | 9.33 | --- | --- | --- | 8.93 | 8.71 | 11.49 | 11.22 | 11.27 | 11.45 |
| 3 | 8.46 | 8.37 | 9.32 | --- | --- | --- | 8.93 | 8.79 | 11.45 | 11.37 | 11.42 | 11.54 |
| 4 | 8.41 | 8.54 | 9.32 | --- | --- | --- | 8.95 | 8.77 | 11.29 | 11.38 | 11.38 | 11.47 |
| 5 | 8.43 | 8.52 | 9.31 | --- | --- | --- | 8.91 | 8.78 | 11.47 | 11.36 | 11.52 | 11.41 |
| 6 | 8.52 | 8.50 | 9.28 | 9.74 | --- | --- | 8.87 | 8.92 | 11.36 | 11.27 | 11.49 | 11.38 |
| 7 | 8.45 | 8.54 | 9.31 | 9.65 | --- | --- | 8.85 | 8.88 | 11.47 | 11.37 | 11.49 | 11.39 |
| 8 | 8.67 | 8.43 | 9.37 | 9.54 | --- | --- | 8.78 | 9.11 | 11.39 | 11.37 | 11.45 | 11.48 |
| 9 | 8.46 | 8.51 | 9.36 | 9.43 | --- | --- | 8.76 | 8.80 | 11.51 | 11.27 | 11.40 | 11.43 |
| 10 | 8.56 | 8.51 | 9.42 | 9.49 | --- | --- | 8.65 | 8.87 | 11.38 | 11.27 | 11.46 | 11.38 |
| 11 | 8.43 | 8.42 | 9.39 | 9.34 | 10.00 | --- | 8.63 | 9.97 | 11.41 | 11.29 | 11.42 | 11.38 |
| 12 | 8.51 | 8.46 | 9.30 | 9.36 | --- | --- | 8.73 | 9.85 | 11.48 | 11.36 | 11.33 | --- |
| 13 | 8.42 | 8.48 | 9.36 | 9.44 | --- | --- | 8.60 | 9.40 | 11.56 | 11.30 | 11.46 | --- |
| 14 | 8.41 | 8.53 | 9.38 | 9.23 | --- | --- | 8.59 | 9.05 | 11.59 | 11.36 | 11.43 | --- |
| 15 | 8.39 | 8.49 | 9.39 | 9.42 | 9.65 | --- | 8.63 | 8.68 | 11.54 | 11.44 | 11.46 | --- |
| 16 | 8.45 | 8.52 | 9.40 | 9.45 | 9.62 | --- | 8.60 | 8.64 | 11.49 | 11.33 | 11.46 | --- |
| 17 | 8.50 | 8.55 | 9.35 | --- | 9.64 | --- | 8.60 | 8.62 | 11.51 | 11.42 | 11.42 | --- |
| 18 | 8.41 | 8.46 | 9.30 | --- | 9.71 | --- | 8.68 | 8.55 | 11.27 | 11.32 | 11.44 | --- |
| 19 | 8.42 | 8.58 | --- | --- | --- | --- | 8.57 | 8.60 | 11.43 | 11.39 | 11.34 | --- |
| 20 | 8.47 | 8.49 | 9.32 | --- | --- | --- | 8.71 | 8.65 | 11.38 | 11.40 | 11.39 | --- |
| 21 | 8.46 | 8.50 | 9.35 | --- | --- | --- | 8.62 | 8.62 | 11.37 | 11.34 | 11.62 | --- |
| 22 | 8.49 | 8.65 | 9.35 | --- | 9.68 | --- | 8.69 | 8.76 | 11.42 | 11.21 | 11.25 | --- |
| 23 | 8.47 | 8.43 | --- | --- | 9.50 | --- | 8.71 | 8.53 | 11.39 | 11.33 | 11.42 | --- |
| 24 | 8.54 | 8.54 | --- | 9.62 | 9.41 | 9.56 | 8.53 | 8.54 | 11.41 | 11.38 | 11.62 | 9.79 |
| 25 | 8.52 | 8.67 | --- | 9.60 | 9.46 | --- | 8.60 | 8.83 | 11.29 | 11.39 | 11.53 | 9.65 |
| 26 | 8.52 | 8.83 | --- | 9.63 | --- | 9.40 | 9.28 | 9.48 | 11.38 | 11.36 | 11.47 | 9.77 |
| 27 | 8.47 | 9.19 | 9.33 | --- | --- | 9.43 | 8.95 | 10.25 | 11.31 | 11.39 | 11.56 | 9.74 |
| 28 | 8.61 | 9.18 | 9.37 | --- | 9.53 | 8.94 | 8.72 | 10.95 | 11.39 | 11.38 | 11.41 | 9.73 |
| 29 | 8.49 | 9.27 | 9.23 | --- | --- | 8.94 | 9.06 | 11.35 | 11.33 | 11.43 | 11.71 | 9.80 |
| 30 | 8.74 | 9.26 | --- | --- | --- | 8.95 | 8.63 | 11.34 | 11.33 | 11.39 | 11.55 | 9.63 |
| 31 | 8.47 | --- | --- | --- | --- | 8.98 | --- | 11.36 | --- | 11.43 | 11.62 | --- |
| MEAN | 8.49 | 8.60 | --- | --- | --- | --- | 8.76 | 9.24 | 11.41 | 11.35 | 11.46 | --- |
| MAX | 8.74 | 9.27 | --- | --- | --- | --- | 9.28 | 11.36 | 11.59 | 11.44 | 11.71 | --- |
| MIN | 8.39 | 8.30 | --- | --- | --- | --- | 8.53 | 8.53 | 11.27 | 11.21 | 11.25 | --- |

## 06340900 MISSOURI RIVER NEAR HENSLER, ND

LOCATION.--Lat 47°16'45", long 101°11'03", in SW$^{1}/_{4}$ 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$^{2}$, 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 National Geodetic Vertical Datum of 1929 (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, 12.91 ft, Nov. 1, 2001.

GAGE HEIGHT, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | --- | 12.91 | 13.83 | 15.89 | --- | --- | 13.61 | 13.41 | 15.90 | 15.83 | --- | 16.12 |
| 2 | --- | 12.95 | 13.92 | 15.98 | 16.10 | --- | 13.60 | 13.35 | 16.00 | 15.73 | --- | 16.00 |
| 3 | --- | 12.95 | 13.98 | 16.00 | --- | --- | 13.53 | 13.45 | 15.98 | 15.85 | --- | 16.06 |
| 4 | --- | 13.09 | 13.92 | 15.88 | --- | 14.17 | 13.63 | 13.42 | 15.83 | 15.84 | --- | 16.01 |
| 5 | --- | 13.11 | 13.91 | 15.90 | 14.75 | 14.24 | 13.56 | 13.45 | 15.95 | 15.88 | --- | 15.96 |
| 6 | --- | 13.06 | --- | 15.86 | 14.47 | --- | 13.46 | 13.58 | 15.88 | 15.79 | --- | 15.93 |
| 7 | --- | 13.15 | 13.87 | 15.90 | 14.22 | 14.00 | 13.49 | 13.51 | 15.95 | 15.86 | --- | 15.94 |
| 8 | --- | 12.99 | 13.93 | 15.88 | 14.10 | 14.25 | 13.46 | 13.78 | 15.85 | 15.87 | 15.94 | 16.02 |
| 9 | --- | 13.12 | 13.92 | 15.94 | 14.12 | --- | 13.44 | 13.50 | 16.04 | 15.80 | 15.89 | 15.97 |
| 10 | --- | 13.09 | 13.99 | 15.88 | 14.02 | --- | 13.32 | 13.51 | 15.91 | 15.79 | 15.93 | 15.92 |
| 11 | --- | 13.02 | 13.95 | 15.92 | 13.93 | 15.53 | 13.33 | 14.26 | 15.92 | 15.79 | 15.90 | 15.92 |
| 12 | 13.04 | 13.05 | 13.87 | 15.90 | 13.94 | 14.56 | 13.39 | 14.55 | 15.97 | 15.85 | 15.83 | 15.84 |
| 13 | 12.96 | 13.08 | 13.91 | 15.78 | 14.08 | 14.06 | 13.28 | 14.29 | 16.00 | 15.80 | 15.95 | 15.96 |
| 14 | 12.94 | 13.13 | 13.94 | --- | 13.89 | 13.93 | 13.26 | 13.69 | 16.04 | 15.85 | 15.93 | 15.89 |
| 15 | 12.94 | 13.11 | 13.94 | --- | 13.91 | 13.81 | 13.29 | 13.39 | 16.02 | 15.93 | 15.96 | 15.58 |
| 16 | 12.95 | 13.11 | 13.94 | --- | 13.95 | 13.80 | 13.28 | 13.29 | 15.97 | 15.84 | 15.96 | 15.16 |
| 17 | 13.02 | 13.17 | 13.98 | --- | 13.94 | 13.81 | 13.26 | 13.26 | 15.98 | 15.91 | 15.92 | 14.54 |
| 18 | 12.93 | 13.09 | --- | --- | 14.07 | 13.74 | 13.36 | 13.21 | 15.77 | 15.84 | 15.95 | 14.56 |
| 19 | 12.96 | 13.15 | --- | 14.93 | 14.00 | 13.83 | 13.24 | 13.23 | 15.92 | 15.86 | 15.86 | 14.31 |
| 20 | 12.99 | 13.14 | 13.89 | 14.82 | 13.98 | 13.88 | 13.36 | 13.23 | 15.85 | 15.87 | 15.90 | 14.46 |
| 21 | 12.99 | --- | 13.89 | 14.62 | 13.96 | 13.83 | 13.29 | 13.12 | 15.85 | --- | 16.10 | 14.44 |
| 22 | 13.03 | --- | 13.95 | 14.34 | 14.03 | 14.31 | 13.33 | 13.37 | 15.91 | --- | 15.79 | 14.46 |
| 23 | 12.99 | --- | 13.94 | --- | 14.07 | 13.84 | 13.37 | 13.21 | 15.88 | --- | 15.94 | 14.37 |
| 24 | 13.12 | --- | --- | --- | 13.98 | 13.81 | 13.24 | 13.17 | 15.89 | --- | 16.10 | 14.53 |
| 25 | 13.08 | --- | --- | 14.15 | --- | 13.84 | 13.20 | 13.35 | 15.80 | --- | 16.04 | 14.41 |
| 26 | 13.08 | --- | --- | 14.15 | --- | 13.80 | 13.90 | 13.93 | 15.85 | --- | 16.00 | 14.51 |
| 27 | 13.02 | --- | 13.89 | --- | --- | 13.84 | 13.61 | 14.65 | 15.81 | --- | 16.10 | 14.47 |
| 28 | 13.17 | --- | 14.00 | --- | --- | 13.54 | 13.41 | 15.35 | 15.86 | --- | 15.97 | 14.43 |
| 29 | 13.04 | --- | 13.98 | --- | --- | 13.52 | 13.73 | 15.88 | 15.82 | --- | 16.20 | 14.46 |
| 30 | 13.27 | 13.89 | --- | --- | --- | 13.58 | 13.32 | 15.89 | 15.82 | --- | 16.11 | 14.35 |
| 31 | 13.09 | --- | --- | --- | --- | 13.61 | --- | 15.91 | --- | --- | 16.15 | --- |
| MEAN | --- | --- | --- | --- | --- | --- | 13.42 | 13.84 | 15.91 | --- | --- | 15.22 |
| MAX | --- | --- | --- | --- | --- | --- | 13.90 | 15.91 | 16.04 | --- | --- | 16.12 |
| MIN | --- | --- | --- | --- | --- | --- | 13.20 | 13.12 | 15.77 | --- | --- | 14.31 |

## 06341000 MISSOURI RIVER AT WASHBURN, ND

LOCATION.--Lat 47°17'20", long 101°02'15", in SE$^1/_4$SW$^1/_4$ 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$^2$, 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 National Geodetic Vertical Datum of 1929. 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, 8.66 ft, Nov. 2, 2001.

GAGE HEIGHT FROM DCP, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 8.80 | 8.69 | 9.30 | --- | --- | --- | --- | 8.93 | 11.12 | 11.12 | 11.21 | 11.39 |
| 2 | 8.88 | 8.66 | 9.39 | --- | --- | --- | --- | 8.90 | 11.20 | 11.06 | 11.11 | 11.33 |
| 3 | 8.84 | 8.68 | --- | --- | --- | --- | --- | 8.99 | 11.22 | 11.10 | 11.22 | 11.49 |
| 4 | 8.78 | 8.76 | --- | 13.87 | --- | --- | --- | 8.96 | 11.10 | 11.12 | 11.21 | 11.32 |
| 5 | 8.76 | 8.78 | --- | 13.68 | --- | --- | --- | 8.95 | 11.16 | 11.13 | 11.26 | 11.25 |
| 6 | 8.83 | 8.73 | --- | 13.38 | --- | --- | 9.05 | 9.05 | 11.15 | 11.06 | 11.31 | 11.21 |
| 7 | 8.81 | 8.81 | --- | --- | --- | --- | 9.05 | 9.02 | 11.18 | 11.11 | 11.31 | 11.21 |
| 8 | 8.94 | 8.70 | --- | --- | --- | --- | 9.04 | 9.22 | 11.10 | 11.13 | 11.30 | 11.21 |
| 9 | 8.85 | 8.76 | 9.42 | --- | --- | --- | 8.98 | 9.04 | 11.26 | 11.10 | 11.28 | 11.32 |
| 10 | 8.86 | 8.73 | --- | --- | --- | --- | 8.89 | 9.03 | 11.16 | 11.05 | 11.28 | 11.20 |
| 11 | 8.81 | 8.67 | --- | --- | --- | --- | 8.87 | 9.45 | 11.19 | 11.05 | 11.25 | 11.22 |
| 12 | 8.86 | 8.70 | --- | 9.68 | --- | --- | 8.91 | 9.95 | 11.24 | 11.11 | 11.22 | 11.12 |
| 13 | 8.81 | 8.73 | --- | 9.73 | --- | --- | 8.85 | 9.79 | 11.25 | 11.08 | 11.26 | 11.20 |
| 14 | 8.78 | 8.77 | 9.45 | --- | --- | --- | 8.80 | 9.26 | 11.31 | 11.10 | 11.28 | 11.21 |
| 15 | 8.71 | 8.77 | 9.45 | --- | --- | --- | 8.82 | 8.98 | 11.29 | 11.19 | 11.31 | 10.95 |
| 16 | 8.74 | 8.78 | 9.43 | --- | --- | 9.52 | 8.84 | 8.84 | 11.25 | 11.11 | 11.28 | 10.66 |
| 17 | --- | 8.85 | --- | --- | --- | --- | 8.85 | 8.83 | 11.25 | 11.18 | 11.28 | 10.19 |
| 18 | 8.72 | --- | --- | --- | --- | --- | 8.93 | 8.78 | 11.09 | 11.12 | 11.27 | 9.96 |
| 19 | 8.74 | 8.82 | --- | --- | --- | --- | 8.88 | 8.78 | 11.22 | 11.14 | 11.30 | 9.73 |
| 20 | 8.73 | --- | --- | --- | --- | --- | 8.95 | 8.82 | 11.14 | 11.17 | 11.16 | 9.91 |
| 21 | 8.73 | --- | --- | --- | --- | --- | 8.93 | 8.84 | 11.15 | 11.15 | 11.35 | 9.78 |
| 22 | 8.78 | --- | --- | --- | --- | --- | 8.94 | 8.92 | 11.19 | 11.04 | 11.25 | 9.84 |
| 23 | 8.73 | --- | --- | --- | --- | --- | 8.95 | 8.75 | 11.18 | 11.10 | 11.15 | 9.79 |
| 24 | 8.82 | --- | --- | --- | --- | --- | 8.87 | 8.74 | 11.18 | 11.16 | 11.27 | 9.89 |
| 25 | 8.75 | --- | --- | --- | --- | --- | 8.78 | 8.83 | 11.12 | 11.22 | 11.40 | 9.85 |
| 26 | 8.76 | 8.83 | --- | --- | --- | --- | 9.30 | 9.26 | 11.13 | 11.18 | 11.22 | 9.86 |
| 27 | 8.73 | --- | --- | --- | --- | 9.47 | 9.12 | 9.86 | 11.13 | 11.21 | 11.36 | 9.91 |
| 28 | 8.81 | --- | --- | --- | --- | 9.27 | 9.01 | 10.47 | 11.15 | 11.19 | 11.34 | 9.85 |
| 29 | 8.73 | --- | --- | --- | --- | 9.19 | 9.18 | 11.04 | 11.13 | 11.25 | 11.36 | 9.91 |
| 30 | 8.89 | 9.38 | --- | --- | --- | 9.26 | 8.91 | 11.09 | 11.12 | 11.18 | 11.40 | 9.77 |
| 31 | 8.76 | --- | --- | --- | --- | 9.26 | --- | 11.11 | --- | 11.22 | 11.45 | --- |
| MEAN | --- | --- | --- | --- | --- | --- | --- | 9.31 | 11.18 | 11.13 | 11.28 | 10.58 |
| MAX | --- | --- | --- | --- | --- | --- | --- | 11.11 | 11.31 | 11.25 | 11.45 | 11.49 |
| MIN | --- | --- | --- | --- | --- | --- | --- | 8.74 | 11.09 | 11.04 | 11.11 | 9.73 |

## 06341410 TURTLE CREEK ABOVE WASHBURN, ND

LOCATION.--Lat 47°23'06", long 100°54'43", in NW$^1/_4$NE$^1/_4$NE$^1/_4$ sec.18, T.145 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$^2$, approximately, of which 195 mi$^2$ 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 National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | e2.4 | 2.7 | e1.5 | e0.52 | e0.11 | e0.08 | e17 | 6.9 | 0.54 | 17 | e12 | 16 |
| 2 | e2.3 | 2.3 | e1.4 | e0.44 | e0.09 | e0.08 | e15 | 5.4 | 1.2 | 17 | e11 | 10 |
| 3 | e2.7 | 3.2 | e1.2 | e0.37 | e0.08 | e0.08 | e8.0 | 5.0 | 2.0 | 17 | e11 | 7.9 |
| 4 | e2.3 | 4.8 | e1.2 | e0.35 | e0.08 | e0.07 | 4.9 | 4.4 | 2.1 | 18 | e10 | 7.0 |
| 5 | e2.4 | 8.1 | e1.2 | e0.33 | e0.08 | e0.07 | 3.8 | 4.1 | 2.3 | 19 | e11 | 5.6 |
| 6 | e2.7 | 7.2 | e1.2 | e0.30 | e0.08 | e0.07 | 5.3 | 4.6 | 3.2 | 19 | e13 | 5.0 |
| 7 | e3.5 | 6.1 | e1.1 | e0.29 | e0.09 | e0.06 | 9.8 | 5.2 | 4.1 | 20 | e15 | 5.2 |
| 8 | e4.4 | 7.2 | e1.1 | e0.28 | e0.07 | e0.06 | 12 | 8.8 | 4.5 | 21 | e15 | 4.9 |
| 9 | e5.5 | 8.0 | e1.1 | e0.27 | e0.05 | e0.06 | 13 | 14 | 62 | 23 | e14 | 4.8 |
| 10 | e6.1 | 7.7 | e1.0 | e0.26 | e0.04 | e0.05 | 13 | 12 | 71 | 25 | e15 | 4.5 |
| 11 | e6.0 | 7.4 | e1.0 | e0.25 | e0.03 | e0.06 | 19 | 8.3 | 52 | 21 | e15 | 4.0 |
| 12 | e5.5 | 7.2 | e1.0 | e0.24 | e0.03 | e0.08 | 22 | 7.1 | 37 | 20 | e14 | 3.7 |
| 13 | 4.8 | 6.2 | e1.0 | e0.22 | e0.05 | e0.07 | 18 | 5.8 | 35 | e19 | e13 | 3.5 |
| 14 | 7.1 | 4.6 | e1.2 | e0.18 | e0.04 | e0.06 | 15 | 5.1 | 33 | e18 | e12 | 2.9 |
| 15 | 9.9 | 2.8 | e1.0 | e0.16 | e0.04 | e0.06 | 14 | 4.3 | 32 | e18 | e11 | 2.9 |
| 16 | 10 | 1.4 | e0.97 | e0.14 | e0.04 | e0.07 | 11 | 4.1 | 29 | e16 | e10 | 2.6 |
| 17 | 11 | 1.3 | e0.93 | e0.12 | e0.05 | e0.07 | 9.9 | 3.4 | 27 | e16 | e10 | 2.3 |
| 18 | 11 | 0.91 | e0.90 | e0.11 | e0.05 | e0.07 | 15 | 3.0 | 26 | e16 | e9.7 | 2.4 |
| 19 | 11 | 0.74 | e0.88 | e0.18 | e0.06 | e0.06 | 17 | 2.7 | 26 | e15 | e9.2 | 3.1 |
| 20 | 12 | 1.00 | e0.82 | e0.21 | e0.08 | e0.06 | 12 | 2.4 | 26 | e14 | e8.8 | 3.0 |
| 21 | 13 | 3.7 | e0.80 | e0.17 | e0.12 | e0.07 | 12 | 1.8 | 25 | e15 | e8.2 | 2.7 |
| 22 | 15 | 2.7 | e0.78 | e0.17 | e0.15 | e0.08 | 12 | 1.6 | 23 | e16 | e7.6 | 2.8 |
| 23 | e16 | 2.7 | e0.74 | e0.16 | e0.21 | e0.09 | 9.9 | 1.5 | 22 | e15 | e6.9 | 2.9 |
| 24 | e12 | 3.7 | e0.72 | e0.14 | e0.16 | e0.10 | 12 | 1.6 | 23 | e14 | 5.4 | 2.6 |
| 25 | e8.0 | e3.1 | e0.70 | e0.16 | e0.12 | e0.12 | e9.8 | 1.4 | 22 | e14 | 5.8 | 2.4 |
| 26 | e6.0 | e2.7 | e0.67 | e0.15 | e0.09 | e0.13 | 8.8 | 1.1 | 21 | e15 | 6.6 | 2.1 |
| 27 | e4.2 | e2.3 | e0.64 | e0.14 | e0.08 | e0.25 | 8.7 | 1.0 | 20 | e13 | 7.0 | 2.8 |
| 28 | e3.0 | e1.9 | e0.61 | e0.14 | e0.08 | e0.85 | 8.5 | 1.1 | 18 | e13 | 11 | 4.1 |
| 29 | 2.2 | e1.7 | e0.59 | e0.14 | --- | e2.4 | 9.4 | 1.0 | 17 | e12 | 8.2 | 3.1 |
| 30 | 2.3 | e1.6 | e0.57 | e0.20 | --- | e4.5 | 8.0 | 0.88 | 17 | e12 | 7.1 | 2.5 |
| 31 | 2.9 | --- | e0.55 | e0.12 | --- | e9.0 | --- | 0.66 | --- | e14 | 22 | --- |
| TOTAL | 207.2 | 116.95 | 29.07 | 6.91 | 2.25 | 18.93 | 353.8 | 130.24 | 683.94 | 522 | 335.5 | 129.3 |
| MEAN | 6.684 | 3.898 | 0.938 | 0.223 | 0.080 | 0.611 | 11.79 | 4.201 | 22.80 | 16.84 | 10.82 | 4.310 |
| MAX | 16 | 8.1 | 1.5 | 0.52 | 0.21 | 9.0 | 22 | 14 | 71 | 25 | 22 | 16 |
| MIN | 2.2 | 0.74 | 0.55 | 0.11 | 0.03 | 0.05 | 3.8 | 0.66 | 0.54 | 12 | 5.4 | 2.1 |
| AC-FT | 411 | 232 | 58 | 14 | 4.5 | 38 | 702 | 258 | 1360 | 1040 | 665 | 256 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1987 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 14.06 | 7.316 | 1.624 | 0.409 | 4.371 | 34.40 | 21.42 | 17.54 | 20.75 | 20.29 | 13.45 | 12.14 |
| MAX | 54.3 | 30.9 | 7.75 | 2.67 | 34.0 | 116 | 69.7 | 51.5 | 71.7 | 52.4 | 36.0 | 32.8 |
| (WY) | 1994 | 1993 | 2000 | 2000 | 1996 | 1987 | 1997 | 1996 | 2001 | 2001 | 2000 | 1993 |
| MIN | 0.092 | 0.043 | 0.000 | 0.000 | 0.000 | 0.22 | 0.28 | 0.069 | 0.009 | 0.000 | 0.033 | 2.31 |
| (WY) | 1990 | 1990 | 1990 | 1989 | 1989 | 1990 | 1990 | 1992 | 1989 | 1988 | 1991 | 1988 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1987 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 9245.27 | | 2536.09 | | | |
| ANNUAL MEAN | 25.33 | | 6.948 | | 14.04 | |
| HIGHEST ANNUAL MEAN | | | | | 29.3 | 1996 |
| LOWEST ANNUAL MEAN | | | | | 1.10 | 1990 |
| HIGHEST DAILY MEAN | 362 | Mar 15 | 71 | Jun 10 | 767 | Mar 21 1987 |
| LOWEST DAILY MEAN | 0.00 | Mar 1 | 0.03 | Feb 11 | 0.00 | Jan 5 1988 |
| ANNUAL SEVEN-DAY MINIMUM | 0.01 | Mar 1 | 0.04 | Feb 10 | 0.00 | Jan 5 1988 |
| MAXIMUM PEAK FLOW | | | 86 | Jun 10 | 954 | Mar 12 1996 |
| MAXIMUM PEAK STAGE | | | 3.0 | Jun 10 | 7.28 | Mar 12 1996 |
| ANNUAL RUNOFF (AC-FT) | 18340 | | 5030 | | 10170 | |
| 10 PERCENT EXCEEDS | 60 | | 17 | | 36 | |
| 50 PERCENT EXCEEDS | 6.0 | | 3.4 | | 4.0 | |
| 90 PERCENT EXCEEDS | 0.21 | | 0.08 | | 0.00 | |

e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | BARO-METRIC PRES-SURE (MM OF HG) (00025) | OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301) | OXYGEN, DIS-SOLVED (MG/L) (00300) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 11... | 1020 | 6.0 | 720 | 93 | 11.6 | 8.4 | 8.4 | 1720 | 1620 | 13.5 | 3.5 | 440 | 40.5 |
| NOV | | | | | | | | | | | | | |
| 29... | 1155 | 1.7 | 695 | -- | 11.8 | 8.5 | 8.3 | 2550 | --e | -5.0 | .0 | 660 | 65.8 |
| FEB | | | | | | | | | | | | | |
| 06... | 1130 | .08 | -- | -- | -- | -- | -- | -- | --e | 9.0 | .5 | -- | -- |
| APR | | | | | | | | | | | | | |
| 01... | 1205 | 17 | 701 | 107 | 14.2 | 8.8 | -- | 1220 | 1270 | 1.0 | .3 | 280 | 27.7 |
| MAY | | | | | | | | | | | | | |
| 21... | 1050 | 1.8 | 704 | 101 | 9.4 | 8.6 | 8.6 | 1930 | 1920 | 20.0 | 14.5 | 420 | 44.3 |
| JUL | | | | | | | | | | | | | |
| 11... | 1120 | 20 | 715 | 100 | 8.2 | 8.5 | 8.5 | 1720 | 1650 | 26.0 | 21.5 | 380 | 26.1 |
| AUG | | | | | | | | | | | | | |
| 23... | 1110 | 6.9 | 710 | 115 | 9.9 | 8.4 | 8.6 | 1740 | 1680 | 25.0 | 18.8 | 430 | 27.5 |
| SEP | | | | | | | | | | | | | |
| 09... | 1225 | 5.1 | -- | -- | -- | 8.2 | 8.4 | 1850 | 1770 | 20.0 | 19.0 | 440 | 31.7 |

| Date | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N) (00618) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 11... | 81.8 | 17.1 | 5 | 228 | 52 | 587 | 16.4 | .4 | 12.3 | 389 | .15 | .023 | .14 |
| NOV | | | | | | | | | | | | | |
| 29... | 120 | 22.2 | 6 | 358 | 53 | 938 | 19.0 | .3 | 15.0 | 594 | .05 | .008 | .09 |
| FEB | | | | | | | | | | | | | |
| 06... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 01... | 50.1 | 17.5 | 5 | 176 | 56 | 360 | 10.2 | .2 | 12.3 | 300 | <.04 | .010 | -- |
| MAY | | | | | | | | | | | | | |
| 21... | 74.6 | 13.9 | 7 | 313 | 61 | 750 | 11.9 | .4 | 5.1 | 392 | <.04 | <.006 | -- |
| JUL | | | | | | | | | | | | | |
| 11... | 76.9 | 17.8 | 6 | 274 | 60 | 663 | 12.4 | .2 | 9.4 | 328 | <.04 | <.008 | -- |
| AUG | | | | | | | | | | | | | |
| 23... | 88.5 | 24.3 | 5 | 259 | 55 | 668 | 12.5 | .3 | 6.3 | 348 | <.04 | <.008 | -- |
| SEP | | | | | | | | | | | | | |
| 09... | 87.8 | 23.6 | 6 | 273 | 56 | 686 | 12.7 | .3 | 12.0 | 381 | <.04 | <.008 | -- |

| Date | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | TURBID-ITY LAB HACH 2100AN (NTU) (99872) | BORON, DIS-SOLVED (UG/L AS B) (01020) | IRON, DIS-SOLVED (UG/L AS FE) (01046) |
|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | |
| 11... | .16 | .05 | 18.5 | -- | 1140 | 38 | 440 | 73 |
| NOV | | | | | | | | |
| 29... | .10 | .03 | 8.02 | -- | 1760 | 27 | 670 | 27 |
| FEB | | | | | | | | |
| 06... | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | |
| 01... | E.03 | .30 | 37.6 | -- | 810 | 7.8 | 330 | 90 |
| MAY | | | | | | | | |
| 21... | <.05 | .08 | 6.63 | 1360 | 1310 | 31 | 630 | <50 |
| JUL | | | | | | | | |
| 11... | <.05 | .03 | 61.7 | -- | 1140 | 24 | 720 | 30 |
| AUG | | | | | | | | |
| 23... | <.05 | E.01 | 21.8 | -- | 1170 | 17 | 680 | 15 |
| SEP | | | | | | | | |
| 09... | <.05 | .07 | 17.0 | -- | 1230 | 29 | 710 | 20 |

< Less than
E Estimated value
e Required equipment not functional/available

## 06341800 PAINTED WOODS CREEK NEAR WILTON, ND

LOCATION.--Lat 47°16'30", long 100°47'30", in SW$^1/_4$SW$^1/_4$ 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$^2$, approximately, of which about 310 mi$^2$ is probably noncontributing.

### WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1957 to September 1981, August 1982 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,764.93 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Fish and Wildlife Service).

REMARKS.--Records fair except for estimated daily discharges, which are 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5.6 | 7.9 | 8.1 | 8.9 | e12 | e7.5 | 30 | e20 | 9.8 | 13 | 11 | 15 |
| 2 | 5.3 | 8.0 | 8.1 | 8.8 | e11 | e7.6 | 24 | e19 | 11 | 13 | 11 | 11 |
| 3 | 5.6 | 7.4 | 8.1 | 9.2 | e11 | e7.6 | 23 | e19 | 12 | 12 | 9.8 | 11 |
| 4 | 5.0 | 7.9 | 8.2 | 9.2 | e12 | e7.8 | 22 | e18 | 12 | 12 | 11 | 9.4 |
| 5 | 5.1 | 7.8 | 8.1 | 9.4 | e12 | e8.4 | e20 | e19 | 12 | 11 | 10 | 9.7 |
| 6 | 5.1 | 7.9 | 8.0 | 9.0 | e11 | e9.0 | e20 | e20 | 11 | 13 | 9.5 | 10 |
| 7 | 5.1 | 7.9 | 8.1 | 9.1 | e12 | e9.8 | e20 | e19 | 12 | 12 | 9.7 | 10 |
| 8 | 5.2 | 8.0 | 8.0 | 9.4 | e11 | e9.6 | e20 | e18 | 11 | 12 | 9.5 | 10 |
| 9 | 6.2 | 7.0 | 8.1 | 9.6 | e11 | e9.2 | e21 | e16 | 14 | 12 | 13 | 10 |
| 10 | 7.6 | 7.1 | 8.2 | 10 | e11 | e8.8 | e23 | e15 | 15 | 14 | 13 | 9.6 |
| 11 | 8.0 | 7.1 | 8.1 | 11 | e11 | e9.0 | e25 | e16 | 15 | 14 | 15 | 9.5 |
| 12 | 6.6 | 7.4 | 8.1 | 9.9 | e11 | e9.2 | e26 | e17 | 14 | 12 | 12 | 8.9 |
| 13 | 7.2 | 7.4 | 8.1 | 9.8 | e11 | e9.4 | e27 | e18 | 15 | 12 | 12 | 9.2 |
| 14 | 6.7 | 7.4 | 8.1 | 9.6 | e11 | e9.6 | e27 | e17 | 15 | 11 | 11 | 8.5 |
| 15 | 7.3 | 7.4 | 8.1 | 9.6 | e11 | e9.8 | e26 | e16 | 15 | 11 | 11 | 9.4 |
| 16 | 6.9 | 7.4 | 8.3 | 9.6 | e11 | e10 | e25 | e16 | 14 | 11 | 11 | 8.0 |
| 17 | 6.1 | 7.4 | 8.5 | 9.6 | e12 | e10 | e24 | e15 | 14 | 11 | 10 | 8.4 |
| 18 | 6.5 | 7.6 | 8.5 | e9.5 | e12 | e11 | e25 | e15 | 13 | 11 | 11 | 7.9 |
| 19 | 6.7 | 8.0 | 8.2 | e9.0 | e12 | e11 | e25 | e14 | 13 | 11 | 9.9 | 9.5 |
| 20 | 6.8 | 7.2 | 8.1 | e9.5 | e12 | e10 | e25 | e13 | 13 | 11 | 9.7 | 7.7 |
| 21 | 6.8 | 7.5 | 8.1 | e10 | e12 | e9.6 | e25 | e13 | 13 | 12 | 9.1 | 7.6 |
| 22 | 6.5 | 7.8 | 8.1 | e11 | e12 | e9.8 | e26 | e13 | 13 | 11 | 9.9 | 7.8 |
| 23 | 6.8 | 8.1 | 8.4 | e11 | e11 | e10 | e25 | e13 | 15 | 11 | 9.1 | 7.8 |
| 24 | 7.7 | 8.2 | 8.5 | e11 | e9.8 | e11 | e24 | e12 | 90 | 11 | 8.7 | 8.5 |
| 25 | 8.7 | 8.5 | 8.7 | e11 | e8.4 | e11 | e22 | e12 | 73 | 12 | 8.3 | 8.0 |
| 26 | 8.7 | 8.2 | 8.8 | e10 | e7.5 | e11 | e21 | e12 | 43 | 11 | 8.1 | 8.1 |
| 27 | 7.7 | 7.7 | 8.8 | e10 | e7.9 | e20 | e20 | e12 | 27 | 9.9 | 7.5 | 9.5 |
| 28 | 7.8 | 8.2 | 8.5 | e9.7 | e8.0 | 26 | e22 | e11 | 20 | 10 | 8.0 | 11 |
| 29 | 8.1 | 8.1 | 8.8 | e10 | --- | 25 | e23 | 11 | 17 | 10 | 7.7 | 9.6 |
| 30 | 7.2 | 8.1 | 9.2 | e9.8 | --- | 19 | e22 | 11 | 15 | 9.7 | 8.6 | 8.8 |
| 31 | 7.6 | --- | 9.1 | e10 | --- | 23 | --- | 10 | --- | 11 | 18 | --- |
| TOTAL | 208.2 | 231.6 | 258.1 | 303.2 | 304.6 | 359.7 | 708 | 470 | 586.8 | 357.6 | 323.1 | 279.4 |
| MEAN | 6.716 | 7.720 | 8.326 | 9.781 | 10.88 | 11.60 | 23.60 | 15.16 | 19.56 | 11.54 | 10.42 | 9.313 |
| MAX | 8.7 | 8.5 | 9.2 | 11 | 12 | 26 | 30 | 20 | 90 | 14 | 18 | 15 |
| MIN | 5.0 | 7.0 | 8.0 | 8.8 | 7.5 | 7.5 | 20 | 10 | 9.8 | 9.7 | 7.5 | 7.6 |
| AC-FT | 413 | 459 | 512 | 601 | 604 | 713 | 1400 | 932 | 1160 | 709 | 641 | 554 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 20.17 | 20.06 | 17.27 | 15.53 | 22.73 | 88.02 | 69.03 | 38.95 | 28.04 | 34.20 | 27.75 | 17.90 |
| MAX | 38.4 | 33.3 | 33.9 | 30.5 | 50.4 | 188 | 454 | 117 | 96.9 | 281 | 138 | 43.2 |
| (WY) | 1987 | 1990 | 1987 | 1990 | 2000 | 1997 | 1997 | 1999 | 2000 | 1993 | 1999 | 1986 |
| MIN | 0.16 | 2.44 | 2.58 | 0.61 | 0.004 | 11.6 | 8.20 | 1.08 | 2.37 | 1.43 | 0.22 | 1.52 |
| (WY) | 1989 | 1999 | 1999 | 1999 | 1997 | 2002 | 1989 | 1990 | 1990 | 1990 | 1983 | 1998 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1983 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 13051.5 | | 4390.3 | | | |
| ANNUAL MEAN | 35.76 | | 12.03 | | 33.38 | |
| HIGHEST ANNUAL MEAN | | | | | 68.0 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 12.0 | 2002 |
| HIGHEST DAILY MEAN | 850 | Mar 19 | 90 | Jun 24 | 1350 | Mar 29 1997 |
| LOWEST DAILY MEAN | 4.7 | Sep 25 | 5.0 | Oct 4 | 0.00 | Feb 2 1997 |
| ANNUAL SEVEN-DAY MINIMUM | 5.2 | Sep 24 | 5.2 | Oct 2 | 0.00 | Feb 2 1997 |
| MAXIMUM PEAK FLOW | | | 132 | Jun 24 | 4050 | Apr 19 1979 |
| MAXIMUM PEAK STAGE | | | 5.49 | Jun 24 | 9.64 | Apr 19 1979 |
| ANNUAL RUNOFF (AC-FT) | 25890 | | 8710 | | 24180 | |
| 10 PERCENT EXCEEDS | 82 | | 20 | | 49 | |
| 50 PERCENT EXCEEDS | 8.3 | | 10 | | 22 | |
| 90 PERCENT EXCEEDS | 6.3 | | 7.5 | | 3.1 | |

e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | BARO-METRIC PRES-SURE (MM OF HG) (00025) | OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301) | OXYGEN, DIS-SOLVED (MG/L) (00300) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 12... | 0935 | 6.5 | 700 | 93 | 10.4 | 7.9 | 8.2 | 2000 | 1970 | 9.0 | 6.5 | 670 | 85.6 |
| NOV | | | | | | | | | | | | | |
| 29... | 1010 | 8.3 | 695 | -- | 12.4 | 8.1 | 8.2 | 2180 | --e | -5.0 | .2 | 770 | 112 |
| FEB | | | | | | | | | | | | | |
| 06... | 1355 | 11 | -- | -- | -- | -- | -- | -- | 2020 | 9.5 | .5 | -- | -- |
| APR | | | | | | | | | | | | | |
| 01... | 1415 | 30 | -- | -- | 14.6 | --e | 7.7 | 1180 | 1220 | 4.0 | 1.0 | 450 | 76.5 |
| MAY | | | | | | | | | | | | | |
| 21... | 1420 | 13 | 704 | 101 | 9.1 | 8.5 | 8.4 | 2320 | 2250 | 24.0 | 16.0 | 850 | 118 |
| JUL | | | | | | | | | | | | | |
| 11... | 1330 | 14 | 713 | 105 | 8.7 | 7.8 | -- | 1840 | 1780 | 28.0 | 21.0 | 620 | 69.5 |
| AUG | | | | | | | | | | | | | |
| 23... | 1325 | 9.0 | 710 | 93 | 7.9 | 7.9 | 8.2 | 1860 | 1760 | 25.5 | 19.3 | 630 | 76.0 |
| SEP | | | | | | | | | | | | | |
| 09... | 1540 | 10 | -- | -- | 7.2 | 8.3 | 7.9 | 1800 | 1680 | 20.0 | 19.0 | 590 | 71.6 |

| Date | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N) (00618) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 12... | 111 | 21.1 | 3 | 201 | 39 | 269 | 19.3 | .2 | 11.4 | 842 | <.04 | <.008 | -- |
| NOV | | | | | | | | | | | | | |
| 29... | 120 | 21.2 | 3 | 213 | 37 | 327 | 18.6 | .2 | 11.2 | 918 | <.04 | <.008 | -- |
| FEB | | | | | | | | | | | | | |
| 06... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 01... | 61.7 | 20.9 | 2 | 88.8 | 29 | 162 | 11.5 | .1 | 9.3 | 460 | .18 | .044 | 1.05 |
| MAY | | | | | | | | | | | | | |
| 21... | 134 | 17.4 | 4 | 243 | 38 | 389 | 19.7 | .3 | 7.7 | 971 | <.04 | <.008 | -- |
| JUL | | | | | | | | | | | | | |
| 11... | 108 | 12.9 | 3 | 196 | 40 | 230 | 15.0 | .2 | 9.0 | 796 | <.04 | <.008 | -- |
| AUG | | | | | | | | | | | | | |
| 23... | 107 | 19.9 | 3 | 191 | 39 | 223 | 19.6 | .2 | 6.8 | 809 | <.04 | <.008 | -- |
| SEP | | | | | | | | | | | | | |
| 09... | 99.7 | 19.9 | 3 | 183 | 39 | 218 | 16.6 | .2 | 9.0 | 754 | E.04 | <.008 | -- |

| Date | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | TURBID-ITY LAB HACH 2100AN (NTU) (99872) | BORON, DIS-SOLVED (UG/L AS B) (01020) | IRON, DIS-SOLVED (UG/L AS FE) (01046) |
|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | |
| 12... | <.05 | <.02 | 25.7 | -- | 1450 | 11 | 400 | <30 |
| NOV | | | | | | | | |
| 29... | <.05 | <.02 | 36.1 | -- | 1610 | 5.1 | 420 | E6 |
| FEB | | | | | | | | |
| 06... | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | |
| 01... | 1.09 | .25 | 66.7 | -- | 832 | 7.0 | 180 | 108 |
| MAY | | | | | | | | |
| 21... | <.05 | .02 | 63.5 | 1840 | 1750 | 21 | 430 | <50 |
| JUL | | | | | | | | |
| 11... | <.05 | .03 | 49.7 | -- | 1340 | 15 | 460 | 12 |
| AUG | | | | | | | | |
| 23... | E.03 | <.02 | 33.3 | -- | 1360 | 12 | 420 | <10 |
| SEP | | | | | | | | |
| 09... | <.05 | .02 | 35.0 | -- | 1280 | 13 | 400 | E8 |

< Less than
E Estimated value
e Required equipment not functional/available

## 06342020 MISSOURI RIVER AT PRICE, ND

LOCATION.--Lat 47°04'47", long 100°55'55", in NW$^{1}/_{4}$ 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$^{2}$, 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 National Geodetic Vertical Datum of 1929 (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, 16.84 ft, Nov. 2, 2001.

GAGE HEIGHT FROM DCP, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 16.95 | 16.90 | 17.62 | 21.33 | 20.00 | 21.07 | 17.46 | 17.03 | 19.71 | 19.56 | 19.64 | 19.80 |
| 2 | 16.95 | 16.84 | 17.69 | 21.69 | 20.07 | 20.69 | 17.43 | 17.04 | 19.76 | 19.52 | 19.58 | 19.78 |
| 3 | 16.96 | 16.88 | 17.75 | 21.84 | 20.17 | 20.25 | 17.37 | 17.06 | 19.79 | 19.51 | 19.59 | 19.84 |
| 4 | 16.93 | 16.91 | 17.69 | 22.24 | 20.05 | 20.50 | 17.42 | 17.12 | 19.71 | 19.56 | 19.65 | 19.73 |
| 5 | 16.92 | 17.00 | 17.68 | 22.25 | 20.01 | 20.69 | 17.37 | 17.10 | 19.67 | 19.59 | 19.67 | 19.67 |
| 6 | 16.99 | 16.96 | 17.64 | 22.03 | 20.17 | 20.54 | 17.30 | 17.13 | 19.72 | 19.54 | 19.75 | 19.62 |
| 7 | 16.99 | 17.00 | 17.66 | 21.82 | 20.20 | 20.12 | 17.29 | 17.20 | 19.69 | 19.53 | 19.74 | 19.62 |
| 8 | 17.07 | 16.94 | 17.71 | 21.70 | 20.11 | 19.90 | 17.25 | 17.31 | 19.62 | 19.59 | 19.73 | 19.60 |
| 9 | 17.10 | 16.96 | 17.75 | 21.57 | 19.96 | 20.04 | 17.19 | 17.32 | 19.76 | 19.60 | 19.75 | 19.75 |
| 10 | 17.02 | 16.96 | 17.80 | 21.32 | 19.76 | 20.02 | 17.13 | 17.19 | 19.70 | 19.50 | 19.69 | 19.62 |
| 11 | 17.04 | 16.93 | 17.76 | 20.99 | 20.08 | 20.54 | 17.09 | 17.35 | 19.69 | 19.49 | 19.65 | 19.65 |
| 12 | 17.00 | 16.91 | 17.74 | 20.57 | 20.23 | 20.84 | 17.12 | 18.34 | 19.71 | 19.54 | 19.64 | 19.56 |
| 13 | 16.99 | 16.94 | 17.74 | 20.51 | 20.27 | 20.77 | 17.12 | 18.24 | 19.73 | 19.55 | 19.62 | 19.61 |
| 14 | 16.94 | 16.97 | 17.77 | 20.34 | 19.77 | 20.34 | 17.03 | 17.63 | 19.80 | 19.56 | 19.68 | 19.68 |
| 15 | 16.93 | 16.99 | 17.80 | 19.44 | 19.09 | 19.35 | 17.01 | 17.29 | 19.79 | 19.64 | 19.70 | 19.47 |
| 16 | 16.93 | 16.97 | 17.79 | 19.80 | 18.63 | 18.35 | 17.00 | 16.98 | 19.73 | 19.60 | 19.67 | 19.16 |
| 17 | 16.98 | 17.03 | 17.85 | 19.72 | 18.19 | 17.86 | 17.00 | 16.96 | 19.71 | 19.60 | 19.68 | 18.72 |
| 18 | 16.96 | 16.96 | 17.75 | 19.40 | 18.05 | 17.70 | 17.07 | 16.94 | 19.60 | 19.62 | 19.66 | 18.16 |
| 19 | 16.94 | 16.96 | 17.73 | 19.92 | 17.98 | 17.68 | 17.03 | 16.89 | 19.64 | 19.59 | 19.70 | 18.07 |
| 20 | 16.94 | 17.04 | 17.75 | 20.01 | 17.91 | 17.71 | 17.01 | 16.92 | 19.59 | 19.63 | 19.55 | 18.08 |
| 21 | 16.96 | 16.97 | 17.74 | 20.22 | 17.89 | 17.85 | 17.06 | 16.97 | 19.57 | 19.63 | 19.69 | 18.06 |
| 22 | 16.98 | 17.01 | 17.77 | 20.21 | 17.90 | 18.45 | 17.01 | 17.05 | 19.60 | 19.52 | 19.72 | 18.13 |
| 23 | 16.96 | 17.06 | 18.03 | 19.96 | 18.00 | 19.22 | 17.06 | 17.02 | 19.65 | 19.52 | 19.51 | 18.13 |
| 24 | 17.00 | 16.95 | 18.86 | 19.74 | 17.89 | 18.54 | 17.02 | 16.88 | 19.62 | 19.57 | 19.65 | 18.15 |
| 25 | 16.99 | 17.04 | 19.46 | 20.02 | 17.94 | 17.90 | 16.89 | 16.92 | 19.60 | 19.67 | 19.80 | 18.24 |
| 26 | 17.01 | 17.03 | 19.87 | 19.99 | 18.27 | 17.75 | 17.30 | 17.38 | 19.56 | 19.61 | 19.65 | 18.19 |
| 27 | 16.97 | 17.43 | 19.61 | 19.40 | 18.78 | 17.69 | 17.37 | 18.12 | 19.60 | 19.64 | 19.73 | 18.28 |
| 28 | 17.00 | 17.57 | 19.66 | 19.09 | 20.09 | 17.61 | 17.22 | 18.82 | 19.57 | 19.63 | 19.78 | 18.17 |
| 29 | 17.00 | 17.58 | 19.85 | 19.21 | --- | 17.37 | 17.25 | 19.47 | 19.59 | 19.68 | 19.71 | 18.24 |
| 30 | 17.04 | 17.67 | 21.30 | 19.67 | --- | 17.48 | 17.18 | 19.65 | 19.54 | 19.62 | 19.84 | 18.16 |
| 31 | 17.08 | --- | 21.46 | 19.96 | --- | 17.47 | --- | 19.69 | --- | 19.66 | 19.91 | --- |
| MEAN | 16.98 | 17.05 | 18.33 | 20.51 | 19.20 | 19.11 | 17.17 | 17.52 | 19.67 | 19.58 | 19.69 | 18.96 |
| MAX | 17.10 | 17.67 | 21.46 | 22.25 | 20.27 | 21.07 | 17.46 | 19.69 | 19.80 | 19.68 | 19.91 | 19.84 |
| MIN | 16.92 | 16.84 | 17.62 | 19.09 | 17.89 | 17.37 | 16.89 | 16.88 | 19.54 | 19.49 | 19.51 | 18.06 |

## 06342260 SQUARE BUTTE CREEK BELOW CENTER, ND

LOCATION.--Lat 47°03'25", long 101°11'35", in SE$^{1}/_{4}$ 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$^{2}$.

### WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Elevation of gage is 1,865 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair except for estimated daily discharges, which are poor. 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | e1.1 | 2.3 | 1.5 | e1.5 | e1.1 | e1.2 | 1.4 | 1.7 | 1.8 | 1.7 | 2.0 | 1.9 |
| 2 | e1.1 | 2.5 | 1.5 | e1.5 | e1.1 | e1.2 | 1.4 | 1.7 | 2.1 | 1.7 | 1.7 | 1.9 |
| 3 | e1.1 | 2.7 | 1.5 | e1.5 | e1.2 | e1.2 | 1.5 | 1.9 | 2.0 | 1.7 | 1.8 | 1.9 |
| 4 | e1.1 | 2.8 | 1.5 | e1.5 | e1.2 | e1.2 | 1.4 | 1.9 | 2.0 | 1.7 | 1.7 | 2.0 |
| 5 | e1.1 | 2.7 | 1.5 | e1.6 | e1.2 | e1.2 | 1.3 | 1.9 | 1.9 | 1.7 | 1.7 | 2.0 |
| 6 | e1.1 | 2.7 | 1.5 | e1.5 | e1.2 | e1.2 | 1.4 | 2.0 | 1.9 | 1.7 | 1.7 | 2.1 |
| 7 | e1.0 | 2.9 | 1.6 | e1.6 | e1.2 | e1.2 | 1.5 | 1.9 | 1.9 | 1.7 | 1.7 | 2.0 |
| 8 | e1.0 | 2.5 | 1.5 | e1.7 | e1.2 | e1.2 | 1.4 | 1.9 | 1.7 | 1.7 | 1.7 | 2.3 |
| 9 | e1.1 | 2.4 | 1.6 | e1.6 | e1.2 | e1.2 | 1.4 | 1.7 | 1.7 | 1.7 | 1.8 | 2.1 |
| 10 | e1.5 | 2.5 | 1.6 | e1.5 | e1.2 | e1.2 | 1.4 | 1.7 | 1.7 | 1.7 | 1.7 | 1.9 |
| 11 | 2.2 | 2.4 | 1.5 | e1.6 | e1.2 | e1.2 | 1.4 | 1.7 | 1.7 | 1.7 | 1.7 | 2.0 |
| 12 | 3.0 | 2.6 | 1.5 | e1.5 | e1.2 | e1.3 | 1.5 | 2.3 | 1.7 | 1.7 | 1.7 | 2.1 |
| 13 | 3.2 | 2.3 | 1.5 | e1.4 | e1.2 | e1.2 | 1.5 | 2.2 | 1.7 | 1.7 | 1.7 | 2.1 |
| 14 | 3.4 | 1.8 | 1.6 | e1.4 | e1.2 | e1.2 | 1.5 | 1.8 | 1.7 | 1.7 | 1.7 | 2.1 |
| 15 | 3.4 | 1.7 | 1.6 | e1.3 | e1.2 | e1.2 | 1.5 | 1.8 | 1.7 | 1.7 | 1.7 | 2.1 |
| 16 | 3.5 | 1.5 | 1.7 | e1.3 | e1.3 | e1.3 | 1.5 | 1.7 | 1.7 | e1.7 | 1.7 | 2.1 |
| 17 | 3.4 | 1.4 | 1.6 | e1.2 | e1.3 | e1.3 | 1.5 | 1.7 | 1.7 | e1.7 | 1.7 | 2.0 |
| 18 | 3.5 | 1.4 | 1.7 | e1.2 | e1.3 | e1.3 | 1.5 | 1.9 | 1.7 | e1.7 | 1.7 | 2.1 |
| 19 | 3.5 | 1.4 | 1.6 | e1.2 | e1.3 | e1.2 | 1.5 | 1.7 | 1.7 | 1.7 | 1.7 | 2.1 |
| 20 | 2.5 | 1.5 | e1.6 | e1.3 | e1.3 | e1.2 | 1.5 | 1.7 | 1.7 | 1.9 | 1.7 | 2.1 |
| 21 | 1.5 | 1.6 | e1.6 | e1.3 | e1.3 | e1.2 | 1.5 | 1.7 | 1.7 | 1.7 | 1.7 | 2.1 |
| 22 | 1.4 | 1.5 | e1.6 | e1.2 | e1.3 | e1.2 | 1.5 | 1.7 | 1.7 | 1.7 | 1.8 | 2.1 |
| 23 | 1.4 | 1.5 | e1.6 | e1.2 | e1.3 | e1.2 | 1.7 | 1.7 | 1.7 | 1.8 | 1.9 | 2.1 |
| 24 | 1.6 | 1.7 | e1.6 | e1.3 | e1.2 | e1.3 | 1.9 | 1.7 | 1.7 | 1.8 | 1.9 | 2.1 |
| 25 | 1.3 | 1.6 | e1.5 | e1.3 | e1.2 | e1.5 | 1.7 | 1.7 | 1.7 | 1.7 | 1.9 | 2.1 |
| 26 | 1.5 | 1.7 | e1.5 | e1.3 | e1.2 | e1.9 | 1.7 | 1.7 | 1.7 | 1.7 | 1.9 | 2.3 |
| 27 | 1.4 | 1.6 | e1.5 | e1.2 | e1.2 | e4.0 | 2.1 | 1.7 | 1.7 | 1.7 | 1.9 | 2.7 |
| 28 | 1.9 | 1.6 | e1.5 | e1.2 | e1.2 | e2.5 | 1.9 | 1.7 | 1.7 | 1.7 | 1.9 | 2.6 |
| 29 | 2.1 | 1.5 | e1.5 | e1.1 | --- | e1.6 | 1.9 | 1.7 | 1.7 | 1.7 | 1.9 | 2.1 |
| 30 | 2.2 | 1.7 | e1.5 | e1.1 | --- | 1.4 | 1.8 | 1.7 | 1.7 | 1.7 | 1.9 | 2.1 |
| 31 | 2.1 | --- | e1.5 | e1.1 | --- | 1.4 | --- | 1.7 | --- | 1.9 | 1.9 | --- |
| TOTAL | 61.2 | 60.0 | 48.1 | 42.2 | 34.2 | 43.6 | 46.7 | 55.5 | 52.7 | 53.3 | 55.1 | 63.2 |
| MEAN | 1.974 | 2.000 | 1.552 | 1.361 | 1.221 | 1.406 | 1.557 | 1.790 | 1.757 | 1.719 | 1.777 | 2.107 |
| MAX | 3.5 | 2.9 | 1.7 | 1.7 | 1.3 | 4.0 | 2.1 | 2.3 | 2.1 | 1.9 | 2.0 | 2.7 |
| MIN | 1.0 | 1.4 | 1.5 | 1.1 | 1.1 | 1.2 | 1.3 | 1.7 | 1.7 | 1.7 | 1.7 | 1.9 |
| AC-FT | 121 | 119 | 95 | 84 | 68 | 86 | 93 | 110 | 105 | 106 | 109 | 125 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 1.562 | 1.466 | 1.401 | 1.360 | 7.219 | 55.14 | 36.24 | 9.396 | 6.806 | 10.15 | 2.995 | 1.633 |
| MAX | 2.98 | 2.99 | 3.35 | 2.10 | 109 | 216 | 223 | 47.8 | 65.0 | 175 | 34.5 | 3.64 |
| (WY) | 1981 | 1983 | 1978 | 2001 | 1996 | 1987 | 1969 | 1995 | 1966 | 1993 | 1993 | 1980 |
| MIN | 0.24 | 0.19 | 0.21 | 0.20 | 0.089 | 1.24 | 1.00 | 0.79 | 0.57 | 0.71 | 0.83 | 0.35 |
| (WY) | 1968 | 1968 | 1968 | 1968 | 1966 | 1998 | 1998 | 1989 | 1989 | 1989 | 1982 | 1967 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1965 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 6738.8 | | 615.8 | | | |
| ANNUAL MEAN | 18.46 | | 1.687 | | 11.33 | |
| HIGHEST ANNUAL MEAN | | | | | 30.0 | 1969 |
| LOWEST ANNUAL MEAN | | | | | 0.86 | 1968 |
| HIGHEST DAILY MEAN | 480 | Mar 19 | e4.0 | Mar 27 | 2670 | Jul 18 1969 |
| LOWEST DAILY MEAN | 1.0 | Oct 7 | 1.0 | Oct 7 | 0.00 | Feb 14 1966 |
| ANNUAL SEVEN-DAY MINIMUM | 1.1 | Oct 2 | 1.1 | Oct 2 | 0.00 | Feb 14 1966 |
| MAXIMUM PEAK FLOW | | | e4.0 | Mar 27 | 9700 | Jun 24 1966 |
| MAXIMUM PEAK STAGE | | | b2.20 | Mar 27 | 14.35 | Jun 24 1966 |
| INSTANTANEOUS LOW FLOW | | | 1.0 | Oct 7 | 0.00 | Feb 14 1966 |
| ANNUAL RUNOFF (AC-FT) | 13370 | | 1220 | | 8210 | |
| 10 PERCENT EXCEEDS | 50 | | 2.1 | | 7.2 | |
| 50 PERCENT EXCEEDS | 2.1 | | 1.7 | | 1.5 | |
| 90 PERCENT EXCEEDS | 1.3 | | 1.2 | | 0.90 | |

b Backwater from ice
e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 10... | 1135 | 1.2 | -- | -- | -- | 1380 | 10.0 | 12.0 | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 12... | 1500 | 1.6 | -- | -- | -- | 1510 | -10.0 | .0 | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 13... | 1415 | 1.4 | -- | -- | -- | 1470 | 8.0 | .0 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 25... | 1140 | 1.5 | -- | -- | -- | 1470 | -10.0 | .0 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 08... | 1450 | 1.5 | -- | -- | -- | 1470 | 5.0 | .0 | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 07... | 1415 | 1.8 | 8.1 | 8.2 | 1520 | 1500 | 5.0 | 10.0 | 360 | 78.0 | 39.0 | 9.70 | 5 |
| JUL | | | | | | | | | | | | | |
| 01... | 1600 | 1.7 | -- | -- | -- | 1520 | 30.0 | 21.0 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 09... | 1105 | 1.6 | -- | -- | -- | 1510 | 20.0 | 24.0 | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 30... | 1530 | 2.1 | -- | -- | -- | 1560 | 18.0 | 13.0 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 10... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 12... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 07... | 210 | 55 | 412 | 11.0 | .40 | 410 | 5.01 | 1030 | 1010 | 1.0 | 60 | <1 | 40 |
| JUL | | | | | | | | | | | | | |
| 01... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 30... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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 | | | | | |
| 10... | -- | -- | -- | -- | -- |
| DEC | | | | | |
| 12... | -- | -- | -- | -- | -- |
| FEB | | | | | |
| 13... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 25... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 08... | -- | -- | -- | -- | -- |
| MAY | | | | | |
| 07... | 300 | <.10 | 3 | <1 | 1100 |
| JUL | | | | | |
| 01... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 09... | -- | -- | -- | -- | -- |
| SEP | | | | | |
| 30... | -- | -- | -- | -- | -- |

< Less than

## 06342450 BURNT CREEK NEAR BISMARCK, ND

LOCATION.--Lat 46°54'54", long 100°48'48", in SW$^1/_4$NW$^1/_4$SW$^1/_4$ sec.29, T.140 N., R.80 W., Burleigh County, Hydrologic Unit 10130101, on right bank, upstream of county highway bridge, and 7 mi northwest of Bismarck.

DRAINAGE AREA.--108 mi$^2$.

### WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1967 to current year (seasonal records only since 1982).

GAGE.--Water-stage recorder. Elevation of gage is 1,690 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except for estimated daily discharges, which are poor.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, about 250 ft$^3$/s, Mar. 28, gage height, 7.21 ft, backwater from ice; minimum daily discharge, no flow many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | --- | --- | --- | --- | e0.00 | e1.4 | 35 | 7.3 | 5.0 | e0.47 | e0.00 | 0.00 |
| 2 | --- | --- | --- | --- | e0.00 | e1.3 | e25 | 6.6 | 4.6 | e0.42 | e0.00 | 0.00 |
| 3 | --- | --- | --- | --- | e0.00 | e1.4 | e17 | 5.9 | 4.5 | e0.40 | e0.00 | 0.00 |
| 4 | --- | --- | --- | --- | e0.00 | e1.5 | e15 | 5.8 | 4.8 | e0.49 | e0.00 | 0.00 |
| 5 | --- | --- | --- | --- | e0.00 | e1.6 | e14 | 5.7 | 5.7 | e0.45 | e0.00 | 0.00 |
| 6 | --- | --- | --- | --- | e0.00 | e1.7 | 14 | 5.7 | 5.4 | e0.41 | e0.00 | 0.00 |
| 7 | --- | --- | --- | --- | e0.00 | e1.7 | e200 | 6.0 | 5.1 | e0.39 | e0.00 | 0.00 |
| 8 | --- | --- | --- | --- | e0.00 | e1.6 | e16 | 6.8 | 5.3 | e0.49 | e0.00 | 0.00 |
| 9 | --- | --- | --- | --- | e0.00 | e1.5 | e12 | 7.7 | 5.4 | e0.50 | 0.00 | 0.00 |
| 10 | --- | --- | --- | --- | e0.00 | e1.4 | 12 | 8.3 | 5.5 | e0.47 | 0.00 | 0.00 |
| 11 | --- | --- | --- | --- | e0.00 | e1.5 | 14 | 7.8 | 5.3 | e0.35 | 0.00 | 0.00 |
| 12 | --- | --- | --- | --- | e0.00 | e1.6 | e14 | 7.0 | 5.5 | e0.26 | 0.00 | 0.00 |
| 13 | --- | --- | --- | --- | e0.00 | e1.8 | 14 | 6.8 | 5.1 | e0.18 | 0.00 | 0.00 |
| 14 | --- | --- | --- | --- | e0.02 | e1.9 | 14 | 6.2 | 4.5 | e0.15 | 0.00 | 0.00 |
| 15 | --- | --- | --- | --- | e0.03 | e2.0 | 13 | 5.5 | 5.0 | e0.10 | 0.00 | 0.00 |
| 16 | --- | --- | --- | --- | e0.05 | e2.0 | 12 | 5.2 | 4.5 | e0.08 | 0.00 | 0.00 |
| 17 | --- | --- | --- | --- | e0.08 | e1.8 | e10 | 5.2 | 4.4 | e0.06 | 0.00 | 0.00 |
| 18 | --- | --- | --- | --- | e0.10 | e1.7 | e9.9 | 5.7 | 5.1 | e0.03 | 0.00 | 0.00 |
| 19 | --- | --- | --- | --- | e0.20 | e1.6 | e12 | 5.5 | 5.4 | e0.02 | 0.00 | 0.00 |
| 20 | --- | --- | --- | --- | e0.30 | e1.7 | e11 | 5.0 | 5.3 | e0.02 | 0.00 | 0.00 |
| 21 | --- | --- | --- | --- | e0.50 | e1.8 | e11 | 4.6 | 5.4 | e0.00 | 0.00 | 0.00 |
| 22 | --- | --- | --- | --- | e0.80 | e1.9 | e9.3 | 4.4 | 5.7 | e0.00 | 0.00 | 0.00 |
| 23 | --- | --- | --- | --- | e1.0 | e2.0 | e8.7 | 6.0 | 4.8 | e0.00 | 0.00 | 0.00 |
| 24 | --- | --- | --- | --- | e2.0 | e6.0 | e8.4 | 6.3 | 5.1 | e0.00 | 0.00 | 0.00 |
| 25 | --- | --- | --- | --- | e1.8 | e20 | e7.6 | 6.2 | 13 | e0.00 | 0.00 | 0.00 |
| 26 | --- | --- | --- | --- | e1.6 | e40 | 7.0 | 6.2 | 6.7 | e0.00 | 0.00 | 0.00 |
| 27 | --- | --- | --- | --- | e1.5 | e95 | 6.8 | 6.0 | 4.1 | e0.00 | 0.00 | 0.00 |
| 28 | --- | --- | --- | --- | e1.5 | e191 | 7.1 | 5.7 | 2.6 | e0.00 | 0.00 | 0.00 |
| 29 | --- | --- | --- | --- | --- | e107 | 8.4 | 5.8 | 1.7 | e0.00 | 0.00 | 0.00 |
| 30 | --- | --- | --- | --- | --- | e61 | 8.3 | 5.2 | 1.1 | e0.00 | 0.00 | 0.00 |
| 31 | --- | --- | --- | --- | --- | e46 | --- | 5.3 | --- | e0.00 | 0.00 | --- |
| TOTAL | --- | --- | --- | --- | 11.48 | 604.4 | 566.5 | 187.4 | 151.6 | 5.74 | 0.00 | 0.00 |
| MEAN | --- | --- | --- | --- | 0.410 | 19.50 | 18.88 | 6.045 | 5.053 | 0.185 | 0.000 | 0.000 |
| MAX | --- | --- | --- | --- | 2.0 | 191 | 200 | 8.3 | 13 | 0.50 | 0.00 | 0.00 |
| MIN | --- | --- | --- | --- | 0.00 | 1.3 | 6.8 | 4.4 | 1.1 | 0.00 | 0.00 | 0.00 |
| AC-FT | --- | --- | --- | --- | 23 | 1200 | 1120 | 372 | 301 | 11 | 0.00 | 0.00 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 0.306 | 0.259 | 0.105 | 0.054 | 12.89 | 45.39 | 31.49 | 4.822 | 3.036 | 3.788 | 1.274 | 0.403 |
| MAX | 1.97 | 1.19 | 0.66 | 0.45 | 87.2 | 170 | 256 | 15.0 | 17.2 | 72.0 | 18.1 | 4.80 |
| (WY) | 1981 | 1981 | 1978 | 1979 | 2000 | 1987 | 1969 | 1995 | 2000 | 1993 | 1999 | 1999 |
| MIN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| (WY) | 1968 | 1968 | 1968 | 1968 | 1968 | 1990 | 1990 | 1990 | 1977 | 1973 | 1972 | 1970 |

| SUMMARY STATISTICS | WATER YEARS 1968 - 2002 | |
|---|---|---|
| ANNUAL MEAN | a7.573 | |
| HIGHEST ANNUAL MEAN | a22.2 | 1969 |
| LOWEST ANNUAL MEAN | a0.55 | 1977 |
| HIGHEST DAILY MEAN | 3900 | Apr 18 1979 |
| LOWEST DAILY MEAN | 0.00 | Oct 1 1967 |
| ANNUAL SEVEN-DAY MINIMUM | 0.00 | Oct 1 1967 |
| MAXIMUM PEAK FLOW | b10000 | Apr 18 1979 |
| MAXIMUM PEAK STAGE | 16.93 | Apr 18 1979 |
| ANNUAL RUNOFF (AC-FT) | a5490 | |
| 10 PERCENT EXCEEDS | 6.0 | |
| 50 PERCENT EXCEEDS | 0.03 | |
| 90 PERCENT EXCEEDS | 0.00 | |

a Based on complete water years only (1968-81)
b From rating curve extended above 2,200 ft$^3$/s on basis of culvert and flow over road indirect measurement of peak flow at U.S. Highway 83
e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 09... | 1035 | .25 | -- | -- | -- | 1700 | 9.5 | 9.5 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 28... | 1615 | 191 | -- | -- | -- | 458 | 8.5 | .5 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 24... | 1535 | 8.4 | 8.5 | -- | 988 | 1060 | 10.5 | 10.0 | 370 | 66.0 | 51.0 | 8.30 | 2 |
| JUL | | | | | | | | | | | | | |
| 01... | 1505 | .49 | 7.8 | -- | 1410 | 1320 | -- | 27.5 | 420 | 54.0 | 70.0 | 7.60 | 3 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 28... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 24... | 99.0 | 36 | 312 | 9.3 | .20 | 280 | 16.4 | 724 | 702 | <1.0 | 70 | <1 | 70 |
| JUL | | | | | | | | | | | | | |
| 01... | 160 | 45 | 454 | 9.1 | .30 | 350 | 1.28 | 961 | 923 | 3.0 | 20 | 1 | 110 |

| Date | 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 | | | | | |
| 09... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 28... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 24... | 30 | <.10 | <1 | <1 | 640 |
| JUL | | | | | |
| 01... | 100 | <.10 | 1 | 1 | 660 |

< Less than

## 06342500 MISSOURI RIVER AT BISMARCK, ND

LOCATION.--Lat 46°48'51", long 100°49'12", in SE$^1/_4$NW$^1/_4$SE$^1/_4$ 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 mile 1,314.5.

DRAINAGE AREA.--186,400 mi$^2$, 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 National Geodetic Vertical Datum of 1929, revised. See WSP 1729 or 1917 for history of changes prior to Sept. 30, 1937.

REMARKS.--Records good except for estimated daily discharges, which are fair. Flow regulated by Lake Sakakawea (station 06338000), 75.4 mi upstream, since November 1953.

EXTREMES PRIOR TO COMPLETION OF GARRISON DAM.--Maximum discharge, 500,000 ft$^3$/s, Apr. 6, 1952, gage height, 27.90 ft.

EXTREMES SINCE COMPLETION OF GARRISON DAM.--Since completion of Garrison Dam in 1953, maximum discharge, 68,900 ft$^3$/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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 10100 | 10300 | 13100 | e13100 | e13500 | e14200 | 13100 | 11200 | 21800 | 21600 | 22200 | 23300 |
| 2 | 9830 | 9950 | 13000 | e13200 | e13500 | e13900 | 12900 | 11200 | 21900 | 21600 | 22000 | 23000 |
| 3 | 9950 | 9850 | 13300 | e13300 | e13500 | e13600 | 12800 | 11100 | 22300 | 21200 | 21600 | 22700 |
| 4 | 9970 | 9790 | 13400 | e13300 | e13700 | e13400 | 12600 | 11400 | 22300 | 21500 | 22000 | 22900 |
| 5 | 9890 | 10200 | 13200 | e13300 | e13500 | e13500 | 12600 | 11300 | 21600 | 21700 | 21900 | 22600 |
| 6 | 9980 | 10200 | 13200 | e13300 | e13400 | e13900 | 12300 | 11300 | 22000 | 21700 | 22200 | 22300 |
| 7 | 10200 | 10100 | 13000 | e13400 | e13500 | e13800 | 12300 | 11700 | 21900 | 21400 | 22400 | 22100 |
| 8 | 10100 | 10400 | 13100 | e13400 | e13500 | e13400 | 12100 | e11700 | 22000 | 21400 | 22500 | 22100 |
| 9 | 10600 | 10100 | 13300 | e13400 | e13600 | e13500 | 12000 | e12300 | 22000 | 22000 | 22700 | 22300 |
| 10 | 10300 | 10300 | 13400 | e13600 | e13500 | e13500 | 11900 | e12400 | 22400 | 21700 | 22400 | 22400 |
| 11 | 10300 | 10200 | 13400 | e13600 | e13400 | e13200 | 11500 | e12600 | e22200 | 21400 | 22300 | 22000 |
| 12 | 10100 | 10000 | 13400 | e13300 | e13500 | e13200 | 11500 | e14100 | 22000 | 21400 | 22100 | 22000 |
| 13 | 10300 | 10100 | 13200 | e13300 | e13700 | e13100 | 11600 | 15500 | 22200 | 21700 | 21900 | 21600 |
| 14 | 10100 | 10200 | 13300 | e13200 | e13500 | e12900 | 11300 | e14500 | 22400 | 21600 | 22100 | 22000 |
| 15 | 10100 | 10300 | 13400 | e13000 | e13200 | e12800 | 11100 | e12500 | 22600 | 21800 | 22200 | 21900 |
| 16 | 9960 | 10200 | 13400 | e13300 | e13300 | e12600 | 11100 | e11200 | 22400 | 22100 | 22300 | 20500 |
| 17 | 10000 | 10300 | 13400 | e13400 | e13400 | e12500 | 11100 | 10700 | 22300 | 21800 | 22200 | 18600 |
| 18 | 10200 | 10400 | 13400 | e13500 | e13500 | e12400 | 11300 | 10600 | 22200 | 22000 | 22200 | 15800 |
| 19 | 9980 | 10200 | 13200 | e13500 | e13700 | e12400 | 11400 | 10400 | 21700 | 21800 | 22100 | 15100 |
| 20 | 9970 | 10500 | 13200 | e13200 | e13500 | e12500 | 11100 | 10300 | 22100 | 22000 | 22000 | 14000 |
| 21 | 10000 | 10400 | 13200 | e13400 | e13400 | e12500 | 11400 | 10300 | 21800 | 22100 | 21800 | 14600 |
| 22 | 10000 | 10300 | 13200 | e13500 | e13400 | e12600 | 11200 | 10500 | 21800 | 21900 | 22600 | 14400 |
| 23 | 10100 | 10600 | 13100 | e13400 | e13500 | e12900 | 11300 | 10900 | 22000 | 21400 | 21800 | 14500 |
| 24 | 10200 | 10200 | e13500 | e13400 | e13500 | e12500 | 11400 | 10300 | 22100 | 21700 | 21800 | 14200 |
| 25 | 10500 | 10300 | e13500 | e13300 | e13400 | e12400 | 11100 | 10200 | 22100 | 22200 | 22500 | 14700 |
| 26 | 10400 | 10600 | e13200 | e13300 | e13600 | e12500 | 11000 | 10900 | 21800 | 22100 | 22700 | 14400 |
| 27 | 10300 | 11000 | e13300 | e13500 | e13900 | e12600 | 12700 | 12800 | 21900 | 22000 | 22200 | 14700 |
| 28 | 10200 | 12600 | e13300 | e13500 | e14100 | e12700 | 12200 | 15700 | 21700 | 22100 | 22700 | 14700 |
| 29 | 10400 | 12800 | e13200 | e13500 | --- | e12800 | 11800 | 18900 | 21800 | 22000 | 22500 | 14500 |
| 30 | 10100 | 13000 | e13000 | e13400 | --- | e12900 | 12300 | e21400 | 21700 | 22200 | 22900 | 14700 |
| 31 | 10800 | --- | e13000 | e13500 | --- | e13200 | --- | 21700 | --- | 22100 | 23300 | --- |
| TOTAL | 314930 | 315390 | 410800 | 414300 | 378700 | 403900 | 354000 | 391600 | 661000 | 675200 | 690100 | 564600 |
| MEAN | 10160 | 10510 | 13250 | 13360 | 13520 | 13030 | 11800 | 12630 | 22030 | 21780 | 22260 | 18820 |
| MAX | 10800 | 13000 | 13500 | 13600 | 14100 | 14200 | 13100 | 21700 | 22600 | 22200 | 23300 | 23300 |
| MIN | 9830 | 9790 | 13000 | 13000 | 13200 | 12400 | 11000 | 10200 | 21600 | 21200 | 21600 | 14000 |
| AC-FT | 624700 | 625600 | 814800 | 821800 | 751200 | 801100 | 702200 | 776700 | 1311000 | 1339000 | 1369000 | 1120000 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1954 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 21280 | 21280 | 20690 | 22770 | 24840 | 22500 | 21280 | 22760 | 24360 | 25310 | 25110 | 22210 |
| MAX | 48180 | 43240 | 31690 | 32350 | 34840 | 34370 | 40370 | 42030 | 43540 | 64610 | 57010 | 45060 |
| (WY) | 1998 | 1998 | 1970 | 1969 | 1969 | 1972 | 1972 | 1972 | 1975 | 1975 | 1975 | 1997 |
| 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 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | [a]WATER YEARS 1954 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 5101070 | | 5574520 | | | |
| ANNUAL MEAN | 13980 | | 15270 | | 22860 | |
| HIGHEST ANNUAL MEAN | | | | | 35630 | 1975 |
| LOWEST ANNUAL MEAN | | | | | 14320 | 1960 |
| HIGHEST DAILY MEAN | 20200 | Jan 26 | 23300 | Aug 31 | 68800 | Jul 13 1975 |
| LOWEST DAILY MEAN | 9580 | Sep 23 | 9790 | Nov 4 | 4000 | Mar 25 1955 |
| ANNUAL SEVEN-DAY MINIMUM | 9760 | Sep 21 | 9990 | Oct 1 | 4860 | Mar 21 1955 |
| MAXIMUM PEAK FLOW | | | 24800 | Aug 31 | 68900 | Jul 13 1975 |
| MAXIMUM PEAK STAGE | | | b10.25 | Dec 27 | b14.80 | Jan 13 1983 |
| ANNUAL RUNOFF (AC-FT) | 10120000 | | 11060000 | | 16560000 | |
| 10 PERCENT EXCEEDS | 18400 | | 22200 | | 34000 | |
| 50 PERCENT EXCEEDS | 13900 | | 13400 | | 21900 | |
| 90 PERCENT EXCEEDS | 10200 | | 10200 | | 11900 | |

a Since completion of Garrison Dam
b Backwater from ice
e Estimated

06342500 MISSOURI RIVER AT BISMARCK, ND--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | BARO-METRIC PRES-SURE (MM OF HG) (00025) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MAY | | | | | | | | | | | | | |
| 13... | 1325 | 16100 | 714 | 8.4 | 8.3 | 685 | 638 | 19.5 | 15.0 | 210 | 49.0 | 21.0 | 3.80 |
| SEP | | | | | | | | | | | | | |
| 04... | 1225 | 23200 | -- | 7.9 | --e | 683 | 630 | 28.0 | 20.5 | 210 | 50.0 | 21.0 | 4.10 |

| Date | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | ARSENIC DIS-SOLVED (UG/L AS AS) (01000) | IRON, DIS-SOLVED (UG/L AS FE) (01046) | LEAD, DIS-SOLVED (UG/L AS PB) (01049) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MAY | | | | | | | | | | | | | |
| 13... | 2 | 61.0 | 38 | 174 | 14.0 | .60 | 170 | 19200 | 442 | 423 | 2.0 | 70 | 1 |
| SEP | | | | | | | | | | | | | |
| 04... | 2 | 60.0 | 38 | 164 | 14.0 | .60 | 170 | 26300 | 419 | 419 | 1.0 | 10 | 1 |

| 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) |
|---|---|---|---|---|---|---|
| MAY | | | | | | |
| 13... | 40 | 10 | <.10 | 3 | 1 | 520 |
| SEP | | | | | | |
| 04... | 40 | 10 | .10 | 2 | 1 | 460 |

< Less than
e Required equipment not functional/available

## 06343500 E.A. PATTERSON LAKE NEAR DICKINSON, ND

LOCATION.--Lat 46°52'11", long 102°49'37", in NE$^1/_4$NW$^1/_4$SW$^1/_4$ 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$^2$, 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 National Geodetic Vertical Datum of 1929 (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 9,340 acre-ft, June 10, elevation, 2,420.59 ft; minimum, 6,440 acre-ft, Sept. 30, elevation, 2,418.00 ft.

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Elevation (feet) | Contents (acre-feet) | Change in contents (acre-feet) |
|---|---|---|---|
| Sept. 30 | 2,419.22 | 7,710 | -- |
| Oct. 31 | 2,419.01 | 7,480 | -230 |
| Nov 30 | 2,419.00 | 7,470 | -10 |
| Dec. 31 | 2,419.08 | 7,560 | +90 |
| CAL YR 2001 | -- | -- | +2,470 |
| Jan. 31 | 2,419.16 | 7,650 | +90 |
| Feb. 28 | 2,419.23 | 7,720 | +70 |
| Mar. 31 | 2,419.47 | 7,990 | +270 |
| Apr. 30 | 2,419.92 | 8.520 | +530 |
| May 31 | 2,419.85 | 8,430 | -90 |
| June 30 | 2,419.90 | 8,490 | +60 |
| July 31 | 2,419.16 | 7,650 | -840 |
| Aug. 31 | 2,418.66 | 7,110 | -540 |
| Sept. 30 | 2,418.00 | 6,440 | -670 |
| WTR YR 2002 | -- | -- | -1,270 |

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 2001 TO SEPTEMBER 2002

| 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) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 16... | 1055 | 1.0 | 1.5 | 1280 | 8.2 | 20 | 220 | 42.7 | 28.0 | 9.91 | 6 | 196 | 64 |
| FEB | | | | | | | | | | | | | |
| 07... | 1105 | .50 | 1.0 | 1580 | 8.4 | 50 | 280 | 54.1 | 34.8 | 11.9 | 6 | 247 | 65 |
| MAY | | | | | | | | | | | | | |
| 09... | 1035 | 1.0 | 1.5 | -- | 8.4 | 20 | 330 | 59.4 | 43.7 | 10.5 | 4 | 168 | 52 |
| AUG | | | | | | | | | | | | | |
| 01... | 1045 | .90 | 1.4 | 1380 | 8.4 | 52 | 230 | 45.7 | 28.0 | 10.9 | 6 | 216 | 66 |

| Date | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, 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) (00631) | PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 16... | 212 | 7.80 | .3 | 12.2 | 437 | .30 | .029 | .27 | .30 | .15 | .12 | 868 | 864 |
| FEB | | | | | | | | | | | | | |
| 07... | 283 | 9.44 | .3 | 3.1 | 533 | .10 | <.008 | -- | .08 | .07 | .04 | 1110 | 1060 |
| MAY | | | | | | | | | | | | | |
| 09... | 252 | 8.71 | .2 | 1.8 | 460 | <.04 | <.008 | -- | E.04 | <.06 | <.02 | 934 | 903 |
| AUG | | | | | | | | | | | | | |
| 01... | 233 | 7.53 | .3 | 6.8 | 470 | <.04 | <.008 | -- | .05 | E.04 | .03 | 961 | 926 |

| Date | BORON, DIS-SOLVED (UG/L AS B) (01020) |
|---|---|
| OCT | |
| 16... | 310 |
| FEB | |
| 07... | 370 |
| MAY | |
| 09... | 280 |
| AUG | |
| 01... | 290 |

06343500 E.A. PATTERSON LAKE NEAR DICKINSON, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| 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 (PER-CENT SATUR-ATION) (00301) | BARO-METRIC PRES-SURE (MM OF HG) (00025) | ICE THICK-NESS METERS (82131) | TRANS-PAR-ENCY (SECCHI DISK) (IN) (00077) | TEMPER-ATURE AIR (DEG C) (00020) | WIND DIREC-TION (DEG. FROM TRUE NORTH) (00036) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 16... | 1045 | 20.3 | .0 | 1330 | 7.6 | 8.3 | 9.8 | 90 | 707 | -- | 22.0 | 10.0 | -- |
| 16... | 1046 | -- | 1.0 | 1330 | 7.8 | 8.2 | 9.5 | -- | -- | -- | -- | -- | -- |
| 16... | 1047 | -- | 2.0 | 1330 | 7.9 | 8.2 | 9.2 | -- | -- | -- | -- | -- | -- |
| 16... | 1048 | -- | 3.0 | 1330 | 7.9 | 8.2 | 9.1 | -- | -- | -- | -- | -- | -- |
| 16... | 1049 | -- | 4.0 | 1330 | 7.9 | 8.1 | 9.2 | -- | -- | -- | -- | -- | -- |
| 16... | 1050 | -- | 5.0 | 1330 | 8.0 | 7.9 | 9.0 | -- | -- | -- | -- | -- | -- |
| 16... | 1051 | -- | 6.2 | 1330 | 8.0 | 7.6 | 9.0 | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 07... | 1050 | 21.6 | .50 | 1630 | 8.4 | 1.8 | 8.7 | 68 | 700 | .40 | 20.0 | 4.0 | 225 |
| 07... | 1052 | -- | 1.0 | 1620 | 8.4 | 2.2 | 8.5 | -- | -- | -- | -- | -- | -- |
| 07... | 1054 | -- | 2.0 | 1610 | 8.4 | 2.6 | 8.5 | -- | -- | -- | -- | -- | -- |
| 07... | 1056 | -- | 4.0 | 1650 | 8.3 | 3.4 | 6.0 | -- | -- | -- | -- | -- | -- |
| 07... | 1058 | -- | 6.0 | 1770 | 8.1 | 4.0 | 4.1 | -- | -- | -- | -- | -- | -- |
| 07... | 1100 | -- | 6.6 | 1780 | 8.1 | 4.2 | 4.1 | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 09... | 1025 | 18.7 | .0 | 1500 | 8.2 | 6.3 | 12.0 | 106 | 700 | -- | 14.4 | 3.0 | 270 |
| 09... | 1026 | -- | .50 | 1500 | 8.2 | 6.3 | 11.7 | -- | -- | -- | -- | -- | -- |
| 09... | 1027 | -- | 1.0 | 1500 | 8.2 | 6.3 | 11.6 | -- | -- | -- | -- | -- | -- |
| 09... | 1028 | -- | 2.0 | 1500 | 8.2 | 6.3 | 11.5 | -- | -- | -- | -- | -- | -- |
| 09... | 1029 | -- | 4.0 | 1510 | 8.2 | 6.2 | 11.5 | -- | -- | -- | -- | -- | -- |
| 09... | 1030 | -- | 5.7 | 1510 | 8.2 | 6.2 | 11.4 | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 01... | 1035 | 20.7 | .0 | 1440 | 8.7 | 22.8 | 8.3 | 106 | 704 | -- | 15.6 | 16.0 | 320 |
| 01... | 1036 | -- | .50 | 1440 | 8.7 | 22.8 | 8.2 | -- | -- | -- | -- | -- | -- |
| 01... | 1037 | -- | 1.0 | 1440 | 8.7 | 22.8 | 8.1 | -- | -- | -- | -- | -- | -- |
| 01... | 1038 | -- | 2.0 | 1440 | 8.7 | 22.8 | 8.0 | -- | -- | -- | -- | -- | -- |
| 01... | 1039 | -- | 3.0 | 1440 | 8.7 | 22.8 | 8.0 | -- | -- | -- | -- | -- | -- |
| 01... | 1040 | -- | 4.0 | 1440 | 8.7 | 22.8 | 8.0 | -- | -- | -- | -- | -- | -- |
| 01... | 1041 | -- | 5.0 | 1440 | 8.7 | 22.8 | 7.9 | -- | -- | -- | -- | -- | -- |
| 01... | 1042 | -- | 6.0 | 1440 | 8.7 | 22.8 | 7.8 | -- | -- | -- | -- | -- | -- |
| 01... | 1043 | -- | 6.3 | 1440 | 8.7 | 22.8 | 7.7 | -- | -- | -- | -- | -- | -- |

| Date | WIND SPEED (MILES PER HOUR) (00035) |
|---|---|
| OCT | |
| 16... | <5.0 |
| 16... | -- |
| 16... | -- |
| 16... | -- |
| 16... | -- |
| 16... | -- |
| 16... | -- |
| FEB | |
| 07... | 9.0 |
| 07... | -- |
| 07... | -- |
| 07... | -- |
| 07... | -- |
| 07... | -- |
| MAY | |
| 09... | 20 |
| 09... | -- |
| 09... | -- |
| 09... | -- |
| 09... | -- |
| 09... | -- |
| AUG | |
| 01... | 14 |
| 01... | -- |
| 01... | -- |
| 01... | -- |
| 01... | -- |
| 01... | -- |
| 01... | -- |
| 01... | -- |
| 01... | -- |

< Less than
E Estimated value

## 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 $mi^2$, approximately.

### WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Elevation of gage is 2,510 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS--Records good except for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.15 | 0.63 | 1.1 | e0.63 | 0.65 | e0.73 | e16 | 2.5 | 0.62 | 0.43 | 0.74 | 0.87 |
| 2 | 0.19 | 0.87 | 1.2 | e0.62 | e0.65 | e0.70 | e12 | 2.1 | 0.87 | 0.37 | 0.56 | 0.84 |
| 3 | 0.14 | 1.1 | 1.2 | e0.62 | e0.72 | e0.57 | e6.9 | 1.7 | 1.2 | 0.34 | 0.49 | 0.70 |
| 4 | 0.20 | 1.2 | 1.2 | e0.62 | e0.75 | 0.72 | e5.8 | 1.8 | 1.7 | 0.34 | 0.40 | 0.51 |
| 5 | 0.35 | 1.0 | 1.3 | e0.63 | e0.70 | 0.87 | e5.6 | 2.8 | 1.8 | 0.42 | 0.31 | 0.40 |
| 6 | 0.29 | 0.95 | 1.2 | e0.69 | e0.68 | 0.89 | e6.1 | 2.0 | 1.7 | 0.38 | 0.33 | 0.34 |
| 7 | 0.68 | 1.1 | 1.2 | e0.83 | e0.61 | 0.88 | 7.5 | 1.5 | 1.5 | 0.34 | 0.39 | 0.37 |
| 8 | 0.37 | 1.4 | 1.1 | e0.93 | e0.64 | e0.73 | 7.5 | 2.0 | 1.5 | 0.36 | 0.48 | 0.51 |
| 9 | 0.23 | 1.7 | 1.1 | e0.98 | e0.72 | e0.67 | 8.5 | 2.3 | 1.7 | 0.57 | 0.48 | 0.71 |
| 10 | 0.22 | 1.7 | 1.2 | e1.0 | e0.64 | e0.35 | 8.5 | 3.5 | 307 | 0.59 | 0.45 | 1.0 |
| 11 | 0.23 | 1.6 | 1.2 | e1.1 | e0.65 | e0.44 | 7.7 | 5.7 | 297 | 0.61 | 0.57 | 1.2 |
| 12 | 0.26 | 1.6 | 1.2 | e1.1 | e0.81 | e0.49 | 7.4 | 6.3 | 84 | 0.60 | 0.68 | 1.2 |
| 13 | 0.26 | 1.5 | e1.1 | e1.1 | e0.70 | e0.93 | 7.8 | 7.7 | 42 | 0.55 | 0.61 | 1.2 |
| 14 | 0.30 | 1.5 | e1.1 | e1.1 | e0.62 | e1.3 | 7.4 | 6.6 | 26 | 0.47 | 0.57 | 1.1 |
| 15 | 0.29 | 1.5 | e1.1 | e1.1 | e0.84 | e1.9 | 7.1 | 5.4 | 18 | 0.39 | 0.62 | 1.1 |
| 16 | 0.28 | 1.5 | e1.2 | e1.0 | e0.82 | e2.7 | 6.6 | 4.7 | 13 | 0.33 | 0.49 | 1.0 |
| 17 | 0.30 | 1.5 | e1.2 | e0.98 | e0.72 | e2.8 | 5.8 | 3.7 | 10 | 0.36 | 0.42 | 0.98 |
| 18 | 0.29 | 1.4 | e1.2 | e0.95 | e0.66 | e2.2 | 6.5 | 3.3 | 8.1 | 0.35 | 0.38 | 1.0 |
| 19 | 0.29 | 1.3 | e1.1 | e0.92 | e0.78 | e1.9 | 7.8 | 2.8 | 6.1 | 0.35 | 0.38 | 1.0 |
| 20 | 0.32 | 1.3 | 1.1 | e0.98 | e0.72 | e1.6 | 9.1 | 2.1 | 3.8 | 0.46 | 0.40 | 1.1 |
| 21 | 0.38 | 1.3 | 0.98 | e1.0 | e0.94 | e1.7 | 10 | 1.6 | 3.1 | 0.47 | 6.1 | 1.1 |
| 22 | 0.41 | 1.3 | e0.90 | e1.0 | e0.82 | e1.7 | 8.4 | 1.3 | 2.8 | 0.41 | 13 | 0.98 |
| 23 | 0.39 | 1.3 | e0.78 | e1.00 | e1.1 | 1.6 | 7.4 | 1.4 | 2.7 | 0.39 | 7.6 | 0.94 |
| 24 | 0.46 | 1.4 | e0.75 | e0.98 | e1.3 | 1.4 | 7.3 | 1.3 | 2.2 | 0.41 | 6.7 | 0.98 |
| 25 | 0.45 | 1.5 | e0.74 | e1.00 | e1.2 | e1.2 | 6.5 | 1.0 | 1.8 | 0.52 | 5.9 | 1.0 |
| 26 | 0.43 | 1.3 | e0.71 | e1.0 | e1.2 | e1.0 | 5.1 | 1.0 | 1.2 | 0.50 | 3.9 | 0.77 |
| 27 | 0.46 | 1.2 | e0.70 | e0.97 | e1.1 | e3.7 | 4.3 | 0.98 | 1.1 | 0.52 | 2.4 | 0.60 |
| 28 | 0.47 | 1.2 | e0.70 | e0.88 | e0.94 | 21 | 3.5 | 1.0 | 0.89 | 0.65 | 1.8 | 0.54 |
| 29 | 0.47 | 1.1 | e0.69 | e0.81 | --- | e44 | 3.3 | 0.92 | 0.62 | 0.77 | 1.3 | 0.47 |
| 30 | 0.48 | 1.1 | e0.67 | e0.74 | --- | e33 | 2.8 | 0.77 | 0.56 | 0.76 | 0.94 | 0.41 |
| 31 | 0.47 | --- | e0.65 | 0.71 | --- | e22 | --- | 0.71 | --- | 0.82 | 0.80 | --- |
| TOTAL | 10.51 | 39.05 | 31.57 | 27.97 | 22.68 | 155.67 | 216.2 | 82.48 | 844.56 | 14.83 | 60.19 | 24.92 |
| MEAN | 0.339 | 1.302 | 1.018 | 0.902 | 0.810 | 5.022 | 7.207 | 2.661 | 28.15 | 0.478 | 1.942 | 0.831 |
| MAX | 0.68 | 1.7 | 1.3 | 1.1 | 1.3 | 44 | 16 | 7.7 | 307 | 0.82 | 13 | 1.2 |
| MIN | 0.14 | 0.63 | 0.65 | 0.62 | 0.61 | 0.35 | 2.8 | 0.71 | 0.56 | 0.33 | 0.31 | 0.34 |
| AC-FT | 21 | 77 | 63 | 55 | 45 | 309 | 429 | 164 | 1680 | 29 | 119 | 49 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 3.107 | 1.726 | 1.000 | 1.321 | 8.652 | 60.68 | 39.77 | 17.18 | 19.78 | 12.18 | 3.579 | 1.687 |
| MAX | 47.7 | 10.6 | 3.40 | 14.3 | 67.4 | 323 | 314 | 141 | 101 | 123 | 29.5 | 21.1 |
| (WY) | 1983 | 1999 | 1999 | 1974 | 1983 | 1972 | 1975 | 1970 | 1970 | 1964 | 1981 | 1986 |
| MIN | 0.076 | 0.31 | 0.13 | 0.000 | 0.000 | 0.33 | 0.71 | 0.60 | 0.067 | 0.000 | 0.000 | 0.000 |
| (WY) | 1993 | 1993 | 1993 | 1993 | 1993 | 1964 | 1990 | 1992 | 1988 | 1988 | 1988 | 1994 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1964 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 7710.56 | | 1530.63 | | | |
| ANNUAL MEAN | 21.12 | | 4.194 | | 14.18 | |
| HIGHEST ANNUAL MEAN | | | | | 35.9 | 1972 |
| LOWEST ANNUAL MEAN | | | | | 0.74 | 1992 |
| HIGHEST DAILY MEAN | 850 | Mar 14 | 307 | Jun 10 | 2700 | Mar 13 1972 |
| LOWEST DAILY MEAN | 0.08 | Sep 28 | 0.14 | Oct 3 | 0.00 | May 25 1964 |
| ANNUAL SEVEN-DAY MINIMUM | 0.12 | Sep 25 | 0.26 | Oct 9 | 0.00 | May 31 1964 |
| MAXIMUM PEAK FLOW | | | 750 | Jun 10 | 4120 | May 9 1970 |
| MAXIMUM PEAK STAGE | | | 11.03 | Jun 10 | a19.58 | Mar 21 1997 |
| INSTANTANEOUS LOW FLOW | | | | | 0.00 | May 25 1964 |
| ANNUAL RUNOFF (AC-FT) | 15290 | | 3040 | | 10270 | |
| 10 PERCENT EXCEEDS | 20 | | 6.6 | | 14 | |
| 50 PERCENT EXCEEDS | 1.1 | | 1.0 | | 1.1 | |
| 90 PERCENT EXCEEDS | 0.32 | | 0.38 | | 0.20 | |

a Backwater from ice
e Estimated

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 05... | 1035 | .30 | -- | -- | -- | 1170 | 1.5 | 9.0 | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 07... | 1550 | 1.1 | -- | -- | -- | 1100 | 3.0 | 5.0 | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 11... | 1415 | 1.2 | -- | -- | -- | 1220 | -3.0 | 1.3 | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 06... | 1455 | .69 | -- | -- | -- | 1220 | 8.5 | 1.0 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 26... | 1010 | 1.1 | -- | -- | -- | 1800 | .0 | .5 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 10... | 1705 | 8.6 | 7.9 | 7.7 | 655 | 653 | 5.0 | .5 | 120 | 24.0 | 14.0 | 9.40 | 3 |
| MAY | | | | | | | | | | | | | |
| 10... | 1040 | 3.1 | -- | -- | -- | 1150 | 14.0 | 6.2 | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 10... | 1800 | 716 | -- | -- | -- | 430 | 19.5 | 13.5 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 30... | 1630 | .76 | 7.6 | --e | 1030 | 1060 | 31.0 | 27.3 | 200 | 35.0 | 28.0 | 8.80 | 5 |
| AUG | | | | | | | | | | | | | |
| 29... | 1425 | 1.1 | -- | -- | -- | 935 | 25.5 | 22.5 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 05... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 07... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 06... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 26... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 10... | 86.0 | 59 | 150 | 6.0 | .20 | 170 | 10.2 | 441 | 400 | 1.0 | 340 | <1 | 20 |
| MAY | | | | | | | | | | | | | |
| 10... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 10... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 30... | 160 | 62 | 299 | 9.2 | .40 | 260 | 1.46 | 710 | 681 | 1.0 | 50 | 1 | 20 |
| AUG | | | | | | | | | | | | | |
| 29... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

06344600 GREEN RIVER NEAR NEW HRADEC, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | 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 | | | | | |
| 05... | -- | -- | -- | -- | -- |
| NOV | | | | | |
| 07... | -- | -- | -- | -- | -- |
| DEC | | | | | |
| 11... | -- | -- | -- | -- | -- |
| FEB | | | | | |
| 06... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 26... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 10... | 70 | <.10 | 1 | <1 | 240 |
| MAY | | | | | |
| 10... | -- | -- | -- | -- | -- |
| JUN | | | | | |
| 10... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 30... | 20 | <.10 | 6 | <1 | 300 |
| AUG | | | | | |
| 29... | -- | -- | -- | -- | -- |

< Less than
e Required equipment not functional/available

## 06345500 HEART RIVER NEAR RICHARDTON, ND

LOCATION.--Lat 46°44'46", long 102°18'27", in NE$^1/_4$NW$^1/_4$ sec.29, T.138 N., R.92 W., Stark County, Hydrologic Unit 10130202, on right bank 50 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$^2$, 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 National Geodetic Vertical Datum of 1929. 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 fair except for estimated daily discharges, 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$^3$/s; flood of Mar. 25, 1943, reached a stage of 24.2 ft from floodmarks, discharge, 11,700 ft$^3$/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 12 | 17 | e16 | e6.7 | e14 | e17 | e32 | 28 | 6.0 | 22 | 21 | 23 |
| 2 | 12 | 16 | e16 | e6.7 | e14 | e16 | e31 | 26 | 6.0 | 20 | 16 | e21 |
| 3 | 12 | 16 | e16 | e6.8 | e14 | e16 | e29 | 23 | 6.1 | 18 | 20 | 19 |
| 4 | 12 | 15 | e16 | e6.9 | e14 | e15 | e31 | 21 | 6.5 | 16 | 18 | 17 |
| 5 | 12 | 15 | e16 | e7.0 | e13 | e15 | e35 | 19 | 7.6 | 16 | 15 | 16 |
| 6 | 11 | 16 | e16 | e7.2 | e13 | e15 | e40 | 19 | 8.2 | 15 | 12 | 14 |
| 7 | 11 | 16 | e16 | e7.3 | e13 | e15 | e43 | 19 | 7.3 | 14 | 12 | 14 |
| 8 | 11 | 17 | e16 | e7.6 | e14 | e14 | e41 | 22 | 6.4 | 14 | 13 | 14 |
| 9 | 11 | 17 | e17 | e7.9 | e14 | e14 | e38 | 25 | 7.9 | 15 | 12 | 14 |
| 10 | 13 | 17 | e17 | e8.6 | e15 | e13 | e39 | 28 | 530 | 15 | 16 | 14 |
| 11 | 13 | 17 | e16 | e9.3 | e15 | e13 | e38 | 31 | 2260 | 20 | 22 | 15 |
| 12 | 15 | 17 | e16 | e9.5 | e16 | e14 | 37 | 28 | 1290 | 24 | 16 | 13 |
| 13 | 15 | 17 | e15 | e10 | e16 | e14 | 36 | 24 | 900 | 18 | 14 | 11 |
| 14 | 15 | 17 | e15 | e11 | e17 | e14 | 36 | 20 | 387 | 17 | e10 | 10 |
| 15 | 15 | 17 | e15 | e13 | e17 | e15 | 35 | 17 | 249 | 16 | e7.5 | 10 |
| 16 | 17 | 17 | e15 | e13 | e17 | e15 | 33 | 15 | 181 | 15 | e6.4 | 9.9 |
| 17 | 17 | 18 | e14 | e14 | e18 | e16 | 30 | 15 | 136 | 14 | e5.8 | 9.4 |
| 18 | 17 | 18 | e14 | e15 | e19 | e16 | 32 | 14 | 105 | 15 | e5.2 | 9.4 |
| 19 | 15 | 18 | e13 | e15 | e19 | e16 | 37 | 13 | 86 | 15 | e5.0 | 9.1 |
| 20 | 15 | 18 | e13 | e16 | e19 | e16 | 40 | 13 | 69 | 18 | e5.3 | 8.7 |
| 21 | 19 | 18 | e13 | e16 | e19 | e16 | 43 | 11 | 58 | 19 | e5.8 | 8.5 |
| 22 | 22 | 18 | e11 | e16 | e19 | e16 | 43 | 9.8 | 53 | 28 | e6.6 | 8.8 |
| 23 | 23 | 18 | e11 | e16 | e19 | e16 | 39 | 10 | 43 | 28 | 16 | 9.2 |
| 24 | 25 | 19 | e10 | e16 | e19 | e16 | 38 | 9.4 | 37 | 23 | 32 | 9.5 |
| 25 | 24 | 19 | e9.2 | e16 | e18 | e16 | 34 | 17 | 43 | 24 | 71 | 9.7 |
| 26 | 31 | 18 | e8.9 | e16 | e18 | e16 | 32 | 16 | 34 | 29 | 47 | 10 |
| 27 | 25 | 17 | e8.2 | e15 | e18 | e16 | 34 | 11 | 29 | 41 | 34 | 9.9 |
| 28 | 24 | e17 | e7.7 | e15 | e17 | e17 | 35 | 9.2 | 32 | 29 | 32 | 10 |
| 29 | 23 | e16 | e7.3 | e15 | --- | e20 | 32 | 8.1 | 29 | 25 | 27 | 11 |
| 30 | 21 | e16 | e7.0 | e14 | --- | e24 | 31 | 7.1 | 24 | 24 | 31 | 11 |
| 31 | 18 | --- | e6.9 | e14 | --- | e29 | --- | 6.4 | --- | 22 | 28 | --- |
| TOTAL | 526 | 512 | 408.2 | 367.5 | 458 | 501 | 1074 | 535.0 | 6637.0 | 629 | 582.6 | 369.1 |
| MEAN | 16.97 | 17.07 | 13.17 | 11.85 | 16.36 | 16.16 | 35.80 | 17.26 | 221.2 | 20.29 | 18.79 | 12.30 |
| MAX | 31 | 19 | 17 | 16 | 19 | 29 | 43 | 31 | 2260 | 41 | 71 | 23 |
| MIN | 11 | 15 | 6.9 | 6.7 | 13 | 13 | 29 | 6.4 | 6.0 | 14 | 5.0 | 8.5 |
| AC-FT | 1040 | 1020 | 810 | 729 | 908 | 994 | 2130 | 1060 | 13160 | 1250 | 1160 | 732 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1903 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 16.99 | 13.83 | 9.090 | 8.885 | 45.20 | 373.6 | 320.2 | 101.6 | 165.2 | 68.98 | 29.97 | 11.91 |
| 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 | 0.10 | 1.93 | 1.00 | 0.000 | 0.000 | 1.66 | 5.77 | 2.78 | 0.37 | 0.40 | 0.000 | 0.000 |
| (WY) | 1961 | 1961 | 1920 | 1962 | 1950 | 1964 | 1905 | 1992 | 1961 | 1919 | 1991 | 1958 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1903 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 53089.2 | | 12599.4 | | | |
| ANNUAL MEAN | 145.4 | | 34.52 | | 97.88 | |
| HIGHEST ANNUAL MEAN | | | | | 316 | 1982 |
| LOWEST ANNUAL MEAN | | | | | 5.18 | 1961 |
| HIGHEST DAILY MEAN | 2800 | Mar 14 | 2260 | Jun 11 | 17000 | Apr 17 1950 |
| LOWEST DAILY MEAN | 5.5 | Mar 1 | a5.0 | Aug 19 | 0.00 | Jul 26 1903 |
| ANNUAL SEVEN-DAY MINIMUM | 5.9 | Feb 24 | 5.7 | Aug 16 | 0.00 | Jul 26 1903 |
| MAXIMUM PEAK FLOW | | | 3750 | Jun 11 | 23400 | Apr 16 1950 |
| MAXIMUM PEAK STAGE | | | 15.02 | Jun 11 | 28.05 | Apr 16 1950 |
| INSTANTANEOUS LOW FLOW | | | 5.0 | Aug 19 | 0.00 | Jul 26 1903 |
| ANNUAL RUNOFF (AC-FT) | 105300 | | 24990 | | 70910 | |
| 10 PERCENT EXCEEDS | 306 | | 35 | | 127 | |
| 50 PERCENT EXCEEDS | 19 | | 16 | | 12 | |
| 90 PERCENT EXCEEDS | 8.0 | | 8.7 | | 2.0 | |

a About
e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 10... | 1150 | 13 | -- | -- | -- | 1740 | 9.5 | 8.5 | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 05... | 1540 | 16 | -- | -- | -- | 1770 | 20.5 | 7.0 | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 10... | 1515 | 17 | -- | -- | -- | 2270 | 2.2 | .2 | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 07... | 1025 | 13 | -- | -- | -- | 2330 | 7.0 | .1 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 26... | 1240 | 16 | -- | -- | -- | 1880 | 4.0 | .3 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 12... | 1550 | 38 | 7.8 | 8.0 | 1180 | 1200 | 21.7 | 8.7 | 300 | 60.0 | 37.0 | 9.30 | 4 |
| JUN | | | | | | | | | | | | | |
| 10... | 1400 | 642 | -- | -- | -- | 840 | 18.0 | 15.0 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 01... | 1020 | 20 | 8.3 | --e | 1430 | 1460 | 16.0 | 21.0 | 270 | 37.0 | 43.0 | 14.0 | 6 |
| 30... | 1400 | 36 | -- | -- | -- | 1370 | 27.5 | 23.5 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 10... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 05... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 10... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 07... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 26... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 12... | 150 | 87 | 215 | 10.0 | .20 | 400 | 83.1 | 810 | 797 | 1.0 | 110 | <1 | 30 |
| JUN | | | | | | | | | | | | | |
| 10... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 01... | 220 | 62 | 210 | 34.0 | .50 | 510 | 55.0 | 993 | 986 | 2.0 | 100 | <1 | 40 |
| 30... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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 | | | | | |
| 10... | -- | -- | -- | -- | -- |
| NOV | | | | | |
| 05... | -- | -- | -- | -- | -- |
| DEC | | | | | |
| 10... | -- | -- | -- | -- | -- |
| FEB | | | | | |
| 07... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 26... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 12... | 60 | <.10 | <1 | <1 | 900 |
| JUN | | | | | |
| 10... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 01... | 20 | <.10 | 5 | <1 | 700 |
| 30... | -- | -- | -- | -- | -- |

< Less than
e Required equipment not functional/available

## 06345780 HEART RIVER ABOVE LAKE TSCHIDA NEAR GLEN ULLIN, ND

LOCATION.--Lat 46°39'24", Long 102°04'40", in SW$^1/_4$NE$^1/_4$NE$^1/_4$ 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$^2$, approximately.

### WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1988 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,090 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good. 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 24 | 32 | e20 | e7.6 | e17 | e18 | e78 | 54 | 14 | 33 | 26 | 37 |
| 2 | 19 | 28 | e21 | e7.5 | e16 | e17 | e68 | 50 | 14 | 28 | 21 | 29 |
| 3 | 15 | 27 | e21 | e7.5 | e16 | e17 | e60 | 46 | 15 | 24 | 19 | 24 |
| 4 | 14 | 26 | e20 | e7.6 | e16 | e17 | e86 | 42 | 14 | 21 | 17 | 23 |
| 5 | 15 | 25 | e20 | e7.9 | e16 | e16 | 91 | 38 | 14 | 18 | 19 | 20 |
| 6 | 15 | 25 | e20 | e8.3 | e16 | e16 | 88 | 37 | 16 | 15 | 16 | 18 |
| 7 | 14 | 27 | e20 | e8.7 | e17 | e16 | 83 | 36 | 20 | 13 | 11 | 16 |
| 8 | 14 | 25 | e20 | e9.1 | e18 | e16 | 84 | 39 | 18 | 11 | 10 | 15 |
| 9 | 15 | 26 | e20 | e9.9 | e19 | e15 | 66 | 42 | 18 | 12 | 13 | 14 |
| 10 | 17 | 28 | e21 | e11 | e20 | e15 | 78 | 46 | 163 | 12 | 9.9 | 14 |
| 11 | 17 | 27 | e21 | e11 | e21 | e15 | 74 | 50 | 1210 | 12 | 7.0 | 12 |
| 12 | 20 | 26 | e21 | e13 | e21 | e16 | 72 | 57 | 1750 | 14 | 20 | 12 |
| 13 | 21 | 27 | 21 | e14 | e22 | e16 | 69 | 56 | 1080 | 26 | 16 | 12 |
| 14 | 23 | 27 | 21 | e16 | e22 | e17 | 66 | 50 | 668 | 18 | 11 | 13 |
| 15 | 22 | 27 | 21 | e17 | e23 | e18 | 66 | 44 | 469 | 12 | 8.3 | 12 |
| 16 | 22 | 27 | e20 | e18 | e23 | e19 | 64 | 38 | 375 | 12 | 6.0 | 11 |
| 17 | 26 | 27 | e20 | e18 | e23 | e20 | 60 | 35 | 304 | 11 | 5.5 | 9.8 |
| 18 | 28 | 27 | e20 | e19 | e23 | e21 | 62 | 32 | 240 | 10 | 3.9 | 10 |
| 19 | 28 | 27 | e19 | e19 | e23 | e22 | 65 | 31 | 197 | 9.7 | 4.0 | 8.9 |
| 20 | 27 | 27 | e19 | e20 | e23 | e22 | 69 | 28 | 153 | 11 | 4.0 | 8.9 |
| 21 | 24 | 27 | e18 | e20 | e23 | e23 | 74 | 27 | 119 | 13 | 4.9 | 7.8 |
| 22 | 28 | 27 | e17 | e20 | e23 | e23 | 78 | 26 | 95 | 19 | 6.4 | 7.2 |
| 23 | 37 | 28 | e15 | e20 | e23 | e24 | 79 | 24 | 87 | 28 | 8.2 | 7.1 |
| 24 | 40 | 28 | e13 | e20 | e22 | e25 | 73 | 23 | 67 | 38 | 9.8 | 8.0 |
| 25 | 41 | 28 | e12 | e20 | e21 | e25 | 67 | 22 | 58 | 29 | 28 | 8.5 |
| 26 | 40 | 21 | e11 | e20 | e20 | e26 | 61 | 31 | 64 | 28 | 100 | 8.9 |
| 27 | 48 | 21 | e9.4 | e20 | e19 | e28 | 61 | 39 | 52 | 37 | 63 | 9.4 |
| 28 | 43 | 21 | e8.4 | e19 | e19 | e45 | 62 | 30 | 43 | 53 | 48 | 12 |
| 29 | 40 | 21 | e8.0 | e19 | --- | e58 | 63 | 24 | 45 | 39 | 40 | 12 |
| 30 | 39 | 20 | e7.8 | e18 | --- | e70 | 59 | 20 | 40 | 30 | 34 | 13 |
| 31 | 37 | --- | e7.7 | e18 | --- | e85 | --- | 17 | --- | 29 | 37 | --- |
| TOTAL | 813 | 780 | 533.3 | 464.1 | 565 | 781 | 2126 | 1134 | 7422 | 665.7 | 626.9 | 413.5 |
| MEAN | 26.23 | 26.00 | 17.20 | 14.97 | 20.18 | 25.19 | 70.87 | 36.58 | 247.4 | 21.47 | 20.22 | 13.78 |
| MAX | 48 | 32 | 21 | 20 | 23 | 85 | 91 | 57 | 1750 | 53 | 100 | 37 |
| MIN | 14 | 20 | 7.7 | 7.5 | 16 | 15 | 59 | 17 | 14 | 9.7 | 3.9 | 7.1 |
| AC-FT | 1610 | 1550 | 1060 | 921 | 1120 | 1550 | 4220 | 2250 | 14720 | 1320 | 1240 | 820 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 22.57 | 22.46 | 14.60 | 10.43 | 41.60 | 350.2 | 137.8 | 83.13 | 120.6 | 78.10 | 50.80 | 13.56 |
| MAX | 104 | 95.3 | 57.7 | 25.2 | 205 | 1587 | 582 | 391 | 394 | 265 | 252 | 44.2 |
| (WY) | 1999 | 1999 | 1999 | 1996 | 1996 | 1997 | 1997 | 1995 | 2001 | 1993 | 1995 | 1995 |
| MIN | 2.23 | 6.52 | 4.14 | 0.32 | 3.41 | 18.5 | 9.90 | 6.20 | 7.21 | 3.16 | 0.050 | 0.10 |
| (WY) | 1992 | 1991 | 1993 | 1991 | 1989 | 1990 | 1992 | 1992 | 1992 | 1989 | 1991 | 1991 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1988 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 64557.8 | | 16324.5 | | | |
| ANNUAL MEAN | 176.9 | | 44.72 | | 79.99 | |
| HIGHEST ANNUAL MEAN | | | | | 229 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 9.17 | 1992 |
| HIGHEST DAILY MEAN | 3780 | Mar 15 | 1750 | Jun 12 | 11000 | Mar 22 1997 |
| LOWEST DAILY MEAN | 7.0 | Feb 25 | 3.9 | Aug 18 | 0.00 | Sep 1 1991 |
| ANNUAL SEVEN-DAY MINIMUM | 7.1 | Feb 24 | 5.0 | Aug 16 | 0.00 | Aug 30 1991 |
| MAXIMUM PEAK FLOW | | | 2860 | Jun 11 | a11500 | Mar 22 1997 |
| MAXIMUM PEAK STAGE | | | 12.47 | Jun 11 | b26.74 | Mar 21 1997 |
| ANNUAL RUNOFF (AC-FT) | 128100 | | 32380 | | 57950 | |
| 10 PERCENT EXCEEDS | 388 | | 66 | | 122 | |
| 50 PERCENT EXCEEDS | 28 | | 21 | | 19 | |
| 90 PERCENT EXCEEDS | 10 | | 9.9 | | 3.4 | |

a About
b Backwater from ice
e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 11... | 1635 | 16 | -- | -- | -- | 1670 | 10.5 | 9.2 | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 05... | 1310 | 25 | -- | -- | -- | 1780 | 9.5 | 4.5 | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 10... | 1305 | 20 | -- | -- | -- | 2320 | -1.2 | .2 | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 07... | 1400 | 17 | -- | -- | -- | 2370 | 11.0 | .4 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 25... | 1430 | 25 | -- | -- | -- | 1950 | -1.0 | .4 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 08... | 1415 | 80 | 7.6 | --e | 1400 | 1410 | 3.0 | .7 | 320 | 61.0 | 42.0 | 7.70 | 4 |
| MAY | | | | | | | | | | | | | |
| 20... | 1415 | 28 | -- | -- | -- | 2230 | 19.0 | 14.5 | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 12... | 1300 | 1570 | -- | -- | -- | 1080 | 17.0 | 14.5 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 01... | 1645 | 22 | 7.9 | 8.1 | 1570 | 1610 | 23.0 | 22.3 | 300 | 53.0 | 42.0 | 15.0 | 6 |
| 27... | 1220 | 59 | -- | -- | -- | 1760 | 29.0 | 22.0 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 05... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 10... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 07... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 08... | 180 | 54 | 274 | 11.0 | .30 | 460 | 208 | 960 | 927 | 1.0 | 70 | <1 | 30 |
| MAY | | | | | | | | | | | | | |
| 20... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 12... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 01... | 240 | 62 | 251 | 37.0 | .50 | 560 | 65.9 | 1120 | 1100 | 1.0 | 200 | 1 | 40 |
| 27... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

06345780 HEART RIVER ABOVE LAKE TSCHIDA NEAR GLEN ULLIN, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | 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 | | | | | |
| 11... | -- | -- | -- | -- | -- |
| NOV | | | | | |
| 05... | -- | -- | -- | -- | -- |
| DEC | | | | | |
| 10... | -- | -- | -- | -- | -- |
| FEB | | | | | |
| 07... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 25... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 08... | 40 | <.10 | 1 | <1 | 870 |
| MAY | | | | | |
| 20... | -- | -- | -- | -- | -- |
| JUN | | | | | |
| 12... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 01... | 30 | <.10 | 5 | 2 | 730 |
| 27... | -- | -- | -- | -- | -- |

< Less than
e Required equipment not functional/available

## 06346000 LAKE TSCHIDA NEAR GLEN ULLIN, ND

LOCATION.--Lat 46°35'43", long 101°48'34", in SW$^1/_4$ NE$^1/_4$ 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$^2$, approximately.

### MONTHEND-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 National Geodetic Vertical Datum of 1929 (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, 65,020 acre-ft, June 19, elevation, 2,063.85 ft; minimum, 52,040 acre-ft, Sept. 27, elevation, 2,059.61 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Elevation (feet) | Contents (acre-feet) | Change in contents (acre-feet) |
|---|---|---|---|
| Sept. 30 | 2,061.58 | 57,880 | -- |
| Oct. 31 | 2,061.12 | 56,490 | -1,390 |
| Nov. 30 | 2,061.02 | 56,180 | -310 |
| Dec. 31 | 2,060.61 | 54,960 | -1,220 |
| CAL YR 2001 | -- | -- | +410 |
| Jan. 31 | 2,060.26 | 53,930 | -1,030 |
| Feb. 28 | 2,060.00 | 53,170 | -760 |
| Mar. 31 | 2,060.01 | 53,200 | +30 |
| Apr. 30 | 2,061.52 | 57,700 | +4,500 |
| May 31 | 2,061.34 | 57,150 | -550 |
| June 30 | 2,063.32 | 63,310 | +6,160 |
| July 31 | 2,061.49 | 57,600 | -5,710 |
| Aug. 31 | 2,060.17 | 53,670 | -3,930 |
| Sept. 30 | 2,059.66 | 52,190 | -1,480 |
| WTR YR 2002 | -- | -- | -5,690 |

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 2001 TO SEPTEMBER 2002

| 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) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 16... | 1230 | 1.0 | 1.5 | 1210 | 8.6 | 8 | 290 | 52.7 | 39.2 | 9.97 | 4 | 155 | 52 |
| FEB | | | | | | | | | | | | | |
| 07... | 1255 | .50 | 1.0 | 1370 | 8.4 | 15 | 320 | 56.9 | 42.7 | 10.1 | 4 | 174 | 53 |
| MAY | | | | | | | | | | | | | |
| 09... | 1230 | 1.0 | 1.5 | 1460 | 8.3 | 52 | 250 | 49.3 | 31.5 | 9.91 | 6 | 214 | 64 |
| AUG | | | | | | | | | | | | | |
| 01... | 1255 | .90 | 1.1 | -- | 8.6 | 18 | 330 | 60.9 | 43.3 | 10.9 | 5 | 190 | 55 |

| Date | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | BORON, DIS-SOLVED (UG/L AS B) (01020) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 16... | 218 | 8.22 | .2 | <.2 | 422 | <.04 | <.008 | <.05 | E.03 | <.02 | 836 | 818 | 260 |
| FEB | | | | | | | | | | | | | |
| 07... | 244 | 9.04 | .3 | .4 | 462 | .05 | <.008 | .05 | E.03 | <.02 | 944 | 902 | 300 |
| MAY | | | | | | | | | | | | | |
| 09... | 263 | 7.43 | .2 | .5 | 482 | <.04 | <.008 | <.05 | <.06 | <.02 | 1010 | 953 | 310 |
| AUG | | | | | | | | | | | | | |
| 01... | 255 | 9.84 | .3 | 2.8 | 484 | <.04 | <.008 | E.04 | <.06 | <.02 | 995 | 955 | 300 |

06346000 LAKE TSCHIDA NEAR GLEN ULLIN, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| 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 (PER-CENT SATUR-ATION) (00301) | BARO-METRIC PRES-SURE (MM OF HG) (00025) | ICE THICK-NESS METERS (82131) | TRANS-PAR-ENCY (SECCHI DISK) (IN) (00077) | TEMPER-ATURE AIR (DEG C) (00020) | WIND DIREC-TION (DEG. FROM TRUE NORTH) (00036) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 16... | 1220 | 44.6 | .0 | 1250 | 8.9 | 10.9 | 10.4 | 101 | 715 | -- | 37.2 | 15.5 | 175 |
| 16... | 1221 | -- | 1.0 | 1250 | 8.5 | 10.9 | 10.1 | -- | -- | -- | -- | -- | -- |
| 16... | 1222 | -- | 2.0 | 1250 | 8.5 | 10.9 | 10.0 | -- | -- | -- | -- | -- | -- |
| 16... | 1223 | -- | 4.0 | 1250 | 8.5 | 10.8 | 9.9 | -- | -- | -- | -- | -- | -- |
| 16... | 1224 | -- | 6.0 | 1250 | 8.5 | 10.8 | 9.9 | -- | -- | -- | -- | -- | -- |
| 16... | 1225 | -- | 8.0 | 1250 | 8.5 | 10.8 | 9.8 | -- | -- | -- | -- | -- | -- |
| 16... | 1226 | -- | 10.0 | 1250 | 8.6 | 10.8 | 9.8 | -- | -- | -- | -- | -- | -- |
| 16... | 1227 | -- | 13.0 | 1250 | 8.5 | 10.7 | 9.5 | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 07... | 1245 | 43.3 | .50 | 1380 | 8.4 | 1.6 | 11.9 | 92 | 705 | .46 | 229 | 13.0 | 225 |
| 07... | 1246 | -- | 1.0 | 1360 | 8.4 | 1.8 | 12.0 | -- | -- | -- | -- | -- | -- |
| 07... | 1247 | -- | 2.0 | 1360 | 8.4 | 2.2 | 11.9 | -- | -- | -- | -- | -- | -- |
| 07... | 1248 | -- | 4.0 | 1360 | 8.4 | 2.5 | 12.0 | -- | -- | -- | -- | -- | -- |
| 07... | 1249 | -- | 6.0 | 1370 | 8.4 | 2.9 | 11.3 | -- | -- | -- | -- | -- | -- |
| 07... | 1250 | -- | 8.0 | 1380 | 8.3 | 3.2 | 10.6 | -- | -- | -- | -- | -- | -- |
| 07... | 1251 | -- | 10.0 | 1470 | 8.1 | 3.7 | 6.9 | -- | -- | -- | -- | -- | -- |
| 07... | 1252 | -- | 12.0 | 1700 | 7.8 | 4.4 | 4.4 | -- | -- | -- | -- | -- | -- |
| 07... | 1253 | -- | 13.2 | 1710 | 7.8 | 4.3 | 4.3 | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 09... | 1220 | 43.3 | .0 | 1400 | 8.3 | 6.6 | 13.3 | 117 | 710 | -- | 97.2 | 7.0 | 270 |
| 09... | 1221 | -- | .50 | 1400 | 8.3 | 6.5 | 12.4 | -- | -- | -- | -- | -- | -- |
| 09... | 1222 | -- | 1.0 | 1400 | 8.3 | 6.6 | 12.2 | -- | -- | -- | -- | -- | -- |
| 09... | 1223 | -- | 2.0 | 1400 | 8.3 | 6.6 | 12.1 | -- | -- | -- | -- | -- | -- |
| 09... | 1224 | -- | 4.0 | 1400 | 8.3 | 6.6 | 12.0 | -- | -- | -- | -- | -- | -- |
| 09... | 1225 | -- | 6.0 | 1410 | 8.3 | 6.5 | 12.0 | -- | -- | -- | -- | -- | -- |
| 09... | 1226 | -- | 8.0 | 1410 | 8.3 | 6.5 | 12.0 | -- | -- | -- | -- | -- | -- |
| 09... | 1227 | -- | 10.0 | 1410 | 8.3 | 6.5 | 11.9 | -- | -- | -- | -- | -- | -- |
| 09... | 1228 | -- | 12.0 | 1410 | 8.3 | 6.5 | 11.9 | -- | -- | -- | -- | -- | -- |
| 09... | 1229 | -- | 13.2 | 1410 | 8.3 | 6.5 | 11.9 | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 01... | 1245 | 44.3 | .0 | 1460 | 8.5 | 23.2 | 8.3 | 105 | 713 | -- | 43.2 | 17.0 | 300 |
| 01... | 1246 | -- | .50 | 1460 | 8.5 | 23.2 | 8.3 | -- | -- | -- | -- | -- | -- |
| 01... | 1247 | -- | 1.0 | 1460 | 8.5 | 23.2 | 8.2 | -- | -- | -- | -- | -- | -- |
| 01... | 1248 | -- | 2.0 | 1460 | 8.5 | 23.2 | 8.2 | -- | -- | -- | -- | -- | -- |
| 01... | 1249 | -- | 4.0 | 1460 | 8.5 | 23.2 | 8.1 | -- | -- | -- | -- | -- | -- |
| 01... | 1250 | -- | 6.0 | 1460 | 8.5 | 23.2 | 8.1 | -- | -- | -- | -- | -- | -- |
| 01... | 1251 | -- | 8.0 | 1460 | 8.5 | 23.2 | 8.1 | -- | -- | -- | -- | -- | -- |
| 01... | 1252 | -- | 10.0 | 1460 | 8.5 | 23.2 | 8.0 | -- | -- | -- | -- | -- | -- |
| 01... | 1253 | -- | 12.0 | 1460 | 8.5 | 23.1 | 7.8 | -- | -- | -- | -- | -- | -- |
| 01... | 1254 | -- | 13.5 | 1460 | 7.8 | 17.7 | .3 | -- | -- | -- | -- | -- | -- |

06346000 LAKE TSCHIDA NEAR GLEN ULLIN, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | WIND SPEED (MILES PER HOUR) (00035) |
|---|---|
| OCT | |
| 16... | 7.0 |
| 16... | -- |
| 16... | -- |
| 16... | -- |
| 16... | -- |
| 16... | -- |
| 16... | -- |
| 16... | -- |
| FEB | |
| 07... | 7.0 |
| 07... | -- |
| 07... | -- |
| 07... | -- |
| 07... | -- |
| 07... | -- |
| 07... | -- |
| 07... | -- |
| 07... | -- |
| MAY | |
| 09... | 10 |
| 09... | -- |
| 09... | -- |
| 09... | -- |
| 09... | -- |
| 09... | -- |
| 09... | -- |
| 09... | -- |
| 09... | -- |
| 09... | -- |
| AUG | |
| 01... | 15 |
| 01... | -- |
| 01... | -- |
| 01... | -- |
| 01... | -- |
| 01... | -- |
| 01... | -- |
| 01... | -- |
| 01... | -- |
| 01... | -- |

< Less than
E Estimated value

## 06347000 ANTELOPE CREEK NEAR CARSON, ND

LOCATION.--Lat 46°32'43", long 101°38'42", in NE$^1/_4$NE$^1/_4$NW$^1/_4$ sec.5, T.135 N., R.87 W., Grant County, Hydrologic Unit 10130203, on right bank 90 ft upstream from bridge on county road and 9 mi northwest of Carson.

DRAINAGE AREA.--221 mi$^2$, approximately.

### WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1948 to October 1975, February 1999 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,960 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to June 23, 1958, wire weight gage at site 1 mile upstream and June 24, 1958, to Sept. 30, 1975, 1.15 miles upstream at datum 14 ft higher.

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, about 236 ft$^3$/s, July 5, gage height, 7.22 ft; minimum daily discharge, 0.04 ft$^3$/s, Aug. 14-15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | --- | --- | --- | --- | e4.4 | e4.0 | e19 | 11 | 2.3 | 0.56 | 0.82 | 1.4 |
| 2 | --- | --- | --- | --- | e4.5 | e4.1 | e16 | 11 | 2.8 | 0.35 | 0.65 | 1.1 |
| 3 | --- | --- | --- | --- | e4.5 | e4.2 | e14 | 9.9 | 3.0 | 0.31 | 0.58 | 0.89 |
| 4 | --- | --- | --- | --- | e4.5 | e4.2 | e14 | 9.9 | 2.8 | 30 | 0.44 | 0.77 |
| 5 | --- | --- | --- | --- | e4.5 | e4.2 | e14 | 9.1 | 2.7 | 136 | 0.32 | 0.58 |
| 6 | --- | --- | --- | --- | e4.6 | e4.2 | e14 | 9.8 | 2.7 | 55 | 0.24 | 0.91 |
| 7 | --- | --- | --- | --- | e4.6 | e4.1 | e15 | 9.6 | 2.7 | 28 | 0.38 | 1.3 |
| 8 | --- | --- | --- | --- | e4.7 | e4.0 | e15 | 9.3 | 2.9 | 15 | 0.24 | 1.7 |
| 9 | --- | --- | --- | --- | e4.7 | e3.8 | e16 | 9.9 | 3.0 | 10 | 0.27 | 1.0 |
| 10 | --- | --- | --- | --- | e4.7 | e3.8 | 16 | 8.5 | 2.8 | 12 | 0.20 | 1.4 |
| 11 | --- | --- | --- | --- | e4.7 | e4.0 | 17 | 9.1 | 2.9 | 9.1 | 0.13 | 1.7 |
| 12 | --- | --- | --- | --- | e4.8 | e4.8 | 17 | 8.6 | 2.3 | 3.7 | 0.08 | 1.4 |
| 13 | --- | --- | --- | --- | e4.7 | e7.6 | 16 | 7.5 | 2.1 | 3.1 | e0.06 | 3.2 |
| 14 | --- | --- | --- | --- | e4.8 | e7.4 | 15 | 7.1 | 2.0 | 2.3 | 0.04 | 3.2 |
| 15 | --- | --- | --- | --- | e4.8 | e8.0 | 14 | 6.4 | 2.3 | 1.7 | e0.04 | 2.6 |
| 16 | --- | --- | --- | --- | e4.7 | e9.2 | 13 | 5.7 | 2.0 | 1.2 | e0.16 | 2.4 |
| 17 | --- | --- | --- | --- | e4.7 | e9.5 | 12 | 5.1 | 1.9 | 0.95 | 0.28 | 2.0 |
| 18 | --- | --- | --- | --- | e4.6 | e8.6 | 14 | 4.8 | 1.6 | 0.88 | 0.18 | 2.0 |
| 19 | --- | --- | --- | --- | e4.4 | e7.9 | 18 | 4.2 | 2.0 | 0.88 | 0.25 | 1.3 |
| 20 | --- | --- | --- | --- | e4.5 | e7.2 | 16 | 3.9 | 1.9 | 1.0 | 0.21 | 0.96 |
| 21 | --- | --- | --- | --- | e4.6 | e6.6 | 17 | 3.7 | 1.8 | 0.87 | 0.63 | 0.66 |
| 22 | --- | --- | --- | --- | e4.7 | e6.8 | 17 | 3.5 | 2.3 | 0.69 | 0.82 | 0.79 |
| 23 | --- | --- | --- | --- | e4.7 | e7.0 | 16 | 3.7 | e3.6 | 0.81 | 0.79 | 0.59 |
| 24 | --- | --- | --- | --- | e4.6 | e6.7 | 18 | 4.2 | 2.0 | 1.0 | 0.55 | 0.20 |
| 25 | --- | --- | --- | --- | e4.5 | e7.0 | 17 | 4.3 | 1.1 | 4.9 | 0.40 | 0.29 |
| 26 | --- | --- | --- | --- | e4.4 | e9.0 | 16 | 4.4 | 0.95 | 2.0 | 0.41 | 0.31 |
| 27 | --- | --- | --- | --- | e4.2 | e16 | 15 | e4.6 | 1.0 | 1.3 | 0.42 | 0.32 |
| 28 | --- | --- | --- | --- | e4.0 | e22 | 14 | e4.3 | 0.86 | 1.4 | 1.3 | 0.43 |
| 29 | --- | --- | --- | --- | --- | e24 | 13 | e4.0 | 0.76 | 1.6 | 1.1 | 0.55 |
| 30 | --- | --- | --- | --- | --- | e23 | 12 | e3.4 | 0.56 | 1.4 | 1.8 | 0.58 |
| 31 | --- | --- | --- | --- | --- | e21 | --- | e2.3 | --- | 1.0 | 1.8 | --- |
| TOTAL | --- | --- | --- | --- | 128.1 | 263.9 | 460 | 202.8 | 63.63 | 329.00 | 15.59 | 36.53 |
| MEAN | --- | --- | --- | --- | 4.575 | 8.513 | 15.33 | 6.542 | 2.121 | 10.61 | 0.503 | 1.218 |
| MAX | --- | --- | --- | --- | 4.8 | 24 | 19 | 11 | 3.6 | 136 | 1.8 | 3.2 |
| MIN | --- | --- | --- | --- | 4.0 | 3.8 | 12 | 2.3 | 0.56 | 0.31 | 0.04 | 0.20 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1948 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 1.360 | 2.102 | 1.452 | 2.111 | 7.227 | 50.85 | 57.97 | 23.71 | 22.80 | 12.89 | 3.899 | 1.184 |
| MAX | 6.44 | 9.41 | 5.79 | 32.6 | 65.1 | 183 | 422 | 208 | 96.3 | 155 | 52.2 | 6.40 |
| (WY) | 1973 | 1973 | 2000 | 1973 | 1999 | 1951 | 1950 | 1970 | 1971 | 1969 | 1952 | 1955 |
| MIN | 0.000 | 0.32 | 0.15 | 0.000 | 0.000 | 1.48 | 2.00 | 1.56 | 1.84 | 0.003 | 0.000 | 0.000 |
| (WY) | 1960 | 1960 | 1962 | 1950 | 1949 | 1965 | 1961 | 1961 | 1959 | 1961 | 1958 | 1948 |

| SUMMARY STATISTICS | WATER YEARS 1948 - 2002 | |
|---|---|---|
| ANNUAL MEAN | a15.61 | |
| HIGHEST ANNUAL MEAN | a47.1 | 1952 |
| LOWEST ANNUAL MEAN | a2.78 | 1961 |
| HIGHEST DAILY MEAN | 4400 | Apr 17 1950 |
| LOWEST DAILY MEAN | 0.00 | Aug 24 1948 |
| ANNUAL SEVEN-DAY MINIMUM | 0.00 | Aug 24 1948 |
| MAXIMUM PEAK FLOW | b11100 | Apr 16 1950 |
| MAXIMUM PEAK STAGE | c17.95 | Apr 16 1950 |
| 10 PERCENT EXCEEDS | 18 | |
| 50 PERCENT EXCEEDS | 1.5 | |
| 90 PERCENT EXCEEDS | 0.00 | |

a Based on complete water years only (1949-75, 2000)
b From rating curve extended above 1,100 ft$^3$/s on basis of slope-area measurement of peak flow at former site, 1 mi upstream
c From floodmark at former site, 1 mi upstream
e Estimated

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1999 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MAR | | | | | | | | | | | | | |
| 12... | 1600 | 4.8 | -- | -- | -- | 1210 | 8.0 | .1 | -- | -- | -- | -- | -- |
| 28... | 1710 | 22 | -- | -- | -- | 790 | 2.5 | .2 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 17... | 1220 | 12 | 8.5 | 8.3 | 797 | 782 | 17.5 | 9.5 | 290 | 54.0 | 38.0 | 6.40 | 2 |
| MAY | | | | | | | | | | | | | |
| 24... | 1345 | 4.1 | -- | -- | -- | 1230 | 16.0 | 10.7 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 16... | 1450 | 1.1 | -- | -- | -- | 1140 | 36.0 | 29.5 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 15... | 1415 | .04 | 8.0 | --e | 909 | 925 | 23.0 | 17.5 | 300 | 38.0 | 50.0 | 10.0 | 2 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MAR | | | | | | | | | | | | | |
| 12... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 28... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 17... | 66.0 | 32 | 264 | 9.4 | .30 | 170 | 15.3 | 492 | 503 | 1.0 | 80 | <1 | 40 |
| MAY | | | | | | | | | | | | | |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 16... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 15... | 92.0 | 39 | 270 | 9.8 | .40 | 210 | .06 | 608 | 572 | 1.0 | 70 | 1 | 60 |

| Date | 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... | -- | -- | -- | -- | -- |
| 28... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 17... | 50 | <.10 | <1 | <1 | 640 |
| MAY | | | | | |
| 24... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 16... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 15... | 10 | <.10 | 1 | 1 | 510 |

< Less than
e Required equipment not functional/available

## 06347500 BIG MUDDY CREEK NEAR ALMONT, ND

LOCATION.--Lat 46°41'40", long 101°28'01", in NE$^1/_4$NE$^1/_4$SE$^1/_4$ 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$^2$.

### 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 1,864 ft above National Geodetic Vertical Datum of 1929, by barometer. Prior to Sept. 5, 1952, nonrecording gage at same site and datum.

REMARKS.--Records good except for estimated daily discharges, which are poor.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 141 ft$^3$/s, Sept. 1, gage height, 5.80 ft; maximum gage height, 5.9 ft, Mar. 29, affected by backwater from ice; minimum daily discharge recorded, 1.3 ft$^3$/s, July 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | --- | --- | --- | --- | e4.9 | e4.7 | e34 | 16 | 2.8 | 1.7 | 1.8 | 71 |
| 2 | --- | --- | --- | --- | e5.0 | e4.7 | e28 | 16 | 3.1 | 1.5 | 1.8 | 18 |
| 3 | --- | --- | --- | --- | e5.1 | e4.8 | e25 | 14 | 3.3 | 1.5 | 1.8 | 9.4 |
| 4 | --- | --- | --- | --- | e5.2 | e4.8 | e23 | 14 | 3.4 | 1.7 | 1.6 | 5.3 |
| 5 | --- | --- | --- | --- | e5.2 | e4.8 | e20 | 13 | 3.3 | 1.7 | 1.5 | 3.7 |
| 6 | --- | --- | --- | --- | e5.2 | e4.7 | e20 | 12 | 3.0 | 1.5 | 1.8 | 3.0 |
| 7 | --- | --- | --- | --- | e5.3 | e4.7 | e23 | 12 | 2.9 | 1.4 | 1.7 | 2.6 |
| 8 | --- | --- | --- | --- | e5.3 | e4.7 | e25 | 12 | 3.0 | 1.5 | 1.5 | 2.5 |
| 9 | --- | --- | --- | --- | e5.4 | e4.8 | e28 | 12 | 3.1 | 2.0 | 1.7 | 2.5 |
| 10 | --- | --- | --- | --- | e5.4 | e5.1 | e29 | 12 | 2.9 | 2.1 | 1.8 | 2.4 |
| 11 | --- | --- | --- | --- | e5.4 | e7.0 | e30 | 12 | 2.9 | 2.0 | 1.7 | 2.2 |
| 12 | --- | --- | --- | --- | e5.4 | e9.0 | e29 | 14 | 2.8 | 1.9 | 1.7 | 2.1 |
| 13 | --- | --- | --- | --- | e5.4 | e9.9 | e29 | 14 | 2.6 | 1.8 | 1.7 | 2.1 |
| 14 | --- | --- | --- | --- | e5.3 | e10 | e27 | 14 | 2.6 | 1.7 | 2.1 | 2.0 |
| 15 | --- | --- | --- | --- | e5.2 | e11 | e27 | 13 | 3.2 | 1.4 | 2.0 | 2.0 |
| 16 | --- | --- | --- | --- | e5.2 | e12 | e26 | 12 | 3.6 | 1.3 | 2.1 | 1.9 |
| 17 | --- | --- | --- | --- | e5.1 | e13 | e25 | 10 | 3.0 | 1.3 | 2.4 | 1.8 |
| 18 | --- | --- | --- | --- | e5.2 | e12 | 24 | 8.8 | 2.7 | 1.6 | 2.4 | 1.8 |
| 19 | --- | --- | --- | --- | e5.2 | e11 | 25 | 7.8 | 3.2 | 1.6 | 2.2 | 1.7 |
| 20 | --- | --- | --- | --- | e5.2 | e10 | 27 | 7.0 | 3.4 | 1.6 | 2.1 | 1.7 |
| 21 | --- | --- | --- | --- | e5.3 | e9.1 | 27 | 6.2 | 3.6 | 1.5 | 2.1 | 1.7 |
| 22 | --- | --- | --- | --- | e5.2 | e8.5 | 26 | 5.7 | 3.4 | 1.3 | 2.1 | 1.7 |
| 23 | --- | --- | --- | --- | e5.2 | e8.0 | 26 | 5.4 | 3.7 | 1.6 | 2.0 | 1.7 |
| 24 | --- | --- | --- | --- | e5.1 | e8.0 | 25 | 5.0 | 3.4 | 1.8 | 2.0 | 1.7 |
| 25 | --- | --- | --- | --- | e5.1 | e10 | 22 | 4.7 | 3.6 | 2.2 | 2.0 | 1.6 |
| 26 | --- | --- | --- | --- | e5.0 | e21 | 21 | 4.5 | 3.4 | 1.9 | 2.0 | 1.6 |
| 27 | --- | --- | --- | --- | e4.9 | e52 | 20 | 3.8 | 3.0 | 2.0 | 2.0 | 1.5 |
| 28 | --- | --- | --- | --- | e4.8 | e73 | 19 | 3.9 | 2.7 | 2.0 | 2.5 | 1.5 |
| 29 | --- | --- | --- | --- | --- | e67 | 17 | 3.6 | 2.4 | 1.8 | 2.4 | 1.5 |
| 30 | --- | --- | --- | --- | --- | e56 | 15 | 3.3 | 1.8 | 1.9 | 2.5 | 1.6 |
| 31 | --- | --- | --- | --- | --- | e41 | --- | 3.0 | --- | 1.9 | 2.5 | --- |
| TOTAL | --- | --- | --- | --- | 145.2 | 506.3 | 742 | 294.7 | 91.8 | 52.7 | 61.5 | 155.8 |
| MEAN | --- | --- | --- | --- | 5.186 | 16.33 | 24.73 | 9.506 | 3.060 | 1.700 | 1.984 | 5.193 |
| MAX | --- | --- | --- | --- | 5.4 | 73 | 34 | 16 | 3.7 | 2.2 | 2.5 | 71 |
| MIN | --- | --- | --- | --- | 4.8 | 4.7 | 15 | 3.0 | 1.8 | 1.3 | 1.5 | 1.5 |
| AC-FT | --- | --- | --- | --- | 288 | 1000 | 1470 | 585 | 182 | 105 | 122 | 309 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 1.197 | 1.601 | 1.329 | 1.080 | 20.20 | 147.8 | 148.2 | 46.34 | 39.69 | 43.00 | 8.560 | 3.036 |
| MAX | 2.61 | 3.19 | 2.48 | 4.59 | 220 | 909 | 1160 | 540 | 405 | 1042 | 75.4 | 15.2 |
| (WY) | 1952 | 1952 | 1952 | 1947 | 1995 | 1997 | 1950 | 1970 | 1966 | 1993 | 1998 | 1953 |
| MIN | 0.39 | 0.58 | 0.35 | 0.065 | 0.000 | 0.73 | 1.48 | 1.01 | 0.43 | 0.042 | 0.12 | 0.35 |
| (WY) | 1962 | 1961 | 1949 | 1949 | 1966 | 1965 | 1992 | 1961 | 1961 | 1961 | 1961 | 1991 |

| SUMMARY STATISTICS | WATER YEARS 1946 - 2002 | |
|---|---|---|
| ANNUAL MEAN | a36.98 | |
| HIGHEST ANNUAL MEAN | a112 | 1950 |
| LOWEST ANNUAL MEAN | a1.41 | 1961 |
| HIGHEST DAILY MEAN | 15000 | Apr 17 1950 |
| LOWEST DAILY MEAN | 0.00 | Jan 28 1946 |
| ANNUAL SEVEN-DAY MINIMUM | 0.00 | Jan 28 1946 |
| MAXIMUM PEAK FLOW | 20200 | Apr 17 1950 |
| MAXIMUM PEAK STAGE | 30.99 | Jul 23 1993 |
| ANNUAL RUNOFF (AC-FT) | a26790 | |
| 10 PERCENT EXCEEDS | 31 | |
| 50 PERCENT EXCEEDS | 1.7 | |
| 90 PERCENT EXCEEDS | 0.40 | |

a Based on complete water years only (1946-70)
e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MAR | | | | | | | | | | | | | |
| 28... | 1440 | 70 | -- | -- | -- | -- | 9.0 | .5 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 17... | 1550 | 25 | 8.5 | 8.1 | 1680 | 1650 | 21.0 | 12.2 | 260 | 45.0 | 36.0 | 11.0 | 8 |
| MAY | | | | | | | | | | | | | |
| 24... | 1130 | 4.9 | -- | -- | -- | 2830 | 14.0 | 9.8 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 18... | 1120 | 1.5 | -- | -- | -- | 2440 | 24.5 | 23.5 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 15... | 1145 | 2.0 | 8.4 | 8.7 | 2380 | 2430 | 19.5 | 18.5 | 230 | 30.0 | 37.0 | 11.0 | 15 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MAR | | | | | | | | | | | | | |
| 28... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 17... | 280 | 69 | 353 | 7.3 | .40 | 560 | 77.0 | 1160 | 1150 | 2.0 | 160 | <1 | 40 |
| MAY | | | | | | | | | | | | | |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 15... | 520 | 82 | 817 | 8.3 | 1.10 | 580 | 9.16 | 1680 | 1680 | 9.0 | 80 | 1 | 60 |

| Date | 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 | | | | | |
| 28... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 17... | 50 | <.10 | <1 | <1 | 660 |
| MAY | | | | | |
| 24... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 18... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 15... | 20 | <.10 | 4 | <1 | 580 |

< Less than

## 06348300 HEART RIVER AT STARK BRIDGE NEAR JUDSON, ND

LOCATION.--Lat 46°42'11", long 101°12'37", in SE$^1/_4$SW$^1/_4$SW$^1/_4$ 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$^2$, 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 National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except for estimated daily discharges, which are poor. Flow regulated by Lake Tschida (06346000) since 1949.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 91 | 58 | e76 | e57 | e52 | e43 | e48 | 60 | 55 | 57 | 63 | 45 |
| 2 | 89 | 45 | e75 | e56 | e52 | e42 | e46 | 54 | 49 | 39 | 67 | 68 |
| 3 | 89 | 36 | e72 | e55 | e52 | e42 | e44 | 49 | 56 | 31 | 60 | 94 |
| 4 | 88 | 32 | e71 | e55 | e52 | e42 | e42 | 49 | 56 | 50 | 54 | 63 |
| 5 | 89 | 29 | e70 | e54 | e52 | e42 | e40 | 44 | 71 | 96 | 41 | 57 |
| 6 | 91 | 28 | e70 | e54 | e52 | e42 | e41 | 45 | 74 | 167 | 38 | 61 |
| 7 | 89 | 27 | e70 | e54 | e52 | e42 | e43 | 45 | 75 | 139 | 41 | 63 |
| 8 | 91 | 28 | e70 | e53 | e52 | e42 | e51 | 47 | 74 | 89 | 36 | 63 |
| 9 | 93 | 26 | e69 | e53 | e52 | e42 | e65 | 50 | 79 | 76 | 43 | 62 |
| 10 | 99 | 26 | e69 | e53 | e52 | e42 | e90 | 48 | 81 | 76 | 55 | 67 |
| 11 | 96 | 25 | e68 | e53 | e52 | e42 | e107 | 46 | 79 | 67 | 65 | 65 |
| 12 | 76 | 25 | e68 | e52 | e52 | e42 | 111 | 47 | 68 | 66 | 71 | 62 |
| 13 | 67 | 25 | e67 | e52 | e52 | e43 | 103 | 44 | 43 | 53 | 72 | 61 |
| 14 | 66 | 24 | e67 | e52 | e52 | e43 | 93 | 44 | 37 | 37 | 81 | 58 |
| 15 | 62 | 24 | e67 | e52 | e51 | e43 | e87 | 38 | 41 | 39 | 80 | 47 |
| 16 | 60 | 24 | e66 | e52 | e50 | e43 | 84 | 33 | 57 | 53 | 88 | 41 |
| 17 | 59 | 24 | e65 | e52 | e49 | e42 | 77 | 32 | 58 | 73 | 94 | 40 |
| 18 | 59 | 49 | e64 | e52 | e49 | e42 | 77 | 29 | 59 | 72 | 96 | 40 |
| 19 | 58 | 59 | e63 | e51 | e48 | e42 | 79 | 26 | 59 | 76 | 81 | 43 |
| 20 | 58 | 59 | e62 | e51 | e48 | e42 | 79 | 23 | 59 | 79 | 63 | 42 |
| 21 | 58 | 58 | e62 | e51 | e48 | e42 | 85 | 21 | 64 | 65 | 63 | 43 |
| 22 | 59 | 59 | e61 | e51 | e47 | e42 | 83 | 19 | 63 | 63 | 62 | 39 |
| 23 | 61 | 60 | e60 | e52 | e47 | e42 | 78 | 35 | 72 | 77 | 62 | 32 |
| 24 | 66 | 61 | e60 | e52 | e47 | e43 | 83 | 83 | 75 | 89 | 58 | 29 |
| 25 | 64 | 61 | e60 | e51 | e46 | e45 | 74 | 88 | 77 | 90 | 49 | 25 |
| 26 | 91 | 80 | e59 | e51 | e46 | e47 | 70 | 87 | 72 | 83 | 44 | 23 |
| 27 | 65 | e76 | e59 | e51 | e45 | e49 | 69 | 89 | 71 | 63 | 43 | 19 |
| 28 | 60 | e79 | e58 | e51 | e44 | e52 | 72 | 84 | 63 | 46 | 50 | 20 |
| 29 | 60 | e79 | e58 | e51 | --- | e53 | 67 | 80 | 63 | 60 | 58 | 19 |
| 30 | 59 | e77 | e58 | e51 | --- | e51 | 64 | 79 | 65 | 55 | 44 | 20 |
| 31 | 58 | --- | e57 | e51 | --- | e50 | --- | 77 | --- | 56 | 35 | --- |
| TOTAL | 2271 | 1363 | 2021 | 1626 | 1393 | 1361 | 2152 | 1595 | 1915 | 2182 | 1857 | 1411 |
| MEAN | 73.26 | 45.43 | 65.19 | 52.45 | 49.75 | 43.90 | 71.73 | 51.45 | 63.83 | 70.39 | 59.90 | 47.03 |
| MAX | 99 | 80 | 76 | 57 | 52 | 53 | 111 | 89 | 81 | 167 | 96 | 94 |
| MIN | 58 | 24 | 57 | 51 | 44 | 42 | 40 | 19 | 37 | 31 | 35 | 19 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 65.67 | 46.45 | 34.24 | 26.14 | 101.6 | 656.0 | 386.2 | 201.4 | 150.6 | 245.5 | 150.0 | 68.72 |
| MAX | 254 | 131 | 94.9 | 59.0 | 578 | 3050 | 2468 | 800 | 484 | 1479 | 674 | 192 |
| (WY) | 1995 | 1999 | 1999 | 1996 | 1995 | 1997 | 1997 | 1995 | 2001 | 1993 | 1998 | 1995 |
| MIN | 12.3 | 14.1 | 7.07 | 0.34 | 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 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1989 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 106860 | | 21147 | | | |
| ANNUAL MEAN | 292.8 | | 57.94 | | 178.5 | |
| HIGHEST ANNUAL MEAN | | | | | 569 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 22.3 | 1990 |
| HIGHEST DAILY MEAN | 5470 | Jul 27 | 167 | Jul 6 | 15000 | Mar 23 1997 |
| LOWEST DAILY MEAN | 24 | Nov 14 | 19 | May 22 | 0.21 | Jan 1 1991 |
| ANNUAL SEVEN-DAY MINIMUM | 24 | Nov 11 | 22 | Sep 24 | 0.22 | Dec 31 1990 |
| MAXIMUM PEAK FLOW | | | 212 | Jul 6 | a18000 | Mar 23 1997 |
| MAXIMUM PEAK STAGE | | | b5.09 | Mar 29 | b,c21.90 | Mar 23 1997 |
| INSTANTANEOUS LOW FLOW | | | 19 | May 22 | | |
| 10 PERCENT EXCEEDS | 903 | | 83 | | 340 | |
| 50 PERCENT EXCEEDS | 95 | | 56 | | 50 | |
| 90 PERCENT EXCEEDS | 38 | | 38 | | 12 | |

a About
b Backwater from ice
c Maximum recorded
e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 30... | 1155 | 59 | -- | -- | -- | 1450 | 4.5 | 4.0 | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 04... | 1300 | 71 | -- | -- | -- | 1600 | 3.2 | .2 | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 13... | 1240 | 52 | -- | -- | -- | 1480 | 9.0 | .2 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 15... | 1305 | 86 | 7.8 | -- | 1210 | 1240 | 18.3 | 14.5 | 270 | 50.0 | 34.0 | 8.90 | 4 |
| MAY | | | | | | | | | | | | | |
| 22... | 1520 | 19 | -- | -- | -- | 1900 | 24.5 | 21.0 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 15... | 1255 | 42 | -- | -- | -- | 1430 | 40.5 | 25.5 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 26... | 1135 | 48 | 7.9 | 8.3 | 1510 | 1570 | 29.0 | 22.0 | 350 | 63.0 | 47.0 | 13.0 | 5 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 30... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 04... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 15... | 170 | 57 | 301 | 8.1 | .30 | 360 | 190 | 820 | 813 | 1.0 | 110 | <1 | 50 |
| MAY | | | | | | | | | | | | | |
| 22... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 15... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 26... | 230 | 58 | 332 | 14.0 | .40 | 520 | 139 | 1080 | 1090 | 1.0 | 60 | <1 | 50 |

| Date | 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 | | | | | |
| 30... | -- | -- | -- | -- | -- |
| DEC | | | | | |
| 04... | -- | -- | -- | -- | -- |
| FEB | | | | | |
| 13... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 15... | 40 | <.10 | <1 | <1 | 630 |
| MAY | | | | | |
| 22... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 15... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 26... | 10 | <.10 | 2 | <1 | 870 |

< Less than

## 06348500 SWEETBRIAR CREEK NEAR JUDSON, ND

LOCATION.--Lat 46°51'06", long 101°15'10", in SW$^1/_4$ sec.14, T.139 N., R.84 W., Morton County, Hydrologic Unit 10130203, on right bank 40 ft downstream from bridge on county highway, 2 mi northeast of Judson, and 16 mi upstream from mouth.

DRAINAGE AREA.--157 mi$^2$, approximately.

### WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1951 to September 1979, June 2002 to September 2002.

REVISED RECORDS.--WSP 1439: 1955(M).

GAGE.--Water-stage recorder. Datum of gage is 1,886.42 ft above National Geodetic Vertical Datum of 1929. Prior to July 20, 1955, nonrecording gage 80 ft upstream at same datum.

REMARKS.--Records fair. Flow regulated by Sweetbriar Reservoir (station 06348490) 2 mi upstream since April 1964.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,200 ft$^3$/s, Apr. 7, 1969, gage height, 11.28 ft; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known, 12.5 ft, Apr. 17, 1950, from floodmarks at present site, discharge, 5,910 ft$^3$/s from rating curve extended above 2,000 ft$^3$/s on basis of contracted-opening measurement of peak flow.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4.2 ft$^3$/s, June 9, gage height, 1.69 ft; minimum daily, 0.51 ft$^3$/s, Aug. 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | --- | --- | --- | --- | --- | --- | --- | --- | 0.63 | 1.00 | 0.72 | 1.1 |
| 2 | --- | --- | --- | --- | --- | --- | --- | --- | 0.81 | 0.94 | 0.77 | 1.0 |
| 3 | --- | --- | --- | --- | --- | --- | --- | --- | 0.76 | 0.98 | 0.74 | 0.95 |
| 4 | --- | --- | --- | --- | --- | --- | --- | --- | 0.77 | 1.1 | 0.67 | 1.0 |
| 5 | --- | --- | --- | --- | --- | --- | --- | --- | 0.75 | 1.2 | 0.51 | 1.1 |
| 6 | --- | --- | --- | --- | --- | --- | --- | --- | 0.69 | 1.2 | 0.64 | 1.2 |
| 7 | --- | --- | --- | --- | --- | --- | --- | --- | 1.1 | 0.94 | 0.71 | 1.2 |
| 8 | --- | --- | --- | --- | --- | --- | --- | --- | 1.1 | 0.81 | 0.68 | 1.3 |
| 9 | --- | --- | --- | --- | --- | --- | --- | --- | 1.8 | 1.1 | 0.81 | 1.2 |
| 10 | --- | --- | --- | --- | --- | --- | --- | --- | 1.2 | 1.1 | 0.79 | 1.3 |
| 11 | --- | --- | --- | --- | --- | --- | --- | --- | 1.1 | 1.2 | 0.78 | 1.3 |
| 12 | --- | --- | --- | --- | --- | --- | --- | --- | 1.0 | 1.2 | 0.62 | 1.3 |
| 13 | --- | --- | --- | --- | --- | --- | --- | --- | 1.3 | 1.1 | 0.52 | 1.2 |
| 14 | --- | --- | --- | --- | --- | --- | --- | --- | 1.1 | 1.1 | 0.55 | 1.1 |
| 15 | --- | --- | --- | --- | --- | --- | --- | --- | 0.99 | 1.1 | 0.65 | 1.1 |
| 16 | --- | --- | --- | --- | --- | --- | --- | --- | 0.91 | 1.1 | 0.81 | 1.1 |
| 17 | --- | --- | --- | --- | --- | --- | --- | --- | 0.93 | 1.0 | 0.83 | 1.2 |
| 18 | --- | --- | --- | --- | --- | --- | --- | --- | 1.0 | 0.88 | 0.83 | 1.3 |
| 19 | --- | --- | --- | --- | --- | --- | --- | --- | 1.6 | 0.76 | 0.77 | 1.3 |
| 20 | --- | --- | --- | --- | --- | --- | --- | --- | 1.7 | 0.84 | 0.88 | 1.1 |
| 21 | --- | --- | --- | --- | --- | --- | --- | --- | 1.3 | 0.82 | 1.1 | 1.0 |
| 22 | --- | --- | --- | --- | --- | --- | --- | --- | 1.4 | 0.77 | 1.1 | 1.1 |
| 23 | --- | --- | --- | --- | --- | --- | --- | --- | 1.6 | 0.90 | 1.1 | 1.1 |
| 24 | --- | --- | --- | --- | --- | --- | --- | --- | 1.6 | 0.91 | 1.2 | 1.1 |
| 25 | --- | --- | --- | --- | --- | --- | --- | --- | 1.6 | 0.93 | 1.2 | 1.2 |
| 26 | --- | --- | --- | --- | --- | --- | --- | --- | 1.6 | 0.89 | 1.1 | 1.1 |
| 27 | --- | --- | --- | --- | --- | --- | --- | --- | 1.5 | 0.75 | 0.80 | 1.1 |
| 28 | --- | --- | --- | --- | --- | --- | --- | --- | 1.5 | 0.73 | 1.0 | 1.2 |
| 29 | --- | --- | --- | --- | --- | --- | --- | --- | 1.4 | 0.77 | 1.1 | 1.2 |
| 30 | --- | --- | --- | --- | --- | --- | --- | --- | 1.2 | 0.74 | 0.97 | 1.2 |
| 31 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.80 | 1.1 | --- |
| TOTAL | --- | --- | --- | --- | --- | --- | --- | --- | 35.94 | 29.66 | 26.05 | 34.65 |
| MEAN | --- | --- | --- | --- | --- | --- | --- | --- | 1.198 | 0.957 | 0.840 | 1.155 |
| MAX | --- | --- | --- | --- | --- | --- | --- | --- | 1.8 | 1.2 | 1.2 | 1.3 |
| MIN | --- | --- | --- | --- | --- | --- | --- | --- | 0.63 | 0.73 | 0.51 | 0.95 |

06348500 SWEETBRIAR CREEK NEAR JUDSON, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 2002 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APR | | | | | | | | | | | | | |
| 15... | 1545 | 17 | 8.0 | 8.0 | 1180 | 1160 | 16.7 | 11.5 | 240 | 42.0 | 33.0 | 12.0 | 4 |
| MAY | | | | | | | | | | | | | |
| 21... | 1250 | 2.0 | -- | -- | -- | 1830 | 22.5 | 14.0 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 15... | 1445 | 1.1 | -- | -- | -- | 1900 | 42.0 | 26.5 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 09... | 1220 | .74 | 8.1 | 8.3 | 1930 | 1980 | 25.0 | 23.4 | 320 | 39.0 | 55.0 | 13.0 | 8 |
| SEP | | | | | | | | | | | | | |
| 19... | 1450 | 1.3 | -- | -- | -- | 2000 | 22.0 | 17.5 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APR | | | | | | | | | | | | | |
| 15... | 160 | 58 | 228 | 10.0 | .20 | 380 | 36.5 | 809 | 775 | 2.0 | 100 | <1 | 30 |
| MAY | | | | | | | | | | | | | |
| 21... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 15... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 09... | 350 | 69 | 488 | 5.3 | .50 | 590 | 2.77 | 1380 | 1350 | 4.0 | 40 | <1 | 60 |
| SEP | | | | | | | | | | | | | |
| 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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... | 80 | <.10 | <1 | <1 | 590 |
| MAY | | | | | |
| 21... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 15... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 09... | 50 | .20 | 1 | 1 | 660 |
| SEP | | | | | |
| 19... | -- | -- | -- | -- | -- |

< Less than

## 06349000 HEART RIVER NEAR MANDAN, ND

LOCATION.--Lat 46°50'02", long 100°58'27", in NW$^1/_4$NE$^1/_4$ 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$^2$, 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 National Geodetic Vertical Datum of 1929 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 good except for 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 104 | 77 | e86 | e64 | e59 | e50 | e51 | 106 | 118 | 65 | 62 | 57 |
| 2 | 105 | 75 | e86 | e63 | e59 | e49 | e50 | 96 | 100 | 64 | 61 | 47 |
| 3 | 103 | 66 | e86 | e62 | e58 | e48 | e48 | 88 | 74 | 45 | 69 | 46 |
| 4 | 103 | 54 | e85 | e62 | e58 | e47 | e47 | 77 | 78 | 38 | 57 | 110 |
| 5 | 103 | 48 | e84 | e61 | e58 | e47 | e44 | 74 | 76 | 36 | 56 | 72 |
| 6 | 103 | 43 | e83 | e60 | e58 | e47 | e42 | 73 | 100 | 97 | 44 | 45 |
| 7 | 108 | 40 | e82 | e60 | e58 | e46 | e42 | 71 | 117 | 189 | 42 | 44 |
| 8 | 109 | 38 | e81 | e60 | e58 | e46 | e43 | 76 | 120 | 174 | 43 | 59 |
| 9 | 114 | 36 | e80 | e60 | e58 | e46 | e50 | 79 | 119 | 132 | 44 | 62 |
| 10 | 127 | 36 | e79 | e60 | e58 | e46 | e60 | 82 | 129 | 101 | 45 | 56 |
| 11 | 130 | 35 | e78 | e60 | e58 | e46 | e71 | 87 | 127 | 98 | 51 | 63 |
| 12 | 128 | 34 | e78 | e60 | e58 | e46 | e84 | 79 | 123 | 81 | 56 | 66 |
| 13 | 98 | 35 | e77 | e60 | e58 | e46 | e121 | 76 | 107 | 69 | 70 | 65 |
| 14 | 83 | 35 | e76 | e60 | e58 | e46 | e180 | 74 | 61 | 49 | 72 | 64 |
| 15 | 75 | 34 | e75 | e60 | e57 | e46 | e164 | 68 | 42 | 36 | 74 | 62 |
| 16 | 71 | 33 | e74 | e60 | e57 | e47 | 154 | 61 | 42 | 31 | 76 | 52 |
| 17 | 69 | 34 | e73 | e59 | e56 | e47 | 139 | 55 | 63 | 36 | 97 | 42 |
| 18 | 66 | 33 | e72 | e59 | e56 | e47 | 133 | 48 | 77 | 69 | 102 | 37 |
| 19 | 65 | 47 | e72 | e59 | e56 | e47 | 131 | 42 | 87 | 64 | 104 | 39 |
| 20 | 65 | 75 | e72 | e59 | e55 | e46 | 130 | 39 | 84 | 80 | 100 | 42 |
| 21 | 65 | 82 | e71 | e59 | e55 | e46 | 126 | 39 | 85 | 69 | 68 | 43 |
| 22 | 65 | 82 | e71 | e59 | e54 | e46 | 127 | 38 | 97 | 63 | 62 | 41 |
| 23 | 68 | 86 | e70 | e59 | e54 | e46 | 125 | 33 | 98 | 71 | 58 | 34 |
| 24 | 74 | 87 | e69 | e59 | e53 | e46 | 123 | 28 | 110 | 86 | 62 | 33 |
| 25 | 74 | 88 | e67 | e59 | e53 | e45 | 124 | 108 | 114 | 130 | 62 | 27 |
| 26 | 59 | e87 | e67 | e59 | e53 | e44 | 116 | 138 | 111 | 116 | 49 | 25 |
| 27 | 84 | e86 | e66 | e59 | e52 | e47 | 114 | 142 | 103 | 101 | 43 | 26 |
| 28 | 87 | e86 | e65 | e59 | e51 | e49 | 110 | 148 | 89 | 70 | 47 | 26 |
| 29 | 74 | e86 | e64 | e59 | --- | e51 | 113 | 132 | 84 | 53 | 39 | 22 |
| 30 | 75 | e86 | e64 | e59 | --- | e52 | 111 | 120 | 77 | 56 | 57 | 22 |
| 31 | 72 | --- | e64 | e59 | --- | e53 | --- | 113 | --- | 62 | 62 | --- |
| TOTAL | 2726 | 1764 | 2317 | 1857 | 1576 | 1461 | 2973 | 2490 | 2812 | 2431 | 1934 | 1429 |
| MEAN | 87.94 | 58.80 | 74.74 | 59.90 | 56.29 | 47.13 | 99.10 | 80.32 | 93.73 | 78.42 | 62.39 | 47.63 |
| MAX | 130 | 88 | 86 | 64 | 59 | 53 | 180 | 148 | 129 | 189 | 104 | 110 |
| MIN | 59 | 33 | 64 | 59 | 51 | 44 | 42 | 28 | 42 | 31 | 39 | 22 |
| AC-FT | 5410 | 3500 | 4600 | 3680 | 3130 | 2900 | 5900 | 4940 | 5580 | 4820 | 3840 | 2830 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1924 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 57.67 | 44.28 | 26.73 | 18.05 | 109.0 | 948.5 | 878.8 | 329.5 | 336.8 | 238.3 | 99.26 | 65.35 |
| MAX | 337 | 383 | 155 | 145 | 1046 | 4029 | 5885 | 3610 | 1925 | 2433 | 763 | 231 |
| (WY) | 1995 | 1983 | 1983 | 1983 | 1930 | 1997 | 1950 | 1970 | 1941 | 1993 | 1998 | 1995 |
| MIN | 5.41 | 6.95 | 0.21 | 0.000 | 0.000 | 0.28 | 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 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1924 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 143194 | | 25770 | | | |
| ANNUAL MEAN | 392.3 | | 70.60 | | 264.6 | |
| HIGHEST ANNUAL MEAN | | | | | 898 | 1982 |
| LOWEST ANNUAL MEAN | | | | | 19.2 | 1990 |
| HIGHEST DAILY MEAN | 5610 | Jul 28 | 189 | Jul 7 | 28400 | Apr 18 1950 |
| LOWEST DAILY MEAN | 33 | Nov 16 | 22 | Sep 29 | 0.00 | Aug 20 1929 |
| ANNUAL SEVEN-DAY MINIMUM | 34 | Nov 12 | 26 | Sep 24 | 0.00 | Feb 1 1930 |
| MAXIMUM PEAK FLOW | | | a241 | Jul 7 | c30500 | Apr 19 1950 |
| MAXIMUM PEAK STAGE | | | b3.79 | Mar 31 | 25.75 | Apr 4 1952 |
| ANNUAL RUNOFF (AC-FT) | 284000 | | 51110 | | 191700 | |
| 10 PERCENT EXCEEDS | 1120 | | 114 | | 420 | |
| 50 PERCENT EXCEEDS | 128 | | 63 | | 51 | |
| 90 PERCENT EXCEEDS | 43 | | 42 | | 6.0 | |

a Gage height, 1.17 ft
b Backwater from ice
c About
e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 30... | 1455 | 73 | -- | -- | -- | 1510 | 7.5 | 5.7 | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 03... | 1545 | 86 | -- | -- | -- | 1740 | 11.0 | .2 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 11... | 1350 | 46 | -- | -- | -- | 1690 | -3.0 | .1 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 22... | 1545 | 129 | 8.5 | 8.2 | 1370 | 1350 | 20.5 | 13.0 | 300 | 57.0 | 39.0 | 8.90 | 5 |
| MAY | | | | | | | | | | | | | |
| 22... | 1050 | 39 | -- | -- | -- | 1880 | 19.0 | 15.5 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 03... | 1140 | 44 | -- | -- | -- | 1600 | 28.5 | 24.0 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 07... | 1500 | 42 | 8.1 | 8.4 | 1450 | --e | 37.0 | 29.5 | 340 | 55.0 | 49.0 | 13.0 | 6 |
| SEP | | | | | | | | | | | | | |
| 19... | 1235 | 38 | -- | -- | -- | 1650 | 18.5 | 16.0 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 30... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 03... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 22... | 200 | 58 | 344 | 9.8 | .30 | 420 | 328 | 942 | 942 | 1.0 | 70 | <1 | 50 |
| MAY | | | | | | | | | | | | | |
| 22... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 03... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 07... | 240 | 60 | 309 | 17.0 | .40 | 530 | 126 | 1110 | 1090 | <1.0 | 100 | 1 | 50 |
| SEP | | | | | | | | | | | | | |
| 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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 | | | | | |
| 30... | -- | -- | -- | -- | -- |
| DEC | | | | | |
| 03... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 11... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 22... | 30 | <.10 | 1 | <1 | 750 |
| MAY | | | | | |
| 22... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 03... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 07... | 60 | .10 | 2 | 1 | 790 |
| SEP | | | | | |
| 19... | -- | -- | -- | -- | -- |

< Less than
e Required equipment not functional/available

## 06349215 LONG LAKE CREEK ABOVE LONG LAKE NEAR MOFFIT, ND

LOCATION.--Lat 46°37'59", long 100°14'29", in NE$^1/_4$NE$^1/_4$NW$^1/_4$ 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$^2$ 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 National Geodetic Vertical Datum of 1929, from topographic map.

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.0 | 6.5 | 8.7 | e4.9 | e5.7 | e8.2 | 37 | 21 | 4.6 | 1.8 | 1.6 | 2.1 |
| 2 | 5.8 | 7.5 | 8.5 | e4.9 | e5.8 | e7.7 | 26 | 18 | 4.7 | 1.7 | 1.7 | 2.0 |
| 3 | 5.9 | 7.2 | 8.0 | e4.8 | e5.8 | e7.3 | 23 | 18 | 4.9 | 1.6 | 1.5 | 2.0 |
| 4 | 6.2 | 7.6 | 7.9 | e4.4 | e5.9 | e7.3 | 24 | 16 | 5.0 | 1.5 | 1.4 | 2.1 |
| 5 | 5.7 | 7.3 | 8.0 | e4.5 | e5.9 | e7.5 | 24 | 15 | 4.8 | 1.4 | 1.5 | 2.0 |
| 6 | 5.1 | 7.7 | 7.9 | e4.8 | e6.0 | e7.7 | 25 | 15 | 4.6 | 1.3 | 1.5 | 1.9 |
| 7 | 4.9 | 7.8 | 7.8 | e5.0 | e6.1 | e8.0 | 26 | 14 | 5.1 | 1.2 | 1.6 | 1.8 |
| 8 | 5.6 | 7.8 | 7.6 | e5.1 | e6.4 | e8.2 | 28 | 16 | 5.4 | 1.2 | 1.6 | 1.9 |
| 9 | 5.6 | 8.0 | 7.5 | e5.4 | e6.8 | e8.1 | 28 | 19 | 5.4 | 1.3 | 1.9 | 2.0 |
| 10 | 4.7 | 7.6 | 7.6 | e5.8 | e7.1 | e8.0 | 29 | 14 | 4.9 | 1.4 | 1.8 | 2.1 |
| 11 | 4.1 | 7.4 | 7.1 | e6.1 | e7.0 | e8.4 | 30 | 14 | 4.5 | 1.5 | 1.8 | 2.4 |
| 12 | 4.1 | 8.3 | 7.1 | e6.2 | e7.2 | e8.9 | 29 | 15 | 4.4 | 1.7 | 1.7 | 2.3 |
| 13 | 4.4 | 7.7 | 7.0 | e6.1 | e7.5 | e9.0 | 29 | 13 | 4.1 | 1.9 | 1.8 | 2.2 |
| 14 | 4.4 | 7.4 | 7.1 | e6.0 | e7.8 | e9.3 | 29 | 13 | 4.1 | 2.1 | 2.1 | 2.1 |
| 15 | 4.8 | 7.7 | 6.9 | e5.9 | e8.0 | e9.3 | 29 | 13 | 4.0 | 2.3 | 2.2 | 2.0 |
| 16 | 5.4 | 8.1 | e7.0 | e5.9 | e8.3 | e8.7 | 30 | 12 | 4.0 | 2.5 | 2.1 | 1.9 |
| 17 | 5.6 | 9.2 | e6.9 | e5.8 | e8.6 | e8.6 | 28 | 10 | 3.6 | 2.9 | 2.0 | 1.9 |
| 18 | 5.1 | 9.2 | e6.8 | e5.7 | e8.8 | e8.4 | 28 | 9.5 | 3.4 | 3.2 | 1.9 | 1.9 |
| 19 | 4.7 | 9.0 | e6.6 | e6.0 | e9.0 | e8.3 | 28 | 9.1 | 3.2 | 3.4 | 1.9 | 1.9 |
| 20 | 4.7 | 9.9 | e6.2 | e6.2 | e9.3 | e8.2 | 28 | 8.4 | 3.1 | 3.9 | 1.8 | 1.8 |
| 21 | 4.7 | 10 | e6.0 | e6.2 | e9.6 | e8.0 | 28 | 7.3 | 3.0 | 8.1 | 1.8 | 1.8 |
| 22 | 4.9 | 9.9 | e6.0 | e6.1 | e9.7 | e7.9 | 28 | 6.3 | e2.9 | 7.5 | 1.7 | 1.7 |
| 23 | 5.2 | 9.9 | e5.9 | e6.0 | e10 | e7.8 | e27 | 7.0 | e2.8 | 3.3 | 2.1 | 1.7 |
| 24 | 6.3 | 9.9 | e5.8 | e6.0 | e10 | e7.8 | e26 | 6.8 | e2.9 | 1.8 | 2.4 | 1.7 |
| 25 | 6.4 | 9.9 | e5.6 | e6.1 | e9.6 | e8.0 | e26 | 6.4 | 3.2 | 2.4 | 2.3 | 1.7 |
| 26 | 6.7 | 9.2 | e5.4 | e6.0 | e9.3 | 8.4 | 24 | 5.8 | 3.2 | 2.8 | 2.4 | 1.7 |
| 27 | 6.8 | 9.1 | e5.2 | e6.0 | e8.8 | 9.3 | 23 | 5.8 | 2.7 | 1.9 | 2.4 | 1.7 |
| 28 | 7.3 | 9.2 | e5.1 | e5.9 | e8.7 | 30 | 24 | 5.7 | 2.3 | 2.0 | 2.3 | 1.7 |
| 29 | 7.1 | 8.7 | e5.1 | e5.8 | --- | 53 | 24 | 5.3 | 2.0 | 2.3 | 2.2 | 1.7 |
| 30 | 7.1 | 8.7 | e5.0 | e5.7 | --- | 41 | 21 | 5.6 | 1.9 | 2.1 | 2.0 | 1.9 |
| 31 | 7.4 | --- | e5.0 | e5.6 | --- | 37 | --- | 5.0 | --- | 1.8 | 2.0 | --- |
| TOTAL | 172.7 | 253.4 | 208.3 | 174.9 | 218.7 | 383.3 | 809 | 350.0 | 114.7 | 75.8 | 59.0 | 57.6 |
| MEAN | 5.571 | 8.447 | 6.719 | 5.642 | 7.811 | 12.36 | 26.97 | 11.29 | 3.823 | 2.445 | 1.903 | 1.920 |
| MAX | 7.4 | 10 | 8.7 | 6.2 | 10 | 53 | 37 | 21 | 5.4 | 8.1 | 2.4 | 2.4 |
| MIN | 4.1 | 6.5 | 5.0 | 4.4 | 5.7 | 7.3 | 21 | 5.0 | 1.9 | 1.2 | 1.4 | 1.7 |
| AC-FT | 343 | 503 | 413 | 347 | 434 | 760 | 1600 | 694 | 228 | 150 | 117 | 114 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 6.076 | 6.848 | 5.496 | 3.827 | 9.048 | 114.5 | 93.03 | 40.46 | 23.46 | 39.45 | 13.10 | 5.538 |
| MAX | 15.2 | 15.7 | 14.4 | 8.48 | 42.0 | 367 | 730 | 179 | 90.3 | 220 | 39.4 | 14.2 |
| (WY) | 1999 | 1999 | 1999 | 2001 | 1996 | 1997 | 1997 | 1999 | 2001 | 1993 | 1993 | 1999 |
| MIN | 0.24 | 0.34 | 0.22 | 0.053 | 0.000 | 3.67 | 5.74 | 2.19 | 0.63 | 0.32 | 0.12 | 0.15 |
| (WY) | 1993 | 1991 | 1991 | 1991 | 1997 | 1991 | 1990 | 1992 | 1992 | 1989 | 1990 | 1990 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1989 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 13214.6 | | 2877.4 | | | |
| ANNUAL MEAN | 36.20 | | 7.883 | | 30.20 | |
| HIGHEST ANNUAL MEAN | | | | | 112 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 3.06 | 1992 |
| HIGHEST DAILY MEAN | 600 | Mar 23 | 53 | Mar 29 | 3200 | Mar 29 1997 |
| LOWEST DAILY MEAN | 4.1 | Oct 11 | 1.2 | Jul 7 | 0.00 | Dec 30 1990 |
| ANNUAL SEVEN-DAY MINIMUM | 4.6 | Oct 10 | 1.3 | Jul 4 | 0.00 | Jan 11 1997 |
| MAXIMUM PEAK FLOW | | | 58 | Mar 29 | 3200 | Mar 29 1997 |
| MAXIMUM PEAK STAGE | | | 1.92 | Mar 29 | 12.99 | Mar 29 1997 |
| INSTANTANEOUS LOW FLOW | | | 1.2 | Jul 7 | 0.00 | Dec 30 1990 |
| ANNUAL RUNOFF (AC-FT) | 26210 | | 5710 | | 21880 | |
| 10 PERCENT EXCEEDS | 98 | | 18 | | 52 | |
| 50 PERCENT EXCEEDS | 9.6 | | 6.0 | | 7.0 | |
| 90 PERCENT EXCEEDS | 6.0 | | 1.8 | | 0.37 | |

e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 28... | 1330 | 9.7 | -- | -- | -- | 1430 | -5.0 | .0 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 14... | 1100 | 9.2 | -- | -- | -- | 1260 | -2.0 | .0 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 29... | 1255 | 26 | --e | 8.1 | 1100 | 1110 | 11.0 | 8.5 | 290 | 55.0 | 38.0 | 16.0 | 4 |
| JUL | | | | | | | | | | | | | |
| 08... | 1200 | 1.2 | 7.8 | 8.2 | 1370 | 1290 | 28.0 | 25.5 | 320 | 58.0 | 42.0 | 19.0 | 5 |
| AUG | | | | | | | | | | | | | |
| 06... | 1250 | 1.5 | -- | -- | -- | 1400 | 25.0 | 21.5 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 28... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 14... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 29... | 140 | 49 | 367 | 11.0 | .40 | 240 | 54.0 | 758 | 721 | 4.0 | 120 | <1 | 170 |
| JUL | | | | | | | | | | | | | |
| 08... | 200 | 56 | 494 | 13.0 | .50 | 290 | 1.33 | 410 | 920 | 12.0 | 60 | <1 | 270 |
| AUG | | | | | | | | | | | | | |
| 06... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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 | | | | | |
| 28... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 14... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 29... | 140 | <.10 | <1 | <1 | 400 |
| JUL | | | | | |
| 08... | 280 | .10 | 2 | 1 | 410 |
| AUG | | | | | |
| 06... | -- | -- | -- | -- | -- |

< Less than
e Required equipment not functional/available

## 06349500 APPLE CREEK NEAR MENOKEN, ND

LOCATION.--Lat 46°47'40", long 100°39'25", in NW$^1/_4$NE$^1/_4$ 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$^2$, approximately, of which about 500 mi$^2$ 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 National Geodetic Vertical Datum of 1929. See WSP 1729 or 1917 for history of changes prior to Sept. 30, 1953.

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 8.8 | 11 | e8.9 | e5.4 | e6.2 | e6.5 | e42 | 31 | 12 | 2.1 | 2.2 | 0.91 |
| 2 | 7.5 | 12 | e9.1 | e5.3 | e6.1 | e6.5 | e38 | 29 | 12 | 2.1 | 2.2 | 0.76 |
| 3 | 5.8 | 12 | e9.4 | e5.1 | e6.2 | e6.4 | e49 | 27 | 12 | 2.4 | 2.2 | 0.63 |
| 4 | 5.5 | 11 | e9.7 | e5.2 | e6.3 | e6.6 | 52 | 31 | 13 | 7.0 | 2.2 | 0.58 |
| 5 | 5.7 | 10 | e9.8 | e5.7 | e6.2 | e6.7 | 63 | 30 | 12 | 6.5 | 2.0 | 0.52 |
| 6 | 6.2 | 10 | e9.8 | e6.1 | e6.1 | e6.8 | 57 | 28 | 10 | 4.8 | 2.0 | 0.51 |
| 7 | 6.2 | 11 | e9.8 | e6.1 | e6.0 | e6.7 | 47 | 28 | 9.9 | 4.2 | 2.1 | 0.52 |
| 8 | 6.5 | 11 | e9.9 | e6.5 | e6.2 | e6.9 | 44 | 30 | 10 | 4.0 | 1.4 | 0.54 |
| 9 | 7.9 | 11 | e9.9 | e6.9 | e6.3 | e7.0 | 34 | 34 | 9.3 | 6.8 | 1.7 | 0.66 |
| 10 | 10 | 11 | e10 | e7.1 | e6.4 | e7.2 | 35 | 21 | 9.9 | 10 | 2.3 | 1.3 |
| 11 | 9.0 | 11 | e10 | e7.3 | e6.6 | e7.3 | 36 | 22 | 9.6 | 8.8 | 2.5 | 1.5 |
| 12 | 8.5 | 10 | e10 | e7.5 | e6.5 | e7.4 | 40 | 40 | 7.4 | 8.8 | 2.7 | 1.6 |
| 13 | 9.9 | 10 | e9.9 | e7.6 | e6.6 | e7.6 | 40 | 40 | 7.1 | 6.6 | 2.7 | 2.3 |
| 14 | 9.7 | 10 | e9.8 | e7.5 | e6.7 | e7.8 | 40 | 37 | 7.2 | 4.9 | 3.0 | 3.7 |
| 15 | 9.1 | 10 | e9.7 | e7.4 | e6.7 | e7.8 | 38 | 40 | 7.7 | 3.8 | 2.5 | 1.5 |
| 16 | 8.3 | e10 | e9.5 | e7.3 | e6.8 | e7.9 | 37 | 37 | 7.0 | 2.8 | 1.3 | 1.3 |
| 17 | 7.6 | e9.9 | e9.2 | e7.2 | e6.9 | e8.0 | 36 | 29 | 6.4 | 2.6 | 1.2 | 1.1 |
| 18 | 7.7 | e9.9 | e9.0 | e7.0 | e6.9 | e8.1 | 38 | 32 | 6.0 | 2.8 | 1.2 | 1.0 |
| 19 | 18 | e9.8 | e9.0 | e6.8 | e7.0 | e7.9 | 41 | 31 | 8.3 | 2.7 | 1.2 | 1.2 |
| 20 | 20 | e9.7 | e9.0 | e6.9 | e7.0 | e7.7 | 39 | 28 | 8.3 | 2.6 | 1.1 | 1.2 |
| 21 | 12 | e9.5 | e8.9 | e7.0 | e6.9 | e8.0 | 41 | 26 | 7.8 | 2.4 | 1.2 | 1.5 |
| 22 | 9.7 | e9.3 | e8.8 | e7.0 | e6.8 | e8.3 | 39 | 29 | 6.3 | 2.3 | 0.97 | 1.3 |
| 23 | 9.6 | e9.0 | e8.4 | e7.0 | e6.8 | e8.7 | 40 | 29 | 6.7 | 2.4 | 0.72 | 1.1 |
| 24 | 10 | e8.6 | e8.3 | e6.9 | e6.7 | e9.1 | 42 | 20 | 6.3 | 2.7 | 0.68 | 1.2 |
| 25 | 9.9 | e8.7 | e7.5 | e6.7 | e6.7 | e9.5 | 38 | 15 | 5.2 | 3.0 | 0.63 | 1.4 |
| 26 | 9.6 | e8.7 | e6.7 | e6.8 | e6.6 | e9.8 | 31 | 18 | 4.3 | 2.9 | 0.56 | 1.2 |
| 27 | 9.3 | e8.8 | e6.7 | e6.9 | e6.5 | e10 | 34 | 17 | 3.7 | 2.4 | 0.56 | 1.1 |
| 28 | 9.0 | e8.7 | e6.7 | e6.8 | e6.5 | e12 | 38 | 17 | 3.2 | 2.2 | 0.60 | 1.3 |
| 29 | 8.8 | e8.8 | e6.4 | e6.6 | --- | e17 | 36 | 18 | 2.6 | 2.1 | 0.61 | 1.4 |
| 30 | 9.3 | e8.7 | e6.1 | e6.5 | --- | e25 | 35 | 16 | 2.3 | 2.1 | 0.61 | 1.4 |
| 31 | 10 | --- | e5.7 | e6.4 | --- | e37 | --- | 14 | --- | 2.2 | 0.69 | --- |
| TOTAL | 285.1 | 299.1 | 271.6 | 206.5 | 183.2 | 299.2 | 1220 | 844 | 233.5 | 123.0 | 47.53 | 36.23 |
| MEAN | 9.197 | 9.970 | 8.761 | 6.661 | 6.543 | 9.652 | 40.67 | 27.23 | 7.783 | 3.968 | 1.533 | 1.208 |
| MAX | 20 | 12 | 10 | 7.6 | 7.0 | 37 | 63 | 40 | 13 | 10 | 3.0 | 3.7 |
| MIN | 5.5 | 8.6 | 5.7 | 5.1 | 6.0 | 6.4 | 31 | 14 | 2.3 | 2.1 | 0.56 | 0.51 |
| AC-FT | 565 | 593 | 539 | 410 | 363 | 593 | 2420 | 1670 | 463 | 244 | 94 | 72 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 6.510 | 5.265 | 3.784 | 2.338 | 12.99 | 117.4 | 206.5 | 81.13 | 44.43 | 29.98 | 17.63 | 9.169 |
| MAX | 67.6 | 40.1 | 30.8 | 15.2 | 316 | 557 | 1606 | 1038 | 346 | 372 | 292 | 130 |
| (WY) | 2000 | 2000 | 1998 | 2000 | 2000 | 1987 | 1997 | 1950 | 1953 | 1993 | 1999 | 1999 |
| MIN | 0.047 | 0.062 | 0.057 | 0.040 | 0.095 | 0.99 | 0.53 | 0.23 | 0.066 | 0.025 | 0.030 | 0.030 |
| (WY) | 1991 | 1990 | 1992 | 1977 | 1975 | 1977 | 1990 | 1977 | 1977 | 1977 | 1991 | 1990 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1946 - 2002 | | |
|---|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 36260.8 | | 4048.96 | | | | |
| ANNUAL MEAN | 99.34 | | 11.09 | | 44.76 | | |
| HIGHEST ANNUAL MEAN | | | | | 268 | | 1997 |
| LOWEST ANNUAL MEAN | | | | | 0.31 | | 1990 |
| HIGHEST DAILY MEAN | 1140 | Mar 22 | 63 | Apr 5 | 5590 | Apr 18 | 1950 |
| LOWEST DAILY MEAN | 5.2 | Jan 1 | 0.51 | Sep 6 | 0.00 | Aug 25 | 1946 |
| ANNUAL SEVEN-DAY MINIMUM | 5.8 | Jan 1 | 0.57 | Sep 3 | 0.00 | Aug 25 | 1946 |
| MAXIMUM PEAK FLOW | | | 72 | Apr 6 | 6750 | Apr 18 | 1950 |
| MAXIMUM PEAK STAGE | | | a6.15 | Apr 1 | 17.46 | Apr 19 | 1979 |
| ANNUAL RUNOFF (AC-FT) | 71920 | | 8030 | | 32430 | | |
| 10 PERCENT EXCEEDS | 310 | | 33 | | 79 | | |
| 50 PERCENT EXCEEDS | 16 | | 7.4 | | 2.4 | | |
| 90 PERCENT EXCEEDS | 7.5 | | 1.3 | | 0.14 | | |

a Backwater from ice
e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 30... | 1140 | 8.7 | -- | -- | -- | 1640 | .0 | .5 | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 07... | 0945 | 6.0 | -- | -- | -- | 1990 | .0 | .0 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 25... | 1330 | 37 | 8.6 | -- | 1580 | 1730 | 4.5 | 8.0 | 370 | 61.0 | 53.0 | 17.0 | 6 |
| JUL | | | | | | | | | | | | | |
| 15... | 1055 | 4.0 | 8.2 | 8.5 | 1960 | 1880 | 32.0 | 26.0 | 360 | 52.0 | 57.0 | 20.0 | 8 |
| AUG | | | | | | | | | | | | | |
| 06... | 1100 | 1.9 | -- | -- | -- | 1770 | 23.0 | 21.5 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 30... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 07... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 25... | 250 | 58 | 386 | 20.0 | .20 | 560 | 123 | 1220 | 1190 | 4.0 | 60 | <1 | 150 |
| JUL | | | | | | | | | | | | | |
| 15... | 350 | 66 | 597 | 33.0 | .40 | 520 | 15.6 | 1430 | 1390 | 21.0 | 50 | <1 | 190 |
| AUG | | | | | | | | | | | | | |
| 06... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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 | | | | | |
| 30... | -- | -- | -- | -- | -- |
| FEB | | | | | |
| 07... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 25... | 50 | <.10 | <1 | <1 | 560 |
| JUL | | | | | |
| 15... | 10 | <.10 | 4 | <1 | 560 |
| AUG | | | | | |
| 06... | -- | -- | -- | -- | -- |

< Less than

## 06349700 MISSOURI RIVER NEAR SCHMIDT, ND

LOCATION.--Lat 46°39'22", long 100°44'18", in SW$^{1}/_{4}$NE$^{1}/_{4}$ 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$^{2}$, 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 National Geodetic Vertical Datum of 1929.

REMARKS.--Stage regulated by releases from Garrison Dam (station 06338490) 91.1 mi upstream and by 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 FROM DCP, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 11.71 | 11.48 | 12.66 | 16.48 | --- | --- | 12.91 | 12.21 | 15.25 | 15.27 | 15.40 | 15.72 |
| 2 | 11.64 | 11.41 | 12.61 | 16.56 | 15.63 | --- | 12.82 | 12.09 | 15.34 | 15.29 | 15.38 | 15.57 |
| 3 | 11.63 | 11.36 | 12.69 | 16.90 | 15.74 | --- | 12.74 | 12.05 | 15.43 | 15.22 | 15.28 | 15.54 |
| 4 | 11.65 | 11.38 | 12.76 | 17.27 | 15.82 | 16.40 | 12.64 | 12.10 | 15.48 | 15.26 | 15.31 | 15.59 |
| 5 | 11.63 | 11.46 | 12.72 | 17.75 | 15.70 | 16.57 | 12.65 | 12.13 | 15.36 | 15.26 | 15.33 | 15.47 |
| 6 | 11.64 | 11.54 | 12.72 | 18.05 | 15.68 | 16.91 | 12.55 | 12.14 | 15.32 | 15.33 | 15.37 | 15.37 |
| 7 | 11.71 | 11.49 | 12.66 | 17.99 | 15.83 | 16.83 | 12.51 | 12.23 | 15.35 | 15.27 | 15.42 | 15.30 |
| 8 | 11.66 | 11.55 | 12.67 | 17.78 | 15.86 | 16.45 | 12.49 | 12.29 | 15.36 | 15.30 | 15.43 | 15.29 |
| 9 | 11.75 | 11.51 | 12.72 | 17.65 | 15.76 | --- | 12.43 | 12.42 | 15.35 | 15.44 | 15.51 | 15.31 |
| 10 | 11.75 | 11.55 | 12.73 | 17.54 | 15.59 | --- | 12.41 | 12.35 | 15.46 | 15.42 | 15.47 | 15.43 |
| 11 | 11.68 | 11.54 | 12.77 | 17.31 | 15.42 | --- | 12.28 | 12.25 | 15.41 | 15.28 | 15.43 | 15.31 |
| 12 | 11.65 | 11.50 | 12.75 | 17.00 | 15.63 | 16.53 | 12.23 | 12.60 | 15.39 | 15.25 | 15.38 | 15.28 |
| 13 | 11.63 | 11.50 | 12.73 | 16.60 | 15.68 | 16.96 | 12.24 | 13.36 | 15.46 | 15.29 | 15.37 | 15.17 |
| 14 | 11.57 | 11.54 | 12.73 | 16.46 | 15.75 | 17.06 | 12.17 | 13.30 | 15.50 | 15.28 | 15.36 | 15.22 |
| 15 | 11.56 | 11.58 | 12.73 | 16.17 | 15.80 | 16.78 | 12.11 | 12.70 | 15.52 | 15.26 | 15.39 | 15.27 |
| 16 | 11.55 | 11.59 | 12.73 | 15.36 | 15.85 | 16.34 | 12.08 | 12.27 | 15.51 | 15.36 | 15.43 | 15.01 |
| 17 | 11.55 | 11.58 | 12.75 | 15.43 | 16.00 | 16.09 | 12.06 | 11.97 | 15.45 | 15.31 | 15.43 | 14.55 |
| 18 | 11.55 | 11.65 | 12.79 | 15.33 | 16.14 | 16.01 | 12.15 | 11.91 | 15.44 | 15.33 | 15.45 | 13.95 |
| 19 | 11.49 | 11.60 | 12.73 | 15.11 | 16.40 | 15.79 | 12.20 | 11.88 | 15.33 | 15.34 | 15.42 | 13.57 |
| 20 | 11.50 | 11.66 | 12.70 | 15.51 | 16.47 | 15.61 | 12.12 | 11.81 | 15.38 | 15.33 | 15.40 | 13.31 |
| 21 | 11.51 | 11.72 | 12.78 | 15.72 | 16.48 | 14.71 | 12.16 | 11.77 | 15.35 | 15.36 | 15.27 | 13.42 |
| 22 | 11.47 | 11.65 | 12.76 | 15.94 | 16.16 | 14.32 | 12.14 | 11.83 | 15.30 | 15.36 | 15.42 | 13.37 |
| 23 | 11.50 | 11.72 | 12.97 | 15.95 | 14.78 | 14.87 | 12.14 | 11.97 | 15.36 | 15.26 | 15.40 | 13.41 |
| 24 | 11.49 | 11.73 | 15.38 | 15.66 | 13.78 | 15.59 | 12.12 | 11.88 | 15.42 | 15.27 | 15.23 | 13.37 |
| 25 | 11.54 | 11.71 | 16.77 | 15.46 | 13.51 | 15.83 | 12.11 | 11.80 | 15.40 | 15.36 | 15.37 | 13.40 |
| 26 | 11.56 | 11.85 | 17.20 | 15.69 | 15.18 | 15.77 | 12.02 | 11.91 | 15.34 | 15.39 | 15.51 | 13.41 |
| 27 | 11.54 | 11.87 | 17.54 | 15.68 | 15.59 | 15.65 | 12.51 | 12.36 | 15.31 | 15.32 | 15.35 | 13.42 |
| 28 | 11.48 | 12.34 | 17.75 | 14.98 | 16.26 | 15.70 | 12.50 | 13.14 | 15.32 | 15.37 | 15.45 | 13.48 |
| 29 | 11.50 | 12.67 | 17.36 | 14.56 | --- | 14.88 | 12.34 | 14.06 | 15.29 | 15.34 | 15.47 | 13.37 |
| 30 | 11.44 | 12.67 | 16.72 | 14.70 | --- | 13.36 | 12.40 | 14.86 | 15.29 | 15.39 | 15.46 | 13.44 |
| 31 | 11.58 | --- | 16.41 | 15.22 | --- | 13.01 | --- | 15.17 | --- | 15.36 | 15.61 | --- |
| MEAN | 11.58 | 11.68 | 13.81 | 16.25 | --- | --- | 12.34 | 12.48 | 15.38 | 15.32 | 15.40 | 14.51 |
| MAX | 11.75 | 12.67 | 17.75 | 18.05 | --- | --- | 12.91 | 15.17 | 15.52 | 15.44 | 15.61 | 15.72 |
| MIN | 11.44 | 11.36 | 12.61 | 14.56 | --- | --- | 12.02 | 11.77 | 15.25 | 15.22 | 15.23 | 13.31 |

## 06350000 CANNONBALL RIVER AT REGENT, ND

LOCATION.--Lat 46°25'36", long 102°33'05", in NE$^1/_4$NE$^1/_4$ 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$^2$, 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 National Geodetic Vertical Datum of 1929.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known since 1914, 26.1 ft, Apr. 16, 1950, from floodmarks, discharge, 20,300 ft$^3$/s, on basis of slope-area measurement at site 4 mi downstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.3 | 4.7 | e4.2 | e2.8 | e3.8 | e4.2 | e7.5 | 13 | 2.6 | 1.6 | 0.84 | 2.3 |
| 2 | 3.4 | 4.6 | e4.3 | e2.7 | e4.0 | e4.2 | e7.3 | 11 | 2.8 | 1.3 | 0.77 | 2.1 |
| 3 | 3.3 | 4.6 | e4.3 | e2.5 | e3.9 | e4.0 | e7.1 | 11 | 2.9 | 1.1 | 0.79 | 2.0 |
| 4 | 3.3 | 4.5 | e4.4 | e2.6 | e4.0 | e4.1 | e7.3 | 9.9 | 3.1 | 1.1 | 0.73 | 1.9 |
| 5 | 3.3 | 4.6 | e4.4 | e3.0 | e4.0 | e4.1 | e7.8 | 9.2 | 3.1 | 1.1 | 0.79 | 2.0 |
| 6 | 3.4 | 4.5 | e4.5 | e3.2 | e4.0 | e4.1 | e9.1 | 9.1 | 3.0 | 0.86 | 0.82 | 2.2 |
| 7 | 3.6 | 4.6 | e4.5 | e3.2 | e4.2 | e4.2 | e9.9 | 8.7 | 2.8 | 0.79 | 0.86 | 2.0 |
| 8 | 3.8 | 4.6 | e4.6 | e3.6 | e4.3 | e4.3 | e11 | 10 | 2.7 | 0.74 | 0.81 | 2.1 |
| 9 | 4.0 | 4.6 | e4.6 | e4.1 | 4.6 | e4.3 | e12 | 11 | 3.3 | 1.0 | 0.73 | 2.1 |
| 10 | 4.5 | 4.6 | e4.6 | e4.2 | 4.5 | 4.3 | e13 | 11 | 4.2 | 1.0 | 0.72 | 2.1 |
| 11 | 4.4 | 4.6 | e4.6 | e4.3 | 4.7 | e4.5 | e14 | 10 | 5.5 | 0.92 | 0.72 | 1.9 |
| 12 | 4.4 | 4.6 | e4.5 | e4.4 | 4.8 | e4.6 | 16 | 11 | 5.0 | 0.83 | 0.75 | 1.8 |
| 13 | 4.3 | 4.7 | e4.4 | e4.4 | 4.7 | e4.9 | 16 | 10 | 4.7 | 0.76 | 0.67 | 1.7 |
| 14 | 4.1 | 4.6 | e4.4 | e4.4 | 4.8 | e5.2 | 16 | 9.2 | 5.7 | 0.63 | 0.65 | 1.7 |
| 15 | 3.9 | 4.6 | e4.3 | e4.5 | 4.9 | e5.5 | 17 | 8.3 | 5.1 | 0.48 | 0.65 | 1.7 |
| 16 | 3.8 | 4.6 | e4.3 | e4.4 | 5.0 | e5.6 | 17 | 6.8 | 4.6 | 0.40 | 0.63 | 1.7 |
| 17 | 3.8 | 4.6 | e4.2 | e4.4 | 5.1 | e5.8 | 17 | 6.6 | 6.9 | e0.35 | 0.74 | 1.6 |
| 18 | 4.0 | 4.6 | e4.1 | e4.4 | 5.2 | e5.8 | 18 | 5.7 | 8.1 | e0.31 | 0.76 | 1.7 |
| 19 | 3.9 | 4.6 | e4.1 | e4.4 | 5.3 | e5.6 | 19 | 5.3 | 7.0 | e0.31 | 0.79 | 1.7 |
| 20 | 4.0 | 4.5 | e4.1 | e4.4 | 5.4 | e5.5 | 19 | 4.8 | 5.8 | e0.27 | 0.79 | 1.7 |
| 21 | 3.9 | 4.8 | e4.1 | e4.4 | e5.3 | e5.1 | 19 | 4.2 | 5.2 | e0.28 | 1.2 | 1.6 |
| 22 | 3.9 | 4.8 | e4.0 | e4.4 | e5.3 | e5.1 | 20 | 4.1 | 4.6 | e0.27 | 2.0 | 1.6 |
| 23 | 4.1 | 4.8 | e3.8 | e4.4 | e5.1 | 5.2 | 20 | 4.5 | 4.4 | e0.25 | 3.3 | 1.6 |
| 24 | 4.5 | e4.6 | e3.3 | e4.4 | e5.0 | e5.1 | 19 | 4.6 | 3.8 | e0.26 | 2.7 | 1.7 |
| 25 | 4.5 | e4.5 | e3.0 | e4.3 | e4.8 | e5.2 | 17 | 4.3 | 3.3 | e0.24 | 2.1 | 1.7 |
| 26 | 4.6 | 4.3 | e3.0 | e4.3 | e4.6 | e5.2 | 16 | 4.2 | 3.0 | e0.23 | 1.8 | 2.0 |
| 27 | 4.5 | 4.1 | e3.2 | e4.3 | e4.5 | 6.1 | 17 | 3.7 | 2.6 | e0.25 | 1.7 | 2.0 |
| 28 | 4.6 | e4.1 | e3.4 | e4.3 | e4.3 | 6.8 | 17 | 3.4 | 2.4 | e0.73 | 1.9 | 2.2 |
| 29 | 4.6 | e4.1 | e3.2 | e4.3 | --- | 7.5 | 11 | 3.6 | 2.1 | e1.1 | 2.0 | 2.6 |
| 30 | 4.5 | e4.1 | e3.1 | e4.1 | --- | e7.7 | 13 | 3.4 | 1.8 | e1.0 | 2.0 | 2.8 |
| 31 | 4.7 | --- | e3.0 | e3.9 | --- | 7.7 | --- | 2.8 | --- | 0.91 | 2.1 | --- |
| TOTAL | 124.9 | 136.1 | 124.5 | 123.0 | 130.1 | 161.5 | 430.0 | 224.4 | 122.1 | 21.37 | 37.81 | 57.8 |
| MEAN | 4.029 | 4.537 | 4.016 | 3.968 | 4.646 | 5.210 | 14.33 | 7.239 | 4.070 | 0.689 | 1.220 | 1.927 |
| MAX | 4.7 | 4.8 | 4.6 | 4.5 | 5.4 | 7.7 | 20 | 13 | 8.1 | 1.6 | 3.3 | 2.8 |
| MIN | 3.3 | 4.1 | 3.0 | 2.5 | 3.8 | 4.0 | 7.1 | 2.8 | 1.8 | 0.23 | 0.63 | 1.6 |
| AC-FT | 248 | 270 | 247 | 244 | 258 | 320 | 853 | 445 | 242 | 42 | 75 | 115 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 8.794 | 5.943 | 4.175 | 4.958 | 22.91 | 138.4 | 117.2 | 62.00 | 77.59 | 26.40 | 17.10 | 5.012 |
| MAX | 124 | 51.6 | 15.7 | 63.2 | 393 | 963 | 1128 | 523 | 512 | 331 | 299 | 20.4 |
| (WY) | 1983 | 1983 | 1983 | 1973 | 1982 | 1978 | 1952 | 1972 | 1957 | 1969 | 1981 | 1986 |
| MIN | 1.25 | 1.87 | 0.52 | 0.000 | 0.000 | 3.23 | 3.80 | 2.94 | 1.57 | 0.69 | 0.67 | 0.70 |
| (WY) | 1961 | 1961 | 1951 | 1952 | 1959 | 1964 | 1961 | 1992 | 1990 | 2002 | 1959 | 1960 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1951 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 14879.1 | | 1693.58 | | | |
| ANNUAL MEAN | 40.76 | | 4.640 | | 40.90 | |
| HIGHEST ANNUAL MEAN | | | | | 168 | 1982 |
| LOWEST ANNUAL MEAN | | | | | 3.11 | 1992 |
| HIGHEST DAILY MEAN | 1120 | Mar 18 | 20 | Apr 22 | 7880 | Mar 27 1978 |
| LOWEST DAILY MEAN | 2.0 | Jan 1 | 0.23 | Jul 26 | 0.00 | Dec 5 1950 |
| ANNUAL SEVEN-DAY MINIMUM | 2.1 | Feb 12 | 0.25 | Jul 21 | 0.00 | Dec 5 1950 |
| MAXIMUM PEAK FLOW | | | 23 | Apr 23 | 10000 | Mar 27 1978 |
| MAXIMUM PEAK STAGE | | | a5.43 | Jun 17 | b21.01 | Mar 21 1997 |
| ANNUAL RUNOFF (AC-FT) | 29510 | | 3360 | | 29630 | |
| 10 PERCENT EXCEEDS | 68 | | 9.1 | | 45 | |
| 50 PERCENT EXCEEDS | 4.6 | | 4.3 | | 5.0 | |
| 90 PERCENT EXCEEDS | 2.5 | | 0.83 | | 1.5 | |

a Backwater from debris
b Backwater from ice
e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 11... | 1350 | 4.5 | -- | -- | -- | 2110 | 9.0 | 9.5 | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 06... | 1625 | 4.4 | -- | -- | -- | 1880 | 11.5 | 5.4 | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 12... | 1230 | 4.5 | -- | -- | -- | 2150 | -4.5 | .5 | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 06... | 1130 | 4.0 | -- | -- | -- | 2180 | 4.0 | .4 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 26... | 1620 | 5.1 | -- | -- | -- | 2050 | 5.0 | 1.9 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 11... | 1125 | 14 | 7.7 | -- | 1550 | 1600 | 10.6 | 3.3 | 340 | 62.0 | 44.0 | 6.40 | 5 |
| MAY | | | | | | | | | | | | | |
| 16... | 1710 | 6.7 | -- | -- | -- | 2380 | 15.5 | 14.7 | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 14... | 1330 | 6.1 | -- | -- | -- | 2150 | 26.0 | 17.0 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 29... | 1250 | 1.1 | 7.8 | --e | 2670 | 2730 | 29.0 | 24.5 | 460 | 56.0 | 77.0 | 14.0 | 10 |
| AUG | | | | | | | | | | | | | |
| 30... | 1130 | 2.0 | -- | -- | -- | 2380 | 28.0 | 21.5 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 06... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 12... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 06... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 26... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 11... | 220 | 58 | 289 | 7.3 | .30 | 560 | 40.8 | 1080 | 1070 | 1.0 | 110 | <1 | 30 |
| MAY | | | | | | | | | | | | | |
| 16... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 14... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 29... | 480 | 69 | 403 | 16.0 | .50 | 1100 | 5.78 | 2020 | 1970 | 2.0 | 90 | 1 | 60 |
| AUG | | | | | | | | | | | | | |
| 30... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

06350000 CANNONBALL RIVER AT REGENT, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | 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 | | | | | |
| 11... | -- | -- | -- | -- | -- |
| NOV | | | | | |
| 06... | -- | -- | -- | -- | -- |
| DEC | | | | | |
| 12... | -- | -- | -- | -- | -- |
| FEB | | | | | |
| 06... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 26... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 11... | 80 | <.10 | <1 | <1 | 1100 |
| MAY | | | | | |
| 16... | -- | -- | -- | -- | -- |
| JUN | | | | | |
| 14... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 29... | 70 | <.10 | 3 | 2 | 1200 |
| AUG | | | | | |
| 30... | -- | -- | -- | -- | -- |

< Less than
e Required equipment not functional/available

## 06351200 CANNONBALL RIVER NEAR RALEIGH, ND

LOCATION.--Lat 46°07'37", long 101°19'58", in SW$^1/_4$SW$^1/_4$NW$^1/_4$ sec.33, T.131 N., R.85 W., Grant County, Hydrologic Unit 10130204, on left bank at upstream side of bridge on State Highway 31 and 20 miles south of Raleigh.

DRAINAGE AREA.--1,640 mi$^2$, approximately.

### WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,890 ft above National Geodetic Vertical Datum of 1929, from topographic map.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge about 15,000 ft$^3$/sec, Mar. 20, 1997, gage height, 16 ft, from high-water mark, was probably higher in 1950.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 11 | 13 | e13 | e11 | e12 | e12 | e32 | 35 | 7.8 | 5.9 | 13 | 0.43 |
| 2 | 11 | 13 | e14 | e11 | e12 | e12 | e31 | 38 | 8.5 | 5.9 | 11 | 0.48 |
| 3 | 10 | 14 | e14 | e11 | e12 | e12 | e31 | 36 | 7.7 | 6.1 | 10 | 0.44 |
| 4 | 9.1 | 13 | e14 | e11 | e12 | e12 | e31 | 35 | 7.0 | 5.4 | 8.1 | 0.18 |
| 5 | 8.6 | 14 | e15 | e11 | e12 | e12 | e32 | 33 | 7.0 | 4.3 | 6.4 | 0.04 |
| 6 | 8.3 | 15 | e15 | e12 | e12 | e13 | e33 | 32 | 7.1 | 4.3 | 5.3 | 0.00 |
| 7 | 8.4 | 14 | e15 | e12 | e12 | e14 | e33 | 32 | 6.2 | 39 | 4.4 | 0.00 |
| 8 | 8.4 | 13 | e15 | e12 | e12 | e16 | e33 | 31 | 7.6 | 58 | 3.4 | 0.00 |
| 9 | 8.8 | 13 | e15 | e12 | e12 | e17 | e33 | 30 | 7.2 | 37 | 3.9 | 1.6 |
| 10 | 19 | 14 | e14 | e13 | e12 | e18 | e33 | 30 | 6.7 | 24 | 5.3 | 4.9 |
| 11 | 11 | 13 | e14 | e14 | e12 | e20 | e32 | 30 | 5.2 | 17 | 5.0 | 1.7 |
| 12 | 10 | 14 | e15 | e14 | e12 | e22 | e34 | 29 | 5.4 | 13 | 3.1 | 0.98 |
| 13 | 9.8 | 13 | e14 | e13 | e12 | e24 | 38 | 27 | 5.2 | 12 | 2.4 | 0.76 |
| 14 | 9.3 | 14 | e15 | e13 | e13 | e26 | 44 | 26 | 5.0 | 10 | 2.2 | 0.53 |
| 15 | 9.5 | 14 | e14 | e13 | e13 | e27 | 48 | 24 | 4.9 | 7.5 | 1.7 | 0.43 |
| 16 | 14 | 14 | e14 | e13 | e13 | e28 | 49 | 24 | 4.7 | 6.3 | 1.5 | 0.42 |
| 17 | 29 | 14 | e13 | e12 | e13 | e29 | 46 | 22 | 4.6 | 5.3 | 1.2 | 0.25 |
| 18 | 25 | 14 | e13 | e12 | e13 | e30 | 46 | 21 | 4.3 | 4.4 | 1.2 | 0.14 |
| 19 | 21 | 14 | e13 | e12 | e13 | e30 | 46 | 20 | 4.9 | 3.9 | 0.96 | 0.00 |
| 20 | 17 | 15 | e13 | e12 | e13 | e31 | 45 | 18 | 5.3 | 12 | 0.79 | 0.00 |
| 21 | 15 | 15 | e12 | e12 | e13 | e30 | 46 | 17 | 5.0 | 16 | 0.82 | 0.00 |
| 22 | 14 | 15 | e12 | e12 | e13 | e30 | 43 | 15 | 4.9 | 5.5 | 1.0 | 0.00 |
| 23 | 14 | 15 | e12 | e12 | e12 | e30 | 41 | 14 | 4.8 | 13 | 1.6 | 0.00 |
| 24 | 14 | 15 | e12 | e12 | e12 | e30 | 39 | 14 | 4.1 | 12 | 0.96 | 0.00 |
| 25 | 16 | e15 | e12 | e12 | e12 | e30 | 38 | 13 | 4.4 | 76 | 0.56 | 0.01 |
| 26 | 15 | e14 | e11 | e12 | e11 | e30 | 38 | 12 | 4.8 | 13 | 0.38 | 0.00 |
| 27 | 14 | e14 | e11 | e12 | e12 | e32 | 38 | 12 | 4.5 | 12 | 0.28 | 0.00 |
| 28 | 15 | e14 | e11 | e12 | e12 | e33 | 36 | 11 | 4.0 | 26 | 0.18 | 0.00 |
| 29 | 14 | e14 | e11 | e12 | --- | e33 | 34 | 11 | 3.5 | 14 | 0.70 | 0.00 |
| 30 | 14 | e13 | e11 | e12 | --- | e33 | 34 | 10 | 3.2 | 14 | 0.59 | 0.00 |
| 31 | 15 | --- | e11 | e12 | --- | e32 | --- | 8.8 | --- | 16 | 0.33 | --- |
| MEAN | 13.49 | 13.97 | 13.16 | 12.13 | 12.29 | 24.13 | 37.90 | 22.93 | 5.517 | 16.09 | 3.169 | 0.443 |
| MAX | 29 | 15 | 15 | 14 | 13 | 33 | 49 | 38 | 8.5 | 76 | 13 | 4.9 |
| MIN | 8.3 | 13 | 11 | 11 | 11 | 12 | 31 | 8.8 | 3.2 | 3.9 | 0.18 | 0.00 |
| AC-FT | 829 | 831 | 809 | 746 | 682 | 1480 | 2260 | 1410 | 328 | 989 | 195 | 26 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 13.49 | 13.97 | 13.16 | 12.13 | 12.29 | 438.6 | 145.8 | 28.87 | 46.21 | 84.96 | 48.33 | 5.620 |
| MAX | 13.5 | 14.0 | 13.2 | 12.1 | 12.3 | 853 | 254 | 34.8 | 86.9 | 154 | 93.5 | 10.8 |
| (WY) | 2002 | 2002 | 2002 | 2002 | 2002 | 2001 | 2001 | 2001 | 2001 | 2001 | 2001 | 2001 |
| MIN | 13.5 | 14.0 | 13.2 | 12.1 | 12.3 | 24.1 | 37.9 | 22.9 | 5.52 | 16.1 | 3.17 | 0.44 |
| (WY) | 2002 | 2002 | 2002 | 2002 | 2002 | 2002 | 2002 | 2002 | 2002 | 2002 | 2002 | 2002 |

| SUMMARY STATISTICS | FOR 2002 WATER YEAR | | WATER YEARS 2001 - 2002 | |
|---|---|---|---|---|
| ANNUAL MEAN | 14.62 | | 14.62 | |
| HIGHEST ANNUAL MEAN | | | 14.6 | 2002 |
| LOWEST ANNUAL MEAN | | | 14.6 | 2002 |
| HIGHEST DAILY MEAN | 76 | Jul 25 | 2600 | Mar 13 2001 |
| LOWEST DAILY MEAN | 0.00 | Sep 6 | 0.00 | Sep 6 2002 |
| ANNUAL SEVEN-DAY MINIMUM | 0.00 | Sep 19 | 0.00 | Sep 19 2002 |
| MAXIMUM PEAK FLOW | 309 | Jul 25 | a3000 | Mar 13 2001 |
| MAXIMUM PEAK STAGE | 4.55 | Jul 25 | b12.45 | Mar 12 2001 |
| ANNUAL RUNOFF (AC-FT) | 10590 | | 10590 | |
| 10 PERCENT EXCEEDS | 32 | | 32 | |
| 50 PERCENT EXCEEDS | 12 | | 12 | |
| 90 PERCENT EXCEEDS | 0.96 | | 0.96 | |

a About
b Backwater from ice
e Estimated

WATER-QUALITY RECORDS

PERIOD OF RECORD.--March 2001 to August 2001.

REMARKS.--Quality assurance sample also collected at this location.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 08... | 1620 | 12 | -- | -- | -- | 1940 | 5.5 | 5.5 | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 19... | 1530 | 13 | -- | -- | -- | 2630 | 2.0 | .2 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 12... | 1250 | 21 | -- | -- | -- | 2150 | 2.0 | .1 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 01... | 1245 | 32 | -- | -- | -- | 1450 | 1.5 | .3 | -- | -- | -- | -- | -- |
| 23... | 1230 | 41 | 8.6 | 8.3 | 1270 | 1240 | 23.0 | 12.5 | 320 | 59.0 | 42.0 | 6.90 | 4 |
| JUN | | | | | | | | | | | | | |
| 05... | 1225 | 6.7 | -- | -- | -- | 1920 | 22.5 | 17.5 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 22... | 1535 | 4.6 | 7.4 | -- | -- | 873 | 27.0 | 26.0 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 26... | 1440 | .41 | 8.5 | 8.6 | 1810 | 1860 | 23.0 | 23.5 | 310 | 46.0 | 47.0 | 14.0 | 8 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 12... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 01... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 23... | 160 | 51 | 249 | 8.2 | .30 | 430 | 95.8 | 861 | 857 | 1.0 | 50 | <1 | 40 |
| JUN | | | | | | | | | | | | | |
| 05... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 22... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 26... | 310 | 67 | 264 | 7.9 | .50 | 720 | 1.44 | 1310 | 1300 | 2.0 | 50 | <1 | 60 |

| Date | 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 | | | | | |
| 08... | -- | -- | -- | -- | -- |
| DEC | | | | | |
| 19... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 12... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 01... | -- | -- | -- | -- | -- |
| 23... | 20 | <.10 | 1 | <1 | 900 |
| JUN | | | | | |
| 05... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 22... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 26... | 20 | .10 | 5 | <1 | 860 |

< Less than

## 06352000 CEDAR CREEK NEAR HAYNES, ND

LOCATION.--Lat 46°09'15", long 102°28'25", in W1/2 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 $mi^2$.

### WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,472.90 ft above National Geodetic Vertical Datum of 1929 (North Dakota Highway Department benchmark). Prior to May 20, 1951, nonrecording gage on former bridge 400 ft upstream at same datum.

REMARKS.--Records good.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 17, 1950, reached a stage of about 23 ft; discharge, 26,900 $ft^3/s$, by slope-area measurement at site 9 mi upstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.1 | 3.5 | 3.8 | e3.9 | e3.6 | e3.4 | e8.7 | 8.5 | 2.0 | 3.4 | 1.6 | 1.0 |
| 2 | 2.1 | 3.5 | 3.9 | e3.9 | e3.6 | e3.3 | e8.7 | 8.3 | 2.0 | 3.1 | 1.1 | 1.0 |
| 3 | 2.1 | 3.1 | 4.0 | e3.9 | e3.6 | e3.3 | e8.4 | 7.9 | 2.1 | 2.9 | 0.80 | 0.88 |
| 4 | 2.3 | 3.0 | 3.9 | e3.9 | e3.6 | e3.4 | e8.2 | 7.9 | 2.3 | 2.7 | 0.66 | 0.87 |
| 5 | 2.3 | 3.1 | 3.8 | e3.9 | e3.6 | e3.4 | e7.9 | 8.4 | 2.4 | 12 | 0.60 | 0.87 |
| 6 | 2.1 | 3.1 | 3.8 | e3.9 | e3.5 | e3.5 | e7.5 | 8.3 | 2.5 | 15 | 0.57 | 0.87 |
| 7 | 2.1 | 3.3 | 3.8 | e3.9 | e3.5 | e3.5 | e7.2 | 7.7 | 2.3 | 10 | 0.54 | 0.76 |
| 8 | 2.1 | 3.4 | 3.8 | e3.9 | e3.5 | e3.6 | 6.7 | 7.6 | 2.3 | 5.8 | 0.50 | 0.76 |
| 9 | 2.2 | 3.3 | 3.8 | e3.8 | e3.5 | e3.7 | 6.3 | 7.9 | 2.3 | 3.4 | 0.50 | 0.66 |
| 10 | 2.6 | 3.1 | 3.8 | e3.8 | e3.5 | e3.8 | 6.0 | 7.9 | 2.4 | 2.5 | 0.76 | 0.66 |
| 11 | 2.8 | 3.1 | 3.8 | e3.8 | e3.5 | e4.0 | 5.8 | 7.8 | 2.5 | 2.0 | 0.87 | 0.66 |
| 12 | 2.9 | 3.3 | 3.8 | e3.8 | e3.5 | e4.3 | 5.8 | 7.6 | 2.5 | 1.7 | 0.87 | 0.66 |
| 13 | 2.9 | 3.5 | 3.9 | e3.7 | e3.5 | e4.8 | 5.8 | 7.3 | 2.3 | 1.3 | 0.87 | 0.70 |
| 14 | 3.2 | 3.6 | 3.9 | e3.7 | e3.4 | e5.1 | 5.5 | 7.0 | 2.3 | 1.0 | 0.87 | 0.76 |
| 15 | 3.5 | 3.4 | 4.0 | e3.7 | e3.4 | e5.5 | 5.5 | 6.7 | 2.3 | 0.76 | 0.76 | 0.76 |
| 16 | 3.1 | 3.5 | 4.0 | e3.7 | e3.4 | e5.9 | 5.3 | 6.6 | 2.3 | 0.66 | 0.66 | 0.85 |
| 17 | 3.1 | 3.6 | 4.0 | e3.7 | e3.4 | e6.0 | 5.2 | 6.6 | 2.1 | 0.62 | 0.50 | 0.92 |
| 18 | 3.2 | 3.6 | 4.0 | e3.6 | e3.4 | e5.9 | 5.3 | 6.3 | 2.0 | 0.57 | 0.43 | 1.1 |
| 19 | 3.4 | 3.6 | 4.0 | e3.6 | e3.3 | e5.8 | 6.4 | 5.8 | 2.1 | 0.52 | 0.50 | 1.3 |
| 20 | 3.1 | 3.4 | 4.0 | e3.6 | e3.3 | e5.6 | 7.9 | 5.1 | 2.1 | 0.50 | 0.43 | 1.3 |
| 21 | 2.9 | 3.4 | e4.0 | e3.6 | e3.3 | e5.5 | 8.2 | 4.5 | 2.1 | 0.50 | 0.43 | 1.3 |
| 22 | 3.1 | 3.5 | e4.0 | e3.6 | e3.4 | e5.3 | 8.4 | 4.0 | 2.2 | 0.45 | 0.66 | 1.3 |
| 23 | 3.0 | 3.6 | e4.0 | e3.6 | e3.5 | e5.2 | 8.5 | 3.6 | 2.5 | 0.43 | 0.87 | 1.3 |
| 24 | 3.7 | 3.6 | e4.0 | e3.6 | e3.7 | e5.1 | 9.1 | 3.2 | 2.7 | 0.43 | 0.87 | 1.1 |
| 25 | 3.9 | 3.7 | e4.0 | e3.6 | e3.8 | e5.0 | 10 | 2.9 | 2.7 | 0.43 | 0.87 | 1.1 |
| 26 | 3.3 | 3.5 | e4.0 | e3.6 | e3.7 | e4.9 | 9.8 | 2.8 | 2.9 | 0.39 | 1.0 | 1.1 |
| 27 | 3.5 | 3.6 | e4.0 | e3.6 | e3.5 | e4.8 | 9.6 | 2.6 | 3.8 | 0.36 | 1.0 | 1.1 |
| 28 | 3.5 | 3.7 | e3.9 | e3.6 | e3.4 | e4.9 | 9.6 | 2.5 | 4.2 | 0.36 | 1.0 | 1.1 |
| 29 | 3.6 | 3.7 | e3.9 | e3.6 | --- | e5.6 | 9.3 | 2.4 | e4.0 | 0.63 | 1.0 | 1.1 |
| 30 | 3.6 | 3.8 | e3.9 | e3.6 | --- | e7.1 | 9.1 | 2.3 | e3.7 | 0.84 | 1.0 | 1.1 |
| 31 | 3.5 | --- | e3.9 | e3.6 | --- | e8.2 | --- | 2.1 | --- | 1.2 | 1.0 | --- |
| TOTAL | 90.8 | 103.1 | 121.4 | 115.3 | 97.9 | 149.4 | 225.7 | 180.1 | 75.9 | 76.45 | 24.09 | 28.94 |
| MEAN | 2.929 | 3.437 | 3.916 | 3.719 | 3.496 | 4.819 | 7.523 | 5.810 | 2.530 | 2.466 | 0.777 | 0.965 |
| MAX | 3.9 | 3.8 | 4.0 | 3.9 | 3.8 | 8.2 | 10 | 8.5 | 4.2 | 15 | 1.6 | 1.3 |
| MIN | 2.1 | 3.0 | 3.8 | 3.6 | 3.3 | 3.3 | 5.2 | 2.1 | 2.0 | 0.36 | 0.43 | 0.66 |
| AC-FT | 180 | 204 | 241 | 229 | 194 | 296 | 448 | 357 | 151 | 152 | 48 | 57 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 4.691 | 5.133 | 3.660 | 4.332 | 14.81 | 122.0 | 111.1 | 54.90 | 53.70 | 17.68 | 10.65 | 3.549 |
| 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 | 0.25 | 0.60 | 0.22 | 0.000 | 0.000 | 1.05 | 1.58 | 1.66 | 0.77 | 0.000 | 0.000 | 0.000 |
| (WY) | 1961 | 1962 | 1962 | 1962 | 1962 | 1964 | 1961 | 1961 | 1956 | 1961 | 1959 | 1960 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1951 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 20394.4 | | 1289.08 | | | |
| ANNUAL MEAN | 55.88 | | 3.532 | | 33.89 | |
| HIGHEST ANNUAL MEAN | | | | | 122 | 1972 |
| LOWEST ANNUAL MEAN | | | | | 1.04 | 1961 |
| HIGHEST DAILY MEAN | 1500 | Mar 16 | 15 | Jul 6 | 7060 | Apr 8 1952 |
| LOWEST DAILY MEAN | 1.4 | Jan 1 | 0.36 | Jul 27 | 0.00 | Jan 29 1957 |
| ANNUAL SEVEN-DAY MINIMUM | 1.5 | Jan 1 | 0.41 | Jul 22 | 0.00 | Jul 26 1959 |
| MAXIMUM PEAK FLOW | | | 16 | Jul 6 | 7870 | Apr 7 1952 |
| MAXIMUM PEAK STAGE | | | 3.56 | Jul 6 | b22.05 | Mar 28 1978 |
| ANNUAL RUNOFF (AC-FT) | 40450 | | 2560 | | 24550 | |
| 10 PERCENT EXCEEDS | 113 | | 7.0 | | 41 | |
| 50 PERCENT EXCEEDS | 4.0 | | 3.5 | | 3.6 | |
| 90 PERCENT EXCEEDS | 1.8 | | 0.76 | | 0.70 | |

b Backwater from ice
e Estimated

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 10... | 1540 | 2.7 | -- | -- | -- | 1740 | 8.5 | 10.5 | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 08... | 1130 | 3.5 | -- | -- | -- | 2020 | 2.5 | 2.8 | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 12... | 1515 | 3.9 | -- | -- | -- | 2810 | -1.0 | .2 | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 04... | 1645 | 3.6 | -- | -- | -- | 2750 | -1.0 | .1 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 27... | 1200 | 4.8 | -- | -- | -- | 1100 | 9.0 | .7 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 11... | 1415 | 5.7 | 7.3 | --e | 1500 | 1490 | 17.8 | 8.9 | 420 | 71.0 | 58.0 | 6.30 | 4 |
| MAY | | | | | | | | | | | | | |
| 09... | 1445 | 8.1 | -- | -- | -- | 2230 | 13.0 | 7.2 | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 14... | 1530 | 2.3 | -- | -- | -- | 2470 | 28.0 | 20.9 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 31... | 1605 | 1.8 | 9.2 | 9.4 | 1460 | 1510 | 32.5 | 28.6 | 260 | 23.0 | 49.0 | 14.0 | 7 |
| AUG | | | | | | | | | | | | | |
| 28... | 1545 | .98 | -- | -- | -- | 1520 | 28.0 | 23.5 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 10... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 12... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 04... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 27... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 11... | 180 | 48 | 288 | 9.5 | .30 | 530 | 16.0 | 1040 | 1030 | 1.0 | 60 | <1 | 40 |
| MAY | | | | | | | | | | | | | |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 14... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 31... | 250 | 66 | 295 | 11.0 | .40 | 510 | 5.17 | 1040 | 1030 | 6.0 | 140 | 1 | 50 |
| AUG | | | | | | | | | | | | | |
| 28... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

06352000 CEDAR CREEK NEAR HAYNES, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | 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 | | | | | |
| 10... | -- | -- | -- | -- | -- |
| NOV | | | | | |
| 08... | -- | -- | -- | -- | -- |
| DEC | | | | | |
| 12... | -- | -- | -- | -- | -- |
| FEB | | | | | |
| 04... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 27... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 11... | 50 | <.10 | 1 | <1 | 1100 |
| MAY | | | | | |
| 09... | -- | -- | -- | -- | -- |
| JUN | | | | | |
| 14... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 31... | 50 | <.10 | 2 | 1 | 510 |
| AUG | | | | | |
| 28... | -- | -- | -- | -- | -- |

< Less than
e Required equipment not functional/available

## 06353000 CEDAR CREEK NEAR RALEIGH, ND

LOCATION.--Lat 46°05'30", long 101°20'00", in NE$^1/_4$SE$^1/_4$ 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$^2$, 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 National Geodetic Vertical Datum of 1929. Prior to June 6, 1962, nonrecording gage at same site and datum, and June 6, 1962, to Sept. 7, 1972, at site 1 mi upstream at datum 9.58 ft higher.

REMARKS.--Records good except for estimated daily discharges, which are poor.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known since 1950, about 18 ft, Apr. 18, 1950; discharge 45,000 ft$^3$/s, on basis of slope-area measurement 5 mi upstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.2 | 4.5 | e6.4 | e6.5 | e8.0 | e7.2 | e17 | 19 | 4.1 | 0.18 | e1.1 | 0.03 |
| 2 | 2.0 | 5.4 | e6.4 | e6.5 | e8.2 | e7.3 | e18 | 19 | 4.4 | 0.11 | e0.88 | 0.01 |
| 3 | 1.9 | 6.1 | e6.5 | e6.6 | e8.5 | e7.4 | e18 | 18 | 4.7 | 0.07 | e0.64 | 0.0 |
| 4 | 1.8 | 6.3 | e6.5 | e6.5 | e8.6 | e7.6 | 19 | 18 | 4.2 | 0.05 | e0.46 | 0.00 |
| 5 | 2.0 | 6.4 | e6.4 | e6.5 | e8.8 | e7.7 | 21 | 20 | 4.0 | 0.03 | e0.32 | 0.00 |
| 6 | 2.2 | 6.6 | e6.4 | e6.5 | e8.7 | e8.0 | 22 | 19 | 3.4 | 0.0 | 0.31 | 0.00 |
| 7 | 2.3 | e6.7 | e6.4 | e6.5 | e8.7 | e8.1 | 21 | 19 | 3.0 | 0.00 | 0.27 | 0.00 |
| 8 | 2.3 | e6.7 | e6.4 | e6.5 | e8.7 | e8.5 | 21 | 19 | 3.0 | 0.00 | 0.19 | 0.00 |
| 9 | 2.8 | e6.7 | e6.4 | e6.5 | e8.6 | e8.9 | 23 | 18 | 2.7 | 0.02 | 0.18 | 0.00 |
| 10 | 5.6 | e6.7 | e6.5 | e6.6 | e8.6 | e9.3 | 25 | 18 | 2.2 | 0.02 | 0.15 | 0.06 |
| 11 | 5.1 | 6.7 | e6.5 | e6.6 | e8.6 | e11 | 25 | 17 | 1.9 | 0.00 | 0.13 | 0.11 |
| 12 | 4.4 | 6.4 | e6.6 | e6.5 | e8.5 | e12 | 23 | 16 | 1.5 | 0.00 | 0.09 | 0.09 |
| 13 | 4.5 | 6.0 | e6.7 | e6.5 | e8.5 | e14 | 20 | 16 | 1.4 | 0.00 | 0.08 | 0.09 |
| 14 | 4.1 | 5.8 | e6.9 | e6.5 | e8.5 | e15 | 23 | 15 | 1.3 | 0.00 | 0.07 | 0.08 |
| 15 | 4.3 | 5.8 | e6.9 | e6.5 | e8.5 | e17 | 22 | 14 | 1.1 | 0.00 | 0.05 | 0.07 |
| 16 | 4.3 | 6.1 | e7.0 | e6.5 | e8.5 | e18 | 21 | 14 | 1.1 | 0.00 | 0.04 | 0.06 |
| 17 | 4.6 | 6.0 | e7.0 | e6.5 | e8.4 | e19 | 20 | 15 | 1.0 | 0.00 | 0.03 | 0.04 |
| 18 | 4.6 | 6.1 | e6.9 | e6.5 | e8.5 | e20 | 20 | 16 | 0.90 | 0.00 | 0.02 | 0.03 |
| 19 | 4.4 | e6.2 | e6.9 | e6.5 | e8.4 | e20 | 21 | 16 | 0.96 | 0.00 | 0.0 | 0.02 |
| 20 | 4.6 | e6.2 | e6.9 | e6.5 | e8.3 | e20 | 21 | 15 | 0.93 | 6.8 | 0.00 | 0.01 |
| 21 | 3.9 | e6.2 | e6.8 | e6.5 | e8.2 | e19 | 21 | 15 | 0.98 | 12 | 0.00 | 0.00 |
| 22 | 3.7 | e6.2 | e6.8 | e6.6 | e8.2 | e19 | 20 | 13 | 0.83 | 6.1 | 0.02 | 0.00 |
| 23 | 4.7 | e6.2 | e6.7 | e6.5 | e8.0 | e19 | 19 | 11 | 1.0 | 1.9 | 0.06 | 0.00 |
| 24 | 5.2 | e6.2 | e6.7 | e6.5 | e7.8 | e18 | 17 | 11 | 1.1 | 1.8 | 0.08 | 0.00 |
| 25 | 4.4 | e6.2 | e6.7 | e6.5 | e7.5 | e18 | 17 | 11 | 0.68 | 26 | 0.07 | 0.00 |
| 26 | 3.3 | 6.2 | e6.7 | e6.6 | e7.5 | e18 | 18 | 11 | 0.56 | 6.3 | 0.05 | 0.00 |
| 27 | 3.2 | e6.2 | e6.6 | e6.6 | e7.3 | e17 | 19 | 10 | 0.53 | 2.0 | 0.05 | 0.00 |
| 28 | 3.4 | e6.2 | e6.6 | e6.7 | e7.3 | e17 | 20 | 9.8 | 0.44 | 6.8 | 0.04 | 0.00 |
| 29 | 3.8 | e6.3 | e6.6 | e6.9 | --- | e17 | 20 | 9.1 | 0.39 | 5.4 | 0.04 | 0.00 |
| 30 | 4.0 | e6.3 | e6.6 | e7.1 | --- | e17 | 20 | 7.7 | 0.27 | 1.4 | 0.04 | 0.00 |
| 31 | 4.5 | --- | e6.6 | e7.5 | --- | e17 | --- | 5.0 | --- | 1.2 | 0.04 | --- |
| TOTAL | 114.1 | 185.6 | 206.0 | 204.3 | 231.9 | 442.0 | 612 | 454.6 | 54.57 | 78.18 | 5.50 | 0.70 |
| MEAN | 3.681 | 6.187 | 6.645 | 6.590 | 8.282 | 14.26 | 20.40 | 14.66 | 1.819 | 2.522 | 0.177 | 0.023 |
| MAX | 5.6 | 6.7 | 7.0 | 7.5 | 8.8 | 20 | 25 | 20 | 4.7 | 26 | 1.1 | 0.11 |
| MIN | 1.8 | 4.5 | 6.4 | 6.5 | 7.3 | 7.2 | 17 | 5.0 | 0.27 | 0.00 | 0.00 | 0.00 |
| AC-FT | 226 | 368 | 409 | 405 | 460 | 877 | 1210 | 902 | 108 | 155 | 11 | 1.4 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 10.88 | 9.742 | 7.199 | 11.02 | 43.51 | 385.4 | 256.6 | 167.5 | 95.73 | 70.71 | 21.63 | 8.445 |
| MAX | 66.4 | 48.8 | 31.3 | 217 | 664 | 2368 | 1526 | 1043 | 605 | 545 | 96.9 | 76.5 |
| (WY) | 1978 | 1983 | 1983 | 1973 | 1982 | 1997 | 1997 | 1975 | 1964 | 1993 | 1984 | 1995 |
| MIN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.25 | 0.35 | 0.89 | 1.82 | 0.25 | 0.000 | 0.000 |
| (WY) | 1965 | 1964 | 1964 | 1964 | 1964 | 1964 | 1991 | 1992 | 2002 | 1990 | 1974 | 1939 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1939 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 42477.0 | | 2589.45 | | | |
| ANNUAL MEAN | 116.4 | | 7.094 | | 92.52 | |
| HIGHEST ANNUAL MEAN | | | | | 369 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 1.91 | 1991 |
| HIGHEST DAILY MEAN | 2450 | Mar 14 | 26 | Jul 25 | 11900 | Mar 24 1997 |
| LOWEST DAILY MEAN | 1.3 | Sep 28 | 0.00 | Jul 6 | 0.00 | Aug 1 1939 |
| ANNUAL SEVEN-DAY MINIMUM | 1.7 | Sep 26 | 0.00 | Jul 11 | 0.00 | Aug 20 1939 |
| MAXIMUM PEAK FLOW | | | a61 | Jul 25 | 14600 | Mar 24 1997 |
| MAXIMUM PEAK STAGE | | | b1.97 | Mar 13 | b17.05 | Mar 24 1997 |
| ANNUAL RUNOFF (AC-FT) | 84250 | | 5140 | | 67030 | |
| 10 PERCENT EXCEEDS | 305 | | 19 | | 156 | |
| 50 PERCENT EXCEEDS | 11 | | 6.5 | | 10 | |
| 90 PERCENT EXCEEDS | 3.9 | | 0.02 | | 0.00 | |

a Gage height, 1.68 ft
b Backwater from ice
e Estimated

06353000 CEDAR CREEK NEAR RALEIGH, ND--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 08... | 1445 | 6.7 | -- | -- | -- | 1940 | 8.0 | 5.0 | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 19... | 1340 | 6.9 | -- | -- | -- | 2650 | -1.5 | .4 | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 04... | 1305 | 8.6 | -- | -- | -- | 3710 | -2.0 | .1 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 27... | 1625 | 17 | -- | -- | -- | 2240 | 15.5 | .4 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 23... | 1520 | 19 | 8.5 | 8.2 | 1620 | 1580 | 28.0 | 15.0 | 360 | 56.0 | 54.0 | 8.60 | 5 |
| JUN | | | | | | | | | | | | | |
| 05... | 1500 | 3.9 | -- | -- | -- | 2180 | 27.0 | 19.5 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 22... | 1240 | 4.9 | 7.8 | 7.6 | 1240 | 1250 | 25.0 | 23.5 | 190 | 33.0 | 25.0 | 11.0 | 7 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 04... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 27... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 23... | 230 | 57 | 285 | 9.8 | .40 | 590 | 58.6 | 1130 | 1120 | 1.0 | 50 | <1 | 60 |
| JUN | | | | | | | | | | | | | |
| 05... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 22... | 210 | 70 | 176 | 8.8 | .40 | 460 | 11.6 | 880 | 853 | 2.0 | 100 | <1 | 60 |

| Date | 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 | | | | | |
| 08... | -- | -- | -- | -- | -- |
| DEC | | | | | |
| 19... | -- | -- | -- | -- | -- |
| FEB | | | | | |
| 04... | -- | -- | -- | -- | -- |
| MAR | | | | | |
| 27... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 23... | 60 | <.10 | 1 | <1 | 990 |
| JUN | | | | | |
| 05... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 22... | 10 | .10 | 1 | <1 | 550 |

< Less than

## 06354000 CANNONBALL RIVER AT BREIEN, ND

LOCATION.--Lat 46°22'33", long 100°56'03", in sec.36, T.134 N., R.82 W., Morton County, Hydrologic Unit 10130206, on left bank at downstream side of bridge on State Highway 6, 1,100 ft downstream from Dogtooth Creek, and 0.6 mi southeast of Breien.

DRAINAGE AREA.--4,100 $mi^2$, approximately.

### WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1934 to current year.

REVISED RECORDS.--WSP 786: 1934. WSP 1146: 1943. WSP 1279: 1936-37(M), 1947(M). WSP 1509: 1955(M).

GAGE.--Water-stage recorder. Datum of gage is 1,673.54 ft above National Geodetic Vertical Datum of 1929. From June 12, 1973, to July 1, 1985, at site 450 ft downstream. Prior to June 12, 1973, at site 50 ft upstream at datum 3.00 ft higher. June 13, 1973, to April 8, 1980, at datum 2.00 ft higher.

REMARKS.--Records good except for estimated daily discharges, which are poor. Some storage in several small lakes above station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 19 | 25 | e29 | e23 | e27 | e22 | e168 | 70 | 18 | 2.5 | 21 | e0.90 |
| 2 | 19 | 26 | e29 | e23 | e27 | e23 | e144 | 68 | 18 | 2.4 | 22 | e0.88 |
| 3 | 18 | 26 | e29 | e24 | e27 | e24 | e129 | 65 | 18 | 2.4 | 19 | e0.87 |
| 4 | 18 | 25 | e29 | e25 | e26 | e24 | e111 | 62 | 17 | 2.5 | 15 | e0.85 |
| 5 | 18 | 26 | e28 | e26 | e26 | e24 | e98 | 58 | 15 | 347 | 13 | 0.50 |
| 6 | 18 | 26 | e27 | e27 | e26 | e25 | e90 | 56 | 14 | 198 | 12 | 0.18 |
| 7 | 18 | 26 | e27 | e27 | e27 | e26 | e82 | 56 | 13 | 70 | 12 | 0.15 |
| 8 | 18 | 26 | e26 | e28 | e26 | e28 | e80 | e57 | 14 | 41 | 10 | 0.07 |
| 9 | 18 | 27 | e25 | e29 | e27 | e29 | e76 | e56 | 13 | 43 | 14 | 0.60 |
| 10 | 24 | 26 | e25 | e29 | e26 | e31 | e77 | 55 | 11 | 68 | 54 | 1.1 |
| 11 | 22 | 26 | e25 | e30 | e26 | e33 | e77 | 54 | 10 | 51 | 51 | 1.4 |
| 12 | 27 | 26 | e24 | e30 | e26 | e35 | 84 | 54 | 9.5 | 38 | 29 | 1.2 |
| 13 | 25 | 27 | e24 | e31 | e25 | e37 | 85 | 51 | 8.3 | 29 | 17 | 0.92 |
| 14 | 21 | 27 | e23 | e32 | e25 | e39 | 80 | 49 | 8.0 | 22 | 12 | 1.0 |
| 15 | 20 | 27 | e22 | e32 | e25 | e42 | 77 | 46 | 8.7 | 17 | 10 | 1.4 |
| 16 | 20 | 27 | e22 | e32 | e25 | e46 | 78 | 43 | 9.3 | 14 | 8.9 | 1.5 |
| 17 | 20 | 27 | e22 | e32 | e25 | e50 | 76 | 43 | 8.4 | 12 | 12 | 1.3 |
| 18 | 20 | e27 | e21 | e31 | e24 | e52 | 76 | 41 | 7.1 | 11 | 7.8 | 0.93 |
| 19 | 36 | e27 | e21 | e31 | e24 | e54 | 79 | 39 | 7.7 | 9.8 | 5.9 | 1.0 |
| 20 | 36 | e27 | e21 | e30 | e23 | e55 | 78 | 38 | 8.4 | 13 | 4.7 | 0.88 |
| 21 | 33 | e27 | e21 | e30 | e22 | e56 | 80 | 36 | 7.5 | 43 | 4.0 | 0.68 |
| 22 | 29 | e27 | e21 | e30 | e22 | e58 | 83 | 33 | 7.1 | 131 | 3.8 | 0.66 |
| 23 | 27 | e27 | e21 | e30 | e22 | e59 | 84 | 30 | 6.9 | 45 | 3.6 | 0.57 |
| 24 | 27 | e28 | e21 | e29 | e22 | e59 | 79 | 30 | 6.6 | 27 | 3.2 | 0.71 |
| 25 | 28 | e29 | e21 | e29 | e22 | e59 | 76 | 28 | 6.0 | 22 | 2.3 | 0.67 |
| 26 | 29 | e29 | e22 | e29 | e22 | e61 | 74 | 25 | 5.2 | 87 | e1.6 | 0.67 |
| 27 | 26 | e29 | e22 | e29 | e22 | e65 | 74 | 26 | 4.4 | 56 | e1.4 | 0.95 |
| 28 | 26 | e29 | e22 | e29 | e22 | e72 | 74 | 25 | 3.5 | 41 | e1.2 | 1.2 |
| 29 | 26 | e29 | e23 | e28 | --- | e90 | 74 | 24 | 3.3 | 37 | e1.1 | 1.3 |
| 30 | 25 | e29 | e22 | e29 | --- | e119 | 74 | 20 | 2.7 | 43 | e1.0 | 1.8 |
| 31 | 27 | --- | e23 | e28 | --- | e140 | --- | 18 | --- | 31 | e0.95 | --- |
| TOTAL | 738 | 810 | 738 | 892 | 689 | 1537 | 2617 | 1356 | 289.6 | 1556.6 | 374.45 | 26.84 |
| MEAN | 23.81 | 27.00 | 23.81 | 28.77 | 24.61 | 49.58 | 87.23 | 43.74 | 9.653 | 50.21 | 12.08 | 0.895 |
| MAX | 36 | 29 | 29 | 32 | 27 | 140 | 168 | 70 | 18 | 347 | 54 | 1.8 |
| MIN | 18 | 25 | 21 | 23 | 22 | 22 | 74 | 18 | 2.7 | 2.4 | 0.95 | 0.07 |
| AC-FT | 1460 | 1610 | 1460 | 1770 | 1370 | 3050 | 5190 | 2690 | 574 | 3090 | 743 | 53 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1934 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 35.06 | 28.92 | 17.53 | 16.01 | 76.53 | 895.0 | 851.9 | 345.1 | 370.9 | 199.2 | 68.19 | 33.19 |
| MAX | 281 | 238 | 98.8 | 342 | 1058 | 5428 | 10070 | 2399 | 2384 | 1409 | 459 | 267 |
| (WY) | 1978 | 1983 | 1999 | 1973 | 1982 | 1997 | 1950 | 1975 | 1937 | 1969 | 1999 | 1977 |
| MIN | 0.21 | 0.63 | 0.38 | 0.000 | 0.000 | 3.29 | 17.1 | 6.48 | 3.10 | 0.17 | 0.12 | 0.010 |
| (WY) | 1961 | 1961 | 1935 | 1941 | 1935 | 1965 | 1961 | 1992 | 1936 | 1936 | 1974 | 1974 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1934 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 107652 | | 11624.49 | | | |
| ANNUAL MEAN | 294.9 | | 31.85 | | 245.3 | |
| HIGHEST ANNUAL MEAN | | | | | 994 | 1950 |
| LOWEST ANNUAL MEAN | | | | | 9.90 | 1961 |
| HIGHEST DAILY MEAN | 5800 | Mar 14 | 347 | Jul 5 | 63100 | Apr 19 1950 |
| LOWEST DAILY MEAN | 13 | Sep 10 | 0.07 | Sep 8 | 0.00 | Jan 11 1935 |
| ANNUAL SEVEN-DAY MINIMUM | 14 | Sep 7 | 0.46 | Sep 3 | 0.00 | Jan 11 1935 |
| MAXIMUM PEAK FLOW | | | 484 | Jul 5 | a94800 | Apr 19 1950 |
| MAXIMUM PEAK STAGE | | | 4.36 | Jul 5 | b22.30 | Apr 19 1950 |
| ANNUAL RUNOFF (AC-FT) | 213500 | | 23060 | | 177700 | |
| 10 PERCENT EXCEEDS | 748 | | 74 | | 410 | |
| 50 PERCENT EXCEEDS | 32 | | 26 | | 29 | |
| 90 PERCENT EXCEEDS | 21 | | 2.1 | | 0.82 | |

a From rating extended above 16,000 $ft^3/s$ on basis of indirect measurement of peak flow
b From floodmark
e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 29... | 1245 | 26 | -- | -- | -- | 1710 | 4.0 | 4.8 | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 03... | 1200 | 29 | -- | -- | -- | 2210 | 3.0 | .2 | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 18... | 1440 | 31 | -- | -- | -- | -- | -8.0 | .2 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 01... | 1530 | 162 | -- | -- | -- | 970 | 1.0 | .3 | -- | -- | -- | -- | -- |
| 22... | 1210 | 82 | 8.7 | 8.4 | 1380 | 1360 | 11.5 | 8.5 | 350 | 61.0 | 48.0 | 8.00 | 4 |
| MAY | | | | | | | | | | | | | |
| 28... | 1210 | 26 | -- | -- | -- | 1900 | 28.5 | 20.7 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 05... | 1220 | 484 | -- | -- | -- | 672 | 36.5 | 24.2 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 07... | 1210 | 13 | 8.3 | 8.2 | 1400 | 1420 | 32.0 | 25.8 | 230 | 40.0 | 32.0 | 11.0 | 7 |
| SEP | | | | | | | | | | | | | |
| 04... | 1250 | .84 | -- | -- | -- | 1770 | 27.0 | 22.0 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 29... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 03... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 01... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 22... | 180 | 52 | 300 | 9.8 | .30 | 470 | 212 | 951 | 958 | 1.0 | 60 | <1 | 50 |
| MAY | | | | | | | | | | | | | |
| 28... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 05... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 07... | 240 | 68 | 281 | 5.4 | .4 | 460 | 33.9 | 997 | 957 | 3 | 40 | <1 | 60 |
| SEP | | | | | | | | | | | | | |
| 04... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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 | | | | | |
| 29... | -- | -- | -- | -- | -- |
| DEC | | | | | |
| 03... | -- | -- | -- | -- | -- |
| JAN | | | | | |
| 18... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 01... | -- | -- | -- | -- | -- |
| 22... | 30 | <.10 | 1 | 1 | 850 |
| MAY | | | | | |
| 28... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 05... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 07... | 20 | .1 | 5 | 1 | 580 |
| SEP | | | | | |
| 04... | -- | -- | -- | -- | -- |

< Less than

## 06354580 BEAVER CREEK BELOW LINTON, ND

LOCATION.--Lat 46°16'07", long 100°15'05", in NW$^1/_4$NW$^1/_4$SW$^1/_4$ 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$^2$, of which about 100 mi$^2$ 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 National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 11 | 11 | e8.8 | e5.9 | e7.1 | e10 | 144 | 63 | 9.9 | 2.1 | 2.5 | e0.60 |
| 2 | 12 | 11 | e8.6 | e5.9 | e7.2 | e10 | 146 | 61 | 10 | 1.7 | 2.4 | e0.81 |
| 3 | 11 | 10 | e8.2 | e5.8 | e7.3 | e10 | 131 | 59 | 11 | e1.6 | 2.1 | e0.35 |
| 4 | 11 | 11 | e8.1 | e5.6 | e7.2 | e9.8 | 116 | 56 | 10 | e1.6 | 1.8 | e0.30 |
| 5 | 10 | 11 | e8.2 | e5.7 | e7.4 | e9.8 | 105 | 52 | 10 | e1.5 | 5.6 | e0.26 |
| 6 | 11 | 11 | e8.1 | e5.9 | e7.8 | e9.8 | 99 | 51 | 9.7 | e1.4 | 7.6 | e0.29 |
| 7 | 11 | 11 | e8.0 | e6.0 | e8.2 | e9.7 | 103 | 48 | 9.3 | e1.3 | 6.5 | e0.36 |
| 8 | 11 | 10 | e7.8 | e6.1 | e8.8 | e9.6 | 100 | 48 | 9.3 | e1.3 | 2.1 | e0.47 |
| 9 | 11 | 11 | e7.7 | e6.4 | e9.2 | e9.5 | 97 | 46 | 8.9 | e1.4 | 1.1 | e0.56 |
| 10 | 10 | 11 | e7.8 | e6.8 | e9.0 | e9.5 | 109 | 44 | 8.1 | e1.6 | 0.67 | e0.73 |
| 11 | 9.9 | 11 | e7.3 | e7.1 | e9.5 | e9.8 | 101 | 46 | 7.4 | e2.1 | 0.75 | e1.1 |
| 12 | 9.4 | 10 | e7.3 | e7.2 | e10 | e11 | 91 | 49 | 6.6 | e2.4 | 0.42 | e0.57 |
| 13 | 9.1 | 11 | e7.2 | e7.1 | e11 | e13 | 92 | 47 | 5.1 | e2.4 | 0.85 | e0.24 |
| 14 | 9.2 | 10 | e7.3 | e7.1 | e11 | e15 | 92 | 46 | 4.1 | e2.3 | e0.60 | e0.82 |
| 15 | 8.3 | 10 | e7.2 | e7.5 | e12 | e19 | 88 | 43 | 5.1 | e2.2 | e0.41 | e0.77 |
| 16 | 12 | 10 | e7.4 | e7.3 | e13 | e21 | 83 | 38 | 4.9 | e2.1 | e0.42 | e0.41 |
| 17 | 12 | 10 | e7.3 | e7.0 | e13 | e22 | 81 | 35 | 4.0 | e2.0 | e0.43 | e0.83 |
| 18 | 11 | 10 | e7.4 | e7.0 | e14 | e21 | 80 | 33 | 3.5 | e1.9 | e0.44 | e0.85 |
| 19 | 10 | 10 | e7.0 | e7.5 | e14 | e20 | 79 | 31 | 5.4 | e1.9 | e0.45 | e0.20 |
| 20 | 9.6 | 11 | e6.6 | e7.3 | e14 | e18 | 77 | 28 | 10 | e1.8 | e0.38 | e0.27 |
| 21 | 9.5 | 12 | e6.4 | e7.5 | e15 | e17 | 80 | 25 | 4.8 | 1.8 | e0.34 | e0.33 |
| 22 | 9.3 | 12 | e6.5 | e7.3 | e15 | e17 | 82 | 23 | 2.2 | 1.8 | e0.29 | e0.65 |
| 23 | 9.3 | 11 | e6.6 | e7.3 | e16 | e16 | 81 | 21 | 2.2 | 2.0 | e0.77 | e0.67 |
| 24 | 9.6 | 11 | e6.3 | e7.6 | e15 | e16 | 77 | 17 | 2.2 | 2.6 | e0.66 | e0.37 |
| 25 | 9.9 | e10 | e6.3 | e7.8 | e14 | e15 | 72 | 13 | 2.3 | 3.0 | e0.55 | e0.14 |
| 26 | 9.7 | e9.6 | e6.2 | e7.8 | e13 | e15 | 69 | 12 | 2.4 | 2.8 | e0.51 | e0.58 |
| 27 | 12 | e9.2 | e6.1 | e7.6 | e12 | e25 | 68 | 12 | 2.4 | 2.6 | e0.48 | e0.28 |
| 28 | 13 | e8.8 | e6.3 | e7.5 | e11 | e42 | 65 | 12 | 2.3 | 2.8 | e0.44 | e0.82 |
| 29 | 12 | e8.8 | e6.3 | e7.2 | --- | e70 | 67 | 12 | 2.0 | 2.6 | e0.35 | e0.80 |
| 30 | 11 | e8.8 | e6.4 | e7.1 | --- | 107 | 65 | 11 | 2.0 | 2.6 | e0.21 | e0.51 |
| 31 | 11 | --- | e6.1 | e7.0 | --- | 140 | --- | 10 | --- | 2.5 | e0.88 | --- |
| TOTAL | 325.8 | 312.2 | 222.8 | 213.9 | 311.7 | 747.5 | 2740 | 1092 | 177.1 | 63.7 | 43.00 | 15.94 |
| MEAN | 10.51 | 10.41 | 7.187 | 6.900 | 11.13 | 24.11 | 91.33 | 35.23 | 5.903 | 2.055 | 1.387 | 0.531 |
| MAX | 13 | 12 | 8.8 | 7.8 | 16 | 140 | 146 | 63 | 11 | 3.0 | 7.6 | 1.1 |
| MIN | 8.3 | 8.8 | 6.1 | 5.6 | 7.1 | 9.5 | 65 | 10 | 2.0 | 1.3 | 0.21 | 0.14 |
| AC-FT | 646 | 619 | 442 | 424 | 618 | 1480 | 5430 | 2170 | 351 | 126 | 85 | 32 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 13.03 | 13.72 | 10.84 | 7.331 | 40.01 | 239.3 | 259.4 | 74.89 | 52.63 | 71.02 | 32.53 | 16.62 |
| MAX | 26.5 | 35.3 | 34.6 | 15.9 | 206 | 693 | 1840 | 231 | 194 | 330 | 174 | 73.8 |
| (WY) | 2000 | 1999 | 1999 | 2000 | 1996 | 1997 | 1997 | 1999 | 1996 | 1993 | 1993 | 1999 |
| MIN | 0.16 | 0.31 | 0.36 | 0.30 | 1.32 | 5.05 | 6.32 | 2.76 | 1.25 | 0.80 | 0.12 | 0.063 |
| (WY) | 1991 | 1991 | 1991 | 1991 | 1991 | 1991 | 1991 | 1992 | 1992 | 1992 | 1990 | 1991 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1990 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 19937.8 | | 6265.64 | | | |
| ANNUAL MEAN | 54.62 | | 17.17 | | 69.32 | |
| HIGHEST ANNUAL MEAN | | | | | 237 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 4.76 | 1990 |
| HIGHEST DAILY MEAN | 757 | Apr 9 | 146 | Apr 2 | 6080 | Apr 2 1997 |
| LOWEST DAILY MEAN | 4.8 | Feb 11 | 0.14 | Sep 25 | 0.00 | Aug 12 1990 |
| ANNUAL SEVEN-DAY MINIMUM | 4.9 | Feb 8 | 0.37 | Sep 3 | 0.00 | Aug 12 1990 |
| MAXIMUM PEAK FLOW | | | 156 | Mar 31 | 6780 | Mar 31 1997 |
| MAXIMUM PEAK STAGE | | | 5.65 | Mar 28 | 15.34 | Mar 31 1997 |
| ANNUAL RUNOFF (AC-FT) | 39550 | | 12430 | | 50220 | |
| 10 PERCENT EXCEEDS | 134 | | 57 | | 125 | |
| 50 PERCENT EXCEEDS | 17 | | 8.8 | | 14 | |
| 90 PERCENT EXCEEDS | 5.6 | | 0.66 | | 0.93 | |

e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 10... | 1125 | 9.4 | -- | -- | -- | 1120 | 13.0 | 12.0 | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 28... | 1145 | 8.8 | -- | -- | -- | 1260 | <-5.0 | .0 | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 07... | 1430 | 8.2 | -- | -- | -- | 1500 | 9.0 | .5 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 08... | 1210 | 91 | 7.4 | 7.5 | 572 | 572 | 2.5 | 3.0 | 170 | 36.0 | 20.0 | 13.0 | 2 |
| AUG | | | | | | | | | | | | | |
| 05... | 1435 | 1.9 | -- | -- | -- | 1200 | 27.5 | 23.5 | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 03... | 1315 | .35 | 7.7 | -- | 1460 | 1480 | 25.0 | 21.0 | 420 | 93.0 | 46.0 | 15.0 | 4 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 10... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 28... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 07... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 08... | 46.0 | 35 | 177 | 7.9 | .10 | 110 | 92.1 | 375 | 340 | 2.0 | 140 | <1 | 60 |
| AUG | | | | | | | | | | | | | |
| 05... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 03... | 180 | 47 | 431 | 55.0 | .20 | 340 | .95 | 1000 | 989 | 7.0 | 50 | 1 | 210 |

| Date | 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 | | | | | |
| 10... | -- | -- | -- | -- | -- |
| NOV | | | | | |
| 28... | -- | -- | -- | -- | -- |
| FEB | | | | | |
| 07... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 08... | 150 | <.10 | <1 | <1 | 260 |
| AUG | | | | | |
| 05... | -- | -- | -- | -- | -- |
| SEP | | | | | |
| 03... | 470 | .10 | 2 | <1 | 630 |

< Less than

## 06439980 LAKE OAHE NEAR PIERRE, SD

LOCATION.--Lat 44°27'30", long 100°23'29", in NE$^{1}/_{4}$ 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$^{2}$, 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 National Geodetic Vertical Datum of 1929. 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$^{3}$/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, 17,441,000 acre-ft, Oct. 1; minimum contents, 13,112,000 acre-ft, Sept. 30.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Elevation (feet) | Contents (acre-feet) | Change in contents (acre-feet) |
|---|---|---|---|
| Sept. 30 | 1,602.95 | 17,465,000 | -- |
| Oct. 31 | 1,601.20 | 16,978,000 | -487,000 |
| Nov. 30 | 1,599.39 | 16,453,000 | -525,000 |
| Dec. 31 | 1,598.51 | 16,215,000 | -238,000 |
| CAL YR 2001 | -- | -- | +414,000 |
| Jan. 31 | 1,598.60 | 16,242,000 | +27,000 |
| Feb. 28 | 1,598.89 | 16,312,000 | +70,000 |
| Mar. 31 | 1,598.19 | 16,113,000 | -199,000 |
| Apr. 30 | 1,596.18 | 15,576,000 | -537,000 |
| May 31 | 1,595.31 | 15,368,000 | -208,000 |
| June 30 | 1,592.70 | 14,665,000 | -703,000 |
| July 31 | 1,590.75 | 14,191,000 | -474,000 |
| Aug. 31 | 1,588.09 | 13,597,000 | -594,000 |
| Sept. 30 | 1,586.39 | 13,112,000 | -485,000 |
| WTR YR 2002 | -- | -- | -4,353,000 |

NOTE.--Lake frozen over Mar. 11 to Apr. 16.

## 06468170 JAMES RIVER NEAR GRACE CITY, ND

LOCATION.--Lat 47°33'29", long 98°51'45", in NW$^1/_4$NW$^1/_4$NW$^1/_4$ 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$^2$, approximately, of which about 650 mi$^2$ 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 National Geodetic Vertical Datum of 1929.

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5.9 | 13 | e6.9 | e1.7 | e1.5 | e2.9 | 6.5 | 45 | 8.8 | 4.4 | 2.5 | 7.0 |
| 2 | 5.7 | 13 | e6.5 | e2.0 | e1.5 | e3.1 | 6.0 | 43 | 8.8 | 4.0 | 2.4 | 3.2 |
| 3 | 5.1 | 13 | e6.3 | e2.1 | e1.5 | e3.1 | 5.7 | 42 | 8.1 | 3.7 | 2.0 | 2.0 |
| 4 | 4.4 | 15 | e6.0 | e2.3 | e1.6 | e2.8 | 5.0 | 37 | 7.5 | 5.0 | 1.6 | 1.8 |
| 5 | 4.2 | 17 | e5.9 | e2.3 | e1.8 | e2.6 | 4.5 | 38 | 7.1 | 4.9 | 1.4 | 1.3 |
| 6 | 4.3 | 18 | e5.9 | e2.2 | e2.0 | e2.7 | 6.6 | 38 | 6.4 | 3.5 | 1.4 | 1.2 |
| 7 | 4.5 | 19 | e5.4 | e2.3 | e2.6 | e2.6 | 10 | 38 | 5.8 | 3.2 | 1.4 | 0.98 |
| 8 | 4.4 | 19 | e5.6 | e2.4 | e2.7 | e3.0 | 9.2 | 45 | 6.5 | 2.8 | 1.1 | 0.77 |
| 9 | 4.7 | 18 | e5.2 | e2.5 | e2.8 | e3.2 | 8.3 | 43 | 20 | 6.2 | 1.1 | 0.83 |
| 10 | 6.9 | 17 | e5.0 | e2.5 | e3.6 | e4.0 | 8.5 | 50 | 12 | 48 | 0.88 | 0.78 |
| 11 | 7.6 | 17 | e4.7 | e2.4 | e4.3 | e4.6 | 9.2 | 53 | 23 | 22 | 1.3 | 0.62 |
| 12 | 6.4 | 16 | e4.6 | e2.3 | e4.1 | e5.7 | 9.5 | 51 | 61 | 12 | 1.8 | 0.54 |
| 13 | 6.2 | 16 | e3.6 | e2.2 | e4.2 | e5.9 | 11 | 47 | 55 | 9.1 | 1.9 | 0.65 |
| 14 | 5.3 | 15 | e3.3 | e2.2 | e4.4 | e6.3 | 14 | 47 | 42 | 8.4 | 1.7 | 0.81 |
| 15 | 5.2 | 15 | e3.3 | e2.1 | e4.1 | 6.5 | 27 | 40 | 30 | 7.3 | 1.4 | 1.1 |
| 16 | 5.7 | 15 | e3.9 | e2.1 | e4.6 | 5.7 | 37 | 40 | 22 | 5.5 | 1.5 | 1.1 |
| 17 | 6.0 | 14 | e4.2 | e2.1 | e4.5 | 6.3 | 42 | 36 | 18 | 5.3 | 0.87 | 1.0 |
| 18 | 5.1 | 12 | e4.4 | e2.1 | e4.7 | 6.0 | 53 | 33 | 14 | 5.5 | 0.96 | 0.87 |
| 19 | 5.4 | 13 | e4.2 | e2.0 | e4.3 | 5.1 | 57 | 31 | 12 | 5.8 | 1.00 | 0.66 |
| 20 | 6.6 | 13 | e4.1 | e1.9 | e4.1 | 4.6 | 54 | 29 | 9.3 | 5.7 | 0.99 | 0.55 |
| 21 | 7.6 | 12 | e3.7 | e1.9 | e4.1 | 4.5 | 52 | 30 | 9.5 | 6.4 | 0.90 | 0.30 |
| 22 | 11 | 12 | e3.5 | e1.9 | e4.3 | 4.3 | 54 | 24 | 8.4 | 9.3 | 0.85 | 0.18 |
| 23 | 13 | 11 | e3.1 | e1.8 | e4.2 | 3.9 | 53 | 20 | 8.0 | 13 | 0.77 | 0.31 |
| 24 | 16 | 11 | e2.8 | e2.0 | e4.1 | 3.8 | 49 | 20 | 9.2 | 11 | 0.70 | 0.39 |
| 25 | 16 | 11 | e2.6 | e1.9 | e3.4 | 3.7 | 50 | 17 | 8.4 | 8.8 | 0.63 | 0.30 |
| 26 | 14 | e9.6 | e2.3 | e2.0 | e3.1 | 3.3 | 54 | 17 | 7.1 | 8.0 | 0.54 | 0.24 |
| 27 | 15 | e9.0 | e2.2 | e1.7 | e2.9 | 4.6 | 54 | 17 | 6.0 | 6.1 | 0.55 | 0.27 |
| 28 | 13 | e8.4 | e2.1 | e1.6 | e3.0 | 8.0 | 47 | 16 | 5.6 | 5.2 | 0.62 | 0.46 |
| 29 | 13 | e7.8 | e2.1 | e1.5 | --- | 7.9 | 45 | 14 | 5.1 | 4.4 | 0.66 | 0.53 |
| 30 | 13 | e7.2 | e2.1 | e1.5 | --- | 7.6 | 48 | 11 | 4.4 | 3.6 | 1.3 | 0.46 |
| 31 | 13 | --- | e1.8 | e1.5 | --- | 8.0 | --- | 9.8 | --- | 3.2 | 11 | --- |
| TOTAL | 254.2 | 407.0 | 127.3 | 63.0 | 94.0 | 146.3 | 890.0 | 1021.8 | 449.0 | 251.3 | 47.72 | 31.20 |
| MEAN | 8.200 | 13.57 | 4.106 | 2.032 | 3.357 | 4.719 | 29.67 | 32.96 | 14.97 | 8.106 | 1.539 | 1.040 |
| MAX | 16 | 19 | 6.9 | 2.5 | 4.7 | 8.0 | 57 | 53 | 61 | 48 | 11 | 7.0 |
| MIN | 4.2 | 7.2 | 1.8 | 1.5 | 1.5 | 2.6 | 4.5 | 9.8 | 4.4 | 2.8 | 0.54 | 0.18 |
| AC-FT | 504 | 807 | 252 | 125 | 186 | 290 | 1770 | 2030 | 891 | 498 | 95 | 62 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 6.795 | 9.777 | 2.418 | 0.678 | 3.175 | 134.9 | 287.1 | 88.35 | 37.93 | 55.78 | 30.90 | 11.06 |
| MAX | 70.7 | 130 | 21.0 | 4.22 | 49.9 | 724 | 1854 | 446 | 335 | 750 | 498 | 156 |
| (WY) | 2001 | 2001 | 2001 | 1994 | 1981 | 1995 | 1997 | 1997 | 2000 | 2000 | 1993 | 2000 |
| MIN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.29 | 0.18 | 0.11 | 0.022 | 0.000 | 0.000 |
| (WY) | 1977 | 1977 | 1977 | 1969 | 1969 | 1969 | 1977 | 1991 | 1973 | 1973 | 1988 | 1976 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1968 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 61321.3 | | 3782.82 | | | |
| ANNUAL MEAN | 168.0 | | 10.36 | | 56.13 | |
| HIGHEST ANNUAL MEAN | | | | | 200 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 0.21 | 1977 |
| HIGHEST DAILY MEAN | 1800 | Mar 28 | 61 | Jun 12 | 3600 | Apr 3 1997 |
| LOWEST DAILY MEAN | 1.8 | Dec 31 | 0.18 | Sep 22 | 0.00 | Jan 1 1969 |
| ANNUAL SEVEN-DAY MINIMUM | 2.0 | Jan 1 | 0.28 | Sep 21 | 0.00 | Jan 1 1969 |
| MAXIMUM PEAK FLOW | | | 64 | Jun 12 | 4000 | Apr 3 1997 |
| MAXIMUM PEAK STAGE | | | 5.28 | Jun 12 | a16.18 | Mar 21 1996 |
| ANNUAL RUNOFF (AC-FT) | 121600 | | 7500 | | 40660 | |
| 10 PERCENT EXCEEDS | 440 | | 34 | | 95 | |
| 50 PERCENT EXCEEDS | 17 | | 5.1 | | 1.2 | |
| 90 PERCENT EXCEEDS | 2.6 | | 1.1 | | 0.00 | |

a About
e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 15... | 1340 | 14 | -- | -- | -- | 1420 | 18.0 | 9.0 | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 18... | 1215 | 2.1 | -- | -- | -- | 2000 | -5.0 | .0 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 09... | 1340 | 7.4 | -- | -- | -- | 632 | 4.0 | 2.0 | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 22... | 1245 | 28 | 8.4 | 8.4 | 1440 | 1450 | 18.0 | 14.6 | 570 | 88.0 | 84.0 | 18.0 | 2 |
| JUL | | | | | | | | | | | | | |
| 17... | 1500 | 5.0 | 8.6 | --e | 1220 | 1320 | 25.0 | 24.0 | 420 | 65.0 | 63.0 | 16.0 | 2 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 15... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 22... | 120 | 31 | 369 | 21.0 | .20 | 470 | 78.2 | 1050 | 1020 | 3.0 | 30 | <1 | 80 |
| JUL | | | | | | | | | | | | | |
| 17... | 120 | 37 | 321 | 18.0 | .20 | 360 | 11.9 | 885 | 835 | 8.0 | 30 | <1 | 70 |

| Date | 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 | | | | | |
| 15... | -- | -- | -- | -- | -- |
| JAN | | | | | |
| 18... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 09... | -- | -- | -- | -- | -- |
| MAY | | | | | |
| 22... | 140 | <.10 | 2 | <1 | 430 |
| JUL | | | | | |
| 17... | 200 | .20 | 2 | <1 | 350 |

< Less than
e Required equipment not functional/available

## 06468250 JAMES RIVER ABOVE ARROWWOOD LAKE NEAR KENSAL, ND

LOCATION.--Lat 47°23'59", long 98°47'50", in SW$^1/_4$SW$^1/_4$SW$^1/_4$ sec.2, T.145 N., R.64 W., Foster County, Hydrologic Unit 10160001, on right bank 20 ft upstream from bridge.

DRAINAGE AREA.--1,200 mi$^2$, approximately, of which about 750 mi$^2$ 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 National Geodetic Vertical Datum of 1929, from topographc map.

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 9.0 | 20 | e8.8 | e3.6 | e3.1 | e5.3 | e10 | 66 | 21 | 8.8 | 11 | 3.3 |
| 2 | 8.9 | 18 | e9.2 | e3.7 | e3.0 | e5.5 | e9.7 | 65 | 21 | 8.1 | 8.5 | 5.9 |
| 3 | 9.1 | 20 | e8.8 | e3.9 | e3.0 | e5.4 | e9.4 | 58 | 19 | e6.7 | 7.2 | 7.2 |
| 4 | 7.2 | 20 | e8.5 | e4.0 | e3.0 | e5.2 | e9.5 | 61 | 17 | 8.5 | 6.2 | 7.6 |
| 5 | 6.3 | 18 | e8.2 | e3.9 | e3.3 | e5.0 | e9.6 | 62 | 16 | 8.6 | 5.6 | 6.6 |
| 6 | 6.0 | 19 | e7.9 | e3.7 | e3.7 | e4.9 | e12 | 66 | 13 | 7.0 | 4.5 | 5.9 |
| 7 | 5.7 | 21 | e7.5 | e3.9 | e4.3 | e4.8 | e13 | 57 | 12 | 8.3 | 4.1 | 5.1 |
| 8 | 6.0 | 20 | e7.7 | e4.2 | e4.5 | e4.7 | e15 | 63 | 13 | 8.8 | 3.6 | 4.6 |
| 9 | 6.8 | 19 | e7.9 | e4.1 | e5.0 | e4.7 | e17 | 69 | 22 | 8.7 | 4.1 | 4.7 |
| 10 | 12 | 21 | e7.2 | e4.0 | e5.6 | e5.6 | e16 | 71 | 46 | e16 | 3.5 | 4.6 |
| 11 | 11 | 24 | e6.8 | e3.9 | e6.1 | e5.7 | e15 | 73 | 39 | e46 | 3.2 | 3.9 |
| 12 | 10 | 20 | e6.4 | e3.8 | e6.3 | e7.1 | 14 | 74 | 29 | e26 | 3.5 | 3.7 |
| 13 | 10 | 20 | e5.9 | e3.6 | e6.2 | e8.0 | 16 | 76 | 54 | e16 | 3.2 | 3.2 |
| 14 | 10 | 19 | e6.0 | e3.5 | e6.3 | e9.0 | 18 | 69 | 69 | e14 | 3.0 | 3.2 |
| 15 | 9.8 | 18 | e6.2 | e3.4 | e6.4 | e8.7 | 22 | 66 | 61 | e13 | e2.9 | 2.4 |
| 16 | 9.4 | 18 | e6.2 | e3.3 | e6.5 | e8.3 | 29 | 69 | 49 | e12 | 3.1 | 2.2 |
| 17 | 8.4 | 18 | e6.3 | e3.3 | e6.4 | e8.7 | 36 | 61 | 41 | e14 | e4.1 | 1.8 |
| 18 | 7.7 | 20 | e6.2 | e3.2 | e6.2 | e8.4 | 62 | 56 | 31 | 15 | e3.4 | 1.7 |
| 19 | 7.4 | 18 | e6.1 | e3.4 | e6.0 | e8.2 | 67 | 54 | 31 | 12 | 3.2 | 1.8 |
| 20 | 7.0 | 16 | e6.0 | e3.5 | e5.9 | e7.8 | 68 | 51 | 26 | 9.8 | 2.8 | 1.7 |
| 21 | 7.3 | 15 | e5.7 | e3.6 | e6.1 | e7.6 | 68 | 41 | 23 | 9.1 | 2.8 | 1.7 |
| 22 | 7.0 | e15 | e5.4 | e3.5 | e6.2 | e7.4 | 66 | 36 | 20 | 9.2 | 2.6 | 1.6 |
| 23 | e7.3 | e15 | e5.1 | e3.6 | e5.9 | e7.3 | 66 | 49 | 22 | e8.8 | 3.0 | 1.9 |
| 24 | e15 | e14 | e4.8 | e3.7 | e5.7 | e7.3 | 73 | 43 | 24 | e14 | 2.8 | 1.9 |
| 25 | 17 | e13 | e4.6 | e3.7 | e5.5 | e6.7 | 72 | 37 | 17 | e19 | 2.3 | 1.9 |
| 26 | 16 | e12 | e4.3 | e3.6 | e5.3 | e6.5 | 69 | 34 | 19 | e20 | 2.0 | 1.9 |
| 27 | 20 | e11 | e4.1 | e3.4 | e5.0 | e9.3 | 72 | 32 | 18 | e17 | 2.0 | e1.9 |
| 28 | 21 | e10 | e4.0 | e3.3 | e5.1 | e12 | 69 | 30 | 13 | e14 | 2.9 | e2.0 |
| 29 | 20 | e9.5 | e3.8 | e3.2 | --- | e11 | 65 | 30 | 9.2 | e12 | 2.8 | 2.2 |
| 30 | 20 | e9.0 | e3.7 | e3.2 | --- | e11 | 67 | 26 | e9.8 | e9.6 | 2.0 | 2.6 |
| 31 | 20 | --- | e3.6 | e3.1 | --- | e10 | --- | e22 | --- | 9.0 | 2.8 | --- |
| TOTAL | 338.3 | 510.5 | 192.9 | 111.8 | 145.6 | 227.1 | 1155.2 | 1667 | 805.0 | 409.0 | 118.7 | 100.7 |
| MEAN | 10.91 | 17.02 | 6.223 | 3.606 | 5.200 | 7.326 | 38.51 | 53.77 | 26.83 | 13.19 | 3.829 | 3.357 |
| MAX | 21 | 24 | 9.2 | 4.2 | 6.5 | 12 | 73 | 76 | 69 | 46 | 11 | 7.6 |
| MIN | 5.7 | 9.0 | 3.6 | 3.1 | 3.0 | 4.7 | 9.4 | 22 | 9.2 | 6.7 | 2.0 | 1.6 |
| AC-FT | 671 | 1010 | 383 | 222 | 289 | 450 | 2290 | 3310 | 1600 | 811 | 235 | 200 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 13.26 | 21.60 | 7.271 | 2.173 | 3.130 | 221.6 | 450.5 | 135.7 | 57.06 | 100.6 | 79.24 | 25.80 |
| MAX | 77.3 | 157 | 47.5 | 10.6 | 19.4 | 781 | 2188 | 625 | 305 | 814 | 688 | 175 |
| (WY) | 2001 | 2001 | 1995 | 1995 | 1998 | 1995 | 1997 | 1997 | 2000 | 2000 | 1993 | 2000 |
| MIN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.21 | 2.59 | 2.24 | 0.077 | 0.000 | 0.000 | 0.000 |
| (WY) | 1989 | 1989 | 1989 | 1989 | 1989 | 1990 | 1991 | 1991 | 1991 | 1991 | 1988 | 1988 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1986 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 69537.0 | | 5781.8 | | | |
| ANNUAL MEAN | 190.5 | | 15.84 | | 93.34 | |
| HIGHEST ANNUAL MEAN | | | | | 245 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 0.52 | 1991 |
| HIGHEST DAILY MEAN | 2300 | Mar 27 | 76 | May 13 | 4400 | Apr 5 1997 |
| LOWEST DAILY MEAN | 3.2 | Mar 3 | 1.6 | Sep 22 | 0.00 | Oct 1 1985 |
| ANNUAL SEVEN-DAY MINIMUM | 3.3 | Feb 28 | 1.7 | Sep 17 | 0.00 | Oct 1 1985 |
| MAXIMUM PEAK FLOW | | | 78 | May 13 | a4700 | Apr 5 1997 |
| MAXIMUM PEAK STAGE | | | 3.22 | May 13 | a,b13.00 | Apr 5 1997 |
| ANNUAL RUNOFF (AC-FT) | 137900 | | 11470 | | 67620 | |
| 10 PERCENT EXCEEDS | 571 | | 50 | | 215 | |
| 50 PERCENT EXCEEDS | 24 | | 8.3 | | 5.1 | |
| 90 PERCENT EXCEEDS | 4.6 | | 3.2 | | 0.00 | |

a About
b Backwater from ice
e Estimated

06468250 JAMES RIVER ABOVE ARROWWOOD LAKE NEAR KENSAL, ND--Continued

WATER-QUALITY RECORDS

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

REMARKS.--Quality assurance sample also collected at this location.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | BARO-METRIC PRES-SURE (MM OF HG) (00025) | OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301) | OXYGEN, DIS-SOLVED (MG/L) (00300) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 24... | 1305 | 13 | -- | -- | 13.1 | 8.2 | -- | 1080 | 1110 | -.5 | 1.0 | 380 | 61.8 |
| NOV | | | | | | | | | | | | | |
| 15... | 1100 | 18 | 716 | 98 | 12.3 | 8.7 | 8.5 | 1230 | 1290 | 17.0 | 3.0 | 450 | 79.9 |
| MAR | | | | | | | | | | | | | |
| 19... | 1250 | 8.2 | 726 | 111 | 15.4 | 8.1 | 8.0 | 1000 | 1040 | -5.0 | .0 | 380 | 71.6 |
| APR | | | | | | | | | | | | | |
| 09... | 1515 | 17 | 720 | 124 | 14.2 | --e | 8.1 | 754 | 708 | 9.5 | 7.0 | 240 | 47.2 |
| 30... | 1115 | 68 | 715 | -- | 11.5 | 8.5 | 8.1 | 1060 | ----ee | 8.5 | 7.5 | 390 | 70.0 |
| JUN | | | | | | | | | | | | | |
| 27... | 1000 | 19 | -- | -- | 3.9 | 8.4 | 8.3 | 1390 | 1400 | 36.5 | 25.8 | 520 | 82.9 |
| JUL | | | | | | | | | | | | | |
| 17... | 1330 | 14 | -- | -- | 14.3 | 8.4 | 8.2 | 1230 | --e | 25.0 | 24.1 | 420 | 55.4 |
| 30... | 1500 | 9.2 | -- | -- | 7.0 | --e | 8.2 | 1100 | 1200 | 27.0 | 26.2 | 370 | 45.9 |
| AUG | | | | | | | | | | | | | |
| 20... | 1540 | 2.4 | -- | -- | 7.7 | --e | 8.6 | 925 | 964 | 30.0 | 20.7 | 280 | 32.0 |

| Date | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 24... | 54.6 | 12.1 | 2 | 94.6 | 34 | 337 | 15.3 | .2 | 8.3 | 277 | 1.1 | -- | <.04 |
| NOV | | | | | | | | | | | | | |
| 15... | 61.2 | 10.6 | 2 | 113 | 35 | 408 | 24.6 | .2 | 13.3 | 307 | 1.1 | -- | <.04 |
| MAR | | | | | | | | | | | | | |
| 19... | 48.6 | 10.4 | 2 | 99.5 | 36 | 325 | 27.3 | .2 | 7.8 | 232 | .97 | -- | E.02 |
| APR | | | | | | | | | | | | | |
| 09... | 30.8 | 9.64 | 2 | 64.0 | 35 | 224 | 18.3 | .2 | 7.7 | 148 | .92 | 1.5 | <.04 |
| 30... | 52.9 | 10.9 | 2 | 78.2 | 30 | 277 | 18.1 | .1 | 7.8 | 300 | 1.1 | 1.6 | <.04 |
| JUN | | | | | | | | | | | | | |
| 27... | 75.8 | 17.7 | 2 | 118 | 32 | 358 | 22.5 | .3 | 19.7 | 408 | 1.5 | -- | <.04 |
| JUL | | | | | | | | | | | | | |
| 17... | 69.0 | 17.4 | 3 | 126 | 38 | 314 | 23.9 | .1 | 21.9 | 369 | 1.9 | 3.8 | E.04 |
| 30... | 61.1 | 15.8 | 3 | 123 | 41 | 281 | 23.6 | .2 | 4.5 | 348 | 1.7 | -- | <.04 |
| AUG | | | | | | | | | | | | | |
| 20... | 48.9 | 13.9 | 3 | 98.6 | 42 | 265 | 20.9 | .2 | 9.4 | 246 | 1.6 | -- | E.02 |

| Date | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | ARSENIC DIS-SOLVED (UG/L AS AS) (01000) | ARSENIC TOTAL (UG/L AS AS) (01002) | BORON, DIS-SOLVED (UG/L AS B) (01020) | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 24... | <.008 | <.05 | .11 | .08 | -- | 26.7 | 744 | 726 | 4 | -- | 110 | <10 | 22.8 |
| NOV | | | | | | | | | | | | | |
| 15... | <.008 | <.05 | .06 | .03 | -- | 41.8 | 860 | 855 | E3 | -- | 140 | E6 | 25.8 |
| MAR | | | | | | | | | | | | | |
| 19... | <.008 | E.04 | .07 | .05 | -- | 16.0 | 728 | 693 | E1 | -- | 150 | 27 | 117 |
| APR | | | | | | | | | | | | | |
| 09... | E.005 | E.03 | .10 | .08 | .20 | 21.5 | 479 | 460 | E2 | 3 | 100 | 31 | 108 |
| 30... | <.008 | <.05 | <.06 | E.01 | .12 | 136 | 737 | 704 | 2 | 2 | 90 | <10 | 12.1 |
| JUN | | | | | | | | | | | | | |
| 27... | <.008 | <.05 | .15 | .12 | -- | 51.3 | 1010 | 961 | 8 | -- | 160 | E7 | 60.7 |
| JUL | | | | | | | | | | | | | |
| 17... | <.008 | <.05 | .17 | .12 | .48 | 33.5 | 913 | 871 | 10 | 9 | 200 | E7 | 50.0 |
| 30... | <.008 | E.03 | E.05 | <.02 | -- | 21.4 | 856 | 791 | 7 | -- | 190 | <10 | 8.9 |
| AUG | | | | | | | | | | | | | |
| 20... | <.008 | <.05 | .06 | <.02 | -- | 4.41 | 674 | 629 | 7 | -- | 160 | E6 | 5.1 |

06468250 JAMES RIVER ABOVE ARROWWOOD LAKE NEAR KENSAL, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | MERCURY DIS-SOLVED (UG/L AS HG) (71890) | SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145) | SELE-NIUM, TOTAL (UG/L AS SE) (01147) | ACIFL-UORFEN WATER, FLTRD, GF 0.7U REC (UG/L) (49315) | 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) | ALDI-CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (49312) | ATRA-ZINE, WATER, DISS, REC (UG/L) (39632) | TRIAZIN SCREEN (ELISA) WAT,WH REC,AS ATRAZIN (UG/L) (34757) | BENDIO-CARB, WATER FLTRD REC (UG/L) (50299) | BENOMYL WATER FLTRD REC (UG/L) (50300) | BEN-SUL-FURON METHYL WAT FLT REC (UG/L) (61693) | BENTA-ZON, WATER, FLTRD, GF 0.7U REC (UG/L) (38711) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 24... | .02 | <2 | -- | -- | -- | -- | -- | -- | .1 | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 15... | .01 | <4 | -- | -- | -- | -- | -- | -- | .2 | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 19... | E.01n | <2 | -- | -- | -- | -- | -- | -- | .1 | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 09... | <.01 | <2 | <2 | -- | -- | -- | -- | -- | <.1 | -- | -- | -- | -- |
| 30... | .02 | <2 | E1 | <.007 | <.02 | <.008 | <.04 | E.004 | <.1 | <.03 | <.004 | <.02 | E.06 |
| JUN | | | | | | | | | | | | | |
| 27... | .14 | <2 | -- | -- | -- | -- | -- | -- | .1 | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 17... | .16 | <2 | <2 | <.007 | <.02 | <.008 | <.04 | E.007 | .2 | <.03 | <.004 | <.02 | M |
| 30... | .04 | <2 | -- | -- | -- | -- | -- | -- | .3 | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 20... | .08 | <2 | -- | -- | -- | -- | -- | -- | .1 | -- | -- | -- | -- |

| Date | CAF-FEINE, WATER FLTRD REC (UG/L) (50305) | CAR-BARYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49310) | CARBO-FURAN, WATER, FLTRD, GF 0.7U REC (UG/L) (49309) | 3HYDRXY CARBO-FURAN WAT,FLT GF 0.7U REC (UG/L) (49308) | 3-KETO CARBO-FURAN WATER FLTRD REC (UG/L) (50295) | CHLOR-AMBEN, METHYL ESTER WATER FLTRD (UG/L) (61188) | CHLORI-MURON, WATER FLTRD REC (UG/L) (50306) | CHLORO-THALO-NIL, WAT,FLT GF 0.7U REC (UG/L) (49306) | CLOPYR-ALID, WATER, FLTRD, GF 0.7U REC (UG/L) (49305) | CY-CLOATE, WATER, DISS, REC (UG/L) (04031) | DACTHAL MONO-ACID, WAT,FLT GF 0.7U REC (UG/L) (49304) | DEETHYL ATRA-ZINE, WATER, DISS, REC (UG/L) (04040) | DEETHYL DEISO-PROPYL ATRAZIN DISS, REC (UG/L) (04039) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 15... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 30... | <.010 | <.03 | <.006 | <.006 | <2 | <.02 | <.010 | <.04 | <.01 | <.01 | <.01 | <.03 | <.01 |
| JUN | | | | | | | | | | | | | |
| 27... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 17... | <.010 | <.03 | <.006 | <.006 | <2 | <.02 | <.010 | <.04 | <.01 | <.01 | <.01 | E.01 | <.01 |
| 30... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 20... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | DEISO-PROPYL ATRAZIN WATER, DISS, REC (UG/L) (04038) | DICAMBA WATER, FLTRD, GF 0.7U REC (UG/L) (38442) | DICHLOR PROP, WATER, FLTRD, GF 0.7U REC (UG/L) (49302) | DINOSEB WATER, FLTRD, GF 0.7U REC (UG/L) (49301) | DIPHEN-AMID, WATER, DISS, REC (UG/L) (04033) | DIURON, WATER, FLTRD, GF 0.7U REC (UG/L) (49300) | FEN-URON, WATER, FLTRD, GF 0.7U REC (UG/L) (49297) | FLUMET-SULAM WATER FLTRD REC (UG/L) (61694) | FLUO-METURON WATER, FLTRD, GF 0.7U REC (UG/L) (38811) | HYDROXY ATRA-ZINE WATER FLTRD REC (UG/L) (50355) | IMAZ-AQUIN WATER FLTRD REC (UG/L) (50356) | IMAZE-THAPYR WATER FLTRD REC (UG/L) (50407) | IMID-ACLOP-RID WATER FLTRD REC (UG/L) (61695) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 15... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 30... | <.04 | <.01 | <.01 | <.01 | E.03 | <.01 | <.03 | <.01 | <.03 | <.008 | <.02 | <.02 | <.007 |
| JUN | | | | | | | | | | | | | |
| 27... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 17... | <.04 | <.01 | <.01 | <.01 | <.03 | E.01 | <.03 | <.01 | <.03 | <.008 | <.02 | <.02 | <.007 |
| 30... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 20... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

06468250 JAMES RIVER ABOVE ARROWWOOD LAKE NEAR KENSAL, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| 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) | METAL-AXYL WATER FLTRD REC (UG/L) (50359) | METHIO-CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (38501) | METH-OMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49296) | MET-SUL-FURON METHYL WAT FLT REC (UG/L) (61697) | NEB-URON, WATER, FLTRD, GF 0.7U REC (UG/L) (49294) | NICOSUL FURON WATER FLTRD REC (UG/L) (50364) | NORFLUR AZON, WATER, FLTRD, GF 0.7U REC (UG/L) (49293) | ORY-ZALIN, WATER, FLTRD, GF 0.7U REC (UG/L) (49292) | OXAMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (38866) | PIC-LORAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49291) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 15... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 30... | <.01 | <.02 | <.01 | <.02 | <.008 | <.004 | <.03 | <.01 | <.01 | <.02 | <.02 | <.01 | <.02 |
| JUN | | | | | | | | | | | | | |
| 27... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 17... | <.01 | .02 | <.01 | <.02 | <.008 | <.004 | <.03 | <.01 | <.01 | <.02 | <.02 | <.01 | <.02 |
| 30... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 20... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | PRO-PHAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49236) | PROP-ICONA-ZOLE , WATER FLTRD REC (UG/L) (50471) | PRO-POXUR, WATER, FLTRD, GF 0.7U REC (UG/L) (38538) | SIDURON WATER FLTRD REC (UG/L) (38548) | SULFO-MET-RURON METHYL WTR FLT REC (UG/L) (50337) | TEBU-THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670) | TER-BACIL, WATER, DISS, REC (UG/L) (04032) | TRI-BENURON METHYL WATER FLTRD (UG/L) (61159) | TRI-CLOPYR, WATER, FLTRD, GF 0.7U REC (UG/L) (49235) | UREA 3( 4-CHLOR OPHENYL METHYL WAT FLT REC (UG/L) (61692) | 2,4-D METHYL ESTER, WATER FLTRD REC (UG/L) (50470) | 2,4-D, DIS-SOLVED (UG/L) (39732) | 2,4-D SCREEN TOTAL (UG/L) (99906) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | <.700 |
| NOV | | | | | | | | | | | | | |
| 15... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | <.700 |
| MAR | | | | | | | | | | | | | |
| 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | <.700 |
| APR | | | | | | | | | | | | | |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | <.700 |
| 30... | <.010 | <.02 | <.008 | <.02 | <.009 | <.006 | <.010 | --u | <.02 | <.02 | <.009 | .10 | <.700 |
| JUN | | | | | | | | | | | | | |
| 27... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | <.700 |
| JUL | | | | | | | | | | | | | |
| 17... | <.010 | <.02 | <.008 | <.02 | <.009 | <.006 | <.010 | --u | <.02 | <.02 | <.009 | .03 | <.700 |
| 30... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | <.700 |
| AUG | | | | | | | | | | | | | |
| 20... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1.54 |

| Date | 2,4-DB WATER, FLTRD, GF 0.7U REC (UG/L) (38746) | SEDI-MENT, SUS-PENDED (MG/L) (80154) | SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155) | SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331) |
|---|---|---|---|---|
| OCT | | | | |
| 24... | -- | 64 | 2.3 | 91 |
| NOV | | | | |
| 15... | -- | 44 | 2.1 | 92 |
| MAR | | | | |
| 19... | -- | 9.0 | .20 | 95 |
| APR | | | | |
| 09... | -- | 12 | .56 | 99 |
| 30... | <.02 | 20 | 3.7 | 89 |
| JUN | | | | |
| 27... | -- | 58 | 2.9 | 90 |
| JUL | | | | |
| 17... | <.02 | 86 | 3.2 | 97 |
| 30... | -- | 66 | 1.6 | 0c |
| AUG | | | | |
| 20... | -- | 54 | .35 | 0c |

< Less than
E Estimated value
M Presence verified, not quantified
c See laboratory comment
n Below the non-detection value
e Required equipment not functional/available
u Unable to determine-matrix interference

## 06468500 JAMES RIVER NEAR PINGREE, ND

LOCATION.--Lat 47°08'30", long 98°47'00", in SW$^{1}/_{4}$SW$^{1}/_{4}$ 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$^{2}$, approximately, of which about 900 mi$^{2}$ is probably noncontributing.

### WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959-60, 1962, 1965, 1979-89, 1993 to current year.

REMARKS.--Quality assurance sample also collected at this location.

### WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | BAROMETRIC PRESSURE (MM OF HG) (00025) | OXYGEN, DISSOLVED (PERCENT SATURATION) (00301) | OXYGEN, DISSOLVED (MG/L) (00300) | PH WATER WHOLE FIELD (STANDARD UNITS) (00400) | PH WATER WHOLE LAB (STANDARD UNITS) (00403) | SPECIFIC CONDUCTANCE LAB (US/CM) (90095) | SPECIFIC CONDUCTANCE (US/CM) (00095) | TEMPERATURE AIR (DEG C) (00020) | TEMPERATURE WATER (DEG C) (00010) | HARDNESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DISSOLVED (MG/L AS CA) (00915) | MAGNESIUM, DISSOLVED (MG/L AS MG) (00925) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 24... | 0930 | 700 | 103 | 13.6 | 8.3 | 8.4 | 1190 | 1070 | 2.0 | .5 | 450 | 80.7 | 59.5 |
| NOV | | | | | | | | | | | | | |
| 15... | 0830 | 716 | 102 | 12.8 | 8.9 | 8.6 | 1110 | 1070 | 10.0 | 3.2 | 390 | 61.9 | 57.8 |
| APR | | | | | | | | | | | | | |
| 09... | 1645 | -- | -- | 14.2 | 8.0 | 8.1 | 1200 | 1100 | 13.0 | 7.6 | 410 | 68.2 | 58.8 |
| 30... | 1400 | 715 | -- | 11.4 | --e | 8.0 | 872 | --e | 11.0 | 9.7 | 290 | 50.3 | 38.9 |
| JUN | | | | | | | | | | | | | |
| 20... | 1330 | -- | -- | 10.6 | 8.6 | 8.4 | 1110 | 1150 | 25.1 | 22.5 | 390 | 67.3 | 54.9 |
| JUL | | | | | | | | | | | | | |
| 30... | 1200 | -- | -- | 17.6 | --e | 8.7 | 812 | 853 | 27.0 | 25.7 | 170 | 33.2 | 21.3 |
| AUG | | | | | | | | | | | | | |
| 19... | 1600 | -- | -- | 7.8 | --e | 8.0 | 961 | 997 | 29.8 | 22.2 | 250 | 42.3 | 34.9 |

| Date | POTASSIUM, DISSOLVED (MG/L AS K) (00935) | SODIUM ADSORPTION RATIO (00931) | SODIUM, DISSOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLORIDE, DISSOLVED (MG/L AS CL) (00940) | FLUORIDE, DISSOLVED (MG/L AS F) (00950) | SILICA, DISSOLVED (MG/L AS SIO2) (00955) | SULFATE DISSOLVED (MG/L AS SO4) (00945) | NITROGEN,AMMONIA + ORGANIC DIS. (MG/L AS N) (00623) | NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608) | NITROGEN, NITRITE DISSOLVED (MG/L AS N) (00613) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 24... | 11.7 | 2 | 101 | 32 | 390 | 19.1 | .2 | 18.1 | 284 | 1.1 | -- | <.04 | <.008 |
| NOV | | | | | | | | | | | | | |
| 15... | 10.9 | 2 | 103 | 35 | 330 | 16.7 | .2 | 9.0 | 304 | 1.2 | -- | <.04 | <.008 |
| APR | | | | | | | | | | | | | |
| 09... | 12.2 | 2 | 109 | 36 | 316 | 24.9 | .2 | 7.3 | 320 | 1.1 | 1.5 | <.04 | E.004 |
| 30... | 9.19 | 2 | 77.7 | 36 | 238 | 17.9 | .2 | 6.8 | 222 | .81 | 1.3 | <.04 | <.008 |
| JUN | | | | | | | | | | | | | |
| 20... | 14.8 | 2 | 99.6 | 34 | 320 | 22.0 | .2 | 10.5 | 299 | 1.2 | -- | <.04 | <.008 |
| JUL | | | | | | | | | | | | | |
| 30... | 12.3 | 3 | 105 | 55 | 160 | 21.3 | .1 | 8.6 | 242 | 2.5 | 12 | E.02 | <.008 |
| AUG | | | | | | | | | | | | | |
| 19... | 12.8 | 3 | 108 | 47 | 221 | 24.8 | .2 | 27.6 | 293 | 2.7 | -- | .57 | .092 |

| Date | NITROGEN, NITRATE DISSOLVED (MG/L AS N) (00618) | NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631) | NITROGEN, ORGANIC DISSOLVED (MG/L AS N) (00607) | NITROGEN DISSOLVED (MG/L AS N) (00602) | PHOSPHORUS DISSOLVED (MG/L AS P) (00666) | ORTHOPHOSPHATE, DISSOLVED (MG/L AS P) (00671) | PHOSPHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301) | ARSENIC DISSOLVED (UG/L AS AS) (01000) | ARSENIC TOTAL (UG/L AS AS) (01002) | BORON, DISSOLVED (UG/L AS B) (01020) | IRON, DISSOLVED (UG/L AS FE) (01046) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 24... | -- | <.05 | -- | -- | .12 | .10 | -- | 788 | 809 | 4 | -- | 130 | E8 |
| NOV | | | | | | | | | | | | | |
| 15... | -- | <.05 | -- | -- | E.06 | .04 | -- | 784 | 762 | <4 | -- | 110 | <10 |
| APR | | | | | | | | | | | | | |
| 09... | -- | E.03 | -- | -- | E.04 | .03 | .12 | 832 | 790 | 2 | 2 | 100 | E9 |
| 30... | -- | <.05 | -- | -- | <.06 | E.01 | .17 | 595 | 566 | E1 | E2 | 90 | E7 |
| JUN | | | | | | | | | | | | | |
| 20... | -- | <.05 | -- | -- | .08 | .06 | -- | 816 | 760 | 4 | -- | 150 | <10 |
| JUL | | | | | | | | | | | | | |
| 30... | -- | E.03 | -- | -- | .12 | .08 | 1.12 | 602 | 540 | 4 | 5 | 60 | <10 |
| AUG | | | | | | | | | | | | | |
| 19... | .05 | .14 | 2.1 | 2.8 | .49 | .48 | -- | 715 | 680 | 10 | -- | 120 | 14 |

06468500 JAMES RIVER NEAR PINGREE, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) | MERCURY DIS-SOLVED (UG/L AS HG) (71890) | SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145) | SELE-NIUM, TOTAL (UG/L AS SE) (01147) | ACIFL-UORFEN WATER, FLTRD, GF 0.7U REC (UG/L) (49315) | 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) | ALDI-CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (49312) | ATRA-ZINE, WATER, DISS, REC (UG/L) (39632) | TRIAZIN SCREEN (ELISA) WAT,WH REC,AS ATRAZIN (UG/L) (34757) | BENDIO-CARB, WATER FLTRD REC (UG/L) (50299) | BENOMYL WATER FLTRD REC (UG/L) (50300) | BEN-SUL-FURON METHYL WAT FLT REC (UG/L) (61693) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 24... | 49.5 | .02 | <2 | -- | -- | -- | -- | -- | -- | .1 | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 15... | 40.5 | .01 | <4 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 09... | 172 | <.01 | <2 | <2 | -- | -- | -- | -- | -- | .1 | -- | -- | -- |
| 30... | 39.9 | E.01n | <2 | E1 | <.007 | <.02 | <.008 | <.04 | E.005 | <.1 | <.03 | <.004 | <.02 |
| JUN | | | | | | | | | | | | | |
| 20... | 39.5 | 2.18 | <2 | -- | <.007 | <.02 | <.008 | <.04 | E.010 | <.1 | <.03 | <.004 | <.02 |
| JUL | | | | | | | | | | | | | |
| 30... | 3.7 | .16 | <2 | U | -- | -- | -- | -- | -- | .4 | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 19... | 22.1 | .35 | E1 | -- | -- | -- | -- | -- | -- | <.1 | -- | -- | -- |

| Date | BENTA-ZON, WATER, FLTRD, GF 0.7U REC (UG/L) (38711) | CAF-FEINE, WATER FLTRD REC (UG/L) (50305) | CAR-BARYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49310) | CARBO-FURAN, WATER, FLTRD, GF 0.7U REC (UG/L) (49309) | 3HYDRXY CARBO-FURAN WAT,FLT GF 0.7U REC (UG/L) (49308) | 3-KETO CARBO-FURAN WATER FLTRD REC (UG/L) (50295) | CHLOR-AMBEN, METHYL ESTER WATER FLTRD (UG/L) (61188) | CHLORI-MURON, WATER FLTRD REC (UG/L) (50306) | CHLORO-THALO-NIL, WAT,FLT GF 0.7U REC (UG/L) (49306) | CLOPYR-ALID, WATER, FLTRD, GF 0.7U REC (UG/L) (49305) | CY-CLOATE, WATER, DISS, REC (UG/L) (04031) | DACTHAL MONO-ACID, WAT,FLT GF 0.7U REC (UG/L) (49304) | DEETHYL ATRA-ZINE, WATER, DISS, REC (UG/L) (04040) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 15... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 30... | E.04 | <.010 | <.03 | <.006 | <.006 | <2 | <.02 | <.010 | <.04 | <.01 | <.01 | <.01 | <.03 |
| JUN | | | | | | | | | | | | | |
| 20... | E.06 | <.010 | <.03 | <.006 | <.006 | <2 | <.02 | <.010 | <.04 | <.01 | <.01 | <.01 | <.03 |
| JUL | | | | | | | | | | | | | |
| 30... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | DEETHYL DEISO-PROPYL ATRAZIN DISS, REC (UG/L) (04039) | DEISO-PROPYL ATRAZIN WATER, DISS, REC (UG/L) (04038) | DICAMBA WATER, FLTRD, GF 0.7U REC (UG/L) (38442) | DICHLOR PROP, WATER, FLTRD, GF 0.7U REC (UG/L) (49302) | DINOSEB WATER, FLTRD, GF 0.7U REC (UG/L) (49301) | DIPHEN-AMID, WATER, DISS, REC (UG/L) (04033) | DIURON, WATER, FLTRD, GF 0.7U REC (UG/L) (49300) | FEN-URON, WATER, FLTRD, GF 0.7U REC (UG/L) (49297) | FLUMET-SULAM WATER FLTRD REC (UG/L) (61694) | FLUO-METURON WATER, FLTRD, GF 0.7U REC (UG/L) (38811) | HYDROXY ATRA-ZINE WATER FLTRD REC (UG/L) (50355) | IMAZ-AQUIN WATER FLTRD REC (UG/L) (50356) | IMAZE-THAPYR WATER FLTRD REC (UG/L) (50407) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 15... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 30... | <.01 | <.04 | <.01 | <.01 | <.01 | <.03 | <.01 | <.03 | <.01 | <.03 | <.008 | <.02 | <.02 |
| JUN | | | | | | | | | | | | | |
| 20... | <.01 | <.04 | <.01 | <.01 | <.01 | <.03 | <.01 | <.03 | <.01 | <.03 | <.008 | <.02 | <.02 |
| JUL | | | | | | | | | | | | | |
| 30... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | IMID-ACLOP-RID WATER FLTRD REC (UG/L) (61695) | 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) | METAL-AXYL WATER FLTRD REC (UG/L) (50359) | METHIO-CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (38501) | METH-OMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49296) | MET-SUL-FURON METHYL WAT FLT REC (UG/L) (61697) | NEB-URON, WATER, FLTRD, GF 0.7U REC (UG/L) (49294) | NICOSUL FURON WATER FLTRD REC (UG/L) (50364) | NORFLUR AZON, WATER, FLTRD, GF 0.7U REC (UG/L) (49293) | ORY-ZALIN, WATER, FLTRD, GF 0.7U REC (UG/L) (49292) | OXAMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (38866) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 15... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 30... | <.007 | <.01 | <.02 | <.01 | <.02 | <.008 | <.004 | <.03 | <.01 | <.01 | <.02 | <.02 | <.01 |
| JUN | | | | | | | | | | | | | |
| 20... | <.007 | <.01 | E.05 | <.01 | <.02 | <.008 | <.004 | <.03 | <.01 | <.01 | <.02 | <.02 | <.01 |
| JUL | | | | | | | | | | | | | |
| 30... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

06468500 JAMES RIVER NEAR PINGREE, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | PIC-LORAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49291) | PRO-PHAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49236) | PROP-ICONA-ZOLE , WATER FLTRD REC (UG/L) (50471) | PRO-POXUR, WATER, FLTRD, GF 0.7U REC (UG/L) (38538) | SIDURON WATER FLTRD REC (UG/L) (38548) | SULFO-MET-RURON METHYL WTR FLT REC (UG/L) (50337) | TEBU-THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670) | TER-BACIL, WATER, DISS, REC (UG/L) (04032) | TRI-BENURON METHYL WATER FLTRD (UG/L) (61159) | TRI-CLOPYR, WATER, FLTRD, GF 0.7U REC (UG/L) (49235) | UREA 3(4-CHLOR OPHENYL METHYL WAT FLT REC (UG/L) (61692) | 2,4-D METHYL ESTER, WATER FLTRD REC (UG/L) (50470) | 2,4-D, DIS-SOLVED (UG/L) (39732) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | | |
| 15... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 30... | <.02 | <.010 | <.02 | <.008 | <.02 | <.009 | <.006 | <.010 | --u | <.02 | <.02 | <.009 | .06 |
| JUN | | | | | | | | | | | | | |
| 20... | <.02 | <.010 | <.02 | <.008 | <.02 | <.009 | <.006 | <.010 | --u | <.02 | <.02 | <.009 | .03 |
| JUL | | | | | | | | | | | | | |
| 30... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 2,4-D SCREEN TOTAL (UG/L) (99906) | 2,4-DB WATER, FLTRD, GF 0.7U REC (UG/L) (38746) | SEDI-MENT, SUS-PENDED (MG/L) (80154) | SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331) |
|---|---|---|---|---|
| OCT | | | | |
| 24... | <.700 | -- | 220 | 87 |
| NOV | | | | |
| 15... | -- | -- | 11 | 91 |
| APR | | | | |
| 09... | <.700 | -- | 17 | 97 |
| 30... | <.700 | <.02 | 85 | 98 |
| JUN | | | | |
| 20... | <.700 | <.02 | 61 | 85 |
| JUL | | | | |
| 30... | <.700 | -- | 45 | 0c |
| AUG | | | | |
| 19... | <.700 | -- | 148 | 0c |

< Less than
E Estimated value
U Analyzed for, not detected
c See laboratory comment
n Below the non-detection value
e Required equipment not functional/available
u Unable to determine-matrix interference

## 06469000 JAMESTOWN RESERVOIR NEAR JAMESTOWN, ND

LOCATION.--Lat 46°55'50", long 98°42'23", in SE$^1/_4$NW$^1/_4$ 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$^2$, approximately, of which about 1,010 mi$^2$ 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. Water-stage recorder discontinued July 15, 1999. Data provided from the Bureau of Reclamation will be published in 2000 data report.

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.

COOPERATION.--Records furnished by the U.S. Bureau of Reclamation. Elevations affected by wind.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 124,900 acre-ft, May 2, 1997, elevation, 1,445.80 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, 33,640 acre-ft, Apr. 24, elevation, 1,431.91 ft; minimum, 25,400 acre-ft, Oct. 8, elevation, 1,428.02 ft.

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Elevation (feet) | Contents (acre-feet) | Change in contents (acre-feet) |
|---|---|---|---|
| Sept. 30 | 1,428.16 | 25,660 | -- |
| Oct. 31 | 1,428.32 | 25,970 | +310 |
| Nov. 30 | 1,428.95 | 27,180 | +1,210 |
| Dec. 31 | 1,429.61 | 28,520 | +1,340 |
| CAL YR 2001 | -- | -- | +7,150 |
| Jan. 31 | 1,430.14 | 29,630 | +1,110 |
| Feb. 28 | 1,430.65 | 30,740 | +1,110 |
| Mar. 31 | 1,431.25 | 32,100 | +1,360 |
| Apr. 30 | 1,431.56 | 32,820 | +720 |
| May 31 | 1,431.04 | 31,600 | -1,220 |
| June 30 | 1,430.83 | 31,140 | -460 |
| July 31 | 1,430.87 | 31,220 | +80 |
| Aug. 31 | 1,430.85 | 31,180 | -40 |
| Sept. 30 | 1,430.21 | 29,780 | -1,400 |
| WTR YR 2002 | -- | -- | +4,120 |

## 06469400 PIPESTEM CREEK NEAR PINGREE, ND

LOCATION.--Lat 47°10'03", long 98°58'07", in NE$^1/_4$NE$^1/_4$NW$^1/_4$ 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$^2$, of which about 440 mi$^2$ 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 National Geodetic Vertical Datum of 1929.

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7.8 | 23 | 8.7 | e2.5 | e1.9 | e2.0 | 44 | 62 | 11 | 2.6 | 0.23 | 0.21 |
| 2 | 7.9 | 22 | 8.8 | e2.4 | e1.9 | e2.1 | 40 | 61 | 9.3 | 2.2 | 0.20 | 0.18 |
| 3 | 6.7 | 24 | 9.2 | e2.3 | e2.0 | e2.1 | 48 | 60 | 8.6 | 1.8 | 0.20 | 0.13 |
| 4 | 7.0 | 24 | 9.6 | e2.3 | e2.1 | e2.0 | 38 | 59 | 8.1 | 3.8 | 0.19 | 0.10 |
| 5 | 6.5 | 24 | 9.9 | e2.2 | e2.0 | e2.0 | 41 | 58 | 7.5 | 5.0 | 0.18 | 0.08 |
| 6 | 6.1 | 24 | 9.6 | e2.3 | e2.1 | e2.1 | 47 | 55 | 6.8 | 4.5 | 0.18 | 0.07 |
| 7 | 6.0 | 25 | 8.6 | e2.4 | e2.3 | e2.1 | 67 | 55 | 6.7 | 3.7 | 0.18 | 0.05 |
| 8 | 6.1 | 19 | 8.1 | e2.9 | e2.3 | e2.2 | 79 | 59 | 6.1 | 3.3 | 0.16 | 0.04 |
| 9 | 6.3 | 21 | 7.8 | e2.70 | e2.3 | e2.2 | 71 | 68 | 5.7 | 2.6 | 0.22 | 0.07 |
| 10 | 11 | 19 | 8.3 | e2.6 | e2.4 | e2.4 | 81 | 70 | 5.9 | 2.8 | 0.21 | 0.13 |
| 11 | 9.6 | 17 | 8.3 | e2.4 | e2.4 | e2.8 | 86 | 70 | 5.8 | 2.5 | 0.20 | 0.12 |
| 12 | 11 | 17 | 8.1 | e2.3 | e2.1 | e3.2 | 86 | 72 | 5.4 | 2.5 | 0.21 | 0.12 |
| 13 | 10 | 16 | 7.4 | e2.2 | e2.1 | e4.1 | 86 | 72 | 6.1 | 2.8 | 0.18 | 0.11 |
| 14 | 12 | 15 | 6.8 | e2.1 | e2.2 | e4.3 | 87 | 69 | 5.5 | 2.4 | 0.21 | 0.11 |
| 15 | 13 | 15 | 6.4 | e2.1 | e2.3 | e3.9 | 88 | 67 | 4.4 | 1.8 | 0.22 | 0.10 |
| 16 | 12 | 14 | 6.5 | e2.0 | e2.3 | e4.2 | 88 | 61 | 4.1 | 1.6 | 0.22 | 0.10 |
| 17 | 13 | 14 | 6.7 | e2.0 | e2.3 | e5.2 | 85 | 58 | 5.2 | 1.3 | 0.27 | 0.08 |
| 18 | 14 | 14 | 6.8 | e2.2 | e2.2 | e5.5 | 87 | 54 | 7.7 | 0.94 | 0.24 | 0.08 |
| 19 | 13 | 10 | 6.6 | e2.2 | e2.1 | e4.8 | 89 | 49 | 10 | 0.83 | 0.22 | 0.09 |
| 20 | 11 | 9.7 | 6.1 | e2.4 | e2.1 | e4.4 | 87 | 44 | 9.5 | 0.76 | 0.20 | 0.08 |
| 21 | 10 | 11 | 5.8 | e2.3 | e2.1 | e4.1 | 83 | 36 | 7.9 | 0.75 | 0.20 | 0.07 |
| 22 | 9.9 | 11 | 4.9 | e2.3 | e2.1 | 4.0 | 80 | 37 | 7.1 | 0.69 | 0.18 | 0.06 |
| 23 | 11 | 11 | e4.0 | e2.3 | e2.1 | 4.1 | 79 | 35 | 7.2 | 0.56 | 0.20 | 0.08 |
| 24 | 21 | 12 | e3.7 | e2.4 | e2.1 | 4.1 | 76 | 28 | 7.5 | 0.55 | 0.21 | 0.08 |
| 25 | 8.3 | 9.5 | e3.4 | e2.4 | e2.0 | 4.2 | 72 | 29 | 7.5 | 0.53 | 0.20 | 0.10 |
| 26 | 7.2 | e7.5 | e3.1 | e2.3 | e1.9 | 4.3 | 67 | 25 | 6.4 | 0.42 | 0.17 | 0.10 |
| 27 | 14 | 6.0 | e3.0 | e2.3 | e1.8 | 5.6 | 68 | 23 | 5.2 | 0.37 | 0.16 | 0.11 |
| 28 | 24 | 6.4 | e3.0 | e2.2 | e2.0 | 27 | 66 | 22 | 4.4 | 0.37 | 0.18 | 0.13 |
| 29 | 23 | 7.8 | e3.0 | e2.1 | --- | 43 | 66 | 21 | 4.1 | 0.35 | 0.22 | 0.14 |
| 30 | 19 | 8.6 | e3.0 | e2.1 | --- | 49 | 63 | 18 | 3.3 | 0.30 | 0.22 | 0.19 |
| 31 | 20 | --- | e2.8 | e2.0 | --- | 44 | --- | 13 | --- | 0.26 | 0.22 | --- |
| TOTAL | 357.4 | 457.5 | 198.0 | 71.20 | 59.5 | 257.0 | 2145 | 1510 | 200.0 | 54.88 | 6.28 | 3.11 |
| MEAN | 11.53 | 15.25 | 6.387 | 2.297 | 2.125 | 8.290 | 71.50 | 48.71 | 6.667 | 1.770 | 0.203 | 0.104 |
| MAX | 24 | 25 | 9.9 | 2.9 | 2.4 | 49 | 89 | 72 | 11 | 5.0 | 0.27 | 0.21 |
| MIN | 6.0 | 6.0 | 2.8 | 2.0 | 1.8 | 2.0 | 38 | 13 | 3.3 | 0.26 | 0.16 | 0.04 |
| AC-FT | 709 | 907 | 393 | 141 | 118 | 510 | 4250 | 3000 | 397 | 109 | 12 | 6.2 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1974 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 9.476 | 9.682 | 4.403 | 1.136 | 5.871 | 139.8 | 189.2 | 60.08 | 33.41 | 51.01 | 24.45 | 15.05 |
| MAX | 133 | 86.9 | 29.1 | 9.72 | 45.9 | 572 | 1300 | 414 | 252 | 389 | 190 | 153 |
| (WY) | 1995 | 2001 | 1995 | 2000 | 1998 | 1995 | 1997 | 1999 | 2001 | 1993 | 1999 | 1994 |
| MIN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003 | 0.096 | 0.038 | 0.017 | 0.000 | 0.000 | 0.000 |
| (WY) | 1974 | 1977 | 1977 | 1974 | 1974 | 1991 | 1991 | 1977 | 1977 | 1985 | 1976 | 1976 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1974 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 42080.8 | | 5319.87 | | | |
| ANNUAL MEAN | 115.3 | | 14.57 | | 45.41 | |
| HIGHEST ANNUAL MEAN | | | | | 149 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 0.035 | 1977 |
| HIGHEST DAILY MEAN | 940 | Mar 23 | 89 | Apr 19 | 2760 | Apr 19 1997 |
| LOWEST DAILY MEAN | 2.8 | Dec 31 | 0.04 | Sep 8 | 0.00 | Oct 1 1973 |
| ANNUAL SEVEN-DAY MINIMUM | 3.0 | Dec 25 | 0.08 | Sep 3 | 0.00 | Oct 1 1973 |
| MAXIMUM PEAK FLOW | | | | | 3400 | Apr 19 1997 |
| MAXIMUM PEAK STAGE | | | | | 11.70 | Mar 17 1995 |
| ANNUAL RUNOFF (AC-FT) | 83470 | | 10550 | | 32900 | |
| 10 PERCENT EXCEEDS | 432 | | 59 | | 90 | |
| 50 PERCENT EXCEEDS | 23 | | 4.3 | | 2.3 | |
| 90 PERCENT EXCEEDS | 5.0 | | 0.18 | | 0.00 | |

e Estimated

06469400 PIPESTEM CREEK NEAR PINGREE, ND--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 13... | 1255 | 7.2 | -- | -- | -- | 1710 | 1.5 | .5 | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 05... | 1340 | 2.2 | -- | -- | -- | 1960 | 2.0 | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 10... | 0915 | 78 | 7.7 | 7.6 | 791 | 767 | 2.0 | 1.0 | 270 | 51.0 | 35.0 | 16.0 | 1 |
| JUN | | | | | | | | | | | | | |
| 20... | 1120 | 9.3 | -- | -- | -- | 1590 | 27.0 | 21.8 | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 30... | 1115 | .33 | 8.4 | 8.0 | 1500 | 1520 | 27.5 | 24.7 | 540 | 92.0 | 76.0 | 18.0 | 3 |
| AUG | | | | | | | | | | | | | |
| 21... | 1015 | .21 | -- | -- | -- | -- | 30.0 | 19.9 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 05... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 10... | 50.0 | 27 | 170 | 11.0 | .10 | 220 | 114 | 539 | 486 | 3.0 | 130 | 2 | 50 |
| JUN | | | | | | | | | | | | | |
| 20... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 30... | 150 | 37 | 402 | 24.0 | .20 | 470 | .99 | 1110 | 1070 | 9.0 | 30 | <1 | 100 |
| AUG | | | | | | | | | | | | | |
| 21... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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) |
|---|---|---|---|---|---|
| DEC | | | | | |
| 13... | -- | -- | -- | -- | -- |
| FEB | | | | | |
| 05... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 10... | 310 | <.10 | <1 | <1 | 270 |
| JUN | | | | | |
| 20... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 30... | 400 | .10 | 2 | <1 | 460 |
| AUG | | | | | |
| 21... | -- | -- | -- | -- | -- |

< Less than

## 06469820 PIPESTEM RESERVOIR NEAR JAMESTOWN, ND

LOCATION.--Lat 46°57'44", long 98°45'11", in NW1/4NW1/4 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 $mi^2$, approximately, of which about 610 $mi^2$ 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 National Geodetic Vertical Datum of 1929.

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, capacity table dated January 1993. Elevations affected by wind.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 103,820 acre-ft, May 10, 1997, elevation, 1,487.01 ft; minimum contents, 6,730 acre-ft, Feb. 17, 1993, elevation, 1,439.65 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 11,480 acre-ft, May 16, elevation, 1,445.26 ft; minimum contents, 8,460 acre-ft, Sept. 10, elevation, 1,441.91 ft.

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Elevation (feet) | Contents (acre-feet) | Change in contents (acre-feet) |
|---|---|---|---|
| Sept. 30 | 1,442.12 | 8,630 | -- |
| Oct. 31 | 1,442.66 | 9,080 | +450 |
| Nov. 30 | 1,442.79 | 9,190 | +110 |
| Dec. 31 | 1,442.68 | 9,100 | -90 |
| CAL YR 2001 | -- | -- | -1,240 |
| Jan. 31 | 1,442.69 | 9,100 | 0 |
| Feb. 28 | 1,442.74 | 9,150 | +50 |
| Mar. 31 | 1,442.89 | 9,270 | +120 |
| Apr. 30 | 1,444.99 | 11,210 | +1,940 |
| May 31 | 1,444.58 | 10,810 | -400 |
| June 30 | 1,443.66 | 9,950 | -860 |
| July 31 | 1,443.26 | 9,600 | -350 |
| Aug. 31 | 1,442.50 | 8,940 | -660 |
| Sept. 30 | 1,442.46 | 8,910 | -30 |
| WTR YR 2002 | -- | -- | +280 |

## 06470000 JAMES RIVER AT JAMESTOWN, ND

LOCATION.--Lat 46°53'22", long 98°40'58", in NW$^1/_4$NE$^1/_4$ 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$^2$, approximately, of which about 1,650 mi$^2$ 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 National Geodetic Vertical Datum of 1929. 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 estimated daily discharges, which are 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 186 | 8.7 | 18 | e10 | e9.0 | e13 | 31 | 140 | 79 | e36 | 26 | 28 |
| 2 | 122 | 12 | 18 | e9.5 | e8.7 | e13 | e38 | 140 | 80 | e33 | 22 | 38 |
| 3 | 56 | 13 | 20 | e9.0 | e8.5 | e12 | e39 | 141 | 79 | e29 | 23 | 15 |
| 4 | 50 | 14 | 20 | e8.0 | e8.4 | e12 | e41 | 141 | 79 | 32 | 24 | 7.5 |
| 5 | 50 | 15 | 19 | e7.5 | e8.3 | e12 | 42 | 141 | 75 | 30 | 24 | 5.4 |
| 6 | 50 | 17 | 18 | e7.0 | e8.2 | e12 | 46 | 141 | 80 | 26 | 24 | 4.9 |
| 7 | 50 | 20 | 18 | e7.0 | e8.4 | e13 | 49 | 141 | 79 | 40 | 25 | 4.4 |
| 8 | 51 | 22 | 18 | e7.5 | e8.3 | e14 | 51 | 154 | 78 | 34 | 22 | 4.0 |
| 9 | 56 | 21 | 18 | e8.0 | e8.2 | e14 | 61 | 143 | 78 | 32 | 21 | 11 |
| 10 | 88 | 22 | 18 | e7.7 | e8.0 | e13 | 63 | 142 | 71 | 33 | 20 | 31 |
| 11 | 55 | 22 | 18 | e7.5 | e8.2 | e13 | 61 | 143 | 54 | 27 | 23 | 31 |
| 12 | 52 | 22 | 17 | e8.0 | e8.5 | e14 | 63 | 143 | 53 | 26 | 24 | 31 |
| 13 | 44 | 22 | 17 | e8.4 | e8.5 | e15 | 63 | 140 | 54 | 26 | 23 | 32 |
| 14 | 39 | 22 | 16 | e8.8 | e8.5 | e14 | 62 | 140 | 54 | 26 | 19 | 32 |
| 15 | 39 | 19 | 16 | e9.4 | e8.7 | e13 | 76 | 141 | 53 | 28 | 14 | 32 |
| 16 | 44 | 20 | 16 | e9.5 | e9.0 | e13 | 99 | 141 | 53 | 38 | 22 | 32 |
| 17 | 46 | 20 | 13 | e9.6 | e9.5 | e14 | 98 | 140 | 53 | 40 | 23 | 32 |
| 18 | 46 | 21 | e14 | e9.6 | e10 | e15 | 111 | 140 | 54 | 50 | 14 | 32 |
| 19 | 46 | 22 | e14 | e9.6 | e10 | e16 | 100 | 139 | 57 | 42 | 13 | 32 |
| 20 | 46 | 21 | e14 | e9.6 | e10 | e17 | 99 | 137 | 53 | 42 | 12 | 32 |
| 21 | 46 | 21 | e14 | e9.6 | e11 | e16 | 99 | 140 | 54 | 76 | 12 | 31 |
| 22 | 46 | 20 | e14 | e9.5 | e11 | e17 | 98 | 141 | 54 | 47 | 10 | 32 |
| 23 | 47 | 20 | e14 | e9.5 | e11 | e17 | 99 | 123 | 107 | 43 | 9.8 | 32 |
| 24 | 26 | e19 | e13 | e9.5 | e13 | 17 | 98 | 105 | 57 | 42 | 8.2 | 32 |
| 25 | 12 | e19 | e14 | e9.3 | e16 | 17 | 118 | 106 | e51 | 40 | 7.1 | 32 |
| 26 | 8.7 | 19 | e14 | e8.8 | e15 | 16 | 140 | 106 | e48 | 27 | 6.5 | 32 |
| 27 | 8.0 | 18 | e13 | e8.8 | e14 | 19 | 144 | 107 | e46 | 27 | 6.2 | 32 |
| 28 | 7.6 | 19 | e12 | e9.0 | e14 | 25 | 142 | 104 | e44 | 27 | 6.3 | 32 |
| 29 | 7.3 | 18 | e11 | e9.5 | --- | 24 | 141 | 81 | e43 | 28 | 6.5 | 33 |
| 30 | 8.5 | 18 | e11 | e9.2 | --- | 22 | 140 | 80 | e40 | 24 | 9.1 | 34 |
| 31 | 11 | --- | e11 | e9.0 | --- | 22 | --- | 79 | --- | 25 | 12 | --- |
| TOTAL | 1444.1 | 566.7 | 481 | 272.9 | 279.9 | 484 | 2512 | 4000 | 1860 | 1076 | 511.7 | 789.2 |
| MEAN | 46.58 | 18.89 | 15.52 | 8.803 | 9.996 | 15.61 | 83.73 | 129.0 | 62.00 | 34.71 | 16.51 | 26.31 |
| MAX | 186 | 22 | 20 | 10 | 16 | 25 | 144 | 154 | 107 | 76 | 26 | 38 |
| MIN | 7.3 | 8.7 | 11 | 7.0 | 8.0 | 12 | 31 | 79 | 40 | 24 | 6.2 | 4.0 |
| AC-FT | 2860 | 1120 | 954 | 541 | 555 | 960 | 4980 | 7930 | 3690 | 2130 | 1010 | 1570 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 69.37 | 36.77 | 11.71 | 5.715 | 11.77 | 84.33 | 276.7 | 236.6 | 176.8 | 119.6 | 96.95 | 79.97 |
| MAX | 946 | 568 | 144 | 47.9 | 111 | 731 | 2434 | 2559 | 1266 | 1024 | 761 | 908 |
| (WY) | 1994 | 2001 | 2001 | 1995 | 1930 | 1966 | 1950 | 1950 | 1997 | 1995 | 1995 | 1993 |
| MIN | 0.29 | 0.35 | 0.66 | 0.29 | 0.60 | 1.74 | 1.00 | 1.06 | 1.27 | 0.67 | 0.23 | 0.20 |
| (WY) | 1990 | 1939 | 1939 | 1991 | 1939 | 1944 | 1939 | 1939 | 1931 | 1933 | 1933 | 1933 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1928 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 141640.8 | | 14277.5 | | | |
| ANNUAL MEAN | 388.1 | | 39.12 | | 100.6 | |
| HIGHEST ANNUAL MEAN | | | | | 521 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 2.38 | 1938 |
| HIGHEST DAILY MEAN | 1320 | May 6 | 186 | Oct 1 | 6170 | May 13 1950 |
| LOWEST DAILY MEAN | 7.3 | Oct 29 | 4.0 | Sep 8 | 0.00 | Jun 28 1933 |
| ANNUAL SEVEN-DAY MINIMUM | 8.5 | Oct 26 | 7.1 | Aug 24 | 0.00 | Oct 26 1989 |
| MAXIMUM PEAK FLOW | | | 234 | Jun 23 | 6390 | May 13 1950 |
| MAXIMUM PEAK STAGE | | | 5.10 | Jun 23 | a15.82 | May 13 1950 |
| INSTANTANEOUS LOW FLOW | | | 4.0 | Sep 8 | 0.00 | Jun 28 1933 |
| ANNUAL RUNOFF (AC-FT) | 280900 | | 28320 | | 72910 | |
| 10 PERCENT EXCEEDS | 1210 | | 105 | | 307 | |
| 50 PERCENT EXCEEDS | 105 | | 22 | | 8.8 | |
| 90 PERCENT EXCEEDS | 18 | | 8.5 | | 1.3 | |

a Site and datum then in use
e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 18... | 1320 | 44 | -- | -- | -- | 1090 | 14.5 | 11.0 | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 13... | 1010 | 17 | -- | -- | -- | 1430 | -2.5 | .5 | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 05... | 1100 | 8.1 | -- | -- | -- | 1530 | -5.0 | .5 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 11... | 0940 | 65 | -- | -- | -- | 1350 | 5.0 | 4.5 | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 22... | 1000 | 141 | 8.5 | 8.5 | 1140 | 1220 | 16.0 | 14.0 | 450 | 77.0 | 62.0 | 15.0 | 2 |
| JUL | | | | | | | | | | | | | |
| 19... | 1000 | 42 | 8.1 | 7.9 | 1210 | 1230 | 26.5 | 25.0 | 440 | 78.0 | 59.0 | 15.0 | 2 |
| AUG | | | | | | | | | | | | | |
| 01... | 1030 | 22 | -- | -- | -- | -- | 12.0 | 8.5 | -- | -- | -- | -- | -- |
| 22... | 1430 | 9.2 | -- | -- | -- | -- | 22.0 | 18.6 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | | |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 05... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 22... | 110 | 34 | 339 | 19.0 | .20 | 350 | 332 | 874 | 838 | 4.0 | 100 | <1 | 80 |
| JUL | | | | | | | | | | | | | |
| 19... | 110 | 34 | 326 | 24.0 | .20 | 350 | 96.8 | 852 | 833 | 7.0 | 50 | <1 | 70 |
| AUG | | | | | | | | | | | | | |
| 01... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 22... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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 | | | | | |
| 18... | -- | -- | -- | -- | -- |
| DEC | | | | | |
| 13... | -- | -- | -- | -- | -- |
| FEB | | | | | |
| 05... | -- | -- | -- | -- | -- |
| APR | | | | | |
| 11... | -- | -- | -- | -- | -- |
| MAY | | | | | |
| 22... | 570 | <.10 | 2 | <1 | 430 |
| JUL | | | | | |
| 19... | 1200 | .30 | 2 | <1 | 440 |
| AUG | | | | | |
| 01... | -- | -- | -- | -- | -- |
| 22... | -- | -- | -- | -- | -- |

< Less than

## 06470500 JAMES RIVER AT LAMOURE, ND

LOCATION.--Lat 46°21'20", long 98°18'15", in NE$^{1}/_{4}$NE$^{1}/_{4}$ 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$^2$, approximately, of which about 2,600 mi$^2$ 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 National Geodetic Vertical Datum of 1929. See WSP 1729 or 1917 for history of changes prior to Apr. 19, 1950.

REMARKS.--Records fair except for estimated daily discharges, which are poor. 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 248 | 21 | 34 | e13 | e11 | e19 | e41 | 211 | 105 | 51 | 112 | 45 |
| 2 | 253 | 17 | 33 | e12 | e11 | e18 | e40 | 202 | 97 | 45 | 92 | 45 |
| 3 | 234 | 18 | 29 | e12 | e11 | e17 | e38 | 187 | 96 | 38 | 90 | 43 |
| 4 | 160 | 18 | 29 | e11 | e11 | e17 | e41 | 217 | 95 | 29 | 84 | 54 |
| 5 | 100 | 17 | 29 | e10 | e11 | e17 | e50 | 206 | 94 | 26 | 74 | 69 |
| 6 | 54 | 19 | 27 | e9.5 | e11 | e17 | e57 | 202 | 93 | 34 | 67 | 59 |
| 7 | 46 | 23 | 27 | e9.8 | e11 | e17 | e65 | 202 | 92 | 39 | 65 | 43 |
| 8 | 47 | 13 | 26 | e10 | e11 | e16 | e72 | 216 | 81 | 49 | 64 | 45 |
| 9 | 51 | 22 | 23 | e11 | e12 | e16 | e80 | 230 | 98 | 56 | 69 | 39 |
| 10 | 59 | 23 | 23 | e11 | e12 | e16 | e90 | 222 | 114 | 108 | 71 | 36 |
| 11 | 61 | 22 | 22 | e10 | e13 | e17 | 100 | 235 | 93 | 67 | 63 | 37 |
| 12 | 97 | 25 | e22 | e10 | e13 | e18 | 110 | 230 | 90 | 49 | 63 | 38 |
| 13 | 87 | 24 | e22 | e11 | e14 | e20 | 113 | 234 | 82 | 44 | 58 | 44 |
| 14 | 76 | 25 | e22 | e12 | e14 | e21 | 116 | 217 | 61 | 37 | 55 | 64 |
| 15 | 63 | 28 | e22 | e12 | e15 | e23 | 117 | 235 | 59 | 32 | 59 | 59 |
| 16 | 50 | 26 | e21 | e13 | e15 | e25 | 112 | e225 | 58 | 31 | 54 | 66 |
| 17 | 49 | 26 | e22 | e13 | e16 | e27 | 111 | e220 | 55 | 29 | 66 | 60 |
| 18 | 50 | 30 | e22 | e13 | e16 | e28 | 153 | e215 | 56 | 105 | 57 | 69 |
| 19 | 50 | 24 | e22 | e13 | e17 | e29 | 158 | e210 | 59 | 163 | 56 | 67 |
| 20 | 52 | 27 | e22 | e13 | e18 | e30 | 172 | e205 | 53 | 100 | 62 | 64 |
| 21 | 49 | 29 | e21 | e13 | e18 | e30 | 172 | e200 | 53 | 366 | 61 | 65 |
| 22 | 48 | 29 | e21 | e12 | e18 | e29 | 155 | 207 | 58 | 368 | 57 | 60 |
| 23 | 51 | 31 | e20 | e12 | e19 | e28 | 166 | 219 | 58 | 273 | 55 | e60 |
| 24 | 61 | 39 | e19 | e12 | e20 | e27 | 163 | 204 | 68 | 276 | 52 | e60 |
| 25 | 44 | 23 | e18 | e12 | e21 | e27 | 146 | 206 | 97 | 234 | 48 | e60 |
| 26 | 40 | 35 | e17 | e11 | e21 | e27 | 138 | 166 | 119 | 194 | 46 | e60 |
| 27 | 31 | e25 | e16 | e11 | e20 | e30 | 148 | 154 | 75 | 177 | 42 | e60 |
| 28 | 27 | e20 | e16 | e12 | e19 | e37 | 194 | 150 | 54 | 163 | 44 | e60 |
| 29 | 17 | e22 | e15 | e12 | --- | e45 | 220 | 149 | 51 | 152 | 44 | e60 |
| 30 | 17 | 25 | e15 | e12 | --- | e43 | 214 | 153 | 60 | 136 | 40 | e60 |
| 31 | 21 | --- | e14 | e12 | --- | e42 | --- | 121 | --- | 123 | 40 | --- |
| TOTAL | 2293 | 726 | 691 | 360.3 | 419 | 773 | 3552 | 6250 | 2324 | 3594 | 1910 | 1651 |
| MEAN | 73.97 | 24.20 | 22.29 | 11.62 | 14.96 | 24.94 | 118.4 | 201.6 | 77.47 | 115.9 | 61.61 | 55.03 |
| MAX | 253 | 39 | 34 | 13 | 21 | 45 | 220 | 235 | 119 | 368 | 112 | 69 |
| MIN | 17 | 13 | 14 | 9.5 | 11 | 16 | 38 | 121 | 51 | 26 | 40 | 36 |
| AC-FT | 4550 | 1440 | 1370 | 715 | 831 | 1530 | 7050 | 12400 | 4610 | 7130 | 3790 | 3270 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 110.8 | 68.09 | 27.54 | 16.26 | 21.47 | 194.1 | 444.6 | 353.4 | 268.5 | 216.3 | 146.5 | 121.4 |
| MAX | 1008 | 574 | 168 | 75.1 | 135 | 1202 | 3209 | 3114 | 1399 | 1165 | 894 | 939 |
| (WY) | 1994 | 2001 | 2001 | 1995 | 2000 | 1966 | 1997 | 1950 | 2001 | 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 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1950 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 186991 | | 24543.3 | | | |
| ANNUAL MEAN | 512.3 | | 67.24 | | 161.6 | |
| HIGHEST ANNUAL MEAN | | | | | 786 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 11.7 | 1990 |
| HIGHEST DAILY MEAN | 2610 | Apr 10 | 368 | Jul 22 | 6420 | Apr 14 1969 |
| LOWEST DAILY MEAN | 13 | Nov 8 | 9.5 | Jan 6 | 0.00 | Jul 15 1973 |
| ANNUAL SEVEN-DAY MINIMUM | 16 | Dec 25 | 10 | Jan 5 | 0.01 | Jul 17 1973 |
| MAXIMUM PEAK FLOW | | | 457 | Jul 21 | 6800 | Apr 14 1969 |
| MAXIMUM PEAK STAGE | | | 7.36 | Jul 21 | 16.17 | Apr 14 1969 |
| INSTANTANEOUS LOW FLOW | | | | | 0.00 | Jul 15 1973 |
| ANNUAL RUNOFF (AC-FT) | 370900 | | 48680 | | 117100 | |
| 10 PERCENT EXCEEDS | 1390 | | 190 | | 474 | |
| 50 PERCENT EXCEEDS | 165 | | 44 | | 31 | |
| 90 PERCENT EXCEEDS | 23 | | 13 | | 7.3 | |

e Estimated

06470500 JAMES RIVER AT LAMOURE, ND--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MAY | | | | | | | | | | | | | |
| 01... | 1105 | 218 | 8.8 | -- | 1160 | 1190 | 5.0 | 9.0 | 460 | 87.0 | 60.0 | 16.0 | 2 |
| JUN | | | | | | | | | | | | | |
| 14... | 1545 | 63 | -- | -- | -- | 1250 | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 31... | 1700 | 125 | 8.6 | --e | 849 | 840 | 28.0 | 24.9 | 290 | 60.0 | 35.0 | 19.0 | 2 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MAY | | | | | | | | | | | | | |
| 01... | 100 | 31 | 358 | 26.0 | .10 | 340 | 517 | 879 | 845 | 4.0 | 50 | <1 | 80 |
| JUN | | | | | | | | | | | | | |
| 14... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 31... | 65.0 | 31 | 250 | 26.0 | .20 | 180 | 19.3 | 571 | 536 | 7.0 | 50 | 1 | 40 |

| Date | 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... | 530 | <.10 | <1 | <1 | 460 |
| JUN | | | | | |
| 14... | -- | -- | -- | -- | -- |
| JUL | | | | | |
| 31... | 610 | .1 | 1 | <1 | 290 |

< Less than
e Required equipment not functional/available

## 06470800 BEAR CREEK NEAR OAKES, ND

LOCATION.--Lat 46°13'31", long 98°04'17", in NE$^1/_4$NE$^1/_4$ 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$^2$, of which about 255 mi$^2$ 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 National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair except for estimated daily discharges, which are 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$^3$/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.35 | 0.40 | 0.75 | e0.19 | e0.17 | e0.49 | 1.7 | 10 | 2.0 | 0.38 | 1.4 | 0.53 |
| 2 | 0.35 | 0.39 | 0.78 | e0.19 | e0.17 | e0.38 | 1.5 | 9.5 | 1.8 | 0.32 | 1.3 | 0.38 |
| 3 | 0.33 | 0.40 | 0.78 | e0.20 | e0.19 | e0.34 | 1.3 | 8.1 | 1.6 | 0.45 | 1.2 | 0.28 |
| 4 | 0.33 | 0.40 | 0.84 | e0.19 | e0.19 | e0.33 | e1.1 | 7.8 | 1.5 | 0.72 | 1.0 | 0.27 |
| 5 | 0.32 | 0.41 | 0.91 | e0.20 | e0.17 | e0.31 | e1.2 | 7.2 | 1.4 | 0.89 | 0.76 | 0.23 |
| 6 | 0.30 | 0.42 | 0.91 | e0.21 | e0.17 | e0.32 | e1.7 | 7.0 | 1.2 | 1.2 | 0.65 | 0.24 |
| 7 | 0.30 | 0.45 | 0.88 | e0.21 | e0.20 | e0.30 | e2.7 | 6.6 | 1.2 | 1.8 | 0.56 | 0.21 |
| 8 | 0.30 | 0.42 | 0.84 | e0.21 | e0.21 | e0.29 | e3.3 | 9.4 | 0.96 | 3.0 | 0.46 | 0.16 |
| 9 | 0.31 | 0.42 | 0.82 | e0.27 | e0.24 | e0.30 | 3.3 | 12 | 0.87 | 4.9 | 0.43 | 0.16 |
| 10 | 0.50 | 0.43 | 0.82 | e0.29 | e0.24 | e0.27 | 3.4 | 9.7 | 0.90 | 40 | 0.43 | 0.21 |
| 11 | 0.88 | 0.43 | e0.80 | e0.29 | e0.27 | e0.32 | 3.2 | 11 | 0.87 | 31 | 0.40 | 0.19 |
| 12 | 0.89 | 0.45 | e0.80 | e0.29 | e0.28 | e0.45 | 2.9 | 14 | 0.74 | 20 | 0.41 | 0.17 |
| 13 | 0.69 | 0.46 | e0.74 | e0.43 | e0.26 | e0.53 | 2.9 | 15 | 0.73 | 15 | 0.38 | 0.17 |
| 14 | 0.59 | 0.46 | e0.69 | e0.47 | e0.27 | e0.53 | 3.0 | 14 | 0.65 | 11 | 0.34 | 0.17 |
| 15 | 0.45 | 0.48 | e0.67 | e0.38 | e0.28 | e0.75 | 3.5 | 13 | 0.59 | 7.7 | 0.25 | 0.11 |
| 16 | 0.34 | 0.50 | e0.65 | e0.33 | e0.30 | e1.0 | 3.9 | 11 | 0.52 | 5.3 | 0.19 | 0.08 |
| 17 | 0.32 | 0.51 | e0.63 | e0.28 | e0.38 | e1.0 | 3.5 | 8.8 | 0.49 | 4.0 | 0.30 | 0.06 |
| 18 | 0.33 | 0.62 | e0.61 | e0.22 | e0.60 | e1.2 | 3.9 | 7.4 | 0.46 | 47 | 0.28 | 0.07 |
| 19 | 0.31 | 0.54 | e0.59 | e0.20 | e0.74 | e1.2 | 3.8 | 6.3 | 0.49 | 53 | 0.24 | 0.16 |
| 20 | 0.32 | 0.53 | e0.57 | e0.19 | e0.80 | e1.2 | 3.6 | 5.2 | 0.43 | 27 | 0.22 | 0.07 |
| 21 | 0.32 | 0.55 | e0.49 | e0.20 | e0.78 | e0.94 | 3.4 | 4.9 | 0.39 | 18 | 0.21 | 0.05 |
| 22 | 0.33 | 0.57 | e0.49 | e0.20 | e0.76 | e0.74 | 3.1 | 6.2 | 0.40 | 11 | 0.25 | 0.03 |
| 23 | 0.33 | 0.57 | e0.42 | e0.19 | e0.94 | e0.73 | 3.1 | 6.9 | 1.5 | 5.4 | 0.28 | 0.07 |
| 24 | 0.41 | 0.72 | e0.33 | e0.18 | e1.2 | e0.73 | 3.0 | 5.9 | 1.6 | 2.7 | 0.22 | 0.05 |
| 25 | 0.39 | 0.62 | e0.30 | e0.18 | e1.1 | e0.75 | 2.4 | 5.3 | 1.3 | 2.5 | 0.21 | 0.04 |
| 26 | 0.35 | 0.58 | e0.26 | e0.21 | e0.92 | e0.81 | 2.2 | 4.6 | 1.0 | 2.3 | 0.22 | 0.05 |
| 27 | 0.35 | 0.65 | e0.25 | e0.20 | e0.67 | 1.1 | 2.5 | 4.0 | 0.82 | 2.0 | 0.21 | 0.06 |
| 28 | 0.37 | 0.60 | e0.25 | e0.18 | e0.57 | 1.5 | 3.0 | 3.5 | 0.64 | 1.8 | 0.21 | 0.08 |
| 29 | 0.37 | 0.63 | e0.25 | e0.16 | --- | 1.8 | 3.3 | 3.2 | 0.53 | 1.6 | 0.19 | 0.07 |
| 30 | 0.38 | 0.70 | e0.23 | e0.16 | --- | 2.1 | 6.1 | 2.8 | 0.46 | 1.4 | 0.20 | 0.07 |
| 31 | 0.38 | --- | e0.22 | e0.17 | --- | 2.0 | --- | 2.2 | --- | 1.2 | 0.32 | --- |
| TOTAL | 12.49 | 15.31 | 18.57 | 7.27 | 13.07 | 24.71 | 87.5 | 242.5 | 28.04 | 324.56 | 13.72 | 4.49 |
| MEAN | 0.403 | 0.510 | 0.599 | 0.235 | 0.467 | 0.797 | 2.917 | 7.823 | 0.935 | 10.47 | 0.443 | 0.150 |
| MAX | 0.89 | 0.72 | 0.91 | 0.47 | 1.2 | 2.1 | 6.1 | 15 | 2.0 | 53 | 1.4 | 0.53 |
| MIN | 0.30 | 0.39 | 0.22 | 0.16 | 0.17 | 0.27 | 1.1 | 2.2 | 0.39 | 0.32 | 0.19 | 0.03 |
| AC-FT | 25 | 30 | 37 | 14 | 26 | 49 | 174 | 481 | 56 | 644 | 27 | 8.9 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1977 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 2.299 | 2.413 | 3.026 | 0.554 | 1.013 | 41.10 | 86.78 | 24.53 | 12.12 | 19.11 | 4.834 | 3.533 |
| MAX | 32.9 | 45.1 | 66.7 | 10.7 | 11.3 | 142 | 679 | 168 | 142 | 179 | 60.7 | 32.8 |
| (WY) | 1999 | 1999 | 1999 | 1999 | 1998 | 1987 | 1997 | 1999 | 1998 | 1993 | 1993 | 1999 |
| MIN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.032 | 0.11 | 0.000 | 0.005 | 0.000 | 0.000 | 0.000 |
| (WY) | 1977 | 1977 | 1977 | 1977 | 1977 | 1981 | 1985 | 1981 | 1977 | 1977 | 1977 | 1977 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1977 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 7023.12 | | 792.23 | | | |
| ANNUAL MEAN | 19.24 | | 2.170 | | 16.79 | |
| HIGHEST ANNUAL MEAN | | | | | 74.3 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 0.042 | 1977 |
| HIGHEST DAILY MEAN | 385 | Apr 8 | 53 | Jul 19 | 1490 | Jun 28 1998 |
| LOWEST DAILY MEAN | 0.15 | Aug 23 | 0.03 | Sep 22 | 0.00 | Oct 1 1976 |
| ANNUAL SEVEN-DAY MINIMUM | 0.17 | Aug 18 | 0.05 | Sep 21 | 0.00 | Oct 1 1976 |
| MAXIMUM PEAK FLOW | | | 120 | Jul 18 | 1730 | Jun 28 1998 |
| MAXIMUM PEAK STAGE | | | 7.90 | Jul 18 | a13.24 | Apr 3 1997 |
| ANNUAL RUNOFF (AC-FT) | 13930 | | 1570 | | 12160 | |
| 10 PERCENT EXCEEDS | 85 | | 5.3 | | 35 | |
| 50 PERCENT EXCEEDS | 0.65 | | 0.53 | | 0.25 | |
| 90 PERCENT EXCEEDS | 0.30 | | 0.19 | | 0.00 | |

a Backwater from ice
e Estimated

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 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APR | | | | | | | | | | | | | |
| 10... | 1425 | 3.4 | -- | -- | -- | 866 | 5.5 | 3.0 | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 01... | 1400 | 11 | 8.4 | 8.1 | 1600 | 1540 | 9.0 | 10.0 | 560 | 97.0 | 78.0 | 12.0 | 2 |
| JUN | | | | | | | | | | | | | |
| 26... | 1515 | 1.0 | -- | -- | -- | 1980 | 35.0 | 30.9 | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 21... | 1650 | .23 | 8.2 | --e | 1400 | 1420 | 20.0 | 19.7 | 520 | 84.0 | 75.0 | 17.0 | 2 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APR | | | | | | | | | | | | | |
| 10... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 01... | 130 | 33 | 316 | 68.0 | .30 | 490 | 33.6 | 1140 | 1070 | 2.0 | 90 | <1 | 90 |
| JUN | | | | | | | | | | | | | |
| 26... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 21... | 120 | 33 | 319 | 73.0 | .30 | 410 | .62 | 987 | 972 | 6.0 | 40 | 1 | 80 |

| Date | 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... | -- | -- | -- | -- | -- |
| MAY | | | | | |
| 01... | 330 | <.10 | <1 | <1 | 450 |
| JUN | | | | | |
| 26... | -- | -- | -- | -- | -- |
| AUG | | | | | |
| 21... | 790 | .20 | 1 | 1 | 600 |

< Less than
e Required equipment not functional/available

## 06470830 JAMES RIVER AT OAKES, ND

LOCATION.--Lat 46°08'20", long 98°06'55", in NW$^1/_4$NE$^1/_4$NE$^1/_4$ 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$^2$, of which about 3,300 mi$^2$ is probably noncontributing.

### GAGE-HEIGHT RECORDS

PERIOD OF RECORD.--October 1982 to current year.

REMARKS.--Records fair.

GAGE.--Water-stage recorder. Datum of gage is 1,200.00 ft above National Geodetic Vertical Datum of 1929. Flow regulated by Jamestown Reservoir (station 06469000).

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 98.77 ft, Apr. 4, 1997; minimum, 88.11 ft, Sept. 4, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum gage height recorded, 91.44 ft, May 22; minimum recorded, 89.29 ft, Nov. 26.

GAGE HEIGHT DATALOGGER, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | --- | --- | 89.85 | 90.15 | 90.39 | 90.15 | 90.08 | 90.23 | 90.11 | --- | 90.19 | 90.06 |
| 2 | --- | --- | 89.90 | 90.17 | 90.41 | 90.15 | 90.05 | 90.30 | 89.92 | --- | 90.23 | 89.98 |
| 3 | --- | --- | 89.95 | 90.20 | 90.42 | 90.14 | 90.03 | 90.71 | 89.90 | 89.89 | 90.15 | 89.99 |
| 4 | --- | --- | 89.99 | 90.23 | --- | 90.14 | 90.00 | 90.49 | 89.97 | 89.88 | 89.94 | --- |
| 5 | --- | --- | 90.01 | 90.25 | --- | 90.13 | 90.01 | 90.56 | 90.01 | 90.11 | 89.91 | --- |
| 6 | --- | --- | 90.01 | 90.25 | --- | 90.14 | 90.17 | 90.19 | --- | 89.81 | 89.94 | --- |
| 7 | --- | --- | 90.00 | 90.25 | --- | 90.14 | 90.06 | 90.25 | 89.91 | 89.74 | 90.12 | 90.16 |
| 8 | --- | --- | 89.99 | 90.27 | 90.46 | --- | 90.02 | 90.34 | 89.94 | 89.66 | 90.25 | 90.16 |
| 9 | --- | --- | 89.99 | 90.27 | 90.46 | 90.17 | 90.17 | 90.46 | 90.26 | 89.78 | 90.05 | 89.85 |
| 10 | --- | --- | 89.99 | 90.27 | 90.45 | 90.16 | 89.99 | 90.54 | 90.33 | 89.84 | 90.08 | 89.90 |
| 11 | --- | --- | 89.98 | 90.27 | 90.46 | 90.18 | 90.09 | 90.47 | 90.11 | 90.05 | 89.99 | 89.91 |
| 12 | --- | --- | 89.99 | 90.27 | 90.46 | 90.19 | 90.23 | 90.55 | 90.15 | 90.23 | 89.91 | 89.91 |
| 13 | --- | --- | 89.99 | 90.26 | 90.44 | 90.20 | 90.29 | 90.53 | 89.99 | 90.26 | 89.89 | 89.93 |
| 14 | --- | --- | 89.99 | 90.27 | 90.44 | 90.21 | 90.26 | 90.67 | 89.93 | 90.26 | 89.95 | 89.77 |
| 15 | --- | 89.99 | 90.00 | 90.27 | 90.42 | 90.20 | 90.11 | 90.56 | 89.89 | 90.34 | --- | 89.93 |
| 16 | --- | 90.01 | 90.00 | 90.27 | 90.41 | 90.20 | 90.31 | 90.24 | 89.95 | 90.27 | --- | 89.95 |
| 17 | --- | 90.18 | --- | 90.27 | 90.39 | --- | 90.31 | 90.30 | 89.94 | 90.00 | --- | 90.15 |
| 18 | --- | 89.88 | --- | 90.27 | 90.38 | --- | 89.79 | 90.29 | 89.96 | 89.98 | --- | 90.10 |
| 19 | --- | 89.89 | 90.00 | 90.29 | 90.35 | 90.25 | 89.89 | 90.25 | 89.89 | 90.24 | 89.86 | 89.82 |
| 20 | --- | 90.01 | 90.01 | 90.29 | 90.33 | 90.27 | 90.05 | 90.36 | 89.93 | 90.39 | 89.87 | 89.92 |
| 21 | --- | 89.96 | 90.01 | 90.29 | 90.31 | 90.28 | 90.10 | 90.78 | 89.88 | 90.39 | 89.73 | 89.88 |
| 22 | --- | 89.85 | 90.02 | 90.30 | 90.29 | 90.26 | 90.30 | 91.10 | 90.07 | 90.47 | 89.73 | 89.85 |
| 23 | --- | 89.85 | 90.02 | 90.30 | 90.27 | 90.25 | 90.42 | 90.67 | 90.91 | 90.69 | 89.79 | 89.73 |
| 24 | --- | 89.50 | 90.02 | 90.31 | 90.24 | 90.22 | 90.13 | 90.54 | 90.83 | --- | --- | 89.93 |
| 25 | --- | 89.36 | 90.03 | 90.32 | 90.24 | 90.19 | 90.08 | 90.52 | 90.58 | --- | --- | 89.73 |
| 26 | --- | 89.34 | 90.05 | 90.32 | 90.20 | 90.17 | 90.08 | 90.43 | 90.32 | --- | --- | 89.85 |
| 27 | --- | 89.52 | 90.06 | 90.32 | 90.18 | 90.16 | 90.00 | 90.37 | 90.25 | 90.76 | 89.84 | 89.83 |
| 28 | --- | 89.64 | 90.07 | 90.33 | 90.17 | 90.20 | 90.23 | 90.39 | 90.36 | 90.64 | 89.89 | 89.66 |
| 29 | --- | 89.74 | 90.09 | 90.35 | --- | 90.25 | 90.34 | 90.36 | 90.45 | 90.58 | 89.85 | 89.88 |
| 30 | --- | 89.81 | 90.12 | 90.36 | --- | 90.25 | 90.27 | 90.35 | 90.31 | 90.44 | 89.94 | 89.85 |
| 31 | --- | --- | 90.13 | 90.37 | --- | 90.18 | --- | 90.25 | --- | 90.40 | 90.13 | --- |
| MEAN | --- | --- | --- | 90.28 | --- | --- | 90.13 | 90.45 | --- | --- | --- | --- |
| MAX | --- | --- | --- | 90.37 | --- | --- | 90.42 | 91.10 | --- | --- | --- | --- |
| MIN | --- | --- | --- | 90.15 | --- | --- | 89.79 | 90.19 | --- | --- | --- | --- |

## 06470875 DAKOTA LAKE NEAR LUDDEN, ND

LOCATION.--Lat 45°56'52", long 98°10'29", in SE$^1/_4$NE$^1/_4$NE$^1/_4$ 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 0.8 mi upstream from North Dakota-South Dakota state line.

DRAINAGE AREA.--5,480 mi$^2$, of which about 3,300 mi$^2$ are probably noncontributing.

### GAGE HEIGHT RECORDS

PERIOD OF RECORD.--August to September 2002. (Formerly published as streamflow gage James River at Dakota Lake Dam near Ludden, ND)

GAGE.--Water-stage recorder. Datum of gage is 1,280.00 ft above National Geodetic Vertical Datum of 1929.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum gage height, 17.86 ft, Apr. 6, 1997.

EXTREMES FOR CURRENT YEAR.--Maximum recorded gage height, 9.96 ft, Sept. 23 (affected by wind).

GAGE HEIGHT (FROM DATALOGGER), in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.79 |
| 2 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.79 |
| 3 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.60 |
| 4 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.41 |
| 5 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.50 |
| 6 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.58 |
| 7 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.30 |
| 8 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.38 |
| 9 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.73 | 9.74 |
| 10 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.67 | 9.61 |
| 11 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.66 | 9.55 |
| 12 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.71 | 9.51 |
| 13 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.66 | 9.48 |
| 14 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.53 | 9.63 |
| 15 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.66 | 9.36 |
| 16 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.58 | 9.40 |
| 17 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.65 | 9.15 |
| 18 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.58 | 9.36 |
| 19 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.44 | 9.77 |
| 20 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.41 | 9.59 |
| 21 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.57 | 9.60 |
| 22 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.57 | 9.57 |
| 23 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.56 | 9.66 |
| 24 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.52 | 9.28 |
| 25 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.50 | 9.57 |
| 26 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.51 | 9.46 |
| 27 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.47 | 9.50 |
| 28 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.45 | 9.65 |
| 29 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.52 | 9.42 |
| 30 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.38 | 9.52 |
| 31 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 9.19 | --- |

## 06470878 JAMES RIVER AT NORTH DAKOTA-SOUTH DAKOTA STATE LINE

LOCATION.--Lat 45°56'10", long 98°10'26", in SE$^1/_4$SE$^1/_4$ 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$^2$, approximately, revised, of which about 3,300 mi$^2$ is probably noncontributing.

### WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 2001 to September 2002. October 1981 to September 2001 equivalent discharge site formerly published as James River at Dakota Lake Dam near Ludden. October 1981 to Septebmer 1999 (gage heights only).

GAGE.--Water-stage recorder. Datum of gage is 1,200 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | e240 | e54 | e70 | e41 | e38 | e88 | e112 | e303 | e220 | e110 | e170 | 121 |
| 2 | e220 | e55 | e73 | e41 | e37 | e84 | e108 | e295 | e205 | e88 | e160 | 124 |
| 3 | e190 | e56 | e74 | e43 | e37 | e79 | e105 | e288 | e195 | e80 | e145 | 58 |
| 4 | e160 | e57 | e76 | e45 | e37 | e75 | e103 | e290 | e185 | e70 | e135 | 27 |
| 5 | e130 | e56 | e75 | e46 | e37 | e72 | e111 | e300 | e175 | e60 | e120 | 37 |
| 6 | e110 | e55 | e73 | e48 | e38 | e70 | e120 | e299 | e165 | e58 | e112 | 55 |
| 7 | e90 | e56 | e71 | e50 | e39 | e68 | e125 | e293 | e155 | e75 | e106 | 20 |
| 8 | e80 | e57 | e72 | e51 | e40 | e67 | e133 | e295 | e148 | e88 | e100 | 29 |
| 9 | e90 | e58 | e70 | e53 | e43 | e66 | e142 | e303 | e155 | e105 | 96 | 100 |
| 10 | e100 | e60 | e68 | e51 | e46 | e68 | e150 | e310 | e170 | e125 | 78 | 58 |
| 11 | e120 | e61 | e67 | e49 | e49 | e71 | e160 | e312 | e175 | e110 | 77 | 45 |
| 12 | e140 | e63 | e65 | e48 | e51 | e77 | e170 | e315 | e168 | e85 | 91 | 37 |
| 13 | e160 | e64 | e64 | e46 | e53 | e84 | e180 | e318 | e140 | e70 | 72 | 31 |
| 14 | e165 | e65 | e62 | e45 | e55 | e91 | e190 | e315 | e125 | e55 | 44 | 69 |
| 15 | e130 | e67 | e61 | e44 | e54 | e100 | e200 | e312 | e110 | e46 | 73 | 16 |
| 16 | e92 | e68 | e59 | e43 | e52 | e105 | e210 | e305 | e100 | e40 | 52 | 18 |
| 17 | e84 | e70 | e58 | e41 | e55 | e113 | e218 | e297 | e94 | e70 | 72 | 2.2 |
| 18 | e81 | e71 | e57 | e40 | e60 | e112 | e225 | e290 | e90 | e111 | 51 | 21 |
| 19 | e80 | e73 | e56 | e41 | e62 | e110 | e230 | e282 | e85 | e180 | 26 | 120 |
| 20 | e81 | e75 | e54 | e42 | e57 | e108 | e230 | e278 | e87 | e290 | 20 | 60 |
| 21 | e83 | e77 | e53 | e43 | e61 | e106 | e225 | e273 | e93 | e400 | 50 | 59 |
| 22 | e90 | e79 | e51 | e45 | e68 | e102 | e220 | e275 | e110 | e425 | 50 | 50 |
| 23 | e100 | e82 | e50 | e46 | e73 | e100 | e215 | e278 | e130 | e400 | 47 | 81 |
| 24 | e108 | e84 | e49 | e46 | e80 | e98 | e212 | e280 | e160 | e350 | 40 | 15 |
| 25 | e95 | e87 | e48 | e45 | e87 | e102 | e220 | e278 | e200 | e320 | 36 | 53 |
| 26 | e83 | e88 | e47 | e44 | e92 | e108 | e232 | e272 | e244 | e285 | 38 | 28 |
| 27 | e74 | e85 | e46 | e42 | e94 | e115 | e250 | e260 | e255 | e260 | 31 | 37 |
| 28 | e67 | e80 | e45 | e41 | e91 | e123 | e265 | e250 | e195 | e240 | 27 | 72 |
| 29 | e60 | e75 | e44 | e40 | --- | e120 | e280 | e245 | e130 | e220 | 39 | 23 |
| 30 | e57 | e69 | e43 | e39 | --- | e116 | e300 | e238 | e115 | e205 | 18 | 39 |
| 31 | e54 | --- | e42 | e38 | --- | e114 | --- | e230 | --- | e185 | 4.5 | --- |
| TOTAL | 3414 | 2047 | 1843 | 1377 | 1586 | 2912 | 5641 | 8879 | 4579 | 5206 | 2180.5 | 1505.2 |
| MEAN | 110.1 | 68.23 | 59.45 | 44.42 | 56.64 | 93.94 | 188.0 | 286.4 | 152.6 | 167.9 | 70.34 | 50.17 |
| MAX | 240 | 88 | 76 | 53 | 94 | 123 | 300 | 318 | 255 | 425 | 170 | 124 |
| MIN | 54 | 54 | 42 | 38 | 37 | 66 | 103 | 230 | 85 | 40 | 4.5 | 2.2 |
| AC-FT | 6770 | 4060 | 3660 | 2730 | 3150 | 5780 | 11190 | 17610 | 9080 | 10330 | 4330 | 2990 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 205.4 | 145.1 | 66.82 | 28.79 | 30.90 | 341.2 | 847.8 | 614.7 | 463.5 | 392.5 | 313.0 | 250.1 |
| MAX | 867 | 613 | 239 | 77.1 | 88.1 | 853 | 4617 | 2316 | 1447 | 1181 | 1143 | 1003 |
| (WY) | 1994 | 2001 | 2001 | 1995 | 2000 | 1995 | 1997 | 1997 | 1997 | 1995 | 1993 | 1999 |
| MIN | 1.86 | 0.20 | 0.28 | 0.056 | 0.62 | 26.0 | 33.4 | 9.92 | 2.12 | 0.015 | 0.000 | 0.011 |
| (WY) | 1989 | 1991 | 1991 | 1991 | 1989 | 1990 | 1990 | 1990 | 1988 | 1988 | 1988 | 1990 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1982 - 2002[a] | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 204598 | | 41169.7 | | | |
| ANNUAL MEAN | 560.5 | | 112.8 | | 309.1 | |
| HIGHEST ANNUAL MEAN | | | | | 969 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 10.3 | 1990 |
| HIGHEST DAILY MEAN | 2740 | Apr 11 | 425 | Jul 22 | 7500 | Apr 6 1997 |
| LOWEST DAILY MEAN | 28 | Feb 26 | 2.2 | Sep 17 | 0.00 | Oct 8 1981 |
| ANNUAL SEVEN-DAY MINIMUM | 28 | Feb 26 | 28 | Aug 25 | 0.00 | Jul 10 1985 |
| MAXIMUM PEAK FLOW | | | b450 | Jul 22 | 7500 | Apr 6 1997 |
| MAXIMUM PEAK STAGE | | | (c) | | d98.04 | Apr 6 1997 |
| INSTANTANEOUS LOW FLOW | | | | | 0.00 | Oct 2 1981 |
| ANNUAL RUNOFF (AC-FT) | 405800 | | 81660 | | 223900 | |
| 10 PERCENT EXCEEDS | 1490 | | 262 | | 975 | |
| 50 PERCENT EXCEEDS | 163 | | 80 | | 92 | |
| 90 PERCENT EXCEEDS | 34 | | 40 | | 0.47 | |

a Historic discharge data, water years 1982-2001, from equivalent station, James River at Dakota Lake Dam near Ludden, ND (06470875)
b About
c Not determined
d From high-water mark at current gage location
e Estimated

06470878 JAMES RIVER AT NORTH DAKOTA-SOUTH DAKOTA STATE LINE--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 2002 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MAY | | | | | | | | | | | | | |
| 21... | 1230 | -- | 8.7 | 8.4 | 1370 | 1360 | 20.0 | 14.9 | 480 | 85.0 | 66.0 | 19.0 | 3 |
| JUN | | | | | | | | | | | | | |
| 26... | 1330 | 244 | -- | -- | -- | 888 | 27.0 | 28.1 | -- | -- | -- | -- | -- |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MAY | | | | | | | | | | | | | |
| 21... | 130 | 36 | 359 | 40.0 | .20 | 390 | 937 | 947 | 4.0 | 160 | <1 | 90 | 1100 |
| JUN | | | | | | | | | | | | | |
| 26... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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... | <.10 | 3 | <1 | 420 |
| JUN | | | | |
| 26... | -- | -- | -- | -- |

< Less than

## 06471200 MAPLE RIVER AT NORTH DAKOTA-SOUTH DAKOTA STATE LINE

LOCATION.--Lat 45°56'20", long 98°27'08", in SW¼ SE¼ sec.33, T.129 N., R.62 W., Dickey County, ND, Hydrologic Unit 10160004, on left bank 0.4 mi upstream from State line, 7.8 mi northeast of Frederick, SD, and 15.7 mi upstream from mouth.

DRAINAGE AREA.--716 $mi^2$, of which about 332 $mi^2$ is probably noncontributing.

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

REVISED RECORDS.--WDR SD-86-1: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 1,365 ft above National Vertical Datum of 1929, from topographic map. Prior to June 14, 1962, nonrecording gage at site 0.4 mi downstream at datum 0.94 ft lower.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Satellite data-collection platform at station. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.00 | 0.00 | 0.00 | 0.94 | e0.90 | e1.9 | 3.4 | 9.0 | 1.3 | 0.93 | 0.31 | 0.26 |
| 2 | 0.00 | 0.00 | 0.00 | 0.88 | e0.90 | e1.8 | 3.7 | 7.8 | 1.2 | 0.76 | 0.12 | 0.23 |
| 3 | 0.00 | 0.00 | 0.00 | 0.84 | e0.90 | e1.7 | 3.4 | 6.1 | 1.0 | 0.61 | 0.09 | 0.10 |
| 4 | 0.00 | 0.00 | 0.00 | 0.80 | e0.90 | e1.6 | 3.4 | 7.6 | 0.86 | 0.39 | 0.08 | 0.05 |
| 5 | 0.00 | 0.00 | 0.00 | 0.83 | e0.90 | e1.6 | 3.2 | 7.0 | 0.66 | 0.25 | 0.04 | 0.03 |
| 6 | 0.00 | 0.00 | 0.00 | 0.85 | e0.90 | e1.6 | 2.8 | 7.4 | 0.52 | 0.20 | 0.01 | 0.02 |
| 7 | 0.00 | 0.00 | 0.00 | 0.81 | e0.95 | e1.5 | 3.7 | 7.1 | 0.48 | 0.22 | 0.00 | 0.00 |
| 8 | 0.00 | 0.00 | 0.00 | 0.86 | e1.0 | e1.5 | 3.2 | 9.1 | 0.33 | 0.20 | 0.00 | 0.00 |
| 9 | 0.00 | 0.00 | 0.18 | 1.1 | e1.2 | e1.4 | 2.9 | 9.5 | 0.25 | 0.13 | 0.00 | 0.00 |
| 10 | 0.00 | 0.00 | 2.3 | 1.1 | 1.4 | e1.4 | 3.5 | 9.1 | 0.27 | 0.19 | 0.00 | 0.00 |
| 11 | 0.00 | 0.00 | 2.5 | 1.2 | 1.8 | e1.5 | 3.1 | 9.6 | 0.27 | 0.10 | 0.00 | 0.00 |
| 12 | 0.00 | 0.00 | 2.2 | 1.3 | 1.8 | e1.7 | 3.3 | 9.7 | 0.21 | 0.07 | 0.00 | 0.00 |
| 13 | 0.00 | 0.00 | 2.0 | 1.5 | 1.9 | e2.0 | 3.4 | 10 | 0.23 | 0.04 | 0.00 | 0.00 |
| 14 | 0.00 | 0.00 | 1.8 | 1.7 | 1.9 | e2.0 | 4.4 | 9.3 | 0.19 | 0.00 | 0.00 | 0.00 |
| 15 | 0.00 | 0.00 | 1.6 | 1.7 | 1.9 | 2.1 | 6.4 | 10 | 0.15 | 0.00 | 0.00 | 0.00 |
| 16 | 0.00 | 0.00 | 1.6 | e1.7 | 1.9 | 2.5 | 5.9 | 10 | 0.11 | 0.00 | 0.00 | 0.00 |
| 17 | 0.00 | 0.00 | 1.5 | e1.7 | 2.1 | 2.7 | 5.7 | 9.8 | 0.09 | 0.00 | 0.00 | 0.00 |
| 18 | 0.00 | 0.00 | 1.6 | e1.6 | 2.5 | 3.1 | 7.8 | 9.5 | 0.07 | 0.00 | 0.00 | 0.00 |
| 19 | 0.00 | 0.00 | 1.4 | e1.6 | 2.8 | 3.5 | 6.6 | 8.6 | 0.31 | 0.00 | 0.00 | 0.00 |
| 20 | 0.00 | 0.00 | 1.3 | e1.6 | 3.0 | 4.2 | 6.7 | 7.4 | 0.46 | 0.00 | 0.00 | 0.00 |
| 21 | 0.00 | 0.00 | 1.2 | 1.6 | 2.9 | 4.3 | 7.0 | 5.1 | 0.36 | 0.00 | 0.00 | 0.00 |
| 22 | 0.00 | 0.00 | e1.2 | 1.6 | 2.7 | 4.2 | 6.5 | 5.2 | 0.31 | 0.00 | 0.00 | 0.00 |
| 23 | 0.00 | 0.00 | e1.1 | 1.5 | 2.9 | 4.5 | 7.2 | 6.3 | 0.45 | 0.00 | 0.00 | 0.00 |
| 24 | 0.00 | 0.00 | e1.1 | 1.5 | 2.7 | 4.5 | 8.0 | 5.3 | 7.5 | 0.00 | 0.00 | 0.00 |
| 25 | 0.00 | 0.00 | e1.1 | 1.5 | 2.5 | 4.1 | 7.3 | 5.2 | 18 | 0.00 | 0.00 | 0.00 |
| 26 | 0.00 | 0.00 | 1.1 | e1.5 | 2.3 | 3.9 | 7.1 | 4.5 | 12 | 0.00 | 0.00 | 0.00 |
| 27 | 0.00 | 0.00 | 1.1 | e1.4 | 2.1 | 3.9 | 9.4 | 3.8 | 6.9 | 0.00 | 0.00 | 0.00 |
| 28 | 0.00 | 0.00 | 1.1 | e1.3 | e2.0 | 4.3 | 9.4 | 3.2 | 3.3 | 0.00 | 0.00 | 0.00 |
| 29 | 0.00 | 0.00 | 1.0 | e1.1 | --- | 4.3 | 9.7 | 2.8 | 2.0 | 0.00 | 0.00 | 0.00 |
| 30 | 0.00 | 0.00 | 1.0 | e1.0 | --- | 4.3 | 9.4 | 2.2 | 1.4 | 0.00 | 0.00 | 0.00 |
| 31 | 0.00 | --- | 0.99 | e0.95 | --- | 3.8 | --- | 1.5 | --- | 0.38 | 0.00 | --- |
| TOTAL | 0.00 | 0.00 | 31.97 | 39.56 | 51.65 | 87.4 | 167.5 | 218.7 | 61.18 | 4.47 | 0.65 | 0.69 |
| MEAN | 0.000 | 0.000 | 1.03 | 1.28 | 1.84 | 2.82 | 5.58 | 7.05 | 2.04 | 0.14 | 0.021 | 0.023 |
| MAX | 0.00 | 0.00 | 2.5 | 1.7 | 3.0 | 4.5 | 9.7 | 10 | 18 | 0.93 | 0.31 | 0.26 |
| MIN | 0.00 | 0.00 | 0.00 | 0.80 | 0.90 | 1.4 | 2.8 | 1.5 | 0.07 | 0.00 | 0.00 | 0.00 |
| AC-FT | 0.00 | 0.00 | 63 | 78 | 102 | 173 | 332 | 434 | 121 | 8.9 | 1.3 | 1.4 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 2002, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 3.09 | 2.12 | 2.08 | 0.39 | 1.01 | 87.5 | 115 | 40.2 | 17.7 | 30.1 | 6.34 | 3.64 |
| MAX | 68.8 | 50.1 | 68.1 | 6.61 | 12.0 | 419 | 840 | 418 | 131 | 446 | 142 | 91.1 |
| (WY) | 1999 | 1999 | 1999 | 1999 | 1998 | 1966 | 1997 | 1999 | 1964 | 1962 | 1966 | 1999 |
| MIN | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| (WY) | 1957 | 1957 | 1957 | 1957 | 1957 | 1957 | 1959 | 1959 | 1959 | 1959 | 1959 | 1958 |

| SUMMARY STATISTICS | FOR 2001 CALENDAR YEAR | | FOR 2002 WATER YEAR | | WATER YEARS 1957 - 2002 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 16657.11 | | 663.77 | | | |
| ANNUAL MEAN | 45.6 | | 1.82 | | a25.8 | |
| HIGHEST ANNUAL MEAN | | | | | 116 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 0.000 | b1959 |
| HIGHEST DAILY MEAN | 1370 | Apr 10 | 18 | Jun 25 | 5500 | Apr 11 1969 |
| LOWEST DAILY MEAN | 0.00 | Sep 6 | 0.00 | Oct 1 | c0.00 | Oct 1 1956 |
| ANNUAL SEVEN-DAY MINIMUM | 0.00 | Sep 6 | 0.00 | Oct 1 | 0.00 | Oct 1 1956 |
| MAXIMUM PEAK FLOW | | | 22 | Jun 25 | d5930 | Apr 11 1969 |
| MAXIMUM PEAK STAGE | | | 3.94 | Jun 25 | f16.19 | Mar 29 1997 |
| ANNUAL RUNOFF (AC-FT) | 33040 | | 1320 | | 18720 | |
| 10 PERCENT EXCEEDS | 138 | | 6.4 | | 35 | |
| 50 PERCENT EXCEEDS | 1.0 | | 0.83 | | 0.10 | |
| 90 PERCENT EXCEEDS | 0.00 | | 0.00 | | 0.00 | |

a Median of annual mean discharges, 16 $ft^3/s$
b Also 1988 and 1990
c No flow for long periods in most years
d Gage height, 16.05 ft, backwater from ice
e Estimated
f Backwater from ice

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 U.S. 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 discharge and stage. 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 ($mi^2$) | Period of record | Water year 2002 maximum | | | Period of record maximum | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Date | Gage height (feet) | Discharge ($ft^3/s$) | Date | Gage height (ft) | Discharge ($ft^3/s$) |
| | | | | RED RIVER OF THE NORTH BASIN | | | | | | |
| 05052500 | Antelope Creek at Dwight, ND | Lat 46°18'41", long 96°44'03", in NW$^1/_4$ sec.8, T.133 N., R.48 W., Richland County, Hydrologic Unit 09020105, at bridge on county road, about 0.4 mi north and 0.1 mi east of Dwight. | 293 | 1944-49# 1950-73 1975 1995-2002 | 07-10-02 | [1]927.54 | [2]360 | 04-10-69 | 943.90 | 9,000 |
| 05056017 | Mauvais Coulee tributary above Brumba pool near Rock Lake, ND | Lat 48°43'29", Long 99°15'47", in NE$^1/_4$NE$^1/_4$SE$^1/_4$ sec.36, T.161 N., R.67 W., Towner County, Hydrologic Unit 09020201, on State Highway 281, 1 mi west and 4.8 mi south of Rock Lake. | 7.1 | 1998-2002 | 06-09-02 | 43.07 | [3]90 | 05-12-99<br>04-05-01 | 44.44<br>[4]45.69 | 210<br>-- |
| 05056900 | Sheyenne River tributary near Cooperstown, ND | Lat 47°27'25", long 98°00'25", in NW$^1/_4$NW$^1/_4$NW$^1/_4$ 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 1995-2002 | [5]03-31-02 | [6]0.91 | [3]20 | 04-01-69 | 9.80 | 1,000 |
| 05057100 | Baldhill Creek near Binford, ND | Lat 47°33'56", long 98°22'56", in SE$^1/_4$SW$^1/_4$SE$^1/_4$ sec.12, T.147 N., R.61 W., Griggs County, Hydrologic Unit 09020203, approximately 1.5 mi west of Binford on State Highway 65. | -- | 1996-2002 | [5]05-10-02 | 16.96 | [3]20 | 03-29-99 | 18.58 | 140 |

**Annual maximum discharge at crest-stage stations--Continued**

| Station number | Station name | Location | Drainage area ($mi^2$) | Period of record | Water year 2002 maximum | | | Period of record maximum | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Date | Gage height (feet) | Discharge ($ft^3/s$) | Date | Gage height (ft) | Discharge ($ft^3/s$) |
| | | | | RED RIVER OF THE NORTH BASIN--Continued | | | | | | |
| 05059678 | Unnamed tributary south of Tower City, ND | Lat 46°53'28", long 97°41'40", in SE$^1/_4$SW$^1/_4$ sec.36, T.140 N., R.56 W., Barnes County, Hydrologic Unit 09020205, 2 mi southwest of Tower City. | -- | 2000-02 | [5]07-09-02 | 40.29 | [3]40 | [5]04-08-01 | 43.88 | [3]400 |
| 05060470 | Rush River near Hunter, ND | Lat 47°09'07", long 97°20'22", in SE$^1/_4$SW$^1/_4$SW$^1/_4$ 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. | 22.1 | 1996-2002 | 07-09-02 | 15.83 | [3]20 | 04-07-01 | 18.73 | [3]250 |
| 05065810 | Middle Branch Goose River tributary near Pickert, ND | Lat 47°25'03", long 97°42'30", in SE$^1/_4$SE$^1/_4$ sec.36, T.146 N., R.56 W., Steele County, Hydrologic Unit 09020109, on county highway 11, 5 mi southeast of Pickert. | -- | 1996-2002 | 07-11-02 | 35.81 | [3]140 | [8]06-20-00 | 37.10 | 310 |
| 05082500 | Red River of the North at Grand Forks, ND | Lat 47°56'34", long 97°03'10", in SW$^1/_4$NE$^1/_4$ 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#<br>1987-2002 | 07-13-02<br>07-14-02 | ([7])<br>38.57 | 38,000<br>([9]) | 04-18-97 | ([8]) | 137,000 |
| 05083580 | Middle Branch Forest River tributary near Adams, ND | Lat 48°22'10", long 98°09'00", in NW$^1/_4$NW$^1/_4$NE$^1/_4$ sec.6, T.156 N., R.58 W., Walsh County, Hydrologic Unit 09020308, approximately 3 mi south and 3.4 mi west of Adams. | -- | 1999-2002 | 08-29-02 | 41.85 | 66 | 04-08-99<br>04-06-01 | 42.52<br>43.04 | [3]100<br>([4]) |

**Annual maximum discharge at crest-stage stations--Continued**

| Station number | Station name | Location | Drainage area ($mi^2$) | Period of record | Water year 2002 maximum | | | Period of record maximum | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Date | Gage height (feet) | Discharge ($ft^3/s$) | Date | Gage height (ft) | Discharge ($ft^3/s$) |
| | | | | RED RIVER OF THE NORTH BASIN--Continued | | | | | | |
| 05090025 | Willow Creek near Hensel, ND | Lat 48°39'50", long 97°38'39", in SE$^1/_4$NE$^1/_4$SE$^1/_4$ sec.19, T.160 N., R.54 W., Pembina County, Hydrologic Unit 09020310, approximately 1.8 mi south and 1 mi east of Hensel. | -- | 1999-2002 | [5]06-10-02 | 16.11 | [3]100 | 03-29-99<br>06-10-02 | 15.85<br>16.11 | [10]80<br>[3]100 |
| 05099340 | Unnamed tributary near Langdon, ND | Lat 48°41'43", long 98°27'30", in NW$^1/_4$SW$^1/_4$NW$^1/_4$ 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. | -- | 1996-2002 | [5]06-09-02 | 19.39 | [3]100 | 04-97 | -- | [3]370 |
| 05100450 | Tongue River near Osnabrock, ND | Lat 48°43'25", long 98°09'19", in SE$^1/_4$NE$^1/_4$SE$^1/_4$ sec.33, T.161 N., R.58 W., Cavalier County, Hydrologic Unit 09020313, approximately 3.5 mi north of Osnabrock. | -- | 1996-2002 | [5]07-09-02 | 17.17 | [3]200 | [5]04-08-01 | [4]18.51 | ([9]) |
| 05102490 | Red River of the North at Pembina, ND | Lat 48°58'17", long 97°14'16", in NE$^1/_4$ 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 | 1985-2002 | 06-18-02 | [11]781.63 | [3]35,500 | 04-26-97 | 794.39 | 141,000 |
| 05113520 | Long Creek tributary near Crosby, ND | 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<br>1995-2002 | 03-27-02 | 3.86 | 6.30 | 06-69 | 7.15 | 65 |
| 05116100 | Souris River tributary near Burlington, ND | Lat 48°18'04", long 101°25'13", in SW$^1/_4$ 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<br>1995-2002 | 03-28-02 | 3.40 | [3]0.50 | 03-25-97 | 8.22 | [3]67 |

**Annual maximum discharge at crest-stage stations--Continued**

| Station number | Station name | Location | Drainage area ($mi^2$) | Period of record | Water year 2002 maximum | | | Period of record maximum | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Date | Gage height (feet) | Discharge ($ft^3/s$) | Date | Gage height (ft) | Discharge ($ft^3/s$) |
| | | | | RED RIVER OF THE NORTH BASIN--Continued | | | | | | |
| 05116135 | Tasker Coulee tributary near Kenaston, ND | Lat 46°38'00", long 102°07'30", in NE$^1/_4$NE$^1/_4$ sec.2, T.159 N., R.89 W., Ward County, Hydrologic Unit 09010002, at culvert on gravel road 1.5 mi northwest of Kenaston. | 4.62 | 1996-2002 | 03-27-02 | [3]1,291.36 | [3]2 | 04-10-96 | 1,295.70 | 450 |
| 05119410 | Bonnes Coulee near Velva, ND | Lat 48°03'30", long 100°57'00", in NE$^1/_4$SW$^1/_4$ 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<br>1965<br>1971-73<br>1976-77<br>1987-2002 | 06-09-02 | 2.69 | [3]220 | 07-27-93 | 6.71 | [12]1,000 |
| 05120180 | Wintering River tributary near Kongsberg, ND | Lat 47°51'45", long 100°45'33", in NE$^1/_4$NE$^1/_4$NE$^1/_4$ sec.34, T.151 N., R.79 W., McHenry County, Hydrologic Unit 09010003, at culvert on gravel road 1 mi north and 1.9 mi east of Kongsberg. | 1.54 | 1998-2002 | 06-09-02 | 9.48 | [3]25 | 06-14-99 | 11.18 | [3]100 |
| 05123300 | Oak Creek tributary near Bottineau, ND | Lat 48°49'14", long 100°24'38", in SW$^1/_4$SW$^1/_4$SE$^1/_4$ 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<br>1959-73<br>1995-2002 | 06-09-02 | 10.77 | 190 | 07-06-55 | 16.52 | 851 |
| | | | | MISSOURI RIVER BASIN | | | | | | |
| 06332150 | White Earth River tributary near White Earth, ND | Lat 48°19'55", long 102°45'10", in S$^1/_2$ 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<br>1995-2002 | 06-22-02 | 7.03 | [3]60 | 06-05-63 | 8.40 | 107 |

**Annual maximum discharge at crest-stage stations--Continued**

| Station number | Station name | Location | Drainage area ($mi^2$) | Period of record | Water year 2002 maximum | | | Period of record maximum | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Date | Gage height (feet) | Discharge ($ft^3/s$) | Date | Gage height (ft) | Discharge ($ft^3/s$) |
| | | | | MISSOURI RIVER BASIN--Continued | | | | | | |
| 06336300 | Little Missouri River tributary near Medora, ND | Lat 46°57'05", long 103°30'20", in SE$^1/_4$ 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<br>1995-2002 | 03-27-02 | 3.00 | [3]0.30 | 06-20-60 | 10.90 | 200 |
| 06337080 | Cherry Creek tributary near Arnegard, ND | Lat 47°47'49", long 103°22'08", in SE$^1/_4$SE$^1/_4$NE$^1/_4$ sec.20, T.150 N., R.99 W., McKenzie County, Hydrologic Unit 10110205, at culverts 4 mi west and 0.5 mi south of Watford City. | 10.41 | 1999-2002 | 04-13-02 | 996.48 | [3]60 | 03-15-99 | 999.62 | [3]285 |
| 06337900 | Snake Creek tributary near Garrison, ND | 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<br>1995-2002 | -- | -- | 0 | 06-07-99 | 7.32 | [3]150 |
| 06339890 | North Creek near Werner, ND | Lat 47°24'37", long 102°30'10", in NE$^1/_4$SE$^1/_4$NE$^1/_4$ sec.3, T.145 N., R.93 W., Dunn County, Hydrologic Unit 10130201, at box culverts 3.5 mi north and 5.5 mi east of Dunn Center. | 17.6 | 1998-2002 | 03-27-02 | 994.56 | 57 | 03-16-99 | 995.56 | 620 |
| 06343000 | Heart River near South Heart, ND | Lat 46°51'56", long 102°56'53", in NE$^1/_4$SE$^1/_4$SW$^1/_4$ 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#<br>1985-2002 | 06-10-02 | 7.68 | [3]390 | 05-09-70 | 22.77 | 8,080 |

**Annual maximum discharge at crest-stage stations--Continued**

| Station number | Station name | Location | Drainage area ($mi^2$) | Period of record | Water year 2002 maximum | | | Period of record maximum | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Date | Gage height (feet) | Discharge ($ft^3/s$) | Date | Gage height (ft) | Discharge ($ft^3/s$) |
| | | | | MISSOURI RIVER BASIN--Continued | | | | | | |
| 06347090 | Tavis Creek near Glen Ullin, ND | Lat 46°47'57", long 101°51'26", in NW1/4SE1/4NW1/4 sec.1, T.138 N., R.89 W., Morton County, Hydrologic Unit 10130203, on State Highway 49, 1.5 mi southwest of Glen Ullin. | -- | 2000-02 | [5]03-28-02 | ([7]) | [3]15 | 07-27-01 | 8.26 | [3]70 |
| 06349083 | Southeast Branch Little Heart River at St. Anthony, ND | Lat 46°37'12", long 100°54'12", in SW1/4SW1/4 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. | [3]40.2 | 1996-2002 | [5]03-28-02 | 1,691.94 | [3]50 | 08-22-98 | 1,692.69 | [3]480 |
| 06351630 | Middle Fork Cedar Creek tributary near Amidon, ND | Lat 46°20'17", long 103°17'35", in SW1/4SE1/4SW1/4 sec.7, T.133 N., R.100 W., Slope County, Hydrologic Unit 10130205, at culvert 1 mi east and 10 mi south of Amidon. | 1.70 | 1998-2002 | 03-27-02 | 10.68 | [3]3.7 | 08-12-99 | 13.03 | 70 |
| 06352380 | Timber Creek tributary near New Leipzig, ND | Lat 46°12'36", long 101°57'36", in NW1/4SW1/4 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. | [3]2.8 | 1996-2002 | [5]03-28-02 | 1,593.03 | [3]70 | 07-01-97 | 1,597.02 | 740 |
| 06354450 | Beaver Creek tributary near Linton, ND | Lat 46°14'48", long 100°04'47", in SW1/4SE1/4SW1/4 sec.16, T.132 N., R.75 W., Emmons County, Hydrologic Unit 10130104, at culverts on State Highway 13, 7.25 mi east of Linton. | 4.07 | 1998-2002 | 06-26-98<br>03-08-00<br>06-10-01<br>[5]03-28-02 | 5.47<br>5.40<br>5.66<br>5.25 | [13]220<br>[13]210<br>[13]240<br>[3]190 | 07-04-99 | 6.44 | [13]330 |

**Annual maximum discharge at crest-stage stations--Continued**

| Station number | Station name | Location | Drainage area ($mi^2$) | Period of record | Water year 2002 maximum | | | Period of record maximum | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Date | Gage height (feet) | Discharge ($ft^3/s$) | Date | Gage height (ft) | Discharge ($ft^3/s$) |
| | | | | MISSOURI RIVER BASIN--Continued | | | | | | |
| 06469100 | Pipestem Creek tributary near Heaton, ND | Lat 47°27'27", long 99°34'58", in NE$^1/_4$NW$^1/_4$NW$^1/_4$ sec.22, T.146 N., R.70 W., Wells County, Hydrologic Unit 10160002, at culverts on State Highway 52, 1.5 mi south and 1.8 mi west of Heaton. | 3.59 | 1998-2002 | 04-07-02<br>04-12-02 | [4]7.01<br>6.46 | --<br>22 | 06-14-00 | 12.05 | 780 |
| 06470200 | Beaver Creek tributary near Eldridge, ND | 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<br>1995-2002 | 04-10-02 | ([7]) | [3]6 | 1973 | 5.88 | 49 |
| 06471100 | Maple Creek tributary near Edgeley, ND | Lat 46°25'00", long 98°49'42", in NE$^1/_4$SE$^1/_4$SE$^1/_4$ sec.15, T.134 N., R.65 W., LaMoure County, Hydrologic Unit 10160004, at culvert on gravel road 10.25 mi northwest of Edgeley. | [3]5.25 | 1996-2002 | 04-06-02 | 1,097.59 | 6.2 | 03-25-97 | 1,100.73 | [3]400 |
| 06471150 | South Fork Maple River tributary near Merricourt, ND | Lat 46°14'54", long 98°42'48", in NE$^1/_4$NE$^1/_4$SW$^1/_4$ sec.17, T.132 N., R.64 W., Dickey County, Hydrologic Unit 10160004, at culvert on gravel road 5.5 mi northeast of Merricourt. | [3]5.5 | 1996-2002 | 04-06-02 | 1,193.48 | [3]3 | 03-25-97 | 1,199.71 | [3]160 |

[#]Operated as a continuous-record gaging station.
[1]Observed, may have been higher, but did not exceed 928.84 ft.
[2]From measurement of discharge on July 10.
[3]Approximately.
[4]Backwater from ice and snow.
[5]On or about.
[6]From floodmark.
[7]Unknown.
[8]Maximum gage height from high-water mark, 52.43 ft, probably occurred on April 22, 1997. Gage height at time of maximum discharge not known.
[9]Not determined.
[10]Discharge for 1999 water year, based on new information, previously shown as unknown.
[11]Observed.
[12]Estimated.
[13]Based on theoretical rating developed in 2002 water year.

Miscellaneous discharge measurement sites

Measurements of streamflow at points other than gaging stations are given in the following table.

**Discharge measurements made at miscellaneous sites during water year 2002**

| Station number | Station name | Location | Drainage area ($mi^2$) | Measured previously (water years) | Measurements | |
|---|---|---|---|---|---|---|
| | | | | | Date | Dis-charge ($ft^3/s$) |
| | | RED RIVER OF THE NORTH BASIN | | | | |
| -- | Wintering River at mouth near Karlsruhe, ND | Lat 48°11'30", long 100°34'36", in NW$^1/_4$ sec.4, T.154 N., R.77 W., McHenry County, Hydrologic Unit 09010003, at bridge about 7 mi north, northeast of Karlsruhe. | -- | -- | 05-02-02 | 21.8 |
| | | | | | 05-16-02 | 27.2 |
| | | | | | 05-23-02 | 22.6 |
| | | | | | 07-16-02 | 8.60 |
| | | | | | 08-20-02 | 2.39 |
| | | | | | 09-18-02 | 1.85 |
| -- | Souris River above Wintering River near Karlsruhe, ND | Lat 48°12'14", long 100°34'57", in NW$^1/_4$ sec.33, T.155 N., R.77 W., McHenry County, Hydrologic Unit 09010003, at bridge about 7.5 mi north, northwest of Karlsruhe. | -- | -- | 05-02-02 | 140 |
| | | | | | 05-16-02 | 66.0 |
| | | | | | 05-23-02 | 36.0 |
| | | | | | 07-16-02 | 28.4 |
| | | | | | 08-20-02 | 15.8 |
| | | | | | 09-18-02 | 15.6 |
| -- | Souris River near Wintering River School | Lat 48°13'31", long 100°32'12", in SW$^1/_4$SW$^1/_4$SW$^1/_4$ sec.23, T.155 N., R.77 W., McHenry County, Hydrologic Unit 09010003, at bridge 9 mi southwest of Towner. | -- | 1997 | 05-02-02 | 165 |
| | | | | | 05-16-02 | 102 |
| | | | | | 05-23-02 | 92.0 |
| | | | | | 07-16-02 | -- |
| | | | | | 08-20-02 | 14.2 |
| | | | | | 09-18-02 | -- |
| -- | Souris River at Rosencrans Forde | Lat 48°16'57", long 100°28'57", in NW$^1/_4$NW$^1/_4$NE$^1/_4$ sec.6, T.155 N., R.76 W., McHenry County, Hydrologic Unit 09010003, at riffle about 4.5 mi southwest of Towner. | -- | -- | 05-02-02 | 0.21 |
| | | | | | 05-16-02 | 0.15 |
| | | | | | 05-23-02 | 177 |
| | | | | | 07-17-02 | 38.7 |
| | | | | | 08-20-02 | 23.2 |
| | | | | | 09-19-02 | 19.3 |
| 05121500 | Souris River near Towner, ND | Lat 48°18", long 100°27', in NE$^1/_4$ sec.29, T.156 N., R.76 W., McHenry County, Hydrologic Unit 09010003, at old gaging staion site, about 4 mi southwest of Towner. | 13,090 | 1935-40 | 05-02-02 | 1.09 |
| | | | | | 05-16-02 | 0.86 |
| | | | | | 05-23-02 | 304 |
| | | | | | 05-24-02 | 255 |
| | | | | | 07-17-02 | 40.1 |
| | | | | | 08-20-02 | 24.0 |
| | | | | | 08-21-02 | 18.5 |
| | | | | | 09-19-02 | 19.5 |
| -- | Souris River at Towner, ND | Lat 48°21'06", long 100°26'13", in SW$^1/_4$NW$^1/_4$NE$^1/_4$ sec.10, T.156 N., R.76 W., McHenry County, Hydrologic Unit 09010003, at bridge on northwest edge of Towner. | -- | 1997 | 05-02-02 | 11.2 |
| | | | | | 05-16-02 | 16.9 |
| | | | | | 05-24-02 | 401 |
| | | | | | 07-17-02 | 44.8 |
| | | | | | 08-21-02 | 22.2 |
| | | | | | 09-19-02 | 23.2 |
| -- | Souris River at Cliff Hanretty farm near Towner, ND | Lat 48°23'27", long 100°23'45", in NW$^1/_4$NW$^1/_4$SE$^1/_4$ sec.19, T.157 N., R.75 W., McHenry County, Hydrologic Unit 09010003, at bridge about 3.5 mi north of Towner. | -- | -- | 05-02-02 | 11.8 |
| | | | | | 05-03-02 | 11.1 |
| | | | | | 05-16-02 | 20.2 |
| | | | | | 05-24-02 | 427 |
| | | | | | 07-17-02 | 44.8 |
| | | | | | 08-21-02 | 17.9 |
| | | | | | 09-19-02 | 20.6 |

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.

05119410 BONNES COULEE NEAR VELVA, ND (LAT 48 03 30N LONG 100 57 00W)

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MAY 17... | 1550 | 2.4 | 8.3 | 8.3 | 2880 | 2860 | 11.0 | 16.0 | 720 | 140 | 90.0 | 14.0 | 8 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MAY 17... | 460 | 58 | 516 | 18.0 | .20 | 1200 | 14.0 | 2180 | 2230 | 2.0 | 60 | <1 | 180 |

| Date | 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 17... | 170 | <.10 | 2 | <1 | 1100 |

< Less than

06343000 HEART RIVER NEAR SOUTH HEART, ND (LAT 46 51 56N LONG 102 56 53W)

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AUG 27... | 1445 | .16 | 8.1 | 8.4 | 4270 | 4410 | 28.0 | 24.0 | 550 | 80.0 | 85.0 | 17.0 | 17 |

| Date | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AUG 27... | 910 | 78 | 738 | 29.0 | .60 | 1700 | 1.45 | 3290 | 3260 | 7.0 | 50 | 1 | 60 |

| Date | 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... | 90 | .10 | 5 | 4 | 1300 |

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS WATER-QUALITY LAKE SITES

480552098145300 McHUGH SLOUGH NEAR LAKOTA, ND

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| 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) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 02... | 0840 | .0 | 2.1 | 1470 | 8.4 | 360 | 41.0 | 62.0 | 34.0 | 4 | 190 | 51 | 438 |
| FEB | | | | | | | | | | | | | |
| 05... | 0905 | .70 | 1.9 | 2240 | 8.1 | 570 | 70.0 | 96.0 | 46.0 | 5 | 290 | 50 | 682 |
| MAY | | | | | | | | | | | | | |
| 07... | 0805 | .0 | 2.1 | 1550 | -- | 370 | 44.0 | 62.0 | 31.0 | 4 | 190 | 51 | 429 |
| JUL | | | | | | | | | | | | | |
| 30... | 0850 | .0 | 1.7 | 1560 | 8.5 | 370 | 34.0 | 69.0 | 41.0 | 5 | 220 | 53 | 461 |

| Date | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605) | NITRO-GEN, TOTAL (MG/L AS N) (00600) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 02... | 50.0 | .20 | 330 | 3.3 | <.04 | <.008 | E.03 | -- | -- | E.01 | .18 | 1030 | 970 |
| FEB | | | | | | | | | | | | | |
| 05... | 97.0 | .20 | 530 | 5.4 | .25 | E.005 | .08 | 5.2 | 5.5 | .08 | .33 | 1660 | 1540 |
| MAY | | | | | | | | | | | | | |
| 07... | 51.0 | .20 | 330 | 3.8 | <.04 | E.005 | E.05n | -- | -- | <.02 | .22 | 1070 | 966 |
| JUL | | | | | | | | | | | | | |
| 30... | 64.0 | .20 | 360 | 4.0 | <.04 | <.008 | E.04 | -- | -- | .03 | .21 | 1120 | 1070 |

| Date | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | 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 | | | | | | | | | | | |
| 02... | 43.4 | E.7 | 6.0 | 50 | 2 | 120 | 10 | <.10 | 2 | 3 | 330 |
| FEB | | | | | | | | | | | |
| 05... | 41.2 | 4.7 | 6.0 | 90 | <1 | 200 | 630 | <.10 | 1 | <1 | 550 |
| MAY | | | | | | | | | | | |
| 07... | E28.0 | E3.5 | 3.0 | 110 | <1 | 120 | 20 | <.10 | <1 | <1 | 370 |
| JUL | | | | | | | | | | | |
| 30... | E39.4 | <.1 | 7.0 | 130 | 1 | 140 | 30 | <.10 | <1 | 1 | 380 |

480552098145300 McHUGH SLOUGH NEAR LAKOTA, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DEPTH OF LAKE MAX. METERS (85310) | 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) | ICE THICK-NESS METERS (82131) | TRANS-PAR-ENCY (SECCHI DISK) (IN) (00077) | TEMPER-ATURE AIR (DEG C) (00020) | WIND DIREC-TION (DEG. FROM TRUE NORTH) (00036) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 02... | 0835 | 2.1 | .0 | 1500 | 8.3 | 13.7 | 7.4 | 76 | 717 | -- | 12.0 | 13.0 | 60 |
| 02... | 0836 | -- | .50 | 1500 | 8.3 | 13.7 | 7.0 | -- | -- | -- | -- | -- | -- |
| 02... | 0837 | -- | 1.1 | 1500 | 8.3 | 13.7 | 6.9 | -- | -- | -- | -- | -- | -- |
| 02... | 0838 | -- | 1.5 | 1500 | 8.4 | 13.7 | 6.8 | -- | -- | -- | -- | -- | -- |
| 02... | 0839 | -- | 2.1 | 1490 | 8.4 | 13.7 | 6.4 | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 05... | 0900 | 1.9 | .70 | 2270 | 7.9 | 1.4 | 8.8 | 66 | 733 | .55 | 12.0 | -3.0 | -- |
| 05... | 0902 | -- | 1.4 | 2250 | 7.9 | 1.4 | 9.4 | -- | -- | -- | -- | -- | -- |
| 05... | 0904 | -- | 1.9 | 2250 | 8.0 | 1.6 | 9.9 | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 07... | 0800 | 2.1 | .0 | 1540 | 8.4 | 4.3 | 11.3 | 91 | 734 | -- | 6.00 | 2.0 | 45 |
| 07... | 0801 | -- | .70 | 1540 | 8.4 | 4.3 | 11.2 | -- | -- | -- | -- | -- | -- |
| 07... | 0802 | -- | 1.4 | 1540 | 8.4 | 4.3 | 11.0 | -- | -- | -- | -- | -- | -- |
| 07... | 0803 | -- | 2.1 | 1530 | 8.4 | 4.3 | 10.9 | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 30... | 0845 | 1.7 | .0 | 1630 | 8.6 | 23.4 | 8.3 | 104 | 722 | -- | 4.80 | 20.0 | 330 |
| 30... | 0846 | -- | .50 | 1630 | 8.6 | 23.4 | 8.2 | -- | -- | -- | -- | -- | -- |
| 30... | 0847 | -- | 1.0 | 1630 | 8.6 | 23.4 | 8.2 | -- | -- | -- | -- | -- | -- |
| 30... | 0848 | -- | 1.5 | 1630 | 8.6 | 23.4 | 7.9 | -- | -- | -- | -- | -- | -- |
| 30... | 0849 | -- | 1.7 | 1630 | 8.6 | 23.4 | 7.9 | -- | -- | -- | -- | -- | -- |

| Date | WIND SPEED (MILES PER HOUR) (00035) |
|---|---|
| OCT | |
| 02... | 9.0 |
| 02... | -- |
| 02... | -- |
| 02... | -- |
| 02... | -- |
| FEB | |
| 05... | -- |
| 05... | -- |
| 05... | -- |
| MAY | |
| 07... | 7.0 |
| 07... | -- |
| 07... | -- |
| 07... | -- |
| JUL | |
| 30... | 11 |
| 30... | -- |
| 30... | -- |
| 30... | -- |
| 30... | -- |

< Less than
E Estimated value
n Below the non-detection value

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS WATER-QUALITY LAKE SITES

480339098101300 LAKE LORETTA NEAR MICHIGAN, ND

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| 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) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 02... | 1005 | .0 | 6.5 | 2360 | 8.7 | 610 | 87.0 | 96.0 | 42.0 | 6 | 330 | 52 | 402 |
| FEB | | | | | | | | | | | | | |
| 05... | 1030 | .70 | 5.6 | 2650 | 8.3 | 640 | 75.0 | 110 | 44.0 | 6 | 370 | 54 | 452 |
| MAY | | | | | | | | | | | | | |
| 07... | 0910 | .0 | 6.7 | 2510 | 8.4 | 570 | 67.0 | 97.0 | 41.0 | 6 | 330 | 54 | 386 |
| JUL | | | | | | | | | | | | | |
| 30... | 0955 | .0 | 6.1 | 2370 | 8.6 | 560 | 68.0 | 95.0 | 45.0 | 6 | 340 | 54 | 398 |

| Date | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605) | NITRO-GEN, TOTAL (MG/L AS N) (00600) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 02... | 140 | .20 | 770 | 1.9 | <.04 | <.008 | E.03 | -- | -- | .11 | .20 | 1680 | 1710 |
| FEB | | | | | | | | | | | | | |
| 05... | 150 | .40 | 890 | 2.1 | .07 | E.004 | .07 | 2.1 | 2.2 | .09 | .14 | 1940 | 1910 |
| MAY | | | | | | | | | | | | | |
| 07... | 140 | .20 | 800 | 2.1 | <.04 | <.008 | <.09 | -- | -- | .07 | .17 | 1740 | 1710 |
| JUL | | | | | | | | | | | | | |
| 30... | 130 | .20 | 790 | 1.9 | <.04 | <.008 | E.04 | -- | -- | .18 | .24 | 1750 | 1710 |

| Date | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | 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 | | | | | | | | | | | |
| 02... | 9.6 | <.1 | 10.0 | 40 | 2 | 150 | 10 | <.10 | 2 | 4 | 490 |
| FEB | | | | | | | | | | | |
| 05... | 5.0 | 1.1 | 8.0 | 70 | <1 | 180 | 60 | <.10 | 2 | <1 | 590 |
| MAY | | | | | | | | | | | |
| 07... | E6.0 | E.7 | 6.0 | 100 | <1 | 150 | 20 | <.10 | 3 | <1 | 530 |
| JUL | | | | | | | | | | | |
| 30... | E6.0 | E.4 | 10.0 | 80 | <1 | 150 | 40 | <.10 | 1 | 1 | 520 |

480339098101300 LAKE LORETTA NEAR MICHIGAN, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DEPTH OF LAKE MAX. METERS (85310) | 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) | ICE THICK-NESS METERS (82131) | TRANS-PAR-ENCY (SECCHI DISK) (IN) (00077) | TEMPER-ATURE AIR (DEG C) (00020) | WIND DIREC-TION (DEG. FROM TRUE NORTH) (00036) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 02... | 0955 | 6.5 | .0 | 2480 | 8.4 | 14.0 | 7.8 | 81 | 718 | -- | 36.0 | 11.5 | 90 |
| 02... | 0956 | -- | 1.0 | 2440 | 8.4 | 14.0 | 7.9 | -- | -- | -- | -- | -- | -- |
| 02... | 0957 | -- | 2.0 | 2440 | 8.4 | 14.0 | 7.8 | -- | -- | -- | -- | -- | -- |
| 02... | 0958 | -- | 3.0 | 2450 | 8.4 | 14.0 | 7.8 | -- | -- | -- | -- | -- | -- |
| 02... | 0959 | -- | 4.0 | 2440 | 8.4 | 14.0 | 7.7 | -- | -- | -- | -- | -- | -- |
| 02... | 1000 | -- | 5.0 | 2450 | 8.4 | 14.0 | 7.8 | -- | -- | -- | -- | -- | -- |
| 02... | 1001 | -- | 6.0 | 2440 | 8.4 | 14.0 | 7.7 | -- | -- | -- | -- | -- | -- |
| 02... | 1002 | -- | 6.5 | 2450 | 8.4 | 14.0 | 7.7 | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 05... | 1015 | 5.6 | .70 | 2730 | 8.3 | .6 | 11.2 | 82 | 733 | .60 | 48.0 | -4.0 | -- |
| 05... | 1017 | -- | 1.7 | 2720 | 8.3 | .5 | 11.5 | -- | -- | -- | -- | -- | -- |
| 05... | 1019 | -- | 2.7 | 2720 | 8.4 | .5 | 11.4 | -- | -- | -- | -- | -- | -- |
| 05... | 1021 | -- | 3.7 | 2700 | 8.4 | 1.0 | 11.2 | -- | -- | -- | -- | -- | -- |
| 05... | 1023 | -- | 4.7 | 2680 | 8.4 | 1.7 | 10.5 | -- | -- | -- | -- | -- | -- |
| 05... | 1025 | -- | 5.6 | 2700 | 8.4 | 1.2 | 10.6 | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 07... | 0900 | 6.7 | .0 | 2510 | 8.5 | 5.1 | 11.7 | 96 | 734 | -- | 22.8 | 4.0 | 30 |
| 07... | 0901 | -- | 1.0 | 2510 | 8.5 | 5.1 | 11.6 | -- | -- | -- | -- | -- | -- |
| 07... | 0902 | -- | 2.0 | 2510 | 8.5 | 5.1 | 11.5 | -- | -- | -- | -- | -- | -- |
| 07... | 0903 | -- | 3.0 | 2520 | 8.5 | 5.1 | 11.5 | -- | -- | -- | -- | -- | -- |
| 07... | 0904 | -- | 4.0 | 2510 | 8.5 | 5.1 | 11.4 | -- | -- | -- | -- | -- | -- |
| 07... | 0905 | -- | 5.0 | 2520 | 8.5 | 5.1 | 11.4 | -- | -- | -- | -- | -- | -- |
| 07... | 0906 | -- | 6.0 | 2520 | 8.5 | 5.1 | 11.3 | -- | -- | -- | -- | -- | -- |
| 07... | 0907 | -- | 6.7 | 2520 | 8.5 | 5.1 | 11.2 | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 30... | 0945 | 6.1 | .0 | 2490 | 8.3 | 23.3 | 7.8 | 98 | 723 | -- | 33.6 | 22.0 | 330 |
| 30... | 0946 | -- | 1.0 | 2490 | 8.3 | 23.3 | 7.8 | -- | -- | -- | -- | -- | -- |
| 30... | 0947 | -- | 2.0 | 2490 | 8.3 | 23.3 | 7.8 | -- | -- | -- | -- | -- | -- |
| 30... | 0948 | -- | 3.0 | 2490 | 8.3 | 23.3 | 7.6 | -- | -- | -- | -- | -- | -- |
| 30... | 0949 | -- | 4.0 | 2500 | 8.3 | 23.1 | 7.3 | -- | -- | -- | -- | -- | -- |
| 30... | 0950 | -- | 5.0 | 2490 | 8.3 | 22.8 | 6.5 | -- | -- | -- | -- | -- | -- |
| 30... | 0951 | -- | 6.1 | 2500 | 8.3 | 22.6 | 4.9 | -- | -- | -- | -- | -- | -- |

| Date | WIND SPEED (MILES PER HOUR) (00035) |
|---|---|
| OCT | |
| 02... | 10 |
| 02... | -- |
| 02... | -- |
| 02... | -- |
| 02... | -- |
| 02... | -- |
| 02... | -- |
| 02... | -- |
| FEB | |
| 05... | 7.0 |
| 05... | -- |
| 05... | -- |
| 05... | -- |
| 05... | -- |
| 05... | -- |
| MAY | |
| 07... | 8.0 |
| 07... | -- |
| 07... | -- |
| 07... | -- |
| 07... | -- |
| 07... | -- |
| 07... | -- |
| 07... | -- |
| JUL | |
| 30... | 9.0 |
| 30... | -- |
| 30... | -- |
| 30... | -- |
| 30... | -- |
| 30... | -- |
| 30... | -- |

< Less than
E Estimated value

ANALYSES OF SAMPLES COLLECTED AT SPIRIT LAKE RESERVATION WATER-QUALITY SITES

05055500 SHEYENNE RIVER AT SHEYENNE, ND

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 29... | 0900 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 09... | 1400 | 8.3 | 1270 | 340 | 53.3 | 50.2 | 14.0 | 4 | 173 | 51 | 485 | 11.5 | .2 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | 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) (00631) | NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605) | NITRO-GEN, TOTAL (MG/L AS N) (00600) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 29... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 09... | 29.3 | 263 | 2.5 | .28 | .102 | .33 | .43 | 2.2 | 3.0 | .02 | .65 | 942 | 888 |

| Date | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|---|---|---|
| OCT | | | | |
| 29... | <.1 | <.1 | -- | -- |
| JUL | | | | |
| 09... | E3.1 | E.3 | 19 | 211 |

< Less than
E Estimated value

475001098560300 SHEYENNE RIVER NO. 2

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 29... | 1000 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 09... | 1300 | 8.2 | 1200 | 330 | 54.6 | 47.5 | 13.1 | 4 | 157 | 50 | 441 | 11.9 | .3 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | 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) (00631) | NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605) | NITRO-GEN, TOTAL (MG/L AS N) (00600) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 29... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 09... | 31.2 | 252 | 2.3 | .12 | .081 | .56 | .64 | 2.2 | 2.9 | .03 | .59 | 890 | 836 |

| Date | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|---|---|---|
| OCT | | | | |
| 29... | .3 | <.1 | -- | -- |
| JUL | | | | |
| 09... | E1.7 | <.1 | 16 | 179 |

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E Estimated value

ANALYSES OF SAMPLES COLLECTED AT SPIRIT LAKE RESERVATION WATER-QUALITY SITES

474740098351500 SHEYENNE RIVER NO. 3

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 29... | 1030 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 09... | 1215 | 8.2 | 1110 | 310 | 53.3 | 42.9 | 13.1 | 3 | 140 | 48 | 405 | 11.3 | .2 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | 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) (00631) | NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605) | NITRO-GEN, TOTAL (MG/L AS N) (00600) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 29... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 09... | 33.8 | 231 | 2.3 | .12 | .046 | .47 | .52 | 2.1 | 2.8 | .03 | .61 | 815 | 771 |

| Date | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|---|---|---|
| OCT | | | | |
| 29... | <.1 | <.1 | -- | -- |
| JUL | | | | |
| 09... | E4.5 | E.7 | 17 | 437 |

< Less than
E Estimated value

480022098551400 DEVILS LAKE, CASINO MARINA

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | ACETO-CHLOR, WATER FLTRD REC (UG/L) (49260) | ALA-CHLOR, WATER, DISS, REC, (UG/L) (46342) | ALPHA BHC DIS-SOLVED (UG/L) (34253) | ATRA-ZINE, WATER, DISS, REC (UG/L) (39632) | METHYL AZIN-PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686) | BEN-FLUR-ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673) | BUTYL-ATE, WATER, DISS, REC (UG/L) (04028) | CAR-BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680) | CARBO-FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674) | CHLOR-PYRIFOS DIS-SOLVED (UG/L) (38933) | CYANA-ZINE, WATER, DISS, REC (UG/L) (04041) | DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC 18... | 1345 | <.004 | <.002 | <.005 | .012 | <.050 | <.010 | <.002 | <.041 | <.020 | <.005 | <.018 | <.003 |

| Date | DEETHYL ATRA-ZINE, WATER, DISS, REC (UG/L) (04040) | DI-AZINON, DIS-SOLVED (UG/L) (39572) | DI-ELDRIN DIS-SOLVED (UG/L) (39381) | 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 PARA-THION WAT FLT 0.7 U GF, REC (UG/L) (82667) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC 18... | E.004 | <.005 | <.005 | <.002 | <.02 | <.002 | <.009 | <.005 | <.003 | <.004 | <.035 | <.027 | <.006 |

| Date | METO-LACHLOR WATER DISSOLV (UG/L) (39415) | METRI-BUZIN SENCOR WATER DISSOLV (UG/L) (82630) | MOL-INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671) | NAPROP-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684) | P,P' DDE DISSOLV (UG/L) (34653) | PARA-THION, DIS-SOLVED (UG/L) (39542) | 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) | PRON-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676) | PROPA-CHLOR, WATER, DISS, REC (UG/L) (04024) | PRO-PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC 18... | <.013 | <.006 | <.002 | <.007 | <.003 | <.007 | <.002 | <.010 | <.006 | <.011 | <.004 | <.010 | <.011 |

| Date | PRO-PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685) | SI-MAZINE, WATER, DISS, REC (UG/L) (04035) | TEBU-THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670) | TER-BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665) | TER-BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675) | THIO-BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681) | TRIAL-LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678) | TRI-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661) |
|---|---|---|---|---|---|---|---|---|
| DEC 18... | <.02 | <.011 | <.02 | <.034 | <.02 | <.005 | <.002 | <.009 |

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E Estimated value

474856098465200 Wetland 11

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 25... | 1150 | 8.8 | 2430 | 450 | 28.6 | 90.8 | 56.6 | 8 | 370 | 61 | E834 | 98.9 | .2 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 25... | 25.0 | 465 | 2.8 | .04 | E.004 | <.05 | 2.7 | <.02 | .12 | 1760 | 14.6 | <.1 | 21 |

| Date | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|
| SEP 25... | 4.5 |

< Less than
E Estimated value

474953098470600 Wetland 14

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 13... | 1451 | 8.9 | 3880 | 360 | 27.9 | 69.6 | 76.7 | 18 | 772 | 79 | 648 | 384 | .2 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 13... | .7 | 967 | 2.6 | <.04 | <.008 | <.05 | <.02 | .10 | 2820 | 2690 | 10.7 | <.1 | E7 |

| Date | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|
| SEP 13... | E3.0b |

< Less than
E Estimated value
b Value was extrapolated below

475159098455900 Wetland 16

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | 1455 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 13... | 1218 | 9.0 | 2790 | 200 | 24.2 | 33.4 | 53.2 | 18 | 575 | 82 | 800 | 192 | .2 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 13... | 33.4 | 481 | 2.8 | <.04 | <.008 | <.05 | .03 | E.18 | 2010 | 1870 | 8.9 | <.1 | 95 |

| Date | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) | 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 SULFONE WAT,FLT GF 0.7U REC (UG/L) (49313) | ALDICA-RB SUL-FOXIDE, WAT,FLT GF 0.7U REC (UG/L) (49314) | ALDI-CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (49312) | ALPHA BHC DIS-SOLVED (UG/L) (34253) | ATRA-ZINE, WATER, DISS, REC (UG/L) (39632) | METHYL AZIN-PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686) | BENDIO-CARB, WATER FLTRD REC (UG/L) (50299) | BEN-FLUR-ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673) | BENOMYL WATER FLTRD REC (UG/L) (50300) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | -- | <.004 | <.007 | <.002 | <.02 | <.008 | <.04 | <.005 | .008 | <.050 | <.03 | <.010 | <.004 |
| SEP | | | | | | | | | | | | | |
| 13... | 12.3 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | BEN-SUL-FURON METHYL WAT FLT REC (UG/L) (61693) | BENTA-ZON, WATER, FLTRD, GF 0.7U REC (UG/L) (38711) | BUTYL-ATE, WATER, DISS, REC (UG/L) (04028) | CAF-FEINE, WATER FLTRD REC (UG/L) (50305) | CAR-BARYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49310) | CAR-BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680) | CARBO-FURAN, WATER, FLTRD, GF 0.7U REC (UG/L) (49309) | CARBO-FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674) | 3HYDRXY CARBO-FURAN WAT,FLT GF 0.7U REC (UG/L) (49308) | 3-KETO CARBO-FURAN WATER FLTRD REC (UG/L) (50295) | CHLOR-AMBEN, METHYL ESTER WATER FLTRD (UG/L) (61188) | CHLORI-MURON, WATER FLTRD REC (UG/L) (50306) | CHLORO-THALO-NIL, WAT,FLT GF 0.7U REC (UG/L) (49306) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | <.02 | <.01 | <.002 | <.010 | <.03 | <.041 | <.006 | <.020 | <.006 | <2 | <.02 | <.010 | <.04 |
| SEP | | | | | | | | | | | | | |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | CHLOR-PYRIFOS DIS-SOLVED (UG/L) (38933) | CLOPYR-ALID, WATER, FLTRD, GF 0.7U REC (UG/L) (49305) | CYANA-ZINE, WATER, DISS, REC (UG/L) (04041) | CY-CLOATE, WATER, DISS, REC (UG/L) (04031) | DACTHAL MONO-ACID, WAT,FLT GF 0.7U REC (UG/L) (49304) | DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682) | DEETHYL ATRA-ZINE, WATER, DISS, REC (UG/L) (04040) | DEETHYL DEISO-PROPYL ATRAZIN DISS, REC (UG/L) (04039) | DEISO-PROPYL ATRAZIN WATER, DISS, REC (UG/L) (04038) | DI-AZINON, DIS-SOLVED (UG/L) (39572) | DICAMBA WATER, FLTRD, GF 0.7U REC (UG/L) (38442) | DICHLOR PROP, WATER, FLTRD, GF 0.7U REC (UG/L) (49302) | DI-ELDRIN DIS-SOLVED (UG/L) (39381) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | <.005 | .04 | <.018 | <.01 | <.01 | <.003 | E.004 | <.01 | <.04 | <.005 | <.01 | <.01 | <.005 |
| SEP | | | | | | | | | | | | | |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| 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) | DIPHEN-AMID, WATER, DISS, REC (UG/L) (04033) | 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) | 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) | FLUMET-SULAM WATER FLTRD REC (UG/L) (61694) | FLUO-METURON WATER, FLTRD, GF 0.7U REC (UG/L) (38811) | FONOFOS WATER DISS REC (UG/L) (04095) | HYDROXY ATRA-ZINE WATER FLTRD REC (UG/L) (50355) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | <.002 | <.01 | <.03 | <.02 | <.01 | <.002 | <.009 | <.005 | <.03 | <.01 | <.03 | <.003 | <.008 |
| SEP | | | | | | | | | | | | | |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

475159098455900 Wetland 16--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | IMAZ-AQUIN WATER FLTRD REC (UG/L) (50356) | IMAZE-THAPYR WATER FLTRD REC (UG/L) (50407) | IMID-ACLOP-RID WATER FLTRD REC (UG/L) (61695) | LINDANE DIS-SOLVED (UG/L) (39341) | LINURON WATER, FLTRD, GF 0.7U REC (UG/L) (38478) | LIN-URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666) | MALA-THION, DIS-SOLVED (UG/L) (39532) | MCPA, WATER, FLTRD, GF 0.7U REC (UG/L) (38482) | MCPB, WATER, FLTRD, GF 0.7U REC (UG/L) (38487) | METAL-AXYL WATER FLTRD REC (UG/L) (50359) | METHIO-CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (38501) | METH-OMYL OXIME WATER FLTRD REC (UG/L) (61696) | METH-OMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49296) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | <.02 | <.02 | <.007 | <.004 | <.01 | <.035 | <.027 | E.01 | <.01 | <.02 | <.008 | --q | <.004 |
| SEP | | | | | | | | | | | | | |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| 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) | MET-SUL-FURON METHYL WAT FLT REC (UG/L) (61697) | 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) | NICOSUL FURON WATER FLTRD REC (UG/L) (50364) | NORFLUR AZON, WATER, FLTRD, GF 0.7U REC (UG/L) (49293) | ORY-ZALIN, WATER, FLTRD, GF 0.7U REC (UG/L) (49292) | OXAMYL OXIME WATER FLTRD REC (UG/L) (50410) | OXAMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (38866) | P,P' DDE DISSOLV (UG/L) (34653) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | <.006 | <.013 | <.006 | <.03 | <.002 | <.007 | <.01 | <.01 | <.02 | <.02 | --q | <.01 | <.003 |
| SEP | | | | | | | | | | | | | |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | PARA-THION, DIS-SOLVED (UG/L) (39542) | PEB-ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669) | PENDI-METH-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683) | PER-METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687) | PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664) | PIC-LORAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49291) | PRON-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676) | PROPA-CHLOR, WATER, DISS, REC (UG/L) (04024) | PRO-PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679) | PRO-PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685) | PRO-PHAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49236) | PROP-ICONA-ZOLE , WATER FLTRD REC (UG/L) (50471) | PRO-POXUR, WATER, FLTRD, GF 0.7U REC (UG/L) (38538) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | <.007 | <.002 | <.010 | <.006 | <.011 | <.02 | <.004 | <.010 | <.011 | <.02 | <.010 | <.02 | <.008 |
| SEP | | | | | | | | | | | | | |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | SIDURON WATER FLTRD REC (UG/L) (38548) | SI-MAZINE, WATER, DISS, REC (UG/L) (04035) | SULFO-MET-RURON METHYL WTR FLT REC (UG/L) (50337) | TEBU-THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670) | TER-BACIL, WATER, DISS, REC (UG/L) (04032) | 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-BENURON METHYL WATER FLTRD (UG/L) (61159) | TRI-CLOPYR, WATER, FLTRD, GF 0.7U REC (UG/L) (49235) | TRI-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661) | UREA 3( 4-CHLOR OPHENYL METHYL WAT FLT REC (UG/L) (61692) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | <.02 | <.011 | <.009 | <.02 | <.010 | <.034 | <.02 | <.005 | <.002 | --u | <.02 | <.009 | <.02 |
| SEP | | | | | | | | | | | | | |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 2,4-D METHYL ESTER, WATER FLTRD REC (UG/L) (50470) | 2,4-D, DIS-SOLVED (UG/L) (39732) | 2,4-DB WATER, FLTRD, GF 0.7U REC (UG/L) (38746) |
|---|---|---|---|
| DEC | | | |
| 17... | <.009 | <.02 | <.02 |
| SEP | | | |
| 13... | -- | -- | -- |

< Less than
E Estimated value
q Sample discarded: holding time exceeded
u Unable to determine-matrix interference

475234098414300 Wetland 18

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STANDARD UNITS) (00403) | SPECIFIC CONDUCTANCE LAB (US/CM) (90095) | HARDNESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DISSOLVED (MG/L AS CA) (00915) | MAGNESIUM, DISSOLVED (MG/L AS MG) (00925) | POTASSIUM, DISSOLVED (MG/L AS K) (00935) | SODIUM ADSORPTION RATIO (00931) | SODIUM, DISSOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLORIDE, DISSOLVED (MG/L AS CL) (00940) | FLUORIDE, DISSOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 11... | 1445 | 7.6 | 838 | 300 | 36.7 | 50.0 | 15.6 | 2 | 84.0 | 37 | 470 | 16.9 | .4 |

| Date | SILICA, DISSOLVED (MG/L AS SIO2) (00955) | SULFATE DISSOLVED (MG/L AS SO4) (00945) | NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608) | NITROGEN, NITRITE DISSOLVED (MG/L AS N) (00613) | NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631) | NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605) | ORTHOPHOSPHATE, DISSOLVED (MG/L AS P) (00671) | PHOSPHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301) | CHLOR-A PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70954) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 11... | 24.9 | .9 | 3.9 | .04 | <.008 | <.05 | 3.8 | E.01 | .20 | 573 | 512 | 32.0 | 3.6 |

| Date | IRON, DISSOLVED (UG/L AS FE) (01046) | MANGANESE, DISSOLVED (UG/L AS MN) (01056) |
|---|---|---|
| SEP 11... | 95 | 367 |

< Less than
E Estimated value

475303098401600 Wetland 20

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STANDARD UNITS) (00403) | SPECIFIC CONDUCTANCE LAB (US/CM) (90095) | HARDNESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DISSOLVED (MG/L AS CA) (00915) | MAGNESIUM, DISSOLVED (MG/L AS MG) (00925) | POTASSIUM, DISSOLVED (MG/L AS K) (00935) | SODIUM ADSORPTION RATIO (00931) | SODIUM, DISSOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLORIDE, DISSOLVED (MG/L AS CL) (00940) | FLUORIDE, DISSOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 11... | 1520 | 7.9 | 712 | 340 | 53.3 | 50.0 | 7.29 | 1 | 45.7 | 22 | 431 | 4.79 | .3 |

| Date | SILICA, DISSOLVED (MG/L AS SIO2) (00955) | SULFATE DISSOLVED (MG/L AS SO4) (00945) | NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608) | NITROGEN, NITRITE DISSOLVED (MG/L AS N) (00613) | NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631) | ORTHOPHOSPHATE, DISSOLVED (MG/L AS P) (00671) | PHOSPHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301) | CHLOR-A PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70954) | IRON, DISSOLVED (UG/L AS FE) (01046) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 11... | 31.1 | 1.4 | 2.4 | E.03 | <.008 | <.05 | <.02 | E.06 | 505 | 453 | 8.6 | E1.1 | 79 |

| Date | MANGANESE, DISSOLVED (UG/L AS MN) (01056) |
|---|---|
| SEP 11... | 317 |

< Less than
E Estimated value

475237098374300 Wetland 21

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 11... | 1550 | 7.8 | 719 | 270 | 54.9 | 32.6 | 9.60 | 2 | 65.7 | 34 | 422 | 4.12 | .4 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 11... | 41.1 | 5.0 | 2.7 | .34 | <.008 | <.05 | 2.4 | .15 | .22 | 532 | 468 | 3.6 | 1.4 |

| Date | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|---|
| SEP 11... | 86 | 723 |

< Less than

475325098341600 Wetland 22

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 11... | 1625 | 8.3 | 726 | 370 | 34.2 | 68.8 | 16.6 | .7 | 29.7 | 14 | 387 | 7.89 | .3 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 11... | 33.8 | 51.2 | 3.6 | <.04 | <.008 | <.05 | <.02 | .18 | 550 | 474 | 20.8 | 5.0 | E6 |

| Date | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|
| SEP 11... | 19.0 |

< Less than
E Estimated value

475127098444200 Wetland 24

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | 1445 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 13... | 1242 | 8.2 | 565 | 260 | 37.9 | 39.3 | 11.8 | .8 | 31.2 | 20 | 342 | 6.11 | .4 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 13... | 35.6 | 2.4 | 1.9 | .24 | <.008 | <.05 | 1.6 | .10 | .13 | 405 | 370 | 1.7 | <.1 |

| Date | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) | 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 SULFONE WAT,FLT GF 0.7U REC (UG/L) (49313) | ALDICA-RB SUL-FOXIDE, WAT,FLT GF 0.7U REC (UG/L) (49314) | ALDI-CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (49312) | ALPHA BHC DIS-SOLVED (UG/L) (34253) | ATRA-ZINE, WATER, DISS, REC (UG/L) (39632) | METHYL AZIN-PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686) | BENDIO-CARB, WATER FLTRD REC (UG/L) (50299) | BEN-FLUR-ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | -- | -- | <.004 | <.007 | <.002 | <.02 | <.008 | <.04 | <.005 | E.003 | <.050 | <.03 | <.010 |
| SEP | | | | | | | | | | | | | |
| 13... | 33 | 104 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | BENOMYL WATER FLTRD REC (UG/L) (50300) | BEN-SUL-FURON METHYL WAT FLT REC (UG/L) (61693) | BENTA-ZON, WATER, FLTRD, GF 0.7U REC (UG/L) (38711) | BUTYL-ATE, WATER, DISS, REC (UG/L) (04028) | CAF-FEINE, WATER FLTRD REC (UG/L) (50305) | CAR-BARYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49310) | CAR-BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680) | CARBO-FURAN, WATER, FLTRD, GF 0.7U REC (UG/L) (49309) | CARBO-FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674) | 3HYDRXY CARBO-FURAN WAT,FLT GF 0.7U REC (UG/L) (49308) | 3-KETO CARBO-FURAN WATER FLTRD REC (UG/L) (50295) | CHLOR-AMBEN, METHYL ESTER WATER FLTRD (UG/L) (61188) | CHLORI-MURON, WATER FLTRD REC (UG/L) (50306) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | <.004 | <.02 | M | <.002 | <.010 | <.03 | <.041 | <.006 | <.020 | <.006 | <2 | <.02 | <.010 |
| SEP | | | | | | | | | | | | | |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | CHLORO-THALO-NIL, WAT,FLT GF 0.7U REC (UG/L) (49306) | CHLOR-PYRIFOS DIS-SOLVED (UG/L) (38933) | CLOPYR-ALID, WATER, FLTRD, GF 0.7U REC (UG/L) (49305) | CYANA-ZINE, WATER, DISS, REC (UG/L) (04041) | CY-CLOATE, WATER, DISS, REC (UG/L) (04031) | DACTHAL MONO-ACID, WAT,FLT GF 0.7U REC (UG/L) (49304) | DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682) | DEETHYL ATRA-ZINE, WATER, DISS, REC (UG/L) (04040) | DEETHYL DEISO-PROPYL ATRAZIN DISS, REC (UG/L) (04039) | DEISO-PROPYL ATRAZIN WATER, DISS, REC (UG/L) (04038) | DI-AZINON, DIS-SOLVED (UG/L) (39572) | DICAMBA WATER, FLTRD, GF 0.7U REC (UG/L) (38442) | DICHLOR PROP, WATER, FLTRD, GF 0.7U REC (UG/L) (49302) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | <.04 | <.005 | <.01 | <.018 | <.01 | <.01 | <.003 | E.002 | <.01 | <.04 | <.005 | <.01 | <.01 |
| SEP | | | | | | | | | | | | | |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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) | DIPHEN-AMID, WATER, DISS, REC (UG/L) (04033) | 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) | 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) | FLUMET-SULAM WATER FLTRD REC (UG/L) (61694) | FLUO-METURON WATER, FLTRD, GF 0.7U REC (UG/L) (38811) | FONOFOS WATER DISS REC (UG/L) (04095) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | <.005 | <.002 | <.01 | <.03 | <.02 | <.01 | <.002 | <.009 | <.005 | <.03 | <.01 | E.01 | <.003 |
| SEP | | | | | | | | | | | | | |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

475127098444200 Wetland 24--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | HYDROXY ATRA-ZINE WATER FLTRD REC (UG/L) (50355) | IMAZ-AQUIN WATER FLTRD REC (UG/L) (50356) | IMAZE-THAPYR WATER FLTRD REC (UG/L) (50407) | IMID-ACLOP-RID WATER FLTRD REC (UG/L) (61695) | LINDANE DIS-SOLVED (UG/L) (39341) | LINURON WATER, FLTRD, GF 0.7U REC (UG/L) (38478) | LIN-URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666) | MALA-THION, DIS-SOLVED (UG/L) (39532) | MCPA, WATER, FLTRD, GF 0.7U REC (UG/L) (38482) | MCPB, WATER, FLTRD, GF 0.7U REC (UG/L) (38487) | METAL-AXYL WATER FLTRD REC (UG/L) (50359) | METHIO-CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (38501) | METH-OMYL OXIME WATER FLTRD REC (UG/L) (61696) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | <.008 | E.01 | <.02 | <.007 | <.004 | <.01 | <.035 | <.027 | <.02 | <.01 | <.02 | <.008 | --q |
| SEP | | | | | | | | | | | | | |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | METH-OMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49296) | 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) | MET-SUL-FURON METHYL WAT FLT REC (UG/L) (61697) | 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) | NICOSUL FURON WATER FLTRD REC (UG/L) (50364) | NORFLUR AZON, WATER, FLTRD, GF 0.7U REC (UG/L) (49293) | ORY-ZALIN, WATER, FLTRD, GF 0.7U REC (UG/L) (49292) | OXAMYL OXIME WATER FLTRD REC (UG/L) (50410) | OXAMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (38866) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | <.004 | <.006 | <.013 | <.006 | <.03 | <.002 | <.007 | <.01 | <.01 | <.02 | <.02 | --q | <.01 |
| SEP | | | | | | | | | | | | | |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | P,P' DDE DISSOLV (UG/L) (34653) | PARA-THION, DIS-SOLVED (UG/L) (39542) | PEB-ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669) | PENDI-METH-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683) | PER-METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687) | PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664) | PIC-LORAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49291) | PRON-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676) | PROPA-CHLOR, WATER, DISS, REC (UG/L) (04024) | PRO-PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679) | PRO-PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685) | PRO-PHAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49236) | PROP-ICONA-ZOLE , WATER FLTRD REC (UG/L) (50471) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | <.003 | <.007 | <.002 | <.010 | <.006 | <.011 | <.02 | <.004 | <.010 | <.011 | <.02 | <.010 | <.02 |
| SEP | | | | | | | | | | | | | |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | PRO-POXUR, WATER, FLTRD, GF 0.7U REC (UG/L) (38538) | SIDURON WATER FLTRD REC (UG/L) (38548) | SI-MAZINE, WATER, DISS, REC (UG/L) (04035) | SULFO-MET-RURON METHYL WTR FLT REC (UG/L) (50337) | TEBU-THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670) | TER-BACIL, WATER, DISS, REC (UG/L) (04032) | 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-BENURON METHYL WATER FLTRD (UG/L) (61159) | TRI-CLOPYR, WATER, FLTRD, GF 0.7U REC (UG/L) (49235) | TRI-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | <.008 | <.02 | <.011 | <.009 | <.02 | <.010 | <.034 | <.02 | <.005 | <.002 | --u | <.02 | <.009 |
| SEP | | | | | | | | | | | | | |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | UREA 3(4-CHLOROPHENYL METHYL WAT FLT REC (UG/L) (61692) | 2,4-D METHYL ESTER, WATER FLTRD REC (UG/L) (50470) | 2,4-D, DIS-SOLVED (UG/L) (39732) | 2,4-DB WATER, FLTRD, GF 0.7U REC (UG/L) (38746) |
|---|---|---|---|---|
| DEC | | | | |
| 17... | <.02 | <.009 | .04 | <.02 |
| SEP | | | | |
| 13... | -- | -- | -- | -- |

< Less than
E Estimated value
M Presence verified, not quantified
q Sample discarded: holding time exceeded
u Unable to determine-matrix interference

475031098440500 Wetland 25

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 13... | 1332 | 8.0 | 348 | 170 | 35.2 | 19.4 | 5.97 | .3 | 9.54 | 11 | 194 | 2.79 | .2 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 13... | 26.3 | 1.1 | 2.3 | .99 | E.004 | <.05 | 1.3 | .15 | .25 | 244 | 219 | 1.0 | .1 |

| Date | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|---|
| SEP 13... | 85 | 417 |

< Less than
E Estimated value

475055098424500 Wetland 26

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 11... | 1057 | 8.5 | 509 | 230 | 22.0 | 43.1 | 17.7 | .7 | 24.5 | 17 | 267 | 19.3 | .3 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 11... | 22.1 | 1.6 | 3.6 | <.04 | <.008 | <.05 | <.02 | .33 | 360 | 311 | 31.1 | <.1 | 23 |

| Date | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|
| SEP 11... | 5.8 |

< Less than

475001098450600 Wetland 27

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 13... | 1403 | 8.3 | 1060 | 400 | 39.0 | 73.9 | 27.3 | 2 | 96.6 | 32 | 659 | 12.7 | .2 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 13... | 43.1 | 3.3 | 2.6 | .42 | <.008 | <.05 | 2.2 | .20 | .22 | 766 | 693 | .7 | <.1 |

| Date | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|---|
| SEP 13... | 27 | 683 |

< Less than

474956098390500 Wetland 28

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 11... | 1140 | 8.4 | 729 | 400 | 33.7 | 76.4 | 12.5 | .5 | 22.8 | 11 | 460 | 5.39 | .3 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 11... | 29.3 | .5 | 3.3 | .14 | .012 | E.03 | 3.2 | <.02 | .13 | 520 | 457 | 22.6 | 4.9 |

| Date | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|---|
| SEP 11... | <10 | E2.5b |

< Less than
E Estimated value
b Value was extrapolated below

475007098513900 WL506404

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 20... | 1010 | 7.0 | 8.1 | 794 | 809 | 370 | 31.5 | 69.7 | 10.5 | 1 | 42.6 | 20 | E489 |

| Date | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 20... | 7.32 | .3 | 38.0 | 7.0 | 4.8 | .49 | .019 | E.04 | 4.3 | .06 | .33 | 541 | E36.2a |

| Date | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|---|---|
| SEP 20... | E23.9 | E5 | 13.0 |

E Estimated value
a Value was extrapolated above

475034098505700 WL506404A

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 19... | 1320 | 8.2 | 8.5 | 1060 | 1070 | 470 | 34.8 | 92.3 | 23.2 | 1 | 66.1 | 22 | E672 |

| Date | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 19... | 6.93 | .3 | 42.4 | 3.8 | 3.6 | .19 | .012 | E.03 | 3.4 | <.02 | .20 | 724 | 33.5 |

| Date | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|---|---|
| SEP 19... | <.1 | <10 | E2.4b |

< Less than
E Estimated value
b Value was extrapolated below

474916098493100 WL506410

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 25... | 1245 | 8.9 | 4340 | 530 | 26.8 | 112 | 60.1 | 14 | 727 | 72 | E693 | 767 | E.1n |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 25... | 4.2 | 521 | 2.9 | E.02 | E.007 | <.05 | .03 | .19 | 2790 | <.1 | <.1 | E25n | E3.9n |

< Less than
E Estimated value
n Below the non-detection value

474849098482000 WL506414

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 25... | 1215 | 8.6 | 4720 | 630 | 37.1 | 129 | 55.1 | 14 | 822 | 72 | E768 | 577 | E.1n |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | 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) (00631) | NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605) | NITRO-GEN, TOTAL (MG/L AS N) (00600) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 25... | 34.0 | 1010 | 3.6 | .54 | .230 | .26 | .49 | 3.0 | 4.1 | .09 | .19 | 3320 | 2.3 |

| Date | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|---|---|
| SEP 25... | <.1 | E18n | E3.6n |

< Less than
E Estimated value
n Below the non-detection value

475600098454800 WL516306

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 25... | 1115 | 8.3 | 8630 | 1800 | 102 | 379 | 86.3 | 15 | 1510 | 63 | E393 | 548 | .1 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | 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) (00631) | NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605) | NITRO-GEN, TOTAL (MG/L AS N) (00600) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 25... | 12.9 | 4160 | 2.8 | .51 | .347 | .07 | .41 | 2.3 | 3.2 | .11 | .17 | 7500 | 1.4 |

| Date | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|---|---|
| SEP 25... | <.1 | E34n | 220 |

< Less than
E Estimated value
n Below the non-detection value

ANALYSES OF SAMPLES COLLECTED AT SPIRIT LAKE RESERVATION WATER-QUALITY SITES

475303098463200 WL516319B

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | 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 SULFONE WAT,FLT GF 0.7U REC (UG/L) (49313) | ALDICA-RB SUL-FOXIDE, WAT,FLT GF 0.7U REC (UG/L) (49314) | ALDI-CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (49312) | ALPHA BHC DIS-SOLVED (UG/L) (34253) | ATRA-ZINE, WATER, DISS, REC (UG/L) (39632) | METHYL AZIN-PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686) | BENDIO-CARB, WATER FLTRD REC (UG/L) (50299) | BEN-FLUR-ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673) | BENOMYL WATER FLTRD REC (UG/L) (50300) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC 17... | 1430 | <.004 | <.007 | <.002 | <.02 | <.008 | <.04 | <.005 | E.005 | <.050 | <.03 | <.010 | <.004 |

| Date | BEN-SUL-FURON METHYL WAT FLT REC (UG/L) (61693) | BENTA-ZON, WATER, FLTRD, GF 0.7U REC (UG/L) (38711) | BUTYL-ATE, WATER, DISS, REC (UG/L) (04028) | CAF-FEINE, WATER FLTRD REC (UG/L) (50305) | CAR-BARYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49310) | CAR-BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680) | CARBO-FURAN, WATER, FLTRD, GF 0.7U REC (UG/L) (49309) | CARBO-FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674) | 3HYDRXY CARBO-FURAN WAT,FLT GF 0.7U REC (UG/L) (49308) | 3-KETO CARBO-FURAN WATER FLTRD REC (UG/L) (50295) | CHLOR-AMBEN, METHYL ESTER WATER FLTRD (UG/L) (61188) | CHLORI-MURON, WATER FLTRD REC (UG/L) (50306) | CHLORO-THALO-NIL, WAT,FLT GF 0.7U REC (UG/L) (49306) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC 17... | <.02 | E.01 | <.002 | E.072 | <.03 | <.041 | <.006 | <.020 | <.006 | <2 | <.02 | <.010 | <.04 |

| Date | CHLOR-PYRIFOS DIS-SOLVED (UG/L) (38933) | CLOPYR-ALID, WATER, FLTRD, GF 0.7U REC (UG/L) (49305) | CYANA-ZINE, WATER, DISS, REC (UG/L) (04041) | CY-CLOATE, WATER, DISS, REC (UG/L) (04031) | DACTHAL MONO-ACID, WAT,FLT GF 0.7U REC (UG/L) (49304) | DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682) | DEETHYL ATRA-ZINE, WATER, DISS, REC (UG/L) (04040) | DEETHYL DEISO-PROPYL ATRAZIN DISS, REC (UG/L) (04039) | DEISO-PROPYL ATRAZIN WATER, DISS, REC (UG/L) (04038) | DI-AZINON, DIS-SOLVED (UG/L) (39572) | DICAMBA WATER, FLTRD, GF 0.7U REC (UG/L) (38442) | DICHLOR PROP, WATER, FLTRD, GF 0.7U REC (UG/L) (49302) | DI-ELDRIN DIS-SOLVED (UG/L) (39381) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC 17... | <.005 | <.01 | <.018 | <.01 | <.01 | <.003 | E.002 | <.01 | <.04 | <.005 | <.01 | <.01 | <.005 |

| 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) | DIPHEN-AMID, WATER, DISS, REC (UG/L) (04033) | 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) | 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) | FLUMET-SULAM WATER FLTRD REC (UG/L) (61694) | FLUO-METURON WATER, FLTRD, GF 0.7U REC (UG/L) (38811) | FONOFOS WATER DISS REC (UG/L) (04095) | HYDROXY ATRA-ZINE WATER FLTRD REC (UG/L) (50355) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC 17... | <.002 | <.01 | <.03 | <.02 | <.01 | <.002 | <.009 | <.005 | <.03 | <.01 | <.03 | <.003 | <.008 |

| Date | IMAZ-AQUIN WATER FLTRD REC (UG/L) (50356) | IMAZE-THAPYR WATER FLTRD REC (UG/L) (50407) | IMID-ACLOP-RID WATER FLTRD REC (UG/L) (61695) | LINDANE DIS-SOLVED (UG/L) (39341) | LINURON WATER, FLTRD, GF 0.7U REC (UG/L) (38478) | LIN-URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666) | MALA-THION, DIS-SOLVED (UG/L) (39532) | MCPA, WATER, FLTRD, GF 0.7U REC (UG/L) (38482) | MCPB, WATER, FLTRD, GF 0.7U REC (UG/L) (38487) | METAL-AXYL WATER FLTRD REC (UG/L) (50359) | METHIO-CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (38501) | METH-OMYL OXIME WATER FLTRD REC (UG/L) (61696) | METH-OMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49296) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC 17... | E.02 | <.02 | <.007 | <.004 | <.01 | <.035 | <.027 | <.02 | <.01 | <.02 | <.008 | --q | <.004 |

| 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) | MET-SUL-FURON METHYL WAT FLT REC (UG/L) (61697) | 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) | NICOSUL FURON WATER FLTRD REC (UG/L) (50364) | NORFLUR AZON, WATER, FLTRD, GF 0.7U REC (UG/L) (49293) | ORY-ZALIN, WATER, FLTRD, GF 0.7U REC (UG/L) (49292) | OXAMYL OXIME WATER FLTRD REC (UG/L) (50410) | OXAMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (38866) | P,P' DDE DISSOLV (UG/L) (34653) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC 17... | <.006 | <.013 | <.006 | <.03 | <.002 | <.007 | <.01 | <.01 | <.02 | <.02 | --q | <.01 | <.003 |

| Date | PARA-THION, DIS-SOLVED (UG/L) (39542) | PEB-ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669) | PENDI-METH-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683) | PER-METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687) | PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664) | PIC-LORAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49291) | PRON-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676) | PROPA-CHLOR, WATER, DISS, REC (UG/L) (04024) | PRO-PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679) | PRO-PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685) | PRO-PHAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49236) | PROP-ICONA-ZOLE , WATER FLTRD REC (UG/L) (50471) | PRO-POXUR, WATER, FLTRD, GF 0.7U REC (UG/L) (38538) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC 17... | <.007 | <.002 | <.010 | <.006 | <.011 | <.02 | <.004 | <.010 | <.011 | <.02 | <.010 | <.02 | <.008 |

475303098463200 WL516319B--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | SIDURON WATER FLTRD REC (UG/L) (38548) | SI-MAZINE, WATER, DISS, REC (UG/L) (04035) | SULFO-MET-RURON METHYL WTR FLT REC (UG/L) (50337) | TEBU-THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670) | TER-BACIL, WATER, DISS, REC (UG/L) (04032) | 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-BENURON METHYL WATER FLTRD (UG/L) (61159) | TRI-CLOPYR, WATER, FLTRD, GF 0.7U REC (UG/L) (49235) | TRI-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661) | UREA 3(4-CHLOR OPHENYL METHYL WAT FLT REC (UG/L) (61692) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | <.02 | <.011 | <.009 | <.02 | <.010 | <.034 | <.02 | <.005 | <.002 | --u | <.02 | <.009 | <.02 |

| Date | 2,4-D METHYL ESTER, WATER FLTRD REC (UG/L) (50470) | 2,4-D, DIS-SOLVED (UG/L) (39732) | 2,4-DB WATER, FLTRD, GF 0.7U REC (UG/L) (38746) |
|---|---|---|---|
| DEC | | | |
| 17... | <.009 | <.02 | <.02 |

< Less than
E Estimated value
q Sample discarded: holding time exceeded
u Unable to determine-matrix interference

475155098451400 WL516329C

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP | | | | | | | | | | | | | |
| 19... | 1400 | 9.2 | 2920 | 190 | 12.1 | 38.8 | 70.3 | 19 | 591 | 82 | E1090 | 140 | .2 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP | | | | | | | | | | | | | |
| 19... | 24.1 | 344 | 3.4 | E.03 | E.005 | <.05 | <.02 | .21 | 2020 | 37.6 | 3.3 | 157 | 11.6 |

< Less than
E Estimated value

475225098453600 WL516330

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 19... | 1450 | 9.6 | 8.9 | 1830 | 1820 | 200 | 12.5 | 41.1 | 41.7 | 10 | 326 | 74 | E682 |

| Date | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 19... | 73.9 | .2 | 17.4 | 226 | 2.1 | .10 | E.004 | <.05 | 2.1 | .02 | .09 | 1230 | 2.0 |

| Date | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|---|---|
| SEP 19... | <.1 | 16 | 24.4 |

< Less than
E Estimated value

475503098530200 WL516408

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 20... | 1210 | 9.3 | 500 | 240 | 10.4 | 52.4 | 30.4 | .5 | 16.2 | 11 | E309 | 7.05 | .2 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 20... | 18.9 | 3.5 | 2.9 | <.04 | <.008 | <.05 | <.02 | .11 | 369 | 24.8 | <.1 | <10 | E1.7b |

< Less than
E Estimated value
b Value was extrapolated below

475505098513800 WL516409

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 25... | 1400 | 8.6 | 428 | 200 | 26.4 | 31.8 | 25.6 | .3 | 10.3 | 9 | E238 | 5.88 | .2 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605) | NITRO-GEN, TOTAL (MG/L AS N) (00600) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 25... | 31.2 | 1.8 | 3.8 | .05 | E.006 | .05 | 3.7 | 3.8 | <.02 | .14 | 319 | 14.7 | <.1 |

| Date | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|---|
| SEP 25... | E6 | E1.6b |

< Less than
E Estimated value
b Value was extrapolated below

475501098491600 WL516411B

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 20... | 0935 | 7.7 | 652 | 300 | 63.0 | 35.8 | 6.66 | .8 | 30.1 | 17 | E367 | 2.43 | .4 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 20... | 45.2 | 4.2 | 1.5 | .04 | <.008 | <.05 | 1.4 | .02 | .08 | 443 | 5.1 | <.1 | 192 |

| Date | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|
| SEP 20... | 659 |

< Less than
E Estimated value

475401098474400 WL516413B

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 20... | 1130 | 8.5 | 664 | 270 | 24.9 | 50.3 | 16.6 | 1 | 44.2 | 25 | E394 | 6.50 | .3 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 20... | 27.4 | 6.4 | 2.0 | <.04 | <.008 | <.05 | <.02 | .11 | 437 | 38.1 | <.1 | <10 | <2.0 |

< Less than
E Estimated value

475325098483800 WL516423A

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 19... | 1515 | 7.7 | 653 | 370 | 90.5 | 34.6 | 5.01 | .2 | 10.5 | 6 | E356 | 1.21 | .4 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 19... | 37.9 | .9 | 1.2 | <.04 | E.004 | <.05 | <.02 | E.04 | 456 | .5 | <.1 | 105 | 149 |

< Less than
E Estimated value

475303098465700 WL516424

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP | | | | | | | | | | | | | |
| 25... | 1315 | 8.8 | 622 | 200 | 17.1 | 38.2 | 12.3 | 2 | 68.1 | 41 | E320 | 9.23 | .3 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP | | | | | | | | | | | | | |
| 25... | 27.4 | 41.9 | 1.6 | <.04 | <.008 | <.05 | <.02 | .06 | 422 | 9.3 | <.1 | <10 | E1.3n |

< Less than
E Estimated value
n Below the non-detection value

475547099063700 WL516604

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP | | | | | | | | | | | | | |
| 10... | 1305 | 7.5 | 8.9 | 1730 | 1770 | 480 | 36.0 | 93.6 | 24.6 | 4 | 219 | 48 | 287 |

| Date | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP | | | | | | | | | | | | | |
| 10... | 64.7 | .2 | 25.2 | 578 | 3.5 | <.040 | <.008 | <.050 | <.020 | .125 | 1310 | 1210 | 41.8 |

| Date | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|---|---|
| SEP | | | |
| 10... | <.1 | <10 | E1.0n |

< Less than
E Estimated value
n Below the non-detection value

475751098513400 WL526421

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 12... | 1400 | 8.9 | 3270 | 850 | 22.2 | 194 | 63.3 | 7 | 485 | 53 | 729 | 87.7 | .3 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 12... | 22.5 | 1190 | 3.6 | <.04 | <.008 | <.05 | <.02 | <.60 | 2660 | 2500 | 4.0 | <.1 | E5 |

| Date | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|
| SEP 12... | E2.9b |

< Less than
E Estimated value
b Value was extrapolated below

475824098502500 WL526422

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 12... | 1455 | 8.8 | 7730 | 1800 | 96.2 | 384 | 128 | 15 | 1460 | 62 | 558 | 553 | .1 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 12... | 8.0 | 3730 | 3.1 | <.04 | <.008 | <.05 | .18 | .33 | 7040 | 6700 | <.1 | <.1 | 11 |

| Date | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|
| SEP 12... | 15.3 |

< Less than

475817098480800 WL526423

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 16... | 1255 | 8.5 | 7830 | 1600 | 138 | 316 | 109 | 16 | 1520 | 65 | 516 | 526 | .1 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 16... | 21.1 | 3530 | 4.1 | .798 | .013 | E.025 | 3.3 | .243 | .350 | 7080 | 6470 | E24.9 | <.1 |

| Date | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|---|
| SEP 16... | 20 | 822 |

< Less than
E Estimated value

475635098523600 WL526432

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 12... | 1530 | 9.0 | 2020 | 250 | 18.8 | 48.7 | 80.1 | 10 | 356 | 69 | 765 | 78.5 | .2 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 12... | 22.8 | 290 | 3.7 | <.04 | <.008 | <.05 | <.02 | <.30 | 1460 | 1350 | 12.2 | <.1 | <10 |

| Date | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|
| SEP 12... | E2.3b |

< Less than
E Estimated value
b Value was extrapolated below

480022099004500 WL5264508

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 25... | 1005 | 8.4 | 2590 | 670 | 86.5 | 111 | 30.2 | 6 | 338 | 51 | E407 | 110 | .2 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 25... | 23.2 | 892 | 3.0 | E.02 | .015 | E.04 | <.02 | .19 | 1960 | 3.4 | <.1 | <30 | 10.0 |

< Less than
E Estimated value

475928099004400 WL5264517

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 10... | 1505 | 8.4 | 1500 | 550 | 71.7 | 89.4 | 14.0 | 3 | 139 | 35 | 287 | 39.8 | .3 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 10... | 23.0 | 523 | 2.2 | <.04 | <.008 | <.05 | <.02 | .13 | 1170 | 1070 | 33.3 | E1.0 | <10 |

| Date | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|
| SEP 10... | E1.0n |

< Less than
E Estimated value
n Below the non-detection value

475824099102200 WL526619

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 10... | 1135 | 8.5 | 7210 | 2100 | 165 | 410 | 90.4 | 11 | 1160 | 53 | 390 | 342 | .1 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 10... | E1.7 | 3770 | 2.9 | .15 | <.008 | <.05 | 2.8 | .13 | .24 | 6830 | 6170 | 4.0 | .5 |

| Date | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|---|
| SEP 10... | <50 | 105 |

< Less than
E Estimated value

475655099063500 WL526633

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 10... | 1335 | 6.5 | 8.2 | 1320 | 1340 | 450 | 55.8 | 76.0 | 14.6 | 3 | 131 | 38 | 243 |

| Date | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 10... | 33.1 | .2 | 43.3 | 428 | 2.3 | <.040 | <.008 | <.050 | <.020 | .128 | 1010 | 928 | 22.1 |

| Date | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|---|---|
| SEP 10... | E1.5 | <10 | E.9n |

< Less than
E Estimated value
n Below the non-detection value

475756099092800 WL526724

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STANDARD UNITS) (00403) | SPECIFIC CONDUCTANCE LAB (US/CM) (90095) | HARDNESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DISSOLVED (MG/L AS CA) (00915) | MAGNESIUM, DISSOLVED (MG/L AS MG) (00925) | POTASSIUM, DISSOLVED (MG/L AS K) (00935) | SODIUM ADSORPTION RATIO (00931) | SODIUM, DISSOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLORIDE, DISSOLVED (MG/L AS CL) (00940) | FLUORIDE, DISSOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 10... | 1020 | 8.3 | 1660 | 600 | 73.0 | 101 | 26.9 | 3 | 145 | 33 | 204 | 33.7 | .2 |

| Date | SILICA, DISSOLVED (MG/L AS SIO2) (00955) | SULFATE DISSOLVED (MG/L AS SO4) (00945) | NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608) | NITROGEN, NITRITE DISSOLVED (MG/L AS N) (00613) | NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631) | ORTHOPHOSPHATE, DISSOLVED (MG/L AS P) (00671) | PHOSPHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301) | CHLOR-A PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70954) | IRON, DISSOLVED (UG/L AS FE) (01046) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 10... | 26.3 | 680 | 2.7 | <.04 | <.008 | <.05 | E.01 | .10 | 1350 | 1210 | 34.5 | <.1 | <10 |

| Date | MANGANESE, DISSOLVED (UG/L AS MN) (01056) |
|---|---|
| SEP 10... | 28.8 |

< Less than
E Estimated value

474844098363800 BATTLE LAKE

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STANDARD UNITS) (00403) | SPECIFIC CONDUCTANCE LAB (US/CM) (90095) | HARDNESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DISSOLVED (MG/L AS CA) (00915) | MAGNESIUM, DISSOLVED (MG/L AS MG) (00925) | POTASSIUM, DISSOLVED (MG/L AS K) (00935) | SODIUM ADSORPTION RATIO (00931) | SODIUM, DISSOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLORIDE, DISSOLVED (MG/L AS CL) (00940) | FLUORIDE, DISSOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 11... | 1216 | 9.0 | 324 | 170 | 13.6 | 33.4 | 9.18 | .4 | 11.8 | 12 | 202 | 5.22 | .2 |

| Date | SILICA, DISSOLVED (MG/L AS SIO2) (00955) | SULFATE DISSOLVED (MG/L AS SO4) (00945) | NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608) | NITROGEN, NITRITE DISSOLVED (MG/L AS N) (00613) | NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631) | ORTHOPHOSPHATE, DISSOLVED (MG/L AS P) (00671) | PHOSPHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301) | CHLOR-A PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70954) | IRON, DISSOLVED (UG/L AS FE) (01046) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 11... | 21.7 | 5.7 | 2.0 | <.04 | <.008 | <.05 | <.02 | .07 | 245 | 222 | 1.1 | <.1 | <10 |

| Date | MANGANESE, DISSOLVED (UG/L AS MN) (01056) |
|---|---|
| SEP 11... | <2.0 |

< Less than

475406098442900 ELBOW LAKE

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | 1400 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 06... | 1330 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 11... | 0930 | 8.9 | 1450 | 260 | 13.6 | 56.1 | 33.3 | 7 | 254 | 64 | 741 | 44.4 | .3 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 06... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 11... | 16.2 | 63.8 | 2.6 | <.04 | <.008 | <.05 | <.02 | .06 | 999 | 926 | 11.3 | <.1 | <10 |

| Date | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) | 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 SULFONE WAT,FLT GF 0.7U REC (UG/L) (49313) | ALDICA-RB SUL-FOXIDE, WAT,FLT GF 0.7U REC (UG/L) (49314) | ALDI-CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (49312) | ALPHA BHC DIS-SOLVED (UG/L) (34253) | ATRA-ZINE, WATER, DISS, REC (UG/L) (39632) | METHYL AZIN-PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686) | BENDIO-CARB, WATER FLTRD REC (UG/L) (50299) | BEN-FLUR-ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673) | BENOMYL WATER FLTRD REC (UG/L) (50300) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 06... | -- | <.006 | <.130 | <.004 | <.02 | <.008 | <.04 | <.005 | .015 | <.050 | <.03 | <.010 | <.004 |
| SEP | | | | | | | | | | | | | |
| 11... | <2.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | BEN-SUL-FURON METHYL WAT FLT REC (UG/L) (61693) | BENTA-ZON, WATER, FLTRD, GF 0.7U REC (UG/L) (38711) | BUTYL-ATE, WATER, DISS, REC (UG/L) (04028) | CAF-FEINE, WATER FLTRD REC (UG/L) (50305) | CAR-BARYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49310) | CAR-BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680) | CARBO-FURAN, WATER, FLTRD, GF 0.7U REC (UG/L) (49309) | CARBO-FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674) | 3HYDRXY CARBO-FURAN WAT,FLT GF 0.7U REC (UG/L) (49308) | 3-KETO CARBO-FURAN WATER FLTRD REC (UG/L) (50295) | CHLOR-AMBEN, METHYL ESTER WATER FLTRD (UG/L) (61188) | CHLORI-MURON, WATER FLTRD REC (UG/L) (50306) | CHLORO-THALO-NIL, WAT,FLT GF 0.7U REC (UG/L) (49306) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 06... | <.02 | <.01 | <.002 | E.452 | <.03 | <.041 | <.006 | <.020 | <.006 | <2 | <.02 | <.010 | <.04 |
| SEP | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | CHLOR-PYRIFOS DIS-SOLVED (UG/L) (38933) | CLOPYR-ALID, WATER, FLTRD, GF 0.7U REC (UG/L) (49305) | CYANA-ZINE, WATER, DISS, REC (UG/L) (04041) | CY-CLOATE, WATER, DISS, REC (UG/L) (04031) | DACTHAL MONO-ACID, WAT,FLT GF 0.7U REC (UG/L) (49304) | DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682) | DEETHYL ATRA-ZINE, WATER, DISS, REC (UG/L) (04040) | DEETHYL DEISO-PROPYL ATRAZIN DISS, REC (UG/L) (04039) | DEISO-PROPYL ATRAZIN WATER, DISS, REC (UG/L) (04038) | DI-AZINON, DIS-SOLVED (UG/L) (39572) | DICAMBA WATER, FLTRD, GF 0.7U REC (UG/L) (38442) | DICHLOR PROP, WATER, FLTRD, GF 0.7U REC (UG/L) (49302) | DI-ELDRIN DIS-SOLVED (UG/L) (39381) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 06... | <.005 | <.01 | <.018 | <.01 | <.01 | <.003 | <.006 | <.01 | <.04 | <.005 | <.01 | <.01 | <.005 |
| SEP | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

475406098442900 ELBOW LAKE--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| 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) | DIPHEN-AMID, WATER, DISS, REC (UG/L) (04033) | 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) | ETHAL-FLUR-ALIN 0.7 U 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) | FLUMET-SULAM WATER FLTRD REC (UG/L) (61694) | FLUO-METURON WATER, FLTRD, GF 0.7U REC (UG/L) (38811) | FONOFOS WATER DISS REC (UG/L) (04095) | HYDROXY ATRA-ZINE WATER FLTRD REC (UG/L) (50355) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 06... | <.006 | <.01 | <.03 | <.02 | <.01 | <.002 | <.009 | <.005 | <.03 | <.01 | <.03 | <.003 | <.008 |
| SEP | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | IMAZ-AQUIN WATER FLTRD REC (UG/L) (50356) | IMAZE-THAPYR WATER FLTRD REC (UG/L) (50407) | IMID-ACLOP-RID WATER FLTRD REC (UG/L) (61695) | LINDANE DIS-SOLVED (UG/L) (39341) | LINURON WATER, FLTRD, GF 0.7U REC (UG/L) (38478) | LIN-URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666) | MALA-THION, DIS-SOLVED (UG/L) (39532) | MCPA, WATER, FLTRD, GF 0.7U REC (UG/L) (38482) | MCPB, WATER, FLTRD, GF 0.7U REC (UG/L) (38487) | METAL-AXYL WATER FLTRD REC (UG/L) (50359) | METHIO-CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (38501) | METH-OMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49296) | METHYL PARA-THION WAT FLT 0.7 U GF, REC (UG/L) (82667) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 06... | <.02 | <.02 | <.007 | <.004 | <.01 | <.035 | <.027 | <.11 | <.01 | <.02 | <.008 | <.004 | <.006 |
| SEP | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | METO-LACHLOR WATER DISSOLV (UG/L) (39415) | METRI-BUZIN SENCOR WATER DISSOLV (UG/L) (82630) | MET-SUL-FURON METHYL WAT FLT REC (UG/L) (61697) | 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) | NICOSUL FURON WATER FLTRD REC (UG/L) (50364) | NORFLUR AZON, WATER, FLTRD, GF 0.7U REC (UG/L) (49293) | ORY-ZALIN, WATER, FLTRD, GF 0.7U REC (UG/L) (49292) | OXAMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (38866) | P,P' DDE DISSOLV (UG/L) (34653) | PARA-THION, DIS-SOLVED (UG/L) (39542) | PEB-ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 06... | <.013 | <.006 | <.03 | <.002 | <.007 | <.01 | <.01 | <.02 | <.02 | <.01 | <.003 | <.010 | <.004 |
| SEP | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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) | PIC-LORAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49291) | PRON-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676) | PROPA-CHLOR, WATER, DISS, REC (UG/L) (04024) | PRO-PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679) | PRO-PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685) | PRO-PHAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49236) | PROP-ICONA-ZOLE , WATER FLTRD REC (UG/L) (50471) | PRO-POXUR, WATER, FLTRD, GF 0.7U REC (UG/L) (38538) | SIDURON WATER FLTRD REC (UG/L) (38548) | SI-MAZINE, WATER, DISS, REC (UG/L) (04035) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 06... | <.022 | <.006 | <.011 | <.02 | <.004 | <.010 | <.011 | <.02 | <.010 | <.02 | <.008 | <.02 | <.005 |
| SEP | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | SULFO-MET-RURON METHYL WTR FLT REC (UG/L) (50337) | TEBU-THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670) | TER-BACIL, WATER, DISS, REC (UG/L) (04032) | 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-BENURON METHYL WATER FLTRD (UG/L) (61159) | TRI-CLOPYR, WATER, FLTRD, GF 0.7U REC (UG/L) (49235) | TRI-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661) | UREA 3( 4-CHLOR OPHENYL METHYL WAT FLT REC (UG/L) (61692) | 2,4-D METHYL ESTER, WATER FLTRD REC (UG/L) (50470) | 2,4-D, DIS-SOLVED (UG/L) (39732) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 06... | <.009 | <.02 | <.010 | --u | <.02 | <.005 | <.002 | --u | <.02 | <.009 | <.02 | <.009 | .06 |
| SEP | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

475406098442900 ELBOW LAKE--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | 2,4-DB WATER, FLTRD, GF 0.7U REC (UG/L) (38746) |
|---|---|
| DEC | |
| 17... | -- |
| MAR | |
| 06... | <.02 |
| SEP | |
| 11... | -- |

< Less than
E Estimated value
u Unable to determine-matrix interference

475410098442400 FREE PEOPLES LAKE

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STANDARD UNITS) (00403) | SPECIFIC CONDUCTANCE LAB (US/CM) (90095) | HARDNESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DISSOLVED (MG/L AS CA) (00915) | MAGNESIUM, DISSOLVED (MG/L AS MG) (00925) | POTASSIUM, DISSOLVED (MG/L AS K) (00935) | SODIUM ADSORPTION RATIO (00931) | SODIUM, DISSOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLORIDE, DISSOLVED (MG/L AS CL) (00940) | FLUORIDE, DISSOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | 1410 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 11... | 1030 | 9.0 | 7520 | 350 | 16.6 | 75.0 | 106 | 39 | 1680 | 88 | 1150 | 560 | .2 |

| Date | SILICA, DISSOLVED (MG/L AS SIO2) (00955) | SULFATE DISSOLVED (MG/L AS SO4) (00945) | NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608) | NITROGEN, NITRITE DISSOLVED (MG/L AS N) (00613) | NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631) | NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605) | ORTHOPHOSPHATE, DISSOLVED (MG/L AS P) (00671) | PHOSPHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301) | CHLOR-A PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70954) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | | | | | | | |
| 11... | 8.5 | 2250 | 3.7 | .04 | <.008 | <.05 | 3.7 | E.01 | .10 | 5630 | 5390 | 1.7 | <.1 |

| Date | IRON, DISSOLVED (UG/L AS FE) (01046) | MANGANESE, DISSOLVED (UG/L AS MN) (01056) | ACETOCHLOR, WATER FLTRD REC (UG/L) (49260) | ALACHLOR, WATER, DISS, REC, (UG/L) (46342) | ALPHA BHC DISSOLVED (UG/L) (34253) | ATRAZINE, WATER, DISS, REC (UG/L) (39632) | METHYL AZINPHOS WAT FLT 0.7 U GF, REC (UG/L) (82686) | BENFLURALIN WAT FLD 0.7 U GF, REC (UG/L) (82673) | BUTYLATE, WATER, DISS, REC (UG/L) (04028) | CARBARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680) | CARBOFURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674) | CHLORPYRIFOS DISSOLVED (UG/L) (38933) | CYANAZINE, WATER, DISS, REC (UG/L) (04041) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | -- | -- | <.004 | <.002 | <.005 | .012 | <.050 | <.010 | <.002 | <.041 | <.020 | <.005 | <.018 |
| SEP | | | | | | | | | | | | | |
| 11... | <50 | <8.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682) | DEETHYL ATRAZINE, WATER, DISS, REC (UG/L) (04040) | DIAZINON, DISSOLVED (UG/L) (39572) | DIELDRIN DISSOLVED (UG/L) (39381) | 2,6-DIETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660) | DISULFOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677) | EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668) | ETHALFLURALIN WAT FLT 0.7 U GF, REC (UG/L) (82663) | ETHOPROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672) | FONOFOS WATER DISS REC (UG/L) (04095) | LINDANE DISSOLVED (UG/L) (39341) | LINURON WATER FLTRD 0.7 U GF, REC (UG/L) (82666) | MALATHION, DISSOLVED (UG/L) (39532) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | <.003 | E.006 | <.005 | <.005 | <.002 | <.02 | <.002 | <.009 | <.005 | <.003 | <.004 | <.035 | <.027 |
| SEP | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

475410098442400 FREE PEOPLES LAKE--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| 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) | MOL-INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671) | NAPROP-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684) | P,P' DDE DISSOLV (UG/L) (34653) | PARA-THION, DIS-SOLVED (UG/L) (39542) | 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) | PRON-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676) | PROPA-CHLOR, WATER, DISS, REC (UG/L) (04024) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | <.006 | <.013 | <.006 | <.002 | <.007 | <.003 | <.007 | <.002 | <.010 | <.006 | <.011 | <.004 | <.010 |
| SEP | | | | | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 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) |
|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | |
| 17... | <.011 | <.02 | <.011 | <.02 | <.034 | <.02 | <.005 | <.002 | <.009 |
| SEP | | | | | | | | | |
| 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- |

< Less than
E Estimated value

475502098473300 GRAVES LAKE

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP | | | | | | | | | | | | | |
| 13... | 1045 | 8.8 | 1080 | 340 | 18.7 | 71.2 | 28.8 | 3 | 133 | 43 | 639 | 19.6 | .2 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP | | | | | | | | | | | | | |
| 13... | 27.4 | 50.3 | 2.0 | <.04 | <.008 | <.05 | <.02 | .11 | 772 | 732 | 17.1 | <.1 | 430 |

| Date | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|
| SEP | |
| 13... | 4.0 |

< Less than

475012098475200 HORSESHOE LAKE

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STANDARD UNITS) (00403) | SPECIFIC CONDUCTANCE LAB (US/CM) (90095) | HARDNESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DISSOLVED (MG/L AS CA) (00915) | MAGNESIUM, DISSOLVED (MG/L AS MG) (00925) | POTASSIUM, DISSOLVED (MG/L AS K) (00935) | SODIUM ADSORPTION RATIO (00931) | SODIUM, DISSOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLORIDE, DISSOLVED (MG/L AS CL) (00940) | FLUORIDE, DISSOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 16... | 1445 | 9.0 | 4860 | 190 | 23.9 | 31.0 | 83.9 | 35 | 1110 | 89 | 885 | 376 | .2 |

| Date | SILICA, DISSOLVED (MG/L AS SIO2) (00955) | SULFATE DISSOLVED (MG/L AS SO4) (00945) | NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608) | NITROGEN, NITRITE DISSOLVED (MG/L AS N) (00613) | NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631) | ORTHOPHOSPHATE, DISSOLVED (MG/L AS P) (00671) | PHOSPHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301) | CHLOR-A PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70954) | IRON, DISSOLVED (UG/L AS FE) (01046) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 16... | 15.8 | 1280 | 2.7 | <.04 | <.008 | <.05 | <.02 | .09 | 3610 | 3460 | 21.7 | <.1 | 29 |

| Date | MANGANESE, DISSOLVED (UG/L AS MN) (01056) |
|---|---|
| SEP 16... | 9.4 |

< Less than

480349099111300 MINNEWAUKEN FLATS

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE FIELD (STANDARD UNITS) (00400) | PH WATER WHOLE LAB (STANDARD UNITS) (00403) | SPECIFIC CONDUCTANCE LAB (US/CM) (90095) | SPECIFIC CONDUCTANCE (US/CM) (00095) | HARDNESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DISSOLVED (MG/L AS CA) (00915) | MAGNESIUM, DISSOLVED (MG/L AS MG) (00925) | POTASSIUM, DISSOLVED (MG/L AS K) (00935) | SODIUM ADSORPTION RATIO (00931) | SODIUM, DISSOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 30... | 1225 | 7.0 | 8.6 | 2040 | 2020 | 510 | 79.7 | 75.3 | 38.0 | 5 | 252 | 50 | E370 |

| Date | CHLORIDE, DISSOLVED (MG/L AS CL) (00940) | FLUORIDE, DISSOLVED (MG/L AS F) (00950) | SILICA, DISSOLVED (MG/L AS SIO2) (00955) | SULFATE DISSOLVED (MG/L AS SO4) (00945) | NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608) | NITROGEN, NITRITE DISSOLVED (MG/L AS N) (00613) | NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631) | ORTHOPHOSPHATE, DISSOLVED (MG/L AS P) (00671) | PHOSPHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300) | CHLOR-A PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70954) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 30... | 112 | .2 | 10.1 | 596 | 1.7 | <.04 | <.008 | <.05 | .28 | .35 | 1460 | 4.9 | <.1 |

| Date | IRON, DISSOLVED (UG/L AS FE) (01046) | MANGANESE, DISSOLVED (UG/L AS MN) (01056) |
|---|---|---|
| SEP 30... | <10 | E1.8b |

< Less than
E Estimated value
b Value was extrapolated below

475450099054800 PLAINVIEW LAKE

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STANDARD UNITS) (00403) | SPECIFIC CONDUCTANCE LAB (US/CM) (90095) | HARDNESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DISSOLVED (MG/L AS CA) (00915) | MAGNESIUM, DISSOLVED (MG/L AS MG) (00925) | POTASSIUM, DISSOLVED (MG/L AS K) (00935) | SODIUM ADSORPTION RATIO (00931) | SODIUM, DISSOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLORIDE, DISSOLVED (MG/L AS CL) (00940) | FLUORIDE, DISSOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 10... | 1220 | 8.6 | 1750 | 480 | 44.7 | 90.2 | 32.9 | 4 | 216 | 47 | 319 | 67.6 | .2 |

| Date | SILICA, DISSOLVED (MG/L AS SIO2) (00955) | SULFATE DISSOLVED (MG/L AS SO4) (00945) | NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608) | NITROGEN, NITRITE DISSOLVED (MG/L AS N) (00613) | NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631) | ORTHOPHOSPHATE, DISSOLVED (MG/L AS P) (00671) | PHOSPHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301) | CHLOR-A PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70954) | IRON, DISSOLVED (UG/L AS FE) (01046) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 10... | 41.3 | 572 | 3.6 | <.040 | <.008 | <.050 | <.020 | E.190 | 1350 | 1260 | 45.2 | E3.6 | <10 |

| Date | MANGANESE, DISSOLVED (UG/L AS MN) (01056) |
|---|---|
| SEP 10... | E2.4b |

< Less than
E Estimated value
b Value was extrapolated below

480134099134001 ROUND LAKE

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STANDARD UNITS) (00403) | SPECIFIC CONDUCTANCE LAB (US/CM) (90095) | HARDNESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DISSOLVED (MG/L AS CA) (00915) | MAGNESIUM, DISSOLVED (MG/L AS MG) (00925) | POTASSIUM, DISSOLVED (MG/L AS K) (00935) | SODIUM ADSORPTION RATIO (00931) | SODIUM, DISSOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLORIDE, DISSOLVED (MG/L AS CL) (00940) | FLUORIDE, DISSOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 10... | 0935 | 8.3 | 1950 | 670 | 102 | 102 | 26.9 | 3 | 203 | 38 | 306 | 47.0 | .2 |

| Date | SILICA, DISSOLVED (MG/L AS SIO2) (00955) | SULFATE DISSOLVED (MG/L AS SO4) (00945) | NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608) | NITROGEN, NITRITE DISSOLVED (MG/L AS N) (00613) | NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631) | NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605) | ORTHOPHOSPHATE, DISSOLVED (MG/L AS P) (00671) | PHOSPHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301) | CHLOR-A PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70954) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 10... | 25.9 | 740 | 2.6 | .063 | <.008 | <.050 | 2.6 | .098 | .229 | 1570 | 1430 | 11.1 | E1.0 |

| Date | IRON, DISSOLVED (UG/L AS FE) (01046) | MANGANESE, DISSOLVED (UG/L AS MN) (01056) |
|---|---|---|
| SEP 10... | <30 | <2.0 |

< Less than
E Estimated value

475159098415900 SHIN BONE LAKE

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 11... | 1357 | 9.1 | 2060 | 180 | 11.7 | 36.7 | 58.0 | 13 | 387 | 77 | 909 | 158 | .2 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 11... | 24.9 | 30.8 | 3.7 | <.04 | <.008 | <.05 | <.02 | .12 | 1370 | 1250 | 15.8 | 1.9 | <10 |

| Date | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|
| SEP 11... | <2.0 |

< Less than

475645098473000 SPRING LAKE

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 13... | 1000 | 8.6 | 2650 | 600 | 55.6 | 113 | 55.0 | 7 | 386 | 56 | 502 | 158 | .2 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 13... | 26.9 | 825 | 2.4 | <.04 | <.008 | <.05 | .06 | E.18 | 2040 | 1920 | 19.9 | <.1 | <10 |

| Date | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|
| SEP 13... | E2.3b |

< Less than
E Estimated value
b Value was extrapolated below

475423098481400 SQUARE LAKE

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP | | | | | | | | | | | | | |
| 20... | 1100 | 8.1 | 435 | 180 | 31.2 | 25.8 | 6.06 | .8 | 25.3 | 22 | E230 | 4.09 | .2 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP | | | | | | | | | | | | | |
| 20... | 29.8 | 19.9 | 1.7 | E.04 | <.008 | <.05 | <.02 | .15 | 301 | 44.3 | <.1 | <10 | <2.0 |

< Less than
E Estimated value

475804099045900 TWIN LAKES, SITE 2

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (00095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP | | | | | | | | | | | | | |
| 10... | 1420 | 7.5 | 8.7 | 1520 | 1560 | 510 | 58.6 | 88.0 | 25.0 | 3 | 166 | 40 | 396 |

| Date | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP | | | | | | | | | | | | | |
| 10... | 47.1 | .2 | 39.3 | 414 | 3.9 | <.040 | <.008 | <.050 | <.020 | .312 | 1160 | 1080 | 116 |

| Date | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|---|---|
| SEP | | | |
| 10... | <.1 | <10 | <2.0 |

< Less than

480028099074500 WEST BAY

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 30... | 1300 | 7.9 | 8.7 | 2040 | 2030 | 510 | 77.9 | 75.4 | 38.1 | 5 | 265 | 51 | E370 |

| Date | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 30... | 113 | .2 | 12.5 | 599 | 1.4 | <.04 | <.008 | <.05 | .28 | .37 | 1470 | E8.0 | <.1 |

| Date | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|---|
| SEP 30... | <10 | E1.4n |

< Less than
E Estimated value
n Below the non-detection value

480112098545200 WEST BAY-CASINO

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 30... | 1430 | 8.9 | 8.8 | 2140 | 2120 | 510 | 77.1 | 77.9 | 38.8 | 5 | 272 | 51 | E369 |

| Date | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP 30... | 123 | .2 | 6.3 | 637 | 1.3 | <.04 | <.008 | <.05 | .30 | .34 | 1530 | 6.2 | <.1 |

| Date | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|---|
| SEP 30... | <10 | E1.5n |

< Less than
E Estimated value
n Below the non-detection value

480106098595500 WEST BAY-FORT TOTTEN

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP | | | | | | | | | | | | | |
| 30... | 1400 | 8.8 | 8.8 | 2140 | 2130 | 520 | 77.5 | 78.4 | 39.5 | 5 | 274 | 51 | E366 |

| Date | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP | | | | | | | | | | | | | |
| 30... | 120 | .2 | 3.4 | 640 | 1.3 | <.04 | <.008 | <.05 | .29 | .35 | 1520 | E9.6 | <.1 |

| Date | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|---|
| SEP | | |
| 30... | <10 | E1.6n |

< Less than
E Estimated value
n Below the non-detection value

475147098374900 WETLAND B1

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP | | | | | | | | | | | | | |
| 11... | 1305 | 9.1 | 2430 | 190 | 17.4 | 34.8 | 58.2 | 17 | 522 | 81 | 1080 | 36.7 | .1 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP | | | | | | | | | | | | | |
| 11... | 28.2 | 289 | 4.7 | <.04 | <.008 | <.05 | .34 | .61 | 1760 | 1630 | 46.9 | 7.2 | E10 |

| Date | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|
| SEP | |
| 11... | 5.5 |

< Less than
E Estimated value

475258098454700 WETLAND B2

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC 17... | 1420 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP 13... | 1137 | E7.5 | 41 | 250 | 20.7 | 48.0 | 18.1 | 2 | 87.3 | 41 | 446 | 12.3 | .3 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP 13... | 30.6 | 20.9 | 2.1 | <.04 | <.008 | <.05 | <.02 | .09 | 534 | 506 | 13.7 | <.1 | <10 |

| Date | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) | 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 SULFONE WAT,FLT GF 0.7U REC (UG/L) (49313) | ALDICA-RB SUL-FOXIDE, WAT,FLT GF 0.7U REC (UG/L) (49314) | ALDI-CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (49312) | ALPHA BHC DIS-SOLVED (UG/L) (34253) | ATRA-ZINE, WATER, DISS, REC (UG/L) (39632) | METHYL AZIN-PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686) | BENDIO-CARB, WATER FLTRD REC (UG/L) (50299) | BEN-FLUR-ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673) | BENOMYL WATER FLTRD REC (UG/L) (50300) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC 17... | -- | <.004 | <.007 | <.002 | <.02 | <.008 | <.04 | <.005 | E.007 | <.050 | <.03 | <.010 | <.004 |
| SEP 13... | E1.2n | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | BEN-SUL-FURON METHYL WAT FLT REC (UG/L) (61693) | BENTA-ZON, WATER, FLTRD, GF 0.7U REC (UG/L) (38711) | BUTYL-ATE, WATER, DISS, REC (UG/L) (04028) | CAF-FEINE, WATER FLTRD REC (UG/L) (50305) | CAR-BARYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49310) | CAR-BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680) | CARBO-FURAN, WATER, FLTRD, GF 0.7U REC (UG/L) (49309) | CARBO-FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674) | 3HYDRXY CARBO-FURAN WAT,FLT GF 0.7U REC (UG/L) (49308) | 3-KETO CARBO-FURAN WATER FLTRD REC (UG/L) (50295) | CHLOR-AMBEN, METHYL ESTER WATER FLTRD (UG/L) (61188) | CHLORI-MURON, WATER FLTRD REC (UG/L) (50306) | CHLORO-THALO-NIL, WAT,FLT GF 0.7U REC (UG/L) (49306) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC 17... | <.02 | <.01 | <.002 | E.036 | <.03 | <.041 | <.006 | <.020 | <.006 | <2 | <.02 | <.010 | <.04 |
| SEP 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | CHLOR-PYRIFOS DIS-SOLVED (UG/L) (38933) | CLOPYR-ALID, WATER, FLTRD, GF 0.7U REC (UG/L) (49305) | CYANA-ZINE, WATER, DISS, REC (UG/L) (04041) | CY-CLOATE, WATER, DISS, REC (UG/L) (04031) | DACTHAL MONO-ACID, WAT,FLT GF 0.7U REC (UG/L) (49304) | DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682) | DEETHYL ATRA-ZINE, WATER, DISS, REC (UG/L) (04040) | DEETHYL DEISO-PROPYL ATRAZIN DISS, REC (UG/L) (04039) | DEISO-PROPYL ATRAZIN WATER, DISS, REC (UG/L) (04038) | DI-AZINON, DIS-SOLVED (UG/L) (39572) | DICAMBA WATER, FLTRD, GF 0.7U REC (UG/L) (38442) | DICHLOR PROP, WATER, FLTRD, GF 0.7U REC (UG/L) (49302) | DI-ELDRIN DIS-SOLVED (UG/L) (39381) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC 17... | <.005 | <.01 | <.018 | <.01 | <.01 | <.003 | E.004 | <.01 | <.04 | <.005 | <.01 | <.01 | <.005 |
| SEP 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| 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) | DIPHEN-AMID, WATER, DISS, REC (UG/L) (04033) | 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) | 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) | FLUMET-SULAM WATER FLTRD REC (UG/L) (61694) | FLUO-METURON WATER, FLTRD, GF 0.7U REC (UG/L) (38811) | FONOFOS WATER DISS REC (UG/L) (04095) | HYDROXY ATRA-ZINE WATER FLTRD REC (UG/L) (50355) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC 17... | <.002 | <.01 | <.03 | <.02 | <.01 | <.002 | <.009 | <.005 | <.03 | <.01 | <.03 | <.003 | <.008 |
| SEP 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

475258098454700 WETLAND B2--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | IMAZ-AQUIN WATER FLTRD REC (UG/L) (50356) | IMAZE-THAPYR WATER FLTRD REC (UG/L) (50407) | IMID-ACLOP-RID WATER FLTRD REC (UG/L) (61695) | LINDANE DIS-SOLVED (UG/L) (39341) | LINURON WATER, FLTRD, GF 0.7U REC (UG/L) (38478) | LIN-URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666) | MALA-THION, DIS-SOLVED (UG/L) (39532) | MCPA, WATER, FLTRD, GF 0.7U REC (UG/L) (38482) | MCPB, WATER, FLTRD, GF 0.7U REC (UG/L) (38487) | METAL-AXYL WATER FLTRD REC (UG/L) (50359) | METHIO-CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (38501) | METH-OMYL OXIME WATER FLTRD REC (UG/L) (61696) | METH-OMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49296) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | M | <.02 | <.007 | <.004 | <.01 | <.035 | <.027 | <.02 | <.01 | <.02 | <.008 | --q | <.004 |
| SEP | | | | | | | | | | | | | |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| 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) | MET-SUL-FURON METHYL WAT FLT REC (UG/L) (61697) | 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) | NICOSUL FURON WATER FLTRD REC (UG/L) (50364) | NORFLUR AZON, WATER, FLTRD, GF 0.7U REC (UG/L) (49293) | ORY-ZALIN, WATER, FLTRD, GF 0.7U REC (UG/L) (49292) | OXAMYL OXIME WATER FLTRD REC (UG/L) (50410) | OXAMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (38866) | P,P' DDE DISSOLV (UG/L) (34653) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | <.006 | <.013 | <.006 | <.03 | <.002 | <.007 | <.01 | <.01 | <.02 | <.02 | --q | <.01 | <.003 |
| SEP | | | | | | | | | | | | | |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | PARA-THION, DIS-SOLVED (UG/L) (39542) | PEB-ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669) | PENDI-METH-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683) | PER-METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687) | PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664) | PIC-LORAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49291) | PRON-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676) | PROPA-CHLOR, WATER, DISS, REC (UG/L) (04024) | PRO-PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679) | PRO-PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685) | PRO-PHAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49236) | PROP-ICONA-ZOLE , WATER FLTRD REC (UG/L) (50471) | PRO-POXUR, WATER, FLTRD, GF 0.7U REC (UG/L) (38538) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | <.007 | <.002 | <.010 | <.006 | <.011 | <.02 | <.004 | <.010 | <.011 | <.02 | <.010 | <.02 | <.008 |
| SEP | | | | | | | | | | | | | |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | SIDURON WATER FLTRD REC (UG/L) (38548) | SI-MAZINE, WATER, DISS, REC (UG/L) (04035) | SULFO-MET-RURON METHYL WTR FLT REC (UG/L) (50337) | TEBU-THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670) | TER-BACIL, WATER, DISS, REC (UG/L) (04032) | 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-BENURON METHYL WATER FLTRD (UG/L) (61159) | TRI-CLOPYR, WATER, FLTRD, GF 0.7U REC (UG/L) (49235) | TRI-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661) | UREA 3(4-CHLOR OPHENYL METHYL WAT FLT REC (UG/L) (61692) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEC | | | | | | | | | | | | | |
| 17... | <.02 | <.011 | <.009 | <.02 | <.010 | <.034 | <.02 | <.005 | <.002 | --u | <.02 | <.009 | <.02 |
| SEP | | | | | | | | | | | | | |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | 2,4-D METHYL ESTER, WATER FLTRD REC (UG/L) (50470) | 2,4-D, DIS-SOLVED (UG/L) (39732) | 2,4-DB WATER, FLTRD, GF 0.7U REC (UG/L) (38746) |
|---|---|---|---|
| DEC | | | |
| 17... | <.009 | E.02 | <.02 |
| SEP | | | |
| 13... | -- | -- | -- |

< Less than
E Estimated value
M Presence verified, not quantified
n Below the non-detection value
q Sample discarded: holding time exceeded
u Unable to determine-matrix interference

475350098501300 WOOD LAKE

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP | | | | | | | | | | | | | |
| 16... | 1405 | 8.4 | 362 | 170 | 26.2 | 26.3 | 8.41 | .4 | 11.9 | 12 | 196 | 4.28 | .2 |

| Date | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP | | | | | | | | | | | | | |
| 16... | 27.5 | 17.3 | .88 | <.04 | <.008 | <.05 | <.02 | <.06 | 252 | 239 | 7.0 | <.1 | <10 |

| Date | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|
| SEP | |
| 16... | E1.5n |

< Less than
E Estimated value
n Below the non-detection value

ANALYSES OF SAMPLES COLLECTED AT TURTLE MOUNTAIN RESERVATION WATER-QUALITY SITES

480345103493500 LAKE TRENTON NO. 1

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| 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) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FEB | | | | | | | | | | | | | |
| 06... | 1020 | .50 | 1.5 | 1220 | 7.8 | 330 | 72.7 | 35.2 | 5.34 | 3 | 144 | 48 | 302 |
| JUN | | | | | | | | | | | | | |
| 18... | 0815 | .0 | 1.9 | 620 | 8.3 | 190 | 46.0 | 18.6 | 4.34 | 2 | 61.9 | 41 | 165 |
| AUG | | | | | | | | | | | | | |
| 20... | 0905 | .0 | 1.0 | 655 | 8.5 | 220 | 53.1 | 21.6 | 4.78 | 2 | 63.1 | 38 | 183 |

| Date | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605) | NITRO-GEN, TOTAL (MG/L AS N) (00600) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FEB | | | | | | | | | | | | | |
| 06... | 13.3 | .9 | 10.0 | 337 | .96 | .11 | <.008 | .07 | .85 | 1.0 | <.02 | E.04 | 832 |
| JUN | | | | | | | | | | | | | |
| 18... | 7.67 | .6 | 8.2 | 150 | .56 | <.04 | <.008 | E.03 | -- | -- | <.02 | E.04 | 406 |
| AUG | | | | | | | | | | | | | |
| 20... | 9.44 | .9 | 6.9 | 157 | .54 | <.04 | <.008 | <.05 | -- | -- | <.02 | E.05 | 436 |

| Date | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625) | FECAL STREP, KF STRP MF, WATER (COL/ 100 ML) (31673) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106) | ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095) | ARSENIC DIS-SOLVED (UG/L AS AS) (01000) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FEB | | | | | | | | | | | | | |
| 06... | 799 | <2 | <2 | 16.3 | 1.2 | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 18... | 396 | -- | -- | 5.6 | .3 | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 20... | 427 | E2k | E10k | 12.3 | 1.4 | 5 | .73 | 2 | 59 | <.06 | E.02 | .9 | .17 |

| Date | COPPER, DIS-SOLVED (UG/L AS CU) (01040) | IRON, DIS-SOLVED (UG/L AS FE) (01046) | LEAD, DIS-SOLVED (UG/L AS PB) (01049) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) | 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) |
|---|---|---|---|---|---|---|---|---|---|
| FEB | | | | | | | | | |
| 06... | -- | <10 | -- | E.9 | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | |
| 18... | -- | E7 | -- | E.9n | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | |
| 20... | 2.4 | <10 | E.06 | .8 | 3.6 | 1.69 | E1 | <1 | 3 |

480345103493500 LAKE TRENTON NO. 1--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DEPTH OF LAKE MAX. METERS (85310) | 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) | ICE THICK-NESS METERS (82131) | TRANS-PAR-ENCY (SECCHI DISK) (IN) (00077) | TEMPER-ATURE AIR (DEG C) (00020) | WIND DIREC-TION (DEG. FROM TRUE NORTH) (00036) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FEB | | | | | | | | | | | | | |
| 06... | 1015 | 1.5 | .50 | 1240 | 7.5 | 1.6 | 10.4 | 80 | 712 | .50 | 36.0 | 3.0 | 270 |
| 06... | 1016 | -- | 1.0 | 1210 | 7.4 | 3.4 | 9.8 | -- | -- | -- | -- | -- | -- |
| 06... | 1017 | -- | 1.5 | 1220 | 7.4 | 4.0 | 7.8 | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 18... | 0810 | 1.9 | .0 | 627 | 8.3 | 20.5 | 10.1 | 122 | 702 | -- | 18.0 | 21.0 | 210 |
| 18... | 0811 | -- | .50 | 636 | 8.3 | 20.5 | 10.0 | -- | -- | -- | -- | -- | -- |
| 18... | 0812 | -- | 1.0 | 635 | 8.3 | 20.1 | 9.6 | -- | -- | -- | -- | -- | -- |
| 18... | 0813 | -- | 1.9 | 632 | 8.2 | 19.3 | 8.1 | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 20... | 0900 | 1.0 | .0 | 687 | 8.2 | 18.1 | 9.5 | 108 | 711 | -- | 7.00 | 18.0 | 130 |
| 20... | 0901 | -- | 1.0 | 700 | 8.2 | 17.8 | 7.4 | -- | -- | -- | -- | -- | -- |

| Date | WIND SPEED (MILES PER HOUR) (00035) |
|---|---|
| FEB | |
| 06... | 15 |
| 06... | -- |
| 06... | -- |
| JUN | |
| 18... | <5.0 |
| 18... | -- |
| 18... | -- |
| 18... | -- |
| AUG | |
| 20... | <5.0 |
| 20... | -- |

< Less than
E Estimated value
k Counts outside acceptable range
n Below the non-detection value

ANALYSES OF SAMPLES COLLECTED AT TURTLE MOUNTAIN RESERVATION WATER-QUALITY SITES

480354103502800 LAKE TRENTON NO. 2

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| 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) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FEB | | | | | | | | | | | | | |
| 06... | 1055 | .50 | 1.6 | 1240 | 7.8 | 330 | 73.2 | 35.5 | 5.39 | 4 | 147 | 49 | 306 |
| JUN | | | | | | | | | | | | | |
| 18... | 0835 | .0 | 1.9 | 607 | 8.3 | 190 | 45.7 | 18.2 | 4.32 | 2 | 60.6 | 40 | 161 |
| AUG | | | | | | | | | | | | | |
| 20... | 0855 | .0 | 1.0 | 638 | 8.5 | 220 | 52.4 | 21.4 | 4.47 | 2 | 60.2 | 37 | 184 |

| Date | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605) | NITRO-GEN, TOTAL (MG/L AS N) (00600) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FEB | | | | | | | | | | | | | |
| 06... | 13.2 | .8 | 9.8 | 347 | .81 | .10 | <.008 | .09 | .71 | .89 | <.02 | E.03 | 848 |
| JUN | | | | | | | | | | | | | |
| 18... | 7.56 | .6 | 8.0 | 147 | .67 | <.04 | <.008 | <.05 | -- | -- | <.02 | E.04 | 397 |
| AUG | | | | | | | | | | | | | |
| 20... | 9.45 | .9 | 6.8 | 154 | .53 | <.04 | <.008 | <.05 | -- | -- | <.02 | E.05 | 437 |

| Date | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625) | FECAL STREP, KF STRP MF, WATER (COL/ 100 ML) (31673) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106) | ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095) | ARSENIC DIS-SOLVED (UG/L AS AS) (01000) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FEB | | | | | | | | | | | | | |
| 06... | 815 | <2 | <2 | 6.0 | .5 | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 18... | 388 | -- | -- | 5.4 | .3 | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 20... | 420 | E10k | E30k | 8.6 | .6 | 4 | .73 | 2 | 60 | <.06 | E.02 | E.6 | .19 |

| Date | COPPER, DIS-SOLVED (UG/L AS CU) (01040) | IRON, DIS-SOLVED (UG/L AS FE) (01046) | LEAD, DIS-SOLVED (UG/L AS PB) (01049) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) | 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) | 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 SULFONE WAT,FLT GF 0.7U REC (UG/L) (49313) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FEB | | | | | | | | | | | | | |
| 06... | -- | <10 | -- | E1.3 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 18... | -- | E5 | -- | E.9n | -- | -- | -- | -- | -- | <.006 | <.007 | <.004 | <.02 |
| AUG | | | | | | | | | | | | | |
| 20... | 2.1 | <10 | <.08 | .4 | 3.6 | 1.98 | E1 | <1 | <1 | <.006 | <.007 | <.004 | <.02 |

| Date | ALDICA-RB SUL-FOXIDE, WAT,FLT GF 0.7U REC (UG/L) (49314) | ALDI-CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (49312) | ALPHA BHC DIS-SOLVED (UG/L) (34253) | ATRA-ZINE, WATER, DISS, REC (UG/L) (39632) | METHYL AZIN-PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686) | BENDIO-CARB, WATER FLTRD REC (UG/L) (50299) | BEN-FLUR-ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673) | BENOMYL WATER FLTRD REC (UG/L) (50300) | BEN-SUL-FURON METHYL WAT FLT REC (UG/L) (61693) | BENTA-ZON, WATER, FLTRD, GF 0.7U REC (UG/L) (38711) | BUTYL-ATE, WATER, DISS, REC (UG/L) (04028) | CAF-FEINE, WATER FLTRD REC (UG/L) (50305) | CAR-BARYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49310) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FEB | | | | | | | | | | | | | |
| 06... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 18... | <.008 | <.04 | <.005 | .013 | <.050 | <.03 | <.010 | <.004 | <.02 | <.01 | <.002 | .035 | <.03 |
| AUG | | | | | | | | | | | | | |
| 20... | <.008 | <.04 | <.005 | <.007 | <.050 | <.03 | <.010 | <.004 | <.02 | <.01 | <.002 | E.031 | <.03 |

480354103502800 LAKE TRENTON NO. 2--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | CARBARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680) | CARBOFURAN, WATER, FLTRD, GF 0.7U REC (UG/L) (49309) | CARBOFURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674) | 3HYDRXY CARBOFURAN WAT,FLT GF 0.7U REC (UG/L) (49308) | 3-KETO CARBOFURAN WATER FLTRD REC (UG/L) (50295) | CHLORAMBEN, METHYL ESTER WATER FLTRD (UG/L) (61188) | CHLORIMURON, WATER FLTRD REC (UG/L) (50306) | CHLOROTHALONIL, WAT,FLT GF 0.7U REC (UG/L) (49306) | CHLORPYRIFOS DISSOLVED (UG/L) (38933) | CLOPYRALID, WATER, FLTRD, GF 0.7U REC (UG/L) (49305) | CYANAZINE, WATER, DISS, REC (UG/L) (04041) | CYCLOATE, WATER, DISS, REC (UG/L) (04031) | DACTHAL MONOACID, WAT,FLT GF 0.7U REC (UG/L) (49304) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FEB | | | | | | | | | | | | | |
| 06... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 18... | <.041 | <.006 | <.020 | <.006 | <2 | <.02 | <.010 | <.04 | <.005 | <.01 | <.018 | E.01 | <.01 |
| AUG | | | | | | | | | | | | | |
| 20... | <.041 | <.006 | <.020 | <.006 | <2 | <.02 | <.010 | <.04 | <.005 | <.01 | <.018 | <.01 | <.01 |

| Date | DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682) | DEETHYL ATRAZINE, WATER, DISS, REC (UG/L) (04040) | DEETHYL DEISOPROPYL ATRAZIN DISS, REC (UG/L) (04039) | DEISOPROPYL ATRAZIN WATER, DISS, REC (UG/L) (04038) | DIAZINON, DISSOLVED (UG/L) (39572) | DICAMBA WATER, FLTRD, GF 0.7U REC (UG/L) (38442) | DICHLORPROP, WATER, FLTRD, GF 0.7U REC (UG/L) (49302) | DIELDRIN DISSOLVED (UG/L) (39381) | 2,6-DIETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660) | DINOSEB WATER, FLTRD, GF 0.7U REC (UG/L) (49301) | DIPHENAMID, WATER, DISS, REC (UG/L) (04033) | DISULFOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677) | DIURON, WATER, FLTRD, GF 0.7U REC (UG/L) (49300) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FEB | | | | | | | | | | | | | |
| 06... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 18... | <.003 | E.005 | <.01 | <.04 | <.005 | <.01 | <.01 | <.005 | <.006 | <.01 | <.03 | <.02 | <.01 |
| AUG | | | | | | | | | | | | | |
| 20... | <.003 | <.006 | <.01 | <.04 | <.005 | <.01 | <.01 | <.005 | <.006 | <.01 | <.03 | <.02 | <.01 |

| Date | EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668) | ETHALFLURALIN WAT FLT 0.7 U GF, REC (UG/L) (82663) | ETHOPROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672) | FENURON, WATER, FLTRD, GF 0.7U REC (UG/L) (49297) | FLUMETSULAM WATER FLTRD REC (UG/L) (61694) | FLUOMETURON WATER, FLTRD, GF 0.7U REC (UG/L) (38811) | FONOFOS WATER DISS REC (UG/L) (04095) | HYDROXYATRAZINE WATER FLTRD REC (UG/L) (50355) | IMAZAQUIN WATER FLTRD REC (UG/L) (50356) | IMAZETHAPYR WATER FLTRD REC (UG/L) (50407) | IMIDACLOPRID WATER FLTRD REC (UG/L) (61695) | LINDANE DISSOLVED (UG/L) (39341) | LINURON WATER, FLTRD, GF 0.7U REC (UG/L) (38478) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FEB | | | | | | | | | | | | | |
| 06... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 18... | <.002 | <.009 | <.005 | <.03 | <.01 | <.03 | <.003 | <.008 | <.02 | <.02 | <.007 | <.004 | <.01 |
| AUG | | | | | | | | | | | | | |
| 20... | <.002 | <.009 | <.005 | <.03 | <.01 | <.03 | <.003 | <.008 | <.02 | <.02 | <.007 | <.004 | <.01 |

| Date | LINURON WATER FLTRD 0.7 U GF, REC (UG/L) (82666) | MALATHION, DISSOLVED (UG/L) (39532) | MCPA, WATER, FLTRD, GF 0.7U REC (UG/L) (38482) | MCPB, WATER, FLTRD, GF 0.7U REC (UG/L) (38487) | METALAXYL WATER FLTRD REC (UG/L) (50359) | METHIOCARB, WATER, FLTRD, GF 0.7U REC (UG/L) (38501) | METHOMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49296) | METHYL PARATHION WAT FLT 0.7 U GF, REC (UG/L) (82667) | METOLACHLOR WATER DISSOLV (UG/L) (39415) | METRIBUZIN SENCOR WATER DISSOLV (UG/L) (82630) | METSULFURON METHYL WAT FLT REC (UG/L) (61697) | MOLINATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671) | NAPROPAMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FEB | | | | | | | | | | | | | |
| 06... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 18... | <.035 | <.027 | .02 | <.01 | <.02 | <.008 | <.004 | <.006 | <.013 | <.006 | <.03 | <.002 | <.007 |
| AUG | | | | | | | | | | | | | |
| 20... | <.035 | <.027 | <.02 | <.01 | <.02 | <.008 | <.004 | <.006 | <.013 | <.006 | <.03 | <.002 | <.007 |

| Date | NEBURON, WATER, FLTRD, GF 0.7U REC (UG/L) (49294) | NICOSULFURON WATER FLTRD REC (UG/L) (50364) | NORFLURAZON, WATER, FLTRD, GF 0.7U REC (UG/L) (49293) | ORYZALIN, WATER, FLTRD, GF 0.7U REC (UG/L) (49292) | OXAMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (38866) | P,P' DDE DISSOLV (UG/L) (34653) | PARATHION, DISSOLVED (UG/L) (39542) | PEBULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669) | PENDIMETHALIN WAT FLT 0.7 U GF, REC (UG/L) (82683) | PERMETHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687) | PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664) | PICLORAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49291) | PRONAMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FEB | | | | | | | | | | | | | |
| 06... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 18... | <.01 | <.01 | <.02 | <.02 | <.01 | <.003 | <.010 | <.004 | <.022 | <.006 | <.011 | <.02 | <.004 |
| AUG | | | | | | | | | | | | | |
| 20... | <.01 | <.01 | <.02 | <.02 | <.01 | <.003 | <.010 | <.004 | <.022 | <.006 | <.011 | <.02 | <.004 |

480354103502800 LAKE TRENTON NO. 2--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | PROPA-CHLOR, WATER, DISS, REC (UG/L) (04024) | PRO-PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679) | PRO-PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685) | PRO-PHAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49236) | PROP-ICONA-ZOLE , WATER FLTRD REC (UG/L) (50471) | PRO-POXUR, WATER, FLTRD, GF 0.7U REC (UG/L) (38538) | SIDURON WATER FLTRD REC (UG/L) (38548) | SI-MAZINE, WATER, DISS, REC (UG/L) (04035) | SULFO-MET-RURON METHYL WTR FLT REC (UG/L) (50337) | TEBU-THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670) | TER-BACIL, WATER, DISS, REC (UG/L) (04032) | TER-BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665) | TER-BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FEB | | | | | | | | | | | | | |
| 06... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 18... | <.010 | <.011 | <.02 | <.010 | <.02 | <.008 | <.02 | <.005 | <.009 | <.02 | <.010 | <.034 | <.02 |
| AUG | | | | | | | | | | | | | |
| 20... | <.010 | <.011 | <.02 | <.010 | <.02 | <.008 | <.02 | <.005 | <.009 | <.02 | <.010 | <.034 | <.02 |

| Date | 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-BENURON METHYL WATER FLTRD (UG/L) (61159) | TRI-CLOPYR, WATER, FLTRD, GF 0.7U REC (UG/L) (49235) | TRI-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661) | UREA 3(4-CHLOR OPHENYL METHYL WAT FLT REC (UG/L) (61692) | 2,4-D METHYL ESTER, WATER FLTRD REC (UG/L) (50470) | 2,4-D, DIS-SOLVED (UG/L) (39732) | 2,4-DB WATER, FLTRD, GF 0.7U REC (UG/L) (38746) |
|---|---|---|---|---|---|---|---|---|---|
| FEB | | | | | | | | | |
| 06... | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | |
| 18... | <.005 | .004 | --u | <.02 | <.009 | <.02 | <.009 | .06 | <.02 |
| AUG | | | | | | | | | |
| 20... | <.005 | <.002 | --u | <.02 | <.009 | <.02 | <.009 | .03 | <.02 |

| Date | Time | DEPTH OF LAKE MAX. METERS (85310) | 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) | ICE THICK-NESS METERS (82131) | TRANS-PAR-ENCY (SECCHI DISK) (IN) (00077) | TEMPER-ATURE AIR (DEG C) (00020) | WIND DIREC-TION (DEG. FROM TRUE NORTH) (00036) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FEB | | | | | | | | | | | | | |
| 06... | 1050 | 1.6 | .50 | 1250 | 7.5 | 1.8 | 10.7 | 82 | 714 | .40 | 43.2 | 5.0 | 270 |
| 06... | 1051 | -- | 1.0 | 1240 | 7.5 | 3.2 | 10.0 | -- | -- | -- | -- | -- | -- |
| 06... | 1052 | -- | 1.6 | 1250 | 7.4 | 3.9 | 7.6 | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 18... | 0830 | 1.9 | .0 | 616 | 8.4 | 20.5 | 9.9 | 120 | 704 | -- | 18.0 | 21.0 | 180 |
| 18... | 0831 | -- | .50 | 618 | 8.4 | 20.5 | 9.8 | -- | -- | -- | -- | -- | -- |
| 18... | 0832 | -- | 1.0 | 618 | 8.3 | 20.0 | 9.5 | -- | -- | -- | -- | -- | -- |
| 18... | 0833 | -- | 1.5 | 616 | 8.1 | 17.4 | 7.7 | -- | -- | -- | -- | -- | -- |
| 18... | 0834 | -- | 1.9 | 608 | 8.0 | 16.7 | 6.8 | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 20... | 0850 | 1.0 | .0 | 674 | 8.3 | 18.1 | 9.8 | 112 | 711 | -- | 9.00 | 16.0 | 60 |
| 20... | 0851 | -- | 1.0 | 683 | 8.2 | 17.5 | 7.7 | -- | -- | -- | -- | -- | -- |

| Date | WIND SPEED (MILES PER HOUR) (00035) |
|---|---|
| FEB | |
| 06... | 15 |
| 06... | -- |
| 06... | -- |
| JUN | |
| 18... | <5.0 |
| 18... | -- |
| 18... | -- |
| 18... | -- |
| 18... | -- |
| AUG | |
| 20... | <5.0 |
| 20... | -- |

< Less than
E Estimated value
k Counts outside acceptable range
n Below the NDV
u Unable to determine-matrix interference

480318103503100 LAKE TRENTON NO. 3

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| 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) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FEB | | | | | | | | | | | | | |
| 06... | 1120 | .50 | 1.0 | 1390 | 8.0 | 360 | 80.3 | 39.2 | 5.90 | 4 | 163 | 49 | 345 |
| JUN | | | | | | | | | | | | | |
| a18... | 0850 | .0 | 1.9 | 586 | 8.4 | 180 | 43.6 | 17.8 | 3.94 | 2 | 55.1 | 39 | 157 |
| AUG | | | | | | | | | | | | | |
| 20... | 0835 | .0 | 1.0 | 629 | 8.5 | 220 | 53.2 | 21.0 | 4.51 | 2 | 56.5 | 35 | 179 |

| Date | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FEB | | | | | | | | | | | | | |
| 06... | 15.2 | 1.1 | 10.2 | 387 | .90 | <.04 | <.008 | <.05 | <.02 | E.05 | 944 | 909 | <2 |
| JUN | | | | | | | | | | | | | |
| a18... | 7.58 | .7 | 8.0 | 142 | .50 | <.04 | <.008 | <.05 | <.02 | E.04 | 391 | 373 | -- |
| AUG | | | | | | | | | | | | | |
| 20... | 9.30 | .9 | 6.8 | 147 | .44 | <.04 | <.008 | <.05 | <.02 | .06 | 420 | 407 | E8k |

| Date | FECAL STREP, KF STRP MF, WATER (COL/ 100 ML) (31673) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106) | ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095) | ARSENIC DIS-SOLVED (UG/L AS AS) (01000) | 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) | IRON, DIS-SOLVED (UG/L AS FE) (01046) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FEB | | | | | | | | | | | | | |
| 06... | <2 | 7.2 | 1.5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | <10 |
| JUN | | | | | | | | | | | | | |
| a18... | -- | 5.1 | .4 | -- | -- | -- | -- | -- | -- | -- | -- | -- | <10 |
| AUG | | | | | | | | | | | | | |
| 20... | 60 | 10.5 | .5 | 15 | .67 | 2 | 56 | <.06 | <.04 | .9 | .16 | 2.2 | 12 |

| Date | 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) |
|---|---|---|---|---|---|---|---|
| FEB | | | | | | | |
| 06... | -- | E1.3 | -- | -- | -- | -- | -- |
| JUN | | | | | | | |
| a18... | -- | E.8n | -- | -- | -- | -- | -- |
| AUG | | | | | | | |
| 20... | <.08 | 1.3 | 3.5 | 1.69 | <2 | <1 | 1 |

480318103503100 LAKE TRENTON NO. 3--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DEPTH OF LAKE MAX. METERS (85310) | 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) | ICE THICK-NESS METERS (82131) | TRANS-PAR-ENCY (SECCHI DISK) (IN) (00077) | TEMPER-ATURE AIR (DEG C) (00020) | WIND DIREC-TION (DEG. FROM TRUE NORTH) (00036) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FEB | | | | | | | | | | | | | |
| 06... | 1117 | 1.0 | .50 | 1390 | 7.9 | .3 | 10.1 | 75 | 714 | .50 | 26.4 | 5.0 | 270 |
| 06... | 1118 | -- | 1.0 | 1370 | 7.9 | .8 | 10.0 | -- | -- | -- | -- | -- | -- |
| JUN | | | | | | | | | | | | | |
| 18... | 0845 | 1.9 | .0 | 614 | 8.3 | 20.3 | 9.7 | 116 | 708 | -- | 18.0 | 22.0 | 180 |
| 18... | 0846 | -- | .50 | 613 | 8.4 | 20.2 | 9.7 | -- | -- | -- | -- | -- | -- |
| 18... | 0847 | -- | 1.0 | 607 | 8.3 | 19.0 | 9.0 | -- | -- | -- | -- | -- | -- |
| 18... | 0848 | -- | 1.5 | 597 | 8.2 | 17.8 | 7.6 | -- | -- | -- | -- | -- | -- |
| 18... | 0849 | -- | 1.9 | 599 | 8.1 | 17.0 | 6.8 | -- | -- | -- | -- | -- | -- |
| AUG | | | | | | | | | | | | | |
| 20... | 0830 | 1.0 | .0 | 658 | 8.1 | 17.5 | 9.2 | 103 | 711 | -- | 6.00 | 16.0 | 100 |
| 20... | 0831 | -- | 1.0 | 657 | 8.2 | 17.4 | 9.0 | -- | -- | -- | -- | -- | -- |

| Date | WIND SPEED (MILES PER HOUR) (00035) |
|---|---|
| FEB | |
| 06... | 15 |
| 06... | -- |
| JUN | |
| 18... | <5.0 |
| 18... | -- |
| 18... | -- |
| 18... | -- |
| 18... | -- |
| AUG | |
| 20... | <5.0 |
| 20... | -- |

a Quality assurance samples collected with this sample
< Less than
E Estimated value
k Counts outside acceptable range
n Below the non-detection value

480220103500800 LAKE TRENTON INFLOW DITCH

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | BARO-METRIC PRES-SURE (MM OF HG) (00025) | OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301) | OXYGEN, DIS-SOLVED (MG/L) (00300) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| JUN 18... | 1100 | .0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG a20... | 1035 | 23 | 711 | 99 | 8.9 | 8.0 | 8.3 | 596 | 623 | 17.0 | 16.8 | 220 | 54.8 |

| Date | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| JUN 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG a20... | 20.0 | 4.61 | 1 | 47.7 | 32 | 173 | 9.22 | .9 | 6.9 | 132 | .38 | <.04 | <.008 |

| Date | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | NITRO-GEN, TOTAL (MG/L AS N) (00600) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | SOLIDS, DIS-SOLVED (TONS PER DAY) (70302) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625) | FECAL STREP, KF STRP MF, WATER (COL/ 100 ML) (31673) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106) | ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| JUN 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG a20... | .12 | .50 | E.02 | .09 | 24.0 | 392 | 381 | >148 | >4500 | 5.6 | .5 | 3 | .60 |

| Date | 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) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| JUN 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG a20... | 2 | 49 | <.06 | E.02 | E.6 | .20 | 2.4 | <10 | <.08 | 31.1 | 3.4 | 1.63 | E1 |

| Date | SILVER, DIS-SOLVED (UG/L AS AG) (01075) | ZINC, DIS-SOLVED (UG/L AS ZN) (01090) | 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 SULFONE WAT,FLT GF 0.7U REC (UG/L) (49313) | ALDICA-RB SUL-FOXIDE, WAT,FLT GF 0.7U REC (UG/L) (49314) | ALDI-CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (49312) | ALPHA BHC DIS-SOLVED (UG/L) (34253) | ATRA-ZINE, WATER, DISS, REC (UG/L) (39632) | METHYL AZIN-PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686) | BENDIO-CARB, WATER FLTRD REC (UG/L) (50299) | BEN-FLUR-ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| JUN 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG a20... | <1 | 1 | <.006 | <.007 | <.004 | <.02 | <.008 | <.04 | <.005 | <.007 | <.050 | <.03 | <.010 |

| Date | BENOMYL WATER FLTRD REC (UG/L) (50300) | BEN-SUL-FURON METHYL WAT FLT REC (UG/L) (61693) | BENTA-ZON, WATER, FLTRD, GF 0.7U REC (UG/L) (38711) | BUTYL-ATE, WATER, DISS, REC (UG/L) (04028) | CAF-FEINE, WATER FLTRD REC (UG/L) (50305) | CAR-BARYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49310) | CAR-BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680) | CARBO-FURAN, WATER, FLTRD, GF 0.7U REC (UG/L) (49309) | CARBO-FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674) | 3HYDRXY CARBO-FURAN WAT,FLT GF 0.7U REC (UG/L) (49308) | 3-KETO CARBO-FURAN WATER FLTRD REC (UG/L) (50295) | CHLOR-AMBEN, METHYL ESTER WATER FLTRD (UG/L) (61188) | CHLORI-MURON, WATER FLTRD REC (UG/L) (50306) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| JUN 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG a20... | <.004 | <.02 | <.01 | <.002 | <.010 | <.03 | <.041 | <.006 | <.020 | <.006 | <2 | <.02 | <.010 |

480220103500800 LAKE TRENTON INFLOW DITCH--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | CHLORO-THALO-NIL, WAT,FLT GF 0.7U REC (UG/L) (49306) | CHLOR-PYRIFOS DIS-SOLVED (UG/L) (38933) | CLOPYR-ALID, WATER, FLTRD, GF 0.7U REC (UG/L) (49305) | CYANA-ZINE, WATER, DISS, REC (UG/L) (04041) | CY-CLOATE, WATER, DISS, REC (UG/L) (04031) | DACTHAL MONO-ACID, WAT,FLT GF 0.7U REC (UG/L) (49304) | DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682) | DEETHYL ATRA-ZINE, WATER, DISS, REC (UG/L) (04040) | DEETHYL DEISO-PROPYL ATRAZIN DISS, REC (UG/L) (04039) | DEISO-PROPYL ATRAZIN WATER, DISS, REC (UG/L) (04038) | DI-AZINON, DIS-SOLVED (UG/L) (39572) | DICAMBA WATER, FLTRD, GF 0.7U REC (UG/L) (38442) | DICHLOR PROP, WATER, FLTRD, GF 0.7U REC (UG/L) (49302) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| JUN 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG a20... | <.04 | <.005 | .11 | <.018 | <.01 | <.01 | <.003 | <.006 | <.01 | <.04 | <.005 | <.01 | <.01 |

| Date | 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) | DIPHEN-AMID, WATER, DISS, REC (UG/L) (04033) | 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) | 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) | FLUMET-SULAM WATER FLTRD REC (UG/L) (61694) | FLUO-METURON WATER, FLTRD, GF 0.7U REC (UG/L) (38811) | FONOFOS WATER DISS REC (UG/L) (04095) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| JUN 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG a20... | <.005 | <.006 | <.01 | <.03 | <.02 | <.01 | <.002 | <.009 | <.005 | <.03 | <.01 | <.03 | <.003 |

| Date | HYDROXY ATRA-ZINE WATER FLTRD REC (UG/L) (50355) | IMAZ-AQUIN WATER FLTRD REC (UG/L) (50356) | IMAZE-THAPYR WATER FLTRD REC (UG/L) (50407) | IMID-ACLOP-RID WATER FLTRD REC (UG/L) (61695) | LINDANE DIS-SOLVED (UG/L) (39341) | LINURON WATER, FLTRD, GF 0.7U REC (UG/L) (38478) | LIN-URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666) | MALA-THION, DIS-SOLVED (UG/L) (39532) | MCPA, WATER, FLTRD, GF 0.7U REC (UG/L) (38482) | MCPB, WATER, FLTRD, GF 0.7U REC (UG/L) (38487) | METAL-AXYL WATER FLTRD REC (UG/L) (50359) | METHIO-CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (38501) | METH-OMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49296) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| JUN 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG a20... | <.008 | <.02 | <.02 | <.007 | <.004 | <.01 | <.035 | <.027 | <.02 | <.01 | <.02 | <.008 | <.004 |

| 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) | MET-SUL-FURON METHYL WAT FLT REC (UG/L) (61697) | 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) | NICOSUL FURON WATER FLTRD REC (UG/L) (50364) | NORFLUR AZON, WATER, FLTRD, GF 0.7U REC (UG/L) (49293) | ORY-ZALIN, WATER, FLTRD, GF 0.7U REC (UG/L) (49292) | OXAMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (38866) | P,P' DDE DISSOLV (UG/L) (34653) | PARA-THION, DIS-SOLVED (UG/L) (39542) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| JUN 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG a20... | <.006 | <.013 | <.006 | <.03 | <.002 | <.007 | <.01 | <.01 | <.02 | <.02 | <.01 | <.003 | <.010 |

| Date | PEB-ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669) | PENDI-METH-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683) | PER-METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687) | PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664) | PIC-LORAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49291) | PRON-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676) | PROPA-CHLOR, WATER, DISS, REC (UG/L) (04024) | PRO-PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679) | PRO-PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685) | PRO-PHAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49236) | PROP-ICONA-ZOLE , WATER FLTRD REC (UG/L) (50471) | PRO-POXUR, WATER, FLTRD, GF 0.7U REC (UG/L) (38538) | SIDURON WATER FLTRD REC (UG/L) (38548) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| JUN 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG a20... | <.004 | <.022 | <.006 | <.011 | <.02 | <.004 | <.010 | <.011 | <.02 | <.010 | <.02 | <.008 | <.02 |

| Date | SI-MAZINE, WATER, DISS, REC (UG/L) (04035) | SULFO-MET-RURON METHYL WTR FLT REC (UG/L) (50337) | TEBU-THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670) | TER-BACIL, WATER, DISS, REC (UG/L) (04032) | 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-BENURON METHYL WATER FLTRD (UG/L) (61159) | TRI-CLOPYR, WATER, FLTRD, GF 0.7U REC (UG/L) (49235) | TRI-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661) | UREA 3( 4-CHLOR OPHENYL METHYL WAT FLT REC (UG/L) (61692) | 2,4-D METHYL ESTER, WATER FLTRD REC (UG/L) (50470) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| JUN 18... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG a20... | <.005 | <.009 | <.02 | <.010 | <.034 | <.02 | <.005 | <.002 | --u | <.02 | <.009 | <.02 | <.009 |

480220103500800 LAKE TRENTON INFLOW DITCH--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | 2,4-D, DIS-SOLVED (UG/L) (39732) | 2,4-DB WATER, FLTRD, GF 0.7U REC (UG/L) (38746) |
|---|---|---|
| JUN | | |
| 18... | -- | -- |
| AUG | | |
| a0... | E.01 | <.02 |

a Quality assurance samples collected with this sample
< Less than
> Greater than
E Estimated value
u Unable to determine-matrix interference

ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

473633101161400 LAKE SAKAKAWEA NEAR LAKE AUDUBON

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| 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) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 02... | 1125 | .0 | .50 | 666 | 8.5 | 210 | 49.6 | 21.5 | 4.06 | 2 | 59.4 | 37 | 175 |
| 02... | 1130 | 12.5 | 13.0 | 691 | 8.4 | 220 | 49.8 | 22.5 | 4.18 | 2 | 63.6 | 38 | 180 |
| 02... | 1135 | .0 | 1.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 20... | 1010 | .0 | .30 | 635 | 8.4 | 210 | 51.0 | 20.9 | 3.94 | 2 | 54.2 | 35 | 180 |
| 20... | 1015 | 17.0 | 17.3 | 642 | 8.4 | 220 | 51.7 | 21.4 | 3.98 | 2 | 54.7 | 35 | 180 |
| 20... | 1020 | .0 | 3.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 08... | 1130 | .70 | 1.7 | 659 | 8.3 | 210 | 50.7 | 20.7 | 3.85 | 2 | 56.9 | 36 | 173 |
| 08... | 1135 | 16.0 | 17.0 | 1050 | 7.9 | 310 | 75.7 | 28.8 | 4.49 | 3 | 108 | 43 | 250 |
| 08... | 1140 | 8.0 | 9.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 28... | 1150 | .50 | 1.0 | 666 | 8.3 | 210 | 49.7 | 20.4 | 3.90 | 2 | 56.2 | 36 | 172 |
| 28... | 1155 | 12.5 | 13.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 28... | 1200 | 8.0 | 9.0 | 671 | 8.3 | 210 | 50.5 | 20.5 | 3.92 | 2 | 57.9 | 37 | 173 |
| MAR | | | | | | | | | | | | | |
| 26... | 1015 | .60 | 1.1 | 672 | 8.3 | 220 | 53.4 | 21.2 | 3.96 | 2 | 59.1 | 36 | 172 |
| 26... | 1020 | 11.0 | 11.5 | 671 | 8.3 | 210 | 51.4 | 20.4 | 3.77 | 2 | 58.8 | 37 | 174 |
| 26... | 1025 | 14.0 | 14.5 | 989 | 7.8 | 310 | 75.7 | 28.2 | 4.57 | 2 | 98.8 | 41 | 237 |
| 26... | 1030 | 16.2 | 16.7 | 1380 | 7.6 | 400 | 100 | 35.7 | 5.24 | 3 | 155 | 45 | 316 |
| 26... | 1035 | .0 | 2.5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 26... | 0945 | .0 | .30 | 609 | 8.4 | 200 | 48.6 | 19.7 | 3.51 | 2 | 54.8 | 37 | 159 |
| 26... | 0950 | 14.7 | 15.0 | 616 | 8.4 | 200 | 48.8 | 19.8 | 3.74 | 2 | 54.7 | 36 | 159 |
| 26... | 0955 | .0 | 1.5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 13... | 1140 | .0 | .50 | 560 | 8.3 | 210 | 49.3 | 19.9 | 3.81 | 2 | 54.5 | 36 | 164 |
| 13... | 1145 | 16.0 | 16.5 | 623 | 8.4 | 200 | 49.4 | 19.7 | 3.76 | 2 | 53.3 | 36 | 164 |
| 13... | 1150 | .0 | 2.5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 02... | 1115 | .0 | .50 | 646 | 8.3 | 210 | 49.0 | 20.6 | 4.07 | 2 | 58.3 | 37 | 165 |
| 02... | 1120 | 16.5 | 17.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 02... | 1125 | .0 | 1.6 | 660 | 8.1 | 210 | 50.5 | 20.7 | 4.19 | 2 | 60.8 | 38 | 170 |
| 24... | 1130 | .0 | .50 | 635 | 8.4 | 220 | 52.4 | 21.0 | 4.12 | 2 | 61.5 | 38 | 167 |
| 24... | 1135 | 12.5 | 13.0 | 638 | 8.3 | 220 | 52.9 | 20.8 | 4.24 | 2 | 61.3 | 37 | 168 |
| 24... | 1140 | .0 | 2.5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605) | NITRO-GEN, TOTAL (MG/L AS N) (00600) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | CARBON, ORGANIC TOTAL (MG/L AS C) (00680) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 02... | 9.37 | .6 | 6.3 | 161 | .25 | <.04 | <.008 | E.03 | -- | -- | <.02 | <.06 | 4.9 |
| 02... | 9.55 | .6 | 6.2 | 169 | .27 | <.04 | <.008 | E.03 | -- | -- | <.02 | <.06 | 4.3 |
| 02... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 20... | 9.06 | .6 | 6.6 | 155 | .21 | <.04 | <.008 | E.03 | -- | -- | <.02 | <.06 | 4.8 |
| 20... | 9.21 | .6 | 6.6 | 157 | .22 | <.04 | <.008 | E.03 | -- | -- | <.02 | <.06 | 6.3 |
| 20... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 08... | 8.66 | .6 | 6.8 | 160 | .28 | E.03 | <.008 | .05 | -- | .33 | <.02 | <.06 | 3.1 |
| 08... | 9.76 | .6 | 9.2 | 302 | .42 | .12 | <.008 | .08 | .29 | .49 | <.02 | <.06 | 4.5 |
| 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 28... | 9.29 | .6 | 6.4 | 163 | .24 | <.04 | <.008 | E.04 | -- | -- | <.02 | <.06 | 3.6 |
| 28... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 28... | 9.43 | .6 | 6.4 | 165 | .30 | <.04 | <.008 | E.04 | -- | -- | <.02 | <.06 | 3.9 |
| MAR | | | | | | | | | | | | | |
| 26... | 8.79 | .6 | 6.5 | 162 | .22 | <.04 | <.008 | E.04 | -- | -- | <.02 | <.06 | 3.5 |
| 26... | 8.66 | .6 | 6.4 | 163 | .24 | <.04 | <.008 | E.05 | -- | -- | <.02 | <.06 | 3.4 |
| 26... | 9.58 | .6 | 8.0 | 281 | .27 | E.02 | <.008 | .09 | -- | .36 | <.02 | <.06 | 4.6 |
| 26... | 11.2 | .6 | 10.9 | 422 | .36 | .06 | <.008 | .27 | .31 | .64 | <.02 | <.06 | 5.6 |
| 26... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 26... | 7.48 | .4 | 5.9 | 149 | .23 | <.04 | <.008 | E.04 | -- | -- | <.02 | <.06 | 3.0 |
| 26... | 7.51 | .5 | 5.9 | 150 | .21 | <.04 | <.008 | E.04 | -- | -- | <.02 | <.06 | 2.9 |
| 26... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 13... | 8.88 | .5 | 6.0 | 158 | .24 | <.04 | <.008 | E.04 | -- | -- | <.02 | <.06 | 3.1 |
| 13... | 8.70 | .6 | 5.9 | 157 | .19 | <.04 | <.008 | E.04 | -- | -- | <.02 | <.06 | 3.0 |
| 13... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | | |
| 02... | 9.17 | .5 | 5.8 | 160 | .18 | <.04 | <.008 | <.05 | -- | -- | <.02 | <.06 | 3.9 |
| 02... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 02... | 9.17 | .6 | 6.3 | 163 | .21 | <.04 | <.008 | .06 | -- | .27 | <.02 | <.06 | 3.5 |
| 24... | 9.65 | .6 | 5.6 | 160 | .21 | .07 | <.008 | E.03 | .13 | -- | <.02 | <.06 | 4.2 |
| 24... | 9.63 | .6 | 5.8 | 161 | .24 | <.04 | <.008 | .05 | -- | .29 | <.02 | <.06 | 3.4 |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

473633101161400 LAKE SAKAKAWEA NEAR LAKE AUDUBON--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|---|---|---|---|---|
| NOV | | | | | | |
| 02... | 438 | 417 | -- | -- | 10 | E.9 |
| 02... | 450 | 433 | -- | -- | E5 | 4.3 |
| 02... | -- | -- | 1.3 | <.1 | -- | -- |
| 20... | 412 | 409 | -- | -- | E5 | E1.9 |
| 20... | 412 | 414 | -- | -- | E6 | 3.4 |
| 20... | -- | -- | .4 | <.1 | -- | -- |
| FEB | | | | | | |
| 08... | 424 | 412 | -- | -- | <10 | <2.0 |
| 08... | 712 | 689 | -- | -- | <10 | 339 |
| 08... | -- | -- | .4 | <.1 | -- | -- |
| 28... | 432 | 413 | -- | -- | <10 | E.9n |
| 28... | -- | -- | 1.0 | <.1 | -- | -- |
| 28... | 432 | 418 | -- | -- | <10 | 4.4 |
| MAR | | | | | | |
| 26... | 439 | 419 | -- | -- | <10 | E1.3n |
| 26... | 438 | 417 | -- | -- | <10 | E3.2b |
| 26... | 674 | 649 | -- | -- | <10 | 126 |
| 26... | 975 | 932 | -- | -- | <10 | 15.7 |
| 26... | -- | -- | 1.1 | <.1 | -- | -- |
| APR | | | | | | |
| 26... | 405 | 385 | -- | -- | <10 | E2.7b |
| 26... | 404 | 387 | -- | -- | <10 | E2.4b |
| 26... | -- | -- | .2 | <.1 | -- | -- |
| MAY | | | | | | |
| 13... | 408 | 399 | -- | -- | <10 | E2.3b |
| 13... | 421 | 396 | -- | -- | <10 | E1.4n |
| 13... | -- | -- | .6 | <.1 | -- | -- |
| JUL | | | | | | |
| 02... | 418 | 407 | -- | -- | <10 | E1.5 |
| 02... | -- | -- | E.5 | <.1 | -- | -- |
| 02... | 439 | 418 | -- | -- | <10 | E1.1n |
| 24... | 428 | 415 | -- | -- | <10 | E2.3 |
| 24... | 428 | 418 | -- | -- | <10 | E1.9 |
| 24... | -- | -- | E.7 | <.1 | -- | -- |

ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

473633101161400 LAKE SAKAKAWEA NEAR LAKE AUDUBON--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DEPTH OF LAKE MAX. METERS (85310) | 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) | TUR-BID-ITY FIELD WATER UNFLTRD (NTU) (61028) | OXYGEN, DIS-SOLVED (MG/L) (00300) | OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301) | BARO-METRIC PRES-SURE (MM OF HG) (00025) | ICE THICK-NESS METERS (82131) | TRANS-PAR-ENCY (SECCHI DISK) (IN) (00077) | TEMPER-ATURE AIR (DEG C) (00020) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 02... | 1115 | 13 | .0 | 684 | 8.1 | 7.2 | 11 | 12.5 | 110 | 717 | -- | 20.4 | 13.0 |
| 02... | 1116 | -- | 1.0 | 690 | 8.2 | 7.2 | 14 | 11.0 | -- | -- | -- | -- | -- |
| 02... | 1117 | -- | 2.0 | 690 | 8.2 | 7.2 | 12 | 10.9 | -- | -- | -- | -- | -- |
| 02... | 1118 | -- | 4.0 | 694 | 8.2 | 7.1 | 12 | 10.8 | -- | -- | -- | -- | -- |
| 02... | 1119 | -- | 6.0 | 698 | 8.2 | 7.0 | 14 | 10.8 | -- | -- | -- | -- | -- |
| 02... | 1120 | -- | 8.0 | 705 | 8.2 | 6.8 | 15 | 10.8 | -- | -- | -- | -- | -- |
| 02... | 1121 | -- | 10.0 | 707 | 8.2 | 6.6 | 16 | 10.8 | -- | -- | -- | -- | -- |
| 02... | 1122 | -- | 12.0 | 713 | 8.1 | 6.5 | 17 | 10.7 | -- | -- | -- | -- | -- |
| 02... | 1123 | -- | 13.0 | 714 | 8.1 | 6.5 | 19 | 10.7 | -- | -- | -- | -- | -- |
| 20... | 1000 | 17 | .0 | 667 | 8.1 | 6.4 | .0 | 11.5 | 100 | 711 | -- | 58.8 | 7.5 |
| 20... | 1001 | -- | 2.0 | 670 | 8.2 | 6.4 | 2.0 | 11.4 | -- | -- | -- | -- | -- |
| 20... | 1002 | -- | 4.0 | 668 | 8.2 | 6.6 | 2.0 | 11.0 | -- | -- | -- | -- | -- |
| 20... | 1003 | -- | 6.0 | 669 | 8.2 | 6.6 | 1.0 | 10.9 | -- | -- | -- | -- | -- |
| 20... | 1004 | -- | 8.1 | 669 | 8.2 | 6.5 | 2.0 | 10.7 | -- | -- | -- | -- | -- |
| 20... | 1005 | -- | 10.1 | 669 | 8.2 | 6.5 | 4.0 | 10.8 | -- | -- | -- | -- | -- |
| 20... | 1006 | -- | 12.1 | 669 | 8.2 | 6.5 | 6.0 | 10.7 | -- | -- | -- | -- | -- |
| 20... | 1007 | -- | 15.0 | 675 | 8.2 | 6.3 | 2.0 | 10.7 | -- | -- | -- | -- | -- |
| 20... | 1008 | -- | 17.3 | 676 | 8.2 | 6.3 | 1.0 | 10.8 | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | | |
| 08... | 1150 | 17 | .70 | 693 | 7.9 | .2 | .0 | 15.2 | 112 | 712 | .70 | 163 | 3.5 |
| 08... | 1152 | -- | 2.2 | 683 | 8.0 | .5 | .0 | 13.5 | -- | -- | -- | -- | -- |
| 08... | 1154 | -- | 4.2 | 683 | 8.1 | .5 | .0 | 13.1 | -- | -- | -- | -- | -- |
| 08... | 1156 | -- | 6.0 | 686 | 8.1 | .5 | .0 | 13.1 | -- | -- | -- | -- | -- |
| 08... | 1158 | -- | 8.3 | 687 | 8.1 | .5 | .0 | 13.1 | -- | -- | -- | -- | -- |
| 08... | 1200 | -- | 10.6 | 694 | 8.1 | .5 | .0 | 13.1 | -- | -- | -- | -- | -- |
| 08... | 1202 | -- | 12.5 | 697 | 8.1 | .7 | .0 | 12.9 | -- | -- | -- | -- | -- |
| 08... | 1204 | -- | 14.8 | 1250 | 7.5 | 1.8 | .0 | 10.2 | -- | -- | -- | -- | -- |
| 08... | 1206 | -- | 16.6 | 1510 | 7.2 | 2.7 | .0 | 7.3 | -- | -- | -- | -- | -- |
| 08... | 1208 | -- | 16.8 | 1600 | 7.1 | 2.9 | .0 | 4.5 | -- | -- | -- | -- | -- |
| 28... | 1135 | 13 | .0 | 693 | 7.6 | 1.6 | .0 | 12.6 | 96 | 718 | .55 | 184 | -- |
| 28... | 1136 | -- | 1.2 | 681 | 7.9 | 1.8 | .0 | 12.7 | -- | -- | -- | -- | -- |
| 28... | 1137 | -- | 2.8 | 682 | 8.0 | 1.8 | .0 | 13.1 | -- | -- | -- | -- | -- |
| 28... | 1138 | -- | 4.1 | 680 | 8.1 | 1.8 | .0 | 13.4 | -- | -- | -- | -- | -- |
| 28... | 1139 | -- | 6.1 | 682 | 8.1 | 1.7 | .0 | 13.6 | -- | -- | -- | -- | -- |
| 28... | 1140 | -- | 8.2 | 689 | 8.1 | 1.6 | .0 | 13.9 | -- | -- | -- | -- | -- |
| 28... | 1141 | -- | 10.4 | 699 | 8.1 | 1.5 | .0 | 13.4 | -- | -- | -- | -- | -- |
| 28... | 1142 | -- | 12.5 | 705 | 8.1 | 1.5 | .0 | 13.0 | -- | -- | -- | -- | -- |
| 28... | 1143 | -- | 13.3 | 712 | 8.1 | 1.6 | .0 | 13.1 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 26... | 1005 | 17 | .60 | 701 | 8.2 | .7 | 33 | 13.2 | 98 | 719 | .60 | 12.4 | -3.0 |
| 26... | 1006 | -- | 1.9 | 684 | 8.1 | 1.8 | 6.0 | 12.8 | -- | -- | -- | -- | -- |
| 26... | 1007 | -- | 3.9 | 685 | 8.1 | 1.8 | 15 | 12.9 | -- | -- | -- | -- | -- |
| 26... | 1008 | -- | 6.1 | 686 | 8.2 | 1.9 | 3.0 | 13.2 | -- | -- | -- | -- | -- |
| 26... | 1009 | -- | 8.7 | 696 | 8.1 | 1.9 | 2.0 | 13.2 | -- | -- | -- | -- | -- |
| 26... | 1010 | -- | 11.2 | 706 | 8.1 | 1.9 | 2.0 | 13.1 | -- | -- | -- | -- | -- |
| 26... | 1011 | -- | 14.2 | 1390 | 7.4 | 2.9 | 3.0 | 6.6 | -- | -- | -- | -- | -- |
| 26... | 1012 | -- | 16.2 | 1900 | 7.2 | 4.2 | 4.0 | .8 | -- | -- | -- | -- | -- |
| 26... | 1013 | -- | 16.7 | 2030 | 7.1 | 4.4 | -- | .3 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 26... | 0930 | 15 | .0 | 636 | 8.0 | 2.0 | 4.0 | 13.1 | 98 | 735 | -- | 28.8 | 2.0 |
| 26... | 0931 | -- | 1.5 | 636 | 8.1 | 2.0 | 10 | 12.9 | -- | -- | -- | -- | -- |
| 26... | 0932 | -- | 3.0 | 636 | 8.1 | 1.9 | 9.0 | 12.9 | -- | -- | -- | -- | -- |
| 26... | 0933 | -- | 4.5 | 636 | 8.1 | 2.0 | 9.0 | 12.8 | -- | -- | -- | -- | -- |
| 26... | 0934 | -- | 6.0 | 636 | 8.1 | 1.9 | 8.0 | 12.8 | -- | -- | -- | -- | -- |
| 26... | 0935 | -- | 7.5 | 636 | 8.1 | 7.1 | 9.0 | 12.8 | -- | -- | -- | -- | -- |
| 26... | 0936 | -- | 9.0 | 639 | 8.1 | 2.4 | 8.0 | 12.7 | -- | -- | -- | -- | -- |
| 26... | 0937 | -- | 10.5 | 639 | 8.1 | 2.4 | 9.0 | 12.7 | -- | -- | -- | -- | -- |
| 26... | 0938 | -- | 12.0 | 640 | 8.1 | 2.5 | 9.0 | 12.7 | -- | -- | -- | -- | -- |
| 26... | 0939 | -- | 13.5 | 641 | 8.1 | 2.6 | 9.0 | 12.7 | -- | -- | -- | -- | -- |
| 26... | 0940 | -- | 15.0 | 642 | 8.1 | 2.7 | 10 | 12.6 | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 13... | 1116 | 17 | .0 | 656 | 8.0 | 6.2 | .0 | 11.6 | 99 | 725 | -- | 46.8 | 11.0 |
| 13... | 1118 | -- | 2.0 | 655 | 8.0 | 6.1 | 2.0 | 11.2 | -- | -- | -- | -- | -- |
| 13... | 1120 | -- | 4.0 | 658 | 8.1 | 6.0 | 2.0 | 11.2 | -- | -- | -- | -- | -- |
| 13... | 1122 | -- | 6.0 | 659 | 8.1 | 6.0 | 2.0 | 10.9 | -- | -- | -- | -- | -- |
| 13... | 1124 | -- | 8.0 | 659 | 8.1 | 5.9 | 2.0 | 11.2 | -- | -- | -- | -- | -- |
| 13... | 1126 | -- | 10.0 | 660 | 8.1 | 5.8 | 1.0 | 10.9 | -- | -- | -- | -- | -- |
| 13... | 1128 | -- | 12.0 | 659 | 8.1 | 5.8 | 1.0 | 11.2 | -- | -- | -- | -- | -- |
| 13... | 1130 | -- | 14.0 | 655 | 8.1 | 5.7 | 1.0 | 11.0 | -- | -- | -- | -- | -- |
| 13... | 1132 | -- | 16.0 | 654 | 8.1 | 5.6 | 1.0 | 11.1 | -- | -- | -- | -- | -- |
| 13... | 1134 | -- | 16.7 | 654 | 8.2 | 5.6 | -- | 11.0 | -- | -- | -- | -- | -- |

473633101161400 LAKE SAKAKAWEA NEAR LAKE AUDUBON--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | WIND DIREC-TION (DEG. FROM TRUE NORTH) (00036) | WIND SPEED (MILES PER HOUR) (00035) |
|---|---|---|
| NOV | | |
| 02... | 240 | 6.0 |
| 02... | -- | -- |
| 02... | -- | -- |
| 02... | -- | -- |
| 02... | -- | -- |
| 02... | -- | -- |
| 02... | -- | -- |
| 02... | -- | -- |
| 02... | -- | -- |
| 20... | 220 | 7.0 |
| 20... | -- | -- |
| 20... | -- | -- |
| 20... | -- | -- |
| 20... | -- | -- |
| 20... | -- | -- |
| 20... | -- | -- |
| 20... | -- | -- |
| 20... | -- | -- |
| FEB | | |
| 08... | 60 | 6.0 |
| 08... | -- | -- |
| 08... | -- | -- |
| 08... | -- | -- |
| 08... | -- | -- |
| 08... | -- | -- |
| 08... | -- | -- |
| 08... | -- | -- |
| 08... | -- | -- |
| 08... | -- | -- |
| 28... | 0 | 12 |
| 28... | -- | -- |
| 28... | -- | -- |
| 28... | -- | -- |
| 28... | -- | -- |
| 28... | -- | -- |
| 28... | -- | -- |
| 28... | -- | -- |
| 28... | -- | -- |
| MAR | | |
| 26... | 170 | 9.0 |
| 26... | -- | -- |
| 26... | -- | -- |
| 26... | -- | -- |
| 26... | -- | -- |
| 26... | -- | -- |
| 26... | -- | -- |
| 26... | -- | -- |
| 26... | -- | -- |
| APR | | |
| 26... | 70 | <5.0 |
| 26... | -- | -- |
| 26... | -- | -- |
| 26... | -- | -- |
| 26... | -- | -- |
| 26... | -- | -- |
| 26... | -- | -- |
| 26... | -- | -- |
| 26... | -- | -- |
| 26... | -- | -- |
| 26... | -- | -- |
| MAY | | |
| 13... | 330 | <5.0 |
| 13... | -- | -- |
| 13... | -- | -- |
| 13... | -- | -- |
| 13... | -- | -- |
| 13... | -- | -- |
| 13... | -- | -- |
| 13... | -- | -- |
| 13... | -- | -- |
| 13... | -- | -- |

ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

473633101161400 LAKE SAKAKAWEA NEAR LAKE AUDUBON--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DEPTH OF LAKE MAX. METERS (85310) | 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) | TUR-BID-ITY FIELD WATER UNFLTRD (NTU) (61028) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| JUL | | | | | | | | | | | | | |
| 02... | 1100 | 18 | .0 | 661 | 8.2 | 21.0 | -- | 8.4 | 100 | 717 | 32.0 | 22.0 | 220 |
| 02... | 1101 | -- | 1.0 | 661 | 8.2 | 21.0 | -- | 8.3 | -- | -- | -- | -- | -- |
| 02... | 1102 | -- | 2.1 | 662 | 8.2 | 20.9 | -- | 8.3 | -- | -- | -- | -- | -- |
| 02... | 1103 | -- | 3.5 | 662 | 8.2 | 20.8 | -- | 8.3 | -- | -- | -- | -- | -- |
| 02... | 1104 | -- | 5.1 | 663 | 8.2 | 20.8 | -- | 8.3 | -- | -- | -- | -- | -- |
| 02... | 1105 | -- | 7.0 | 663 | 8.2 | 20.7 | -- | 8.3 | -- | -- | -- | -- | -- |
| 02... | 1106 | -- | 9.2 | 665 | 8.2 | 19.2 | -- | 8.4 | -- | -- | -- | -- | -- |
| 02... | 1107 | -- | 11.2 | 665 | 8.1 | 16.5 | -- | 8.7 | -- | -- | -- | -- | -- |
| 02... | 1108 | -- | 13.2 | 670 | 7.9 | 13.1 | -- | 8.4 | -- | -- | -- | -- | -- |
| 02... | 1109 | -- | 16.0 | 672 | 7.8 | 12.2 | -- | 8.1 | -- | -- | -- | -- | -- |
| 02... | 1110 | -- | 17.6 | 674 | 7.8 | 12.1 | -- | 7.9 | -- | -- | -- | -- | -- |
| 24... | 1100 | 13 | .0 | 626 | 8.2 | 21.2 | 48 | 8.4 | 101 | 715 | 48.0 | 24.0 | 30 |
| 24... | 1102 | -- | 1.0 | 627 | 8.2 | 21.2 | 44 | 8.7 | -- | -- | -- | -- | -- |
| 24... | 1104 | -- | 2.0 | 627 | 8.2 | 21.2 | 39 | 8.7 | -- | -- | -- | -- | -- |
| 24... | 1106 | -- | 3.0 | 627 | 8.2 | 21.1 | 32 | 8.7 | -- | -- | -- | -- | -- |
| 24... | 1108 | -- | 4.0 | 628 | 8.2 | 21.1 | 29 | 8.6 | -- | -- | -- | -- | -- |
| 24... | 1110 | -- | 5.0 | 627 | 8.2 | 21.1 | 25 | 8.3 | -- | -- | -- | -- | -- |
| 24... | 1112 | -- | 6.0 | 627 | 8.2 | 21.0 | 20 | 8.3 | -- | -- | -- | -- | -- |
| 24... | 1114 | -- | 7.0 | 629 | 8.2 | 20.9 | 18 | 8.1 | -- | -- | -- | -- | -- |
| 24... | 1116 | -- | 8.0 | 627 | 8.2 | 20.6 | 15 | 8.0 | -- | -- | -- | -- | -- |
| 24... | 1118 | -- | 10.0 | 629 | 8.1 | 19.7 | 15 | 8.0 | -- | -- | -- | -- | -- |
| 24... | 1120 | -- | 12.0 | 631 | 8.1 | 18.9 | 16 | 7.9 | -- | -- | -- | -- | -- |
| 24... | 1122 | -- | 13.1 | 637 | 8.0 | 18.3 | -- | 7.5 | -- | -- | -- | -- | -- |

| Date | WIND SPEED (MILES PER HOUR) (00035) |
|---|---|
| JUL | |
| 02... | 7.0 |
| 02... | -- |
| 02... | -- |
| 02... | -- |
| 02... | -- |
| 02... | -- |
| 02... | -- |
| 02... | -- |
| 02... | -- |
| 02... | -- |
| 02... | -- |
| 24... | <5.0 |
| 24... | -- |
| 24... | -- |
| 24... | -- |
| 24... | -- |
| 24... | -- |
| 24... | -- |
| 24... | -- |
| 24... | -- |
| 24... | -- |
| 24... | -- |
| 24... | -- |
| 24... | -- |

< Less than
E Estimated value
b Value was extrapolated below
n Below the non-detection value

473629101154100 LAKE AUDUBON NEAR SNAKE CREEK PUMP PLANT

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| 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) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SODIUM AD-SORP-TION RATIO (00931) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 02... | 1220 | .0 | -- | 959 | 8.5 | 260 | 41.2 | 37.2 | 6.37 | 3 | 113 | 48 | 243 |
| 02... | 1225 | 16.0 | -- | 960 | 8.6 | 260 | 41.1 | 37.2 | 6.44 | 3 | 113 | 48 | 231 |
| 02... | 1230 | .0 | 4.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 20... | 1125 | .0 | .50 | 938 | 8.6 | 250 | 39.3 | 36.0 | 6.14 | 3 | 108 | 48 | 243 |
| 20... | 1130 | 15.6 | 15.9 | 939 | 8.6 | 250 | 39.3 | 36.1 | 6.34 | 3 | 109 | 48 | 243 |
| 20... | 1135 | .0 | 8.5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 09... | 1030 | .0 | .50 | 1010 | 8.5 | 260 | 41.1 | 38.5 | 6.31 | 3 | 115 | 48 | 238 |
| 09... | 1035 | 10.3 | 10.8 | 1010 | 8.5 | 260 | 41.2 | 38.5 | 6.50 | 3 | 113 | 48 | 235 |
| 09... | 1040 | .0 | 10.8 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | CARBON, ORGANIC TOTAL (MG/L AS C) (00680) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 02... | 13.9 | .5 | 3.1 | 260 | .53 | <.04 | <.008 | E.02 | <.02 | <.06 | 6.3 | 644 | 621 |
| 02... | 13.4 | .6 | 3.2 | 262 | .51 | <.04 | <.008 | <.05 | <.02 | <.06 | 7.5 | 644 | 615 |
| 02... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 20... | 12.9 | .7 | 3.3 | 262 | .48 | E.03 | <.008 | <.05 | <.02 | <.06 | 7.6 | 632 | 614 |
| 20... | 13.0 | .6 | 3.4 | 264 | .52 | E.03 | <.008 | <.05 | <.02 | <.06 | 6.0 | 648 | 617 |
| 20... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 09... | 14.1 | .6 | 2.9 | 291 | .48 | E.03 | <.008 | E.03 | <.02 | <.06 | 6.0 | 656 | 652 |
| 09... | 14.1 | .7 | 2.8 | 289 | .50 | E.03 | <.008 | E.03 | .06 | .07 | 5.9 | 678 | 647 |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| Date | CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953) | CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954) | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) |
|---|---|---|---|---|
| NOV | | | | |
| 02... | -- | -- | <10 | E1.4 |
| 02... | -- | -- | <10 | E1.1 |
| 02... | E1.1 | <.1 | -- | -- |
| 20... | -- | -- | <10 | E1.7 |
| 20... | -- | -- | <10 | E2.6 |
| 20... | .7 | .2 | -- | -- |
| JAN | | | | |
| 09... | -- | -- | <10 | E1.9 |
| 09... | -- | -- | <10 | E3.1 |
| 09... | E.3 | <.1 | -- | -- |

ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

473629101154100 LAKE AUDUBON NEAR SNAKE CREEK PUMP PLANT--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| Date | Time | DEPTH OF LAKE MAX. METERS (85310) | 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) | TUR-BID-ITY FIELD WATER UNFLTRD (NTU) (61028) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NOV | | | | | | | | | | | | | |
| 02... | 1210 | 16 | .0 | 988 | 8.3 | 5.0 | .0 | 11.6 | 97 | 716 | 84.0 | 13.0 | 180 |
| 02... | 1211 | -- | 1.0 | 988 | 8.3 | 4.9 | .0 | 11.1 | -- | -- | -- | -- | -- |
| 02... | 1212 | -- | 2.0 | 988 | 8.3 | 4.9 | .0 | 11.1 | -- | -- | -- | -- | -- |
| 02... | 1213 | -- | 4.0 | 989 | 8.3 | 4.9 | .0 | 10.6 | -- | -- | -- | -- | -- |
| 02... | 1214 | -- | 6.0 | 988 | 8.3 | 4.9 | .0 | 10.9 | -- | -- | -- | -- | -- |
| 02... | 1215 | -- | 8.0 | 988 | 8.3 | 4.9 | .0 | 11.0 | -- | -- | -- | -- | -- |
| 02... | 1216 | -- | 10.0 | 989 | 8.3 | 4.9 | .0 | 11.0 | -- | -- | -- | -- | -- |
| 02... | 1217 | -- | 12.0 | 990 | 8.3 | 4.9 | .0 | 11.0 | -- | -- | -- | -- | -- |
| 02... | 1218 | -- | 14.0 | 990 | 8.3 | 4.9 | .0 | 11.0 | -- | -- | -- | -- | -- |
| 02... | 1219 | -- | 16.1 | 990 | 8.3 | 4.8 | .0 | 10.9 | -- | -- | -- | -- | -- |
| 20... | 1110 | 16 | .0 | 995 | 8.4 | 4.2 | .0 | 11.7 | 96 | 712 | 169 | 8.5 | 225 |
| 20... | 1111 | -- | 1.5 | 995 | 8.4 | 4.2 | .0 | 11.7 | -- | -- | -- | -- | -- |
| 20... | 1112 | -- | 3.0 | 996 | 8.4 | 4.2 | .0 | 11.6 | -- | -- | -- | -- | -- |
| 20... | 1113 | -- | 4.5 | 996 | 8.4 | 4.2 | .0 | 11.6 | -- | -- | -- | -- | -- |
| 20... | 1114 | -- | 6.0 | 996 | 8.4 | 4.2 | .0 | 11.6 | -- | -- | -- | -- | -- |
| 20... | 1115 | -- | 7.5 | 995 | 8.4 | 4.2 | .0 | 11.4 | -- | -- | -- | -- | -- |
| 20... | 1116 | -- | 9.0 | 997 | 8.4 | 4.2 | .0 | 11.4 | -- | -- | -- | -- | -- |
| 20... | 1117 | -- | 10.5 | 995 | 8.4 | 4.2 | .0 | 11.5 | -- | -- | -- | -- | -- |
| 20... | 1118 | -- | 12.0 | 995 | 8.4 | 4.2 | .0 | 11.4 | -- | -- | -- | -- | -- |
| 20... | 1119 | -- | 13.6 | 996 | 8.4 | 4.2 | .0 | 11.5 | -- | -- | -- | -- | -- |
| 20... | 1120 | -- | 15.0 | 995 | 8.4 | 4.2 | .0 | 11.4 | -- | -- | -- | -- | -- |
| 20... | 1121 | -- | 15.9 | 996 | 8.4 | 4.2 | .0 | 11.2 | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | | |
| 09... | 1015 | 11 | .0 | 1160 | 7.6 | 1.2 | .0 | 16.0 | 122 | 710 | 425 | 3.0 | 255 |
| 09... | 1016 | -- | 1.1 | 1070 | 7.9 | 1.5 | .0 | 14.3 | -- | -- | -- | -- | -- |
| 09... | 1017 | -- | 2.7 | 1060 | 8.0 | 1.5 | .0 | 14.8 | -- | -- | -- | -- | -- |
| 09... | 1018 | -- | 3.8 | 1060 | 8.0 | 1.5 | .0 | 14.9 | -- | -- | -- | -- | -- |
| 09... | 1019 | -- | 4.9 | 1050 | 8.0 | 1.6 | .0 | 14.9 | -- | -- | -- | -- | -- |
| 09... | 1020 | -- | 6.0 | 1050 | 8.0 | 1.6 | .0 | 15.2 | -- | -- | -- | -- | -- |
| 09... | 1021 | -- | 7.6 | 1050 | 8.0 | 1.8 | .0 | 14.7 | -- | -- | -- | -- | -- |
| 09... | 1022 | -- | 8.9 | 1050 | 8.0 | 1.8 | .0 | 15.5 | -- | -- | -- | -- | -- |
| 09... | 1023 | -- | 10.1 | 1050 | 8.0 | 1.9 | .0 | 16.2 | -- | -- | -- | -- | -- |
| 09... | 1024 | -- | 10.8 | 1050 | 8.0 | 1.9 | .0 | 16.2 | -- | -- | -- | -- | -- |

| Date | WIND SPEED (MILES PER HOUR) (00035) |
|---|---|
| NOV | |
| 02... | <5.0 |
| 02... | -- |
| 02... | -- |
| 02... | -- |
| 02... | -- |
| 02... | -- |
| 02... | -- |
| 02... | -- |
| 02... | -- |
| 02... | -- |
| 20... | 7.0 |
| 20... | -- |
| 20... | -- |
| 20... | -- |
| 20... | -- |
| 20... | -- |
| 20... | -- |
| 20... | -- |
| 20... | -- |
| 20... | -- |
| 20... | -- |
| 20... | -- |
| JAN | |
| 09... | <5.0 |
| 09... | -- |
| 09... | -- |
| 09... | -- |
| 09... | -- |
| 09... | -- |
| 09... | -- |
| 09... | -- |
| 09... | -- |
| 09... | -- |

< Less than
E Estimated value

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$^1/_4$NW$^1/_4$SW$^1/_4$ 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[1] model 301 wet/dry precipitation collector mounted on ground surface. Precipitation quantity is determined by a Belfort[1] 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 2001 TO SEPTEMBER 2002

| 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) |
|---|---|---|---|---|---|---|---|---|
| 09/25 to 10/02 | b.00 | -- | -- | -- | -- | -- | -- | -- |
| 10/02 to 10/09 | .04 | 125 | -- | 36 | -- | 6.7 | 2.11 | .202 |
| 10/09 to 10/16 | .79 | 99 | 5 | 4 | 5.1 | 5.9 | .064 | .013 |
| 10/16 to 10/23 | .15 | 73 | 16 | 15 | 6.2 | 6.6 | .501 | .112 |
| 10/23 to 10/30 | -- | -- | 4 | 4 | 5.5 | 6.0 | .126 | .036 |
| 10/30 to 11/06 | .05 | 40 | -- | a16 | -- | a5.8 | a.425 | a.043 |
| 11/06 to 11/13 | .06 | 133 | -- | 10 | -- | 5.4 | .184 | .031 |
| 11/13 to 11/20 | b.00 | -- | -- | -- | -- | -- | -- | -- |
| 11/20 to 11/26 | .10 | 40 | -- | 9 | -- | 5.7 | .183 | .036 |
| 11/26 to 12/04 | .10 | 20 | -- | -- | -- | -- | -- | -- |
| 12/04 to 12/11 | .52 | 37 | -- | 4 | 5.6 | 5.6 | .037 | .009 |
| 12/11 to 12/18 | .10 | 10 | -- | a17 | -- | a5.4 | a.136 | a<.013 |
| 12/18 to 12/25 | .25 | 20 | -- | 15 | -- | 6.0 | .463 | .058 |
| 12/25 to 01/01 | <.01 | -- | -- | -- | -- | -- | -- | -- |
| 01/01 to 01/08 | b.00 | -- | -- | -- | -- | -- | -- | -- |
| 01/08 to 01/15 | .05 | -- | -- | -- | -- | -- | -- | -- |
| 01/15 to 01/22 | b<.01 | 100 | -- | 6 | -- | 5.5 | -- | -- |
| 01/22 to 01/29 | <.01 | >100 | -- | a9 | -- | a5.0 | a.151 | a.024 |
| 01/29 to 02/05 | b.00 | -- | -- | -- | -- | -- | -- | -- |
| 02/05 to 02/12 | b<.01 | 100 | -- | -- | -- | -- | -- | -- |
| 02/12 to 02/19 | .00 | -- | -- | -- | -- | -- | -- | -- |
| 02/19 to 02/26 | .00 | -- | -- | -- | -- | -- | -- | -- |
| 02/26 to 03/05 | b.05 | <20 | -- | -- | -- | -- | -- | -- |
| 03/05 to 03/12 | .38 | 8 | -- | 4 | -- | 5.9 | .240 | .032 |
| 03/12 to 03/19 | .19 | 53 | 20 | 21 | 5.1 | 6.2 | .660 | .091 |
| 03/19 to 03/26 | b<.01 | 100 | -- | -- | -- | -- | -- | -- |
| 03/26 to 04/02 | .00 | -- | -- | -- | -- | -- | -- | -- |
| 04/02 to 04/09 | <.01 | >200 | -- | a50 | -- | a7.2 | a4.82 | a.581 |
| 04/09 to 04/16 | b<.01 | 100 | -- | 19 | -- | 6.6 | -- | -- |
| 04/16 to 04/23 | .10 | 90 | -- | 10 | -- | 6.4 | .463 | .037 |
| 04/23 to 04/30 | .45 | 93 | 9 | 9 | 5.6 | 6.5 | .293 | .064 |
| 04/30 to 05/07 | .30 | 87 | -- | 11 | -- | 6.4 | .284 | .047 |
| 05/07 to 05/14 | 1.41 | 81 | 5 | 4 | -- | 5.9 | .083 | .014 |
| 05/14 to 05/21 | b.00 | -- | -- | -- | -- | -- | -- | -- |
| 05/21 to 05/28 | .25 | 92 | 13 | 13 | -- | 6.6 | .516 | .083 |
| 05/28 to 06/03 | .05 | 80 | -- | 43 | -- | 7.0 | 2.19 | .460 |
| 06/03 to 06/11 | 6.2 | 97 | 7 | 6 | 5.4 | 6.1 | .211 | .016 |
| 06/11 to 06/18 | .43 | 93 | 5 | 5 | 5.8 | 6.2 | .054 | .016 |
| 06/18 to 06/25 | 1.94 | 101 | 7 | 7 | 5.5 | 6.1 | .193 | .023 |
| 06/25 to 07/02 | b<.01 | 100 | -- | -- | -- | -- | -- | -- |
| 07/02 to 07/09 | .45 | 104 | 13 | 13 | -- | 6.1 | .440 | .074 |
| 07/09 to 07/16 | .05 | 140 | -- | 10 | -- | 5.1 | .235 | .051 |
| 07/16 to 07/23 | .09 | 100 | 21 | 22 | -- | 6.6 | .662 | .169 |
| 07/23 to 07/30 | .37 | 92 | -- | 9 | -- | 5.9 | .281 | .072 |
| 07/30 to 08/06 | .14 | 100 | 11 | 11 | 6.0 | 6.1 | .426 | .088 |
| 08/06 to 08/13 | 1.8 | 98 | 8 | 8 | 5.5 | 5.9 | .216 | .049 |
| 08/13 to 08/20 | .75 | 97 | 5 | 5 | 5.8 | 5.8 | .109 | .019 |
| 08/20 to 08/27 | .70 | 91 | 7 | 7 | 6.2 | 6.1 | .198 | .050 |
| 08/27 to 09/03 | 3.13 | 99 | 6 | 7 | 5.8 | 5.9 | .117 | .020 |
| 09/03 to 09/10 | .05 | 120 | -- | 27 | -- | 6.4 | 1.39 | .132 |
| 09/10 to 09/17 | b.00 | -- | -- | -- | -- | -- | -- | -- |
| 09/17 to 09/24 | 2.8 | 102 | 6 | 7 | 5.8 | 6.0 | .189 | .027 |

RED RIVER OF THE NORTH BASIN

484714097442301 ICELANDIC STATE PARK, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| 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) |
|---|---|---|---|---|---|---|---|
| 09/25 to 10/02 | -- | -- | -- | -- | -- | -- | -- |
| 10/02 to 10/09 | .116 | .201 | 3.5 | .13 | 1.18 | 1.82 | <.003 |
| 10/09 to 10/16 | .007 | <.003 | .32 | .02 | .069 | .170 | <.003 |
| 10/16 to 10/23 | .030 | .070 | 1.6 | .10 | .312 | .940 | <.003 |
| 10/23 to 10/30 | .005 | .012 | .26 | .02 | .085 | .190 | <.003 |
| 10/30 to 11/06 | a.066 | a .034 | a1.9 | a.15 | a.741 | a1.03 | a<.009 |
| 11/06 to 11/13 | .021 | .022 | 1.5 | .08 | .354 | .590 | <.003 |
| 11/13 to 11/20 | -- | -- | -- | -- | -- | -- | -- |
| 11/20 to 11/26 | .038 | .022 | .96 | .06 | .304 | .390 | <.003 |
| 11/26 to 12/04 | -- | -- | -- | -- | -- | -- | -- |
| 12/04 to 12/11 | .007 | .006 | .27 | .03 | .147 | .170 | <.003 |
| 12/11 to 12/18 | a.013 | a<.013 | a1.4 | a.07 | a1.10 | a1.26 | a<.013 |
| 12/18 to 12/25 | .028 | .020 | 1.2 | .05 | .879 | .900 | <.003 |
| 12/25 to 01/01 | -- | -- | -- | -- | -- | -- | -- |
| 01/01 to 01/08 | -- | -- | -- | -- | -- | -- | -- |
| 01/08 to 01/15 | -- | -- | -- | -- | -- | -- | -- |
| 01/15 to 01/22 | -- | -- | -- | -- | -- | -- | -- |
| 01/22 to 01/29 | a<.018 | a<.018 | a<.06 | a.09 | a.377 | a<.090 | a<.018 |
| 01/29 to 02/05 | -- | -- | -- | -- | -- | -- | -- |
| 02/05 to 02/12 | -- | -- | -- | -- | -- | -- | -- |
| 02/12 to 02/19 | -- | -- | -- | -- | -- | -- | -- |
| 02/19 to 02/26 | -- | -- | -- | -- | -- | -- | -- |
| 02/26 to 03/05 | -- | -- | -- | -- | -- | -- | -- |
| 03/05 to 03/12 | .016 | .011 | .25 | .04 | .082 | .090 | <.003 |
| 03/12 to 03/19 | .042 | .020 | 2.1 | .12 | .940 | 1.18 | <.003 |
| 03/19 to 03/26 | -- | -- | -- | -- | -- | -- | -- |
| 03/26 to 04/02 | -- | -- | -- | -- | -- | -- | -- |
| 04/02 to 04/09 | a1.09 | a.440 | a5.3 | a.32 | a.826 | a1.37 | a<.011 |
| 04/09 to 04/16 | -- | -- | -- | -- | -- | -- | -- |
| 04/16 to 04/23 | .032 | .101 | .31 | .05 | .165 | .300 | <.003 |
| 04/23 to 04/30 | .022 | .025 | .72 | .04 | .226 | .690 | <.003 |
| 04/30 to 05/07 | .078 | .013 | .94 | .04 | .232 | .780 | <.003 |
| 05/07 to 05/14 | .015 | .010 | .36 | .02 | .121 | .230 | <.003 |
| 05/14 to 05/21 | -- | -- | -- | -- | -- | -- | -- |
| 05/21 to 05/28 | .025 | .042 | .78 | .04 | .362 | .900 | <.003 |
| 05/28 to 06/03 | .485 | .267 | 3.9 | .21 | 1.39 | 2.10 | <.003 |
| 06/03 to 06/11 | .018 | .029 | .60 | .03 | .154 | .370 | <.003 |
| 06/11 to 06/18 | <.003 | .006 | .38 | <.005 | .104 | .410 | <.003 |
| 06/18 to 06/25 | .027 | .024 | .52 | .04 | .273 | .470 | <.003 |
| 06/25 to 07/02 | -- | -- | -- | -- | -- | -- | -- |
| 07/02 to 07/09 | .051 | .063 | .86 | .09 | .415 | .830 | <.003 |
| 07/09 to 07/16 | .030 | .038 | .59 | .25 | .379 | .360 | <.003 |
| 07/16 to 07/23 | .039 | .059 | 1.9 | .12 | .711 | 1.39 | <.003 |
| 07/23 to 07/30 | .014 | .020 | 1.1 | .03 | .220 | .490 | <.003 |
| 07/30 to 08/06 | .023 | .064 | .93 | .08 | .410 | .610 | <.003 |
| 08/06 to 08/13 | .013 | .035 | .91 | .04 | .286 | .470 | <.003 |
| 08/13 to 08/20 | .010 | .019 | .40 | .02 | .163 | .260 | <.003 |
| 08/20 to 08/27 | .010 | .034 | .48 | .04 | .286 | .430 | <.003 |
| 08/27 to 09/03 | .008 | .018 | .69 | .03 | .244 | .440 | <.003 |
| 09/03 to 09/10 | .072 | .230 | 3.8 | .17 | .897 | 1.25 | <.003 |
| 09/10 to 09/17 | -- | -- | -- | -- | -- | -- | -- |
| 09/17 to 09/24 | .007 | .015 | .81 | .02 | .193 | .430 | <.003 |

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.

< Less than.

JAMES RIVER BASIN

470732099140204 WOODWORTH, ND
(National Trends Network precipitation-quality station)

LOCATION.--Lat 47°14'32", long 99°14'02", in SE$^1/_4$SW$^1/_4$SW$^1/_4$ 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 Aerochem Metrics[1] model 301 wet/dry precipitation collector mounted on ground surface. Precipitation quantity is determined by a Belfort[1] 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 2001 TO SEPTEMBER 2002

| 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) |
|---|---|---|---|---|---|---|---|---|
| 09/25 to 10/02 | .00 | -- | -- | -- | -- | -- | -- | -- |
| 10/02 to 10/09 | .05 | 60 | -- | 38 | -- | 6.6 | 1.75 | .169 |
| 10/09 to 10/16 | 1.08 | 84 | 4 | 5 | 5.3 | 5.6 | .135 | .023 |
| 10/16 to 10/23 | b.00 | -- | -- | -- | -- | -- | -- | -- |
| 10/23 to 10/30 | -- | -- | 7 | 8 | 6.2 | 6.5 | .487 | .105 |
| 10/30 to 11/06 | b.01 | <100 | -- | 20 | -- | 6.2 | -- | -- |
| 11/06 to 11/13 | .05 | 100 | 34 | 33 | 4.8 | 5.0 | .900 | .137 |
| 11/13 to 11/20 | .00 | -- | -- | -- | -- | -- | -- | -- |
| 11/20 to 11/27 | b.00 | -- | -- | -- | -- | -- | -- | -- |
| 11/27 to 12/04 | b.03 | <33 | -- | -- | -- | -- | -- | -- |
| 12/04 to 12/11 | .04 | 100 | -- | 21 | -- | 5.0 | .146 | .013 |
| 12/11 to 12/18 | b.02 | <50 | -- | 45 | -- | 6.4 | -- | -- |
| 12/18 to 12/25 | .10 | 30 | -- | -- | -- | -- | -- | -- |
| 12/25 to 01/01 | b.00 | -- | -- | -- | -- | -- | -- | -- |
| 01/01 to 01/08 | b.00 | -- | -- | -- | -- | -- | -- | -- |
| 01/08 to 01/15 | .05 | 40 | -- | a10 | -- | a5.3 | a.176 | a.019 |
| 01/15 to 01/22 | b.00 | -- | -- | -- | -- | -- | -- | -- |
| 01/22 to 01/29 | .02 | 100 | -- | a3 | -- | a5.4 | a.046 | a<.012 |
| 01/29 to 02/05 | b.01 | <100 | -- | -- | -- | -- | -- | -- |
| 02/05 to 02/12 | b.01 | <100 | -- | -- | -- | -- | -- | -- |
| 02/12 to 02/19 | b.00 | -- | -- | -- | -- | -- | -- | -- |
| 02/19 to 02/26 | b.02 | <50 | -- | -- | -- | -- | -- | -- |
| 02/26 to 03/05 | b.03 | <33 | -- | -- | -- | -- | -- | -- |
| 03/05 to 03/12 | b.06 | <17 | -- | -- | -- | -- | -- | -- |
| 03/12 to 03/19 | b.09 | <11 | -- | 28 | -- | 6.2 | -- | -- |
| 03/19 to 03/26 | b.00 | -- | -- | -- | -- | -- | -- | -- |
| 03/26 to 04/02 | .18 | 78 | 5 | 5 | 5.9 | 6.0 | .095 | .010 |
| 04/02 to 04/09 | .05 | 20 | -- | a13 | -- | a6.1 | a.303 | a.034 |
| 04/09 to 04/16 | .18 | 83 | 14 | 13 | 5.9 | 6.5 | .371 | .043 |
| 04/16 to 04/23 | .76 | 86 | 8 | 9 | 5.8 | 6.6 | .308 | .036 |
| 04/23 to 04/30 | .16 | 69 | 13 | 14 | 5.4 | 6.4 | .307 | .051 |
| 04/30 to 05/07 | .04 | 200 | 15 | 9 | 6.0 | 6.5 | .336 | .064 |
| 05/07 to 05/14 | .34 | 97 | 13 | 12 | 6.4 | 6.7 | .765 | .086 |
| 05/14 to 05/21 | b.01 | <100 | -- | -- | -- | -- | -- | -- |
| 05/21 to 05/28 | .24 | 83 | 25 | 24 | 6.4 | 6.9 | 1.02 | .180 |
| 05/28 to 06/04 | .10 | 100 | 27 | 26 | 6.3 | 6.7 | 1.20 | .166 |
| 06/04 to 06/11 | .25 | 104 | 21 | 22 | 6.4 | 6.6 | .686 | .087 |
| 06/11 to 06/18 | .04 | 75 | -- | 12 | -- | 6.2 | .279 | .061 |
| 06/18 to 06/25 | .80 | 105 | 12 | 12 | 6.2 | 6.2 | .347 | .035 |
| 06/25 to 07/02 | b.01 | <100 | -- | 43 | -- | 6.4 | -- | -- |
| 07/02 to 07/09 | 1.7 | 101 | 8 | 8 | 6.5 | 6.2 | .246 | .033 |
| 07/09 to 07/16 | .75 | 88 | 7 | 5 | 6.6 | 5.9 | .060 | .013 |
| 07/16 to 07/23 | .23 | 100 | 15 | 15 | 6.4 | 6.4 | .555 | .105 |
| 07/23 to 07/30 | .41 | 102 | 12 | 10 | 6.5 | 6.3 | .309 | .069 |
| 07/30 to 08/06 | .17 | 124 | 13 | 11 | 6.7 | 6.4 | .328 | .051 |
| 08/06 to 08/13 | .77 | 84 | 13 | 12 | 6.9 | 6.3 | .431 | .076 |
| 08/13 to 08/20 | .23 | 91 | 12 | 10 | 7.2 | 6.5 | .418 | .081 |
| 08/20 to 08/27 | .02 | 100 | -- | a27 | -- | a6.4 | a.553 | a.133 |
| 08/27 to 09/03 | .55 | 91 | 11 | 10 | 6.4 | 5.8 | .240 | .033 |
| 09/03 to 09/10 | .31 | 106 | 4 | 3 | 6.4 | 5.5 | .019 | <.003 |
| 09/10 to 09/17 | .00 | -- | -- | -- | -- | -- | -- | -- |
| 09/17 to 09/24 | .10 | 90 | 18 | 17 | 6.4 | 6.5 | .718 | .098 |

470732099140204 WOODWORTH, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

| 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) |
|---|---|---|---|---|---|---|---|
| 09/25 to 10/02 | -- | -- | -- | -- | -- | -- | -- |
| 10/02 to 10/09 | .180 | .370 | 4.1 | .25 | 1.44 | 1.27 | .006 |
| 10/09 to 10/16 | .032 | .013 | .54 | .02 | .100 | .180 | <.003 |
| 10/16 to 10/23 | -- | -- | -- | -- | -- | -- | -- |
| 10/23 to 10/30 | .046 | .092 | .65 | .08 | .167 | .360 | <.003 |
| 10/30 to 11/06 | -- | -- | -- | -- | -- | -- | -- |
| 11/06 to 11/13 | .147 | .080 | 5.1 | .22 | 1.18 | 1.47 | <.003 |
| 11/13 to 11/20 | -- | -- | -- | -- | -- | -- | -- |
| 11/20 to 11/27 | -- | -- | -- | -- | -- | -- | -- |
| 11/27 to 12/04 | -- | -- | -- | -- | -- | -- | -- |
| 12/04 to 12/11 | .019 | .031 | 1.9 | .06 | 1.18 | 1.35 | <.003 |
| 12/11 to 12/18 | -- | -- | -- | -- | -- | -- | -- |
| 12/18 to 12/25 | -- | -- | -- | -- | -- | -- | -- |
| 12/25 to 01/01 | -- | -- | -- | -- | -- | -- | -- |
| 01/01 to 01/08 | -- | -- | -- | -- | -- | -- | -- |
| 01/08 to 01/15 | a.035 | a.013 | a.99 | a.08 | a.409 | a.480 | a<.009 |
| 01/15 to 01/22 | -- | -- | -- | -- | -- | -- | -- |
| 01/22 to 01/29 | a<.012 | a<.012 | a.13 | a.06 | a.106 | a<.060 | a<.012 |
| 01/29 to 02/05 | -- | -- | -- | -- | -- | -- | -- |
| 02/05 to 02/12 | -- | -- | -- | -- | -- | -- | -- |
| 02/12 to 02/19 | -- | -- | -- | -- | -- | -- | -- |
| 02/19 to 02/26 | -- | -- | -- | -- | -- | -- | -- |
| 02/26 to 03/05 | -- | -- | -- | -- | -- | -- | -- |
| 03/05 to 03/12 | -- | -- | -- | -- | -- | -- | -- |
| 03/12 to 03/19 | -- | -- | -- | -- | -- | -- | -- |
| 03/19 to 03/26 | -- | -- | -- | -- | -- | -- | -- |
| 03/26 to 04/02 | .022 | .009 | .52 | .03 | .148 | .310 | <.003 |
| 04/02 to 04/09 | a.082 | a.058 | a1.2 | a.16 | a.587 | a.780 | a<.014 |
| 04/09 to 04/16 | .061 | .026 | .97 | .07 | .395 | .880 | <.003 |
| 04/16 to 04/23 | .042 | .024 | .49 | .05 | .211 | .600 | <.003 |
| 04/23 to 04/30 | .047 | .032 | 1.7 | .05 | .502 | 1.01 | <.003 |
| 04/30 to 05/07 | .111 | .032 | .86 | .05 | .219 | .580 | <.003 |
| 05/07 to 05/14 | .083 | .049 | .95 | .08 | .450 | .570 | <.003 |
| 05/14 to 05/21 | -- | -- | -- | -- | -- | -- | -- |
| 05/21 to 05/28 | .046 | .125 | 1.3 | .08 | .649 | 1.47 | <.003 |
| 05/28 to 06/04 | .204 | .109 | 2.0 | .23 | .924 | 1.51 | <.003 |
| 06/04 to 06/11 | .081 | .077 | 2.0 | .12 | .663 | 1.53 | <.003 |
| 06/11 to 06/18 | .022 | .090 | 1.0 | 1.7 | .465 | .840 | <.003 |
| 06/18 to 06/25 | .060 | .080 | .73 | .09 | .384 | .570 | <.003 |
| 06/25 to 07/02 | -- | -- | -- | -- | -- | -- | -- |
| 07/02 to 07/09 | .031 | .035 | .54 | .06 | .275 | .430 | <.003 |
| 07/09 to 07/16 | .010 | .011 | .35 | .03 | .127 | .330 | <.003 |
| 07/16 to 07/23 | .028 | .059 | 1.4 | .07 | .591 | .920 | <.003 |
| 07/23 to 07/30 | .023 | .029 | .64 | .04 | .326 | .640 | <.003 |
| 07/30 to 08/06 | .029 | .056 | .78 | .06 | .415 | .780 | <.003 |
| 08/06 to 08/13 | .063 | .071 | 1.2 | .05 | .384 | .690 | <.003 |
| 08/13 to 08/20 | .026 | .058 | .76 | .06 | .335 | .540 | <.003 |
| 08/20 to 08/27 | a.063 | a.081 | a2.4 | a.16 | a.768 | a1.94 | a<.011 |
| 08/27 to 09/03 | .020 | .033 | 1.2 | .06 | .419 | .610 | <.003 |
| 09/03 to 09/10 | <.003 | <.003 | .06 | .02 | .058 | .070 | <.003 |
| 09/10 to 09/17 | -- | -- | -- | -- | -- | -- | -- |
| 09/17 to 09/24 | .068 | .100 | 1.9 | .09 | .578 | .970 | <.003 |

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.

< Less than.

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# CONVERSION FACTORS AND VERTICAL DATUM

| Multiply | By | To obtain |
|---|---|---|
| | ***Length*** | |
| 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 |
| | ***Area*** | |
| acre | $4.047 \times 10^{3}$ | square meter |
| | $4.047 \times 10^{-1}$ | square hectometer |
| | $4.047 \times 10^{-3}$ | square kilometer |
| square mile ($mi^2$) | $2.590 \times 10^{0}$ | square kilometer |
| | ***Volume*** | |
| 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 ($ft^3$) | $2.832 \times 10^{1}$ | cubic decimeter |
| | $2.832 \times 10^{-2}$ | cubic meter |
| cubic-foot-per-second day [($ft^3$/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 |
| | ***Flow*** | |
| cubic foot per second ($ft^3$/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 |
| | ***Mass*** | |
| ton (short) | $9.072 \times 10^{-1}$ | megagram or metric ton |