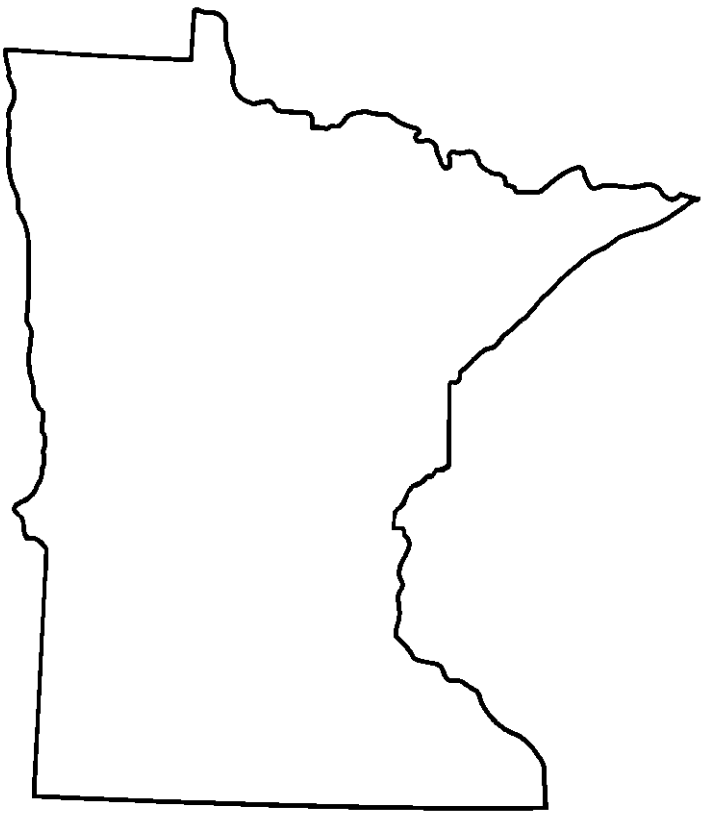
U.S. Department of the Interior
U.S. Geological Survey

Water Resources Data
Minnesota
Water Year 2002

By G.B. Mitton, K.G. Guttormson, G.W. Stratton, and E.S. Wakeman

Water-Data Report MN-02-1



Prepared in cooperation with the Minnesota Department of Natural Resources, Division of Waters; the Minnesota Department of Transportation; and with other State, municipal, and Federal agencies.

U.S. Department of the Interior

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Mounds View, Minnesota, 2003

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Water-Data Report MN-02-1

Preface

This volume of the annual hydrologic report of Minnesota is one of a series of annual reports that documents hydrologic data gathered from the U.S. Geological Survey's surface- and ground-water data-collection networks in each state, Puerto Rico, and the Trust Territories. These records of streamflow, ground-water levels, and water quality provide the hydrologic information needed by state, local, and Federal agencies, and the private sector for developing and managing our Nation's land and water resources. Hydrologic data for Minnesota, including four major basins; Great Lakes, Souris-Red Rainy River, Upper Mississippi River, and Missouri River, are contained in this volume.

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. The authors had primary responsibility for assuring that the information contained herein is accurate, complete, and adheres to U.S. Geological Survey policy and established guidelines.

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REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. AGENCY USE ONLY *(Leave blank)*	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	April 15, 2002	Annual, Oct. 1, 2001 through Sept. 30, 2002

4. TITLE AND SUBTITLE
Water Resources Data, Minnesota, Water Year 2002

5. FUNDING NUMBERS

6. AUTHOR(S)
Gregory B. Mitton, K.G. Guttormson, G.W. Stratton, and E.S. Wakeman.

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
U.S. Geological Survey, Water Resources Division
2280 Woodale Drive
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USGS-WRD-MN-02-1

8. PERFORMING ORGANIZATION REPORT NUMBER
U.S. Geological Survey, Water Resources Division

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)
2280 Woodale Drive
Mounds View, MN 55112

USGS-WRD-MN-02-1

10. SPONSORING / MONITORING AGENCY REPORT NUMBER
Prepared in cooperation with the State of Minnesota and with other agencies.

11. SUPPLEMENTARY NOTES

No restriction on distribution. This report may be purchased from:

12a. DISTRIBUTION / AVAILABILITY STATEMENT

National Technical Information Service
Springfield, VA 22161

12b. DISTRIBUTION CODE

13. ABSTRACT *(Maximum 200 words)*

Water resources data for the 2002 water year for Minnesota consist of records of stage, discharge, and water quality of streams; stage of lakes and reservoirs; ground-water quality; and water quality in wells. This report contains discharge records for 101 stream-gaging stations; stage for 11 lakes and reservoirs; water quality for 6 stream-gaging stations; peak flow data for 89 high-flow partial-record stations, and water levels for 3 groundwater observation wells. Additional water data were collected at various sites that are not part of the systematic data collection program, and are published as miscellaneous measurements. These data represent that part of the National Water Data System operated by the U.S. Geological Survey for cooperating State and Federal agencies in Minnesota.

14. SUBJECT TERMS
*Minnesota, *Hydrologic data, *Surface water, *Ground water, *Water quality, Flow rate, Gaging stations, Lakes, Reservoirs, Chemical analyses, Sediments, Water temperatures, Sampling sites, Water levels, Water analyses, Data collection

15. NUMBER OF PAGES
349

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
Unclassified	Unclassified		

CONTENTS

ILLUSTRATIONS

Note.--Data for partial-record stations and miscellaneous sites for both surface-water quantity and quality are published in separate sections of the data report. See references at the end of this list for page numbers for these sections.

[Letters after station name designates type of data: (d) discharge; (e) gage height, elevation, or contents; (c) chemical, radio-chemical, or pesticides; (b) biological or micro-biological; (p) physical (water temperature, sediment, or specific conductance)]

ST. LAWRENCE RIVER BASIN

HUDSON BAY BASIN

STREAMS TRIBUTARY TO LAKE WINNIPEG (head of Nelson River):

RED RIVER OF THE NORTH BASIN

GROUND-WATER WELLS, BY COUNTY, FOR WHICH RECORDS ARE PUBLISHED IN THIS VOLUME

GROUND-WATER LEVELS

QUALITY OF GROUND-WATER RECORDS

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE ONLY STATIONS

The following continuous-record surface-water discharge or stage-only stations (gaging stations) in Minnesota 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.

[Letters after station name designate type of data collected: (d) discharge, (e) elevation (stage only)].

Station name	Station number	Drainage area (mi^2)	Period of record
Pigeon River above mouth of Arrow River, MN (d)	04010000	256	1924-27
Loon Lake, northeast side, near Grand Portage, MN (e)	475807089483501	-	1998-2002
Cuffs Lake, east side, near Grand Portage, MN (e)	475647089443301	-	1998-2002
Poplar River at Lutsen, MN (d)	04012500	114	1911 (e), 1912-17, 1928-47, 1952-61
Cross River at Schroeder, MN (d)	04013000	91	1931-32
Baptism River near Beaver Bay, MN (d)	04014500	140	1928-93
Beaver Creek (Beaver Bay Run) at Beaver Bay, MN (d)	04015000	126	1911-14, 1928-31
South Branch Partridge River near Babbitt, MN (d)	04015455	18.5	1977-80
Partridge River above Colby Lake, at Hoyt Lakes, MN (d)	04015475	106	1979-88
Second Creek near Aurora, MN (d)	04015500	29	1955-80
Partridge River near Aurora, MN (d)	04016000	161	1942-82
St. Louis River near Aurora, MN (d)	04016500	290	1942-87
Embarrass River at Embarrass, MN (d)	04017000	93.8	1942-64
Embarrass River near McKinley, MN (d)	04018000	171	1953-62
St. Louis River at Forbes, MN (d)	04018750	713	1965-90
East Two Rivers near Iron Junction, MN (d)	04018900	40.0	1966-79
West Two Rivers near Iron Junction, MN (d)	04019000	65.3	1953-62, 1965-79
West Swan River near Silica, MN (d)	04019300	16.3	1963-79
East Swan River near Toivola, MN (d)	04019500	112	1953-62, 1964-71
Swan River near Toivola, MN (d)	04020000	254	1952-61
Whiteface River below (at) Meadowlands, MN (d)	04021000	453	1909-17
Cloquet River at Independence, MN (d)	04023000	750	1909-17
Elim Creek near Holyoke, MN (d)	04024090	1.06	1976-78
Skunk Creek below Elim Creek near Holyoke, MN (d)	04024093	8.83	1976-78
Otter Tail River near Detroit Lakes, MN (d)	05030000	270	1937-71
Pelican River at Detroit Lakes, MN (d)	05033900	-	1968-71
Pelican River at Detroit Lk. out. nr. Detroit Lakes, MN (d)	05034100	-	1968-71, 1974-75
Long Lake outlet near Detroit Lakes, MN (d)	05035100	-	1968-71
West Branch Cty. Ditch No. 14 nr. Detroit Lakes, MN (d)	05035200	-	1968-71
East Branch County Ditch No. 14 nr. Detroit Lakes, MN (d)	05035300	-	1968-71
St. Clair Lake outlet near Detroit Lakes, MN (d)	05035500	-	1968-75
Pelican River at Muskrat Lk outlt nr Detroit Lakes, MN (d)	05035600	-	1968-75
Pelican River at Sallie Lk outlet nr Detroit Lakes, MN (d)	05037100	-	1968-75
Pelican River at Lake Melissa olt nr Detroit Lakes, MN (d)	05039100	-	1968-75
Pelican River near Detroit Lakes, MN (d)	05040000	123	1942-53
Pelican River near Fergus Falls, MN (d)	05040500	482	1909-12
Otter Tail River near Breckenridge, MN (d)	05046500	2,040	1931-32, 1939-46
Mustinka River (head of Bois de Sioux River) nr Norcross, MN (d)	05047000	-	1940-47
Mustinka Ditch above West Branch Mustinka River (Twelve Mile Creek) near Charlesville, MN (d)	05047500	-	1943-55
Mustinka Ditch below West Branch Mustinka River (Twelve Mile Creek) near Charlesville, MN (d)	05048000	-	1943-55
W. Branch Mustinka River (Twelve Mile Creek) below Mustinka Ditch near Charlesville, MN (d)	05048500	-	1943-55
Mustinka River above Wheaton, MN (d)	05049000	834	1915-24, 1930-58
Bois de Sioux River below Fairmont, ND (d)	05050500	1,540	1919-44
Rabbit River at Campbell, MN (d)	05051000	266	1942-52
Red River of the North below Fargo, ND (d)	05054020	-	1969-78
Whiskey Creek at Barnesville, MN (d)	05061200*	25.3	1964-66
Wild Rice River near Ada, MN (d)	05063000	1,100	1948-54
South Branch Wild Rice River near Borup, MN (d)	05063500	254	1944-49
Marsh River below Ada, MN (d)	05067000	-	1948-52
Sand Hill River at Beltrami, MN (d)	05068000	324	1943-58
Sand Hill Ditch at Beltrami, MN (d)	05068500	-	1943-58
Red Lake River at High Landing, near Goodridge (d)	05075000	2,300	1929-2000

Station name	Station number	Drainage area (mi^2)	Period of record
Thief River near Gatske, MN (d)	05075500	-	1953-56
Red Lake River at Thief River Falls, MN (d)	05076500	3,450	1909-18, 1920-30
Clearwater River near Pinewood, MN (d)	05077000	132	1940-45
Clearwater River near Leonard, MN (d)	05077500	153	1934-47
Ruffy Brook near Gonvick, MN (d)	05077700*	45.2	1960-78
Red River of the North at Oslo, MN (d)	05083500	31,200	1936-37, 1941-43, 1945-60, 1973-78
Snake River at Warren, MN (d)	05085500	-	1945, 1953-56
Snake River above Alvarado, MN (d)	05085900	218	1993-96
Snake River at Alvarado, MN (d)	05086000	220	1945, 1953-56
Middle River near Strandquist, MN (d)	05087000	-	1953-56
Tamarac River near Strandquist, MN (d)	05090500	-	1953-56
Tamarac River near Stephen, MN (d)	05091500	320	1945
Two Rivers (Middle Fork Two Rivers) nr Hallock, MN (d)	05092500	131	1931-38
South Branch (South Fork) Two Rivers near Pelan, MN (d)	05093000	281	1928-38, 1953-56
South Branch Two Rivers (Two Rivers) at Hallock, MN (d)	05094500	-	1940-47
Two Rivers (South Branch Two Rivers) at Hallock, MN (d)	05095000	-	1911-14, 1929-30, 1938-39, 1941-43
Two Rivers below Hallock, MN (d)	05095500	644	1945-55
North Branch (North Fk) Two Rivers nr Lancaster, MN (d)	05096000	32	1929-38, 1941-55 1953-55
State Ditch 85 near Lancaster, MN (d)	05096500	95	1929-38, 1942-55
North Branch Two Rivers at Lancaster, MN (d)	05096500	209	1941-42, 1953-56
North Branch Two Rivers near Northcote, MN (d)	05097500	386	1941-42, 1945-51
Two Rivers below North Branch near Hallock, MN (d)	05098000	1,060	1941-43
Roseau River (at) near Malung, MN (d)	05103000	252	1928-46
South Fork (W. Branch) Roseau River nr Malung, MN (d)	05104000	312	1911-14, 1928-46
Roseau River at Roseau, MN (d)	05105000	-	1940-47
Roseau River near Roseau, MN (d)	05105500	-	1930-60
Pine Creek near Pine Creek, MN (d)	05107000	74.6	1928-53
Roseau River at Roseau Lake, MN (e)	05106500	-	1939-91
Roseau River near Badger, MN (d)	05108000	-	1928-69
Roseau River near Duxby, MN (d)	05108500	-	1929-51, 1952-56
Badger Creek near Badger, MN (d)	05109000	2.2	1929-30, 1931-38
Roseau River near Haug, MN (d)	05109500	-	1932-66
Roseau River at otlt of State Ditch 69 nr Oak Point, MN (d)	05110000	-	1939-42
Roseau R. at head of State Ditch 51 nr Oak Point, MN (d)	05110500	-	1933-42
Roseau River at Oak Point, MN (d)	05111000	-	1933-39, 1941-60
Roseau River at international boundary, nr Caribou, MN (d)	05112500	1,590	1933-69
Shagawa Lake tributary at Ely, MN (d)	05127219	1.84	1971-78
Burgo Creek near Ely, MN (d)	05127220	3.04	1967-78
Shagawa River near Ely, MN (d)	05127230	99	1967-78
Vermilion Lake near Soudan, MN (e)	05128200	-	1913-15, 1941-42, 1946-87
Pike River near Biwabik, MN (d)	05128340	-	1977-79
Pike River near Embarrass, MN (d)	05128500	115	1953-64, 1976-79
Rainy River at International Falls, MN (d)	05129500	14,900	1905-60
Sturgeon River (Lake) at Side Lake, MN (d)	05130000	-	1938-47
Dark River near Chisholm, MN (d)	05131000	50.6	1942-61, 1965-79
Deer Lake outlet (Deer Lake) near Effie, MN (d)	05131800	-	1937-39, 1940-46 1982-93
Rapid River near Baudette, MN (d)	05134200	543	1956-85
Warroad River near Warroad, MN (d)	05139500	162	1946-80
Bulldog Run near Warroad, MN (d)	05140000	14.2	1946-51, 1966-77
East Branch Warroad River nr Warroad, MN (d)	05140500	102	1946-54, 1966-77
Williams lake near Akeley, MN (e) (data stored under station number 465724094402601)	05202000	0.88	1988-96.
Mississippi River near Deer River, MN (d)	05210000	3,190	1945-50
Prairie River near Grand Rapids, MN (d)	05213000	485	1909 (e), 1925-49
O'Brien Creek near Pengilly, MN (d)	05216800	-	1963-68
Initial tailings basin outflow near Keewatin, MN (d)	05216820	2.5	1982-85
Swan River near Calumet, MN (d)	05216850	114	1964-90
Swan River near Warba, MN (d)	05217000	254	1954-69

Station name	Station number	Drainage area (mi^2)	Period of record
Mississippi River above Sandy River near Libby, MN (d)	05218000	4,560	1895-1915, 1925-29
Mississippi River below Sandy River near Libby, MN (d)	05220500	5,060	1930-90
Pelican Brook (Long Lake) near Pequot Lakes, MN (d)	05232000	-	1938-42, 1943-47
Rabbit River near Crosby, MN (d)	05241500	8.38	1945-63
Little Sand Lake outlet (Sand Lake outlet) nr Dorset, MN (d	05242700	74	1930-41
Straight River at County Highway 125 near Osage, MN (d)	05243721	-	1986-91
Straight River at Cty. Hwy. 115 near Park Rapids, MN (d)	05243723	-	1986-89
Crow Wing River at Motley, MN (d)	05244500	2,140	1909 (e), 1913-17 1930-31
Diversion from Long Prairie River near Osakis, MN (d)	05244980	-	1939-47
Long Prairie River near Osakis, MN (d)	05245000	-	1949-54
Long Prairie near Motley	05245500	973	1909-17, 1930-31
Crow Wing River at Pillager, MN (d)	05246000		1909-13, 1925-50
Mississippi River near Ft. Ripley, MN (d)	05261000	11,010	1987-2000
Platte (Platt) River at Pillager, MN (d)	05268000*	338	1929-36
Mississippi River near Sauk Rapids, MN (d)	05269000	12,400	1903-06
Mississippi River at Sartell, MN (d)	05270000	12,450	1929, 1943-47(e)
Clearwater River at Clearwater, MN (d)	05273500	-	1937, 1940-42
St. Francis River at Santiago, MN (d)	05274700	-	1965-70, 1980-81
St. Francis River above Zimmerman, MN (d)	05274750	-	1980-84
St. Francis River near Big Lake, MN (d)	05274900	-	1965-70
Mississippi River at Elk River, MN (d)	05275500	14,500	1915-56
North Fork Crow River near Regal, MN (d)	05276000	215	1943-54
North Fork Crow River above Paynesville, MN (d)	05276005	232	1996-98
Middle Fork Crow River at New London, MN (e)	05277000	-	1939-42, 1943-47
Middle Fork Crow River (Calhoun Lk Diversion) nr Spicer, MN (e)	05277500	-	1939, 1940-46
Middle Fork Crow River near Spicer, MN (d)	05278000	179	1949-87
South Fork Crow River at Cosmos, MN (d)	05278500	221	1945-64
Buffalo Creek near Glencoe, MN (d)	05278930*	374	1972-80
South Fork Crow River near Mayer, MN (d)	05279000	1,170	1934-79
South Fork Crow River near Rockford, MN (d)	05279500	1,250	1909-12
Mississippi River at Anoka, MN (d)	05283500	17,100	1897, 1905-13
Rum River at Onamia, MN (d)	05284500	414	1910-12
Rum River at Spencer Brook, MN (d)	05284750	-	1960-64
Rum River at Cambridge, MN (d)	05285000	1,160	1909-14
Rum River near Anoka, MN (d)	05286500	1,430	1905-06, 1909
Minnetonka Lake (head of Minnehaha Creek) near Wayzata (at Excelsior), MN (d)	05289000	-	1938-64
Minnehaha Creek at Minnetonka Mills, MN (d)	05289500	130	1953-64
Big Stone Lake near Big Stone City, SD (formerly Big Stone Lake at Ortonville, MN (e)	05291500	-	1937-93
Minnesota River near Odessa, MN (d)	05292500	1,340	1909-12, 1944-63
Pomme de Terre River near Morris, MN (d)	05293500	-	1937-39, 1940-47
Pomme de Terre River at Appleton, MN (d)	05294000	864	1931-99
Canby Creek at Canby, MN (d)	05299500	-	1938-39, 1940-46
Chippewa River at diversion dam near Hancock, MN (d)	05303000	-	1930-39, 1940-46
Chippewa River at Benson, MN (d)	05303500	1,270	1949-51
Shakopee Creek near Benson, MN (d)	05304000	352	1949-54
Chippewa River near Watson, MN (d)	05305000	2,050	1910-17, 1931-36
South Branch Yellow Medicine River at Minneota, MN (d)	05311400	111	1960-81, 1983-87
Spring Creek near Hazel Run, MN (d)	05312500	101	1945-48
Chetomba Creek near Maynard, MN (d)	05314000	200	1949-51
Hawk Creek near Maynard, MN (d)	05314500*	474	1949-54
Prairie Ravine near Marshall, MN (d)	05315200	5.63	1959-64
Redwood River near Green Valley, MN (d)	05315500	436	1947-57
Minnesota River at New Ulm, MN (d)	05316770	9,536	1968-76
Dry Creek near Jeffers, MN (d)	05316900	3.13	1982-85
Minnesota River at Judson, MN (d)	05317500	11,200	1938-50
East Branch (East Fork) Blue Earth River near Bricelyn, MN (d)	05318000	132	1951-70
South Fork Watonwan River at diversion dam near St. James, MN (d)	05319000	-	1939, 1940-46
Blue Earth River at Mankato, MN (d)	05321000	3,550	1938-39, 1940-42

Station name	Station number	Drainage area (mi^2)	Period of record
Sand Creek at diversion dam near Jordan, MN (d)	05330400	-	1938-39, 1940-46
Purgatory Creek at Eden Prairie, MN (d)	05330800	-	1975-80
Nine Mile Creek at Bloomington, MN (d)	05330900	-	1963-73
Glaisby Brook near Kettle River, MN (d)	05336200*	24.2	1959-70
Kettle River near Sandstone, MN (d)	05336500	825	1908-16
Grindstone River at Hinckley, MN (d)	05337000	-	1940-47
Snake River at Mora, MN (d)	05337500	422	1909-13
St. Croix River near Rush City, MN (d)	05339500	5,120	1923-61
Sunrise River near Stacy, MN (d)	05340000	167	1949-65
Sunrise River near Lindstrom, MN (d)	05340050	231	1965-85
Vermillion River at Hastings, MN (d)	05346000	195	1942-47, 90
South Fork Zumbro River near Rochester, MN (d)	05373000	304	1952-81
Zumbro River (South Branch) near Zumbro Falls, MN (d)	05373500	821	1911-17
Zumbro River at Zumbro Falls, MN (d)	05374000*	-	1909-17, 1929-80
Zumbro River at Theilman, MN (d)	05374500	1,320	1938-56
Zumbro River at Kellogg, MN (d)	05374900	1,400	1975-90
North Fork Whitewater River near Elba, MN (d)	05376000	101	1939-41, 1967-93
Middle Fork Whitewater River near St. Charles, MN (d)	05376100	-	1988-92
South Fork Whitewater River near Altura, MN (d)	05376500	76.8	1939-71
Whitewater River near Beaver, MN (d)	05376800	271	1975-85, 1991-99
Whitewater River at Beaver, MN (d)	05377500	288	1936-38, 1939-56
Stockton Valley Creek at Stockton, MN (d)	05378230	-	1982-85
Garvin Brook near Minnesota City, MN (d)	05378235	-	1982-91
Straight Valley Creek near Rollingstone, MN (d)	05378300	5.16	1970-85
Gilmore Creek at Winona, MN (d)	05379000	8.95	1939-63
Mississippi River at LaCrosse, WI (d)	05383500	-	1929-55
North Branch Root River tributary near Stewartville, MN (d)	05383600	0.73	1959-64
Root River near Lanesboro, MN (d)	05384000*	615	1910, 11-17, 1940-85, 87-90
Rush Creek near Rushford, MN (d)	05384500*	129	1942-79
Root River near Houston, MN (d)	05385000*	1,250	1909-17, 1929-83, 1991-2000
South Fork Root River near Houston, MN (d)	05385500*	275	1953-83
Root River below South Fork near Houston, MN (d)	05386000	1,560	1938-61
Turtle Creek near Austin, MN (d)	05456500	144	1947-51
Heron Lake outlet nr Heron Lake, MN (d)	05475000	-	1930-43
Rock River at Luverne, MN (d)	06483000*	419	1911-14, 1996-97
Little Sioux River near Lakefield, MN (d)	06603000	17.1	1948-63
Jackson County Ditch No. 11 near Lakefield, MN (d)	06603500	7.69	1948-61

Station name	Station number	Drainage area (mi^2)	Type of record	Period of record
Baptism River near Beaver Bay, MN	04014500	140	C., Bio., Sed., Temp., D.O., pH., S.C.	1968-93
Partridge River abv Colby Lake at Hoyt Lakes, MN	04015475	106	Temp., S.C.	1976-85
St. Louis River at Forbes, MN	04018750	713	Sed.	1968-70
St. Louis River at Scanlon, MN	04024000	3430	C., Bio., Sed., Temp., D.O., pH, S.C.	1958-66, 68-94
Elim Creek near Holyoke, MN	04024090	1.06	Sed.	1976-79
Skunk Creek below Elim Creek near Holyoke, MN	04024093	8.83	C., Sed., Temp., D.O., pH, S.C.	1976-79
Deer Creek near Holyoke, MN	04024098	7.77	C., Bio., Temp., D.O., pH, S.C.	1977-79
			Sed.	1977-81
Otter Tail River below Orwell Dam, near Fergus Falls, MN	05046000	1740	C., Sed., Temp., D.O., pH, S.C.	1961-63, 65-66, 85-86, 93-95
Bois de Sioux River near Doran, MN	05051300	1880	C., Sed., Temp., D.O., pH, S.C.	1993-95
Buffalo River near Dilworth, MN	05062000	1040	Sed.	1971-81
Wild Rice River at Twin Valley, MN	05062500	934	C., Temp., D.O., pH, S.C.	1966, 1973-79, 92-98, 2000-01
Wild Rice River at Hendrum, MN	05064000	1,560	C., Temp., D.O., pH, S.C.	1962-63, 67-68, 80-85, 91, 97-2001
Marsh River near Shelly, MN	05067500	220	C., Temp., D.O., pH, S.C.	1975, 79, 2000-01
Sand Hill River at Climax, MN	05069000	420	C., Temp., D.O., pH, S.C.	1966, 75, 79, 2000-01
Red Lake River near Red Lake, MN	05074500	1,950	C., Temp., D.O., pH, S.C.	1964-66, 2000-01
Thief River near Thief River Falls, MN	05076000	985	C., Temp., D.O., pH, S.C.	1963-66, 75, 79, 2000-01
Clearwater River at Plummer, MN	05078000	555	C., Temp., D.O., pH, S.C.	1963, 79, 2000-01
Lost River at Oklee, MN	05078230	254	C., Temp., D.O., pH, S.C.	1966, 1979, 2000-01
Clearwater River at Red Lake Falls, MN	05078500	1370	C., Sed., Temp., D.O., pH, S.C.	1964-66, 79, 92, 95
Red Lake River at Crookston, MN	05079000	5,270	C., Sed., Temp., D.O., pH, S.C.	1962-68, 72-76, 78-95, 97, 2000-01
Red Lake River at Fisher, MN	05080000	5,680	C., Sed., Temp., D.O., pH, S.C.	2000-01
Snake River above Alvarado, MN (d)	05085900	218	C., Temp., D.O., pH, S.C.	1994-96
Middle River at Argyle, MN	05087500	255	C., Sed., Temp., D.O., pH, S.C.	1968, 75, 79, 93, 2000-01
South Branch Two Rivers at Lake Bronson, MN	05094000	422	C., Sed., Temp., D.O., pH, S.C.	2000-01
Roseau River below Roseau, MN	05105300		C., Bio., Sed., Temp., D.O., pH, S.C.	1973-83
Roseau River below State Ditch 51, near Caribou, MN	05112000	1560	C., Bio., Sed., Temp., D.O., pH, S.C	1972-95, 2001
Kawishiwi River near Ely, MN	05124480	253	C., Bio., Sed., Temp., D.O., pH, S.C	1966-96
Little Fork River at Littlefork, MN	05131500	1730	C., Bio., Sed., Temp., D.O., pH, S.C.	1967, 69, 71, 73-86
Big Fork River at Big Falls, MN	05132000	1460	C., Bio., Sed., Temp., D.O., pH, S.C.	1968, 71-77
Rainy River at Manitou Rapids, MN	05133500	19,400	C., Bio., Sed., Temp., D.O., pH, S.C.	1968-70, 78-94
Mississippi River near Royalton, MN	05267000	11,600	C., Bio., Sed., Temp., D.O., pH, S.C.	1963-66, 1975-98
Sauk River near St. Cloud, MN	05270500	1,030	C., Bio., Temp., D.O., pH, S.C.	2001
Elk River near Big Lake, MN	05275000	615	Sed., Temp.	1976-81
North Fork Crow River above Paynesville, MN	05276005	232	C., Bio., Sed., Temp., D.O., S.C.	1996-98
Crow River at Rockford, MN	05280000	2520	Sed., Temp.	1975-81
			C., Sed., Temp., D.O., pH, S.C.	1997
Mississippi River near Anoka, MN	05288500	19,100	Sed.	1963-67, 75-98
			C., Temp., D.O., pH, S.C.	1996-98
Mississippi River at Fridley, MN	05288550		Temp., D.O., pH, S.C.	1975-86
Mississippi River at Ford Plant at St. Paul, MN	05288950	19,700	Temp., D.O., pH, S.C.	1974-78, 81-82
Whetstone River near Big Stone City, SD	05291000	389	Sed., Temp.	1974-88
Yellow Bank River near Odessa, MN	05293000	398	Sed., Temp.	1974-88
Chippewa River near Milan, MN	05304500	1870	Sed., Temp.	1972-81
Yellow Medicine River near Granite Falls, MN	05313500	653	Sed., Temp.	1971-75, 77-81
Redwood River near Marshall, MN	05315000	259	Sed., Temp.	1968-71
Redwood River near Redwood Falls, MN	05316500	629	Sed., Temp.	1968-70
			Sed.,	1968-76
Watonwan River near Garden City, MN	05319500	812	Sed.	1977-80
Blue Earth River near Rapidan, MN	05320000	2,410	C., Bio., Temp., D.O., pH, S.C.	1960-67, 69, 2000-01
Minnesota River near Jordan, MN	05330000	16,200	C., Bio., Temp., D.O., pH, S.C.	1952-63, 69, 72-98
Minnesota River at Burnsville, MN	05330908		Temp., D.O., pH, S.C.	1980-83
Minnesota River at Fort Snelling State Pk., St. Paul, MN	05330920	16,900	Temp., D.O., pH, S.C.	1973-83
Mississippi River at Industrial Molasses, St. Paul, MN	05331005		Temp., D.O., pH, S.C.	1976-85
Mississippi River at Fifth at Newport, MN	05331545		Temp., D.O., pH, S.C.	1979-90
Mississippi River at Grey Cloud Island near Cottage Grove, MN	05331560		Temp., D.O., pH, S.C.	1977-90
Mississippi River at Ninninger	05331570	37,000	C., Bio., Sed., Temp., D.O., pH, S.C.	1977-95
Mississippi River at Lock and Dam 2 at Hastings, MN	05331578		Temp., D.O., pH, S.C.	1975-90
Snake River near Pine City, MN	05338500	958	C., Bio., Temp., D.O., pH, S.C.	1963, 65, 67-68, 75-83, 85, 92-94, 98
St. Croix River at Afton, MN	05341770		Temp., D.O., pH, S.C.	1977-83
Vermillion River near Empire, MN	05345000	110	Temp., D.O., pH, S.C.	1974-91
			C., Bio.	1990-91, 97, 98
Mississippi River at Lock and Dam 3 near Red Wing, MN	05344980	46,000	Temp., D.O., pH, S.C.	1976-83

Station name	Station number	Drainage area (mi^2)	Type of record	Period of record
Mississippi River at Red Wing, MN	05355250	46,800	C., Bio., Sed., Temp., D.O., pH, S.C.	1996-98
South Fork Zumbro River at Rochester, MN	05372995	303	C., Temp., D.O., pH, S.C.	2001
			Sed., Temp.	1981-82
Zumbro River at Kellogg, MN	05374900	1400	Sed., Temp.	1975-81
North Fork Whitewater River near Elba, MN	05376000	101	C., Bio., Sed., Temp, D.O., pH, S.C.	1967-93
Middle Fork Whitewater River near St. Charles, MN	05376100		Sed., Temp., S.C.	1988-92
Whitewater River near Beaver, MN	05376800	271	Sed., Temp.	1975-81
Mississippi River at Winona, MN	05378500	59,200	C., Bio., D.O., pH	1963-66, 76-88
			Sed.	1976-2000
Root River near Houston, MN	05385000	1270	Sed.,Temp.	1975-81
South Fork Root River near Houston, MN	05385500	275	Sed., Temp.	1975-81
Cedar River near Austin, MN	05457000	425	Sed., Temp., S.C.	1971, 73-75, 78-81
Des Moines River at Jackson, MN	05476000	1220	C., Bio., D.O., pH, S.C.	1968-69, 73-76, 78, 83, 89-90, 94-95, 98
			Sed., Temp	1968-81

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Roseau, Minnesota - June 12, 2002 - flooding from the Roseau River.
– – – Main Channel [photo courtesy of National Weather Service]

INTRODUCTION

Water Resources Division of the U.S. Geological Survey (USGS), in cooperation with Federal, State, and local agencies, obtains a large amount of data pertaining to the water resources of Minnesota each water year. These data, accumulated during many 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 USGS, the data are published annually in this report series entitled "Water-Resources Data Minnesota."

Water-resources data for the 2002 water year (hereinafter 2002) for Minnesota consist of records of stage, discharge, and water quality of streams; and stage of lakes and reservoirs; and water quality of ground water. This volume contains discharge records for 102 stream-gaging stations; stage for 11 lakes and reservoirs; water quality for 6 stream-gaging stations; peak flow data for 89 high-flow partial-record stations; and ground-water levels for 3 ground-water observation wells. These data represent a part of the National Water Data System collected by the USGS and cooperating State and Federal agencies in Minnesota.

This series of annual reports for Minnesota 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. Beginning with the 1975 water year, the report was changed to present, in one volume, data on quantities of surface water, quality of surface and ground water, and ground-water levels.

Prior to introduction of this series and for several water years concurrent with it, water-resources data for Minnesota 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 4, 5 and 6A." For the 1961 through 1970 water years, the data were published in two 5-year reports. Data on chemical quality, temperature, and suspended sediment for the 1941 through 1970 water years were published annually under the title "Quality of Surface Waters of the United States," and water levels for the 1935 through 1974 water years were published under the title "Ground-Water Levels in the United States." The above mentioned Water-Supply papers can be consulted in the libraries of the principal cities of the United States and may be purchased from the U.S. Geological Survey Branch of Information Services, Denver Federal Center, Box 25286, Denver, Colorado 80225.

Publications similar to this report are published annually by the USGS 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 volume number. For example, this volume is identified as the "U.S. Geological Survey Water-Data Report MN-02-1." For archiving and general distribution, the reports for 1971-74 water years also are identified as water-data reports. These water-data reports are for sale in paper copy or in microfiche by the National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22161.

Additional information, including current prices, for ordering specific reports may be obtained from the District Chief at the address given on the back of the title page or by telephone (763) 783-3100.

COOPERATION

The USGS and agencies of the State of Minnesota have had cooperative agreements for the systematic collection of streamflow records since 1909, for ground-water levels since 1948, and for water-quality records since 1952. Organizations that assisted in collecting data through cooperative agreement with the USGS are:

— Minnesota Department of Natural Resources
— Minnesota Department of Transportation
— Minnesota Pollution Control Agency
— Grand Portage Reservation Tribal Council
— Elm Creek Watershed Management Commission
— Red River Watershed Management Board
— City of Rochester
— City of Grand Forks
— Bois Forte Reservation Tribal Council
— Prairie Island Indian Community
— City of Mankato
— Prairie Country Resource Conservation District

Assistance in the form of funds or services was given by the U.S. Army Corps of Engineers, U.S. Department of State, and the Federal Energy Regulatory Commission. Other organizations that supplied data are acknowledged in station descriptions.

SUMMARY OF HYDROLOGIC CONDITIONS

Precipitation

Most of Minnesota received normal to above normal precipitation ("normal" being the statistical median based on data from 1971-2000) during the 2002 water year (figs. 1 and 2). Central and east-central Minnesota were greater than 9 inches above normal, while northwestern Minnesota was approximately 6 inches above normal. Precipitation totals, unless otherwise stated, are aggregates for the state, or for the nine climatic divisions. These include the northwest, north-central, northeast, west-central, central, east-central, southwest, south-central, and southeast.

Precipitation totals for the first quarter, October 1 to December 31, 2001 ranged from 2.5 inches in the northwest to 6.5 inches in the northeast. The greatest departures from normal were in the north-central and northeastern parts of the state, which were 1.2 inches above normal, and northwestern Minnesota, which was 0.9 inches below normal. The remainder of the state was near normal.

Precipitation for the second quarter, January 1 to March 31, 2002, was generally below normal for the entire state. The largest deviations were in the northern one-third as well as the west-central and south-central parts of the state, which were all approximately 1 inch below normal.

For the third quarter, April 1 to June 30, 2002, precipitation totals were above normal for all but the west-central and southwest parts of the state. The largest deviations were in the northwest and west-central parts of the state which were between 3.8 and 4.1 inches above normal. Some of the largest individual precipitation events occurred in the month of June, in the northwestern and central parts of the state. Rainfall amounts in excess of 10 inches were reported in parts of northwestern Minnesota. While in north-central Minnesota, amounts exceeded 12 and even 14 inches. Two events contributed to most of these totals. The June 9-10 event alone produced over 12 inches in some areas of Lake of the Woods and Roseau counties. The June 20-23 event produced amounts over 4 inches in nine counties in northern Minnesota. June rainfall totals were in 99th percentile for much of northwestern Minnesota.

For the final quarter, July 1 to September 30, 2002, precipitation totals were near normal for most of the state. The exceptions being in the northwest, central, and east-central parts of the state, which were 4.0, 5.9, and 6.5 inches above normal respectively. From July 9 to 11, more than 3 inches fell in a broad area of central to west-central part of the state.

Precipitation data not derived from figures 1 and 2 were obtained through the World Wide Web from the Minnesota State Climatology Office at: http://climate.umn.edu/ or from the Midwestern Regional Climate Center at: http://mcc.sws.uiuc.edu/index.html.

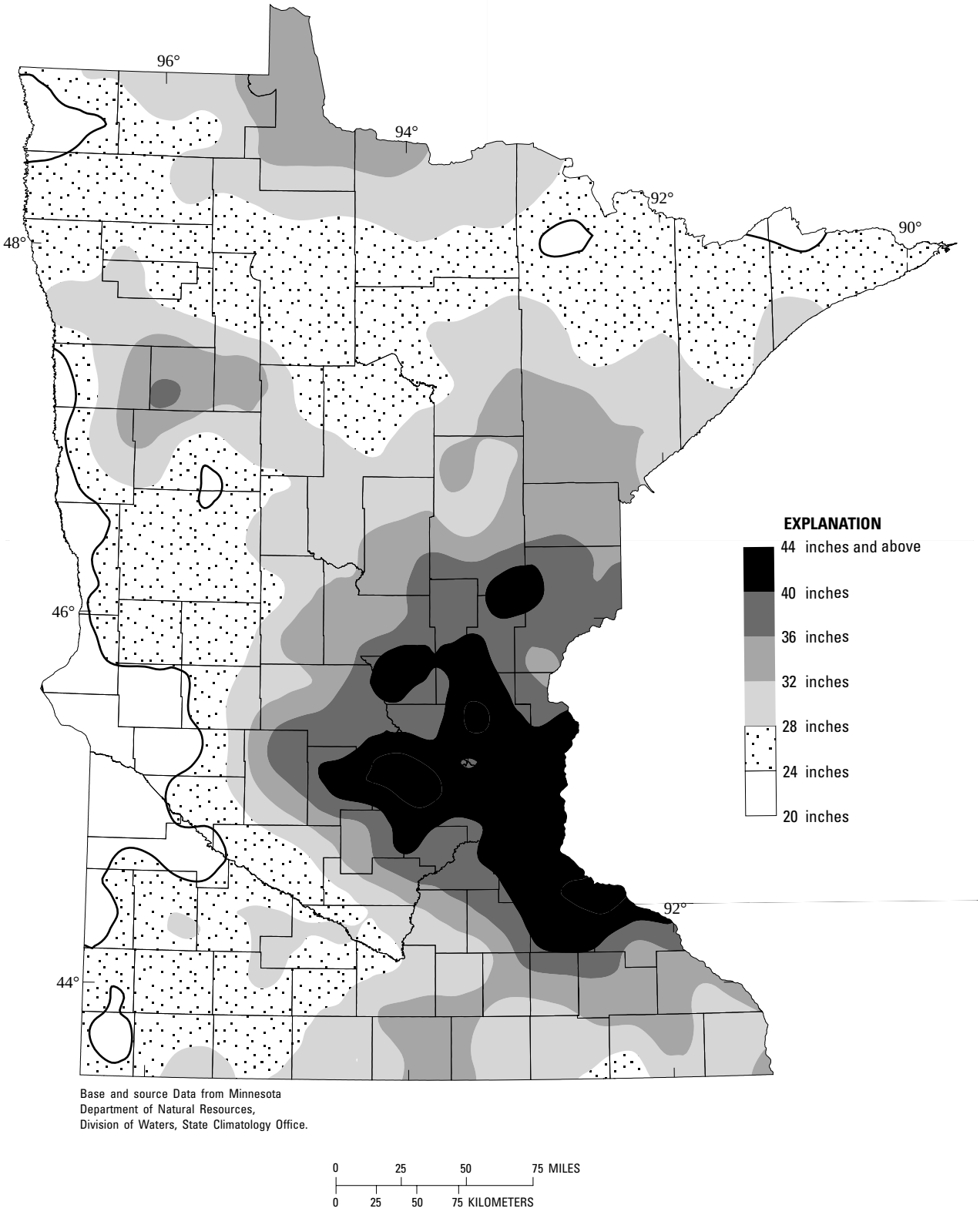


Figure 1. Precipitation, in inches, during 2002 water year, in Minnesota.

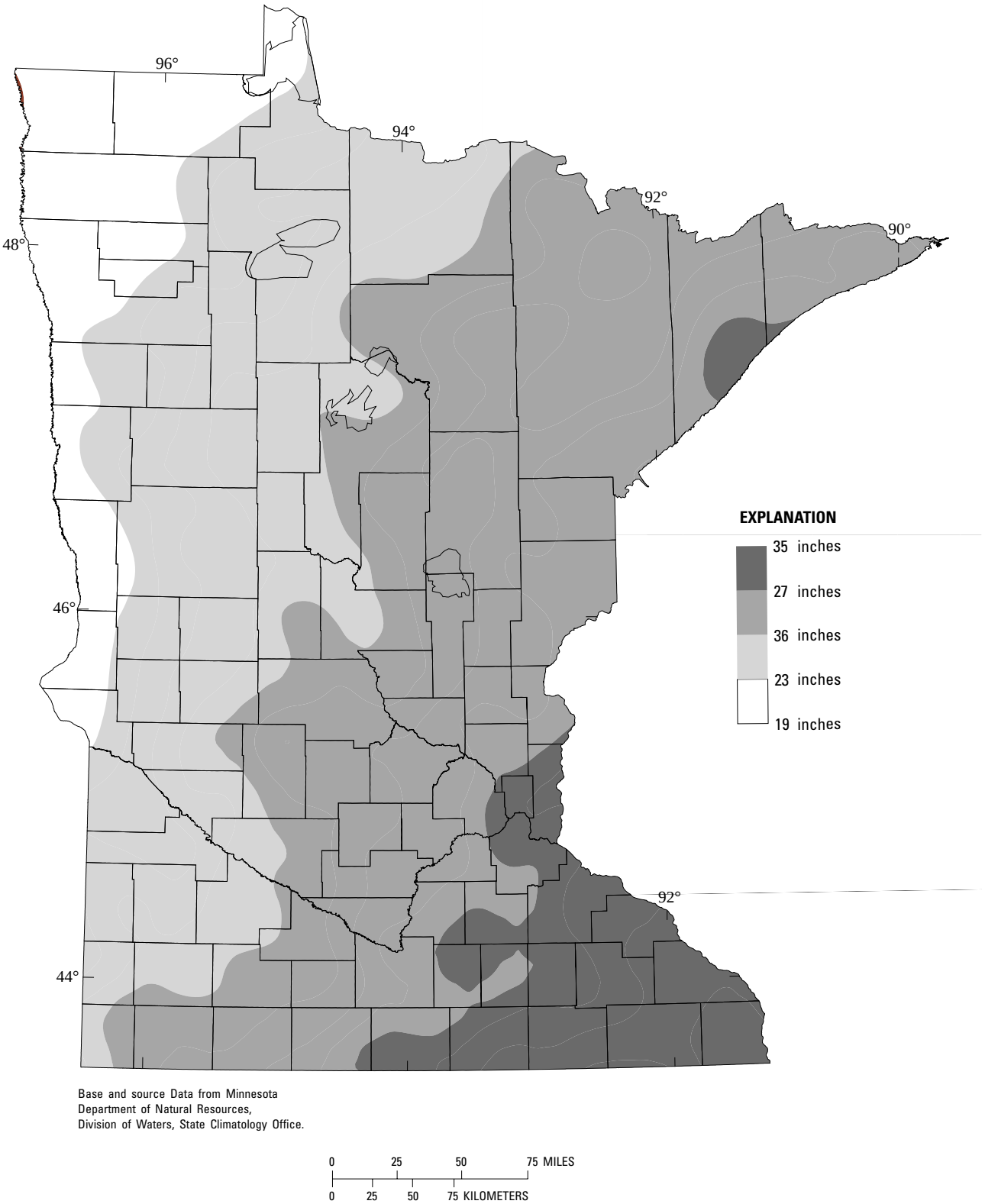


Figure 2. Average annual precipitation, in inches, for 30-year period, 1971-2000, in Minnesota.

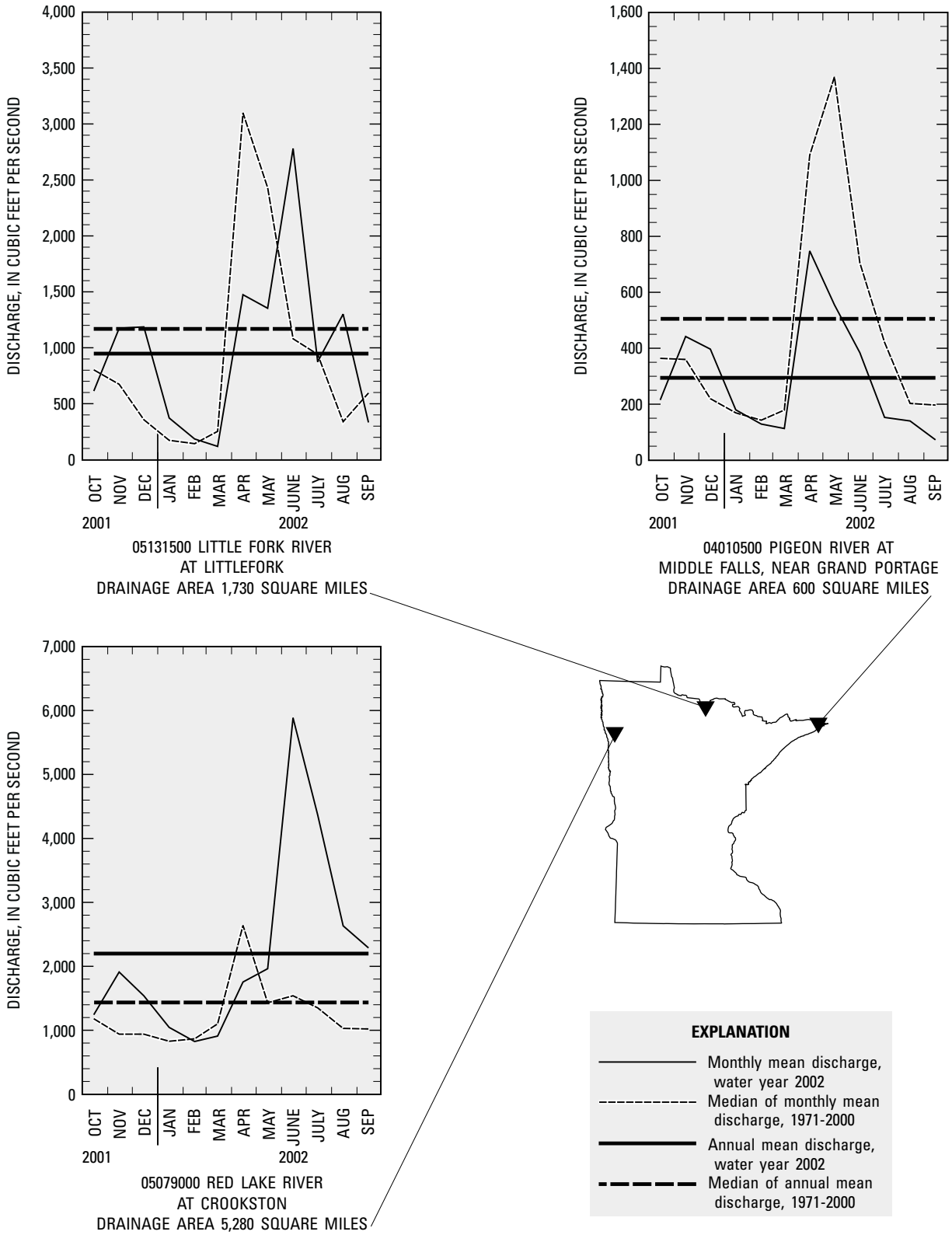
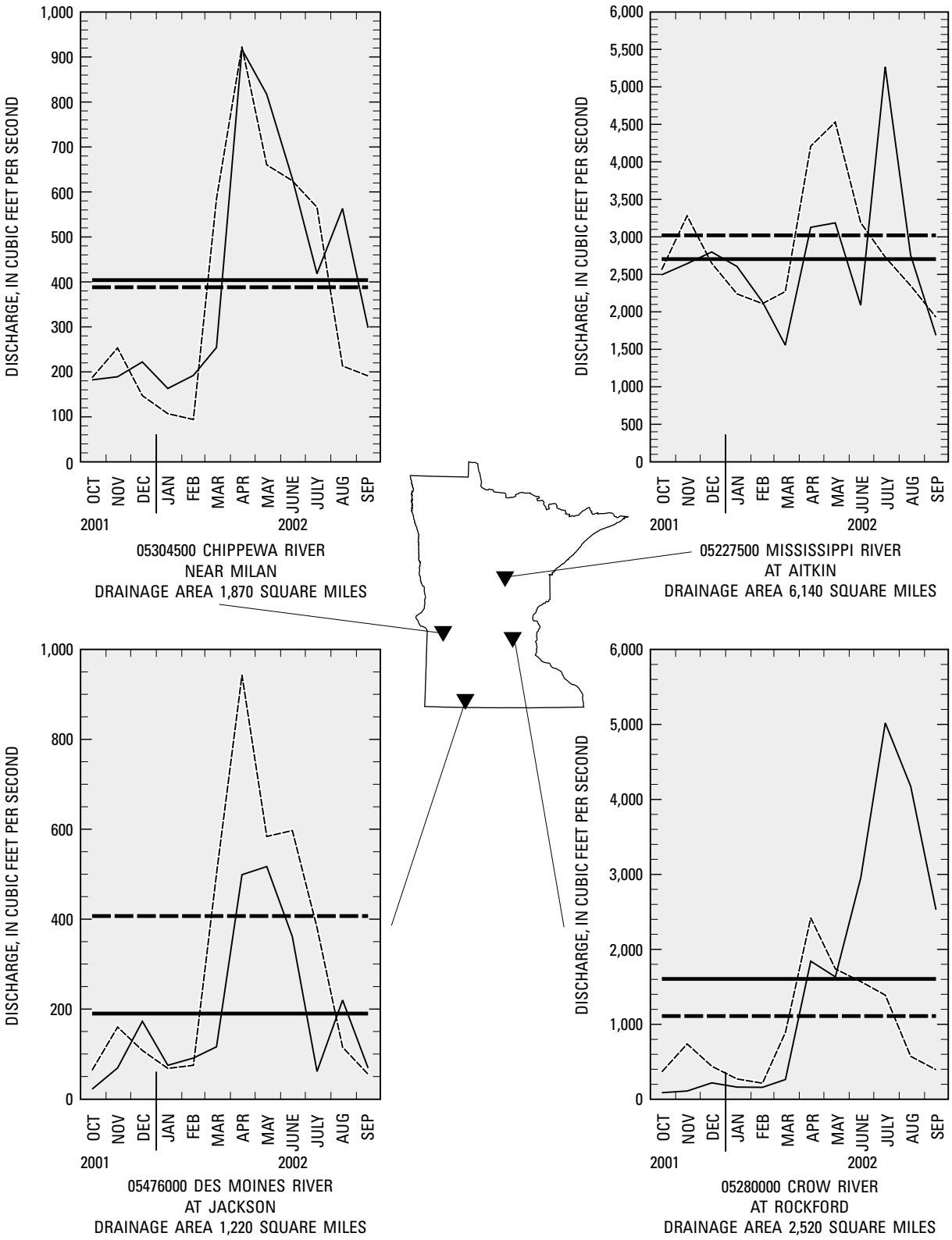


Figure 3. Comparison of mean discharge for the 2002 water year with the median



of mean discharges for 1971-2000 at seven long-term representative gaging stations.

Surface Water

Figure 3 shows monthly-mean and annual-mean discharges for water year 2002 compared to normal (median of monthly-mean discharges for the period 1971-2000) for 7 streamflow gaging stations: Little Fork River near Littlefork, Pigeon River at Middle Falls, Red Lake River at Crookston, Chippewa River near Milan, Mississippi River at Aitkin, Des Moines River at Jackson, and Crow River at Rockford. These stations are located in the following basins—Lake Superior, Red River of the North, Lake of the Woods, and the upper Mississippi River.

For the first six months of the water year monthly-mean streamflows were near normal at all gaging stations listed above. Pigeon River at Middle Falls and Des Moines River at Jackson, located in the extreme northeast and southwest parts of the state, had discharges in April and May that were from 50 to 100 percent below normal. Flows returned to near normal through the remainder of the water year.

Flows for Chippewa River near Milan were near normal for the entire water year with the exception of August, when flows were nearly 200 percent above normal. Many precipitation reporting stations, including some in and near the Chippewa River Basin, reported rainfall totals over 8 inches for the month of August.

For the remaining four sites, Red Lake River at Crookston, Little Fork River at Littlefork, Mississippi River at Aitkin, and Crow River at Rockford, streamflows in the months of April and May were from 50 to 100 percent below normal. Beginning in early June, heavy rains fell over much of central and northern Minnesota pushing montly-mean streamflows above normal. And over 500 percent of normal in some cases.

Flooding occurred in many areas of northwest and central Minnesota as a result of the heavy rains that fell in June and July. Six stream-gaging stations and 5 high-flow partial record stations (with more than 10 years of record) recorded peak flows of record. The two watersheds with the most significant flooding were the Wild Rice River and the Roseau River. The USGS gaging station on the Wild Rice River at Twin Valley recorded a peak flow of 19,000 ft^3/s with a 500-year recurrence interval. In the Roseau River Basin, the USGS gaging stations Roseau River below South Fork near Malung and Roseau River at Ross each recorded peak flows that were of more than a 500-year recurrence interval. The Roseau River flows through the town of Roseau, of which more that 90 percent was flooded [USGS OFR 02-278 2002, online at: http://nd.water.usgs.gov/pubs/ofr/ofr02278/].

In central Minnesota, the heavy rains caused overland flooding, and flooding due to rapidly rising lake levels. The nearest USGS stream gaging stations such as Crow River at Rockford had relatively minor peak flows in the 10-25 year recurrence interval, or less. No USGS gaging stations were located in areas where more significant peak flows would have been recorded.

Ground-Water Levels

This report includes levels from three ground water wells, all located in surficial-sand and gravel aquifers. The location of these wells is shown in figure 8. All three wells are measured approximately monthly by observers. The well in Watonwan County in southern Minnesota showed declining water levels until July, when levels rose by about 3 feet, then fell over the next 2 months by over 3 feet. The central Minnesota well in Morrison County had water levels fall just over one foot from the beginning of the water year to March, then rose steadily by about 2 feet to the end of the year. The well in northern Minnesota in Beltrami County followed the same pattern as the other two although with more modest changes. It fluctuated less than one foot the entire water year.

SPECIAL NETWORKS AND PROGRAMS

Hydrologic Bench-Mark 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 bases 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 affects 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 four of the Nation's largest river basins--the Mississippi, Columbia, Colorado, and Rio Grande. From the year 2000 to 2004 the network will be reduced from approximately 40 stations to just a few index stations on the Colorado and Columbia Rivers so that a network of 5 stations can 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 to (1) describe the long-term trends and changes in concentration and transport of these constituents; (2) test findings of the NAWQA; (3) characterize processes unique to large-river systems such as storage and re-mobilization of sediments and associated contaminants; and (4) 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 climate of precipitation throughout the United States. As the lead Federal agency, the USGS works together with over 100 organizations to accomplish the following objectives: (1) Provide a long-term, spatial and temporal record of atmospheric deposition generated from a network of 225 precipitation chemistry monitoring sites. (2) Provide the mechanism to evaluate ongoing and future regulations intended to reduce atmospheric emissions and subsequent impacts to the Nation's land and water resources. Data from the network, as well as information about individual sites, are available through the World Wide Web at: http://bqs.usgs.gov/acidrain/.

The National Water-Quality Assessment (NAWQA) Program of the USGS 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. 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 and ground-water records published in this report are for the 1999 water year that began October 1, 1998, and ended September 30, 1999. A calendar of the water year is provided on the inside of the front cover. The records contain streamflow data, stage and content data for lakes and reservoirs, water-quality data for the surface and ground water, and ground-water-level data. 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, whether stream site or well, in this report is assigned a unique identification number. This number is unique in that it applies specifically to a given station. The number usually is assigned when a station is first established and is retained for that station indefinitely. The system used by the USGS to assign identification numbers for surface-water stations and for ground-water well sites differ, but both are based on geographic location. The "downstream order" system is used for regular surface-water stations and the "latitude-longitude" system is used for wells and, in Minnesota, for surface-water stations where only miscellaneous measurements are made.

Downstream Order System and Station Number

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

As an added means of identification, each hydrologic station and partial-record station has been assigned a station number. These are in the same downstream order in this report. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream-order position in a list made up of both types of stations. Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete eight-digit number for each station such as 05041000, which appears just to the left of the station name, includes the two-digit part number "05" plus the six-digit downstream order number "041000."

Numbering System for Wells and Miscellaneous Sites

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

The well and miscellaneous site numbering system of the USGS is based on the grid system of latitude and longitude. The system provides the geographic location of the well or miscellaneous site and a unique number for each site. The number consists of 15 digits. The first 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 wells or other sites within a one-second grid. See figure 4. Each well site is also identified by a local well number, which consists of township, range, and section numbers, three letters designating 1/4, 1/4, 1/4 section location, and a two-digit sequential number.

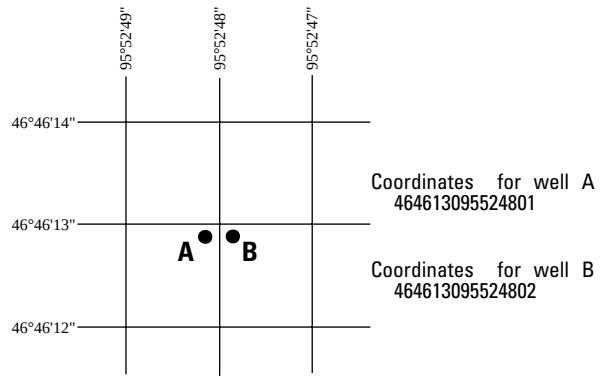


Figure 4. Example of system for numbering wells and miscellaneous sites.

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 discharge may be computed for anytime, 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 "High-flow 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, but they are presented separately in this report. Location of all continuous-record, surface-water-quality, and high-flow partial-record stations for which data are given in this report are shown in figures 5, 6, and 7.

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 relations 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 relation 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.

Records of stage are obtained with recorders that trace continuous graphs of stage or encode stage values at selected time intervals and store on a variety of media. Measurements of discharge are made with current meters using methods adapted by the USGS as a result of experience accumulated since 1880. These methods are described in standard textbooks, in U.S. Geological Survey Water-Supply Paper 2175, and in

U.S. Geological Survey Techniques of Water-Resources Investigations (TWRI), book 3, chapter A6.

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 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 information such as temperature and precipitation records, notes of observations, and records for other stations in the same or nearby basins for comparable periods.

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

In computing records of lake or reservoir contents, it is necessary to have available from surveys, curves, or tables defining the relation 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 relation changes because of deposition of sediment in a lake or reservoir, periodic resurveys may be necessary to redefine the relation. Even when this is done, the contents computed may become increasingly in error as time since the last survey increases. Discharge over lake or reservoir spillways are computed from stage-discharge relations 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. 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 gage 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, given for only a few stations, 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 there are published records for the station or for an equivalent station. An equivalent station is one that was in operation at a time when the present station was not, and whose location was such that records from it can reasonably be considered equivalent with records from the present station.

REVISED RECORDS--Published records, because of new information, occasionally are found to be incorrect, and revisions are printed in later reports. Listed under this heading are all reports in which revisions have been published for the station and 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)" means that only the instantaneous minimum was revised; and "(P)" means 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 National Geodetic Vertical Datum of 1929 (see glossary), and a condensed history of the types, locations, and datum of previous gages are given under this heading.

REMARKS--All periods of estimated daily-discharge record will either be identified by date in this paragraph of the station description for water-discharge stations or flagged in the daily-discharge table. If a remarks statement 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, to conditions that affect natural flow at the station 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 USGS by a cooperating organization are identified here.

EXTREMES OUTSIDE PERIOD OF RECORD--Included here is the 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 USGS.

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.

Manuscript information for lake or reservoir stations differs from that for stream stations in the nature of the "Remarks" and to 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, except for the listing of secondary instantaneous peak discharges in the EXTREMES FOR CURRENT YEAR paragraph, is now presented in the tabular summaries following the discharge table or in the REMARKS paragraph, as appropriate. No changes have been made to the data presentations of lake contents.

Peak Discharges Greater Than Base Discharge

Tables of peak discharges above base discharge are included for some stations where secondary instantaneous peak discharges are used in flood-frequency studies of highway and bridge design, flood-control structures, and other flood-related projects. The base discharge value is selected so an average of three peaks a year will be reported. This base discharge value has a recurrence interval of approximately 1.1 years.

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 19__-19__, 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 19__-19__, 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 yearly-mean discharge is adjusted for reservoir storage or diversion. The adjusted figures are identified by 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 occurrin for the water year or designated period. Occaisionally the maximum flow for a year may occur at midnight at the beginning or end of the year. In this case, the maximum peak flow is given in the table and the maximum flow may be reported in a footmote or REMARKS paragraph in the manuscript.

MAXIMUM PEAK STAGE--The maximum instantaneous peak stage occurring for the water year or designated period. Occaisionally the maximum flow for a year may occur at midnight at the beginnning 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 footmote may be used to provide further information.

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

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

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

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

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

10 PERCENT EXCEEDS--The discharge that is exceeded by 10 percent of the flow for the designated period.

50 PERCENT EXCEEDS--The discharge that is exceeded by 50 percent of the flow for the designated period.

90 PERCENT EXCEEDS--The discharge that is exceeded by 90 percent of the flow 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 discharge measurements at low-flow partial-record stations, and the second is a table of annual maximum stage and discharge at crest-stage stations. The tables of partial-record stations are followed by a listing of discharge measurements made at sites other than continuous-record or partial-record stations. 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 the true; "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.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff due to the effects of diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or to other factors. For such stations, figures of cubic feet per second per square mile and of runoff, in inches, are not published unless satisfactory adjustments can be made for diversions, for changes in contents of reservoirs, or for other changes incident to use and control. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless it is so stated. Even at those stations where adjustments are made, large errors in computed runoff may occur if adjustments or losses are large in comparison with the observed discharge

Other Records Available

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

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

The National Water Data Exchange, Water Resources Division, U.S. Geological Survey, National Center, Reston, VA 22092, maintains an index of all discharge-measurement sites in the State as well as an index of records of discharge collected by other agencies but not published by the USGS. Information on records available at specific sites can be obtained upon request.

RECORDS OF SURFACE-WATER QUALITY

Records of surface-water quality ordinarily are obtained at or near stream-gaging stations because interpretation of records of surface-water quality nearly always requires corresponding discharge data. Records of surface-water quality in this report may involve a variety of types of data and measurement frequencies.

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 one or more times daily, weekly, monthly, or quarterly. A **partial-record station** is a site

where limited water-quality data are collected systematically over a period of years. Frequency of sampling is usually less than quarterly. A **miscellaneous** sampling site is a location other than a continuing or partial-record station, where random samples are collected to give better areal coverage to define water-quality conditions in the river basin.

A distinction needs to be made between "continuing records," as used in this report, and "continuous recordings," which refers to a continuous graph or a series of discrete values punched at short intervals on a paper tape. Some records of water quality, such as temperature and specific conductance, may be obtained through continuous recordings; however, most data are obtained only monthly or less frequently. Locations of stream-gaging stations for which records on the quality of surface water appear in this report are shown in figure 6.

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. Water-quality data for partial-record stations and for miscellaneous sampling sites appear in separate tables following the table of discharge measurements at miscellaneous sites.

On-Site Measurement and Sample Collection

Water-quality data must be representative of the in situ quality of water. To assure this, certain measurements, such as water temperature, 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 on-site measurements and for collecting, treating, and shipping samples are given in publications on "Techniques of Water-Resource Investigations," book 1, chap. D2; book 3, chap. C2; book 5 chaps. A1, A3, and A4; book 9, chap. A1-A9. All of these references are listed on pages 22-24 of this report. Also, detailed information on collecting, treating, and shipping samples may be obtained from the USGS Minnesota District office.

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

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

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

Water Temperature

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures are taken at time of discharge measurements for water-discharge stations. For stations where water temperatures are taken manually once or twice daily, the water temperatures are taken at about the same time each day. Large streams have a small 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 and minimum temperatures for each day are published. Water temperatures measured at the time of water-discharge measurements are on file in the Minnesota District office.

Sediment

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

During periods of rapidly changing flow or rapidly changing concentration, samples may have been collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided-day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided-day method. For periods when no samples were collected, daily loads of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge.

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

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

Laboratory Measurements

Samples for indicator bacteria and specific conductance are analyzed locally. All other samples are analyzed in the Geological Survey laboratories in Arvada, Colorado; Doraville, Georgia; or Iowa City, Iowa. Methods used in analyzing sediment samples and computing sediment records are given in U.S. Geological Survey Techniques of Water Resources Investigations, book 5, chap. C1. Methods used by the USGS laboratories are given in U.S. Geological Survey Techniques of Water Resources Investigation, book 1, chap. D2; book 3, chap. C2; book 5, chaps. A1, A3, and A4.

Data Presentation

For continuous-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, cooperation, and extremes for parameters currently measured daily. Tables of chemical, physical, biological, radiochemical data, and so forth, obtained at a frequency less than daily are presented first. Tables of daily values of specific conductance, pH, water temperature, dissolved, and suspended sediment then follow in sequence.

In the descriptive headings, if the location is identical to that of the discharge gaging station, neither the LOCATION nor the DRAINAGE AREA statements are repeated. The following information, when 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 recorder, sediment 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 USGS by a cooperating organization are identified here.

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

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

The surface-water-quality records for partial-record stations and miscellaneous sampling sites are published in separate tables following the table of discharge measurements at miscellaneous sites. No descriptive statements are given for these records. Each station is published with its own station number and name in the regular downstream-order sequence.

Remark Codes

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

PRINTED OUTPUT	REMARK
e	Estimated value
>	Actual value is known to be greater than the value shown
<	Actual value is known to be less than the value shown
K	Results based on colony count outside the acceptance range (non-ideal colony count)
L	Biological organisms count less than 0.5 percent (organisms may be observed rather than counted)
D	Biological organism count equal to or greater than 15 percent (dominant)
M	Presence of material verified, but not quantified.
V	Analyte was detected in both the environmental sample and the associated blanks
&	Biological organism estimated as dominant.

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 USGS. These procedures allow for storage of all derived QC data and are identified so that they can be related to corresponding environmental samples.

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 is the general case for which a duplicate is the special case consisting of two samples. 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 SAMPLE--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

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 USGS began using new trace-element protocols at some stations in water year 1994.

Change in National Trends Network Procedures

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).

RECORDS OF GROUND-WATER QUALITY

Records of ground-water quality in this report differ from other types of records in that for most sampling sites they consist of only one set of measurements for the water year. The quality of ground water ordinarily changes only slowly; therefore, for most general purposes one annual sampling, or only a few samples taken at infrequent intervals during the year, is sufficient. Frequent measurement of the same constituents is not necessary unless one is concerned with a particular problem, such as monitoring for trends in nitrate concentration. In the special cases where the quality of ground water may change more rapidly, more frequent measurements are made to identify the nature of the changes.

Data Collection and Computation

The records of ground-water quality in this report were obtained mostly as a part of special studies in specific areas. Consequently, a number of chemical analyses are presented for some counties, but none are presented for others. As a result, the records for this year, by themselves, do not provide a balanced view of ground-water quality statewide. Such a view can be attained only by considering records for this year in context with similar records obtained for these and other counties in earlier years.

Most methods for collecting and analyzing water samples are described in the U.S. Geological Survey Techniques of Water-Resources Investigation manuals listed on pages 22-25. The values reported in this report represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. All samples were obtained by trained personnel. The wells sampled were pumped long enough to assure that the water collected came directly from the aquifer and had not stood for a long time in the well casing where it would have been exposed to the atmosphere and to the material, possibly metal, comprising the casings.

Data Presentation

The records of ground-water quality are published in the section entitled QUALITY OF GROUND WATER. Data for quality of ground water are listed alphabetically, by county, and are identified by well number. The prime identification number for wells sampled is the 15-digit number derived from the latitude-longitude locations. No descriptive statements are given for ground-water-quality records; however, the well number, depth of well, date of sampling, and other pertinent data are given in the table containing the chemical analyses of the ground water. The REMARK codes listed for surface-water-quality records also are applicable to ground-water-quality records.

ACCESS TO USGS WATER DATA

The USGS 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 and discontinued gaging stations through the World Wide Web. These data may be accessed at:

http://www.water.usgs.gov

Some water-quality and ground-water data also are available through the World Wide Web. 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.

DEFINITION OF TERMS

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

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).

Acre-foot (AC-FT, acre-ft) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet, 325,851 gallons, or 1,233 cubic meters.

Adenosine triphosphate (ATP) is an organic, phosphate-rich, compound important in the transfer of energy in organisms. Its central role in living cells makes it an excellent indicator of the presence of living material in water. A measurement of ATP therefore provides a sensitive and rapid estimate of biomass. ATP is reported in micrograms per liter.

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

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

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.

Aroclor is the registered trademark for a group of polychlorinated biphenyls that were manufactured by the Monsanto Company prior to 1976. Aroclors are assigned specific 4-digit reference numbers dependent upon molecular type and degree of substitution of the biphenyl ring hydrogen atoms by chlorine atoms. The first two digits of a numbered aroclor represent the molecular type and the last two digits represent the weight percent of the hydrogen substituted chlorine.

Bacteria are microscopic unicellular organisms, typically spherical, rod like, 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.

Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. This group includes coliforms that inhabit the intestine of warm-blooded animals and those that inhabit soils. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria that ferment lactose with gas formation within 48 hours at 35 °C. In the laboratory, these bacteria are defined as all the organisms that produce colonies with a golden-green metallic sheen within 24 hours when incubated at 35 °C plus or minus 1.0 °C on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Fecal coliform bacteria are bacteria that are present in the 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.

Enterococcus bacteria are commonly found in the feces of humans and other warm-blooded animals. Although some strains are ubiquitous and not related to fecal pollution, the presence of enterococci in water is an indication of fecal pollution and the possible presence of enteric pathogens. Enterococcus bacteria are those bacteria that produce pink to red colonies with black or reddish-brown precipitate after incubation at 41 °C on mE agar and subsequent transfer to EIA medium. Enterococci include *Streptococcus feacalis, Streptococcus feacium, Streptococcus avium,* and their variants.

Escherichia coli (E. coli) are bacteria present in the intestine and feces of warm-blooded animals. *E. coli* are a member species of the fecal coliform group of indicator bacteria. In the laboratory, they are defined as those bacteria that produce yellow or yellow-brown colonies on a filter pad saturated with urea substrate broth after primary culturing for 22 to 24 hours at 44.5 °C on mTEC medium. Their concentrations are expressed as number of colonies per 100 mL of sample.

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.

Benthic organisms (invertebrates) are the group of animals inhabiting the bottom of an aquatic environment. They include a number of types of organisms, such as bacteria, fungi, insect larvae and nymphs, snails, clams, and crayfish. They are useful as indicators of water quality.

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

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

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

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

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

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

Biomass pigment ratio is an indicator of the total proportion of periphyton which are autotrophic (plants). This is also called the Autotrophic Index.

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.

Cells volume (biovolume) determination is one of several common methods used to estimate biomass of algae in aquatic systems. Cell members of algae are frequently used in aquatic surveys as an indicator of algal production. However, cell numbers alone cannot represent true biomass because of considerable cell-size variation among the algal species. Cell volume (μm^3) is determined by obtaining critical cell measurements on cell dimensions (for example, length, width, height, or radius) for 20 to 50 cells of each important species to obtain an average biovolume per cell. Cells are categorized according to the correspondence of their cellular shape to the nearest geometric solid or combinations of simple solids (for example, spheres, cones, or cylinders). Representative formulae used to compute biovolume are as follows:

sphere $4/3\ \pi^3$ cone $1/3\ \pi^3 h$ cylinder $\pi^3 h$.

From cell volume, total algal biomass expressed as biovolume ($\mu m^3/mL$) is thus determined by multiplying the number of cells of a given species by its average cell volume and then summing these volumes over all species.

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.

Colloid is any substance with particles in such a fine state of subdivision dispersed in a medium (for example, water) that they do not settle out; but not in so fine a state of subdivision that they can be said to be truly dissolved.

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.

Confined aquifer is a term used to describe an aquifer containing water between two relatively impermeable boundaries. The water level in a well tapping a confined aquifer stands above the top of the confined aquifer and can be higher or lower than the water table that may be present in the material above it. In some cases the water level can rise above the ground surface, yielding a flowing well.

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:

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.

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.

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, as used in this report, is an elevation above mean sea level to which all gage height readings are referenced.

Diel is of or pertaining to a 24-hour period of time; a regular daily cycle.

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.

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

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

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

Drainage area of a 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").

Dry weight refers to the weight of animal tissue after it has been dried in an oven at 65 °C until a constant weight is achieved. Dry weight represents total organic and inorganic matter in the tissue.

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 the elevation of the zero point of the reference gage from which gage height is determined as compared to sea level (see "Datum"). This elevation is established by a system of levels from known benchmarks, by approximation from topographic maps, or by geographical positioning system.

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.

Gas chromatography/flame ionization detector (GC/FID) is a laboratory analytical method used as a screening technique for semi-volatile organic compounds that are extractable from water in methylene chloride.

Ground-water level is the elevation of the water table or another potentiometric surface at a particular location.

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 ($CaCO_3$).

High tide is the maximum height reached by each rising tide. The high-high and low-high tides are the higher and lower of the two high tides, respectively, of each tidal day. *See NOAA web site: http://www.co-ops.nos.noaa.gov/tideglos.html*

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

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.

Light-attenuation coefficient, also known as the extinction coefficient, is a measure of water clarity. Light is attenuated according to the Lambert-Beer equation

$$I = I_o e^{-\lambda L} \quad ,$$

where I_o is the source light intensity, I is the light intensity at length L (in meters) from the source, λ is the light-attenuation coefficient, and e is the base of the natural logarithm. The light attenuation coefficient is defined as

$$\lambda = -\frac{1}{L} \log_e \frac{I}{I_o} \quad .$$

Lipid is any one of a family of compounds that are insoluble in water and that make up one of the principal components of living cells. Lipids include fats, oils, waxes, and steroids. Many environmental contaminants such as organochlorine pesticides are lipophilic.

Low tide is the minimum height reached by each falling tide. The high-low and low-low tides are the higher and lower of the two low tides, respectively, of each tidal day. *See NOAA web site: http://www.co-ops.nos.noaa.gov/tideglos.html*

Macrophytes are the macroscopic plants in the aquatic environment. The most common macrophytes are the rooted vascular plants that are usually arranged in zones in aquatic ecosystems and restricted in the area by the extent of illumination through the water and sediment deposition along the shoreline.

Measuring point (MP) is an arbitrary permanent reference point from which the distance to water surface in a well is measured to obtain water level.

Membrane filter is a thin microporous material of specific pore size used to filter bacteria, algae, and other very small particles from water.

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

Methylene blue active substances (MBAS) are apparent detergents. The determination depends on the formation of a blue color when methylene blue dye reacts with synthetic anionic detergent compounds.

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 kilogram (UG/KG, µg/kg) is a unit expressing the concentration of a chemical constituent as the mass (micrograms) of the constituent per unit mass (kilogram) of the material analyzed. One microgram per kilogram is equivalent to 1 part per billion.

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.

Most probable number (MPN) is an index of the number of coliform bacteria that, more probably than any other number, would give the results shown by the laboratory examination; it is not an actual enumeration. MPN is determined from the distribution of gas-positive cultures among multiple inoculated tubes.

Multiple-plate samplers are artificial substrates of known surface area used for obtaining benthic invertebrate samples. They consist of a series of spaced, hardboard plates on an eyebolt.

Nanograms per liter (NG/L, ng/L) is a unit expressing the concentration of chemical constituents in solution as mass (nanograms) of solute per unit volume (liter) of water. One million nanograms per liter is equivalent to 1 milligram per liter.

North American Vertical Datum of 1988 (NAVD of 1988) is the vertical control datum established in 1991 by the minimum-constraint adjustment of the Canadian-Mexican-U.S. leveling observations. It held fixed the height of the primary tidal bench mark, referenced to the new International Great Lakes Datum of 1985 local mean sea level height value, at Father Point/Rimouski, Quebec, Canada. *See NOAA web site: http://www.ngs.noaa.gov/faq.shtml#WhatVD29VD88*

National Geodetic Vertical Datum of 1929 (NGVD of 1929) is a geodetic datum derived from a general adjustment of the first order level nets of the United States and Canada. It was formerly called "Sea Level Datum of 1929" or "mean sea level" in this series of reports. Although the datum was derived from the average sea level over a period of many years at 26 tide stations along the Atlantic, Gulf of Mexico, and Pacific Coasts, it does not necessarily represent local mean sea level at any particular place. *See NOAA web site: http://www.ngs.noaa.gov/faq.shtml#WhatVD29VD88*

Nekton are the consumers in the aquatic environment and consist of large free-swimming organisms that are capable of sustained, directed mobility.

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.

Open or screened interval is the length of unscreened opening or of well screen through which water enters a well, in feet below land surface.

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).

Organism is any living entity.

Organism count/area refers to the number of organisms collected and enumerated in a sample and adjusted to the number per area habitat, usually square meter (m^2), acre, or hectare. Periphyton, benthic organisms, and macrophytes are expressed in these terms.

Organism count/volume refers to the number of organisms collected and enumerated in a sample and adjusted to the number per sample volume, usually milliliter (mL) or liter (L). Numbers of planktonic organisms can be expressed in these terms.

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

Organochlorine compounds are any chemicals that contain carbon and chlorine. Organochlorine compounds that are important in investigations of water, sediment, and biological quality include certain pesticides and industrial compounds.

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.

Periodic station is a site where stage, discharge, sediment, chemical, or other hydrologic measurements are made one or more times during a year, but at a frequency insufficient to develop a daily record.

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

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 (1×10^{-12}) of the amount of radioactivity represented by a curie (Ci). A curie is the amount of radioactivity that yields 3.7×10^{10} radioactive disintegrations per second. A picocurie yields 2.22 dpm (disintegrations per minute).

Plankton is the community of suspended, floating, or weakly swimming organisms that live in the open water of lakes and rivers. Concentrations are expressed as a number of cells per milliliter (cells/mL of sample).

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

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

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

Euglenoids (*Euglenophyta*) are a group of algae that are usually free-swimming and rarely creeping. They have the ability to grow either photosynthetically in the light or heterotrophically in the dark.

Fire algae (*Pyrrhophyta*) are a group of algae that are free-swimming unicells characterized by a red pigment spot.

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

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

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

Polychlorinated naphthalenes (PCN's) are industrial chemicals that are mixtures of chlorinated naphthalene compounds. They have properties and applications similar to polychlorinated biphenyls (PCB's) and have been identified in commercial PCB preparations.

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

Primary productivity (carbon method) is expressed as milligrams of carbon per area per unit time [mg C/(m^2/time)] for periphyton and macrophytes or per volume [mg C/(m^3/time)] for phytoplankton. Carbon method defines the amount of carbon dioxide consumed as measured by radioactive carbon (carbon-14). The carbon-14 method is of greater sensitivity than the oxygen light and dark bottle method and is preferred for use in unenriched waters. Unit time may be either the hour or day, depending on the incubation period.

Primary productivity (oxygen method) is expressed as milligrams of oxygen per area per unit time [mg O/(m^2/time)] for periphyton and macrophytes or per volume [mg O/(m^3/time)] for phytoplankton. Oxygen method defines production and respiration rates as estimated from changes in the measured dissolved-oxygen concentration. The oxygen light and dark bottle method is preferred if the rate of primary production is sufficient for accurate measurements to be made within 24 hours. Unit time may be either the hour or day, depending on the incubation period.

Radioisotopes are isotopic forms of an element that exhibit radioactivity. Isotopes are varieties of a chemical element that differ in atomic weight, but are very nearly alike in chemical properties. The difference arises because the atoms of the isotopic forms of an element differ in the number of neutrons in the nucleus; for example, ordinary chlorine is a mixture of isotopes having atomic weights of 35 and 37, and the natural mixture has an atomic weight of about 35.453. Many of the elements similarly exist as mixtures of isotopes, and a great many new isotopes have been produced in the operation of nuclear devices such as the cyclotron. There are 275 isotopes of the 81 stable elements, in addition to more than 800 radioactive isotopes.

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

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 nonexceedance 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 $7Q_{10}$.

Replicate samples are a group of samples collected in a manner such that the samples are thought to be essentially identical in composition.

River mile is the distance of a point on a river measured in miles from the river's mouth along the low-water channel.

River mileage is the linear distance along the meandering path of a stream channel determined in accordance with Bulletin No. 14 (October 1968) of the Water Resources Council.

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 refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)—a geodetic datum derived from a general adjustment of the first-order level nets of the United States and Canada, formerly called Sea Level Datum of 1929. *See*: *http://www.co-ops.nos.noaa.gov/glossary/gloss_n.html#NGVD*

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.

Stable isotope ratio (per MILL/MIL) is a unit expressing the ratio of the abundance of two radioactive isotopes. Isotope ratios are used in hydrologic studies to determine the age or source of specific waters, to evaluate mixing of different waters, as an aid in determining reaction rates, and other chemical or hydrologic processes.

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.

Substrate is the physical surface upon which an organism lives.

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

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

Surface area of a lake or impoundment is that area encompassed by the boundary of the lake or impoundment as shown on USGS 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.

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

Suspended (as used in tables of chemical analyses) refers to the amount (concentration) of 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.

Synoptic Studies are short-term investigations of specific water-quality conditions during selected seasonal or hydrologic periods to provide improved spatial resolution for critical water-quality conditions. For the period and conditions sampled, they assess the spatial distribution of selected water-quality conditions in relation to causative factors, such as land use and contaminant sources.

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

Kingdom	Animal
Phylum	Arthropoda
Class	Insecta
Order	Ephemeroptera
Family	Ephemeridae
Genus	*Hexagenia*
Species	*Hexagenia limbata*

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

Tons per acre-foot 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 length (fish) is the straight-line distance from the anterior point of a fish specimen's snout, with the mouth closed, to the posterior end of the caudal (tail) fin, with the lobes of the caudal fin squeezed together.

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.

Volatile organic compounds (VOC's) are organic compounds that can be isolated from the water phase of a sample by purging the water sample with inert gas, such as helium, and subsequently analyzed by gas chromatography. Many VOC's are manmade chemicals that are used and produced in the manufacture of paints, adhesives, petroleum products, pharmaceuticals, and refrigerants. They are often components of fuels, solvents, hydraulic fluids, paint thinners, and dry cleaning agents commonly used in urban settings. VOC contamination of drinking-water supplies is a human health concern

because many are toxic and are known or suspected human carcinogens (U.S. Environmental Protection Agency, 1996).

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-table aquifer is an unconfined aquifer within which is found the water table.

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, 1999, is called the "1999 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.

Well is an excavation (pit, hole, tunnel), generally cylindrical in form and often walled in, drilled, dug, driven, bored, or jetted into the ground to such a depth as to penetrate water-yielding geologic material and allow the water to flow or to be pumped to the surface.

Wet weight refers to the weight of animal tissue or other substance including its contained water.

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

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.

Book 1. Collection of Water Data by Direct Measurement

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.

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2–F1. *Application of drilling, coring, and sampling techniques to test holes and wells*, by Eugene Shuter and W.E. Teasdale: USGS–TWRI book 2, chap. F1. 1989. 97 p.

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3–A1. *General field and office procedures for indirect discharge measurements*, by M.A. Benson and Tate Dalrymple: USGS–TWRI book 3, chap. A1. 1967. 30 p.

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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.

3–A13. *Computation of continuous records of streamflow,* by E.J. Kennedy: USGS–TWRI book 3, chap. A13. 1983. 53 p.

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3–A19. *Levels at streamflow gaging stations,* by E.J. Kennedy: USGS–TWRI book 3, chap. A19. 1990. 31 p.

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3–A21 *Stream-gaging cableways,* by C. Russell Wagner: USGS–TWRI book 3, chap. A21. 1995. 56 p.

Section B. Ground-Water Techniques

3–B1. *Aquifer-test design, observation, and data analysis,* by R.W. Stallman: USGS–TWRI book 3, chap. B1. 1971. 26 p.

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Book 5. Laboratory Analysis

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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 Stations

Hydrographer installing temporary gage at Roseau River near Malung - June 2002

Figure 5. Location of lake and stream-gaging stations.

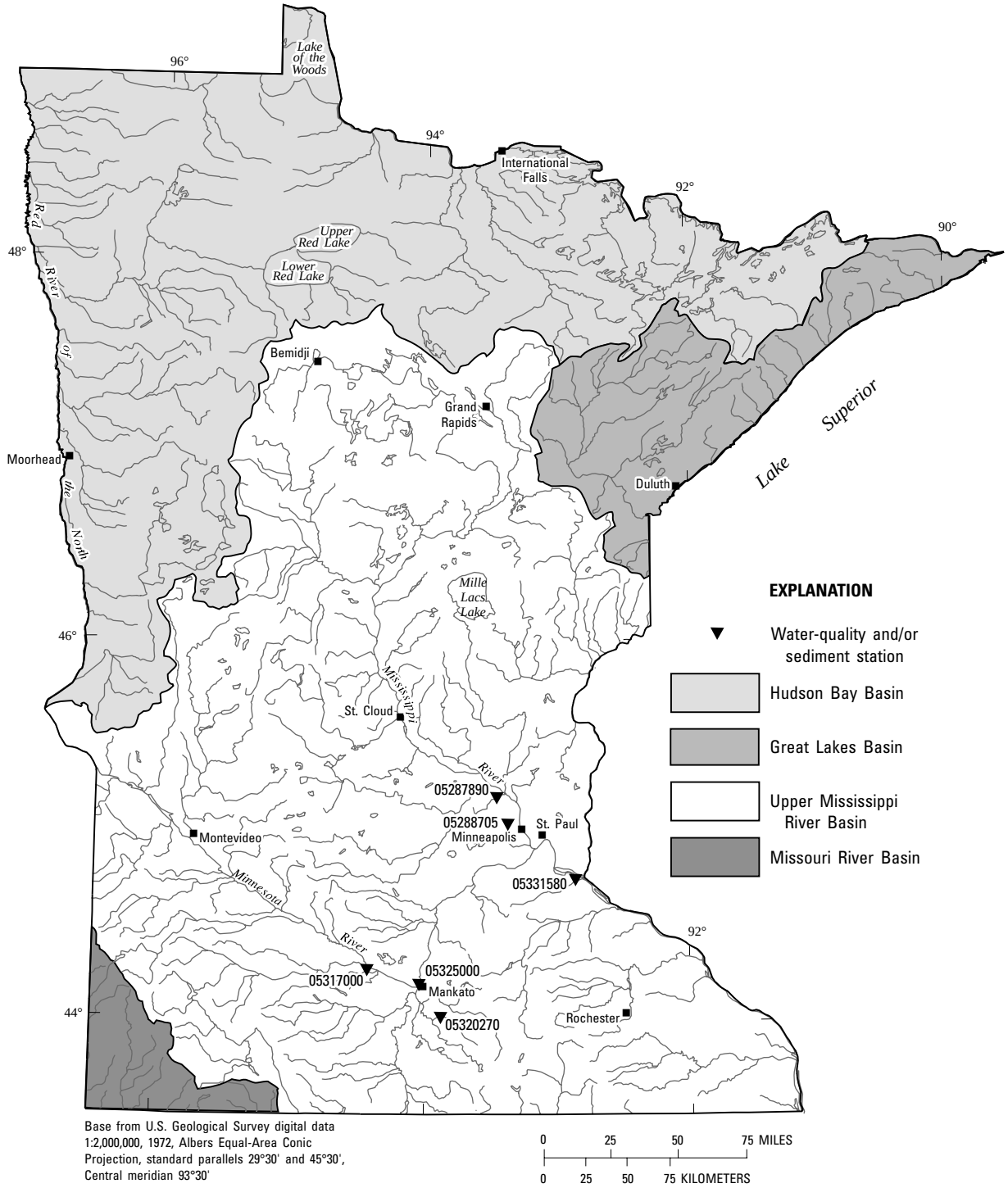


Figure 6. Location of surface-water quality stations.

04010500 PIGEON RIVER AT MIDDLE FALLS, NEAR GRAND PORTAGE, MN

LOCATION.--Lat 48°00'44", long 89°36'58", in SW¼NE¼ sec. 24, T.64 N., R.6 E., Cook County, Hydrologic Unit 04010101, on the Grand Portage Indian Reservation, on right bank 400 ft upstream from Middle Falls, 2.5 mi upstream from Grand Portage Port of Entry, 3.5 mi upstream from mouth, and 4.7 mi northeast of city of Grand Portage.

DRAINAGE AREA.--609 mi^2.

PERIOD OF RECORD.--June to October 1921, April to November 1922, March 1923 to current year. Published as "at International Bridge" April 1924 to September 1940; as "below International Bridge" October 1940 to September 1965. Monthly discharge only for some periods, published in WSP 1307.

REVISED RECORDS.--WSP 744:1927-28. WSP 804: 1934(M). WSP 974: Drainage area. WSP 1337:1924(M), 1925, 1926-28(M), 1931(M), 1938(M), 1941(M), 1945-46(M), 1947, 1948(M), 1950(M).

GAGE.--Water-stage recorder. Datum of gage is 787.58 ft above sea level (NGVD of 1929). Prior to Sept. 30, 1940, nonrecording gage at International Bridge, 5.8 mi upstream at datum 102.24 ft higher. Oct. 1, 1940 to Dec. 31, 1975, at present site at datum 2.00 ft higher.

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,700 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Apr 17	1300	*2,890	*8.03	No other peak greater than base discharge.			

Minimum discharge, 46 ft^3/s, Sept. 27, 28, gage height, 2.23 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	94	399	e600	e215	e145	e115	e110	603	420	349	176	79
2	93	414	e560	e215	e140	e115	e110	571	394	312	220	99
3	90	385	e520	e210	e140	e115	e110	548	361	282	233	144
4	89	360	e500	e205	e140	e115	e110	540	335	256	211	115
5	86	318	e540	e205	e140	e115	e110	596	318	236	181	110
6	86	288	e760	e200	e135	e115	e110	618	307	214	155	107
7	88	266	e700	e200	e135	e115	e115	605	294	198	135	96
8	88	308	e620	e195	e135	e115	e120	610	284	189	122	86
9	89	326	e540	e195	e135	e115	e130	803	274	182	113	81
10	102	324	e490	e190	e135	e115	e150	864	259	172	105	90
11	112	297	e460	e185	e130	e110	e200	808	257	161	100	86
12	120	273	e430	e185	e130	e100	e400	711	285	152	98	81
13	131	262	e410	e180	e130	e90	e830	669	301	144	100	78
14	324	250	e390	e180	e130	e145	1320	655	310	139	98	74
15	411	243	e370	e180	e130	e125	1480	668	423	131	120	69
16	349	233	e355	e175	e125	e115	1730	637	515	125	152	65
17	293	227	e340	e175	e125	e115	2180	618	442	119	220	60
18	262	221	e325	e175	e125	e110	2040	569	375	111	233	57
19	252	221	e315	e170	e125	e110	1830	524	327	105	216	59
20	240	219	e300	e170	e125	e110	1480	493	325	98	193	57
21	225	221	e290	e170	e120	e110	1170	465	343	95	165	53
22	208	210	e280	e170	e120	e110	979	444	326	103	143	50
23	217	206	e275	e170	e120	e110	842	436	316	101	128	49
24	252	370	e270	e150	e120	e110	798	434	381	96	115	48
25	316	1870	e260	e140	e120	e110	795	429	619	94	104	49
26	395	1610	e250	e190	e120	e110	722	401	721	89	96	49
27	382	1010	e240	e170	e120	e110	653	386	633	85	89	47
28	345	e605	e235	e160	e120	e110	608	371	531	101	85	48
29	305	e660	e230	e155	---	e110	604	357	448	97	82	49
30	284	e670	e225	e150	---	e110	615	362	389	106	79	48
31	339	---	e220	e145	---	e110	---	402	---	106	77	---
TOTAL	6667	13266	12300	5575	3615	3490	22451	17197	11513	4748	4344	2183
MEAN	215	442	397	180	129	113	748	555	384	153	140	72.8
MAX	411	1870	760	215	145	145	2180	864	721	349	233	144
MIN	86	206	220	140	120	90	110	357	257	85	77	47
AC-FT	13220	26310	24400	11060	7170	6920	44530	34110	22840	9420	8620	4330
CFSM	0.35	0.73	0.65	0.30	0.21	0.18	1.23	0.91	0.63	0.25	0.23	0.12
IN.	0.41	0.81	0.75	0.34	0.22	0.21	1.37	1.05	0.70	0.29	0.27	0.13

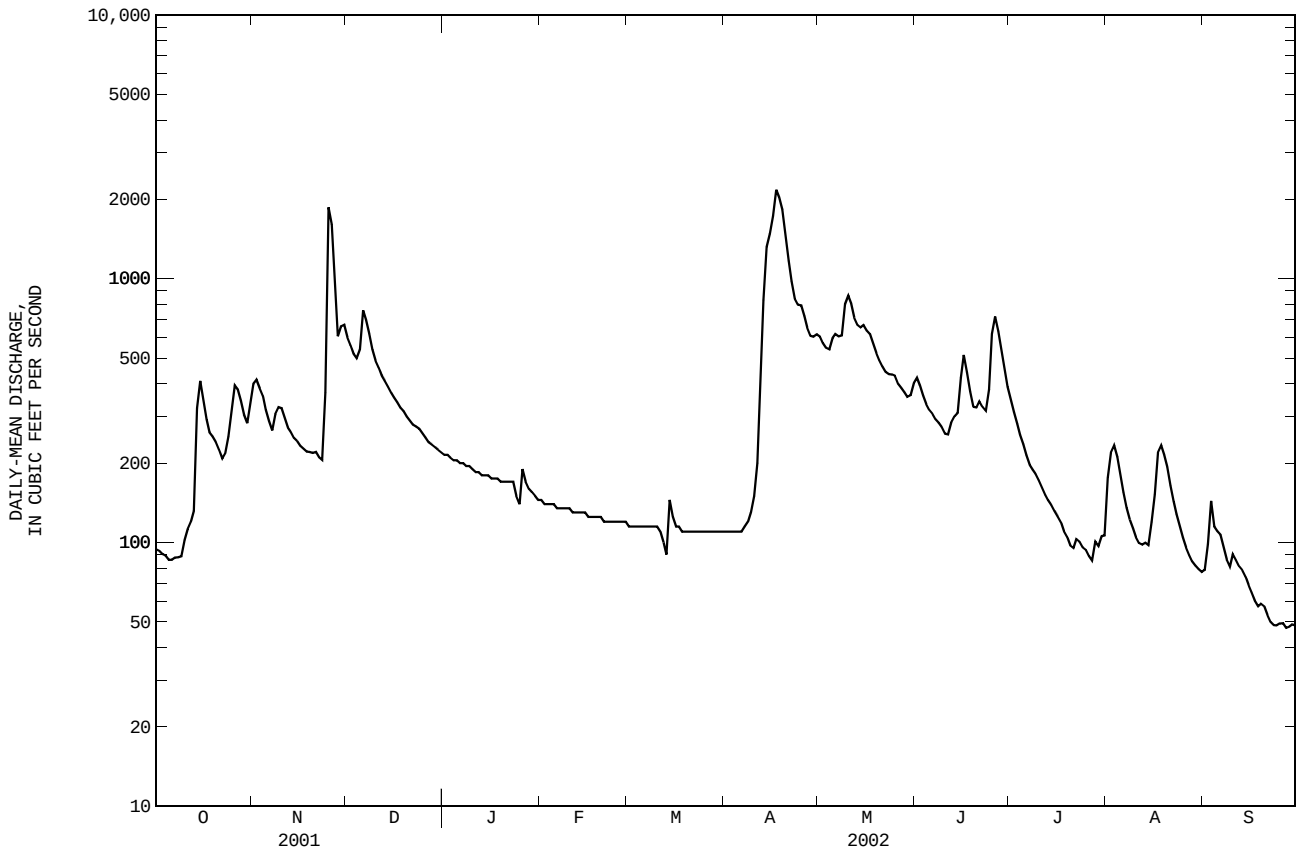
04010500 PIGEON RIVER AT MIDDLE FALLS, NEAR GRAND PORTAGE, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1921 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	359	356	209	151	126	176	1203	1602	836	417	241	286
MAX	2095	1461	720	431	300	1169	2724	4016	2801	1127	1029	2985
(WY)	1978	1971	1978	1975	1969	1945	2001	1950	1947	1968	1950	1977
MIN	17.4	11.4	2.85	2.18	8.02	60.0	290	138	125	78.0	46.5	40.2
(WY)	1977	1977	1977	1977	1977	1941	1977	1977	1977	1958	1998	1976

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1921 - 2002	
ANNUAL TOTAL	249138		107349			
ANNUAL MEAN	683		294		499	
HIGHEST ANNUAL MEAN					840	1971
LOWEST ANNUAL MEAN					158	1958
HIGHEST DAILY MEAN	5710	Apr 26	2180	Apr 17	10700	May 5 1934
LOWEST DAILY MEAN	65	Jan 1	47	Sep 27	1.0a	Jan 15-21 1977
ANNUAL SEVEN-DAY MINIMUM	67	Jan 1	48	Sep 24	1.0	Jan 15 1977
MAXIMUM PEAK FLOW			2890	Apr 17	11000b	May 5 1934
MAXIMUM PEAK STAGE			8.03	Apr 17	12.37c	Sep 24 1977
INSTANTANEOUS LOW FLOW			46	Sep 27	1.0a	Jan 15 1977
ANNUAL RUNOFF (AC-FT)	494200		212900		361800	
ANNUAL RUNOFF (CFSM)	1.12		0.48		0.82	
ANNUAL RUNOFF (INCHES)	15.22		6.56		11.14	
10 PERCENT EXCEEDS	2000		616		1280	
50 PERCENT EXCEEDS	264		193		223	
90 PERCENT EXCEEDS	87		90		84	

a Minimum observed.
b Gage height 7.60 ft, site and datum then in use.
c At present site and datum, discharge 10,500 ft^3/s.
e Estimated.



04015330 KNIFE RIVER NEAR TWO HARBORS, MN

LOCATION.--Lat 46°56'49", long 91°47'32", in SW¼NW¼ sec. 31, T.52 N., R.11 W., Lake County, Hydrologic Unit 04010102, on right bank 600 ft downstream from bridge on U.S. Highway 61, 0.5 mi upstream from bridge on County Highway 102, in town of Knife River, 0.8 mi upstream from Lake Superior, and 7.8 mi southwest of Two Harbors.

DRAINAGE AREA.--83.6 mi^2.

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

GAGE.--Water-stage recorder. Elevation of gage is 640 ft above sea level (from topographic map).

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow regulated intermittently by fish ladder operation just upstream of gage.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,800 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jun 23	1130	2,170	6.56	Jul 8	0700	*2,390	*6.79

Minimum discharge, 0.45 ft^3/s, July 5, gage height, 2.04 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	7.0	33	69	e11	e3.9	e3.1	e31	133	22	18	22	14
2	7.0	29	62	e10	e3.9	e3.0	e29	111	20	13	28	24
3	6.8	26	51	e10	e3.9	e2.9	e27	92	19	11	19	40
4	6.7	23	50	e9.3	e3.9	e2.9	e24	89	19	8.5	16	24
5	6.7	22	206	e10	e3.9	e2.9	e23	116	19	6.9	13	56
6	6.6	21	237	e11	4.0	e2.8	e21	119	18	8.4	11	44
7	6.7	21	98	e13	e4.2	2.8	e75	105	18	16	10	28
8	7.4	51	69	e14	e4.3	e2.9	e290	188	17	1210	11	20
9	8.7	51	39	e13	e4.4	e3.0	e230	647	15	457	11	15
10	20	42	53	e11	e4.4	3.0	e600	339	14	136	8.5	176
11	37	36	42	e9.6	e4.4	e3.2	1110	195	14	72	7.5	83
12	28	32	36	e8.8	e4.4	e3.5	817	279	14	42	21	42
13	26	30	33	e7.8	e4.4	e4.0	971	232	16	28	37	27
14	44	29	e38	e7.0	4.3	e4.6	971	167	19	21	23	21
15	37	27	e39	e6.4	e4.3	e5.2	796	132	16	16	22	15
16	30	26	27	e5.8	e4.4	e5.9	619	114	13	13	77	12
17	24	24	31	e5.4	e4.6	e6.7	439	96	11	11	162	11
18	21	23	32	e5.0	e5.0	e6.2	401	82	9.6	11	118	10
19	19	23	30	e5.1	e4.7	e5.6	333	71	12	8.9	70	12
20	18	22	e28	e5.4	e4.5	e5.2	196	63	24	8.4	47	20
21	16	21	e26	e5.6	e4.5	e4.4	138	57	26	9.2	38	16
22	16	21	e24	e5.7	e4.5	e5.0	116	52	21	10	41	13
23	30	21	e22	e5.4	e4.9	e5.6	106	50	1510	8.7	33	14
24	65	144	e20	e5.0	e4.6	e6.2	97	47	951	7.8	31	22
25	75	662	e19	e6.5	e4.2	e6.6	89	43	477	13	26	22
26	62	218	e18	e6.1	e3.8	e6.8	78	41	176	20	18	26
27	51	132	e16	e5.0	e3.5	e7.2	71	37	95	16	15	23
28	43	108	e15	e4.4	e3.2	e9.0	81	34	57	20	13	19
29	38	95	e14	e4.1	---	e14	115	32	37	18	13	18
30	37	62	e13	e4.0	---	e21	177	29	25	13	13	18
31	33	---	e12	e3.9	---	e30	---	27	---	13	12	---
TOTAL	833.6	2075	1469	234.3	119.0	195.2	9071	3819	3704.6	2264.8	987.0	885
MEAN	26.9	69.2	47.4	7.56	4.25	6.30	302	123	123	73.1	31.8	29.5
MAX	75	662	237	14	5.0	30	1110	647	1510	1210	162	176
MIN	6.6	21	12	3.9	3.2	2.8	21	27	9.6	6.9	7.5	10
AC-FT	1650	4120	2910	465	236	387	17990	7570	7350	4490	1960	1760
CFSM	0.32	0.83	0.57	0.09	0.05	0.08	3.62	1.47	1.48	0.87	0.38	0.35
IN.	0.37	0.92	0.65	0.10	0.05	0.09	4.04	1.70	1.65	1.01	0.44	0.39

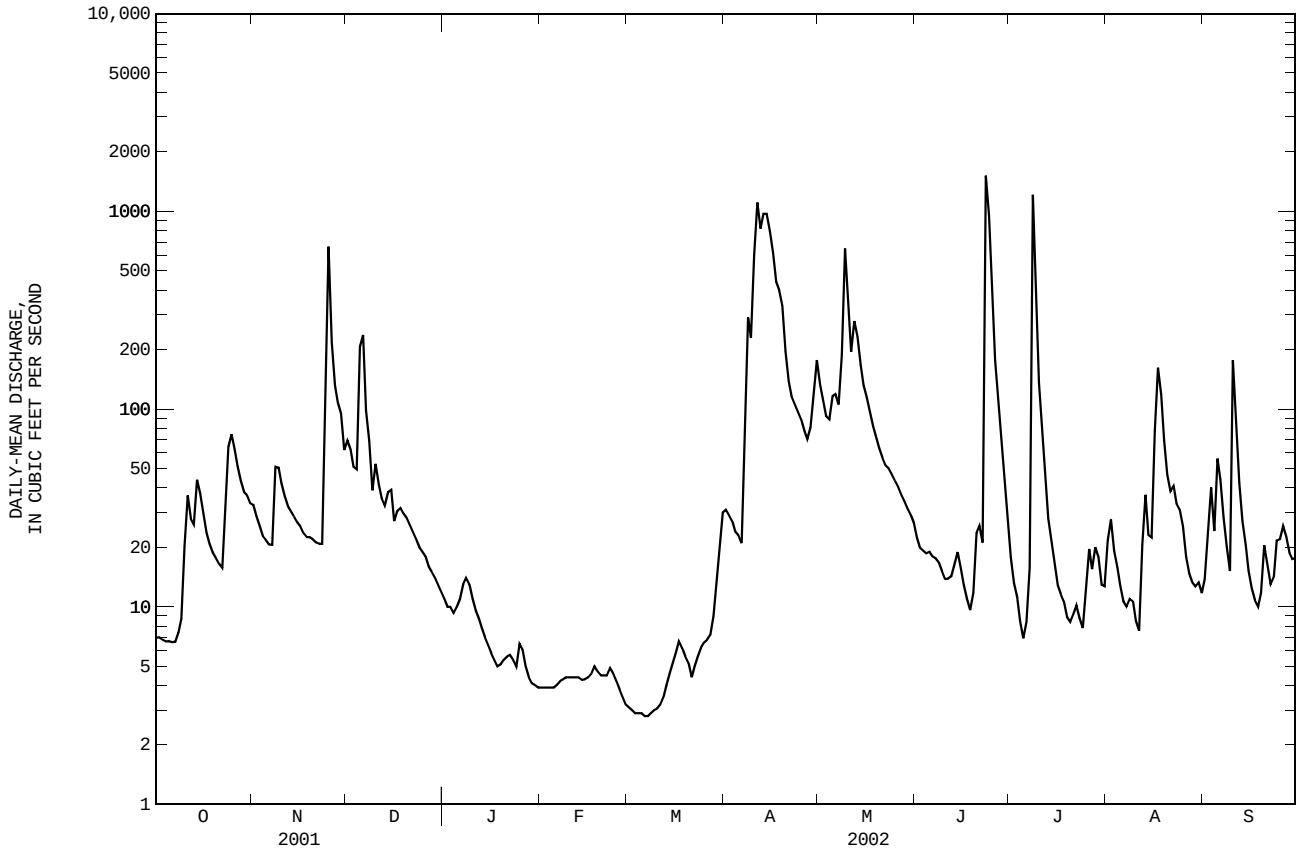
04015330 KNIFE RIVER NEAR TWO HARBORS, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1974 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	90.7	82.9	24.4	11.4	13.4	60.0	380	155	89.3	90.6	36.7	79.8
MAX	267	238	75.1	31.4	79.2	204	889	427	240	402	163	314
(WY)	1996	1999	1999	1975	1998	1998	2001	1979	1984	1999	1988	1977
MIN	3.06	1.58	0.000	0.000	0.000	6.30	73.6	16.0	13.0	4.87	2.95	1.43
(WY)	1977	1977	1977	1977	1977	2002	1977	1976	1995	1988	1976	1976

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1974 - 2002	
ANNUAL TOTAL	40288.8		25657.5			
ANNUAL MEAN	110		70.3		93.2	
HIGHEST ANNUAL MEAN					164	1999
LOWEST ANNUAL MEAN					44.2	1977
HIGHEST DAILY MEAN	2640	Apr 23	1510	Jun 23	4840	Jul 5 1999
LOWEST DAILY MEAN	3.5	Feb 24	2.8	Mar 6, 7	0.00a	Dec 2 1976
ANNUAL SEVEN-DAY MINIMUM	3.6	Feb 21	2.9	Mar 2	0.00	Dec 2 1976
MAXIMUM PEAK FLOW			2390	Jul 8	9100	Jul 5 1999
MAXIMUM PEAK STAGE			6.79	Jul 8	12.14	Jul 5 1999
INSTANTANEOUS LOW FLOW			0.45b	Jul 5		
ANNUAL RUNOFF (AC-FT)	79910		50890		67530	
ANNUAL RUNOFF (CFSM)	1.32		0.84		1.12	
ANNUAL RUNOFF (INCHES)	17.93		11.42		15.15	
10 PERCENT EXCEEDS	238		134		229	
50 PERCENT EXCEEDS	16		21		23	
90 PERCENT EXCEEDS	4.6		4.4		5.0	

a Many days in 1977.
b Result of regulation.
e Estimated.



04024000 ST. LOUIS RIVER AT SCANLON, MN

LOCATION.--Lat 46°42'12", long 92°25'07", in NW¼ sec. 30, T.49 N., R.16 W., Carlton County, Hydrologic Unit 04010201, on right bank 80 ft downstream from lower bridge on U.S. Highway 61 at Scanlon, 0.6 mi downstream from Minnesota Power Co. power plant, 3 mi upstream from Thomson Reservoir, and 3.2 mi upstream from Midway River.

DRAINAGE AREA.--3,430 mi^2 (approximately).

PERIOD OF RECORD.--January 1908 to current year. Monthly discharge only for some periods published in WSP 1307. Published as "near Thomson" 1908-50.

REVISED RECORDS.--WSP 1337: 1911-12.

GAGE.--Water-stage recorder. Datum of gage is 1,101.23 ft above sea level (NGVD of 1929). Oct. 5, 1909 to Sept. 5, 1914, nonrecording gage 3 mi downstream and 50 ft below power plant at datum about 420 ft lower. Sept. 6, 1914 to Aug. 4, 1953, power plant record at Thomson hydroelectric plant.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Diurnal fluctuation caused by power plant upstream. Flow regulated by Whiteface Reservoir and Boulder, Island, Rice and Fish Lakes, combined capacity, 332,160 acre-ft; the water-discharge table shows the monthly change in contents (+).

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	584	1330	2390	e1100	1060	e900	1230	3510	1340	6690	2510	1600
2	548	1230	2180	e1360	1050	624	1190	3360	1260	5400	3430	1820
3	555	1290	2210	e1340	1020	e1000	1110	2960	1170	4370	3520	1930
4	583	1300	2260	e1270	e1010	809	1010	3000	1110	3550	3020	1800
5	570	1200	2200	e1320	e1020	532	933	2810	1020	2840	2690	1640
6	509	1150	2460	e1300	1020	e1200	919	3020	991	2460	2340	1650
7	503	1150	2680	1260	1050	e1100	972	3040	877	2430	2160	1680
8	534	1230	2730	1290	1070	874	1320	3080	870	8880	1980	1560
9	603	1220	2090	1380	1060	908	1640	3600	836	12000	1910	1550
10	760	1270	2210	1380	1040	e1040	2460	3890	737	8970	1880	1670
11	870	1310	2030	1330	1030	1120	4470	3880	764	7300	1690	2050
12	946	1230	2210	1350	1010	e1140	4920	3930	778	6010	1850	2060
13	1100	1190	2130	1330	1070	e1100	5350	4470	767	5040	1830	1810
14	1110	1210	1760	1240	1030	e1070	6560	4600	818	4410	1800	1660
15	1140	1190	1730	1210	985	e1060	7520	4650	830	3810	1670	1490
16	1130	1190	1880	1190	1030	e1040	7220	4110	788	3260	1700	1420
17	1110	1190	1960	1100	953	e1250	6920	3900	775	2850	3140	1310
18	1200	1180	1880	e1120	1020	e1300	6660	3400	798	2380	3620	1190
19	1190	1090	1590	e1130	1060	e1230	6990	3100	980	2250	3640	1180
20	1120	1050	1550	1150	1060	e1120	7100	2820	1010	1840	3020	1480
21	1090	1090	1400	1100	994	1030	6630	2500	987	1740	2780	1750
22	1060	1080	1410	1110	1020	928	6220	2380	1080	1680	2780	1640
23	1090	1050	1490	1150	1040	1120	5760	2300	9550	1670	2850	1530
24	1150	1150	e1250	1090	1030	1110	5450	2000	21800	1490	2710	1530
25	1220	1370	e1230	1040	1060	1020	4870	1920	25400	1490	2370	1540
26	1280	1750	e1300	1090	895	1030	4490	1780	24300	1460	2190	1520
27	1240	2050	1380	1100	e600	956	4060	1760	20700	1500	2040	1430
28	1300	1500	e1270	1100	707	934	3900	1590	15600	1900	1860	1310
29	1320	1610	e1200	e1070	---	1020	3630	1590	11200	3030	1680	1230
30	1260	2050	e1260	990	---	1080	3620	1420	8500	2650	1580	1220
31	1330	---	e1180	1050	---	1170	---	1340	---	2300	1470	---
TOTAL	30005	38900	56500	37040	27994	31815	125124	91710	157636	117650	73710	47250
MEAN	968	1297	1823	1195	1000	1026	4171	2958	5255	3795	2378	1575
MAX	1330	2050	2730	1380	1070	1300	7520	4650	25400	12000	3640	2060
MIN	503	1050	1180	990	600	532	919	1340	737	1460	1470	1180
AC-FT	59510	77160	112100	73470	55530	63110	248200	181900	312700	233400	146200	93720
CFSM	0.28	0.38	0.53	0.35	0.29	0.30	1.22	0.86	1.53	1.11	0.69	0.46
IN.	0.33	0.42	0.61	0.40	0.30	0.35	1.36	0.99	1.71	1.28	0.80	0.51
+	61.6	186	-309	-611	-539	-469	892	272	780	301	1.04	-111
‡MEAN	1030	1483	1514	584	461	557	5063	3230	6034	4096	2379	1464
‡CFSM	.30	.43	.44	.17	.13	.16	1.48	.94	1.76	1.19	.69	.43
‡IN	.35	.48	.51	.20	.14	.18	1.65	1.08	1.96	1.37	.80	.48

CAL YR 01 TOTAL 1220088 MEAN 3343 MAX 27100 MIN 503 ‡MEAN 3126 ‡CFSM 0.91 ‡IN 12.38
WTR YR 02 TOTAL 835334 MEAN 2289 MAX 25400 MIN 503 ‡MEAN 2327 ‡CFSM 0.68 ‡IN 9.21

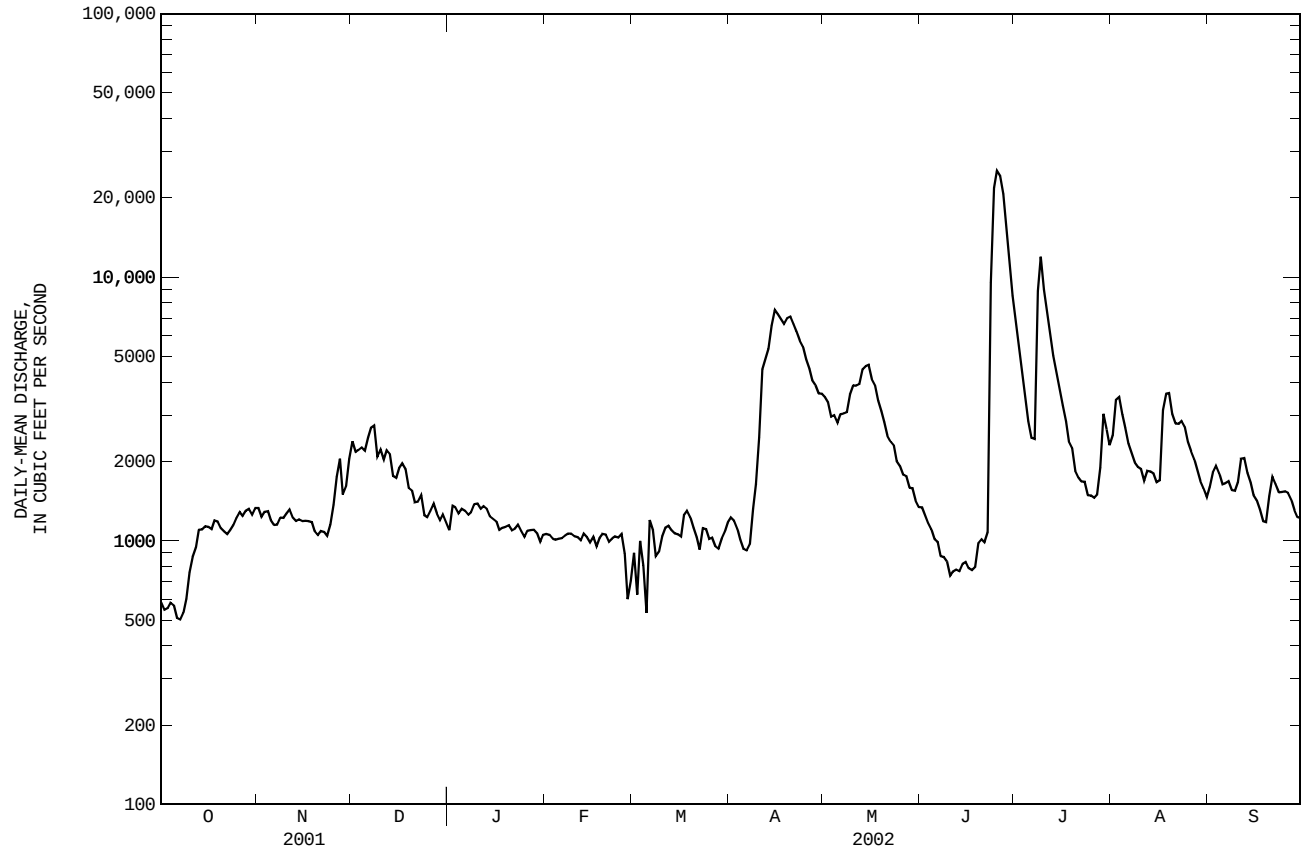
04024000 ST. LOUIS RIVER AT SCANLON, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1908 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	2034	1756	1295	1078	1063	1461	5733	5112	3568	2503	1673	1765
MAX	7508	8518	2993	2272	2200	6026	15860	22210	16480	12630	9197	7594
(WY)	1974	1972	1972	1966	1966	1945	2001	1950	1908	1999	1953	1928
MIN	407	473	282	265	249	301	667	593	458	199	377	402
(WY)	1935	1935	1911	1911	1924	1924	1977	1977	1988	1988	1977	1934

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1908 - 2002	
ANNUAL TOTAL	1220088		835334			
ANNUAL MEAN	3343		2289		2408	
HIGHEST ANNUAL MEAN					4276	1972
LOWEST ANNUAL MEAN					945	1924
HIGHEST DAILY MEAN	27100	Apr 25	25400	Jun 25	37900	May 9 1950
LOWEST DAILY MEAN	503	Oct 7	503	Oct 7	88	Aug 24 1977
ANNUAL SEVEN-DAY MINIMUM	543	Oct 2	543	Oct 2	134	Jul 26 1988
MAXIMUM PEAK FLOW			25900	Jun 25	37900	May 9 1950
MAXIMUM PEAK STAGE			11.87	Jun 25	15.80	May 9 1950
ANNUAL RUNOFF (AC-FT)	2420000		1657000		1745000	
ANNUAL RUNOFF (CFSM)	0.97		0.67		0.70	
ANNUAL RUNOFF (INCHES)	13.23		9.06		9.54	
10 PERCENT EXCEEDS	11300		4390		5300	
50 PERCENT EXCEEDS	1180		1340		1400	
90 PERCENT EXCEEDS	652		941		656	

\+ Change in contents, equivalent in cubic feet per second, in Whiteface Reservoir, and Boulder, Island, Rice and Fish Lakes; records furnished by Minnesota Power Co.
‡ Adjusted for change in reservoir contents.
e Estimated.



04024098 DEER CREEK NEAR HOLYOKE, MN

LOCATION.--Lat 46°31'30", long 92°23'20", in NE¼SE¼ sec. 29, T.47 N., R.16 W., Carlton County, Hydrologic Unit 04010301, on left bank 179 ft west of State Highway No. 23, 0.9 mi upstream from mouth and 4.0 mi north of Holyoke.

DRAINAGE AREA.--7.70 mi^2.

PERIOD OF RECORD.--October 1976 to December, 2001 (discontinued).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 786.14 ft above sea level (NGVD of 1929).

REMARKS.--Records fair except those 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	1.5	2.0	3.1	---	---	---	---	---	---	---	---	---
2	1.6	2.0	3.8	---	---	---	---	---	---	---	---	---
3	1.5	1.8	3.4	---	---	---	---	---	---	---	---	---
4	1.6	1.8	3.4	---	---	---	---	---	---	---	---	---
5	1.9	1.8	12	---	---	---	---	---	---	---	---	---
6	1.8	1.9	15	---	---	---	---	---	---	---	---	---
7	1.8	1.8	10	---	---	---	---	---	---	---	---	---
8	2.0	1.8	3.6	---	---	---	---	---	---	---	---	---
9	2.1	1.8	3.5	---	---	---	---	---	---	---	---	---
10	3.5	1.8	2.9	---	---	---	---	---	---	---	---	---
11	2.4	1.8	2.7	---	---	---	---	---	---	---	---	---
12	1.8	1.6	2.5	---	---	---	---	---	---	---	---	---
13	2.2	1.9	e1.9	---	---	---	---	---	---	---	---	---
14	2.5	1.8	e1.9	---	---	---	---	---	---	---	---	---
15	2.6	1.8	2.4	---	---	---	---	---	---	---	---	---
16	2.6	1.7	2.6	---	---	---	---	---	---	---	---	---
17	3.7	1.7	3.0	---	---	---	---	---	---	---	---	---
18	2.5	1.8	3.2	---	---	---	---	---	---	---	---	---
19	2.4	1.7	2.5	---	---	---	---	---	---	---	---	---
20	2.0	1.7	e2.3	---	---	---	---	---	---	---	---	---
21	1.9	1.6	e2.2	---	---	---	---	---	---	---	---	---
22	2.1	1.7	e2.1	---	---	---	---	---	---	---	---	---
23	2.8	1.9	e2.1	---	---	---	---	---	---	---	---	---
24	2.0	4.0	e1.9	---	---	---	---	---	---	---	---	---
25	1.9	7.1	e1.8	---	---	---	---	---	---	---	---	---
26	2.1	4.2	e1.7	---	---	---	---	---	---	---	---	---
27	1.9	17	e1.7	---	---	---	---	---	---	---	---	---
28	1.8	17	e1.6	---	---	---	---	---	---	---	---	---
29	1.9	6.0	e1.6	---	---	---	---	---	---	---	---	---
30	1.9	3.8	e1.6	---	---	---	---	---	---	---	---	---
31	1.9	---	e1.5	---	---	---	---	---	---	---	---	---
TOTAL	66.2	100.3	105.5	---	---	---	---	---	---	---	---	---
MEAN	2.14	3.34	3.40	---	---	---	---	---	---	---	---	---
MAX	3.7	17	15	---	---	---	---	---	---	---	---	---
MIN	1.5	1.6	1.5	---	---	---	---	---	---	---	---	---
AC-FT	131	199	209	---	---	---	---	---	---	---	---	---
CFSM	0.28	0.43	0.44	---	---	---	---	---	---	---	---	---
IN.	0.32	0.48	0.51	---	---	---	---	---	---	---	---	---

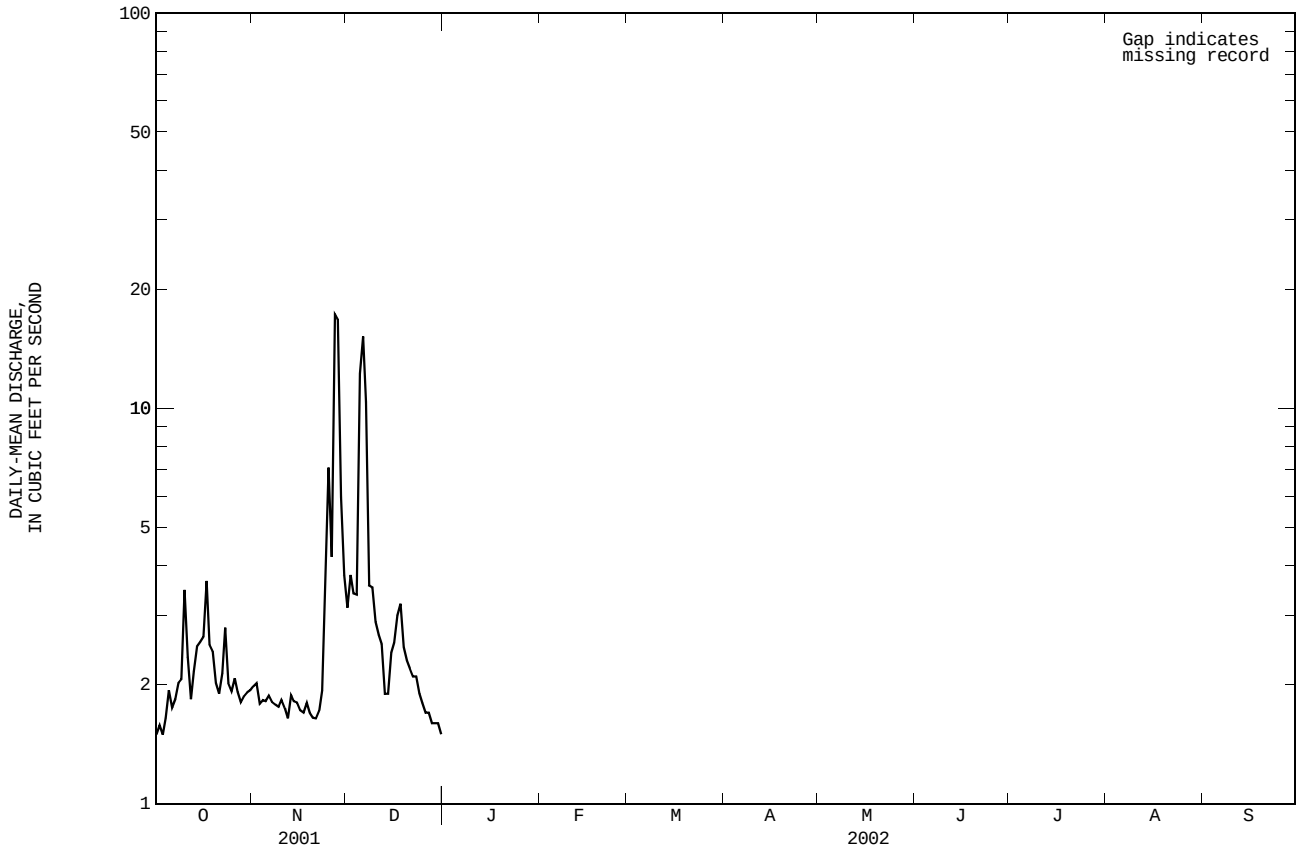
04024098 DEER CREEK NEAR HOLYOKE, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1976 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	5.99	4.60	2.48	1.90	2.70	8.45	24.7	10.1	7.63	6.98	4.99	6.75
MAX	21.8	12.2	4.35	2.92	9.29	21.5	90.8	24.3	31.4	26.7	36.9	30.4
(WY)	1983	1983	1999	1992	1998	1995	1986	1991	1993	1999	1986	1986
MIN	1.69	1.59	1.31	0.97	1.06	2.34	4.11	2.15	1.39	1.50	0.89	1.24
(WY)	1988	1977	1977	1979	1979	1986	1977	1980	1995	1988	1982	1993

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		WATER YEARS 1976 - 2002	
ANNUAL TOTAL	3660.3			
ANNUAL MEAN	10.0		7.29	
HIGHEST ANNUAL MEAN			19.3	1986
LOWEST ANNUAL MEAN			3.65	1980
HIGHEST DAILY MEAN	393	Apr 23	553	Sep 6 1990
LOWEST DAILY MEAN	1.4	Feb 15	0.21	Jul 2 1976
ANNUAL SEVEN-DAY MINIMUM	1.5	Aug 5	0.47	Aug 10 1982
MAXIMUM PEAK FLOW			2000a	Sep 3 1985
MAXIMUM PEAK STAGE			32.76b	Sep 3 1985
INSTANTANEOUS LOW FLOW			0.10	Nov 13 1996
ANNUAL RUNOFF (AC-FT)	7260		5280	
ANNUAL RUNOFF (CFSM)	1.30		0.95	
ANNUAL RUNOFF (INCHES)	17.68		12.87	
10 PERCENT EXCEEDS	18		14	
50 PERCENT EXCEEDS	2.1		2.5	
90 PERCENT EXCEEDS	1.6		1.5	

a From rating curve extended above 1000 ft^3/s on basis of flow-thru-culvert computations.
b From floodmark.
e Estimated.



05030500 OTTER TAIL RIVER NEAR ELIZABETH, MN

LOCATION.--Lat 46°22'10", long 96°01'02", in SW¼SE¼ sec. 31, T.134 N., R.42 W., Ottertail County, Hydrologic Unit 09020103, on right bank at County Highway 10, 2.5 miles below Taplin Gorge Dam, 5.0 miles above the Diversion Dam, 5.7 miles east of Elizabeth and 6.6 miles northeast of Fergus Falls.

DRAINAGE AREA.--1,230 mi^2 (approximately).

PERIOD OF RECORD.--May 1904 to September 1917, monthly discharge only, published as "at German Church near Fergus Falls" in WSP 1308. July 1992 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,250 ft above sea level (from topographic map). Nonrecording gage at same site Nov. 1913 to September 1917 at elevation 1,265 ft (from topographic map).

REMARKS.--Records good except those for estimated daily discharge, which are fair. Flow regulated by power plant 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	273	251	279	e345	e301	286	305	453	525	409	486	352
2	273	251	279	e345	303	287	308	449	519	413	485	393
3	266	251	280	e345	e305	286	306	451	504	420	475	410
4	265	251	293	e350	e305	286	307	452	490	406	460	397
5	259	251	313	e350	e305	287	309	452	488	418	476	394
6	256	251	335	e345	303	289	314	453	487	404	475	412
7	252	251	349	e345	303	289	316	455	488	398	465	394
8	253	251	346	350	304	291	318	480	461	470	438	387
9	254	252	347	344	305	293	323	527	428	456	413	366
10	252	251	348	343	e303	293	347	518	432	539	458	355
11	258	251	352	342	300	291	363	527	434	589	444	358
12	258	251	351	340	298	305	361	534	433	562	419	358
13	259	251	352	340	298	313	362	536	422	544	438	357
14	258	251	352	337	298	313	365	545	404	558	421	352
15	258	251	351	333	296	311	374	556	416	548	412	349
16	258	251	350	e325	294	309	402	553	405	533	401	337
17	258	251	351	e324	295	309	401	554	395	541	398	330
18	255	251	368	e326	294	308	403	555	389	536	395	330
19	255	251	356	e324	294	307	400	556	392	534	375	320
20	255	251	355	e325	294	307	401	558	386	537	380	296
21	253	251	359	324	294	303	407	560	382	517	379	287
22	252	252	359	326	294	298	412	564	377	536	370	287
23	243	253	352	e325	294	300	418	554	383	523	366	287
24	242	254	336	e320	294	301	418	542	395	522	364	287
25	241	261	331	318	291	302	412	537	396	480	360	286
26	235	316	338	316	283	300	415	535	395	537	352	282
27	248	315	345	317	279	302	438	534	409	519	372	265
28	240	279	e350	e310	284	302	462	534	414	485	375	255
29	240	264	e350	e310	---	303	452	536	413	497	375	254
30	245	277	e345	e305	---	303	453	530	415	463	375	249
31	251	---	e345	e305	---	302	---	525	---	430	374	---
TOTAL	7865	7743	10517	10254	8311	9276	11272	16115	12877	15324	12776	9986
MEAN	254	258	339	331	297	299	376	520	429	494	412	333
MAX	273	316	368	350	305	313	462	564	525	589	486	412
MIN	235	251	279	305	279	286	305	449	377	398	352	249
AC-FT	15600	15360	20860	20340	16480	18400	22360	31960	25540	30400	25340	19810
CFSM	0.21	0.21	0.28	0.27	0.24	0.24	0.31	0.42	0.35	0.40	0.34	0.27
IN.	0.24	0.23	0.32	0.31	0.25	0.28	0.34	0.49	0.39	0.46	0.39	0.30

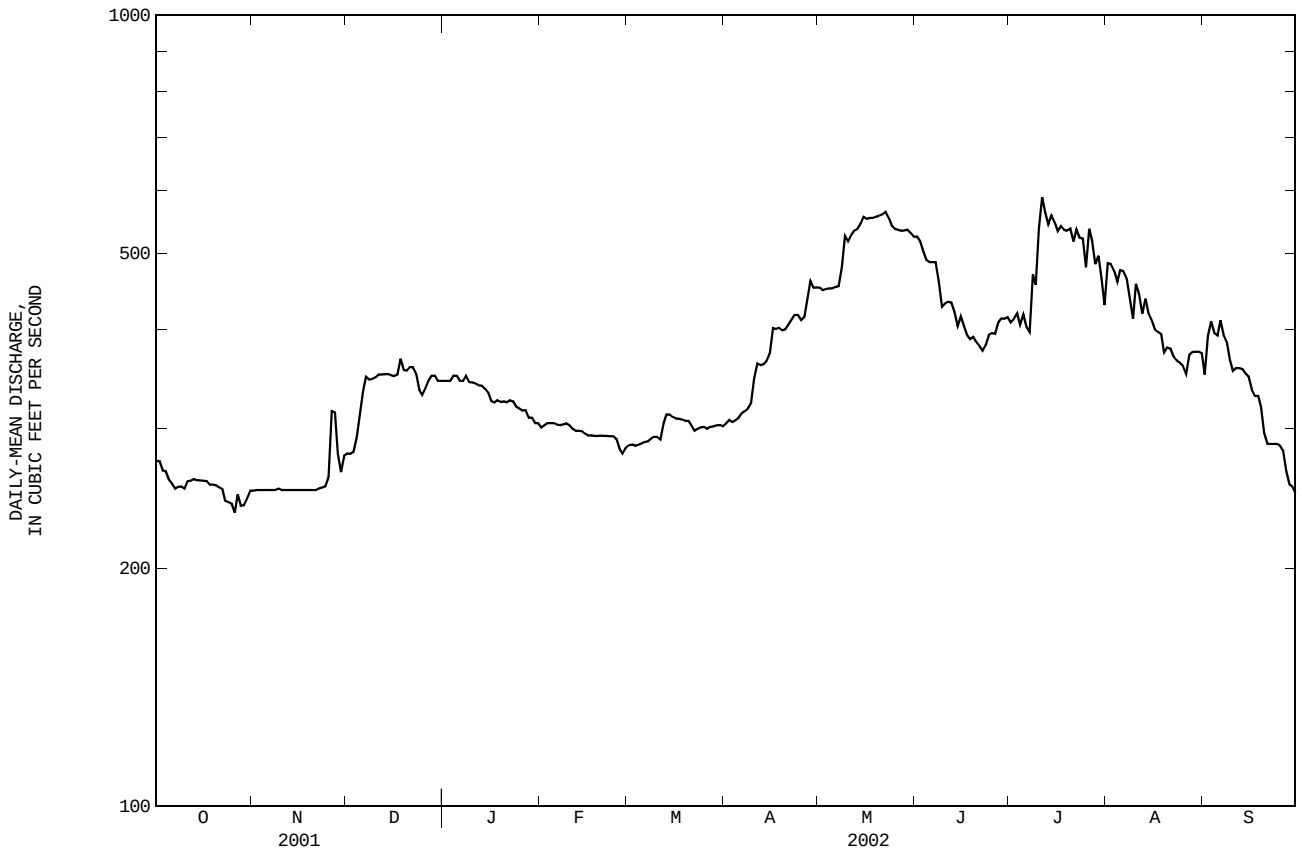
05030500 OTTER TAIL RIVER NEAR ELIZABETH, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	311	337	346	335	350	393	550	729	659	583	433	353
MAX	740	571	529	479	523	477	725	1056	1003	770	759	817
(WY)	1994	1994	1999	1999	1999	1999	1999	2001	2001	1998	1993	1993
MIN	112	143	141	181	209	299	357	453	429	358	218	134
(WY)	1997	1993	1993	1993	1993	2002	1993	1993	2002	1995	1996	1996

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1992 - 2002	
ANNUAL TOTAL	194160		132316			
ANNUAL MEAN	532		363		452	
HIGHEST ANNUAL MEAN					593	1999
LOWEST ANNUAL MEAN					349	1995
HIGHEST DAILY MEAN	1110	May 23	589	Jul 11	1110	May 23 2001
LOWEST DAILY MEAN	235	Oct 26	235	Oct 26	99	Oct 15 1996
ANNUAL SEVEN-DAY MINIMUM	241	Oct 23	241	Oct 23	101	Oct 10 1996
MAXIMUM PEAK FLOW			663	Jul 10	1170	May 23 2001
MAXIMUM PEAK STAGE			7.33	Jul 10	9.37	May 23 2001
INSTANTANEOUS LOW FLOW			175a	Oct 26	61a	Aug 9 1996
ANNUAL RUNOFF (AC-FT)	385100		262400		327200	
ANNUAL RUNOFF (CFSM)	0.43		0.29		0.37	
ANNUAL RUNOFF (INCHES)	5.87		4.00		4.99	
10 PERCENT EXCEEDS	1020		524		746	
50 PERCENT EXCEEDS	435		345		416	
90 PERCENT EXCEEDS	253		253		217	

a Result of regulation.
e Estimated.



05046000 OTTER TAIL RIVER BELOW ORWELL DAM, NEAR FERGUS FALLS, MN

LOCATION.--Lat 46°12'35", long 96°11'05", in NE¼ sec. 34, T.132 N., R.44 W., Otter Tail County, Hydrologic Unit 09020103, on left bank 0.7 mi downstream from Orwell Dam on County Highway 15, 6.1 mi downstream from Dayton Hollow Dam, 8 mi southwest of Fergus Falls, and 11.1 mi downstream from Pelican River.

DRAINAGE AREA.--1,740 mi^2.

PERIOD OF RECORD.--October 1930 to current year. Prior to October 1952, published as "Otter Tail River below Pelican River, near Fergus Falls". Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 785: 1934(M). WSP 1208: 1947(M). WSP 1308: 1931(M).

GAGE.--Water-stage recorder. Datum of gage is 1,029.65 ft above sea level ((NGVD of 1912, levels by U.S. Army Corps of Engineers). Oct. 11, 1930 to Nov. 17, 1933, at same site at datum 2.00 ft higher; Nov. 18, 1933 to Mar. 21, 1953, at site 6.1 mi upstream at datum 40.30 ft higher.

REMARKS.--Records good. Flow regulated at Orwell Lake (station 05045950) beginning Mar. 21, 1953, and by power plant 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	428	399	425	518	415	407	526	699	738	500	629	531
2	446	400	425	518	390	446	513	687	733	467	589	530
3	400	398	425	518	392	446	513	676	713	468	562	578
4	370	397	425	492	397	425	513	678	672	473	562	606
5	370	397	423	477	422	390	513	675	654	476	562	609
6	370	397	442	479	440	377	512	647	632	477	562	623
7	368	376	457	477	440	396	513	641	608	481	565	635
8	369	340	458	478	440	411	492	719	585	621	567	634
9	367	340	458	477	440	413	477	786	585	723	567	629
10	370	340	475	477	440	411	480	831	588	832	567	627
11	412	340	489	477	460	432	601	857	589	1070	564	614
12	456	341	489	477	495	446	651	858	588	1070	546	543
13	477	342	489	477	511	446	561	858	587	1060	534	504
14	476	340	489	505	488	485	565	878	584	1050	513	503
15	472	344	489	523	476	513	663	813	584	886	496	502
16	465	348	489	521	475	513	717	766	583	765	496	473
17	446	349	489	518	473	512	718	840	580	725	499	452
18	419	349	490	500	471	511	717	858	578	694	502	449
19	411	349	516	479	471	512	717	855	548	693	503	428
20	404	374	516	477	474	509	717	811	512	693	594	411
21	404	397	470	477	474	483	713	761	525	699	668	415
22	404	397	453	461	472	454	679	747	545	695	660	415
23	404	397	456	452	471	440	658	749	548	658	577	411
24	405	397	456	452	475	440	662	747	552	635	523	396
25	405	397	457	468	473	440	637	747	568	589	422	383
26	404	397	453	477	472	440	623	748	584	618	179	344
27	404	397	421	477	423	462	624	746	560	675	202	314
28	404	411	420	477	375	477	628	742	545	675	216	340
29	404	431	452	477	---	522	713	739	545	675	272	343
30	403	425	453	463	---	549	729	741	545	671	478	334
31	397	---	490	452	---	546	---	741	---	649	528	---
TOTAL	12734	11306	14339	14998	12645	14254	18345	23641	17758	21463	15704	14576
MEAN	411	377	463	484	452	460	612	763	592	692	507	486
MAX	477	431	516	523	511	549	729	878	738	1070	668	635
MIN	367	340	420	452	375	377	477	641	512	467	179	314
AC-FT	25260	22430	28440	29750	25080	28270	36390	46890	35220	42570	31150	28910
CFSM	0.24	0.22	0.27	0.28	0.26	0.26	0.35	0.44	0.34	0.40	0.29	0.28
IN.	0.27	0.24	0.31	0.32	0.27	0.30	0.39	0.51	0.38	0.46	0.34	0.31

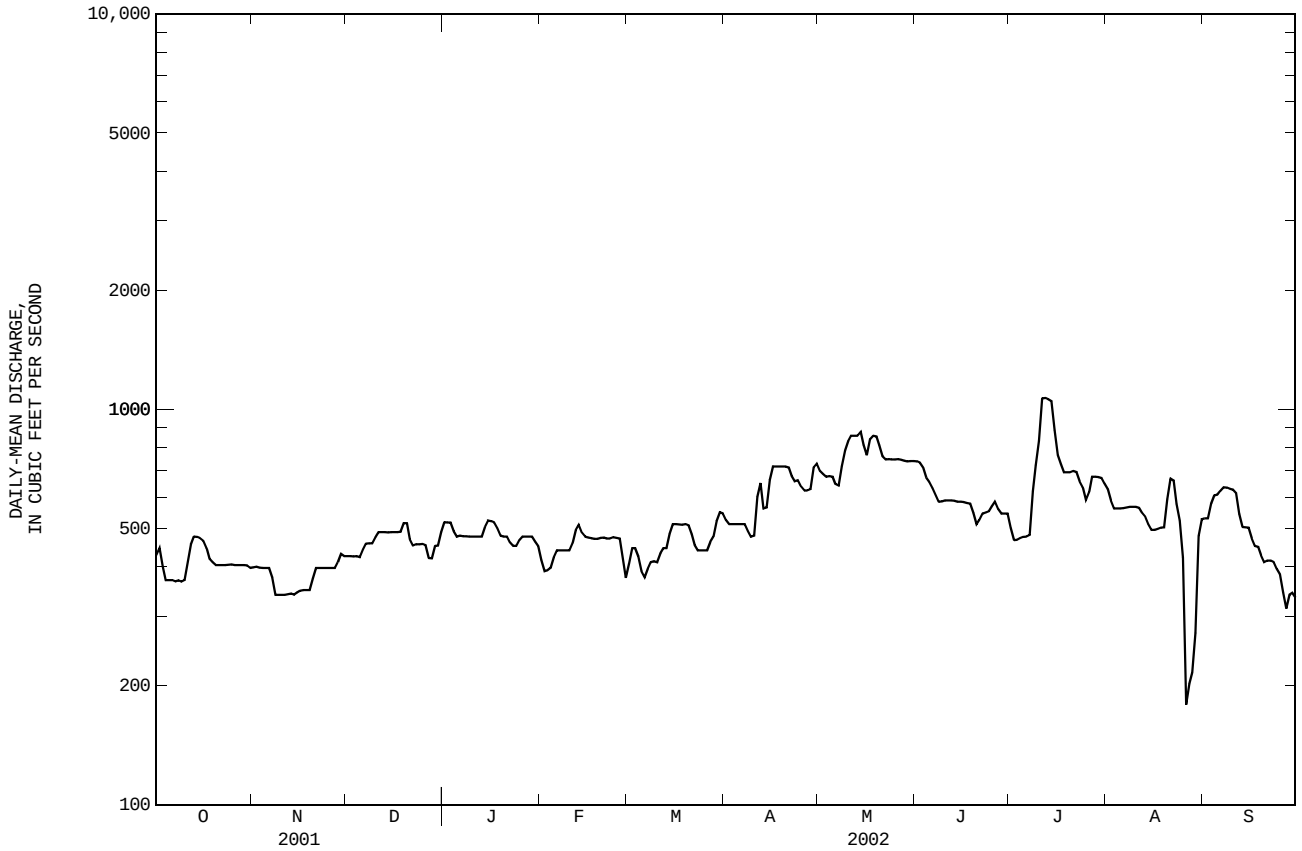
05046000 OTTER TAIL RIVER BELOW ORWELL DAM, NEAR FERGUS FALLS, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	256	268	260	253	256	341	509	612	597	453	308	259
MAX	973	831	740	737	742	785	1199	1427	1442	1246	1080	1026
(WY)	1994	1986	1999	1999	1999	1999	1997	1986	2001	1953	1985	1993
MIN	9.15	8.42	8.10	15.1	10.8	23.5	39.5	14.1	14.2	12.8	11.5	7.99
(WY)	1977	1977	1977	1937	1935	1937	1934	1977	1934	1936	1934	1934

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1931 - 2002	
ANNUAL TOTAL	281121		191763			
ANNUAL MEAN	770		525		365	
HIGHEST ANNUAL MEAN					846	1999
LOWEST ANNUAL MEAN					20.4	1934
HIGHEST DAILY MEAN	1580	May 29	1070	Jul 11,12	1670	Jun 20 1953
LOWEST DAILY MEAN	119	Aug 15	179	Aug 26	1.6a	Feb 7 1937
ANNUAL SEVEN-DAY MINIMUM	340	Nov 8	327	Aug 24	5.9	Sep 15 1934
MAXIMUM PEAK FLOW			1080	Jul 12	2040	May 29 2001
MAXIMUM PEAK STAGE			4.04	Jul 12	5.60	Jun 17 1953
INSTANTANEOUS LOW FLOW			154b	Aug 25	0.70a	Aug 5 1970
ANNUAL RUNOFF (AC-FT)	557600		380400		264200	
ANNUAL RUNOFF (CFSM)	0.44		0.30		0.21	
ANNUAL RUNOFF (INCHES)	6.01		4.10		2.85	
10 PERCENT EXCEEDS	1310		718		790	
50 PERCENT EXCEEDS	667		489		295	
90 PERCENT EXCEEDS	397		394		37	

a Due in part to regulation.
b Due to regulation.



05049995 MUD LAKE ABOVE WHITE ROCK DAM NEAR WHITE ROCK, SD

LOCATION.--Lat 45°51'41", long 96°34'20", in NW¼NW¼ sec. 34, T.128 N., R.47 W., Roberts County, Hydrologic Unit 09020101, on Sisseton Indian Reservation, on left bank, 10 ft west of White Rock Dam, 4 mi south of White Rock and 5 mi northwest of Wheaton, MN.

DRAINAGE AREA.--

PERIOD OF RECORD.--October 2000 to current year. Gage height record prior to October 2000 can be obtained from Corp of Engineers.

GAGE.--Water-stage recorder. Datum of gage is 960.00 ft, adjustment of 1912 (levels by U.S. Army Corps of Engineers).

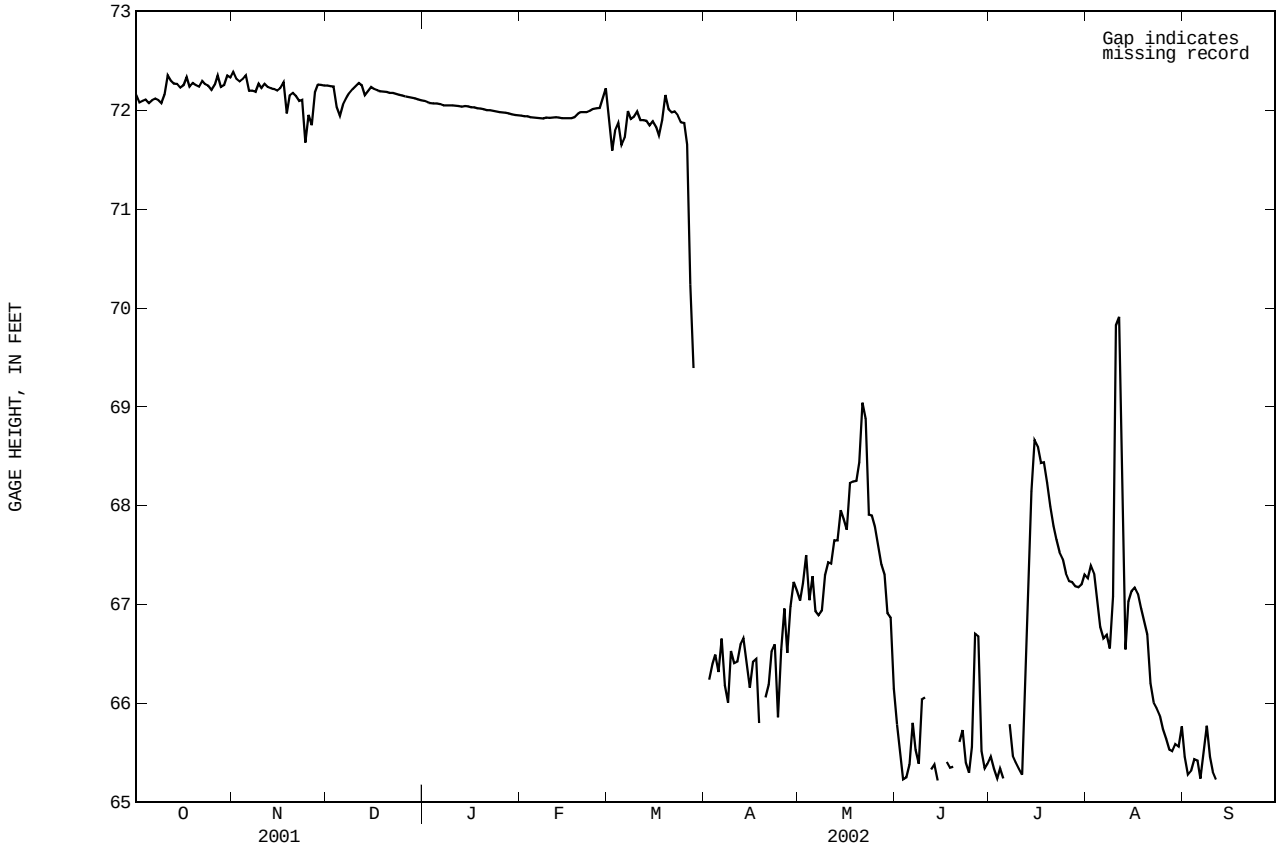
REMARKS.--Records fair. Lake regulated by Lake Traverse-Boise de Sioux Flood Control and Water Conservation project.

EXTREMES FOR PERIOD OF RECORD.---Maximum gage-height, 80.90 ft, Apr. 29, 2001; maximum daily, 80.76 ft, Apr. 19, 2001; minimum gage-height recorded, 65.14 ft, many days in Sep. 2002, but may have been lower in Apr. June, July, or Sep. 2002 when stage was below detection limits of gage; minimum daily recorded, 65.22 ft, June 14, 2002.

EXTREMES FOR CURRENT YEAR.--Maximum gage-height, 72.64 ft, Nov. 1; maximum daily, 72.39 ft, Nov. 1; minimum gage-height recorded, 65.14 ft, many days in Sep., but may have been lower in Apr. June, July, or Sep. when stage was below detection limits of gage; minimum daily recorded, 65.22 ft, June 14.

GAGE HEIGHT, 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	72.16	72.39	72.25	72.09	71.95	71.93	---	67.04	65.79	65.46	67.26	65.46
2	72.08	72.32	72.24	72.08	71.94	71.59	66.24	67.22	65.54	65.34	67.40	65.28
3	72.10	72.29	72.24	72.07	71.94	71.79	66.40	67.50	65.23	65.24	67.32	65.32
4	72.11	72.32	72.03	72.07	71.93	71.87	66.49	67.04	65.25	65.34	67.05	65.43
5	72.07	72.35	71.94	72.07	71.93	71.65	66.32	67.29	65.38	65.24	66.77	65.42
6	72.10	72.20	72.06	72.06	71.92	71.72	66.66	66.93	65.80	---	66.66	65.24
7	72.12	72.20	72.12	72.05	71.92	71.99	66.18	66.89	65.53	65.79	66.69	65.49
8	72.10	72.18	72.17	72.05	71.92	71.91	66.01	66.94	65.39	65.47	66.56	65.78
9	72.07	72.27	72.21	72.05	71.93	71.93	66.53	67.30	66.04	65.41	67.08	65.46
10	72.16	72.22	72.24	72.05	71.92	71.98	66.41	67.43	66.06	65.34	69.83	65.31
11	72.35	72.27	72.28	72.05	71.93	71.90	66.42	67.41	---	65.28	69.91	65.23
12	72.30	72.23	72.25	72.04	71.93	71.90	66.60	67.65	65.33	66.22	67.95	---
13	72.27	72.22	72.15	72.04	71.93	71.89	66.66	67.65	65.38	67.20	66.55	---
14	72.27	72.21	72.19	72.04	71.92	71.85	66.43	67.95	65.22	68.14	67.03	---
15	72.23	72.20	72.23	72.04	71.92	71.89	66.16	67.87	---	68.67	67.14	---
16	72.25	72.22	72.22	72.03	71.92	71.83	66.42	67.75	---	68.60	67.17	---
17	72.33	72.28	72.20	72.03	71.92	71.75	66.45	68.23	65.41	68.43	67.11	---
18	72.24	71.97	72.19	72.02	71.93	71.90	65.80	68.25	65.35	68.44	66.96	---
19	72.28	72.15	72.19	72.02	71.96	72.15	---	68.25	65.36	68.23	66.84	---
20	72.25	72.17	72.18	72.01	71.98	72.01	66.06	68.44	---	67.99	66.70	---
21	72.24	72.14	72.18	72.00	71.98	71.98	66.19	69.04	65.61	67.80	66.20	---
22	72.30	72.10	72.17	72.00	71.98	71.99	66.53	68.88	65.73	67.66	66.01	---
23	72.26	72.10	72.17	71.99	71.99	71.95	66.60	67.91	65.40	67.53	65.96	---
24	72.25	71.67	72.16	71.99	72.01	71.88	65.86	67.90	65.30	67.46	65.88	---
25	72.20	71.95	72.15	71.98	72.02	71.87	66.54	67.79	65.56	67.32	65.74	---
26	72.26	71.85	72.14	71.98	72.02	71.65	66.96	67.60	66.71	67.24	65.64	---
27	72.35	72.18	72.13	71.98	72.12	70.23	66.51	67.41	66.68	67.23	65.53	---
28	72.23	72.26	72.13	71.97	72.22	69.39	66.98	67.30	65.52	67.19	65.52	---
29	72.25	72.26	72.12	71.96	---	---	67.23	66.91	65.34	67.18	65.59	---
30	72.35	72.25	72.11	71.95	---	---	67.14	66.87	65.39	67.21	65.57	---
31	72.33	---	72.10	71.95	---	---	---	66.15	---	67.30	65.77	---
MEAN	72.22	72.18	72.17	72.02	71.96	---	---	67.57	---	---	66.75	---
MAX	72.35	72.39	72.28	72.09	72.22	---	---	69.04	---	---	69.91	---
MIN	72.07	71.67	71.94	71.95	71.92	---	---	66.15	---	---	65.52	---


GAGE HEIGHT, IN FEET
73
72
71
70
69
68
67
66
65
Gap indicates
missing record
O
N
D
J
F
M
A
M
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J
A
S
2001
2002

05050000 BOIS DE SIOUX RIVER NEAR WHITE ROCK, SD

LOCATION.--Lat 45°51'45", long 96°34'25", in SW¼SW¼ sec. 27, T.128 N., R.47 W., Roberts County, Hydrologic Unit 09020101, on Sisseton Indian Reservation, on left bank at Big Slough Outlet, 300 ft downstream from White Rock Dam, 4 mi south of White Rock and 5 mi northwest of Wheaton, MN.

DRAINAGE AREA.--1,160 mi^2 (approximately).

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

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

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow regulated by Lake Traverse-Boise de Sioux Flood Control and Water Conservation project.

DISCHARGE -TAILWATER, in CFS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.0	7.3	e14	e6.9	e4.4	148	156	183	31	7.2	217	23
2	5.0	6.8	e15	e6.5	e4.3	e250	64	203	10	5.3	238	12
3	5.0	6.6	e21	e6.2	e4.2	e250	139	235	4.4	2.4	228	12
4	4.8	6.3	167	e6.0	e4.2	e250	106	185	4.8	3.5	185	21
5	4.7	6.2	354	e5.8	4.2	e340	77	205	7.0	2.0	124	20
6	4.7	6.3	344	e5.6	4.3	e440	118	160	29	1.1	90	9.2
7	4.6	12	338	e5.5	4.4	e440	64	149	7.4	6.0	91	28
8	4.9	19	348	e5.6	4.9	e500	51	167	7.7	43	66	43
9	5.2	22	342	e6.3	5.9	e540	104	235	54	21	27	8.8
10	22	20	328	8.0	5.7	e540	92	233	e30	8.5	2.2	8.5
11	40	22	319	9.9	5.4	e540	107	227	e17	9.8	1.9	7.5
12	27	20	313	10	5.9	e540	128	257	e9.5	98	66	3.6
13	18	19	259	9.5	6.0	e540	139	264	4.7	283	128	2.9
14	15	18	111	8.1	6.0	e460	107	287	3.5	418	213	2.3
15	13	17	25	7.7	6.2	e460	80	283	2.8	494	236	2.0
16	11	19	20	7.4	6.5	e460	110	268	2.6	548	250	2.1
17	8.6	22	21	7.0	6.8	e440	112	303	4.9	552	243	2.2
18	8.0	12	22	6.6	7.8	381	34	302	3.8	554	220	3.8
19	7.4	14	21	6.3	10	264	20	301	4.5	502	198	2.0
20	7.2	15	18	6.2	11	228	55	307	3.1	442	175	1.9
21	6.9	14	14	5.8	9.7	146	71	327	18	387	90	1.8
22	6.7	12	14	5.7	9.7	137	114	321	34	334	58	1.4
23	6.7	13	12	5.8	11	84	124	268	11	300	52	0.77
24	7.3	7.1	12	5.4	11	82	47	267	6.4	276	45	0.63
25	7.0	17	e10	5.4	8.4	35	116	254	4.2	243	31	0.77
26	6.9	14	e9.5	5.7	9.4	144	172	233	2.4	225	23	0.77
27	6.9	e18	e9.2	5.6	12	292	110	208	4.4	222	14	0.77
28	7.7	e16	e8.6	5.3	17	316	177	192	5.8	211	14	1.3
29	7.6	e15	e8.1	5.0	---	277	213	143	5.1	206	24	2.2
30	7.0	e14	e7.7	4.7	---	244	198	123	4.1	211	29	1.9
31	7.0	---	e7.3	4.6	---	186	---	71	---	222	45	---
TOTAL	298.8	430.6	3512.4	200.1	206.3	9954	3205	7161	337.1	6837.8	3424.1	228.11
MEAN	9.639	14.35	113.3	6.455	7.368	321.1	106.8	231.0	11.24	220.6	110.5	7.604
MAX	40	22	354	10	17	540	213	327	54	554	250	43
MIN	4.6	6.2	7.3	4.6	4.2	35	20	71	2.4	1.1	1.9	0.63
AC-FT	593	854	6970	397	409	19740	6360	14200	669	13560	6790	452
CFSM	0.01	0.01	0.10	0.01	0.01	0.28	0.09	0.20	0.01	0.19	0.10	0.01
IN.	0.01	0.01	0.11	0.01	0.01	0.32	0.10	0.23	0.01	0.22	0.11	0.01

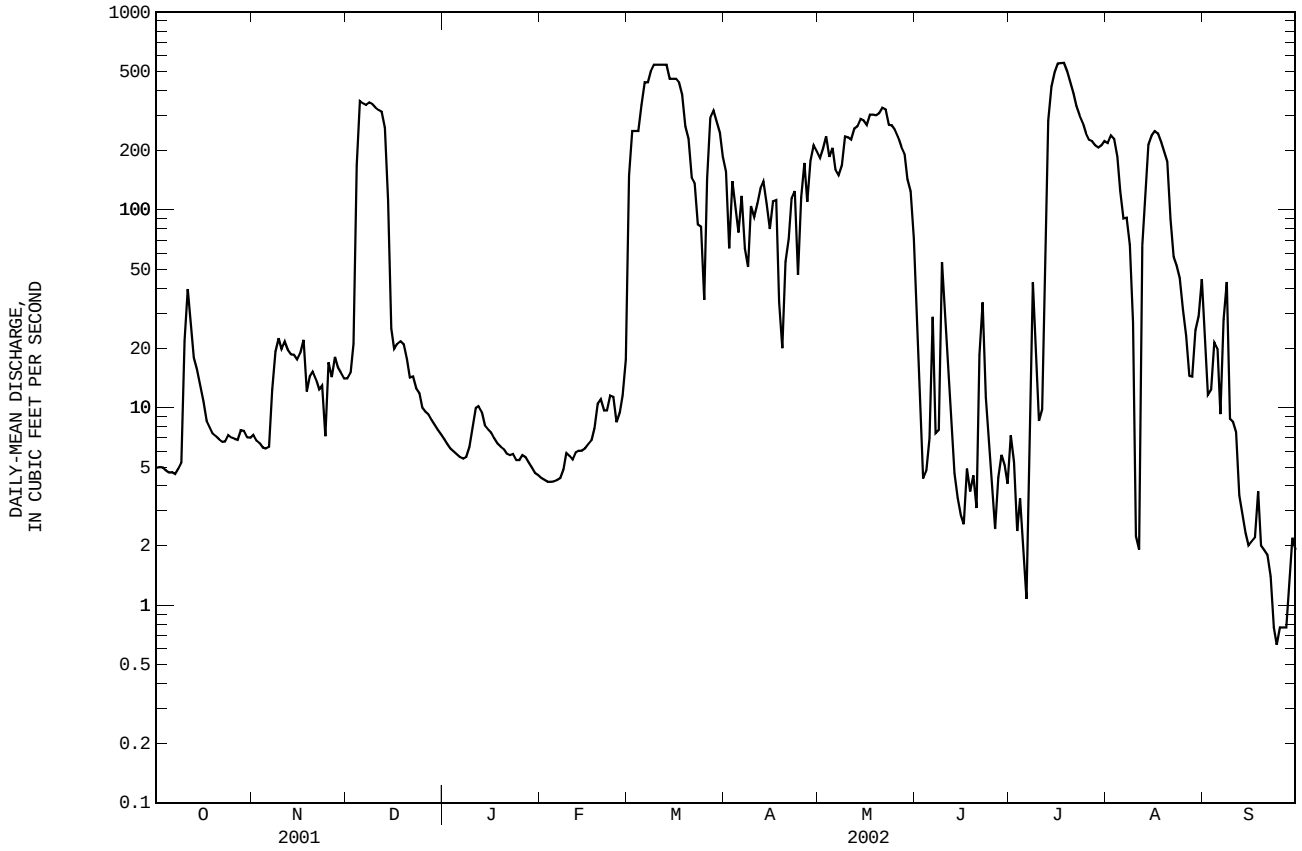
05050000 BOIS DE SIOUX RIVER NEAR WHITE ROCK, SD--Continued

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

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	28.62	16.29	10.37	3.437	7.552	73.20	331.5	316.7	253.7	175.4	72.18	35.23
MAX	535	307	207	42.4	148	628	3814	1445	1103	1035	1182	1062
(WY)	1994	1996	1999	1997	1997	1996	1997	1997	1986	1962	1993	1993
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.23	0.010	0.000	0.000	0.000
(WY)	1942	1942	1942	1942	1942	1942	1942	1977	1977	1961	1970	1960

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1942 - 2002	
ANNUAL TOTAL	188883.71		35795.31			
ANNUAL MEAN	517.5		98.07		110.6a	
HIGHEST ANNUAL MEAN					536	1997
LOWEST ANNUAL MEAN					0.38	1977
HIGHEST DAILY MEAN	3780	Apr 13	554	Jul 18	7710	Apr 16 1997
LOWEST DAILY MEAN	0.95	Aug 24	0.63	Sep 24	0.00b	Oct 1 1941
ANNUAL SEVEN-DAY MINIMUM	1.2	Aug 19	0.92	Sep 22	0.00	Oct 1 1941
MAXIMUM PEAK FLOW			566c	Jul 18	8750d	Apr 20 1997
MAXIMUM PEAK STAGE			9.46f	Mar 9	16.90d	Apr 20 1997
ANNUAL RUNOFF (AC-FT)	374700		71000		80110	
ANNUAL RUNOFF (CFSM)	0.45		0.085		0.095	
ANNUAL RUNOFF (INCHES)	6.06		1.15		1.30	
10 PERCENT EXCEEDS	1260		302		360	
50 PERCENT EXCEEDS	21		18		3.4	
90 PERCENT EXCEEDS	1.2		4.3		0.00	

a Median of annual mean discharges is 64 ft^3/s.
b Many days, several years; result of regulation.
c Gage height 7.74 ft.
d Estimated, from observed readings made under non-ideal conditions.
Some evidence that peak occurred Apr. 16 at 7930 ft^3/s.
e Estimated.
f Backwater from ice.



05051300 BOIS DE SIOUX RIVER NEAR DORAN, MN

LOCATION.--Lat 46°09'08", long 96°34'44", in NE¼ NE¼ sec. 21, T.131 N., R.47 W., Wilken County, MN, Hydrologic Unit 09020101, on right bank, 10 ft downstream from bridge on County Highway 6, 3 miles downstream from Rabbit River, 4.3 mi southwest of Doran.

DRAINAGE AREA.--1,880 mi^2 (approximately).

PERIOD OF RECORD.--October 12, 1989 to current year.

GAGE.--Water-stage recorder. Datum of gage is 943.90 ft above sea level (NGVD of 1929), elevation data obtained from Wilkin County Highway Engineers.

REMARKS.--Records good except for estimated daily discharges, which are poor. Flow regulated by Lake Traverse-Bois de Sioux Flood Control and Water Conservation project near White Rock, S.D.

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	3.1	26	e28	e11	e6.3	e10	e425	265	106	5.1	320	51
2	2.6	43	e27	e10	e6.2	e16	311	234	63	5.3	325	71
3	4.6	45	e28	e9.8	e6.0	e110	138	284	40	5.3	340	67
4	2.1	39	e43	e9.2	e5.9	e180	137	332	25	5.3	294	58
5	2.7	31	e150	e8.7	e5.9	e205	134	235	19	5.5	212	51
6	3.0	23	e400	e8.2	e5.9	e260	105	238	16	5.5	146	47
7	2.5	18	e390	e7.8	e6.3	e320	157	175	17	5.6	120	39
8	2.8	16	e385	e7.6	e6.8	e355	163	207	22	12	120	26
9	3.4	20	e395	e8.5	e7.4	e380	166	437	17	100	111	25
10	10	27	e400	e10	e7.9	e390	203	574	18	801	96	30
11	37	25	e390	e12	e8.4	e400	228	515	34	1570	70	27
12	48	23	e380	e13	e8.5	e400	272	500	29	1650	46	19
13	47	22	e360	e13	e8.4	e400	246	581	13	1230	39	15
14	36	21	e250	e14	e8.4	e400	219	559	11	880	185	12
15	27	20	e140	e13	e8.6	e385	165	557	11	760	287	8.9
16	22	20	e70	e11	e9.3	e370	134	485	9.3	735	324	6.7
17	16	20	e37	e10	e11	e340	157	478	7.0	719	331	6.4
18	11	20	e35	e9.4	e12	e325	140	510	5.8	701	307	6.3
19	8.0	21	e33	e8.5	e14	e300	82	500	6.7	681	256	5.7
20	8.3	19	e32	e7.8	e16	e260	61	495	8.8	616	219	5.0
21	8.4	18	e37	e7.3	e18	e207	81	510	11	564	175	4.2
22	7.4	18	e30	e7.2	e17	e170	106	540	13	520	120	3.8
23	7.9	17	e24	e7.4	e16	e145	146	498	18	469	98	3.7
24	7.2	18	e20	e7.3	e15	e115	135	392	24	424	85	3.5
25	10	20	e18	e7.1	e14	e95	89	389	25	370	75	3.3
26	10	22	e16	e7.3	e13	e80	153	355	17	308	64	3.1
27	14	e25	e15	e7.7	e12	e190	195	308	12	284	52	3.1
28	13	e30	e14	e7.9	e11	e400	149	252	7.9	275	43	3.1
29	13	e33	e13	e7.3	---	e640	268	277	5.6	256	40	3.2
30	15	e32	e12	e6.8	---	e620	293	415	4.9	254	38	3.3
31	18	---	e12	e6.5	---	e540	---	217	---	284	39	---
TOTAL	421.0	732	4184	282.3	285.2	9008	5258	12314	617.0	14500.6	4977	611.3
MEAN	13.6	24.4	135	9.11	10.2	291	175	397	20.6	468	161	20.4
MAX	48	45	400	14	18	640	425	581	106	1650	340	71
MIN	2.1	16	12	6.5	5.9	10	61	175	4.9	5.1	38	3.1
AC-FT	835	1450	8300	560	566	17870	10430	24420	1220	28760	9870	1210
CFSM	0.01	0.01	0.07	0.00	0.01	0.15	0.09	0.21	0.01	0.25	0.09	0.01
IN.	0.01	0.01	0.08	0.01	0.01	0.18	0.10	0.24	0.01	0.29	0.10	0.01

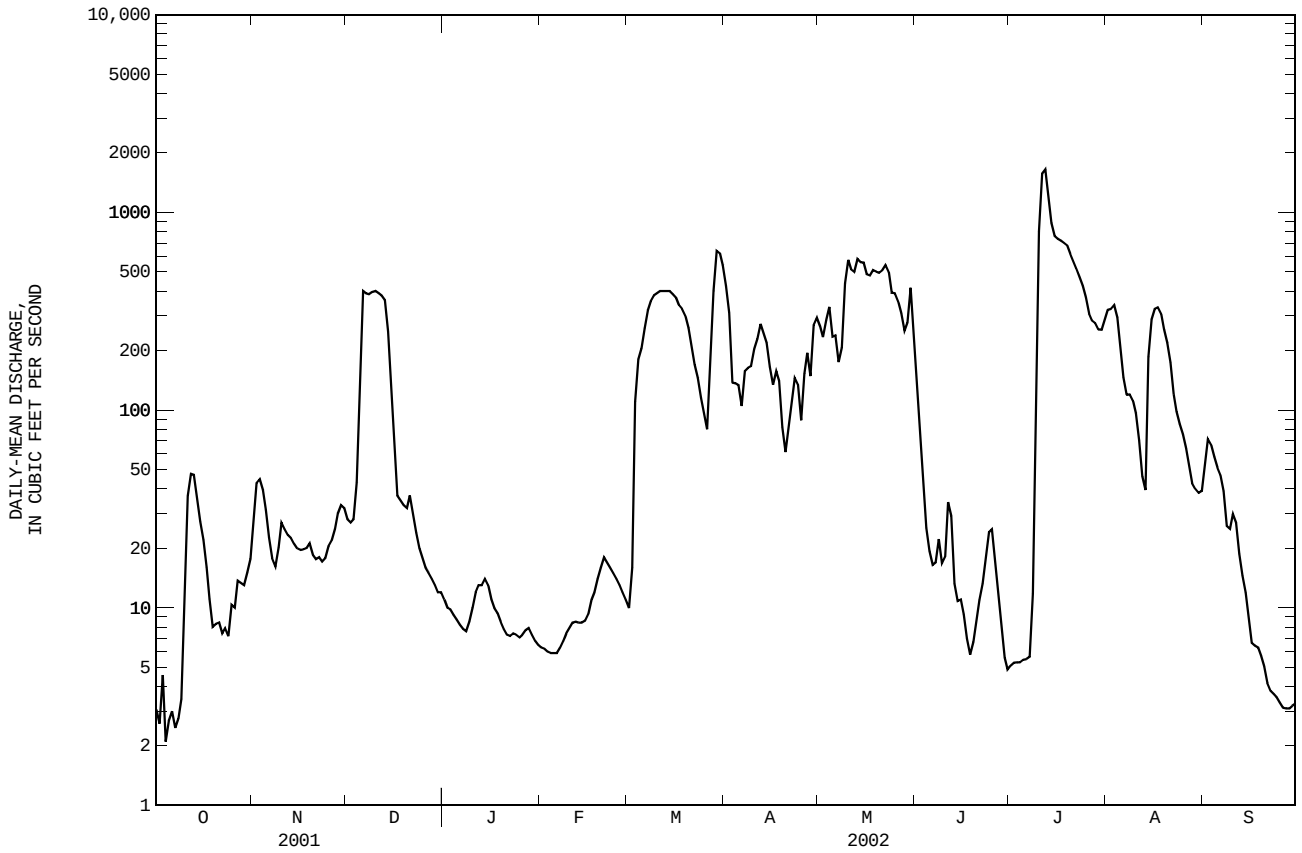
05051300 BOIS DE SIOUX RIVER NEAR DORAN, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	89.7	49.3	33.6	6.99	29.9	464	1327	719	440	472	203	149
MAX	592	465	222	43.9	155	1757	5936	1893	1432	1477	1486	1244
(WY)	1994	1996	1999	1997	1998	1995	1997	1997	2001	1993	1993	1993
MIN	0.026	1.97	0.65	0.077	0.000	25.5	12.6	11.8	12.6	4.37	0.000	0.000
(WY)	1991	1991	1991	1991	1990	1990	1990	1990	1990	1990	1990	1990

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1990 - 2002	
ANNUAL TOTAL	291931.18		53190.4			
ANNUAL MEAN	800		146		333	
HIGHEST ANNUAL MEAN					786	2001
LOWEST ANNUAL MEAN					8.77	1990
HIGHEST DAILY MEAN	8220	Apr 14	1650	Jul 12	11500	Apr 16 1997
LOWEST DAILY MEAN	0.00	Jan 20	2.1	Oct 4	0.00a	Jan 7 1990
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan 20	2.9	Oct 2	0.00	Jan 7 1990
MAXIMUM PEAK FLOW			1720	Jul 12	12300	Apr 16 1997
MAXIMUM PEAK STAGE			14.86	Jul 12	24.42	Apr 16 1997
INSTANTANEOUS LOW FLOW			1.8	Oct 4	0.00a	Jan 7 1990
ANNUAL RUNOFF (AC-FT)	579000		105500		240900	
ANNUAL RUNOFF (CFSM)	0.43		0.078		0.18	
ANNUAL RUNOFF (INCHES)	5.78		1.05		2.40	
10 PERCENT EXCEEDS	1630		400		1150	
50 PERCENT EXCEEDS	33		31		14	
90 PERCENT EXCEEDS	0.05		6.3		0.29	

a Many days, several years; result of regulation.
e Estimated.



05051500 RED RIVER OF THE NORTH AT WAHPETON, ND

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

DRAINAGE AREA.--4,010 mi^2 (approximately).

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

GAGE.--Water-stage recorder and concrete and wooden dam. Datum of gage is 942.97 ft above sea level. Prior to Aug. 6, 1943, National Weather Service non-recording 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 those for estimated daily discharge, 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	439	422	580	577	569	837	782	1165	556	1214	625	489
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

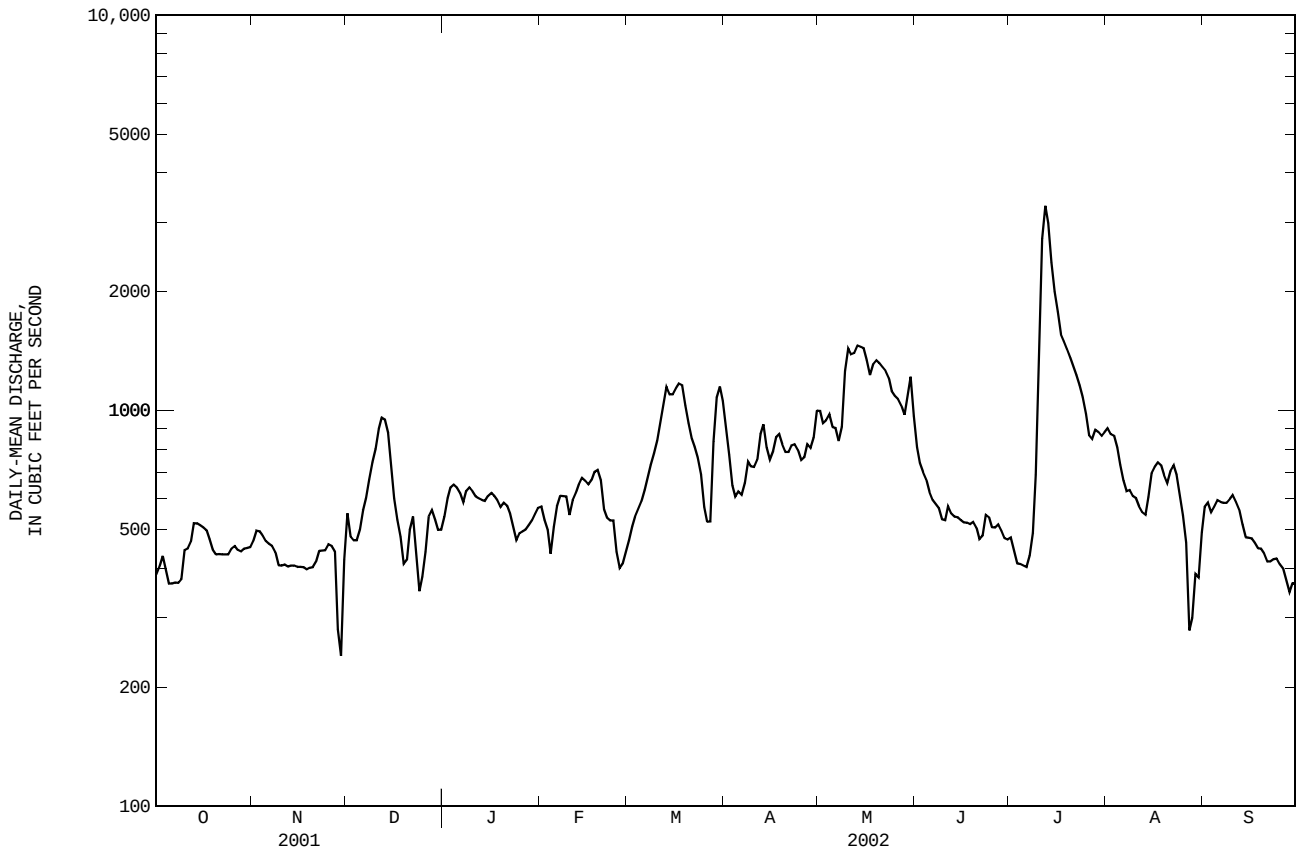
05051500 RED RIVER OF THE NORTH AT WAHPETON, ND--Continued

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

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	342	321	295	286	308	705	1473	1148	1079	831	443	344
MAX	1599	952	820	678	868	2629	8717	3344	2981	2787	2496	2148
(WY)	1994	1987	1987	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		628	
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	19.42a	Apr 6 1997
INSTANTANEOUS LOW FLOW					1.7	Aug 28 1976
ANNUAL RUNOFF (AC-FT)	1148000		499800		455200	
10 PERCENT EXCEEDS	3260		1110		1450	
50 PERCENT EXCEEDS	650		585		390	
90 PERCENT EXCEEDS	420		409		109	

a Backwater from ice; from floodmark.
e Estimated.



05051522 RED RIVER OF THE NORTH AT HICKSON, ND

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

DRAINAGE AREA.--4,300 mi^2 (approximately).

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

GAGE.--Water-stage recorder and concrete control. Datum of gage is 877.06 ft above sea level, National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for periods of 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	425	653	588	592	921	1002	1230	624	1384	661	506
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
CFSM	0.10	0.10	0.15	0.14	0.14	0.21	0.23	0.29	0.15	0.32	0.15	0.12
IN.	0.12	0.11	0.18	0.16	0.14	0.25	0.26	0.33	0.16	0.37	0.18	0.13

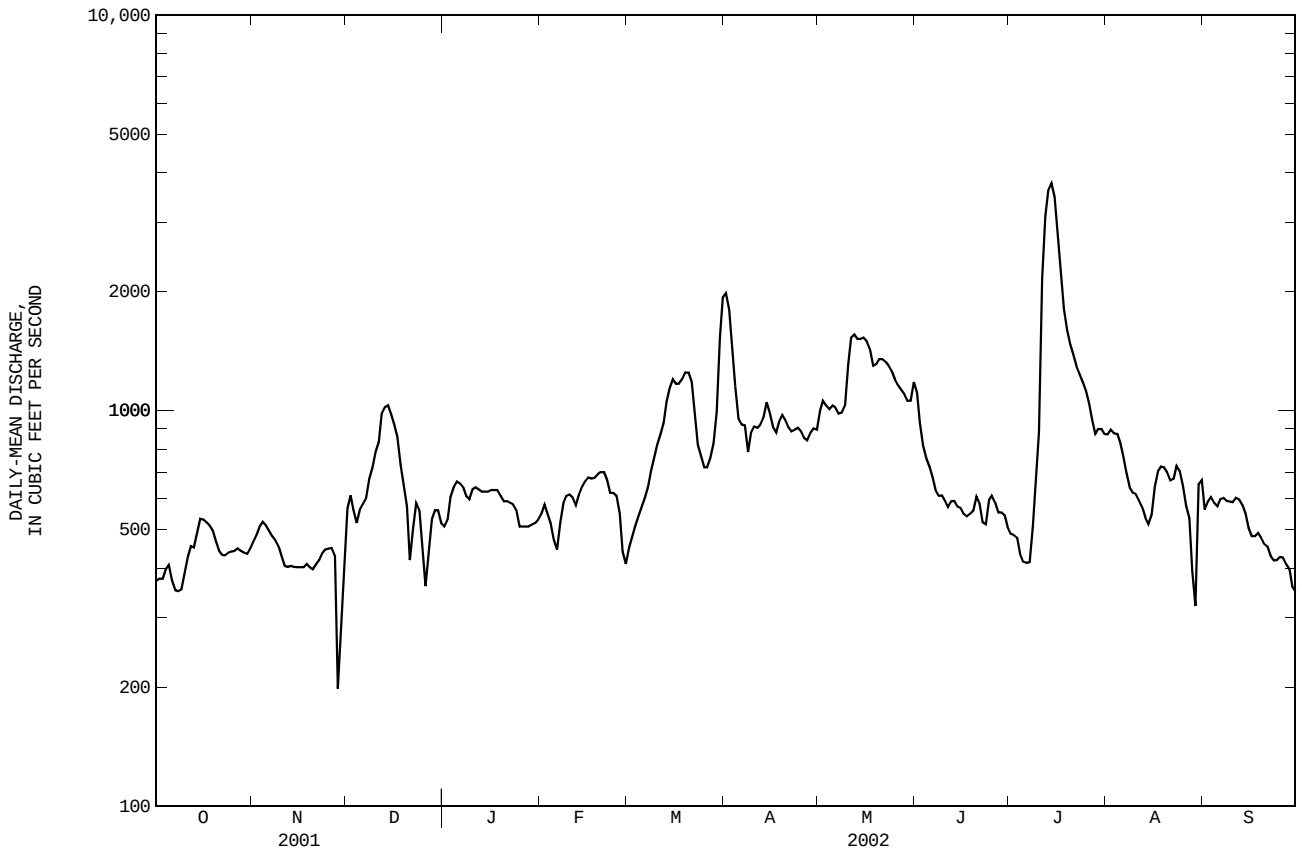
05051522 RED RIVER OF THE NORTH AT HICKSON, ND--Continued

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

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	418	361	334	324	390	993	2251	1372	1110	976	552	443
MAX	1558	900	817	747	1058	2687	9864	3925	3264	2674	2674	2135
(WY)	1994	1987	1986	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		794	
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		575100	
ANNUAL RUNOFF (CFSM)	0.41		0.18		0.18	
ANNUAL RUNOFF (INCHES)	5.56		2.38		2.51	
10 PERCENT EXCEEDS	3770		1200		1850	
50 PERCENT EXCEEDS	690		610		450	
90 PERCENT EXCEEDS	420		419		98	

e Estimated.



05054000 RED RIVER OF THE NORTH AT FARGO, ND

LOCATION.--Lat 46°51'40", long 96°47'00", in NW¼NE¼ sec.18, T.139 N., R.48 W., Cass County, Hydrologic Unit 09020104, at waterplant on 4th St. S. in Fargo, 25 mi upstream from mouth of Sheyenne River, and at mile 453.

DRAINAGE AREA.--6,800 mi^2 (approximately).

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 sea level. Oct. 1, 1960, to Sept. 30, 1962, water-stage recorder at present site at datum 5.6 ft higher. See WSP 1728 or 1913 for history of changes prior to Oct. 1, 1960.

REMARKS.--Records 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 from the Sheyenne River to the cities of Fargo, ND and Moorhead, MN

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	e1940	1220	1550	829	1230	1100
2	451	709	736	e570	640	e550	e1910	1350	1380	796	1200	1010
3	452	736	783	e550	643	e580	e1680	1380	1200	781	1200	935
4	459	758	723	e550	e590	e600	e1410	1330	1090	755	1180	903
5	484	743	696	e650	e560	e640	e1180	1340	1020	697	1150	846
6	488	719	715	e690	e530	e700	e1050	1360	975	661	1090	830
7	452	689	731	e680	e510	e730	e1050	1310	922	792	1010	848
8	430	660	777	e660	e530	e770	e1100	1480	878	808	926	830
9	432	633	839	e650	e570	e830	e1190	1400	2020	894	868	812
10	588	611	870	e650	e610	e880	e1350	1580	1520	1920	874	805
11	527	579	904	e670	e620	e930	e1320	1940	966	3200	851	799
12	545	545	e1050	684	e610	e990	e1300	2100	846	3720	817	802
13	566	540	1150	672	e624	e1080	1330	2100	850	4210	763	766
14	581	538	1170	665	e660	e1160	1430	2070	829	e4200	728	723
15	639	533	1160	665	e688	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	e979	1150	1700	967	e1510	995	482
24	598	605	646	e620	e645	e762	1170	1650	898	e1470	1020	464
25	590	623	591	e580	e640	e830	1180	1600	1150	e1400	978	457
26	578	616	469	e550	e600	e903	1150	1520	1060	e1350	866	469
27	598	650	438	e560	e540	e840	1130	1470	957	e1300	756	457
28	601	487	520	e560	e510	e874	1130	1480	890	1260	670	445
29	599	325	e585	e570	---	e986	1170	1470	882	1220	506	426
30	594	398	e610	e580	---	e1300	1170	1450	870	1240	583	383
31	608	---	e600	600	---	e1670	---	1470	---	1210	1040	---
TOTAL	17335	17715	23554	19475	17554	30424	38460	50510	30406	54213	28772	20138
MEAN	559	590	760	628	627	981	1282	1629	1014	1749	928	671
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
CFSM	0.08	0.09	0.11	0.09	0.09	0.14	0.19	0.24	0.15	0.26	0.14	0.10
IN.	0.09	0.10	0.13	0.11	0.10	0.17	0.21	0.28	0.17	0.30	0.16	0.11

	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

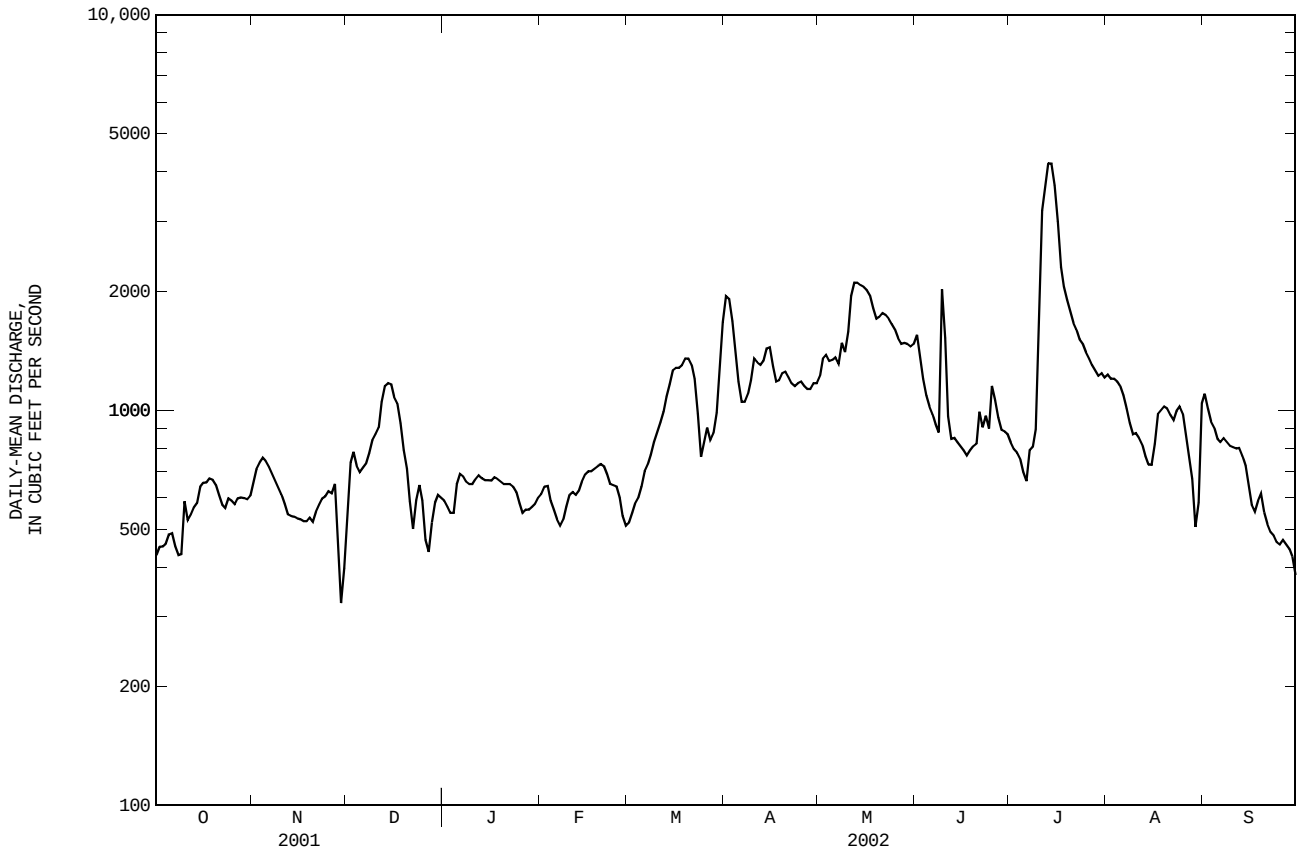
05054000 RED RIVER OF THE NORTH AT FARGO, ND--Continued

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

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	328	289	243	224	236	773	2010	1157	1080	923	439	330
MAX	1741	942	801	740	1353	4722	17920	5365	5120	5690	3293	2280
(WY)	1994	1907	1987	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

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1901 - 2002	
ANNUAL TOTAL	807908		348556			
ANNUAL MEAN	2213		955		671	
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 13	39.72	Apr 18 1997
ANNUAL RUNOFF (AC-FT)	1602000		691400		485800	
ANNUAL RUNOFF (CFSM)	0.33		0.14		0.099	
ANNUAL RUNOFF (INCHES)	4.42		1.91		1.34	
10 PERCENT EXCEEDS	4370		1520		1500	
50 PERCENT EXCEEDS	777		792		330	
90 PERCENT EXCEEDS	545		530		41	

+ Diversions, in acre-ft, to cities of Fargo and Moorhead.
‡ Adjusted for diversions to cities of Fargo and Moorhead.
e Estimated.



05061000 BUFFALO RIVER NEAR HAWLEY, MN

LOCATION.--Lat 46°51'00", long 96°19'45", in NW¼SE¼ sec. 14, T.139 N., R.45 W., Clay County, Hydrologic Unit 09020106, near left downstream end of bridge on farm lane, 2 mi southwest of Hawley.

DRAINAGE AREA.--325 mi^2.

PERIOD OF RECORD.--March 1945 to current year. Water year 1981 (annual maximum only); March 1982 to September 1985 (no winter records).

REVISED RECORDS.--WSP 1308: 1945-46(M), 1948(M).

GAGE.--Water-stage recorder. Datum of gage is 1,111.91 ft above sea level (NGVD of 1929). Prior to Jan. 29, 1953, nonrecording gage at bridge 1,800 ft upstream at datum 3.17 ft lower.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known, about 11.3 ft, present datum, spring of 1921, from information by local resident.

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	36	109	79	e56	e45	e43	e71	92	54	212	129	173
2	38	126	e84	e55	e45	e43	e69	86	50	173	114	153
3	35	123	e84	e55	e44	e43	e68	80	52	151	104	134
4	36	119	84	e54	e44	e43	e67	76	51	132	94	118
5	36	103	84	e53	e43	e43	e66	73	48	116	83	103
6	34	91	e81	e53	e43	e43	e68	76	44	103	73	97
7	36	86	79	e53	e43	e43	e76	75	40	96	66	88
8	35	83	e78	e52	e43	e43	91	90	38	150	61	77
9	35	82	e76	e52	e44	e43	96	143	273	214	56	69
10	58	87	72	e53	e44	e43	114	180	483	545	54	65
11	73	87	e71	e55	e45	e43	170	166	310	921	50	60
12	80	80	70	e55	e44	e43	139	161	196	798	58	56
13	74	74	e69	e54	e43	e44	130	160	144	599	62	52
14	71	70	e68	e54	44	e44	142	149	121	415	54	48
15	69	70	66	e53	45	e45	151	138	104	293	50	45
16	66	73	76	e52	46	e47	153	132	83	224	50	43
17	74	71	80	e52	48	e49	170	116	65	194	57	41
18	70	70	78	e52	50	e52	172	112	55	178	58	54
19	66	77	e76	e51	53	e54	154	106	93	168	53	84
20	66	87	e73	e51	54	e58	139	99	215	156	49	83
21	64	88	e69	e51	51	e64	127	91	285	150	47	69
22	59	78	e65	e52	50	e58	118	85	271	139	47	60
23	57	72	e64	e52	e48	e53	111	86	282	126	47	63
24	64	72	e62	e52	e47	e49	110	84	392	124	45	65
25	71	73	e61	e52	e46	e47	103	78	469	320	42	62
26	53	74	e60	e51	e45	e47	93	75	531	627	53	57
27	43	70	e59	e50	e44	e49	89	71	537	494	67	52
28	81	e70	e59	e49	e43	e54	91	66	480	255	91	46
29	92	70	e58	e48	---	e60	99	60	385	199	142	44
30	93	76	e57	e47	---	e74	95	56	298	170	97	44
31	97	---	e57	e46	---	e73	---	56	---	144	108	---
TOTAL	1862	2511	2199	1615	1284	1537	3342	3118	6449	8586	2161	2205
MEAN	60.1	83.7	70.9	52.1	45.9	49.6	111	101	215	277	69.7	73.5
MAX	97	126	84	56	54	74	172	180	537	921	142	173
MIN	34	70	57	46	43	43	66	56	38	96	42	41
AC-FT	3690	4980	4360	3200	2550	3050	6630	6180	12790	17030	4290	4370
CFSM	0.18	0.26	0.22	0.16	0.14	0.15	0.34	0.31	0.66	0.85	0.21	0.23
IN.	0.21	0.29	0.25	0.18	0.15	0.18	0.38	0.36	0.74	0.98	0.25	0.25

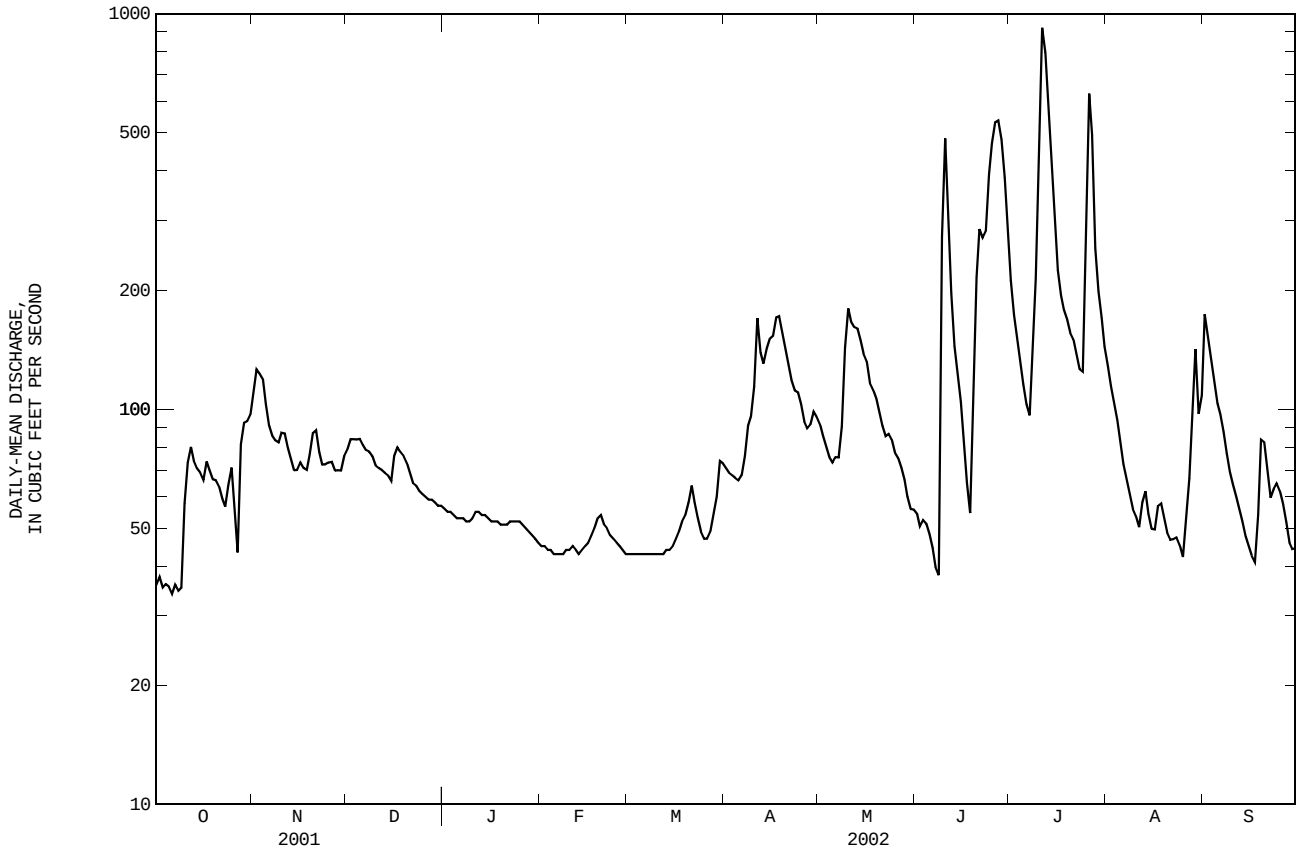
05061000 BUFFALO RIVER NEAR HAWLEY, MN--Continued

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

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	44.6	45.9	30.9	24.5	27.3	92.3	274	141	118	115	53.5	43.2
MAX	151	298	127	70.2	170	434	1036	383	589	784	472	192
(WY)	1974	2001	1999	2001	1998	1966	1997	1998	2000	1993	1955	1999
MIN	11.6	12.2	10.6	9.94	9.88	15.0	33.3	21.5	12.7	10.1	5.87	8.52
(WY)	1979	1977	1977	1962	1949	1969	1981	1977	1977	1976	1976	1976

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1945 - 2002	
ANNUAL TOTAL	58704		36869			
ANNUAL MEAN	161		101		84.8	
HIGHEST ANNUAL MEAN					188	1998
LOWEST ANNUAL MEAN					16.7	1977
HIGHEST DAILY MEAN	1730	Apr 8	921	Jul 11	2360a	Apr 6 1997
LOWEST DAILY MEAN	28	Aug 30	34	Oct 6	3.2	Aug 25 1976
ANNUAL SEVEN-DAY MINIMUM	30	Aug 26	35	Oct 3	4.3	Aug 22 1976
MAXIMUM PEAK FLOW			963	Jul 11	2360a	Apr 6 1997
MAXIMUM PEAK STAGE			8.55	Jul 11	10.86	Jun 22 2000
INSTANTANEOUS LOW FLOW			33	Oct 6	2.8	Aug 26 1977
ANNUAL RUNOFF (AC-FT)	116400		73130		61470	
ANNUAL RUNOFF (CFSM)	0.49		0.31		0.26	
ANNUAL RUNOFF (INCHES)	6.72		4.22		3.55	
10 PERCENT EXCEEDS	334		170		194	
50 PERCENT EXCEEDS	70		70		35	
90 PERCENT EXCEEDS	41		44		14	

a Estimated daily discharge, backwater from ice.
e Estimated.



05061500 SOUTH BRANCH BUFFALO RIVER AT SABIN, MN

LOCATION--Lat 46°46'20", long 96°37'40", in SW¼ SW¼ sec. 9, T.138 N., R.47 W., Clay County, Hydrologic Unit 09020106, on left bank, on downstream side of County Road 67 bridge, 0.3 mi downstream from Stony Creek and 1 mi east of Sabin.

DRAINAGE AREA.--454 mi^2.

PERIOD OF RECORD.--March 1945 to current year. Water year 1981, annual maximum only; March 1982 to September 1985, no winter records.

REVISED RECORDS.--WSP 1308: 1949(M). WRIR 97-4249: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 902.39 ft above sea level (NGVD of 1929, levels by Soil Conservation Service). Prior to April 17, 1948, nonrecording gage at site 1 mi downstream at different datum. Aug. 17, 1948 to Oct. 4, 1989, nonrecording gage at present site and datum.

REMARKS.--Records good except those 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	6.5	92	e34	e18	e12	e22	e68	101	72	92	36	75
2	5.5	100	e43	e17	e12	e22	e64	97	46	65	32	61
3	6.6	92	e48	e17	e11	e22	e56	88	35	e50	28	53
4	7.7	78	e49	e17	e11	e21	e52	78	29	e38	23	51
5	10	72	e49	e17	e10	e21	e50	69	26	e32	21	48
6	9.0	63	e48	e17	e10	e21	e48	63	24	28	19	43
7	6.7	55	e47	e17	e11	e21	e53	60	24	25	17	36
8	7.1	49	e46	e17	e11	e21	e60	66	23	37	14	28
9	8.8	45	e44	e18	e12	e21	e76	96	149	139	14	21
10	19	43	e42	e19	e12	e22	e100	212	272	198	12	18
11	34	41	e40	e20	e13	e23	e123	304	259	412	14	14
12	52	40	e38	e21	e14	e24	e133	310	230	627	13	13
13	62	38	e37	e21	e14	e26	141	253	179	835	14	11
14	67	38	e37	e20	e15	e28	140	208	103	893	17	10
15	59	38	e36	e20	e15	e31	142	172	64	804	13	9.2
16	50	37	e38	e19	e16	e34	146	134	46	589	12	7.6
17	51	37	e42	e19	e17	e38	141	108	33	355	13	6.9
18	50	36	e46	e18	e18	e43	137	88	26	235	14	12
19	47	35	e46	e17	e20	e48	140	73	22	173	15	74
20	43	33	e38	e16	e21	e57	145	64	130	121	14	37
21	39	33	e35	e16	e22	e54	139	57	259	87	14	35
22	35	38	e32	e16	e24	e50	123	51	339	71	12	34
23	33	40	e29	e16	e25	e45	108	45	436	61	11	26
24	34	34	e26	e16	e26	e42	98	41	539	53	8.3	22
25	40	34	e24	e16	e27	e41	89	40	640	47	8.3	20
26	36	32	e23	e16	e26	e41	87	36	703	41	8.6	20
27	40	e30	e21	e16	e25	e42	84	33	643	37	7.5	19
28	57	e27	e20	e15	e23	e44	80	47	473	34	17	17
29	65	e27	e19	e14	---	e48	85	185	272	36	20	15
30	67	e29	e18	e13	---	e53	94	275	150	42	26	14
31	74	---	e18	e13	---	e59	---	158	---	41	66	---
TOTAL	1121.9	1386	1113	532	473	1085	3002	3612	6246	6298	553.7	850.7
MEAN	36.2	46.2	35.9	17.2	16.9	35.0	100	117	208	203	17.9	28.4
MAX	74	100	49	21	27	59	146	310	703	893	66	75
MIN	5.5	27	18	13	10	21	48	33	22	25	7.5	6.9
AC-FT	2230	2750	2210	1060	938	2150	5950	7160	12390	12490	1100	1690
CFSM	0.08	0.10	0.08	0.04	0.04	0.08	0.22	0.26	0.46	0.45	0.04	0.06
IN.	0.09	0.11	0.09	0.04	0.04	0.09	0.25	0.30	0.51	0.52	0.05	0.07

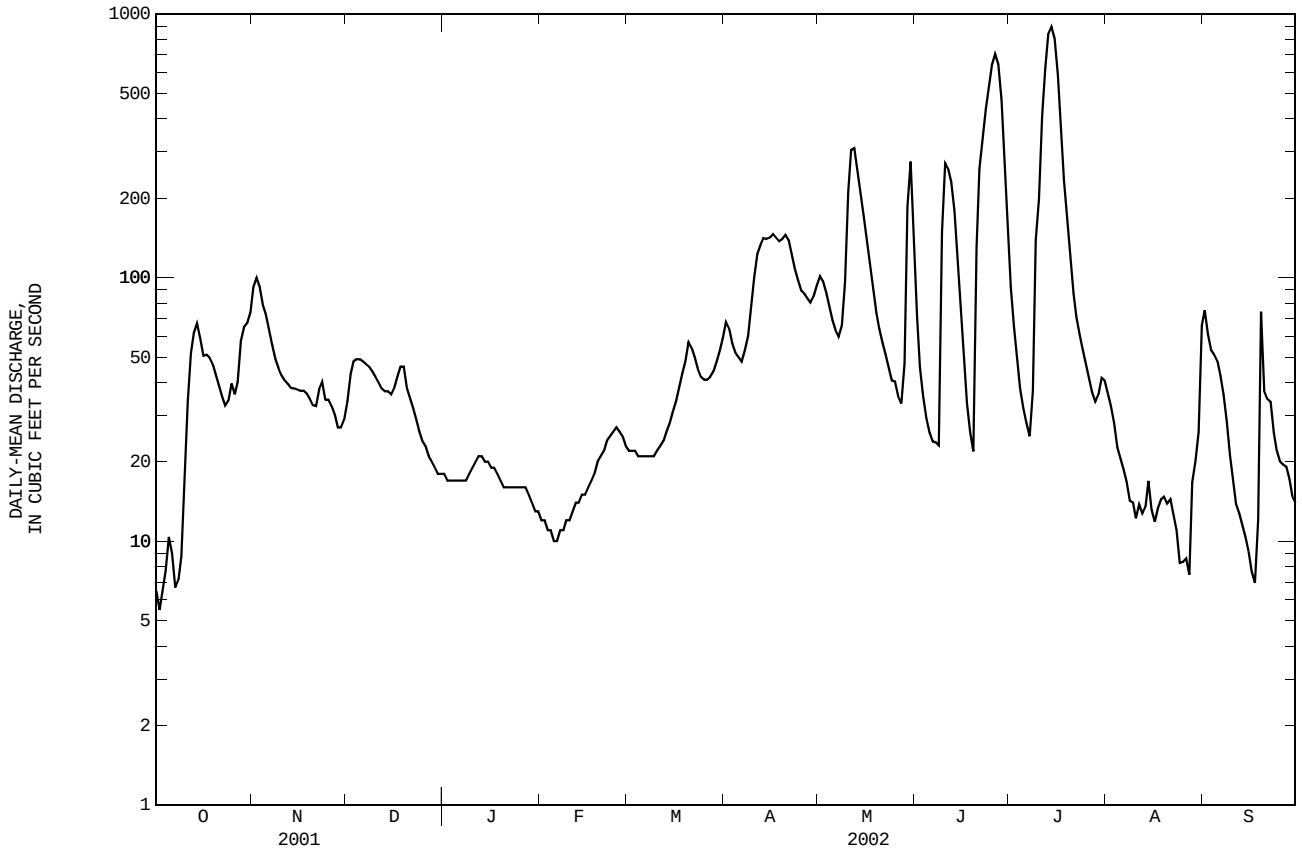
05061500 SOUTH BRANCH BUFFALO RIVER AT SABIN, MN--Continued

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

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	19.4	21.6	8.11	2.84	6.91	110	291	93.3	101	85.8	12.0	17.3
MAX	108	194	66.8	18.5	205	581	1683	580	1068	1112	152	186
(WY)	1999	2001	1999	2001	1998	1966	1997	1962	1962	1975	1993	1999
MIN	0.023	2.05	0.006	0.000	0.000	0.000	27.9	8.28	1.30	0.000	0.000	0.000
(WY)	1977	1977	1961	1946	1946	1951	1973	1980	1976	1988	1976	1976

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1945 - 2002	
ANNUAL TOTAL	55544.1		26273.3			
ANNUAL MEAN	152		72.0		64.9a	
HIGHEST ANNUAL MEAN					198	1962
LOWEST ANNUAL MEAN					12.2	1977
HIGHEST DAILY MEAN	3870	Apr 9	893	Jul 14	8200	Jul 1 1975
LOWEST DAILY MEAN	3.7	Aug 19	5.5	Oct 2	0.00b	Dec 13 1945
ANNUAL SEVEN-DAY MINIMUM	4.1	Aug 19	7.4	Oct 1	0.00	Dec 13 1945
MAXIMUM PEAK FLOW			905	Jul 14	8500	Jul 2 1975
MAXIMUM PEAK STAGE			12.25	Jul 14	19.90	Jul 2 1975
INSTANTANEOUS LOW FLOW			5.2	Oct 2		
ANNUAL RUNOFF (AC-FT)	110200		52110		47000	
ANNUAL RUNOFF (CFSM)	0.34		0.16		0.14	
ANNUAL RUNOFF (INCHES)	4.55		2.15		1.94	
10 PERCENT EXCEEDS	309		143		117	
50 PERCENT EXCEEDS	20		37		8.4	
90 PERCENT EXCEEDS	6.9		13		0.07	

a Median of annual mean discharges is 51 ft^3/s.
b Many days, several years.
e Estimated.



05062000 BUFFALO RIVER NEAR DILWORTH, MN

LOCATION--Lat 46°57'40", long 96°39'40", in SW¼ SE¼ sec. 6, T.140 N., R.47 W., Clay County, Hydrologic Unit 09020106, on left bank, at County Road 94 bridge, 4.5 mi southeast of Kragnes, 6.5 mi northeast of Dilworth, and 9 mi downstream from South Branch.

DRAINAGE AREA.--975 mi^2.

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

REVISED RECORDS.--WSP 1308: 1931(M).

GAGE.--Water-stage recorder. Datum of gage is 878.31 ft above sea level (NGVD of 1929, levels by U.S. Army Corps of Engineers). Prior to April 5, 1937, nonrecording gage at same site and datum.

REMARKS.--Records good except those 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	50	205	e125	e91	e57	e78	e178	222	288	703	247	253
2	47	230	e135	e89	e55	e74	e182	223	200	466	219	303
3	45	255	e145	e87	e54	e73	e184	219	138	324	198	303
4	47	256	e152	e85	e53	e72	e170	207	110	254	181	260
5	46	242	e152	e83	e52	e72	e162	195	96	217	160	227
6	45	222	e150	e81	e51	e71	e158	182	85	188	141	204
7	46	199	e148	e79	e52	e70	e175	174	79	169	124	188
8	46	181	e145	e78	e53	e70	e200	181	72	216	112	169
9	49	163	e140	e79	e54	e70	e227	233	597	198	103	144
10	56	151	e137	e80	e55	e71	e250	293	1580	344	95	125
11	76	148	e132	e83	e56	e72	e270	377	1630	579	90	111
12	100	147	e128	e86	e56	e73	e288	461	1490	800	87	99
13	139	139	e126	e87	e56	e75	e305	495	1180	1000	86	90
14	154	130	e124	e84	e57	e77	321	476	755	1180	88	82
15	161	123	e123	e81	e58	e80	320	425	459	1280	85	76
16	160	120	e127	e79	e60	e88	328	372	315	1280	80	74
17	142	120	e133	e75	e63	e97	331	329	239	1160	79	68
18	134	119	e139	e73	e65	e107	342	285	185	901	81	64
19	136	120	e137	e71	e68	e115	360	253	152	607	79	70
20	129	116	e130	e70	e71	e131	348	231	180	450	78	193
21	122	127	e126	e70	e75	e135	333	211	361	370	72	213
22	115	134	e122	e71	e78	e131	315	192	546	309	69	154
23	106	126	e117	e72	e83	e127	292	175	642	270	69	124
24	103	122	e113	e73	e87	e122	272	164	776	244	67	119
25	108	120	e109	e72	e91	e120	254	156	909	286	64	113
26	117	118	e107	e70	e88	e120	238	144	998	364	60	104
27	115	e117	e104	e68	e85	e124	224	136	1070	515	55	97
28	93	e116	e101	e65	e83	e132	219	128	1110	580	84	90
29	111	e116	e98	e63	---	e142	215	130	1080	504	125	83
30	176	e118	e95	e61	---	e155	220	195	943	360	330	79
31	191	---	e93	e59	---	e167	---	305	---	285	266	---
TOTAL	3165	4600	3913	2365	1816	3111	7681	7769	18265	16403	3674	4279
MEAN	102	153	126	76.3	64.9	100	256	251	609	529	119	143
MAX	191	256	152	91	91	167	360	495	1630	1280	330	303
MIN	45	116	93	59	51	70	158	128	72	169	55	64
AC-FT	6280	9120	7760	4690	3600	6170	15240	15410	36230	32540	7290	8490
CFSM	0.10	0.16	0.13	0.08	0.07	0.10	0.26	0.26	0.62	0.54	0.12	0.15
IN.	0.12	0.18	0.15	0.09	0.07	0.12	0.29	0.30	0.70	0.63	0.14	0.16

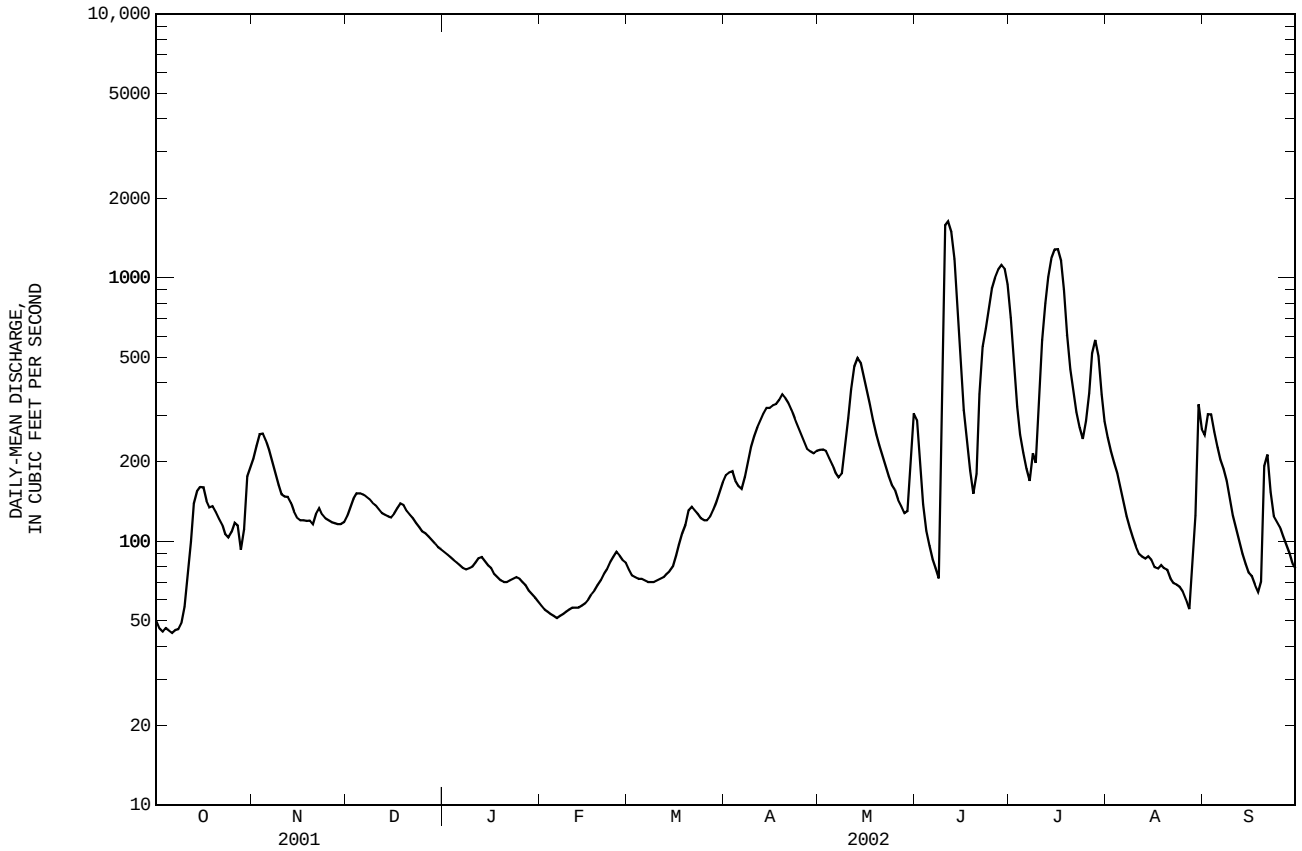
05062000 BUFFALO RIVER NEAR DILWORTH, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	62.9	65.4	38.8	24.5	27.8	199	610	252	228	215	74.1	63.2
MAX	279	575	240	99.0	285	1308	3412	1144	2138	2814	910	517
(WY)	1999	2001	1999	2001	1998	1966	1997	1998	1962	1975	1993	1944
MIN	5.48	8.74	4.75	0.87	0.76	2.26	33.5	27.2	15.1	2.23	0.000	0.79
(WY)	1940	1937	1938	1940	1940	1940	1931	1931	1934	1936	1936	1936

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1931 - 2002	
ANNUAL TOTAL	144094		77041			
ANNUAL MEAN	395		211		157	
HIGHEST ANNUAL MEAN					477	1998
LOWEST ANNUAL MEAN					25.6	1934
HIGHEST DAILY MEAN	6390	Apr 10	1630	Jun 11	13500	Jul 2 1975
LOWEST DAILY MEAN	34	Aug 31	45	Oct 3, 6	0.00a	Jul 22 1936
ANNUAL SEVEN-DAY MINIMUM	35	Aug 28	46	Oct 2	0.00	Jul 28 1936
MAXIMUM PEAK FLOW			1650	Jun 10	13600	Jul 2 1975
MAXIMUM PEAK STAGE			15.00	Jun 10	27.10	Jul 2 1975
INSTANTANEOUS LOW FLOW			44	Oct 5		
ANNUAL RUNOFF (AC-FT)	285800		152800		113400	
ANNUAL RUNOFF (CFSM)	0.40		0.22		0.16	
ANNUAL RUNOFF (INCHES)	5.50		2.94		2.18	
10 PERCENT EXCEEDS	712		374		339	
50 PERCENT EXCEEDS	108		128		42	
90 PERCENT EXCEEDS	52		66		10	

a Occurred many days in 1936.
e Estimated.



05062500 WILD RICE RIVER AT TWIN VALLEY, MN

LOCATION.--Lat 47°16'00", long 96°14'40", in NW¼NE¼ sec. 27, T.144 N., R.44, Norman County, Hydrologic Unit 09020108, on left bank, 100 ft upstream from County Highway 29 bridge, 0.8 mi northeast of Twin Valley, and 2 mi upstream from small tributary.

DRAINAGE AREA.--934 mi^2.

PERIOD OF RECORD.--June 1909 to September 1917, July 1930 to September 1983, October 1989 to current year. Monthly discharge only for some periods, published in WSP 1308. October 1983 to September 1989, annual maximums only.

REVISED RECORDS.--WSP 955: 1941. WSP 1308: 1915(M), 1917(M).

GAGE.--Water-stage recorder. Datum of gage is 1,008.16 ft above sea level (NGVD of 1929, U.S. Army Corps of Engineers bench mark). June 1909 to September 1917, nonrecording gage at site 0.2 mi downstream at different datum. July 23, 1930 to Nov. 24, 1934, nonrecording gage at highway bridge 100 ft downstream from present site at present datum. Nov. 25, 1934 to Aug. 2, 1950, water-stage recorder 80 ft upstream from present site at present datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow slightly regulated by Rice Lake and many other 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	46	410	e245	e160	e120	e123	e280	454	291	3130	666	577
2	45	459	e243	e160	e120	e120	e260	430	254	2760	620	622
3	45	412	e240	e158	e120	e118	e255	415	231	2420	585	626
4	39	359	e236	e155	e120	e115	e250	394	218	2140	557	581
5	36	325	e230	e155	e118	e115	e240	381	218	1880	527	531
6	35	313	e222	e175	e118	e115	e240	384	202	1590	502	491
7	37	308	e220	e170	e116	e114	e240	364	188	1350	479	471
8	35	294	e220	e165	e115	e114	e270	382	180	1470	459	455
9	36	279	e215	e163	e115	e113	e310	485	4780	1760	439	431
10	72	268	e210	e160	e115	e116	369	610	8940	3400	419	409
11	138	254	e205	e158	e115	e116	390	592	5700	5260	404	388
12	202	254	e200	e155	e120	e118	430	567	3880	3990	399	363
13	195	241	e200	e154	e129	e125	487	591	2770	3250	397	336
14	209	239	e198	e150	e138	e135	483	571	2010	2520	392	312
15	218	241	e197	e147	e140	e148	471	540	1670	2030	373	291
16	217	e240	e210	e145	e151	e170	467	506	1490	1680	356	271
17	204	e231	e220	e143	e157	e200	462	491	1260	1380	367	254
18	195	e225	e220	e140	e160	e240	485	458	1080	1150	411	236
19	191	219	e210	e140	e160	e265	533	442	1050	1040	420	227
20	192	211	e190	e137	e158	e255	533	415	1210	987	398	225
21	186	200	e183	e135	e155	e238	514	388	1340	1050	362	211
22	181	204	e180	e133	e150	e219	495	367	1410	1170	326	194
23	177	211	e180	e130	e145	e195	484	353	10800	1170	293	181
24	201	215	e177	e130	e140	e176	502	356	16600	1080	269	176
25	241	227	e175	e128	e138	e165	526	339	9030	987	252	174
26	e260	225	e175	e128	e132	e153	510	303	7660	926	236	171
27	e300	174	e170	e125	e128	e155	469	292	e6200	906	299	169
28	e280	140	e168	e125	e125	e190	458	272	e5000	898	341	166
29	e280	206	e165	e123	---	e250	472	264	4040	841	339	163
30	e300	238	e163	e123	---	e310	469	271	3530	777	411	160
31	339	---	e162	e121	---	e300	---	300	---	719	493	---
TOTAL	5132	7822	6229	4491	3718	5286	12354	12977	103232	55711	12791	9862
MEAN	166	261	201	145	133	171	412	419	3441	1797	413	329
MAX	339	459	245	175	160	310	533	610	16600	5260	666	626
MIN	35	140	162	121	115	113	240	264	180	719	236	160
AC-FT	10180	15510	12360	8910	7370	10480	24500	25740	204800	110500	25370	19560
CFSM	0.18	0.28	0.22	0.16	0.14	0.18	0.44	0.45	3.68	1.92	0.44	0.35
IN.	0.20	0.31	0.25	0.18	0.15	0.21	0.49	0.52	4.11	2.22	0.51	0.39

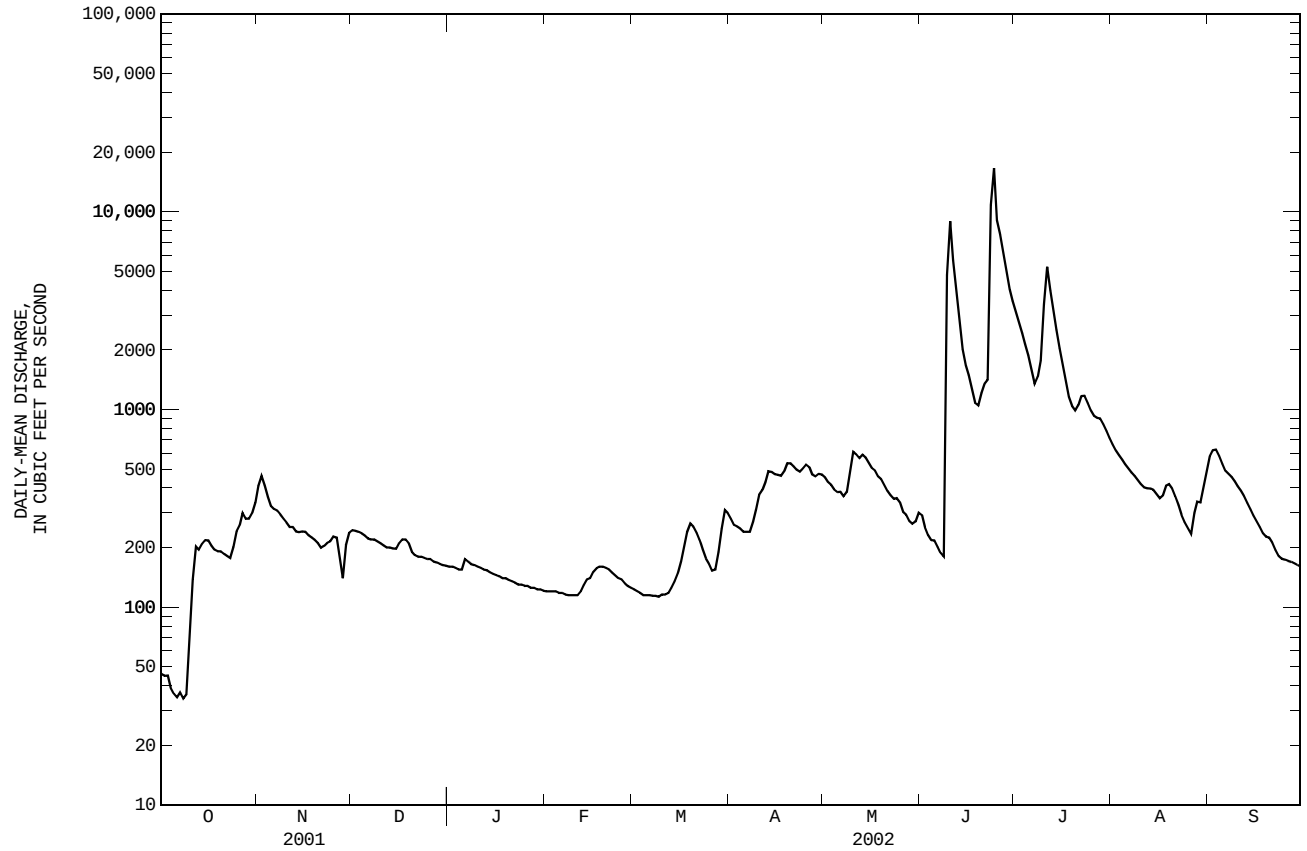
05062500 WILD RICE RIVER AT TWIN VALLEY, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1909 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	99.8	101	65.4	48.9	48.6	154	628	447	380	283	120	101
MAX	614	941	343	200	336	828	2471	2259	3441	1926	1024	842
(WY)	1974	2001	2001	2001	1998	1995	1997	1950	2002	1909	1993	1999
MIN	6.10	9.31	6.00	4.00	4.00	12.8	73.8	30.9	26.4	8.04	3.02	2.96
(WY)	1933	1933	1933	1933	1933	1940	1931	1977	1977	1934	1932	1936

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1909 - 2002	
ANNUAL TOTAL	157080		239605			
ANNUAL MEAN	430		656		204a	
HIGHEST ANNUAL MEAN					656	2002
LOWEST ANNUAL MEAN					22.7	1977
HIGHEST DAILY MEAN	4890	Apr 8	16600	Jun 24	16600	Jun 24 2002
LOWEST DAILY MEAN	35	Oct 6	35	Oct 6	1.1	Aug 13 1932
ANNUAL SEVEN-DAY MINIMUM	38	Oct 3	38	Oct 3	1.3	Aug 11 1932
MAXIMUM PEAK FLOW			20300	Jun 24	20300	Jun 24 2002
MAXIMUM PEAK STAGE			17.96b	Jun 24	17.96b	Jun 24 2002
INSTANTANEOUS LOW FLOW					0.50	Nov 4 1939
ANNUAL RUNOFF (AC-FT)	311600		475300		147500	
ANNUAL RUNOFF (CFSM)	0.46		0.70		0.22	
ANNUAL RUNOFF (INCHES)	6.26		9.54		2.96	
10 PERCENT EXCEEDS	993		1230		514	
50 PERCENT EXCEEDS	198		250		75	
90 PERCENT EXCEEDS	83		123		16	

a Median of annual mean discharges is 170 ft^3/s.
b Gage-height 20.00 ft., July 22, 1909; site and datum then in use.
e Estimated.



05064000 WILD RICE RIVER AT HENDRUM, MN

LOCATION.--Lat 47°16'05", long 96°47'50", in SE¼SE¼ sec. 19, T.144 N., R.48 W., Norman County, Hydrologic Unit 09020108, on right bank 30 ft downstream from County Highway 25 bridge, 0.5 mi east of Hendrum and 4 mi upstream from mouth.

DRAINAGE AREA.--1,560 mi^2.

PERIOD OF RECORD.--March 1944 to September 1984 and May 1985 to current year. Operated as a high-flow partial-record station October 1984 to April 1985.

REVISED RECORDS.--WSP 1728: 1958.

GAGE.--Water-stage recorder. Datum of gage is 836.75 ft above sea level (NGVD of 1929, levels by U.S. Army Corps of Engineers). Prior to July 18, 1989, nonrecording gage at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Large part of high flow diverted into Marsh River Basin at overflow section 3.5 mi east of Ada. Another diversion into the Marsh River Basin formed in 1947, 1.5 mi southeast of Ada and diverted water at all stages 1947-51, after which it was closed except for a small regulated flow diverted for abatement of contamination from Ada sewage plant effluent. Amount of diversion not known.

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	133	467	e270	e178	e135	e140	e460	665	394	7240	1010	1070
2	130	609	e265	e177	e133	e135	e410	644	395	6380	930	1170
3	129	735	e260	e175	e130	e128	e370	613	371	5410	853	1070
4	126	682	e255	e170	e130	e125	e340	592	341	4560	792	943
5	125	586	e250	e170	e130	e123	e320	560	321	3840	735	829
6	120	516	e250	e170	e130	e123	e320	536	312	3190	689	728
7	119	471	e243	e170	e130	e122	e345	535	302	2520	649	652
8	119	446	e235	e175	e129	e120	e400	530	290	2210	626	641
9	121	421	e225	e180	e127	e120	e460	638	1090	2390	574	588
10	129	395	e220	e180	e124	e120	e520	965	4300	3290	557	534
11	154	375	e220	e175	e123	e120	e580	1050	6210	4390	512	495
12	202	353	e219	e170	e123	e120	e640	987	7990	5690	517	461
13	271	344	e215	e167	e123	e125	e730	936	8450	6260	535	440
14	298	332	e213	e165	e126	e130	e800	941	8230	6170	534	411
15	292	321	e220	e163	e130	e138	740	896	7570	5600	e500	385
16	308	324	e231	e160	e138	e153	693	824	6630	4730	474	362
17	308	321	e245	e160	e144	e176	678	755	5550	3830	479	342
18	297	320	e255	e160	e155	e210	676	705	4260	2870	533	322
19	280	310	e235	e157	e160	e250	710	657	2570	2160	595	306
20	267	293	e215	e155	e163	e300	773	613	1500	1710	549	326
21	260	291	e205	e152	e163	e300	771	579	1730	1600	484	345
22	258	284	e197	e150	e163	e250	732	543	1730	1800	438	320
23	249	276	e195	e148	e163	e210	695	518	2700	2020	410	299
24	251	280	e190	e144	e163	e190	671	497	5050	1840	394	289
25	271	284	e190	e142	e160	e180	685	494	6990	1650	375	284
26	305	290	e188	e141	e158	e180	723	479	8080	2000	355	276
27	326	263	e185	e140	e155	e195	710	438	8560	1960	473	264
28	317	225	e183	e139	e148	e240	669	417	8660	1730	750	257
29	315	270	e180	e137	---	e320	654	444	8390	1520	745	248
30	341	273	e180	e135	---	e420	663	395	7860	1310	900	242
31	400	---	e180	e135	---	e490	---	379	---	1140	919	---
TOTAL	7221	11357	6814	4940	3956	5953	17938	19825	126826	103010	18886	14899
MEAN	233	379	220	159	141	192	598	640	4228	3323	609	497
MAX	400	735	270	180	163	490	800	1050	8660	7240	1010	1170
MIN	119	225	180	135	123	120	320	379	290	1140	355	242
AC-FT	14320	22530	13520	9800	7850	11810	35580	39320	251600	204300	37460	29550
CFSM	0.15	0.24	0.14	0.10	0.09	0.12	0.38	0.41	2.71	2.13	0.39	0.32
IN.	0.17	0.27	0.16	0.12	0.09	0.14	0.43	0.47	3.02	2.46	0.45	0.36

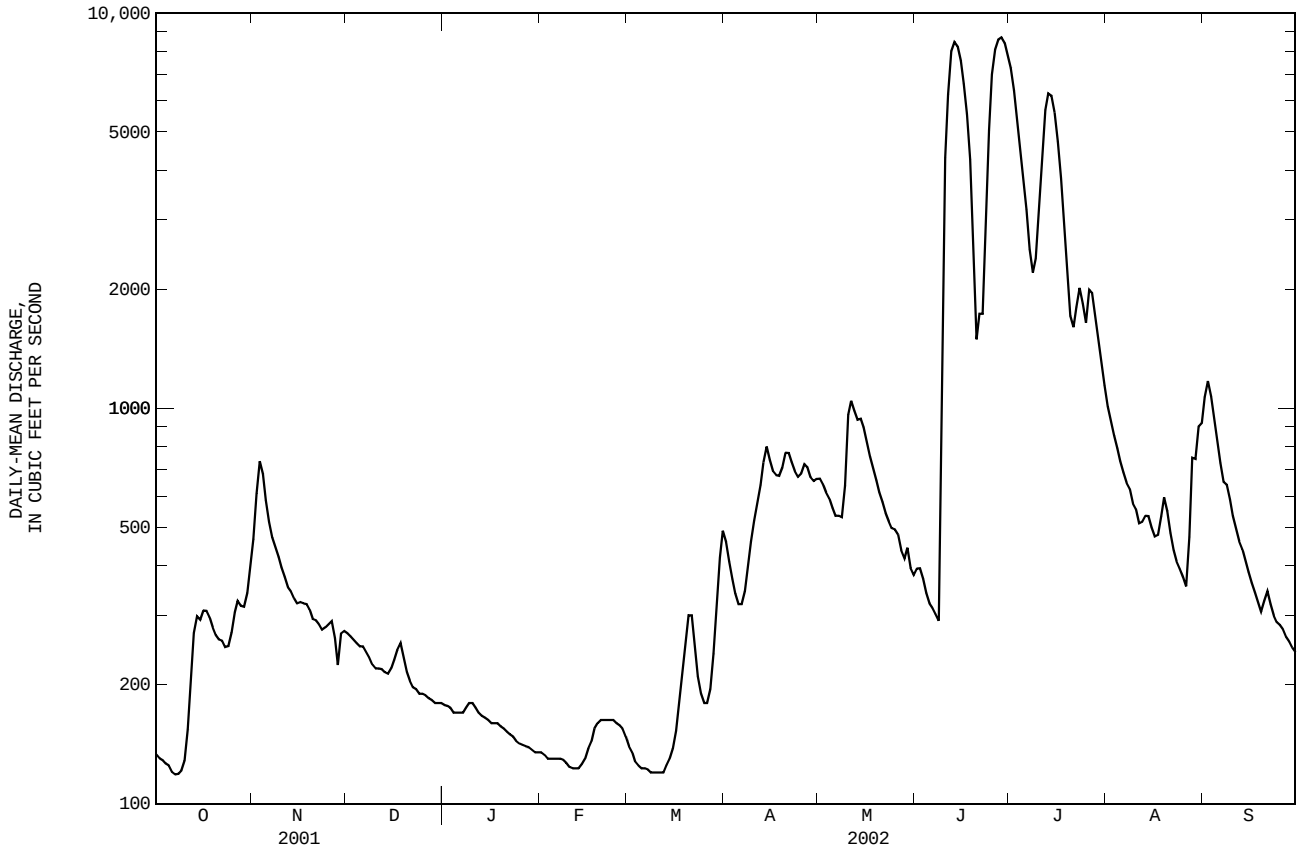
05064000 WILD RICE RIVER AT HENDRUM, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	145	152	86.5	62.5	69.9	332	1237	666	560	457	173	144
MAX	744	1305	390	245	767	1485	5115	2137	4228	3323	1833	1329
(WY)	1972	2001	2001	2001	1998	1966	1997	1998	2002	2002	1993	1999
MIN	0.44	3.32	1.08	0.092	0.22	0.46	106	56.1	9.15	8.82	1.07	0.18
(WY)	1949	1949	1977	1977	1977	1949	1981	1977	1952	1951	1977	1948

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1944 - 2002	
ANNUAL TOTAL	279475		341625			
ANNUAL MEAN	766		936		335a	
HIGHEST ANNUAL MEAN					936	2002
LOWEST ANNUAL MEAN					28.9	1977
HIGHEST DAILY MEAN	9470	Apr 10	8660	Jun 28	10300	Apr 18 1997
LOWEST DAILY MEAN	119	Oct 7	119	Oct 7,8	0.00b	Sep 13 1948
ANNUAL SEVEN-DAY MINIMUM	123	Oct 3	121	Mar 6	0.00	Sep 27 1948
MAXIMUM PEAK FLOW			8690c	Jun 28	10600d	Apr 18 1997
MAXIMUM PEAK STAGE			28.02	Jun 13	33.85f	Apr 18 1997
ANNUAL RUNOFF (AC-FT)	554300		677600		242600	
ANNUAL RUNOFF (CFSM)	0.49		0.60		0.21	
ANNUAL RUNOFF (INCHES)	6.66		8.15		2.92	
10 PERCENT EXCEEDS	1890		2180		779	
50 PERCENT EXCEEDS	260		332		101	
90 PERCENT EXCEEDS	156		134		17	

a Median of annual mean discharges is 287 ft^3/s.
b Many days, Sep.-Oct. 1948.
c Gage-height, 26.48 ft.
d From measurement of discharge.
e Estimated.
f Backwater from Red River of the North.



05067500 MARSH RIVER NEAR SHELLY, MN

LOCATION.--Lat 47°24'45", long 96°45'50", in NE¼NW¼ sec. 3, T.145 N., R.48W., Norman County, Hydrologic Unit 09020107, on left bank, 10 ft downstream of County Road 129 bridge, 3.8 mi southeast of Shelly and 10 mi upstream from mouth.

DRAINAGE AREA.--220 mi^2.

PERIOD OF RECORD.--March 1944 to September 1983 and April 1985 to current year (no winter records since 1989). Monthly discharge only for March 1944, published in WSP 1308. Operated as a high-flow partial-record station October 1983 to March 1985.

GAGE.--Water-stage recorder. Datum of gage is 841.14 ft above sea level (NGVD of 1929, levels by U.S. Army Corps of Engineers). Prior to Oct. 1, 1965, nonrecording gage at datum 3.0 ft higher. Oct. 1, 1965 to May 17, 1989, nonrecording gage at present site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Large part of high flow of Wild Rice River diverted into Marsh River Basin at overflow section 4.6 mi east of Ada. Another diversion from Wild Rice River Basin formed in 1947, 1.5 mi southeast of Ada and diverted water at all stages 1947- 51, after which it was closed except for a small regulated flow diverted for abatement of pollution from Ada sewage plant effluent.

DISCHARGE, in CFS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e0.34	e11	---	---	---	---	e20	16	14	1050	29	73
2	e0.34	e13	---	---	---	---	e19	16	7.4	e400	25	55
3	e0.30	e19	---	---	---	---	e17	15	4.6	e300	20	37
4	e0.28	e23	---	---	---	---	e15	12	2.8	e200	17	24
5	e0.26	e30	---	---	---	---	e15	11	2.2	e140	15	16
6	e0.24	e34	---	---	---	---	e16	12	2.9	e90	15	8.9
7	e0.22	e32	---	---	---	---	e19	14	2.4	e55	14	5.7
8	e0.20	e26	---	---	---	---	e28	16	1.7	45	12	3.4
9	e0.20	e23	---	---	---	---	34	25	661	41	10	2.6
10	e0.28	e21	---	---	---	---	36	48	2420	950	9.1	2.4
11	e0.30	e17	---	---	---	---	35	67	3480	2110	11	2.1
12	e0.21	e14	---	---	---	---	32	71	4580	2070	14	1.6
13	e0.18	e12	---	---	---	---	32	58	4370	1580	15	1.4
14	e0.16	e9.0	---	---	---	---	32	47	3260	1180	13	1.2
15	e0.13	e7.0	---	---	---	---	28	38	2260	783	11	0.93
16	e0.12	6.6	---	---	---	---	23	35	1400	383	9.3	0.82
17	e0.10	5.9	---	---	---	---	17	31	692	257	11	0.71
18	e0.03	5.4	---	---	---	---	15	26	378	222	14	0.71
19	e0.03	4.2	---	---	---	---	15	22	296	171	11	0.83
20	e0.03	4.1	---	---	---	---	16	18	275	144	8.4	0.64
21	e0.08	3.7	---	---	---	---	13	15	281	134	6.7	0.54
22	e0.08	3.2	---	---	---	---	14	11	237	330	5.9	0.49
23	e0.11	3.6	---	---	---	---	14	7.4	708	218	5.6	0.70
24	e2.0	3.0	---	---	---	---	13	8.4	1680	117	5.1	0.72
25	e4.8	2.7	---	---	---	---	16	9.0	2880	74	4.1	0.79
26	e6.5	1.9	---	---	---	---	15	7.3	5190	125	3.5	0.83
27	e6.0	1.7	---	---	---	---	11	5.8	5290	144	4.0	0.82
28	e3.5	1.5	---	---	---	---	10	6.5	4140	95	16	0.84
29	e5.0	1.7	---	---	---	---	14	12	2870	61	20	0.83
30	e7.0	2.5	---	---	---	---	16	22	1930	42	40	0.87
31	e9.0	---	---	---	---	---	---	19	---	34	70	---
TOTAL	48.02	342.7	---	---	---	---	600	721.4	49316.0	13545	464.7	246.37
MEAN	1.549	11.42	---	---	---	---	20.00	23.27	1644	436.9	14.99	8.212
MAX	9.0	34	---	---	---	---	36	71	5290	2110	70	73
MIN	0.03	1.5	---	---	---	---	10	5.8	1.7	34	3.5	0.49
AC-FT	95	680	---	---	---	---	1190	1430	97820	26870	922	489
CFSM	0.01	0.05	---	---	---	---	0.09	0.11	7.47	1.99	0.07	0.04
IN.	0.01	0.06	---	---	---	---	0.10	0.12	8.34	2.29	0.08	0.04

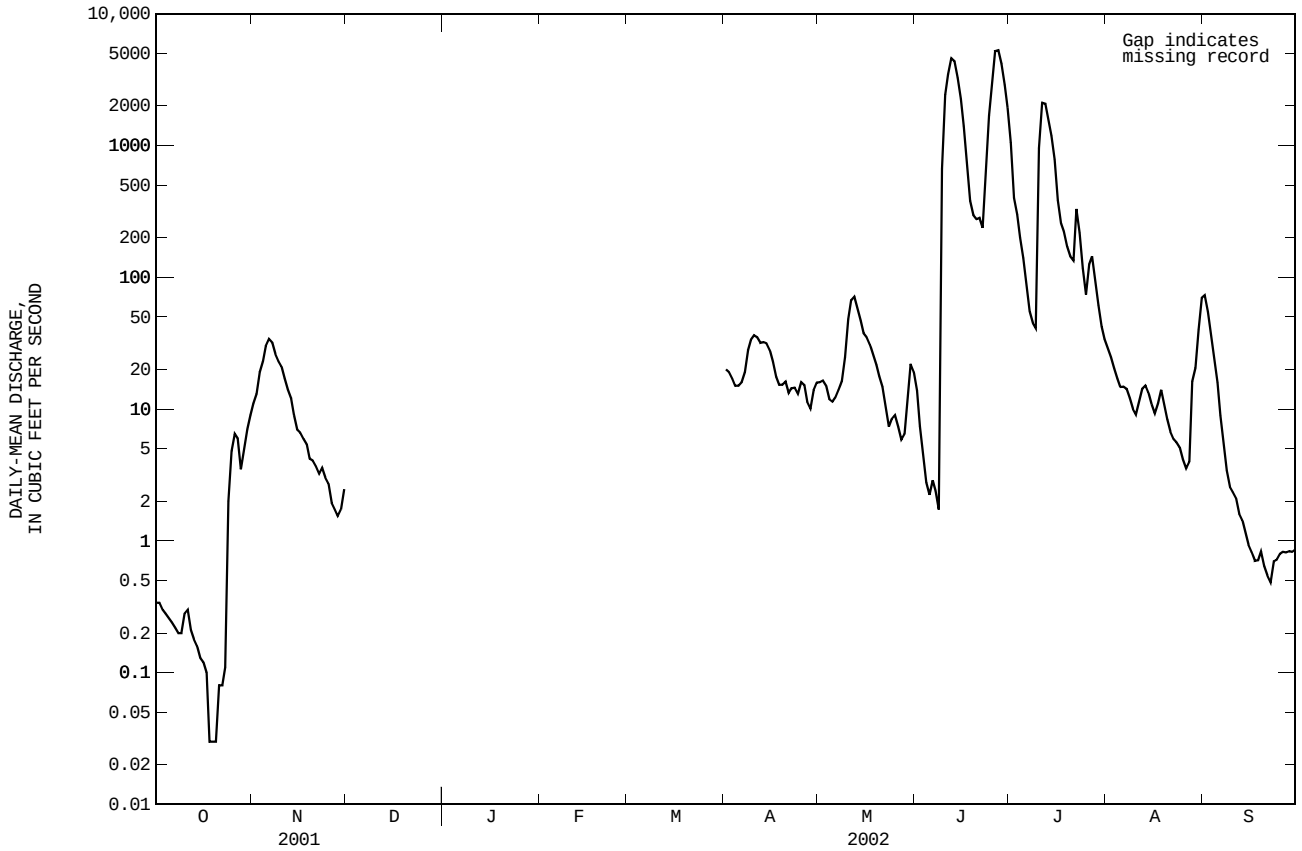
05067500 MARSH RIVER NEAR SHELLY, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	13.22	10.99	5.602	3.793	3.294	77.47	301.1	122.9	112.5	80.71	18.58	12.52
MAX	130	102	77.1	64.5	62.1	437	1537	2617	1644	820	363	144
(WY)	1952	1952	1951	1951	1951	1945	1950	1950	2002	1950	1949	1944
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.078	0.87	0.000	0.000	0.000	0.000
(WY)	1955	1956	1956	1946	1946	1964	1981	1980	1980	1961	1959	1954

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1944 - 2002	
ANNUAL MEAN					63.28	
HIGHEST ANNUAL MEAN					543a	1950
LOWEST ANNUAL MEAN					1.24	1977
HIGHEST DAILY MEAN	2350	Apr 10	5290	Jun 27	5290	Jun 27 2002
LOWEST DAILY MEAN	0.00	Aug 22	0.03	Oct 18-20	0.00b	Sep 4 1945
ANNUAL SEVEN-DAY MINIMUM	0.00	Aug 22	0.07	Oct 17	0.00	Sep 12 1945
MAXIMUM PEAK FLOW			5530	Jun 26c	5530c	Jun 26 2002
MAXIMUM PEAK STAGE			24.90	Jun 12	25.45d	Apr 18 1997
ANNUAL RUNOFF (AC-FT)					45850	
ANNUAL RUNOFF (CFSM)					0.29	
ANNUAL RUNOFF (INCHES)					3.91	
10 PERCENT EXCEEDS					106	
50 PERCENT EXCEEDS					0.80	
90 PERCENT EXCEEDS					0.00	

a Based on complete years only, 1945-83, 86-89.
b Many days, most years.
c Gage-height, 24.35 ft.
d From floodmark.
e Estimated.



05069000 SAND HILL RIVER AT CLIMAX, MN

LOCATION.--Lat 47°36'43", long 96°48'52", in NE¼NE¼ sec. 30, T.148 N., R.48 W., Polk County, Hydrologic Unit 09020301, on left bank 25 ft upstream from bridge on U.S. Highway 75 in Climax and 3.7 mi upstream from mouth.

DRAINAGE AREA.--420 mi^2.

PERIOD OF RECORD.--March 1943 to September 1984, June 1985 to current year (winter records incomplete prior to 1947). Monthly discharge only for some periods, published in WSP 1308 and 1728. October 1984 to May 1985, operated as a high-flow partial-record station.

REVISED RECORDS.--WSP 1388: 1943(M), 1944, 1947(M). WSP 1728: 1951(M), 1960 (average discharge).

GAGE.--Water-stage recorder. Datum of gage is 820.10 ft above sea level (NGVD or 1929, levels by U.S. Army Corps of Engineers). Prior to Oct. 1, 1966, nonrecording gage at site 3.2 mi upstream at datum 12.78 ft higher. Oct. 1, 1966 to Sept 5, 1989, nonrecording gage at present site and datum.

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

DISCHARGE, in CFS, 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	56	e30	e23	e39	e28	e185	79	84	553	161	646
2	22	e66	e32	e23	e41	e28	e175	77	113	471	144	e700
3	21	e75	e33	e24	e43	e27	e170	68	119	409	130	e604
4	21	e90	e31	e25	e44	e27	e160	62	103	362	117	e545
5	21	99	e30	e25	e44	e27	e150	60	78	325	105	497
6	21	101	e30	e26	e44	e27	e145	60	62	285	94	423
7	21	87	e29	e27	e43	e27	e140	63	55	263	87	351
8	21	79	e28	e28	e42	e27	e135	74	50	246	82	297
9	37	e74	e28	e28	e41	e26	e130	142	996	226	79	253
10	49	e71	e28	e29	e40	e26	e128	183	2120	2480	77	217
11	36	e69	e28	e29	e39	e26	e124	170	1070	3360	72	190
12	29	e66	e27	e29	e39	e26	133	164	894	e3000	73	171
13	27	e64	e27	e29	e38	e26	154	160	1150	e2200	75	156
14	36	e61	e26	e29	e37	e26	144	159	1320	e1700	70	142
15	43	e58	e25	e28	e36	e26	114	137	1090	e1300	68	130
16	47	e57	e25	e27	e35	e26	106	119	768	e900	72	119
17	46	e55	e25	e27	e34	e26	97	105	564	e500	77	113
18	38	e52	e24	e26	e33	e26	96	96	451	428	83	106
19	32	48	e24	e25	e33	e26	106	86	446	365	75	100
20	29	42	e23	e24	e32	e26	113	77	358	319	72	94
21	27	40	e23	e24	e32	e27	103	74	315	286	70	88
22	25	38	e23	e23	e31	e29	97	68	384	263	68	84
23	24	38	e22	e23	e31	e32	89	64	1220	239	74	82
24	30	41	e22	e23	e30	e39	81	65	1200	218	84	82
25	17	39	e22	e23	e30	e48	81	60	932	192	86	80
26	42	29	e22	e24	e29	e65	76	58	1180	180	80	78
27	44	22	e22	e25	e29	e85	e78	60	1160	160	76	75
28	43	23	e22	e26	e29	e110	e81	59	973	147	172	74
29	47	e26	e23	e28	---	e140	83	60	781	135	e212	74
30	49	e29	e23	e31	---	e200	84	59	648	127	188	74
31	49	---	e23	e35	---	e195	---	57	---	154	522	---
TOTAL	1016	1695	800	816	1018	1500	3558	2825	20684	21793	3445	6645
MEAN	32.77	56.50	25.81	26.32	36.36	48.39	118.6	91.13	689.5	703.0	111.1	221.5
MAX	49	101	33	35	44	200	185	183	2120	3360	522	700
MIN	17	22	22	23	29	26	76	57	50	127	68	74
AC-FT	2020	3360	1590	1620	2020	2980	7060	5600	41030	43230	6830	13180
CFSM	0.08	0.13	0.06	0.06	0.09	0.12	0.28	0.22	1.64	1.67	0.26	0.53
IN.	0.09	0.15	0.07	0.07	0.09	0.13	0.32	0.25	1.83	1.93	0.31	0.59

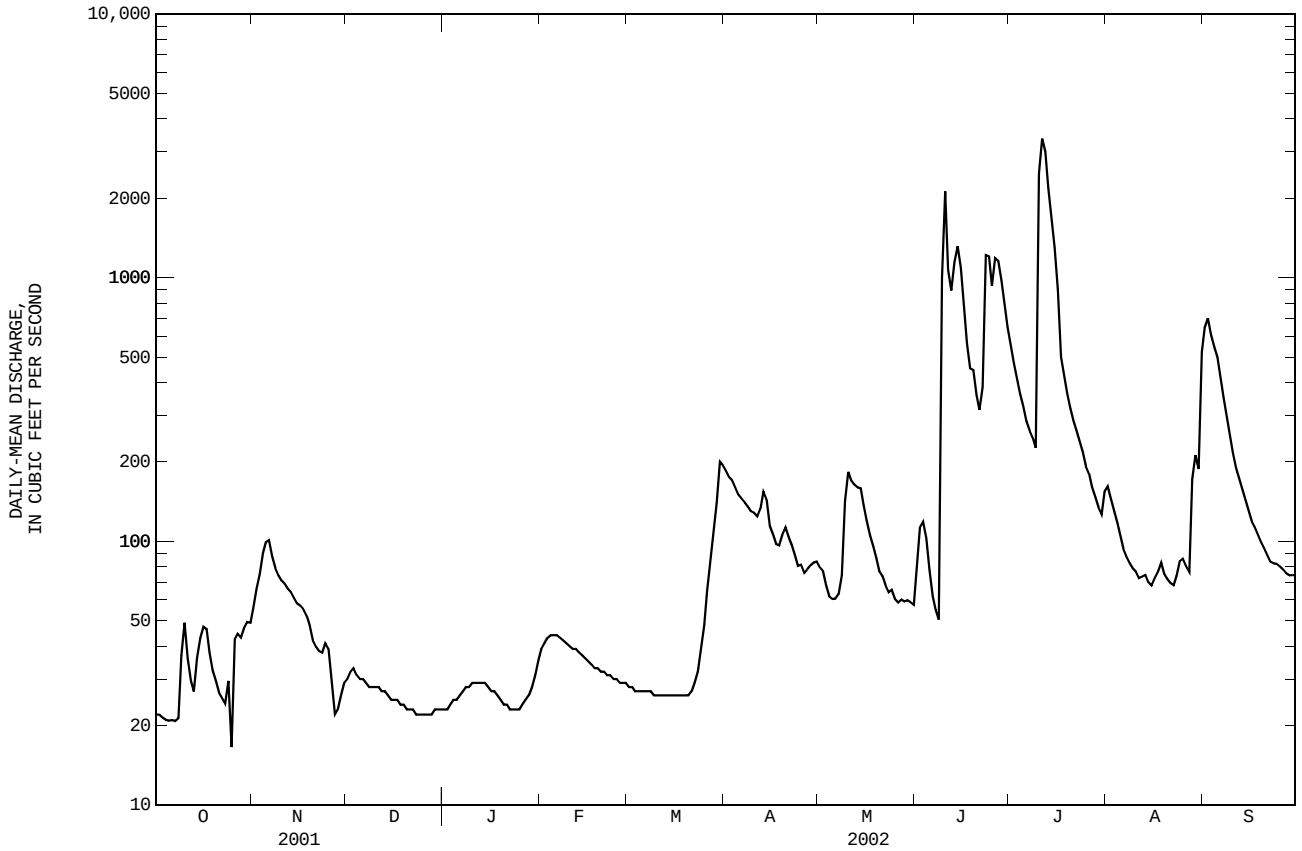
05069000 SAND HILL RIVER AT CLIMAX, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1943 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	38.55	35.28	20.21	14.91	17.66	94.42	382.9	132.9	112.6	93.42	41.51	36.53
MAX	223	284	58.0	36.8	183	610	1568	1156	689	703	426	374
(WY)	1972	2001	1999	2001	1998	1999	1997	1950	2002	2002	1993	1999
MIN	9.43	8.64	5.11	2.02	3.55	5.81	25.3	23.7	11.5	8.95	6.30	6.49
(WY)	1977	1956	1964	1962	1962	1948	1981	1958	1980	1980	1961	1955

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1943 - 2002	
ANNUAL TOTAL	43405		65795			
ANNUAL MEAN	118.9		180.3		85.44a	
HIGHEST ANNUAL MEAN					249	1999
LOWEST ANNUAL MEAN					18.4	1977
HIGHEST DAILY MEAN	3400	Apr 10	3360	Jul 11	4360	Apr 14 1965
LOWEST DAILY MEAN	17	Oct 25	17	Oct 25	1.0	Jan 17 1962
ANNUAL SEVEN-DAY MINIMUM	21	Oct 2	21	Oct 2	1.1	Jan 12 1962
MAXIMUM PEAK FLOW			3530	Jul 10	4560b	Apr 14 1965
MAXIMUM PEAK STAGE			16.62	Jul 10	39.40c	Apr 20 1997
ANNUAL RUNOFF (AC-FT)	86090		130500		61890	
ANNUAL RUNOFF (CFSM)	0.28		0.43		0.20	
ANNUAL RUNOFF (INCHES)	3.84		5.83		2.76	
10 PERCENT EXCEEDS	216		425		165	
50 PERCENT EXCEEDS	38		66		25	
90 PERCENT EXCEEDS	24		25		9.0	

a Median of annual mean discharges is 65 ft^3/s.
b Gage-height, 17.81 ft, site and datum then in use.
c Backwater from Red River of the North.
e Estimated.



05073500 UPPER RED LAKE AT WASKISH, MN

LOCATION.--Lat 48°10'32", long 94°30'51", in SW¼NE¼NE¼ sec. 8, T.154 N., R. 30 W., Beltrami County, Hydrologic Unit 09020302, on east side of Upper Red Lake, near mouth of Tamarac River, on Minnesota Department of Natural Resources property, 500 feet west of State Highway 72 bridge on north edge of Waskish.

PERIOD OF RECORD.-- October 1921 to September 1929, fragmentary gage height record in files of Minnesota Department of Natural Resources, April 1930 to September 1933, published as "Red Lake at Waskish", May 1940 to July 1946, October 1995 to current year.

GAGE.-- Water-stage recorder. Datum of gage is 1,100.00 ft above sea level, adjustment of 1912. October 1921 to September 1929, non-recording gage at datum 1,170.00 ft (no winter readings). April 1930 to September 1933, non-recording gage at datum 1,100.00 ft (some winter readings). May 1940 to July 1946, non-recording gage at datum 1170.00 ft.

REMARKS.-- Records good. Water level subject to fluctuation caused by seiches, and the stage of the Tamarac River.

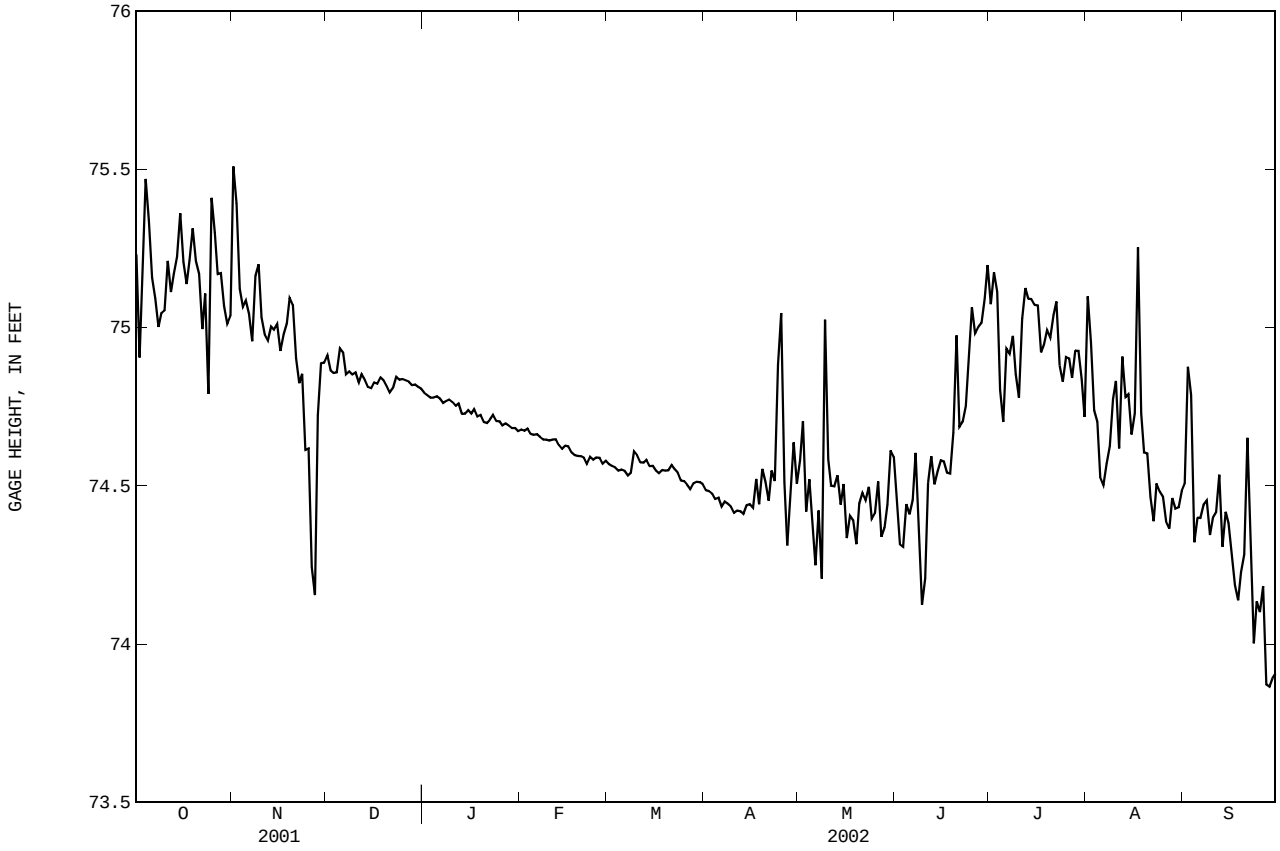
EXTREMES FOR PERIOD OF RECORD.-- Maximum gage height, 78.34 ft (present datum), June 28, 1943; minimum recorded, 72.10 ft, Oct. 17, 1932.

EXTREMES FOR CURRENT YEAR.-- Maximum gage height, 76.22 ft, Aug. 17; maximum daily, 75.51 ft, Nov. 1; minimum gage height, 73.34 ft, June 9; minimum daily, 73.87 ft, Sept. 27,28.

GAGE HEIGHT, 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	75.23	75.51	74.91	74.79	74.68	74.57	74.49	74.58	74.45	75.08	75.10	74.51
2	74.91	75.39	74.87	74.79	74.67	74.56	74.48	74.70	74.32	75.17	74.95	74.88
3	75.18	75.12	74.86	74.78	74.68	74.56	74.48	74.42	74.31	75.11	74.74	74.79
4	75.47	75.07	74.86	74.78	74.66	74.55	74.46	74.52	74.44	74.80	74.70	74.32
5	75.34	75.09	74.93	74.78	74.66	74.55	74.46	74.39	74.41	74.70	74.53	74.40
6	75.16	75.04	74.92	74.78	74.66	74.55	74.43	74.25	74.45	74.93	74.50	74.40
7	75.09	74.96	74.85	74.76	74.65	74.53	74.45	74.42	74.60	74.92	74.57	74.44
8	75.00	75.16	74.86	74.77	74.65	74.54	74.44	74.21	74.39	74.97	74.63	74.45
9	75.05	75.20	74.85	74.77	74.65	74.61	74.44	75.03	74.12	74.85	74.78	74.35
10	75.05	75.03	74.86	74.77	74.64	74.60	74.42	74.59	74.21	74.78	74.83	74.40
11	75.21	74.98	74.83	74.75	74.65	74.58	74.42	74.50	74.51	75.03	74.62	74.42
12	75.11	74.96	74.85	74.76	74.65	74.57	74.42	74.50	74.59	75.12	74.91	74.54
13	75.17	75.00	74.84	74.73	74.63	74.58	74.41	74.53	74.51	75.09	74.78	74.31
14	75.22	74.99	74.81	74.73	74.62	74.56	74.44	74.44	74.55	75.09	74.79	74.42
15	75.36	75.01	74.81	74.74	74.63	74.56	74.44	74.51	74.58	75.07	74.66	74.38
16	75.21	74.93	74.83	74.73	74.62	74.55	74.43	74.33	74.58	75.07	74.73	74.28
17	75.14	74.98	74.82	74.74	74.61	74.54	74.52	74.41	74.54	74.92	75.25	74.19
18	75.21	75.01	74.84	74.72	74.60	74.55	74.44	74.39	74.54	74.95	74.73	74.14
19	75.31	75.09	74.83	74.72	74.59	74.55	74.55	74.32	74.67	74.99	74.61	74.23
20	75.21	75.07	74.81	74.70	74.59	74.55	74.51	74.44	74.98	74.97	74.60	74.28
21	75.17	74.90	74.80	74.70	74.59	74.57	74.45	74.48	74.69	75.04	74.46	74.65
22	75.00	74.82	74.81	74.71	74.57	74.55	74.55	74.46	74.70	75.08	74.39	74.37
23	75.11	74.85	74.85	74.72	74.59	74.54	74.51	74.50	74.75	74.88	74.51	74.00
24	74.79	74.61	74.84	74.71	74.58	74.52	74.88	74.40	74.92	74.83	74.48	74.13
25	75.41	74.62	74.84	74.70	74.59	74.52	75.05	74.41	75.06	74.91	74.47	74.10
26	75.30	74.24	74.83	74.69	74.59	74.50	74.51	74.51	74.98	74.90	74.39	74.18
27	75.17	74.16	74.83	74.70	74.57	74.49	74.31	74.34	75.00	74.84	74.37	73.87
28	75.17	74.72	74.82	74.69	74.58	74.51	74.46	74.37	75.01	74.93	74.46	73.87
29	75.07	74.89	74.82	74.68	---	74.51	74.64	74.44	75.09	74.93	74.43	73.89
30	75.01	74.89	74.81	74.68	---	74.51	74.51	74.61	75.20	74.84	74.43	73.91
31	75.04	---	74.81	74.67	---	74.51	---	74.59	---	74.72	74.48	---
MEAN	75.16	74.94	74.84	74.73	74.62	74.55	74.50	74.47	74.64	74.95	74.64	74.30
MAX	75.47	75.51	74.93	74.79	74.68	74.61	75.05	75.03	75.20	75.17	75.25	74.88
MIN	74.79	74.16	74.80	74.67	74.57	74.49	74.31	74.21	74.12	74.70	74.37	73.87

05073500 UPPER RED LAKE AT WASKISH, MN--Continued



05073650 LOWER RED LAKE AT BATTLE RIVER MOUTH NEAR SAUM, MN

LOCATION.-- Lat 47°57'35", long 94°44'31", in SE¼NE¼NE¼ sec. 28, T. 152 N., R. 32 W., Beltrami County, Hydrologic Unit 09020302, on east side of Lower Red Lake, 200 feet upstream of mouth of Battle River, 900 feet southwest of highway bridge, and 3.2 mi southwest of Saum.

PERIOD OF RECORD.--June 5, 1996 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,100.00 ft above sea level, adjustment of 1912.

REMARKS.--Records fair. Water level subject to the stage of the Battle River and ice pile up at the mouth; and by lake seiches.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 76.75 ft, Aug. 9, 2001; minimum recorded, 73.29 ft, Oct. 4, 1998.

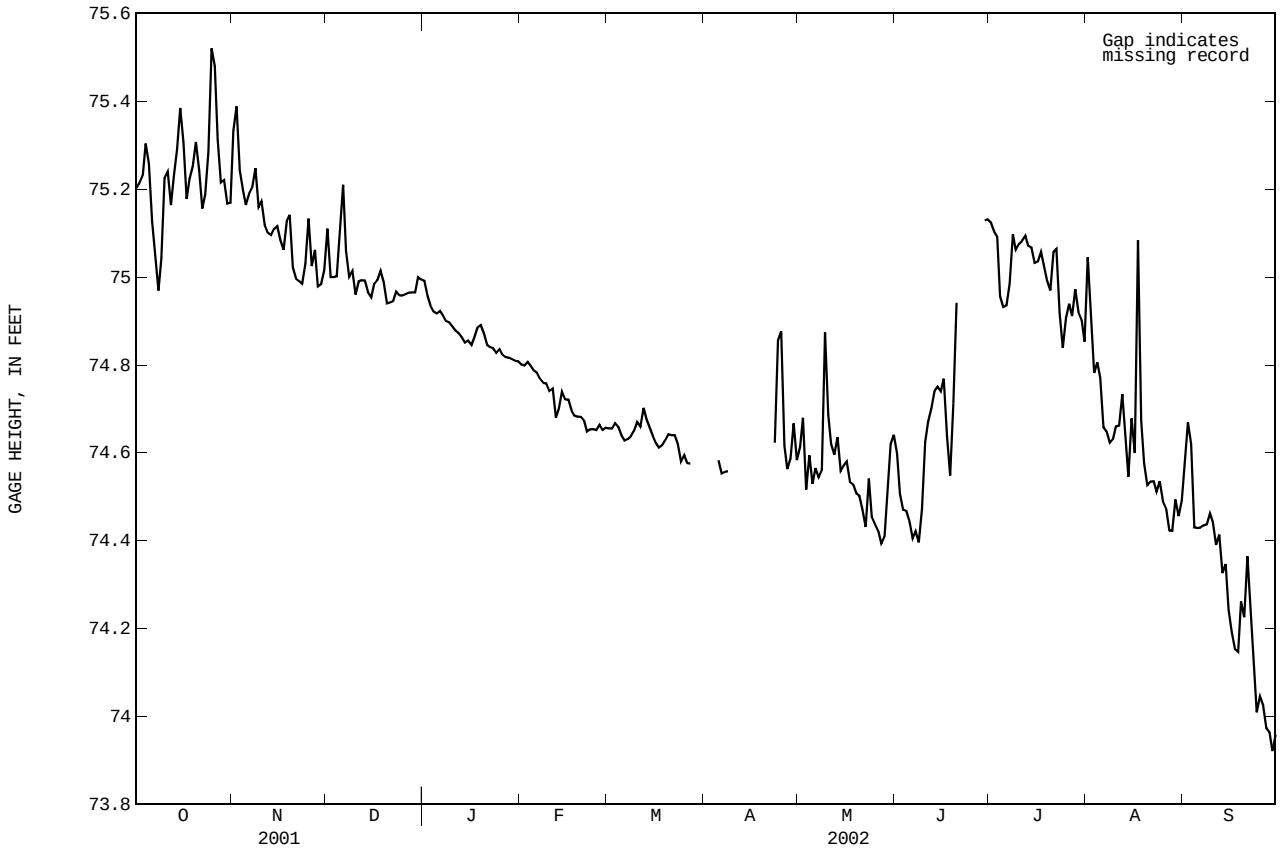
EXTREMES FOR CURRENT YEAR.--Maximum gage height, 75.82 ft, Aug. 17; maximum daily, 75.52 ft, Oct. 25; minimum gage height, 73.90 ft, Sep. 29; minimum daily, 73.92 ft, Sep. 29.

REVISIONS.--Prior to Oct. 1, 1997, daily-mean, daily-maximum, and daily-minimum gage heights revised upwards by 0.11 ft. Datum of gage had been established 0.11 ft too low.

GAGE HEIGHT, 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	75.20	75.33	75.11	74.99	74.80	74.66	---	74.61	74.60	75.12	75.04	74.58
2	75.21	75.39	75.00	74.96	74.80	74.66	---	74.68	74.51	75.10	74.91	74.67
3	75.23	75.24	75.00	74.94	74.81	74.67	---	74.52	74.47	75.09	74.78	74.62
4	75.30	75.20	75.00	74.92	74.80	74.66	---	74.59	74.47	74.96	74.81	74.43
5	75.26	75.16	75.12	74.92	74.79	74.64	74.58	74.53	74.44	74.93	74.77	74.43
6	75.13	75.19	75.21	74.92	74.78	74.63	74.55	74.56	74.40	74.94	74.66	74.43
7	75.04	75.20	75.06	74.91	74.77	74.63	74.56	74.54	74.42	74.99	74.65	74.44
8	74.97	75.25	75.00	74.90	74.76	74.64	74.56	74.56	74.40	75.10	74.62	74.44
9	75.04	75.16	75.01	74.90	74.76	74.65	---	74.87	74.47	75.06	74.63	74.46
10	75.23	75.17	74.96	74.89	74.74	74.67	---	74.69	74.63	75.08	74.66	74.44
11	75.24	75.12	74.99	74.88	74.75	74.66	---	74.62	74.67	75.08	74.66	74.39
12	75.16	75.10	74.99	74.87	74.68	74.70	---	74.60	74.70	75.09	74.73	74.41
13	75.23	75.10	74.99	74.86	74.70	74.68	---	74.64	74.74	75.07	74.63	74.33
14	75.29	75.11	74.97	74.85	74.74	74.66	---	74.56	74.75	75.07	74.55	74.35
15	75.39	75.12	74.95	74.86	74.72	74.64	---	74.57	74.74	75.03	74.68	74.24
16	75.31	75.08	74.98	74.85	74.72	74.62	---	74.58	74.77	75.03	74.60	74.19
17	75.18	75.06	74.99	74.86	74.70	74.61	---	74.53	74.64	75.06	75.08	74.15
18	75.22	75.13	75.01	74.88	74.68	74.62	---	74.53	74.55	75.03	74.67	74.15
19	75.25	75.14	74.99	74.89	74.68	74.63	---	74.51	74.71	74.99	74.58	74.26
20	75.31	75.02	74.94	74.87	74.68	74.64	---	74.50	74.94	74.97	74.53	74.23
21	75.24	75.00	74.94	74.85	74.67	74.64	---	74.47	---	75.06	74.53	74.36
22	75.16	74.99	74.94	74.84	74.65	74.64	---	74.43	---	75.06	74.54	74.25
23	75.19	74.98	74.97	74.84	74.65	74.62	74.62	74.54	---	74.92	74.51	74.12
24	75.29	75.03	74.96	74.83	74.65	74.58	74.86	74.45	---	74.84	74.54	74.01
25	75.52	75.13	74.96	74.84	74.65	74.59	74.88	74.44	---	74.91	74.49	74.05
26	75.48	75.03	74.96	74.82	74.66	74.58	74.62	74.42	---	74.94	74.47	74.03
27	75.31	75.06	74.96	74.82	74.65	74.58	74.56	74.39	---	74.91	74.42	73.97
28	75.22	74.98	74.96	74.82	74.66	---	74.59	74.41	---	74.97	74.42	73.96
29	75.22	74.98	74.96	74.81	---	---	74.67	74.51	75.13	74.92	74.49	73.92
30	75.17	75.02	75.00	74.81	---	---	74.58	74.62	75.13	74.90	74.46	73.96
31	75.17	---	74.99	74.81	---	---	---	74.64	---	74.85	74.49	---
MEAN	75.23	75.12	75.00	74.87	74.72	---	---	74.55	---	75.00	74.63	74.28
MAX	75.52	75.39	75.21	74.99	74.81	---	---	74.87	---	75.12	75.08	74.67
MIN	74.97	74.98	74.94	74.81	74.65	---	---	74.39	---	74.84	74.42	73.92

05073650 LOWER RED LAKE AT BATTLE RIVER MOUTH NEAR SAUM, MN--Continued



05074000 LOWER RED LAKE NEAR RED LAKE, MN

LOCATION.--Lat 47°57'27", long 95°16'34", in SW¼NW¼ sec. 28, T.152 N., R.36 W., Clearwater County, Hydrologic Unit 09020302, on Red Lake Indian Reservation, on left bank just upstream from dam at outlet of Lower Red Lake, and 13 mi northwest of city of Red Lake.

DRAINAGE AREA.--1,950 mi^2 (approximately).

PERIOD OF RECORD.--June 1930 to November 1932, May 1933 to September 1997, October 1999 to September 2000. Published as "Red Lake at Redby" prior to May 1933 and as "Red Lake near Red Lake" May 1933 to September 1940. Fragmentary gage-height record, October 1921 to September 1929, for "Red Lake at Redby" in files of Minnesota Department of Natural Resources. Gage height record, October 1997 to September 1999, in files of U.S. Army Corps of Engineers.

GAGE.--Water-stage recorder. Datum of gage is 1,100.00 ft above sea level, adjustment of 1912 (levels by U.S. Army Corps of Engineers). May 1933 to Sept. 6, 1934, nonrecording gage. Sept. 7, 1934 to Sept. 30, 1986, water-stage recorder at present site at datum 69.00 ft higher.

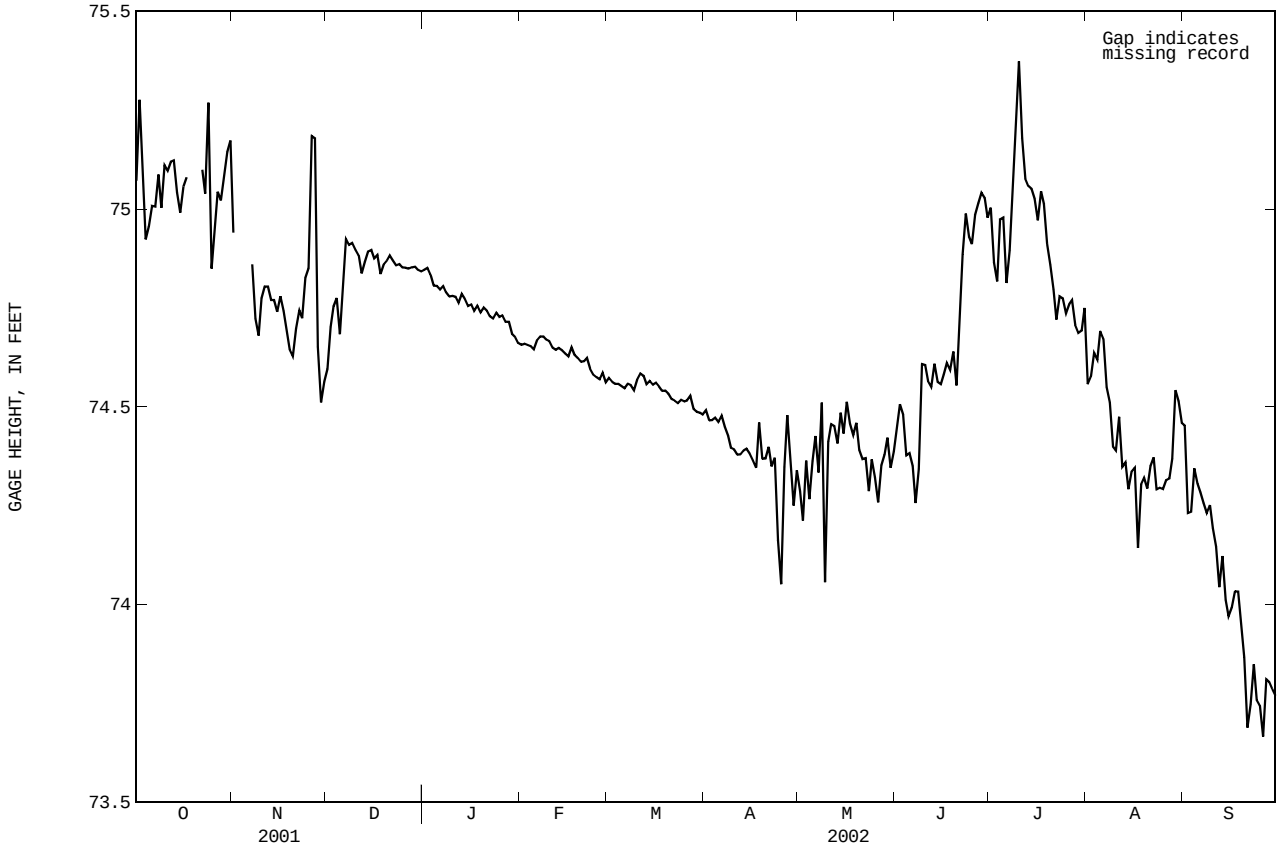
REMARKS.--Records fair. Water level subject to fluctuation caused by seiches, and by drawdown from dam gate changes.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height recorded, 78.53 ft, June 25, 1950; minimum recorded, 69.80 ft, Nov. 20, 1936.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 75.71 ft, Oct. 24; maximum daily, 75.37 ft, July 10; minimum gage height, 73.51 ft, Sept. 22; minimum daily, 73.67 ft, Sept. 26.

GAGE HEIGHT, 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	75.07	74.94	74.60	74.85	74.66	74.57	74.49	74.29	74.45	75.00	74.56	74.45
2	75.28	---	74.70	74.85	74.66	74.56	74.47	74.21	74.51	74.86	74.58	74.23
3	75.12	---	74.75	74.83	74.66	74.56	74.47	74.36	74.48	74.82	74.64	74.23
4	74.92	---	74.78	74.81	74.65	74.56	74.47	74.27	74.38	74.97	74.62	74.34
5	74.96	---	74.68	74.81	74.65	74.55	74.46	74.36	74.38	74.98	74.69	74.31
6	75.01	---	74.81	74.80	74.67	74.55	74.48	74.43	74.35	74.81	74.67	74.28
7	75.01	74.86	74.92	74.81	74.68	74.56	74.45	74.33	74.26	74.90	74.55	74.26
8	75.09	74.72	74.91	74.79	74.68	74.55	74.43	74.51	74.34	75.05	74.51	74.23
9	75.00	74.68	74.91	74.78	74.67	74.54	74.40	74.06	74.61	75.19	74.40	74.25
10	75.11	74.77	74.90	74.78	74.67	74.57	74.39	74.41	74.61	75.37	74.39	74.19
11	75.10	74.80	74.88	74.78	74.65	74.58	74.38	74.46	74.57	75.18	74.47	74.15
12	75.12	74.80	74.84	74.76	74.64	74.58	74.38	74.45	74.55	75.08	74.35	74.04
13	75.12	74.77	74.87	74.79	74.65	74.56	74.39	74.41	74.61	75.06	74.36	74.12
14	75.04	74.77	74.89	74.77	74.64	74.57	74.39	74.49	74.56	75.05	74.29	74.01
15	74.99	74.74	74.90	74.75	74.64	74.56	74.38	74.43	74.56	75.03	74.34	73.97
16	75.06	74.78	74.88	74.76	74.63	74.56	74.36	74.51	74.58	74.97	74.35	73.99
17	75.08	74.74	74.88	74.74	74.65	74.55	74.35	74.46	74.61	75.04	74.14	74.03
18	---	74.69	74.84	74.76	74.63	74.54	74.46	74.43	74.59	75.01	74.30	74.03
19	---	74.65	74.86	74.74	74.62	74.54	74.37	74.46	74.64	74.91	74.32	73.95
20	---	74.63	74.87	74.75	74.61	74.53	74.37	74.39	74.55	74.86	74.29	73.87
21	---	74.70	74.88	74.74	74.62	74.52	74.40	74.37	74.74	74.80	74.35	73.69
22	75.10	74.74	74.87	74.73	74.62	74.52	74.35	74.37	74.89	74.72	74.37	73.75
23	75.04	74.72	74.86	74.72	74.60	74.51	74.37	74.29	74.99	74.78	74.29	73.85
24	75.27	74.83	74.86	74.74	74.58	74.52	74.16	74.37	74.93	74.77	74.30	73.76
25	74.85	74.85	74.85	74.73	74.58	74.51	74.05	74.32	74.91	74.74	74.29	73.74
26	74.96	75.18	74.85	74.73	74.57	74.52	74.35	74.26	74.99	74.76	74.31	73.67
27	75.04	75.18	74.85	74.72	74.59	74.53	74.48	74.35	75.01	74.77	74.32	73.81
28	75.02	74.65	74.85	74.72	74.56	74.50	74.36	74.38	75.04	74.71	74.37	73.80
29	75.08	74.51	74.85	74.68	---	74.49	74.25	74.42	75.03	74.69	74.54	73.79
30	75.14	74.56	74.85	74.68	---	74.49	74.34	74.35	74.98	74.69	74.51	73.77
31	75.17	---	74.84	74.66	---	74.48	---	74.39	---	74.75	74.46	---
MEAN	---	---	74.84	74.76	74.63	74.54	74.38	74.37	74.66	74.91	74.42	74.02
MAX	---	---	74.92	74.85	74.68	74.58	74.49	74.51	75.04	75.37	74.69	74.45
MIN	---	---	74.60	74.66	74.56	74.48	74.05	74.06	74.26	74.69	74.14	73.67


GAGE HEIGHT, IN FEET
75.5
75
74.5
74
73.5
Gap indicates
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O
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05074500 RED LAKE RIVER NEAR RED LAKE, MN

LOCATION.--Lat 47°57'27", long 95°16'35", in SW¼NW¼ sec. 28, T.152 N., R.36 W., Clearwater County, Hydrologic Unit 09020302, on Red Lake Indian Reservation, on left bank 50 ft downstream from dam outlet at outlet of Lower Red Lake, and 13 mi northwest of city of Red Lake.

DRAINAGE AREA.--1,950 mi^2 (approximately).

PERIOD OF RECORD.--May 1933 to September 1994 (monthly discharge only for May 1933, published in WSP 1308), October 1999 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,100.00 ft above sea level, adjustment of 1912 (levels by U.S. Army Corps of Engineers). Prior to Sept. 7, 1934, nonrecording gage at site 50 ft upstream at datum 69.00 ft higher. Sept. 7, 1934 to Nov. 26, 1951, water-stage recorder at present site at datum 69.00 ft higher. Nov. 27,1951 to Sept. 30, 1986, water-stage recorder at present site at datum 67.00 ft higher.

REMARKS.--Records poor. Flow completely regulated by outlet dam on Lower Red Lake.

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	782	782	e830	e710	e730	e710	711	1260	995	435	1120	667
2	861	750	e880	e740	e730	e710	714	1250	996	773	1110	655
3	869	754	e950	e770	e730	e705	713	1250	997	1040	1100	677
4	820	755	e1030	e760	e730	e705	697	1240	991	1130	1100	898
5	802	755	e1100	e760	e730	e705	695	1240	981	1170	1130	965
6	788	745	e900	e760	e740	e705	685	1260	980	1180	1160	1050
7	778	1030	e700	e757	e750	e705	690	1260	971	1220	1140	1050
8	743	1370	e690	e755	755	e700	729	1280	966	1100	1120	1050
9	764	1420	e700	e755	740	e700	861	1280	1020	666	1090	1060
10	768	1460	e710	e755	e740	e700	969	1070	896	e250	1080	1050
11	613	1480	e715	e755	e740	e705	992	1050	433	e150	1090	1040
12	772	1500	e720	e755	e730	e710	1020	1040	366	e150	1070	1020
13	815	1500	e725	e755	726	e710	1050	1040	353	518	1080	1040
14	828	1490	e730	e755	713	e720	1080	1040	475	543	1080	1020
15	824	1480	e735	e755	719	725	1100	1030	772	590	1090	1010
16	820	1480	e740	e755	735	728	1130	1040	802	754	1110	1010
17	e815	1470	e745	e755	723	730	1180	1040	811	801	1110	1020
18	e800	1460	e750	e755	717	740	1180	1040	789	819	1120	1020
19	e780	1440	e760	e755	715	750	1200	1040	796	917	1140	996
20	e770	1440	e760	e755	712	743	1260	1030	810	1060	1150	968
21	e775	1440	e760	e750	713	761	1290	1020	727	1080	1170	903
22	e790	1440	e750	e750	e715	765	1280	1010	425	1080	1180	890
23	806	1440	e745	e745	e715	736	1290	1010	406	1080	1160	915
24	854	1440	e740	e745	e715	709	1290	1000	402	1080	1160	882
25	842	1460	e730	e740	e715	700	1260	992	397	1070	1160	873
26	813	e1450	e720	e740	e710	702	1250	982	395	1070	1170	841
27	799	e1250	e715	e740	e710	702	1260	972	388	1070	1180	870
28	789	e1000	e710	e740	e710	737	1280	967	380	1060	1000	878
29	788	e700	e710	e740	---	751	1280	984	367	1050	554	869
30	790	e810	e710	e735	---	748	1260	1000	364	1080	471	861
31	785	---	e710	e735	---	735	---	1000	---	1140	642	---
TOTAL	24643	36991	23870	23232	20308	22352	31396	33717	20451	27126	33037	28048
MEAN	795	1233	770	749	725	721	1047	1088	682	875	1066	935
MAX	869	1500	1100	770	755	765	1290	1280	1020	1220	1180	1060
MIN	613	700	690	710	710	700	685	967	353	150	471	655
AC-FT	48880	73370	47350	46080	40280	44340	62270	66880	40560	53800	65530	55630
CFSM	0.41	0.63	0.39	0.38	0.37	0.37	0.54	0.56	0.35	0.45	0.55	0.48
IN.	0.47	0.71	0.46	0.44	0.39	0.43	0.60	0.64	0.39	0.52	0.63	0.54

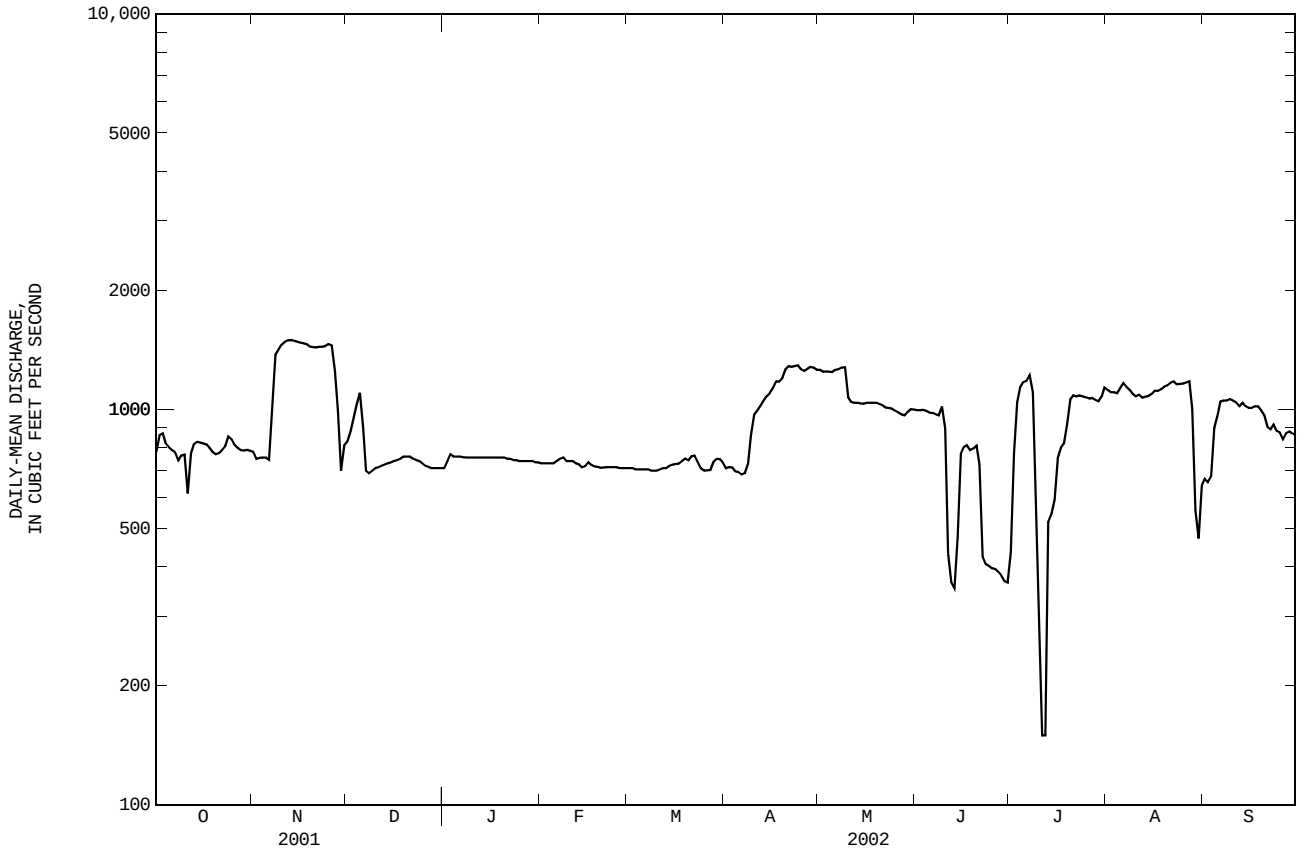
05074500 RED LAKE RIVER NEAR RED LAKE, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1933 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	487	492	477	484	478	447	364	505	576	546	484	478
MAX	2071	1765	1498	1418	1342	1396	1357	1624	2025	1840	1464	1712
(WY)	1951	2000	1951	1951	1951	1951	2000	1950	1950	1950	1975	1950
MIN	5.10	3.57	0.95	0.35	0.40	0.60	4.00	0.60	2.15	4.63	2.73	1.61
(WY)	1934	1934	1934	1934	1934	1936	1936	1933	1933	1934	1936	1934

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1933 - 2002	
ANNUAL TOTAL	318517		325171			
ANNUAL MEAN	873		891		488	
HIGHEST ANNUAL MEAN					1292	1951
LOWEST ANNUAL MEAN					5.55	1936
HIGHEST DAILY MEAN	1500	Nov 12	1500	Nov 12,13	2240	Oct 6 1950
LOWEST DAILY MEAN	142	Apr 11	150	Jul 11,12	0.00a	Sep 19 1933
ANNUAL SEVEN-DAY MINIMUM	174	Apr 11	385	Jun 24	0.00	Sep 1 1934
MAXIMUM PEAK FLOW			1500b	Nov 12	3600	Jun 25 1950
MAXIMUM PEAK STAGE			74.20c	Nov 28	78.19	Jun 25 1950
ANNUAL RUNOFF (AC-FT)	631800		645000		353800	
ANNUAL RUNOFF (CFSM)	0.45		0.46		0.25	
ANNUAL RUNOFF (INCHES)	6.08		6.20		3.40	
10 PERCENT EXCEEDS	1140		1250		1020	
50 PERCENT EXCEEDS	855		802		429	
90 PERCENT EXCEEDS	682		700		41	

a Many days in 1933, 1934 and 1936.
b Gage-height, 73.53 ft.
c Backwater from ice.
e Estimated.



05076000 THIEF RIVER NEAR THIEF RIVER FALLS, MN

LOCATION.--Lat 48°11'08", long 96°10'11", in NW¼SW¼ sec. 3, T.154 N., R.43 W., Marshall County, Hydrologic Unit 09020304, on right bank, 0.2 mi upstream from highway bridge, 5 mi north of Thief River Falls, 7 mi upstream from mouth, and 9 mi downstream from Mud Lake National Wildlife Refuge.

DRAINAGE AREA.--985 mi^2.

PERIOD OF RECORD.--July 1909 to September 1917, April 1920 to September 1921, October 1922 to September 1924, October 1928 to September 1981, March 1982 to current year. Monthly discharge only for some periods, annual maximums for water years 1919, 1922, 1925, 1926, published in WSP 1308. October 1981 to February 1982, operated as a high-flow partial-record station.

REVISED RECORDS.--WSP 925: Drainage area. WSP 1308: 1917(M), 1924(M), 1929(M), 1931-33(M), 1935(M), 1937(M).

GAGE.--Water-stage recorder and control of grouted boulders. Datum of gage is 1,112.33 ft above sea level (NGVD of 1929, levels by Minnesota Department of Transportation). Prior to May 4, 1939, nonrecording gages at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Some regulation by Thief and Mud Lakes.

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	130	223	e93	e2.2	0.62	e1.3	e52	62	521	2370	1190	536
2	117	233	e90	e2.2	0.55	e1.2	e40	51	411	2280	1140	554
3	118	224	e88	e2.1	0.47	e1.1	e28	44	324	2190	1130	518
4	93	212	e87	e2.1	0.36	e0.58	e21	41	267	2120	1120	498
5	86	206	e86	e2.1	0.26	e0.58	e16	38	249	2080	1070	470
6	83	200	e45	e2.1	e0.36	e0.66	e14	51	289	2020	917	455
7	83	197	e45	e2.2	e0.39	0.13	e12	69	275	2000	887	444
8	80	191	e45	e2.2	e0.46	0.10	e13	96	322	2040	809	435
9	32	189	e45	e2.3	0.52	0.16	e14	313	1180	2100	792	432
10	26	188	e45	e2.4	0.56	e0.38	e15	449	3350	2330	755	375
11	26	181	e45	e2.4	0.58	e0.46	e20	379	3350	2570	745	375
12	26	177	e45	e2.5	0.72	1.4	e32	305	3260	2470	701	370
13	27	174	e45	e2.4	0.80	e1.7	e48	273	3260	2300	545	284
14	29	172	e45	e2.3	1.4	e2.1	e90	252	3190	2160	503	193
15	37	193	e45	e2.2	e1.5	e2.5	e85	223	3110	2050	383	181
16	38	488	e45	e2.1	e1.6	e2.9	50	206	3020	1970	371	187
17	34	743	e45	e2.1	e1.7	e4.0	43	191	2880	1900	368	182
18	32	736	e45	e2.0	e1.9	e7.1	64	151	2680	1850	360	147
19	31	649	e15	e1.9	e2.3	e4.6	104	133	2650	1810	372	116
20	27	426	e6.0	e1.9	e3.3	e3.6	102	125	2930	1760	416	100
21	26	392	e4.6	e1.8	e2.5	e3.0	67	122	2990	1730	412	47
22	26	146	e3.8	e1.8	e2.0	e3.2	47	108	3040	1690	408	36
23	30	103	e3.2	e1.7	e1.7	e3.6	36	55	3240	1650	405	30
24	71	104	e2.8	e1.6	e1.6	e3.7	64	51	3250	1610	400	30
25	63	104	e2.6	e1.6	e1.6	e3.9	119	50	3190	1580	397	26
26	132	66	e2.5	e1.5	e1.6	e4.3	97	46	3070	1550	392	24
27	159	e65	e2.4	e1.5	e1.5	e5.4	63	43	2920	1490	389	22
28	191	e100	e2.3	1.4	e1.5	e40	50	44	2790	1460	418	25
29	188	e98	e2.3	1.1	---	e55	44	169	2640	1420	427	21
30	180	e96	e2.2	0.93	---	e60	71	483	2490	1340	437	21
31	184	---	e2.2	0.78	---	e57	---	569	---	1250	493	---
TOTAL	2405	7276	1080.9	59.41	34.35	275.65	1521	5192	67138	59140	19152	7134
MEAN	77.6	243	34.9	1.92	1.23	8.89	50.7	167	2238	1908	618	238
MAX	191	743	93	2.5	3.3	60	119	569	3350	2570	1190	554
MIN	26	65	2.2	0.78	0.26	0.10	12	38	249	1250	360	21
AC-FT	4770	14430	2140	118	68	547	3020	10300	133200	117300	37990	14150
CFSM	0.08	0.25	0.04	0.00	0.00	0.01	0.05	0.17	2.27	1.94	0.63	0.24
IN.	0.09	0.27	0.04	0.00	0.00	0.01	0.06	0.20	2.54	2.23	0.72	0.27

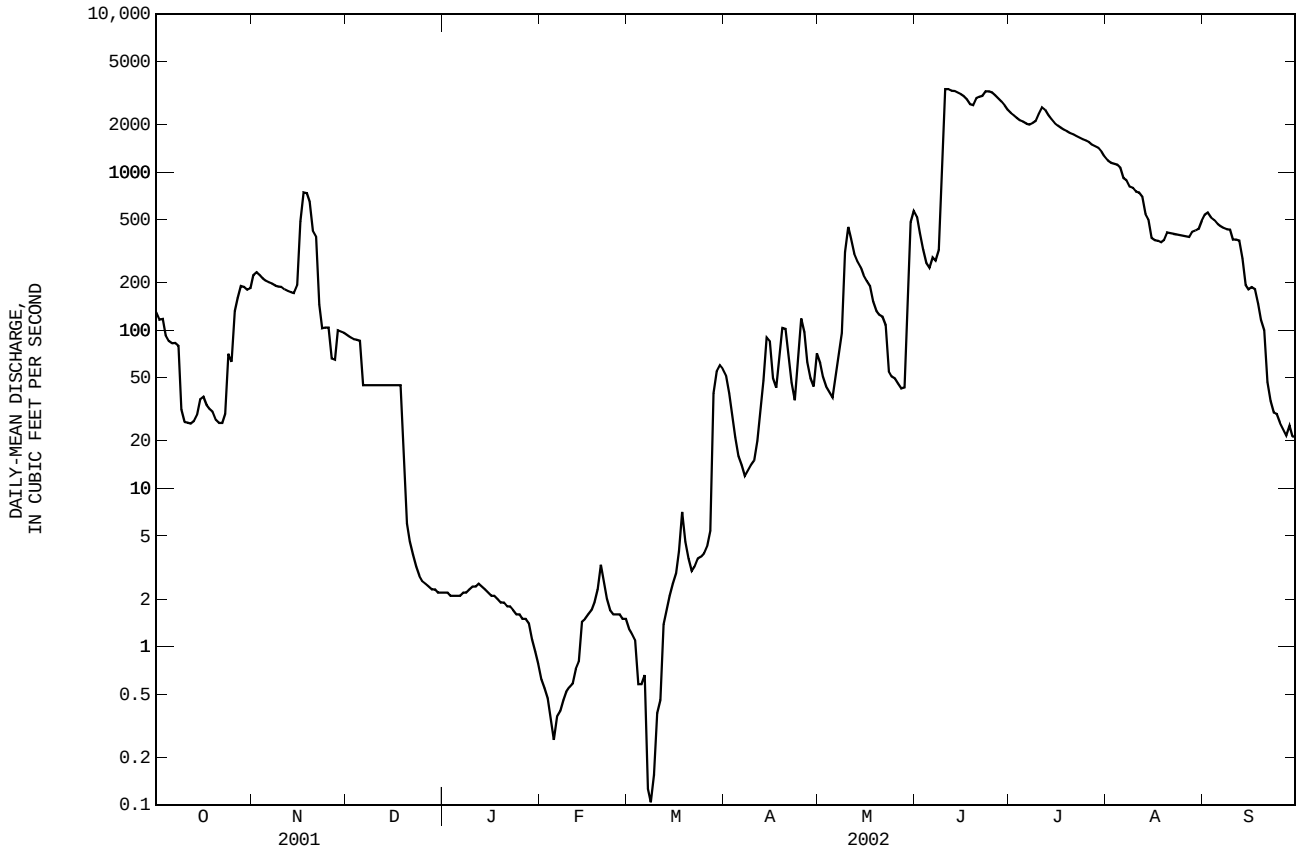
05076000 THIEF RIVER NEAR THIEF RIVER FALLS, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1909 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	94.9	85.6	24.7	5.73	5.36	78.0	619	506	340	255	120	117
MAX	637	1019	215	100	101	773	2827	4274	2238	2103	1130	1619
(WY)	1986	2001	1999	1910	1998	1995	1966	1950	2002	1975	2001	1999
MIN	0.000	0.000	0.000	0.000	0.000	0.000	7.75	1.83	0.032	0.000	0.000	0.000
(WY)	1911	1911	1911	1911	1911	1930	1981	1990	1980	1932	1932	1929

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1909 - 2002	
ANNUAL TOTAL	162693.1		170408.31			
ANNUAL MEAN	446		467		187a	
HIGHEST ANNUAL MEAN					791	1999
LOWEST ANNUAL MEAN					1.28	1939
HIGHEST DAILY MEAN	3400	Apr 9	3350	Jun 10,11	5580	May 13 1950
LOWEST DAILY MEAN	2.2	Dec 30	0.10	Mar 8	0.00b	Oct 1 1910
ANNUAL SEVEN-DAY MINIMUM	2.4	Dec 25	0.35	Mar 5	0.00	Oct 1 1910
MAXIMUM PEAK FLOW			3410	Jun 10	5610	May 13 1950
MAXIMUM PEAK STAGE			14.55	Jun 10	17.38	May 13 1950
INSTANTANEOUS LOW FLOW			0.07	Mar 7		
ANNUAL RUNOFF (AC-FT)	322700		338000		135700	
ANNUAL RUNOFF (CFSM)	0.45		0.47		0.19	
ANNUAL RUNOFF (INCHES)	6.14		6.44		2.58	
10 PERCENT EXCEEDS	1340		1980		582	
50 PERCENT EXCEEDS	198		80		10	
90 PERCENT EXCEEDS	3.8		1.6		0.00	

a Median of annual mean discharges is 146 ft^3/s.
b Many days, several years.
e Estimated.



05078000 CLEARWATER RIVER AT PLUMMER, MN

LOCATION.--Lat 47°55'24", long 96°02'46", in SE¼SW¼ sec. 4, T.151 N., R.42 W., Red Lake County, Hydrologic Unit 09020305, on right bank 200 ft downstream from Soo Line Railroad bridge, 300 ft downstream from bridge on U.S. Highway 59, 0.9 mi northwest of railroad depot in Plummer, and 8 mi upstream from Hill River.

DRAINAGE AREA.--555 mi^2.

PERIOD OF RECORD.--April 1939 to September 1979, March 1982 to current year. Annual maximums only, October 1979 to February 1982.

GAGE.--Water-stage recorder. Datum of gage is 1,098.57 ft above sea level (NGVD of 1929, levels by U.S. Army Corps of Engineers). Prior to Nov. 10, 1939, nonrecording gage at site 100 ft upstream at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Since 1968, undetermined amounts of water diverted for the flooding of wild rice paddies upstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 630 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jun 10	0500	1,030	7.16	Aug 29	0900	683	5.87
Jun 23	1230	*1,410	*8.32	Sep 1	1400	814	6.38
Jul 12	1600	1,210	7.77				

Minimum discharge, 40 ft^3/s, Oct. 9, 10, Sept. 20, 23, 24, gage height, 2.59 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	53	97	e102	e80	e65	e60	e75	187	207	899	234	792
2	51	96	e97	e80	e64	e59	e71	184	209	925	277	646
3	44	119	e92	e80	e63	e59	e67	181	196	910	260	433
4	48	160	e89	e81	e63	e59	e66	183	179	827	241	313
5	49	153	e85	e83	e64	e58	e65	196	177	687	192	248
6	46	124	e83	e85	e64	e58	e65	191	186	542	158	228
7	45	104	e82	e87	e65	e58	e65	177	189	468	158	219
8	54	101	e82	e89	e66	e58	e66	173	160	628	151	193
9	42	87	e81	e92	e67	e58	e69	253	468	655	140	174
10	40	91	e80	e93	e68	e58	e73	348	916	696	127	162
11	54	97	e82	e91	e68	e60	e90	360	615	937	114	158
12	132	94	e88	e89	e69	e61	e120	325	470	1170	114	147
13	153	80	e86	e87	e69	e63	e170	305	391	1090	133	137
14	138	68	e84	e85	e70	e66	e200	283	464	829	135	127
15	142	67	e87	e83	e71	e69	188	268	469	598	111	118
16	134	71	e91	e80	e71	e72	152	240	394	544	108	109
17	142	70	e91	e78	e71	e72	135	220	327	498	124	94
18	130	70	e90	e77	e71	e70	142	242	316	404	185	82
19	120	70	e87	e76	e71	e67	211	277	391	349	198	54
20	112	80	e85	e75	e70	e65	297	224	698	318	185	44
21	110	75	e83	e75	e69	e63	294	175	851	316	160	46
22	107	71	e83	e74	e68	e62	273	164	1070	288	141	48
23	93	75	e82	e73	e66	e61	225	153	1370	244	130	42
24	86	80	e81	e72	e65	e60	200	185	1280	248	124	42
25	88	96	e80	e71	e64	e60	246	184	1280	226	125	47
26	97	74	e80	e70	e63	e60	282	171	1330	229	117	46
27	91	e64	e80	e69	e62	e62	270	170	1280	221	110	46
28	99	e60	e80	e68	e61	e67	261	136	1160	213	270	45
29	99	e59	e80	e68	---	e79	245	155	1010	216	601	42
30	94	e107	e80	e67	---	e88	200	193	905	275	414	47
31	88	---	e80	e66	---	e80	---	213	---	254	570	---
TOTAL	2781	2660	2633	2444	1868	1992	4883	6716	18958	16704	6107	4929
MEAN	89.7	88.7	84.9	78.8	66.7	64.3	163	217	632	539	197	164
MAX	153	160	102	93	71	88	297	360	1370	1170	601	792
MIN	40	59	80	66	61	58	65	136	160	213	108	42
AC-FT	5520	5280	5220	4850	3710	3950	9690	13320	37600	33130	12110	9780
CFSM	0.16	0.16	0.15	0.14	0.12	0.12	0.29	0.39	1.14	0.97	0.35	0.30
IN.	0.19	0.18	0.18	0.16	0.13	0.13	0.33	0.45	1.27	1.12	0.41	0.33

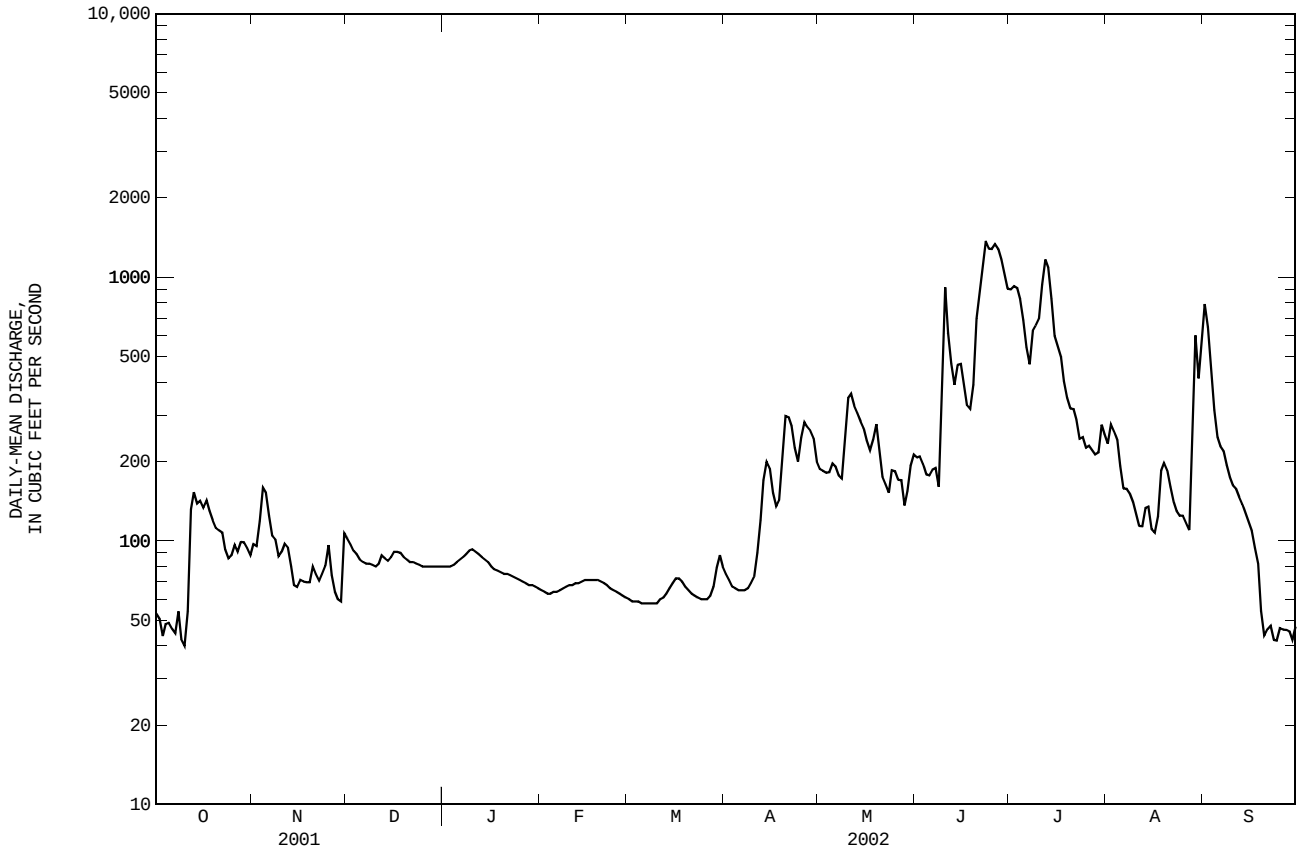
05078000 CLEARWATER RIVER AT PLUMMER, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	117	100	67.9	54.6	52.5	119	541	363	265	232	128	115
MAX	483	617	211	125	184	445	1472	1974	1140	1072	507	666
(WY)	1972	2001	2001	2001	1998	1995	1997	1950	1962	1997	1985	1973
MIN	21.5	23.8	24.4	18.4	19.0	22.8	26.8	7.52	30.1	16.0	13.3	14.1
(WY)	1941	1991	1990	1940	1940	1940	1977	1977	1991	1940	1940	1940

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1939 - 2002	
ANNUAL TOTAL	105635		72675			
ANNUAL MEAN	289		199		181a	
HIGHEST ANNUAL MEAN					354	1950
LOWEST ANNUAL MEAN					57.0	1990
HIGHEST DAILY MEAN	2100	Apr 13	1370	Jun 23	3840	Apr 25 1979
LOWEST DAILY MEAN	40	Oct 10	40	Oct 10	2.6	May 16 1977
ANNUAL SEVEN-DAY MINIMUM	46	Oct 4	44	Sep 23	2.9	May 10 1977
MAXIMUM PEAK FLOW			1410	Jun 23	3940b	Apr 25 1979
MAXIMUM PEAK STAGE			8.32	Jun 23	12.74c	Apr 16 1997
INSTANTANEOUS LOW FLOW			40	Oct 9,Sep 20,23	2.5	May 16 1977
ANNUAL RUNOFF (AC-FT)	209500		144200		130800	
ANNUAL RUNOFF (CFSM)	0.52		0.36		0.33	
ANNUAL RUNOFF (INCHES)	7.08		4.87		4.42	
10 PERCENT EXCEEDS	789		468		419	
50 PERCENT EXCEEDS	120		97		80	
90 PERCENT EXCEEDS	73		60		34	

a Median of annual mean discharges is 178 ft^3/s.
b Gage-height, 12.31 ft.
c Backwater from ice.
e Estimated.



05078230 LOST RIVER AT OKLEE, MN

LOCATION.--Lat 47°50'35", long 95°51'30", in SE¼NE¼ sec. 2, T.150 N., R.41 W., Red Lake County, Hydrologic Unit 09020305, on left bank 30 ft upstream of bridge on State Highway 222 at northwest edge of Oklee, 12 mi upstream from mouth.

DRAINAGE AREA.--254 mi^2.

PERIOD OF RECORD.--April 1960 to September 1981, February 1982 to current year. Monthly and daily figures for April 1960 to June 1960, published in WSP 2113.

GAGE.--Water-stage recorder. Datum of gage is 1,126.94 ft above sea level, adjustment of 1912 (levels by U.S. Army Corps of Engineers). Prior to Sept. 9, 1960, reference points at same site at datum 8.00 ft higher. Sept. 9, 1960 to Sept. 30, 1964, nonrecording gage at same site at datum 8.00 ft higher. Oct. 1, 1964 to Sept. 30, 1981, and Feb. 24, 1982 to Sept. 6, 1989, nonrecording gage at same site and datum.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known since at least 1897, 18.39 ft, present datum, Apr. 21, 1950, from floodmarks, discharge, 2,790 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	16	57	e36	e18	e17	e15	e65	101	62	171	48	161
2	15	55	e35	e17	e17	e15	e53	98	60	159	48	101
3	17	52	e34	e17	e17	e15	e47	93	60	140	46	70
4	16	49	e33	e17	e17	e16	e44	91	56	126	44	54
5	21	48	e33	e17	e17	e16	e42	89	54	116	40	44
6	26	47	e33	e17	e17	e16	e41	91	53	108	34	39
7	29	45	e33	e17	e18	e16	e41	92	51	106	27	35
8	32	45	e32	e18	e18	e16	e41	107	48	126	21	31
9	34	45	e32	e19	e18	e16	e42	252	83	118	19	28
10	36	46	e32	e21	e18	e17	e43	254	134	292	16	26
11	48	45	e33	e23	e18	e17	e50	196	157	493	15	23
12	49	44	e33	e23	e18	e17	e65	154	136	363	16	21
13	51	42	e32	e24	e18	e18	e125	135	123	234	18	18
14	54	42	e32	e24	e18	e18	e130	123	210	159	16	15
15	53	41	e32	e24	e18	e20	123	110	159	122	14	13
16	51	40	e34	e23	e18	e22	117	106	107	104	13	12
17	49	39	e36	e21	e18	e32	115	96	85	94	17	11
18	48	39	e37	e19	e18	e45	135	89	71	94	31	11
19	46	38	e34	e18	e18	e36	180	84	72	88	38	11
20	45	38	e32	e18	e18	e30	159	79	386	84	37	11
21	43	38	e30	e18	e18	e27	128	75	578	80	35	15
22	42	38	e28	e18	e18	e24	108	72	556	75	31	22
23	42	38	e27	e18	e18	e22	98	77	765	70	26	28
24	46	38	e25	e18	e17	e21	107	76	818	58	21	29
25	57	38	e24	e17	e17	e20	129	72	699	53	17	28
26	59	33	e24	e17	e16	e21	115	70	549	62	14	27
27	59	e32	e23	e17	e16	e23	108	65	382	59	13	26
28	60	e30	e23	e17	e16	e50	105	64	279	54	24	25
29	62	e29	e22	e17	---	e85	108	67	226	51	83	26
30	59	e37	e21	e17	---	e100	105	67	190	47	71	26
31	57	---	e20	e17	---	e84	---	63	---	43	124	---
TOTAL	1322	1248	935	586	490	890	2769	3208	7209	3949	1017	987
MEAN	42.6	41.6	30.2	18.9	17.5	28.7	92.3	103	240	127	32.8	32.9
MAX	62	57	37	24	18	100	180	254	818	493	124	161
MIN	15	29	20	17	16	15	41	63	48	43	13	11
AC-FT	2620	2480	1850	1160	972	1770	5490	6360	14300	7830	2020	1960
CFSM	0.17	0.16	0.12	0.07	0.07	0.11	0.36	0.41	0.95	0.50	0.13	0.13
IN.	0.19	0.18	0.14	0.09	0.07	0.13	0.41	0.47	1.06	0.58	0.15	0.14

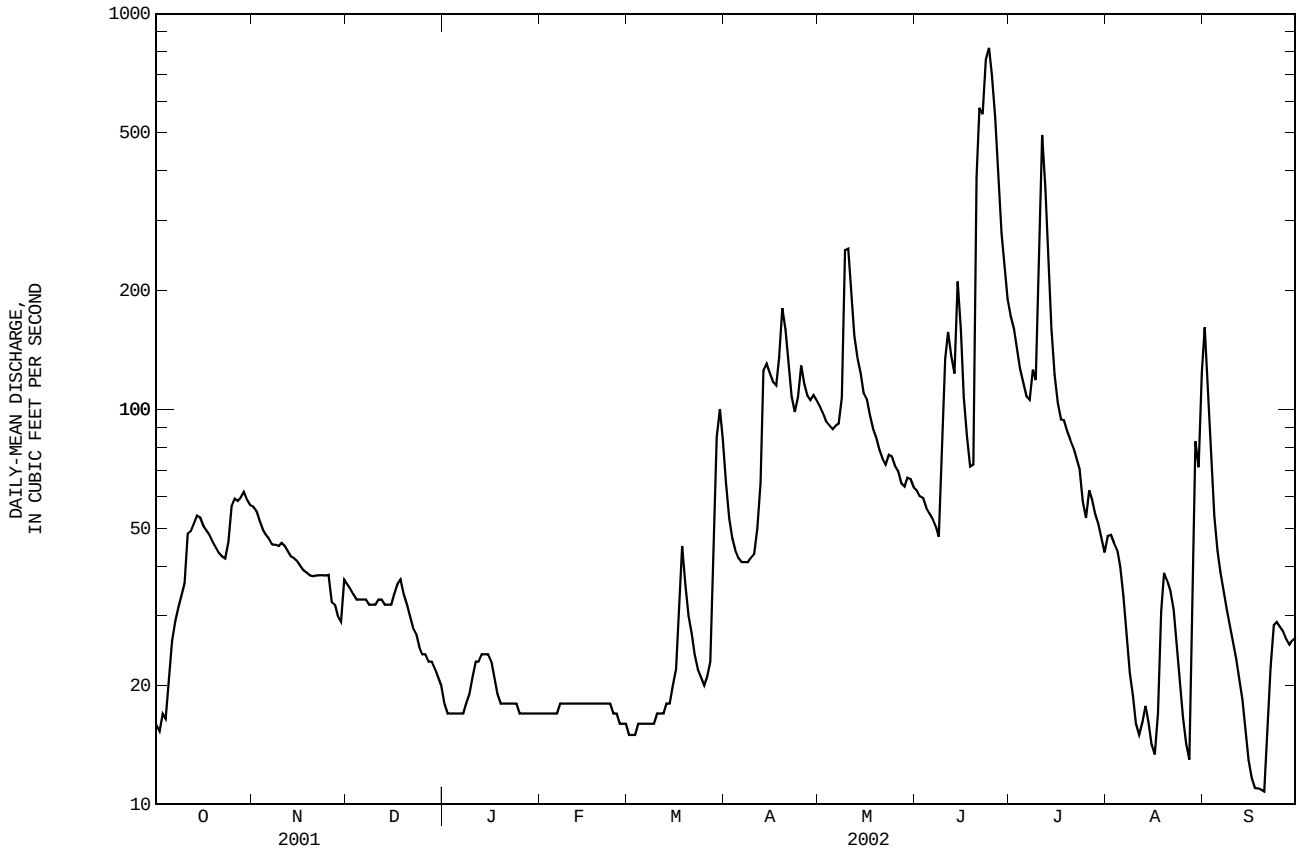
05078230 LOST RIVER AT OKLEE, MN--Continued

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

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	48.6	36.7	16.3	10.2	10.8	76.1	307	140	95.9	84.5	40.0	41.9
MAX	470	232	56.6	26.7	76.3	264	904	622	657	442	351	330
(WY)	1972	1972	1978	1998	1998	1999	1996	1962	1962	1962	1985	1973
MIN	1.02	1.11	0.050	0.002	0.000	0.19	29.5	10.5	8.20	1.99	1.17	0.000
(WY)	1991	1977	1977	1977	1977	1964	1991	1980	1980	1961	1961	1990

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1960 - 2002	
ANNUAL TOTAL	37836.9		24610			
ANNUAL MEAN	104		67.4		75.7	
HIGHEST ANNUAL MEAN					177	1962
LOWEST ANNUAL MEAN					18.2	1990
HIGHEST DAILY MEAN	1960	Apr 8	818	Jun 24	3040	Apr 11 1969
LOWEST DAILY MEAN	8.1	Sep 5	11	Sep 17-20	0.00a	Feb 16 1963
ANNUAL SEVEN-DAY MINIMUM	9.3	Aug 31	12	Sep 14	0.00	Feb 16 1963
MAXIMUM PEAK FLOW			833	Jun 24	3210b	Apr 11 1969
MAXIMUM PEAK STAGE			10.12	Jun 24	16.91c	Apr 8 1997
INSTANTANEOUS LOW FLOW			9.9	Sep 21		
ANNUAL RUNOFF (AC-FT)	75050		48810		54860	
ANNUAL RUNOFF (CFSM)	0.41		0.27		0.30	
ANNUAL RUNOFF (INCHES)	5.54		3.60		4.05	
10 PERCENT EXCEEDS	221		127		169	
50 PERCENT EXCEEDS	32		38		20	
90 PERCENT EXCEEDS	15		17		2.7	

a Many days, several years.
b Gage-height, 14.91, from floodmark.
c Backwater from ice.
e Estimated.



05078500 CLEARWATER RIVER AT RED LAKE FALLS, MN

LOCATION.--Lat 47°53'15", long 96°16'25", in NW¼NE¼ sec. 22, T.151 N., R.44 W., Red Lake County, Hydrologic Unit 09020305, on left bank 40 ft downstream from Great Northern Railroad bridge in Red Lake Falls, 1.4 mi upstream from mouth, and 3 mi downstream from Badger Creek.

DRAINAGE AREA.--1,380 mi^2.

PERIOD OF RECORD.--June 1909 to September 1917, October 1934 to September 1981, March 1982 to current year. Monthly discharge only for October, November, 1934, published in WSP 1308. October 1981 to February 1982, operated as a high-flow partial-record station.

REVISED RECORDS.--WSP 355: 1911-12. WSP 1438: 1910-11, 1917(M). WDR MN-84-1:1983.

GAGE.--Water-stage recorder. Datum of gage is 948.94 ft above sea level (NGVD of 1929, levels by U.S. Army Corps of Engineers). Prior to Sept. 12, 1911, nonrecording gage at site 0.5 mi upstream, and Sept. 12, 1911 to Sept. 30, 1917, nonrecording gage at site 40 ft upstream at different datum.

REMARKS.--Records good except those 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	78	253	e170	e131	e127	e118	e205	410	334	1550	452	5510
2	84	265	e160	e132	e126	e117	e193	400	325	1520	463	3490
3	80	252	e150	e133	e126	e116	e185	379	312	1490	477	1980
4	68	276	e145	e134	e125	e116	e180	370	290	1430	450	1410
5	74	295	e140	e136	e126	e116	e177	377	268	1310	402	1080
6	78	271	e137	e138	e126	e116	e178	377	257	1130	339	887
7	78	229	e136	e143	e127	e116	e180	375	262	1050	302	771
8	76	209	e136	e145	e132	e116	e185	384	252	1090	298	656
9	91	204	e135	e148	e134	e117	e200	614	1390	1170	289	586
10	84	188	e134	e148	e136	e117	e220	919	2570	1940	260	532
11	83	194	e133	e148	e138	e118	e230	926	1930	2770	236	485
12	134	200	e145	e147	e139	e121	e255	832	1590	2600	216	443
13	260	190	e142	e146	e140	e126	e360	734	1370	2280	212	399
14	266	173	e140	e145	e141	e132	e460	662	1340	1820	233	366
15	263	161	e146	e143	e143	e136	492	602	1450	1470	219	336
16	263	159	e150	e142	e143	e140	460	547	1290	1230	198	297
17	247	160	e149	e141	e143	e140	410	492	1100	1120	211	270
18	251	158	e146	e140	e144	e136	406	447	957	966	239	243
19	237	153	e144	e139	e144	e133	489	478	963	840	306	222
20	220	152	e140	e138	e143	e130	633	453	1100	758	298	187
21	204	160	e138	e137	e140	e128	632	383	1520	723	278	165
22	202	152	e136	e137	e136	e127	586	330	1920	672	246	162
23	194	148	e135	e136	e132	e125	510	328	2690	595	234	168
24	207	151	e134	e136	e128	e125	444	312	2870	547	211	168
25	196	159	e133	e135	e126	e126	471	358	2810	514	199	164
26	235	153	e132	e134	e124	e129	537	323	2660	474	227	166
27	250	e62	e132	e133	e122	e138	538	308	2470	479	240	162
28	253	e55	e131	e132	e120	e160	510	293	2220	454	1530	163
29	265	e140	e131	e131	---	e175	491	294	1950	421	2540	159
30	267	e180	e131	e130	---	e230	463	288	1690	434	2130	154
31	257	---	e131	e128	---	e217	---	334	---	476	4550	---
TOTAL	5545	5502	4342	4286	3731	4157	11280	14329	42150	35323	18485	21781
MEAN	179	183	140	138	133	134	376	462	1405	1139	596	726
MAX	267	295	170	148	144	230	633	926	2870	2770	4550	5510
MIN	68	55	131	128	120	116	177	288	252	421	198	154
AC-FT	11000	10910	8610	8500	7400	8250	22370	28420	83600	70060	36660	43200
CFSM	0.13	0.13	0.10	0.10	0.10	0.10	0.27	0.33	1.02	0.83	0.43	0.53
IN.	0.15	0.15	0.12	0.12	0.10	0.11	0.30	0.39	1.14	0.95	0.50	0.59

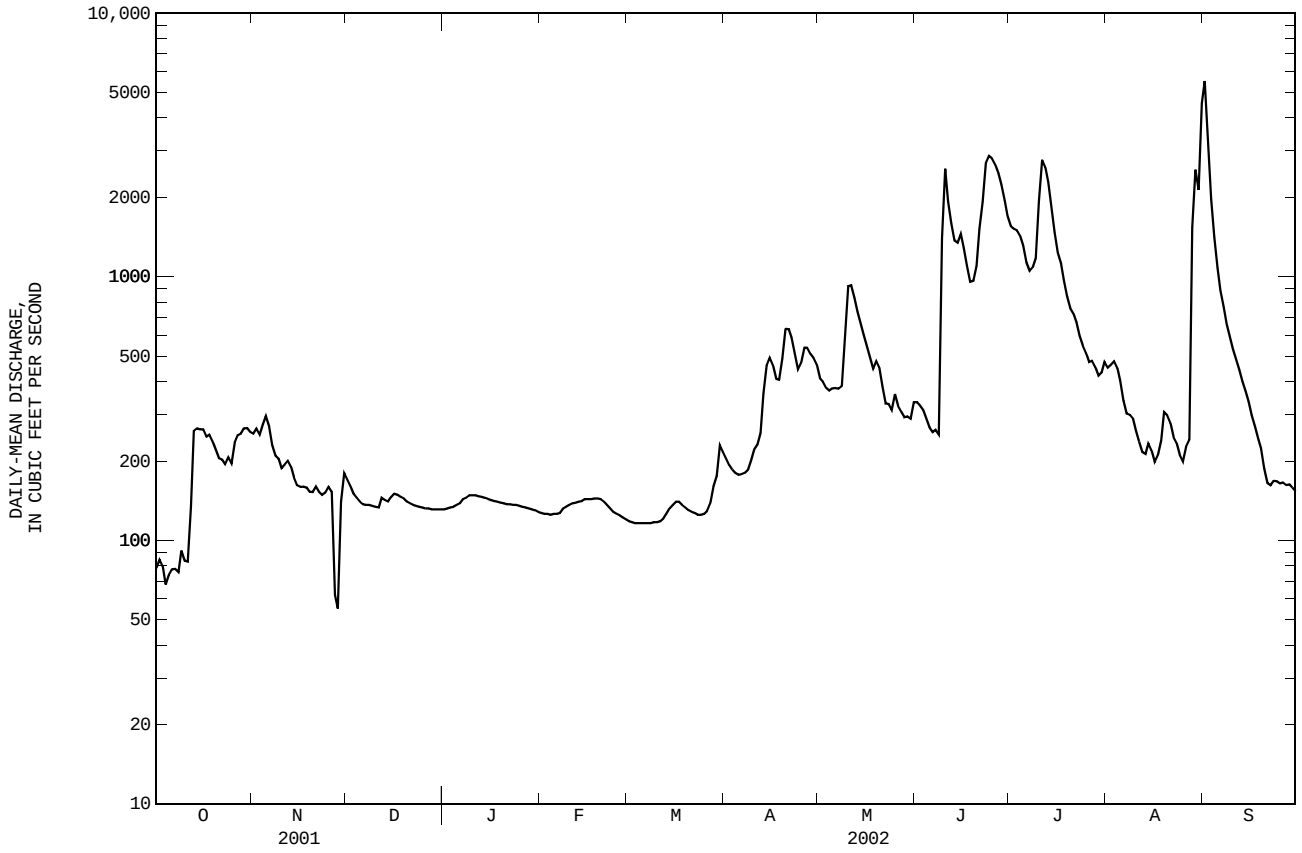
05078500 CLEARWATER RIVER AT RED LAKE FALLS, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1909 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	193	156	97.1	77.2	74.2	248	1184	701	510	414	217	203
MAX	1350	1233	321	221	385	1136	3507	5059	3042	2389	1686	1599
(WY)	1972	1972	2001	1998	1998	1995	1997	1950	1962	1997	1985	1999
MIN	10.0	19.0	21.4	21.4	19.1	13.6	61.0	32.2	26.5	8.34	1.49	2.92
(WY)	1935	1935	1937	1940	1937	1937	1981	1977	1980	1936	1936	1936

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1909 - 2002	
ANNUAL TOTAL	197157		170911			
ANNUAL MEAN	540		468		337a	
HIGHEST ANNUAL MEAN					855	1950
LOWEST ANNUAL MEAN					64.4	1939
HIGHEST DAILY MEAN	5300	Apr 12	5510	Sep 1	9930	Apr 25 1979
LOWEST DAILY MEAN	55	Nov 28	55	Nov 28	0.10	Sep 15 1936
ANNUAL SEVEN-DAY MINIMUM	77	Oct 2	77	Oct 2	0.24	Sep 12 1936
MAXIMUM PEAK FLOW			5890	Sep 1	10300b	Apr 25 1979
MAXIMUM PEAK STAGE			9.65	Sep 1	15.85c	Mar 6 1983
INSTANTANEOUS LOW FLOW			36d	Nov 28	0.00f	Sep 15 1936
ANNUAL RUNOFF (AC-FT)	391100		339000		244200	
ANNUAL RUNOFF (CFSM)	0.39		0.34		0.24	
ANNUAL RUNOFF (INCHES)	5.31		4.61		3.32	
10 PERCENT EXCEEDS	1460		1300		800	
50 PERCENT EXCEEDS	207		211		119	
90 PERCENT EXCEEDS	131		126		38	

a Median of annual mean discharges is 293 ft^3/s.
b Gage-height, 12.38 ft.
c From highwater mark, backwater from ice.
d Result of freezeup.
e Estimated.
f Also occurred Sep. 14, 1939, and Aug. 19-22, 1940.



05079000 RED LAKE RIVER AT CROOKSTON, MN

LOCATION.--Lat 47°46'32", long 96°36'33", in SW¼SW¼ sec. 30, T.150 N., R.46 W., Polk County, Hydrologic Unit 09020303, on right bank 100 ft upstream from Sargent Street bridge in Crookston, 0.3 mi downstream from Interstate Power Co.'s dam, 0.6 mi downstream from bridge on U.S. Highway 75, and 53 mi upstream from mouth.

DRAINAGE AREA.--5,270 mi^2.

PERIOD OF RECORD.--May 1901 to current year. Monthly discharge only for some periods, published in WSP 1308. Figures of daily discharge for Apr. 3-30, 1904, published in WSP 130, have been found unreliable and should not be used.

REVISED RECORDS.--WSP 1115: 1906, 1915-16, 1919-20, 1922, 1925, 1927, 1929. WSP 1308: 1916(M), 1919(M), 1928(M), 1930(M). (See also PERIOD OF RECORD).

GAGE.--Water-stage recorder. Datum of gage is 832.72 ft above sea level (NGVD of 1929). May 18, 1901 to June 30, 1909, nonrecording gage at bridge 300 ft upstream at same datum. July 1, 1909 to Sept. 25, 1911, nonrecording gage, Sept. 26, 1911 to Sept. 30, 1919, water-stage recorder, Oct. 1, 1919 to Sept. 30, 1930, nonrecording gage, at present site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Diurnal fluctuation prior to 1975 caused by power plant 1,000 ft upstream. Runoff from 1,950 mi^2 in the headwaters of Red Lake River is completely controlled by dam at outlet of Lower Red Lake. Flow partially affected by occasional regulation at Thief and Mud Lakes in Thief River Basin (see station 05076000).

DISCHARGE, in CFS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1190	1630	1190	e1390	e830	e690	e1300	2010	2130	4560	2640	10600
2	1240	1740	1190	e1380	e840	e720	e1350	1970	2040	4290	2530	9060
3	1140	1780	1250	e1350	e840	e750	e1380	1930	1920	4140	2530	5250
4	1140	1760	1250	e1330	e840	e790	e1410	e1850	1810	4080	2510	3350
5	1060	1710	1320	e1300	e840	e820	e1420	e1800	1720	4070	2450	2580
6	1150	1670	1530	e1260	e840	e850	e1460	e1800	1620	3990	2370	2180
7	1070	1650	1550	e1240	e840	e870	e1500	e1810	1630	3890	2210	2000
8	1050	1580	1710	e1220	e840	e890	e1520	1980	1630	4870	2150	1900
9	1030	1540	1560	e1200	e840	e900	e1550	2280	4520	4790	2140	1870
10	1070	1610	1610	e1170	e840	e920	e1560	2910	13200	7390	2090	1900
11	1040	1780	1660	e1150	e840	e930	e1600	3180	15400	10700	2040	1800
12	1020	1950	1300	e1130	e840	e940	e1620	2850	11600	9870	2000	1730
13	1110	1970	1480	e1100	e830	e940	e1650	2520	8440	7930	1940	1690
14	1170	2080	1560	e1080	e830	e940	e1750	2310	6480	5920	1830	1610
15	1150	1940	1600	e1050	e830	e930	1810	2190	5890	4710	1830	1510
16	1270	2100	1590	e1020	e830	e930	1810	2090	5580	4110	1740	1450
17	1270	2340	1560	e1000	e830	e910	1710	2000	5170	3790	1750	1420
18	1310	2600	1680	e960	e820	e900	1790	1920	4760	3590	1730	1430
19	1290	2630	2110	e940	e820	e880	1920	1860	4540	3400	1740	1400
20	1270	2590	e2100	e900	e820	e870	2090	e1780	5260	3280	1780	1360
21	1250	2380	e1900	e890	e830	e870	2120	e1710	6460	3180	1830	1330
22	1240	2320	e1600	e870	e840	e870	2070	1660	6410	3120	1800	1290
23	1200	2120	e1600	e860	e850	e880	2050	1610	8040	3070	1810	1280
24	1320	2000	e1580	e850	e850	e890	2020	1570	8950	3010	1790	1260
25	1390	2040	e1550	e840	e840	e910	1990	1550	9150	2970	1790	1230
26	1360	2030	e1500	e840	e810	e950	2090	1550	8290	2900	1780	1240
27	1420	1860	e1480	e830	e730	e980	2050	1540	7070	2870	1910	1240
28	1530	1370	e1450	e820	e660	e1020	2020	1520	6230	2780	4310	1230
29	1570	1320	e1450	e820	---	e1090	2010	1490	5610	2750	9250	1220
30	1600	1260	e1420	e820	---	e1170	2020	1580	5030	2700	6020	1230
31	1620	---	e1400	e820	---	e1220	---	2030	---	2660	7350	---
TOTAL	38540	57350	47730	32430	23090	28220	52640	60850	176580	135380	81640	68640
MEAN	1243	1912	1540	1046	824.6	910.3	1755	1963	5886	4367	2634	2288
MAX	1620	2630	2110	1390	850	1220	2120	3180	15400	10700	9250	10600
MIN	1020	1260	1190	820	660	690	1300	1490	1620	2660	1730	1220
AC-FT	76440	113800	94670	64320	45800	55970	104400	120700	350200	268500	161900	136100
CFSM	0.24	0.36	0.29	0.20	0.16	0.17	0.33	0.37	1.12	0.83	0.50	0.43
IN.	0.27	0.40	0.34	0.23	0.16	0.20	0.37	0.43	1.25	0.96	0.58	0.48

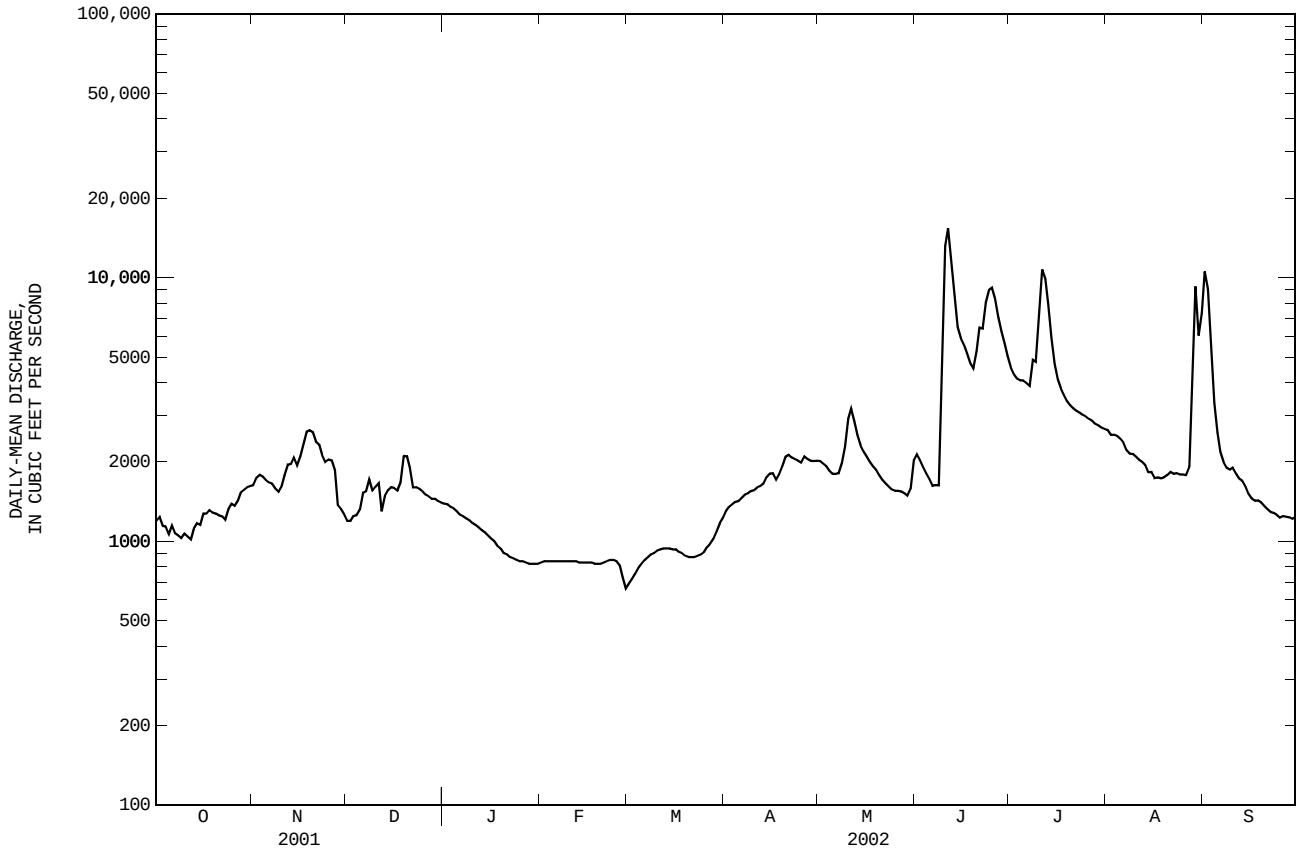
05079000 RED LAKE RIVER AT CROOKSTON, MN--Continued

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

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	861.7	753.2	605.1	533.1	515.0	1020	3128	2157	1757	1407	893.4	887.0
MAX	2836	3620	1900	1663	1778	4257	11870	15290	7205	6851	3868	5408
(WY)	1972	2001	1904	1951	1998	1995	1997	1950	1962	1975	1985	1999
MIN	8.02	10.1	5.34	15.6	17.8	24.9	232	154	80.4	26.2	12.3	8.87
(WY)	1937	1937	1937	1934	1937	1936	1981	1934	1934	1936	1934	1934

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1901 - 2002	
ANNUAL TOTAL	849070		803090			
ANNUAL MEAN	2326		2200		1206	
HIGHEST ANNUAL MEAN					3129	1950
LOWEST ANNUAL MEAN					83.6	1934
HIGHEST DAILY MEAN	20000	Apr 9	15400	Jun 11	27500	Apr 18 1997
LOWEST DAILY MEAN	920	Mar 13	660	Feb 28	2.5	Sep 29 1936
ANNUAL SEVEN-DAY MINIMUM	926	Mar 9	736	Feb 26	3.9	Sep 28 1936
MAXIMUM PEAK FLOW			16100	Jun 11	28400	Apr 12 1969
MAXIMUM PEAK STAGE			20.85	Jun 11	28.40a	Apr 17 1997
INSTANTANEOUS LOW FLOW					0.00b	Jul 13 1960
ANNUAL RUNOFF (AC-FT)	1684000		1593000		874000	
ANNUAL RUNOFF (CFSM)	0.44		0.42		0.23	
ANNUAL RUNOFF (INCHES)	5.99		5.67		3.11	
10 PERCENT EXCEEDS	4550		4530		2640	
50 PERCENT EXCEEDS	1600		1600		750	
90 PERCENT EXCEEDS	950		840		120	

a From highwater mark, backwater from ice.
b From regulation by power plant upstream.
e Estimated.



05080000 RED LAKE RIVER AT FISHER, MN

LOCATION.--Lat 47°48'01", long 96°48'31", in SW¼NE¼ 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.--Mar. to Sep. 1999 (gage heights and maximum discharge only), Oct. 1, 1999 to current year.

GAGE.--Water-stage recorder. Datum of gage is 800.00 ft above sea level (levels by Minnesota Department of Transportation).

REMARKS.-- Records good except those 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, in CFS, 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

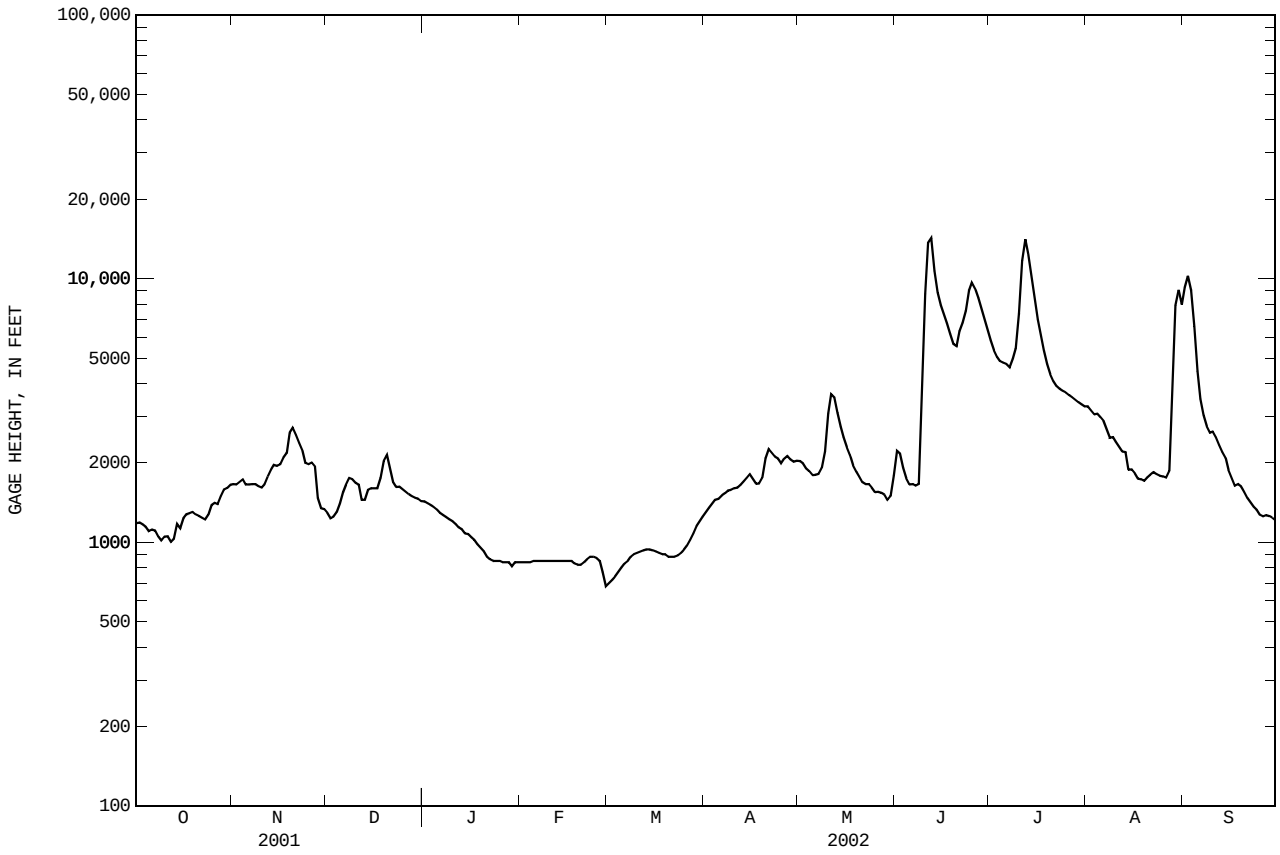
05080000 RED LAKE RIVER AT FISHER, MN--Continued

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°55'38", long 97°01'34", in sec.2, T.151 N., R.50 W., Grand Forks County, Hydrologic Unit 09020301, on right bank 200 ft upstream 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.

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 sea level, 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 periods of estimated discharge, 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	68890	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
CFSM	0.08	0.13	0.09	0.08	0.07	0.08	0.17	0.19	0.59	0.66	0.20	0.21
IN.	0.10	0.15	0.11	0.09	0.07	0.10	0.19	0.22	0.66	0.76	0.23	0.24

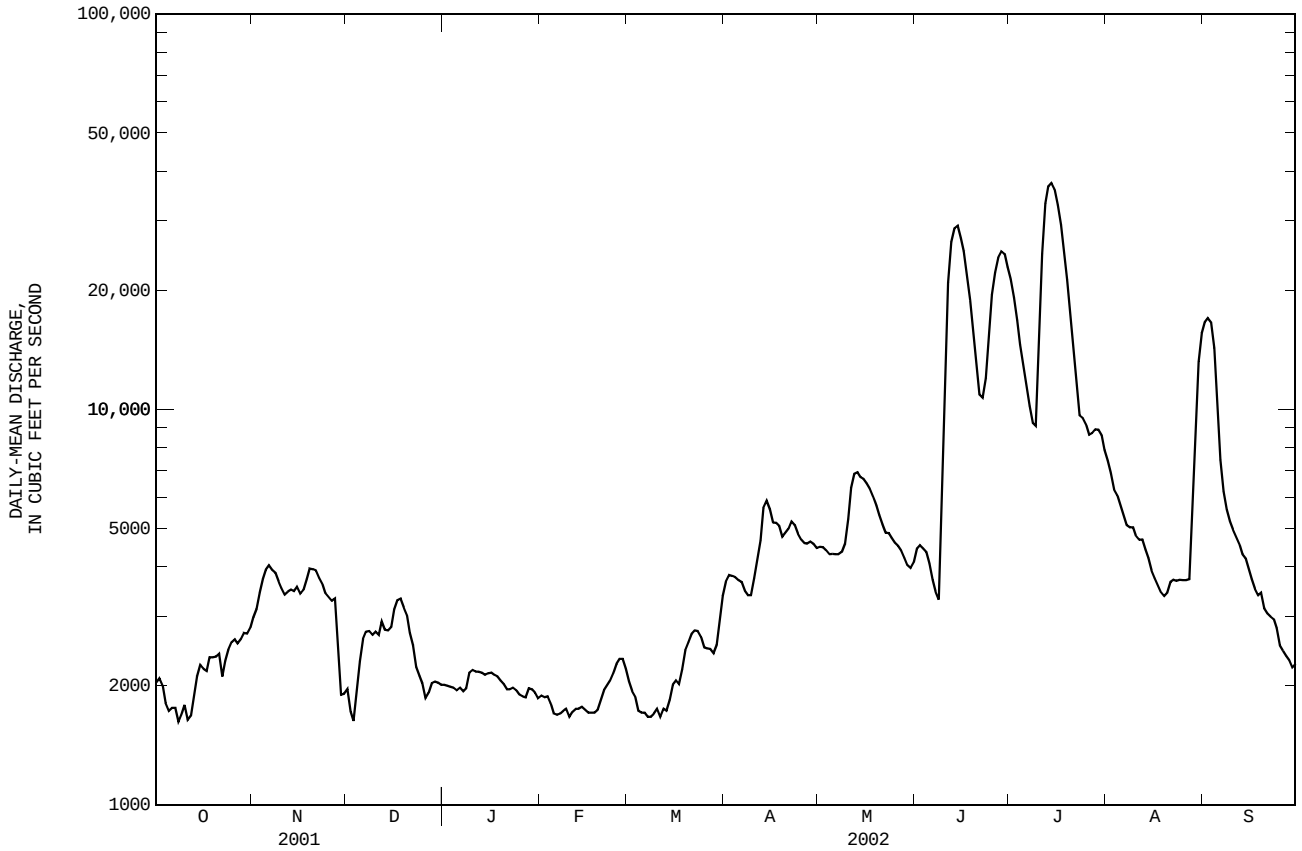
05082500 RED RIVER OF THE NORTH AT GRAND FORKS, ND--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1904 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1496	1377	1080	894	875	2789	10290	5595	4307	3752	1898	1615
MAX	5127	9971	3832	2656	3520	15370	56210	36500	19250	25230	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	88.5	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	2785830		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	1.8	Sep 2 1977
ANNUAL SEVEN-DAY MINIMUM	1710	Oct 6	1700	Mar 5	2.5	Feb 12 1937
MAXIMUM PEAK FLOW			38000a	Jul 13	137000b	Apr 18 1997
MAXIMUM PEAK STAGE			38.67	Jul 14	54.35c	Apr 22 1997
ANNUAL RUNOFF (AC-FT)	5526000		4095000		2161000	
ANNUAL RUNOFF (CFSM)	0.29		0.21		0.11	
ANNUAL RUNOFF (INCHES)	3.94		2.92		1.51	
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 flow from Red River of the North about 20 miles upstream of gage, that entered Red Lake River about 2 miles from the confluence with Red River of the North.
c From floodmark.
e Estimated.



05087500 MIDDLE RIVER AT ARGYLE, MN

LOCATION.--Lat 48°20'25", long 96°48'58", in NE¼NW¼ sec. 15, T.156 N., R.48 W., Marshall County, Hydrologic Unit 09020309, on left bank 30 ft upstream of bridge on County Highway 4 in Argyle and 14 mi upstream from mouth.

DRAINAGE AREA.--255 mi^2.

PERIOD OF RECORD.--March to September 1945, November 1950 to September 1981, February 1982 to current year. Monthly discharge only for some periods, published in WSP 1728. October 1981 to January 1982, operated as a high-flow partial-record station.

GAGE.--Water-stage recorder. Datum of gage is 828.53 ft above sea level (NGVD of 1929). Prior to Nov. 8, 1951, nonrecording gage and Nov. 8, 1951 to Sept. 18, 1952, water-stage recorder at site 800 ft downstream at datum 1.0 ft higher. Sept. 19, 1952 to June 28, 1982, recording gage at site 800 feet downstream at present datum. June 29, 1982 to Sept. 20, 1983, nonrecording gage at present site and datum.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of April 1950 reached a stage of 15.25 ft present datum, site then in use, from floodmarks, discharge, 2,790 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	2.8	1.6	e10	e3.8	e3.0	e2.6	e8.0	e120	127	169	13	130
2	3.0	1.7	e9.7	e3.8	e3.0	e2.6	22	97	138	132	12	286
3	2.3	14	e9.3	e3.8	e3.0	e2.5	53	84	121	107	13	193
4	2.4	49	e8.3	e3.7	e2.9	e2.5	36	71	91	89	12	144
5	2.3	66	e7.7	e3.9	e2.9	e2.4	28	62	68	75	10	113
6	2.3	58	e7.5	e3.9	e2.9	e2.4	22	57	53	65	9.8	83
7	2.6	51	e7.0	e3.9	e2.9	e2.3	20	60	43	60	9.0	61
8	2.9	44	e6.4	e3.8	e2.9	e2.3	18	98	36	106	8.4	45
9	2.8	39	e6.1	e3.6	e2.8	e2.2	16	122	41	e150	9.9	34
10	3.2	34	e6.0	e3.6	e2.8	e2.2	15	162	67	e220	9.4	28
11	2.9	30	e5.8	e3.6	e2.8	e2.2	16	258	496	e320	8.2	23
12	2.7	28	e5.8	e3.6	e2.8	e2.2	16	268	2140	e360	7.7	20
13	2.7	26	e5.7	e3.7	e2.8	e2.2	18	243	2550	e300	7.0	17
14	2.7	24	e5.6	e3.7	e2.7	e2.2	24	202	2060	e240	6.8	14
15	3.1	23	e5.5	e3.7	e2.7	e2.2	37	169	1620	e170	6.8	12
16	2.6	21	e5.3	e3.6	e2.9	e2.2	48	145	1350	e120	6.7	12
17	2.5	20	e5.0	e3.5	e3.1	e2.2	45	126	1140	e90	7.5	e11
18	2.8	20	e4.7	e3.4	e3.1	e2.2	39	104	886	e65	6.7	11
19	3.5	19	e4.5	e3.4	e3.0	e2.2	37	88	636	52	6.5	21
20	3.6	18	e4.4	e3.2	e3.0	e2.2	37	74	478	43	6.1	32
21	3.6	17	e4.4	e3.3	e2.9	e2.2	39	61	386	36	5.7	20
22	3.8	17	e4.3	e3.2	e2.9	e2.2	35	52	323	31	4.9	15
23	2.4	16	e4.3	e3.3	e2.8	e2.2	31	45	448	26	4.5	11
24	4.7	15	e4.2	e3.3	e2.8	e2.3	30	41	598	24	4.8	10
25	4.7	15	e4.2	e3.2	e2.7	e2.3	57	38	786	21	4.4	8.5
26	5.6	14	e4.2	e3.1	e2.7	e2.3	292	35	856	19	4.2	8.1
27	6.3	13	e4.3	e3.1	e2.7	e2.3	325	33	706	17	6.1	7.0
28	4.1	e12	e4.1	e3.1	e2.6	e2.3	297	33	483	13	186	6.2
29	3.0	e11	e4.0	e3.1	---	e2.4	216	32	336	12	192	5.5
30	2.4	e10	e4.0	e3.1	---	e3.0	153	31	233	11	89	5.5
31	1.8	---	e3.9	e3.0	---	e4.0	---	64	---	11	62	---
TOTAL	98.1	727.3	176.2	108.0	80.1	73.5	2030.0	3075	19296	3154	740.1	1386.8
MEAN	3.16	24.2	5.68	3.48	2.86	2.37	67.7	99.2	643	102	23.9	46.2
MAX	6.3	66	10	3.9	3.1	4.0	325	268	2550	360	192	286
MIN	1.8	1.6	3.9	3.0	2.6	2.2	8.0	31	36	11	4.2	5.5
AC-FT	195	1440	349	214	159	146	4030	6100	38270	6260	1470	2750
CFSM	0.01	0.10	0.02	0.01	0.01	0.01	0.27	0.39	2.52	0.40	0.09	0.18
IN.	0.01	0.11	0.03	0.02	0.01	0.01	0.30	0.45	2.81	0.46	0.11	0.20

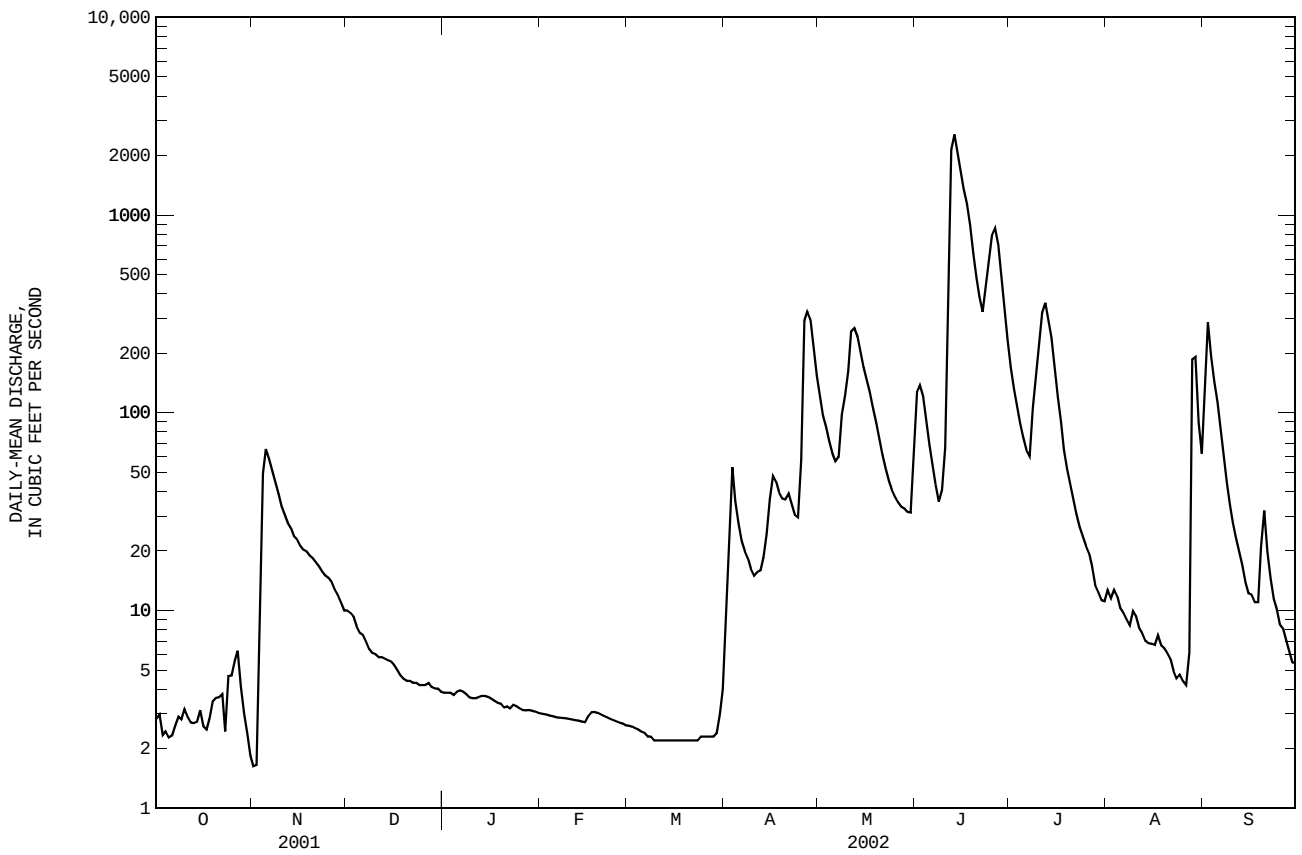
05087500 MIDDLE RIVER AT ARGYLE, MN--Continued

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

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	12.8	19.2	3.83	1.53	2.98	36.6	237	94.3	91.8	62.5	15.0	18.6
MAX	94.1	535	22.2	8.77	69.8	335	966	896	660	688	265	272
(WY)	1983	2001	1995	1995	2000	1995	1997	1996	1970	1975	1993	1993
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.20	2.12	0.37	0.000	0.000	0.000
(WY)	1954	1954	1954	1953	1953	1954	1991	1981	1973	1961	1961	1952

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1945 - 2002	
ANNUAL TOTAL	32009.5		30945.1			
ANNUAL MEAN	87.7		84.8		49.8a	
HIGHEST ANNUAL MEAN					198	1999
LOWEST ANNUAL MEAN					1.60	1977
HIGHEST DAILY MEAN	2190	Apr 9	2550	Jun 13	4800	May 19 1996
LOWEST DAILY MEAN	1.6	Nov 1	1.6	Nov 1	0.00b	Aug 18 1952
ANNUAL SEVEN-DAY MINIMUM	2.5	Oct 3	2.2	Mar 9	0.00	Aug 18 1952
MAXIMUM PEAK FLOW			2730	Jun 12	5020	May 19 1996
MAXIMUM PEAK STAGE			16.16	Jun 12	18.27c	May 19 1996
ANNUAL RUNOFF (AC-FT)	63490		61380		36100	
ANNUAL RUNOFF (CFSM)	0.34		0.33		0.20	
ANNUAL RUNOFF (INCHES)	4.67		4.51		2.65	
10 PERCENT EXCEEDS	191		188		101	
50 PERCENT EXCEEDS	8.0		10		3.0	
90 PERCENT EXCEEDS	3.2		2.5		0.00	

a Median of annual mean discharges is 41 ft^3/s.
b Many days, several years.
c From floodmark.
e Estimated.



05092000 RED RIVER OF THE NORTH AT DRAYTON, ND

LOCATION.--Lat 48°34'20", long 97°08'50", in SE¼SE¼SE¼ 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.

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

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

GAGE.--Water-stage recorder and concrete control. Datum of gage is 755.00 ft above sea level, National Geodetic Vertical Datum of 1929 (Minnesota Department of Transportation benchmark). Prior to Nov. 30, 1954, nonrecording gage at site 1.5 mi upstream at datum 1.59 ft higher.

REMARKS.--Records fair except those 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
CFSM	0.08	0.12	0.09	0.07	0.06	0.07	0.16	0.17	0.67	0.67	0.18	0.23
IN.	0.09	0.13	0.10	0.08	0.06	0.08	0.18	0.20	0.75	0.77	0.21	0.26

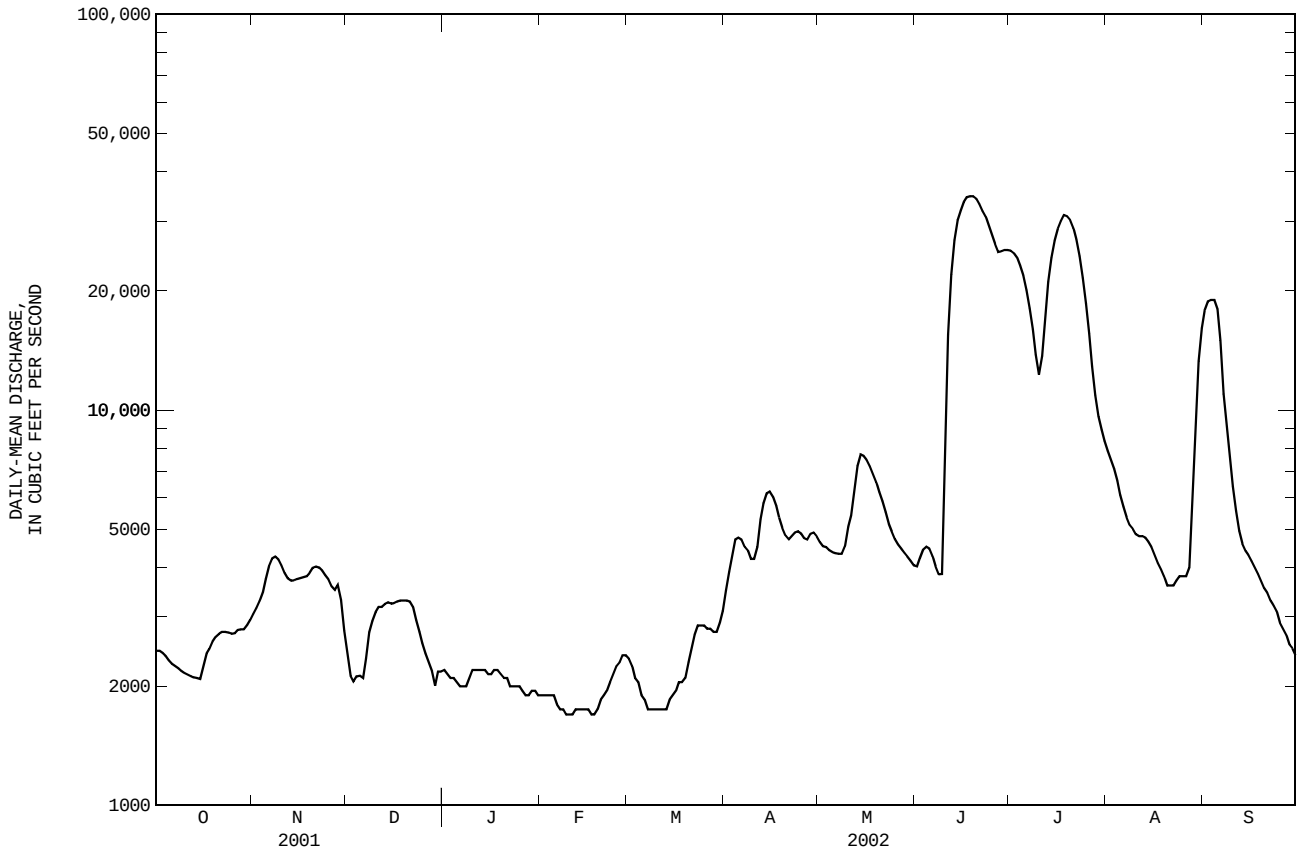
05092000 RED RIVER OF THE NORTH AT DRAYTON, ND--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1936 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1943	1905	1459	1200	1167	3389	14950	9307	5837	5388	2632	2147
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	13.8	277	149	174	201	280	1275	938	399	118	50.1	27.4
(WY)	1937	1977	1977	1990	1977	1962	1981	1977	1936	1936	1936	1936

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1936 - 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 9-11,17,18	7.7	Oct 16 1936
ANNUAL SEVEN-DAY MINIMUM	2130	Oct 9	1730	Feb 7	9.9	Oct 11 1936
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	
ANNUAL RUNOFF (CFSM)	0.28		0.21		0.14	
ANNUAL RUNOFF (INCHES)	3.82		2.91		1.94	
10 PERCENT EXCEEDS	28500		20500		10200	
50 PERCENT EXCEEDS	3580		3740		1930	
90 PERCENT EXCEEDS	2500		1950		495	

e Estimated.



05094000 SOUTH BRANCH TWO RIVERS AT LAKE BRONSON, MN

LOCATION.--Lat 48°43'50", long 96°39'50", in SW¼SW¼ sec. 30, T.161 N., R.46 W., Kittson County, Hydrologic Unit 09020312, on left bank 70 ft upstream from culvert on U.S. Highway 59 at Lake Bronson and 3.4 mi downstream from dam at outlet of Bronson Lake.

DRAINAGE AREA.--422 mi^2.

PERIOD OF RECORD.--September 1928 to November 1936, April to September 1937, April 1941 to October 1943, April to December 1944, April 1945 to September 1947, October 1953 to September 1981, April 1985 to current year. Monthly discharge only for some periods, published in WSP 1308. October 1981 to March 1985, annual maximums only. Published as South Fork Two Rivers at Bronson prior to 1941.

REVISED RECORDS.--WSP 1308: 1929(M), 1931(M), 1936(M), 1944(M), 1947(M).

GAGE.--Water-stage recorder. Datum of gage is 928.53 ft above sea level (NGVD of 1929, Minnesota Department of Transportation benchmark). Prior to Nov. 23, 1953, nonrecording gage at bridge 100 ft downstream at datum 2.00 ft higher. Nov 23, 1953 to Oct. 5, 1963, water-stage recorder at same site at datum 2.00 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow partly regulated since 1937 at Bronson Lake; usable capacity, 3,700 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	9.4	21	14	8.5	e5.0	e4.1	343	28	275	826	246	87
2	4.4	28	14	8.5	e4.9	e4.0	280	24	123	846	233	258
3	3.4	39	14	8.3	e4.9	e3.9	221	24	70	821	229	384
4	3.4	50	13	8.5	e4.8	e3.7	162	24	32	744	218	125
5	3.7	57	14	e8.4	e4.8	e3.7	104	25	29	772	214	12
6	3.7	67	14	e7.8	e4.8	e3.6	64	25	25	769	209	34
7	4.7	72	13	e7.4	e4.7	e3.4	47	25	25	748	117	67
8	8.0	64	13	e7.1	e4.7	e3.4	39	134	25	762	38	62
9	10	59	13	e6.9	e4.7	e3.3	34	190	26	854	165	61
10	14	56	12	e6.6	e4.6	e3.2	32	240	291	847	224	61
11	15	52	12	e6.4	e4.5	e3.2	30	374	2070	763	210	54
12	13	47	11	e6.5	e4.4	e3.2	28	325	2400	684	175	38
13	12	42	11	e6.4	e4.5	e3.2	27	279	2630	683	122	3.7
14	12	38	11	e6.3	e4.6	e3.2	29	222	2680	654	87	2.9
15	12	35	11	e6.2	e5.0	e3.2	35	205	2410	610	91	2.3
16	13	26	11	e6.2	e5.3	e3.2	37	205	2030	546	98	2.1
17	13	18	11	e6.1	e5.5	e3.2	37	171	1730	493	119	1.7
18	13	23	11	e6.0	e5.5	e3.2	31	86	1490	526	160	1.6
19	12	23	11	e6.0	e5.4	e3.2	30	83	1310	504	190	2.0
20	13	23	11	e5.9	e5.3	e3.3	29	61	831	435	185	1.9
21	13	23	e11	e5.8	e5.1	e3.3	29	28	862	466	153	7.0
22	13	22	e11	e5.7	e5.0	e3.3	23	28	953	469	92	16
23	11	21	e10	e5.6	e4.9	e3.4	15	27	1510	452	25	90
24	18	20	e10	e5.5	e4.8	e3.5	16	25	1710	410	28	3.1
25	19	19	e9.9	e5.4	e4.7	e13	17	25	1980	358	35	1.8
26	17	18	e9.6	e5.4	e4.5	e30	228	25	1850	336	53	2.8
27	15	16	e9.2	e5.3	e4.4	e45	244	26	1700	347	70	6.1
28	13	16	e9.0	e5.2	e4.3	e80	54	26	1550	348	76	7.3
29	12	15	e8.6	e5.2	---	e170	41	27	1180	324	74	8.5
30	12	14	e8.6	e5.1	---	e260	30	40	904	305	73	9.1
31	13	---	8.5	e5.0	---	332	---	299	---	257	79	---
TOTAL	348.7	1024	350.4	199.2	135.6	1011.9	2336	3326	34701	17959	4088	1412.9
MEAN	11.2	34.1	11.3	6.43	4.84	32.6	77.9	107	1157	579	132	47.1
MAX	19	72	14	8.5	5.5	332	343	374	2680	854	246	384
MIN	3.4	14	8.5	5.0	4.3	3.2	15	24	25	257	25	1.6
AC-FT	692	2030	695	395	269	2010	4630	6600	68830	35620	8110	2800
CFSM	0.03	0.08	0.03	0.02	0.01	0.08	0.18	0.25	2.74	1.37	0.31	0.11
IN.	0.03	0.09	0.03	0.02	0.01	0.09	0.21	0.29	3.06	1.58	0.36	0.12

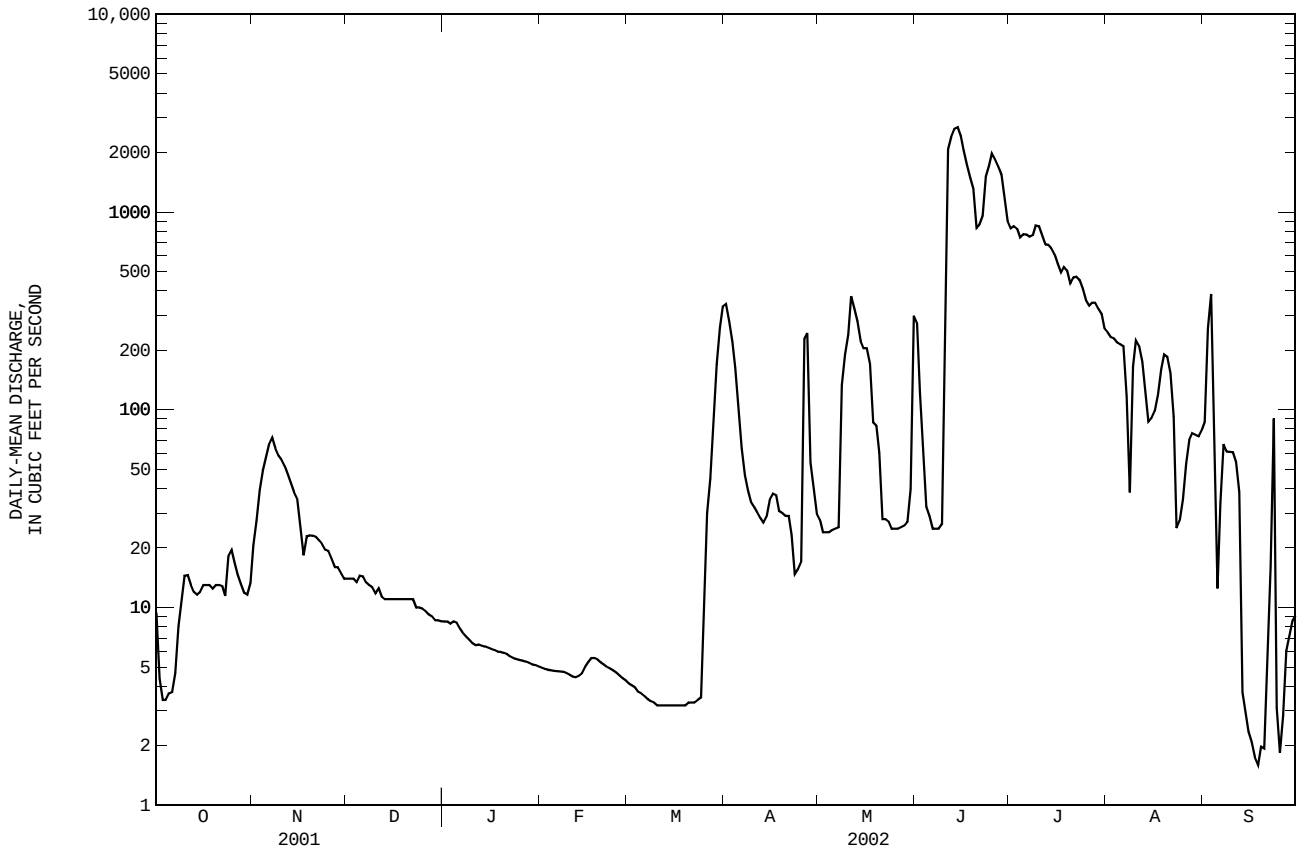
05094000 SOUTH BRANCH TWO RIVERS AT LAKE BRONSON, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	22.2	33.2	6.04	3.45	6.02	77.8	451	220	189	121	54.1	44.7
MAX	153	1132	37.9	15.3	93.1	689	1977	1500	1336	1136	1349	525
(WY)	1958	2001	2001	2001	1998	1995	1966	1996	1970	1956	1993	1957
MIN	0.40	0.38	0.13	0.12	0.12	0.66	0.54	0.98	1.43	0.44	0.089	0.000
(WY)	1991	1990	1987	1987	1987	1934	1991	1991	1980	1988	1988	1937

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1929 - 2002	
ANNUAL TOTAL	79236.8		66892.7			
ANNUAL MEAN	217		183		103a	
HIGHEST ANNUAL MEAN					314	2001
LOWEST ANNUAL MEAN					2.89	1934
HIGHEST DAILY MEAN	3290	Apr 10	2680	Jun 14	5290	Apr 5 1966
LOWEST DAILY MEAN	3.2	Jul 17	1.6	Sep 18	0.00b	Jul 25 1937
ANNUAL SEVEN-DAY MINIMUM	4.0	Aug 30	2.1	Sep 14	0.00	Aug 2 1937
MAXIMUM PEAK FLOW			2730	Jun 14	5410	Apr 5 1966
MAXIMUM PEAK STAGE			11.23	Jun 14	18.23	Apr 5 1966
ANNUAL RUNOFF (AC-FT)	157200		132700		74960	
ANNUAL RUNOFF (CFSM)	0.51		0.43		0.25	
ANNUAL RUNOFF (INCHES)	6.98		5.90		3.33	
10 PERCENT EXCEEDS	613		534		244	
50 PERCENT EXCEEDS	18		23		5.2	
90 PERCENT EXCEEDS	8.8		3.8		0.88	

a Median of annual mean discharges is 67 ft^3/s.
b Many days, several years.
e Estimated.



05104500 ROSEAU RIVER BELOW SOUTH FORK NEAR MALUNG, MN

LOCATION.--Lat 48°47'30", long 95°44'40", in NW¼SW¼ sec. 6, T.161 N., R.39 W., Roseau County, Hydrologic Unit 09020314, on left bank 0.3 mi downstream from South Fork and 1.5 mi northwest of Malung.

DRAINAGE AREA.--430 mi^2.

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

REVISED RECORDS.--WSP 2113: 1948, 1950, 1951, 1956(M), 1957(M), 1962(M). WRIR 97-4249: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,029.67 ft above sea level (NGVD of 1912).

REMARKS.--Records good except those for estimated daily discharges, which are fair. Some flow bypasses the gaging station through a natural overflow channel 0.8 mi. upstream and returns to river 0.5 mi downstream. Overflow begins at stage of about 13.0 ft, discharge, 1,800 ft^3/s. These records include any flow in the overflow channel.

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	25	85	55	e17	e6.9	4.9	e34	221	547	609	34	52
2	25	100	50	e16	e6.4	e4.8	e30	208	544	471	32	73
3	26	116	47	15	6.3	e4.8	e27	188	478	374	29	102
4	25	117	49	15	e6.1	e4.5	e25	176	377	273	26	102
5	24	110	48	15	e6.1	e4.2	e23	167	297	361	25	92
6	21	104	47	e15	e6.4	e4.1	e22	188	244	391	22	75
7	21	99	45	14	e6.6	e4.0	22	240	209	320	21	63
8	21	97	45	14	e6.6	e4.0	24	290	180	290	20	52
9	24	95	44	15	e6.6	e4.1	27	432	192	365	21	44
10	24	94	45	15	e6.6	e4.0	33	588	1380	406	21	45
11	26	94	42	15	e6.8	e4.0	47	634	11200	332	21	46
12	27	90	40	15	e6.6	e4.0	64	606	15800	258	23	49
13	28	87	40	14	e6.8	e3.9	92	549	12600	211	22	50
14	34	84	38	13	e7.1	3.9	131	512	7440	161	18	45
15	49	81	38	12	e7.3	3.9	170	490	4880	131	16	39
16	41	78	e38	11	e7.5	4.1	190	451	3580	109	24	34
17	37	76	e37	11	e7.6	4.3	161	382	2680	94	37	30
18	35	74	e35	e11	7.6	e5.6	146	324	1990	83	39	23
19	35	71	e34	e11	7.7	e6.3	149	274	1570	75	40	27
20	34	68	e32	e11	7.7	e7.1	150	239	1300	70	47	23
21	34	65	e30	e10	7.1	e8.2	138	217	1110	66	44	21
22	36	63	e28	e10	7.2	e8.4	124	195	1220	60	42	e20
23	37	61	e26	e10	7.4	e8.5	112	176	1810	54	37	e19
24	40	61	e24	e10	6.6	e7.8	217	166	2240	50	33	e18
25	42	60	22	e9.7	6.2	7.9	360	161	2530	48	30	e17
26	47	59	21	e9.7	5.6	7.9	438	155	2250	45	25	e16
27	54	41	e21	e9.2	5.1	e8.2	378	146	1780	43	22	e16
28	54	48	e20	e8.9	4.9	e12	292	140	1370	40	27	e15
29	62	57	e19	e8.4	---	e20	244	154	1030	38	28	e15
30	68	60	18	e7.8	---	e41	227	233	781	37	29	e15
31	78	---	e18	e7.6	---	e37	---	453	---	37	33	---
TOTAL	1134	2395	1096	376.3	187.4	257.4	4097	9355	83609	5902	888	1238
MEAN	36.6	79.8	35.4	12.1	6.69	8.30	137	302	2787	190	28.6	41.3
MAX	78	117	55	17	7.7	41	438	634	15800	609	47	102
MIN	21	41	18	7.6	4.9	3.9	22	140	180	37	16	15
AC-FT	2250	4750	2170	746	372	511	8130	18560	165800	11710	1760	2460
CFSM	0.09	0.19	0.08	0.03	0.02	0.02	0.32	0.70	6.48	0.44	0.07	0.10
IN.	0.10	0.21	0.09	0.03	0.02	0.02	0.35	0.81	7.23	0.51	0.08	0.11

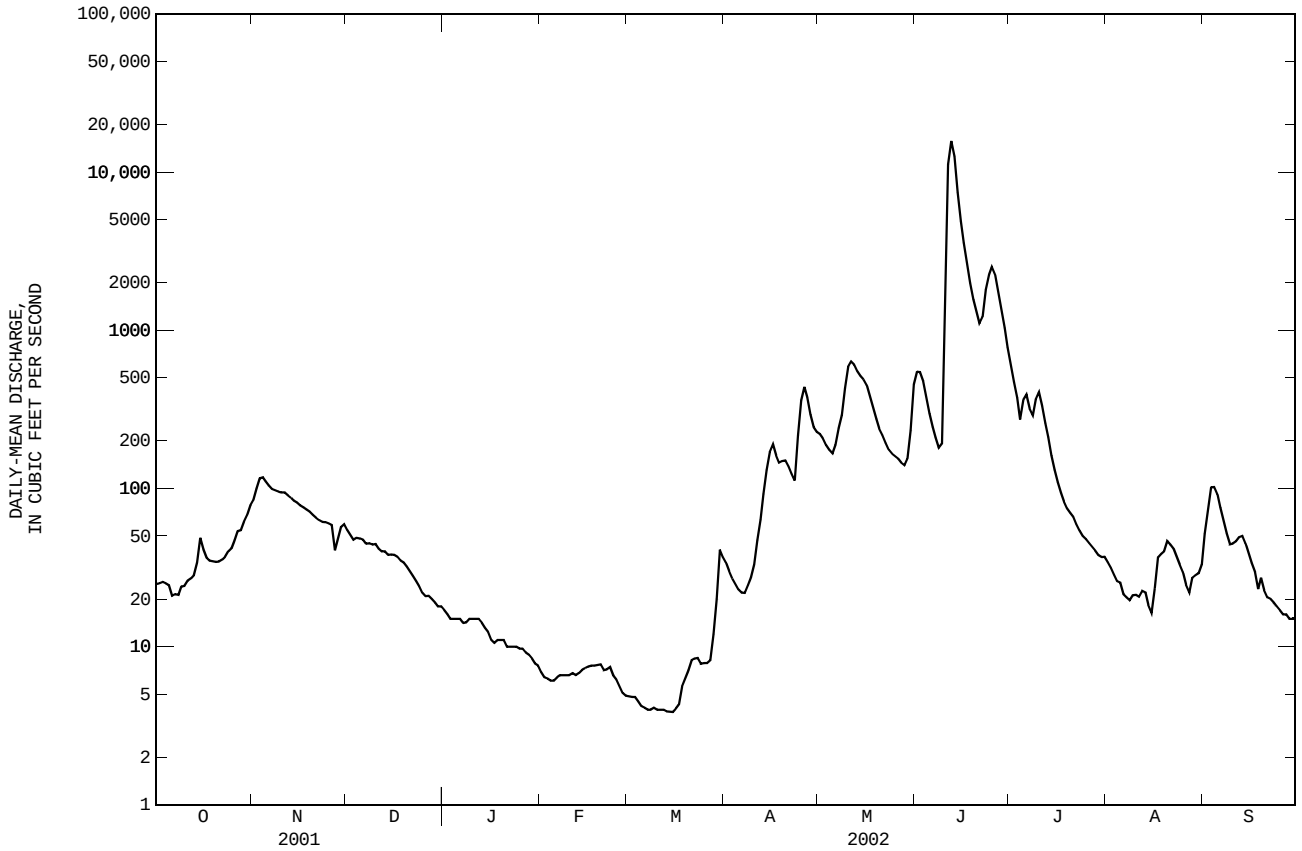
05104500 ROSEAU RIVER BELOW SOUTH FORK NEAR MALUNG, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	66.1	65.0	17.5	7.93	8.69	66.6	610	331	278	160	74.7	80.8
MAX	351	848	65.6	22.2	102	524	2035	1589	2787	1152	896	710
(WY)	1983	2001	1995	1997	1998	1995	1966	1950	2002	1968	2001	1957
MIN	0.029	0.16	0.013	0.000	0.000	0.83	5.60	8.77	4.17	0.092	0.000	0.025
(WY)	1991	1991	1977	1977	1977	1977	1991	1990	1980	1980	1961	1988

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1947 - 2002	
ANNUAL TOTAL	106162.5		110535.1			
ANNUAL MEAN	291		303		147a	
HIGHEST ANNUAL MEAN					355	2001
LOWEST ANNUAL MEAN					7.28	1990
HIGHEST DAILY MEAN	3940	Aug 3	15800	Jun 12	15800	Jun 12 2002
LOWEST DAILY MEAN	7.4	Mar 5	3.9	Mar 13-15	0.00b	Jul 23 1961
ANNUAL SEVEN-DAY MINIMUM	7.7	Feb 23	4.0	Mar 9	0.00	Jul 23 1961
MAXIMUM PEAK FLOW			16000	Jun 12	16000	Jun 12 2002
MAXIMUM PEAK STAGE			26.96	Jun 12	26.96	Jun 12 2002
INSTANTANEOUS LOW FLOW			3.7	Mar 15		
ANNUAL RUNOFF (AC-FT)	210600		219200		106500	
ANNUAL RUNOFF (CFSM)	0.68		0.70		0.34	
ANNUAL RUNOFF (INCHES)	9.18		9.56		4.65	
10 PERCENT EXCEEDS	891		416		339	
50 PERCENT EXCEEDS	61		39		20	
90 PERCENT EXCEEDS	10		6.9		1.9	

a Median of annual mean discharges is 132 ft^3/s.
b Many days, several years.
e Estimated.



05106000 SPRAGUE CREEK NEAR SPRAGUE, MANITOBA

LOCATION.--Lat 48°59'33", long 95°39'43", in NE¼ sec. 34, T.164 N., R.39 W., Roseau County, Hydrologic Unit 09020314, on left bank 0.5 mi south of international boundary, 3.5 mi south of Sprague, Manitoba, 8 mi upstream from mouth, and 10.5 mi northeast of Roseau, MN.

DRAINAGE AREA.--176 mi^2.

PERIOD OF RECORD.--September 1928 to December 1981, October, 1999 to current year.

REVISED RECORDS.--WSP 1055: 1944. WSP 1308: 1931(M). WDR MN-81-1: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,038.40 ft above sea level, 1928 datum, (levels by Geodetic Survey of Canada). Prior to Mar. 15, 1929, nonrecording gage at same site and datum.

REMARKS.--Records good except those 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	10	41	e16	e4.7	e2.0	e1.6	e17	e89	118	229	41	111
2	10	46	e16	e4.6	e1.9	e1.5	e16	e83	106	235	37	109
3	13	44	e15	e4.6	e1.9	e1.5	e14	e78	97	192	33	95
4	12	42	e14	e4.4	e1.8	e1.4	e12	e74	87	153	31	73
5	16	38	e14	e4.3	e1.8	e1.4	e12	e70	76	448	28	60
6	12	37	e14	e4.2	e1.8	e1.4	e10	e88	67	694	24	53
7	11	37	e13	e4.2	e1.8	e1.4	e9.5	e110	62	620	22	47
8	11	37	e13	e4.3	e1.9	e1.4	e10	e130	54	567	23	41
9	11	37	e13	e4.3	e1.9	e1.4	e11	e190	105	426	33	37
10	12	36	e13	e4.3	e1.9	e1.4	e15	e230	2090	320	55	36
11	18	40	e12	e4.0	e1.9	e1.4	e24	e285	e8070	246	65	33
12	15	34	e12	e3.7	e2.0	e1.4	e33	e265	e6940	197	66	30
13	15	31	e12	e3.5	e2.0	e1.4	e49	e255	e4820	171	59	27
14	15	31	e12	e3.4	e2.0	e1.4	e60	e245	e3170	144	50	23
15	23	32	e12	e3.4	e2.1	e1.4	e130	e230	1840	126	42	21
16	18	32	e11	e3.3	e2.1	e1.5	e96	e210	1180	112	38	20
17	15	30	e11	e3.2	e2.2	e1.5	e69	e190	997	103	63	19
18	15	30	e11	e3.2	e2.2	e1.7	e62	e170	838	95	130	19
19	14	27	e10	e3.1	e2.2	e2.0	e64	e155	709	82	124	50
20	15	30	e9.8	e3.1	e2.2	e2.1	e62	e140	698	84	103	71
21	14	26	e9.3	e3.0	e2.1	e2.2	e57	127	553	125	82	56
22	15	23	e8.5	e3.0	e2.1	e2.3	e53	117	485	122	63	54
23	15	23	e7.8	e2.9	e2.0	e2.4	e46	109	600	103	51	51
24	17	24	e7.3	e2.9	e1.9	e2.3	e80	104	595	88	51	45
25	20	24	e6.6	e2.8	e1.8	e2.2	e130	99	600	77	49	45
26	21	e21	e6.2	e2.7	e1.7	e2.1	e180	95	590	69	42	40
27	21	e19	e5.8	e2.6	e1.6	e3.0	e150	89	539	61	38	35
28	22	e18	e5.6	e2.5	e1.6	e5.6	e125	91	434	57	48	34
29	27	e17	e5.4	e2.4	---	e10	e105	117	349	52	77	32
30	28	e17	e5.2	e2.2	---	e20	e97	150	279	48	94	30
31	33	---	e4.9	e2.1	---	e18	---	140	---	43	105	---
TOTAL	514	924	326.4	106.9	54.4	100.3	1798.5	4525	37148	6089	1767	1397
MEAN	16.6	30.8	10.5	3.45	1.94	3.24	60.0	146	1238	196	57.0	46.6
MAX	33	46	16	4.7	2.2	20	180	285	8070	694	130	111
MIN	10	17	4.9	2.1	1.6	1.4	9.5	70	54	43	22	19
AC-FT	1020	1830	647	212	108	199	3570	8980	73680	12080	3500	2770
CFSM	0.09	0.17	0.06	0.02	0.01	0.02	0.34	0.83	7.04	1.12	0.32	0.26
IN.	0.11	0.20	0.07	0.02	0.01	0.02	0.38	0.96	7.85	1.29	0.37	0.30

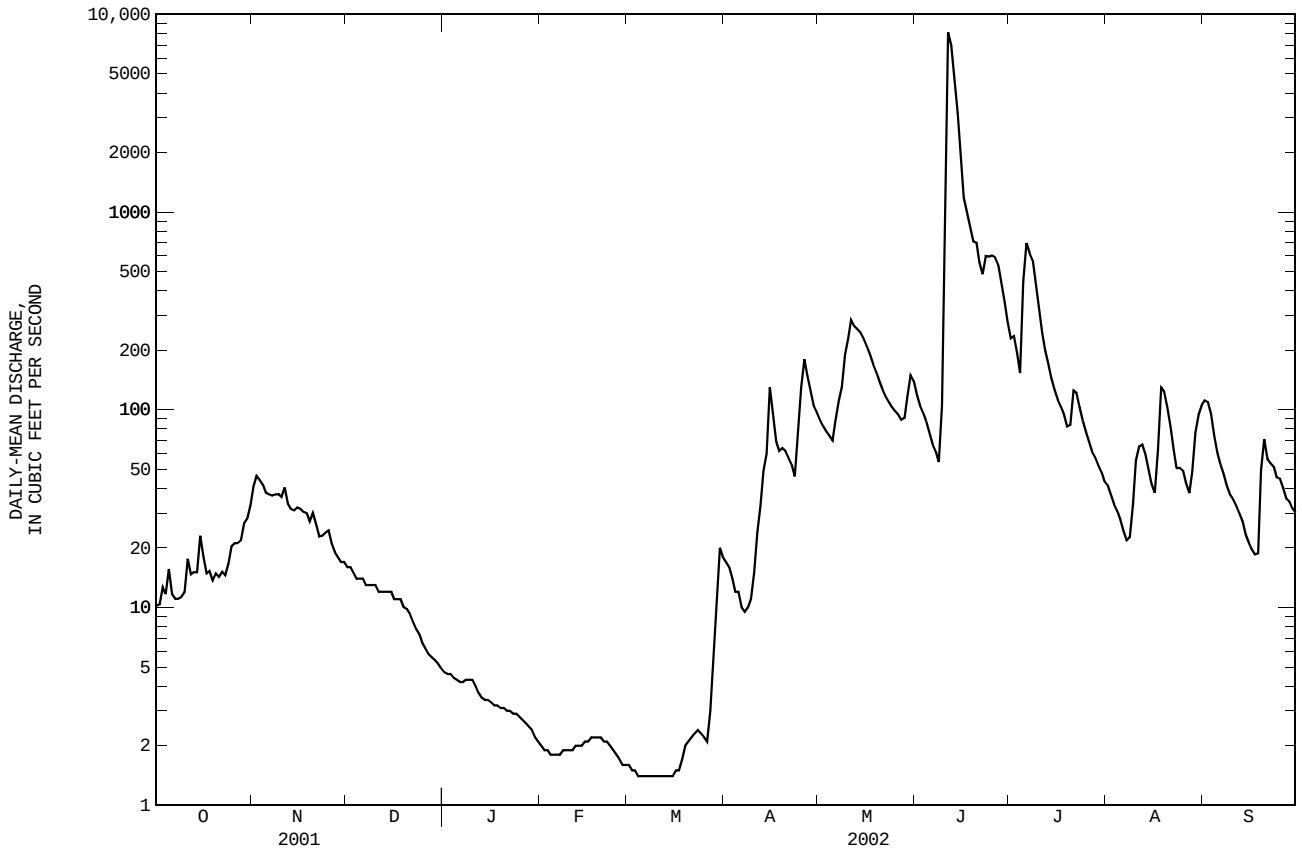
05106000 SPRAGUE CREEK NEAR SPRAGUE, MANITOBA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	34.2	30.5	5.68	2.20	1.83	16.5	175	162	127	51.5	26.6	41.3
MAX	259	460	30.1	10.3	7.32	193	633	709	1238	315	160	419
(WY)	1942	2001	2001	1966	2000	1945	1966	1950	2002	1937	1968	1941
MIN	0.95	1.10	0.20	0.23	0.13	0.53	7.16	2.21	0.11	0.032	0.094	0.39
(WY)	1953	1977	1977	1977	1977	1964	1981	1980	1980	1980	1961	1934

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1929 - 2002	
ANNUAL TOTAL	33207.8		54750.5			
ANNUAL MEAN	91.0		150		60.6	
HIGHEST ANNUAL MEAN					150	2002
LOWEST ANNUAL MEAN					4.07	1980
HIGHEST DAILY MEAN	617	Apr 12	8070e	Jun 11	8070e	Jun 11 2002
LOWEST DAILY MEAN	4.0	Feb 23	1.4	Mar 4-15	0.00a	Apr 1 1930
ANNUAL SEVEN-DAY MINIMUM	4.1	Feb 21	1.4	Mar 4	0.00	Aug 7 1936
MAXIMUM PEAK FLOW			8440e	Jun 11	8440be	Jun 11 2002
MAXIMUM PEAK STAGE			17.08	Jun 11	17.08	Jun 11 2002
ANNUAL RUNOFF (AC-FT)	65870		108600		43910	
ANNUAL RUNOFF (CFSM)	0.52		0.85		0.34	
ANNUAL RUNOFF (INCHES)	7.02		11.57		4.68	
10 PERCENT EXCEEDS	325		218		170	
50 PERCENT EXCEEDS	18		28		8.9	
90 PERCENT EXCEEDS	5.2		2.0		1.1	

a Many days, several years.
b From rating curve extended above 2,560 ft^3/s.
e Estimated.



05107500 ROSEAU RIVER AT ROSS, MN

LOCATION.--Lat 48°54'37", long 95°55'18", in NE¼SE¼ sec. 27, T. 163 N., R. 41 W., Roseau County, Hydrologic Unit 09020314, on left bank 300 ft downstream from State Highway 89 bridge, 0.2 mi. north of Ross, and 2.3 mi downstream from Pine Creek.

DRAINAGE AREA.--1,090 mi^2.

PERIOD OF RECORD.--July 1928 to September 1991, April 1995 to current year.

REVISED RECORDS.--WSP 1055: 1945. WSP 1175: Drainage area. WSP 1308: 1936(m). WSP 1508: 1848-49(P).

GAGE.--Water-stage recorder. Datum of gage is 1,018.61 ft above sea level (NGVD of 1929, levels by Geodetic Survey of Canada). Prior to Mar. 13, 1929, nonrecording gage at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. High flow affected by natural storage in Roseau Lake.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known, about 19 ft in 1896. Other floods reached the following stages, from information by local residents: flood of July 1919, 17.5 ft; flood of 1927, about 16 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	47	163	e110	e33	e15	e10	e115	461	614	4490	765	286
2	46	195	e106	e33	e14	e9.8	e100	423	634	4150	672	340
3	49	213	e103	e33	e13	e9.7	e90	385	608	3830	588	327
4	50	220	e100	e32	e13	e9.3	e80	356	569	3610	506	295
5	50	214	e98	e32	e13	e8.8	e75	346	522	3550	440	258
6	52	202	e95	e31	e13	e8.3	e69	377	471	3270	366	224
7	47	189	e93	e30	e13	e8.1	e66	444	415	3110	305	193
8	43	181	e91	e30	e13	e8.0	e64	488	351	2910	261	165
9	45	180	e89	e30	e13	e8.0	e64	614	352	2800	317	143
10	48	174	e87	e31	e13	e8.0	e74	895	1100	2720	332	129
11	51	170	e86	e32	e14	e8.0	e92	946	1800	2600	325	121
12	57	171	e84	e30	e14	e8.0	e240	918	2750	2500	282	113
13	63	163	e82	e28	e14	e8.1	432	885	5320	2420	210	108
14	66	158	e81	e26	e14	e8.2	524	841	7360	2340	158	102
15	72	155	e80	e24	e15	e8.3	531	803	9010	2260	130	93
16	92	149	e78	e24	e15	e8.4	451	783	10100	2180	113	83
17	90	144	e77	e23	e16	e8.6	401	761	10100	2100	204	74
18	80	140	e74	e23	e16	e8.8	373	727	9470	2000	389	69
19	73	135	e70	e22	e15	e9.3	321	688	8670	1910	372	134
20	70	125	e65	e22	e15	e11	283	642	7790	1840	309	173
21	72	126	e60	e22	e15	e13	256	593	7160	1790	251	160
22	73	125	e56	e21	e15	e14	227	550	6520	1700	202	140
23	71	120	e52	e21	e14	e15	203	513	6260	1610	170	129
24	75	120	e47	e20	e14	e16	310	485	6080	1520	187	117
25	80	118	e44	e20	e13	e18	636	455	5940	1430	173	107
26	89	105	e41	e19	e12	e19	641	432	5780	1330	145	100
27	94	e89	e39	e19	e11	e20	597	412	5620	1240	120	92
28	101	e96	e38	e18	e11	e23	558	391	5390	1150	166	83
29	108	e113	e36	e18	---	e26	517	411	5100	1070	244	78
30	122	e117	e35	e17	---	e31	495	465	4720	983	236	72
31	136	---	e34	e16	---	e54	---	550	---	881	228	---
TOTAL	2212	4570	2231	780	386	423.7	8885	18040	136576	71294	9166	4508
MEAN	71.4	152	72.0	25.2	13.8	13.7	296	582	4553	2300	296	150
MAX	136	220	110	33	16	54	641	946	10100	4490	765	340
MIN	43	89	34	16	11	8.0	64	346	351	881	113	69
AC-FT	4390	9060	4430	1550	766	840	17620	35780	270900	141400	18180	8940
CFSM	0.07	0.14	0.07	0.02	0.01	0.01	0.27	0.53	4.18	2.11	0.27	0.14
IN.	0.08	0.16	0.08	0.03	0.01	0.01	0.30	0.62	4.66	2.43	0.31	0.15

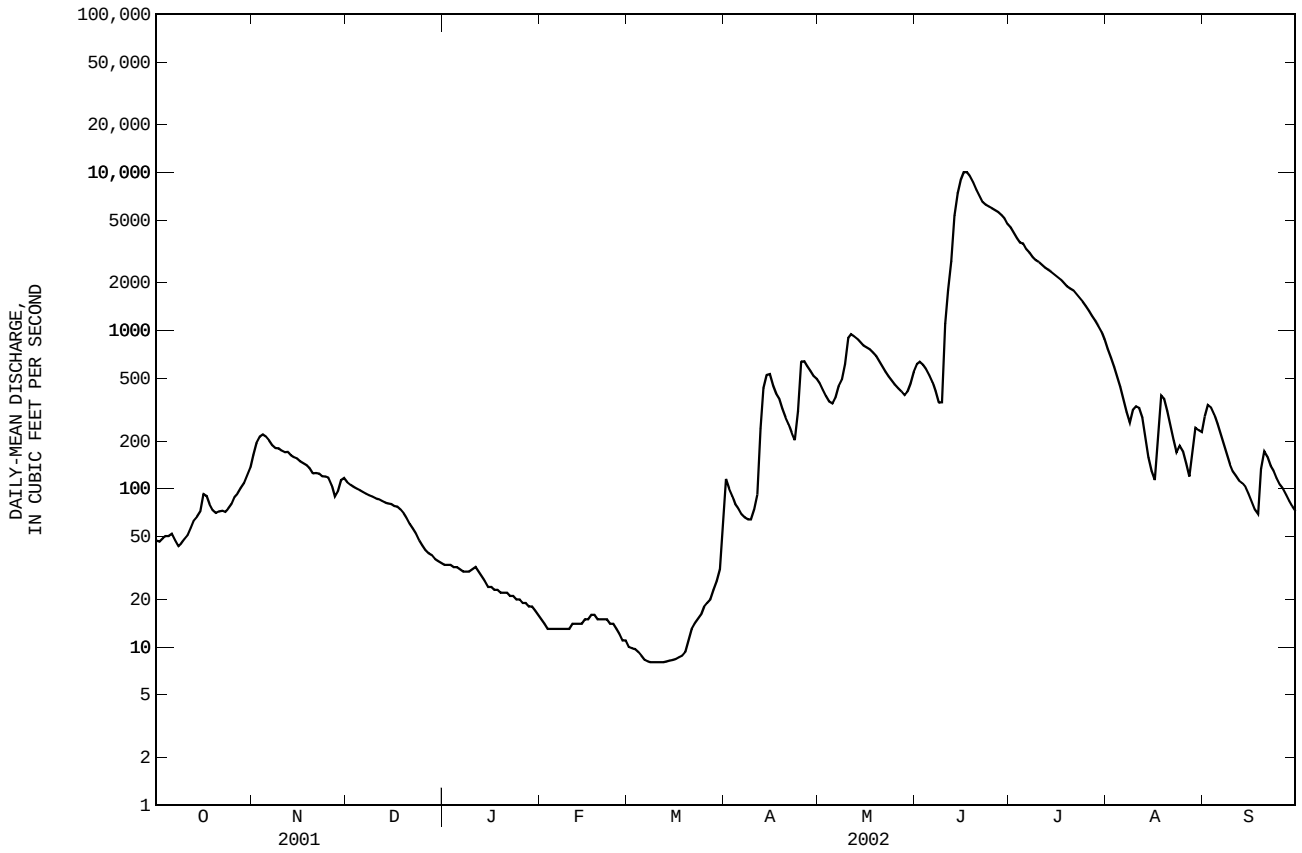
05107500 ROSEAU RIVER AT ROSS, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	134	120	37.6	16.5	14.6	85.1	883	922	574	336	139	132
MAX	974	1926	395	66.5	99.2	551	3234	4583	4553	2300	1352	1041
(WY)	1942	2001	2001	1997	1998	1946	1966	1950	2002	2002	1968	1968
MIN	1.91	1.63	0.27	0.001	0.000	2.76	32.1	29.5	6.83	1.39	0.84	0.38
(WY)	1991	1977	1977	1977	1977	1989	1991	1988	1980	1980	1961	1990

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1928 - 2002	
ANNUAL TOTAL	207251		259071.7			
ANNUAL MEAN	568		710		284a	
HIGHEST ANNUAL MEAN					753	2001
LOWEST ANNUAL MEAN					28.9	1934
HIGHEST DAILY MEAN	2640	Apr 18	10100	Jun 16,17	10100	Jun 16 2002
LOWEST DAILY MEAN	20	Mar 1	8.0	Mar 8-12	0.00b	Aug 29 1961
ANNUAL SEVEN-DAY MINIMUM	20	Mar 1	8.0	Mar 7	0.00	Jan 3 1977
MAXIMUM PEAK FLOW			10500	Jun 16	10500	Jun 16 2002
MAXIMUM PEAK STAGE			18.89	Jun 16	18.89	Jun 16 2002
ANNUAL RUNOFF (AC-FT)	411100		513900		205500	
ANNUAL RUNOFF (CFSM)	0.52		0.65		0.26	
ANNUAL RUNOFF (INCHES)	7.07		8.84		3.54	
10 PERCENT EXCEEDS	1740		2040		907	
50 PERCENT EXCEEDS	132		120		41	
90 PERCENT EXCEEDS	26		14		6.0	

a Median of annual mean discharges is 239 ft^3/s.
b Many days, several years.
e Estimated.



05112000 ROSEAU RIVER BELOW STATE DITCH 51, NEAR CARIBOU, MN

LOCATION.--Lat 48°58'54", long 96°27'46", in SE¼SW¼ sec. 34, T.164 N., R.45 W., Kittson County, Hydrologic Unit 09020314, on left bank 400 ft downstream from State ditch 51 (known locally as Caribou cutoff ditch) and 0.6 mi west of Caribou.

DRAINAGE AREA.--1,420 mi^2.

PERIOD OF RECORD.--April to October 1917, April 1920 to current year (no winter records in water years 1931, 1932, 1934-36, 1938-40, 1944-72). Published as "at Caribou," prior to April 1929; as "below Cutoff ditch, near Caribou April 1929 to September 1936. Records published for both sites April 1929 to September 1930. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1938(M). WSP 1508: 1917(M), 1920, 1932(M), 1934-35(M). WSP 1913: 1954(M).

GAGE.--Water-stage recorder. Datum of gage is 1,002.31 ft above sea level (NGVD of 1929, levels by Geodetic Survey of Canada). Prior to Apr. 1, 1929, nonrecording gage at site at Caribou 0.6 mi upstream at datum 0.95 ft lower.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Some regulation from wildlife management impoundments several miles upstream of gage. Occasionally, at high stages, there is some natural diversion of flow above station to headwaters of Two Rivers.

COOPERATION.--Red Lake Watershed Management Board.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1916 is reported to have reached a stage of about 15.5 ft at former site.

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	60	211	e125	e41	e21	e15	e60	545	583	3990	2000	356
2	51	231	e120	e40	e20	e14	e150	504	650	3940	1890	383
3	47	278	e116	e39	e19	e13	e135	490	688	3860	1790	406
4	46	281	e112	e38	e18	e13	e120	469	686	3790	1670	395
5	48	265	e110	e37	e18	e12	e110	447	655	3770	1520	367
6	52	249	e108	e37	e18	e12	e100	438	607	3750	1320	329
7	58	234	e107	e36	e17	e11	e93	491	547	3710	1050	292
8	61	216	e104	e36	e17	e11	e87	576	486	3670	823	258
9	56	204	e102	e35	e17	e11	e84	648	453	3590	874	229
10	56	198	e100	e35	e17	e11	e87	783	1210	3520	885	200
11	58	192	e98	e36	e17	e11	e91	942	2420	3440	799	164
12	59	186	e97	e38	e17	e10	e120	1010	2120	3360	714	147
13	62	182	e96	e37	e17	e10	e200	1040	2000	3270	608	136
14	71	168	e95	e35	e18	e11	e340	1050	1950	3190	427	127
15	79	162	e93	e32	e18	e11	e460	1050	2010	3100	322	120
16	83	163	e92	e31	e19	e11	e480	1040	2150	3020	281	109
17	94	159	e91	e30	e19	e11	461	1010	2370	2950	360	100
18	103	155	e90	e29	e20	e11	437	991	2740	2880	529	93
19	96	150	e88	e29	e20	e12	394	959	3090	2820	595	116
20	92	144	e85	e29	e20	e12	345	919	3400	2800	551	237
21	88	147	e81	e28	e20	e13	302	859	3650	2820	458	260
22	201	142	e77	e28	e20	e16	265	794	3910	2760	362	233
23	223	137	e73	e28	e20	e18	231	732	4160	2690	288	199
24	223	133	e67	e27	e19	e20	221	678	4280	2610	271	174
25	220	131	e62	e26	e18	e21	332	598	4320	2540	290	175
26	215	e90	e58	e26	e18	e23	596	527	4270	2470	258	163
27	208	e51	e53	e25	e17	e24	665	492	4200	2390	216	152
28	198	e70	e50	e25	e16	e26	653	467	4160	2310	214	141
29	200	e125	e47	e24	---	e29	619	451	4110	2220	308	124
30	195	e130	e45	e23	---	e33	579	462	4050	2160	356	104
31	200	---	e43	e22	---	e40	---	507	---	2080	343	---
TOTAL	3503	5184	2685	982	515	496	8817	21969	71925	95470	22372	6289
MEAN	113	173	86.6	31.7	18.4	16.0	294	709	2398	3080	722	210
MAX	223	281	125	41	21	40	665	1050	4320	3990	2000	406
MIN	46	51	43	22	16	10	60	438	453	2080	214	93
AC-FT	6950	10280	5330	1950	1020	984	17490	43580	142700	189400	44370	12470
CFSM	0.08	0.12	0.06	0.02	0.01	0.01	0.21	0.50	1.69	2.17	0.51	0.15
IN.	0.09	0.14	0.07	0.03	0.01	0.01	0.23	0.58	1.88	2.50	0.59	0.16

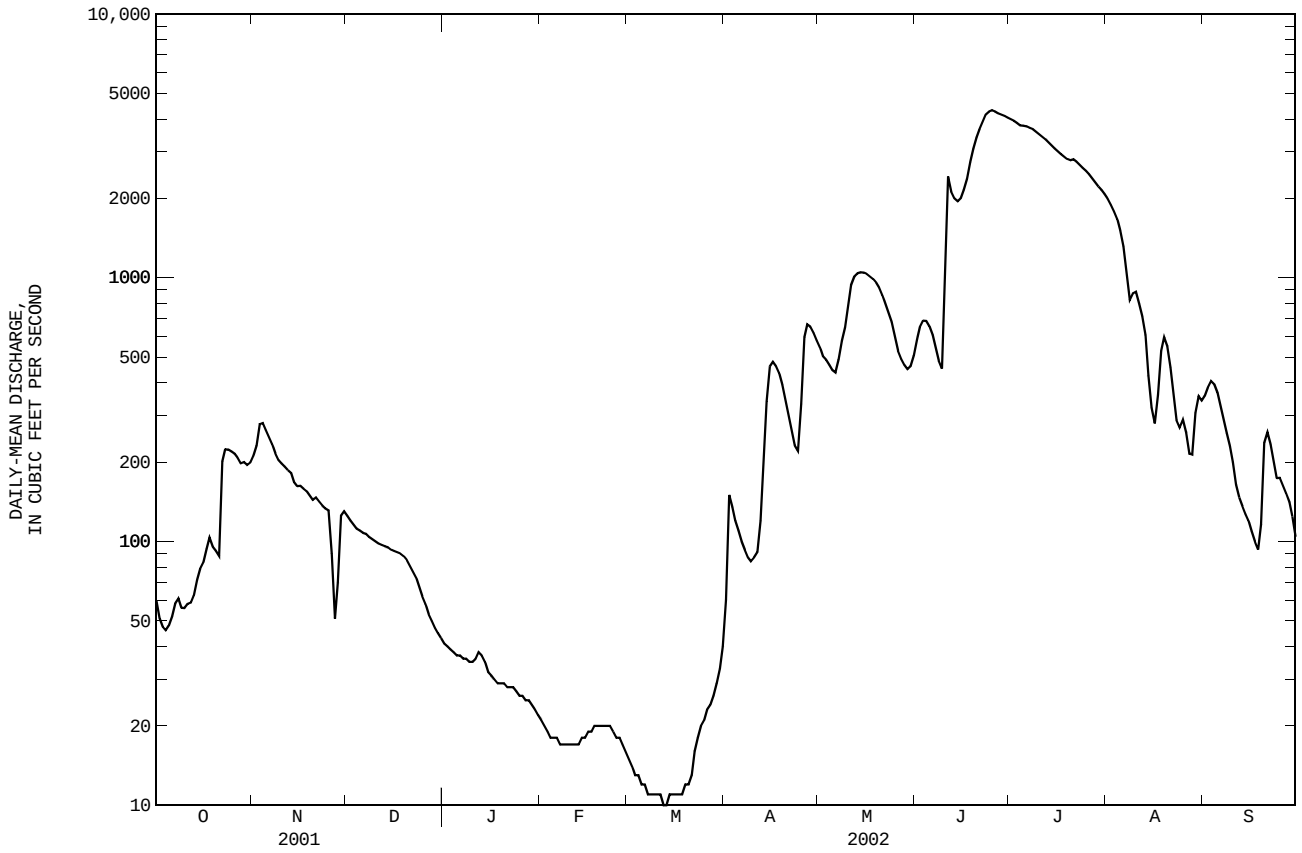
05112000 ROSEAU RIVER BELOW STATE DITCH 51, NEAR CARIBOU, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1917 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	173	172	71.2	27.7	23.3	131	834	973	649	460	179	181
MAX	1302	2022	813	134	75.4	793	2168	3029	2588	3080	1582	1451
(WY)	1942	2001	2001	1927	1997	1995	1966	1950	1970	2002	1993	1968
MIN	0.12	0.26	0.53	0.090	0.060	1.57	38.2	26.9	6.70	0.65	2.09	0.30
(WY)	1991	1991	1991	1991	1991	1989	1981	1988	1980	1980	1936	1990

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1917 - 2002	
ANNUAL TOTAL	255925		240207			
ANNUAL MEAN	701		658		341	
HIGHEST ANNUAL MEAN					933	2001
LOWEST ANNUAL MEAN					35.9	1977
HIGHEST DAILY MEAN	2870	Apr 15	4320	Jun 25	4320	Jun 25 2002
LOWEST DAILY MEAN	25	Mar 1	10	Mar 12	0.00	Sep 15-17 1990
ANNUAL SEVEN-DAY MINIMUM	25	Mar 1	11	Mar 7	0.04	Sep 12 1990
MAXIMUM PEAK FLOW			4320	Jun 24	4320	Jun 24 2002
MAXIMUM PEAK STAGE			11.91	Jun 24	11.91	Jun 24 2002
INSTANTANEOUS LOW FLOW					0.00a	Aug 13 1936
ANNUAL RUNOFF (AC-FT)	507600		476500		247200	
ANNUAL RUNOFF (CFSM)	0.49		0.46		0.24	
ANNUAL RUNOFF (INCHES)	6.70		6.29		3.26	
10 PERCENT EXCEEDS	2020		2640		1180	
50 PERCENT EXCEEDS	190		163		66	
90 PERCENT EXCEEDS	31		18		8.5	

a many days, several years.
e Estimated.



05124480 KAWISHIWI RIVER NEAR ELY, MN

LOCATION.--Lat 47°55'22", long 91°32'06", in SE¼SE¼ sec. 24, T.63 N., R.10 W., Lake County, Hydrologic Unit 09030001, in Superior National Forest, on left bank 100 ft upstream from rapids, 2 mi upstream from South Kawishiwi River, 2.2 mi southwest of Fernberg Lookout Tower and 14 mi east of Ely.

DRAINAGE AREA.--254 mi^2.

PERIOD OF RECORD.--June 1966 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,450 ft above sea level, from topographic map.

REMARKS.--Records good.

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	96	91	149	189	113	73	56	208	206	166	117	93
2	94	92	151	186	111	72	56	213	196	157	128	90
3	90	92	153	184	109	70	55	219	188	147	129	84
4	86	93	154	181	108	69	54	228	181	138	126	78
5	84	93	158	177	105	68	53	241	174	136	120	75
6	82	92	162	176	103	67	53	248	169	134	113	73
7	79	93	164	172	101	66	53	252	163	132	105	70
8	79	96	167	169	100	69	53	256	157	140	99	68
9	81	96	169	167	98	76	53	265	152	135	93	65
10	88	96	170	165	97	76	53	271	146	129	95	67
11	92	97	172	162	96	73	55	273	163	122	98	65
12	89	98	173	160	94	71	57	277	165	115	96	62
13	88	99	175	157	92	70	62	276	177	110	92	60
14	89	99	175	154	90	68	76	276	190	106	85	57
15	86	99	176	152	89	66	92	276	192	103	88	54
16	85	99	179	149	87	65	106	272	187	97	91	52
17	82	99	181	146	85	64	119	268	180	93	94	51
18	81	102	182	144	84	63	134	263	168	87	91	50
19	79	104	183	142	83	64	150	257	168	83	88	55
20	77	103	183	140	85	63	159	252	172	81	84	56
21	75	103	183	138	83	63	166	248	163	80	83	54
22	75	102	186	136	81	62	173	243	158	79	80	50
23	80	103	202	133	80	61	180	239	167	75	78	49
24	80	109	201	130	78	59	185	232	178	72	75	47
25	85	125	199	129	77	58	187	229	187	72	72	45
26	88	129	199	126	76	58	188	226	190	73	70	44
27	85	133	199	124	75	57	192	222	187	76	67	43
28	83	138	197	122	74	58	196	217	184	91	64	43
29	82	141	196	120	---	59	201	215	179	87	64	44
30	83	145	194	118	---	59	205	217	174	84	89	44
31	89	---	191	116	---	58	---	215	---	81	97	---
TOTAL	2612	3161	5523	4664	2554	2025	3422	7594	5261	3281	2871	1788
MEAN	84.3	105	178	150	91.2	65.3	114	245	175	106	92.6	59.6
MAX	96	145	202	189	113	76	205	277	206	166	129	93
MIN	75	91	149	116	74	57	53	208	146	72	64	43
AC-FT	5180	6270	10950	9250	5070	4020	6790	15060	10440	6510	5690	3550
CFSM	0.33	0.41	0.70	0.59	0.36	0.26	0.45	0.96	0.69	0.42	0.36	0.23
IN.	0.38	0.46	0.81	0.68	0.37	0.30	0.50	1.11	0.77	0.48	0.42	0.26

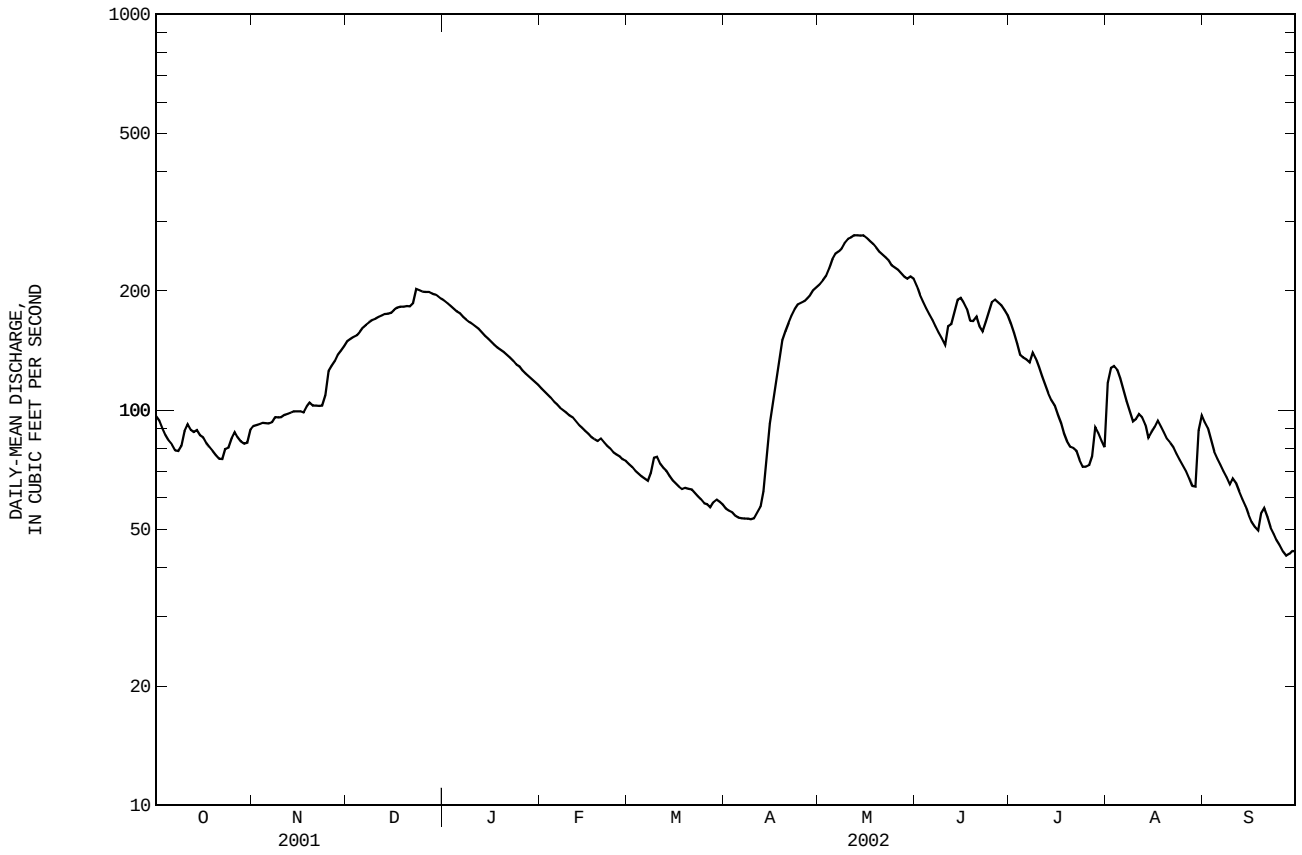
05124480 KAWISHIWI RIVER NEAR ELY, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	150	161	136	94.2	68.3	56.9	242	646	369	208	146	135
MAX	881	684	345	163	107	85.2	785	1133	1070	523	758	698
(WY)	1978	1971	1983	1984	1971	1969	1976	1979	1970	1999	1988	1988
MIN	12.1	9.43	7.25	5.32	4.77	5.87	8.95	13.3	115	65.1	36.0	18.5
(WY)	1977	1977	1977	1977	1977	1977	1977	1977	1977	1998	1998	1976

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1966 - 2002	
ANNUAL TOTAL	95429		44756			
ANNUAL MEAN	261		123		202	
HIGHEST ANNUAL MEAN					313	1971
LOWEST ANNUAL MEAN					81.3	1998
HIGHEST DAILY MEAN	1850	May 3	277	May 12	1850	May 3 2001
LOWEST DAILY MEAN	52	Mar 29	43	Sep 27,28	4.5a	Jan 31 1977
ANNUAL SEVEN-DAY MINIMUM	53	Mar 28	44	Sep 24	4.6	Jan 29 1977
MAXIMUM PEAK FLOW			280	May 15	1870	May 4 2001
MAXIMUM PEAK STAGE			4.02	May 15	6.07	May 4 2001
INSTANTANEOUS LOW FLOW			42	Sep 27	4.5	Jan 30 1977
ANNUAL RUNOFF (AC-FT)	189300		88770		146300	
ANNUAL RUNOFF (CFSM)	1.03		0.48		0.80	
ANNUAL RUNOFF (INCHES)	13.98		6.55		10.81	
10 PERCENT EXCEEDS	619		200		495	
50 PERCENT EXCEEDS	136		99		109	
90 PERCENT EXCEEDS	66		59		37	

a Occurred Jan. 31 to Feb. 2, 1977.



05127000 KAWISHIWI RIVER NEAR WINTON, MN

LOCATION.--Lat 47°56'05", long 91°45'50", in NE¼NW¼ sec. 20, T.63 N., R.11 W., Lake County, Hydrologic Unit 09030001, Superior National Forest, at power plant of Minnesota Power Co., just upstream from Fall Lake, and 1.8 mi east of Winton.

DRAINAGE AREA.--1,230 mi^2.

PERIOD OF RECORD.--June 1905 to June 1907, October 1912 to September 1919 (fragmentary), September 1923 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WDR MN-77-1: Drainage area.

REMARKS.--No estimated daily discharges. Records fair. Daily discharge computed from power plant records. Flow regulated by power plant and by Camp Six, Bald Eagle, Gabbro, Little Gabbro, Birch, White Iron, South Farm, and Garden Lakes.

COOPERATION.--Records collected by Minnesota Power Co., under general supervision of the Geological Survey, in connection with a Federal Energy Regulatory Commission project.

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	355	889	1060	840	459	400	448	1780	442	1140	1000	452
2	345	889	1060	801	459	400	449	1830	442	1150	1280	452
3	118	889	1060	750	459	400	448	1570	670	1150	1280	452
4	141	889	1040	731	459	400	448	1390	798	1150	985	452
5	206	889	955	682	459	392	448	1390	839	984	850	453
6	206	889	883	620	352	332	448	1250	879	819	663	453
7	206	839	888	656	386	329	448	1140	878	700	581	453
8	300	742	891	656	386	329	447	1150	808	755	512	453
9	432	570	890	657	386	329	447	1260	636	769	539	452
10	433	534	890	656	385	329	447	1400	298	797	605	452
11	451	534	890	656	385	329	447	1540	400	772	512	452
12	391	716	890	655	385	373	447	1630	846	608	213	452
13	267	933	889	655	385	414	446	1620	1130	555	217	452
14	253	949	889	655	385	443	447	1420	1140	498	283	452
15	337	950	889	655	385	443	415	1270	1080	228	594	445
16	352	951	889	655	384	341	217	1270	877	173	795	295
17	345	951	889	639	384	223	119	1270	874	237	876	117
18	285	951	889	555	385	148	119	1280	850	219	839	117
19	253	941	889	555	386	332	119	1280	770	116	613	315
20	262	955	889	555	394	372	312	1260	788	286	458	405
21	280	785	881	555	406	413	399	1370	795	432	435	392
22	296	620	837	556	406	421	419	1520	795	238	400	354
23	338	620	838	555	406	421	718	1520	1270	117	400	243
24	412	578	840	555	406	290	883	1310	1270	117	400	116
25	441	811	840	555	406	257	1150	1160	1260	204	400	119
26	443	1060	840	494	406	257	1250	1150	1260	345	400	158
27	675	1060	840	483	406	257	1150	467	1260	371	400	120
28	889	1060	840	483	404	262	1150	280	1150	444	404	120
29	889	1060	840	472	---	388	1380	384	1140	444	328	120
30	889	1060	840	459	---	431	1710	434	1140	637	352	223
31	889	---	830	459	---	443	---	442	---	797	452	---
TOTAL	12379	25564	27775	18910	11294	10898	17775	38037	26785	17252	18066	9991
MEAN	399	852	896	610	403	352	592	1227	893	557	583	333
MAX	889	1060	1060	840	459	443	1710	1830	1270	1150	1280	453
MIN	118	534	830	459	352	148	119	280	298	116	213	116
AC-FT	24550	50710	55090	37510	22400	21620	35260	75450	53130	34220	35830	19820
CFSM	0.32	0.69	0.73	0.50	0.33	0.29	0.48	1.00	0.73	0.45	0.47	0.27
IN.	0.37	0.77	0.84	0.57	0.34	0.33	0.54	1.15	0.81	0.52	0.55	0.30
+	47.7	16.2	-68.9	-178	-164	-127	542	-2.81	8.82	-24.3	24.3	-25.1
MEAN ‡	447	868	827	432	239	225	1134	1224	902	532	607	308
CFSM ‡	0.36	0.71	0.67	0.35	0.19	0.18	0.92	1.00	0.73	0.43	0.49	0.25
IN ‡	0.42	0.79	0.77	0.40	0.20	0.21	1.03	1.15	0.81	0.50	0.56	0.2

CAL. YR. 01 TOTAL 498321 MEAN 1365 MAX 8940 MIN 116 MEAN ‡ 1382 CFSM ‡ 1.12 IN ‡ 15.26
WTR. YR 02 TOTAL 234726 MEAN 634 MAX 1830 MIN 116 MEAN ‡ 647 CFSM ‡ 0.53 IN ‡ 7.14

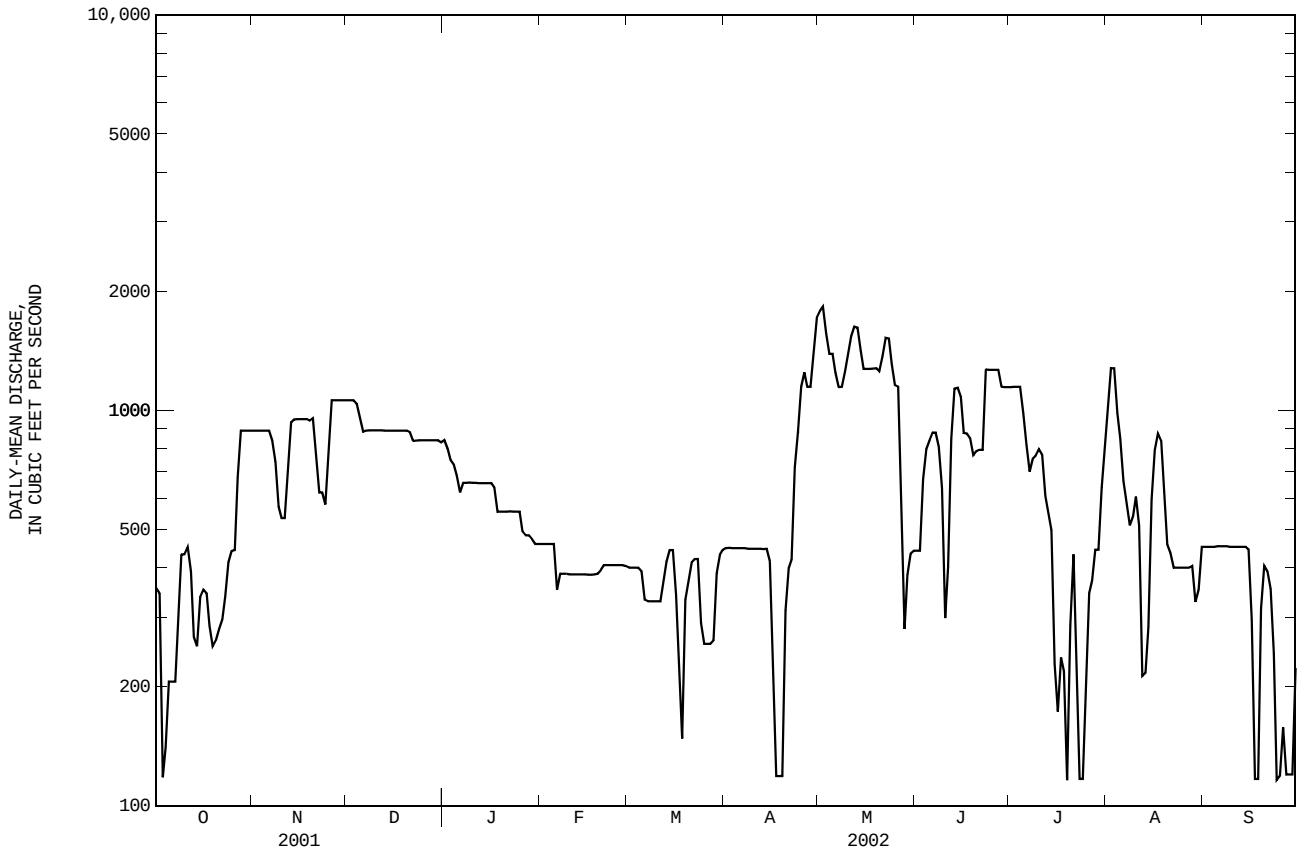
05127000 KAWISHIWI RIVER NEAR WINTON, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1905 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	887	765	600	456	350	378	1221	3109	1898	1164	694	732
MAX	4277	3572	1422	862	770	844	5020	9278	5661	3382	3775	3149
(WY)	1947	1971	1983	1978	1927	1945	1945	1950	1968	1999	1988	1928
MIN	66.5	8.97	76.1	80.3	74.5	103	19.3	111	519	217	51.7	38.1
(WY)	1924	1924	1977	1977	1977	1924	1924	1924	1980	1961	1919	1919

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1905 - 2002	
ANNUAL TOTAL	498321		234726			
ANNUAL MEAN	1365		643		1031	
HIGHEST ANNUAL MEAN					1967	1950
LOWEST ANNUAL MEAN					240	1924
HIGHEST DAILY MEAN	8940	May 4	1830	May 2	16000	May 18 1950
LOWEST DAILY MEAN	116	Jul 14	116	Jul 19	0.00a	Aug 24 1905
ANNUAL SEVEN-DAY MINIMUM	217	Oct 2	139	Sep 24	0.00	Oct 13 1923
ANNUAL RUNOFF (AC-FT)	988400		465600		747300	
ANNUAL RUNOFF (CFSM)	1.11		0.52		0.84	
ANNUAL RUNOFF (INCHES)	15.07		7.10		11.39	
10 PERCENT EXCEEDS	3950		1150		2440	
50 PERCENT EXCEEDS	655		498		603	
90 PERCENT EXCEEDS	304		257		201	

+ Change in contents, equivalent in cubic feet per second, in Camp Six, Bald Eagle, Gabbro, Little Gabbro, Birch, White Iron, Farm, South Farm, and Garden Lakes.
‡ Adjusted for change in reservoir contents.
a Many days, several years.



RAINY RIVER BASIN--Continued

05127500 BASSWOOD RIVER NEAR WINTON, MN
(International Gaging Station)

LOCATION.--Lat 48°04'57", long 91°39'09", in SE¼SE¼ sec. 30, T.65 N., R.10 W., Lake County, Hydrologic Unit 09030001, in Superior National Forest, on island in Jackfish Bay of Basswood Lake, used to determine discharge at outlet (lat 48°06'21", long 91°38'51", in sec. 19, T.65 N., R.10 W., on international boundary 14 mi northeast of Winton).

DRAINAGE AREA.--1,740 mi^2, approximately, (above outlet of Basswood Lake).

PERIOD OF RECORD.--March to June 1924, September 1925 to March 1928, January 1930 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 955: Drainage area. WSP 1145: 1935, 1937.

GAGE.--Water-stage recorder. Datum of gage is 1,296.80 ft above sea level (NGVD of 1928, levels by Geodetic Survey of Canada). Prior to Oct. 27, 1938, nonrecording gages at several sites in vicinity of gage, at datum 3.0 ft higher. Oct. 28, 1938 to Sept. 30, 1966, water-stage recorder at datum 3.0 ft higher.

REMARKS.--Records good. Some regulation by power plant on Kawishiwi River at Winton, and by many lakes located upstream from station.

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

DISCHARGE, in CFS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	850	850	1250	1300	888	642	578	1160	1370	1570	638	604
2	835	861	1280	1300	879	637	576	1230	1310	1530	642	604
3	802	888	1290	1290	860	634	576	1330	1250	1500	668	586
4	763	908	1300	1270	853	634	581	1390	1200	1470	681	586
5	740	938	1330	1250	843	625	584	1460	1170	1500	704	584
6	716	949	1330	1240	829	619	587	1510	1160	1520	710	576
7	697	976	1350	1220	813	617	588	1530	1140	1490	707	569
8	684	986	1340	1200	804	634	589	1540	1120	1460	702	566
9	681	999	1340	1180	792	664	593	1560	1130	1420	687	552
10	718	991	1330	1170	780	676	596	1580	1100	1380	695	568
11	738	988	1340	1160	773	671	600	1600	1150	1320	703	563
12	738	979	1320	1150	752	669	610	1620	1130	1280	707	545
13	743	978	1320	1140	748	656	626	1650	1170	1240	690	536
14	744	978	1320	1110	738	652	659	1690	1180	1200	668	515
15	737	988	1320	1110	728	646	695	1720	1200	1170	667	504
16	730	1010	1310	1090	714	644	731	1700	1200	1100	668	490
17	720	1020	1300	1070	711	640	767	1680	1210	1050	675	481
18	708	1030	1300	1070	703	633	791	1660	1210	992	676	470
19	699	1040	1300	1060	695	621	814	1650	1230	927	685	499
20	681	1060	1300	1050	690	612	821	1630	1240	873	689	500
21	671	1060	1300	1040	679	605	820	1630	1240	844	681	472
22	668	1060	1300	1020	675	601	821	1620	1250	811	674	451
23	695	1050	1360	1010	671	600	827	1620	1350	776	663	444
24	698	1090	1360	998	665	598	846	1630	1420	740	644	432
25	697	1140	1350	986	656	593	870	1630	1480	703	632	413
26	723	1160	1350	976	652	585	900	1610	1540	668	621	401
27	738	1190	1350	963	648	578	956	1590	1560	666	604	384
28	737	1200	1340	947	644	584	996	1550	1580	686	579	383
29	748	1210	1330	938	---	585	1040	1520	1590	665	571	378
30	784	1240	1320	921	---	578	1090	1480	1580	652	616	367
31	822	---	1310	900	---	576	---	1420	---	644	620	---
TOTAL	22705	30817	40940	34129	20883	19309	22128	48190	38460	33847	20567	15023
MEAN	732.4	1027	1321	1101	745.8	622.9	737.6	1555	1282	1092	663.5	500.8
MAX	850	1240	1360	1300	888	676	1090	1720	1590	1570	710	604
MIN	668	850	1250	900	644	576	576	1160	1100	644	571	367
AC-FT	45040	61130	81200	67690	41420	38300	43890	95580	76290	67140	40790	29800
CFSM	0.42	0.59	0.76	0.63	0.43	0.36	0.42	0.89	0.74	0.63	0.38	0.29
IN.	0.49	0.66	0.88	0.73	0.45	0.41	0.47	1.03	0.82	0.72	0.44	0.32

RAINY RIVER BASIN--Continued

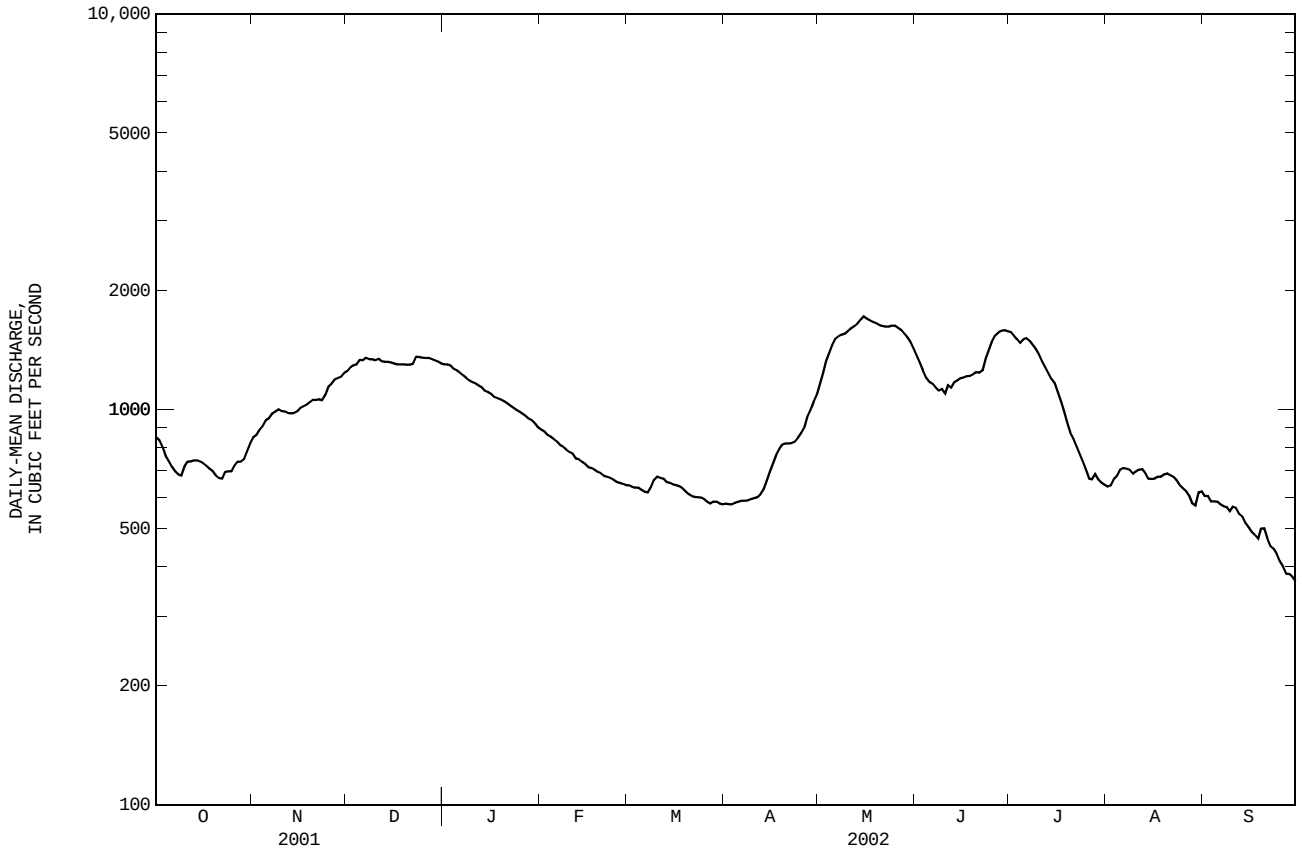
05127500 BASSWOOD RIVER NEAR WINTON, MN--Continued
(International Gaging Station)

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1080	1020	889.8	736.1	601.7	573.1	1235	3721	2826	1828	1134	984.3
MAX	5320	3879	2510	1475	1229	1143	5069	9114	7332	4453	3487	5034
(WY)	1978	1971	1983	1966	1966	1966	1945	1950	1950	1944	1944	1988
MIN	65.1	60.2	76.2	86.2	95.0	135	269	225	696	512	278	120
(WY)	1977	1977	1977	1977	1977	1977	1977	1977	1980	1980	1998	1976

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1931 - 2002	
ANNUAL TOTAL	717503		346998			
ANNUAL MEAN	1966		950.7		1398	
HIGHEST ANNUAL MEAN					2643	1950
LOWEST ANNUAL MEAN					557	1958
HIGHEST DAILY MEAN	8950	May 9	1720	May 15	15200	May 24 1950
LOWEST DAILY MEAN	448	Mar 29	367	Sep 30	58	Nov 3 1976
ANNUAL SEVEN-DAY MINIMUM	452	Mar 25	394	Sep 24	58	Nov 7 1976
MAXIMUM PEAK FLOW			1730	May 15	15600	May 24 1950
MAXIMUM PEAK STAGE			3.99	May 15	9.94a	May 24 1950
INSTANTANEOUS LOW FLOW			360b	Sep 30	55	Nov 18 1976
ANNUAL RUNOFF (AC-FT)	1423000		688300		1013000	
ANNUAL RUNOFF (CFSM)	1.13		0.55		0.80	
ANNUAL RUNOFF (INCHES)	15.34		7.42		10.92	
10 PERCENT EXCEEDS	5170		1480		3230	
50 PERCENT EXCEEDS	1110		850		879	
90 PERCENT EXCEEDS	505		584		375	

a Present datum.
b Falling stage.



05128000 NAMAKAN RIVER AT OUTLET OF LAC LA CROIX, ONTARIO
(International Gaging Station)

LOCATION.--Lat 48°21'14", long 92°13'01", at Campbell's Camp, on Lac La Croix Lake, used to determine discharge at outlet [Lat 48°23'00", long 92°10'40", 2.5 mi east of Campbell's Camp].

DRAINAGE AREA.--5,170 mi^2.

PERIOD OF RECORD.--September 1921 to January 1922, April 1922 to current year, in reports of Geological Survey. Monthly discharge only for some periods, published in WSP 1308. August 1921 to current year, in reports of Water Survey of Canada.

GAGE.--Water-stage recorder. Datum of gage is sea level (United States and Canadian Boundary Survey). Prior to October 1933, nonrecording gages at various sites on Lac la Croix. October 1933 to Mar. 13, 1963, nonrecording gage at present site and datum.

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

COOPERATION.--This station is one of the international 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	3600	2880	3230	3640	2790	2070	1790	2970	3990	5860	3170	1860
2	3530	2860	3300	3640	2750	2050	1780	3030	3990	5830	3090	1850
3	3420	2910	3310	3600	2720	2030	1780	3140	3920	5760	3020	1800
4	3280	2910	3330	3570	2700	2010	1770	3180	3880	5760	2890	1830
5	3260	2920	3400	3570	2660	2000	1750	3270	3810	6000	2810	e1820
6	3230	2900	3430	3530	2640	1970	1750	3340	3780	6110	2730	e1790
7	3170	2930	3570	3520	2600	1960	1740	3390	3670	6110	2630	e1770
8	3150	2900	3600	3480	2570	1960	1730	3490	3640	6040	2530	e1750
9	3100	2920	3640	3450	2550	1980	1720	3500	3670	5970	2440	e1730
10	3110	2910	3670	3430	2520	1980	1720	3600	3600	5900	2430	e1710
11	3170	2930	3710	3400	2510	1970	1720	3670	3780	5720	2390	e1690
12	3160	2930	3710	3370	2470	1970	1720	3740	3880	5580	2340	e1670
13	3140	2930	3740	3350	2450	1950	1740	3780	3990	5470	2270	e1650
14	3110	2930	3740	3320	2430	1940	1770	3850	4100	5330	2230	e1630
15	3090	2920	3740	3280	2400	1920	1820	3880	4170	5230	2210	e1620
16	3100	2940	3740	3260	2370	1920	1870	3880	4240	5080	2210	e1600
17	3100	2930	3740	3220	2350	1910	1940	3880	4340	4940	2120	e1580
18	3060	2910	3740	3190	2330	1890	2000	3920	4410	4840	2140	e1560
19	3040	2890	3740	3170	2300	1880	2080	3950	4480	4700	2120	e1540
20	3000	2910	3710	3140	2270	1870	2150	3950	4520	4560	2090	e1530
21	2990	2910	3710	3120	2240	1860	2220	3920	4630	4410	2070	e1500
22	2990	2910	3710	3090	2220	1850	2300	3920	4770	4240	2040	e1490
23	2970	2880	3780	3060	2200	1840	2370	3880	4940	4130	2000	e1470
24	2980	2930	3780	3030	2160	1830	2430	3880	5120	4030	1960	e1450
25	2880	3040	3780	3000	2140	1820	2460	3880	5330	3920	1940	e1430
26	2930	3110	3780	2970	2120	1810	2570	3810	5510	3810	1930	e1420
27	2960	3150	3780	2930	2100	1800	2680	3810	5650	3740	1900	1390
28	2920	3200	3780	2900	2080	1810	2740	3810	5760	3640	1860	1400
29	2910	3210	3740	2880	---	1810	2810	3880	5830	3530	1860	1400
30	2920	3240	3740	2850	---	1810	2890	3950	5830	3430	1870	1380
31	2930	---	3710	2820	---	1800	---	3950	---	3350	1870	---
TOTAL	96200	88840	113080	100780	67640	59270	61810	114100	133230	153020	71160	48310
MEAN	3103	2961	3648	3251	2416	1912	2060	3681	4441	4936	2295	1610
MAX	3600	3240	3780	3640	2790	2070	2890	3950	5830	6110	3170	1860
MIN	2880	2860	3230	2820	2080	1800	1720	2970	3600	3350	1860	1380
AC-FT	190800	176200	224300	199900	134200	117600	122600	226300	264300	303500	141100	95820
CFSM	0.60	0.57	0.71	0.63	0.47	0.37	0.40	0.71	0.86	0.95	0.44	0.31
IN.	0.69	0.64	0.81	0.73	0.49	0.43	0.44	0.82	0.96	1.10	0.51	0.35

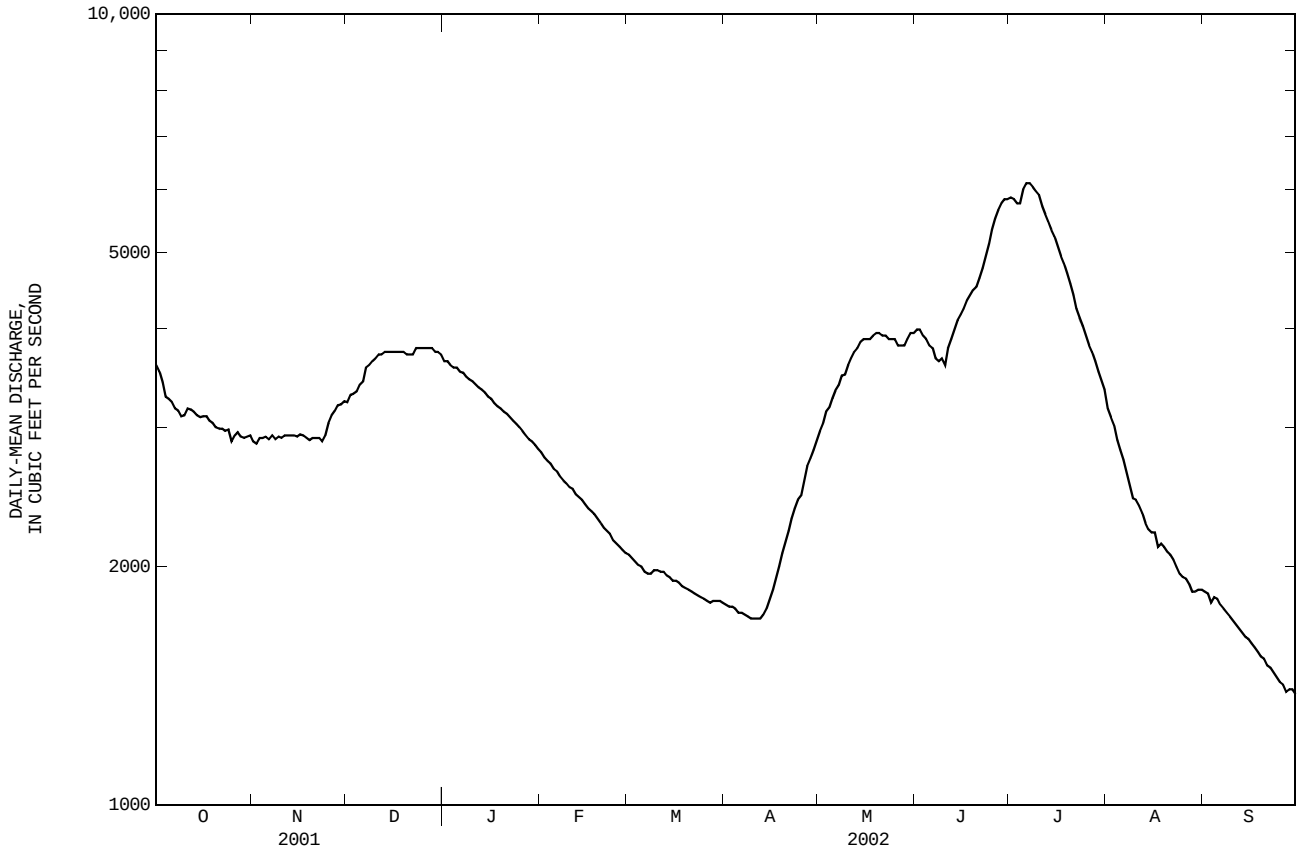
05128000 NAMAKAN RIVER AT OUTLET OF LAC LA CROIX, ONTARIO--Continued
(International Gaging Station)

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1921 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	3059	2916	2616	2210	1899	1684	2597	7690	7950	6071	4080	3175
MAX	14200	10610	7189	4568	3432	2996	9071	16900	22120	15930	11200	13140
(WY)	1978	1978	1972	1978	1966	1966	1945	1938	1950	1968	1944	1988
MIN	744	624	567	547	540	535	614	899	1475	1263	1123	774
(WY)	1999	1977	1977	1977	1924	1924	1977	1977	1924	1924	1998	1998

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1921 - 2002	
ANNUAL TOTAL	1963010		1107440			
ANNUAL MEAN	5378		3034		3847	
HIGHEST ANNUAL MEAN					7270	1950
LOWEST ANNUAL MEAN					964	1924
HIGHEST DAILY MEAN	16500	May 14	6110	Jul 6,7	28200a	May 31 1950
LOWEST DAILY MEAN	1480	Apr 4	1380	Sep 30	535	Feb 4 1924
ANNUAL SEVEN-DAY MINIMUM	1490	Mar 30	1410	Sep 24	535	Feb 4 1924
MAXIMUM PEAK FLOW			6250	Jul 5	28200	May 31 1950
MAXIMUM PEAK STAGE			1185.67	Jul 5	1193.30a	May 31 1950
INSTANTANEOUS LOW FLOW					535b	Feb 1 1924
ANNUAL RUNOFF (AC-FT)	3894000		2197000		2787000	
ANNUAL RUNOFF (CFSM)	1.04		0.59		0.74	
ANNUAL RUNOFF (INCHES)	14.12		7.97		10.11	
10 PERCENT EXCEEDS	13100		4240		8290	
50 PERCENT EXCEEDS	3710		2960		2710	
90 PERCENT EXCEEDS	1650		1780		1180	

a Occurred May 31 to June 2, 1950.
b Many days in 1924.



05129115 VERMILION RIVER NEAR CRANE LAKE, MN

LOCATION.--Lat 48°15'53", long 92°33'57", in NE¼NE¼ sec. 30, T.67 N., R.17 W., St. Louis County, Hydrologic Unit 09030002, in Superior National Forest, on left bank 350 ft downstream from bridge on Forest Route 491, 3.5 mi upstream from mouth, and 3.5 mi west of city of Crane Lake.

DRAINAGE AREA.--905 mi^2.

PERIOD OF RECORD.--August 1979 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,180 ft above sea level (from topographic map).

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of April 1979 reached a stage of 15.15 ft, from high-water mark, discharge approximately 4,600 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	444	852	927	561	330	233	193	673	582	698	334	272
2	423	858	885	549	324	228	191	652	563	657	319	270
3	403	831	856	539	323	220	188	628	544	620	310	272
4	394	804	846	538	319	214	186	619	522	583	305	268
5	380	782	896	524	322	216	184	615	492	607	292	275
6	366	e765	1100	515	320	212	182	616	469	642	285	274
7	353	e750	1180	501	317	205	191	616	449	620	284	271
8	355	e725	1180	495	313	205	212	613	419	605	287	262
9	382	698	1120	492	307	214	218	653	403	587	283	250
10	423	e675	1090	489	303	220	248	671	404	572	293	246
11	573	e660	1030	480	298	230	271	686	448	559	305	238
12	674	e650	992	476	296	230	412	695	523	540	302	234
13	736	e635	945	467	288	231	637	694	613	511	296	225
14	784	625	895	457	285	229	959	697	750	491	286	215
15	777	614	856	449	284	223	1150	699	807	474	293	205
16	746	599	841	442	281	219	1240	668	778	459	297	196
17	703	591	841	435	275	216	1310	646	704	442	313	190
18	673	577	829	421	273	213	1270	626	629	422	309	183
19	638	563	797	413	271	212	1260	605	595	409	308	193
20	600	550	755	408	270	208	1210	590	594	396	300	197
21	572	540	720	403	266	201	1130	581	552	386	292	189
22	555	531	689	401	260	198	1070	571	546	367	285	178
23	565	528	683	398	257	195	1000	552	622	352	279	167
24	580	532	658	389	255	192	947	530	761	342	271	160
25	611	750	642	383	252	185	874	514	929	348	262	152
26	635	926	636	376	246	184	798	505	941	348	253	146
27	667	915	626	366	242	183	754	483	900	345	249	137
28	694	820	613	358	239	187	732	477	854	355	252	135
29	715	846	598	353	---	193	717	484	793	351	258	134
30	731	907	587	343	---	197	693	531	747	344	257	132
31	775	---	569	334	---	195	---	584	---	337	267	---
TOTAL	17927	21099	25882	13755	8016	6488	20427	18774	18933	14769	8926	6266
MEAN	578	703	835	444	286	209	681	606	631	476	288	209
MAX	784	926	1180	561	330	233	1310	699	941	698	334	275
MIN	353	528	569	334	239	183	182	477	403	337	249	132
AC-FT	35560	41850	51340	27280	15900	12870	40520	37240	37550	29290	17700	12430
CFSM	0.64	0.78	0.92	0.49	0.32	0.23	0.75	0.67	0.70	0.53	0.32	0.23
IN.	0.74	0.87	1.06	0.57	0.33	0.27	0.84	0.77	0.78	0.61	0.37	0.26

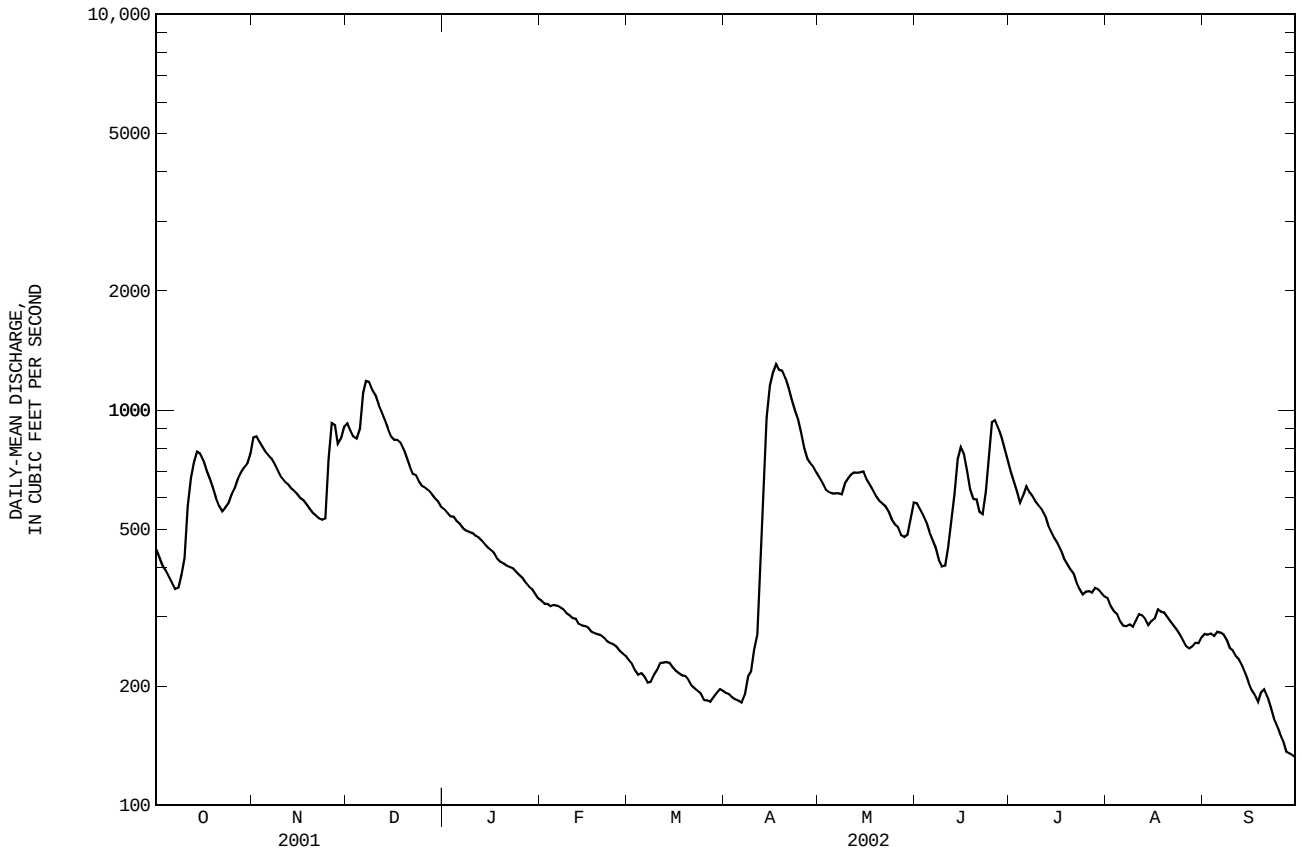
05129115 VERMILION RIVER NEAR CRANE LAKE, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1979 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	570	556	430	295	239	290	1192	1413	961	782	556	478
MAX	1436	1138	872	476	374	574	2286	3012	2234	1609	2225	1880
(WY)	1996	1983	1983	1996	1997	1995	2001	2001	2001	1985	2001	1988
MIN	110	152	116	97.8	94.1	89.5	627	507	205	113	60.0	69.1
(WY)	1998	1988	1988	1988	1988	1988	1987	1980	1980	1980	1980	1998

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1979 - 2002	
ANNUAL TOTAL	431915		181262			
ANNUAL MEAN	1183		497		650	
HIGHEST ANNUAL MEAN					1132	2001
LOWEST ANNUAL MEAN					280	1998
HIGHEST DAILY MEAN	3690	May 27	1310	Apr 17	4300	Apr 25 1985
LOWEST DAILY MEAN	194	Mar 30	132	Sep 30	38	Aug 13 1980
ANNUAL SEVEN-DAY MINIMUM	197	Mar 25	142	Sep 24	40	Aug 10 1980
MAXIMUM PEAK FLOW			1320	Apr 17	4360	Apr 25 1985
MAXIMUM PEAK STAGE			9.60	Apr 17	15.20	Apr 25 1985
INSTANTANEOUS LOW FLOW			132	Sep 28,30	38	Aug 13 1980
ANNUAL RUNOFF (AC-FT)	856700		359500		470600	
ANNUAL RUNOFF (CFSM)	1.31		0.55		0.72	
ANNUAL RUNOFF (INCHES)	17.75		7.45		9.75	
10 PERCENT EXCEEDS	2970		846		1450	
50 PERCENT EXCEEDS	733		469		444	
90 PERCENT EXCEEDS	222		207		162	

e Estimated.



05129290 GOLD PORTAGE OUTLET FROM KABETOGAMA LAKE NEAR RAY, MN

LOCATION.--Lat 48°31'28", long 93°04'29", in SW¼NE¼ sec. 30, T.70 N., R.21 W., St. Louis County, Hydrologic Unit 09030003, on right bank in bay at head of Gold Portage Outlet from Kabetogama Lake, 9.8 mi northeast of Ray.

PERIOD OF RECORD.--October 1982 to September 1993, October 1993 to September 1994 (peak gage height and discharge only), October 1997 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,100 ft above sea level (NGVD of 1912, U.S. Army Corp of Engineers benchmark), water surface transfer.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Flow completely regulated by outlet dam on Namakan Lake.

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	366	257	176	64	19	e2.8	0.00	11	371	808	479	398
2	369	243	182	59	18	e2.6	0.00	12	404	800	472	393
3	363	247	177	57	17	e2.3	0.00	18	440	792	478	370
4	345	241	174	54	16	e2.1	0.00	20	459	817	464	387
5	343	239	175	53	15	e1.9	0.00	26	486	904	464	390
6	353	228	e170	50	e14	e1.8	0.00	30	518	942	466	389
7	355	230	e160	49	e13	e1.7	0.00	36	509	925	474	388
8	361	216	e155	48	e12	e1.5	0.00	45	527	897	470	386
9	348	219	150	46	e12	e1.4	0.00	46	575	872	458	378
10	344	214	148	e44	e11	e1.3	0.00	53	632	850	458	380
11	355	213	149	e43	e10	e1.1	0.00	63	713	809	456	385
12	363	211	142	e41	e9.8	e1.0	0.00	69	721	771	454	383
13	349	203	136	e40	e9.2	e0.94	0.00	73	734	741	443	392
14	341	199	135	e39	e8.5	e0.84	0.00	84	729	709	446	380
15	329	193	132	e38	e8.0	e0.76	0.00	90	718	685	440	387
16	326	196	127	e36	e7.6	e0.71	0.00	93	706	653	439	386
17	329	191	121	e35	e7.2	e0.64	e0.01	102	703	632	418	393
18	312	181	118	e34	e6.7	e0.54	e0.02	108	698	620	414	395
19	300	172	e115	e33	e6.3	e0.47	e0.03	117	697	598	417	390
20	289	178	e110	e31	e5.8	e0.39	e0.06	125	680	583	415	395
21	285	176	e105	e30	e5.4	e0.30	e0.11	137	680	565	409	378
22	287	176	e102	e29	e5.0	e0.23	e0.20	150	689	540	406	374
23	279	169	e100	e28	e4.6	e0.15	e0.40	155	713	549	405	383
24	283	168	98	e27	e4.3	e0.09	e0.84	175	723	553	400	386
25	249	173	91	e26	e3.9	e0.06	e1.6	195	722	555	400	377
26	265	184	88	e25	e3.6	e0.04	3.5	202	722	548	402	376
27	280	188	85	e24	e3.3	0.00	5.7	227	729	557	408	373
28	275	189	81	23	e3.2	0.00	6.8	252	766	547	398	380
29	269	187	75	22	---	0.00	7.0	286	794	533	400	385
30	276	182	71	21	---	0.00	8.7	319	806	520	403	382
31	272	---	67	20	---	0.00	---	339	---	514	407	---
TOTAL	9860	6063	3915	1169	259.4	27.66	34.97	3658	19364	21389	13463	11539
MEAN	318	202	126	37.7	9.26	0.89	1.17	118	645	690	434	385
MAX	369	257	182	64	19	2.8	8.7	339	806	942	479	398
MIN	249	168	67	20	3.2	0.00	0.00	11	371	514	398	370
AC-FT	19560	12030	7770	2320	515	55	69	7260	38410	42430	26700	22890

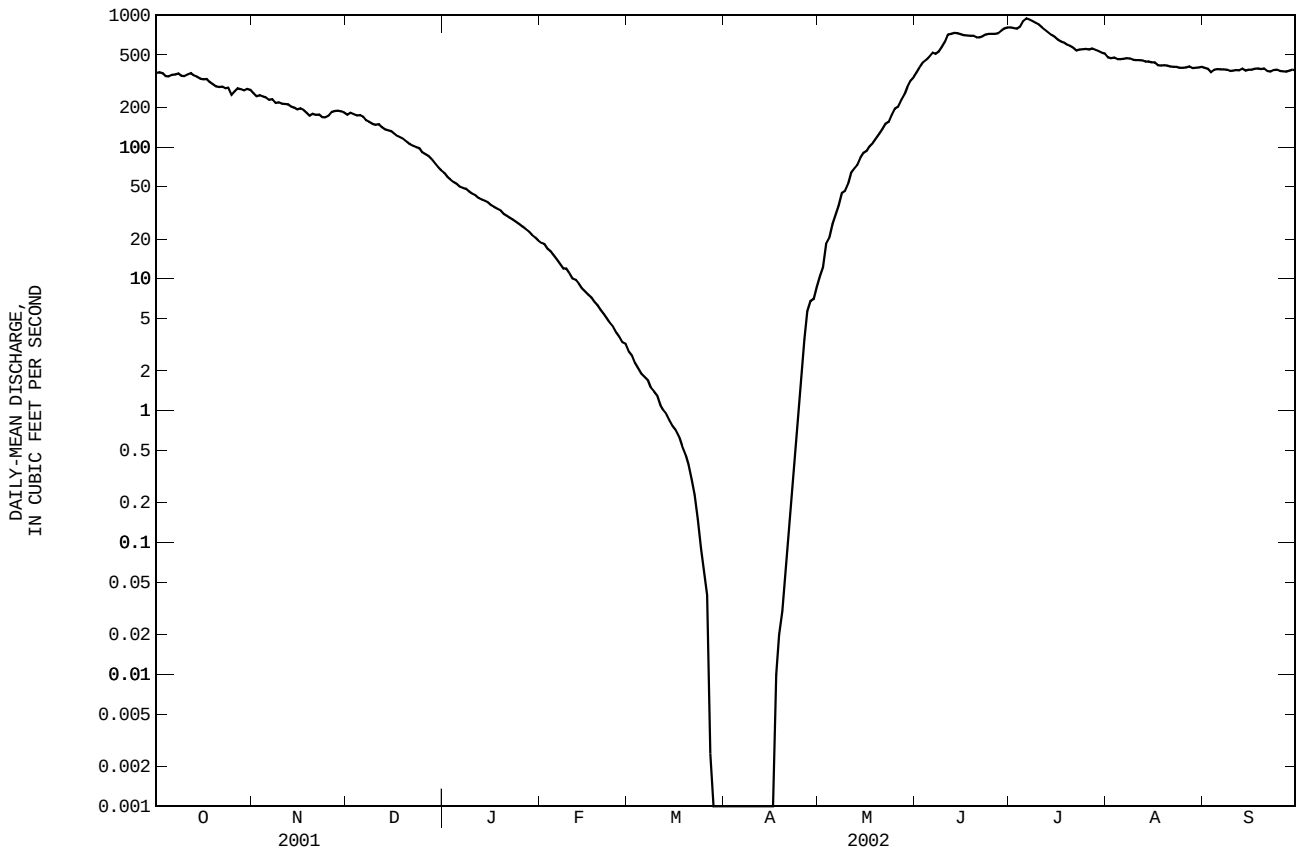
05129290 GOLD PORTAGE OUTLET FROM KABETOGAMA LAKE NEAR RAY, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	378	199	83.1	20.0	3.82	0.52	7.03	165	432	569	558	509
MAX	530	267	149	57.2	32.7	4.48	98.9	798	950	690	686	787
(WY)	1986	1990	1992	2000	2000	2000	2001	2001	2001	2002	1988	1988
MIN	140	115	16.5	1.10	0.000	0.000	0.000	0.000	96.0	323	288	181
(WY)	1999	1988	1988	1988	1983	1983	1983	1987	1987	1998	1998	1998

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1983 - 2002	
ANNUAL TOTAL	125377.94		90742.03			
ANNUAL MEAN	344		249		245	
HIGHEST ANNUAL MEAN					340	2001
LOWEST ANNUAL MEAN					141	1998
HIGHEST DAILY MEAN	1310	May 30	942	Jul 6	1310	May 30 2001
LOWEST DAILY MEAN	0.47	Mar 30	0.00	Mar 27 - Apr. 16	0.00a	Jan 21 1983
ANNUAL SEVEN-DAY MINIMUM	0.68	Mar 26	0.00	Mar 27	0.00	Jan 21 1983
MAXIMUM PEAK FLOW			985	Jul 6	1310	May 29 2001
MAXIMUM PEAK STAGE			19.58	Jul 6	20.53	May 31 2001
ANNUAL RUNOFF (AC-FT)	248700		180000		177600	
10 PERCENT EXCEEDS	793		640		594	
50 PERCENT EXCEEDS	269		182		160	
90 PERCENT EXCEEDS	5.1		0.51		0.00	

a Many days, several years.
e Estimated.



05129400 RAINY LAKE NEAR FORT FRANCES, ONTARIO
(International Gaging Station)

LOCATION.--Lat 48°38'30", long 93°20'00", at Five Mile dock, approximately 5 mi northeast of city of Fort Frances.

PERIOD OF RECORD.--January 1910 to September 1917 and October 1934 to current year, in reports of Geological Survey. August 1911 to current year, in reports of Water Survey of Canada. Prior to October 1949, published as "at Ranier, Minn.", and as "at Fort Frances, Ontario" October 1949 to September 1964.

GAGE.--Water-stage recorder. Datum of gage is sea level (United States and Canadian Boundary Survey). January 1910 to December 1949, nonrecording gage 3 mi northeast at Ranier, Minn., at same datum. January 1950 to October 1964, water-stage recorder on Government dock at Pither's Point at Fort Frances, and supplementary gage in town pumping station, 0.5 mi south, used during winter months, at same datum.

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

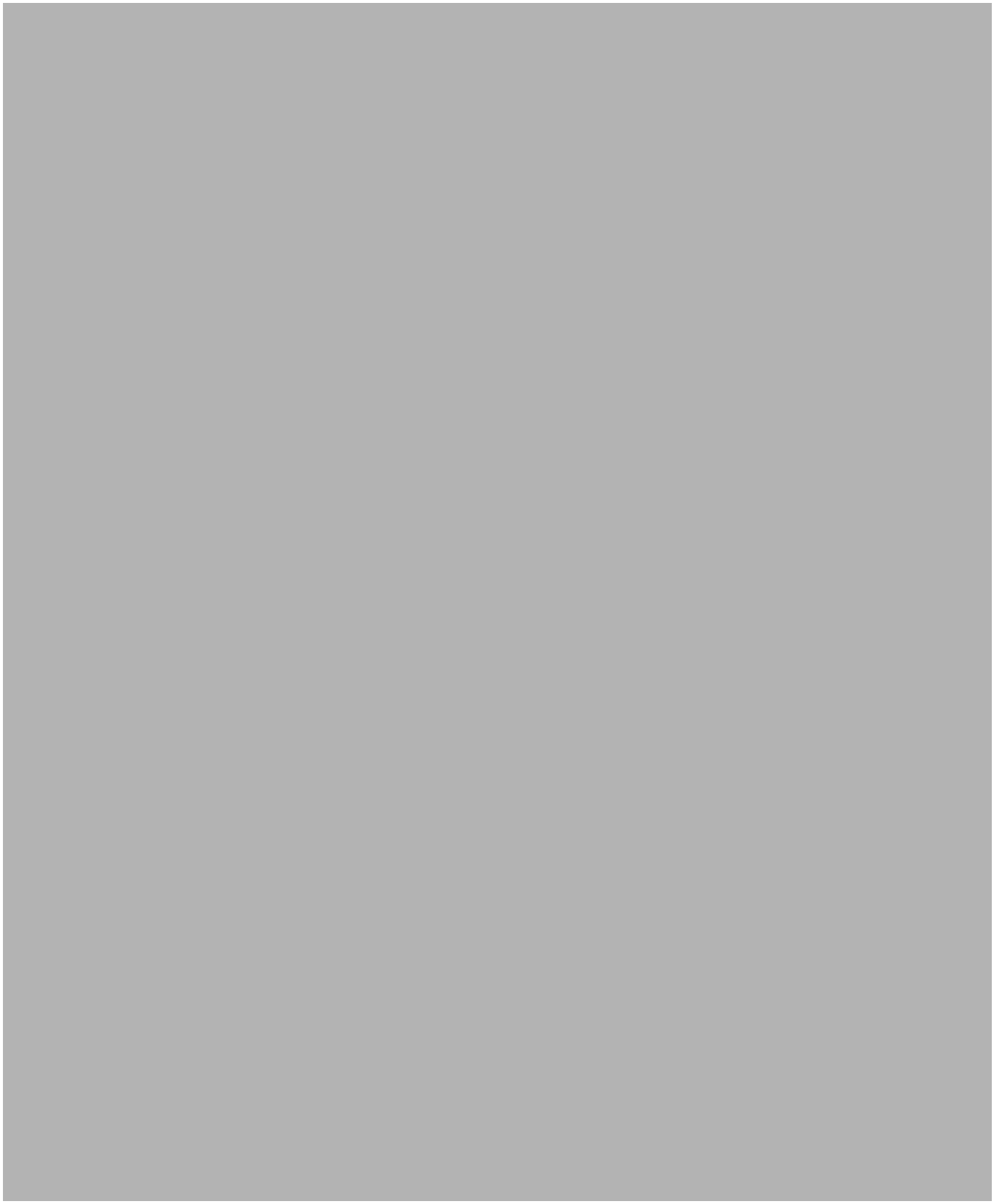
COOPERATION.--This station is one of the international gaging stations maintained by Canada under agreement with the United States.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation observed, 1,112.97 ft, July 5, 1950; minimum observed, 1,101.26 ft, Apr. 17, 1923, Apr. 2, 1930.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 1,110.82 ft, June 30; maximum daily, 1110.81 ft, June 27; minimum elevation, 1,105.10 ft, Apr. 11; minimum daily, 1105.11 ft, Apr. 11.

MONTH-END ELEVATION, IN SEA LEVEL, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Oct. 31	1107.26	Apr. 30	1105.89
Nov. 30	1107.27	May 31	1106.95
Dec. 31	1106.95	June 30	1110.72
Jan. 31	1106.34	July 31	1107.69
Feb. 28	1105.68	Aug. 31	1107.55
Mar. 31	1105.17	Sep. 30	1107.08



05130500 STURGEON RIVER NEAR CHISHOLM, MN

LOCATION.--Lat 47°40'25", long 92°54'00", in NE¼NW¼ sec. 20, T.60 N., R.20 W., St. Louis County, Hydrologic Unit 09030005, on left bank 1,000 ft upstream from County Highway 65 bridge, 0.6 mi downstream from East Branch Sturgeon River, and 11.5 mi north of Chisholm.

DRAINAGE AREA.--180 mi^2.

PERIOD OF RECORD.--August 1942 to current year.

REVISED RECORDS.--WSP 1438: 1946.

GAGE.--Water-stage recorder. Datum of gage is 1,305.7 ft above sea level (NGVD of 1929). Prior to Aug. 24, 1944, nonrecording gage at site 1,000 ft downstream at different datum. Aug. 25, 1944 to Sept. 30, 1975 at present site at datum 1.00 ft higher.

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jun 25	0700	*1,730	*5.92	No other peak greater than base discharge.			

Minimum discharge, 17 ft^3/s, Mar. 5, 6, 7, 8, gage height, 1.47 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	31	104	e118	66	31	22	e25	144	87	261	237	78
2	30	101	e127	65	30	20	e26	140	80	214	267	81
3	30	94	141	65	30	19	e26	132	71	175	260	81
4	30	90	151	64	29	18	e27	126	65	146	228	77
5	30	86	148	63	28	18	e28	133	60	125	182	74
6	29	82	172	60	28	18	e28	136	55	109	144	72
7	28	80	181	56	29	17	e32	137	50	99	129	69
8	28	86	175	55	30	e17	e41	134	48	220	125	66
9	32	87	165	54	30	e18	e54	146	45	227	116	64
10	54	88	152	54	30	e18	e76	157	42	185	120	68
11	92	86	142	54	29	e18	e103	154	44	153	138	68
12	92	84	135	53	29	e19	e128	157	46	125	147	64
13	101	82	127	52	28	e20	e210	166	45	108	145	60
14	113	81	120	50	27	e20	e310	176	44	96	134	57
15	117	79	115	48	27	e21	389	177	50	86	141	54
16	110	76	118	48	27	e22	403	171	47	83	181	53
17	101	74	121	46	27	e22	403	157	47	71	231	50
18	94	73	120	43	27	e22	389	142	41	66	249	49
19	87	73	97	41	27	e22	385	128	43	60	231	57
20	82	71	93	40	28	e23	348	118	49	58	199	61
21	77	69	93	39	27	e22	298	110	46	59	167	68
22	74	66	87	39	26	e22	253	100	111	59	147	71
23	84	64	85	39	26	e21	219	96	756	56	130	75
24	89	75	82	38	26	e21	195	94	1310	53	117	70
25	104	154	80	38	25	e21	185	89	1680	64	107	63
26	107	179	78	37	24	e21	168	86	1390	69	98	59
27	103	128	76	37	23	e21	150	82	1000	78	91	57
28	106	e115	73	35	23	e22	143	77	676	84	85	55
29	105	e108	72	34	---	e23	143	79	466	94	84	59
30	101	e113	70	33	---	e24	148	90	338	92	81	57
31	102	---	68	31	---	e25	---	92	---	84	79	---
TOTAL	2363	2748	3582	1477	771	637	5333	3926	8832	3459	4790	1937
MEAN	76.2	91.6	116	47.6	27.5	20.5	178	127	294	112	155	64.6
MAX	117	179	181	66	31	25	403	177	1680	261	267	81
MIN	28	64	68	31	23	17	25	77	41	53	79	49
AC-FT	4690	5450	7100	2930	1530	1260	10580	7790	17520	6860	9500	3840
CFSM	0.42	0.51	0.64	0.26	0.15	0.11	0.99	0.70	1.64	0.62	0.86	0.36
IN.	0.49	0.57	0.74	0.31	0.16	0.13	1.10	0.81	1.83	0.71	0.99	0.40

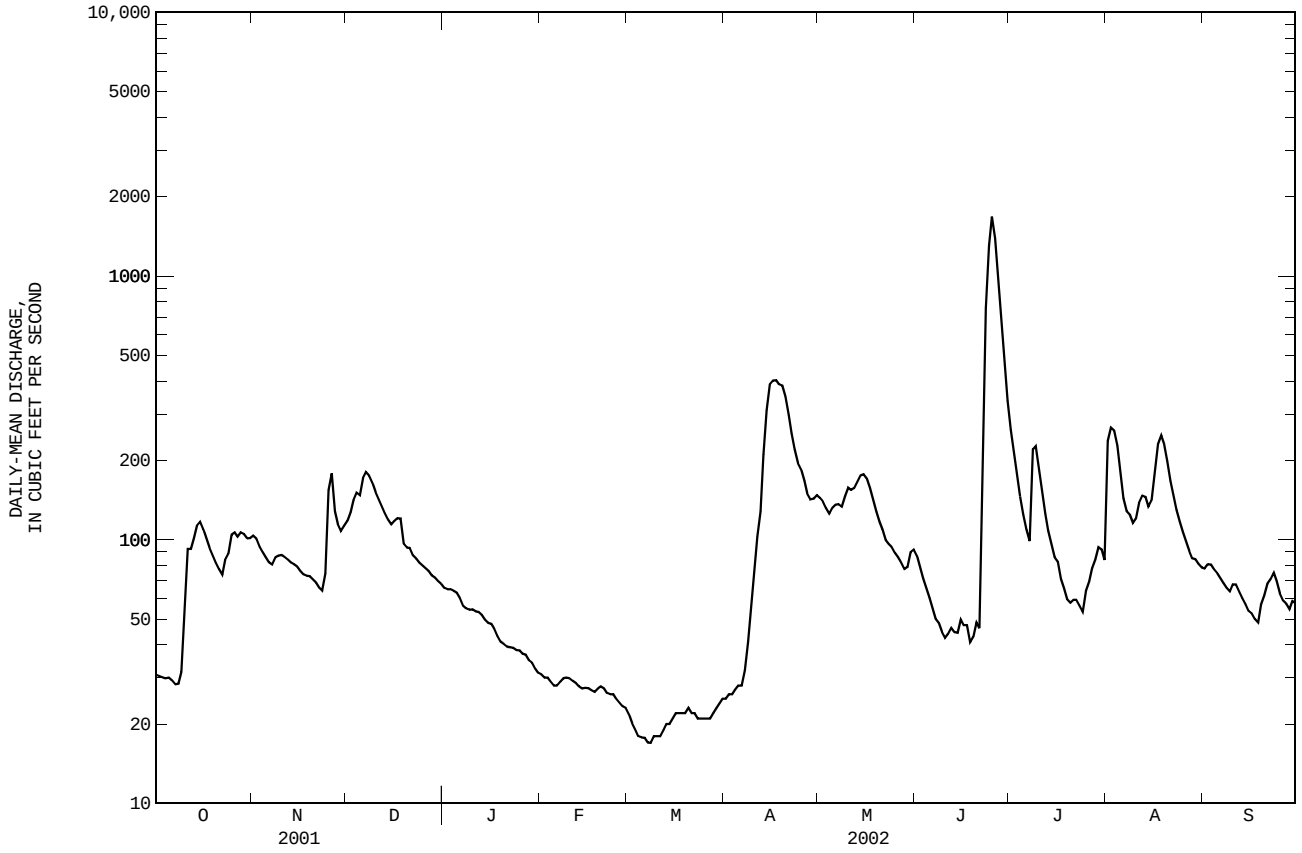
05130500 STURGEON RIVER NEAR CHISHOLM, MN--Continued

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

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	121	95.8	50.5	29.6	23.9	50.8	367	299	183	125	73.6	91.4
MAX	600	264	135	66.0	47.7	337	868	1451	528	623	268	424
(WY)	1996	1978	1999	1966	1984	1945	1948	1950	1944	1993	1988	1977
MIN	7.85	8.90	4.82	3.98	4.54	10.0	41.0	22.9	14.7	5.99	12.6	4.60
(WY)	1977	1977	1977	1977	1977	1957	1977	1977	1988	1988	1961	1976

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1942 - 2002	
ANNUAL TOTAL	60576		39855			
ANNUAL MEAN	166		109		126	
HIGHEST ANNUAL MEAN					218	1996
LOWEST ANNUAL MEAN					63.1	1977
HIGHEST DAILY MEAN	1670	Apr 14	1680	Jun 25	3530	May 8 1950
LOWEST DAILY MEAN	24	Sep 6	17	Mar 7,8	2.5	Jul 30 1988
ANNUAL SEVEN-DAY MINIMUM	25	Sep 15	18	Mar 4	3.0	Jul 24 1988
MAXIMUM PEAK FLOW			1730	Jun 25	3630a	May 7 1950
MAXIMUM PEAK STAGE			5.92	Jun 25	7.41b	May 7 1950
ANNUAL RUNOFF (AC-FT)	120200		79050		91410	
ANNUAL RUNOFF (CFSM)	0.92		0.61		0.70	
ANNUAL RUNOFF (INCHES)	12.52		8.24		9.52	
10 PERCENT EXCEEDS	526		181		295	
50 PERCENT EXCEEDS	64		77		60	
90 PERCENT EXCEEDS	26		26		18	

a From rating curve extended above 1,600 ft^3/s, on basis of slope-area measurement of peak flow.
b Present datum.
e Estimated.



05131448 WOOD DUCK CREEK NEAR NETT LAKE, MN

LOCATION.--Lat 48°09'24", long 93°08'20", in SW¼SW¼ sec. 35, T.66 N., R.22 W., Koochiching County, Hydrologic Unit 09030005, at bridge on Tribal Service Road, 2.9 miles above mouth at Nett Lake, and 3.5 miles northwest of the town of Nett Lake.

DRAINAGE AREA.--31.8 mi^2.

PERIOD OF RECORD.--October 1995 to current year.

GAGE.--Water-stage recorder. Elevation of gage 1,270 ft above sea level (from topographic map).

REMARKS.--Records poor. Backwater from Nett Lake occurs at times.

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	2.8	21	e31	e7.1	e2.9	e0.70	e0.47	24	12	23	0.90	0.52
2	2.7	23	e29	e6.9	e2.8	e0.68	e0.51	22	13	16	0.87	0.50
3	2.7	24	e26	e6.7	e2.6	e0.65	e0.55	22	13	9.4	0.84	0.44
4	2.3	21	e25	e6.5	e2.5	e0.61	e0.66	23	11	8.2	0.75	0.45
5	2.2	18	e25	e6.3	e2.4	e0.58	e0.85	24	10	13	0.70	0.45
6	2.6	15	e27	e6.1	e2.3	e0.55	e1.1	24	10	16	0.72	0.43
7	2.8	14	e30	e5.9	e2.2	e0.52	e1.5	24	9.1	12	0.98	0.41
8	3.6	12	e32	e5.7	e2.1	e0.49	e2.0	25	8.5	14	1.0	0.38
9	3.4	13	e34	e5.4	e2.0	e0.47	e3.0	34	11	11	0.94	0.31
10	4.5	13	e29	e5.3	e1.9	e0.46	e5.0	48	12	9.3	0.92	0.30
11	13	11	e26	e5.2	e1.8	e0.44	e9.0	54	32	6.3	0.89	0.29
12	18	10	e23	e5.1	e1.7	e0.44	e17	55	87	4.0	0.96	0.25
13	19	8.4	e21	e4.9	e1.7	e0.43	e30	54	132	3.5	0.87	0.26
14	22	7.2	e20	e4.7	e1.6	e0.43	e45	61	136	2.8	0.87	0.22
15	19	6.0	e19	e4.6	e1.5	e0.43	e80	58	115	2.6	0.85	0.24
16	18	5.5	e17	e4.6	e1.4	e0.43	e110	51	86	2.3	0.93	0.22
17	19	5.0	e16	e4.5	e1.4	e0.43	132	46	60	2.0	1.4	0.23
18	16	5.1	e15	e4.4	e1.3	e0.42	140	40	44	1.8	1.4	0.23
19	15	3.3	e14	e4.4	e1.2	e0.42	144	34	47	1.7	1.4	0.21
20	13	3.2	e13	e4.3	e1.1	e0.42	125	28	59	1.6	1.2	0.22
21	13	3.3	e12	e4.2	e1.1	e0.42	104	25	53	1.4	1.0	0.20
22	14	3.3	e11	e4.1	e1.0	e0.42	84	22	52	1.3	0.88	0.18
23	14	3.1	e11	e4.1	e0.96	e0.42	64	15	108	1.2	0.81	0.18
24	15	3.8	e10	e3.9	e0.92	e0.42	52	17	140	1.2	0.73	0.20
25	12	13	e9.7	e3.8	e0.87	e0.42	44	16	150	1.1	0.68	0.18
26	17	e36	e9.2	e3.6	e0.83	e0.43	37	11	122	1.0	0.66	0.17
27	19	e30	e8.8	e3.5	e0.79	e0.43	31	12	94	1.1	0.63	0.16
28	20	e25	e8.4	e3.4	e0.73	e0.43	28	13	64	1.1	0.56	0.17
29	19	e23	e8.1	e3.2	---	e0.44	27	16	43	1.1	0.54	0.20
30	23	e26	e7.8	e3.1	---	e0.44	25	17	31	1.0	0.54	0.20
31	22	---	e7.5	e3.0	---	e0.45	---	14	---	1.0	0.56	---
TOTAL	389.6	405.2	575.5	148.5	45.60	14.72	1343.64	929	1764.6	173.0	26.98	8.40
MEAN	12.6	13.5	18.6	4.79	1.63	0.47	44.8	30.0	58.8	5.58	0.87	0.28
MAX	23	36	34	7.1	2.9	0.70	144	61	150	23	1.4	0.52
MIN	2.2	3.1	7.5	3.0	0.73	0.42	0.47	11	8.5	1.0	0.54	0.16
AC-FT	773	804	1140	295	90	29	2670	1840	3500	343	54	17
CFSM	0.40	0.42	0.58	0.15	0.05	0.01	1.41	0.94	1.85	0.18	0.03	0.01
IN.	0.46	0.47	0.67	0.17	0.05	0.02	1.57	1.09	2.06	0.20	0.03	0.01

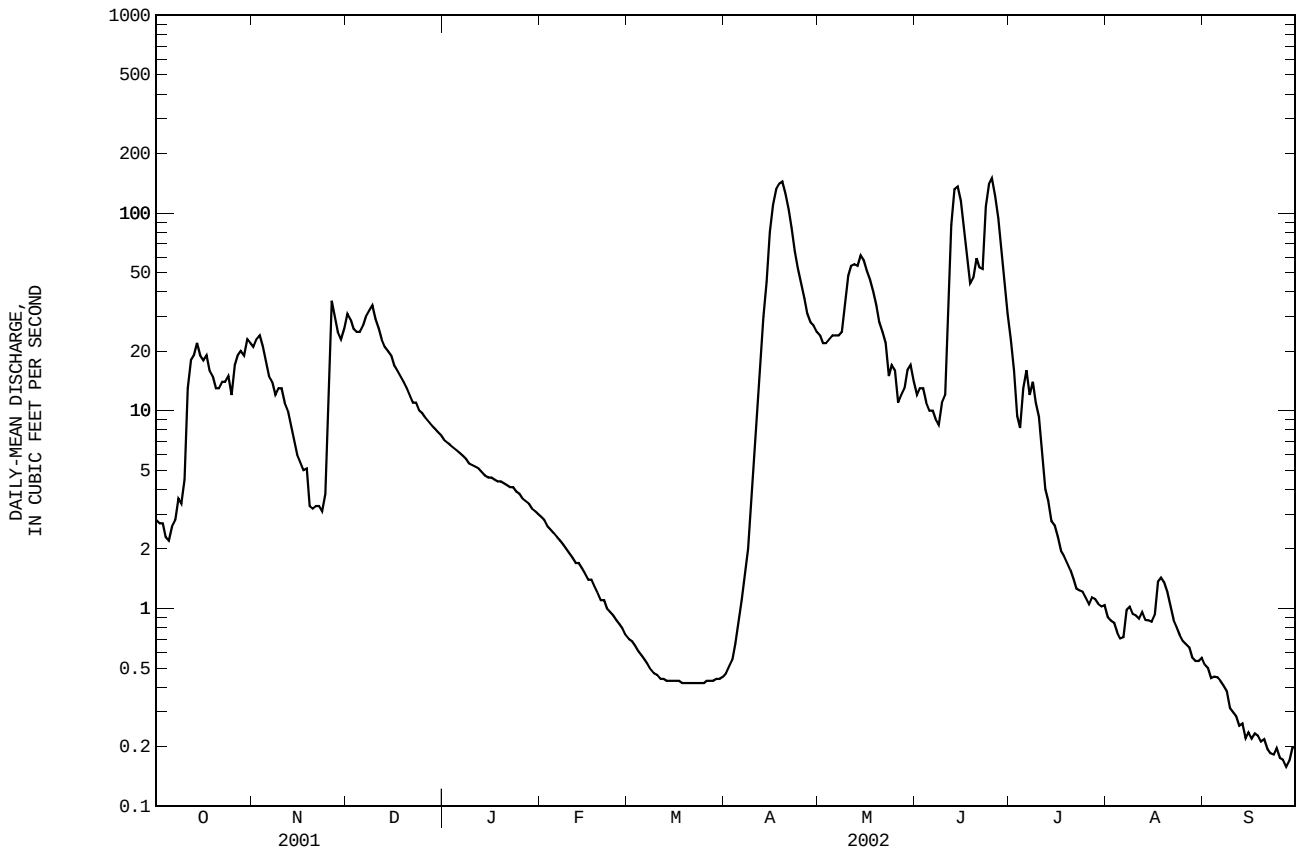
05131448 WOOD DUCK CREEK NEAR NETT LAKE, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1996 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	22.2	20.6	8.04	2.62	1.89	4.02	85.7	68.0	17.7	14.4	20.4	12.5
MAX	65.4	43.0	18.6	6.18	4.61	10.9	148	136	58.8	32.5	75.7	48.0
(WY)	1996	2001	2002	1997	1998	1998	2001	1996	2002	1996	2001	1999
MIN	3.11	6.00	3.02	0.19	0.000	0.47	20.1	18.4	6.78	3.70	0.83	0.042
(WY)	1999	1999	2000	1999	1999	2002	2000	1998	1998	2001	1998	1998

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1996 - 2002	
ANNUAL TOTAL	13498.8		5824.74			
ANNUAL MEAN	37.0		16.0		23.2	
HIGHEST ANNUAL MEAN					38.3	2001
LOWEST ANNUAL MEAN					9.77	1998
HIGHEST DAILY MEAN	432	May 23	150	Jun 25	432	May 23 2001
LOWEST DAILY MEAN	1.3	Mar 6	0.16	Sep 27	0.00a	Sep 8 1998
ANNUAL SEVEN-DAY MINIMUM	1.3	Mar 6	0.18	Sep 22	0.00	Sep 8 1998
MAXIMUM PEAK FLOW			153b	Jun 25	445c	May 23 2001
MAXIMUM PEAK STAGE			8.85d	Apr 15	12.88f	Apr 7 1997
INSTANTANEOUS LOW FLOW			0.15	Sep 25	0.00	Sep 7 1998
ANNUAL RUNOFF (AC-FT)	26770		11550		16800	
ANNUAL RUNOFF (CFSM)	1.16		0.50		0.73	
ANNUAL RUNOFF (INCHES)	15.79		6.81		9.91	
10 PERCENT EXCEEDS	126		44		57	
50 PERCENT EXCEEDS	8.7		4.7		6.7	
90 PERCENT EXCEEDS	1.4		0.43		0.60	

a Many days, several years.
b Gage height, 8.65 ft.
c Gage height, 11.50 ft.
d Backwater from ice.
e Estimated.
f From highwater mark, backwater from ice.



05131450 NETT LAKE AT NETT LAKE, MN

LOCATION.--Lat 48°06'57", long 93°05'58", in NE¼SE¼ sec. 13, T.65 N., R.22 W., Koochiching County, Hydrologic Unit 09030005, on Bois Forte Indian Reservation at Nett Lake town boat ramp.

PERIOD OF RECORD.--June 1998 to September 2001 (no winter record), October 2001 to current year.

GAGE.--Water-stage recorder. Datum of gage 1,270 ft above sea level (from topographic map).

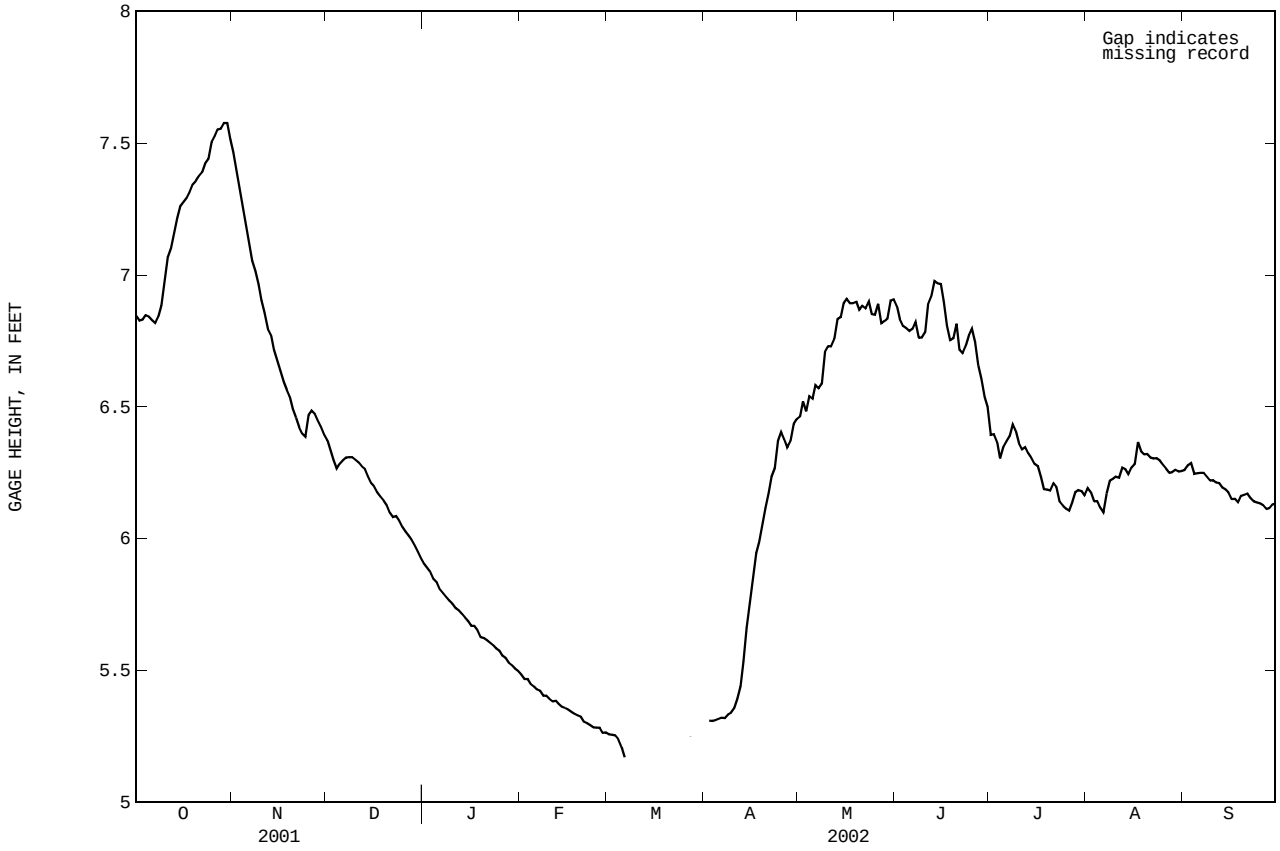
EXTREMES FOR PERIOD OF RECORD.--Maximum-recorded gage height, 8.57 ft., Apr. 18, 2001; maximum daily, 8.52 ft., Apr. 21, 2001; minimum-recorded gage height, 5.15 ft, Mar. 6, 2002, but may have been lower during period of no gage-height record, Mar. 7-26 and Mar. 28 to April 1, 2002; minimum daily, 5.17 ft, Mar. 6, 2002.

EXTREMES FOR CURRENT YEAR.--Maximum-recorded gage height, 7.63 ft., Oct. 30; maximum daily, 7.58 ft., Oct. 29, 30; minimum-recorded gage height, 5.15 ft, Mar. 6, but may have been lower during period of no gage-height record, Mar. 7-26 and Mar. 28 to April 1; minimum daily, 5.17 ft, Mar. 6.

GAGE HEIGHT, 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	6.84	7.46	6.37	5.90	5.48	5.26	---	6.46	6.88	6.39	6.19	6.26
2	6.83	7.40	6.33	5.89	5.47	5.26	5.31	6.52	6.83	6.40	6.18	6.28
3	6.83	7.32	6.30	5.87	5.47	5.25	5.31	6.48	6.81	6.37	6.14	6.29
4	6.85	7.25	6.26	5.85	5.45	5.24	5.31	6.54	6.80	6.30	6.14	6.25
5	6.84	7.19	6.28	5.84	5.44	5.21	5.32	6.53	6.79	6.35	6.12	6.25
6	6.83	7.12	6.30	5.81	5.43	5.17	5.32	6.58	6.80	6.37	6.10	6.25
7	6.82	7.05	6.31	5.79	5.42	---	5.32	6.57	6.82	6.39	6.17	6.25
8	6.84	7.01	6.31	5.78	5.40	---	5.33	6.59	6.76	6.43	6.22	6.24
9	6.88	6.96	6.31	5.77	5.40	---	5.34	6.71	6.76	6.41	6.23	6.22
10	6.97	6.90	6.30	5.75	5.39	---	5.36	6.73	6.78	6.36	6.23	6.22
11	7.07	6.85	6.29	5.74	5.38	---	5.39	6.73	6.89	6.34	6.23	6.21
12	7.10	6.80	6.28	5.73	5.39	---	5.44	6.76	6.92	6.35	6.27	6.21
13	7.15	6.77	6.27	5.72	5.37	---	5.53	6.83	6.98	6.32	6.26	6.19
14	7.21	6.72	6.24	5.70	5.36	---	5.66	6.84	6.97	6.31	6.24	6.19
15	7.26	6.68	6.21	5.69	5.36	---	5.77	6.89	6.97	6.28	6.27	6.18
16	7.28	6.64	6.20	5.67	5.35	---	5.86	6.91	6.90	6.27	6.28	6.15
17	7.29	6.60	6.18	5.67	5.34	---	5.95	6.89	6.81	6.23	6.37	6.15
18	7.31	6.57	6.16	5.65	5.34	---	5.99	6.89	6.75	6.19	6.33	6.14
19	7.34	6.54	6.14	5.63	5.33	---	6.05	6.90	6.76	6.19	6.32	6.16
20	7.36	6.49	6.13	5.62	5.33	---	6.12	6.87	6.82	6.18	6.32	6.17
21	7.38	6.46	6.10	5.61	5.30	---	6.17	6.88	6.72	6.21	6.31	6.17
22	7.39	6.42	6.08	5.61	5.30	---	6.24	6.87	6.70	6.20	6.30	6.15
23	7.42	6.40	6.09	5.60	5.29	---	6.27	6.90	6.73	6.14	6.31	6.14
24	7.44	6.39	6.07	5.58	5.28	---	6.37	6.85	6.77	6.13	6.30	6.14
25	7.50	6.47	6.05	5.57	5.28	---	6.41	6.85	6.80	6.11	6.28	6.13
26	7.53	6.49	6.03	5.56	5.28	---	6.38	6.89	6.74	6.11	6.27	6.13
27	7.55	6.47	6.01	5.55	5.26	5.25	6.35	6.82	6.66	6.14	6.25	6.11
28	7.55	6.45	5.99	5.53	5.26	---	6.37	6.82	6.60	6.18	6.25	6.12
29	7.58	6.42	5.97	5.52	---	---	6.43	6.84	6.54	6.18	6.26	6.13
30	7.58	6.39	5.95	5.51	---	---	6.45	6.90	6.50	6.18	6.25	6.13
31	7.51	---	5.93	5.50	---	---	---	6.91	---	6.16	6.26	---
MEAN	7.20	6.76	6.18	5.68	5.36	---	---	6.77	6.79	6.26	6.25	6.19
MAX	7.58	7.46	6.37	5.90	5.48	---	---	6.91	6.98	6.43	6.37	6.29
MIN	6.82	6.39	5.93	5.50	5.26	---	---	6.46	6.50	6.11	6.10	6.11

05131450 NETT LAKE AT NETT LAKE, MN--Continued



05131455 NETT LAKE RIVER NEAR NETT LAKE, MN

LOCATION.--Lat 48°06'36", long 93°11'12", in NE¼NE¼ sec. 20, T.65 N., R.22 W., Koochiching County, Hydrologic Unit 09030005, downstream from dam at outlet of Nett Lake, 4 miles west of the town of Nett Lake.

DRAINAGE AREA.--128 mi^2.

PERIOD OF RECORD.--October 1995 to current year.

GAGE.--Water-stage recorder. Elevation of gage 1,270 ft above sea level (from topographic map).

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Regulation from Nett Lake Dam upstream of 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	64	384	e175	e72	e35	e0.24	e0.13	e13	54	257	e2.2	e3.1
2	2.2	363	e163	e69	e33	e0.22	e0.13	e12	59	8.4	e2.0	e3.0
3	e1.9	369	e154	e67	e31	e0.20	e0.13	e11	57	8.7	e1.8	e2.8
4	e1.8	346	e145	e65	e30	e0.19	e0.13	e11	51	13	e1.7	e2.8
5	e1.7	318	e160	e63	e28	e0.18	e0.13	17	50	26	e1.6	e2.8
6	e1.7	293	e180	e62	e26	e0.17	e0.13	22	44	17	e1.6	e2.7
7	e1.7	283	e200	e61	e24	e0.17	e0.14	17	34	19	e3.5	e2.6
8	e2.1	244	e195	e60	e22	e0.16	e0.40	31	42	47	e3.7	e2.4
9	e3.0	236	e185	e59	e20	e0.16	e1.5	23	59	68	e3.7	e2.1
10	e3.8	224	e170	e58	e17	e0.15	e6.0	27	54	68	e3.8	e2.0
11	e5.0	213	e160	e57	e15	e0.15	21	37	65	52	e3.8	e1.8
12	e6.1	205	e150	e56	e13	e0.15	84	41	103	45	e3.8	1.6
13	e6.8	188	e140	e56	e11	e0.15	94	44	220	42	e3.8	e1.8
14	e7.0	178	e130	e55	e9.0	e0.15	121	55	334	37	e3.8	e1.5
15	e7.0	164	e125	e54	e7.5	e0.15	160	52	328	36	e3.9	e1.7
16	e7.0	162	e117	e54	e6.0	e0.14	186	60	307	e4.7	e3.9	e1.4
17	7.0	147	e112	e53	e4.5	e0.14	218	58	294	e4.5	e4.0	e1.6
18	6.7	134	e106	e52	e3.5	e0.14	276	58	276	e4.3	e4.0	e1.5
19	6.7	120	e100	e52	e2.8	e0.14	345	61	273	e4.0	e4.1	e1.3
20	7.3	121	e96	e51	e2.2	e0.14	333	57	256	e3.6	e4.1	e1.5
21	8.3	122	e93	e50	e1.7	e0.13	320	51	264	e3.2	e4.0	e1.2
22	12	120	e89	e49	e1.3	e0.13	300	49	263	e2.9	e3.8	e1.1
23	12	111	e87	48	e1.0	e0.13	286	47	288	e2.7	e3.7	e1.2
24	21	122	e95	e47	e0.80	e0.13	274	54	363	e2.3	e3.6	e1.4
25	9.7	129	e110	e46	e0.60	e0.13	268	50	403	e2.1	e3.5	e1.3
26	21	164	e100	e44	e0.48	0.13	262	39	399	e1.9	e3.4	e1.2
27	29	250	e94	e42	e0.38	e0.13	e250	52	389	e2.3	e3.3	e1.1
28	31	e225	e87	e41	e0.30	e0.13	e247	49	368	e2.8	2.9	e1.2
29	35	e205	e83	e39	---	e0.13	e186	56	341	e3.4	e2.8	e1.4
30	200	e185	e79	e38	---	e0.13	e15	47	306	e2.8	e2.6	e1.5
31	474	---	e75	e37	---	e0.13	---	48	---	e2.4	e3.4	---
TOTAL	1003.5	6325	3955	1657	347.06	4.72	4254.82	1249	6344	794.0	101.8	54.6
MEAN	32.4	211	128	53.5	12.4	0.15	142	40.3	211	25.6	3.28	1.82
MAX	474	384	200	72	35	0.24	345	61	403	257	4.1	3.1
MIN	1.7	111	75	37	0.30	0.13	0.13	11	34	1.9	1.6	1.1
AC-FT	1990	12550	7840	3290	688	9.4	8440	2480	12580	1570	202	108
CFSM	0.25	1.65	1.00	0.42	0.10	0.00	1.11	0.31	1.65	0.20	0.03	0.01
IN.	0.29	1.84	1.15	0.48	0.10	0.00	1.24	0.36	1.84	0.23	0.03	0.02

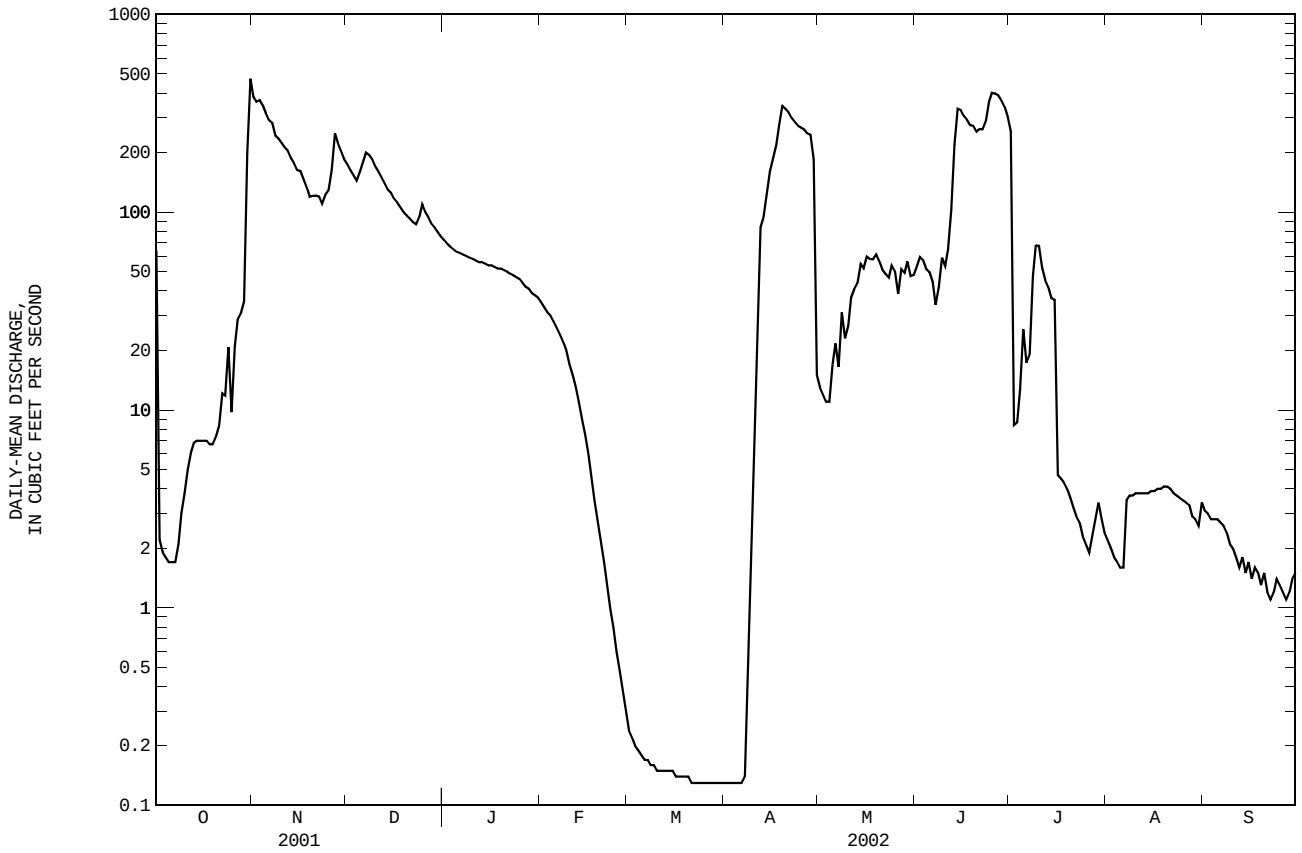
05131455 NETT LAKE RIVER NEAR NETT LAKE, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1996 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	79.1	101	60.8	31.9	19.4	17.1	304	338	120	51.8	25.5	37.9
MAX	187	211	128	54.3	37.3	40.1	464	566	322	94.8	98.0	154
(WY)	2001	2002	2002	1997	1996	1998	1999	2001	2001	1997	2001	1999
MIN	0.22	0.063	1.38	1.50	1.45	0.15	142	40.3	11.9	1.41	0.059	0.000
(WY)	1999	1999	1999	1999	1999	2002	2002	2002	2000	1996	1998	1998

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1996 - 2002	
ANNUAL TOTAL	58809.7		26090.50			
ANNUAL MEAN	161		71.5		99.0	
HIGHEST ANNUAL MEAN					162	2001
LOWEST ANNUAL MEAN					52.6	1998
HIGHEST DAILY MEAN	936	Apr 27	474	Oct 31	1470	Apr 13 1999
LOWEST DAILY MEAN	1.7	Oct 5	0.13	Mar 21 - Apr 6	0.00a	Jun 21 1996
ANNUAL SEVEN-DAY MINIMUM	1.9	Oct 2	0.13	Mar 21	0.00	Aug 13 1996
MAXIMUM PEAK FLOW			481	Oct 31	1490	Apr 13 1999
MAXIMUM PEAK STAGE			5.32	Oct 31	7.26	Apr 13 1999
ANNUAL RUNOFF (AC-FT)	116600		51750		71740	
ANNUAL RUNOFF (CFSM)	1.26		0.56		0.77	
ANNUAL RUNOFF (INCHES)	17.09		7.58		10.51	
10 PERCENT EXCEEDS	494		250		299	
50 PERCENT EXCEEDS	70		27		29	
90 PERCENT EXCEEDS	17		0.21		0.19	

a Many days in 1996, 1998 and 1999.
e Estimated.



05131500 LITTLE FORK RIVER AT LITTLEFORK, MN

LOCATION.--Lat 48°23'45", long 93°32'57", in NE¼SE¼ sec. 9, T.68 N., R.25 W., Koochiching County, Hydrologic Unit 09030005, on right bank at town of Littlefork, 0.9 mi upstream from bridge on State Highway 217, 2.8 mi upstream from Beaver Creek, and 19 mi upstream from mouth.

DRAINAGE AREA.--1,680 mi^2.

PERIOD OF RECORD.--June to November 1909, April to November 1910, April 1911 to June 1917, September 1917, October 1917 to March 1919 (gage heights only), June 1928 to current year.

REVISED RECORDS.--WSP 955: Drainage area. WSP 1508: 1913, 1916, 1928-32, 1934. WRD MN-74: 1963.

GAGE.--Water-stage recorder. Datum of gage is 1,083.59 ft above sea level (NGVD of 1929). June 23, 1909 to March 4, 1917, nonrecording gage, and July 21, 1937 to October 23, 1979, water-stage recorder at site 1.2 mi downstream at datum 10.53 ft lower; March 5 to September 30, 1917, and June 22, 1928 to July 20, 1937, non-recording gage at site 1.18 mi downstream at datum 10.53 ft lower.

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

DISCHARGE, in CFS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	282	1340	e1750	e560	e250	e125	e124	1320	1200	2930	505	531
2	273	1740	e1680	e540	e245	e125	e126	1250	1200	2110	457	489
3	266	1800	e1580	e510	e240	e124	e127	1210	1080	1500	413	476
4	231	1710	e1450	e490	e235	e123	e129	1170	960	1080	464	476
5	196	1560	e1470	e475	e225	e121	e132	1150	850	923	528	475
6	182	1420	e1500	e460	e220	e119	e137	1170	757	864	521	493
7	178	1310	e1600	e450	e215	e118	e145	1190	682	798	528	480
8	173	1220	e1750	e435	e210	e116	e150	1210	619	792	4950	446
9	184	1180	e1900	e425	e205	e114	e160	1350	579	850	4950	418
10	208	1160	e1750	e410	e200	e110	e180	1620	741	1230	2910	383
11	254	1140	e1600	e400	e195	e112	e260	1780	3580	1760	2030	360
12	427	1110	e1500	e390	e190	e114	e400	1820	3080	1710	1740	337
13	583	1060	e1420	e380	e185	e115	e600	1770	2360	1430	1680	321
14	812	1010	e1350	e370	e185	e116	e1000	1910	2210	1170	1490	313
15	960	960	e1250	e360	e180	e117	e1800	2130	2170	983	1310	291
16	994	914	e1200	e350	e175	e118	e3420	2130	2060	827	1330	271
17	976	870	e1130	e345	e170	e118	e4080	1960	1800	684	1350	255
18	923	835	e1050	e340	e170	e118	3510	1760	1520	561	1470	245
19	851	793	e1000	e335	e165	e118	3570	1570	1610	482	1600	236
20	782	755	e950	e325	e160	e118	3600	1400	3080	425	1580	228
21	724	722	e910	e320	e155	e118	3300	1260	2680	384	1370	224
22	678	706	e860	e315	e155	e118	2860	1140	2270	347	1180	230
23	657	687	e810	e310	e150	e118	2480	1050	3480	315	1000	244
24	655	676	e770	e305	e145	e118	2180	995	5670	296	857	249
25	713	723	e730	e295	e145	e118	1980	960	6920	294	741	249
26	827	1470	e700	e285	e140	e118	1800	919	7630	300	653	251
27	912	e1990	e670	e280	e135	e119	1640	866	7260	283	582	250
28	979	e1750	e640	e275	e130	e120	1510	813	6350	301	558	248
29	1000	e1200	e610	e270	---	e121	1430	902	5100	406	511	242
30	1030	e1450	e600	e265	---	e122	1380	1020	3930	508	488	240
31	1080	---	e580	e255	---	e123	---	1160	---	537	545	---
TOTAL	18990	35261	36760	11525	5175	3672	44210	41955	83428	27080	40291	9951
MEAN	612.6	1175	1186	371.8	184.8	118.5	1474	1353	2781	873.5	1300	331.7
MAX	1080	1990	1900	560	250	125	4080	2130	7630	2930	4950	531
MIN	173	676	580	255	130	110	124	813	579	283	413	224
AC-FT	37670	69940	72910	22860	10260	7280	87690	83220	165500	53710	79920	19740
CFSM	0.36	0.70	0.71	0.22	0.11	0.07	0.88	0.81	1.66	0.52	0.77	0.20
IN.	0.42	0.78	0.81	0.26	0.11	0.08	0.98	0.93	1.85	0.60	0.89	0.22

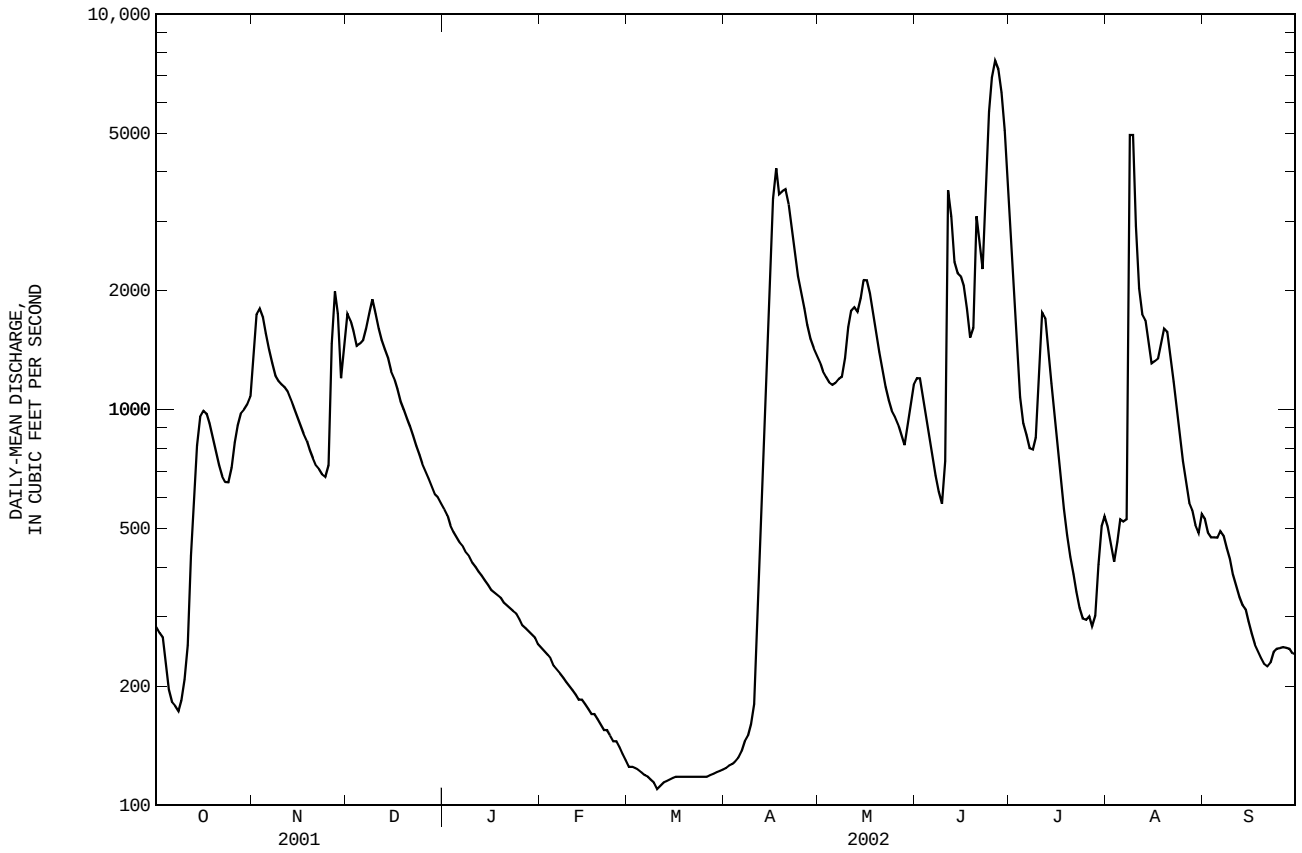
05131500 LITTLE FORK RIVER AT LITTLEFORK, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1909 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	904.8	737.4	324.5	153.0	115.9	282.1	3210	2875	1752	997.2	573.8	730.0
MAX	4450	3044	972	477	270	3022	8421	12190	5490	3643	2679	5189
(WY)	1996	1972	1983	1966	1969	1945	1966	1950	1944	1944	1988	1977
MIN	43.4	60.8	52.6	43.5	42.2	50.2	292	173	182	75.4	34.3	29.2
(WY)	1977	1977	1977	1931	1963	1940	1977	1977	1988	1988	1936	1976

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1909 - 2002	
ANNUAL TOTAL	672128		358298			
ANNUAL MEAN	1841		981.6		1069	
HIGHEST ANNUAL MEAN					1912	1966
LOWEST ANNUAL MEAN					306	1931
HIGHEST DAILY MEAN	18500	Apr 14	7630	Jun 26	25000	Apr 18 1916
LOWEST DAILY MEAN	173	Oct 8	110	Mar 10	21	Aug 26 1936
ANNUAL SEVEN-DAY MINIMUM	181	Mar 18	114	Mar 8	22	Aug 21 1936
MAXIMUM PEAK FLOW			7690	Jun 26	25000	Apr 18 1916
MAXIMUM PEAK STAGE			11.64	Jun 26	37.00a	Apr 18 1916
INSTANTANEOUS LOW FLOW					21	Aug 26 1936
ANNUAL RUNOFF (AC-FT)	1333000		710700		774600	
ANNUAL RUNOFF (CFSM)	1.10		0.58		0.64	
ANNUAL RUNOFF (INCHES)	14.88		7.93		8.65	
10 PERCENT EXCEEDS	5880		1970		2830	
50 PERCENT EXCEEDS	688		676		374	
90 PERCENT EXCEEDS	186		131		87	

a Also occurred May 11, 1950, site and datum then in use.
e Estimated.



05132000 BIG FORK RIVER AT BIG FALLS, MN

LOCATION.--Lat 48°11'45", long 93°48'25", in SW¼SE¼ sec.35, T.155 N., R.25 W., Koochiching County, Hydrologic Unit 09030006, on left bank at town of Big Falls, 700 ft downstream from falls, 0.3 mi downstream from bridge on U.S. Highway 71, and 4.8 mi upstream from Sturgeon River.

DRAINAGE AREA.--1,480 mi^2.

PERIOD OF RECORD.--August to November 1909, April to November 1910, April 1911 to September 1912 (gage heights and discharge measurements only), June 1928 to September 1979, October 1979 to September 1982 (annual maximum only), October 1982 to September 1993, October 1993 to September 1994 (annual maximum only) and October 1997 to current year.

REVISED RECORDS.--WSP 1308:1935 (M).

GAGE.--Water-stage recorder. Datum of gage is 1,144.71 ft above sea level (NGVD of 1929). Prior to June 10, 1911, nonrecording gage at railroad bridge about 0.4 mi upstream at different datum. June 10, 1911 to Sept. 30, 1912, and June 22, 1928 to Dec. 17, 1937, nonrecording gage at site 200 ft upstream at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Prior to 1971, a powerplant, located 0.3 mi upstream, caused some diurnal fluctuation at low 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	357	980	e620	e420	e300	e195	e215	1040	797	2360	520	465
2	355	1000	e660	e415	e300	e190	e215	1030	774	1960	468	445
3	359	994	e690	e410	e295	e185	e220	990	688	1680	436	448
4	359	974	e675	e405	e290	e190	e225	950	605	1430	408	437
5	357	935	e655	e400	e285	e195	e230	942	537	1260	381	429
6	356	894	e675	e390	e280	e200	e240	944	490	1140	355	429
7	357	875	e685	e385	e275	e200	e260	960	460	1050	1150	420
8	361	893	e690	e380	e270	e200	e300	975	441	1090	1380	411
9	364	896	e680	e375	e265	e200	e370	1120	434	1140	976	401
10	396	887	e665	e370	e265	e200	e440	1370	557	1520	894	391
11	511	864	e635	e365	e260	e200	e500	1570	1130	1670	838	380
12	646	835	e615	e365	e260	e200	e590	1570	1240	1580	775	365
13	713	819	e590	e360	e255	e200	e700	1480	1310	1410	727	364
14	765	807	e580	e360	e250	e200	e920	1450	1440	1240	641	347
15	810	799	e565	e360	e245	e200	e1500	1390	1320	1100	653	339
16	805	783	e550	e357	e245	e200	e2500	1310	1130	991	774	329
17	805	771	e540	e355	e240	e200	1970	1210	945	879	730	331
18	787	746	e530	e350	e235	e200	1760	1120	776	786	710	325
19	761	736	e520	e340	e230	e200	1900	1020	802	710	652	335
20	728	722	e510	e340	e225	e200	2000	932	1210	645	609	336
21	718	695	e505	e335	e225	e200	1970	857	1220	610	568	333
22	710	671	e495	e330	e220	e200	1820	777	1210	560	531	336
23	707	655	e485	e330	e215	e200	1620	742	4150	530	480	338
24	730	651	e480	e325	e215	e200	1480	738	7910	501	452	335
25	795	724	e470	e325	e210	e200	1390	741	9420	468	429	330
26	868	825	e465	e320	e210	e200	1270	716	8450	445	404	327
27	916	e680	e455	e320	e205	e205	1180	657	6570	440	407	319
28	919	e580	e445	e315	e205	e205	1080	640	4920	461	430	323
29	910	e400	e440	e310	---	e210	1030	654	3800	530	476	325
30	925	e385	e435	e310	---	e210	1030	734	2970	589	465	325
31	950	---	e430	e305	---	e210	---	796	---	567	464	---
TOTAL	20100	23476	17435	11027	6975	6195	30925	31425	67706	31342	19183	11018
MEAN	648	783	562	356	249	200	1031	1014	2257	1011	619	367
MAX	950	1000	690	420	300	210	2500	1570	9420	2360	1380	465
MIN	355	385	430	305	205	185	215	640	434	440	355	319
AC-FT	39870	46560	34580	21870	13830	12290	61340	62330	134300	62170	38050	21850
CFSM	0.44	0.53	0.38	0.24	0.17	0.14	0.70	0.68	1.52	0.68	0.42	0.25
IN.	0.51	0.59	0.44	0.28	0.18	0.16	0.78	0.79	1.70	0.79	0.48	0.28

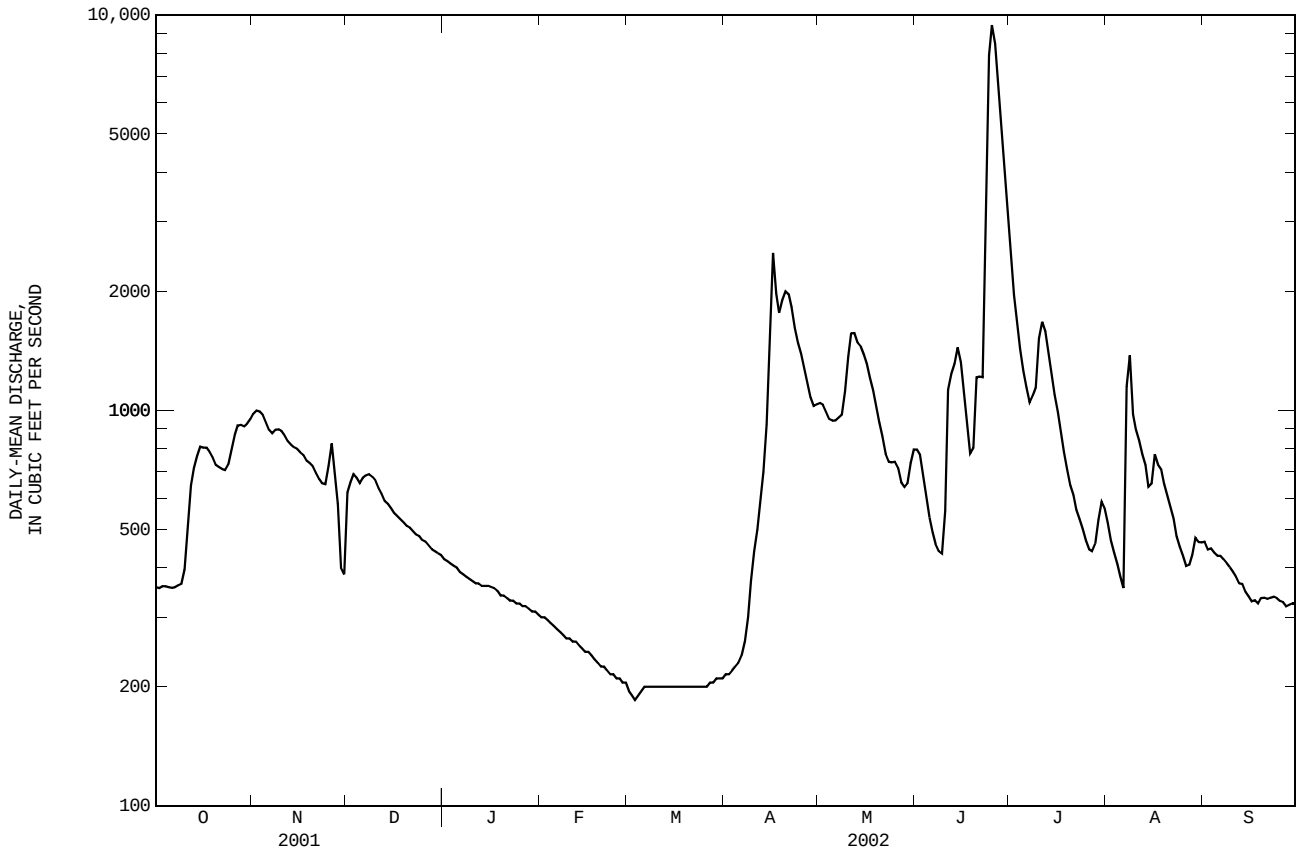
05132000 BIG FORK RIVER AT BIG FALLS, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1909 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	669	553	294	178	142	253	1915	2010	1185	654	417	565
MAX	2247	2034	685	399	335	1928	5186	7496	2890	2321	1799	2989
(WY)	1970	1972	1970	1969	1969	1945	1966	1950	1974	1944	1978	1937
MIN	38.3	44.5	31.6	22.2	22.9	32.9	175	138	180	46.0	26.7	22.4
(WY)	1932	1935	1935	1935	1935	1940	1931	1931	1934	1931	1934	1934

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1909 - 2002	
ANNUAL TOTAL	454241		276807			
ANNUAL MEAN	1244		758		737	
HIGHEST ANNUAL MEAN					1362	1950
LOWEST ANNUAL MEAN					92.0	1931
HIGHEST DAILY MEAN	9360	Apr 15	9420	Jun 25	14800	May 9 1950
LOWEST DAILY MEAN	237	Mar 18	185	Mar 3	14	Jan 10 1940
ANNUAL SEVEN-DAY MINIMUM	237	Mar 18	194	Mar 1	18	Jan 22 1935
MAXIMUM PEAK FLOW			9570	Jun 25	14800	May 8 1950
MAXIMUM PEAK STAGE			12.50	Jun 25	17.08	May 8 1950
INSTANTANEOUS LOW FLOW					7.0	Aug 7 1939
ANNUAL RUNOFF (AC-FT)	901000		549000		533900	
ANNUAL RUNOFF (CFSM)	0.84		0.51		0.50	
ANNUAL RUNOFF (INCHES)	11.42		6.96		6.77	
10 PERCENT EXCEEDS	3920		1310		1810	
50 PERCENT EXCEEDS	510		530		337	
90 PERCENT EXCEEDS	242		215		81	

e Estimated.



05133500 RAINY RIVER AT MANITOU RAPIDS, MN
(International Gaging Station)

LOCATION.--Lat 48°38'04", long 93°54'47", in NW¼SE¼ sec. 36, T.160 N., R.26 W., Koochiching County, Hydrologic Unit 09030004, on left bank at Manitou Rapids, 4 mi west of Indus.

DRAINAGE AREA.--19,400 mi^2 (approximately).

PERIOD OF RECORD.--July 1928 to current year. Monthly discharge only for some periods, published in WSP 1308. October 1911 to October 1924 (gage heights only) at site near Birchdale in files of U.S. Army Corps of Engineers. Published as "near Birchdale" 1932-34.

GAGE.--Water-stage recorder. Datum of gage is 1,062.48 ft above sea level (NGVD of 1929). Prior to Nov. 10, 1934, nonrecording gage at site near Birchdale, 7 mi. downstream at different datum.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Diurnal fluctuation caused by power plants at International Falls. Some regulation at Rainy and Namakan Lakes affects low and medium flows.

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	6920	14200	15100	e15000	e11900	e10000	5510	8170	7540	50200	16500	8300
2	9100	14400	15400	e15000	e11900	e9800	7050	8130	7650	47800	16200	8510
3	9140	15100	15400	e15000	e11700	e8200	7810	8140	7470	45900	13700	8450
4	9120	14800	15300	e15300	e11700	e8200	6630	7870	7170	44300	11200	9330
5	9040	14700	15300	e15200	e11700	e9500	5710	7910	6890	46900	10500	9160
6	8590	14200	15500	e15000	e12000	e9800	5580	7890	6600	48500	10200	8900
7	6180	14100	e15000	e14800	e12000	e9800	5420	7940	6310	46200	8980	8960
8	5420	14200	e14600	e14700	e12000	e9400	5490	8050	6190	44800	8450	9040
9	6370	14700	e14500	e14600	e11800	e8800	5500	8300	6190	44000	12300	8870
10	7190	15000	e14500	e14300	e11600	e7200	5660	9100	15700	43400	12300	8810
11	9800	15000	e16500	e14000	e11300	e7800	5970	9770	35900	43300	10200	8460
12	11100	15000	e17900	e13700	e11100	e8800	6440	10100	46100	43100	9010	7170
13	12600	13900	e17800	e13600	e11000	e9400	7200	10100	47000	42300	8460	6430
14	14600	14000	e17700	e13500	e10900	e9600	8110	10100	49400	41300	8230	5860
15	15700	14200	e17000	e12600	e10700	e9700	8980	9970	49300	40400	8050	5810
16	16000	14200	e16300	e12600	e10600	e9600	10100	9840	48000	39300	9090	5690
17	16100	13900	e16000	e12700	e10400	e8700	13200	9620	46600	38500	10600	5630
18	15900	13200	e16000	e12500	e10300	e8700	12900	9230	45300	37700	11400	5530
19	15800	13100	e15700	e12200	e10600	e9800	11900	8850	45100	36800	11600	5460
20	16100	13400	e15400	e12000	e10700	e9700	11800	8440	46500	36000	11600	5470
21	16200	13200	e15000	e12000	e10600	e9400	11600	8050	47600	35300	11400	5410
22	16100	13300	e14700	e12100	e10500	e9600	11300	7710	48900	34300	11000	5460
23	15100	13300	e15300	e12200	e10400	e10000	10700	7370	52100	33600	10200	5430
24	14600	13100	e15400	e12100	e10000	e9300	10100	7310	55400	32800	9420	5430
25	14500	12300	e15800	e12000	e9800	e9000	9700	7190	60200	32000	9010	5350
26	14700	12500	e16500	e12000	e9700	e10100	9540	7060	63100	31100	8760	5330
27	14300	14100	e16500	e11800	e10100	e9700	9090	7030	63100	30000	8290	5300
28	14400	15000	e16100	e11700	e10200	e9400	8680	6850	60600	28400	7970	5310
29	14600	14800	e14800	e11800	---	9080	8340	6730	56900	26300	7880	5290
30	14600	14800	e14800	e11900	---	6460	8280	6820	53300	22600	7840	5230
31	14200	---	e15000	e11900	---	5570	---	7210	---	18200	7920	---
TOTAL	384070	421700	486800	409800	307200	280110	254290	256850	1098110	1185300	318260	203380
MEAN	12390	14060	15700	13220	10970	9036	8476	8285	36600	38240	10270	6779
MAX	16200	15100	17900	15300	12000	10100	13200	10100	63100	50200	16500	9330
MIN	5420	12300	14500	11700	9700	5570	5420	6730	6190	18200	7840	5230
AC-FT	761800	836400	965600	812800	609300	555600	504400	509500	2178000	2351000	631300	403400
CFSM	0.64	0.72	0.81	0.68	0.57	0.47	0.44	0.43	1.89	1.97	0.53	0.35
IN.	0.74	0.81	0.93	0.79	0.59	0.54	0.49	0.49	2.11	2.27	0.61	0.39

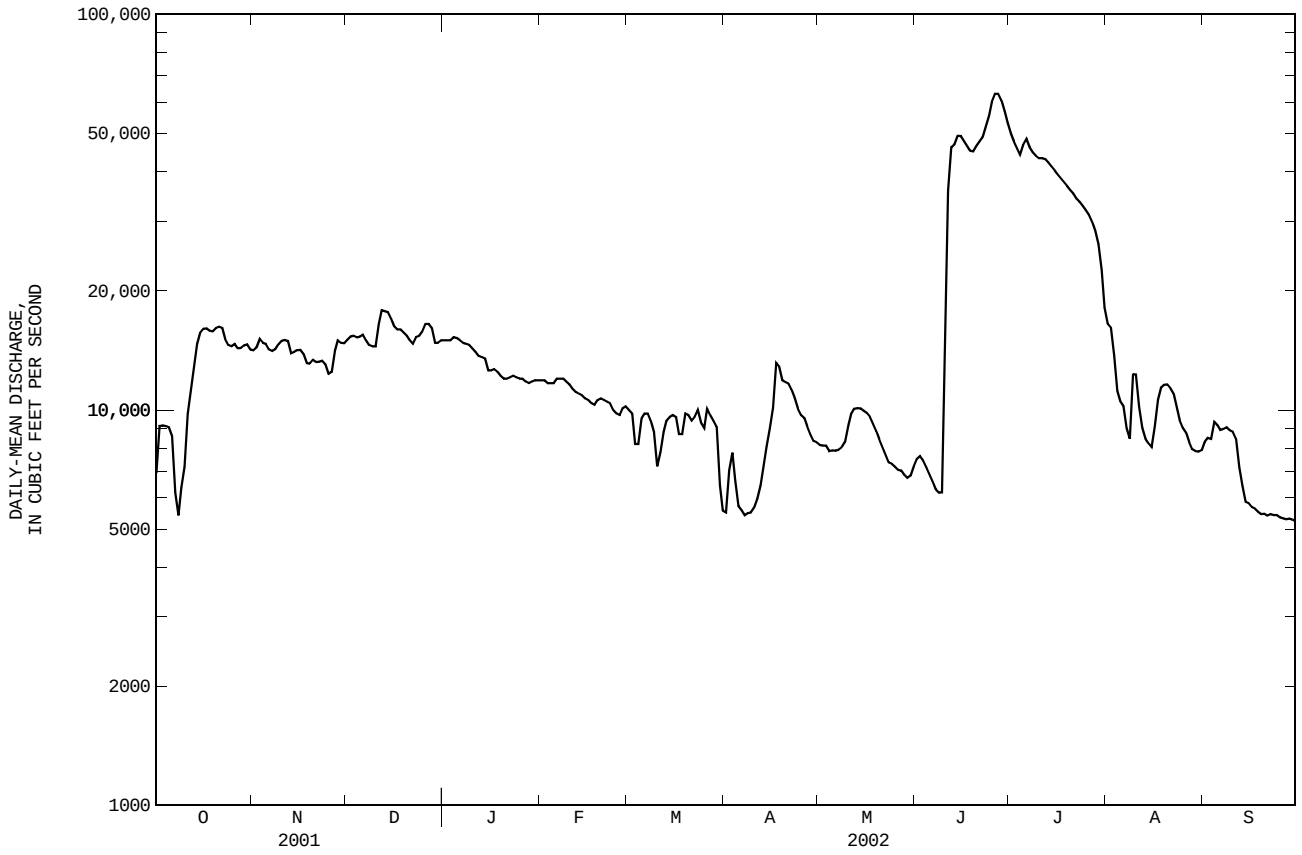
05133500 RAINY RIVER AT MANITOU RAPIDS, MN--Continued
(International Gaging Station)

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	11890	11500	10270	9194	8741	8954	15580	19740	20330	16950	11690	11120
MAX	42410	37280	27790	18430	17240	16640	38100	52880	49480	47970	33700	30620
(WY)	1942	1972	1972	1972	1969	1945	1966	1950	1950	1950	1944	1988
MIN	4728	3796	3190	2900	3129	2926	4378	4106	3676	3483	3422	3746
(WY)	1981	1977	1930	1931	1931	1931	1977	1977	1980	1980	1980	1998

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1929 - 2002	
ANNUAL TOTAL	7606430		5605870			
ANNUAL MEAN	20840		15360		13010	
HIGHEST ANNUAL MEAN					23260	1950
LOWEST ANNUAL MEAN					4470	1931
HIGHEST DAILY MEAN	60100	May 25	63100	Jun 26,27	71300	May 11 1950
LOWEST DAILY MEAN	5400	Feb 19	5230a	Sep 30	928	Dec 26 1929
ANNUAL SEVEN-DAY MINIMUM	6140	Apr 1	5320	Sep 24	1500	Dec 24 1929
MAXIMUM PEAK FLOW			63800	Jun 26	71600	May 12 1950
MAXIMUM PEAK STAGE			19.33	Jun 26	21.04	May 12 1950
ANNUAL RUNOFF (AC-FT)	15090000		11120000		9427000	
ANNUAL RUNOFF (CFSM)	1.07		0.79		0.67	
ANNUAL RUNOFF (INCHES)	14.59		10.75		9.11	
10 PERCENT EXCEEDS	41900		38000		25700	
50 PERCENT EXCEEDS	15000		11600		10300	
90 PERCENT EXCEEDS	8000		6620		5060	

a Falling stage.
e Estimated.



05140520 LAKE OF THE WOODS AT WARROAD, MN
(International gaging station)

LOCATION.--Lat 48°54'15", long 95°18'57", in SW¼SE¼ sec.29, T. 163 N., R. 36 W., Roseau County, Hydrologic Unit 09030009, on left bank of Warroad River in Warroad, 300 ft downstream from Canadian National railroad bridge, 1000 ft downstream from bridge on State Highway 11, and 4000 ft upstream from mouth of Warroad River.

DRAINAGE AREA.--27,200 mi^2.

PERIOD OF RECORD.--April to September 1978, month-end elevations only. October 1978 to September 1985, daily-mean elevations; October 1985 to December 1994 and October 1997 to current year, daily-mean elevations (gage heights). Records collected prior to April 1978 are in reports of the Water Survey of Canada.

GAGE.--Water-stage recorder. Datum at gage is 1,000.00 ft above sea level (Lake of the Woods datum).

REMARKS.--Records good. Runoff conditions of the Warroad River can affect water levels at this station. Water level subject to fluctuation caused by changes in direction and velocity of wind and resulting seiches.

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

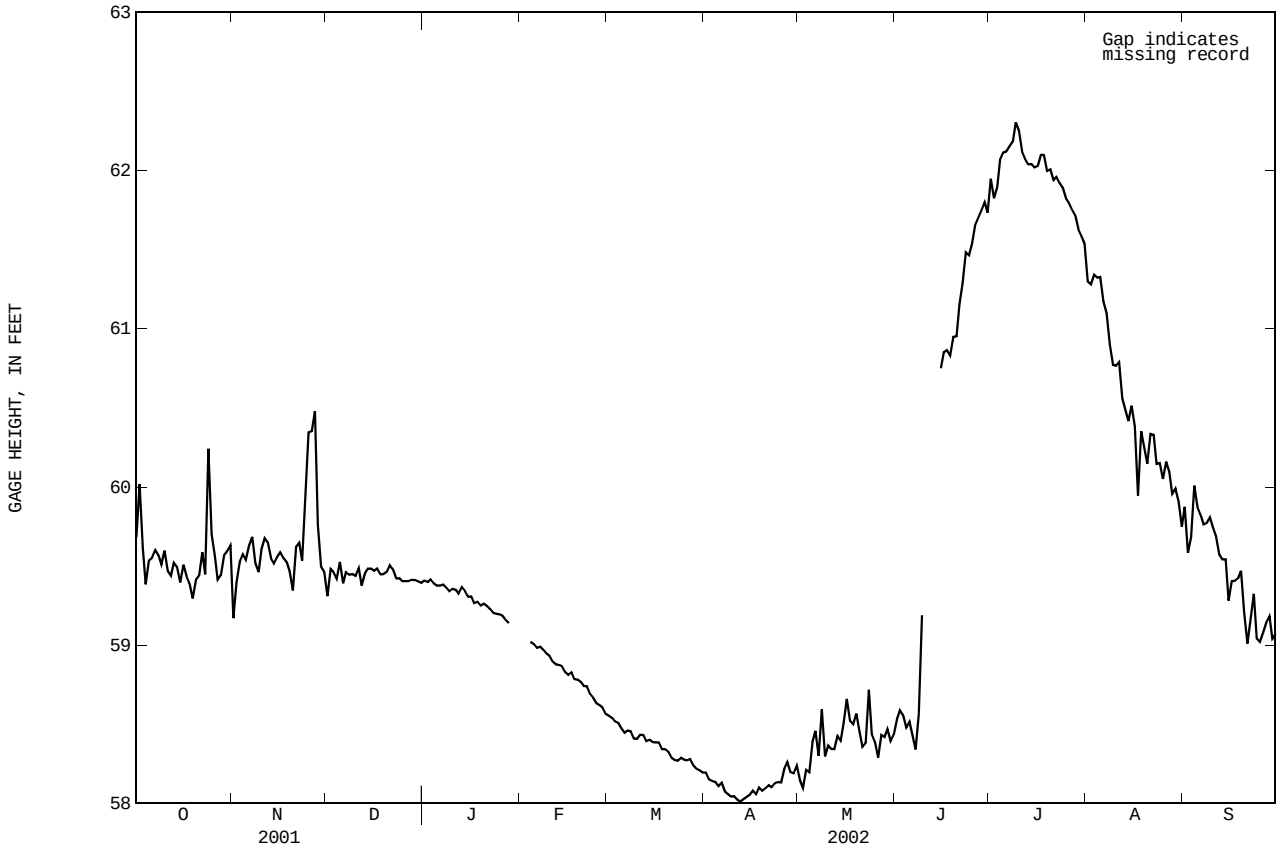
EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 62.55 ft, June 27, 2001; maximum daily, 62.31 ft, Jul. 9, 2002; minimum gage height recorded, 55.94 ft, Sept. 4, 1980; minimum daily recorded, 56.52 ft, Apr. 15, 1981.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 62.44 ft, Jul. 10; maximum daily, 62.31 ft, Jul. 9; minimum gage height, 57.81 ft, May 2; minimum daily, 58.01 ft, Apr. 12.

GAGE HEIGHT 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	59.68	59.17	59.31	59.41	---	58.55	58.19	58.14	58.53	61.95	61.30	59.87
2	60.02	59.40	59.48	59.40	---	58.54	58.15	58.10	58.59	61.83	61.28	59.58
3	59.61	59.53	59.46	59.41	---	58.52	58.14	58.21	58.56	61.89	61.34	59.68
4	59.38	59.57	59.42	59.39	59.02	58.51	58.14	58.20	58.48	62.07	61.32	60.01
5	59.54	59.54	59.53	59.38	59.01	58.47	58.11	58.39	58.52	62.11	61.33	59.87
6	59.55	59.63	59.39	59.38	58.98	58.45	58.13	58.46	58.42	62.12	61.17	59.83
7	59.60	59.68	59.46	59.38	58.99	58.46	58.07	58.30	58.34	62.15	61.10	59.76
8	59.57	59.52	59.44	59.36	58.97	58.46	58.06	58.59	58.57	62.18	60.90	59.77
9	59.51	59.46	59.45	59.34	58.95	58.41	58.04	58.30	59.19	62.31	60.77	59.81
10	59.60	59.61	59.44	59.36	58.93	58.41	58.05	58.37	---	62.25	60.77	59.74
11	59.47	59.68	59.49	59.35	58.90	58.43	58.02	58.34	---	62.12	60.79	59.69
12	59.44	59.65	59.38	59.33	58.88	58.43	58.01	58.34	---	62.07	60.56	59.57
13	59.52	59.55	59.45	59.37	58.88	58.39	58.02	58.43	---	62.04	60.48	59.54
14	59.49	59.52	59.48	59.34	58.87	58.40	58.04	58.40	---	62.04	60.42	59.54
15	59.40	59.56	59.48	59.31	58.83	58.39	58.05	58.51	60.75	62.02	60.51	59.28
16	59.51	59.59	59.47	59.31	58.81	58.38	58.08	58.66	60.85	62.03	60.38	59.41
17	59.43	59.55	59.48	59.27	58.83	58.39	58.06	58.52	60.86	62.10	59.94	59.41
18	59.39	59.52	59.45	59.27	58.79	58.34	58.10	58.50	60.83	62.10	60.35	59.42
19	59.30	59.47	59.45	59.25	58.78	58.34	58.08	58.57	60.95	62.00	60.26	59.47
20	59.41	59.35	59.46	59.26	58.77	58.33	58.10	58.46	60.95	62.01	60.15	59.20
21	59.44	59.62	59.51	59.25	58.74	58.29	58.11	58.36	61.15	61.94	60.34	59.01
22	59.59	59.65	59.48	59.23	58.74	58.27	58.10	58.38	61.29	61.96	60.33	59.16
23	59.45	59.53	59.42	59.20	58.69	58.27	58.13	58.72	61.48	61.92	60.15	59.33
24	60.24	59.90	59.42	59.20	58.67	58.29	58.13	58.44	61.46	61.89	60.15	59.04
25	59.70	60.34	59.41	59.20	58.63	58.28	58.13	58.39	61.53	61.83	60.05	59.02
26	59.57	60.35	59.41	59.19	58.62	58.27	58.22	58.29	61.65	61.79	60.16	59.08
27	59.41	60.48	59.40	59.16	58.61	58.28	58.26	58.43	61.70	61.75	60.09	59.14
28	59.44	59.76	59.41	59.14	58.57	58.24	58.20	58.42	61.75	61.72	59.96	59.18
29	59.57	59.50	59.41	---	---	58.22	58.19	58.47	61.80	61.63	59.99	59.04
30	59.59	59.46	59.40	---	---	58.21	58.24	58.39	61.73	61.58	59.91	59.07
31	59.63	---	59.39	---	---	58.19	---	58.44	---	61.54	59.75	---
MEAN	59.55	59.64	59.44	---	---	58.37	58.11	58.40	---	61.97	60.52	59.45
MAX	60.24	60.48	59.53	---	---	58.55	58.26	58.72	---	62.31	61.34	60.01
MIN	59.30	59.17	59.31	---	---	58.19	58.01	58.10	---	61.54	59.75	59.01

05140520 LAKE OF THE WOODS AT WARROAD, MN--Continued
(International gaging station)



05140521 LAKE OF THE WOODS AT SPRINGSTEEL ISLAND NEAR WARROAD, MN

LOCATION.--Lat 48°56'45", long 95°18'24", in SW¼SW¼ sec. 9, T. 163 N., R. 36 W., Roseau County, Hydrologic Unit 09030009, at Springsteel Resort on Springsteel Island, 2.8 mi north of Warroad.

DRAINAGE AREA.--27,200 mi^2.

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

GAGE.--Water-stage recorder. Datum at gage is 1,000.00 ft above sea level (Lake of the Woods datum).

REMARKS.--Records fair. Water level subject to fluctuation caused by changes in direction and velocity of wind and resulting seiches.

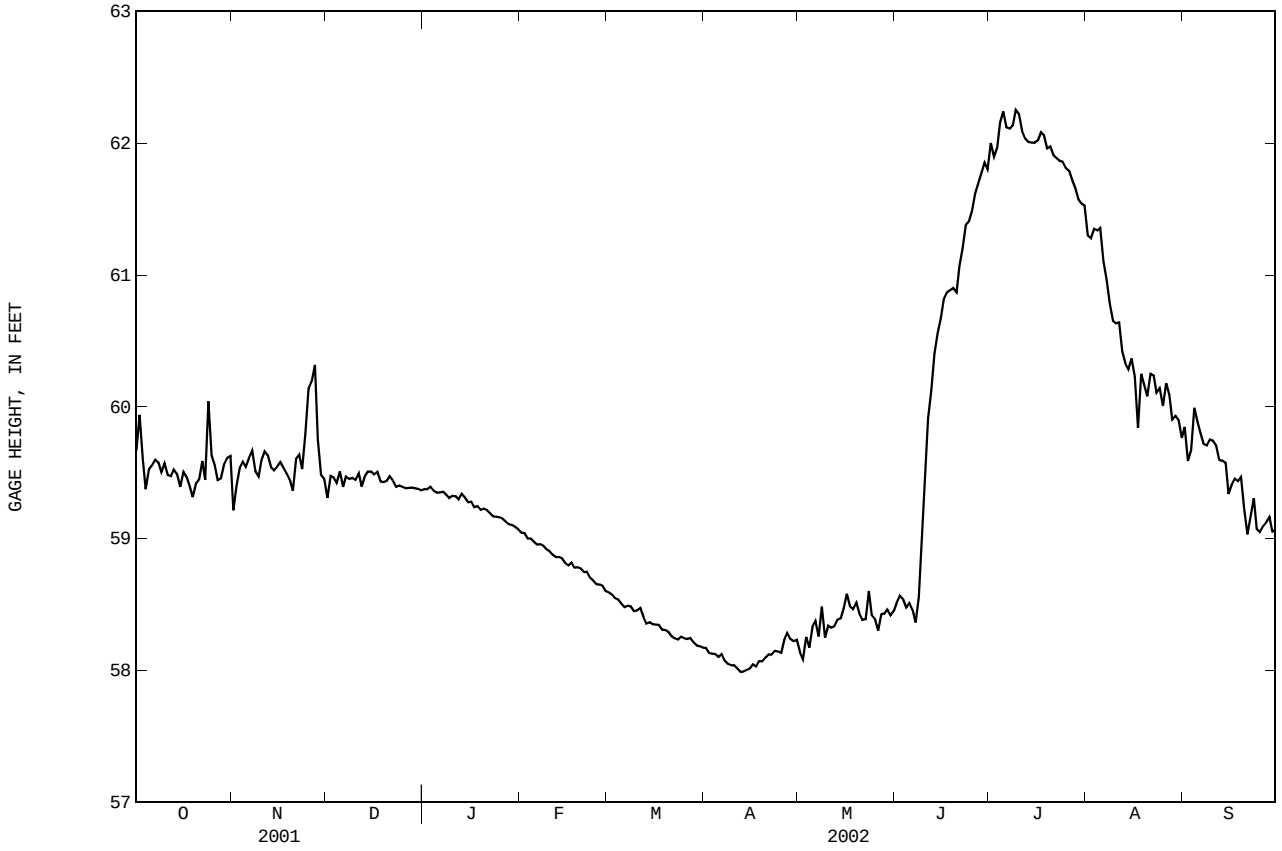
EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 62.53 ft, July 5, 2002; maximum daily, 62.25 ft, July 9, 2002; minimum gage height, 57.22 ft, Nov. 22, 1990; minimum daily, 57.43 ft, Mar. 18, 19, 20, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 62.53 ft, July 5; maximum daily, 62.25 ft, July 9; minimum gage height, 57.87 ft, May 2; minimum daily, 57.99 ft, Apr. 12, 13.

GAGE HEIGHT, 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	59.67	59.22	59.31	59.38	59.05	58.59	58.17	58.14	58.52	62.00	61.30	59.85
2	59.94	59.40	59.48	59.38	59.04	58.57	58.13	58.09	58.57	61.90	61.28	59.59
3	59.61	59.54	59.47	59.39	59.00	58.55	58.13	58.25	58.54	61.97	61.35	59.67
4	59.38	59.59	59.42	59.36	59.00	58.54	58.12	58.17	58.48	62.16	61.34	59.99
5	59.52	59.54	59.51	59.35	58.98	58.51	58.10	58.33	58.51	62.24	61.36	59.88
6	59.56	59.61	59.39	59.35	58.95	58.48	58.13	58.37	58.46	62.12	61.10	59.80
7	59.60	59.67	59.47	59.36	58.96	58.49	58.08	58.26	58.36	62.11	60.96	59.72
8	59.58	59.51	59.45	59.34	58.95	58.49	58.05	58.48	58.55	62.14	60.78	59.71
9	59.50	59.47	59.46	59.31	58.92	58.45	58.04	58.25	59.10	62.25	60.65	59.75
10	59.57	59.60	59.45	59.32	58.91	58.46	58.04	58.34	59.50	62.22	60.63	59.74
11	59.48	59.66	59.50	59.32	58.88	58.47	58.02	58.32	59.91	62.09	60.64	59.71
12	59.47	59.63	59.40	59.30	58.86	58.41	57.99	58.33	60.12	62.04	60.42	59.60
13	59.52	59.54	59.47	59.34	58.86	58.36	57.99	58.38	60.40	62.01	60.33	59.59
14	59.49	59.52	59.51	59.31	58.85	58.37	58.00	58.40	60.56	62.00	60.29	59.58
15	59.39	59.54	59.51	59.28	58.82	58.35	58.01	58.47	60.67	62.00	60.37	59.34
16	59.51	59.58	59.49	59.28	58.80	58.35	58.04	58.58	60.81	62.02	60.23	59.41
17	59.47	59.54	59.51	59.24	58.82	58.35	58.03	58.49	60.87	62.08	59.84	59.46
18	59.40	59.50	59.43	59.25	58.78	58.31	58.07	58.46	60.88	62.06	60.25	59.44
19	59.32	59.45	59.43	59.22	58.78	58.31	58.07	58.51	60.90	61.96	60.17	59.47
20	59.41	59.36	59.44	59.23	58.77	58.29	58.10	58.44	60.87	61.97	60.08	59.22
21	59.45	59.60	59.47	59.21	58.75	58.26	58.12	58.38	61.07	61.91	60.25	59.03
22	59.59	59.64	59.44	59.19	58.75	58.25	58.12	58.39	61.20	61.89	60.24	59.17
23	59.45	59.53	59.39	59.17	58.71	58.24	58.15	58.60	61.38	61.87	60.11	59.31
24	60.04	59.80	59.40	59.17	58.68	58.26	58.14	58.42	61.41	61.86	60.14	59.07
25	59.63	60.14	59.39	59.16	58.65	58.24	58.13	58.39	61.48	61.81	60.01	59.05
26	59.56	60.19	59.38	59.15	58.65	58.24	58.24	58.30	61.62	61.79	60.18	59.09
27	59.44	60.32	59.39	59.13	58.64	58.25	58.28	58.43	61.69	61.72	60.09	59.12
28	59.46	59.75	59.39	59.11	58.60	58.22	58.24	58.43	61.77	61.66	59.90	59.16
29	59.56	59.49	59.38	59.10	---	58.19	58.22	58.46	61.85	61.57	59.93	59.05
30	59.61	59.45	59.38	59.09	---	58.18	58.23	58.42	61.80	61.54	59.90	59.07
31	59.63	---	59.37	59.07	---	58.17	---	58.45	---	61.53	59.76	---
MEAN	59.54	59.61	59.43	59.25	58.84	58.36	58.11	58.38	60.26	61.95	60.45	59.45
MAX	60.04	60.32	59.51	59.39	59.05	58.59	58.28	58.60	61.85	62.25	61.36	59.99
MIN	59.32	59.22	59.31	59.07	58.60	58.17	57.99	58.09	58.36	61.53	59.76	59.03

05140521 LAKE OF THE WOODS AT SPRINGSTEEL ISLAND NEAR WARROAD, MN--Continued



05200510 MISSISSIPPI RIVER NEAR BEMIDJI, MN

LOCATION.--Lat 47°29'00", long 94°43'40", in SE¼SW¼ sec. 3, T.146 N., R.32 W., Beltrami County, Hydrologic Unit 07010101, on right bank 100 ft upstream of County Highway 12, 400 ft downstream from Stump Lake dam, and 3.5 mi east of Bemidji .

DRAINAGE AREA.--610 mi^2 (approximately).

PERIOD OF RECORD.--September 1987 to current year (no winter records).

GAGE.--Water-stage recorder. Elevation of gage is 1,315 ft above sea level (from topographic map).

REMARKS.--Records good. Flow regulated by Stump Lake Dam upstream from 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	143	484	---	---	---	200	197	397	380	1250	422	313
2	142	395	---	---	---	200	197	397	372	1270	570	314
3	143	389	---	---	---	200	184	385	364	1200	668	316
4	147	382	---	---	---	200	145	389	363	1150	640	312
5	144	500	---	---	---	200	144	386	361	1140	426	312
6	140	641	---	---	---	200	143	382	279	1120	271	315
7	136	746	---	---	---	200	137	380	239	1110	258	315
8	135	910	---	---	---	200	105	351	239	1220	264	315
9	139	845	---	---	---	200	82	411	241	1140	265	371
10	154	813	---	---	---	200	106	405	253	1130	271	467
11	158	766	---	---	---	200	104	397	261	1050	273	459
12	157	688	---	---	---	200	103	399	260	941	275	456
13	167	636	---	---	---	200	102	401	262	936	275	453
14	173	366	---	---	---	200	100	397	264	919	275	451
15	177	201	---	---	---	200	97	400	264	845	275	444
16	176	200	---	---	---	200	93	401	266	746	275	439
17	174	200	---	---	---	200	94	401	265	728	278	433
18	184	198	---	---	---	200	176	401	265	728	277	430
19	189	197	---	---	---	200	311	402	275	695	277	432
20	194	198	---	---	---	200	302	402	281	660	275	377
21	197	200	---	---	---	200	302	397	273	665	275	351
22	202	200	---	---	---	202	305	392	283	596	275	351
23	212	200	---	---	---	200	306	398	310	547	276	347
24	325	200	---	---	---	201	319	394	363	550	274	346
25	442	200	---	---	---	202	323	391	417	461	271	343
26	432	127	---	---	---	201	311	391	529	427	269	343
27	419	40	---	---	---	200	312	384	738	431	268	269
28	416	42	---	---	---	200	317	381	946	430	308	228
29	563	45	---	---	---	199	369	386	987	428	307	228
30	594	47	---	---	---	197	396	391	1040	428	308	218
31	469	---	---	---	---	197	---	387	---	425	310	---
TOTAL	7443	11056	---	---	---	6199	6182	12176	11640	25366	9951	10748
MEAN	240	369	---	---	---	200	206	393	388	818	321	358
MAX	594	910	---	---	---	202	396	411	1040	1270	668	467
MIN	135	40	---	---	---	197	82	351	239	425	258	218
AC-FT	14760	21930	---	---	---	12300	12260	24150	23090	50310	19740	21320
CFSM	0.39	0.60	---	---	---	0.33	0.34	0.64	0.64	1.34	0.53	0.59
IN.	0.45	0.67	---	---	---	0.38	0.38	0.74	0.71	1.55	0.61	0.66

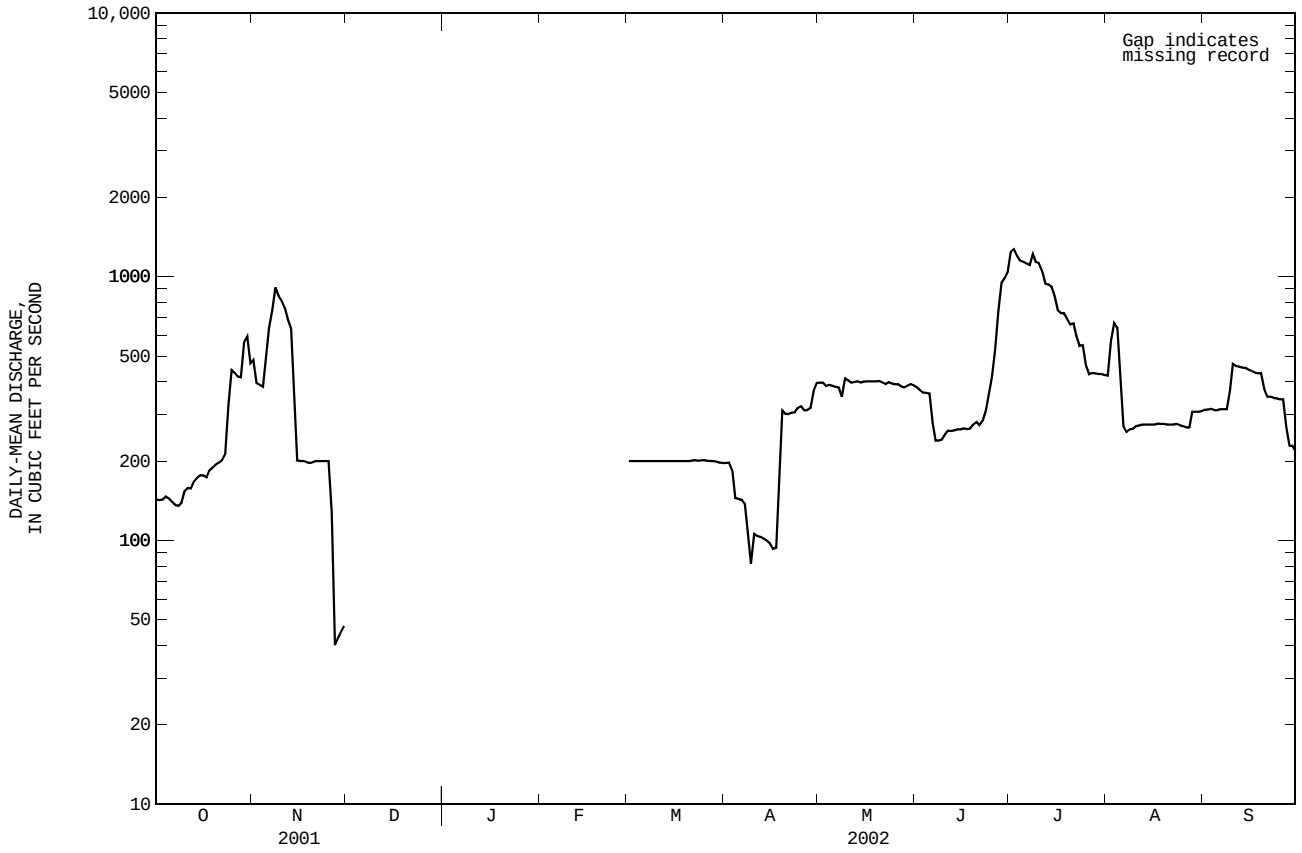
05200510 MISSISSIPPI RIVER NEAR BEMIDJI, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1987 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	233	469	330	---	---	230	435	464	329	344	220	263
MAX	471	790	406	---	---	247	889	858	866	912	477	837
(WY)	2000	2001	2001	---	---	1998	1997	2001	2001	1997	1999	1999
MIN	75.5	322	254	---	---	200	148	181	104	62.2	61.9	62.3
(WY)	1991	2000	2000	---	---	2002	1992	1992	1988	1988	1989	1990

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1987 - 2002	
HIGHEST DAILY MEAN	1270	Apr 23	1270	Jul 2	1320	Jul 14 1997
LOWEST DAILY MEAN	40	Nov 27	40	Nov 27	22a	Jul 12 1988
ANNUAL SEVEN-DAY MINIMUM	87	Aug 10	99	Apr 11	24	Jul 7 1988
MAXIMUM PEAK FLOW			1520	Jul 1	1820	Jul 11 1997
MAXIMUM PEAK STAGE			5.66	Jul 1	5.98	Jul 11 1997
INSTANTANEOUS LOW FLOW			32a	Apr 8		

a Minimum recorded.



05211000 MISSISSIPPI RIVER AT GRAND RAPIDS, MN

LOCATION.--Lat 47°13'56", long 93°31'48", in SW¼NW¼ sec. 27, T.55 N., R.25 W., Itasca County, Hydrologic Unit 07010103, on left bank, in utility room of Blandin Paper Mill in Grand Rapids, 400 ft downstream from Blandin Dam, 400 ft upstream from bridge on U.S. Highway 169, 2.5 mi upstream from Prairie River, and at mile 1,182 upstream from Ohio River.

DRAINAGE AREA.--3,370 mi^2 (approximately).

PERIOD OF RECORD.--October 1883 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,242.03 ft above sea level (NGVD of 1929). See WSP 1914 for history of changes prior to Jan. 17, 1951.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Flow regulated by Winnibigoshish Lake, Leech Lake, Pokegama Lake, Blandin Paper Mill (up to 16 ft^3/s diverted for paper production), and occasionally at low flow by power plant at Blandin Dam. Backwater from Prairie River occurs at times in most years.

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	1470	2080	e1150	e1860	e1690	1360	427	421	517	e1580	2150	1160
2	1610	2060	e1160	e1860	e1640	1450	493	480	559	e1580	2280	951
3	1700	2030	e1180	e1870	e1660	1460	440	423	466	e1590	2040	1070
4	1580	2010	e1220	e1880	e1680	1440	456	366	387	e1590	2060	1050
5	1700	1990	e1250	e1890	e1690	1380	502	464	412	e1590	2000	974
6	1710	1940	1760	e1910	e1700	1160	497	384	379	e1820	1730	1110
7	1620	1920	1680	e1920	e1710	1230	431	421	354	e1820	1720	1090
8	1650	2000	1760	e1940	1750	1190	510	449	430	e1820	1820	946
9	1770	1880	1820	e1950	1620	1250	484	546	411	e1750	1770	1010
10	1750	1850	1840	e1960	1690	1350	486	607	364	1520	1750	1130
11	2190	1890	1960	1980	1680	1170	564	594	417	1560	1760	983
12	2340	1880	2030	1960	1740	930	445	623	403	1280	1840	993
13	2270	1830	2050	1960	1720	902	540	752	336	1300	1780	1040
14	2310	1820	2180	1900	1720	929	522	955	457	1300	1650	1030
15	2290	1780	2100	1890	1760	949	677	914	363	1460	1580	975
16	2230	1800	2170	1940	1830	988	746	892	386	2040	1630	950
17	2190	1760	2150	1950	1870	958	797	871	402	2030	1540	e940
18	2190	1750	2250	e1950	1820	921	1090	751	436	2000	1680	e940
19	e2190	1840	2250	e1940	1840	948	880	747	483	1970	1530	e780
20	e2170	1690	e2100	e1940	1870	635	1000	714	405	1960	1370	e740
21	e2150	1680	e1700	e1930	1880	741	1030	723	517	1950	1290	735
22	e2120	1740	e1650	e1920	1810	472	791	710	e630	1930	1310	795
23	e2000	1710	e1750	e1910	1780	413	550	690	e700	1840	1280	738
24	2180	1710	e1780	e1910	1770	460	634	493	e1350	1610	1340	794
25	2130	1790	e1820	e1900	1720	434	423	504	e1580	1810	1260	997
26	2160	1780	e1850	e1900	1450	439	496	573	e1580	1960	1130	778
27	2200	1720	e1900	e1880	1250	425	354	495	e1590	1830	1100	921
28	2110	1730	e1870	e1860	1380	452	450	545	e1600	1670	e1070	814
29	2050	1470	e1850	e1830	---	457	523	544	e1590	1730	e1070	858
30	2100	1320	e1850	e1790	---	472	326	513	e1580	1750	1080	855
31	2110	---	e1850	e1740	---	478	---	509	---	1820	1020	---
TOTAL	62240	54450	55930	59020	47720	27843	17564	18673	21084	53460	48630	28147
MEAN	2008	1815	1804	1904	1704	898	585	602	703	1725	1569	938
MAX	2340	2080	2250	1980	1880	1460	1090	955	1600	2040	2280	1160
MIN	1470	1320	1150	1740	1250	413	326	366	336	1280	1020	735
AC-FT	123500	108000	110900	117100	94650	55230	34840	37040	41820	106000	96460	55830
CFSM	0.60	0.54	0.54	0.56	0.51	0.27	0.17	0.18	0.21	0.51	0.47	0.28
IN.	0.69	0.60	0.62	0.65	0.53	0.31	0.19	0.21	0.23	0.59	0.54	0.31

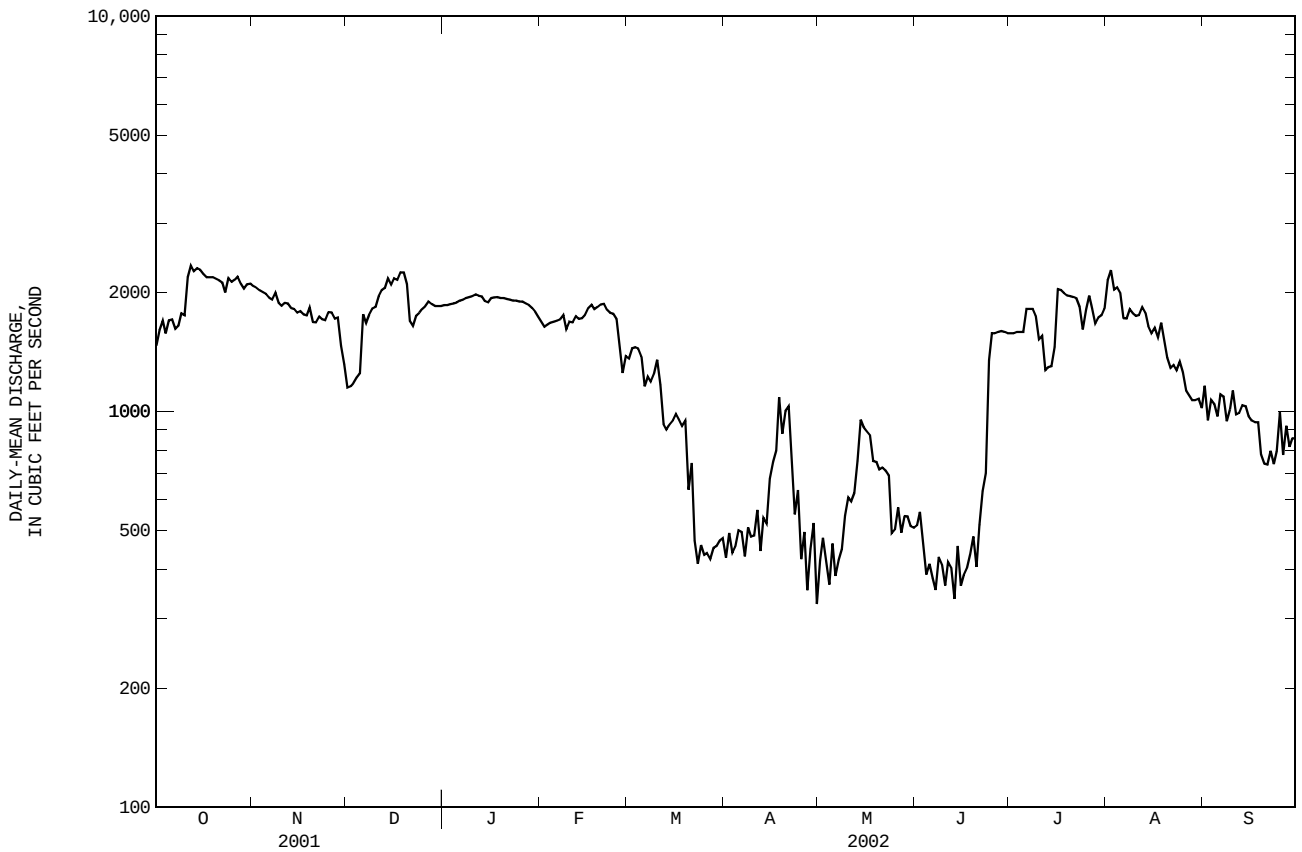
05211000 MISSISSIPPI RIVER AT GRAND RAPIDS, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1884 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1458	1357	1156	1141	1130	1074	1040	1163	1246	1372	1352	1396
MAX	3544	3259	2608	2410	2729	2762	3622	3668	3271	3363	4505	4438
(WY)	1902	1903	2000	1952	1945	1945	1901	1901	1962	1962	1905	1905
MIN	103	122	150	165	155	129	106	32.5	185	125	88.3	89.2
(WY)	1937	1937	1937	1937	1934	1937	1937	1949	1936	1961	1934	1934

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1884 - 2002	
ANNUAL TOTAL	811426		494761			
ANNUAL MEAN	2223		1356		1250a	
HIGHEST ANNUAL MEAN					2429	1906
LOWEST ANNUAL MEAN					193	1934
HIGHEST DAILY MEAN	3340	Jun 16	2340	Oct 12	8900	Sep 29 1914
LOWEST DAILY MEAN	200	Apr 11	326	Apr 30	0.00b	Oct 2 1948
ANNUAL SEVEN-DAY MINIMUM	804	Apr 8	388	Jun 7	24	May 9 1949
MAXIMUM PEAK FLOW			2470c	Aug 1	12500d	Sep 3 1948
MAXIMUM PEAK STAGE			9.35f	Jun 29	15.20g	Sep 3 1948
INSTANTANEOUS LOW FLOW			145h	Mar 22		
ANNUAL RUNOFF (AC-FT)	1609000		981400		905400	
ANNUAL RUNOFF (CFSM)	0.66		0.40		0.37	
ANNUAL RUNOFF (INCHES)	8.96		5.46		5.04	
10 PERCENT EXCEEDS	2860		2030		2360	
50 PERCENT EXCEEDS	2300		1580		1160	
90 PERCENT EXCEEDS	1490		457		311	

a Median of annual mean discharges is 1240 ft^3/s.
b Many days, several years.
c Gage height, 7.16 ft.
d From rating curve extended above 4500 ft^3/s.
e Estimated.
f Backwater from Prairie River.
g From floodmark; result of dam failure.
h Result of regulation.



05212700 PRAIRIE RIVER NEAR TACONITE, MN

LOCATION.--Lat 47°23'20", long 93°22'50", in NW¼SW¼ sec. 21, T.57 N., R.24 W., Itasca County, Hydrologic Unit 07010103, on left bank 125 ft downstream from bridge on County Highway 7, 1.5 mi downstream from outlet of Lawrence Lake and 5 mi north of Taconite.

DRAINAGE AREA.--371 mi^2 (revised).

PERIOD OF RECORD.--April 1967 to September 1983, February 2001 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,294.81 ft above sea level (NGVD of 1929). Prior to Aug. 31, 1967, nonrecording gage at site 125 ft downstream (same datum).

REMARKS.--Records good except those 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	49	162	243	e137	e91	e78	87	265	190	1790	165	116
2	48	163	e231	e134	e91	e77	87	256	191	1510	174	116
3	47	161	e237	e131	e90	e76	86	246	189	1280	196	116
4	45	160	250	e126	e90	e76	85	244	182	1070	226	108
5	44	156	258	e125	e90	e75	85	237	172	926	246	106
6	42	155	269	e121	e90	e75	82	234	158	810	251	102
7	40	152	275	e119	e90	e75	87	227	151	717	251	98
8	39	154	280	e117	e90	e76	93	226	144	674	242	96
9	41	147	283	e117	e90	e78	96	239	135	611	221	95
10	52	147	277	e114	e90	e80	106	243	131	565	203	98
11	64	145	276	e113	e90	e82	124	244	135	517	185	91
12	70	144	276	e111	e89	e84	137	254	131	472	180	86
13	84	144	271	e109	e89	e86	162	262	131	426	168	83
14	98	144	260	e107	e88	e88	195	272	129	379	159	80
15	112	142	247	e106	e88	e91	225	281	124	339	163	73
16	120	137	242	e105	e88	e93	255	286	117	303	169	69
17	123	134	239	e104	e88	e93	295	281	109	275	185	65
18	127	135	234	e102	e88	e92	337	276	102	246	197	63
19	134	131	e207	e100	e88	92	370	265	105	218	210	64
20	131	126	e200	e98	e88	e86	387	251	101	198	226	61
21	129	124	e188	e98	e87	e83	396	232	97	184	239	58
22	126	122	e177	e97	e86	e80	397	216	123	166	235	57
23	131	120	e170	e95	e87	e76	388	208	812	149	221	58
24	134	127	e165	e94	e87	e77	379	195	1510	140	205	53
25	146	152	e160	e93	e85	e73	361	183	2450	137	185	52
26	150	161	e157	e92	e83	e72	338	175	3100	133	163	50
27	150	184	e151	e92	e81	e74	317	166	3170	128	147	49
28	154	e200	e149	e92	e79	80	300	160	2900	125	138	49
29	158	e225	e143	e92	---	82	286	166	2510	123	147	47
30	158	236	e142	e92	---	86	275	177	2130	125	134	46
31	162	---	e140	e91	---	86	---	186	---	128	121	---
TOTAL	3108	4590	6797	3324	2461	2522	6818	7153	21629	14864	5952	2305
MEAN	100	153	219	107	87.9	81.4	227	231	721	479	192	76.8
MAX	162	236	283	137	91	93	397	286	3170	1790	251	116
MIN	39	120	140	91	79	72	82	160	97	123	121	46
AC-FT	6160	9100	13480	6590	4880	5000	13520	14190	42900	29480	11810	4570
CFSM	0.27	0.41	0.59	0.29	0.24	0.22	0.61	0.62	1.94	1.29	0.52	0.21
IN.	0.31	0.46	0.68	0.33	0.25	0.25	0.68	0.72	2.17	1.49	0.60	0.23

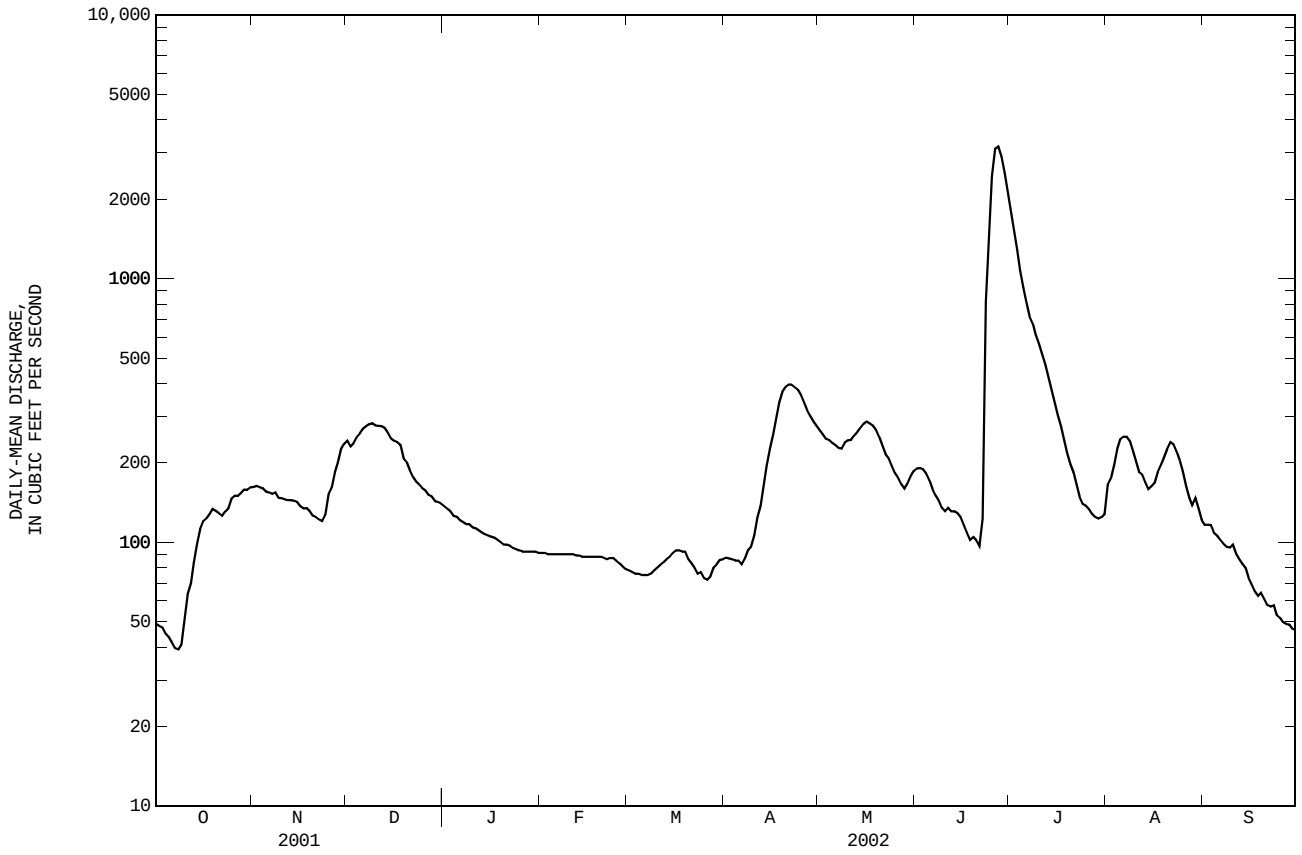
05212700 PRAIRIE RIVER NEAR TACONITE, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	201	203	111	75.2	71.4	93.2	613	543	363	238	114	128
MAX	586	605	222	110	106	170	1329	1094	866	618	295	482
(WY)	1974	1972	1978	1978	1969	1983	1969	1975	1974	1975	1978	1977
MIN	11.4	14.0	15.5	24.1	37.0	60.1	86.9	57.0	69.7	61.3	24.3	15.4
(WY)	1977	1977	1977	1977	1968	1977	1977	1977	1980	1980	1976	1976

SUMMARY STATISTICS	FOR 2002 WATER YEAR		WATER YEARS 1967 - 2002	
ANNUAL TOTAL	81523			
ANNUAL MEAN	223		227	
HIGHEST ANNUAL MEAN			327	1974
LOWEST ANNUAL MEAN			89.1	1977
HIGHEST DAILY MEAN	3170	Jun 27	3240	Apr 17 1969
LOWEST DAILY MEAN	39	Oct 8	8.0	Oct 5 1970
ANNUAL SEVEN-DAY MINIMUM	43	Oct 3	11	Oct 17 1976
MAXIMUM PEAK FLOW	3220	Jun 27	3260	Apr 17 1969
MAXIMUM PEAK STAGE	11.78	Jun 27	11.81	Apr 17 1969
INSTANTANEOUS LOW FLOW	39	Oct 7	7.0	Oct 5 1970
ANNUAL RUNOFF (AC-FT)	161700		164200	
ANNUAL RUNOFF (CFSM)	0.62		0.63	
ANNUAL RUNOFF (INCHES)	8.42		8.55	
10 PERCENT EXCEEDS	290		523	
50 PERCENT EXCEEDS	135		115	
90 PERCENT EXCEEDS	76		48	

e Estimated.



05227500 MISSISSIPPI RIVER AT AITKIN, MN

LOCATION.--Lat 46°32'26", long 93°42'26", in SW¼NW¼ sec. 24, T.47 N., R.27 W., Aitkin County, Hydrologic Unit 07010104, on right bank upstream side of highway bridge at north edge of Aitkin, 1 mi downstream from Ripple River and at mile 1,055.9 upstream from Ohio River.

DRAINAGE AREA.--6,140 mi^2 (approximately).

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

GAGE.--Water-stage recorder. Datum of gage is 1,182.41 ft above sea level (NGVD of 1929, levels by U.S. Army Corps of Engineers). Mar. 1, 1945 to Mar. 14, 1961, nonrecording gage, and Mar. 15, 1961 to Sept. 30, 1967, water-stage recorder at same site at datum 3.0 ft higher. Diversion channel: Non-recording gage and crest-stage gage. Datum of gage is 1,182.02 ft above sea level (NGVD of 1929). Apr. 9, 1955 to Apr. 10, 1956, nonrecording gage at site 4 mi downstream at different datum. Apr. 11, 1956 to Sept. 30, 1967, non-recording gage at same site at datum 3.0 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Flow regulated by Winnibigoshish Lake, Leech Lake, Pokegama Lake, and Sandy Lake. Water diverted at medium and high stages into Aitkin diversion channel 6.5 mi above station, bypasses station and returns to river 15.5 mi below station. Diversion began Apr. 2, 1955. These records include flow in diversion channel.

EXTREMES FOR CURRENT YEAR.--Main channel: maximum discharge, 4100 ft^3/s, July 11; gage height, 12.27 ft. Diversion channel: maximum discharge, 3200 ft^3/s, July 11, gage height, 11.78 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	1750	2930	2700	e2740	e2240	e1900	e1320	3440	1780	6360	3270	1900
2	1750	2920	2610	e2700	e2220	e1830	e1330	3330	1730	6370	3280	1930
3	1770	2910	2590	e2680	e2200	e1760	e1320	3140	1670	6260	3420	1920
4	1770	2900	2670	e2680	e2180	e1730	e1300	3030	1620	6060	3630	1910
5	1830	2870	2710	e2680	e2170	e1730	e1280	2950	1580	5760	3680	1870
6	1890	2820	2730	e2690	e2160	e1740	e1270	2860	1460	5390	3500	1830
7	1900	2760	2810	e2700	e2140	e1740	e1260	2750	1330	5050	3230	1800
8	1920	2720	2990	e2730	e2120	e1730	e1340	2780	1260	5880	3010	1760
9	1950	2690	3050	e2770	e2100	e1690	e1450	2980	1170	6880	2750	1770
10	1970	2720	3030	e2790	e2090	e1670	e1680	3170	1100	6990	2590	1810
11	2000	2760	3110	e2800	e2070	e1660	e2100	3320	1080	7470	2540	1760
12	2110	2710	3190	e2820	e2070	e1670	e2380	3560	1070	7560	2610	1780
13	2340	2660	3210	e2830	e2060	e1670	e2800	3900	1030	7290	2650	1840
14	2630	2640	3100	e2850	e2070	e1660	e3350	4180	1010	6900	2640	1810
15	2830	2610	3130	e2850	e2080	e1640	e3800	4350	1010	6460	2670	1740
16	2940	2570	3090	e2800	e2090	e1590	e3880	4500	956	6090	2660	1700
17	2990	2540	3370	e2730	e2100	e1560	e4150	4560	947	5680	2770	1650
18	3020	2510	3280	e2650	e2100	e1560	4450	4430	891	5290	2920	1590
19	2980	2490	e2950	e2570	e2120	e1560	4650	4160	885	5030	2950	1590
20	2930	2440	e2700	e2500	e2140	e1560	4860	3810	926	4710	2910	1590
21	2900	2410	e2500	e2450	e2170	e1560	4970	3480	977	4400	2920	1530
22	2890	2400	e2300	e2400	e2190	e1550	4950	3190	1050	4170	2870	1460
23	2890	2360	e2250	e2380	e2200	e1500	4890	2980	1150	3990	2700	1480
24	2870	2370	e2260	e2380	e2220	e1400	4850	2820	1920	3790	2540	1480
25	2820	2430	e2350	e2380	e2200	e1300	4650	2650	3820	3550	2380	1470
26	2800	2510	e2470	e2400	e2160	e1200	4370	2460	5060	3340	2280	1480
27	2890	2680	e2600	e2420	e2080	e1160	4120	2240	5690	3190	2190	1520
28	2970	2680	e2720	e2420	e2000	e1170	3860	2080	5990	3330	2100	1570
29	3010	2610	e2770	e2390	---	e1230	3660	1970	6160	3420	2000	1560
30	3000	2640	e2780	e2350	---	e1260	3510	1890	6290	3350	1910	1540
31	2970	---	e2760	e2260	---	e1300	---	1830	---	3280	1890	---
TOTAL	77280	79260	86780	80790	59740	48280	93800	98790	62612	163290	85460	50640
MEAN	2493	2642	2799	2606	2134	1557	3127	3187	2087	5267	2757	1688
MAX	3020	2930	3370	2850	2240	1900	4970	4560	6290	7560	3680	1930
MIN	1750	2360	2250	2260	2000	1160	1260	1830	885	3190	1890	1460
AC-FT	153300	157200	172100	160200	118500	95760	186100	196000	124200	323900	169500	100400
CFSM	0.41	0.43	0.46	0.42	0.35	0.25	0.51	0.52	0.34	0.86	0.45	0.27
IN.	0.47	0.48	0.53	0.49	0.36	0.29	0.57	0.60	0.38	0.99	0.52	0.31

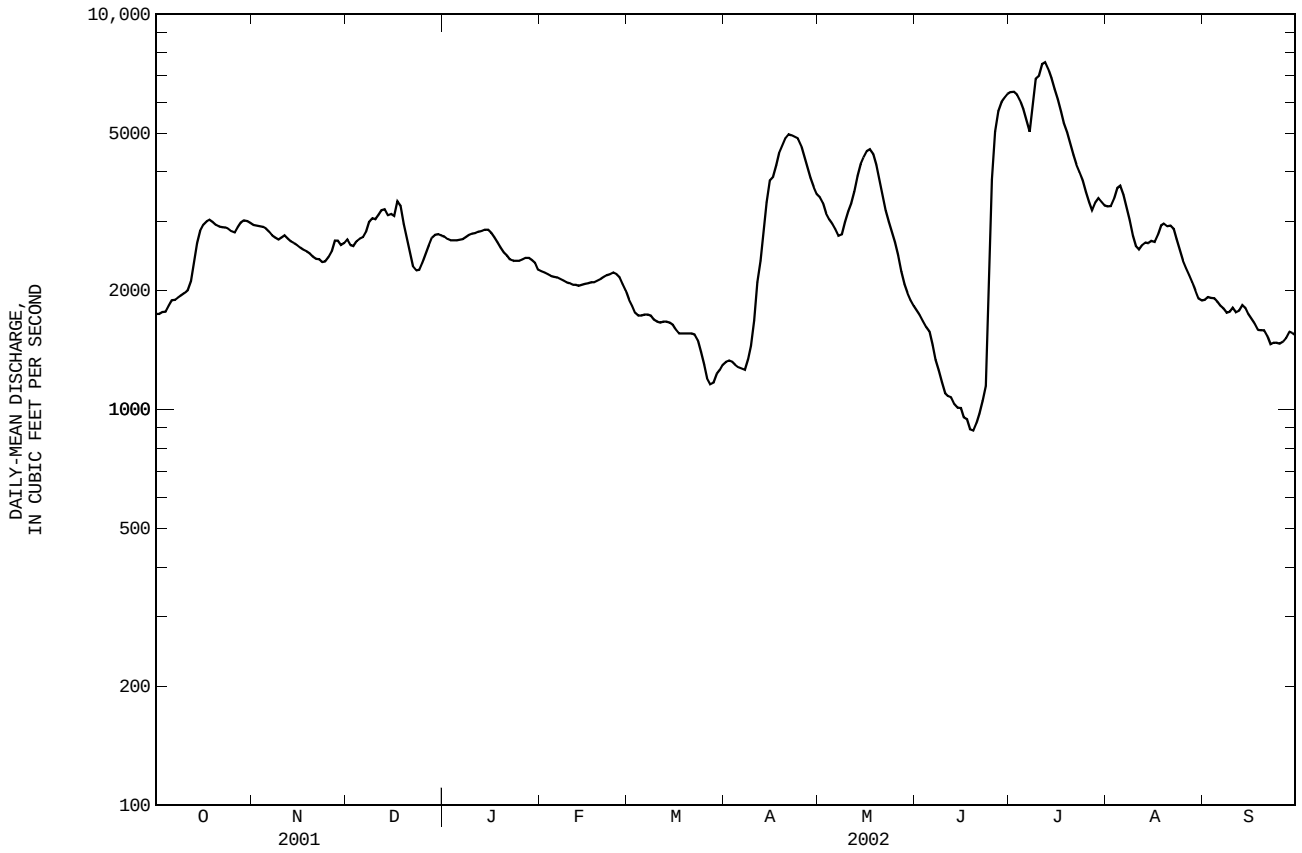
05227500 MISSISSIPPI RIVER AT AITKIN, MN--Continued

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

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	2704	2838	2325	2005	1909	2258	5216	5291	3695	3158	2379	2236
MAX	6534	6756	4498	3525	3196	5415	10830	15510	8072	8201	8270	6689
(WY)	1966	1972	1997	1966	1966	1945	1966	1950	1965	1993	1953	1986
MIN	313	328	324	345	398	638	1074	669	540	346	273	321
(WY)	1977	1977	1977	1977	1977	1977	1977	1958	1988	1961	1961	1976

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1945 - 2002	
ANNUAL TOTAL	1602370		986722			
ANNUAL MEAN	4390		2703		2995	
HIGHEST ANNUAL MEAN					4985	1966
LOWEST ANNUAL MEAN					796	1977
HIGHEST DAILY MEAN	14200	Apr 27	7560	Jul 12	19900	May 20 1950
LOWEST DAILY MEAN	1600	Sep 22	885	Jun 19	153	Sep 1 1961
ANNUAL SEVEN-DAY MINIMUM	1690	Sep 18	942	Jun 15	195	Aug 26 1961
MAXIMUM PEAK FLOW			7610	Jul 11	20000	May 20 1950
MAXIMUM PEAK STAGE			12.27	Jul 11	22.49a	May 20 1950
INSTANTANEOUS LOW FLOW			856	Jun 19	151	Sep 1 1961
ANNUAL RUNOFF (AC-FT)	3178000		1957000		2169000	
ANNUAL RUNOFF (CFSM)	0.71		0.44		0.49	
ANNUAL RUNOFF (INCHES)	9.71		5.98		6.63	
10 PERCENT EXCEEDS	9620		4410		5900	
50 PERCENT EXCEEDS	2940		2570		2380	
90 PERCENT EXCEEDS	1950		1470		990	

a Present datum.
e Estimated.



05242300 MISSISSIPPI RIVER AT BRAINERD, MN

LOCATION.--Lat 46°22'40", long 94°10'59", in SE¼/SW¼ sec. 18, T. 145 N., R.30 W., Crow Wing County, Hydrologic Unit 07010104, on left bank in hydropower plant of Potlach Corporation, Northwest Paper Division in Brainerd, 12.7 mi upstream from Crow Wing River, and at mile 1003.7 upstream from Ohio River.

DRAINAGE AREA.--7,320 mi^2 (approximately).

PERIOD OF RECORD.--October 1987 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,146.96 ft above sea level (NGVD of 1929).

REMARKS.--Records good except those for estimated daily discharges, which are fair. Flow regulated by Winnibigoshish Lake, Leech Lake, Pokegama Lake, Sandy Lake, Pine River Reservoir at Cross Lake, and by hydropower plant in Brainerd.

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	2020	3410	3480	e3020	e2500	e2280	e1580	4140	2350	7570	4030	2580
2	2000	3430	3630	e3010	e2500	e2200	e1580	4100	2300	7620	4000	2430
3	2000	3380	3480	e3000	e2480	e2130	1550	4030	2020	7420	4140	2230
4	1990	3290	3480	e3000	e2470	e2060	1530	3830	2030	7190	4240	2480
5	1920	3310	3530	e3010	e2470	e2020	1550	3750	2030	6790	4380	2400
6	1960	3320	3760	e3020	e2460	e2030	1530	3800	1840	6410	4160	2310
7	2240	3230	3580	e3040	e2460	e2060	1510	3580	1950	6140	3960	2230
8	2070	2990	3770	e3070	e2450	e2070	1590	3920	1660	7630	3600	2220
9	2170	3120	3400	e3100	e2450	e2080	1720	3700	1570	8160	3440	2190
10	2410	3170	3890	e3120	e2450	e2000	2200	4320	1540	9020	3100	2310
11	2250	3100	3390	e3150	e2450	e1920	2490	4430	1450	9640	3100	2130
12	2230	3160	3850	e3170	e2440	e1900	3060	4590	1510	9820	3180	2310
13	2570	3220	3770	e3190	e2440	e1900	3780	4870	1320	9950	3110	2150
14	2780	3000	3490	e3200	e2440	e1920	4520	5380	1420	9680	3100	2300
15	3080	3010	3300	e3200	e2440	e1930	4910	5630	1350	9130	3230	2150
16	3260	3060	4260	e3200	e2450	e1850	4990	5790	1320	8630	3100	2120
17	3350	2990	4650	e3170	2480	e1800	5110	5800	1270	8180	3420	2160
18	3430	2950	4510	e3100	2490	e1780	5450	5790	1190	7500	3530	1980
19	3490	2650	3530	e3000	2590	e1790	5360	5560	1580	7070	3560	1980
20	3440	2970	3170	e2850	2590	e1810	5680	4980	1390	6640	3440	1850
21	3440	2860	2910	e2770	2560	e1830	5810	4700	1260	6260	3490	1860
22	3420	2860	2780	e2670	2670	e1830	5850	4200	1410	5720	3400	1900
23	3600	2910	2530	e2650	2680	e1770	5850	3870	1910	5440	3390	1920
24	3350	3040	e2470	e2650	2680	e1670	5760	3580	1900	5170	3240	1830
25	3590	2870	e2470	e2660	2680	e1550	5660	3350	3670	4780	2860	1810
26	3500	3160	e2550	e2670	e2570	e1460	5430	3170	5320	4510	2870	1850
27	3460	3220	e2700	e2660	e2450	e1430	5040	2940	6600	4260	2810	1840
28	3660	3210	e2850	e2630	e2370	1380	4660	2700	7120	4210	2480	1880
29	3830	3420	e3000	e2560	---	e1460	4520	2570	7370	4290	2680	1940
30	3630	3430	e3030	e2540	---	e1550	4370	2410	7600	4350	2410	1900
31	3740	---	e3050	e2520	---	e1570	---	2350	---	4160	2300	---
TOTAL	89880	93740	104260	90600	70160	57030	114640	127830	77250	213340	103750	63240
MEAN	2899	3125	3363	2923	2506	1840	3821	4124	2575	6882	3347	2108
MAX	3830	3430	4650	3200	2680	2280	5850	5800	7600	9950	4380	2580
MIN	1920	2650	2470	2520	2370	1380	1510	2350	1190	4160	2300	1810
AC-FT	178300	185900	206800	179700	139200	113100	227400	253600	153200	423200	205800	125400
CFSM	0.40	0.43	0.46	0.40	0.34	0.25	0.52	0.56	0.35	0.94	0.46	0.29
IN.	0.46	0.48	0.53	0.46	0.36	0.29	0.58	0.65	0.39	1.08	0.53	0.32

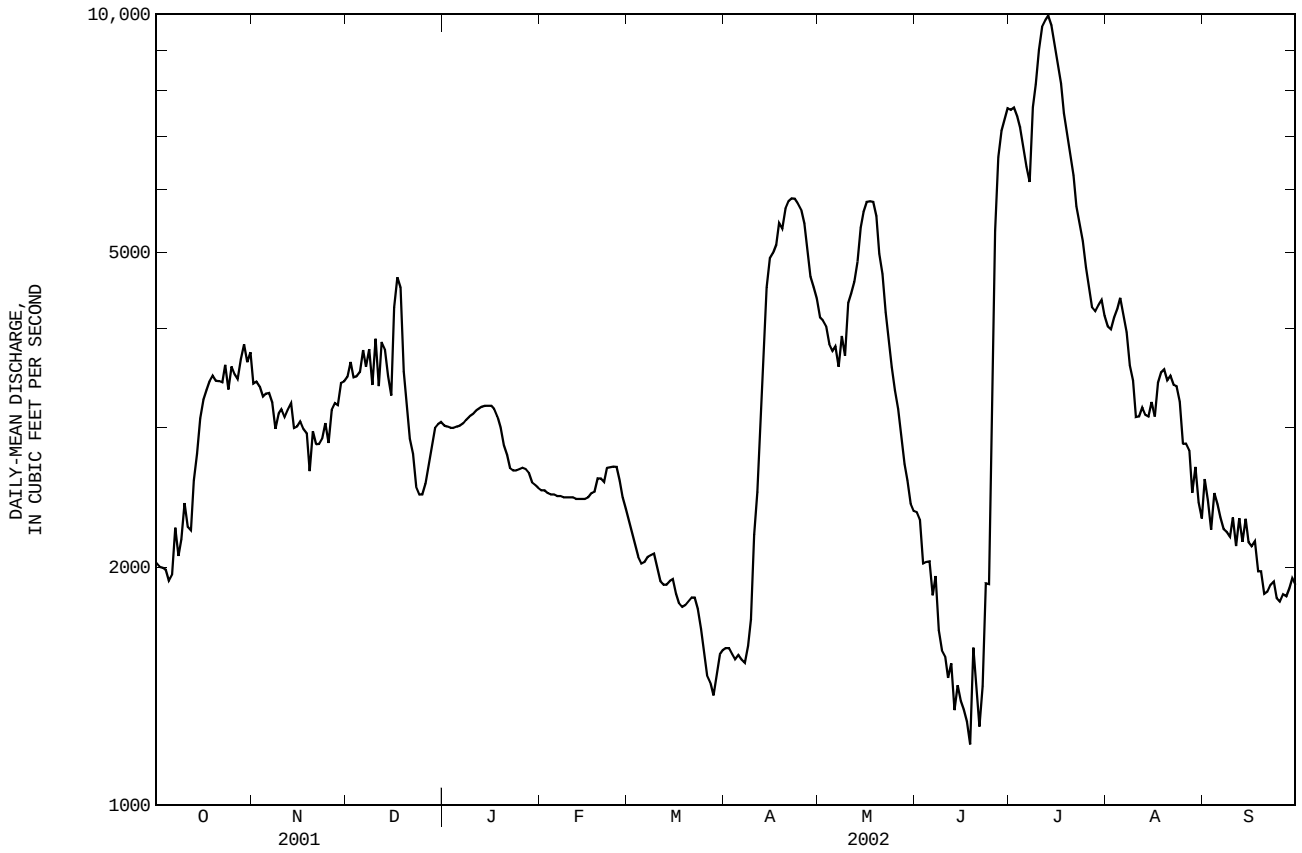
05242300 MISSISSIPPI RIVER AT BRAINERD, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1987 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	3383	3802	3210	2704	2504	2879	6250	6052	4180	4552	2748	2558
MAX	8002	6655	5926	4081	3973	4306	12890	12890	10100	10260	6950	6925
(WY)	1996	2001	1997	1997	1997	2000	1997	2001	2001	1993	1999	1999
MIN	1840	1931	1362	1140	1040	1435	3400	1928	662	442	935	1067
(WY)	1992	1993	1991	1991	1991	1991	1990	1988	1988	1988	1990	1998

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1987 - 2002	
ANNUAL TOTAL	1958050		1205720			
ANNUAL MEAN	5365		3303		3782	
HIGHEST ANNUAL MEAN					5707	2001
LOWEST ANNUAL MEAN					1950	1988
HIGHEST DAILY MEAN	17400	Apr 28	9950	Jul 13	17400	Apr 28 2001
LOWEST DAILY MEAN	1800	Sep 23	1190	Jun 18	348	Jul 30 1988
ANNUAL SEVEN-DAY MINIMUM	1950	Sep 19	1340	Jun 15	357	Jul 29 1988
MAXIMUM PEAK FLOW			10100	Jul 13	17500	Apr 30 2001
MAXIMUM PEAK STAGE			12.10	Jul 13	16.70	Apr 30 2001
INSTANTANEOUS LOW FLOW			638a	Jun 19	273	Jul 12 1988
ANNUAL RUNOFF (AC-FT)	3884000		2392000		2740000	
ANNUAL RUNOFF (CFSM)	0.73		0.45		0.52	
ANNUAL RUNOFF (INCHES)	9.95		6.13		7.02	
10 PERCENT EXCEEDS	12000		5590		7020	
50 PERCENT EXCEEDS	3480		3000		3170	
90 PERCENT EXCEEDS	2240		1810		1520	

a Result of regulation.
e Estimated.



05243725 STRAIGHT RIVER NEAR PARK RAPIDS, MN

LOCATION.--Lat 46°52'30", long 95°03'56", in NW¼NE¼ sec. 11, T. 139 N., R. 35 W., Hubbard County, Hydrologic Unit 07010106, upstream from culvert on U.S. Highway 71, 3.2 mi south of Park Rapids.

DRAINAGE AREA.--53.2 mi^2.

PERIOD OF RECORD.--Occasional low-flow measurements, water years 1970-71, 1973, 1975-76. October 1986 to current year (no winter records in 1987, 1990-91). May 1988 through August 1989, records of hourly water temperature (available in files of the Geological Survey).

GAGE.--Water-stage recorder. Datum of gage is 1,399.55 ft above sea level (NGVD of 1929, levels by Minnesota Department of Natural Resources).

REMARKS.--Records good except those for estimated daily discharges, which are fair. Diurnal flucations in flow due to ground-water withdrawals.

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	53	58	64	e64	e63	e58	56	58	53	56	60	74
2	53	57	63	e64	e63	e58	57	57	53	55	59	71
3	53	57	62	e64	e63	e59	56	56	52	54	59	67
4	52	57	62	e64	e63	e59	56	56	52	52	57	64
5	52	57	63	e64	e63	e58	56	56	52	49	55	64
6	52	57	62	e64	e63	e58	56	56	50	49	55	60
7	51	58	64	e64	e63	e58	57	55	50	53	53	60
8	51	58	61	e64	e63	e58	58	60	50	61	54	58
9	51	58	65	e63	e62	e58	57	67	50	62	56	60
10	61	57	62	e62	e61	e58	59	63	49	67	62	60
11	67	57	61	e62	e61	e58	62	62	50	65	60	59
12	64	58	61	e62	e60	e59	61	63	51	62	68	57
13	65	58	61	e62	e60	e59	62	62	50	59	68	57
14	67	58	61	e61	e59	e58	63	61	50	57	69	56
15	67	58	61	e61	57	e57	62	60	49	55	69	55
16	64	59	63	e61	57	57	62	60	48	54	69	53
17	61	59	63	e61	56	56	67	59	47	54	69	52
18	59	59	62	e61	57	56	68	58	49	54	66	55
19	58	59	58	e61	57	56	67	57	66	53	63	57
20	57	58	e56	e61	57	56	65	57	65	55	62	57
21	56	58	e57	e61	57	55	62	58	61	55	63	58
22	55	59	e59	e61	57	e56	61	60	58	54	61	58
23	55	59	e61	e61	58	e58	60	61	93	54	61	60
24	59	62	e63	e62	57	e57	60	62	103	57	60	61
25	62	65	e64	e62	57	e56	59	60	96	59	58	61
26	61	63	e64	e62	e58	55	58	58	89	60	57	59
27	59	49	e64	e62	e58	55	58	57	80	65	57	59
28	57	e60	e64	e62	e58	57	60	56	72	65	60	59
29	57	e70	e64	e62	---	58	59	55	64	61	77	59
30	57	e67	e64	e62	---	57	60	55	60	58	81	57
31	57	---	e64	e62	---	57	---	54	---	57	75	---
TOTAL	1793	1769	1923	1929	1668	1775	1804	1819	1812	1771	1943	1787
MEAN	57.8	59.0	62.0	62.2	59.6	57.3	60.1	58.7	60.4	57.1	62.7	59.6
MAX	67	70	65	64	63	59	68	67	103	67	81	74
MIN	51	49	56	61	56	55	56	54	47	49	53	52
AC-FT	3560	3510	3810	3830	3310	3520	3580	3610	3590	3510	3850	3540
CFSM	1.09	1.11	1.17	1.17	1.12	1.08	1.13	1.10	1.14	1.07	1.18	1.12
IN.	1.25	1.24	1.34	1.35	1.17	1.24	1.26	1.27	1.27	1.24	1.36	1.25

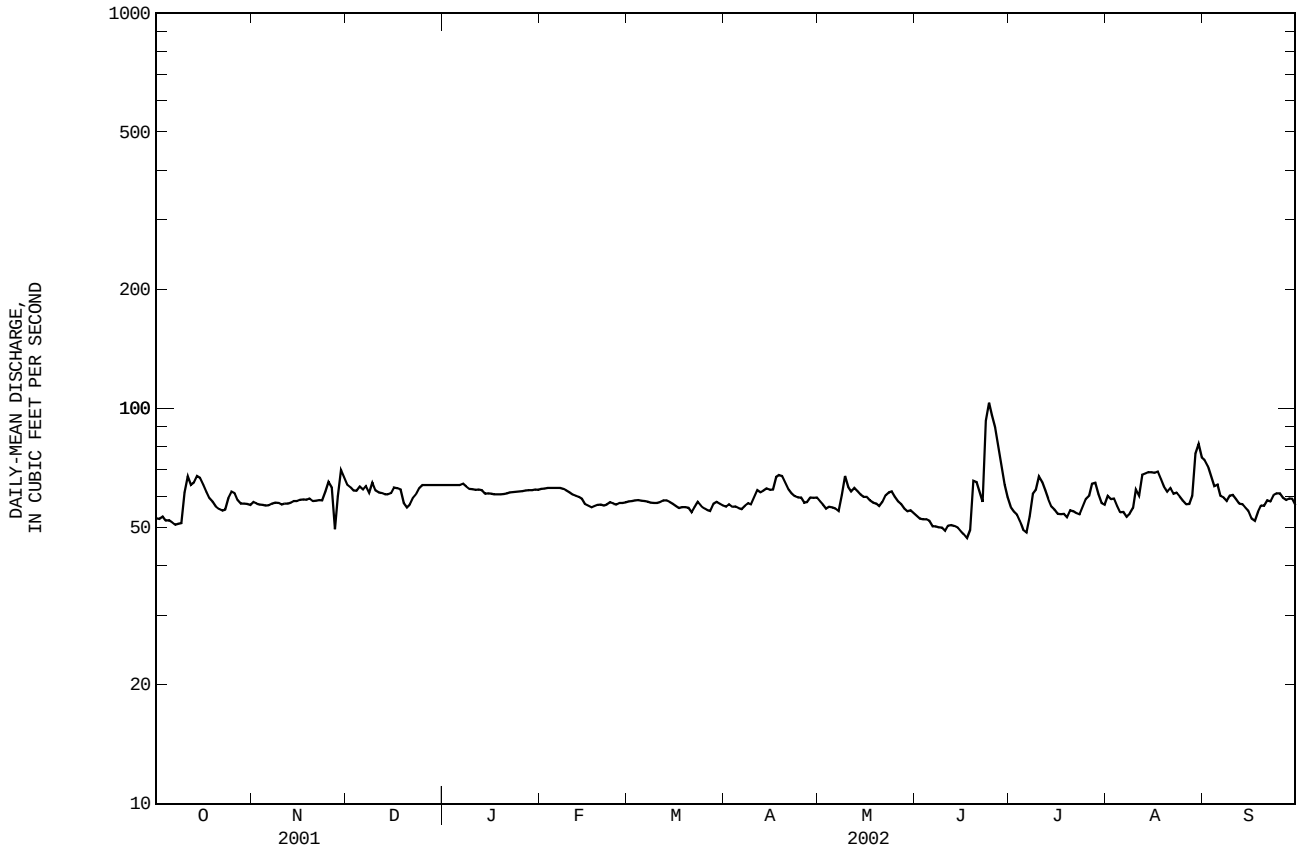
05243725 STRAIGHT RIVER NEAR PARK RAPIDS, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1987 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	63.3	64.8	61.7	56.8	56.8	63.3	72.0	67.4	61.2	58.8	56.6	59.8
MAX	83.1	77.6	74.5	77.7	69.8	76.8	101	86.6	76.1	81.5	81.2	81.4
(WY)	1996	1998	1995	1999	1998	1995	1997	1999	1999	1997	1999	1999
MIN	42.2	47.4	46.0	41.9	44.8	50.9	56.1	46.2	41.9	39.5	35.9	38.7
(WY)	1993	1989	1989	1992	1992	1989	1991	1992	1992	1988	1990	1990

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1987 - 2002	
ANNUAL TOTAL	22824		21793			
ANNUAL MEAN	62.5		59.7		63.0	
HIGHEST ANNUAL MEAN					78.3	1999
LOWEST ANNUAL MEAN					48.0	1992
HIGHEST DAILY MEAN	103	Apr 8	103	Jun 24	144	Apr 6 1997
LOWEST DAILY MEAN	47	Jan 23	47	Jun 17	28a	Jan 9 1992
ANNUAL SEVEN-DAY MINIMUM	47	Jan 23	49	Jun 12	34	Aug 5 1990
MAXIMUM PEAK FLOW			108b	Jun 24	149	Apr 6 1997
MAXIMUM PEAK STAGE			2.53c	Feb 13	3.08c	Dec 22 1999
INSTANTANEOUS LOW FLOW			40d	Dec 19	28a	Jan 9 1992
ANNUAL RUNOFF (AC-FT)	45270		43230		45610	
ANNUAL RUNOFF (CFSM)	1.18		1.12		1.18	
ANNUAL RUNOFF (INCHES)	15.96		15.24		16.08	
10 PERCENT EXCEEDS	82		65		79	
50 PERCENT EXCEEDS	59		59		62	
90 PERCENT EXCEEDS	50		54		46	

a Estimated, result of freezeup.
b Gage height, 2.17 ft.
c Backwater from ice.
d Result of freezeup.
e Estimated.



05244000 CROW WING RIVER AT NIMROD, MN

LOCATION.--Lat 46°38'25", long 94°52'44", in SE¼NW¼ sec. 32, T. 137 N., R. 33 W., Wadena County, Hydrologic Unit 07010106, on right bank 200 ft upstream from County Highway 227 bridge, 0.2 mi north of Nimrod, and 0.7 mi upstream from Cat River.

DRAINAGE AREA.--1,030 mi^2.

PERIOD OF RECORD.--April 1910 to September 1914, July 1930 to September 1981, October 1991 to current year (winter records incomplete prior to 1940). October 1981 to September 1987, annual maximums only.

REVISED RECORDS.--WSP 1508: 1910-11, 1913-14, 1937, 1942(M), 1944(M).

GAGE.--Water-stage recorder. Datum of gage is 1,313.27 ft above sea level (NGVD of 1929, levels by Wadena County Highway Department from Minnesota Department of Transportation benchmark). Apr. 15, 1910 to Sept. 30, 1914, nonrecording gage at same site, at datum 2.2 ft lower. July 28, 1930 to Nov. 4, 1949, nonrecording gages at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Flow affected by natural storage in many lakes.

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	283	440	e410	e340	e287	e282	e262	500	435	654	511	520
2	283	427	e470	e333	e285	e280	e264	511	413	626	517	524
3	281	423	e495	e328	e283	e277	e274	516	401	598	505	506
4	279	443	e490	e325	e280	e275	e285	523	393	571	500	483
5	279	478	e480	e322	e279	e272	e315	531	382	550	486	482
6	277	500	e475	e320	e277	e270	e340	541	372	527	483	475
7	272	510	e470	e321	e276	e270	e365	542	357	564	464	458
8	271	515	e475	e323	e280	e271	e390	617	348	864	448	442
9	270	511	e490	e325	e285	e272	408	732	331	790	442	441
10	336	500	e510	e329	e289	e272	445	744	329	889	494	473
11	376	488	e505	e332	e291	e273	506	736	327	965	485	474
12	379	480	e495	e327	e293	e275	522	779	326	882	502	490
13	406	476	e490	e322	e295	e278	531	794	318	809	528	504
14	422	472	e485	e319	e297	e280	555	782	318	763	523	507
15	439	457	e480	e314	e299	e280	575	760	313	728	543	506
16	453	416	e465	e309	e300	e280	583	739	295	705	567	489
17	450	381	e460	e304	e302	e279	624	699	286	679	591	482
18	441	364	e440	e298	e305	e277	629	666	276	664	597	447
19	425	359	e425	e292	e308	e272	632	644	357	626	573	399
20	407	355	e420	e290	e309	e265	613	624	400	593	556	372
21	394	358	e410	e290	e310	e258	589	608	396	585	549	340
22	385	356	e405	e297	e308	e258	574	590	389	575	540	316
23	388	355	e400	e300	e305	e259	558	574	538	554	526	327
24	392	370	e395	e302	e300	e260	537	565	679	549	499	332
25	397	409	e385	e305	e292	e260	513	550	750	544	473	325
26	402	418	e377	e304	e288	e261	489	523	739	536	458	318
27	400	405	e373	e300	e286	e264	482	504	712	522	445	309
28	407	e335	e365	e295	e285	e268	503	489	704	520	440	300
29	424	e330	e360	e292	---	e268	505	484	700	516	516	294
30	439	e350	e352	e290	---	e268	498	488	677	506	526	296
31	440	---	e345	e288	---	e265	---	457	---	499	524	---
TOTAL	11497	12681	13597	9636	8194	8389	14366	18812	13261	19953	15811	12631
MEAN	371	423	439	311	293	271	479	607	442	644	510	421
MAX	453	515	510	340	310	282	632	794	750	965	597	524
MIN	270	330	345	288	276	258	262	457	276	499	440	294
AC-FT	22800	25150	26970	19110	16250	16640	28490	37310	26300	39580	31360	25050
CFSM	0.37	0.42	0.43	0.31	0.29	0.27	0.47	0.60	0.44	0.64	0.50	0.42

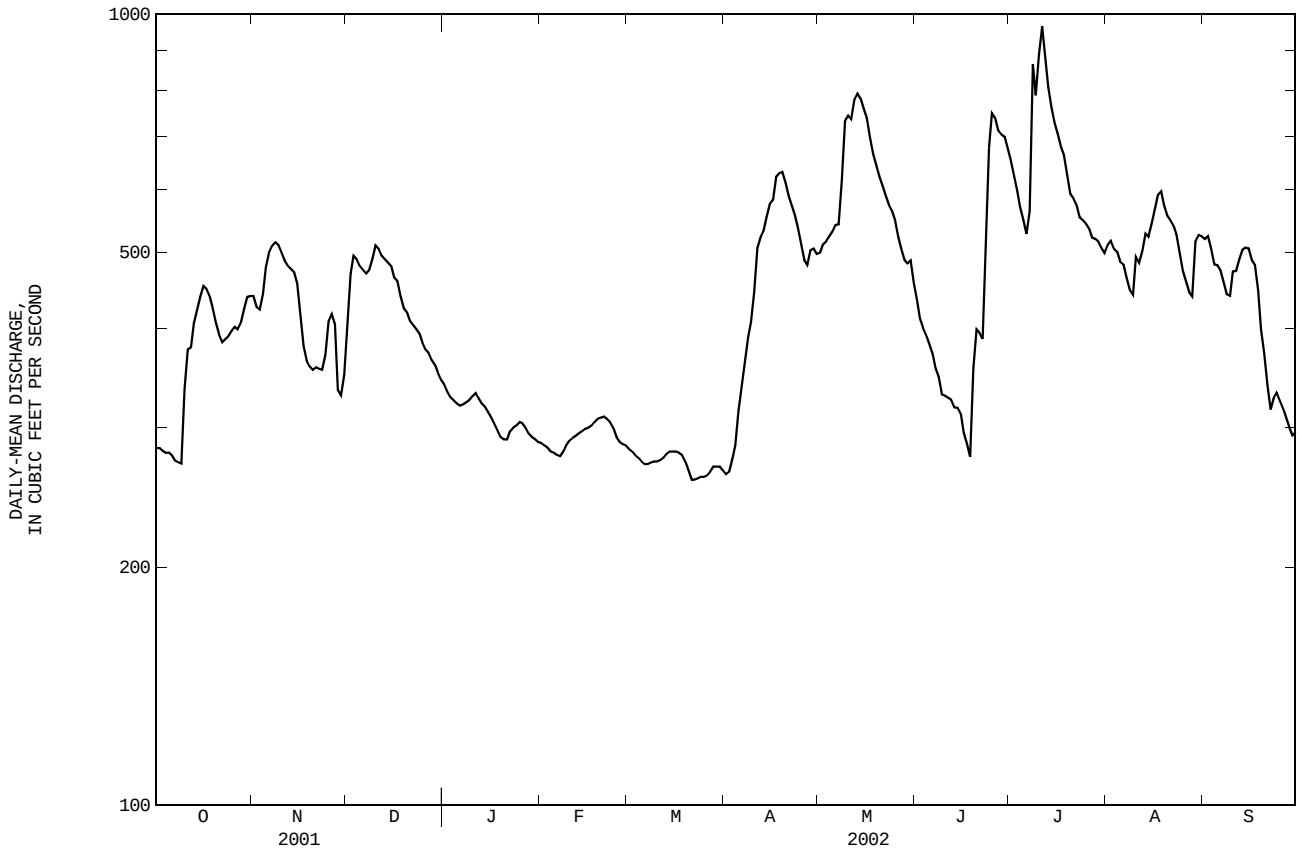
05244000 CROW WING RIVER AT NIMROD, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1910 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	418	418	354	308	314	415	769	683	579	456	380	386
MAX	1463	871	692	462	527	780	1624	1615	1354	1124	1452	929
(WY)	1974	1972	1999	1966	2000	1995	1966	1950	1965	1997	1944	1944
MIN	137	146	131	125	170	171	202	181	149	84.0	74.3	131
(WY)	1937	1937	1940	1940	1940	1940	1911	1911	1934	1936	1936	1934

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1910 - 2002	
ANNUAL TOTAL	200364		158828			
ANNUAL MEAN	549		435		486	
HIGHEST ANNUAL MEAN					757	1999
LOWEST ANNUAL MEAN					230	1940
HIGHEST DAILY MEAN	1720	Apr 13	965	Jul 11	3580	Oct 10 1973
LOWEST DAILY MEAN	270	Oct 9	258	Mar 21,22	45	Aug 7 1936
ANNUAL SEVEN-DAY MINIMUM	276	Oct 3	260	Mar 21	55	Aug 3 1936
MAXIMUM PEAK FLOW			995a	Jul 10	3700	Oct 10 1973
MAXIMUM PEAK STAGE			5.08b	Dec 20	7.64b	Apr 20 1950
INSTANTANEOUS LOW FLOW					45	Aug 7 1936
ANNUAL RUNOFF (AC-FT)	397400		315000		352100	
ANNUAL RUNOFF (CFSM)	0.54		0.43		0.48	
10 PERCENT EXCEEDS	1080		620		833	
50 PERCENT EXCEEDS	427		422		402	
90 PERCENT EXCEEDS	305		279		242	

a Gage-height, 3.95 ft.
b Backwater from ice.
e Estimated.



05245100 LONG PRAIRIE RIVER AT LONG PRAIRIE, MN

LOCATION.--Lat 45°58'30", long 94°51'56", in NE¼NW¼ sec. 20, T. 129 N., R. 33 W., Todd County, Hydrologic Unit 07010108, on right bank 90 ft upstream from bridge on First Avenue at Long Prairie and 400 ft downstream from Venewitz Creek.

DRAINAGE AREA.--434 mi^2.

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

GAGE.--Water-stage recorder. Datum of gage is 1,281.74 ft above sea level (NGVD of 1929).

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

DISCHARGE, in CFS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	128	112	e76	e62	e81	e72	e207	339	211	157	199	175
2	127	111	e80	e62	e81	e71	e202	316	203	147	189	190
3	125	109	e90	e62	e80	e71	e187	286	200	140	190	191
4	124	108	e97	e68	e79	e72	e176	271	192	130	188	187
5	121	106	e98	e74	e79	e73	e163	261	184	124	177	179
6	127	105	e99	e80	e80	e77	e135	256	174	118	170	199
7	129	103	e99	e86	e82	e80	e160	258	168	117	165	180
8	124	103	e101	e90	e83	e85	262	319	166	234	162	159
9	122	102	e101	e96	e85	e88	279	389	164	192	159	162
10	136	102	e101	e95	e85	e93	302	447	160	492	156	185
11	136	101	e101	e94	e86	e96	359	479	158	735	149	181
12	140	101	e101	e90	e87	e102	409	510	155	581	162	e165
13	153	101	e101	e92	e87	e108	429	514	149	508	154	e150
14	151	101	e98	e93	e87	e106	436	496	144	470	146	e140
15	150	100	e98	e93	e87	e105	422	485	139	444	150	e130
16	149	98	e96	e93	e87	e102	400	471	132	416	146	e125
17	147	99	e92	e92	e87	e99	393	444	127	371	168	e120
18	145	99	e90	e92	e87	e96	392	412	123	326	162	120
19	140	97	e87	e91	e87	e94	406	375	188	279	154	114
20	134	96	e85	e91	e87	e91	417	341	211	257	151	111
21	130	95	e83	e91	e86	e89	418	312	218	253	160	108
22	129	94	e81	e91	e82	e89	404	290	228	257	157	105
23	126	94	e79	e91	e80	e88	374	277	278	242	148	104
24	123	106	e78	e91	e78	e88	350	268	325	243	144	101
25	124	128	e75	e91	e76	e89	333	259	293	242	136	100
26	124	e103	e72	e90	e74	e88	305	252	270	247	131	96
27	124	e64	e68	e89	e73	e89	286	246	251	241	127	91
28	120	e61	e65	e88	e73	e97	292	241	224	232	126	92
29	116	e60	e63	e86	---	e113	315	235	193	223	222	93
30	115	e59	e62	e85	---	e132	337	237	172	210	216	92
31	115	---	e62	e83	---	e180	---	224	---	203	180	---
TOTAL	4054	2918	2679	2672	2306	2923	9550	10510	5800	8831	5044	4145
MEAN	130.8	97.27	86.42	86.19	82.36	94.29	318.3	339.0	193.3	284.9	162.7	138.2
MAX	153	128	101	96	87	180	436	514	325	735	222	199
MIN	115	59	62	62	73	71	135	224	123	117	126	91
AC-FT	8040	5790	5310	5300	4570	5800	18940	20850	11500	17520	10000	8220
CFSM	0.30	0.22	0.20	0.20	0.19	0.22	0.73	0.78	0.45	0.66	0.37	0.32
IN.	0.35	0.25	0.23	0.23	0.20	0.25	0.82	0.90	0.50	0.76	0.43	0.36

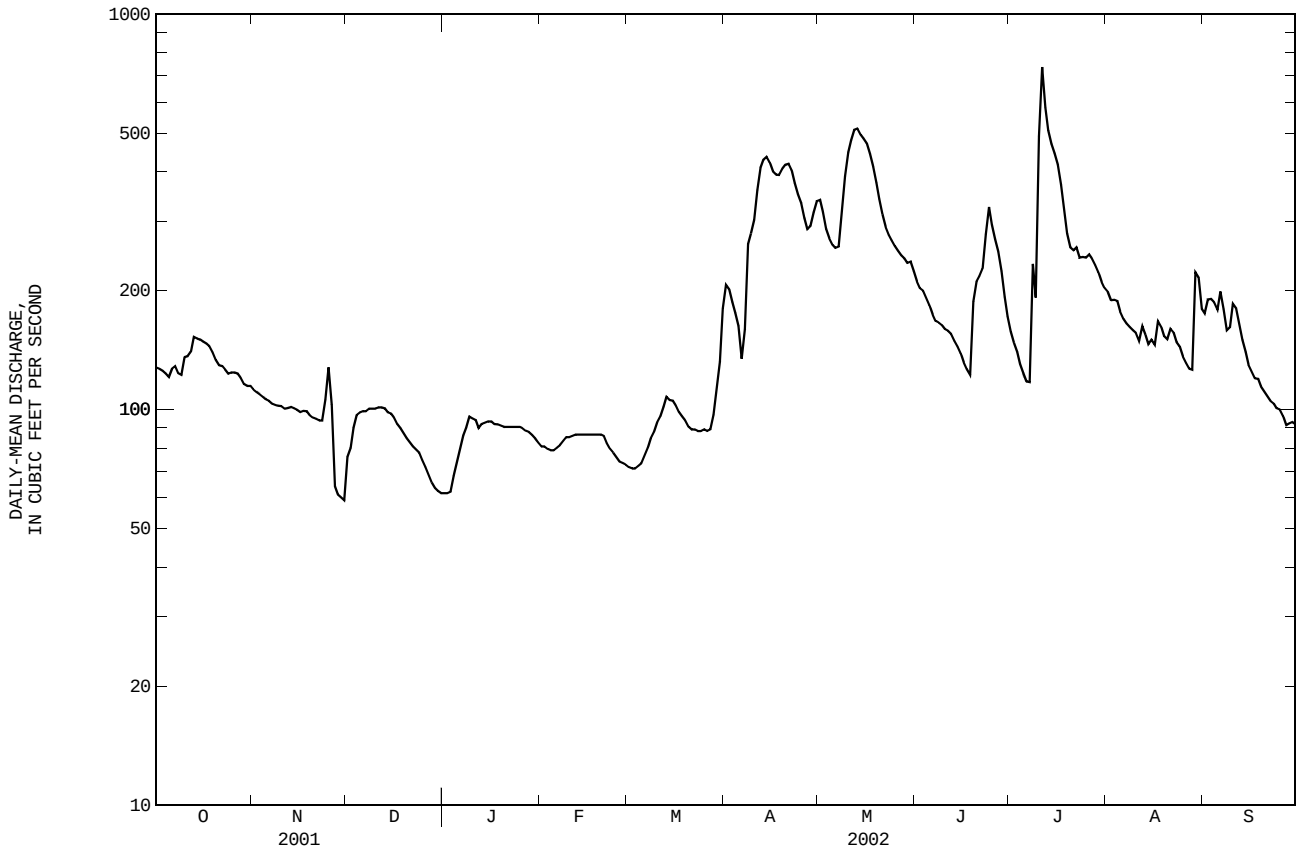
05245100 LONG PRAIRIE RIVER AT LONG PRAIRIE, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1972 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	130.4	117.6	76.09	63.55	66.95	171.6	382.2	283.6	228.8	197.5	140.9	121.4
MAX	512	425	270	217	208	441	1062	653	774	777	715	607
(WY)	1987	1972	1987	1987	1987	1985	2001	1986	2001	1972	1972	1986
MIN	13.4	8.69	3.19	1.05	1.62	19.8	71.8	45.5	27.5	4.73	10.0	5.32
(WY)	1977	1977	1977	1977	1977	1989	1977	1977	1988	1988	1989	1976

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1972 - 2002	
ANNUAL TOTAL	108375		61432			
ANNUAL MEAN	296.9		168.3		165.3	
HIGHEST ANNUAL MEAN					366	1972
LOWEST ANNUAL MEAN					25.2	1977
HIGHEST DAILY MEAN	2710	Apr 9	735	Jul 11	2900	Jul 22 1972
LOWEST DAILY MEAN	45	Jan 1	59a	Nov 30	0.84a	Jan 12 1977
ANNUAL SEVEN-DAY MINIMUM	49	Jan 1	63	Dec 28	0.84	Jan 12 1977
MAXIMUM PEAK FLOW			788	Jul 11	3270	Jul 22 1972
MAXIMUM PEAK STAGE			5.77	Jul 11	9.37	Jul 22 1972
INSTANTANEOUS LOW FLOW			59a	Nov 30	0.84a	Jan 12 1977
ANNUAL RUNOFF (AC-FT)	215000		121900		119700	
ANNUAL RUNOFF (CFSM)	0.68		0.39		0.38	
ANNUAL RUNOFF (INCHES)	9.29		5.27		5.17	
10 PERCENT EXCEEDS	819		335		371	
50 PERCENT EXCEEDS	138		127		106	
90 PERCENT EXCEEDS	51		80		26	

a Estimated daily-mean discharge, backwater from ice.
e Estimated.



05247500 CROW WING RIVER NEAR PILLAGER, MN

LOCATION.--Lat 46°18'18", long 94°22'38", in SW¼NE¼ sec. 30, T. 133 N., R. 29 W., Cass County, Hydrologic Unit 07010106, at Sylvan Dam power plant of Minnesota Power Co., 3.6 mi above mouth and 4.9 mi southeast of Pillager.

DRAINAGE AREA.--3,520 mi^2 (approximately).

PERIOD OF RECORD.--October 1968 to September 1986, October 1987 to current year. Records for August 1924 to September 1968 available in files of the Minnesota District Office.

GAGE.--Water-stage recorder. Datum of gage is 1,151.00 ft above sea level, adjustment of 1912. Prior to January 16, 1991, staff gage attached to retaining wall approximately 20 ft below the turbine outlet bays, at datum 1150.00 ft, adjustment of 1912.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Discharge computed on the basis of power plant records prior to January 16, 1991. Records for Oct. 1, 1968 to Sept. 30, 1975, were adjusted for storage change in the Sylvan Dam reservoir. Flow partly regulated by Sylvan Dam power plant and Gull Lake reservoir.

COOPERATION.--Prior to February 1991, records collected by Minnesota Power Company in connection with a Federal Energy Regulatory Commision project.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum daily discharge since 1924, 18,300 ft^3/s, Apr. 14, 1965.

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	857	1060	e1420	1040	734	842	1770	2440	1710	2240	1580	e1590
2	825	1070	e1440	1040	734	923	1770	2400	1590	1740	1450	e1590
3	804	1120	e1460	1040	733	800	1660	2330	1430	1530	1510	e1580
4	800	1130	e1570	1030	776	743	1580	2320	1280	1540	1990	e1640
5	761	1120	e1740	1020	789	728	1590	2210	1160	1480	1790	e1700
6	808	1140	e1610	990	787	720	1620	2250	1170	1320	1610	1450
7	822	1110	e1270	968	787	758	1670	2260	1160	1250	1390	1290
8	768	1070	e1280	966	785	812	1920	2390	1160	2510	1360	1200
9	761	1070	e1320	966	785	812	2220	2840	1160	3300	1260	1250
10	848	1080	1500	965	787	812	2210	3150	1060	4240	e1170	1280
11	1090	1150	1470	952	784	809	2680	3220	987	5070	e1180	1160
12	1180	1150	1360	982	833	808	2820	3330	958	4450	e1300	1210
13	1280	1150	1460	1070	833	804	3080	3490	964	4420	e1270	1230
14	1230	1150	1380	1090	835	816	2940	3590	962	4480	e1360	1180
15	1240	1150	1180	1050	838	885	2900	3650	963	4320	e1280	1150
16	1320	1150	1520	989	835	910	2910	3560	938	4320	e1240	1140
17	1360	1100	1750	960	840	911	3000	3400	835	4230	e1470	1110
18	1170	1100	1620	910	847	944	3000	3190	812	4220	e1440	1100
19	1140	1090	1160	937	939	982	3380	3100	1260	3880	e1520	1080
20	1130	1070	951	892	947	980	3290	2760	1270	3440	e1630	1070
21	1120	1020	1010	888	945	984	3000	2570	1390	3180	e1550	1040
22	1120	1020	890	818	948	984	3020	2380	1460	2720	e1390	956
23	1140	1020	1140	734	958	907	3110	2160	1900	2500	e1390	994
24	1120	1060	1080	842	997	859	2990	2320	2300	2040	e2170	976
25	1060	e1150	1040	781	989	837	2640	2200	2540	2050	e1990	966
26	1030	e1300	965	865	940	927	2540	2000	2670	2000	e1900	958
27	1060	e1340	978	887	906	973	2440	1860	2720	1880	1710	971
28	1130	e960	1010	884	898	934	2440	1680	2730	1690	1460	946
29	1210	e940	1110	872	---	1260	2500	1600	2540	1810	1290	975
30	1200	e1150	1220	830	---	1650	2520	1710	2290	1800	1410	664
31	1080	---	1150	769	---	1780	---	1720	---	1540	e1520	---
TOTAL	32464	33190	40054	29027	23809	28894	75210	80080	45369	87190	46580	35446
MEAN	1047	1106	1292	936	850	932	2507	2583	1512	2813	1503	1182
MAX	1360	1340	1750	1090	997	1780	3380	3650	2730	5070	2170	1700
MIN	761	940	890	734	733	720	1580	1600	812	1250	1170	664
AC-FT	64390	65830	79450	57580	47230	57310	149200	158800	89990	172900	92390	70310
CFSM	0.32	0.34	0.39	0.28	0.26	0.28	0.76	0.78	0.46	0.85	0.46	0.36
IN.	0.37	0.37	0.45	0.33	0.27	0.33	0.85	0.90	0.51	0.98	0.53	0.40

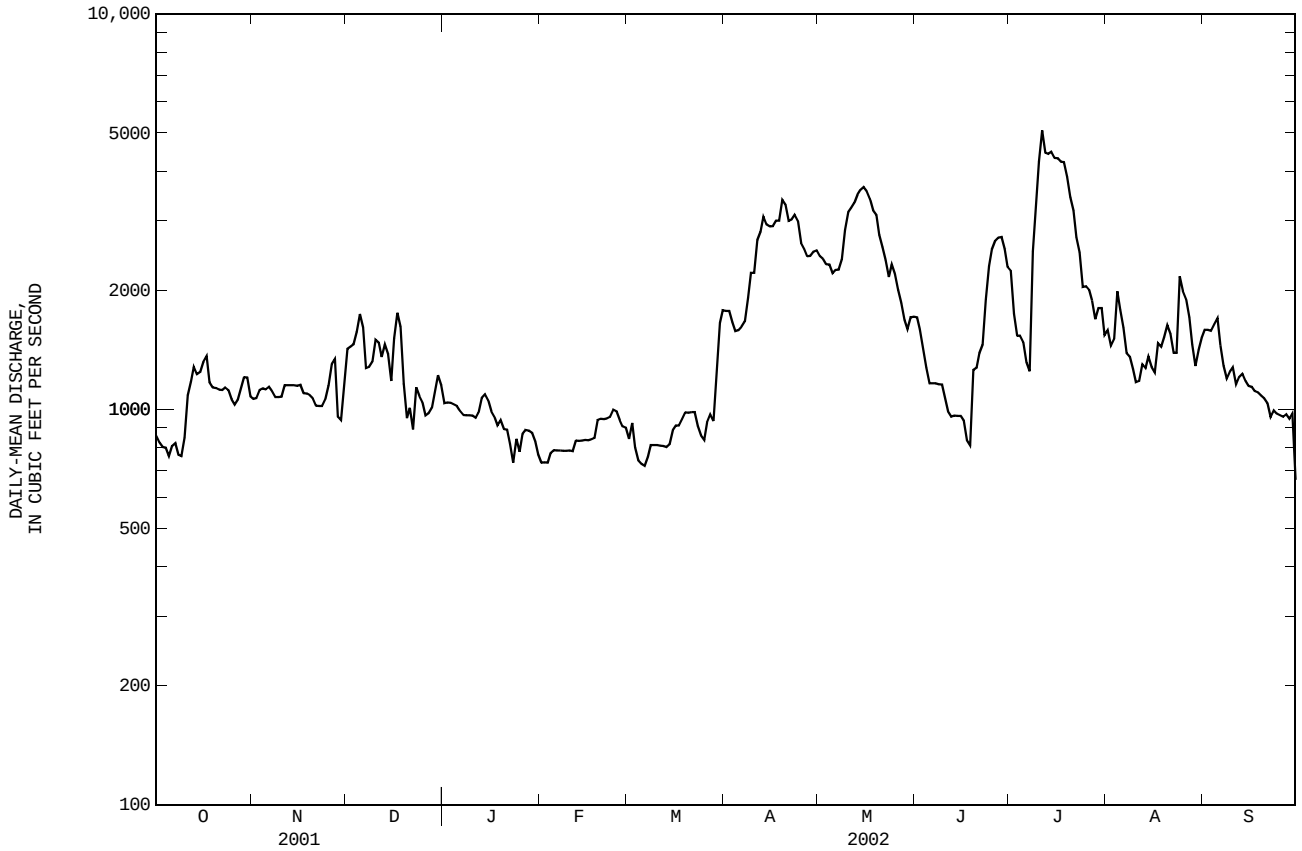
05247500 CROW WING RIVER NEAR PILLAGER, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1240	1243	886	723	739	1394	3451	2486	1774	1506	1028	963
MAX	3771	3674	1699	1188	1360	2996	8266	5671	5307	3295	3520	3309
(WY)	1974	1972	1999	1986	1998	1972	2001	1986	2001	1972	1972	1986
MIN	215	215	199	218	255	548	882	545	447	206	120	161
(WY)	1977	1977	1977	1977	1977	1981	1981	1977	1988	1988	1976	1976

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1969 - 2002	
ANNUAL TOTAL	847214		557313			
ANNUAL MEAN	2321		1527		1454	
HIGHEST ANNUAL MEAN					2564	1972
LOWEST ANNUAL MEAN					446	1977
HIGHEST DAILY MEAN	16900	Apr 12	5070	Jul 11	16900	Apr 12 2001
LOWEST DAILY MEAN	580	Jul 18	664	Sep 30	60	Aug 10 1976
ANNUAL SEVEN-DAY MINIMUM	789	Oct 3	760	Jan 31	68	Aug 9 1976
MAXIMUM PEAK FLOW			5310	Jul 10	17500a	Apr 12 2001
MAXIMUM PEAK STAGE			6.57	Jul 10	12.11a	Apr 12 2001
INSTANTANEOUS LOW FLOW			162b	Jun 11	78b	Jul 17 2001
ANNUAL RUNOFF (AC-FT)	1680000		1105000		1053000	
ANNUAL RUNOFF (CFSM)	0.70		0.46		0.44	
ANNUAL RUNOFF (INCHES)	9.55		6.28		5.99	
10 PERCENT EXCEEDS	5670		2830		2950	
50 PERCENT EXCEEDS	1120		1180		990	
90 PERCENT EXCEEDS	849		824		459	

a Since stage record began, Jan. 16, 1991.
b Result of regulation.
e Estimated.



05267000 MISSISSIPPI RIVER NEAR ROYALTON, MN

LOCATION.--Lat 45°49'34", long 94°21'18", sec. 32, T. 39 N., R. 32 W., Morrison County, Hydrologic Unit 07010201, on left bank at upstream side of bridge on County Highway 26, 2.5 mi west of Royalton, and at mile 954 upstream from Ohio River.

DRAINAGE AREA.--11,600 mi^2 (approximately).

PERIOD OF RECORD.--March 1924 to Sept. 30, 1993, discharges obtained from Minnesota Power and adjusted to U.S. Geological Survey streamflow measurements; Oct. 1993 to Sept. 30, 2000, discharges flow-averaged between Mississippi River at Ft. Ripley (05261000) and Mississippi River at St. Cloud (05270700); Oct. 2000 to July, 2001, discharges obtained from Minnesota Power and adjusted to U.S. Geological Survey streamflow measurements; July 2001 to current year.

GAGE.--Water-stage recorder.

REMARKS.--Records good except those for adjusted and estimated discharge, which are fair. Flow partly regulated by power plants and Winnibigoshish, Leech, Pokegama, Sandy, and Gull Lakes and by Pine River Reservoir.

COOPERATION.--Minnesota Power Co. in connection with a Federal Energy Regulatory Commission project.

DISCHARGE, in CFS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3310	5020	5320	e4210	e3450	e3440	5480	8380	4670	10300	7190	4980
2	2890	4750	5710	e4310	e3430	e3400	5210	7880	4310	9810	6730	5370
3	3090	4620	5810	e4370	e3420	e3360	5160	7420	4170	9600	7090	5120
4	3030	5020	5430	e4440	e3400	e3320	5050	7490	3530	9140	7280	4930
5	2880	4620	5940	e4480	e3400	e3270	4780	7240	3680	9150	7160	4970
6	2790	4770	5980	e4710	e3390	e3250	4470	6910	3650	8600	7080	5740
7	2920	4720	6080	e4900	e3380	e3210	4260	6870	3330	8180	6570	4780
8	3240	4560	5630	e5040	e3370	e3190	4810	7860	3270	9320	6060	4340
9	3210	4040	5280	e5020	e3360	e3220	5380	8400	3300	11000	5630	3900
10	3310	4470	5590	e5030	e3360	e3280	6000	9150	2890	13600	5260	4350
11	3560	4490	5870	e4970	e3360	e3280	7160	9270	2890	16500	5070	4250
12	3600	4500	5910	e4960	e3350	e3280	8360	9630	2790	16900	4810	3650
13	3740	5200	5650	e4940	e3350	e3350	9000	9860	2680	16100	5360	4320
14	4410	4670	5340	e4960	e3350	e3300	9600	10400	2690	15900	4960	3860
15	4320	4300	5670	e4960	e3340	e3260	9740	10500	2700	15200	5220	4090
16	4810	4740	5520	e4960	e3340	e3200	10000	10600	2630	14300	5160	3770
17	4820	4460	6690	e4300	e3340	e3100	9750	10600	2360	13700	5040	3500
18	5390	4570	7140	e4000	e3340	e3050	9980	10000	2440	12800	5590	3900
19	4790	4350	5550	e3710	e3410	e3050	10200	9820	3120	12300	5780	3400
20	4940	3980	4640	e3720	e3500	e3050	10300	9120	3640	11400	5430	3430
21	4800	4410	e4090	e3740	e3630	e3040	10300	8480	3790	10700	5930	3160
22	4750	4310	e4070	e3750	e3650	e3060	9870	8100	3570	10600	5420	3180
23	5200	4300	e3920	e3750	e3650	e3100	10100	7060	4600	9470	5190	3010
24	5130	4320	e3540	e3750	e3700	e3150	9910	6740	6110	9160	5380	3160
25	4760	4840	e3500	e3720	e3800	e3050	9500	6510	6460	8710	6290	3230
26	4900	4600	e3600	e3670	e3600	e3000	9080	6180	8710	8340	5260	3020
27	4780	5390	e3650	e3620	e3300	e3030	8890	5520	9590	8100	5010	2910
28	5000	4950	e3840	e3570	e3400	e3200	8740	5270	10300	7930	4620	3170
29	5210	4620	e3960	e3540	---	e3500	8380	4700	10500	7770	4650	2970
30	5560	4970	e4060	e3500	---	5480	8330	4400	10100	7990	4970	3270
31	5030	---	e4130	e3480	---	5780	---	4610	---	7550	4490	---
TOTAL	130170	138560	157110	132080	96370	104250	237790	244970	138470	340120	175680	117730
MEAN	4199	4619	5068	4261	3442	3363	7926	7902	4616	10970	5667	3924
MAX	5560	5390	7140	5040	3800	5780	10300	10600	10500	16900	7280	5740
MIN	2790	3980	3500	3480	3300	3000	4260	4400	2360	7550	4490	2910
AC-FT	258200	274800	311600	262000	191100	206800	471700	485900	274700	674600	348500	233500
CFSM	0.36	0.40	0.44	0.37	0.30	0.29	0.68	0.68	0.40	0.95	0.49	0.34
IN.	0.42	0.44	0.50	0.42	0.31	0.33	0.76	0.79	0.44	1.09	0.56	0.38

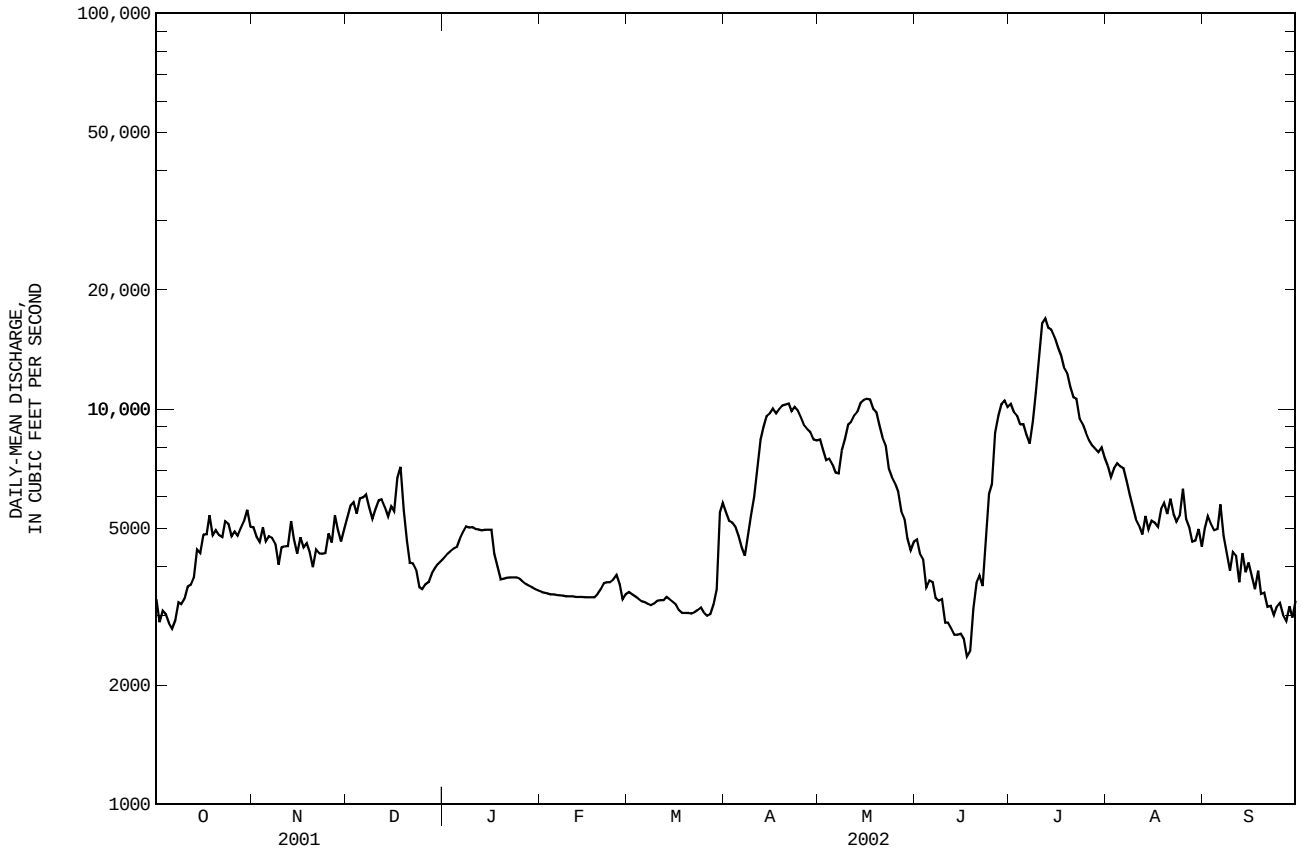
05267000 MISSISSIPPI RIVER NEAR ROYALTON, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1924 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	4186	4066	3194	2807	2692	3894	9362	8760	6546	5041	3760	3590
MAX	12930	14640	7297	5713	5480	12290	25430	24600	18160	15250	15230	12940
(WY)	1966	1972	1997	1966	1997	1966	1997	1950	1965	1993	1953	1986
MIN	632	618	627	534	758	968	1924	1663	1071	648	449	535
(WY)	1937	1937	1935	1935	1937	1940	1931	1977	1988	1988	1934	1934

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1924 - 2002	
ANNUAL TOTAL	2959060		2013300			
ANNUAL MEAN	8107		5516		4852	
HIGHEST ANNUAL MEAN					9555	1966
LOWEST ANNUAL MEAN					1213	1934
HIGHEST DAILY MEAN	35500	Apr 13	16900	Jul 12	38200	Apr 8 1997
LOWEST DAILY MEAN	2790	Oct 6	2360	Jun 17	254	Nov 25 1936
ANNUAL SEVEN-DAY MINIMUM	2980	Oct 2	2610	Jun 12	358	Sep 3 1936
ANNUAL RUNOFF (AC-FT)	5869000		3993000		3515000	
ANNUAL RUNOFF (CFSM)	0.70		0.48		0.42	
ANNUAL RUNOFF (INCHES)	9.49		6.46		5.68	
10 PERCENT EXCEEDS	19500		9670		9880	
50 PERCENT EXCEEDS	4670		4760		3560	
90 PERCENT EXCEEDS	3490		3200		1340	

e Estimated.



05270500 SAUK RIVER NEAR ST. CLOUD, MN

LOCATION.--Lat 45°33'35", long 94°14'00", in SW¼SW¼ sec. 8, T. 124 N., R. 28 W., Stearns County, Hydrologic Unit 07010203, on right bank 0.5 mi northwest of Waite Park, 3 mi west of St. Cloud, and 5 mi upstream from mouth.

DRAINAGE AREA.--1,030 mi^2.

PERIOD OF RECORD.--July 1909 to December 1912, April to December 1913, May to November 1929, March 1930 to September 1931, April to November 1932, March to November 1933, March 1934 to September 1981. Monthly discharge only for some periods, published in WSP 1308.October 1990 to current year.

REVISED RECORD--WSP 895: Drainage area. WSP 1308: 1912(M), 1932 (M). WSP 1508: 1937(m).

GAGE.--Water-stage recorder. Datum of gage is 1,034.63 ft above sea level (NGVD of 1929). Prior to Nov. 22, 1934, nonrecording gage on highway bridge 1 mi downstream at datum 6.77 ft lower.

REMARKS.--Records good except those for estimated daily discharge, which are fair to poor. Flow may be influenced by minor regulation from small lakes and a powerplant upstream from 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	136	138	e218	e103	e132	e103	e378	609	411	505	1010	1100
2	133	147	e220	e103	e131	e103	e387	592	370	482	998	1200
3	130	131	e226	e103	e132	e103	e366	550	330	450	1120	1180
4	138	125	e232	e106	e134	e105	e333	526	336	418	1540	1060
5	149	122	e231	e112	e135	e109	e311	503	327	378	1520	954
6	148	124	e230	e117	e137	e113	e287	488	312	352	1590	1030
7	136	113	e225	e126	e138	e120	e324	476	321	341	1620	864
8	128	116	e222	e138	e139	e133	e666	510	304	363	1560	779
9	168	112	e218	e146	e140	e150	e1020	619	279	361	1460	736
10	201	107	e207	e150	e138	e167	e1260	599	279	542	1380	845
11	218	101	e204	e160	e138	e185	e1460	604	305	530	1300	782
12	198	115	e200	e160	e140	e201	1490	669	284	470	1200	737
13	213	146	e197	e160	e141	e212	1510	710	281	498	1090	704
14	228	146	e192	e158	e142	e203	1530	724	262	554	968	682
15	235	148	e182	e150	e141	e197	1500	736	239	646	881	640
16	223	148	e174	e140	e140	e190	1420	746	223	759	813	596
17	212	146	e164	e135	e139	e178	1400	727	211	860	781	560
18	207	158	e155	e137	e134	e164	1300	720	197	924	719	526
19	208	156	e147	e140	e127	e153	1240	695	204	977	662	544
20	197	150	e143	e143	e122	e145	1160	669	207	1050	645	509
21	187	146	e137	e148	e116	e136	1090	661	244	1140	750	485
22	177	142	e134	e149	e112	e132	1060	630	271	1150	719	457
23	171	142	e129	e150	e107	e125	969	628	284	1120	708	422
24	178	165	e126	e149	e107	e129	897	569	340	1090	708	400
25	211	220	e120	e148	e106	e129	838	535	386	1170	689	381
26	173	206	e116	e147	e104	e132	727	512	417	1130	657	377
27	137	192	e110	e145	e103	e136	651	488	458	1090	608	370
28	131	e250	e107	e142	e103	e149	672	473	495	1130	580	365
29	132	e236	e105	e140	---	e174	674	479	512	1100	675	362
30	125	e222	e103	e137	---	e213	630	469	517	1060	902	360
31	129	---	e103	e133	---	e271	---	448	---	1040	951	---
TOTAL	5357	4570	5277	4275	3578	4760	27550	18364	9606	23680	30804	20007
MEAN	173	152	170	138	128	154	918	592	320	764	994	667
MAX	235	250	232	160	142	271	1530	746	517	1170	1620	1200
MIN	125	101	103	103	103	103	287	448	197	341	580	360
AC-FT	10630	9060	10470	8480	7100	9440	54650	36420	19050	46970	61100	39680
CFSM	0.17	0.15	0.17	0.13	0.12	0.15	0.89	0.58	0.31	0.74	0.96	0.65
IN.	0.19	0.17	0.19	0.15	0.13	0.17	1.00	0.66	0.35	0.86	1.11	0.72

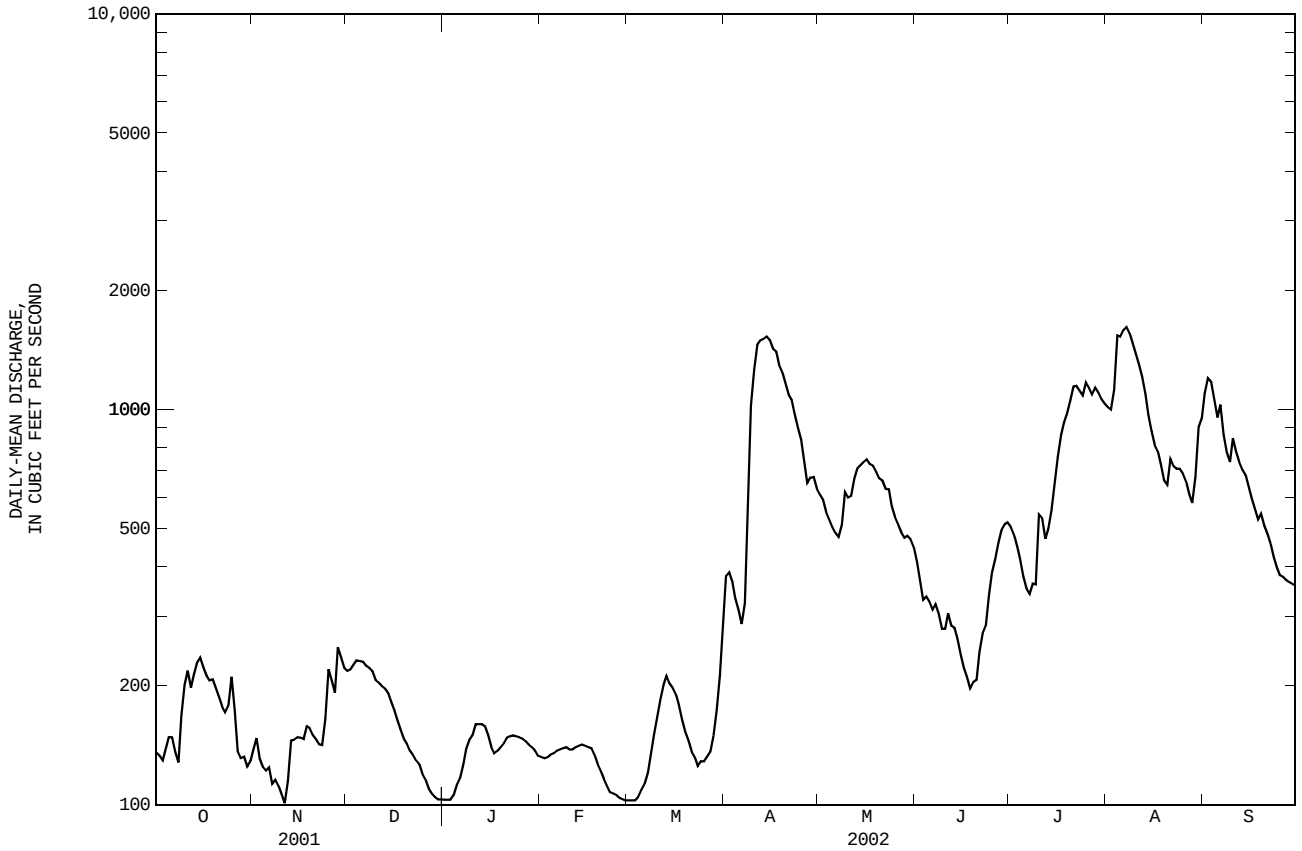
05270500 SAUK RIVER NEAR ST. CLOUD, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1909 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	170	182	137	102	110	312	848	529	418	328	217	186
MAX	1154	1091	528	336	568	1380	2997	1862	1333	1262	1250	1136
(WY)	1996	1972	1972	1980	1966	1966	1997	2001	1957	1993	1972	1957
MIN	6.22	6.18	5.15	3.25	7.61	28.7	16.5	7.84	15.9	10.6	10.5	10.7
(WY)	1934	1934	1935	1935	1935	1940	1934	1934	1934	1934	1933	1933

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1909 - 2002	
ANNUAL TOTAL	212695		157828			
ANNUAL MEAN	583		432		310a	
HIGHEST ANNUAL MEAN					732	1972
LOWEST ANNUAL MEAN					51.0	1931
HIGHEST DAILY MEAN	4550	Apr 14	1620	Aug 7	7940	Apr 14 1965
LOWEST DAILY MEAN	74	Aug 25	101	Nov 11	1.3	Jan 6 1935
ANNUAL SEVEN-DAY MINIMUM	75	Jan 1	103	Feb 26	1.5	Jan 2 1935
MAXIMUM PEAK FLOW			1620	Aug 6	9100	Apr 13 1965
MAXIMUM PEAK STAGE			4.99	Aug 6	10.68	Apr 13 1965
INSTANTANEOUS LOW FLOW			53b	Nov 27	0.30	Nov 25 1936
ANNUAL RUNOFF (AC-FT)	421900		313100		224900	
ANNUAL RUNOFF (CFSM)	0.57		0.42		0.30	
ANNUAL RUNOFF (INCHES)	7.68		5.70		4.09	
10 PERCENT EXCEEDS	1770		1060		780	
50 PERCENT EXCEEDS	147		232		150	
90 PERCENT EXCEEDS	86		123		40	

a Median of annual mean discharges is 300 ft^3/s.
b Result of ice dam upstream.
e Estimated.



05270700 MISSISSIPPI RIVER AT ST. CLOUD, MN

LOCATION.--Lat 45°32'50", long 94°08'44", in SE¼SW¼ sec. 1, T. 35 N., R. 31 W., Sherburne County, Hydrologic Unit 07010203, on left bank about 250 ft below the left downstream end of the City of St. Cloud hydropower dam and at mile 926.3 upstream from Ohio River.

DRAINAGE AREA.--13,320 mi^2 (approximately).

PERIOD OF RECORD.--October 1988 to current year.

GAGE.--Water-stage recorder. Datum of gage is 958.49 ft above sea level (NGVD of 1929).

REMARKS.--Records good except those for estimated daily discharge, which are fair to poor. Flow partly regulated by power plants and reservoirs.

DISCHARGE, in CFS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4080	5570	5560	e4440	e3750	e3670	7610	9790	5980	11300	8400	6190
2	e4000	5430	5960	e4520	e3720	e3590	7450	9050	5450	11000	7980	7270
3	e3970	5110	6440	e4600	e3680	e3540	7090	8430	5360	10500	8580	7160
4	3530	5420	5800	e4660	e3660	e3480	6780	8620	4760	9480	9340	6780
5	3630	5110	6380	e4770	e3640	e3420	6570	8300	4630	9640	8930	6660
6	3300	5260	6450	e4980	e3640	e3360	6370	7950	4520	8920	8660	9370
7	3270	5280	6560	e5100	e3620	e3310	6740	7860	4670	8460	8390	8290
8	3770	5060	6230	e5160	e3620	e3350	7290	8650	4090	9390	7780	7410
9	3720	4440	5600	e5150	e3610	e3390	7970	9910	4290	11400	7370	6790
10	3810	4820	6100	e5180	e3610	e3390	8840	10000	3810	15800	7010	7010
11	4040	4850	6290	e5170	e3600	e3400	10300	11100	3710	20000	6740	6830
12	4290	4920	6470	e5160	e3600	e3430	11700	11500	3520	21100	6540	6020
13	4140	5680	6150	e5190	e3600	e3440	12600	12000	3470	20000	6620	6190
14	4890	5370	5710	e5200	e3600	e3420	13400	12300	3350	19500	6370	5960
15	5070	4820	6030	e5210	e3600	e3370	13400	12800	3330	18700	6230	5530
16	5380	5100	6070	e5050	e3590	e3320	13500	12900	3050	17400	6270	5560
17	5350	4780	6730	e4340	e3590	e3300	13200	12500	2900	16500	6260	4970
18	5840	5170	7210	e4140	e3610	e3220	13100	12200	2610	15500	6480	5260
19	5530	4690	6020	e3970	e3690	e3300	13200	11500	3500	14500	6460	4890
20	5520	4360	5170	e4030	e3820	e3330	12700	11100	4400	13800	6520	4680
21	5540	4900	e4170	e4000	e3870	e3290	12900	9820	4220	12800	6980	4240
22	5350	4660	e4160	e4010	e3880	e3240	12200	9410	4450	12400	6730	4340
23	5670	4550	e4090	e4010	e3910	e3350	12100	8790	5190	11100	6310	3910
24	6190	5010	e3710	e4010	e3950	e3270	12100	7810	6900	10700	6270	3950
25	5910	5080	e3610	e4000	e4050	e3230	11400	7840	7180	10300	6900	4280
26	5160	5450	e3720	e3970	e3900	e3140	10400	7550	9030	9680	6300	4000
27	5130	5830	e3790	e3920	e3790	e3200	10400	7040	10900	9550	5920	3860
28	5690	5510	e3920	e3890	e3730	e3500	10100	6600	11500	9650	5440	4010
29	5570	5110	e4040	e3850	---	4630	9770	6430	12000	9060	6040	3940
30	6270	5260	e4200	e3810	---	6510	9340	5620	11600	9260	6140	4130
31	5540	---	e4360	e3790	---	7900	---	5820	---	8940	5950	---
TOTAL	149150	152600	166700	139280	103930	113290	310520	291190	164370	396330	215910	169480
MEAN	4811	5087	5377	4493	3712	3655	10350	9393	5479	12780	6965	5649
MAX	6270	5830	7210	5210	4050	7900	13500	12900	12000	21100	9340	9370
MIN	3270	4360	3610	3790	3590	3140	6370	5620	2610	8460	5440	3860
AC-FT	295800	302700	330600	276300	206100	224700	615900	577600	326000	786100	428300	336200
CFSM	0.36	0.38	0.40	0.34	0.28	0.27	0.78	0.71	0.41	0.96	0.52	0.42
IN.	0.42	0.43	0.47	0.39	0.29	0.32	0.87	0.81	0.46	1.11	0.60	0.47

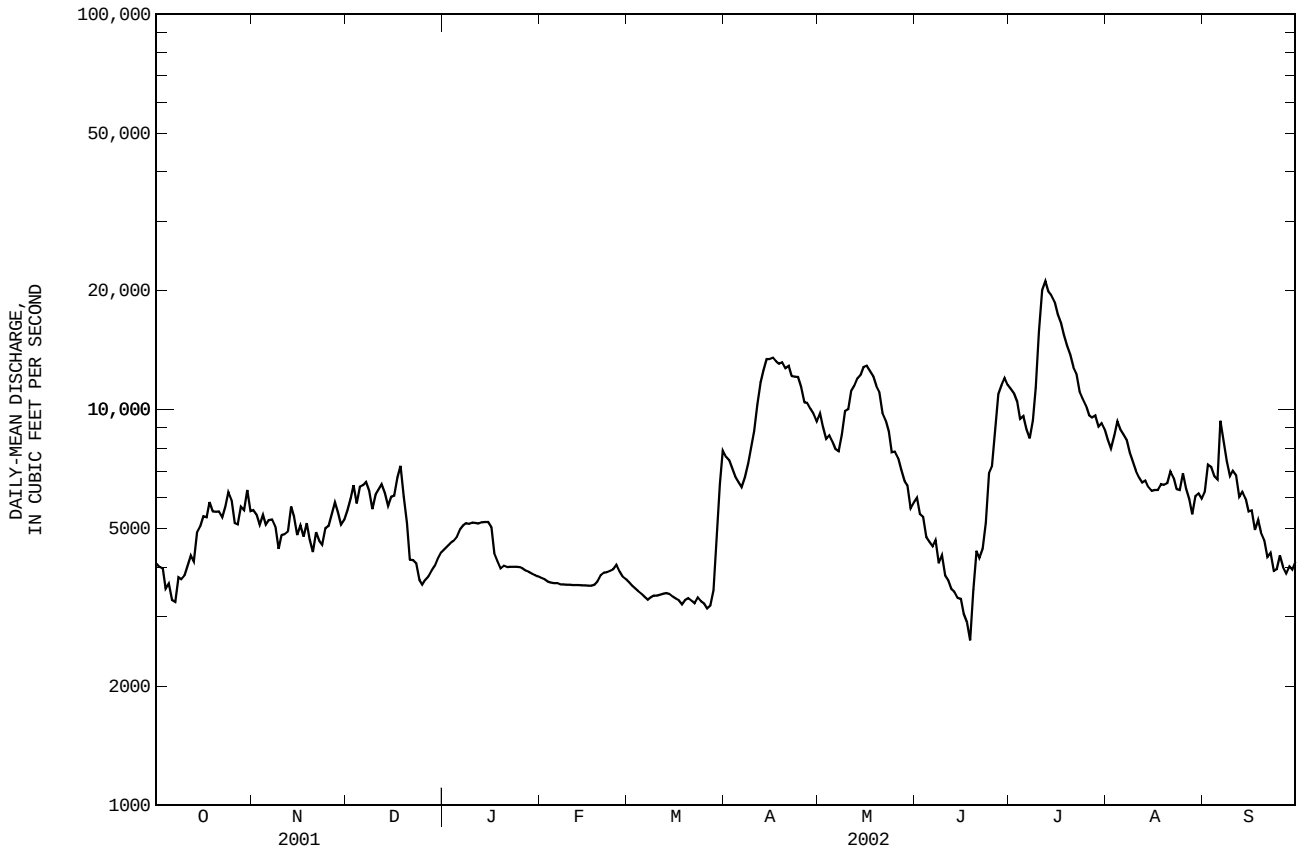
05270700 MISSISSIPPI RIVER AT ST. CLOUD, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	5708	6026	4835	4118	4001	6389	14060	12050	8451	8489	5024	4835
MAX	15680	9675	7434	5616	5796	10600	29710	22020	20310	16830	9687	9763
(WY)	1996	1996	1997	1997	1997	1995	2001	2001	2001	1993	1999	1999
MIN	3106	2953	2310	1927	1815	3655	6134	5653	3743	3930	1535	2297
(WY)	1993	1989	1991	1991	1990	2002	2000	1998	1992	1989	1989	1990

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1988 - 2002	
ANNUAL TOTAL	3540080		2372750			
ANNUAL MEAN	9699		6501		6992	
HIGHEST ANNUAL MEAN					9947	2001
LOWEST ANNUAL MEAN					4615	1990
HIGHEST DAILY MEAN	44000	Apr 12	21100	Jul 12	45100	Apr 9 1997
LOWEST DAILY MEAN	3270	Oct 7	2610	Jun 18	1010	Aug 24 1989
ANNUAL SEVEN-DAY MINIMUM	3550	Sep 10	3170	Jun 13	1250	Aug 13 1989
MAXIMUM PEAK FLOW			22200a	Jul 12	46900	Apr 8 1997
MAXIMUM PEAK STAGE			8.06a	Jul 12	11.44	Apr 8 1997
INSTANTANEOUS LOW FLOW			1600a	Jun 18	484a	Oct 18 1992
ANNUAL RUNOFF (AC-FT)	7022000		4706000		5066000	
ANNUAL RUNOFF (CFSM)	0.73		0.49		0.52	
ANNUAL RUNOFF (INCHES)	9.89		6.63		7.13	
10 PERCENT EXCEEDS	26000		11500		12800	
50 PERCENT EXCEEDS	5080		5450		5600	
90 PERCENT EXCEEDS	3920		3540		2790	

a Due to regulation.
e Estimated.



05275000 ELK RIVER NEAR BIG LAKE, MN

LOCATION.--Lat 45°20'02", long 93°40'00", in NE¼SW¼ sec. 23, T.33 N., R.27 W., Sherburne County, Hydrologic Unit 07010203, on right bank at upstream side of County Highway 15 bridge, 4 mi east of Big Lake and 4 mi downstream from St. Francis River.

DRAINAGE AREA.--559 mi^2.

PERIOD OF RECORD.--April 1911 to September 1917, April to September 1931, April to November 1932, March to November 1933, March 1934 to September 1987, October 1990 to current year.

REVISED RECORDS.--WSP 895: 1939. WSP 1308: 1912(M), 1915-17(M).

GAGE.--Water-stage recorder. Datum of gage is 899.60 ft above sea level (NGVD of 1929). April 1911 to Sept. 30, 1917, April 1, 1931 to July 26, 1934, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods of estimated daily discharge, 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	78	100	189	e86	e94	e88	e157	488	222	500	719	498
2	77	100	175	e86	e93	e88	e195	483	208	496	735	526
3	74	100	179	e87	e93	e87	e229	490	200	512	754	544
4	74	100	182	e89	e93	e87	e227	486	194	506	1070	518
5	72	100	187	e93	e93	e89	e217	473	189	479	1030	479
6	69	100	201	e99	e94	e92	e208	472	178	440	953	609
7	69	101	196	e102	e95	e94	e239	457	178	393	911	702
8	70	101	195	e106	e95	e98	e383	484	180	346	927	690
9	70	101	179	e113	e95	e101	e675	532	179	308	1010	1150
10	77	101	219	e115	e96	e106	899	527	174	403	983	1830
11	82	98	221	e117	e97	e112	1090	526	196	562	894	1940
12	84	99	189	e119	e98	e119	1170	574	203	583	809	1830
13	87	104	183	e119	e98	e128	1230	630	195	640	720	1730
14	93	108	205	e119	e99	e126	1570	652	188	991	637	1680
15	96	109	176	e119	e99	e119	1820	637	178	1620	577	1590
16	96	110	165	e119	e99	e114	1900	628	169	2050	534	1490
17	95	109	166	e119	e100	e108	1850	637	160	2220	519	1360
18	97	109	165	e117	e100	e102	1690	646	153	2210	478	1210
19	100	110	e143	e116	e100	e98	1500	646	151	2040	437	1040
20	100	110	e130	e116	e99	e94	1260	622	151	1780	399	876
21	100	109	e119	e114	e97	e88	1090	581	162	1550	543	732
22	103	110	e110	e109	e95	e85	995	539	202	1350	518	625
23	103	110	e103	e105	e93	e84	902	501	222	1170	469	560
24	104	126	e99	e102	e91	e85	830	461	251	1000	470	514
25	106	168	e96	e101	e90	e85	749	413	315	903	527	487
26	105	180	e93	e100	e89	e88	672	356	351	815	617	483
27	107	151	e91	e99	e89	e92	612	318	372	755	680	459
28	104	143	e89	e98	e88	e95	586	293	413	752	629	439
29	100	181	e88	e97	---	e100	546	278	463	699	560	433
30	101	195	e88	e96	---	e107	511	264	494	649	528	428
31	103	---	e87	e95	---	e121	---	240	---	653	503	---
TOTAL	2796	3543	4708	3272	2662	3080	26002	15334	6891	29375	21140	27452
MEAN	90.2	118	152	106	95.1	99.4	867	495	230	948	682	915
MAX	107	195	221	119	100	128	1900	652	494	2220	1070	1940
MIN	69	98	87	86	88	84	157	240	151	308	399	428
AC-FT	5550	7030	9340	6490	5280	6110	51570	30410	13670	58270	41930	54450
CFSM	0.16	0.21	0.27	0.19	0.17	0.18	1.55	0.88	0.41	1.70	1.22	1.64
IN.	0.19	0.24	0.31	0.22	0.18	0.20	1.73	1.02	0.46	1.95	1.41	1.83

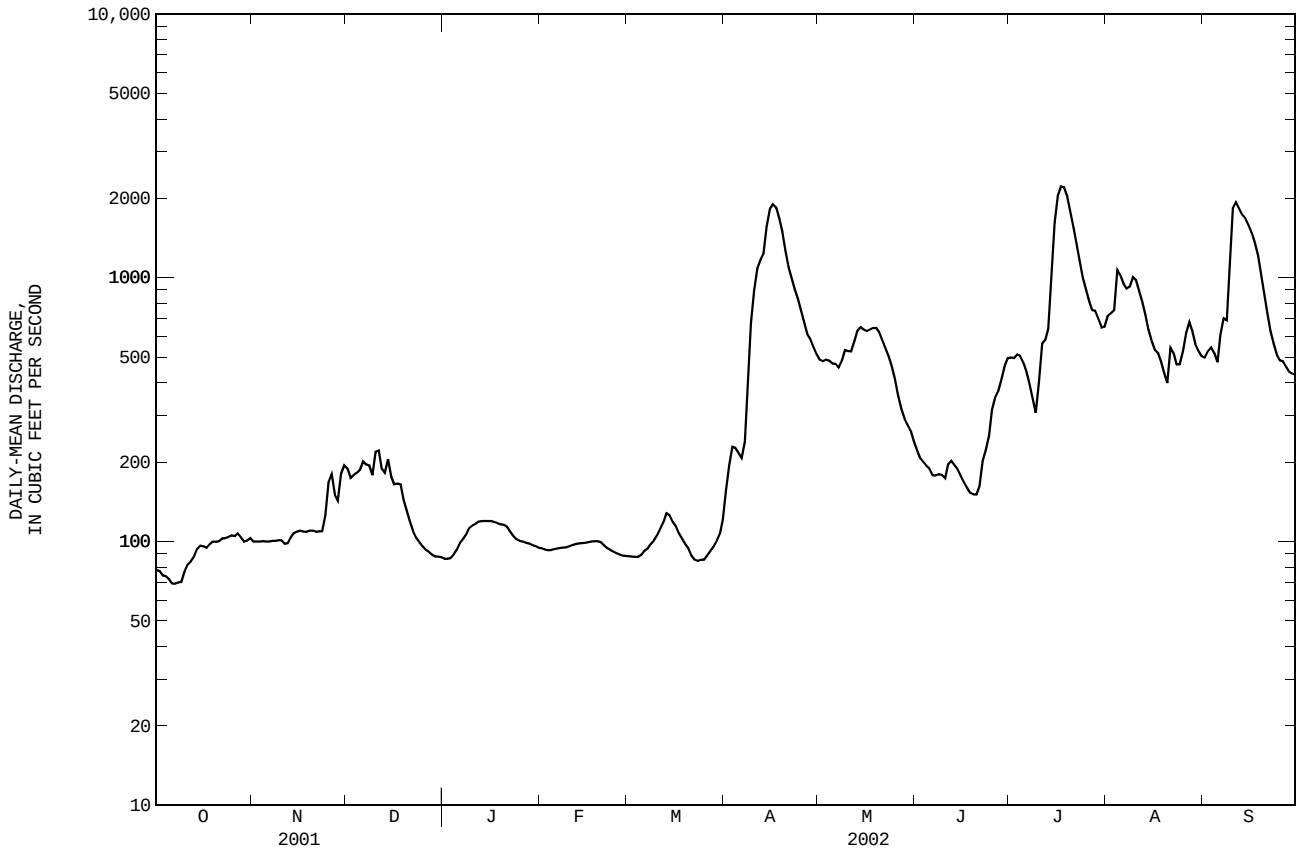
05275000 ELK RIVER NEAR BIG LAKE, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1911 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	204	209	149	111	117	298	667	443	336	271	185	206
MAX	778	794	410	290	392	1125	1823	1620	1647	1026	926	1050
(WY)	1985	1972	1966	1979	1984	1966	1969	1986	1984	1978	1972	1986
MIN	32.7	56.3	44.1	38.4	29.8	58.8	75.5	37.5	20.5	8.94	8.74	23.4
(WY)	1934	1935	1935	1935	1936	1934	1934	1934	1934	1934	1934	1932

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1911 - 2002	
ANNUAL TOTAL	121348		146255			
ANNUAL MEAN	332		401		276a	
HIGHEST ANNUAL MEAN					669	1986
LOWEST ANNUAL MEAN					88.0	1935
HIGHEST DAILY MEAN	4370	Apr 27	2220	Jul 17	7170	Apr 16 1965
LOWEST DAILY MEAN	58	Feb 21	69	Oct 6,7	4.0	Aug 1 1934
ANNUAL SEVEN-DAY MINIMUM	59	Feb 18	71	Oct 3	4.5	Jul 27 1934
MAXIMUM PEAK FLOW			2240	Jul 17	7360	Apr 16 1965
MAXIMUM PEAK STAGE			6.25	Jul 17	10.86	Apr 16 1965
INSTANTANEOUS LOW FLOW			68	Oct 6	3.6	Jul 31 1934
ANNUAL RUNOFF (AC-FT)	240700		290100		200100	
ANNUAL RUNOFF (CFSM)	0.59		0.72		0.49	
ANNUAL RUNOFF (INCHES)	8.08		9.73		6.71	
10 PERCENT EXCEEDS	880		993		575	
50 PERCENT EXCEEDS	100		181		170	
90 PERCENT EXCEEDS	63		91		72	

a Median of annual mean discharges is 258 ft^3/s.
e Estimated.



05280000 CROW RIVER AT ROCKFORD, MN

LOCATION.--Lat 45°05'12", long 93°44'02", in sec. 29, T.119 N., R.24 W., Hennepin County, Hydrologic Unit 07010204, on right bank at Rockford, 150 ft downstream from bridge on State Highway 55, 2 miles downstream from confluence of North and South Forks, and 23 miles upstream from confluence with the Mississippi River.

DRAINAGE AREA.--2,640 mi^2.

PERIOD OF RECORD.--April to July 1906 (published as "near Dayton"), June 1909 to September 1917, April to November 1929, March 1930 to September 1931, April to November 1932, March to November 1933, March 1934 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1115: 1932. WSP 1508: 1933. WDR MN-77-2: 1972 (M)(m).

GAGE.--Water-stage recorder. Datum of gage is 893.08 ft above sea level (NGVD of 1929). Apr. 13 to July 21, 1906, nonrecording gage at Berning Mill 14 mi downstream at different datum. June 4, 1909 to Sept. 30, 1917, nonrecording gage at site 600 ft downstream at different datum;. Apr. 23, 1929 to Aug. 21, 1934, nonrecording gage at site 600 ft downstream at present datum.

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

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

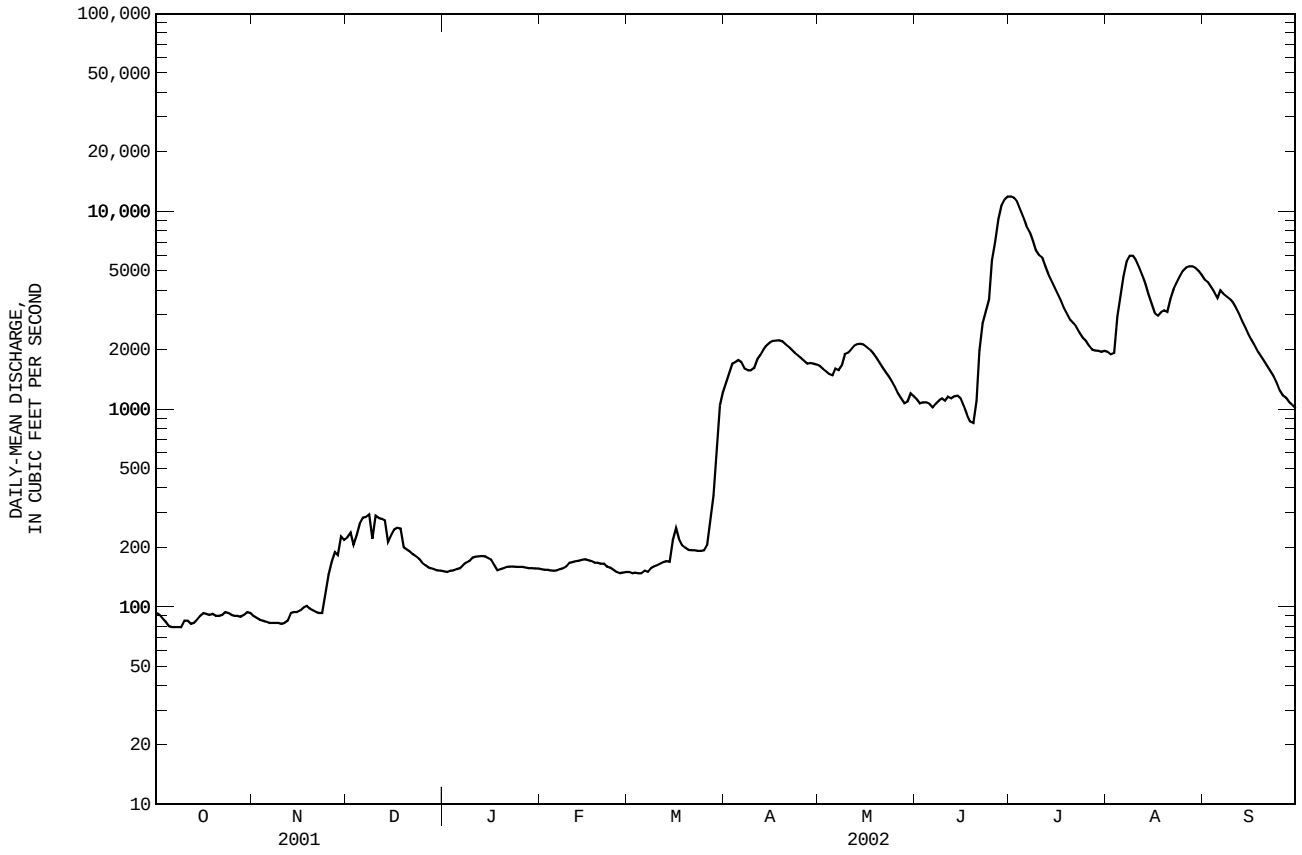
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	93	90	224	e151	e155	e150	1350	1650	1120	11900	1950	4530
2	91	88	236	e150	e154	e148	1510	1600	1070	11700	1890	4390
3	87	86	206	e152	e154	e149	1700	1550	1080	11200	1920	4160
4	84	85	230	e153	e153	e148	1720	1500	1080	10300	2940	3910
5	80	84	264	e155	e152	e148	1770	1480	1060	9390	3650	3650
6	79	83	283	e157	e153	e152	1720	1600	1020	8430	4670	3990
7	79	83	285	e163	e155	e150	1600	1570	1060	7880	5570	3830
8	79	83	293	e167	e157	e156	1570	1660	1100	7110	5970	3710
9	79	83	221	e170	e160	e160	1570	1900	1130	6370	5960	3600
10	85	82	289	e177	e167	e162	1610	1930	1100	6030	5680	3470
11	85	83	282	e179	168	e165	1780	2000	1150	5850	5240	3260
12	82	85	278	e180	170	e168	1880	2090	1130	5280	4760	3020
13	83	93	273	e181	171	e170	1990	2130	1160	4830	4280	2780
14	86	94	212	e180	173	e169	2100	2140	1170	4480	3810	2580
15	90	94	e230	e176	174	218	2170	2120	1130	4140	3410	2390
16	93	96	e245	e173	e172	250	2210	2060	1040	3830	3060	2230
17	92	99	e251	e163	e170	221	2220	2000	940	3540	2970	2090
18	91	101	e249	e153	e167	205	2230	1920	863	3260	3090	1950
19	92	98	e200	e155	e167	199	2200	1820	848	3040	3150	1850
20	90	96	e195	e157	e165	e194	2130	1730	1100	2830	3090	1750
21	90	94	e190	e159	e165	e193	2070	1630	1980	2720	3600	1650
22	91	93	e184	e160	e160	e193	2000	1540	2710	2610	4040	1550
23	94	93	e180	e160	e158	e192	1930	1460	3130	2440	4340	1460
24	93	117	e175	e159	e154	e192	1870	1390	3580	2300	4680	1360
25	91	145	e167	e159	e150	e193	1810	1300	5630	2210	5000	1240
26	90	169	e162	e159	e148	e205	1750	1200	7000	2080	5190	1170
27	90	189	e158	e158	e149	272	1700	1130	9100	2000	5280	1140
28	89	183	e156	e157	e150	366	1710	1070	10700	1980	5280	1080
29	91	227	e154	e157	---	635	1700	1090	11500	1970	5170	1050
30	94	218	e153	e156	---	1040	1680	1200	11900	1950	5010	1010
31	93	---	e152	e156	---	1210	---	1160	---	1970	4770	---
TOTAL	2726	3314	6777	5032	4491	8173	55250	50620	88581	155620	129420	75850
MEAN	87.9	110	219	162	160	264	1842	1633	2953	5020	4175	2528
MAX	94	227	293	181	174	1210	2230	2140	11900	11900	5970	4530
MIN	79	82	152	150	148	148	1350	1070	848	1950	1890	1010
AC-FT	5410	6570	13440	9980	8910	16210	109600	100400	175700	308700	256700	150400
CFSM	0.03	0.04	0.08	0.06	0.06	0.10	0.70	0.62	1.12	1.90	1.58	0.96
IN.	0.04	0.05	0.10	0.07	0.06	0.12	0.78	0.71	1.25	2.19	1.82	1.07

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1906 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	433	412	291	173	172	852	2243	1491	1293	1076	593	501
MAX	3809	1909	1477	928	1115	4085	9026	5992	6166	6759	4175	4941
(WY)	1986	1972	1983	1992	1966	1983	1965	1986	1906	1993	2002	1991
MIN	16.6	28.3	17.3	12.4	12.5	25.1	57.1	26.7	14.8	5.76	5.87	13.0
(WY)	1934	1937	1938	1938	1959	1934	1934	1934	1934	1934	1934	1933

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1906 - 2002	
ANNUAL TOTAL	490621		585854			
ANNUAL MEAN	1344		1605		826a	
HIGHEST ANNUAL MEAN					2754	1986
LOWEST ANNUAL MEAN					64.5	1931
HIGHEST DAILY MEAN	13000	Apr 29	11900	Jun 30, July 1	22100	Apr 16 1965
LOWEST DAILY MEAN	79	Oct 6	79	Oct 6-9	3.8	Aug 4 1934
ANNUAL SEVEN-DAY MINIMUM	81	Oct 4	81	Oct 4	4.0	Jul 31 1934
MAXIMUM PEAK FLOW			12000	Jul 1	22400	Apr 16 1965
MAXIMUM PEAK STAGE			13.97	Jul 1	19.27b	Apr 16 1965
INSTANTANEOUS LOW FLOW			79	Oct 5	1.8c	Nov 15 1936
ANNUAL RUNOFF (AC-FT)	973100		1162000		598100	
ANNUAL RUNOFF (CFSM)	0.51		0.61		0.31	
ANNUAL RUNOFF (INCHES)	6.91		8.26		4.25	
10 PERCENT EXCEEDS	4280		4430		2310	
50 PERCENT EXCEEDS	126		940		281	
90 PERCENT EXCEEDS	86		92		41	

a Median of annual mean discharges is 632 ft^3/s.
b From floodmark.
c Result of ice jam upstream.
e Estimated.



05284000 MILLE LACS LAKE AT COVE BAY NEAR ONAMIA, MN

LOCATION.--Lat 46°06'36", long 93°37'08", in NE¼NE¼ sec. 21, T.42 N., R.26 W., Mille Lacs County, Hydrologic Unit 07010207, in Minnesota Department of Natural Resources boathouse at Cove Bay boatlanding, 3.6 mi northeast of Onamia.

PERIOD OF RECORD.--June 1931 to current year. Monthend records for the period October 1939 to September 1953 published in WSP 1278 (fragmentary 1940-41). Published as "at Wealthwood" prior to October 1939, and as "at Garrison" October 1939 to September 1987 (gage heights collected at Wealthwood October 1939 to September 1941, but converted to gage datum at Garrison for publication).

GAGE.--Water-stage recorder. Datum of gage is 1,240.40 ft above sea level (NGVD of 1929, levels by Minnesota Department of Natural Resources). Gage readings have been converted to elevations above sea level. Prior to Oct. 1, 1941, nonrecording gage at Wealthwood, 17 mi north of present site, at various datums; gage readings were converted to elevations (adjustment of 1912). Oct. 1, 1941 to Sept. 30, 1958, water-stage recorder at Garrison, 16 mi northwest of present site at datum 1,240.50 ft (adjustment of 1912). To convert these readings to NGVD of 1929, subtract 0.10 ft. Oct. 1, 1958 to Sept. 30, 1987, water-stage recorder at Garrison at present datum.

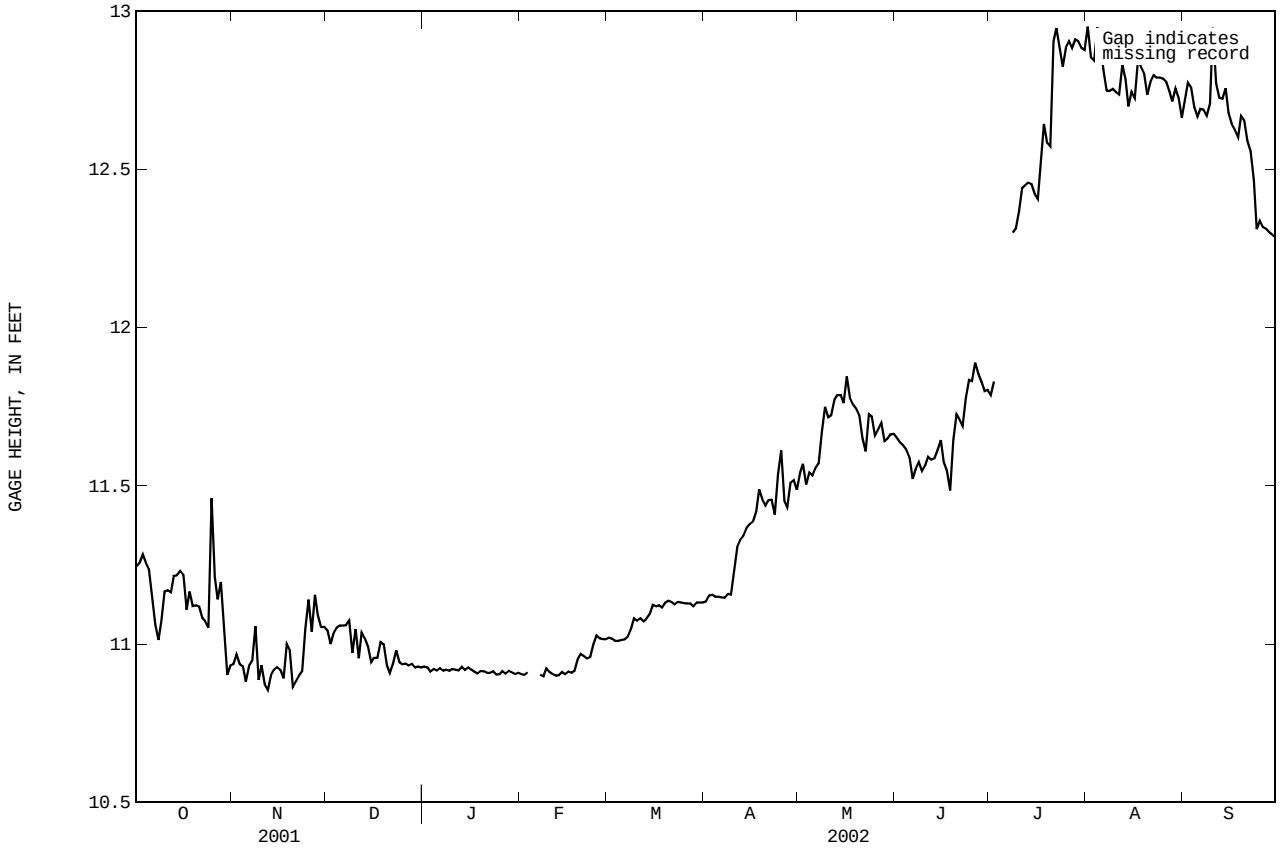
REMARKS.--Records good to fair. Water level affected by fixed-crest spillway constructed in 1953 at outlet of Ogechie Lake, 2.7 mi downstream from outlet of Mille Lacs Lake, with crest at elevation 1,250.50 ft. Water level subject to fluctuation caused by seiches.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage-height, 13.64 ft, July 21, 2002, affected by seiche action; maximum daily, 13.03 ft, Aug. 22, 1972; minimum gage-height observed, 5.34 ft (present datum) Oct. 16-19, 1936.

EXTREMES FOR CURRENT YEAR.--Maximum gage-height, 13.64 ft, July 21, affected by seiche action; maximum daily, 12.95 ft, July 22, Aug. 1, 4, Sept. 10; minimum gage height recorded, 10.66 ft, June 6, affected by seiche action; minimum daily recorded, 10.86 ft, Nov. 12, 20.

GAGE HEIGHT, 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	11.25	10.94	11.04	10.93	10.91	11.02	11.13	11.54	11.65	11.79	12.95	12.72
2	11.26	10.97	11.00	10.93	10.90	11.02	11.15	11.57	11.64	11.83	12.85	12.78
3	11.28	10.94	11.03	10.91	10.91	11.01	11.16	11.50	11.63	---	12.84	12.76
4	11.26	10.93	11.05	10.92	---	11.01	11.15	11.54	11.62	---	12.95	12.70
5	11.24	10.88	11.06	10.92	---	11.01	11.15	11.53	11.59	---	12.90	12.67
6	11.15	10.93	11.06	10.92	---	11.02	11.15	11.56	11.52	---	12.81	12.69
7	11.06	10.95	11.06	10.92	10.90	11.02	11.15	11.57	11.55	---	12.75	12.69
8	11.01	11.06	11.07	10.92	10.90	11.05	11.16	11.67	11.57	12.30	12.75	12.67
9	11.07	10.89	10.97	10.91	10.92	11.08	11.16	11.75	11.55	12.31	12.75	12.71
10	11.17	10.93	11.05	10.92	10.91	11.07	11.24	11.72	11.56	12.37	12.74	12.95
11	11.17	10.87	10.96	10.92	10.91	11.08	11.31	11.72	11.59	12.44	12.74	12.77
12	11.16	10.86	11.04	10.92	10.90	11.07	11.33	11.77	11.58	12.45	12.83	12.73
13	11.22	10.90	11.02	10.93	10.90	11.08	11.34	11.79	11.59	12.46	12.79	12.72
14	11.22	10.92	10.99	10.92	10.91	11.09	11.37	11.79	11.61	12.45	12.70	12.76
15	11.23	10.93	10.94	10.93	10.90	11.12	11.38	11.76	11.64	12.42	12.75	12.68
16	11.22	10.92	10.96	10.92	10.91	11.12	11.39	11.85	11.57	12.41	12.73	12.64
17	11.11	10.89	10.96	10.91	10.91	11.12	11.42	11.78	11.55	12.52	12.85	12.63
18	11.17	11.00	11.01	10.91	10.92	11.12	11.49	11.76	11.49	12.64	12.82	12.60
19	11.12	10.98	11.00	10.91	10.95	11.13	11.46	11.74	11.65	12.59	12.81	12.67
20	11.12	10.86	10.93	10.91	10.97	11.14	11.44	11.72	11.73	12.57	12.74	12.65
21	11.12	10.88	10.91	10.91	10.96	11.13	11.46	11.65	11.71	12.91	12.78	12.59
22	11.08	10.90	10.94	10.91	10.95	11.13	11.46	11.61	11.69	12.95	12.80	12.56
23	11.07	10.91	10.98	10.91	10.96	11.13	11.41	11.73	11.78	12.88	12.79	12.47
24	11.05	11.05	10.94	10.90	11.00	11.13	11.54	11.72	11.83	12.83	12.79	12.31
25	11.46	11.14	10.94	10.91	11.03	11.13	11.61	11.66	11.83	12.89	12.79	12.34
26	11.21	11.04	10.94	10.91	11.02	11.13	11.45	11.68	11.89	12.91	12.78	12.32
27	11.14	11.16	10.93	10.91	11.02	11.13	11.43	11.70	11.85	12.88	12.75	12.31
28	11.20	11.09	10.94	10.91	11.01	11.12	11.51	11.64	11.83	12.91	12.71	12.30
29	11.06	11.05	10.93	10.91	---	11.13	11.52	11.65	11.80	12.91	12.76	12.29
30	10.90	11.05	10.93	10.91	---	11.13	11.49	11.66	11.80	12.88	12.73	12.28
31	10.93	---	10.93	10.91	---	11.13	---	11.66	---	12.88	12.66	---
MEAN	11.15	10.96	10.98	10.92	---	11.09	11.35	11.68	11.66	---	12.79	12.60
MAX	11.46	11.16	11.07	10.93	---	11.14	11.61	11.85	11.89	---	12.95	12.95
MIN	10.90	10.86	10.91	10.90	---	11.01	11.13	11.50	11.49	---	12.66	12.28


GAGE HEIGHT, IN FEET
13
12.5
12
11.5
11
10.5
Gap indicates
missing record
O
N
D
J
F
M
A
M
J
J
A
S
2001
2002

05286000 RUM RIVER NEAR ST. FRANCIS, MN

LOCATION.--Lat 45°19'40", long 93°22'20", in SE¼ sec. 19, T.33 N., R.24 W., Anoka County, Hydrologic Unit 07010207, on left bank at upstream side of County Highway 22 bridge, 4 mi south of St. Francis and 15.8 mi upstream from mouth.

DRAINAGE AREA.--1,360 mi^2 (approximately).

PERIOD OF RECORD.--May to November 1929, March 1930 to September 1931, April to November 1932, March 1933 to current year.

REVISED RECORDS.--WSP 1308: 1930(M), 1932(M).

GAGE.--Water-stage recorder. Datum of gage is 860.74 ft above sea level (NGVD of 1929, levels by Anoka County Highway Department). Prior to Nov. 9, 1933, nonrecording gage at site 50 ft downstream at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are fair to poor. Occasional regulation from Ogechie (also controls Mille Lacs Lake) and Onamia Lakes.

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	373	267	514	e266	e228	e218	720	1490	708	2390	1430	884
2	371	270	527	e263	e225	e217	885	1500	670	2220	1440	1060
3	347	275	528	e262	e223	e218	985	1530	650	1900	1500	1150
4	346	275	522	e267	e226	e222	1150	1540	636	1500	1780	1240
5	340	273	549	e271	e231	e227	1200	1490	628	1200	1780	1380
6	332	278	609	e276	e237	e237	1420	1380	609	1020	1850	1800
7	327	279	658	e279	e238	e247	1520	1260	605	933	1830	2010
8	316	276	667	e281	e238	e253	1550	1210	600	975	1800	2210
9	316	274	668	e280	e239	e265	1680	1240	595	1040	1720	2270
10	324	271	607	e277	e239	e270	1830	1310	594	1180	1570	2360
11	324	269	649	e276	e238	e274	2160	1380	632	1550	1400	2540
12	323	268	616	e273	e238	e300	2660	1540	650	1970	1260	2820
13	332	278	640	e269	e239	e239	3060	1800	629	2230	1180	3020
14	351	283	605	e263	e240	e210	3660	2060	615	2410	1110	3080
15	352	290	511	e260	e240	e146	4740	2220	596	2660	1060	3000
16	348	298	519	e257	e241	e224	5800	2300	565	2990	1030	2800
17	346	299	547	e252	e241	e235	6110	2290	548	3320	1020	2530
18	343	303	539	e255	e242	e230	5920	2220	527	3460	1010	2190
19	337	304	546	e257	e241	e233	5430	2070	519	3320	974	1850
20	334	301	e409	e260	e241	e234	4800	1840	607	3000	956	1580
21	328	302	e384	e262	e242	e234	4200	1600	741	2620	1100	1370
22	319	299	e372	e266	e239	e235	3690	1400	954	2200	1150	1240
23	311	299	e359	e272	e234	e237	3240	1260	1110	1860	1200	1160
24	304	326	e354	e266	e231	e240	2860	1140	1260	1610	1170	1100
25	297	375	e347	e259	e227	e245	2520	1040	1600	1470	1170	1050
26	294	430	e325	e248	e225	e250	2160	976	1790	1380	1180	1060
27	280	465	e315	e239	e222	e275	1880	922	1980	1290	1150	1040
28	267	471	e303	e233	e220	312	1720	878	2120	1310	1080	1030
29	268	506	e288	e230	---	395	1600	833	2260	1320	999	1040
30	266	511	e282	e229	---	504	1530	795	2380	1320	938	1030
31	264	---	e268	e228	---	619	---	751	---	1380	892	---
TOTAL	9980	9615	15027	8076	6565	8245	82680	45265	28378	59028	39729	52894
MEAN	322	320	485	261	234	266	2756	1460	946	1904	1282	1763
MAX	373	511	668	281	242	619	6110	2300	2380	3460	1850	3080
MIN	264	267	268	228	220	146	720	751	519	933	892	884
AC-FT	19800	19070	29810	16020	13020	16350	164000	89780	56290	117100	78800	104900
CFSM	0.24	0.24	0.36	0.19	0.17	0.20	2.03	1.07	0.70	1.40	0.94	1.30
IN.	0.27	0.26	0.41	0.22	0.18	0.23	2.26	1.24	0.78	1.61	1.09	1.45

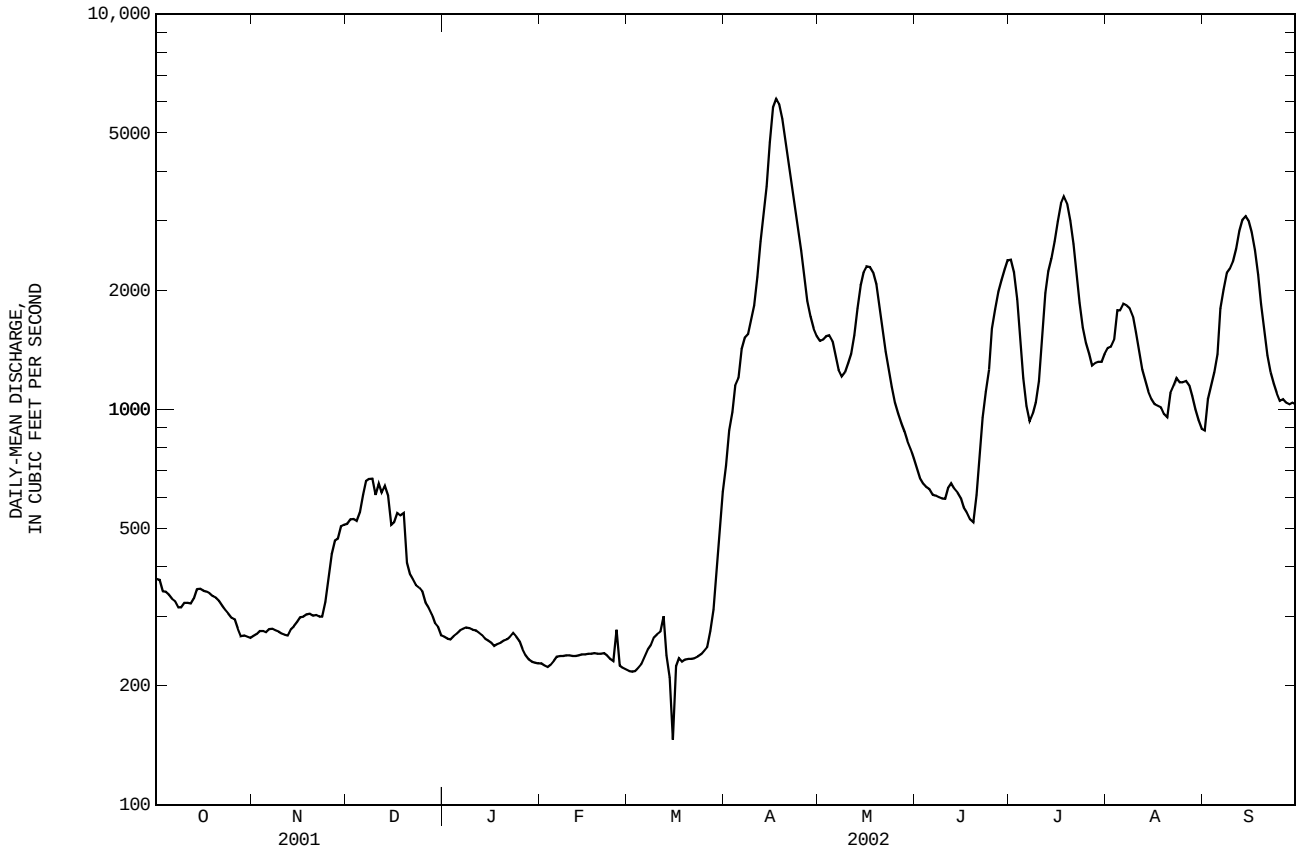
05286000 RUM RIVER NEAR ST. FRANCIS, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	449	439	323	242	246	612	1581	1118	868	651	424	442
MAX	2300	1715	1051	660	813	2699	4269	3899	3400	2532	2251	2362
(WY)	1969	1972	1983	1987	1966	1966	1969	1986	1984	1954	1972	1986
MIN	65.4	71.8	55.8	51.5	59.2	75.8	154	73.6	43.7	34.5	37.3	47.1
(WY)	1934	1934	1934	1934	1934	1934	1934	1934	1934	1934	1934	1933

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1929 - 2002	
ANNUAL TOTAL	337333		365482			
ANNUAL MEAN	924		1001		634	
HIGHEST ANNUAL MEAN					1512	1986
LOWEST ANNUAL MEAN					66.1	1934
HIGHEST DAILY MEAN	8090	Apr 29	6110	Apr 17	10000	Apr 13 1969
LOWEST DAILY MEAN	127	Feb 20	146	Mar 15	30	Aug 3 1934
ANNUAL SEVEN-DAY MINIMUM	127	Feb 20	216	Mar 14	31	Aug 1 1934
MAXIMUM PEAK FLOW			6200	Apr 17	10100a	Apr 20 1965
MAXIMUM PEAK STAGE			8.70	Apr 17	11.63	Apr 13 1969
INSTANTANEOUS LOW FLOW			90b	Mar 15	29	Aug 18 1934
ANNUAL RUNOFF (AC-FT)	669100		724900		459300	
ANNUAL RUNOFF (CFSM)	0.68		0.74		0.47	
ANNUAL RUNOFF (INCHES)	9.23		10.00		6.33	
10 PERCENT EXCEEDS	2310		2240		1390	
50 PERCENT EXCEEDS	432		607		373	
90 PERCENT EXCEEDS	132		239		118	

a Also occurred Apr. 13, 1969.
b Result of freezeup.
e Estimated.



05287890 ELM CREEK NEAR CHAMPLIN, MN

LOCATION.--Lat 45°09'48", long 93°26'11", in NE¼NW¼ sec. 35, T.120 N., R.22 W., Hennepin County, Hydrologic Unit 07010206, on left bank, 33 ft downstream from bridge on Elm Creek Road, 2.5 mi southwest of Champlin.

DRAINAGE AREA.--86.0 mi^2.

PERIOD OF RECORD.--October 1978 to current year.

GAGE.--Water-stage recorder. Datum of gage is 850.70 ft above sea level (NGVD of 1929). Prior to March 16, 1979, nonrecording gage at present site and datum.

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

REVISIONS.--The maximum discharge has been revised for water years; 1982, 471 ft^3/s; 1985, 579 ft^3/s; 1986, 812 ft^3/s; 1994, 669 ft^3/s; 1996, 404 ft^3/s; 1997, 511 ft^3/s; and 1999, 538 ft^3/s.

DISCHARGE, in CFS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.7	2.5	22	e4.3	e1.2	e6.4	95	91	26	361	125	99
2	8.4	2.6	22	e4.1	e1.2	e6.1	e97	89	23	328	115	129
3	8.1	2.5	22	e4.1	e1.1	e5.8	e100	86	40	304	117	137
4	5.2	2.3	23	e4.5	e1.0	e5.4	e97	81	51	276	203	130
5	3.0	2.3	30	e4.0	e0.98	e5.2	e95	79	51	240	231	122
6	2.2	2.4	e35	e3.5	e0.95	e5.2	e92	123	48	201	228	164
7	2.7	3.0	e38	e3.4	0.92	e5.2	e91	168	47	175	237	227
8	2.8	2.8	e42	e3.8	0.89	e5.4	e91	268	48	152	235	275
9	2.5	2.7	e44	3.8	e0.86	e5.8	90	471	46	133	221	315
10	2.8	2.5	e44	3.5	e0.85	e6.3	94	522	42	129	199	329
11	2.7	2.5	e43	3.2	e0.84	6.4	137	531	47	142	167	315
12	2.6	2.5	e40	3.0	e0.85	5.1	174	501	52	153	137	292
13	3.0	3.0	e35	2.9	e0.86	e5.6	193	446	54	155	113	266
14	3.8	2.9	31	e2.9	e0.90	e6.2	207	395	54	152	94	237
15	4.3	2.9	30	e2.9	e0.96	e6.5	213	361	53	143	83	207
16	3.6	2.7	27	e2.9	e1.0	e7.0	205	327	49	129	74	173
17	2.5	2.4	24	e2.8	1.1	7.6	188	289	44	113	69	146
18	2.6	2.6	21	e2.8	1.5	7.5	180	253	39	96	62	127
19	2.2	2.5	e13	e2.8	2.6	7.5	167	214	40	86	53	110
20	2.2	2.1	e11	e2.7	4.0	8.2	150	176	40	77	45	99
21	2.7	1.9	e9.4	e3.0	4.9	e8.2	135	145	93	71	85	88
22	2.7	1.5	e8.5	3.4	e5.4	e8.0	124	119	230	69	141	81
23	2.7	1.5	e7.5	3.0	6.9	e7.7	114	99	300	63	185	77
24	2.7	3.9	e7.0	3.1	7.7	e7.3	102	87	360	56	236	71
25	2.8	10	e6.5	2.5	11	6.9	94	76	460	62	258	68
26	2.9	10	e6.0	2.6	e9.5	7.2	87	67	511	71	233	69
27	3.4	14	e5.6	2.4	e7.5	8.7	82	58	512	77	208	65
28	3.8	17	e5.4	e1.9	e6.8	36	84	49	486	86	167	60
29	3.0	20	e5.2	e1.7	---	61	89	44	435	108	141	57
30	3.3	22	e5.0	e1.4	---	78	91	38	391	123	123	55
31	3.2	---	e4.5	e1.3	---	93	---	32	---	127	108	---
TOTAL	107.1	153.5	667.6	94.2	84.26	446.4	3758	6285	4672	4458	4693	4590
MEAN	3.455	5.117	21.54	3.039	3.009	14.40	125.3	202.7	155.7	143.8	151.4	153.0
MAX	8.4	22	44	4.5	11	93	213	531	512	361	258	329
MIN	2.2	1.5	4.5	1.3	0.84	5.1	82	32	23	56	45	55
AC-FT	212	304	1320	187	167	885	7450	12470	9270	8840	9310	9100
CFSM	0.04	0.06	0.25	0.04	0.03	0.17	1.46	2.36	1.81	1.67	1.76	1.78
IN.	0.05	0.07	0.29	0.04	0.04	0.19	1.63	2.72	2.02	1.93	2.03	1.99

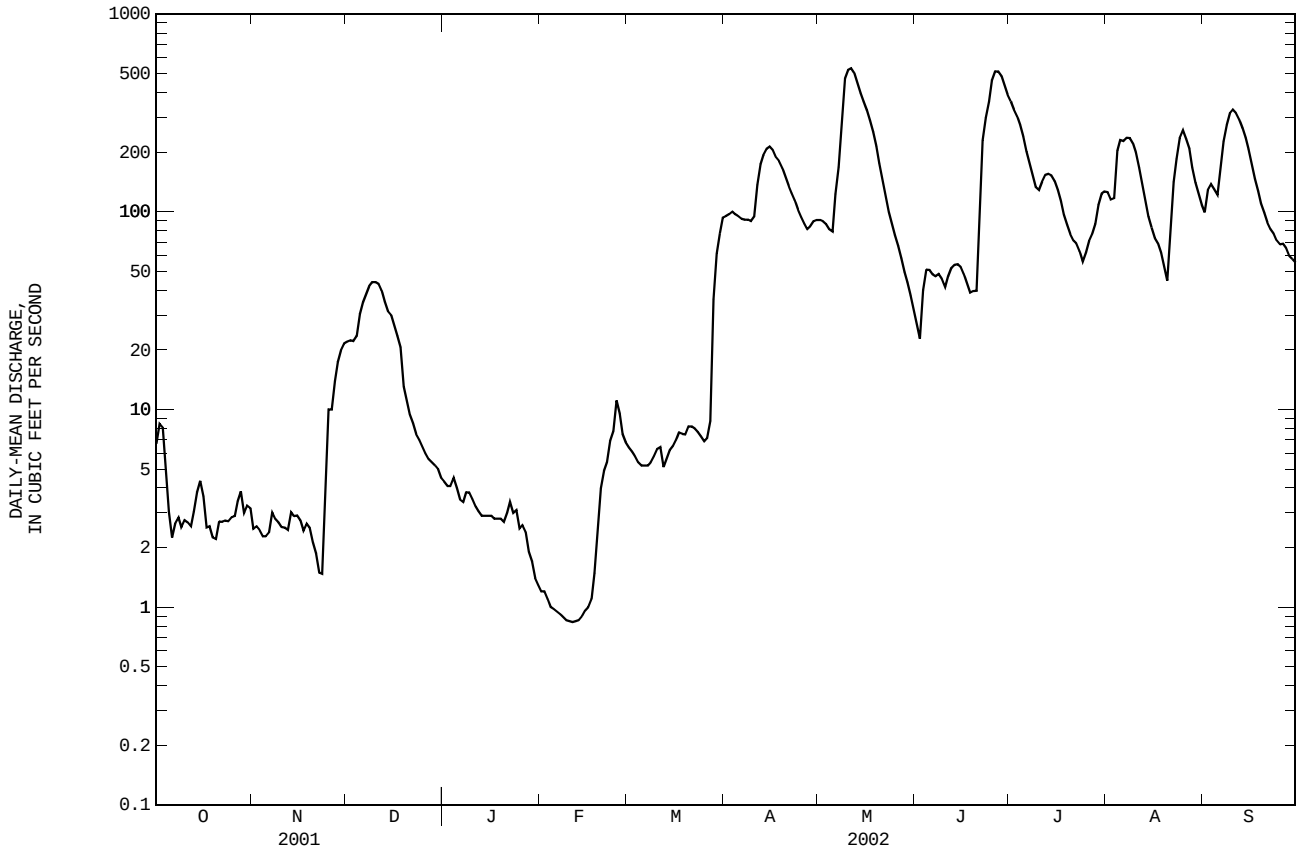
05287890 ELM CREEK NEAR CHAMPLIN, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1979 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	27.20	20.72	11.59	5.445	10.04	64.73	108.6	70.34	45.77	37.90	34.15	30.50
MAX	240	67.4	41.3	22.0	99.1	185	414	203	156	157	151	170
(WY)	1986	1994	1992	1992	1984	1985	2001	2002	2002	1993	2002	1991
MIN	1.13	1.03	0.92	0.74	0.91	3.86	5.31	3.54	1.34	0.76	1.44	1.08
(WY)	1990	1990	1990	1991	1990	2001	1987	2000	1988	1988	1989	1988

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1979 - 2002	
ANNUAL TOTAL	21724.5		30009.06			
ANNUAL MEAN	59.52		82.22		39.00	
HIGHEST ANNUAL MEAN					82.2	2002
LOWEST ANNUAL MEAN					4.54	1988
HIGHEST DAILY MEAN	815	Apr 25	531	May 11	815	Apr 25 2001
LOWEST DAILY MEAN	1.4	Mar 9	0.84a	Feb 11	0.31	Jun 30 1988
ANNUAL SEVEN-DAY MINIMUM	1.5	Mar 7	0.86	Feb 8	0.35	Jun 26 1988
MAXIMUM PEAK FLOW			554	May 10	875	Apr 25 2001
MAXIMUM PEAK STAGE			9.44	May 10	10.02	Apr 25 2001
INSTANTANEOUS LOW FLOW					0.29	Jul 9 1989
ANNUAL RUNOFF (AC-FT)	43090		59520		28250	
ANNUAL RUNOFF (CFSM)	0.69		0.96		0.45	
ANNUAL RUNOFF (INCHES)	9.40		12.98		6.16	
10 PERCENT EXCEEDS	167		232		109	
50 PERCENT EXCEEDS	6.5		40		12	
90 PERCENT EXCEEDS	2.4		2.5		2.0	

a Estimated, backwater from ice.
e Estimated.



WATER-QUALITY RECORDS

PERIOD OF RECORD.--February 1988 to current year.

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

Date	Time	Sample type	Medium code	GAGE HEIGHT (FEET) (00065)	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	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)
OCT													
22...	1200	ENVIRONMENTAL		3.47	2.5	738	7.3	61	7.6	--	586	16.0	6.4
NOV													
19...	1100	ENVIRONMENTAL		3.38	2.6	744	4.7	38	7.8	--	640	3.3	5.6
DEC													
19...	1015	ENVIRONMENTAL		3.90	13	742	11.8	83	7.8	--	548	2.0	.2
JAN													
24...	1030	ENVIRONMENTAL		3.48	5.0	741	10.9	77	7.7	--	714	-5.0	.3
FEB													
13...	1035	ENVIRONMENTAL		3.19	1.2	745	11.2	79	8.2	--	770	3.0	.4
MAR													
26...	1040	ENVIRONMENTAL		3.68	8.1	750	12.0	88	8.6	--	792	5.0	2.0
MAR													
28-29	0100	COMPOSITE (TIME)		--	--	--	--	--	7.4	--	411	--	--
APR													
02-02	1221	COMPOSITE (TIME)		--	--	--	--	--	7.8	--	440	--	--
APR													
10-13	2327	COMPOSITE (TIME)		--	--	--	--	--	7.9	--	490	--	--
18...	1230	ENVIRONMENTAL		7.31	183	729	7.2	75	7.3	--	550	19.0	15.3
MAY													
05-08	2004	COMPOSITE (TIME)		--	--	--	--	--	7.8	--	519	--	--
MAY													
08-11	2235	COMPOSITE (TIME)		--	--	--	--	--	--	452	--	--	--
JUN													
11-12	0102	COMPOSITE (TIME)		--	--	--	--	--	8.0	--	490	--	--
12...	0950	ENVIRONMENTAL		4.97	54	742	5.8	66	7.5	--	493	21.0	20.0
JUN													
21-24	0741	COMPOSITE (TIME)		--	--	--	--	--	7.7	--	368	--	--
JUL													
23...	1030	ENVIRONMENTAL		5.24	63	749	4.7	54	7.3	--	436	21.0	21.0
JUL													
25-28	1043	COMPOSITE (TIME)		--	--	--	--	--	8.2	--	417	--	--
AUG													
20...	1400	ENVIRONMENTAL		4.78	45	743	6.8	76	7.2	--	418	27.5	20.0
20...	1402	BLANK		--	--	--	--	--	--	<3	--	--	--
AUG													
21-23	0407	COMPOSITE (TIME)		--	--	--	--	--	7.9	326	343	--	--

05287890 ELM CREEK NEAR CHAMPLIN, MN--Continued

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

Date	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L) (00535)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (00340)	Data base number
OCT											
22...	26.1	<10	<10	<.04	.59	.12	.008	E.05	.10	20	01
NOV											
19...	24.3	<10	<10	.05	.51	.07	E.004	E.04	.07	10	01
DEC											
19...	55.6	10	<10	E.02	1.2	.18	E.006	E.05	.10	30	01
JAN											
24...	61.0	<10	<10	.13	.97	.07	<.008	E.03	.07	30	01
FEB											
13...	75.2	<10	<10	E.02	.80	E.11	<.008	<.06	.07	20	01
MAR											
26...	109	<10	<10	.07	.98	.11	<.008	<.06	.07	30	01
MAR											
28-29	59.4	36	--	.25	1.6	.89	.024	.18	.34	40	01
APR											
02-02	56.1	62	--	.23	2.1	1.31	.030	.17	.41	50	01
APR											
10-13	62.3	27	--	.08	1.4	1.14	.023	.10	.18	30	01
18...	64.0	17	<10	<.04	1.3	.48	.017	.07	.13	30	01
MAY											
05-08	66.4	40	--	<.04	1.3	<.05	.071	.09	.18	30	01
MAY											
08-11	57.6	37	--	<.04	1.2	.52	.016	.10	.19	40	01
JUN											
11-12	49.0	<10	--	<.04	1.3	.14	.015	.22	.30	90	01
12...	51.2	<10	<10	<.04	1.2	.27	.018	.22	.31	40	01
JUN											
21-24	36.0	50	--	.04	1.3	.59	.033	.24	.36	40	01
JUL											
23...	30.1	54	<10	<.04	1.5	.22	.065	.25	.44	40	01
JUL											
25-28	29.2	<10	--	.07	1.3	.17	.036	.19	.33	40	01
AUG											
20...	27.8	<10	<10	.09	1.1	.79	<.008	.13	.20	40	01
20...	<.30	<10	<10	<.04	<.10	<.05	<.008	<.06	<.06	<10	77
AUG											
21-23	25.3	<10	--	.05	1.2	.15	.013	.15	.28	30	01

05288500 MISSISSIPPI RIVER NEAR ANOKA, MN

LOCATION.--Lat 45°07'36", long 93°17'48", in SW¼ sec. 12, T.119 N., R.21 W., Hennepin County, Hydrologic Unit 07010206, on right bank 0.4 mi downstream from Coon Creek, 1.3 mi downstream from Coon Rapids Dam at Coon Rapids, 6.5 mi downstream from Anoka, and at mile 864.8 upstream from Ohio River.

DRAINAGE AREA.--19,100 mi^2, approximately.

PERIOD OF RECORD.--June 1931 to current year. Prior to October 1931 published as "at Coon Rapids, near Anoka."

GAGE.--Water-stage recorder. Datum of gage is 804.53 ft above sea level (NGVD of 1929). Prior to June 14, 1932, at site 1.2 mi upstream at different datum.

REMARKS.--Records good except those for estimated days, which are fair. Flow slightly regulated by six reservoirs on headwaters; total usable capacity, 1,640,600 acre-ft. Diurnal regulation caused by Coon Rapids Dam 1.3 mi. 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	4190	5970	6700	e5200	4660	e4820	10200	14400	8370	26500	14200	13500
2	4230	6110	6950	e5310	4780	e4720	e9810	14700	8340	26300	13700	14400
3	3890	5810	7350	e5500	4510	e4670	e9310	14000	8070	25300	13700	15000
4	3860	5590	7740	e5670	4550	e4600	e9060	13400	7780	24000	17700	14700
5	3780	5970	7280	e5850	e4630	e4510	e8810	13500	7190	22300	17900	14300
6	3830	5620	7950	e5960	4640	e4420	e9600	13200	7050	21100	18400	17000
7	3540	5810	8120	e6100	4420	4380	e10400	12700	6960	19700	19100	18600
8	3520	5740	8330	e6130	e4450	4210	11500	13400	7150	18500	18900	17500
9	4000	5520	7540	e6130	e4430	e4070	12300	15900	6600	18900	18500	16600
10	4240	4940	7330	e6190	4360	3930	13200	15800	6760	21400	17600	17000
11	4240	5360	7530	e6210	4320	4230	15300	16800	6620	27300	16600	17000
12	4470	5430	7870	e6170	e4330	4550	17200	17900	6500	29800	15600	16500
13	4740	5660	7980	6150	4320	4690	18900	18500	6330	30100	14600	15700
14	4750	6260	7120	e6210	e4310	4520	20600	18900	6130	28900	14200	15800
15	5350	5860	7370	6140	e4310	4200	22600	19500	5960	28600	13200	15000
16	5520	5430	7460	6070	e4330	4150	23800	19700	5810	27900	12700	14400
17	5730	5770	7460	e5680	e4310	4630	24700	19300	5440	26900	12600	13700
18	5760	5490	8270	e5490	e4480	4870	24400	18900	5170	26300	12300	12500
19	6190	5820	8480	e5330	e4550	4700	23900	17900	5040	24800	12500	12300
20	5870	5390	6810	e5460	e4640	4520	22900	17100	6070	23600	12500	11100
21	5910	5090	6050	5520	e4710	4200	21900	15900	7890	22000	14500	10500
22	5890	5580	5810	5470	e4760	4080	21200	14400	9570	20500	15000	9610
23	5740	5440	5750	5250	e4840	4210	19900	13800	9920	19200	14600	9450
24	6060	5700	4810	5120	e4910	4620	19400	12500	11700	17300	14400	8750
25	6580	6210	e4670	5120	4980	4570	18600	11700	15300	17100	14800	8660
26	6000	6330	e4650	4930	e4890	4540	17300	11200	16900	16000	15700	8970
27	5420	6920	e4700	4990	e4870	4520	16300	10700	20800	15200	15000	8510
28	5510	7010	e4780	5010	e4840	4810	16300	9940	23600	15700	14600	8290
29	6220	6730	e4890	e4950	---	5850	15400	9110	25700	15400	14100	8440
30	6070	6470	e5040	e4910	---	7050	14800	9100	26600	14800	14300	8230
31	6430	---	e5160	e4770	---	9160	---	8210	---	14900	14100	---
TOTAL	157530	175030	207950	172990	128130	147000	499590	452060	301320	686300	467600	392010
MEAN	5082	5834	6708	5580	4576	4742	16650	14580	10040	22140	15080	13070
MAX	6580	7010	8480	6210	4980	9160	24700	19700	26600	30100	19100	18600
MIN	3520	4940	4650	4770	4310	3930	8810	8210	5040	14800	12300	8230
AC-FT	312500	347200	412500	343100	254100	291600	990900	896700	597700	1361000	927500	777600
CFSM	0.27	0.31	0.35	0.29	0.24	0.25	0.87	0.76	0.53	1.16	0.79	0.68
IN.	0.31	0.34	0.41	0.34	0.25	0.29	0.97	0.88	0.59	1.34	0.91	0.76

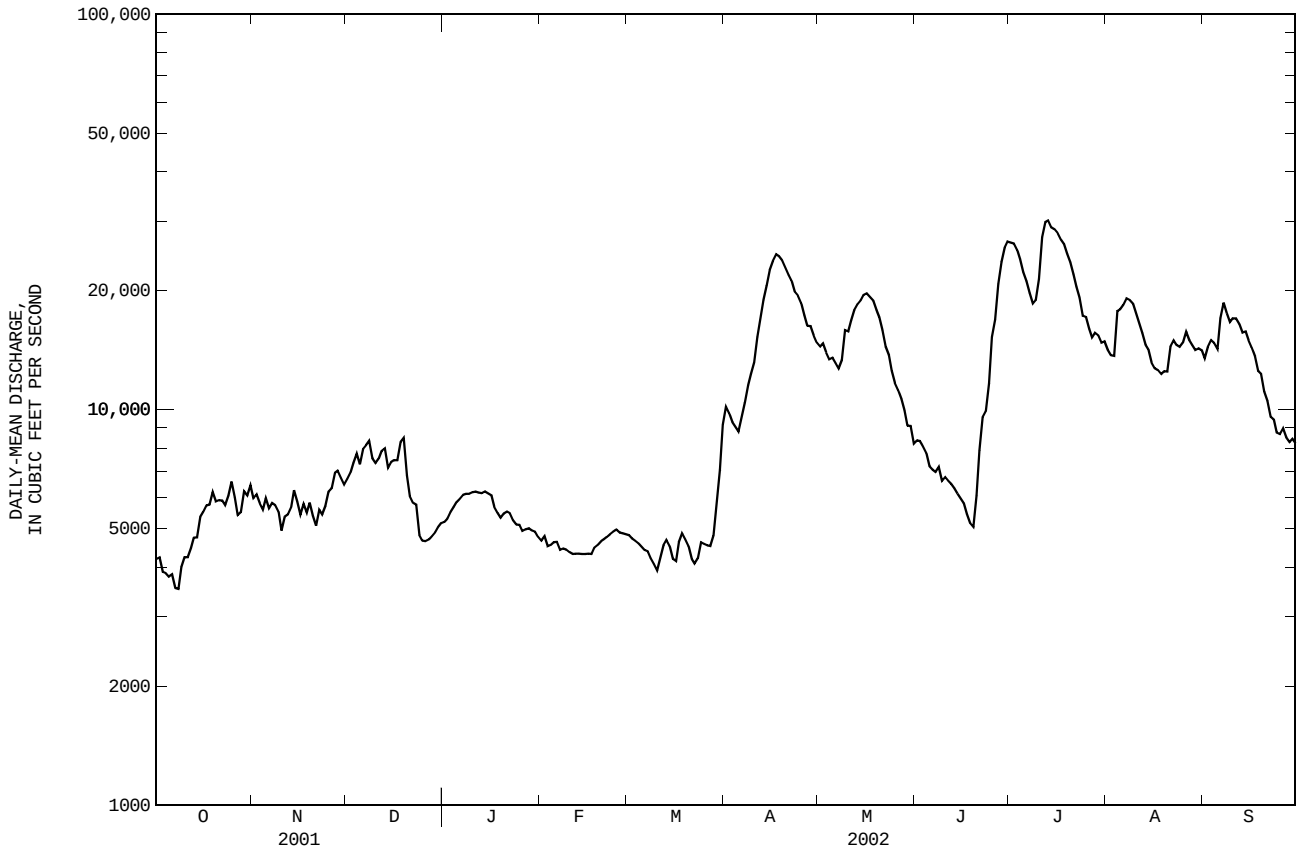
05288500 MISSISSIPPI RIVER NEAR ANOKA, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	6439	6379	4939	4309	4225	7354	17860	15120	11570	8965	6216	5920
MAX	21250	22800	10800	8304	9948	23410	43690	39760	29910	27240	22490	23570
(WY)	1987	1972	1972	1986	1966	1966	1997	1986	1943	1993	1972	1986
MIN	1128	1152	1006	935	1079	1602	3575	2796	1646	1022	715	888
(WY)	1937	1937	1935	1935	1933	1940	1959	1934	1934	1934	1934	1934

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1931 - 2002	
ANNUAL TOTAL	4653510		3787510			
ANNUAL MEAN	12750		10380		8306	
HIGHEST ANNUAL MEAN					17750	1986
LOWEST ANNUAL MEAN					1603	1934
HIGHEST DAILY MEAN	65100	Apr 15	30100	Jul 13	90300	Apr 17 1965
LOWEST DAILY MEAN	3520	Oct 8	3520	Oct 8	602	Sep 10 1934
ANNUAL SEVEN-DAY MINIMUM	3770	Oct 3	3770	Oct 3	646	Aug 26 1934
MAXIMUM PEAK FLOW			30500	Jul 13	91000	Apr 17 1965
MAXIMUM PEAK STAGE			9.41	Jul 13	19.53	Apr 17 1965
INSTANTANEOUS LOW FLOW			3380a	Oct 4	529a	Aug 29 1976
ANNUAL RUNOFF (AC-FT)	9230000		7513000		6017000	
ANNUAL RUNOFF (CFSM)	0.67		0.54		0.43	
ANNUAL RUNOFF (INCHES)	9.06		7.38		5.91	
10 PERCENT EXCEEDS	33800		19400		17900	
50 PERCENT EXCEEDS	5820		7330		5800	
90 PERCENT EXCEEDS	4570		4510		2190	

a Due in part to regulation.
e Estimated.



05288705 SHINGLE CREEK AT QUEEN AVE. IN MINNEAPOLIS, MN

LOCATION.-- Lat 45°03'00", long 93°18'36", in NE¼NW¼ sec. 11, T.118 N., R.21 W., Hennepin County, Hydrologic Unit 07010206, at bridge over Shingle Creek at intersection of Queen Avenue North and 52nd Avenue North in Minneapolis.

DRAINAGE AREA.-- 28.2 mi^2.

PERIOD OF RECORD.-- May 1996 to September 1999, May 2001 to current year.

GAGE.-- Water-stage recorder. Elevation of gage is 850 ft above sea level (from topographic map).

REMARKS.-- Records good except those 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	4.4	6.6	13	e2.1	1.9	e2.5	14	33	18	49	70	37
2	4.1	5.5	12	e2.1	1.8	e2.2	13	26	16	41	60	40
3	3.9	5.4	11	e2.1	1.8	e1.9	13	21	42	65	69	35
4	3.1	5.7	14	2.5	1.7	e2.0	11	19	46	52	89	32
5	2.6	6.6	22	2.6	1.8	e2.1	10	47	40	45	79	30
6	2.6	7.2	29	2.3	2.1	e2.2	10	89	33	54	73	80
7	3.5	7.4	25	2.0	2.6	e2.3	15	83	46	70	65	66
8	5.0	8.7	19	2.6	3.2	e2.7	17	128	39	60	56	60
9	4.6	7.0	14	3.7	3.3	e3.0	16	135	32	53	49	50
10	7.8	7.0	11	3.9	2.6	3.4	25	118	28	103	43	44
11	5.8	6.5	9.1	3.5	2.7	5.8	65	110	52	91	36	40
12	4.4	7.0	8.6	3.2	2.8	14	56	102	43	82	35	38
13	8.1	8.7	7.4	2.9	3.0	23	51	94	42	77	33	36
14	4.6	11	6.6	3.3	4.1	30	47	86	38	67	28	37
15	6.8	19	6.2	3.2	4.5	31	41	77	31	57	e25	34
16	5.0	8.3	6.3	3.0	4.2	7.6	36	66	27	48	e51	31
17	4.0	4.8	6.2	2.6	3.6	9.5	32	58	24	39	38	28
18	3.4	4.1	5.9	1.9	3.8	13	42	53	23	33	29	25
19	1.9	2.9	5.3	1.9	6.8	18	37	47	61	30	25	27
20	0.81	2.3	6.0	2.1	8.0	e21	32	43	54	35	23	21
21	0.70	2.5	5.1	2.1	6.5	e15	32	39	109	38	112	18
22	1.1	2.3	6.7	2.4	6.4	e10	33	37	104	33	97	15
23	2.1	2.8	e6.3	2.4	7.9	e7.8	32	34	103	27	90	14
24	2.1	39	e5.2	2.2	8.1	e6.4	32	31	127	33	83	13
25	3.3	40	e4.6	2.4	e5.2	e6.0	25	28	105	78	75	17
26	5.8	32	e4.1	2.7	e4.2	6.1	20	26	91	57	66	28
27	5.6	25	e3.5	2.4	e3.6	14	21	23	84	63	59	25
28	6.5	21	e3.1	2.0	e3.0	34	40	27	76	75	50	21
29	7.8	18	e2.8	1.7	---	37	43	29	68	94	50	18
30	7.6	16	e2.5	1.7	---	31	40	24	59	86	45	12
31	9.2	---	e2.3	1.7	---	21	---	21	---	79	40	---
TOTAL	138.21	340.3	283.8	77.2	111.2	385.5	901	1754	1661	1814	1743	972
MEAN	4.46	11.3	9.15	2.49	3.97	12.4	30.0	56.6	55.4	58.5	56.2	32.4
MAX	9.2	40	29	3.9	8.1	37	65	135	127	103	112	80
MIN	0.70	2.3	2.3	1.7	1.7	1.9	10	19	16	27	23	12
AC-FT	274	675	563	153	221	765	1790	3480	3290	3600	3460	1930
CFSM	0.16	0.40	0.32	0.09	0.14	0.44	1.07	2.01	1.96	2.08	1.99	1.15
IN.	0.18	0.45	0.37	0.10	0.15	0.51	1.19	2.31	2.19	2.39	2.30	1.28

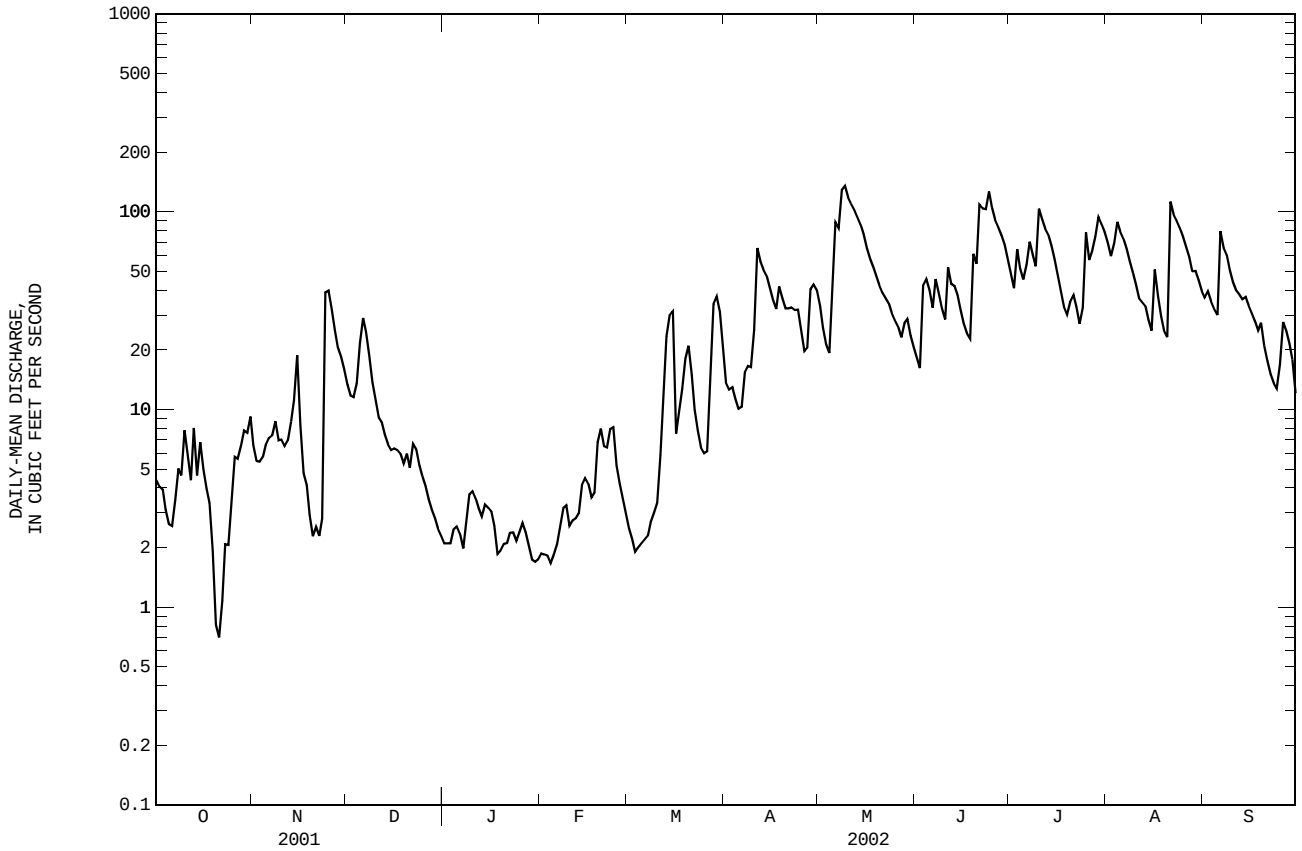
05288705 SHINGLE CREEK AT QUEEN AVE. IN MINNEAPOLIS, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1996 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	15.9	14.1	7.05	4.27	6.10	16.0	29.9	37.6	30.0	29.1	24.2	13.0
MAX	185	28.2	9.21	7.25	11.3	24.3	32.1	56.6	55.4	58.5	56.2	32.4
(WY)	2000	1997	1997	1997	1999	1997	1998	2002	2002	2002	2002	2002
MIN	4.46	5.22	3.49	2.49	3.97	12.4	27.1	13.3	7.47	7.92	5.04	2.92
(WY)	2002	1998	2000	2002	2002	2002	1999	1997	1997	1996	1996	1996

SUMMARY STATISTICS	FOR 2002 WATER YEAR		WATER YEARS 1996 - 2002	
ANNUAL TOTAL	10181.21			
ANNUAL MEAN	27.9		20.8	
HIGHEST ANNUAL MEAN			79.0	2000
LOWEST ANNUAL MEAN			12.1	1998
HIGHEST DAILY MEAN	135	May 9	185	Oct 1 1999
LOWEST DAILY MEAN	0.70	Oct 21	0.13a	Oct 13 1996
ANNUAL SEVEN-DAY MINIMUM	1.7	Oct 19	0.14	Oct 8 1996
MAXIMUM PEAK FLOW	222	May 8	225	Jul 1 1997
MAXIMUM PEAK STAGE	12.58	May 8	13.07	Jul 1 1997
INSTANTANEOUS LOW FLOW	0.56	Oct 21	0.11a	Oct 11 1996
ANNUAL RUNOFF (AC-FT)	20190		15070	
ANNUAL RUNOFF (CFSM)	0.99		0.74	
ANNUAL RUNOFF (INCHES)	13.43		10.02	
10 PERCENT EXCEEDS	71		54	
50 PERCENT EXCEEDS	19		11	
90 PERCENT EXCEEDS	2.4		3.0	

a Minimum observed.
e Estimated.



05288705 SHINGLE CREEK AT QUEEN AVE. IN MINNEAPOLIS, MN--Continued
(National Water-Quality Assessment Program)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1996 to current year.

PERIOD OF DAILY RECORD:

WATER TEMPERATURES.-- May 1996 to September 30, 1998.

SPECIFIC CONDUCTANCE.-- May 1996 to September 30, 1998.

REVISED RECORDS.--WDR MN-96-1: Specific conductance.

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

Date	Time	Sample type	Medium code	GAGE HEIGHT (FEET) (00065)	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	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)
OCT													
17...	1130	ENVIRONMENTAL		9.46	4.2	747	7.3	63	7.6	--	--	1030	9.0
NOV													
27...	1045	ENVIRONMENTAL		9.88	25	740	14.4	100	7.7	--	--	601	-1.1
DEC													
19...	1000	ENVIRONMENTAL		9.34	4.9	740	11.7	81	7.7	--	--	1100	.0
19...	1002	BLANK		--	--	--	--	--	--	--	5	--	--
JAN													
23...	1000	ENVIRONMENTAL		9.23	2.4	743	2.4	19	7.6	--	--	1880	3.3
FEB													
14...	0855	ENVIRONMENTAL		9.28	3.5	734	11.2	83	8.0	--	--	1620	4.0
MAR													
08...	1540	ENVIRONMENTAL		9.29	3.7	--	--	--	--	--	--	2310	--
11...	1610	ENVIRONMENTAL		9.57	13	--	--	--	--	--	--	5520	--
11...	2045	ENVIRONMENTAL		9.44	8.2	--	--	--	7.3	7.2	6470	6620	--
12...	1640	ENVIRONMENTAL		9.83	26	--	--	--	6.9	7.2	4620	4590	--
APR													
16...	0930	ENVIRONMENTAL		10.04	36	731	8.2	100	7.8	--	--	759	19.0
16...	0935	REPLICATE		--	--	--	--	--	--	--	--	--	--
MAY													
08...	1145	ENVIRONMENTAL		11.07	107	738	8.0	71	7.5	--	--	401	9.0
JUN													
13...	0930	ENVIRONMENTAL		10.17	43	740	4.2	46	7.3	--	--	641	19.0
JUL													
22...	1030	ENVIRONMENTAL		10.16	33	741	3.6	42	7.1	--	--	766	24.0
22...	1035	REPLICATE		--	--	--	--	--	--	--	--	--	--
AUG													
15...	0915	ENVIRONMENTAL		9.81	26	731	4.6	54	7.4	--	--	919	--
15...	0916	SPIKE		--	--	--	--	--	--	--	--	--	--
SEP													
11...	1115	ENVIRONMENTAL		10.16	41	746	4.7	53	7.3	--	--	568	20.5

05288705 SHINGLE CREEK AT QUEEN AVE. IN MINNEAPOLIS, MN--Continued
(National Water-Quality Assessment Program)

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

Date	TEMPER-ATURE WATER (DEG C) (00010)	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, DIS-SOLVED (MG/L AS NA) (00930)	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)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
OCT													
17...	8.4	--	--	--	--	228	278	0	145	--	--	82.2	--
NOV													
27...	.5	--	--	--	--	104	127	0	103	--	--	30.8	--
DEC													
19...	.8	--	--	--	--	231	282	0	169	--	--	80.2	--
19...	--	--	--	--	--	--	--	--	2.18	--	--	<.1	--
JAN													
23...	1.2	--	--	--	--	294	359	0	351	--	--	122	--
FEB													
14...	1.2	--	--	--	--	265	323	0	298	--	--	111	--
MAR													
08...	--	--	--	--	287	--	--	--	515	--	--	--	--
11...	--	--	--	--	1080	--	--	--	1690	--	--	--	--
11...	.5	91.1	22.7	8.83	1210	177	213	0	2020	.2	10.8	70.8	3540
12...	4.0	60.9	15.1	14.8	821	118	141	0	1390	.2	7.91	53.8	2530
APR													
16...	16.7	--	--	--	--	129	158	0	131	--	--	28.8	--
16...	--	--	--	--	--	--	--	--	130	--	--	28.7	--
MAY													
08...	8.7	--	--	--	--	79	96	0	62.4	--	--	15.8	--
JUN													
13...	19.0	--	--	--	--	147	179	0	82.0	--	--	27.0	--
JUL													
22...	23.0	--	--	--	--	168	205	0	103	--	--	42.5	--
22...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG													
15...	21.4	--	--	--	--	194	237	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP													
11...	19.5	--	--	--	--	86	105	0	73.7	--	--	26.3	--

Date	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	2,6-DI-ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	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)
OCT													
17...	.38	1.2	.18	.017	<.02	.098	--	--	<.002	<.004	<.002	<.005	<.007
NOV													
27...	.12	.75	.41	.014	<.02	.085	--	--	--	--	--	--	--
DEC													
19...	.17	.77	.51	.021	E.02	.055	--	--	<.002	<.004	<.002	<.005	.011
19...	<.04	<.10	<.05	<.008	<.02	<.004	--	--	--	--	--	--	--
JAN													
23...	.50	.97	1.00	.027	E.01	.036	--	--	--	--	--	--	--
FEB													
14...	.34	.94	.89	.018	<.02	.045	--	--	<.006	<.006	<.004	<.005	<.007
MAR													
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	<50	109	--	--	--	--	--
12...	--	--	--	--	--	--	<30	5.7	--	--	--	--	--
APR													
16...	<.04	1.2	.37	.023	<.02	.118	--	--	<.006	.051	<.004	<.005	.085
16...	<.04	1.1	.34	.022	<.02	.109	--	--	--	--	--	--	--
MAY													
08...	.23	1.2	.71	.034	<.02	.131	--	--	<.006	.178	<.007	<.005	.412
JUN													
13...	.21	1.0	.34	.036	.02	.131	--	--	<.006	.023	<.004	<.005	.830
JUL													
22...	.12	.71	.38	.083	E.01	.064	--	--	<.006	<.006	<.004	<.005	.041
22...	--	--	--	--	--	--	--	--	<.006	<.006	<.004	<.005	.039
AUG													
15...	<.04	.64	.42	.033	<.02	.055	--	--	<.006	<.006	<.004	<.005	.043
15...	--	--	--	--	--	--	--	--	.097	.113	.121	.140	.168
SEP													
11...	<.04	.83	.24	.019	.04	.086	--	--	<.006	<.006	<.004	<.005	.033

05288705 SHINGLE CREEK AT QUEEN AVE. IN MINNEAPOLIS, MN--Continued
(National Water-Quality Assessment Program)

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

Date	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)	DEETHYL ATRA-ZINE, WATER, DISS, REC (UG/L) (04040)	DI-AZINON, DIS-SOLVED (UG/L) (39572)	DI-ELDRIN DIS-SOLVED (UG/L) (39381)	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)
OCT													
17...	<.010	<.002	<.041	<.030	<.005	<.018	<.003	<.006	.030	<.005	<.02	<.002	<.009
NOV													
27...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC													
19...	<.010	<.002	<.041	<.020	<.005	<.018	<.003	E.005	<.005	<.005	<.02	<.002	<.009
19...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN													
23...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB													
14...	<.010	<.002	<.041	<.020	<.005	<.018	<.003	<.006	<.005	<.005	<.02	<.002	<.009
MAR													
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR													
16...	<.010	<.002	<.041	<.020	<.005	<.018	<.003	E.005	<.005	<.005	<.02	<.002	<.009
16...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY													
08...	E.004	<.002	E.018	<.020	<.005	<.018	E.002	E.030	.056	<.005	<.02	.049	<.009
JUN													
13...	<.010	<.002	E.011	<.020	<.005	<.018	<.003	E.103	.072	<.005	<.02	<.002	<.009
JUL													
22...	<.010	<.002	<.041	<.020	<.005	<.018	<.003	<.010	.025	<.005	<.02	<.002	<.009
22...	<.010	<.002	<.041	<.020	<.005	<.018	<.003	<.013	.022	<.005	<.02	<.002	<.009
AUG													
15...	<.010	<.002	<.041	<.020	<.005	<.018	<.003	E.013	.007	<.005	<.02	<.002	<.009
15...	.092	.097	E.124	E.157	.101	.156	.117	E.071	.104	.096	E.10	.105	.123
SEP													
11...	<.010	<.002	<.041	<.020	<.005	<.018	<.003	E.014	.013	<.005	<.02	<.002	<.009

Date	ETHO-PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	FONOFOS WATER DISS REC (UG/L) (04095)	LINDANE DIS-SOLVED (UG/L) (39341)	LIN-URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	MALA-THION, DIS-SOLVED (UG/L) (39532)	METHYL AZIN-PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	METHYL PARA-THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	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)
OCT													
17...	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.007
NOV													
27...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC													
19...	<.005	<.003	<.004	<.035	<.027	<.050	<.006	E.005	<.006	<.002	<.007	<.003	<.007
19...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN													
23...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB													
14...	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010
MAR													
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR													
16...	<.005	<.003	<.004	<.035	<.027	<.050	<.006	.029	<.006	<.002	<.007	<.003	<.010
16...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY													
08...	<.005	<.003	<.004	<.035	<.027	<.050	<.006	.048	<.006	<.002	<.007	<.003	<.010
JUN													
13...	<.005	<.003	<.004	<.035	<.027	<.050	<.006	E.012	<.006	<.002	<.007	<.003	<.010
JUL													
22...	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010
22...	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010
AUG													
15...	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010
15...	.106	.090	.103	.145	.123	E.159	.141	.118	.118	.107	.090	.057	.136
SEP													
11...	<.005	<.003	<.004	<.035	<.040	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010

05288705 SHINGLE CREEK AT QUEEN AVE. IN MINNEAPOLIS, MN--Continued
(National Water-Quality Assessment Program)

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

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)	PRO-METON, WATER, DISS, REC (UG/L) (04037)	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)	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)
OCT													
17...	<.002	<.010	<.006	<.011	.02	<.004	<.010	<.011	<.03	<.011	.02	<.034	<.02
NOV													
27...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC													
19...	<.002	<.010	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.011	<.02	<.034	<.02
19...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN													
23...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB													
14...	<.004	<.022	<.006	<.011	<.03	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02
MAR													
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR													
16...	<.004	<.022	<.006	<.011	E.01	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02
16...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY													
08...	<.004	E.020	<.006	<.011	.02	<.004	<.010	<.011	<.02	<.007	<.02	<.034	<.02
JUN													
13...	<.004	<.022	<.006	<.011	.22	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02
JUL													
22...	<.004	<.022	<.006	<.011	.04	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02
22...	<.004	<.022	<.006	<.011	.04	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02
AUG													
15...	<.004	<.022	<.006	<.011	.04	<.011	<.010	<.011	<.02	<.005	E.01	<.034	<.02
15...	.117	.154	.053	E.104	.18	.123	.134	.118	.12	.087	.19	E.136	E.10
SEP													
11...	<.004	<.022	<.006	<.011	.06	<.020	<.010	<.011	<.02	<.005	<.02	<.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-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	Data base number
OCT						
17...	<.005	<.002	<.009	--	--	01
NOV						
27...	--	--	--	9	9.4	01
DEC						
19...	<.005	<.002	<.009	--	87	01
19...	--	--	--	--	.8	77
JAN						
23...	--	--	--	--	202	01
FEB						
14...	<.005	<.002	<.009	--	166	01
MAR						
08...	--	--	--	--	--	01
11...	--	--	--	--	--	01
11...	--	--	--	--	--	01
12...	--	--	--	--	--	01
APR						
16...	<.005	<.002	<.009	--	16	01
16...	--	--	--	--	17	77
MAY						
08...	<.005	<.002	E.004	--	39	01
JUN						
13...	<.005	<.002	<.009	--	14	01
JUL						
22...	<.005	<.002	<.009	--	4.8	01
22...	<.005	<.002	<.009	--	--	77
AUG						
15...	<.005	<.002	<.009	--	21	01
15...	.117	.121	.095	--	--	77
SEP						
11...	<.005	<.002	<.009	--	12	01

05290000 LITTLE MINNESOTA RIVER NEAR PEEVER, SD

LOCATION.--Lat 45°36'05", long 96°52'18", in SW¼SW¼ sec. 13, T.125 N., R.50 W., Roberts County, Hydrologic Unit 07020001, on Sisseton Indian Reservation, on right bank 2 mi northwest of town of Browns Valley, MN, 5.3 mi northeast of Peever, 7.2 mi downstream from Jorgenson River, and 8 mi upstream from Big Stone Lake.

DRAINAGE AREA.--438 mi^2.

PERIOD OF RECORD.--October 1939 to September 1981, October 1989 to September, 2002 (discontinued).

REVISED RECORDS.--WSP 1308: 1943(M).

GAGE.--Water-stage recorder. Datum of gage is 1,002.20 ft above sea level (NGVD of 1929). Oct. 1, 1939 to Mar. 20, 1940, nonrecording gage at site 4.5 mi downstream at different datum. Mar. 21 to Apr. 12, 1940, nonrecording gage at site 100 ft downstream at present datum. April 13 to Aug. 27, 1940, nonrecording gage at present site and datum.

REMARKS.--Records fair except those for estimated daily discharges, which are fair to poor. Breakout flow into Lake Traverse (Red River of the North Basin) may occur 3.5 miles downstream when the stage exceeds approximately 8.0 ft.

DISCHARGE, in CFS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.6	8.3	13	e12	e9.6	e22	138	100	41	16	4.4	3.6
2	3.4	8.3	12	e12	e9.5	e23	125	91	35	14	3.7	3.6
3	3.4	8.3	12	e11	e9.5	e24	92	81	30	13	4.2	3.5
4	3.1	7.9	14	e12	e9.5	e23	82	71	28	11	7.0	3.3
5	3.1	7.9	15	e13	e9.5	e21	75	62	25	10	14	3.1
6	3.1	7.9	15	e14	e9.6	e20	72	57	24	9.6	12	2.9
7	3.3	7.9	16	e15	e9.7	e18	74	54	23	8.9	9.7	2.5
8	3.8	7.9	16	e14	e9.8	e16	120	63	20	8.7	7.8	2.1
9	4.2	7.9	15	e14	e10	e15	116	256	20	8.5	6.2	1.8
10	8.4	7.9	15	e13	e10	e12	105	318	19	10	6.7	1.7
11	12	7.9	15	e13	e10	e14	121	244	18	11	6.0	1.7
12	15	7.9	15	e13	e11	e19	132	246	17	11	7.0	1.6
13	13	8.2	15	e13	e11	e18	120	269	15	9.5	6.7	1.4
14	11	8.9	14	e12	e11	e18	113	231	15	8.3	7.6	1.4
15	9.1	9.2	14	e12	e12	e19	106	200	14	7.4	8.1	1.3
16	8.4	8.9	14	e11	e13	e19	98	173	13	6.2	6.7	1.2
17	7.9	9.4	14	e10	e13	e25	91	145	12	5.1	5.6	1.2
18	7.3	9.6	15	e10	e14	e24	83	125	11	5.6	4.5	1.1
19	7.0	9.6	13	e10	e16	e23	75	109	12	5.9	3.9	1.1
20	6.6	9.2	15	e10	e27	e23	69	94	11	7.4	3.6	1.1
21	6.4	9.2	14	e10	40	e22	64	82	16	7.4	3.9	0.99
22	6.3	9.5	14	e10	46	e22	64	74	58	7.1	4.1	0.95
23	6.4	9.6	14	e10	44	e22	65	69	71	11	5.2	0.90
24	6.6	11	18	e10	36	e22	62	63	50	9.0	5.7	0.89
25	7.0	13	21	e11	e29	e22	59	61	42	8.1	5.2	0.90
26	7.0	15	25	e11	e28	e22	54	60	42	6.8	4.6	0.95
27	7.4	15	22	e10	e24	e23	52	58	33	6.2	4.3	0.94
28	7.4	16	e16	e10	e24	e31	63	56	26	5.9	3.8	1.2
29	7.4	15	e15	e9.8	---	e50	96	53	22	6.1	3.5	2.0
30	7.4	14	e14	e9.7	---	e158	104	51	19	5.7	3.1	2.0
31	7.9	---	e13	e9.6	---	e159	---	46	---	5.0	3.5	---
TOTAL	213.9	296.3	473	355.1	505.7	949	2690	3662	782	265.4	182.3	52.92
MEAN	6.900	9.877	15.26	11.45	18.06	30.61	89.67	118.1	26.07	8.561	5.881	1.764
MAX	15	16	25	15	46	159	138	318	71	16	14	3.6
MIN	3.1	7.9	12	9.6	9.5	12	52	46	11	5.0	3.1	0.89
AC-FT	424	588	938	704	1000	1880	5340	7260	1550	526	362	105
CFSM	0.02	0.02	0.03	0.03	0.04	0.07	0.20	0.27	0.06	0.02	0.01	0.00
IN.	0.02	0.03	0.04	0.03	0.04	0.08	0.23	0.31	0.07	0.02	0.02	0.00

MINNESOTA RIVER BASIN--Continued

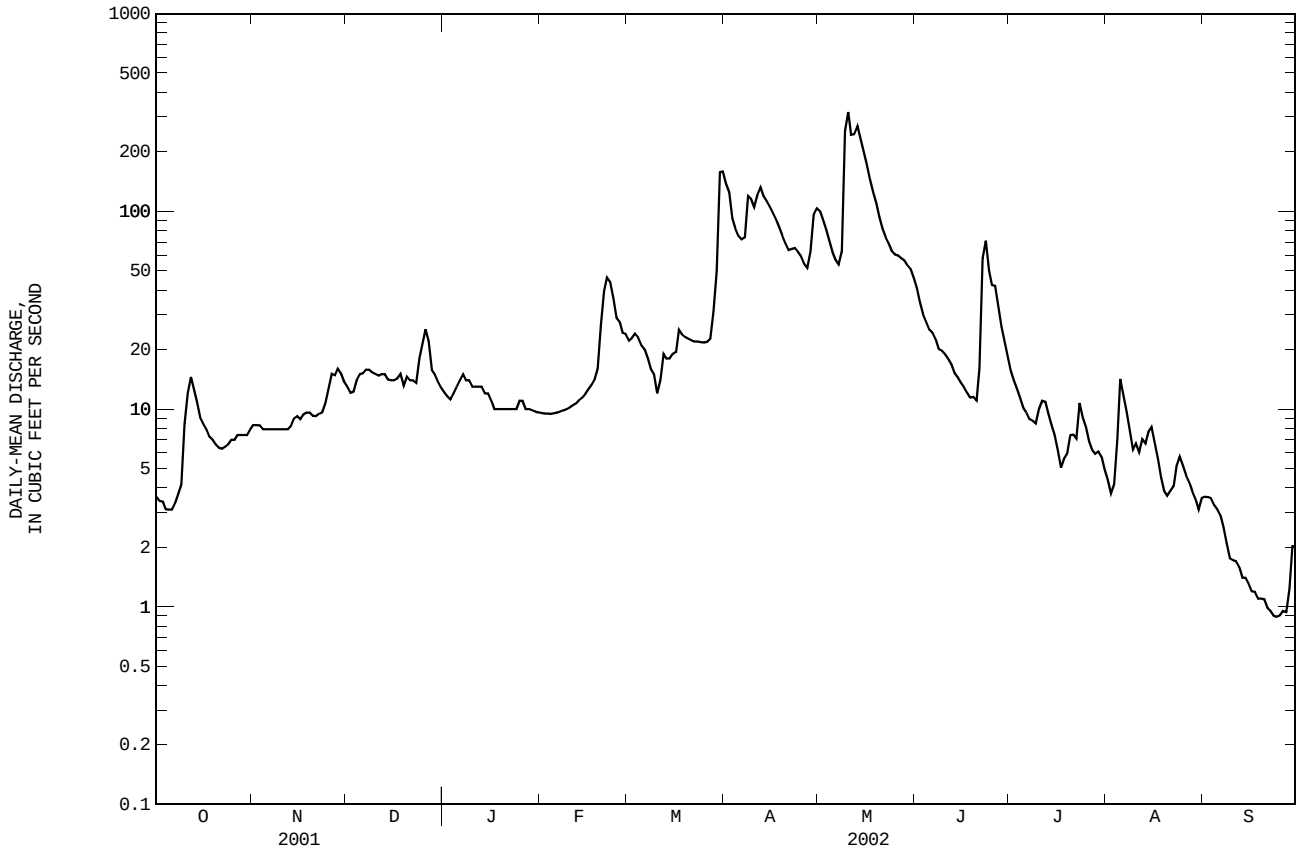
05290000 LITTLE MINNESOTA RIVER NEAR PEEVER, SD--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	6.233	7.276	4.478	1.977	5.138	116.7	235.3	105.9	73.11	53.92	12.94	5.137
MAX	73.9	74.5	61.2	11.5	57.0	603	1321	531	355	865	235	52.0
(WY)	1996	1999	1999	2002	1998	1997	1952	1962	1942	1993	1993	1999
MIN	0.21	0.25	0.10	0.000	0.000	0.51	2.89	2.20	0.41	0.041	0.059	0.074
(WY)	1940	1940	1940	1940	1940	1956	1981	1981	1976	1976	1976	1976

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1940 - 2002	
ANNUAL TOTAL	47437.8		10427.62			
ANNUAL MEAN	130.0		28.57		52.41a	
HIGHEST ANNUAL MEAN					172	1997
LOWEST ANNUAL MEAN					1.37	1981
HIGHEST DAILY MEAN	2960	Apr 13	318	May 10	5400	Jul 25 1993
LOWEST DAILY MEAN	2.0	Sep 13	0.89	Sep 24	0.00b	Jan 1 1940
ANNUAL SEVEN-DAY MINIMUM	2.5	Sep 8	0.93	Sep 21	0.00	Jan 1 1940
MAXIMUM PEAK FLOW			373	May 9	8900	Jul 25 1993
MAXIMUM PEAK STAGE			4.69	May 9	14.40	Mar 27 1997
INSTANTANEOUS LOW FLOW			0.89	Sep 23	0.00b	Jan 1 1940
ANNUAL RUNOFF (AC-FT)	94090		20680		37970	
ANNUAL RUNOFF (CFSM)	0.30		0.065		0.12	
ANNUAL RUNOFF (INCHES)	4.03		0.89		1.63	
10 PERCENT EXCEEDS	410		75		118	
50 PERCENT EXCEEDS	10		12		4.3	
90 PERCENT EXCEEDS	4.5		3.5		0.30	

a Median of annual mean discharges is 38 ft^3/s.
b Many days, several years.
e Estimated.



05291000 WHETSTONE RIVER NEAR BIG STONE CITY, SD

LOCATION.--Lat 45°17'30", long 96°29'14", in SE¼NW¼ sec. 18, T.121 N., R.46 W., Grant County, Hydrologic Unit 07020001, on right bank 20 ft downstream from former highway bridge site, 1.5 mi west of Big Stone City, S.D., and 4.5 mi upstream from Big Stone Lake.

DRAINAGE AREA.--398 mi^2.

PERIOD OF RECORD.--March 1910 to November 1912 (no winter records), and March 1931 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 895: Drainage area. WSP 1308: 1932(M), 1935(M).

GAGE.--Water-stage recorder. Datum of gage is 996.96 ft in sea level (NGVD of 1912). Mar. 8, 1910 to Nov. 30, 1912, nonrecording gage 2 mi downstream at different datum. Mar. 18, 1931 to May 3, 1939, nonrecording gage, at site 20 ft upstream at present datum. May 4, 1939 to Nov. 8, 1952, water-stage recorder at site 80 ft downstream at present datum.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known, about 26 ft in June 1919, present site and datum, from information by local resident, discharge 29,000 ft^3/s, from dam break.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 230 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar 30	0200	*1,690	*7.89	May 13	2300	278	3.38
Apr 8	1900	233	3.12	Jun 23	0000	550	4.80
May 10	1500	243	3.17				

Minimum discharge, 4.0 ft^3/s, Sept. 25, gage height, 0.79 ft.

DISCHARGE, in CFS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.8	15	22	e22	e20	e42	320	108	34	23	9.3	8.1
2	9.6	15	24	e22	e20	e38	220	86	32	20	8.3	7.8
3	9.5	15	26	e22	e20	e35	130	72	30	20	14	7.3
4	9.3	15	26	e21	e20	e33	97	63	29	18	16	6.9
5	9.8	15	26	e21	e20	e32	89	57	29	17	14	6.9
6	10	15	28	e21	e21	e31	88	54	30	16	13	7.4
7	9.5	15	30	e21	e21	e30	108	53	29	15	12	7.0
8	10	16	27	e22	e22	e29	197	64	30	14	11	6.0
9	11	17	27	e23	e22	e28	195	133	32	13	10	6.0
10	13	16	25	e23	e23	e27	148	225	29	13	10	6.4
11	13	17	26	e23	e24	e27	133	185	26	13	10	6.3
12	15	16	26	e23	e25	e27	134	164	24	13	15	6.3
13	17	15	24	e22	e27	e26	119	220	23	13	18	6.2
14	16	17	24	e22	e29	e26	108	247	22	12	22	6.1
15	15	18	23	e21	e31	e26	98	169	20	11	22	5.9
16	14	17	24	e21	e33	e27	90	121	19	11	18	5.2
17	13	17	24	e21	e37	e27	79	94	18	9.4	15	4.8
18	14	17	22	e20	e43	e27	70	81	17	10	12	4.9
19	13	17	e28	e20	e64	e27	62	71	17	9.7	10	4.9
20	13	16	24	e20	e89	e27	55	66	16	10	9.8	4.9
21	12	17	e23	e20	e95	e26	55	62	74	12	15	4.6
22	12	16	e22	e20	e97	e26	56	60	442	15	18	4.4
23	12	17	e22	e20	e90	e26	56	59	427	16	14	4.4
24	13	22	e23	e21	e83	e26	56	55	204	15	13	4.3
25	13	31	e23	e21	e74	e26	54	54	101	15	11	4.8
26	18	29	e23	e20	e65	e25	51	53	67	14	11	5.3
27	17	e36	e23	e20	e53	e32	52	51	52	13	11	6.5
28	15	33	e22	e20	e47	e79	66	51	40	12	9.6	5.5
29	15	26	e22	e20	---	e362	82	49	33	12	8.8	6.2
30	15	23	e22	e20	---	1080	101	45	26	11	8.4	6.2
31	15	---	e22	e20	---	549	---	41	---	9.8	8.3	---
TOTAL	401.5	571	753	653	1215	2849	3169	2913	1972	425.9	397.5	177.5
MEAN	12.95	19.03	24.29	21.06	43.39	91.90	105.6	93.97	65.73	13.74	12.82	5.917
MAX	18	36	30	23	97	1080	320	247	442	23	22	8.1
MIN	9.3	15	22	20	20	25	51	41	16	9.4	8.3	4.3
AC-FT	796	1130	1490	1300	2410	5650	6290	5780	3910	845	788	352
CFSM	0.03	0.05	0.06	0.05	0.11	0.23	0.27	0.24	0.17	0.03	0.03	0.01
IN.	0.04	0.05	0.07	0.06	0.11	0.27	0.30	0.27	0.18	0.04	0.04	0.02

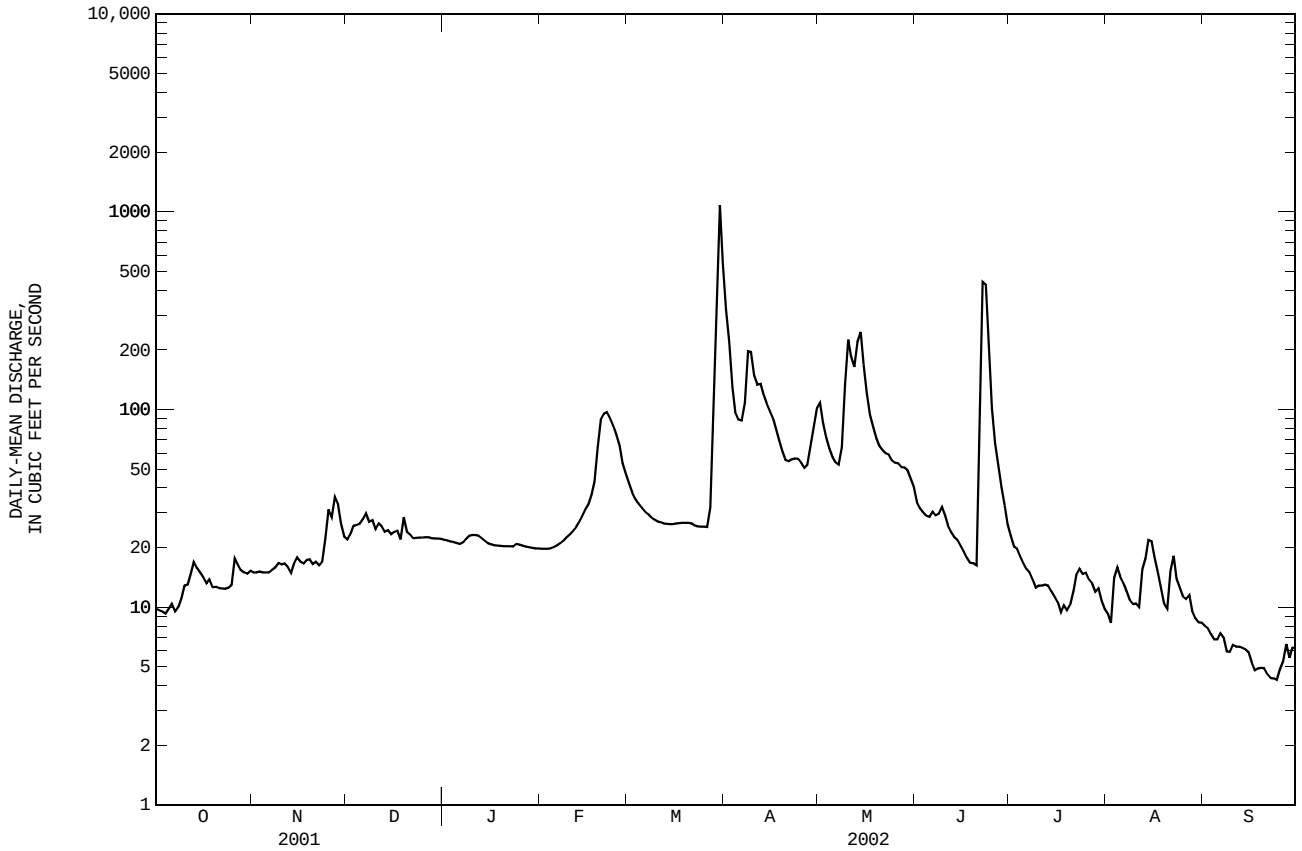
05291000 WHETSTONE RIVER NEAR BIG STONE CITY, SD--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1910 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	14.75	14.81	9.997	6.623	15.38	155.9	224.2	93.53	79.29	57.36	19.58	10.45
MAX	280	122	56.0	36.3	168	612	1677	491	478	885	327	77.0
(WY)	1996	1996	1999	1994	1998	1978	1997	1972	1984	1993	1991	1995
MIN	0.60	0.40	0.20	0.000	0.000	2.85	3.63	0.77	1.42	0.035	0.000	0.36
(WY)	1932	1935	1935	1934	1934	1969	1934	1934	1936	1934	1934	1935

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1910 - 2002	
ANNUAL TOTAL	62342.7		15497.4			
ANNUAL MEAN	170.8		42.46		60.21a	
HIGHEST ANNUAL MEAN					232	1997
LOWEST ANNUAL MEAN					1.52	1934
HIGHEST DAILY MEAN	8090	Apr 8	1080	Mar 30	8090	Apr 8 2001
LOWEST DAILY MEAN	5.2	Jan 1	4.3	Sep 24	0.00b	Sep 13 1931
ANNUAL SEVEN-DAY MINIMUM	6.0	Jan 1	4.6	Sep 19	0.00	Jul 31 1933
MAXIMUM PEAK FLOW			1690	Mar 30	9930	Apr 8 2001
MAXIMUM PEAK STAGE			7.89	Mar 30	15.93	Apr 8 2001
INSTANTANEOUS LOW FLOW			4.0	Sep 25	0.00b	Sep 13 1931
ANNUAL RUNOFF (AC-FT)	123700		30740		43620	
ANNUAL RUNOFF (CFSM)	0.43		0.11		0.15	
ANNUAL RUNOFF (INCHES)	5.83		1.45		2.06	
10 PERCENT EXCEEDS	387		89		112	
50 PERCENT EXCEEDS	17		22		9.0	
90 PERCENT EXCEEDS	7.0		9.4		1.4	

a Median of annual mean discharges is 46.1 ft^3/s.
b Many days, several years.
e Estimated.



05292000 MINNESOTA RIVER AT ORTONVILLE, MN

LOCATION.--Lat 45°17'44", long 96°26'38", in NE¼NW¼ sec. 16, T.121 N., R.46 W., Big Stone County, Hydrologic Unit 07020001, on left bank 400 ft downstream from bridge on U.S. Highway 12 and 1,300 ft downstream from dam at outlet of Big Stone Lake, at Ortonville.

DRAINAGE AREA.--1,160 mi^2 (approximately).

PERIOD OF RECORD.--February 1938 to current year.

REVISED RECORDS.--WSP 895: 1939. WSP 1508: 1942 (yearly mean).

GAGE.--Water-stage recorder. Datum of gage is 956.38 ft above sea level (NGVD of 1929). Prior to Mar. 31, 1939, nonrecording gage on downstream side of dam 1,300 ft upstream at datum 1.31 ft higher.

REMARKS.--Records good. Affected by regulation of Big Stone Lake.

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	49	2.3	24	19	18	721	108	46	46	5.8	7.6
2	6.6	30	2.5	24	19	18	718	107	44	19	5.3	6.6
3	6.8	30	2.5	24	19	19	566	103	43	18	8.3	5.6
4	6.4	29	2.5	24	19	20	264	108	44	17	5.6	5.3
5	6.6	27	2.3	23	19	20	263	108	43	16	8.1	5.2
6	6.0	28	2.3	23	19	19	258	111	44	16	8.4	5.0
7	6.7	28	2.3	23	19	19	261	111	43	16	7.3	4.9
8	7.4	21	2.3	23	19	19	261	159	43	15	13	4.8
9	8.0	20	2.3	23	21	22	259	276	41	14	7.5	5.7
10	8.3	20	61	23	35	24	261	263	38	14	7.1	6.0
11	5.5	20	134	23	19	23	261	262	39	27	5.7	5.4
12	5.8	20	136	23	19	22	259	271	39	16	6.0	5.3
13	5.7	20	116	21	19	21	256	507	39	16	4.2	5.0
14	6.2	20	68	22	19	21	261	703	39	15	8.5	5.2
15	5.4	20	31	22	20	22	260	705	40	14	10	4.7
16	11	19	30	22	18	22	258	711	39	11	30	4.5
17	20	19	28	22	18	22	259	683	38	10	9.0	4.1
18	21	14	27	22	18	22	179	670	38	8.3	6.5	4.2
19	21	8.7	27	22	18	22	109	646	38	7.2	5.9	4.5
20	20	8.6	27	22	18	22	106	568	38	7.0	5.9	4.2
21	20	8.6	26	22	18	23	105	396	112	7.4	8.8	4.1
22	20	8.6	26	22	17	24	106	208	348	6.5	9.7	3.5
23	20	9.0	25	22	17	24	80	81	609	6.2	9.3	2.6
24	18	8.6	25	21	18	23	60	80	495	7.3	9.1	2.0
25	15	5.1	25	21	29	20	55	81	278	7.6	8.9	1.9
26	14	4.5	25	20	18	19	52	81	155	13	7.7	1.3
27	14	3.2	25	19	18	18	54	82	94	8.7	7.0	3.9
28	14	3.0	25	19	17	106	55	64	44	7.4	8.5	4.3
29	13	2.8	24	19	---	884	79	49	44	6.2	7.8	3.5
30	13	2.3	24	19	---	1590	103	50	45	5.8	7.7	2.8
31	37	---	24	19	---	1150	---	48	---	5.6	7.6	---
TOTAL	388.3	507.0	980.3	678	546	4298	6789	8400	3040	404.2	260.2	133.7
MEAN	12.5	16.9	31.6	21.9	19.5	139	226	271	101	13.0	8.39	4.46
MAX	37	49	136	24	35	1590	721	711	609	46	30	7.6
MIN	5.4	2.3	2.3	19	17	18	52	48	38	5.6	4.2	1.3
AC-FT	770	1010	1940	1340	1080	8530	13470	16660	6030	802	516	265
CFSM	0.01	0.01	0.03	0.02	0.02	0.12	0.20	0.23	0.09	0.01	0.01	0.00
IN.	0.01	0.02	0.03	0.02	0.02	0.14	0.22	0.27	0.10	0.01	0.01	0.00

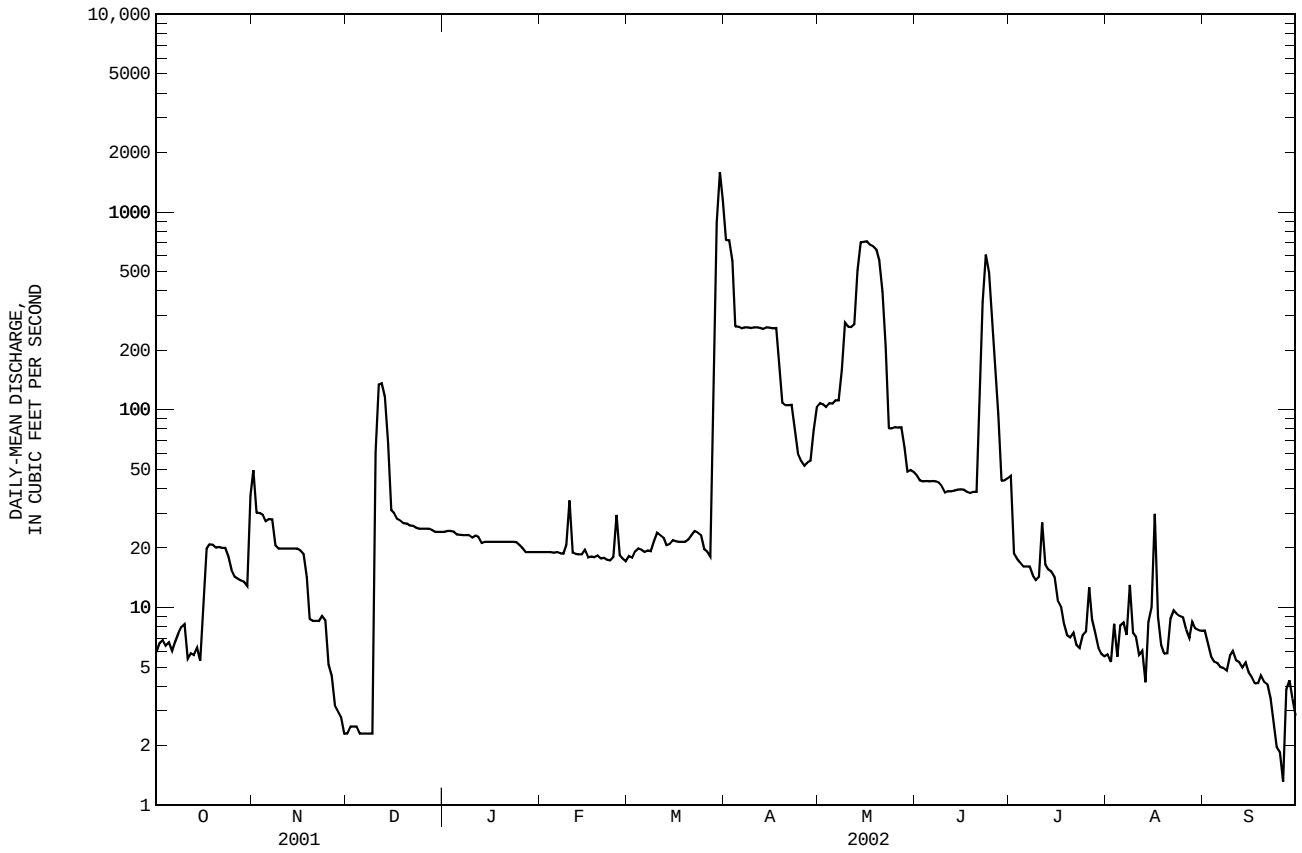
05292000 MINNESOTA RIVER AT ORTONVILLE, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	31.6	24.2	22.6	22.3	34.2	201	528	280	188	152	74.6	34.5
MAX	441	269	194	164	273	1519	4109	904	1034	1781	1299	250
(WY)	1996	1996	1943	1943	1998	1994	1997	2001	1962	1993	1993	1942
MIN	0.20	0.20	0.20	0.17	0.16	1.14	1.27	0.91	1.30	1.11	0.25	0.18
(WY)	1939	1939	1939	1940	1940	1941	1941	1941	1977	1977	1959	1988

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1938 - 2002	
ANNUAL TOTAL	146755.1		26424.7			
ANNUAL MEAN	402		72.4		134a	
HIGHEST ANNUAL MEAN					514	1997
LOWEST ANNUAL MEAN					2.39	1977
HIGHEST DAILY MEAN	4790	Apr 14	1590	Mar 30	5010	Apr 10 1997
LOWEST DAILY MEAN	2.3	Nov 30	1.3	Sep 26	0.00	Dec 13 1940
ANNUAL SEVEN-DAY MINIMUM	2.4	Dec 3	2.4	Dec 3	0.08	Sep 12 1988
MAXIMUM PEAK FLOW			1820	Mar 30	5070	Apr 10 1997
MAXIMUM PEAK STAGE			7.52	Mar 30	12.92	Apr 13 1952
INSTANTANEOUS LOW FLOW			1.1b	Sep 26	0.00	Dec 13 1940
ANNUAL RUNOFF (AC-FT)	291100		52410		97190	
ANNUAL RUNOFF (CFSM)	0.35		0.062		0.12	
ANNUAL RUNOFF (INCHES)	4.71		0.85		1.57	
10 PERCENT EXCEEDS	1330		257		351	
50 PERCENT EXCEEDS	22		20		21	
90 PERCENT EXCEEDS	7.4		5.2		1.2	

a Median of annual mean discharges is 91 ft^3/s.
b Due in part to regulation.



05292704 NORTH FORK YELLOW BANK RIVER NEAR ODESSA, MN

LOCATION.--Lat 45°11'21", long 96°24'54", in NW¼ NW¼ SW¼ sec.22, T.120 N., R.46 W., Lac qui Parle County, Hydrologic Unit 07020001, on left bank at upstream side of County Highway #7 bridge, 11.0 mi east-southeast of Milbank, SD, 6.4 mi southwest of Odessa, and 2.9 mi upstream from mouth.

DRAINAGE AREA.--208 mi^2.

PERIOD OF RECORD.--May 1991 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,020 ft above NGVD of 1929, from topographic map.

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	4.4	6.8	e5.5	e4.4	e3.0	e15	506	54	24	4.9	1.1	0.78
2	4.5	7.2	e6.0	e4.5	e3.2	e14	311	42	19	4.1	0.80	0.75
3	3.9	7.1	e6.0	e5.0	e3.5	e14	212	35	15	4.9	1.2	0.68
4	4.2	7.1	e6.0	e5.0	e4.0	e13	161	32	14	4.3	1.8	0.63
5	4.5	7.9	e6.0	e5.0	e6.0	e13	137	27	13	3.6	1.5	0.64
6	4.4	8.2	e6.0	e5.0	e10	e12	98	24	12	2.8	1.8	0.63
7	4.3	8.5	e5.5	e5.0	e15	e12	108	24	11	2.5	2.0	0.63
8	5.0	8.0	e5.5	e6.0	e20	e11	157	31	11	2.5	1.3	0.55
9	5.5	6.2	e5.5	e7.0	e30	e10	151	43	10	2.3	1.0	0.54
10	5.8	6.4	e5.5	e8.0	e30	e15	110	68	9.6	2.2	0.96	0.76
11	6.0	6.4	e5.5	e8.0	e40	e20	96	63	8.9	2.5	0.89	0.94
12	6.1	6.3	e5.8	e7.5	e50	e25	87	61	8.1	2.3	1.3	0.75
13	6.6	6.3	e5.8	e7.5	e65	e35	78	100	8.0	1.7	1.1	0.65
14	6.5	6.4	e5.8	e7.5	80	e50	72	98	7.8	1.4	0.89	0.65
15	6.5	6.4	e5.5	e7.5	92	e48	71	67	7.4	1.3	0.78	0.71
16	6.5	6.5	e5.5	e6.0	100	e48	60	51	7.1	1.2	0.96	0.67
17	6.5	6.5	e5.5	e5.5	96	e50	52	40	6.5	1.1	0.71	0.56
18	6.7	7.1	e5.2	e5.5	99	e50	46	34	6.2	1.3	0.64	0.56
19	7.1	6.9	e5.0	e5.5	132	e48	41	29	6.1	1.4	0.65	0.58
20	5.6	6.7	e5.0	e5.5	154	e45	35	26	5.8	1.7	0.77	0.59
21	5.4	6.6	e5.0	e5.5	159	e40	33	24	8.4	1.6	2.3	0.58
22	5.3	6.6	e4.5	e5.5	134	e45	34	22	13	1.9	2.4	0.58
23	6.0	6.6	e4.0	e5.0	100	e50	32	22	13	1.6	1.5	0.51
24	6.1	e6.0	e4.0	e4.5	e40	e45	32	21	10	1.5	1.3	0.54
25	6.1	e5.8	e4.0	e4.5	e20	e40	31	20	9.0	1.6	1.0	0.64
26	6.0	e5.5	e4.0	e4.0	e20	e40	26	18	10	1.4	0.83	0.68
27	6.0	e5.5	e4.0	e3.3	e17	e50	26	18	12	2.2	0.90	0.71
28	6.2	e5.5	e4.0	e3.0	e15	e100	32	18	8.6	2.5	0.96	0.83
29	6.4	e5.5	e4.0	e3.0	---	e250	41	20	7.4	1.6	0.92	0.75
30	6.5	e5.5	e4.0	e3.0	---	743	56	45	6.0	1.4	0.90	0.90
31	6.8	---	e4.0	e3.0	---	1100	---	45	---	1.1	0.96	---
TOTAL	177.4	198.0	157.6	165.2	1537.7	3051	2932	1222	307.9	68.4	36.12	19.97
MEAN	5.723	6.600	5.084	5.329	54.92	98.42	97.73	39.42	10.26	2.206	1.165	0.666
MAX	7.1	8.5	6.0	8.0	159	1100	506	100	24	4.9	2.4	0.94
MIN	3.9	5.5	4.0	3.0	3.0	10	26	18	5.8	1.1	0.64	0.51
AC-FT	352	393	313	328	3050	6050	5820	2420	611	136	72	40

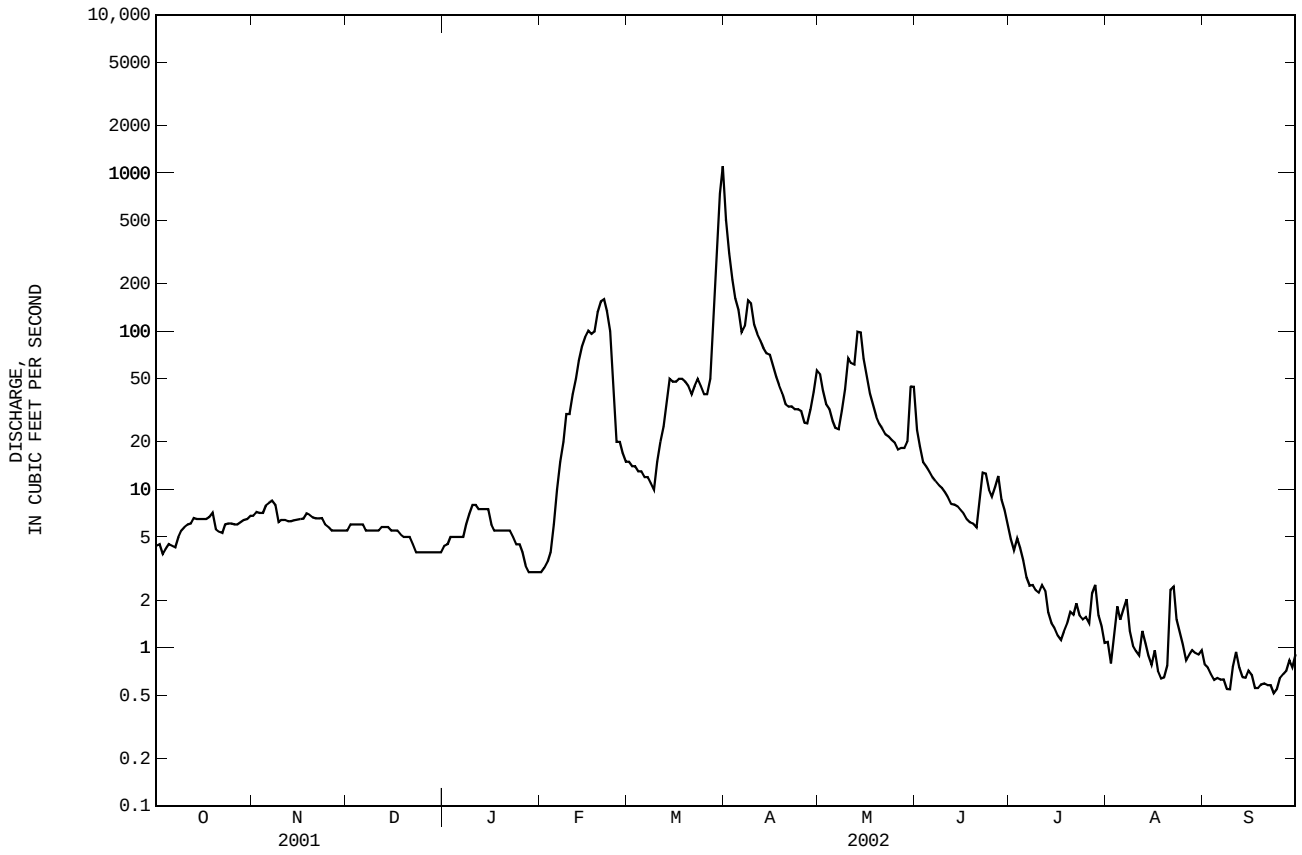
05292704 NORTH FORK YELLOW BANK RIVER NEAR ODESSA, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 2002, BY WATER YEAR (WY)

MEAN	43.47	26.42	13.42	7.938	39.06	160.3	298.6	91.10	83.04	110.3	23.18	15.82
MAX	342	122	32.7	19.5	166	422	977	267	212	501	107	72.5
(WY)	1996	1996	1996	1996	1996	1997	1997	1995	1992	1993	1995	1995
MIN	0.94	2.42	0.57	0.34	0.56	9.73	12.7	9.14	7.20	2.21	0.79	0.48
(WY)	2001	2001	2001	2001	2001	2001	2000	1992	2000	2002	2000	2000

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1992 - 2002	
ANNUAL TOTAL	37306.36		9873.29			
ANNUAL MEAN	102.2		27.05		76.00a	
HIGHEST ANNUAL MEAN					134	1997
LOWEST ANNUAL MEAN					7.33	2000
HIGHEST DAILY MEAN	5000	Apr 8	1100	Mar 31	5000	Apr 8 2001
LOWEST DAILY MEAN	0.10	Jan 2	0.51	Sep 23	0.10	Jan 2 2001
ANNUAL SEVEN-DAY MINIMUM	0.18	Jan 1	0.56	Sep 18	0.13	Dec 28 2000
MAXIMUM PEAK FLOW			1410	Mar 31	6840b	Apr 8 2001
MAXIMUM PEAK STAGE			11.71	Mar 31	18.02c	Mar 29 1997
ANNUAL RUNOFF (AC-FT)	74000		19580		55060	
10 PERCENT EXCEEDS	184		60		150	
50 PERCENT EXCEEDS	6.0		6.2		16	
90 PERCENT EXCEEDS	0.50		0.89		2.7	

a Median of annual mean discharges, 97 ft^3/s.
b Gage height, 16.72 ft, backwater from ice.
c Backwater from ice.
e Estimated.



05293000 YELLOW BANK RIVER NEAR ODESSA, MN

LOCATION.--Lat 45°13'37", long 96°21'12", in SW¼SW¼ sec. 6, T. 120 N., R. 45 W., Lac qui Parle County, Hydrologic Unit 07020001, on left bank 1200 ft upstream from highway bridge, 2.5 mi southwest of Odessa, and 4.5 mi upstream from mouth.

DRAINAGE AREA.--459 mi^2.

PERIOD OF RECORD.--October 1939 to September 1999, October 1999 to March 2001 (peak flow only), April 2001 to current year.

REVISED RECORDS.--WSP 1388: 1947(M), 1950. WDR MN-95-1: Sept. 5 (Q). WRIR 97-4249: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 953.34 ft above sea level (U.S. Army Corps of Engineers benchmark, NGVD of 1929). Prior to Aug. 28, 1940, nonrecording gage at site 150 ft upstream at same datum.

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 300 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar 31	(daily)	*e1300	--	No other peak greater than base discharge.			

Minimum discharge, 2.4 ft^3/s, Sept. 24, gage height, 1.55 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	e12	e24	e26	e4.7	e8.6	e31	e851	125	60	19	6.1	6.2
2	e11	e25	e25	e4.4	e9.1	e30	e512	114	49	16	5.7	5.6
3	e9.3	e24	e26	e4.3	e9.3	e28	e299	95	43	18	6.8	5.0
4	e9.3	e23	e27	e4.4	e8.8	e26	222	81	39	16	7.7	4.5
5	e9.0	e22	e28	e4.9	e8.7	e24	206	73	37	17	7.3	3.9
6	e9.4	e21	e29	e5.7	e8.8	e20	218	65	34	15	7.4	3.8
7	e9.1	e19	e27	e6.1	e9.6	e16	232	63	32	15	7.5	3.4
8	e7.7	e21	e23	e7.0	e12	e14	256	79	30	15	6.7	3.0
9	e9.2	e20	e22	e8.1	e19	e10	283	94	29	13	5.7	3.3
10	e14	e20	e22	e9.4	e19	e7.0	232	126	27	12	5.9	4.0
11	e14	e20	e20	e11	e21	e11	199	144	26	13	5.8	3.4
12	e14	e18	e21	e13	e24	e22	185	145	24	10	6.3	3.4
13	e18	e19	e19	e16	e24	e38	175	160	23	9.5	6.2	3.5
14	e20	e18	e18	e17	e29	e33	161	186	22	8.8	5.7	3.4
15	e21	e18	e18	e18	e35	e28	152	161	21	7.7	5.3	3.2
16	e22	e18	e19	e18	e41	e30	139	133	21	7.4	4.9	3.3
17	e22	e18	e18	e18	e41	e34	127	115	19	6.9	4.6	3.1
18	e23	e18	e19	e17	e44	e38	116	98	18	8.0	4.7	3.0
19	e24	e20	e13	e16	e52	e39	101	85	18	7.8	4.6	2.9
20	e23	e20	e16	e17	e74	e38	88	78	16	9.9	4.7	2.8
21	e22	e19	e14	e17	e68	e37	83	74	23	9.5	9.1	2.6
22	e21	e18	e12	e18	e71	e36	82	70	26	9.6	11	2.7
23	e22	e18	e10	e18	e91	e39	80	65	32	7.8	11	2.8
24	e23	e23	e8.9	e17	e77	e39	76	63	28	7.9	26	2.6
25	e23	e24	e8.2	e17	e35	e38	75	61	26	8.3	22	3.0
26	e24	e21	e7.7	e17	e48	e37	69	60	33	8.2	16	3.3
27	e23	e21	e7.7	e16	e50	e39	65	60	45	13	12	3.1
28	e23	e34	e7.0	e13	e36	e95	71	60	34	10	9.9	3.4
29	e22	e32	e6.0	e11	---	e248	85	59	28	11	8.5	3.9
30	e23	e28	e5.4	e9.8	---	e450	112	62	23	7.9	8.1	4.4
31	e23	---	e5.0	e9.1	---	e1300	---	96	---	7.1	7.3	---
TOTAL	550.0	644	527.9	382.9	973.9	2875.0	5552	2950	886	345.3	260.5	106.5
MEAN	17.7	21.5	17.0	12.4	34.8	92.7	185	95.2	29.5	11.1	8.40	3.55
MAX	24	34	29	18	91	1300	851	186	60	19	26	6.2
MIN	7.7	18	5.0	4.3	8.6	7.0	65	59	16	6.9	4.6	2.6
AC-FT	1090	1280	1050	759	1930	5700	11010	5850	1760	685	517	211
CFSM	0.04	0.05	0.04	0.03	0.08	0.20	0.40	0.21	0.06	0.02	0.02	0.01
IN.	0.04	0.05	0.04	0.03	0.08	0.23	0.45	0.24	0.07	0.03	0.02	0.01

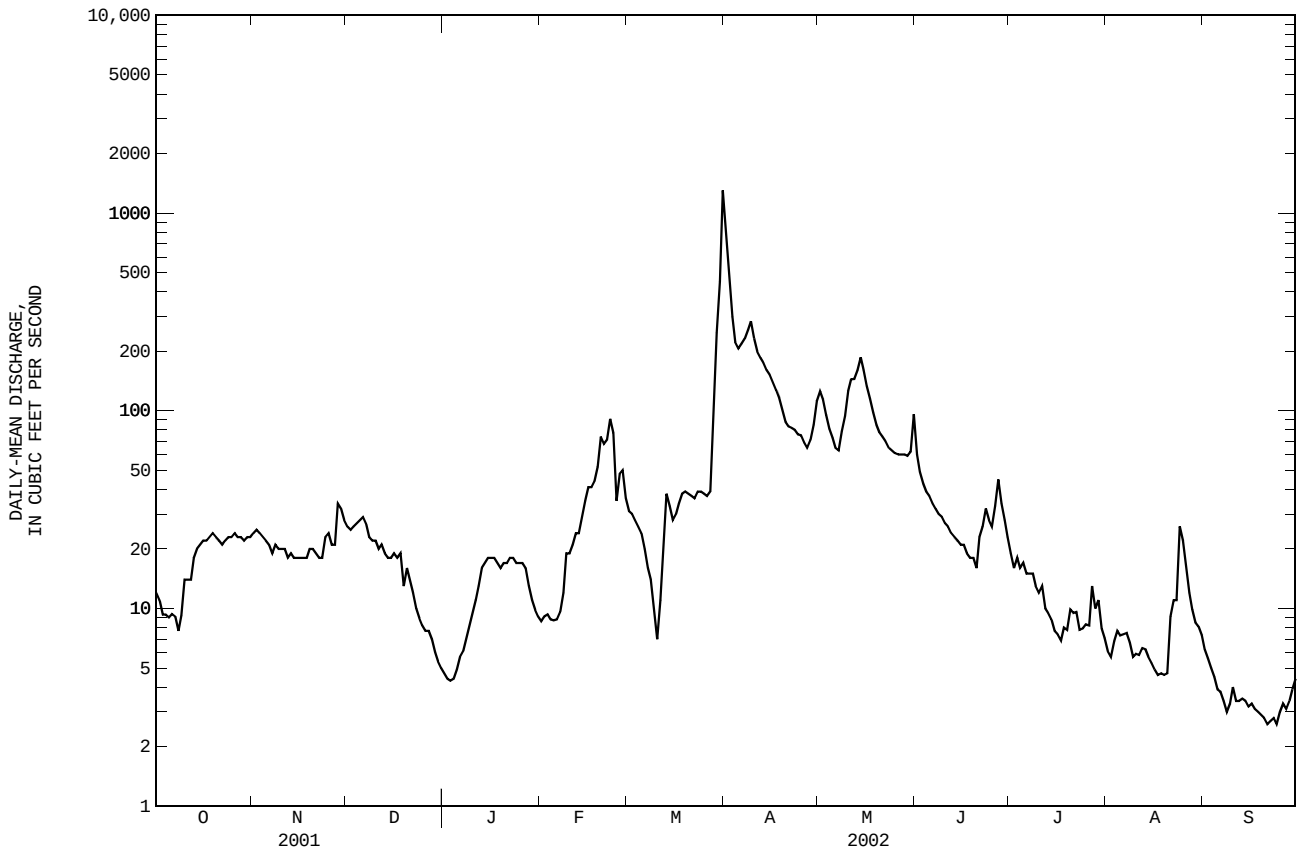
05293000 YELLOW BANK RIVER NEAR ODESSA, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	25.4	24.8	13.2	7.98	17.6	173	266	111	106	64.8	29.8	17.0
MAX	588	256	86.3	68.0	147	693	1614	652	577	741	281	273
(WY)	1996	1996	1996	1994	1998	1996	1997	1972	1992	1993	1991	1985
MIN	0.31	0.44	0.32	0.090	0.001	1.59	9.13	2.94	1.83	0.27	0.088	0.083
(WY)	1941	1977	1977	1977	1977	1965	1981	1981	1976	1976	1976	1976

SUMMARY STATISTICS	FOR 2002 WATER YEAR		WATER YEARS 1940 - 2002		
ANNUAL TOTAL	16054.0				
ANNUAL MEAN	44.0		71.5a		
HIGHEST ANNUAL MEAN			237		1996
LOWEST ANNUAL MEAN			3.98		1981
HIGHEST DAILY MEAN	1300	Mar 31	6640	Apr 9	1969
LOWEST DAILY MEAN	2.6	Sep 21,24	0.00b	Jan 26	1940
ANNUAL SEVEN-DAY MINIMUM	2.8	Sep 18	0.00	Jan 26	1940
MAXIMUM PEAK FLOW	1300c	Mar 31	6970	Apr 9	1969
MAXIMUM PEAK STAGE	10.24d	Mar 31	19.07	Apr 9	1969
INSTANTANEOUS LOW FLOW	2.4	Sep 24	0.00b	Jan 26	1940
ANNUAL RUNOFF (AC-FT)	31840		51830		
ANNUAL RUNOFF (CFSM)	0.096		0.16		
ANNUAL RUNOFF (INCHES)	1.30		2.12		
10 PERCENT EXCEEDS	95		151		
50 PERCENT EXCEEDS	19		12		
90 PERCENT EXCEEDS	4.9		1.0		

a Median of annual mean discharges is 54 ft^3/s.
b Many days, several years.
c Estimated daily discharge. Maximum discharge probably higher.
d Backwater from beaver dam.
e Estimated.



05299650 LAC QUI PARLE RIVER NEAR PROVIDENCE, MN

LOCATION.--Lat 44°53'07", long 96°03'07", in SE¼NE¼ sec. 5, T.116 N., R.43 W., Lac qui Parle County, Hydrologic Unit 07020003, on left bank 10 ft downstream from County Road 23 bridge, 6.1 mi upstream from confluence with West Branch of Lac qui Parle River, and 3 mi south of Dawson.

DRAINAGE AREA.--374 mi^2.

PERIOD OF RECORD.--April 2001 to current year.

GAGE.--Water-stage recorder.

REMARKS.--Records good to fair except those 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	1.9	4.3	e14	e3.4	e6.4	e20	e301	211	97	44	e2.5	10
2	1.9	4.4	e15	e3.3	e6.3	e19	e469	194	93	e38	e1.9	8.6
3	1.8	5.2	e15	e3.2	e6.0	e17	e518	176	94	e34	e1.5	9.3
4	1.8	5.4	e15	e3.3	e5.7	e15	e360	159	95	30	e1.1	5.2
5	1.5	7.2	e16	e3.6	e5.7	e14	e301	145	91	26	e0.95	4.2
6	1.4	9.3	e16	e3.9	e5.9	e13	e287	135	85	24	e1.2	3.7
7	1.3	7.6	e16	e4.4	e6.1	e11	e313	125	79	e21	e1.6	3.0
8	1.2	7.1	e15	e4.9	e6.5	e9.1	401	130	73	e18	e1.6	2.4
9	1.3	7.1	e14	e5.7	e7.2	e7.1	420	180	69	e16	e1.6	2.2
10	1.2	7.3	e14	e6.5	e7.9	e5.9	330	294	64	e14	e1.4	2.3
11	1.2	7.7	e13	e7.4	e8.8	e5.9	275	315	60	e14	e1.3	1.9
12	1.4	7.2	e13	e8.8	e9.7	e7.2	266	284	58	12	e1.4	1.5
13	1.8	7.9	e12	e11	e11	e9.6	265	285	55	11	e1.3	1.4
14	1.9	6.6	e12	e13	e12	e9.6	253	e292	52	13	e1.1	1.3
15	1.9	5.5	e12	e15	e14	e9.0	247	e268	49	13	e0.96	1.2
16	2.0	5.4	e11	e15	e17	e9.5	247	e254	45	10	e0.90	1.1
17	2.2	5.7	e11	e15	e19	e9.9	236	e242	41	9.0	e0.89	1.0
18	3.9	6.3	e9.9	e14	e22	e11	233	e229	38	7.5	e0.87	0.97
19	3.5	7.7	e9.2	e14	e25	e12	226	e215	36	6.9	e0.85	1.2
20	3.1	5.9	e8.5	e14	e26	e14	208	e197	34	e6.6	2.0	1.2
21	3.1	5.4	e7.7	e14	e28	e15	190	181	37	e7.6	15	0.95
22	2.8	5.5	e6.9	e13	e29	e15	184	171	50	e7.7	57	0.90
23	2.9	5.6	e6.2	e14	e30	e16	183	161	148	e5.8	76	0.86
24	3.5	8.0	e5.9	e14	e31	e16	180	151	140	e5.9	49	0.78
25	4.4	12	e5.5	e15	e29	e16	170	139	106	e6.3	36	0.86
26	4.8	e19	e5.4	e14	e27	e16	150	131	97	e6.6	30	0.86
27	3.6	e15	e5.2	e11	e25	e17	140	126	86	e6.8	24	0.79
28	3.4	e14	e4.9	e9.3	e23	e23	149	117	75	e6.6	19	0.78
29	3.5	e14	e4.4	e7.5	---	e35	181	113	62	e6.1	15	0.81
30	4.0	e14	e4.1	e7.1	---	e79	208	112	51	e5.2	14	0.79
31	4.2	---	e3.8	e6.7	---	e166	---	104	---	e4.1	13	---
TOTAL	78.4	243.3	321.6	295.0	450.2	642.8	7891	5836	2160	436.7	374.92	72.05
MEAN	2.53	8.11	10.4	9.52	16.1	20.7	263	188	72.0	14.1	12.1	2.40
MAX	4.8	19	16	15	31	166	518	315	148	44	76	10
MIN	1.2	4.3	3.8	3.2	5.7	5.9	140	104	34	4.1	0.85	0.78
AC-FT	156	483	638	585	893	1270	15650	11580	4280	866	744	143
CFSM	0.01	0.02	0.03	0.03	0.04	0.06	0.70	0.50	0.19	0.04	0.03	0.01
IN.	0.01	0.02	0.03	0.03	0.04	0.06	0.78	0.58	0.21	0.04	0.04	0.01

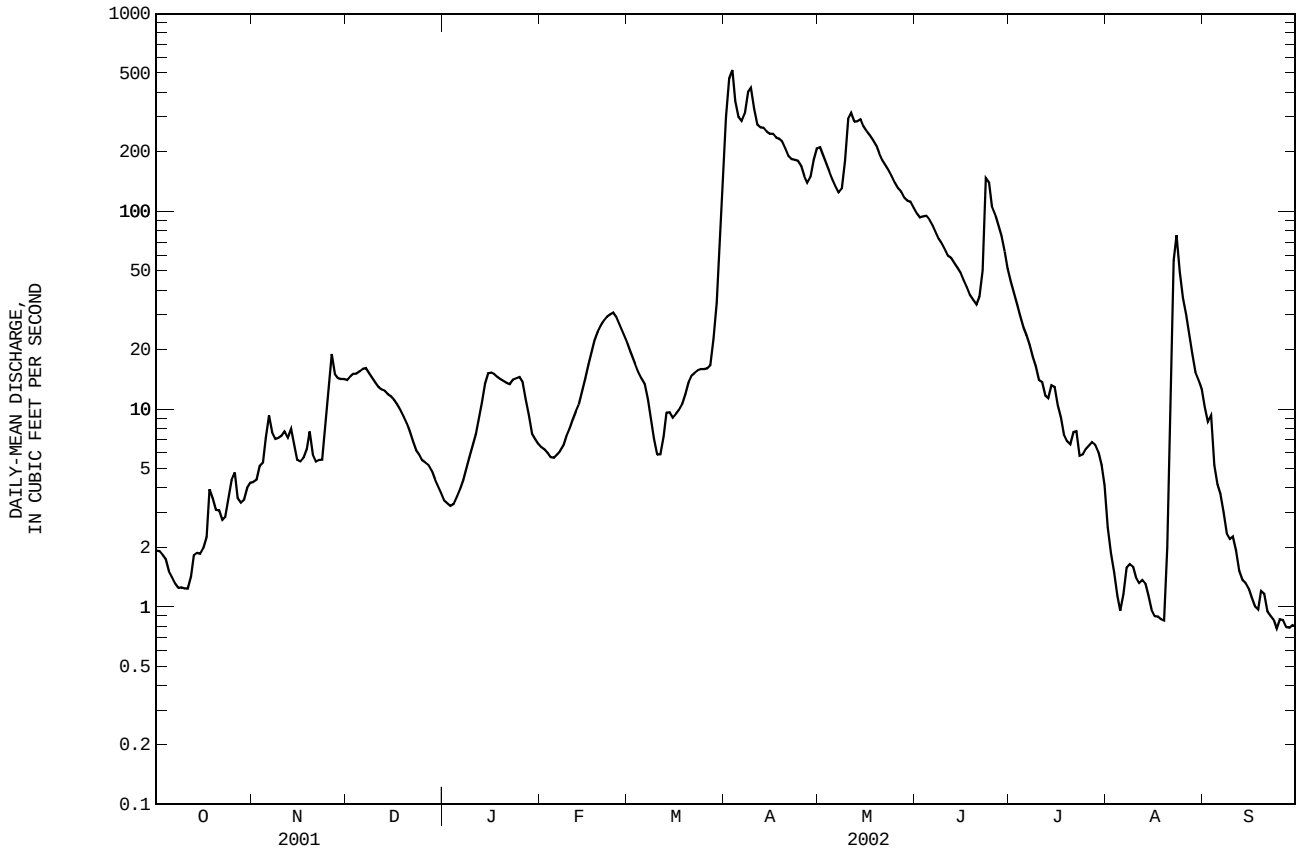
05299650 LAC QUI PARLE RIVER NEAR PROVIDENCE, MN--Continued

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

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	2.53	8.11	10.4	9.52	16.1	20.7	684	259	167	53.9	18.3	2.92
MAX	2.53	8.11	10.4	9.52	16.1	20.7	1349	331	263	93.7	24.6	3.44
(WY)	2002	2002	2002	2002	2002	2002	2001	2001	2001	2001	2001	2001
MIN	2.53	8.11	10.4	9.52	16.1	20.7	263	188	72.0	14.1	12.1	2.40
(WY)	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002

SUMMARY STATISTICS	FOR 2002 WATER YEAR		WATER YEARS 2001 - 2002	
ANNUAL TOTAL	18801.97			
ANNUAL MEAN	51.5		124	
HIGHEST ANNUAL MEAN			276	2001
LOWEST ANNUAL MEAN			51.5	2002
HIGHEST DAILY MEAN	518	Apr 3	2100	Apr 14 2001
LOWEST DAILY MEAN	0.78	Sep 24, 28	0.78	Sep 24 2002
ANNUAL SEVEN-DAY MINIMUM	0.81	Sep 24	0.81	Sep 24 2002
MAXIMUM PEAK FLOW	518a	Apr 3	2140	Apr 14 2001
MAXIMUM PEAK STAGE	14.58b	Apr 4	18.29	Apr 14 2001
INSTANTANEOUS LOW FLOW	0.72c	Sep 30	0.72c	Sep 30 2002
ANNUAL RUNOFF (AC-FT)	37290		89490	
ANNUAL RUNOFF (CFSM)	0.14		0.33	
ANNUAL RUNOFF (INCHES)	1.87		4.49	
10 PERCENT EXCEEDS	183		292	
50 PERCENT EXCEEDS	12		15	
90 PERCENT EXCEEDS	1.4		1.9	

a Estimated daily discharge, backwater from ice.
b Backwater from ice.
c Falling stage.
e Estimated.



05299800 WEST BRANCH LAC QUI PARLE RIVER AT DAWSON, MN

LOCATION.--Lat 44°55'45", long 96°03'09", in SW¼NE¼ sec. 21, T.117 N., R.43 W., Lac qui Parle County, Hydrologic Unit 07020003, on left bank 5 ft downstream from Diagonal St. bridge in Dawson and 1.7 mi upstream from confluence with the Lac qui Parle River.

DRAINAGE AREA.--474 mi^2.

PERIOD OF RECORD.--April 2001 to current year.

GAGE.--Water-stage recorder.

REMARKS.--Records fair except those 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	e3.0	e18	e26	e11	15	e23	723	196	56	29	e2.3	e8.0
2	e2.8	e12	e27	e10	15	e21	670	177	52	27	e0.96	e7.2
3	e2.6	e13	e29	e9.9	14	e19	556	151	48	19	e0.68	e6.5
4	e2.8	e12	e30	e9.8	14	e18	380	132	48	19	e0.90	e7.2
5	e2.9	e13	e35	e10	14	e16	321	120	47	19	e0.80	e6.5
6	e3.3	e13	43	e11	14	e15	313	109	46	17	e2.3	e5.8
7	e3.7	e16	44	e12	14	e15	299	101	43	15	e4.2	e4.9
8	e3.7	e18	40	e12	15	e14	303	103	41	14	e4.4	e4.3
9	e3.7	e18	40	e14	16	e12	335	129	39	13	e4.4	e4.2
10	e4.1	e19	43	e15	15	e11	291	176	36	12	e4.2	e4.6
11	e5.6	e19	45	17	16	e10	247	189	33	12	e4.0	e4.5
12	e7.5	e17	40	21	16	e12	236	174	32	11	e3.8	e4.3
13	e8.4	e19	44	25	16	e13	235	179	31	11	e3.4	e4.1
14	e7.8	e22	39	26	18	e14	222	197	30	10	e3.0	e3.8
15	e10	e25	36	26	19	e14	205	181	30	9.5	e2.6	e3.5
16	e12	e20	41	25	20	e14	191	156	28	8.3	e2.7	e3.7
17	e12	e22	44	23	22	e14	179	136	28	6.4	e2.8	e4.1
18	e11	e24	41	e21	25	e14	167	119	27	5.0	e2.9	e4.1
19	e9.7	e27	41	e20	28	e15	150	108	27	4.6	e2.8	e4.1
20	e12	e26	33	20	35	e16	134	98	27	4.3	e8.1	e3.8
21	e12	e25	36	20	37	e17	126	92	35	5.3	47	e3.1
22	e13	e24	34	20	36	e18	121	90	35	5.3	100	e2.6
23	e13	e33	29	19	36	e19	125	86	45	3.5	101	e2.2
24	e11	e28	24	18	41	e19	124	80	35	e4.1	76	e1.9
25	e13	e26	22	18	32	e19	117	77	37	e7.4	50	e1.9
26	e13	e51	e23	19	35	e19	112	74	41	e8.3	34	e2.0
27	e18	e35	e20	19	e30	e19	106	71	38	e6.9	24	e2.1
28	e15	e27	e18	18	e26	33	110	67	36	e5.9	e19	e2.3
29	e14	e25	e17	17	---	112	141	65	33	e5.4	e15	e2.4
30	e15	e26	e15	16	---	203	184	63	31	e5.5	e12	e2.5
31	e16	---	e12	15	---	501	---	60	---	e4.4	e9.9	---
TOTAL	281.6	673	1011	537.7	634	1279	7423	3756	1115	328.1	549.14	122.2
MEAN	9.08	22.4	32.6	17.3	22.6	41.3	247	121	37.2	10.6	17.7	4.07
MAX	18	51	45	26	41	501	723	197	56	29	101	8.0
MIN	2.6	12	12	9.8	14	10	106	60	27	3.5	0.68	1.9
AC-FT	559	1330	2010	1070	1260	2540	14720	7450	2210	651	1090	242
CFSM	0.02	0.05	0.07	0.04	0.05	0.09	0.52	0.26	0.08	0.02	0.04	0.01
IN.	0.02	0.05	0.08	0.04	0.05	0.10	0.58	0.29	0.09	0.03	0.04	0.01

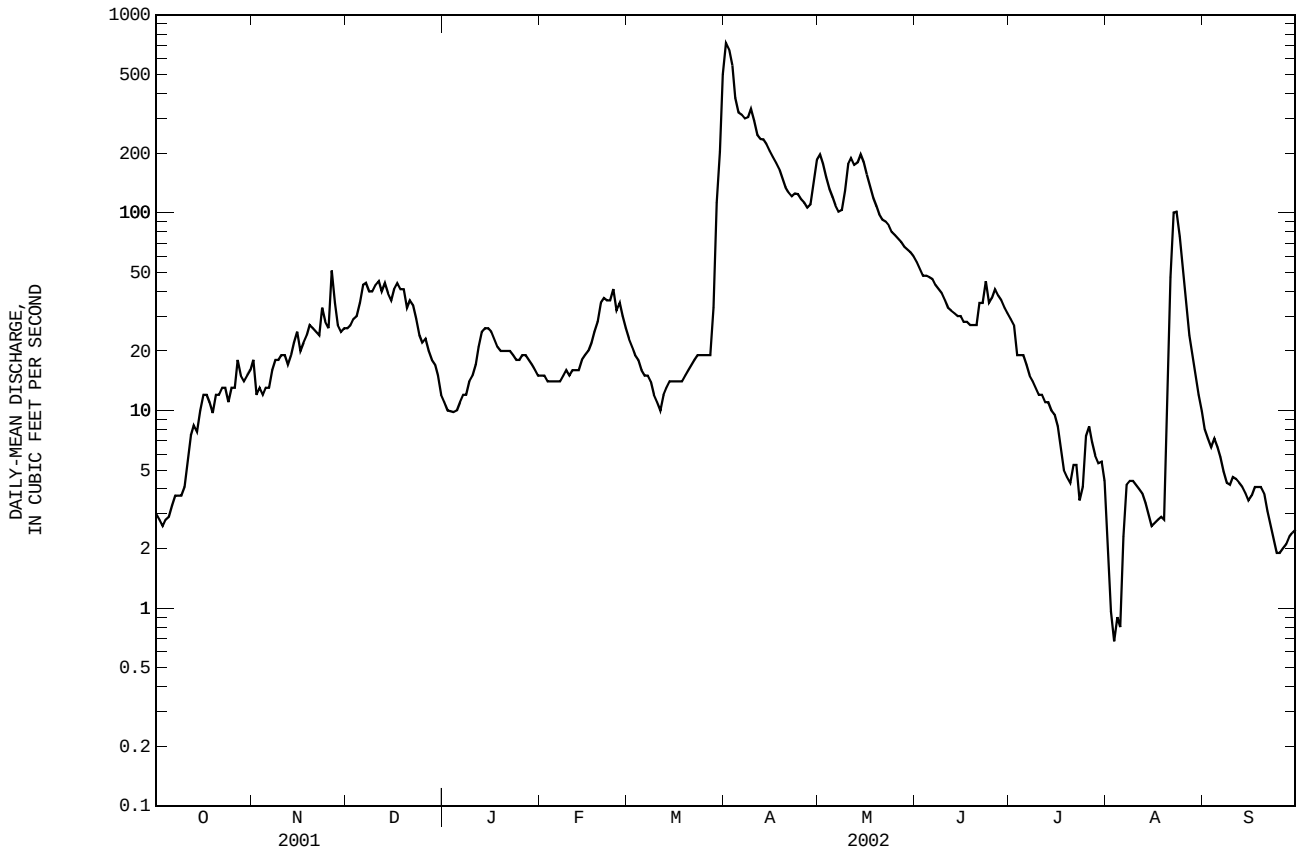
05299800 WEST BRANCH LAC QUI PARLE RIVER AT DAWSON, MN--Continued

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

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	9.08	22.4	32.6	17.3	22.6	41.3	1204	236	206	37.9	14.6	6.81
MAX	9.08	22.4	32.6	17.3	22.6	41.3	2571	351	374	65.2	17.7	9.55
(WY)	2002	2002	2002	2002	2002	2002	2001	2001	2001	2001	2002	2001
MIN	9.08	22.4	32.6	17.3	22.6	41.3	247	121	37.2	10.6	11.6	4.07
(WY)	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2001	2002

SUMMARY STATISTICS	FOR 2002 WATER YEAR			WATER YEARS 2001 - 2002		
ANNUAL TOTAL	17709.74					
ANNUAL MEAN	48.5			179		
HIGHEST ANNUAL MEAN				453		2001
LOWEST ANNUAL MEAN				48.5		2002
HIGHEST DAILY MEAN	723	Apr	1	5050	Apr 13	2001
LOWEST DAILY MEAN	0.68	Aug	3	0.68	Aug 3	2002
ANNUAL SEVEN-DAY MINIMUM	1.7	Aug	1	1.7	Aug 1	2002
MAXIMUM PEAK FLOW	737	Apr	1	5150	Apr 13	2001
MAXIMUM PEAK STAGE	34.24	Apr	1	41.03	Apr 13	2001
ANNUAL RUNOFF (AC-FT)	35130			129700		
ANNUAL RUNOFF (CFSM)	0.10			0.38		
ANNUAL RUNOFF (INCHES)	1.39			5.13		
10 PERCENT EXCEEDS	130			303		
50 PERCENT EXCEEDS	19			24		
90 PERCENT EXCEEDS	3.8			3.7		

e Estimated.



05300000 LAC QUI PARLE RIVER NEAR LAC QUI PARLE, MN

LOCATION.--Lat 44°59'42", long 95°55'09", in SW¼SW¼ sec. 27, T.118 N., R.42 W., Lac qui Parle County, Hydrologic Unit 07020003, on right bank 40 ft downstream from highway bridge and 0.5 mi southwest of village of Lac qui Parle.

DRAINAGE AREA.--960 mi^2.

PERIOD OF RECORD.--April 1910 to November 1914; March 1931 to September 1999 (winter records incomplete prior to 1934), October 1999 to March 2001 (peak flow only), April 2001 to current year. Published as "at Lac qui Parle," 1910-14.

REVISED RECORDS.--WSP 1308: 1912(M), 1935(M).

GAGE.--Water-stage recorder. Datum of gage is 946.98 ft above sea level (NGVD of 1929, Minnesota Department of Transportation benchmark). Apr. 27, 1910 to Nov. 15, 1914, nonrecording gage at site 2 mi downstream at different datum. Mar. 17, 1931 to Mar. 9, 1937, nonrecording gage at site 40 ft upstream at present datum.

REMARKS.--Records good except those for estimated daily discharges, which are fair to 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	41	34	e51	e17	e23	e49	e1020	415	199	107	14	43
2	e36	36	e51	e17	e23	e43	e1160	393	190	89	13	37
3	e32	39	e55	e16	e22	e39	e1080	354	183	80	14	32
4	e27	36	e56	e16	e22	e36	e982	319	182	82	16	30
5	e26	37	e62	e17	e21	e33	e690	292	180	80	16	24
6	e25	37	e72	e19	e21	e30	616	270	173	65	19	21
7	e23	44	e75	e19	e22	e26	636	255	164	52	16	18
8	e22	44	e69	e21	e24	e22	622	262	153	45	15	16
9	e20	42	e67	e23	e25	e20	694	289	144	39	14	14
10	19	41	e70	e26	e25	e18	657	418	136	34	14	14
11	19	41	e72	e29	e26	e17	567	529	130	32	12	e13
12	23	42	e68	e33	e26	e18	527	519	123	30	15	e10
13	26	45	e67	e40	e29	e23	525	499	118	28	17	e8.5
14	31	43	e70	e44	e30	e27	512	524	109	25	16	e8.3
15	31	46	e64	e47	e33	e29	479	513	101	25	15	e7.5
16	31	44	e65	e47	e37	e29	468	466	93	26	15	e6.6
17	32	44	e68	e44	e42	e29	452	424	86	23	18	e6.2
18	32	43	e78	e41	e47	e30	424	390	79	22	21	e6.0
19	31	43	e80	e40	e55	e33	404	358	71	20	15	5.4
20	32	44	e79	e38	e62	e35	371	333	67	22	16	5.0
21	31	45	e67	e37	e69	e38	347	312	77	21	122	4.3
22	31	43	e57	e37	e75	e40	323	292	112	19	185	3.8
23	31	42	e50	e38	e78	e42	320	275	133	18	243	2.8
24	31	54	e41	e37	e78	e43	316	260	234	19	231	2.5
25	33	86	e38	e37	e74	e45	307	248	215	19	180	2.6
26	33	74	e37	e37	e69	e46	290	235	228	18	142	3.3
27	32	e71	e32	e33	e63	e50	274	225	204	21	116	2.9
28	36	e59	e29	e30	e57	e75	275	221	171	21	90	3.2
29	36	e52	e26	e28	---	e193	308	215	145	20	71	3.6
30	35	e52	e24	e26	---	e367	374	214	124	18	58	3.3
31	33	---	e20	e24	---	e744	---	207	---	16	49	---
TOTAL	921	1403	1760	958	1178	2269	16020	10526	4324	1136	1798	357.8
MEAN	29.7	46.8	56.8	30.9	42.1	73.2	534	340	144	36.6	58.0	11.9
MAX	41	86	80	47	78	744	1160	529	234	107	243	43
MIN	19	34	20	16	21	17	274	207	67	16	12	2.5
AC-FT	1830	2780	3490	1900	2340	4500	31780	20880	8580	2250	3570	710
CFSM	0.03	0.05	0.06	0.03	0.04	0.08	0.56	0.35	0.15	0.04	0.06	0.01
IN.	0.04	0.05	0.07	0.04	0.05	0.09	0.62	0.41	0.17	0.04	0.07	0.01

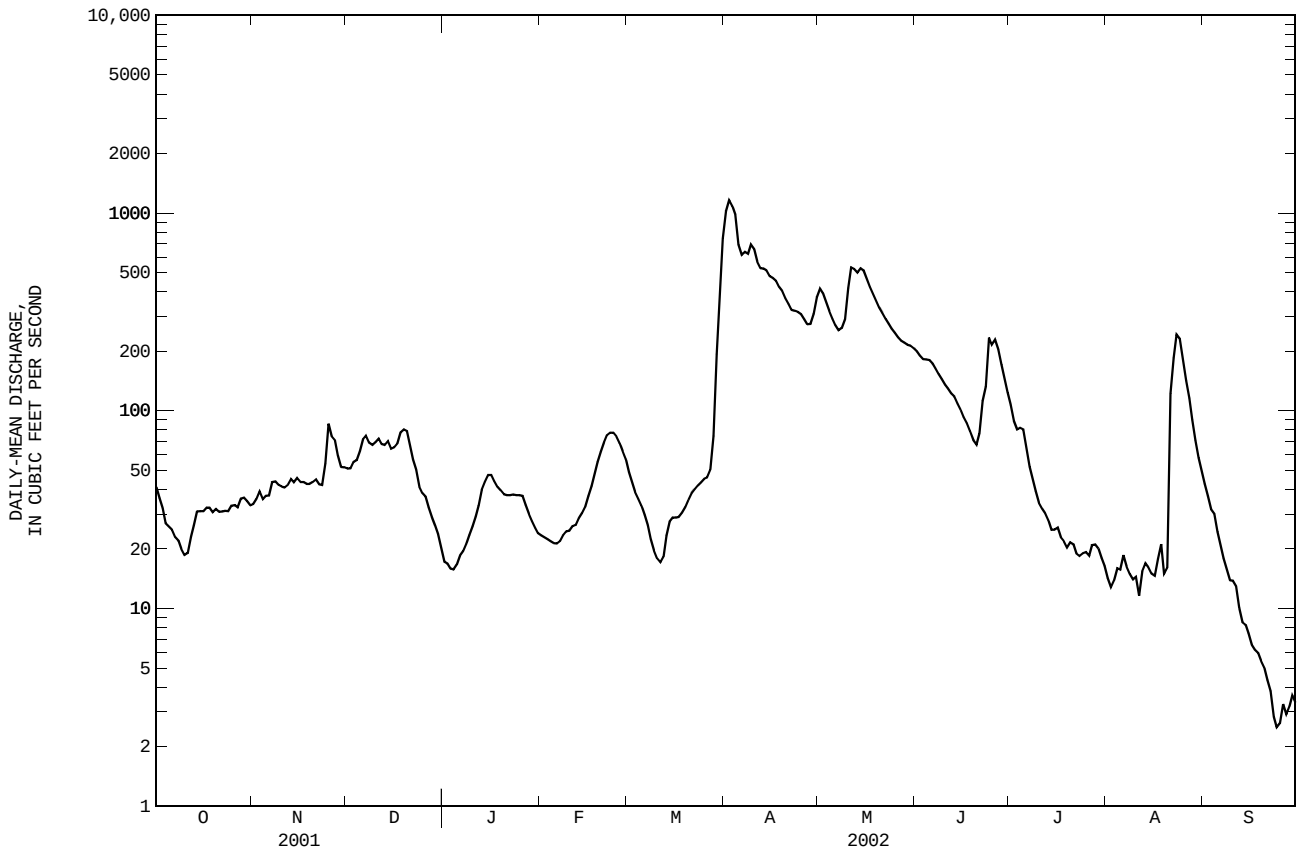
05300000 LAC QUI PARLE RIVER NEAR LAC QUI PARLE, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1910 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	43.0	48.5	26.4	11.9	23.4	297	635	254	273	141	76.2	37.8
MAX	629	378	149	88.1	244	1634	5354	1264	1762	1613	765	535
(WY)	1996	1996	1996	1994	1998	1985	1997	1995	1984	1993	1953	1985
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)	1932	1932	1932	1932	1934	1934	1934	1934	1934	1934	1931	1931

SUMMARY STATISTICS	FOR 2002 WATER YEAR		WATER YEARS 1910 - 2002	
ANNUAL TOTAL	42650.8			
ANNUAL MEAN	117		158a	
HIGHEST ANNUAL MEAN			716	2001
LOWEST ANNUAL MEAN			0.000	1934
HIGHEST DAILY MEAN	1160	Apr 2	16000	Apr 10 1969
LOWEST DAILY MEAN	2.5	Sep 24	0.00b	Jul 15 1931
ANNUAL SEVEN-DAY MINIMUM	3.0	Sep 23	0.00	Jul 15 1931
MAXIMUM PEAK FLOW	1160c	Apr 2	17100	Apr 10 1969
MAXIMUM PEAK STAGE	11.16d	Mar 31	24.37f	Apr 9 1965
INSTANTANEOUS LOW FLOW	2.3	Sep 23	0.00b	Jul 15 1931
ANNUAL RUNOFF (AC-FT)	84600		114600	
ANNUAL RUNOFF (CFSM)	0.12		0.16	
ANNUAL RUNOFF (INCHES)	1.65		2.24	
10 PERCENT EXCEEDS	350		361	
50 PERCENT EXCEEDS	42		23	
90 PERCENT EXCEEDS	16		0.57	

a Median of annual mean discharges is 117 ft^3/s.
b Many days, several years.
c Estimated daily-mean discharge, backwater from ice.
d Backwater from ice.
e Estimated.
f From highwater mark, backwater from ice. Datum then in use.



05301000 MINNESOTA RIVER NEAR LAC QUI PARLE, MN

LOCATION.--Lat 45°01'17", long 95°52'05", in NW¼NE¼ sec.24, T.118 N., R.42 W., Chippewa County, Hydrologic Unit 07020004, on left bank 200 ft downstream from highway bridge and dam, 2.4 mi northeast of city of Lac Qui Parle, and 3.5 mi west of city of Watson.

DRAINAGE AREA.--4,050 mi^2 (approximately).

PERIOD OF RECORD.--October 1942 to September 1994, October 1998 to present.

REVISED RECORDS.--WDR MN-91-2; 1979

GAGE.--Water-stage recorder. Datum of gage is 900.00 ft above sea level (NGVD or 1929, levels by U.S. Army Corps of Engineers). Prior to Nov. 10, 1944, at datum 0.20 ft. lower.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Part of flow from 2,050 mi^2, of Chippewa River Basin at most times diverted into Minnesota River above station. Some regulation by Big Stone Lake since Apr. 17, 1937, Lac qui Parle since Jan. 1938, Marsh Lake since Nov. 1, 1939, and Odessa Dam since May 1974.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 1997 reached a discharge of approximately 43,000 ft^3/s, combination of measured flow through dam and indirect computation of flow over dam; peak stage occurred Apr. 7, 1997 (from U.S. Army Corps of Engineers).

DISCHARGE - TAILWATER, in CFS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	131	286	372	e421	318	e731	1630	2140	1160	979	742	497
2	190	293	e383	420	319	736	2020	1950	1030	604	568	497
3	231	302	512	408	308	730	2350	1620	919	695	449	497
4	230	305	635	359	316	645	2600	1280	642	927	520	394
5	231	298	700	303	301	481	2840	1260	606	892	810	261
6	225	276	771	278	289	472	3040	1260	674	794	926	222
7	222	299	739	270	288	487	3110	1260	719	810	925	222
8	223	315	646	250	287	541	3150	1380	762	730	822	224
9	238	263	654	247	278	562	3150	1680	766	556	578	225
10	289	254	581	244	274	e570	3130	1820	738	548	331	172
11	298	255	524	247	277	571	3090	1960	710	576	328	99
12	326	256	515	244	267	570	3010	2070	713	588	331	69
13	316	256	520	246	273	563	2860	2090	713	593	314	69
14	320	251	527	244	271	561	2760	2120	714	516	416	69
15	322	244	532	267	270	611	2680	2190	711	414	382	71
16	322	242	522	306	270	665	2510	2200	709	337	295	71
17	336	252	526	366	278	662	2360	2040	599	567	116	71
18	331	282	519	437	276	648	2350	1820	458	716	61	71
19	296	265	519	485	290	618	2350	1680	428	552	54	71
20	253	255	517	487	329	603	2290	1600	376	441	41	71
21	254	258	525	486	480	521	2200	1450	386	442	438	72
22	242	258	515	456	640	468	2060	1310	529	531	678	72
23	206	258	e513	363	733	467	1700	1190	900	718	879	76
24	219	323	e510	318	738	466	1480	1200	1390	859	1050	72
25	286	375	e510	319	737	468	1320	1200	1830	902	1050	72
26	208	485	e476	316	e733	468	1310	1210	2050	867	928	72
27	183	740	e462	308	e733	470	1310	1330	1900	866	541	72
28	186	703	e463	309	e733	465	1320	1480	1590	863	290	72
29	204	681	e463	313	---	711	1570	1350	1290	863	397	72
30	245	540	e452	318	---	1150	2130	1220	1240	860	498	72
31	284	---	e422	319	---	1230	---	1210	---	858	498	---
TOTAL	7847	10070	16525	10354	11306	18911	69680	49570	27252	21464	16256	4667
MEAN	253.1	335.7	533.1	334.0	403.8	610.0	2323	1599	908.4	692.4	524.4	155.6
MAX	336	740	771	487	738	1230	3150	2200	2050	979	1050	497
MIN	131	242	372	244	267	465	1310	1190	376	337	41	69
AC-FT	15560	19970	32780	20540	22430	37510	138200	98320	54050	42570	32240	9260
CFSM	0.06	0.08	0.13	0.08	0.10	0.15	0.57	0.39	0.22	0.17	0.13	0.04
IN.	0.07	0.09	0.15	0.10	0.10	0.17	0.64	0.46	0.25	0.20	0.15	0.04

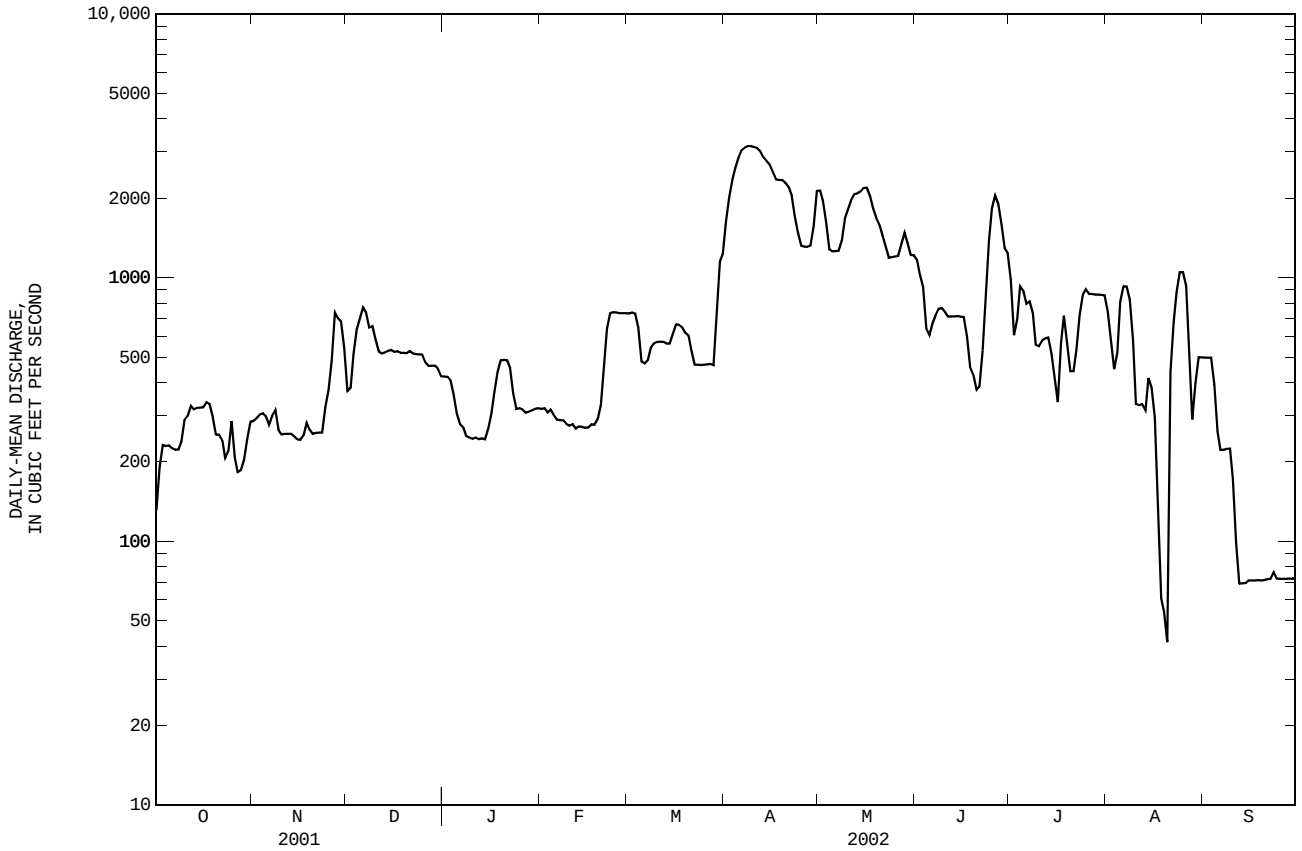
05301000 MINNESOTA RIVER NEAR LAC QUI PARLE, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1943 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	271.7	287.4	232.7	156.9	191.2	844.1	2759	1454	1174	986.0	532.5	266.8
MAX	2924	2327	1204	574	644	4599	14580	5837	4229	7024	6012	2402
(WY)	1987	1985	1985	1987	1999	1994	2001	2001	1984	1993	1993	1986
MIN	4.16	0.46	0.17	0.19	0.094	46.5	151	122	29.5	14.7	11.8	5.59
(WY)	1977	1977	1977	1977	1977	1956	1961	1959	1988	1988	1974	1967

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1943 - 2002	
ANNUAL TOTAL	855486		263902			
ANNUAL MEAN	2344		723.0		763.3	
HIGHEST ANNUAL MEAN					2507	1986
LOWEST ANNUAL MEAN					75.7	1959
HIGHEST DAILY MEAN	29800	Apr 14	3150	Apr 8	29800	Apr 14 2001
LOWEST DAILY MEAN	104	Jan 3	41	Aug 20	0.00a	Oct 19 1951
ANNUAL SEVEN-DAY MINIMUM	123	Jan 1	70	Sep 12	0.00	Oct 19 1951
MAXIMUM PEAK FLOW			3190	Apr 8	30100	Apr 14 2001
MAXIMUM PEAK STAGE			30.33	Apr 8	40.05	Apr 14 2001
INSTANTANEOUS LOW FLOW			4.1b	Aug 18	0.00a	Oct 19 1951
ANNUAL RUNOFF (AC-FT)	1697000		523400		553000	
ANNUAL RUNOFF (CFSM)	0.58		0.18		0.19	
ANNUAL RUNOFF (INCHES)	7.86		2.42		2.56	
10 PERCENT EXCEEDS	5770		1750		1840	
50 PERCENT EXCEEDS	392		510		232	
90 PERCENT EXCEEDS	159		223		27	

a Many days, several years.
b Result of regulation.
e Estimated.



05304500 CHIPPEWA RIVER NEAR MILAN, MN

LOCATION.--Lat 45°06'39", long 95°47'57", in NE¼NE¼ sec. 21, T.119 N., R.41 W., Chippewa County, Hydrologic Unit 07020005, on right bank 20 ft downstream from bridge on State Highway 40, 2.0 mi upstream from small tributary, and 5.5 mi east of Milan.

DRAINAGE AREA.--1,880 mi^2.

PERIOD OF RECORD.--March 1937 to current year.

REVISED RECORDS.--WSP 1145: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 959.69 ft above sea level (NGVD of 1929). Prior to June 15, 1942, nonrecording gage on bridge 800 ft downstream at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are fair to poor. Flow may be influenced by regulation from several small lakes upstream from gage.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 600 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Apr 5	0900	1,060	3.27	Jun 23	0400	*1,490	*4.00
Apr 17	2200	1,110	3.38	Aug 5	2200	740	2.77
May 13	1100	1,070	3.33				

Minimum discharge, 99 ft^3/s, Nov. 28, 29, gage height, 1.18 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	189	194	e262	e158	e153	e191	e894	877	552	608	569	509
2	184	189	e285	e155	e152	e181	e853	848	533	539	571	494
3	180	185	e285	e155	e151	e173	847	823	514	529	592	477
4	175	183	e270	e154	e150	e165	881	781	505	502	667	450
5	169	186	e259	e153	e150	e160	920	754	483	471	720	422
6	166	199	e248	e153	e150	e158	819	735	458	407	730	381
7	166	188	e242	e152	e151	e157	681	720	442	361	713	353
8	168	179	e239	e157	e156	e155	742	774	426	362	707	332
9	170	178	e239	e161	e163	e154	779	904	417	370	697	313
10	174	187	e238	e167	e172	e152	822	992	409	351	697	303
11	173	186	e239	e169	e185	e150	903	985	411	340	679	304
12	176	186	e239	e173	e195	e159	948	1040	425	393	663	304
13	188	185	e237	e177	e201	e205	987	1060	437	387	628	299
14	188	186	e233	e179	e205	e254	988	1060	421	379	578	291
15	189	188	e232	e177	e208	e267	976	1040	393	360	547	281
16	185	187	e228	e173	e208	e263	963	1010	369	333	523	272
17	186	187	e225	e171	e209	e256	1050	958	354	311	500	265
18	191	186	e222	e171	e213	e249	1100	907	337	308	489	257
19	195	181	e220	e169	e218	e241	1060	861	333	294	464	248
20	190	204	e217	e166	e223	e233	1030	818	319	316	443	241
21	187	191	e213	e165	e232	e232	1000	783	420	339	476	231
22	186	192	e208	e162	e244	e231	997	755	1210	372	501	221
23	187	191	e202	e160	e240	e227	990	727	1430	380	528	213
24	185	208	e194	e157	e230	e224	958	701	1310	397	519	208
25	177	243	e189	e159	e220	e219	915	674	1230	431	502	207
26	186	273	e183	e160	e210	e229	874	658	1170	468	482	210
27	179	e160	e176	e161	e200	e242	851	641	1070	483	450	213
28	186	e109	e171	e160	e195	e265	870	628	963	494	430	213
29	193	e142	e168	e157	---	e385	904	614	840	540	428	215
30	190	e215	e164	e155	---	e780	909	609	713	569	447	216
31	191	---	e161	e154	---	e918	---	588	---	568	498	---
TOTAL	5649	5668	6888	5040	5384	7875	27511	25325	18894	12962	17438	8943
MEAN	182	189	222	163	192	254	917	817	630	418	563	298
MAX	195	273	285	179	244	918	1100	1060	1430	608	730	509
MIN	166	109	161	152	150	150	681	588	319	294	428	207
AC-FT	11200	11240	13660	10000	10680	15620	54570	50230	37480	25710	34590	17740
CFSM	0.10	0.10	0.12	0.09	0.10	0.14	0.49	0.43	0.34	0.22	0.30	0.16
IN.	0.11	0.11	0.14	0.10	0.11	0.16	0.54	0.50	0.37	0.26	0.35	0.18

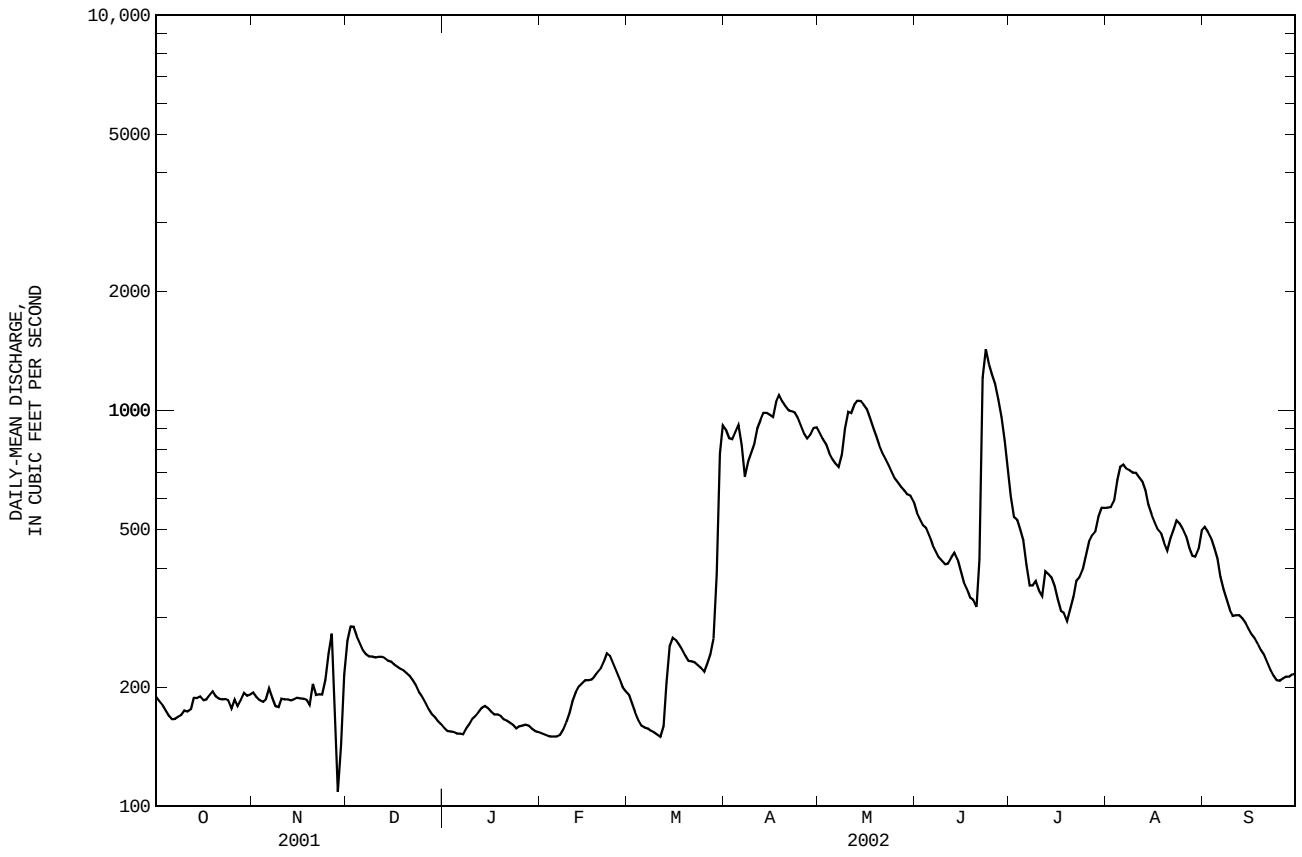
05304500 CHIPPEWA RIVER NEAR MILAN, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	235	201	127	74.8	79.1	405	1134	708	599	480	281	223
MAX	1996	1318	655	425	432	2141	6606	2462	2248	2507	2183	2273
(WY)	1985	1985	1985	1987	1998	1985	1997	1986	1984	1995	1993	1986
MIN	5.51	8.67	4.77	0.094	0.000	2.92	90.9	81.6	36.8	15.1	6.19	3.50
(WY)	1977	1977	1977	1940	1940	1965	1959	1939	1940	1940	1976	1976

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1938 - 2002	
ANNUAL TOTAL	350185		147577			
ANNUAL MEAN	959		404		379a	
HIGHEST ANNUAL MEAN					1307	1986
LOWEST ANNUAL MEAN					45.4	1940
HIGHEST DAILY MEAN	11500	Apr 10	1430	Jun 23	13400	Apr 6 1997
LOWEST DAILY MEAN	54	Jan 2	109	Nov 28	0.00b	Jan 4 1940
ANNUAL SEVEN-DAY MINIMUM	56	Jan 1	151	Feb 1	0.00	Jan 4 1940
MAXIMUM PEAK FLOW			1490	Jun 23	14400	Apr 6 1997
MAXIMUM PEAK STAGE			4.54c	Mar 30	18.03d	Apr 6 1997
INSTANTANEOUS LOW FLOW			99f	Nov 28	0.00b	Jan 4 1940
ANNUAL RUNOFF (AC-FT)	694600		292700		274900	
ANNUAL RUNOFF (CFSM)	0.51		0.22		0.20	
ANNUAL RUNOFF (INCHES)	6.93		2.92		2.74	
10 PERCENT EXCEEDS	2440		898		995	
50 PERCENT EXCEEDS	216		257		149	
90 PERCENT EXCEEDS	64		161		17	

a Median of annual mean discharges is 322 ft^3/s.
b Many days in 1940.
c Backwater from ice.
d From highwater mark.
e Estimated.
f Measured flow, result of freezeup.



05311000 MINNESOTA RIVER AT MONTEVIDEO, MN

LOCATION.--Lat 44°56'00", long 95°44'00", in NW¼NW¼ sec. 19, T.117 N., R.40 W., Yellow Medicine County, Hydrologic Unit 07020004, on right bank 20 ft upstream from bridge on U.S. Highway 212, at Montevideo, and 480 ft downstream from Chippewa River.

DRAINAGE AREA.--6,180 mi^2 (approximately).

PERIOD OF RECORD.--July 1909 to September 1917, October 1917 to September 1929 (no winter records), October 1929 to current year. Prior to October 1939, published as "near Montevideo." Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1035: 1919(M). WSP 1085: 1935-36. WSP 1508: 1912, 1925(M), 1929(M), WDR MN-2000-1; 1995, 1996.

GAGE.--Water-stage recorder. Datum of gage is 909.12 ft above sea level (NGVD of 1929). July 22, 1909 to Feb. 4, 1932, nonrecording gage at bridge 600 ft downstream at present datum. Feb. 5, 1932 to Nov. 26, 1934, nonrecording gage at bridge 100 ft downstream at present datum.

REMARKS.--Records good except those for estimated daily discharges, which are fair to poor. Flow regulated by Big Stone Lake since Apr. 17, 1937, Lac qui Parle since Jan. 1938, and Marsh Lake since Nov. 1, 1939.

DISCHARGE, in CFS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	265	360	450	e478	e416	e810	1800	2540	1500	1540	1020	715
2	256	361	422	e484	e416	e805	2210	2430	1360	1030	858	713
3	342	369	495	e470	e416	e797	2540	2210	1280	747	726	708
4	353	373	647	e410	e418	e728	2700	1790	957	1070	701	692
5	346	373	671	e360	e413	e628	2870	1680	846	1120	784	549
6	331	356	765	e328	e406	e529	3120	1670	877	954	952	453
7	321	347	763	e317	e402	e552	3390	1640	917	915	1240	434
8	321	386	694	e310	e392	e604	3520	1690	956	911	1290	430
9	324	346	726	e294	386	e628	3580	2000	971	717	1140	423
10	340	315	698	e293	370	e636	3590	2200	953	655	875	352
11	370	308	554	e292	369	e638	3600	2340	879	663	810	319
12	390	310	542	e292	362	e645	3580	2460	871	619	811	267
13	400	312	554	e292	360	652	3490	2500	878	687	802	251
14	395	310	564	e291	362	640	3350	2530	874	687	851	248
15	398	299	580	e305	362	636	3240	2590	887	567	844	245
16	398	294	581	e333	365	704	3120	2620	880	598	826	245
17	402	295	575	e390	371	720	2950	2570	854	450	704	239
18	406	308	582	e460	378	723	2840	2380	669	726	529	186
19	403	332	555	e507	384	695	2800	2200	628	632	479	177
20	346	310	e551	e512	410	682	2740	2120	591	496	494	201
21	331	304	e566	e510	452	639	2670	1940	585	467	965	202
22	329	305	e560	e488	640	575	2610	1760	668	481	1100	199
23	309	306	e553	e445	773	544	2310	1620	899	632	1160	197
24	268	333	e555	e426	808	538	2070	1530	1510	809	1350	198
25	317	436	e554	e411	775	536	1850	1520	2150	932	1360	194
26	333	404	e537	e409	e790	537	1790	1520	2430	898	1300	192
27	272	687	e516	e413	e800	542	1780	1550	2440	888	996	189
28	252	712	e516	e411	e810	569	1800	1730	2180	886	623	187
29	258	695	e518	e413	---	743	1880	1730	1800	885	563	185
30	288	656	e504	e413	---	1410	2360	1550	1680	886	697	178
31	341	---	e484	e414	---	1540	---	1510	---	930	715	---
TOTAL	10405	11502	17832	12171	13606	21625	82150	62120	34970	24478	27565	9768
MEAN	335.6	383.4	575.2	392.6	485.9	697.6	2738	2004	1166	789.6	889.2	325.6
MAX	406	712	765	512	810	1540	3600	2620	2440	1540	1360	715
MIN	252	294	422	291	360	529	1780	1510	585	450	479	177
AC-FT	20640	22810	35370	24140	26990	42890	162900	123200	69360	48550	54680	19370
CFSM	0.05	0.06	0.09	0.06	0.08	0.11	0.44	0.32	0.19	0.13	0.14	0.05
IN.	0.06	0.07	0.11	0.07	0.08	0.13	0.49	0.37	0.21	0.15	0.17	0.06

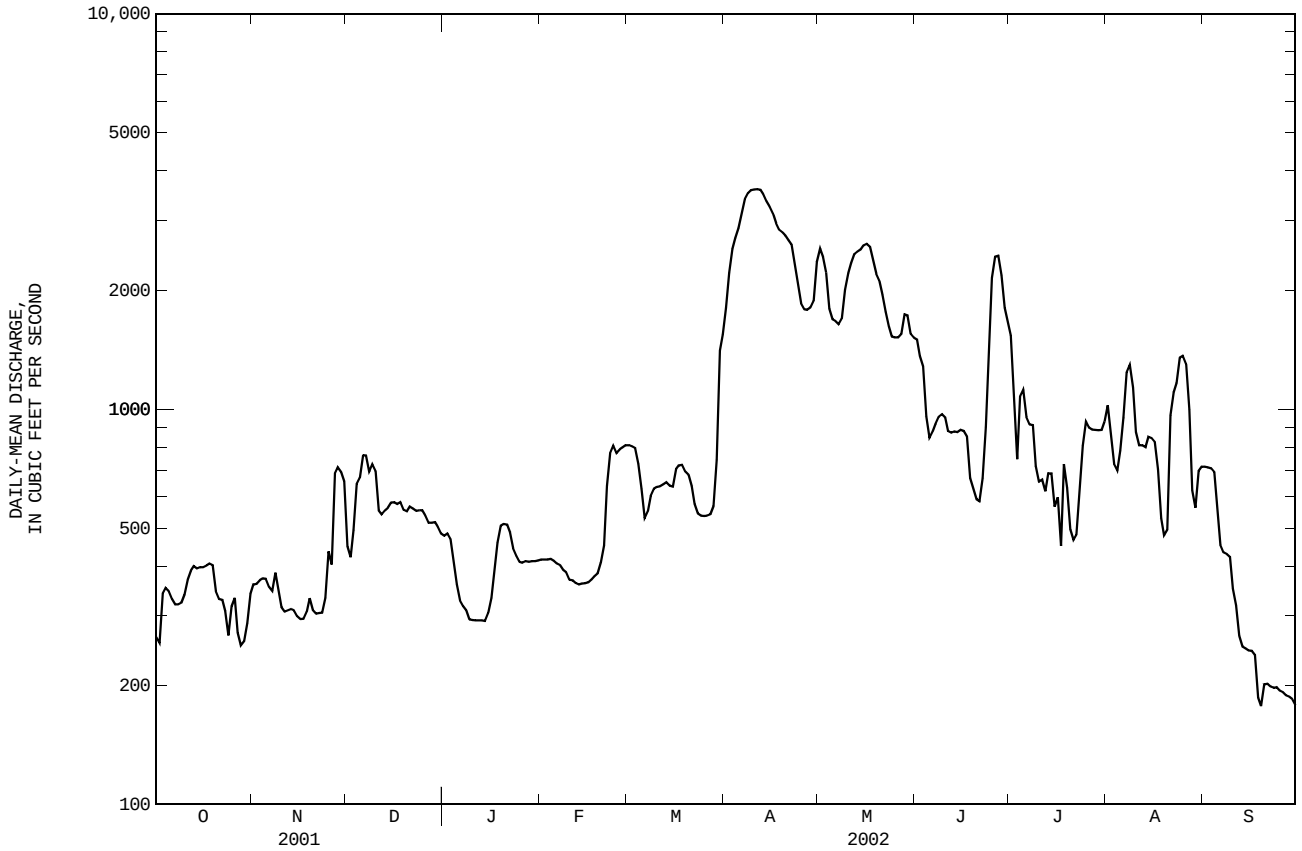
05311000 MINNESOTA RIVER AT MONTEVIDEO, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1909 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	361.6	384.3	285.2	182.0	209.8	944.5	2953	1659	1345	1148	593.1	343.9
MAX	3675	3797	1572	760	864	5363	22320	7315	5088	7853	7084	2613
(WY)	1996	1996	1996	1987	1998	1994	1997	1986	1984	1993	1993	1986
MIN	0.76	1.61	2.35	1.57	1.06	5.06	7.82	3.13	1.40	1.89	0.60	0.57
(WY)	1934	1935	1935	1934	1937	1934	1934	1934	1934	1933	1933	1933

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1909 - 2002	
ANNUAL TOTAL	993494		328192			
ANNUAL MEAN	2722		899.2		915.4a	
HIGHEST ANNUAL MEAN					3166	1997
LOWEST ANNUAL MEAN					4.43	1934
HIGHEST DAILY MEAN	33700	Apr 14	3600	Apr 11	46800	Apr 7 1997
LOWEST DAILY MEAN	142	Jan 1	177	Sep 19	0.00b	Aug 14 1933
ANNUAL SEVEN-DAY MINIMUM	151	Feb 16	189	Sep 24	0.00	Jul 5 1934
MAXIMUM PEAK FLOW			3650	Apr 11	47500	Apr 6 1997
MAXIMUM PEAK STAGE			11.44	Apr 11	23.90	Apr 6 1997
INSTANTANEOUS LOW FLOW			174c	Sep 19	0.00b	Aug 14 1933
ANNUAL RUNOFF (AC-FT)	1971000		651000		663100	
ANNUAL RUNOFF (CFSM)	0.44		0.15		0.15	
ANNUAL RUNOFF (INCHES)	5.98		1.98		2.01	
10 PERCENT EXCEEDS	7760		2200		2330	
50 PERCENT EXCEEDS	465		623		277	
90 PERCENT EXCEEDS	191		305		34	

a Median of annual mean discharges is 672 ft^3/s.
b Many days in 1933, 34, and 36.
c Due in part to regulation.
e Estimated.



05313500 YELLOW MEDICINE RIVER NEAR GRANITE FALLS, MN

LOCATION.--Lat 44°43'18", long 95°31'07", in NW¼SW¼ sec. 35, T.115 N., R.39 W., Yellow Medicine County, Hydrologic Unit 07020004, on right bank 50 ft downstream from highway bridge, 6 mi upstream from mouth, and 8 mi south of town of Granite Falls.

DRAINAGE AREA.--664 mi^2.

PERIOD OF RECORD.--March 1931 to September 1935 (no winter records), October 1935 to September 1938, October 1939 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1508: 1931, 1934(M), 1937(M), 1946(M), 1950(M).

GAGE.--Water-stage recorder. Datum of gage is 960.64 ft above sea level (NGVD of 1929). Mar. 16, 1931 to June 13, 1938, nonrecording gage, on bridge 50 ft upstream at present datum. Oct. 12, 1939 to Nov. 30, 1952, nonrecording gage 500 ft downstream at present datum.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1919 reached a stage of 17.5 ft, from information by local residents, discharge, 25,200 ft^3/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 260 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Apr 3	1700	*1,460	*5.65	May 11	0100	1,170	5.06
May 1	0200	571	4.07	Jun 23	1900	622	4.17

Minimum discharge, 6.1 ft^3/s, Oct. 7, 8, 9, gage height, 2.31 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	7.9	13	e45	e52	e41	e59	e830	562	237	106	12	27
2	8.0	13	e44	e51	e40	e56	e1140	506	235	89	11	26
3	8.0	13	e44	e52	e39	e53	e1310	450	228	78	12	27
4	7.5	14	e46	e53	e38	e49	e1240	402	227	71	17	24
5	7.3	13	e49	e54	e38	e46	e1140	356	222	99	17	22
6	6.7	13	e51	e53	e39	e43	e1060	322	211	80	24	21
7	6.4	13	e54	e54	e39	e42	e952	298	198	65	34	19
8	6.3	13	e56	e55	e38	e40	865	303	182	55	28	18
9	6.9	13	e59	e60	e38	e39	887	452	174	49	29	17
10	8.0	16	e63	e63	e37	e38	796	1010	164	44	33	16
11	7.2	18	e65	e66	e38	e37	704	1100	152	43	25	14
12	9.4	18	e64	e68	e39	e37	679	901	139	42	25	12
13	11	20	e63	e68	e40	e37	691	870	127	46	20	12
14	12	18	e61	e68	e42	e37	672	897	117	47	18	11
15	11	16	e55	e68	e44	e37	640	778	112	41	15	10
16	11	13	e64	e68	e47	e37	627	658	104	35	14	9.4
17	13	14	e70	e65	e51	e36	583	568	97	30	13	8.5
18	13	23	e74	e63	60	e36	599	501	90	28	12	7.7
19	12	20	e73	e63	67	e36	621	451	85	24	10	7.1
20	13	17	e69	e60	76	e36	547	411	80	23	11	7.0
21	11	14	e66	e58	83	e35	480	374	84	21	27	6.8
22	12	13	e61	e57	88	e34	442	343	138	19	27	6.5
23	12	13	e54	e57	84	e34	437	317	532	16	26	6.8
24	12	25	e44	e54	e77	e34	437	295	520	15	54	6.4
25	12	37	e42	e54	e68	e35	423	277	380	18	51	6.7
26	12	e42	e48	e55	e64	e36	383	261	279	17	48	7.1
27	12	e47	e50	e52	e61	e40	347	250	221	17	42	7.1
28	14	e43	e52	e49	e63	e72	340	242	179	15	37	6.9
29	13	e47	e52	e45	---	e134	410	242	149	13	33	7.3
30	24	e47	e51	e44	---	e268	525	239	124	13	44	9.1
31	14	---	e51	e42	---	e521	---	234	---	12	33	---
TOTAL	333.6	639	1740	1771	1479	2074	20807	14870	5787	1271	802	386.4
MEAN	10.8	21.3	56.1	57.1	52.8	66.9	694	480	193	41.0	25.9	12.9
MAX	24	47	74	68	88	521	1310	1100	532	106	54	27
MIN	6.3	13	42	42	37	34	340	234	80	12	10	6.4
AC-FT	662	1270	3450	3510	2930	4110	41270	29490	11480	2520	1590	766
CFSM	0.02	0.03	0.08	0.09	0.08	0.10	1.04	0.72	0.29	0.06	0.04	0.02
IN.	0.02	0.04	0.10	0.10	0.08	0.12	1.17	0.83	0.32	0.07	0.04	0.02

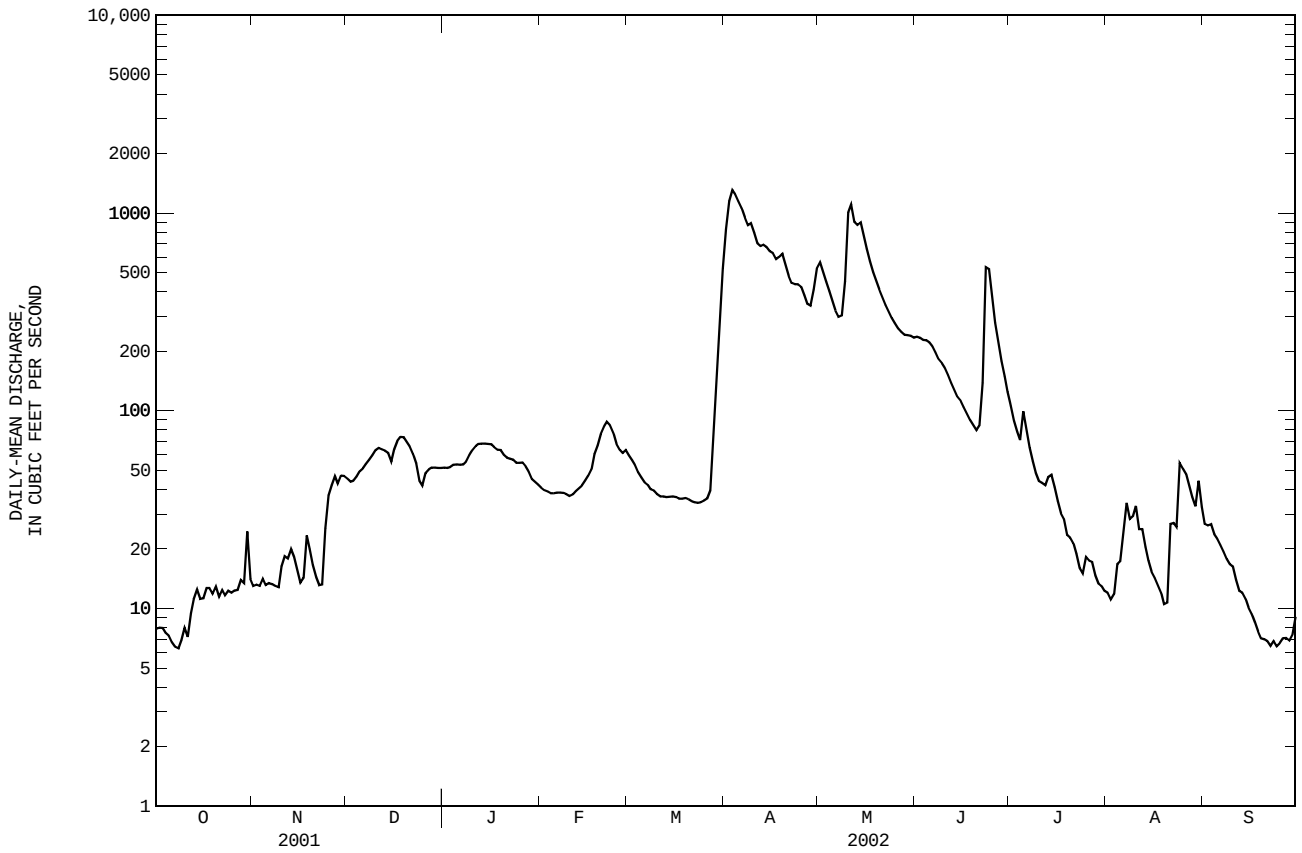
05313500 YELLOW MEDICINE RIVER NEAR GRANITE FALLS, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	42.3	45.9	29.7	14.4	19.6	218	526	211	275	139	67.6	41.2
MAX	561	392	256	88.3	149	933	3302	1087	2484	1600	510	1005
(WY)	1996	1996	1996	1996	1998	1986	1969	1944	1984	1993	1953	1986
MIN	1.41	1.60	1.39	0.90	0.13	3.67	2.58	1.18	1.18	0.34	0.38	0.47
(WY)	1937	1938	1936	1948	1959	1975	1934	1934	1934	1933	1934	1976

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1931 - 2002	
ANNUAL TOTAL	107040.1		51960.0			
ANNUAL MEAN	293		142		144a	
HIGHEST ANNUAL MEAN					566	1993
LOWEST ANNUAL MEAN					8.32	1959
HIGHEST DAILY MEAN	3800	Apr 26	1310	Apr 3	16400	Apr 10 1969
LOWEST DAILY MEAN	3.8	Jan 3	6.3	Oct 8	0.00b	Jul 26 1931
ANNUAL SEVEN-DAY MINIMUM	4.0	Jan 1	6.8	Sep 19	0.00	Jan 21 1948
MAXIMUM PEAK FLOW			1460c	Apr 3	17200	Apr 10 1969
MAXIMUM PEAK STAGE			5.65d	Apr 3	14.90	Apr 10 1969
INSTANTANEOUS LOW FLOW			6.1	Oct 7	0.00b	Jul 26 1931
ANNUAL RUNOFF (AC-FT)	212300		103100		104500	
ANNUAL RUNOFF (CFSM)	0.44		0.21		0.22	
ANNUAL RUNOFF (INCHES)	6.00		2.91		2.95	
10 PERCENT EXCEEDS	772		463		335	
50 PERCENT EXCEEDS	22		46		22	
90 PERCENT EXCEEDS	4.4		12		2.7	

a Median of annual mean discharges is 93.2 ft^3/s.
b Many days, several years.
c Measurement of flow.
d Backwater from ice.
e Estimated



05315000 REDWOOD RIVER NEAR MARSHALL, MN

LOCATION.--Lat 44°25'49", long 95°50'43", in SW¼SE¼ sec. 12, T.111 N., R.42 W., Lyon County, Hydrologic Unit 07020006, on right bank 1.7 mi upstream from Redwood River diversion structure on southwest edge of town of Marshall, MN. Prior to Apr. 10, 1980, at site 5 mi downstream.

DRAINAGE AREA.--259 mi^2.

PERIOD OF RECORD.--March 1940 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WDR MN-89-2: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,188.23 ft above sea level (NGVD of 1929). March 1940 to April 9, 1980, nonrecording gage 5.0 mi downstream from present site at datum 43.35 ft lower (crest-stage gage added June 12, 1968). From March 1964 to April 1980, nonrecording gage and crest-stage gage on diversion channel 1.5 mi downstream at datum 1,100.00 ft above sea level.

REMARKS.--Records fair except those for estimated daily discharge, which are fair to poor. Water diverted at medium and high stages into diversion channel 3.4 mi below station. Diversion began Mar. 18, 1964. Unknown amount of natural diversion into Cottonwood River basin occurs at extremely high stages 0.8 mi below 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	8.3	10	32	e38	e25	e33	e372	226	107	97	10	25
2	7.9	11	34	e37	e25	e31	e360	206	105	87	8.4	24
3	7.9	11	33	e36	e24	e30	306	189	275	82	9.4	21
4	8.1	11	34	e35	e24	e30	279	177	326	74	13	18
5	8.0	11	40	e34	e24	e28	260	165	278	67	11	17
6	7.9	11	51	e34	e25	e28	247	158	224	61	21	16
7	8.1	11	e51	e33	e28	e27	254	155	189	54	26	13
8	8.3	11	e51	e33	e30	e27	231	217	167	47	28	11
9	8.9	10	e49	e33	e31	e27	209	307	156	42	40	10
10	9.9	11	e48	e35	e31	e27	196	277	146	38	42	12
11	9.3	10	e48	e36	e31	e27	200	264	138	38	33	8.4
12	10	11	e47	e36	e31	e30	217	316	126	32	32	7.4
13	11	11	e47	e36	e30	e36	210	321	118	28	28	7.6
14	11	11	e47	e36	e30	e41	213	299	111	26	25	8.3
15	11	11	e48	e35	e30	e41	205	283	101	23	24	7.4
16	11	11	e50	e33	e30	e40	196	268	93	21	22	6.9
17	11	12	e52	e33	e31	e40	214	255	85	18	23	6.4
18	11	12	e52	e32	e35	e44	223	243	78	17	20	5.6
19	11	13	e50	e32	40	e43	201	232	74	16	19	5.6
20	11	13	e48	e31	43	e43	184	217	73	15	17	5.4
21	11	13	e47	e31	43	e42	182	204	172	13	49	4.4
22	11	13	e46	e31	38	e41	181	189	364	13	62	4.0
23	11	13	e45	e30	44	e41	188	182	310	12	58	4.8
24	9.9	38	e44	e31	e42	e40	186	163	247	11	55	5.1
25	9.6	67	e43	e31	e40	e39	168	152	192	11	48	5.8
26	9.9	45	e43	e30	e38	e38	148	143	159	9.2	41	7.6
27	11	29	e42	e28	e37	e43	150	138	140	8.7	37	7.3
28	11	38	e42	e28	e34	e93	192	129	128	11	34	7.7
29	10	32	e41	e27	---	e186	252	123	116	15	32	9.3
30	10	31	e41	e26	---	e294	252	122	106	17	29	9.3
31	10	---	e40	e26	---	e354	---	115	---	13	27	---
TOTAL	305.0	542	1386	1007	914	1884	6676	6435	4904	1016.9	923.8	301.3
MEAN	9.84	18.1	44.7	32.5	32.6	60.8	223	208	163	32.8	29.8	10.0
MAX	11	67	52	38	44	354	372	321	364	97	62	25
MIN	7.9	10	32	26	24	27	148	115	73	8.7	8.4	4.0
AC-FT	605	1080	2750	2000	1810	3740	13240	12760	9730	2020	1830	598
CFSM	0.04	0.07	0.17	0.13	0.13	0.23	0.86	0.80	0.63	0.13	0.12	0.04
IN.	0.04	0.08	0.20	0.14	0.13	0.27	0.96	0.92	0.70	0.15	0.13	0.04

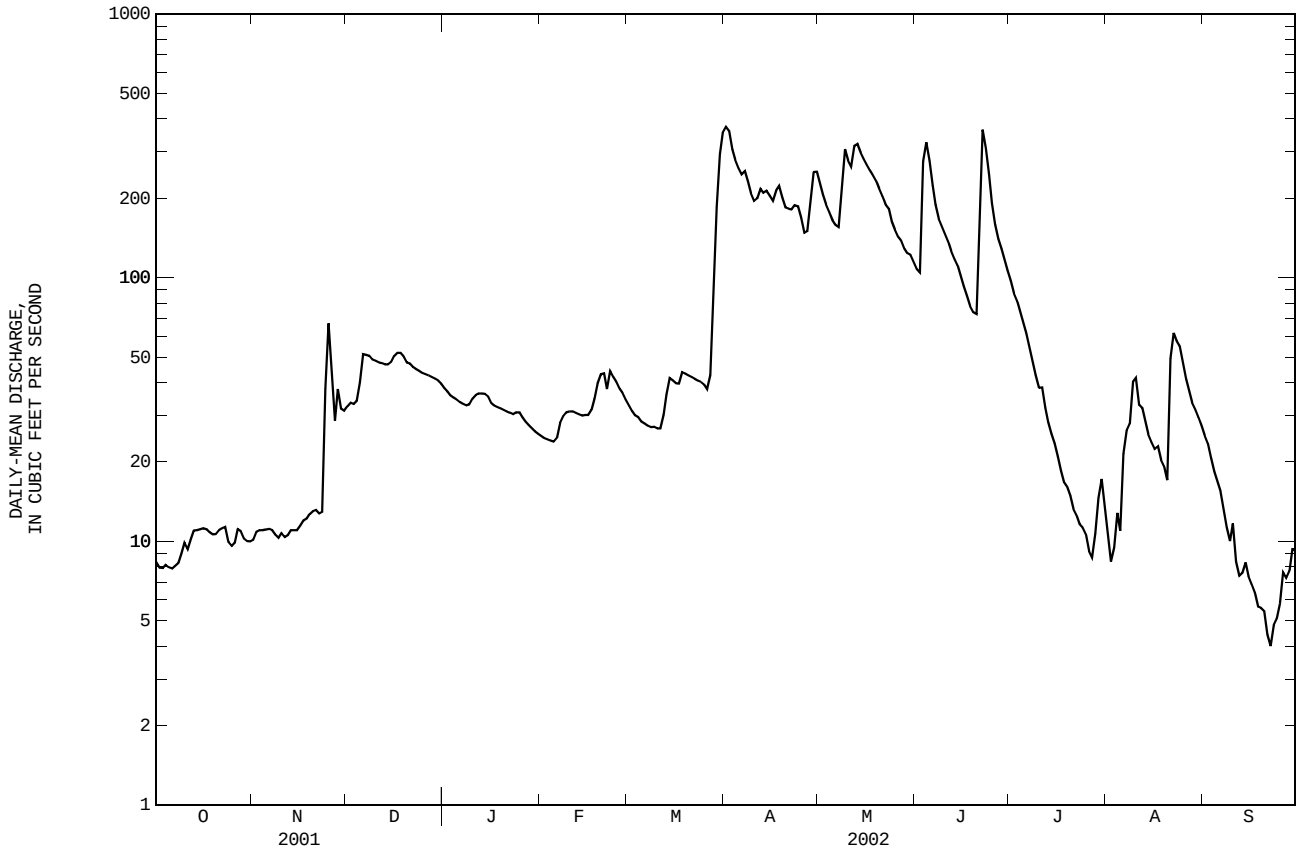
05315000 REDWOOD RIVER NEAR MARSHALL, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	27.4	27.5	16.3	9.28	16.4	121	245	128	121	70.1	34.1	25.3
MAX	310	202	115	59.4	101	571	1252	1205	936	1161	610	292
(WY)	1996	1996	1999	1994	1983	1983	2001	1993	1993	1993	1993	1986
MIN	0.029	0.58	0.87	0.000	0.090	2.70	7.36	3.90	0.83	0.058	0.042	0.007
(WY)	1977	1977	1977	1977	1979	1965	1990	1981	1976	1976	1941	1941

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1940 - 2002	
ANNUAL TOTAL	65357.1		26295.0			
ANNUAL MEAN	179		72.0		70.7a	
HIGHEST ANNUAL MEAN					421	1993
LOWEST ANNUAL MEAN					5.13	1981
HIGHEST DAILY MEAN	3670	Apr 24	372	Apr 1	5300	May 9 1993
LOWEST DAILY MEAN	7.1	Feb 27	4.0	Sep 22	0.00b	Jul 28 1940
ANNUAL SEVEN-DAY MINIMUM	7.4	Jan 1	5.0	Sep 18	0.00	Jul 28 1940
MAXIMUM PEAK FLOW			392	Jun 21	6380	May 9 1993
MAXIMUM PEAK STAGE			12.71c	Mar 30	17.00	May 9 1993
INSTANTANEOUS LOW FLOW			3.2	Sep 23	0.00b	Jul 28 1940
ANNUAL RUNOFF (AC-FT)	129600		52160		51220	
ANNUAL RUNOFF (CFSM)	0.69		0.28		0.27	
ANNUAL RUNOFF (INCHES)	9.39		3.78		3.71	
10 PERCENT EXCEEDS	489		213		168	
50 PERCENT EXCEEDS	21		34		13	
90 PERCENT EXCEEDS	8.2		9.9		2.0	

a Median of annual mean discharges is 45.0 ft^3/s.
b Many days, several years.
c Backwater from ice.
e Estimated.



05316500 REDWOOD RIVER NEAR REDWOOD FALLS, MN

LOCATION.--Lat 44°31'25", long 95°10'20", in SE¼NE¼ sec. 9, T.112 N., R.36 W., Redwood County, Hydrologic Unit 07020006, on right bank 4 ft upstream from highway bridge, 3 mi west of town of Redwood Falls, and 8.5 mi upstream from mouth.

DRAINAGE AREA.--629 mi^2.

PERIOD OF RECORD.--July 1909 to September 1914 (no winter records except 1911-12). August 1930 to September 1935 (no winter records), October 1935 to current year.

REVISED RECORDS.--WDR MN-89-2: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 972.33 ft above sea level (NGVD of 1929). July 1909 to September 1914, nonrecording gage at bridge 20 ft downstream at datum 0.22 ft lower. August 1930 to Oct. 25, 1949, nonrecording gage, at bridge 20 ft downstream at present datum.

REMARKS.--Records good except those for estimated daily discharges, which are fair to poor. Natural discharge affected by unknown amount of interbasin flow between Yellow Medicine, Redwood, and Cottonwood River basins during extreme floods.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 400 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Apr 1	1700	1,100a	--	Jun 5	0200	855	3.89
Apr 30	1800	705	3.64	Jun 22	1400	*1,610	*5.52
May 9	1800	1,030	4.27	Jul 3	1100	1,410	5.14

Minimum discharge, 21 ft^3/s, Sept. 24, 25, gage height, 1.64 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	28	34	145	e128	e93	e73	e1110	693	281	285	59	69
2	26	33	140	e124	e91	e72	1090	624	273	253	50	65
3	26	30	e142	e120	e88	e71	1010	539	438	643	49	59
4	25	30	144	e114	e86	e70	903	465	817	429	68	55
5	25	30	150	e109	e84	e69	736	405	823	292	86	52
6	23	30	175	e106	e83	e69	667	470	691	238	74	49
7	24	31	209	e105	e85	e69	634	412	565	204	96	46
8	24	26	e208	e106	e88	e69	617	553	469	175	103	43
9	24	26	e196	e107	e92	e68	589	972	405	155	85	40
10	26	29	e189	e111	e93	e68	549	1000	366	139	84	36
11	29	29	e179	e113	e93	e69	539	994	337	141	98	36
12	27	28	e179	e114	e93	e87	607	1010	312	198	96	42
13	30	30	e179	e115	e92	e103	657	1000	293	148	91	36
14	29	33	e181	e115	e90	e101	680	982	277	120	80	35
15	33	41	e184	e113	e90	e95	671	945	261	106	71	33
16	34	34	e190	e110	e90	e90	621	869	244	94	66	31
17	34	32	e201	e108	e93	e93	572	765	231	84	75	29
18	34	33	e208	e106	e94	e91	563	682	220	77	66	28
19	34	31	e210	e105	e95	e88	562	615	208	72	61	27
20	33	30	e210	e105	e96	e85	507	556	199	69	55	26
21	32	31	e204	e105	e95	e82	447	505	529	64	233	26
22	31	33	e192	e106	e93	e79	446	466	1510	59	288	25
23	31	33	e187	e106	e85	e78	465	434	1390	56	230	24
24	32	51	e181	e104	e85	e77	474	389	1150	53	186	24
25	32	168	e173	e110	e81	e75	439	364	967	69	155	23
26	30	293	e164	e112	e76	e82	380	347	767	62	129	26
27	27	241	e156	e112	e76	e118	349	333	593	55	111	26
28	28	138	e149	e109	e75	e235	393	321	476	62	99	28
29	28	161	e143	e104	---	e436	579	312	384	115	91	31
30	30	163	e136	e99	---	e718	690	308	327	84	81	28
31	33	---	e133	e95	---	e1030	---	293	---	67	74	---
TOTAL	902	1932	5437	3396	2475	4610	18546	18623	15803	4668	3190	1098
MEAN	29.1	64.4	175	110	88.4	149	618	601	527	151	103	36.6
MAX	34	293	210	128	96	1030	1110	1010	1510	643	288	69
MIN	23	26	133	95	75	68	349	293	199	53	49	23
AC-FT	1790	3830	10780	6740	4910	9140	36790	36940	31350	9260	6330	2180
CFSM	0.05	0.10	0.28	0.17	0.14	0.24	0.98	0.96	0.84	0.24	0.16	0.06
IN.	0.05	0.11	0.32	0.20	0.15	0.27	1.10	1.10	0.93	0.28	0.19	0.06

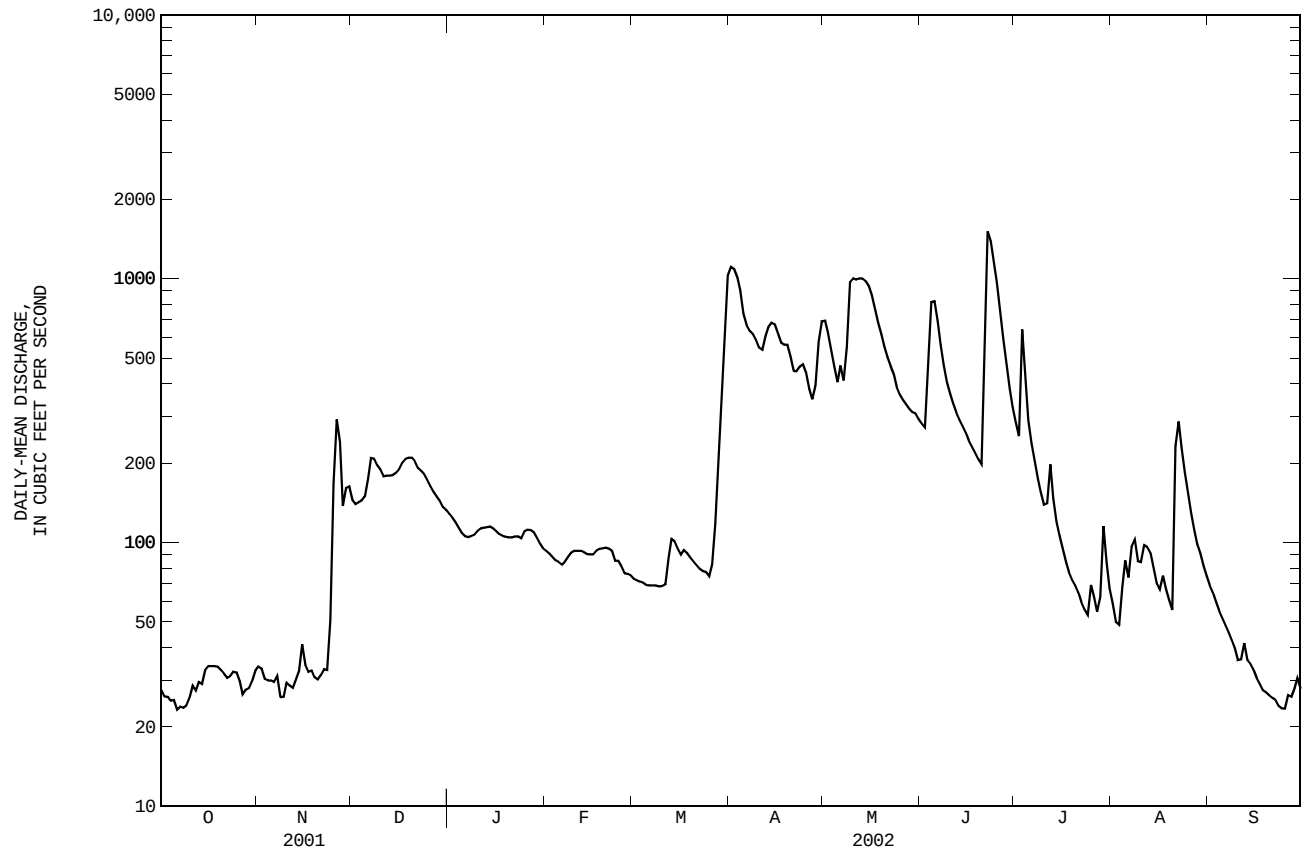
05316500 REDWOOD RIVER NEAR REDWOOD FALLS, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1909 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	55.8	60.9	38.8	18.9	24.5	237	466	235	264	152	78.5	50.7
MAX	509	541	245	110	167	1289	2880	1530	2724	1994	934	673
(WY)	1996	1980	1983	2002	1983	1983	1969	1993	1993	1993	1993	1986
MIN	0.84	0.96	0.46	0.19	0.20	1.54	14.6	2.75	1.01	0.44	0.51	0.31
(WY)	1937	1936	1936	1940	1937	1965	1934	1934	1934	1934	1934	1976

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1909 - 2002	
ANNUAL TOTAL	139928		80680			
ANNUAL MEAN	383		221		154b	
HIGHEST ANNUAL MEAN					789	1993
LOWEST ANNUAL MEAN					10.8	1959
HIGHEST DAILY MEAN	5620	Apr 25	1510	Jun 22	13200	Apr 9 1969
LOWEST DAILY MEAN	14	Jan 3	23	Oct 6, Sep 25	0.00c	Jan 17 1940
ANNUAL SEVEN-DAY MINIMUM	16	Jan 1	24	Oct 3	0.01	Jan 25 1940
MAXIMUM PEAK FLOW			1610	Jun 22	19700	Jun 18 1957
MAXIMUM PEAK STAGE			8.30d	Mar 31	18.01d	Mar 29 1997
INSTANTANEOUS LOW FLOW			21	Sep 24	0.00c	Jan 17 1940
ANNUAL RUNOFF (AC-FT)	277500		160000		111700	
ANNUAL RUNOFF (CFSM)	0.61		0.35		0.25	
ANNUAL RUNOFF (INCHES)	8.28		4.77		3.33	
10 PERCENT EXCEEDS	1090		616		366	
50 PERCENT EXCEEDS	67		105		34	
90 PERCENT EXCEEDS	18		30		2.8	

a Estimated daily, backwater from ice.
b Median of annual mean discharges is 100 ft^3/s.
c Many days in 1940 and 1959.
d Backwater from ice.
e Estimated.



05316580 MINNESOTA RIVER AT MORTON, MN

LOCATION.--Lat 44°32'46", long 94°59'46", in NE¼SE¼ sec. 36, T.113 N., R.35 W., Redwood County, Hydrologic Unit 07020007, on right bank 10 ft downstream from highway bridge, ½ mi southwest of town of Morton, and 203 mi upstream from mouth.

DRAINAGE AREA.--8,970 mi^2.

PERIOD OF RECORD.--October 2000 to current year.

GAGE.--Water-stage recorder.

REMARKS.--Records good except those for estimated daily discharges, which are fair to poor. Some regulation from Big Stone Lake, Marsh Lake, and Lac qui Parle.

DISCHARGE, in CFS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	381	393	1030	e680	e721	e1060	e3990	4260	e2720	e3550	e1070	e1330
2	446	425	941	e640	e724	e1080	e4580	e4510	e2580	e3100	e1080	e1300
3	295	448	829	e630	e721	e1080	4910	e4360	e2580	e2730	e1070	e1200
4	304	450	788	e625	e721	e1080	5160	e4010	e2580	e1950	e1010	e1150
5	359	460	857	e620	e714	e1070	5240	e3500	e2470	e2110	e943	e1110
6	390	469	1010	e610	e717	e1050	5300	e3230	e2150	e1980	e948	e1030
7	384	469	e1050	e600	e716	e983	5480	e3120	e1940	e1700	e1040	e946
8	377	460	e1090	e600	e716	e937	5730	3240	e1860	e1560	e1260	e849
9	375	442	e1090	e580	e716	e912	5970	e3900	e1800	e1530	e1430	e814
10	380	455	e1090	e590	e723	e890	6140	e4470	e1770	e1300	e1370	e810
11	387	443	e1090	e590	e726	e886	6310	5160	e1840	e1260	e1210	e803
12	392	419	e1060	e590	e726	e884	6430	5550	e1720	e1210	e1100	e732
13	434	425	1050	e590	e723	e896	6570	e5610	e1620	e1170	e1080	e724
14	477	427	1040	e590	e723	e911	6660	e5590	e1560	e1180	e1010	e651
15	501	423	1050	e600	e723	e923	6520	e5530	e1530	e1080	e987	e628
16	499	426	1000	e600	e729	e929	6150	e5320	e1500	e1040	e1010	e601
17	495	415	1060	e610	e735	e934	5770	e5080	e1460	e1000	e1020	e594
18	552	400	1160	e608	e738	e952	5490	e4780	e1430	e960	e939	e612
19	560	394	e1120	e625	e763	e993	5270	e4440	e1360	e926	e830	e595
20	497	407	e1070	e650	e811	e999	5060	e4090	e1360	e889	e751	e552
21	488	422	e1020	e696	e889	e993	4810	e3770	e1730	e860	1030	e496
22	457	416	e919	e745	e986	e973	4640	e3510	e2470	e846	2130	e476
23	421	410	e839	e804	e1040	e951	4530	e3270	e3120	e840	e3060	e453
24	347	488	e781	e810	e1040	e930	e4330	e3020	e3800	e855	e2820	e443
25	409	657	e783	e802	e1020	e928	3940	e2810	e4490	e938	e2520	e447
26	386	893	e785	e771	e1000	e936	3570	e2720	e4980	e1100	e2320	e458
27	391	982	e781	e744	e1000	e1010	3350	e2680	5220	e1130	e2140	e468
28	416	901	e770	e747	e1010	e1200	3370	e2630	e5200	e1120	e1880	e473
29	387	1020	e750	e727	---	e1790	e3460	e2760	e4980	e1170	e1510	e478
30	366	1070	e710	e717	---	e2790	e3790	2830	e4320	e1160	e1180	e492
31	366	---	e680	e715	---	e3440	---	2790	---	e1130	e1200	---
TOTAL	12919	15909	29293	20506	22571	35390	152520	122540	78140	43374	42948	21715
MEAN	416.7	530.3	944.9	661.5	806.1	1142	5084	3953	2605	1399	1385	723.8
MAX	560	1070	1160	810	1040	3440	6660	5610	5220	3550	3060	1330
MIN	295	393	680	580	714	884	3350	2630	1360	840	751	443
AC-FT	25620	31560	58100	40670	44770	70200	302500	243100	155000	86030	85190	43070
CFSM	0.05	0.06	0.11	0.07	0.09	0.13	0.57	0.44	0.29	0.16	0.15	0.08
IN.	0.05	0.07	0.12	0.09	0.09	0.15	0.63	0.51	0.32	0.18	0.18	0.09

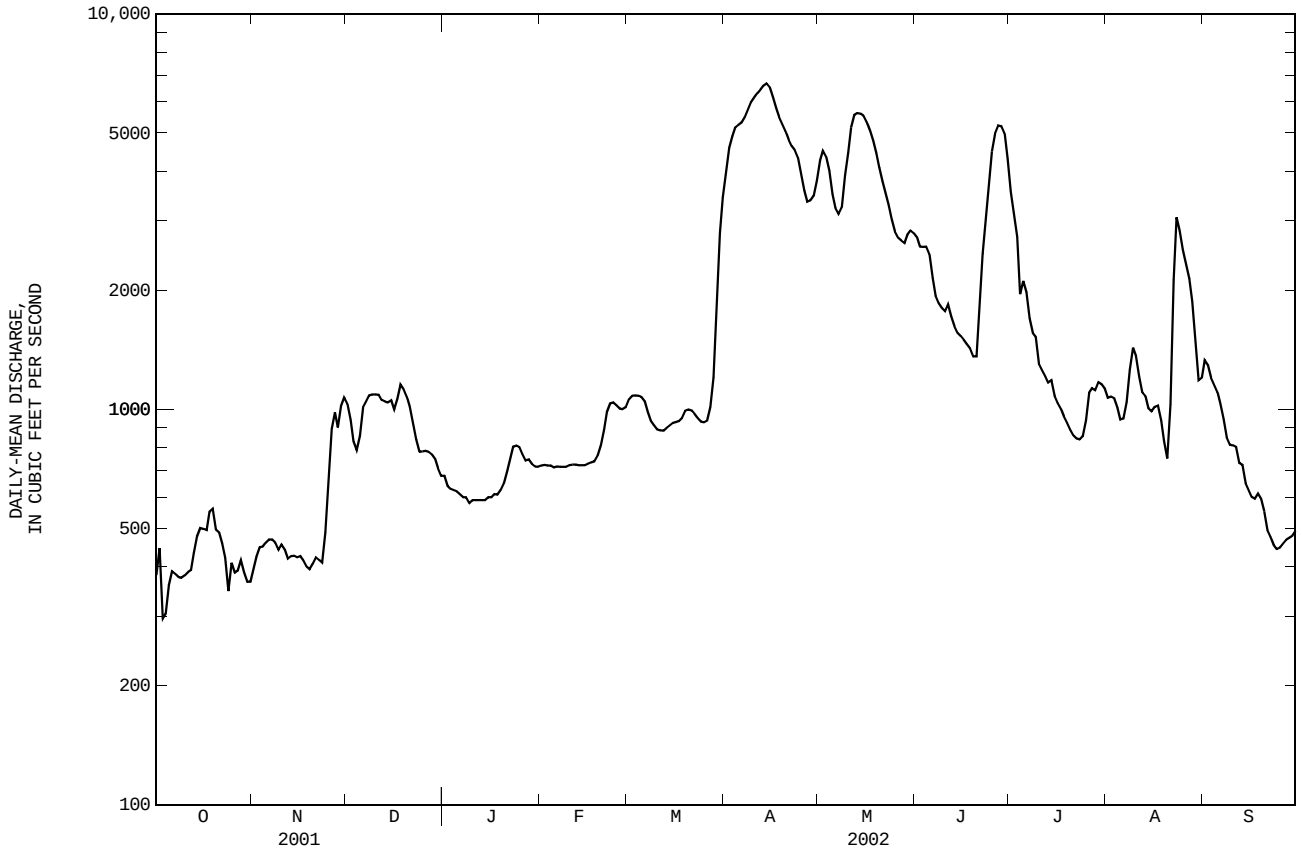
05316580 MINNESOTA RIVER AT MORTON, MN--Continued

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

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	257.5	489.7	610.3	449.5	532.1	848.3	15900	7864	4327	2376	1179	577.2
MAX	417	530	945	661	806	1142	26720	11780	6049	3354	1385	724
(WY)	2002	2002	2002	2002	2002	2002	2001	2001	2001	2001	2002	2002
MIN	98.2	449	276	237	258	555	5084	3953	2605	1399	973	431
(WY)	2001	2001	2001	2001	2001	2001	2002	2002	2002	2002	2001	2001

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 2001 - 2002	
ANNUAL TOTAL	1585182		597825			
ANNUAL MEAN	4343		1638		2945	
HIGHEST ANNUAL MEAN					4252	2001
LOWEST ANNUAL MEAN					1638	2002
HIGHEST DAILY MEAN	45400	Apr 15	6660	Apr 14	45400	Apr 15 2001
LOWEST DAILY MEAN	194	Jan 1	295a	Oct 3	81a	Oct 6 2000
ANNUAL SEVEN-DAY MINIMUM	201	Feb 19	355	Oct 3	86	Oct 5 2000
MAXIMUM PEAK FLOW			6740	Apr 14	45400	Apr 15 2001
MAXIMUM PEAK STAGE			18.73	Apr 14	29.26b	Apr 16 2001
INSTANTANEOUS LOW FLOW			271a	Oct 3	80a	Oct 6 2000
ANNUAL RUNOFF (AC-FT)	3144000		1186000		2134000	
ANNUAL RUNOFF (CFSM)	0.48		0.18		0.33	
ANNUAL RUNOFF (INCHES)	6.57		2.48		4.46	
10 PERCENT EXCEEDS	13400		4480		6030	
50 PERCENT EXCEEDS	665		993		830	
90 PERCENT EXCEEDS	251		443		231	

a Due in part to regulation.
b Maximum recorded, peak stage was less than 30.0 feet.
e Estimated.



05317000 COTTONWOOD RIVER NEAR NEW ULM, MN

LOCATION.--Lat 44°17'29", long 94°26'24", in SW¼NE¼ sec. 33, T.110 N., R.30 W., Brown County, Hydrologic Unit 07020008, on left bank 600 ft upstream from highway bridge, 1.8 mi south of New Ulm, and 3.2 mi upstream from mouth.

DRAINAGE AREA.--1,300 mi^2.

PERIOD OF RECORD.--July 1909 to December 1913, March 1931 to March 1938, August 1938 to current year (winter records incomplete prior to 1936).

REVISED RECORDS.--WSP 355: 1912.

GAGE.--Water-stage recorder. Datum of gage is 796.83 ft above sea level (NGVD of 1929). July 1, 1909 to Dec. 13, 1913, nonrecording gage at site 2.7 mi upstream at different datum. Mar. 15, 1931 to Mar. 31, 1938, nonrecording gage 2.2 mi upstream at datum 11.41 ft higher. Aug. 23, 1938 to June 25, 1948, nonrecording gage at present site and datum.

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,100 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar 31	(daily)	e1,400	--	Jun 4	0700	*5,390	*11.95
May 9	2300	1,780	7.79	Jun 23	0900	2,830	9.36

Minimum discharge, 52 ft^3/s, Oct. 7, gage height, 2.90 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	74	61	327	e175	e173	e230	1320	956	708	878	200	209
2	69	63	324	e175	e170	e225	1200	967	706	750	174	189
3	66	60	278	e176	e170	e220	1160	898	2050	652	151	171
4	61	59	324	e178	e171	e217	998	812	5050	582	142	156
5	58	59	366	e180	e173	e213	846	743	4120	537	139	142
6	54	58	495	e182	e178	e212	739	687	3110	487	155	131
7	53	60	648	e183	e182	e212	688	671	2450	447	190	120
8	53	60	666	e183	e188	e214	680	778	1970	402	269	112
9	54	60	e555	e183	e196	e215	678	1420	1620	355	369	103
10	57	59	e550	e182	e202	e216	670	1730	1360	336	370	98
11	56	56	e470	e181	e210	e217	679	1710	1260	369	286	88
12	55	57	e440	e180	e222	e217	689	1690	1420	416	259	80
13	62	57	e420	e178	e230	e218	734	1610	1270	359	233	76
14	70	56	e405	e176	e245	e220	798	1460	1050	340	210	77
15	73	58	e360	e174	e255	e220	846	1350	951	307	190	73
16	68	57	e320	e173	e265	e221	854	1250	883	273	175	70
17	65	57	e290	e172	e275	e222	826	1130	826	245	160	68
18	65	58	e260	e171	e289	e223	765	1020	825	221	142	71
19	68	55	e235	e170	e294	e223	700	938	731	200	129	71
20	70	56	e220	e170	e297	e222	644	877	758	183	123	69
21	68	56	e210	e170	e296	e221	612	828	1040	171	186	66
22	66	58	e200	e171	e293	e221	593	778	2170	159	220	59
23	80	65	e195	e172	e288	e221	595	740	2760	147	456	56
24	81	120	e190	e173	e280	e222	624	684	2480	137	617	54
25	73	154	e187	e174	e269	e224	644	631	2540	165	577	77
26	73	353	e186	e175	e255	e230	626	588	2230	148	484	97
27	67	482	e185	e176	e247	e255	611	564	1860	129	411	89
28	64	471	e182	e178	e239	e340	618	556	1550	137	341	82
29	63	385	e178	e178	---	e560	690	531	1270	215	291	80
30	61	328	e176	e177	---	e1000	833	557	1050	278	261	81
31	61	---	e175	e176	---	e1400	---	634	---	241	235	---
TOTAL	2008	3638	10017	5462	6552	9271	22960	29788	52068	10266	8145	2915
MEAN	64.8	121	323	176	234	299	765	961	1736	331	263	97.2
MAX	81	482	666	183	297	1400	1320	1730	5050	878	617	209
MIN	53	55	175	170	170	212	593	531	706	129	123	54
AC-FT	3980	7220	19870	10830	13000	18390	45540	59080	103300	20360	16160	5780
CFSM	0.05	0.09	0.25	0.14	0.18	0.23	0.59	0.74	1.34	0.25	0.20	0.07
IN.	0.06	0.10	0.29	0.16	0.19	0.27	0.66	0.85	1.49	0.29	0.23	0.08

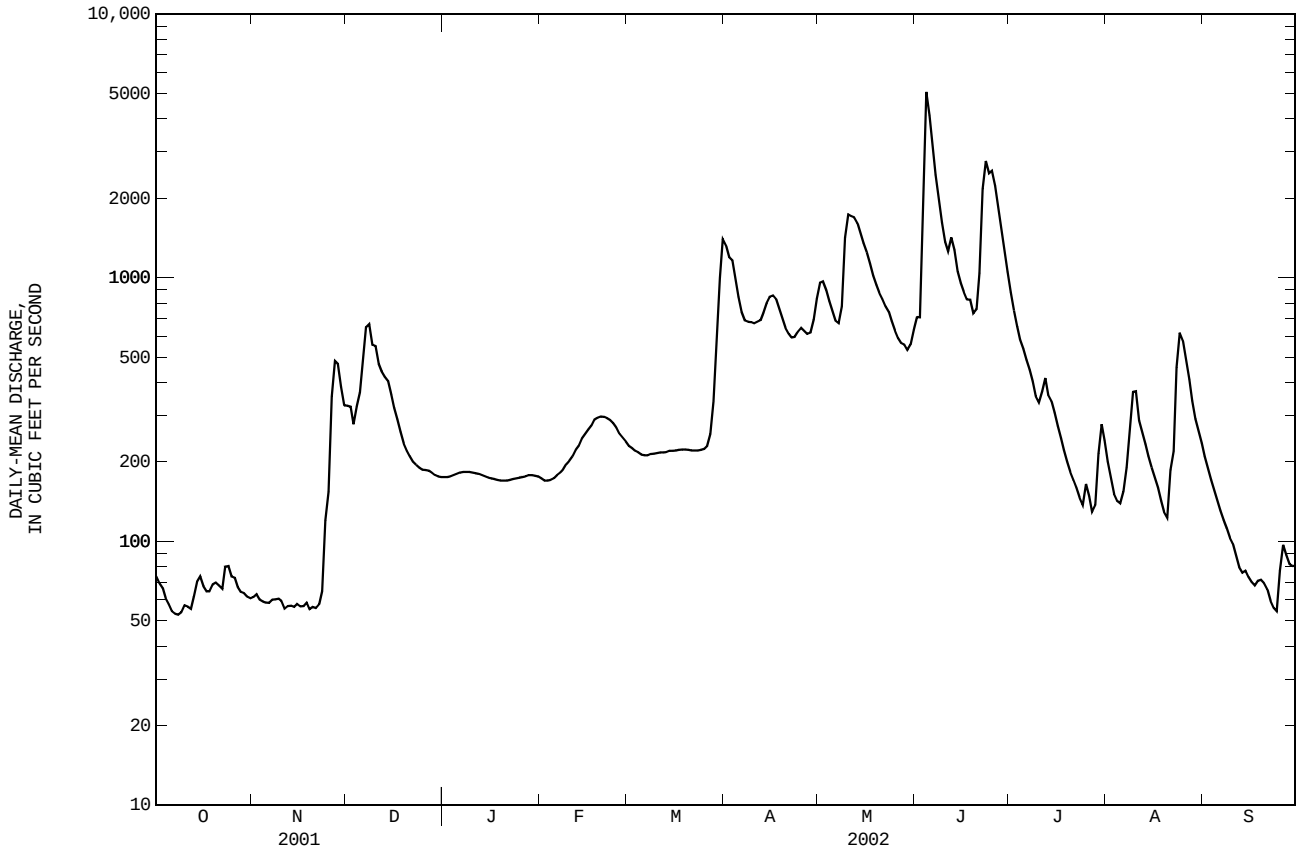
05317000 COTTONWOOD RIVER NEAR NEW ULM, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1909 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	172	159	110	58.3	101	644	1083	599	634	371	191	150
MAX	3208	1099	572	282	628	3350	7075	3497	5831	3815	1791	2438
(WY)	1969	1980	1980	1992	1983	1997	1969	1993	1993	1993	1993	1986
MIN	4.57	7.97	5.77	1.61	1.47	13.9	40.0	7.57	8.58	4.37	1.05	3.28
(WY)	1934	1940	1936	1940	1940	1965	1959	1934	1911	1934	1934	1933

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1909 - 2002	
ANNUAL TOTAL	321696		163090			
ANNUAL MEAN	881		447		383a	
HIGHEST ANNUAL MEAN					1796	1993
LOWEST ANNUAL MEAN					41.1	1940
HIGHEST DAILY MEAN	18700	Apr 25	5050	Jun 4	27100	Apr 9 1969
LOWEST DAILY MEAN	44	Jan 20	53	Oct 7, 8	0.60	Aug 1 1934
ANNUAL SEVEN-DAY MINIMUM	44	Feb 16	55	Oct 6	0.64	Feb 1 1940
MAXIMUM PEAK FLOW			5390	Jun 4	28700	Apr 10 1969
MAXIMUM PEAK STAGE			11.95	Jun 4	20.86	Apr 8 1965
INSTANTANEOUS LOW FLOW			52	Oct 7	0.50b	Nov 27 1952
ANNUAL RUNOFF (AC-FT)	638100		323500		277200	
ANNUAL RUNOFF (CFSM)	0.68		0.34		0.29	
ANNUAL RUNOFF (INCHES)	9.21		4.67		4.00	
10 PERCENT EXCEEDS	2040		1010		920	
50 PERCENT EXCEEDS	128		221		97	
90 PERCENT EXCEEDS	46		63		14	

a Median of annual mean discharges is 252 ft^3/s.
b Minimum observed.
e Estimated.



05317000 COTTONWOOD RIVER NEAR NEW ULM, MN--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--1961-62, 64-68, 71-72, 74-76, 89-92, 95, 98, 2002

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

Date	Time	Sample type	Medium code	GAGE HEIGHT (FEET) (00065)	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)
MAY												
30...	1350	ENVIRONMENTAL		5.05	557	734	12.1	151	8.2	1140	--	25.0
JUN												
25...	1620	ENVIRONMENTAL		9.03	2580	731	6.7	84	7.9	851	26.0	24.0

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05317200 LITTLE COTTONWOOD RIVER NEAR COURTLAND, MN

LOCATION.--Lat 44°14'47", long 94°20'19", in SW¼NE¼ sec.17, T.109 N., R.29 W., Blue Earth County, Hydrologic Unit 07020007, on right bank 30 ft downstream from bridge on State Highway 68, 0.7 mi above mouth, 1.5 mi south of Courtland.

DRAINAGE AREA.--170 mi^2.

PERIOD OF RECORD.--October 1973 to current year. September 1969 to September 1973, operated as a low-flow station only.

GAGE.--Water-stage recorder. Datum of gage is 788.25 ft above sea level (NGVD of 1929).

REMARKS.--Records good except those for estimated days, which are fair.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jun 4	0400	*892	*7.67	Jun 21	1800	812	7.42
Jun 18	1000	421	5.73				

Minimum discharge, 4.3 ft^3/s, Sept. 24, gage height, 2.64 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	13	19	53	24	25	e24	130	103	98	115	24	27
2	13	17	51	23	26	e22	103	98	96	101	20	25
3	11	17	51	22	25	e19	77	90	283	94	20	23
4	10	17	51	22	25	e19	69	84	747	89	21	20
5	11	16	60	24	24	e19	63	79	680	78	22	18
6	9.9	17	71	25	24	e19	60	75	537	72	26	16
7	9.9	18	75	25	25	e19	60	75	485	66	35	14
8	9.7	19	76	26	26	e19	62	90	511	62	42	12
9	10	19	63	26	27	e18	65	101	534	57	40	11
10	11	19	74	26	28	e18	65	100	506	60	36	11
11	12	17	69	28	27	e18	67	98	448	59	31	9.6
12	12	17	64	30	26	e19	78	102	369	67	30	9.2
13	14	18	60	31	28	e19	89	106	291	62	27	8.9
14	15	20	45	33	28	e19	92	104	258	54	25	9.6
15	17	20	63	32	29	e20	92	100	232	48	24	8.5
16	20	20	53	32	31	e20	88	96	207	44	23	8.6
17	17	19	52	33	33	e21	85	88	181	39	22	7.8
18	16	20	50	31	34	e21	83	83	247	37	19	7.2
19	15	22	39	29	40	e22	75	77	191	37	17	6.5
20	16	19	30	28	41	e23	68	71	175	34	16	6.6
21	16	21	38	28	40	e23	66	68	430	32	33	5.9
22	16	19	45	28	39	e24	66	65	562	28	56	5.3
23	21	21	30	29	44	e24	69	65	407	23	71	5.1
24	18	34	20	29	49	e25	68	61	326	21	82	4.6
25	18	60	42	28	44	e28	64	60	290	30	82	7.2
26	19	76	35	28	31	e31	63	57	273	28	66	19
27	17	80	31	30	37	42	63	56	246	25	52	24
28	17	70	31	30	38	86	77	58	197	23	43	26
29	19	61	29	28	---	111	95	56	157	28	37	23
30	e18	55	27	27	---	127	104	57	134	31	33	19
31	19	---	25	26	---	121	---	67	---	28	29	---
TOTAL	460.5	867	1503	861	894	1040	2306	2490	10098	1572	1104	398.6
MEAN	14.9	28.9	48.5	27.8	31.9	33.5	76.9	80.3	337	50.7	35.6	13.3
MAX	21	80	76	33	49	127	130	106	747	115	82	27
MIN	9.7	16	20	22	24	18	60	56	96	21	16	4.6
AC-FT	913	1720	2980	1710	1770	2060	4570	4940	20030	3120	2190	791
CFSM	0.09	0.17	0.29	0.16	0.19	0.20	0.45	0.47	1.98	0.30	0.21	0.08
IN.	0.10	0.19	0.33	0.19	0.20	0.23	0.50	0.54	2.21	0.34	0.24	0.09

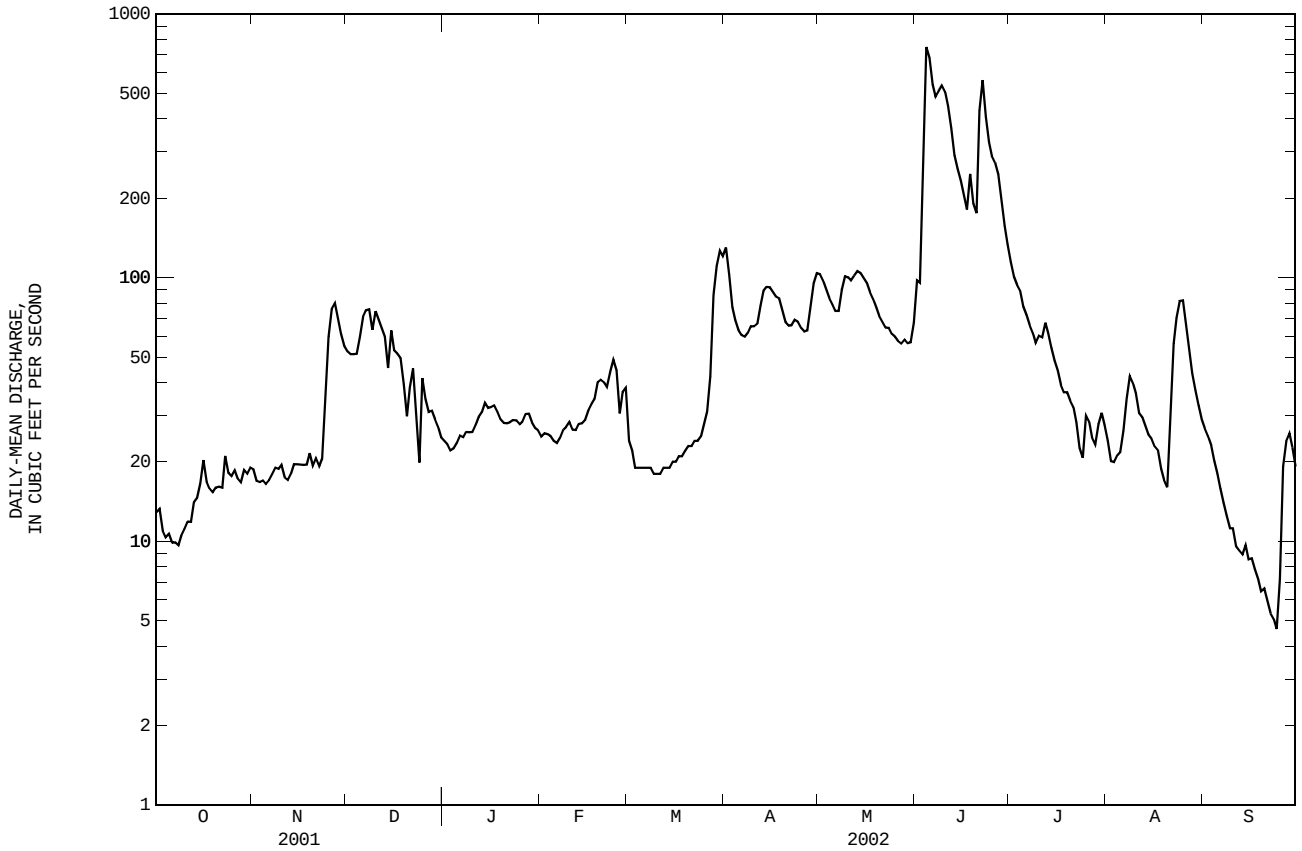
05317200 LITTLE COTTONWOOD RIVER NEAR COURTLAND, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1974 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	38.4	44.6	27.2	14.8	22.6	120	192	124	141	89.9	51.3	38.8
MAX	163	134	118	80.1	105	392	980	418	750	553	248	262
(WY)	1987	1983	1992	1992	1983	1997	2001	1993	1993	1993	1993	1986
MIN	0.75	0.70	0.21	0.15	0.38	5.79	9.64	4.17	2.39	0.63	0.81	0.54
(WY)	1976	1977	1977	1977	1977	1975	1990	1981	1976	1988	1976	1976

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1974 - 2002	
ANNUAL TOTAL	51742.2		23594.1			
ANNUAL MEAN	142		64.6		75.4	
HIGHEST ANNUAL MEAN					239	1993
LOWEST ANNUAL MEAN					9.18	1989
HIGHEST DAILY MEAN	2310	Apr 5	747	Jun 4	2850	Jun 20 1993
LOWEST DAILY MEAN	3.8	Jan 2	4.6	Sep 24	0.02	Sep 12 1977
ANNUAL SEVEN-DAY MINIMUM	4.5	Jan 1	5.9	Sep 18	0.08	Sep 11 1977
MAXIMUM PEAK FLOW			892	Jun 4	3520a	Jun 20 1993
MAXIMUM PEAK STAGE			7.67	Jun 4	11.60b	Apr 4 1997
INSTANTANEOUS LOW FLOW			4.3	Sep 24	0.01	Sep 17 1977
ANNUAL RUNOFF (AC-FT)	102600		46800		54620	
ANNUAL RUNOFF (CFSM)	0.83		0.38		0.44	
ANNUAL RUNOFF (INCHES)	11.32		5.16		6.03	
10 PERCENT EXCEEDS	346		103		194	
50 PERCENT EXCEEDS	23		31		27	
90 PERCENT EXCEEDS	8.0		16		1.5	

a Gage-height, 10.45 ft.
b Backwater from the Minnesota River.
e Estimated.



05319500 WATONWAN RIVER NEAR GARDEN CITY, MN

LOCATION.--Lat 44°02'47", long 94°11'43", in SW¼NE¼ sec. 28, T.107 N., R.28 W., Blue Earth County, Hydrologic Unit 07020010, on left bank 25 ft downstream from bridge on County Highway 13, 1.5 miles west of Garden City, 7.3 mi upstream from mouth, and 9.2 mi downstream from Perch Creek.

DRAINAGE AREA.--851 mi^2.

PERIOD OF RECORD.--March 1940 to September 1945, September 1976 to current year. 1953, 1960, 1961, and 1969 (one or more discharge measurements each year).

REVISED RECORDS.--WDR MN-78-2: 1977. WRIR 97-4249: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 905.05 ft above sea level (NGVD of 1929). Prior to September 30, 1945, nonrecording gage at site 200 ft upstream and at datum 0.17 ft higher.

REMARKS.--Records good except those for estimated daily discharge, which are fair to poor.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 7, 1965, reached a stage of 18.89 ft at datum 0.17 ft higher, from floodmarks, discharge, 19,000 ft^3/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,200 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Aug 23	1900	*920	*3.44	No other peak greater than base discharge.			

Minimum discharge, 26 ft^3/s, Sep. 24.

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	36	e33	128	e50	e50	e60	371	367	365	268	47	189
2	35	e35	120	e49	e49	e58	337	359	358	231	40	157
3	36	e33	111	e49	e49	e57	265	337	459	206	39	133
4	32	e33	112	e50	e49	e57	190	312	546	186	44	113
5	29	e33	122	e52	e50	e58	212	290	692	163	58	96
6	28	e33	130	e53	e52	e60	202	268	795	145	275	83
7	28	e34	141	e54	e54	e61	186	257	711	134	467	71
8	28	e34	159	e55	e56	e62	196	253	629	121	461	62
9	29	e33	e155	e57	e58	e62	192	270	567	114	379	56
10	35	33	151	e58	e61	e62	186	282	509	114	309	51
11	31	33	150	e58	e64	e62	199	286	567	121	240	48
12	31	32	138	e58	e65	e62	261	291	686	156	199	43
13	35	34	133	e58	e67	e63	308	309	621	171	176	41
14	38	38	e120	e58	e70	e65	310	333	541	135	168	44
15	38	38	e110	e57	e74	e67	309	339	489	113	154	41
16	37	36	e105	e56	e77	e69	297	338	438	98	131	41
17	37	35	e99	e54	e80	e70	288	322	401	86	110	37
18	43	38	e90	e52	e82	e70	271	300	469	78	95	35
19	40	36	e82	e51	e86	e70	249	277	447	73	82	36
20	36	35	e74	e51	e93	e70	223	256	402	67	70	34
21	39	35	e67	e51	e98	e69	212	238	425	61	120	33
22	37	35	e59	e52	e96	e68	208	222	525	58	480	32
23	38	37	e55	e52	e93	e68	217	218	626	55	859	29
24	37	64	e54	e52	e85	e68	224	221	602	50	896	27
25	36	118	e54	e52	e76	e69	230	204	545	55	779	31
26	33	150	e54	e53	e70	e70	224	194	486	51	638	33
27	35	156	e53	e54	e65	e74	220	186	428	45	519	38
28	33	179	e53	e54	e62	e115	244	354	383	43	417	39
29	36	167	e52	e53	---	198	316	302	344	54	347	38
30	33	142	e52	e52	---	297	355	403	308	58	287	37
31	e33	---	e51	e51	---	392	---	418	---	58	230	---
TOTAL	1072	1772	3034	1656	1931	2753	7502	9006	15364	3368	9116	1748
MEAN	34.6	59.1	97.9	53.4	69.0	88.8	250	291	512	109	294	58.3
MAX	43	179	159	58	98	392	371	418	795	268	896	189
MIN	28	32	51	49	49	57	186	186	308	43	39	27
AC-FT	2130	3510	6020	3280	3830	5460	14880	17860	30470	6680	18080	3470
CFSM	0.04	0.07	0.12	0.06	0.08	0.10	0.29	0.34	0.60	0.13	0.35	0.07
IN.	0.05	0.08	0.13	0.07	0.08	0.12	0.33	0.39	0.67	0.15	0.40	0.08

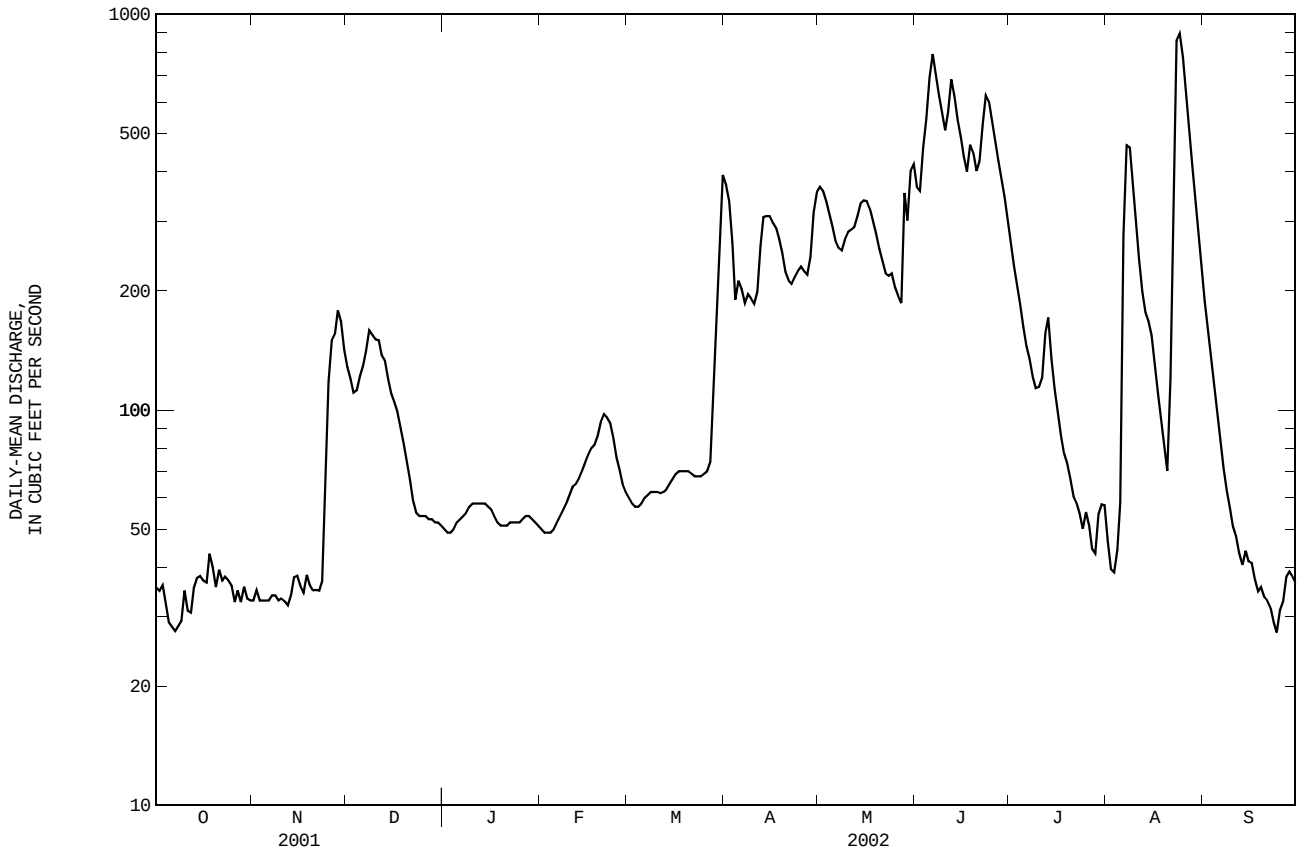
05319500 WATONWAN RIVER NEAR GARDEN CITY, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	184	230	139	68.8	104	563	963	628	859	471	241	185
MAX	686	826	530	319	626	2105	4411	2025	4494	2389	1095	819
(WY)	1993	1993	1992	1992	1983	1992	2001	1993	1993	1993	1979	1993
MIN	5.37	7.69	3.76	2.70	2.39	19.3	33.7	16.1	17.3	8.27	6.56	3.63
(WY)	1990	1977	1990	1977	1977	1940	1990	1940	1989	1940	1989	1976

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1940 - 2002	
ANNUAL TOTAL	252676		58322			
ANNUAL MEAN	692		160		397	
HIGHEST ANNUAL MEAN					1330	1993
LOWEST ANNUAL MEAN					43.7	1989
HIGHEST DAILY MEAN	7180	Apr 14	896	Aug 24	13400	Jun 20 1993
LOWEST DAILY MEAN	28	Oct 6	27	Sep 24	1.8	Dec 24 1989
ANNUAL SEVEN-DAY MINIMUM	30	Oct 5	30	Oct 5	1.9	Jan 20 1977
MAXIMUM PEAK FLOW			920	Aug 23	13900	Jun 20 1993
MAXIMUM PEAK STAGE			3.44	Aug 23	15.91	Jun 20 1993
INSTANTANEOUS LOW FLOW			26	Sep 24	1.8	Dec 24 1989
ANNUAL RUNOFF (AC-FT)	501200		115700		287800	
ANNUAL RUNOFF (CFSM)	0.81		0.19		0.47	
ANNUAL RUNOFF (INCHES)	11.05		2.55		6.34	
10 PERCENT EXCEEDS	2210		396		1080	
50 PERCENT EXCEEDS	59		73		141	
90 PERCENT EXCEEDS	35		35		14	

e Estimated.



05320000 BLUE EARTH RIVER NEAR RAPIDAN, MN

LOCATION.--Lat 44°05'44", long 94°06'33", in SE¼SE¼ sec. 6, T.107 N., R.27 W., Blue Earth County, Hydrologic Unit 07020009, on left bank 0.2 mi downstream from power plant (reactivated in 1984) operated by Rapidan Redevelopment Limited Partnership, 2 mi west of Rapidan, 3.5 mi downstream from Watonwan River, and 7.8 mi upstream from Le Sueur River.

DRAINAGE AREA.--2,410 mi^2.

PERIOD OF RECORD.--July 1909 to November 1910 published as "at Rapidan Mills" (no winter records), October 1939 to September 1945, July 1949 to current year. Annual maximums only, 1912 to 1939.

REVISED RECORDS.-- WSP 1508: 1910.

GAGE.--Water-stage recorder. Datum of gage is 807.83 ft above sea level (NGVD of 1929). July 20, 1909 to Apr. 28, 1910, nonrecording gage at site 0.2 mi upstream at different datum. Apr. 29 to Nov. 12, 1910, nonrecording gage at site 800 ft upstream at different datum. Oct. 4 to Nov. 14, 1939, nonrecording gage at present site and datum.

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

DISCHARGE, in CFS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	127	72	366	93	e145	193	809	1050	1600	923	876	713
2	120	71	283	95	e125	188	572	1080	1580	761	779	568
3	86	95	293	95	106	e180	639	1020	1420	700	607	495
4	63	107	287	103	114	172	433	974	1440	602	561	483
5	63	104	280	131	114	172	403	871	1500	517	661	383
6	62	103	281	128	110	163	402	828	1640	478	1520	332
7	65	96	281	117	110	150	392	787	1720	419	2140	283
8	75	83	281	117	110	139	369	804	1540	411	2580	261
9	73	77	270	117	109	e134	382	739	1330	326	2820	227
10	83	77	285	117	125	e128	400	690	1190	305	2590	221
11	88	77	336	142	138	123	399	684	1370	381	2150	194
12	86	77	330	189	130	120	460	744	2550	335	1460	172
13	86	86	270	159	124	120	626	695	2880	301	1280	180
14	95	102	249	149	124	126	786	736	2900	321	1130	176
15	104	107	251	182	125	133	737	824	2450	326	1070	170
16	104	96	271	192	130	142	902	834	2010	332	1080	168
17	107	78	272	177	156	318	850	834	1770	320	1000	159
18	103	73	272	148	167	449	783	805	1710	300	741	144
19	102	73	232	157	202	556	720	715	1840	263	664	159
20	101	85	163	156	243	660	658	666	1590	220	672	166
21	101	96	129	159	212	637	623	615	2020	196	705	149
22	100	100	161	152	198	545	633	581	2180	208	1660	118
23	98	100	200	145	239	540	650	586	2210	200	2200	107
24	141	127	113	148	228	620	637	559	2160	183	2140	140
25	127	322	115	161	182	506	555	504	1820	512	1850	191
26	88	249	256	139	147	426	723	497	1530	646	1660	215
27	81	302	167	135	219	590	636	471	1420	546	1390	175
28	78	340	151	200	246	540	699	632	1230	388	1220	153
29	78	410	166	146	---	541	735	761	1110	467	959	153
30	78	405	142	154	---	572	889	718	985	501	1090	179
31	78	---	117	159	---	737	---	1070	---	491	964	---
TOTAL	2841	4190	7270	4462	4378	10620	18502	23374	52695	12879	42219	7234
MEAN	91.65	139.7	234.5	143.9	156.4	342.6	616.7	754.0	1756	415.5	1362	241.1
MAX	141	410	366	200	246	737	902	1080	2900	923	2820	713
MIN	62	71	113	93	106	120	369	471	985	183	561	107
AC-FT	5640	8310	14420	8850	8680	21060	36700	46360	104500	25550	83740	14350
CFSM	0.04	0.06	0.10	0.06	0.06	0.14	0.25	0.31	0.72	0.17	0.56	0.10
IN.	0.04	0.06	0.11	0.07	0.07	0.16	0.28	0.36	0.81	0.20	0.65	0.11

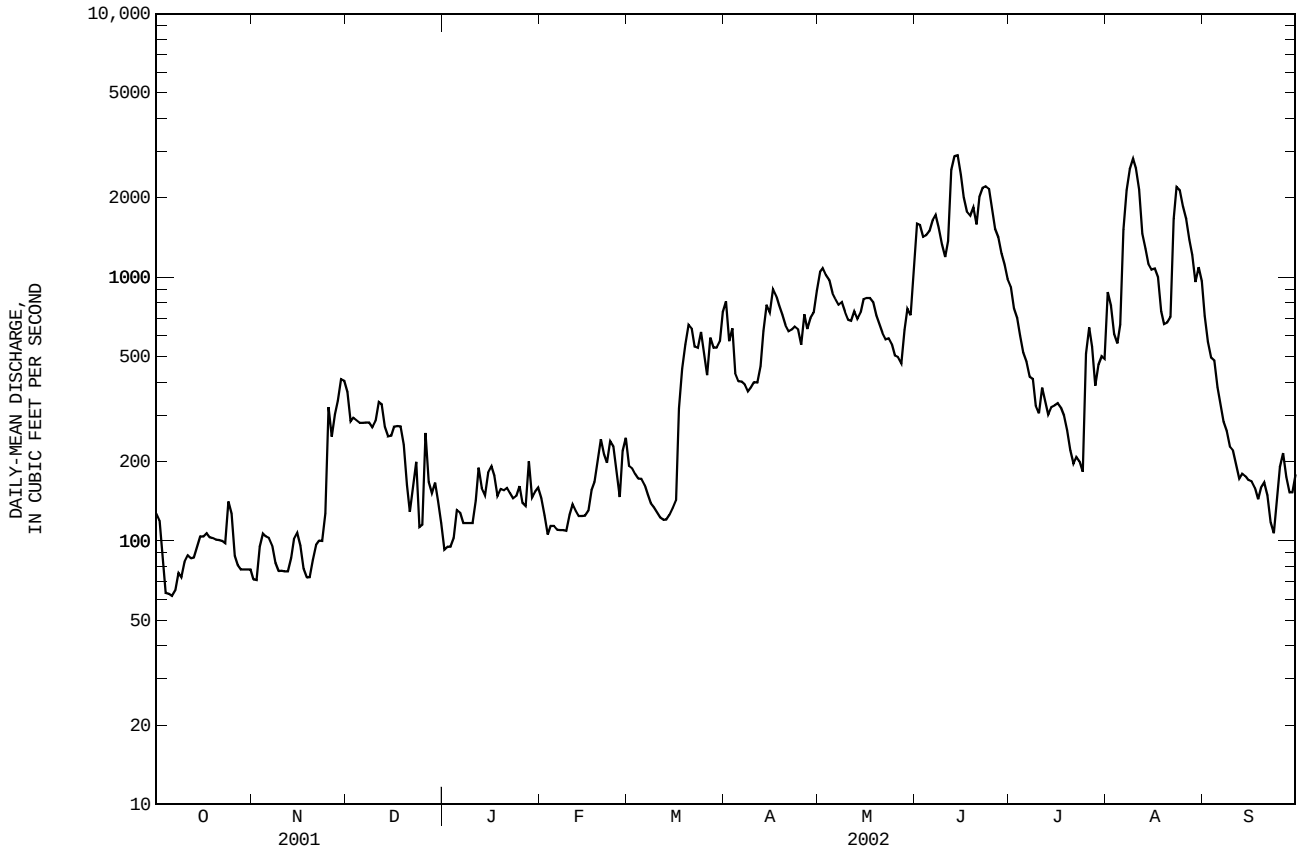
05320000 BLUE EARTH RIVER NEAR RAPIDAN, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1909 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	550.3	557.7	348.9	202.0	263.6	1382	2782	1796	2212	1366	689.6	505.8
MAX	5121	2878	1724	1093	1793	6277	13230	5775	11700	8540	5541	4313
(WY)	1969	1993	1992	1992	1983	1983	1965	1991	1993	1993	1979	1993
MIN	22.5	26.7	16.0	14.8	14.2	92.4	142	53.4	110	30.9	37.7	22.1
(WY)	1940	1940	1956	1977	1959	1968	1977	1940	1976	1940	1976	1976

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1909 - 2002	
ANNUAL TOTAL	798314		190664			
ANNUAL MEAN	2187		522.4		1071	
HIGHEST ANNUAL MEAN					4518	1993
LOWEST ANNUAL MEAN					105	1940
HIGHEST DAILY MEAN	16800	Apr 14	2900	Jun 14	42500	Apr 9 1965
LOWEST DAILY MEAN	52	Jan 3	62	Oct 6	7.4	Oct 28 1955
ANNUAL SEVEN-DAY MINIMUM	67	Jan 1	69	Oct 4	8.1	Oct 24 1955
MAXIMUM PEAK FLOW			4010a	Aug 23	43100	Apr 9 1965
MAXIMUM PEAK STAGE			5.66a	Aug 23	21.36b	Apr 9 1965
INSTANTANEOUS LOW FLOW			45c	Dec 29	6.9	Oct 12 1955
ANNUAL RUNOFF (AC-FT)	1583000		378200		776100	
ANNUAL RUNOFF (CFSM)	0.90		0.21		0.44	
ANNUAL RUNOFF (INCHES)	12.22		2.92		5.99	
10 PERCENT EXCEEDS	7390		1400		2890	
50 PERCENT EXCEEDS	175		281		364	
90 PERCENT EXCEEDS	75		96		46	

a Maximum recorded, result of regulation.
b From floodmark.
c Minimum recorded, result of regulation.
e Estimated.



05320270 LITTLE COBB RIVER NEAR BEAUFORD, MN

LOCATION.--Lat 43°59'48", long 93°54'30", in SE¼SE¼ sec. 11, T.106 N., R.26 W., Blue Earth County, Hydrologic Unit 07020011, on left bank at downstream end of bridge on County Road No. 16, 1.6 mi upstream from mouth, 2.6 mi east of Beauford, and 5.3 mi northeast of Mapleton.

DRAINAGE AREA.--130 mi^2.

PERIOD OF RECORD.--April 1996 to September 30, 1999, June 2001 to current year.

REVISED RECORDS.-- WDR MN-99-1: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 980 ft above sea level (from topographic map).

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum gage height observed, 12.17 ft, on April 5, 2001, discharge 2,220 ft^3/s (from highwater mark).

DISCHARGE, in CFS, 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	3.3	1.8	e1.4	e3.5	e20	66	26	93	3.4	15
2	0.00	0.00	3.7	1.6	e1.1	e3.3	e18	64	24	77	2.7	11
3	0.00	0.00	3.5	1.5	e0.85	e3.2	e17	63	31	66	2.7	7.7
4	0.00	0.00	3.6	1.5	e1.0	e2.9	e16	61	55	57	6.6	6.4
5	0.00	0.00	4.1	1.6	e1.4	e2.6	e15	56	89	49	8.6	4.6
6	0.00	0.00	8.7	1.6	e1.7	e2.6	e15	53	103	43	7.4	4.1
7	0.00	0.00	8.3	1.4	e2.2	e2.6	e14	49	106	39	9.8	3.7
8	0.00	0.00	6.4	1.5	e2.3	e2.5	e15	48	98	35	9.5	2.9
9	0.00	0.00	6.0	1.6	e2.4	e2.1	e15	47	89	31	7.4	2.4
10	0.00	0.00	7.9	1.9	e2.4	e2.4	e17	45	79	29	5.8	2.1
11	0.00	0.00	6.9	2.2	e2.5	e2.0	e22	42	155	28	4.9	1.6
12	0.00	0.00	6.9	2.5	e2.6	e2.2	e44	41	230	27	4.6	1.2
13	0.00	0.00	6.1	2.6	e2.7	e4.2	e59	42	233	25	5.9	1.2
14	0.00	0.00	5.5	2.5	e2.8	e5.4	65	42	250	22	4.0	2.6
15	0.00	0.00	8.5	2.5	e2.9	e6.8	68	41	260	19	3.4	2.7
16	0.00	0.00	6.3	2.5	e3.1	e8.9	68	40	245	17	3.0	1.4
17	0.00	0.00	5.8	2.5	e3.2	e12	66	38	214	14	2.5	0.84
18	0.00	0.00	5.7	2.4	e3.3	e13	62	35	181	11	2.0	0.59
19	0.00	0.00	4.9	2.2	e3.5	e14	62	33	166	8.3	2.0	0.51
20	0.00	0.00	4.8	1.9	e3.7	e18	58	32	136	6.5	1.4	0.37
21	0.00	0.00	4.5	1.9	e4.1	e20	54	30	137	5.3	13	0.28
22	0.00	0.00	4.4	2.0	e4.5	e22	53	29	230	5.2	29	0.36
23	0.00	0.00	4.1	2.1	e4.6	e24	53	28	233	3.6	43	0.22
24	0.00	0.15	4.2	1.8	e4.1	e25	52	27	238	2.8	53	0.18
25	0.00	0.51	3.6	1.7	e3.9	e27	51	26	247	3.2	50	0.40
26	0.00	0.51	3.0	2.1	e3.9	e28	49	26	235	3.2	48	0.58
27	0.00	5.0	3.0	2.5	e4.0	e32	46	25	205	3.0	39	0.83
28	0.00	6.9	3.1	2.4	e3.7	e28	53	31	169	2.9	32	0.71
29	0.00	5.3	2.8	2.3	---	e24	63	39	138	4.7	26	0.74
30	0.00	3.7	2.5	2.1	---	e22	67	32	113	3.1	22	0.86
31	0.00	---	2.2	1.8	---	e21	---	29	---	4.3	19	---
TOTAL	0.00	22.07	154.3	62.5	79.85	387.2	1277	1260	4715	738.1	471.6	78.07
MEAN	0.000	0.736	4.977	2.016	2.852	12.49	42.57	40.65	157.2	23.81	15.21	2.602
MAX	0.00	6.9	8.7	2.6	4.6	32	68	66	260	93	53	15
MIN	0.00	0.00	2.2	1.4	0.85	2.0	14	25	24	2.8	1.4	0.18
AC-FT	0.00	44	306	124	158	768	2530	2500	9350	1460	935	155
CFSM	0.00	0.01	0.04	0.02	0.02	0.10	0.33	0.31	1.21	0.18	0.12	0.02
IN.	0.00	0.01	0.04	0.02	0.02	0.11	0.37	0.36	1.35	0.21	0.13	0.02

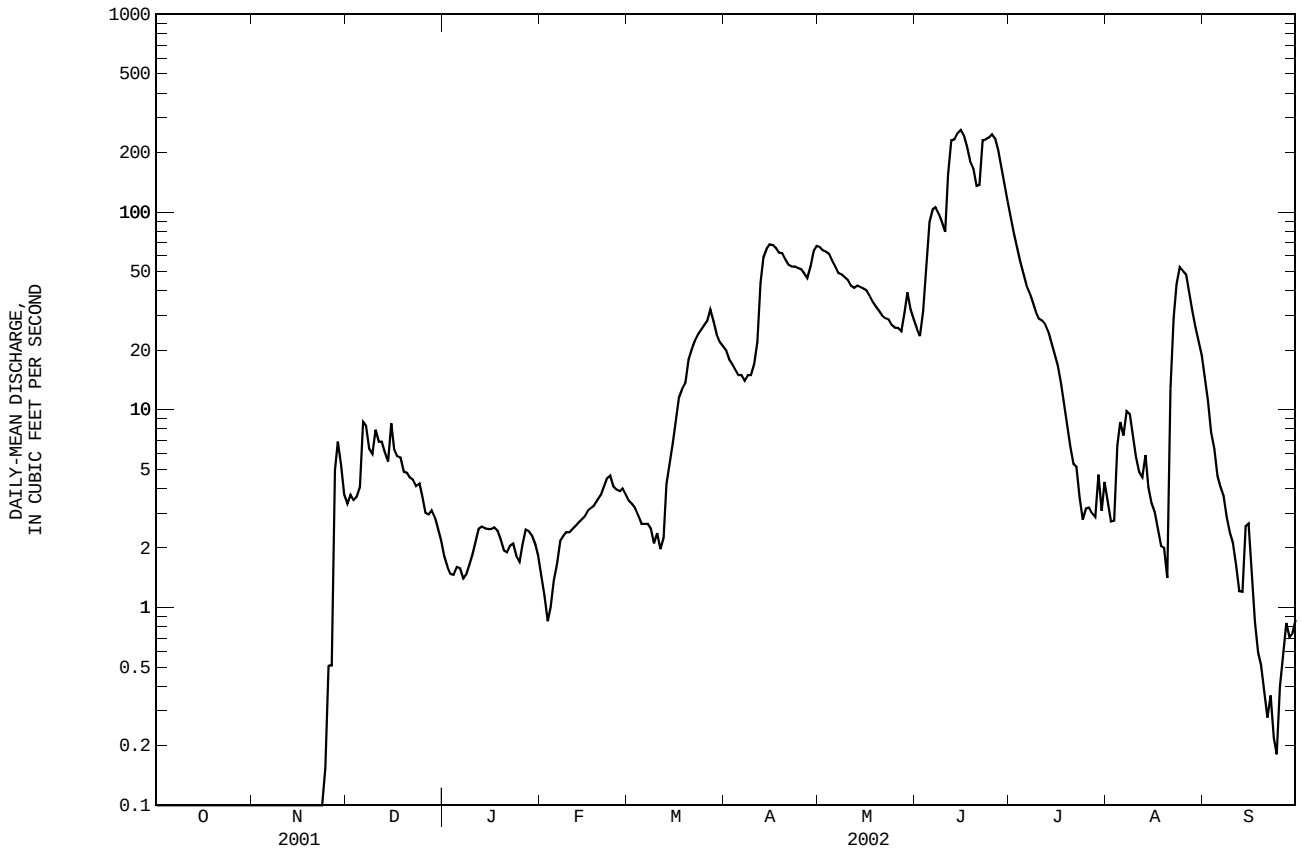
05320270 LITTLE COBB RIVER NEAR BEAUFORD, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1996 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	10.33	29.09	15.44	6.243	32.98	117.2	200.3	137.6	143.0	75.10	25.18	5.548
MAX	23.2	89.7	54.0	18.2	58.2	278	410	341	217	150	58.0	17.2
(WY)	1998	1997	1997	1997	1999	1997	1999	1999	1999	1999	1999	1997
MIN	0.000	0.74	1.46	0.49	2.85	12.5	42.6	40.6	83.1	23.8	4.34	0.027
(WY)	2002	2002	2000	1999	2002	2002	2002	2002	1998	2002	1998	2001

SUMMARY STATISTICS	FOR 2002 WATER YEAR		WATER YEARS 1996 - 2002		
ANNUAL TOTAL	9245.69				
ANNUAL MEAN	25.33		72.55		
HIGHEST ANNUAL MEAN			114		1999
LOWEST ANNUAL MEAN			25.3		2002
HIGHEST DAILY MEAN	260	Jun 15	811	Apr 12	1999
LOWEST DAILY MEAN	0.00	Oct 1 - Nov. 23	0.00a	Sep 6	1998
ANNUAL SEVEN-DAY MINIMUM	0.00	Oct 1	0.00	Sep 12	1998
MAXIMUM PEAK FLOW	263	Jun 15	852	Apr 12	1999
MAXIMUM PEAK STAGE	7.97	Jun 15	11.38	Mar 14	1997
INSTANTANEOUS LOW FLOW	0.00	Oct 1	0.00a	Sep 5	1998
ANNUAL RUNOFF (AC-FT)	18340		52560		
ANNUAL RUNOFF (CFSM)	0.19		0.56		
ANNUAL RUNOFF (INCHES)	2.65		7.58		
10 PERCENT EXCEEDS	63		195		
50 PERCENT EXCEEDS	4.2		23		
90 PERCENT EXCEEDS	0.00		0.64		

a Many days, several years.
e Estimated.



05320270 LITTLE COBB RIVER NEAR BEAUFORD, MN--Continued
(National Water-Quality Assessment Program)

WATER QUALITY RECORDS

PERIOD OF RECORD.--Water years 1996 to current year.

PERIOD OF DAILY RECORD:

WATER TEMPERATURES.-- April 1996 to September 1998.

SPECIFIC CONDUCTANCE.-- April 1996 to September 1998.

INSTRUMENTATION.--Water-quality monitor since April 1996, provides continuous recordings. Sensor located at gage.

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

Date	Time	Sample type	Medium code	GAGE HEIGHT (FEET) (00065)	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)
NOV													
26...	1230	ENVIRONMENTAL		4.74	.98	736	8.8	67	7.7	554	.5	3.6	231
DEC													
18...	1030	ENVIRONMENTAL		4.88	5.3	735	11.9	88	7.9	638	5.0	1.4	231
JAN													
23...	1110	ENVIRONMENTAL		4.79	2.0	741	9.6	68	7.3	903	-5.0	-.1	313
FEB													
26...	1030	ENVIRONMENTAL		4.89	3.9	742	13.2	92	7.8	519	-8.0	.0	195
APR													
17...	1200	ENVIRONMENTAL		5.68	65	736	9.8	106	8.0	584	18.9	17.5	201
MAY													
07...	1220	BLANK		--	--	--	--	--	--	--	--	--	--
07...	1225	ENVIRONMENTAL		5.48	40	742	--	--	9.0	603	15.0	13.2	219
JUN													
06...	1310	ENVIRONMENTAL		6.08	102	738	9.1	96	7.9	635	19.0	17.0	208
27...	1045	ENVIRONMENTAL		7.31	206	738	5.8	71	7.6	632	26.0	24.0	--
JUL													
25...	1210	ENVIRONMENTAL		4.77	3.2	736	6.1	70	7.7	512	21.0	21.0	197
25...	1215	SPIKE		--	--	--	--	--	--	--	--	--	--
AUG													
23...	0835	ENVIRONMENTAL		5.40	40	739	7.2	82	7.3	444	22.0	19.9	180
23...	0840	REPLICATE		--	--	--	--	--	--	--	--	--	--

Date	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)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	2,6-DI-ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	ACETO-CHLOR, WATER FLTRD REC (UG/L) (49260)	ALA-CHLOR, WATER, DISS, REC, (UG/L) (46342)
NOV													
26...	282	0	16.3	33.1	<.04	.98	E.05	<.008	.33	.45	--	--	--
DEC													
18...	282	0	26.4	64.8	<.04	.99	4.66	.026	.22	.098	<.002	.023	<.002
JAN													
23...	382	0	42.8	116	E.03	1.1	3.64	.022	.03	.050	--	--	--
FEB													
26...	238	0	25.9	56.8	<.04	.64	2.49	.008	E.01	.034	<.006	.010	<.004
APR													
17...	245	4	18.6	53.3	<.04	1.9	7.64	.102	<.02	.184	E.003	.070	<.004
MAY													
07...	--	--	<.30	<.1	<.04	<.10	<.05	<.008	<.02	<.004	--	--	--
07...	255	6	17.7	47.3	<.04	1.4	8.76	.070	<.02	.117	<.006	.071	<.004
JUN													
06...	254	0	15.4	31.1	<.04	1.6	17.1	.084	.04	.22	<.006	.372	<.015
27...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL													
25...	240	0	19.9	27.1	E.02	1.0	2.08	.010	.16	.23	<.006	.009	<.004
25...	--	--	--	--	--	--	--	--	--	--	.091	.143	.130
AUG													
23...	220	0	15.8	18.8	.11	2.0	2.24	.036	.22	.39	<.006	.266	<.004
23...	--	--	15.9	18.9	.12	2.0	2.25	.035	.23	.40	--	--	--

05320270 LITTLE COBB RIVER NEAR BEAUFORD, MN--Continued
(National Water-Quality Assessment Program)

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

Date	ALPHA BHC DIS-SOLVED (UG/L) (34253)	ATRA-ZINE, WATER, DISS, REC (UG/L) (39632)	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)	DEETHYL ATRA-ZINE, WATER, DISS, REC (UG/L) (04040)	DI-AZINON, DIS-SOLVED (UG/L) (39572)	DI-ELDRIN DIS-SOLVED (UG/L) (39381)	DISUL-FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)
NOV													
26...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC													
18...	<.005	.032	<.010	<.002	<.041	<.020	<.005	<.018	<.003	E.010	<.005	<.005	<.02
JAN													
23...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB													
26...	<.005	.021	<.010	<.002	<.041	<.020	<.005	<.018	<.003	E.009	<.005	<.005	<.02
APR													
17...	<.005	.055	<.010	<.002	<.041	<.020	<.005	<.018	<.003	E.014	<.005	<.005	<.02
MAY													
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	<.005	.064	<.010	<.002	<.041	<.020	<.005	<.018	<.003	E.021	<.005	<.005	<.02
JUN													
06...	<.005	.547	<.010	<.002	<.041	<.020	<.005	<.018	<.003	E.051	<.005	<.005	<.02
27...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL													
25...	<.005	.352	<.010	<.002	<.041	<.020	<.005	<.018	<.003	E.042	<.005	<.005	<.02
25...	.107	.498	.090	.111	E.134	E.138	.106	.121	.118	E.104	.111	.125	E.05
AUG													
23...	<.005	.232	<.010	<.002	<.041	<.020	<.005	<.018	<.003	E.060	<.005	<.005	<.02
23...	--	--	--	--	--	--	--	--	--	--	--	--	--

Date	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	ETHAL-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	ETHO-PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	FONOFOS WATER DISS REC (UG/L) (04095)	LINDANE DIS-SOLVED (UG/L) (39341)	LIN-URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	MALA-THION, DIS-SOLVED (UG/L) (39532)	METHYL AZIN-PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	METHYL PARA-THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	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)
NOV													
26...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC													
18...	<.002	<.009	<.005	<.003	<.004	<.035	<.027	<.050	<.006	.080	<.006	<.002	<.007
JAN													
23...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB													
26...	<.002	<.009	<.005	<.003	<.004	<.035	<.027	<.050	<.006	.055	<.006	<.002	<.007
APR													
17...	<.002	<.009	<.005	<.003	<.004	<.035	<.027	<.050	<.006	.078	<.006	<.002	<.007
MAY													
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	.013	<.009	<.005	<.003	<.004	<.035	<.027	<.050	<.006	.045	<.006	<.002	<.007
JUN													
06...	<.002	<.009	<.005	<.003	<.004	<.035	<.027	<.050	<.006	.126	<.006	<.002	<.007
27...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL													
25...	<.002	<.009	<.005	<.003	<.004	<.035	<.027	<.050	<.006	.043	<.006	<.002	<.007
25...	.100	.109	.102	.116	.117	.128	.104	E.419	.129	.157	.100	.105	.131
AUG													
23...	<.002	<.009	<.005	<.003	<.004	<.035	<.027	<.050	<.011	.077	<.006	<.002	<.007
23...	--	--	--	--	--	--	--	--	--	--	--	--	--

05320270 LITTLE COBB RIVER NEAR BEAUFORD, MN--Continued
(National Water-Quality Assessment Program)

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

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)	PRO-METON, WATER, DISS, REC (UG/L) (04037)	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)	SI-MAZINE, WATER, DISS, REC (UG/L) (04035)	TEBU-THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)
NOV													
26...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC													
18...	<.003	<.007	<.002	<.010	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.011	<.02
JAN													
23...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB													
26...	<.003	<.010	<.004	<.022	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005	<.02
APR													
17...	<.003	<.010	<.004	<.022	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005	<.02
MAY													
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	<.003	<.010	<.004	<.022	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005	<.02
JUN													
06...	<.003	<.010	<.004	<.022	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.006	<.02
27...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL													
25...	<.003	<.010	<.004	<.022	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005	<.02
25...	.071	.125	.115	.106	.060	.051	.13	.117	.134	.138	.11	.067	.13
AUG													
23...	<.003	<.010	<.004	<.022	<.006	<.011	E.01	<.031	<.010	<.011	<.02	<.005	<.02
23...	--	--	--	--	--	--	--	--	--	--	--	--	--

Date	TER-BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TER-BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	THIO-BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	TRIAL-LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRI-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	Data base number
NOV							
26...	--	--	--	--	--	16	01
DEC							
18...	<.034	<.02	<.005	<.002	<.009	99	01
JAN							
23...	--	--	--	--	--	117	01
FEB							
26...	<.034	<.02	<.005	<.002	<.009	61	01
APR							
17...	<.034	<.02	<.005	<.002	<.009	120	01
MAY							
07...	--	--	--	--	--	--	77
07...	<.034	<.02	<.005	<.002	<.009	97	01
JUN							
06...	<.034	<.02	<.005	<.002	<.009	131	01
27...	--	--	--	--	--	--	01
JUL							
25...	<.034	<.02	<.005	<.002	<.009	48	01
25...	E.113	.08	.117	.113	.092	--	77
AUG							
23...	<.034	<.02	<.005	<.002	<.009	147	01
23...	--	--	--	--	--	142	77

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05320500 LE SUEUR RIVER NEAR RAPIDAN, MN

LOCATION.--Lat 44°06'40", long 94°02'28", in SW¼ sec. 35, T.108 N., R.27 W., Blue Earth County, Hydrologic Unit 07020011, on right bank 600 ft downstream from highway bridge, 1.8 mi northeast of Rapidan, and 2.3 mi upstream from mouth.

DRAINAGE AREA.--1,110 mi^2.

PERIOD OF RECORD.--October 1939 to September 1945, July 1949 to current year.

GAGE.--Water-stage recorder. Datum of gage is 775.76 ft above sea level (NGVD of 1929). Prior to Nov. 15, 1939, nonrecording gage at same site and datum.

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,600 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
May 29	0400	2,100	4.81	Jun 23	0900	2,230	4.96
Jun 15	0200	*2,550	*5.33	Aug 24	0300	1,680	4.33

Minimum discharge, 34 ft^3/s, Oct. 12, gage height, 0.96 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	57	39	224	e54	e55	e85	244	722	701	784	176	301
2	54	40	205	e53	e55	e81	228	694	549	659	150	249
3	51	39	188	e53	e54	e78	207	640	655	587	133	205
4	47	39	173	e53	e54	e76	189	591	1030	523	197	172
5	44	42	164	e53	e56	e75	181	532	1460	446	353	148
6	42	46	159	e54	e62	e74	171	503	1520	384	1170	130
7	41	46	174	e55	e66	e77	173	467	1470	347	1250	115
8	41	45	e185	e55	e72	e82	174	477	1270	313	1220	102
9	37	45	e190	e57	e76	e86	173	463	1090	284	961	102
10	41	45	e190	e59	e83	e90	182	415	936	267	720	99
11	38	48	e185	e60	e86	e91	211	393	1280	265	517	88
12	35	48	185	e61	e91	e93	399	391	1780	255	393	78
13	46	50	e165	e61	e95	e115	696	386	2180	339	322	71
14	53	48	e141	e61	e98	e165	893	392	2480	386	296	77
15	63	48	e126	e61	e103	e330	862	395	2520	327	288	74
16	54	48	e116	e60	e108	e470	765	389	2240	273	254	76
17	49	48	e108	e59	e113	e700	686	373	1820	236	217	78
18	48	46	e100	e59	121	e910	607	361	1520	202	178	74
19	46	48	e94	e58	125	e970	539	353	1360	174	152	79
20	45	47	e87	e58	129	911	478	335	1290	155	134	67
21	45	48	e80	e58	122	668	459	315	1300	147	350	63
22	45	50	e72	e59	123	551	442	297	1940	136	1320	64
23	49	52	e65	e60	122	598	440	297	2220	117	1500	75
24	50	91	e60	e60	120	525	456	290	2120	181	1620	72
25	45	133	e58	e60	114	394	444	276	1920	291	1340	77
26	42	135	e57	e60	e105	372	436	266	1740	232	1110	83
27	42	172	e56	e60	e97	349	422	261	1780	186	852	79
28	40	221	e56	e59	e89	376	508	258	1440	165	659	103
29	40	234	e56	e59	---	329	635	1530	1150	162	568	140
30	40	231	e56	e58	---	282	702	939	943	148	459	167
31	40	---	e55	e57	---	260	---	781	---	167	369	---
TOTAL	1410	2272	3830	1794	2594	10263	13002	14782	45704	9138	19228	3308
MEAN	45.5	75.7	124	57.9	92.6	331	433	477	1523	295	620	110
MAX	63	234	224	61	129	970	893	1530	2520	784	1620	301
MIN	35	39	55	53	54	74	171	258	549	117	133	63
AC-FT	2800	4510	7600	3560	5150	20360	25790	29320	90650	18130	38140	6560
CFSM	0.04	0.07	0.11	0.05	0.08	0.30	0.39	0.43	1.37	0.27	0.56	0.10
IN.	0.05	0.08	0.13	0.06	0.09	0.34	0.44	0.50	1.53	0.31	0.64	0.11

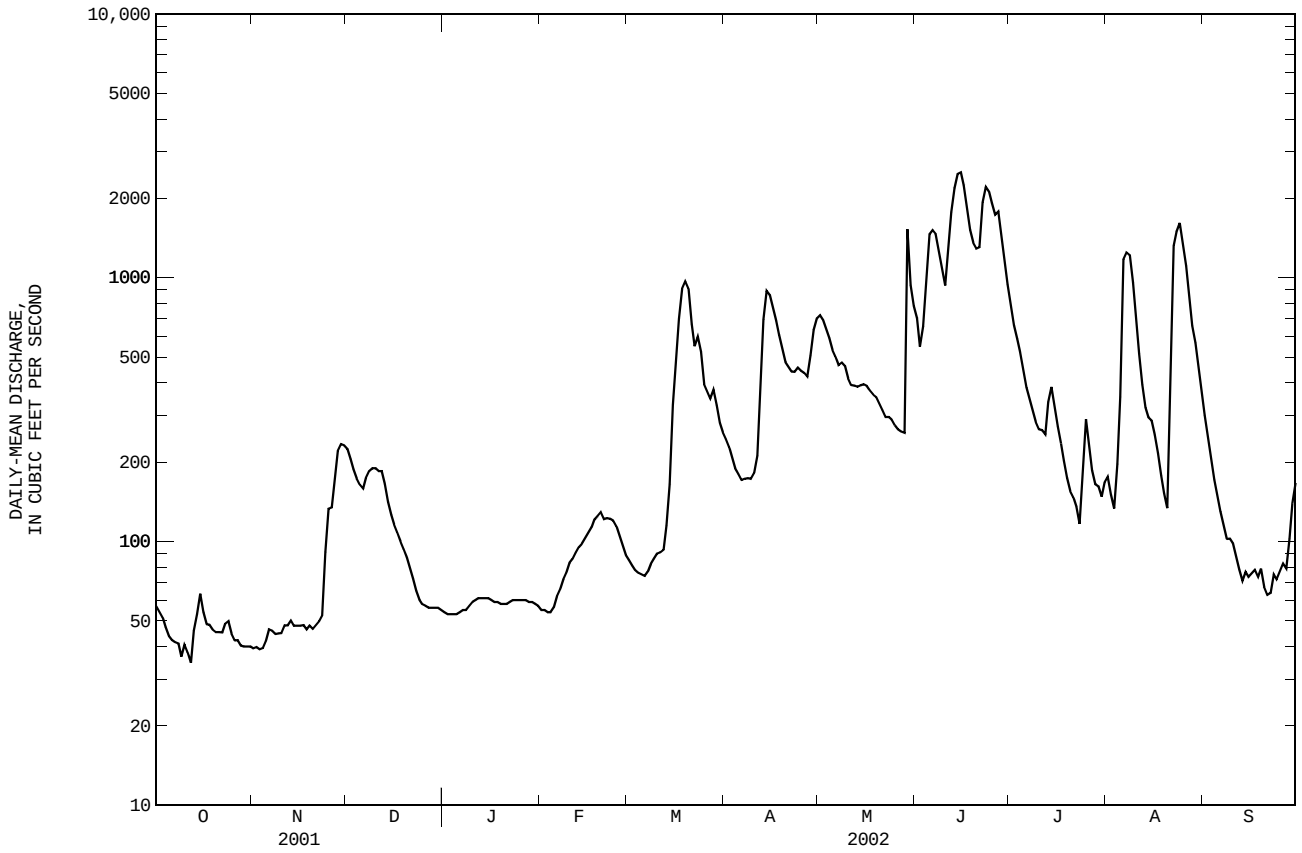
05320500 LE SUEUR RIVER NEAR RAPIDAN, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	313	270	149	83.3	139	789	1431	973	1078	654	405	239
MAX	3300	1561	698	493	1299	3465	6563	3706	3913	2760	3656	1526
(WY)	1969	1993	1992	1992	1984	1983	1965	1960	1993	1993	1993	1993
MIN	7.41	11.1	5.04	2.96	1.68	33.0	48.3	18.8	40.4	20.6	8.20	7.55
(WY)	1990	1956	1959	1957	1959	1964	1957	1940	1950	1988	1989	1976

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1940 - 2002	
ANNUAL TOTAL	419011		127325			
ANNUAL MEAN	1148		349		545	
HIGHEST ANNUAL MEAN					2035	1993
LOWEST ANNUAL MEAN					51.4	1977
HIGHEST DAILY MEAN	12800	Apr 6	2520	Jun 15	23400	Apr 8 1965
LOWEST DAILY MEAN	35	Oct 12	35	Oct 12	1.6	Feb 9 1959
ANNUAL SEVEN-DAY MINIMUM	37	Sep 13	39	Oct 6	1.6	Feb 9 1959
MAXIMUM PEAK FLOW			2550	Jun 15	24700	Apr 8 1965
MAXIMUM PEAK STAGE			5.33	Jun 15	22.72a	May 22 1960
INSTANTANEOUS LOW FLOW			34	Oct 12	1.6	Feb 9 1959
ANNUAL RUNOFF (AC-FT)	831100		252500		394900	
ANNUAL RUNOFF (CFSM)	1.03		0.31		0.49	
ANNUAL RUNOFF (INCHES)	14.04		4.27		6.67	
10 PERCENT EXCEEDS	3700		950		1510	
50 PERCENT EXCEEDS	65		162		154	
90 PERCENT EXCEEDS	44		48		18	

a From highwater mark.
e Estimated.



05325000 MINNESOTA RIVER AT MANKATO, MN

LOCATION(REVISED).--Lat 44°10′′08", long 94°00′11", in SE¼SW¼ sec. 7, T. 108 N., R. 26 W., Blue Earth County, Hydrologic Unit 07020007, on right bank 300 ft downstream from Memorial bridge in Mankato, 2.0 mi downstream from Blue Earth River and at mile 106.2 upstream from Mississippi River.

DRAINAGE AREA.--14,900 mi^2 (approximately).

PERIOD OF RECORD.--May 1903 to current year (no winter records 1904, 1906-10, 1918-29). Monthly discharge only for some periods, published in WSP 1308. Published as "near Mankato": 1903-21.

REVISED RECORDS.--WSP 875: 1917. WSP 955: Drainage area. WSP 1085: 1929. WSP 1238: 1903, 1908, 1919. WSP 1508: 1916(M), 1918(M), 1926(M), 1928, 1930, 1932(M), 1938(M). WDR-MN-76-1: 1881(M).

GAGE.--Water-stage recorder. Datum of gage is 747.92 ft above sea level (NGVD of 1929). Prior to Oct. 19, 1921, nonrecording gage, at site 1.8 mi upstream at datum 6.4 ft higher. Mar. 15, 1922 to Nov. 30, 1924, nonrecording gage, and Dec. 1, 1924 to May 24, 1971, recorder at site 0.2 mi upstream at present datum. May 25, 1971 to Aug. 14, 1977, recorder at site 0.5 mi upstream at present datum. Aug. 14, 1977 to July 27, 1978, nonrecording gage; and from July 28, 1978 to Sept. 30, 1993, recording gage at site 0.7 mi upstream of present site.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage, 29.9 ft, Apr. 26, 1881, near present site and datum, from floodmark (estimated discharge, 110,000 ft^3/s).

DISCHARGE, in CFS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	731	705	2110	1980	e1150	e1300	5650	6420	6090	8540	3040	2570
2	721	684	2050	1850	e1100	e1240	6130	6810	6160	7310	2840	2320
3	703	678	2000	1750	e1050	e1170	6510	6840	6760	6320	2610	2160
4	662	733	1900	1700	e1000	e1140	6460	6900	10500	5550	2640	2060
5	653	758	1870	1680	e980	e1140	6350	6640	12300	5100	2610	1910
6	573	792	1880	1660	e970	e1140	6220	6340	11800	4590	3840	1770
7	542	815	2040	1610	e960	e1150	6200	5890	10600	4140	4550	1640
8	574	840	2290	1590	e950	e1150	6290	5810	9140	3950	5040	1540
9	625	785	2280	1580	e960	e1160	6310	6050	7930	3610	5360	1400
10	665	801	2230	1540	e970	e1170	6500	6830	7110	3340	5340	1300
11	661	796	2240	1500	e990	e1120	6720	7230	7120	3330	4790	1190
12	647	786	2320	1520	e1010	e1240	7020	7620	8340	3230	4140	1100
13	702	814	2330	1520	e1030	e1270	7380	7830	9310	3100	3560	1070
14	711	827	2020	1490	1050	e1290	8070	7980	9380	3080	3190	1070
15	747	827	2000	1490	1070	e1330	8060	8090	8730	2910	3040	989
16	795	821	2090	e1470	1120	e1540	8280	8170	7740	2720	2930	939
17	789	804	2150	e1430	1160	e1770	8390	8080	6870	2610	2820	888
18	817	795	2120	e1380	1240	e2100	8290	7910	6400	2460	2550	856
19	821	810	2040	e1320	1330	e2400	8050	7590	6610	2280	2390	871
20	823	770	1900	e1280	1450	e2450	7710	7250	6110	2110	2310	837
21	879	777	1980	e1270	1520	e2330	7410	6790	6830	2000	2500	803
22	862	794	1910	e1270	1450	e2120	7150	6310	10700	2040	3880	760
23	884	844	2620	e1260	1620	e2070	6870	6050	12400	1930	5120	722
24	881	1110	1710	e1250	1670	e2020	6720	5680	12800	1800	6470	690
25	937	1310	1630	e1230	1650	e2000	6490	5260	12700	2150	6700	770
26	783	1330	e1570	e1220	e1600	e1970	6290	4940	12400	2430	6030	895
27	676	1800	e1630	e1210	e1530	e2020	5970	4720	12100	2380	5320	868
28	675	2070	e1610	e1200	e1400	e2250	5830	4680	11200	2340	4550	815
29	700	2200	e1590	e1200	---	2700	5830	5800	10400	2480	4000	839
30	699	2140	e1560	e1190	---	3430	5980	5340	9460	2840	3570	866
31	703	---	e1530	e1180	---	4790	---	5550	---	2840	3200	---
TOTAL	22641	30016	61200	44820	33980	55970	205130	203400	275990	105510	120930	36508
MEAN	730.4	1001	1974	1446	1214	1805	6838	6561	9200	3404	3901	1217
MAX	937	2200	2620	1980	1670	4790	8390	8170	12800	8540	6700	2570
MIN	542	678	1530	1180	950	1120	5650	4680	6090	1800	2310	690
AC-FT	44910	59540	121400	88900	67400	111000	406900	403400	547400	209300	239900	72410
CFSM	0.05	0.07	0.13	0.10	0.08	0.12	0.46	0.44	0.62	0.23	0.26	0.08
IN.	0.06	0.07	0.15	0.11	0.08	0.14	0.51	0.51	0.69	0.26	0.30	0.09

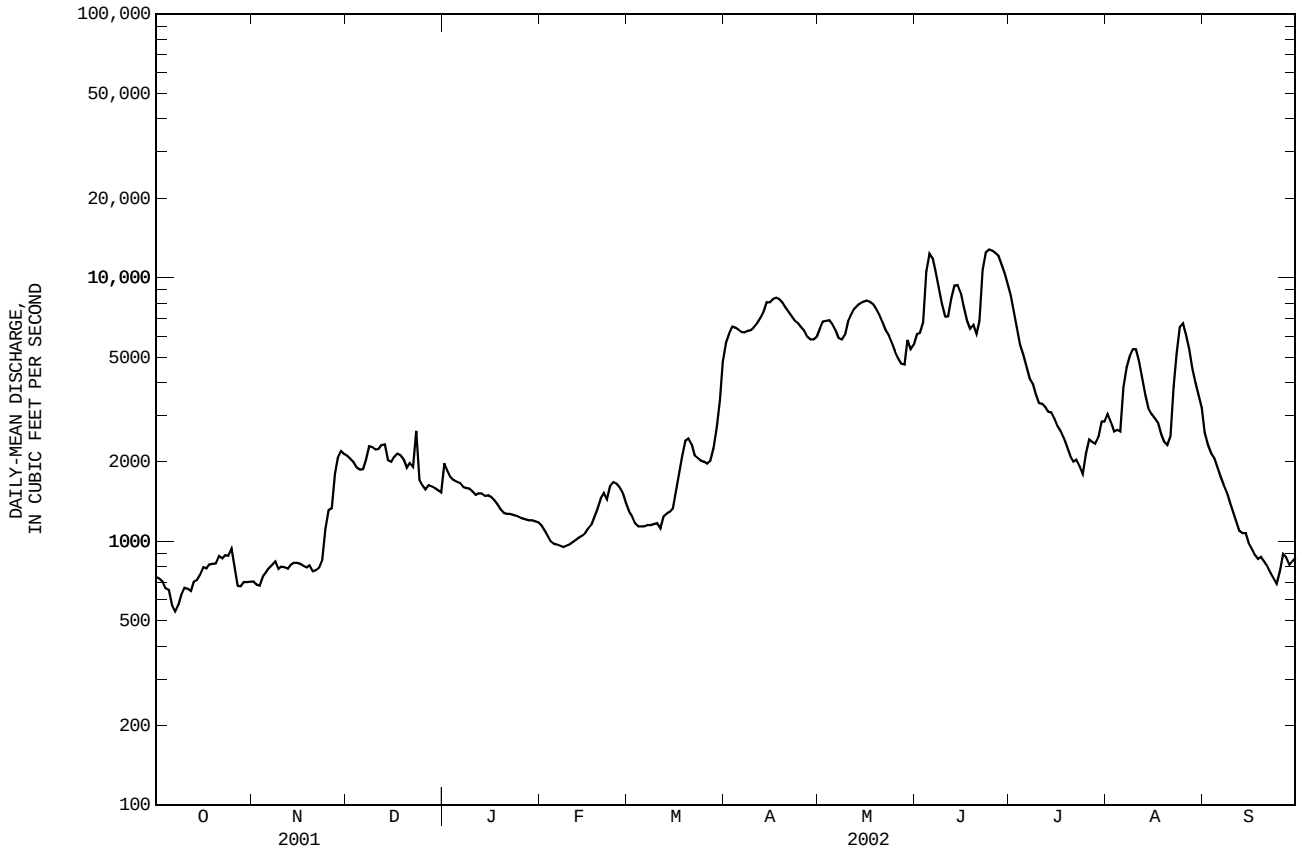
05325000 MINNESOTA RIVER AT MANKATO, MN--Continued

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

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1618	1570	1049	656.9	803.2	4493	9813	6045	6330	4604	2374	1630
MAX	14600	8569	4770	3009	4505	18230	52910	25740	34230	33130	23520	11070
(WY)	1969	1996	1983	1992	1983	1983	2001	2001	1993	1993	1993	1993
MIN	66.1	83.5	80.9	61.5	58.4	132	609	101	194	58.3	37.4	56.6
(WY)	1934	1934	1934	1940	1940	1934	1931	1934	1934	1934	1934	1934

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1903 - 2002	
ANNUAL TOTAL	3356315		1196095			
ANNUAL MEAN	9195		3277		3579a	
HIGHEST ANNUAL MEAN					14890	1993
LOWEST ANNUAL MEAN					136	1934
HIGHEST DAILY MEAN	73200	Apr 16	12800	Jun 24	92700	Apr 10 1965
LOWEST DAILY MEAN	410	Feb 25	542	Oct 7	31	Aug 3 1934
ANNUAL SEVEN-DAY MINIMUM	419	Feb 24	612	Oct 6	33	Jul 29 1934
MAXIMUM PEAK FLOW			13000	Jun 24	94100	Apr 10 1965
MAXIMUM PEAK STAGE			10.74	Jun 24	30.11	Jun 21 1993
INSTANTANEOUS LOW FLOW			531	Oct 7	26b	Aug 4 1934
ANNUAL RUNOFF (AC-FT)	6657000		2372000		2593000	
ANNUAL RUNOFF (CFSM)	0.62		0.22		0.24	
ANNUAL RUNOFF (INCHES)	8.38		2.99		3.26	
10 PERCENT EXCEEDS	32600		7480		9660	
50 PERCENT EXCEEDS	1290		2020		1280	
90 PERCENT EXCEEDS	481		793		180	

a Median of annual mean discharges is 2,870 ft^3/s.
b Minimum observed.
e Estimated.



05325000 MINNESOTA RIVER AT MANKATO, MN--Continued

PERIOD OF RECORD.-- Water years 1963-66, 1968 to current year.

PERIOD OF DAILY RECORD:

WATER TEMPERATURES.-- October 1967 to September 30, 1981, October 1982 to current year (fragmentary records).

SUSPENDED-SEDIMENT DISCHARGE.-- October 1967 to current year.

REMARKS.--Sediment samples were collected generally from two to five three times per week by an observer from Apr. 11 to Sept. 30. In general, daily concentrations and loads for the open-water period are considered fair to poor. During the winter period, and for periods of no observer samples, daily sediment concentrations and loads are based primarily on concentrations of sediment in samples that were collected monthly, and on daily water-discharge records. Sediment records for the winter period are considered poor. Water temperatures were obtained by the observer at the time of sediment sampling, and monthly by U.S. Geological Survey personnel.

EXTREMES FOR PERIOD OF DAILY RECORD:

WATER TEMPERATURES.-- Maximum observed, 31.5 C, Aug. 6, 2001; minimum observed, 0.0 C on many days most winters.

SEDIMENT CONCENTRATIONS.-- Maximum daily mean, 2,850 mg/L, Aug. 7, 1968; minimum daily mean, 9 mg/L, Jan. 15-19, 1991.

SEDIMENT LOADS.-- Maximum daily, 414,000 tons, June 21, 1993; minimum daily, 5.2 tons, Nov. 6, 1976.

EXTREMES FOR CURRENT YEAR:

WATER TEMPERATURES.-- Maximum observed, 30.0 C, July 7,8,16,20,31; minimum observed, 0.0 C, Dec. 14,19 (assumed to be 0.0 C, many days during winter).

SEDIMENT CONCENTRATIONS.-- Maximum daily mean, 1,040 mg/L, June 4; minimum daily mean, 31 mg/L, Sep. 24.

SEDIMENT LOADS.-- Maximum daily, 29,500 tons, June 4; minimum daily, 58 tons, Sep. 24.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18.0	---	---	---	---	---	3.0	12.0	25.0	29.0	25.5	---
2	15.0	10.0	---	---	---	---	2.0	12.0	21.0	28.0	24.0	---
3	15.5	---	---	---	---	---	0.0	---	19.0	28.0	26.0	---
4	---	---	---	---	---	---	1.0	14.0	15.0	25.0	24.0	---
5	---	---	---	---	---	---	2.0	15.0	18.0	29.0	26.0	---
6	---	---	---	---	---	---	---	15.0	21.0	28.0	23.0	25.0
7	12.5	---	---	---	---	---	---	---	18.0	30.0	---	---
8	---	---	---	---	---	---	7.0	10.0	21.0	30.0	21.0	---
9	---	9.5	---	---	---	---	8.0	12.0	24.0	28.0	22.0	---
10	---	---	---	---	---	---	---	---	24.0	26.5	24.0	24.0
11	---	---	1.0	---	---	---	9.0	11.0	23.0	27.0	---	23.0
12	12.0	7.0	---	---	---	---	---	10.0	23.0	22.5	24.0	24.0
13	12.0	10.5	1.5	---	---	---	---	13.0	---	26.0	24.0	22.0
14	---	---	0.0	---	---	---	16.0	14.0	19.0	27.0	---	23.5
15	10.0	---	---	---	---	---	19.0	15.0	22.0	27.0	23.0	22.0
16	---	---	---	---	---	---	22.0	15.0	---	30.0	22.5	23.0
17	10.0	---	2.0	---	---	---	---	---	21.0	28.0	22.0	23.0
18	---	---	---	---	---	---	---	16.0	21.0	---	23.0	23.0
19	11.5	8.0	0.0	---	3.0	---	---	15.0	21.0	---	25.0	---
20	---	---	---	---	---	---	---	16.0	22.0	30.0	---	20.0
21	---	---	---	---	0.5	---	12.0	17.0	21.0	---	22.0	19.0
22	---	---	---	---	---	---	---	17.0	21.0	27.0	23.0	15.0
23	---	---	---	---	---	0.5	14.0	17.0	---	---	22.0	---
24	10.0	---	---	---	---	---	12.0	19.0	---	26.0	23.0	---
25	---	---	---	---	---	2.0	12.0	---	27.0	28.0	24.0	---
26	---	3.5	---	---	---	3.0	---	21.0	26.0	25.0	25.0	15.0
27	---	---	---	---	---	4.5	---	---	25.0	---	24.0	14.0
28	---	---	---	---	---	5.0	10.0	21.0	27.0	---	24.0	---
29	7.5	15.0	---	---	---	---	13.0	23.0	29.0	26.0	25.0	23.0
30	---	---	---	---	---	---	11.0	---	---	28.0	26.0	---
31	9.0	---	---	---	---	---	---	---	---	30.0	24.0	---
MEAN	11.9	9.1	0.9	---	1.8	2.9	9.6	15.2	22.2	27.6	23.7	21.2
MAX	18.0	15.0	2.0	---	3.0	5.0	22.0	23.0	29.0	30.0	26.0	25.0
MIN	7.5	3.5	0.0	---	0.5	0.2	0.0	10.0	15.0	22.5	21.0	14.0

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	OCTOBER MEAN CONCEN-TRATION (MG/L)	OCTOBER LOAD (TONS/ DAY)	NOVEMBER MEAN CONCEN-TRATION (MG/L)	NOVEMBER LOAD (TONS/ DAY)	DECEMBER MEAN CONCEN-TRATION (MG/L)	DECEMBER LOAD (TONS/ DAY)	JANUARY MEAN CONCEN-TRATION (MG/L)	JANUARY LOAD (TONS/ DAY)	FEBRUARY MEAN CONCEN-TRATION (MG/L)	FEBRUARY LOAD (TONS/ DAY)	MARCH MEAN CONCEN-TRATION (MG/L)	MARCH LOAD (TONS/ DAY)
1	75	148	137	261	159	906	194	770	159	494	147	615
2	74	144	136	251	158	875	193	740	155	460	144	630
3	74	140	136	249	158	853	191	707	152	431	143	660
4	74	132	136	269	158	811	191	691	149	402	141	678
5	74	130	135	276	159	803	190	667	147	389	141	697
6	73	113	134	287	159	807	189	648	145	380	140	696
7	73	107	133	293	165	909	189	623	144	373	137	673
8	73	113	133	302	172	1060	188	604	144	369	133	625
9	74	125	132	280	178	1100	188	599	143	371	126	561
10	87	156	132	285	182	1100	187	591	143	375	116	479
11	83	148	132	284	183	1110	187	596	143	382	108	426
12	81	141	138	293	185	1160	187	601	143	390	97	354
13	118	224	141	310	185	1160	187	611	144	400	86	302
14	138	265	137	306	185	1010	186	613	144	408	79	277
15	136	274	135	301	184	994	186	618	145	419	72	259
16	134	288	134	297	183	1030	186	613	148	448	69	287
17	133	283	134	291	182	1060	186	603	150	470	82	392
18	133	293	137	294	182	1040	186	593	153	512	94	533
19	132	293	136	297	181	997	186	588	157	564	95	616
20	131	291	133	277	181	929	186	583	159	622	90	595
21	131	311	133	279	180	962	186	593	160	657	85	535
22	136	317	132	283	190	980	185	619	159	622	82	469
23	155	370	165	376	226	1600	185	629	156	682	80	447
24	150	357	228	683	216	997	185	649	153	690	77	420
25	147	372	222	785	210	924	184	646	151	673	75	405
26	144	304	201	722	207	877	181	630	150	648	74	394
27	142	259	181	880	203	893	176	589	149	616	73	398
28	141	257	170	950	201	874	172	557	148	559	76	462
29	139	263	163	968	199	854	169	548	---	---	90	656
30	138	260	160	924	197	830	165	530	---	---	124	1150
31	137	260	---	---	196	810	162	516	---	---	160	2070
TOTAL	---	7138	---	12553	---	30315	---	19165	---	13806	---	17761

DAY	APRIL MEAN CONCEN-TRATION (MG/L)	APRIL LOAD (TONS/ DAY)	MAY MEAN CONCEN-TRATION (MG/L)	MAY LOAD (TONS/ DAY)	JUNE MEAN CONCEN-TRATION (MG/L)	JUNE LOAD (TONS/ DAY)	JULY MEAN CONCEN-TRATION (MG/L)	JULY LOAD (TONS/ DAY)	AUGUST MEAN CONCEN-TRATION (MG/L)	AUGUST LOAD (TONS/ DAY)	SEPTEMBER MEAN CONCEN-TRATION (MG/L)	SEPTEMBER LOAD (TONS/ DAY)
1	201	3070	136	2360	177	2910	169	3900	99	813	105	729
2	259	4290	158	2910	165	2740	168	3320	93	713	103	645
3	346	6080	175	3230	308	5620	170	2900	110	775	102	595
4	343	5980	156	2910	1040	29500	172	2580	134	955	100	556
5	270	4630	130	2330	762	25300	173	2380	108	761	99	511
6	230	3860	113	1930	328	10500	168	2080	345	3580	95	454
7	206	3450	105	1670	257	7360	161	1800	305	3750	88	390
8	193	3280	101	1580	228	5630	149	1590	232	3160	83	345
9	193	3290	105	1720	203	4350	143	1390	205	2970	81	306
10	225	3950	178	3280	181	3470	198	1790	184	2650	78	274
11	223	4050	242	4720	323	6210	162	1460	169	2190	73	235
12	215	4080	233	4790	419	9440	140	1220	152	1700	69	205
13	213	4240	225	4760	414	10400	131	1100	141	1360	69	199
14	209	4550	222	4780	364	9220	123	1020	129	1110	80	231
15	201	4370	216	4720	331	7800	113	888	118	969	70	187
16	192	4290	213	4700	306	6390	107	786	110	870	64	162
17	183	4150	210	4580	282	5230	102	719	104	792	73	175
18	172	3850	207	4420	291	5030	95	631	100	688	77	178
19	157	3410	198	4060	263	4690	90	554	98	632	63	148
20	149	3100	184	3600	250	4120	84	479	97	605	51	115
21	181	3620	175	3210	422	7780	90	486	100	675	44	95.4
22	176	3400	167	2850	732	21100	90	496	315	3300	41	84.1
23	163	3020	155	2530	534	17900	83	433	320	4420	37	72.1
24	154	2790	151	2320	403	13900	132	642	275	4800	31	57.8
25	143	2510	151	2140	321	11000	99	575	231	4180	69	143
26	134	2280	178	2370	254	8500	78	512	200	3260	68	164
27	127	2050	222	2830	203	6630	76	488	177	2540	49	115
28	119	1870	276	3490	177	5350	103	651	155	1900	43	94.6
29	119	1870	339	5310	170	4770	131	877	135	1460	41	92.9
30	122	1970	224	3230	168	4290	118	905	122	1180	42	98.2
31	---	---	199	2980	---	---	107	820	112	968	---	---
TOTAL	---	107350	---	102310	---	267130	---	39472	---	59726	---	7657.1

YEAR 684383.1

05327000 HIGH ISLAND CREEK NEAR HENDERSON, MN

LOCATION.--Lat 44°34'19", long 93°55'18", in NE¼NW¼ sec. 26, T.113 N., R.26 W., Sibley County, Hydrologic Unit 07020012, on left bank 20 ft downstream from bridge on County Road 6, 1.6 mi upstream from mouth, and 3.1 mi north of Henderson.

DRAINAGE AREA.--238 mi^2.

PERIOD OF RECORD.--October 1973 to current year. May 1970 to September 1973, operated as a low-flow station only.

REVISED RECORDS.--WDR-MN-80-2: 1974-75, 1977-79, WRD MN-98: 1993.

GAGE.--Water-stage recorder. Datum of gage is 728.56 ft above sea level (NGVD of 1929).

REMARKS.--Records good except those for estimated daily discharges, which are fair to 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	1.6	2.3	3.4	e4.2	e2.9	e5.8	23	19	42	543	155	126
2	1.7	2.2	3.4	e4.1	e3.0	5.0	28	19	42	483	123	164
3	1.8	2.2	3.3	e4.0	e3.0	e4.8	25	19	494	399	111	139
4	1.7	2.4	3.4	e4.1	e3.1	e4.6	18	18	615	322	460	118
5	1.9	2.4	3.7	4.3	e3.2	4.4	20	18	322	257	536	103
6	1.9	2.4	3.9	4.4	3.1	3.9	17	25	240	201	423	96
7	2.0	2.5	4.0	e4.2	3.3	3.9	18	23	212	164	356	88
8	2.2	2.5	4.1	4.0	3.5	4.0	25	105	192	141	303	79
9	2.3	2.9	4.0	3.9	3.7	e3.9	24	91	169	126	252	72
10	2.4	2.2	4.2	3.9	3.8	e3.8	29	60	146	122	205	66
11	2.4	2.4	4.1	3.8	3.8	e3.7	33	51	243	119	170	62
12	2.6	2.4	4.1	3.6	3.8	3.6	35	60	141	113	150	58
13	3.1	2.5	3.9	3.6	3.8	4.1	37	57	120	102	133	53
14	3.0	2.7	3.8	3.6	4.1	4.9	41	50	107	94	117	51
15	2.9	2.6	3.8	3.5	4.4	e4.8	41	45	97	86	103	48
16	2.9	2.6	3.9	3.5	4.7	e4.6	40	44	87	77	95	46
17	3.0	2.6	3.9	e3.4	4.9	5.0	39	41	82	70	121	43
18	2.9	3.0	5.1	e3.4	4.3	5.8	36	38	82	68	114	41
19	2.8	2.8	4.7	e3.3	4.9	6.9	31	37	119	73	104	40
20	3.0	2.5	4.7	e3.1	5.6	7.8	27	35	132	77	95	40
21	2.9	2.7	4.7	e2.9	5.2	e7.5	25	33	850	71	267	38
22	3.0	2.7	5.2	e2.7	5.0	e7.0	22	32	969	65	416	36
23	3.1	2.9	e5.8	2.9	5.6	e6.4	20	31	668	61	328	35
24	2.8	6.9	e5.6	e2.7	6.4	5.6	18	29	626	57	299	32
25	2.6	7.2	e5.2	2.6	e6.3	e5.5	17	29	1240	55	293	35
26	2.5	5.2	e4.8	2.8	e6.2	e5.5	16	29	1010	54	280	41
27	2.4	4.8	4.8	2.9	e6.2	11	17	30	794	49	259	39
28	2.4	4.1	4.3	2.9	6.1	31	21	47	703	53	223	38
29	2.4	3.8	e4.2	2.8	---	35	19	108	644	171	189	38
30	2.5	3.6	4.3	e2.8	---	28	19	62	592	205	158	40
31	2.4	---	e4.2	2.9	---	24	---	47	---	181	136	---
TOTAL	77.1	94.0	132.5	106.8	123.9	261.8	781	1332	11780	4659	6974	1905
MEAN	2.49	3.13	4.27	3.45	4.42	8.45	26.0	43.0	393	150	225	63.5
MAX	3.1	7.2	5.8	4.4	6.4	35	41	108	1240	543	536	164
MIN	1.6	2.2	3.3	2.6	2.9	3.6	16	18	42	49	95	32
AC-FT	153	186	263	212	246	519	1550	2640	23370	9240	13830	3780
CFSM	0.01	0.01	0.02	0.01	0.02	0.04	0.11	0.18	1.66	0.63	0.95	0.27
IN.	0.01	0.01	0.02	0.02	0.02	0.04	0.12	0.21	1.85	0.73	1.09	0.30

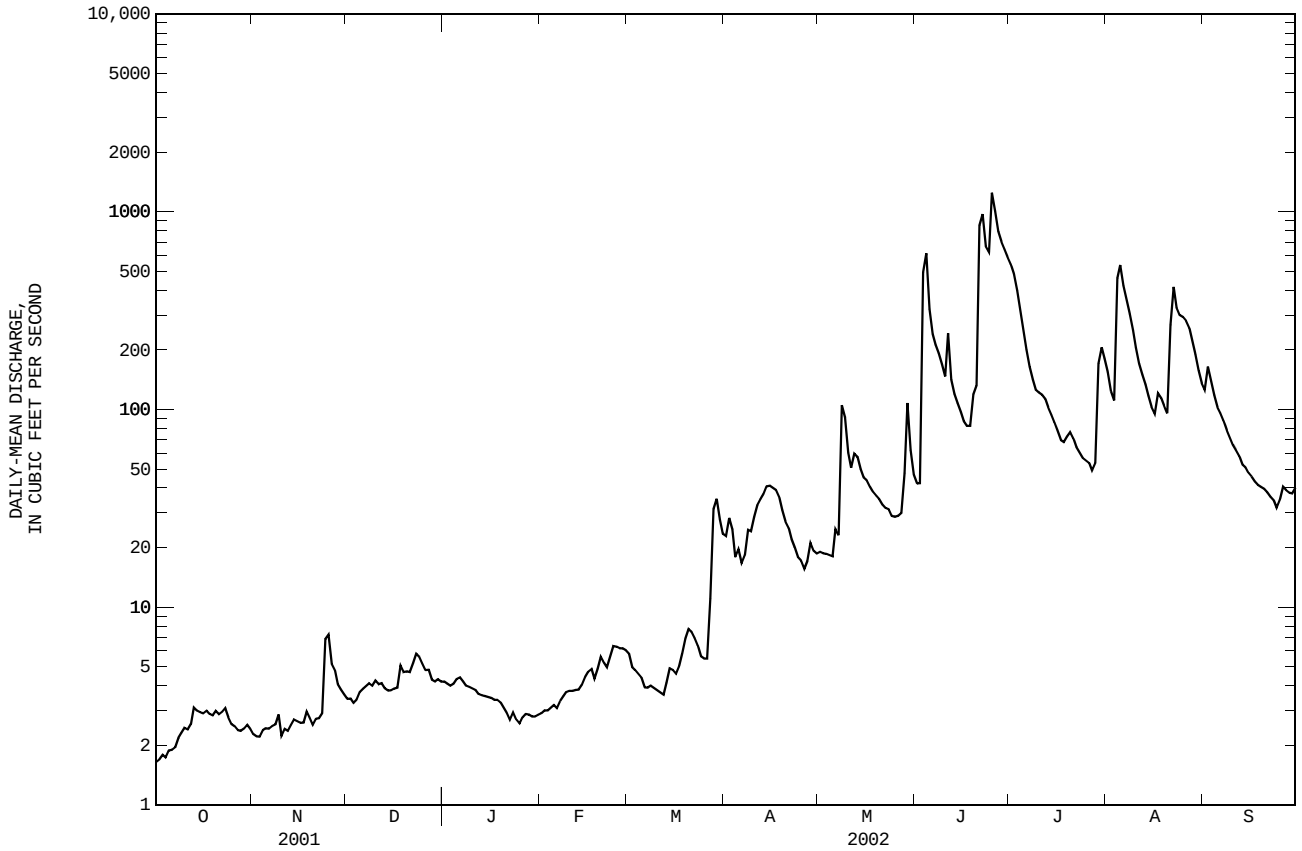
05327000 HIGH ISLAND CREEK NEAR HENDERSON, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1974 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	67.8	57.8	32.3	14.2	22.4	155	274	158	169	125	81.1	93.2
MAX	298	219	111	72.5	121	547	1104	478	646	783	380	592
(WY)	1986	1993	1983	1992	1984	1992	2001	1993	1993	1993	1997	1991
MIN	1.51	2.11	1.37	0.98	1.28	5.33	6.69	3.32	1.58	0.80	1.16	1.18
(WY)	1990	1990	1976	1977	1989	2001	1990	1976	1976	1976	1976	1974

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1974 - 2002	
ANNUAL TOTAL	53916.4		28232.4			
ANNUAL MEAN	148		77.3		104	
HIGHEST ANNUAL MEAN					293	1993
LOWEST ANNUAL MEAN					9.23	1976
HIGHEST DAILY MEAN	2400	Apr 12	1240	Jun 25	2400	Apr 12 2001
LOWEST DAILY MEAN	1.6	Oct 1	1.6	Oct 1	0.46	Oct 3 1976
ANNUAL SEVEN-DAY MINIMUM	1.7	Sep 28	1.8	Oct 1	0.59	Jul 10 1976
MAXIMUM PEAK FLOW			1660	Jun 21,25	2830a	Jul 25 1997
MAXIMUM PEAK STAGE			9.48	Jun 21	9.88	Apr 23 2001
INSTANTANEOUS LOW FLOW			1.4	Oct 1	0.20b	Jan 4 1981
ANNUAL RUNOFF (AC-FT)	106900		56000		75560	
ANNUAL RUNOFF (CFSM)	0.62		0.33		0.44	
ANNUAL RUNOFF (INCHES)	8.46		4.43		5.98	
10 PERCENT EXCEEDS	514		205		297	
50 PERCENT EXCEEDS	3.8		18		28	
90 PERCENT EXCEEDS	2.3		2.7		2.0	

a Backwater from Minnesota River.
b Result of freezeup.
e Estimated.



05330000 MINNESOTA RIVER NEAR JORDAN, MN

LOCATION.--Lat 44°41'35", long 93°38'30", in NW¼SW¼ sec. 7, T.114 N., R.23 W., Carver County, Hydrologic Unit 07020012, on right bank 100 ft downstream from bridge on Scott County Highway 9, 1.5 mi northwest of Jordan, and at mile 39.4 uptream from Mississippi River.

DRAINAGE AREA.--16,200 mi^2 (approximately).

PERIOD OF RECORD.--September 1934 to current year. Prior to Oct. 1, 1966, published as "near Carver, Minn".

REVISED RECORDS.--WSP 955: Drainage area. WSP 1508: 1935. WDR MN-87-2: 1976 (cal. yr. summary).

GAGE.--Water-stage recorder. Datum of gage is 690.00 ft above sea level (NGVD of 1929). Prior to Oct. 1, 1966, water-stage recorder 2.8 mi downstream with auxiliary nonrecording gage at present site and present datum.

REMARKS.--Records good except those for estimated daily discharges, which are fair to 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	976	908	2200	e1650	e1380	e1500	4540	5930	5320	12200	3280	4310
2	970	901	2150	e1580	e1360	e1580	5510	e6280	5670	10700	3190	3810
3	984	882	2130	e1550	e1320	e1600	6040	6640	6810	9250	3200	3340
4	964	866	2080	e1520	e1320	e1620	6400	6730	10100	7910	4720	3020
5	930	862	2010	e1510	e1310	e1690	6500	6750	13100	6840	5220	2850
6	893	902	1910	e1590	e1300	e1780	6450	6670	14300	6090	4860	2790
7	863	940	1880	e1670	e1300	e1880	6390	6360	14100	5450	5040	2600
8	818	968	1940	e1700	e1310	e1870	6390	6280	12700	4860	5680	2420
9	796	957	2130	e1660	e1310	e1830	6440	6520	11000	4500	6000	2240
10	841	966	2270	e1630	e1300	e1750	6530	6630	e10000	4250	6120	2090
11	888	953	2240	e1620	e1300	e1690	6780	7000	e8400	4050	6000	1940
12	902	957	2240	e1580	e1300	e1680	7060	7460	7970	4050	5530	1830
13	904	975	2260	e1580	e1290	e1680	7350	7770	8520	3950	4980	1740
14	907	976	2320	e1580	e1300	e1700	7700	7960	9450	e3660	4210	1670
15	925	976	2180	e1570	e1310	1730	8220	8070	9570	e3400	3790	1610
16	924	980	2050	e1580	e1320	1880	8280	8140	9080	e3210	3490	1550
17	946	988	2080	e1580	e1340	2090	8460	8130	8180	e3130	3780	1490
18	985	982	2140	e1590	e1360	2300	8560	8040	7270	e2960	3640	1430
19	990	964	2140	e1560	e1380	2600	8470	7880	6780	e2880	3340	1390
20	1000	942	2100	e1500	e1400	2980	8240	7590	6960	2730	3000	1370
21	1010	948	1840	e1470	e1440	e3020	7980	7230	e8100	2570	3490	1330
22	1010	936	1800	e1450	e1520	e2930	7680	6820	e10900	2380	4680	1280
23	1060	943	1710	e1430	e1550	e2750	7380	6390	e13700	2290	5510	1240
24	1070	1030	1670	e1440	e1520	e2700	7100	6010	16500	2250	6570	1190
25	1070	1160	1470	e1440	e1520	e2650	6800	5670	17300	2150	7810	1180
26	1050	1290	1370	e1430	1640	e2500	6590	5280	18200	2190	8290	1250
27	1040	1460	1400	e1420	1450	2530	6390	4970	18100	2510	7690	1300
28	945	1580	1670	e1410	e1390	2550	6230	4720	17300	2560	6910	1340
29	905	1910	1790	e1400	---	2910	6000	4840	15800	2800	5940	1310
30	893	2130	e1750	e1390	---	3100	5940	5500	14000	2960	5270	1270
31	898	---	e1710	e1390	---	3540	---	5370	---	3180	4660	---
TOTAL	29357	32232	60630	47470	38540	68610	208400	205630	335180	133910	155890	58180
MEAN	947	1074	1956	1531	1376	2213	6947	6633	11170	4320	5029	1939
MAX	1070	2130	2320	1700	1640	3540	8560	8140	18200	12200	8290	4310
MIN	796	862	1370	1390	1290	1500	4540	4720	5320	2150	3000	1180
AC-FT	58230	63930	120300	94160	76440	136100	413400	407900	664800	265600	309200	115400
CFSM	0.06	0.07	0.12	0.09	0.08	0.14	0.43	0.41	0.69	0.27	0.31	0.12
IN.	0.07	0.07	0.14	0.11	0.09	0.16	0.48	0.47	0.77	0.31	0.36	0.13

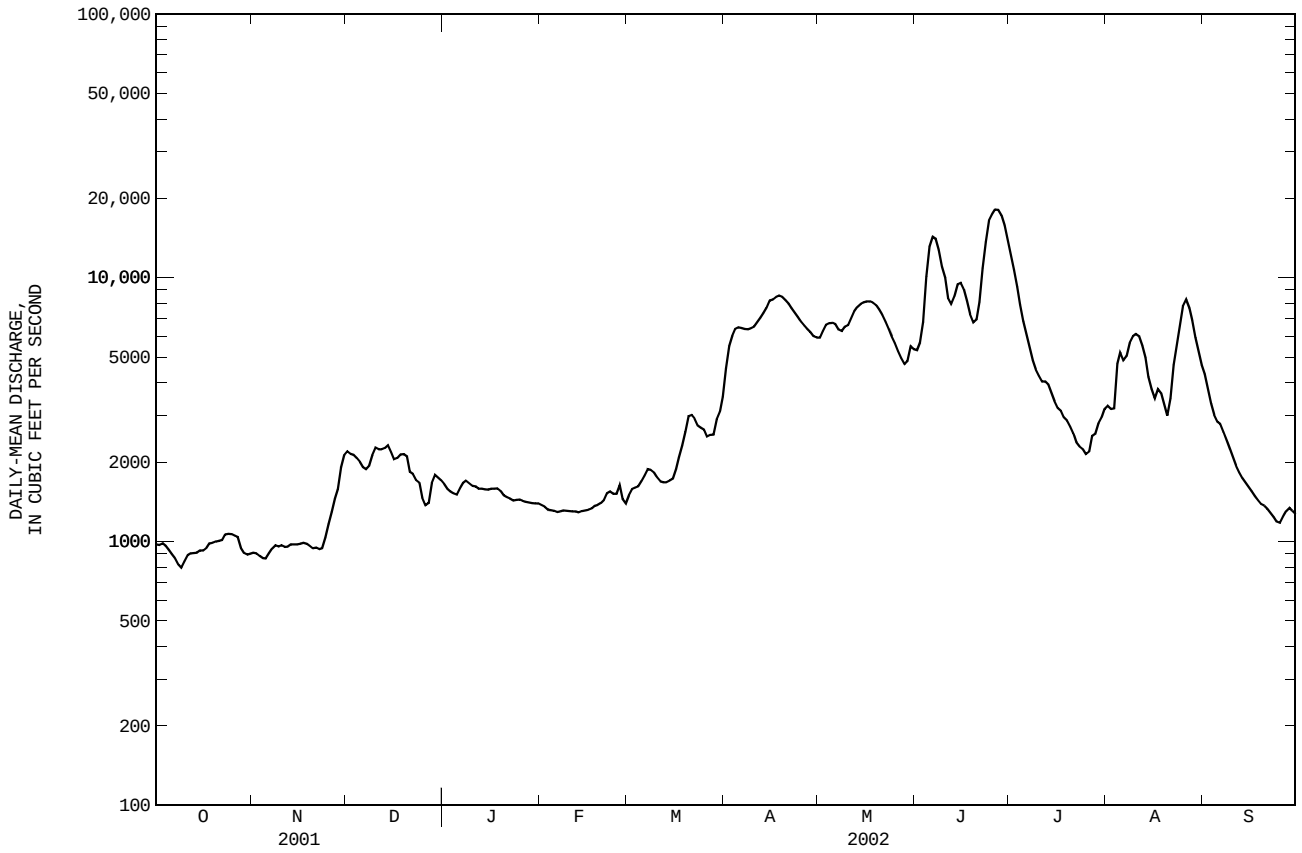
05330000 MINNESOTA RIVER NEAR JORDAN, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1935 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	2174	2145	1518	934	1021	5118	12920	8318	7992	5955	3321	2239
MAX	16030	9463	5216	3344	3992	21170	59030	31480	41460	38640	25660	14460
(WY)	1969	1996	1983	1992	1983	1983	2001	2001	1993	1993	1993	1993
MIN	167	178	158	111	130	322	926	923	633	279	178	183
(WY)	1935	1935	1977	1940	1940	1940	1959	1959	1976	1936	1936	1976

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1935 - 2002	
ANNUAL TOTAL	3854133		1374029			
ANNUAL MEAN	10560		3764		4477a	
HIGHEST ANNUAL MEAN					16910	1993
LOWEST ANNUAL MEAN					687	1940
HIGHEST DAILY MEAN	86200	Apr 18	18200	Jun 26	112000	Apr 11 1965
LOWEST DAILY MEAN	520	Feb 27	796	Oct 9	85	Jan 21 1940
ANNUAL SEVEN-DAY MINIMUM	527	Feb 24	857	Oct 6	89	Jan 20 1940
MAXIMUM PEAK FLOW			18300	Jun 26	117000	Apr 11 1965
MAXIMUM PEAK STAGE			20.62	Jun 26	35.07	Apr 12 1965
INSTANTANEOUS LOW FLOW			791	Oct 9	79	Nov 17 1955
ANNUAL RUNOFF (AC-FT)	7645000		2725000		3243000	
ANNUAL RUNOFF (CFSM)	0.65		0.23		0.28	
ANNUAL RUNOFF (INCHES)	8.85		3.16		3.75	
10 PERCENT EXCEEDS	33100		8050		11900	
50 PERCENT EXCEEDS	1420		2150		1840	
90 PERCENT EXCEEDS	650		973		326	

a Median of annual mean discharges is 3,710 ft^3/s.
e Estimated.



05331000 MISSISSIPPI RIVER AT ST. PAUL, MN

LOCATION.--Lat 44°56'01", long 93°06'20", in NE¼NE¼ sec.13, T. 28 N., R. 22 W., Ramsey County, Hydrologic Unit 07010206, on left bank in St. Paul, 100 ft upstream from Smith Ave. Bridge, 4.8 mi downstream from Minnesota River, and at mile 840.5 upstream from Ohio River.

DRAINAGE AREA.--36,800 mi^2 (approximately).

PERIOD OF RECORD.--Water year 1867-69, 1872-92 (annual maximums), March 1892 to current year (prior to 1901, fragmentary during some winters). Records prior to March 1892, published in the 19th Annual Report, Part 4, have been found to be unreliable and should not be used. Monthly discharge only for some periods, published in WSP 1308. Gage-height records (winter records incomplete) collected at same site since 1866 are contained in reports of U.S. Weather Bureau, War Department and Mississippi River Commission.

REVISED RECORDS.--WSP 285: 1892-96. WSP 715: Drainage area. WSP 875: 1938. WSP 895: 1939. WSP 1308: 1867(M). WSP 1508: 1897, 1898(M). 1903(M), 1917-18(M). 1928(M), 1929. WRD MN-74: 1973.

GAGE.--Water-stage recorder. Datum of gage is 683.62 ft above sea level (NGVD of 1929). Prior to Mar. 18, 1925, nonrecording gage at several sites within 300 ft of each other and 1.2 miles downstream of present site at present datum. Mar. 19, 1925 to June 24, 1999, recording gage 1.2 miles downstream of present site at present datum. Since September 1938, auxiliary water-stage recorder 5.6 mi downstream.

REMARKS.--Records good except those for estimated days, which are fair to poor. Flow-routing techniques were used from Oct. 1, 2001 to April 11, 2002, April 28 to June 24, 2002 and July 19 to Sept. 30, 2002. Routed discharges are considered fair to poor. Slight regulation, except during extreme floods, by reservoirs on headquarters and by power plants. Beginning July 20, 1939, effluent from Minneapolis and St. Paul, which formerly entered the river above station, was diverted to a wasterwater treatment plant, thence to river about 4 miles below station. Daily-mean discharge figures do not include this diversion.

COOPERATION.--Records of discharge from the Metro Plant wastewater treatment plant were provided by the Metropolitan Council - Environmental Services.

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	4850	7370	7990	e6910	e6090	e6460	12200	20800	13600	41600	17900	18900
2	5120	6820	8540	e6890	e5970	e6240	14300	20500	13700	39800	17400	17800
3	5100	6900	9060	e6940	e6100	e6110	15400	e21200	14100	37900	17100	18500
4	4720	6610	9440	e7080	e5820	e6090	15500	20800	15100	34800	16900	18800
5	4680	6390	9810	e7170	e5890	e6160	15600	20400	18200	31200	21800	18000
6	4640	6780	9350	e7310	e5940	e6080	15400	20500	20800	28700	23300	17200
7	4680	6410	10000	e7380	e5880	e6010	16200	20000	21900	27000	23400	19900
8	4410	6580	10100	e7510	e5660	e6060	e17000	19300	21600	24600	24200	21500
9	4380	6480	10200	e7610	e5670	e5980	18000	19900	20300	23400	24700	20200
10	4830	6290	9400	e7680	e5630	e5950	18900	22600	18000	26400	24700	19100
11	5030	5750	9270	e7780	e5550	e5800	19800	22600	e17100	31200	23800	19300
12	5000	6200	9730	e7760	e5500	e6050	22600	24000	e15200	33600	22700	19100
13	5170	6290	10100	e7690	e5500	e6290	24400	25600	14700	34800	21200	18500
14	5510	6510	10200	e7650	e5500	e6370	26100	26500	15100	33300	19600	17500
15	5550	7130	9410	e7670	e5490	e6190	28600	27200	15900	32300	18400	17500
16	6200	6720	9720	e7610	e5490	e5860	30900	27900	15800	31600	17200	16600
17	6380	6300	9650	e7530	e5500	e5840	32000	28100	15200	30400	16500	15900
18	6540	6640	9570	e7150	e5500	6360	32500	27700	13900	29400	16100	15100
19	6540	6350	10300	e7050	e5670	6750	31900	27200	12600	e29400	16100	14000
20	6990	6700	10600	e6900	e5730	6910	30900	26100	12000	e27700	16100	13800
21	6670	6280	8970	e7030	e5840	7160	29800	25000	13200	e26400	15800	12500
22	6730	5980	8200	e7020	e5950	7220	28900	23400	e16400	24600	17500	11800
23	6750	6490	7920	e6870	e6010	e7160	27500	21500	e21000	22900	19200	10900
24	6630	6380	7600	e6620	e6140	e7160	26200	20300	e24300	21500	20300	10700
25	6940	6640	6610	e6540	e6330	e7350	24900	18700	31900	19500	21200	10000
26	7500	7130	e6380	e6500	e6400	e7210	23900	17400	34400	19300	22800	9850
27	6940	7230	e6320	e6290	e6360	e7130	23100	16600	37800	18100	24200	10100
28	6370	7830	e6140	e6350	e6380	e6960	22900	15700	41300	17300	22900	9600
29	6460	8090	e6170	e6380	---	7280	22700	14700	42800	18100	21700	9380
30	7150	8080	e6230	e6320	---	8330	21600	14000	43000	17900	20200	9610
31	7020	---	e6560	e6250	---	9910	---	14700	---	17600	19600	---
TOTAL	181480	201350	269540	219440	163490	206430	689700	670900	630900	852300	624500	461640
MEAN	5854	6712	8695	7079	5839	6659	22990	21640	21030	27490	20150	15390
MAX	7500	8090	10600	7780	6400	9910	32500	28100	43000	41600	24700	21500
MIN	4380	5750	6140	6250	5490	5800	12200	14000	12000	17300	15800	9380
AC-FT	360000	399400	534600	435300	324300	409500	1368000	1331000	1251000	1691000	1239000	915700
CFSM	0.16	0.18	0.24	0.19	0.16	0.18	0.62	0.59	0.57	0.75	0.55	0.42
IN.	0.18	0.20	0.27	0.22	0.17	0.21	0.70	0.68	0.64	0.86	0.63	0.47
+	303	293	265	293	286	294	320	340	368	376	391	347
‡MEAN	6160	7000	8960	7370	6160	6950	23200	22000	21400	27900	20500	15700
‡CFSM	0.17	0.19	0.24	0.20	0.17	0.19	0.63	0.60	0.58	0.76	0.56	0.43
‡IN	0.19	0.21	0.28	0.23	0.18	0.22	0.71	0.69	0.65	0.87	0.64	0.48

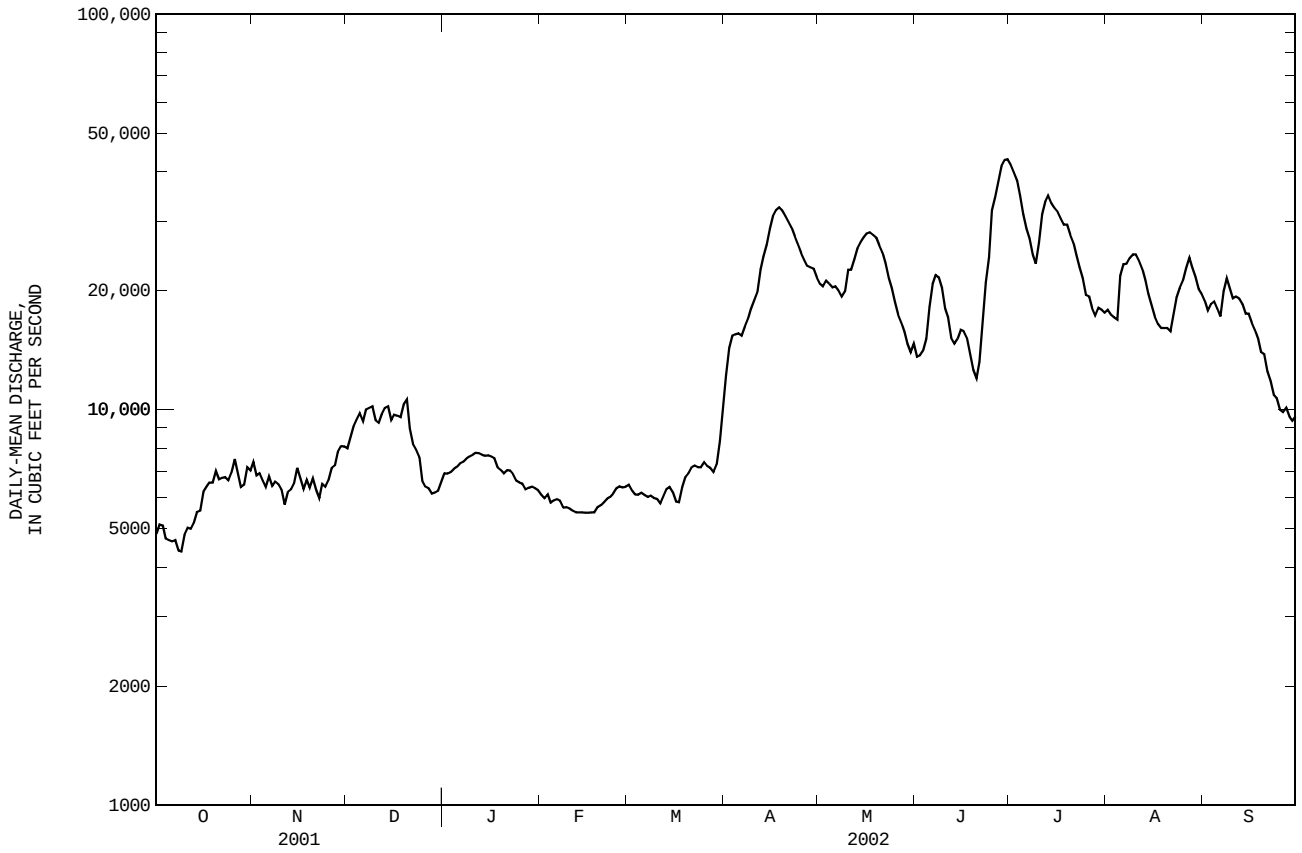
05331000 MISSISSIPPI RIVER AT ST. PAUL, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1892 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	8529	7911	5759	4656	4614	11140	26600	21380	18520	14640	9023	8107
MAX	38210	27660	16080	11500	14700	43240	96590	70430	57170	73590	42550	34380
(WY)	1987	1972	1983	1983	1966	1983	2001	2001	1993	1993	1993	1986
MIN	1289	1348	1277	1097	1300	1757	3421	3085	1980	1272	864	1143
(WY)	1937	1937	1935	1935	1895	1940	1895	1934	1934	1934	1934	1934

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1892 - 2002	
ANNUAL TOTAL	8718520		5171670			
ANNUAL MEAN	23890		14170		11820	
HIGHEST ANNUAL MEAN					29580	1986
LOWEST ANNUAL MEAN					1935	1934
HIGHEST DAILY MEAN	142000	Apr 18	43000	Jun 30	171000	Apr 16 1965
LOWEST DAILY MEAN	4340	Sep 30	4380	Oct 9	632	Aug 26 1934
ANNUAL SEVEN-DAY MINIMUM	4620	Oct 4	4620	Oct 4	741	Aug 26 1934
MAXIMUM PEAK FLOW			43400	Jun 29	171000	Apr 16 1965
MAXIMUM PEAK STAGE			9.52	Jun 29	26.01	Apr 16 1965
ANNUAL RUNOFF (AC-FT)	17290000		10260000		8563000	
ANNUAL RUNOFF (CFSM)	0.65		0.39		0.32	
ANNUAL RUNOFF (INCHES)	8.81		5.23		4.36	
10 PERCENT EXCEEDS	68300		27100		27400	
50 PERCENT EXCEEDS	6940		10100		7150	
90 PERCENT EXCEEDS	5300		5920		2700	

+ Diversion, in cubic feet per second, from wastewater treatment plant.
‡ Adjusted for discharges from wastewater treatment plant.
e Estimated.



05331580 MISSISSIPPI RIVER BELOW LOCK AND DAM 2, AT HASTINGS, MN

LOCATION.--Lat 44°44'48", long 92°51'08", SE¼SE¼ sec. 21, T.115 N., R.17 W., Dakota County, Hydrologic Unit 07010206, near bridge on U.S. Highway 61 in Hastings, 1.2 mi downstream from Lock and Dam 2, 2.5 mi upstream from St. Croix River, and at mile 813.8 upstream from Ohio River.

DRAINAGE AREA.--37,050 mi^2.

PERIOD OF RECORD.--October 1996 to current year.

REMARKS.-- Records fair to poor. Water-discharge computed on the basis of routed discharge for Mississippi River at St. Paul (station 05331000) adjusted for inflow (including metropolitan wastewater treatment plant) and travel time.

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

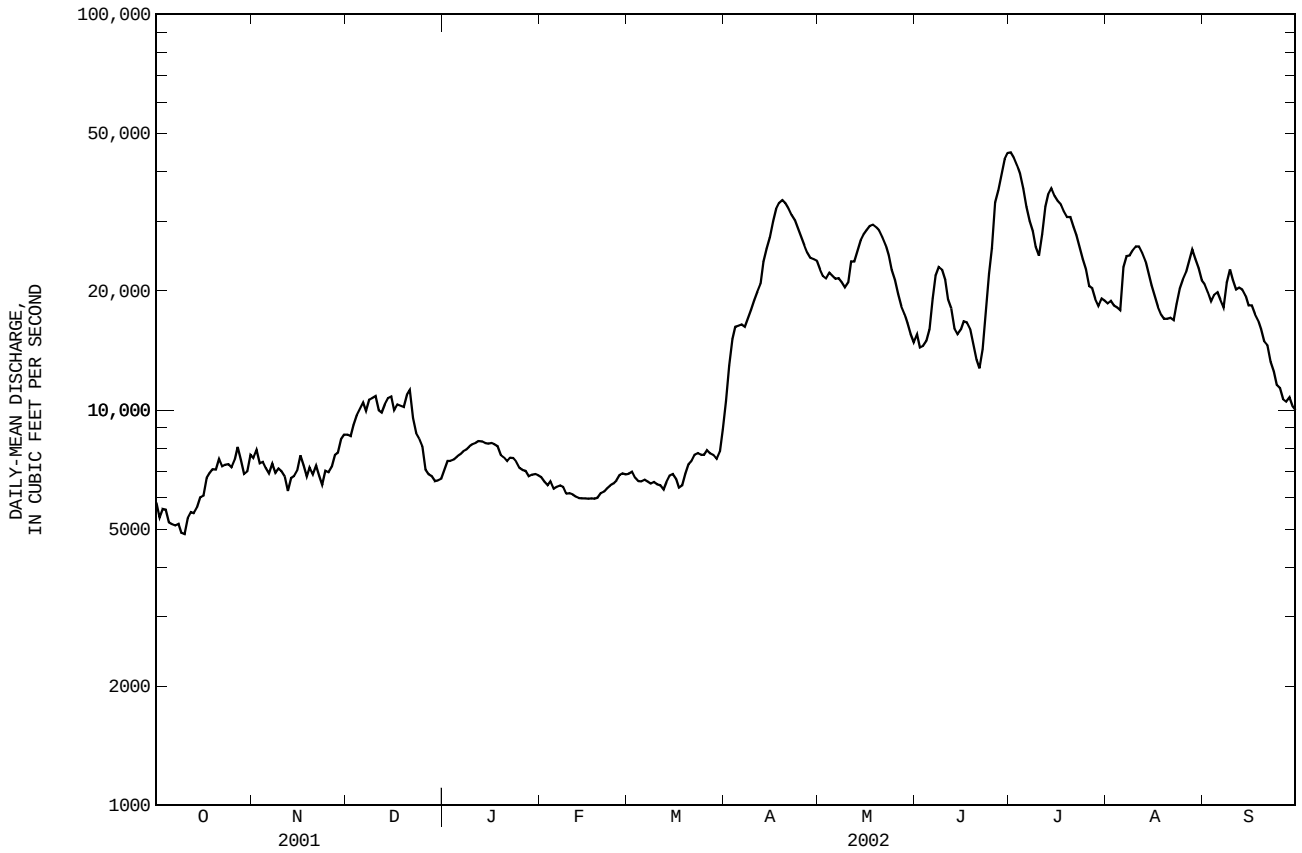
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5840	7560	8660	7050	6760	6900	10500	22700	15500	44900	18600	20800
2	5340	7930	8580	7440	6590	6980	12900	21800	14400	43400	18900	19900
3	5620	7330	9160	7440	6450	6750	15100	21500	14500	41500	18400	18800
4	5600	7400	9690	7490	6600	6620	16200	22200	14900	39600	18100	19500
5	5200	7130	10100	7620	6320	6600	16300	21800	16000	36300	17900	19900
6	5140	6920	10400	7720	6390	6660	16400	21500	19200	32600	23000	19000
7	5110	7310	9950	7870	6440	6580	16200	21600	21900	30000	24500	18200
8	5150	6930	10600	7940	6380	6510	17100	21100	23000	28300	24600	21000
9	4880	7110	10700	8080	6150	6570	17900	20400	22700	25800	25400	22600
10	4850	7000	10800	8190	6160	6480	18900	21000	21300	24600	25900	21300
11	5320	6800	9980	8250	6120	6450	19900	23700	19000	27800	25900	20200
12	5520	6240	9850	8350	6040	6300	20800	23800	18000	32700	25000	20400
13	5480	6720	10300	8320	5980	6580	23700	25200	16100	35100	23800	20200
14	5670	6800	10700	8250	5980	6820	25600	26800	15600	36400	22300	19400
15	6010	7030	10800	8220	5980	6880	27300	27800	15900	34800	20600	18400
16	6070	7680	9990	8260	5970	6700	29900	28500	16800	33800	19400	18400
17	6730	7250	10300	8180	5980	6360	32300	29200	16700	33100	18200	17500
18	6910	6790	10300	8100	5970	6440	33400	29400	16100	31800	17400	16900
19	7080	7170	10200	7700	6000	6900	33900	29000	14700	30800	17000	16000
20	7070	6870	10900	7590	6160	7290	33300	28500	13400	30800	17000	14900
21	7530	7230	11200	7420	6220	7450	32300	27300	12700	29000	17100	14600
22	7200	6800	9540	7570	6330	7710	31100	26200	14200	27700	16900	13200
23	7270	6460	8740	7560	6450	7770	30200	24600	17400	25800	18500	12500
24	7290	7020	8450	7400	6510	7700	28800	22600	22100	24000	20300	11600
25	7170	6960	8110	7140	6640	7700	27400	21300	25700	22600	21400	11400
26	7480	7180	7060	7060	6840	7910	26100	19600	33500	20600	22300	10600
27	8060	7700	6870	7020	6910	7760	25000	18300	35900	20300	24000	10500
28	7470	7800	6800	6800	6880	7690	24200	17500	39500	19100	25400	10800
29	6890	8420	6610	6860	---	7520	24100	16600	43100	18300	24100	10200
30	6990	8670	6640	6890	---	7840	23800	15500	44700	19100	22800	10000
31	7700	---	6690	6830	---	8920	---	14800	---	18900	21300	---
TOTAL	195640	216210	288670	236610	177200	219340	710600	711800	634500	919500	656000	498700
MEAN	6311	7207	9312	7633	6329	7075	23690	22960	21150	29660	21160	16620
MAX	8060	8670	11200	8350	6910	8920	33900	29400	44700	44900	25900	22600
MIN	4850	6240	6610	6800	5970	6300	10500	14800	12700	18300	16900	10000
AC-FT	388100	428900	572600	469300	351500	435100	1409000	1412000	1259000	1824000	1301000	989200
CFSM	0.17	0.19	0.25	0.21	0.17	0.19	0.64	0.62	0.57	0.80	0.57	0.45
IN.	0.20	0.22	0.29	0.24	0.18	0.22	0.71	0.71	0.64	0.92	0.66	0.50

05331580 MISSISSIPPI RIVER BELOW LOCK AND DAM 2, AT HASTINGS, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1996 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	10490	13270	10320	7784	7796	13910	49360	36440	27730	23670	13390	8992
MAX	25600	24960	13290	9657	10040	20360	95650	76140	52600	36910	23560	16620
(WY)	1996	1996	1997	1996	1998	1998	2001	2001	2001	1997	1997	2002
MIN	4661	7207	6912	6022	5588	6436	10400	14070	16100	15970	6460	4369
(WY)	2001	2002	2000	2000	2000	2001	2000	2000	1997	2000	2000	2000

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1996 - 2002	
ANNUAL TOTAL	9135910		5464770			
ANNUAL MEAN	25030		14970		18610	
HIGHEST ANNUAL MEAN					25040	2001
LOWEST ANNUAL MEAN					10310	2000
HIGHEST DAILY MEAN	147000	Apr 19	44900	Jul 1	147000	Apr 19 2001
LOWEST DAILY MEAN	4850	Oct 10	4850	Oct 10	3650	Sep 25 2000
ANNUAL SEVEN-DAY MINIMUM	5090	Oct 5	5090	Oct 5	3900	Sep 23 2000
ANNUAL RUNOFF (AC-FT)	18120000		10840000		13480000	
ANNUAL RUNOFF (CFSM)	0.67		0.40		0.50	
ANNUAL RUNOFF (INCHES)	9.16		5.48		6.81	
10 PERCENT EXCEEDS	71000		28400		38500	
50 PERCENT EXCEEDS	7480		10700		11700	
90 PERCENT EXCEEDS	5810		6420		5920	



05331580 MISSISSIPPI RIVER AT HASTINGS, MN--Continued
(National Water-Quality Assessment Program)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1936-41, 1943-1977, 1995 to current year.

NASQAN samples previously collected at Mississippi River at Ninninger (station no. 05331570), January 1977 to September 1995.

PERIOD OF DAILY RECORD:

WATER TEMPERATURES.-- 1996 to 1998 (non-winter months).

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

Date	Time	Sample type	Medium code	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	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)	ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)
OCT													
24...	1005	ENVIRONMENTAL		--	731	11.0	107	8.4	--	519	10.0	11.7	179
NOV													
20...	0935	ENVIRONMENTAL		--	750	11.4	98	8.2	--	510	4.0	7.7	176
DEC													
17...	1015	ENVIRONMENTAL		--	743	14.3	106	8.2	--	578	2.0	2.7	183
JAN													
22...	1100	ENVIRONMENTAL		--	738	14.2	100	7.7	--	619	4.0	.0	210
FEB													
12...	1000	ENVIRONMENTAL		--	745	13.5	98	7.9	--	621	.0	.8	263
APR													
24...	1055	BLANK		--	742	--	--	--	3	--	15.0	--	--
24...	1100	ENVIRONMENTAL		28800	742	10.1	95	7.9	--	481	15.0	11.5	145
MAY													
06...	1130	ENVIRONMENTAL		--	742	10.9	105	8.2	--	562	18.0	12.4	170
JUN													
11...	1130	ENVIRONMENTAL		18700	741	7.8	91	7.9	--	665	22.0	22.0	182
11...	1135	SPIKE		18700	741	7.8	91	7.9	--	665	22.0	22.0	182
JUL													
26...	1000	ENVIRONMENTAL		--	744	7.1	86	7.7	--	392	28.0	24.0	142
AUG													
14...	1045	ENVIRONMENTAL		20100	743	7.9	96	8.0	--	465	24.0	23.5	172

Date	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)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	2,6-DI-ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	ACETO-CHLOR, WATER FLTRD REC (UG/L) (49260)	ALA-CHLOR, WATER, DISS, REC, (UG/L) (46342)
OCT													
24...	218	6	33.3	39.6	<.04	.76	.78	.024	.05	.190	<.002	.005	<.002
NOV													
20...	215	5	31.9	40.8	E.03	1.1	.96	.033	.06	.193	--	--	--
DEC													
17...	224	0	29.6	57.3	.05	.66	2.06	.034	.10	.161	<.002	.007	<.002
JAN													
22...	256	0	34.2	67.5	.08	.75	2.23	.039	.12	.165	--	--	--
FEB													
12...	320	0	38.0	62.2	.06	.80	1.96	.051	.11	.184	<.006	<.006	<.004
APR													
24...	--	--	<.30	<.1	<.04	<.10	<.05	<.008	<.02	<.004	--	--	--
24...	177	0	19.6	68.8	E.04	1.2	1.36	.027	.05	.183	<.006	.016	<.004
MAY													
06...	202	2	22.2	81.2	<.04	1.3	1.89	.068	<.02	.148	<.006	.044	<.011
JUN													
11...	222	0	26.5	81.6	.08	1.2	8.10	.087	.10	.23	<.006	.427	.016
11...	222	0	--	--	--	--	--	--	--	--	.107	.549	.134
JUL													
26...	173	0	19.2	24.1	.05	1.3	.85	.028	.12	.24	<.006	.011	<.004
AUG													
14...	210	--	19.7	28.6	--	--	--	--	--	--	<.006	.014	<.004

05331580 MISSISSIPPI RIVER AT HASTINGS, MN--Continued
(National Water-Quality Assessment Program)

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

Date	ALPHA BHC DIS-SOLVED (UG/L) (34253)	ATRA-ZINE, WATER, DISS, REC (UG/L) (39632)	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)	DEETHYL ATRA-ZINE, WATER, DISS, REC (UG/L) (04040)	DI-AZINON, DIS-SOLVED (UG/L) (39572)	DI-ELDRIN DIS-SOLVED (UG/L) (39381)	DISUL-FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)
OCT													
24...	<.005	.030	<.010	<.002	<.041	<.020	<.005	<.018	<.003	E.011	E.003	<.005	<.02
NOV													
20...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC													
17...	<.005	.027	<.010	<.002	<.041	<.020	<.005	<.018	<.003	E.011	E.003	<.005	<.02
JAN													
22...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB													
12...	<.005	.027	<.010	<.002	<.041	<.020	<.005	<.018	<.003	E.014	<.005	<.005	<.02
APR													
24...	--	--	--	--	--	--	--	--	--	--	--	--	--
24...	<.005	.040	<.010	<.002	<.041	<.020	<.005	<.018	<.003	E.007	<.005	<.005	<.02
MAY													
06...	<.005	.043	<.010	<.002	<.041	<.020	<.005	<.018	<.003	E.009	<.005	<.005	<.02
JUN													
11...	<.005	.957	<.010	<.002	<.041	<.020	<.005	.069	<.003	E.046	<.005	<.005	<.02
11...	.098	1.11	.088	.102	E.114	E.121	.104	.181	.110	E.113	.107	.090	.07
JUL													
26...	<.005	.230	<.010	<.002	<.041	<.020	<.005	<.018	<.003	E.028	E.003	<.005	<.02
AUG													
14...	<.005	.196	<.010	<.002	<.041	<.020	<.005	<.018	<.003	E.048	<.005	<.005	<.02

Date	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	ETHAL-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	ETHO-PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	FONOFOS WATER DISS REC (UG/L) (04095)	LINDANE DIS-SOLVED (UG/L) (39341)	LIN-URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	MALA-THION, DIS-SOLVED (UG/L) (39532)	METHYL AZIN-PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	METHYL PARA-THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	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)
OCT													
24...	<.002	<.009	<.005	<.003	<.004	<.035	<.027	<.050	<.006	E.010	<.006	<.002	<.007
NOV													
20...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC													
17...	<.002	<.009	<.005	<.003	<.004	<.035	<.027	<.050	<.006	.021	<.006	<.002	<.007
JAN													
22...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB													
12...	<.007	<.009	<.005	<.003	<.004	<.035	<.027	<.050	<.006	E.011	<.006	<.002	<.007
APR													
24...	--	--	--	--	--	--	--	--	--	--	--	--	--
24...	<.002	<.009	<.005	<.003	<.004	<.035	<.027	<.050	<.006	.049	<.006	<.002	<.007
MAY													
06...	.012	<.009	<.005	<.003	<.004	<.035	<.027	<.050	<.006	.028	<.006	<.002	<.007
JUN													
11...	.014	<.009	<.005	<.003	<.004	<.035	<.027	<.050	<.006	.227	.013	<.002	<.007
11...	.100	.091	.102	.108	.105	.144	.096	E.288	.128	.360	.109	.106	.109
JUL													
26...	<.002	<.009	<.005	<.003	<.004	<.035	<.027	<.050	<.006	.014	<.006	<.002	<.007
AUG													
14...	<.002	<.009	<.005	<.003	<.004	<.035	<.027	<.050	<.006	.038	<.006	<.002	<.007

05331580 MISSISSIPPI RIVER AT HASTINGS, MN--Continued
(National Water-Quality Assessment Program)

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

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)	PRO-METON, WATER, DISS, REC (UG/L) (04037)	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)	SI-MAZINE, WATER, DISS, REC (UG/L) (04035)	TEBU-THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)
OCT													
24...	<.003	<.007	<.002	<.010	<.006	<.011	E.01	<.004	<.010	<.011	<.02	<.011	<.02
NOV													
20...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC													
17...	<.003	<.007	<.002	<.010	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.011	<.02
JAN													
22...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB													
12...	<.003	<.010	<.004	<.022	<.006	<.011	<.01	<.004	<.010	<.011	<.02	E.002	<.02
AP													
24...	--	--	--	--	--	--	--	--	--	--	--	--	--
24...	<.003	<.010	<.004	<.022	<.006	<.011	E.01	<.004	<.010	<.011	<.02	<.005	<.02
MAY													
06...	.003	<.010	<.004	<.022	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005	<.02
JUN													
11...	<.003	<.010	<.004	<.022	<.006	<.011	E.01	<.004	<.010	<.011	<.02	<.005	<.02
11...	.064	.119	.108	.112	.037	.067	.13	.109	.119	.123	.08	.078	.13
JUL													
26...	<.003	<.010	<.004	<.022	<.006	<.011	.02	<.004	<.010	<.011	<.02	<.005	<.02
AUG													
14...	<.003	<.010	<.004	<.022	<.006	<.011	E.01	<.004	<.010	<.011	<.02	<.005	<.02

Date	TER-BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TER-BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	THIO-BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	TRIAL-LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRI-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	Data base number
OCT							
24...	<.034	<.02	<.005	<.002	<.009	36	01
NOV							
20...	--	--	--	--	--	30	01
DEC							
17...	<.034	<.02	<.005	<.002	<.009	6.9	01
JAN							
22...	--	--	--	--	--	3.2	01
FEB							
12...	<.034	<.02	<.005	<.002	<.009	10	01
APR							
24...	--	--	--	--	--	--	77
24...	<.034	<.02	<.005	<.002	<.009	48	01
MAY							
06...	<.034	<.02	<.005	<.002	<.009	25	01
JUN							
11...	<.034	<.02	<.005	<.002	<.009	66	01
11...	E.105	.08	.106	.101	.096	--	77
JUL							
26...	<.034	<.02	<.005	<.002	<.009	42	01
AUG							
14...	<.034	<.02	<.005	<.002	<.009	44	01

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05336700 KETTLE RIVER BELOW SANDSTONE, MN

LOCATION.--Lat 46°06'20", long 92°51'50", in NW¼SW¼ sec. 22, T.42 N., R.20 W., Pine County, Hydrologic Unit 07030003, on Sandstone Federal Correctional Institution property, on left bank, about 1.8 mi south of Sandstone.

DRAINAGE AREA.--868 mi^2.

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

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 931.50 ft above sea level (NGVD of 1929, Minnesota Department of Transportation benchmark).

REMARKS.--Records good except those for estimated daily discharge, which are fair.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in April 1965 reached a stage of 12.96 ft, from flood marks, discharge, 13,400 ft^3/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,200 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Apr 12	1600	*5,620	*9.06	Jul 12	0300	3,410	7.74
May 10	0700	3,590	7.88				

Minimum discharge, 104 ft^3/s, Oct. 1, 2, gage height, 3.95 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	107	184	341	e157	e129	e126	451	1180	391	596	818	446
2	108	182	316	e153	e128	e121	417	1090	356	506	748	894
3	110	176	322	e151	e128	e120	357	981	331	437	714	1150
4	110	172	325	e150	e127	e120	316	891	311	380	727	944
5	110	168	345	e149	e127	e122	280	871	295	333	644	727
6	110	165	415	e149	e127	e123	261	865	279	301	553	621
7	109	164	e390	e150	e127	e124	296	848	274	421	485	546
8	113	163	e340	e150	e127	e130	653	1500	273	1360	431	495
9	120	165	e305	e151	e127	e136	1160	3080	264	1930	394	463
10	140	165	e285	e152	e127	e142	1680	3470	269	2340	362	487
11	163	163	e260	e154	e127	e149	3980	3010	261	3120	347	512
12	176	160	e260	e155	e127	e154	5460	2750	246	3280	402	478
13	181	163	e255	e160	e128	e158	5210	2760	236	2720	553	439
14	178	163	e246	e163	e131	e158	4750	2660	238	2150	553	409
15	179	162	e239	e162	e133	e156	4330	2420	243	1760	539	374
16	178	164	e236	e160	e134	e153	3960	2220	251	1480	632	347
17	177	166	e235	e158	e138	e151	3550	1980	245	1260	1180	322
18	178	168	e233	e157	e140	151	3200	1730	237	1310	2150	300
19	176	169	e230	e152	e145	155	2990	1490	247	1240	1850	292
20	179	168	e226	e152	e150	e158	2670	1300	334	1050	1540	344
21	191	164	e221	e149	e153	e160	2320	1150	385	1070	1490	328
22	187	163	e215	e147	e156	e161	2050	1010	371	1090	1470	297
23	188	164	e210	e146	e159	e162	1880	906	376	972	1290	297
24	191	187	e202	e143	e158	e163	1720	799	556	820	1100	356
25	195	279	e192	e141	e156	e162	1570	723	1160	727	917	418
26	190	354	e183	e139	e146	e162	1410	663	1220	656	763	487
27	188	362	e178	e136	e138	e161	1280	618	1090	919	647	519
28	187	326	e173	e134	e130	169	1240	564	964	1370	561	486
29	184	359	e170	e132	---	196	1240	516	835	1150	504	477
30	180	352	e168	e131	---	243	1230	476	707	963	453	481
31	182	---	e162	e130	---	390	---	430	---	835	413	---
TOTAL	4965	6060	7878	4613	3823	4936	61911	44951	13245	38546	25230	14736
MEAN	160	202	254	149	137	159	2064	1450	442	1243	814	491
MAX	195	362	415	163	159	390	5460	3470	1220	3280	2150	1150
MIN	107	160	162	130	127	120	261	430	236	301	347	292
AC-FT	9850	12020	15630	9150	7580	9790	122800	89160	26270	76460	50040	29230
CFSM	0.18	0.23	0.29	0.17	0.16	0.18	2.38	1.67	0.51	1.43	0.94	0.57
IN.	0.21	0.26	0.34	0.20	0.16	0.21	2.65	1.93	0.57	1.65	1.08	0.63

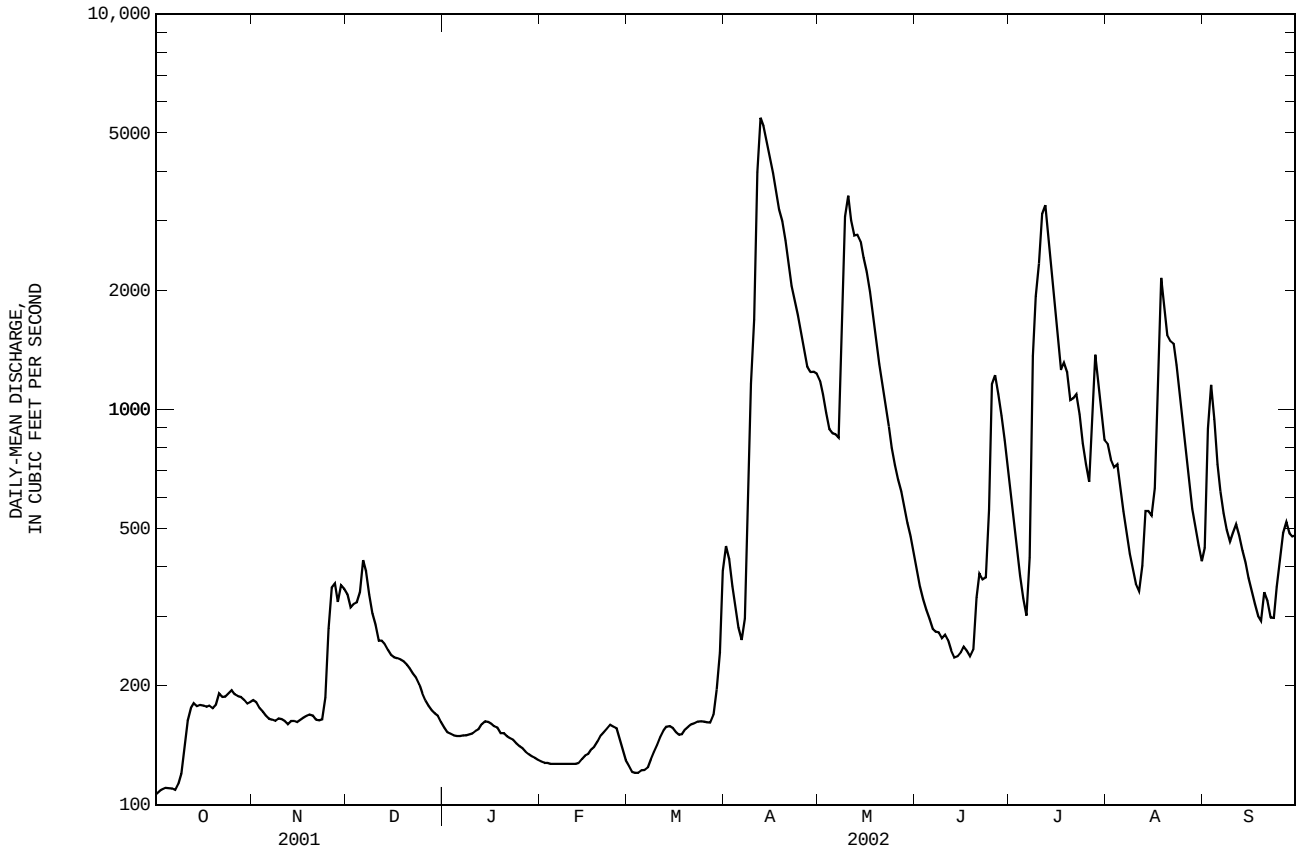
05336700 KETTLE RIVER BELOW SANDSTONE, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1979 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	667	534	289	191	200	571	2420	1262	856	645	404	567
MAX	2071	1569	652	411	447	1451	6459	3168	2799	1960	1575	3065
(WY)	1983	1992	1984	1984	1998	1992	2001	1986	1993	1993	1999	1986
MIN	129	137	118	86.4	111	141	453	222	131	110	97.2	90.0
(WY)	1988	1990	1990	1981	1990	1980	1987	1980	1988	1988	1989	1998

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1979 - 2002	
ANNUAL TOTAL	331633		230894			
ANNUAL MEAN	909		633		717	
HIGHEST ANNUAL MEAN					1352	1986
LOWEST ANNUAL MEAN					318	1988
HIGHEST DAILY MEAN	14200	Apr 24	5460	Apr 12	14200	Apr 24 2001
LOWEST DAILY MEAN	102	Sep 15	107a	Oct 1	78	Sep 22 1998
ANNUAL SEVEN-DAY MINIMUM	106	Sep 14	109	Oct 1	80	Jan 23 1981
MAXIMUM PEAK FLOW			5620	Apr 12	17200	Jul 23 1972
MAXIMUM PEAK STAGE			9.06	Apr 12	15.38	Jul 23 1972
INSTANTANEOUS LOW FLOW			104a	Oct 1	25b	Nov 11 1977
ANNUAL RUNOFF (AC-FT)	657800		458000		519400	
ANNUAL RUNOFF (CFSM)	1.05		0.73		0.83	
ANNUAL RUNOFF (INCHES)	14.21		9.90		11.22	
10 PERCENT EXCEEDS	2140		1520		1720	
50 PERCENT EXCEEDS	174		285		316	
90 PERCENT EXCEEDS	118		134		138	

a Rising stage.
b Result of freezeup.
e Estimated.



05337400 KNIFE RIVER NEAR MORA, MN

LOCATION.--Lat 45°55'12", long 93°18'26", in SW¼SW¼ sec. 26, T.40 N., R.24 W., Kanabec County, Hydrologic Unit 07030004, on left bank 400 ft upstream from bridge on County Highway 77, 1.1 mi upstream from mouth and 2.5 mi north of Mora.

DRAINAGE AREA.--102 mi^2.

PERIOD OF RECORD.--Occasional low-flow measurements, water years 1969-74; July 1974 to December 2001 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 991.20 ft above sea level (NGVD of 1929, Kanabec County benchmark).

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 26, 1972, reached a stage of 14.0 ft, from information by local resident (discharge not determined). Result of dam failure and backwater from collapsed bridge.

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	3.6	9.2	35	---	---	---	---	---	---	---	---	---
2	4.1	8.7	e33	---	---	---	---	---	---	---	---	---
3	6.7	8.9	e32	---	---	---	---	---	---	---	---	---
4	4.2	8.7	e32	---	---	---	---	---	---	---	---	---
5	3.3	8.1	e32	---	---	---	---	---	---	---	---	---
6	2.9	8.8	e31	---	---	---	---	---	---	---	---	---
7	2.6	9.9	e31	---	---	---	---	---	---	---	---	---
8	2.6	10	e30	---	---	---	---	---	---	---	---	---
9	3.7	7.5	e28	---	---	---	---	---	---	---	---	---
10	6.8	8.8	e26	---	---	---	---	---	---	---	---	---
11	9.3	7.9	e25	---	---	---	---	---	---	---	---	---
12	10	8.0	e25	---	---	---	---	---	---	---	---	---
13	12	11	e24	---	---	---	---	---	---	---	---	---
14	13	12	e23	---	---	---	---	---	---	---	---	---
15	13	12	e22	---	---	---	---	---	---	---	---	---
16	12	13	e22	---	---	---	---	---	---	---	---	---
17	10	12	e22	---	---	---	---	---	---	---	---	---
18	10	13	e21	---	---	---	---	---	---	---	---	---
19	9.1	13	e20	---	---	---	---	---	---	---	---	---
20	8.9	11	e20	---	---	---	---	---	---	---	---	---
21	8.6	11	e19	---	---	---	---	---	---	---	---	---
22	8.8	13	e17	---	---	---	---	---	---	---	---	---
23	9.3	12	e16	---	---	---	---	---	---	---	---	---
24	8.3	24	e15	---	---	---	---	---	---	---	---	---
25	9.6	30	e15	---	---	---	---	---	---	---	---	---
26	12	37	e14	---	---	---	---	---	---	---	---	---
27	8.6	57	e14	---	---	---	---	---	---	---	---	---
28	8.4	46	e14	---	---	---	---	---	---	---	---	---
29	11	40	e14	---	---	---	---	---	---	---	---	---
30	8.9	39	e13	---	---	---	---	---	---	---	---	---
31	9.8	---	e13	---	---	---	---	---	---	---	---	---
TOTAL	251.1	510.5	698	---	---	---	---	---	---	---	---	---
MEAN	8.10	17.0	22.5	---	---	---	---	---	---	---	---	---
MAX	13	57	35	---	---	---	---	---	---	---	---	---
MIN	2.6	7.5	13	---	---	---	---	---	---	---	---	---
AC-FT	498	1010	1380	---	---	---	---	---	---	---	---	---
CFSM	0.08	0.17	0.22	---	---	---	---	---	---	---	---	---
IN.	0.09	0.19	0.25	---	---	---	---	---	---	---	---	---

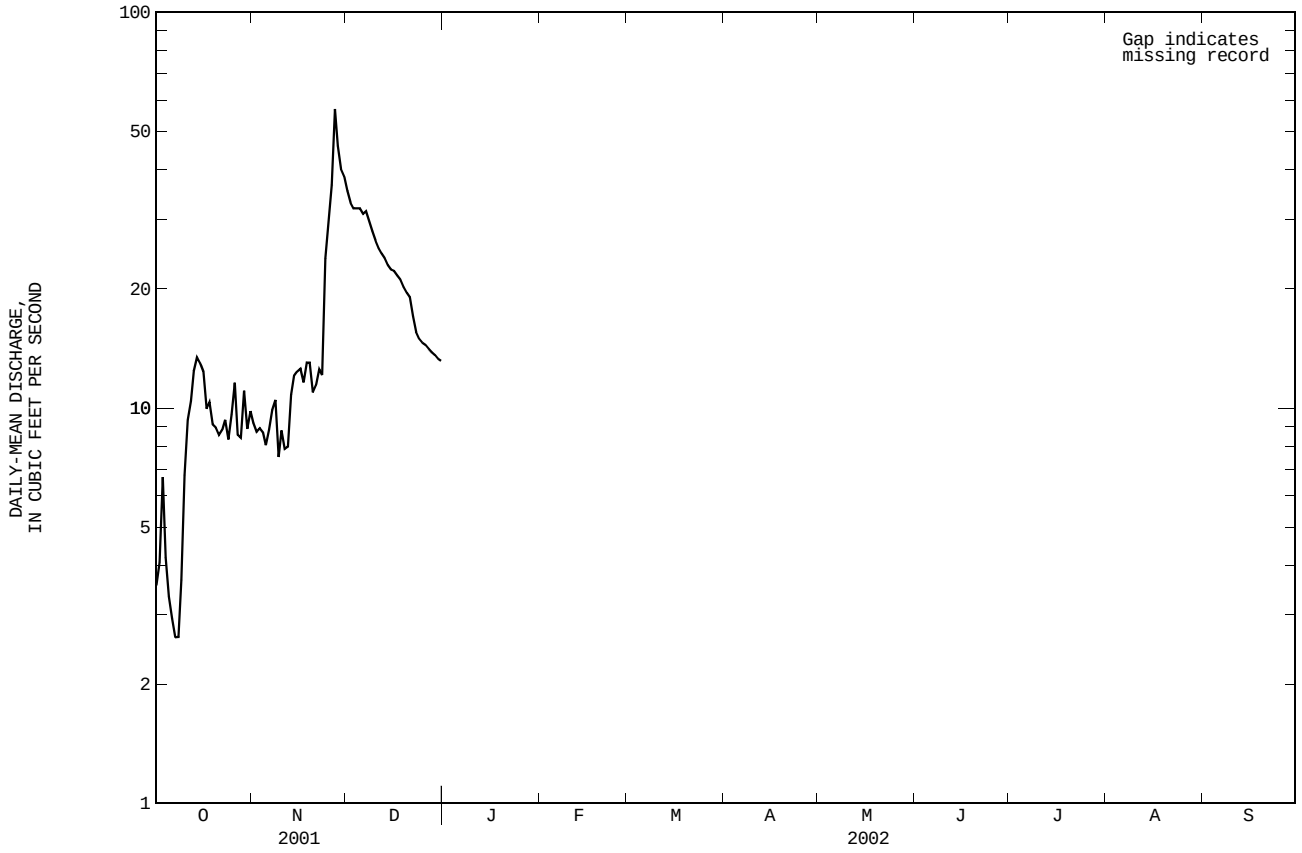
05337400 KNIFE RIVER NEAR MORA, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1979 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	47.2	36.0	22.0	13.0	15.8	69.5	243	113	75.2	44.9	33.4	35.3
MAX	242	78.4	63.6	28.8	48.9	238	802	338	394	133	218	257
(WY)	1985	1984	1984	1984	1984	1983	2001	1986	2001	1991	1995	1986
MIN	3.25	1.38	1.17	1.23	1.16	12.2	35.2	11.4	3.06	0.98	1.94	1.69
(WY)	2001	1990	1990	1990	1990	2001	1987	1998	1988	1988	1988	2000

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		WATER YEARS 1979 - 2002	
ANNUAL TOTAL	44415.6			
ANNUAL MEAN	122		62.1	
HIGHEST ANNUAL MEAN			135	1986
LOWEST ANNUAL MEAN			15.9	2002
HIGHEST DAILY MEAN	2620	Apr 23	2620	Apr 23 2001
LOWEST DAILY MEAN	2.6	Oct 7	0.76	Jul 7 1988
ANNUAL SEVEN-DAY MINIMUM	3.7	Oct 3	0.86	Jul 23 1988
MAXIMUM PEAK FLOW			3450	Apr 23 2001
MAXIMUM PEAK STAGE			7.76	Apr 23 2001
INSTANTANEOUS LOW FLOW			0.74	Jul 6 1988
ANNUAL RUNOFF (AC-FT)	88100		44960	
ANNUAL RUNOFF (CFSM)	1.19		0.61	
ANNUAL RUNOFF (INCHES)	16.20		8.27	
10 PERCENT EXCEEDS	230		144	
50 PERCENT EXCEEDS	13		22	
90 PERCENT EXCEEDS	6.2		5.3	

e Estimated.



05338500 SNAKE RIVER NEAR PINE CITY, MN

LOCATION.--Lat 45°50'30", long 92°56'00", in SE¼NW¼ sec. 26, T. 39 N., R. 21 W., Pine County, Hydrologic Unit 07030004, on left bank at site of former power plant and dam, 0.5 mi downstream from Cross Lake and l.5 mi northeast of Pine City.

DRAINAGE AREA.--974 mi^2.

PERIOD OF RECORD.--June 1913 to September 1917, July 1951 to Sept. 1981, Oct. 1992 to current year.

GAGE.--Water-stage recorder. Datum of gage is 919.00 ft above sea level (NGVD of 1929). June 25, 1913 to Sept. 30, 1917, nonrecording gage at site 500 ft downstream at different datum. July l to Oct. 28, 1951, nonrecording gage at present site and datum.

REMARKS.--Records good except those for estimated discharge, which are fair.

DISCHARGE, in CFS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	119	169	425	157	e102	217	651	1570	416	914	1070	493
2	115	166	384	149	e100	208	829	1570	355	745	903	604
3	118	145	376	136	e100	180	923	1470	332	618	831	777
4	116	140	376	131	e99	160	960	1400	319	507	962	1090
5	114	138	417	129	100	155	962	1280	302	426	1170	1300
6	101	141	428	128	97	145	926	1180	269	384	1360	1640
7	87	133	457	124	96	146	970	1080	266	428	1430	1690
8	90	150	491	122	96	154	1210	1080	271	706	1360	1720
9	106	132	447	122	101	178	1690	1310	254	1270	1220	1700
10	132	133	463	124	107	189	2270	1490	256	2440	1050	1750
11	124	129	457	124	101	139	3230	1840	278	3900	856	1700
12	121	129	447	129	108	136	4230	2270	253	4960	752	1640
13	134	139	423	129	109	137	e5000	2550	249	5670	660	1520
14	151	142	360	133	108	144	e5820	2700	228	5950	615	1360
15	154	150	327	137	109	171	e6350	2760	217	5790	607	1160
16	148	144	353	135	110	154	6400	2710	204	5280	550	962
17	139	153	348	134	108	146	6130	2570	186	4600	572	807
18	151	161	354	132	111	146	5660	2400	169	3900	549	688
19	154	164	343	128	141	154	5090	2180	199	3290	655	610
20	149	143	282	123	173	154	4490	1940	288	2770	774	546
21	142	148	267	121	189	e152	3940	1690	352	2400	939	525
22	133	143	280	118	199	e152	3470	1450	470	2070	961	495
23	144	148	287	118	209	146	3000	1290	612	1820	1010	451
24	158	175	254	115	238	145	2650	1070	755	1740	1030	418
25	195	227	225	115	235	e144	2310	901	928	1760	971	420
26	137	208	216	115	224	140	1970	799	1110	1750	873	429
27	110	288	210	115	222	138	1730	708	1240	1690	764	441
28	118	288	198	115	217	145	1650	632	1290	1620	671	459
29	119	347	189	115	---	177	1600	570	1230	1510	596	471
30	125	406	179	109	---	271	1570	525	1100	1370	531	481
31	147	---	167	108	---	445	---	469	---	1220	496	---
TOTAL	4051	5279	10430	3890	3909	5268	87681	47454	14398	73498	26788	28347
MEAN	130.7	176.0	336.5	125.5	139.6	169.9	2923	1531	479.9	2371	864.1	944.9
MAX	195	406	491	157	238	445	6400	2760	1290	5950	1430	1750
MIN	87	129	167	108	96	136	651	469	169	384	496	418
AC-FT	8040	10470	20690	7720	7750	10450	173900	94130	28560	145800	53130	56230
CFSM	0.14	0.18	0.35	0.13	0.15	0.18	3.05	1.60	0.50	2.47	0.90	0.99
IN.	0.16	0.20	0.41	0.15	0.15	0.20	3.40	1.84	0.56	2.85	1.04	1.10

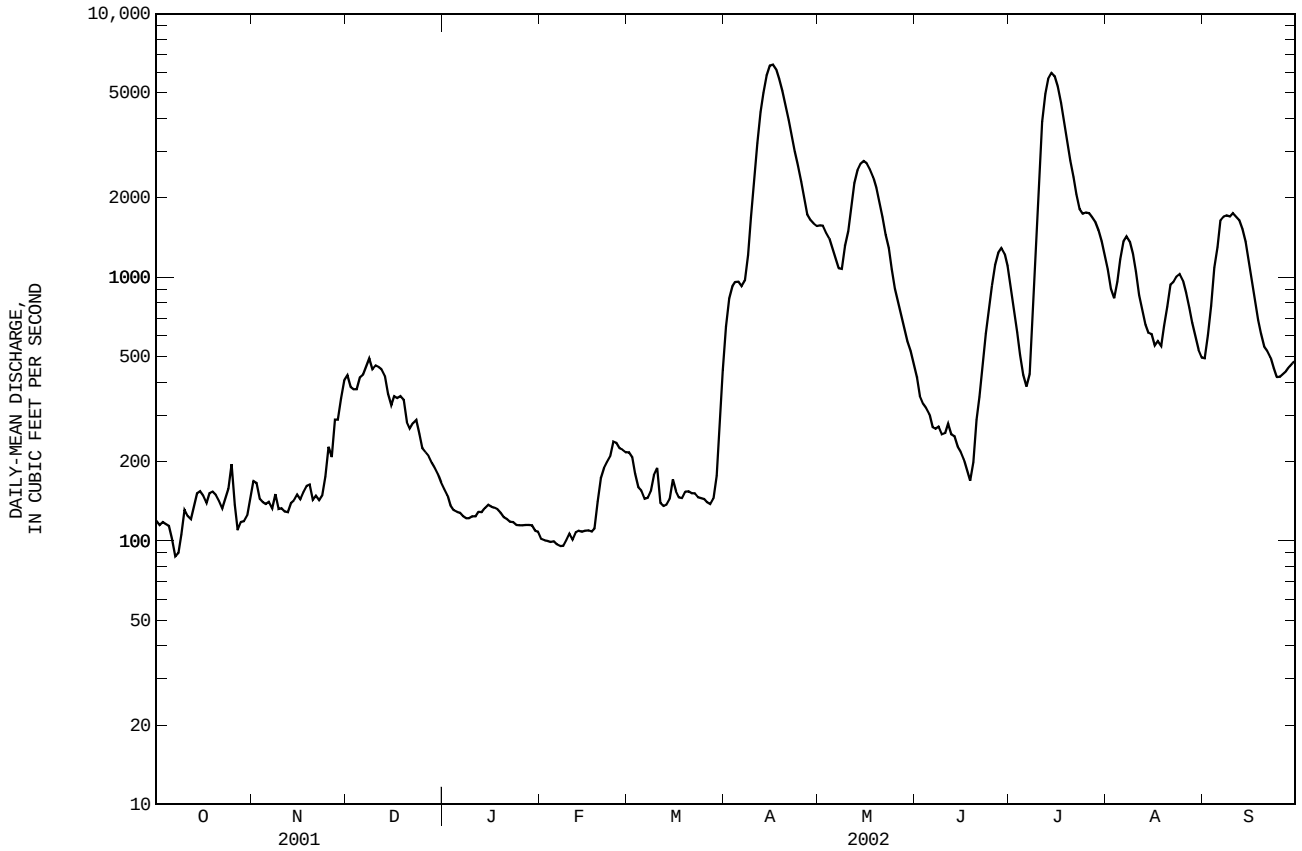
05338500 SNAKE RIVER NEAR PINE CITY, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1979 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	307.9	395.7	225.7	145.2	156.9	579.4	2359	1122	617.2	602.4	342.7	313.8
MAX	1189	866	402	266	277	1611	5905	2726	2149	2371	1080	1030
(WY)	1982	1996	1992	1992	1998	1992	2001	1979	2001	2002	1995	1995
MIN	76.3	164	88.0	58.4	99.2	130	666	203	167	104	76.8	59.3
(WY)	2001	1979	1981	1981	1993	2001	2000	1998	1997	1980	1998	1998

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1979 - 2002	
ANNUAL TOTAL	355332		310993			
ANNUAL MEAN	973.5		852.0		591.9a	
HIGHEST ANNUAL MEAN					980	2001
LOWEST ANNUAL MEAN					305	1998
HIGHEST DAILY MEAN	10900	Apr 27	6400	Apr 16	10900	Apr 27 2001
LOWEST DAILY MEAN	87	Oct 7	87	Oct 7	37	Sep 22 1998
ANNUAL SEVEN-DAY MINIMUM	105	Oct 3	98	Feb 2	42	Sep 18 1998
MAXIMUM PEAK FLOW			6460	Apr 15	14300	Jul 27 1972
MAXIMUM PEAK STAGE			7.50	Apr 15	10.38	Jul 27 1972
INSTANTANEOUS LOW FLOW			80b	Oct 8	5.5c	Oct 1 1964
ANNUAL RUNOFF (AC-FT)	704800		616900		428800	
ANNUAL RUNOFF (CFSM)	1.02		0.89		0.62	
ANNUAL RUNOFF (INCHES)	13.80		12.08		8.40	
10 PERCENT EXCEEDS	2930		2110		1460	
50 PERCENT EXCEEDS	167		352		241	
90 PERCENT EXCEEDS	114		118		106	

a Median of annual mean discharges is 530 ft^3/s.
b Also occurred Feb. 11.
c Result of dam rehabilitation.
e Estimated.



05340500 ST. CROIX RIVER AT ST. CROIX FALLS, WI
(National Water-Quality Assessment Program)

LOCATION.--Lat 45°24'25", long 92°38'49", in SW¼NW¼ sec. 30, T.34 N., R.18 W., Polk County, Hydrologic Unit 07030005, St. Croix National Scenic Riverway, on left bank, 1,500 ft downstream from power plant of Northern States Power Co., in St. Croix Falls, and at mile 52.2.

DRAINAGE AREA.--6,240 mi^2.

PERIOD OF RECORD.--January 1902 to current year. Prior to January 1910, monthly discharge only, published in WSP 1308. Prior to October 1939, published as "near St. Croix Falls."

REVISED RECORDS.--WSP 1115: 1929. WDR WI-82-1: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 689.94 ft above sea level. Prior to July 1905, gage heights and discharge measurements were used by Loweth and Wolff, consulting engineers of St. Paul, MN, to determine the flow. July 1905 to February 1940, records were computed from power generation at the St. Croix Falls power plant. February 1940 to Sept. 30, 1979, water-stage recorder at site 300 ft downstream at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Diurnal fluctuation caused by St. Croix Falls Powerplant 1,500 ft 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	2360	2920	4300	2700	2510	2600	5210	9910	4190	5110	5110	4050
2	2200	2790	4130	2700	2400	2600	5540	8090	3920	4610	4960	5290
3	2100	2960	4110	2660	2300	2500	5190	7720	3840	4250	4600	6900
4	2180	2660	4070	2690	2400	2460	5450	7500	3700	3820	6080	7110
5	2410	2690	4240	2820	2400	2370	4890	7220	3720	3460	7150	6790
6	2140	2520	4680	2860	2230	2590	4860	7010	3430	3220	6590	7870
7	2090	2470	5430	2700	1940	2690	5180	6820	3620	3240	5930	7490
8	2150	2730	5490	2770	2220	2510	6150	7210	3570	4080	5500	7440
9	2220	2720	4950	2650	2410	2500	7040	9570	3630	7490	5190	7170
10	2420	2820	5050	2820	2240	2200	9310	12900	3550	11000	4990	7210
11	2380	2620	4840	2940	2450	2670	15100	15900	3700	13700	4880	7320
12	2600	2590	4760	2530	2300	2660	22900	17100	3800	16400	4330	7150
13	3000	2560	4510	3020	2440	2930	28300	17200	3610	17100	4540	6680
14	2500	2580	4130	2710	2510	2800	31500	17200	3470	15500	4320	6370
15	3120	2630	3920	2610	2530	2800	32300	16800	3250	13300	4340	6260
16	2900	2820	4190	2610	2290	2700	32300	15800	3260	11700	4240	5940
17	3010	2560	4180	2600	2400	2840	31300	14400	3180	10100	4140	5310
18	3100	2590	4100	2500	2530	3070	29100	13000	3100	8940	4810	5060
19	3070	3040	3840	2300	2620	3050	26200	11400	3340	8210	6230	4690
20	3000	2390	2900	2500	2920	3040	23800	9840	3400	7460	6790	4460
21	2780	2700	2410	2290	2850	3130	21700	8850	4100	6910	6670	4710
22	2630	2740	2880	2510	3070	2880	19500	8120	4830	6460	7010	4560
23	2780	2790	3210	2480	3040	3100	17200	7570	4850	6280	6770	4530
24	3070	3010	2650	2460	3210	2610	15100	7030	5240	5300	6810	4390
25	2740	3250	2010	2460	2970	2930	13200	6650	6280	5540	6470	4460
26	3030	3610	1870	2510	2990	2820	11700	5890	6900	5570	6070	4870
27	2950	3990	2450	2640	2730	2800	10500	5500	7130	5090	5380	5140
28	2940	3970	2560	2690	2900	3170	10100	5230	6920	5370	4880	5320
29	2790	4020	2560	2430	---	4050	9540	5100	6730	5780	4630	5210
30	2850	4330	2790	2300	---	4970	9430	4730	5930	5900	4320	5130
31	2810	---	2800	2470	---	5560	---	4320	---	5220	4210	---
TOTAL	82320	88070	116010	80930	71800	91600	469590	301580	130190	236110	167940	174880
MEAN	2655	2936	3742	2611	2564	2955	15650	9728	4340	7616	5417	5829
MAX	3120	4330	5490	3020	3210	5560	32300	17200	7130	17100	7150	7870
MIN	2090	2390	1870	2290	1940	2200	4860	4320	3100	3220	4140	4050
AC-FT	163300	174700	230100	160500	142400	181700	931400	598200	258200	468300	333100	346900
CFSM	0.43	0.47	0.60	0.42	0.41	0.47	2.51	1.56	0.70	1.22	0.87	0.93
IN.	0.49	0.53	0.69	0.48	0.43	0.55	2.80	1.80	0.78	1.41	1.00	1.04

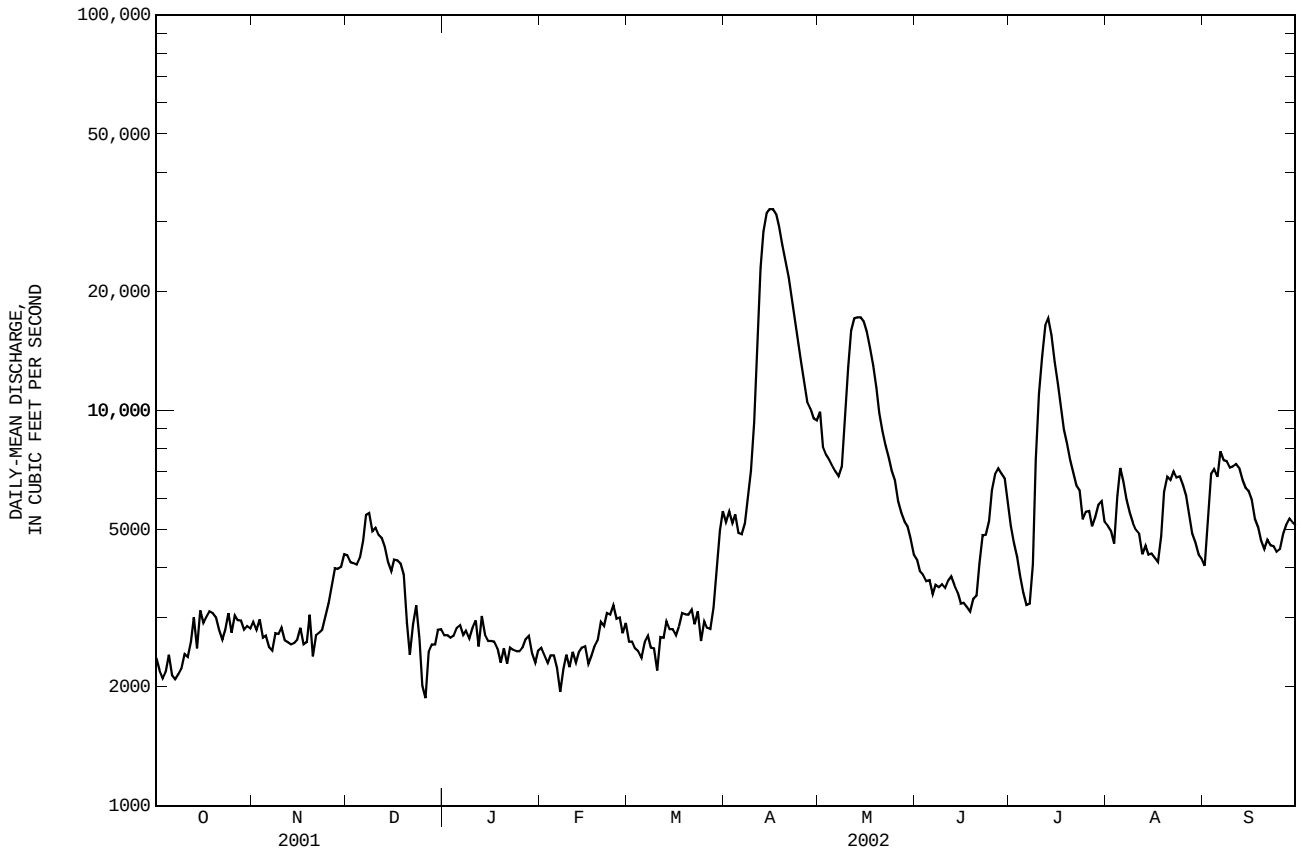
05340500 ST. CROIX RIVER AT ST. CROIX FALLS, WI--Continued
(National Water-Quality Assessment Program)

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1902 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	3655	3499	2564	2161	2143	4240	10520	7439	5630	4162	2928	3388
MAX	14270	11910	5821	4279	6021	14420	29600	21840	19510	17260	9777	14590
(WY)	1969	1972	1984	1984	1984	1945	2001	1950	1944	1952	1955	1941
MIN	1380	1342	1287	1157	1257	1538	2212	2430	1481	1014	839	1152
(WY)	1933	1911	1911	1911	1913	1912	1902	1934	1934	1934	1934	1933

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1902 - 2002	
ANNUAL TOTAL	2227060		2011020			
ANNUAL MEAN	6102		5510		4370	
HIGHEST ANNUAL MEAN					8569	1986
LOWEST ANNUAL MEAN					1754	1934
HIGHEST DAILY MEAN	59500	Apr 26	32300	Apr 15	59500	Apr 26 2001
LOWEST DAILY MEAN	1770	Aug 29	1870	Dec 26	75	Jul 17 1910
ANNUAL SEVEN-DAY MINIMUM	2070	Feb 26	2180	Oct 2	754	Jul 29 1934
MAXIMUM PEAK FLOW			32500	Apr 15	60900	Apr 25 2001
MAXIMUM PEAK STAGE			15.05	Apr 15	25.88	Apr 25 2001
ANNUAL RUNOFF (AC-FT)	4417000		3989000		3166000	
ANNUAL RUNOFF (CFSM)	0.98		0.88		0.70	
ANNUAL RUNOFF (INCHES)	13.28		11.99		9.52	
10 PERCENT EXCEEDS	12000		9990		8960	
50 PERCENT EXCEEDS	2760		3990		2790	
90 PERCENT EXCEEDS	2170		2460		1580	

e Estimated.



05344500 MISSISSIPPI RIVER AT PRESCOTT, WI

LOCATION.--Lat 44°44'45", long 92°48'00", in sec. 9, T.26 N., R.20 W., Pierce County, Hydrologic Unit 07040001,on left bank at Prescott, 200 ft downstream from St. Croix River, 300 ft south of Chicago, Burlington & Quincy Railroad bridge, 800 ft south of bridge on U.S. Highway 10, and at mile 811.4 upstream from Ohio River.

DRAINAGE AREA.--44,800 mi^2 (approximately).

PERIOD OF RECORD.--June 1928 to current year.

REVISED RECORDS.--WSP 1508: 1941. WRD MN-74: 1973.

GAGE.--Water-stage recorder. Datum of gage is 649.50 ft above sea level (NGVD of 1929). Prior to Aug. 2, 1932, nonrecording gage at railroad bridge 300 ft upstream at following datums: June 3, 1928 to Sept. 30, 1929, 19.27 ft higher; Oct. 1, 1929 to Sept. 30, 1930, 17.68 ft higher; Oct. 1, 1930 to Aug. 1, 1932, 19.28 ft higher. Aug. 2, 1932 to Oct. 30, 1938, water-stage recorder at present site at datum 19.28 ft higher; Nov. 1, 1938 to Sept. 7, 1971, water-stage recorder at present site at datum 50.00 ft lower. Auxiliary water-stage recorder 10.7 mi downstream from base gage is used in discharge computations.

REMARKS.--Records good to fair except those for estimated daily discharges, which are fair to poor. Some regulation by reservoirs, navigation dams, and power plants at low and medium stages. Discharges below a stage of about 27 ft may be computed by routing flows from the Mississippi River at St. Paul (05331000) and St. Croix River at St. Croix Falls, WI (05340500).

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	e8220	e10900	e13700	e10300	e9680	e10300	e17100	33500	20300	48600	27100	27300
2	e8130	e11300	e13500	e10600	e9550	e10000	e19200	33100	20200	46900	26100	26900
3	e8250	e10600	e13800	e10600	e9280	e9800	e21600	32500	20900	45200	25400	26600
4	e8120	e10900	e14400	e10600	e9320	e9520	e22300	31500	22500	42600	28900	28000
5	e7830	e10300	e14700	e10800	e9100	e9430	e22700	30800	24800	39800	31700	28500
6	e7950	e10100	e15400	e11000	e9130	e9490	e22000	31400	26300	37000	33500	e28000
7	e7640	e10200	e15300	e11200	e9130	e9670	e21700	31000	28100	34600	33600	e29500
8	e7660	e9870	e16700	e11100	e8780	e9670	e22900	30400	29000	33500	33600	e31000
9	e7400	e10200	e16900	e11300	e8810	e9560	e24700	32200	27500	31800	33300	e32600
10	e7460	e10100	e16500	e11300	e9020	e9480	e26700	34500	25800	32900	32700	32100
11	e8120	e10100	e15700	e11500	e8800	e9030	30900	36900	24500	38600	31900	30900
12	e8320	e9340	e15400	e11800	e8940	e9450	35400	40300	23300	42700	30800	30200
13	e8540	e9770	e15800	e11300	e8710	e9780	42000	42700	21400	47200	29400	29500
14	e9150	e9860	e15900	e11800	e8840	e10200	50100	44200	21200	49100	27500	28500
15	e9020	e10100	e15500	e11400	e8950	e10200	57200	44900	21600	48400	26500	27500
16	e9810	e10900	e14500	e11300	e8940	e10000	62700	45800	21300	47100	24700	26600
17	e10200	e10500	e15000	e11300	e8710	e9670	66700	45400	20700	45200	24900	24900
18	e10500	e9830	e15000	e11100	e8800	e9680	67400	44200	19000	42900	26000	23700
19	e10700	e10200	e14900	e10600	e8970	e10500	66000	42300	18300	40800	24800	22300
20	e10700	e10300	e15200	e10200	e9240	e10900	62700	40200	19200	38600	25200	20500
21	e11000	e10000	e14600	e10400	e9610	e11100	59100	37700	21400	37100	27800	19200
22	e10500	e9870	e12400	e10400	e9680	e11300	56200	35200	27000	35100	31400	18200
23	e10400	e9670	e12100	e10500	e9990	e11100	52300	33800	30200	32600	32200	16800
24	e10500	e10300	e12200	e10300	e9980	e11400	49100	32400	33400	31000	32500	16100
25	e10800	e10500	e11200	e10100	e10300	e10800	45500	29900	37100	29500	32300	16700
26	e10700	e11100	e9420	e9970	e10300	e11300	41800	28400	40000	28800	32900	17200
27	e11600	e12000	e9180	e9990	e10400	e11000	39400	26800	42400	27600	33100	17200
28	e10900	e12500	e9690	e9880	e10100	e10900	38100	24900	45600	26900	32100	16700
29	e10300	e13100	e9630	e10000	---	e11200	36400	23600	47900	28000	30700	16600
30	e10300	e13400	e9650	e9760	---	e12500	34800	21800	49100	28100	29300	16600
31	e11000	---	e9900	e9580	---	e14600	---	20500	---	27300	28200	---
TOTAL	291720	317810	423770	331980	261060	323530	1214700	1062800	830000	1165500	920100	726400
MEAN	9410	10590	13670	10710	9324	10440	40490	34280	27670	37600	29680	24210
MAX	11600	13400	16900	11800	10400	14600	67400	45800	49100	49100	33600	32600
MIN	7400	9340	9180	9580	8710	9030	17100	20500	18300	26900	24700	16100
AC-FT	578600	630400	840500	658500	517800	641700	2409000	2108000	1646000	2312000	1825000	1441000
CFSM	0.21	0.24	0.31	0.24	0.21	0.23	0.90	0.77	0.62	0.84	0.66	0.54
IN.	0.24	0.26	0.35	0.28	0.22	0.27	1.01	0.88	0.69	0.97	0.76	0.60

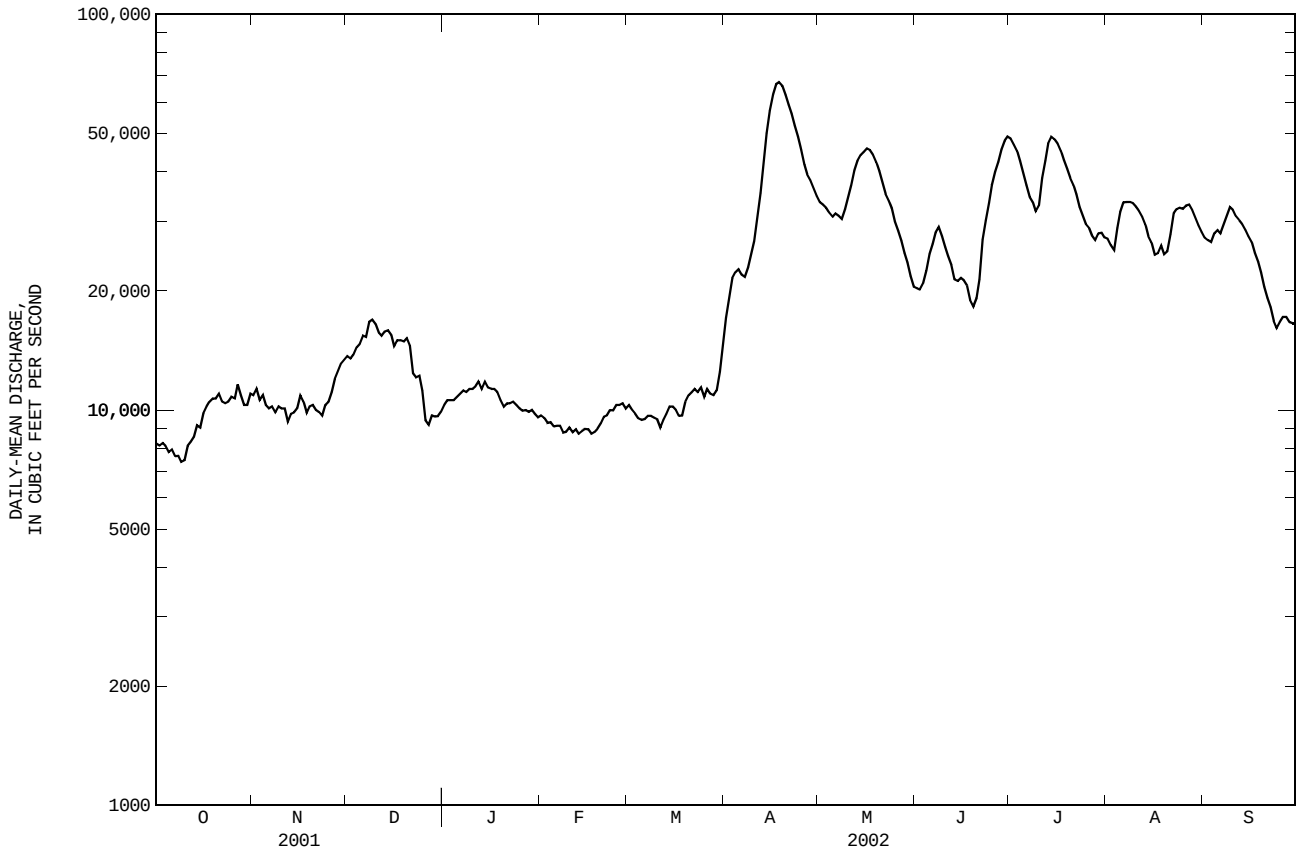
05344500 MISSISSIPPI RIVER AT PRESCOTT, WI--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	13400	13390	10120	8379	8277	17270	42250	32840	26290	20890	13670	12920
MAX	49740	40360	21460	16060	21390	55010	122400	90100	69890	87420	48350	45950
(WY)	1987	1972	1983	1983	1966	1983	2001	1986	1993	1993	1993	1986
MIN	3526	3874	3379	3153	3519	4369	7215	6304	4185	3197	2366	3002
(WY)	1933	1977	1934	1935	1934	1934	1931	1931	1934	1934	1934	1976

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1928 - 2002	
ANNUAL TOTAL	11365520		7869370			
ANNUAL MEAN	31140		21560		18350a	
HIGHEST ANNUAL MEAN					38540	1986
LOWEST ANNUAL MEAN					4367	1934
HIGHEST DAILY MEAN	186000	Apr 27	67400	Apr 18	226000	Apr 18 1965
LOWEST DAILY MEAN	7400	Oct 9	7400	Oct 9	1380	Jul 13 1940
ANNUAL SEVEN-DAY MINIMUM	7720	Oct 4	7720	Oct 4	2190	Aug 11 1936
MAXIMUM PEAK FLOW			68000	Apr 18	228000	Apr 18 1965
MAXIMUM PEAK STAGE			32.91	Apr 18	43.11	Apr 18 1965
ANNUAL RUNOFF (AC-FT)	22540000		15610000		13300000	
ANNUAL RUNOFF (CFSM)	0.70		0.48		0.41	
ANNUAL RUNOFF (INCHES)	9.44		6.53		5.57	
10 PERCENT EXCEEDS	80900		41200		39500	
50 PERCENT EXCEEDS	10800		16600		12000	
90 PERCENT EXCEEDS	8410		9390		5190	

a Median of annual mean discharges is 18,500 ft^3/s.
e Estimated.



05344850 STURGEON LAKE, WEST SIDE, AT PRAIRIE ISLAND, MN

LOCATION.--Lat 44°38'18", long 92°38'38", in NE¼NE¼SW¼ sec. 32, T. 114 N., R. 15 W., Goodhue County, Hydrologic Unit 07040001, on west bank of Sturgeon Lake, 0.7 miles above lake outlet to Mississippi River and 7 miles northwest of Red Wing.

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

GAGE.--Water-stage recorder. Datum of gage is sea level (NAVD of 1988).

REMARKS.--Records good. Water level affected by U.S. Army Corp of Engineers Lock and Dam 3 on the Mississippi River above Red Wing.

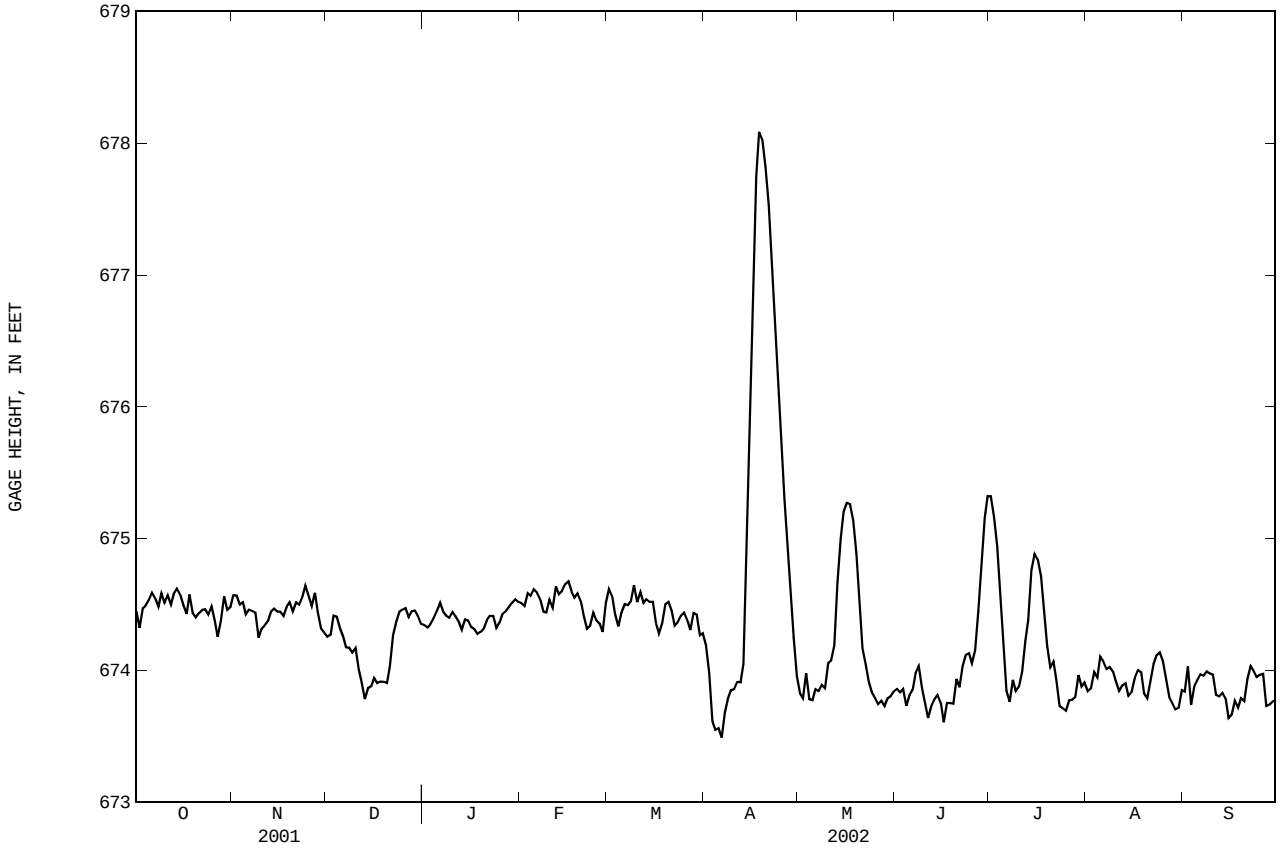
EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 685.90 ft, Apr. 28, 2001; maximum daily, 685.89 ft, Apr. 28, 2001; minimum elevation, 673.42 ft, Apr. 6, 2002; minimum daily, 673.49 ft, Apr. 6, 2002.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 678.13 ft, Apr. 18; maximum daily, 678.09 ft, Apr. 18; minimum elevation, 673.42 ft, Apr. 6; minimum daily, 673.49 ft, Apr. 6.

ELEVATION, 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	674.45	674.57	674.26	674.34	674.51	674.62	674.19	673.83	673.86	675.32	673.84	673.84
2	674.32	674.57	674.27	674.33	674.49	674.56	673.98	673.79	673.83	675.17	673.86	674.03
3	674.47	674.50	674.42	674.35	674.59	674.43	673.62	673.98	673.86	674.94	673.99	673.74
4	674.49	674.52	674.41	674.40	674.57	674.34	673.55	673.78	673.73	674.65	673.95	673.88
5	674.53	674.42	674.32	674.45	674.62	674.44	673.56	673.77	673.81	674.27	674.11	673.93
6	674.59	674.46	674.26	674.51	674.59	674.50	673.49	673.86	673.85	673.84	674.07	673.97
7	674.55	674.45	674.18	674.45	674.54	674.49	673.68	673.84	673.98	673.76	674.01	673.96
8	674.48	674.44	674.17	674.42	674.45	674.52	673.79	673.89	674.03	673.93	674.02	673.99
9	674.58	674.25	674.13	674.40	674.44	674.65	673.85	673.87	673.87	673.84	673.99	673.98
10	674.51	674.32	674.17	674.44	674.54	674.52	673.86	674.06	673.75	673.88	673.92	673.97
11	674.57	674.34	674.01	674.41	674.48	674.59	673.91	674.08	673.64	673.99	673.84	673.81
12	674.50	674.37	673.91	674.37	674.64	674.51	673.91	674.19	673.73	674.23	673.89	673.80
13	674.58	674.45	673.78	674.31	674.58	674.54	674.05	674.67	673.78	674.38	673.90	673.83
14	674.62	674.47	673.87	674.39	674.60	674.52	675.02	675.00	673.81	674.76	673.81	673.79
15	674.58	674.45	673.88	674.38	674.66	674.52	676.13	675.20	673.75	674.89	673.84	673.64
16	674.49	674.45	673.94	674.33	674.68	674.36	677.13	675.27	673.61	674.84	673.94	673.67
17	674.43	674.42	673.91	674.31	674.60	674.28	677.74	675.26	673.75	674.72	674.00	673.77
18	674.58	674.49	673.92	674.28	674.55	674.36	678.09	675.14	673.75	674.45	673.99	673.72
19	674.43	674.52	673.91	674.29	674.58	674.50	678.03	674.89	673.75	674.19	673.83	673.79
20	674.40	674.45	673.90	674.32	674.52	674.52	677.82	674.57	673.94	674.02	673.79	673.77
21	674.44	674.52	674.03	674.39	674.40	674.45	677.53	674.17	673.87	674.07	673.92	673.94
22	674.46	674.50	674.26	674.41	674.32	674.34	677.18	674.05	674.03	673.93	674.05	674.03
23	674.47	674.55	674.37	674.41	674.34	674.37	676.82	673.91	674.12	673.73	674.12	674.00
24	674.42	674.64	674.45	674.32	674.44	674.42	676.37	673.84	674.13	673.71	674.14	673.95
25	674.48	674.57	674.46	674.36	674.38	674.44	675.76	673.80	674.05	673.70	674.07	673.97
26	674.38	674.49	674.47	674.43	674.35	674.39	675.31	673.75	674.15	673.77	673.93	673.98
27	674.26	674.59	674.40	674.45	674.29	674.31	675.04	673.77	674.45	673.78	673.80	673.73
28	674.38	674.44	674.45	674.48	674.51	674.44	674.70	673.73	674.84	673.80	673.76	673.74
29	674.56	674.32	674.45	674.51	---	674.42	674.25	673.79	675.16	673.97	673.70	673.76
30	674.46	674.29	674.41	674.54	---	674.27	673.96	673.80	675.32	673.88	673.72	673.78
31	674.48	---	674.35	674.52	---	674.28	---	673.84	---	673.91	673.85	---
MEAN	674.48	674.46	674.18	674.40	674.51	674.45	675.21	674.17	674.01	674.20	673.92	673.86
MAX	674.62	674.64	674.47	674.54	674.68	674.65	678.09	675.27	675.32	675.32	674.14	674.03
MIN	674.26	674.25	673.78	674.28	674.29	674.27	673.49	673.73	673.61	673.70	673.70	673.64

05344850 STURGEON LAKE, WEST SIDE, AT PRAIRIE ISLAND, MN--Continued



05345000 VERMILLION RIVER NEAR EMPIRE, MN

LOCATION.--Lat 44°40'00", long 93°03'17", in SW¼NW¼ sec. 24, T.114 N., R.19 W., Dakota County, Hydrologic Unit 07040001, on right bank and just downstream from County Road 79, 2 mi west of Empire and 4 mi northeast of Farmington.

DRAINAGE AREA.--129 mi^2.

PERIOD OF RECORD.--May 1942 to June 1945 (no record during July, August, and September 1944), September 1969 to September 1973 (discharge measurements only), October 1973 to current year. Prior to October 1975 published as "near Empire City".

GAGE.--Water-stage recorder. Datum of gage is 851.99 ft above sea level (NGVD of 1929, levels by U.S. Army Corps of Engineers). April 12, 1942 to June 30, 1944, and October 1, 1944 to July 7, 1945, nonrecording gage at same site and present datum.

REMARKS.--Records good. Some regulation at lower flows by wastewater treatment plant upstream.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in April 1965, reached a stage of 7.5 ft, from information by local resident; discharge 6,200 ft^3/s, from rating extended above 2,100 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	42	48	52	40	37	42	61	95	55	119	79	104
2	40	47	51	40	37	42	59	89	55	105	70	141
3	39	46	51	39	37	42	56	83	327	97	71	129
4	39	45	51	39	37	41	54	78	602	91	257	105
5	39	45	57	39	37	41	55	75	385	84	511	99
6	39	45	60	39	37	41	58	82	275	79	365	266
7	40	45	54	39	37	41	64	78	202	75	217	629
8	40	45	52	38	37	42	67	83	162	74	172	481
9	40	45	51	39	38	49	64	91	137	70	146	261
10	42	45	50	39	38	46	79	84	116	77	128	209
11	43	45	48	39	39	46	128	81	128	127	113	173
12	42	46	48	39	38	48	192	90	112	112	104	147
13	46	48	48	39	38	66	159	91	124	95	97	131
14	50	47	47	40	39	64	141	91	109	84	90	131
15	47	44	47	38	39	52	129	84	90	77	83	139
16	46	42	47	38	40	51	115	78	79	70	77	125
17	46	42	46	38	40	52	111	73	75	65	131	114
18	47	42	45	38	41	54	106	71	72	63	167	106
19	47	43	45	38	43	57	104	68	78	63	125	105
20	48	42	44	38	46	59	90	67	80	76	101	103
21	46	42	43	38	45	62	88	67	142	96	224	96
22	46	43	45	37	44	56	91	67	421	74	489	91
23	50	42	45	37	44	54	92	69	517	64	575	89
24	50	63	43	36	45	52	89	67	377	61	358	85
25	50	83	42	36	45	52	85	64	291	69	247	95
26	49	61	42	36	43	57	83	65	253	78	192	160
27	47	59	42	37	43	57	87	70	249	68	159	196
28	48	60	42	37	43	87	111	68	190	65	140	163
29	49	56	41	36	---	85	112	68	158	120	128	146
30	47	54	41	36	---	73	102	64	136	110	121	135
31	48	---	40	37	---	66	---	61	---	87	110	---
TOTAL	1392	1460	1460	1179	1127	1677	2832	2362	5997	2595	5847	4954
MEAN	44.9	48.7	47.1	38.0	40.2	54.1	94.4	76.2	200	83.7	189	165
MAX	50	83	60	40	46	87	192	95	602	127	575	629
MIN	39	42	40	36	37	41	54	61	55	61	70	85
AC-FT	2760	2900	2900	2340	2240	3330	5620	4690	11900	5150	11600	9830
CFSM	0.35	0.38	0.37	0.29	0.31	0.42	0.73	0.59	1.55	0.65	1.46	1.28
IN.	0.40	0.42	0.42	0.34	0.32	0.48	0.82	0.68	1.73	0.75	1.69	1.43

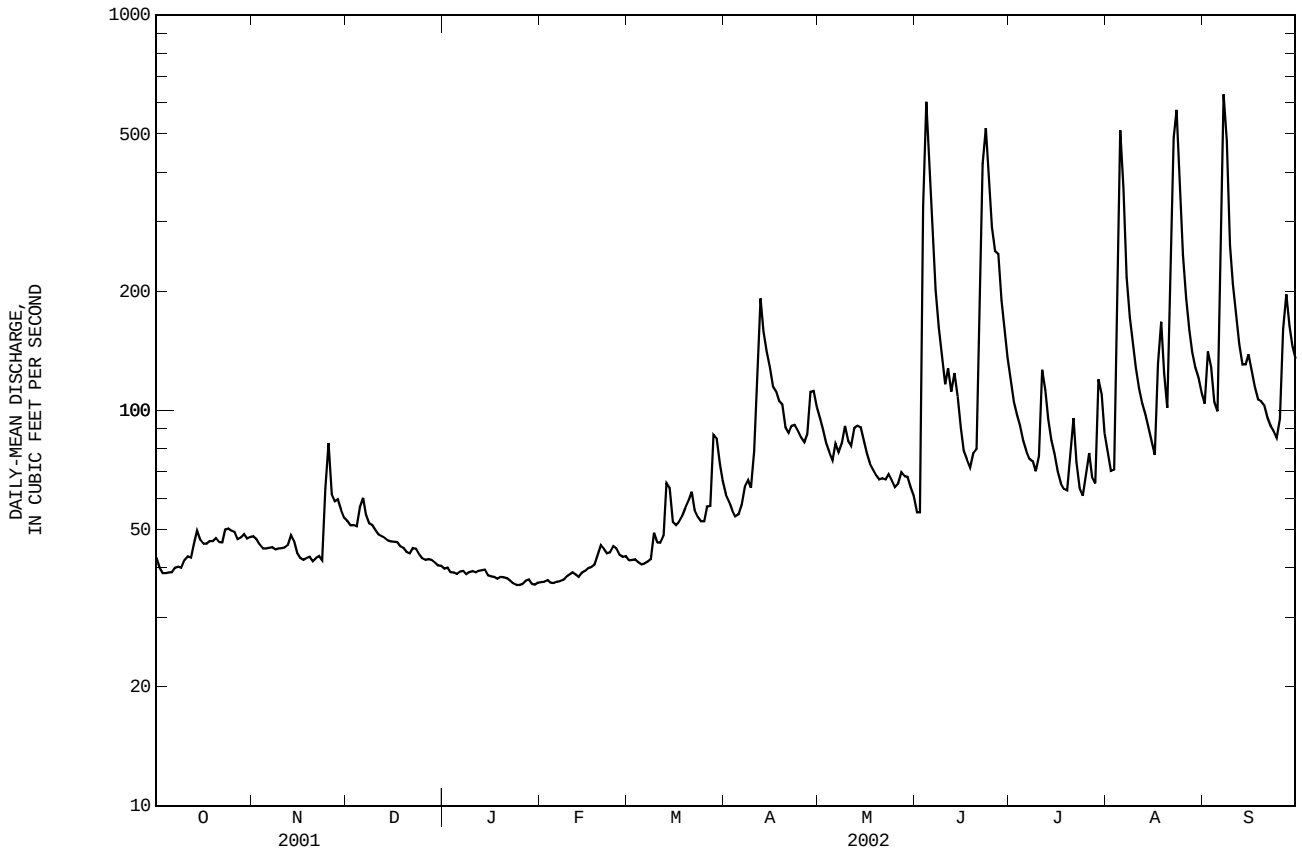
05345000 VERMILLION RIVER NEAR EMPIRE, MN--Continued

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

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	55.6	51.4	40.6	32.5	38.5	98.4	116	94.0	97.1	75.8	63.2	73.4
MAX	160	133	79.5	58.6	89.8	199	337	223	290	258	234	313
(WY)	1995	1993	1993	1998	1998	1983	2001	1986	1993	1997	1997	1992
MIN	14.9	15.6	12.4	11.0	13.1	25.4	35.2	29.3	23.0	16.0	14.3	14.6
(WY)	1977	1977	1977	1977	1977	1975	1977	1977	1988	1988	1976	1976

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1942 - 2002	
ANNUAL TOTAL	30288		32882			
ANNUAL MEAN	83.0		90.1		70.0	
HIGHEST ANNUAL MEAN					147	1998
LOWEST ANNUAL MEAN					23.6	1977
HIGHEST DAILY MEAN	637	Apr 8	629	Sep 7	3000	Sep 16 1992
LOWEST DAILY MEAN	30	Feb 23	36	Jan 24	8.4	Jan 15 1975
ANNUAL SEVEN-DAY MINIMUM	31	Feb 17	36	Jan 24	9.0	Jan 13 1975
MAXIMUM PEAK FLOW			795	Sep 7	6570	Sep 16 1992
MAXIMUM PEAK STAGE			7.09	Sep 7	10.00	Sep 16 1992
INSTANTANEOUS LOW FLOW			31a	Feb 4	6.8a	Aug 15 1992
ANNUAL RUNOFF (AC-FT)	60080		65220		50680	
ANNUAL RUNOFF (CFSM)	0.64		0.70		0.54	
ANNUAL RUNOFF (INCHES)	8.73		9.48		7.37	
10 PERCENT EXCEEDS	179		159		133	
50 PERCENT EXCEEDS	45		61		46	
90 PERCENT EXCEEDS	33		39		21	

a Result of regulation.



05346050 CLEAR LAKE, EAST SIDE, AT PRAIRIE ISLAND, MN

LOCATION.--Lat 43°38'11", long 92°58'26", in NE¼SE¼ sec. 15, T. 102 N., R. 18 W., Goodhue County, on east bank of Clear Lake and 0.9 miles above lake output to Vermillion River.

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

GAGE.--Water-stage recorder. Datum of gage is sea level (NAVD of 1988).

REMARKS.--Records good. Water level affected by U.S. Army Corp of Engineers Lock and Dam 3 on the Mississippi River.

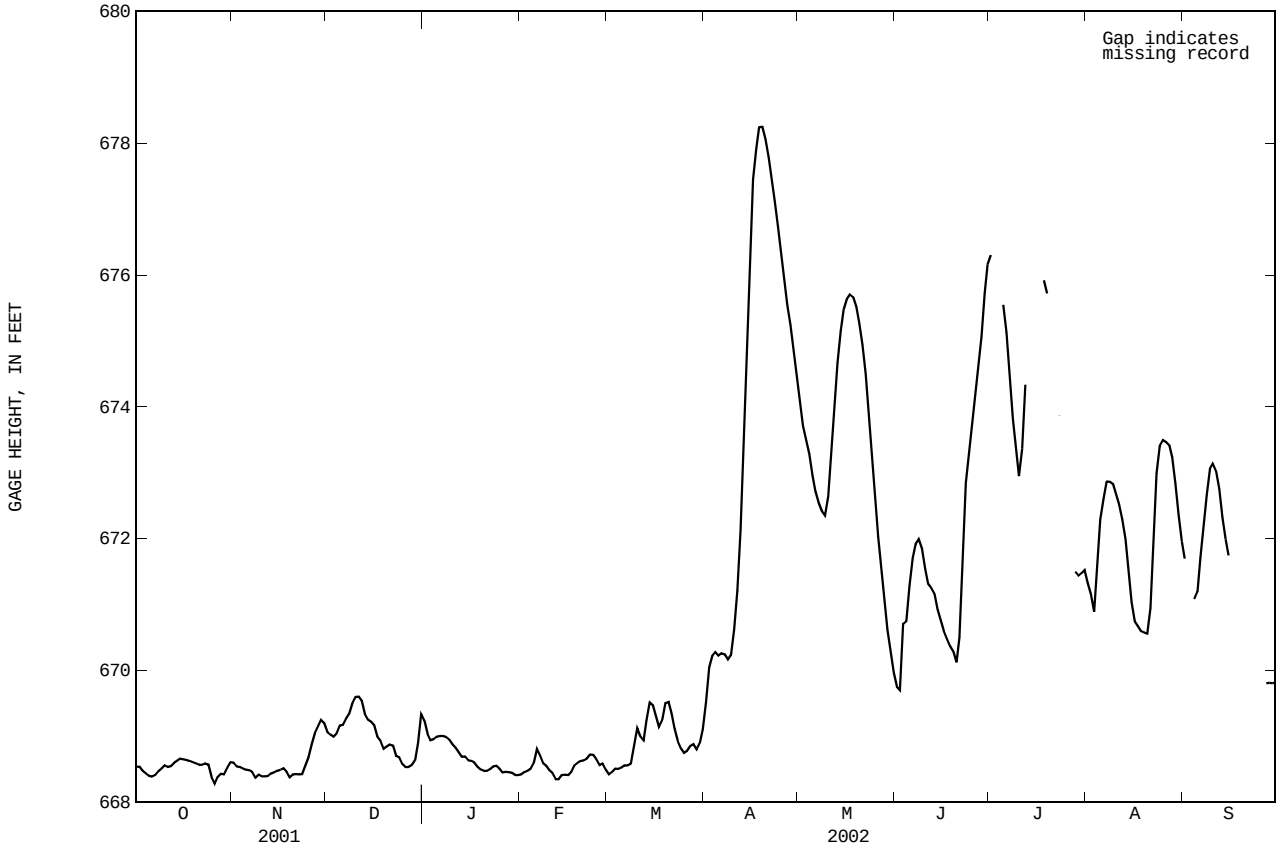
EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 685.88 ft (from floodmark), Apr. 28, 2001; maximum daily, 678.93 ft, May 22, 1999 (probably higher in April 2001); minimum gage height, 668.22 ft, Oct. 26, 2002; minimum daily, 668.27 ft, Oct. 7, 2000.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 678.29 ft, April 18; maximum daily, 678.25, Apr. 18, 19; minimum gage height, 668.22 ft, Oct. 26; minimum daily, 668.28 ft, Oct. 26.

ELEVATION, 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	668.54	668.60	669.07	669.25	668.42	668.43	669.52	674.07	669.75	676.30	671.32	671.70
2	668.54	668.55	669.03	669.04	668.46	668.46	670.05	673.71	669.70	---	671.15	---
3	668.48	668.54	669.00	668.95	668.48	668.51	670.22	673.49	670.71	---	670.89	---
4	668.45	668.51	669.05	668.96	668.51	668.51	670.28	673.28	670.74	---	671.69	671.09
5	668.41	668.50	669.17	669.00	668.60	668.53	670.23	672.96	671.29	675.55	672.29	671.20
6	668.39	668.49	669.18	669.01	668.81	668.56	670.26	672.72	671.71	675.13	672.59	671.71
7	668.42	668.46	669.26	669.00	668.71	668.56	670.25	672.55	671.91	674.43	672.87	672.16
8	668.47	668.38	669.34	668.99	668.59	668.58	670.17	672.42	671.99	673.82	672.86	672.67
9	668.51	668.42	669.50	668.96	668.55	668.86	670.23	672.35	671.85	673.41	672.83	673.06
10	668.56	668.40	669.60	668.88	668.49	669.12	670.62	672.65	671.54	672.95	672.68	673.14
11	668.54	668.39	669.60	668.83	668.45	669.00	671.21	673.30	671.32	673.36	672.52	673.03
12	668.55	668.40	669.54	668.76	668.35	668.94	672.12	674.04	671.26	674.33	672.29	672.75
13	668.59	668.44	669.34	668.69	668.35	669.24	673.39	674.67	671.17	---	672.00	672.32
14	668.63	668.45	669.25	668.70	668.41	669.52	674.68	675.15	670.92	---	671.52	671.99
15	668.66	668.48	669.22	668.64	668.42	669.47	675.89	675.47	670.76	---	671.04	671.75
16	668.65	668.49	669.17	668.63	668.42	669.30	677.45	675.63	670.60	---	670.75	---
17	668.64	668.52	669.00	668.60	668.47	669.14	677.91	675.70	670.48	---	670.67	---
18	668.63	668.46	668.93	668.54	668.56	669.25	678.25	675.67	670.37	675.92	670.59	---
19	668.61	668.38	668.81	668.50	668.60	669.50	678.25	675.52	670.29	675.72	670.57	---
20	668.59	668.42	668.84	668.48	668.63	669.52	678.06	675.27	670.12	---	670.56	---
21	668.57	668.43	668.88	668.48	668.64	669.34	677.78	674.94	670.51	---	670.95	---
22	668.57	668.42	668.86	668.50	668.66	669.11	677.45	674.50	671.72	---	672.01	---
23	668.59	668.43	668.70	668.54	668.72	668.93	677.12	673.94	672.85	673.87	672.99	---
24	668.57	668.56	668.68	668.55	668.72	668.82	676.73	673.35	673.29	---	673.41	---
25	668.38	668.69	668.58	668.51	668.65	668.75	676.27	672.72	673.71	---	673.50	---
26	668.28	668.88	668.54	668.45	668.57	668.78	675.88	672.03	674.14	---	673.47	---
27	668.39	669.05	668.53	668.46	668.59	668.85	675.55	671.50	674.63	---	673.42	669.81
28	668.43	669.14	668.56	668.46	668.49	668.88	675.24	671.02	675.07	671.50	673.23	669.81
29	668.42	669.25	668.64	668.45	---	668.81	674.87	670.62	675.73	671.44	672.83	669.81
30	668.52	669.20	668.90	668.41	---	668.90	674.47	670.29	676.16	671.48	672.36	669.82
31	668.61	---	669.34	668.41	---	669.11	---	669.96	---	671.52	671.96	---
MEAN	668.52	668.58	669.04	668.70	668.55	668.94	674.01	673.40	671.88	---	672.06	---
MAX	668.66	669.25	669.60	669.25	668.81	669.52	678.25	675.70	676.16	---	673.50	---
MIN	668.28	668.38	668.53	668.41	668.35	668.43	669.52	669.96	669.70	---	670.56	---

05346050 CLEAR LAKE, EAST SIDE, AT PRAIRIE ISLAND, MN--Continued



05353800 STRAIGHT RIVER NEAR FARIBAULT, MN

LOCATION.--Lat 44°15'29", long 93°13'51", in NW¼SE¼ sec. 9, T.109 N., R.20 W., Rice County, Hydrologic Unit 07040002, on right bank 50 ft downstream from highway bridge, 2.8 mi upstream from Falls Creek and 3.2 mi southeast of Faribault.

DRAINAGE AREA.--435 mi^2.

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

GAGE.--Water-stage recorder. Datum of gage is 1,034.58 ft above sea level (NGVD of 1929).

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jun 4	1800	1,910	7.16	Jun 22	0200	*1,920	*7.24

Minimum discharge, 62 ft^3/s, Feb. 27, gage height, 3.89 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	79	75	192	e84	e93	e85	176	333	186	263	94	121
2	78	74	169	e86	e92	e78	166	310	161	241	82	110
3	74	76	154	e84	e91	e72	152	281	849	220	75	101
4	72	75	148	e83	e90	e69	145	256	1670	199	259	93
5	71	73	169	e85	e96	e68	139	240	1660	180	283	87
6	69	72	254	e87	e100	e68	134	266	1290	167	260	97
7	68	73	282	e85	e103	e69	132	251	846	154	210	87
8	69	71	253	e87	e110	e81	139	246	580	148	150	79
9	71	70	218	e88	e117	e160	143	238	453	143	122	73
10	85	69	208	e88	e120	e170	155	211	383	142	104	71
11	80	69	195	e89	e124	e180	228	204	512	158	94	69
12	80	67	187	e88	e123	e210	493	239	816	139	96	67
13	92	72	174	e87	e122	e330	596	238	726	128	105	66
14	103	71	163	e86	e122	e370	496	231	550	116	94	81
15	106	72	158	e85	e121	494	429	220	438	106	88	88
16	106	71	148	e84	e120	664	378	208	369	100	81	77
17	99	69	143	e83	e118	992	357	190	326	94	122	71
18	96	69	141	e82	e123	791	330	176	301	96	106	67
19	94	85	134	e86	e127	537	304	163	311	117	93	167
20	92	73	120	e89	e137	456	272	155	360	93	79	149
21	90	70	e110	e92	e133	377	269	148	1040	87	238	121
22	87	69	e104	e93	e112	280	272	145	1690	143	627	104
23	90	69	e100	e95	e110	e245	270	144	1280	198	917	95
24	83	128	e100	e98	e108	e225	285	132	879	151	772	89
25	82	168	e97	e99	e95	210	270	125	642	117	455	99
26	80	170	e96	e100	e82	202	248	123	494	108	325	120
27	76	207	e94	e102	e87	187	239	121	434	97	261	143
28	74	231	e90	e100	e92	188	287	267	376	88	212	156
29	73	238	e89	e98	---	190	344	418	330	96	178	151
30	72	218	e88	e96	---	180	353	319	295	85	155	338
31	73	---	e86	e94	---	178	---	237	---	120	137	---
TOTAL	2564	3014	4664	2783	3068	8406	8201	6835	20247	4294	6874	3237
MEAN	82.7	100	150	89.8	110	271	273	220	675	139	222	108
MAX	106	238	282	102	137	992	596	418	1690	263	917	338
MIN	68	67	86	82	82	68	132	121	161	85	75	66
AC-FT	5090	5980	9250	5520	6090	16670	16270	13560	40160	8520	13630	6420
CFSM	0.19	0.23	0.34	0.20	0.25	0.61	0.62	0.50	1.53	0.31	0.50	0.24
IN.	0.22	0.25	0.39	0.23	0.26	0.71	0.69	0.58	1.70	0.36	0.58	0.27

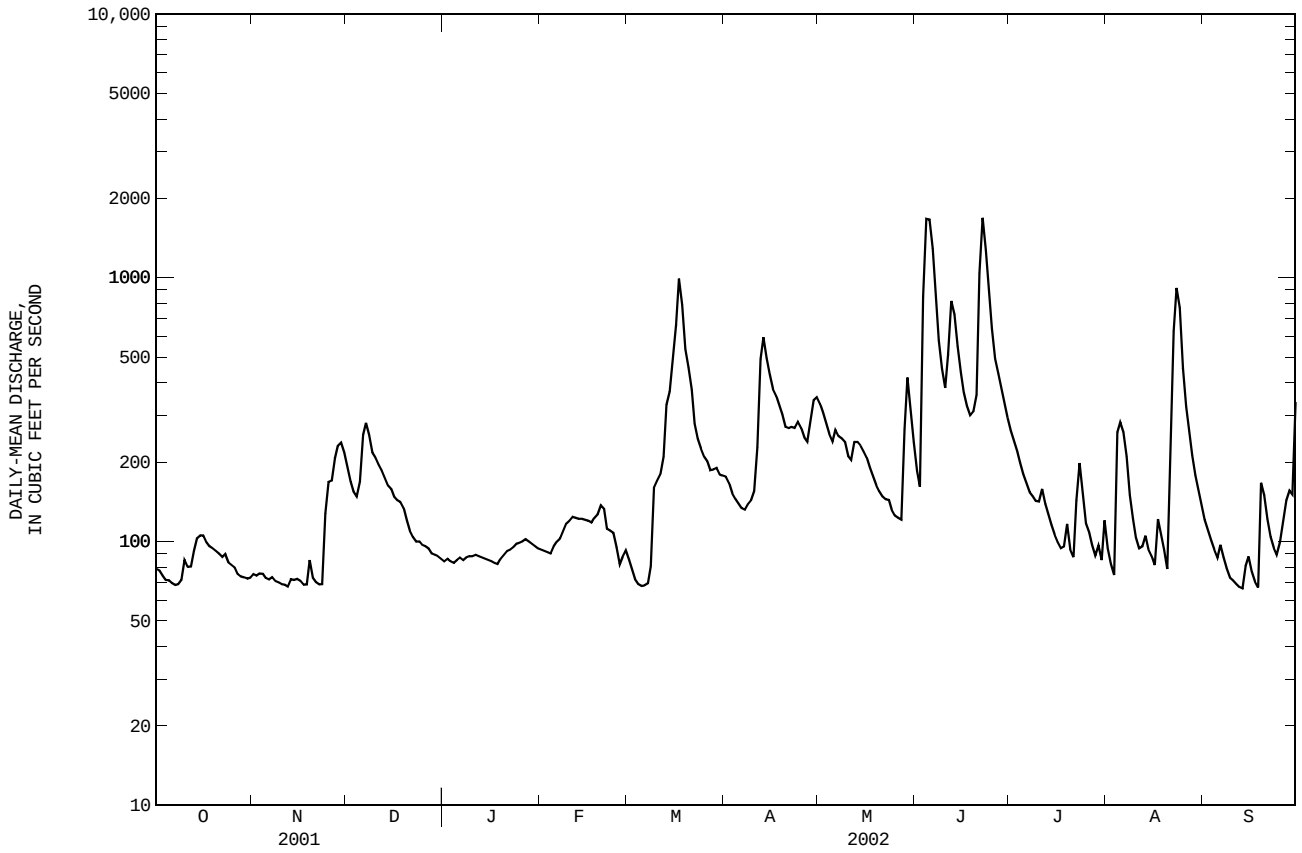
05353800 STRAIGHT RIVER NEAR FARIBAULT, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	213	191	120	69.8	118	508	662	464	434	321	228	169
MAX	831	595	336	167	837	1270	2365	1322	1470	1027	1136	645
(WY)	1969	1971	1983	1992	1984	1973	2001	1999	2001	1993	1979	1993
MIN	17.0	15.1	11.0	11.0	12.9	26.4	70.2	58.1	45.8	26.2	16.2	16.0
(WY)	1977	1977	1977	1977	1968	1968	1977	1976	1976	1988	1976	1976

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1966 - 2002	
ANNUAL TOTAL	179488		74187			
ANNUAL MEAN	492		203		292	
HIGHEST ANNUAL MEAN					754	1993
LOWEST ANNUAL MEAN					43.9	1977
HIGHEST DAILY MEAN	5340	Jun 15	1690	Jun 22	5410	May 2 1973
LOWEST DAILY MEAN	57	Feb 27	66	Sep 13	11a	Feb 18 1968
ANNUAL SEVEN-DAY MINIMUM	60	Sep 13	70	Nov 8	11	Feb 18 1968
MAXIMUM PEAK FLOW			1920	Jun 22	6030	Jul 7 1990
MAXIMUM PEAK STAGE			7.24	Jun 22	12.74b	Mar 5 1974
INSTANTANEOUS LOW FLOW			62	Feb 27	10	Oct 27 1976
ANNUAL RUNOFF (AC-FT)	356000		147100		211500	
ANNUAL RUNOFF (CFSM)	1.11		0.46		0.66	
ANNUAL RUNOFF (INCHES)	15.11		6.24		8.98	
10 PERCENT EXCEEDS	1540		377		716	
50 PERCENT EXCEEDS	98		123		127	
90 PERCENT EXCEEDS	65		73		32	

a Many days in 1968 and 1977.
b Backwater from ice.
e Estimated.



05355200 CANNON RIVER AT WELCH, MN

LOCATION.--Lat 44°33'50", long 92°43'55", in NW¼SW¼ sec. 27, T. 113 N., R. 16 W., Goodhue County, on right bank 0.3 mile downstream from highway bridge at Welch and 1.8 miles upstream from Belle Creek.

DRAINAGE AREA.--1,340 mi^2.

PERIOD OF RECORD.--June 1909 to January 1914 (no winter records 1909-11), November 1930 to September 1971, October 1972 to September 1987 (annual maximum only), October 1991 to current year.

REVISED RECORDS.--WSP 1308: 1912(M). WSP 1508: 1933. WSP 1914: 1960. WRD MN-98: 1986 (M), 1997.

GAGE.--Water-stage recorder. Datum of gage is 699.16 ft above sea level (NGVD of 1929). Prior to Nov. 11, 1930, nonrecording gage on highway bridge at site 0.3 mile upstream at datum 3.00 ft lower. Nov. 11, 1930 to Oct. 11, 1938, water-stage recorder at site 0.3 mile upstream at present datum.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known, 17.1 ft, present datum, in April 1888, from floodmark at mill about 2,400 ft upstream.

REMARKS.--Records good to fair except those for estimated daily discharges, which are fair. Flow affected at lower stages by regulation from hydropower plant upstream.

DISCHARGE, in CFS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	269	332	545	e300	317	298	536	713	374	1100	667	793
2	297	336	472	e295	e290	273	541	726	359	1040	656	819
3	325	337	481	e300	e270	249	549	708	622	1000	627	835
4	328	328	444	e310	e250	251	511	695	1690	899	2290	786
5	336	320	457	e320	e270	257	467	687	2490	856	1670	699
6	333	305	513	325	e305	258	451	694	2440	810	1380	911
7	312	305	520	325	313	290	441	689	2160	808	1210	925
8	305	309	517	327	311	297	446	695	1760	813	1080	853
9	315	308	543	323	312	715	464	699	1290	776	890	786
10	337	303	566	325	315	662	517	685	1160	734	868	701
11	332	301	529	325	315	700	656	659	1500	754	811	646
12	313	304	530	336	306	763	759	612	2170	744	705	582
13	375	337	520	346	315	1050	844	602	1920	717	640	535
14	417	371	488	343	315	1070	1040	592	1550	696	650	547
15	400	362	461	344	318	989	1040	558	1400	665	639	587
16	365	360	456	340	318	848	992	501	1190	614	618	594
17	326	325	441	336	318	978	987	493	1110	603	670	583
18	329	311	403	e270	330	1290	948	470	1000	611	655	537
19	329	315	411	e270	384	1440	884	430	916	627	622	526
20	338	309	410	276	411	1130	830	406	917	663	603	546
21	354	317	394	300	418	971	795	373	1920	657	1020	610
22	358	321	372	339	422	828	785	341	5530	631	3330	611
23	367	326	400	337	386	750	766	331	3910	580	3100	573
24	364	370	e350	329	365	711	765	326	2660	564	2570	535
25	345	453	e300	309	362	699	738	336	2150	589	2200	496
26	343	501	e275	322	363	688	701	337	2060	641	1900	605
27	331	507	e290	322	334	668	697	336	1840	624	1480	656
28	318	530	e310	322	310	574	701	333	1550	596	948	655
29	329	584	e320	319	---	534	706	336	1380	750	857	655
30	326	582	e315	294	---	538	703	371	1230	672	753	654
31	326	---	e310	304	---	536	---	393	---	668	753	---
TOTAL	10442	10969	13343	9833	9243	21305	21260	16127	52248	22502	36862	19841
MEAN	336.8	365.6	430.4	317.2	330.1	687.3	708.7	520.2	1742	725.9	1189	661.4
MAX	417	584	566	346	422	1440	1040	726	5530	1100	3330	925
MIN	269	301	275	270	250	249	441	326	359	564	603	496
AC-FT	20710	21760	26470	19500	18330	42260	42170	31990	103600	44630	73120	39350
CFSM	0.25	0.27	0.32	0.24	0.25	0.51	0.53	0.39	1.30	0.54	0.89	0.49
IN.	0.29	0.30	0.37	0.27	0.26	0.59	0.59	0.45	1.45	0.62	1.02	0.55

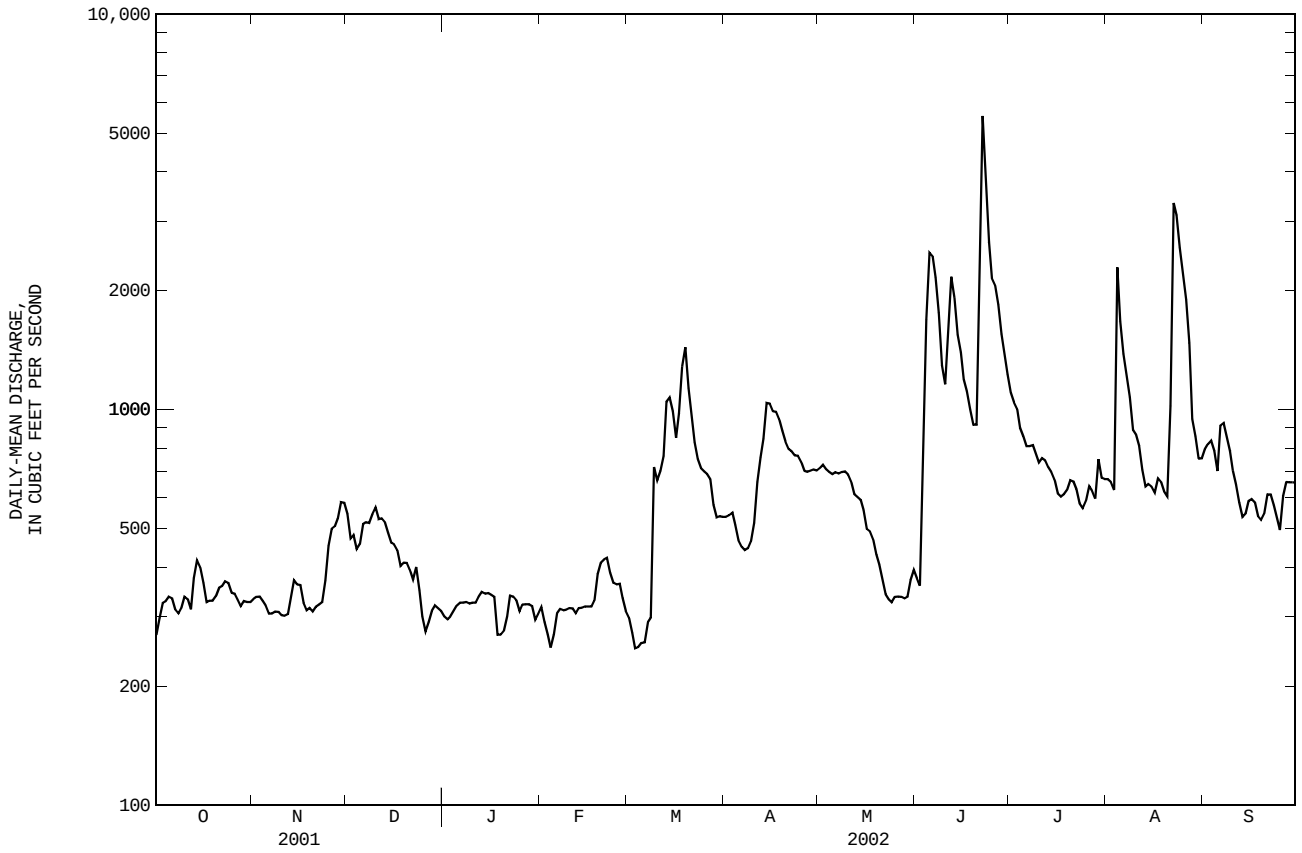
05355200 CANNON RIVER AT WELCH, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1909 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	379.7	374.8	293.9	242.7	309.1	979.3	1431	811.5	877.1	609.7	458.3	395.7
MAX	1806	1708	1105	662	1141	2627	8240	2966	4144	3343	2951	1823
(WY)	1969	1971	1992	1992	1966	1992	1965	1944	1993	1993	1993	1993
MIN	65.5	78.8	75.0	76.9	110	149	145	84.9	80.0	71.2	78.1	72.8
(WY)	1934	1934	1938	1938	1913	1911	1911	1934	1934	1934	1936	1933

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1909 - 2002	
ANNUAL TOTAL	441164		243975			
ANNUAL MEAN	1209		668.4		619.7	
HIGHEST ANNUAL MEAN					2132	1993
LOWEST ANNUAL MEAN					137	1934
HIGHEST DAILY MEAN	10800	Apr 13	5530	Jun 22	28700	Apr 8 1965
LOWEST DAILY MEAN	150	Feb 25	249	Mar 3	19a	Jan 2 1950
ANNUAL SEVEN-DAY MINIMUM	160	Feb 19	268	Mar 2	42	Aug 12 1936
MAXIMUM PEAK FLOW			6120	Jun 22	36100	Apr 8 1965
MAXIMUM PEAK STAGE			9.21	Jun 22	15.05	Jun 27 1998
INSTANTANEOUS LOW FLOW			221	Feb 4	2.5a	Jan 3 1950
ANNUAL RUNOFF (AC-FT)	875000		483900		448900	
ANNUAL RUNOFF (CFSM)	0.90		0.50		0.46	
ANNUAL RUNOFF (INCHES)	12.25		6.77		6.28	
10 PERCENT EXCEEDS	3680		1120		1390	
50 PERCENT EXCEEDS	370		535		306	
90 PERCENT EXCEEDS	262		309		104	

a Result of ice jam upstream.
e Estimated.



05372995 SOUTH FORK ZUMBRO RIVER AT ROCHESTER, MN

LOCATION.--Lat 44°03'42", long 92°27'58", in NW¼NE¼ sec. 23, T.107 N., R.14 W., Olmsted County, Hydrologic Unit 07040004, on left bank 50 ft downstream from 37th Street bridge, 0.2 mi upstream from wastewater treatment plant, and 2.0 mi downstream from Silver Lake Dam.

DRAINAGE AREA.--303 mi^2.

PERIOD OF RECORD.--March 1981 to current year.

GAGE.--Water-stage recorder. Datum of gage is 950.00 ft above sea level (NGVD of 1929). Prior to Mar. 1981, recording gage at site 0.6 miles downstream. Record published as "near Rochester, MN" and under downstream order number 05373000. Peak flow record is considered equivalent at both sites but daily-mean streamflows are not.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Some regulation at times from Silver Lake.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 6, 1978, reached a stage of about 28.0 ft, on upstream side of bridge, discharge 30,500 ft^3/s. This is the highest known stage since at least 1908.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,300 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jun 11	0400	2,180	7.65	Aug 17	0600	*2,400	*8.14
Jun 21	0700	2,080	7.42				

Minimum discharge, 50 ft^3/s, Feb. 4, gage height, 2.18 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	91	79	133	68	72	125	113	249	e88	218	140	173
2	89	78	126	66	e69	e113	116	235	116	197	131	169
3	83	73	123	63	e67	e106	107	215	244	175	190	164
4	83	72	117	61	68	e104	102	199	636	163	390	159
5	81	71	154	65	76	e106	100	191	841	164	227	153
6	76	71	159	69	76	e112	99	203	540	179	190	166
7	73	71	157	65	79	118	98	187	368	176	174	151
8	72	69	149	69	84	152	105	195	305	172	164	146
9	93	69	149	73	98	234	106	187	256	168	157	140
10	98	68	143	77	141	169	104	174	233	e171	148	138
11	88	69	137	80	114	177	198	178	1020	e169	141	132
12	86	65	133	79	124	206	276	177	611	e162	141	131
13	149	87	131	79	94	390	263	176	483	e140	149	127
14	141	73	124	80	109	319	230	167	395	121	136	159
15	133	72	119	80	108	224	215	162	325	111	129	138
16	118	69	119	76	107	183	209	156	272	100	126	131
17	109	67	117	62	97	198	194	149	244	96	712	126
18	104	77	113	65	114	187	187	143	222	e116	325	123
19	105	81	110	73	178	182	176	137	297	e150	226	130
20	105	73	93	74	261	176	168	132	217	e169	195	129
21	98	72	91	74	221	173	179	125	1080	e208	367	124
22	105	73	130	77	180	143	176	119	940	e259	425	120
23	95	87	92	77	179	157	174	117	550	e184	344	116
24	95	139	76	75	178	159	175	115	418	e163	289	116
25	90	127	96	74	175	135	169	115	359	175	255	154
26	85	133	92	78	163	139	163	113	430	165	233	154
27	82	140	87	80	134	130	225	108	341	158	213	144
28	80	138	88	82	158	128	308	105	294	150	199	135
29	81	138	88	84	---	125	327	105	258	153	190	136
30	80	138	78	79	---	122	275	98	228	155	183	135
31	81	---	72	81	---	118	---	91	---	149	176	---
TOTAL	2949	2639	3596	2285	3524	5110	5337	4823	12611	5036	7065	4219
MEAN	95.1	88.0	116	73.7	126	165	178	156	420	162	228	141
MAX	149	140	159	84	261	390	327	249	1080	259	712	173
MIN	72	65	72	61	67	104	98	91	88	96	126	116
AC-FT	5850	5230	7130	4530	6990	10140	10590	9570	25010	9990	14010	8370
CFSM	0.31	0.29	0.38	0.24	0.42	0.54	0.59	0.51	1.39	0.54	0.75	0.46

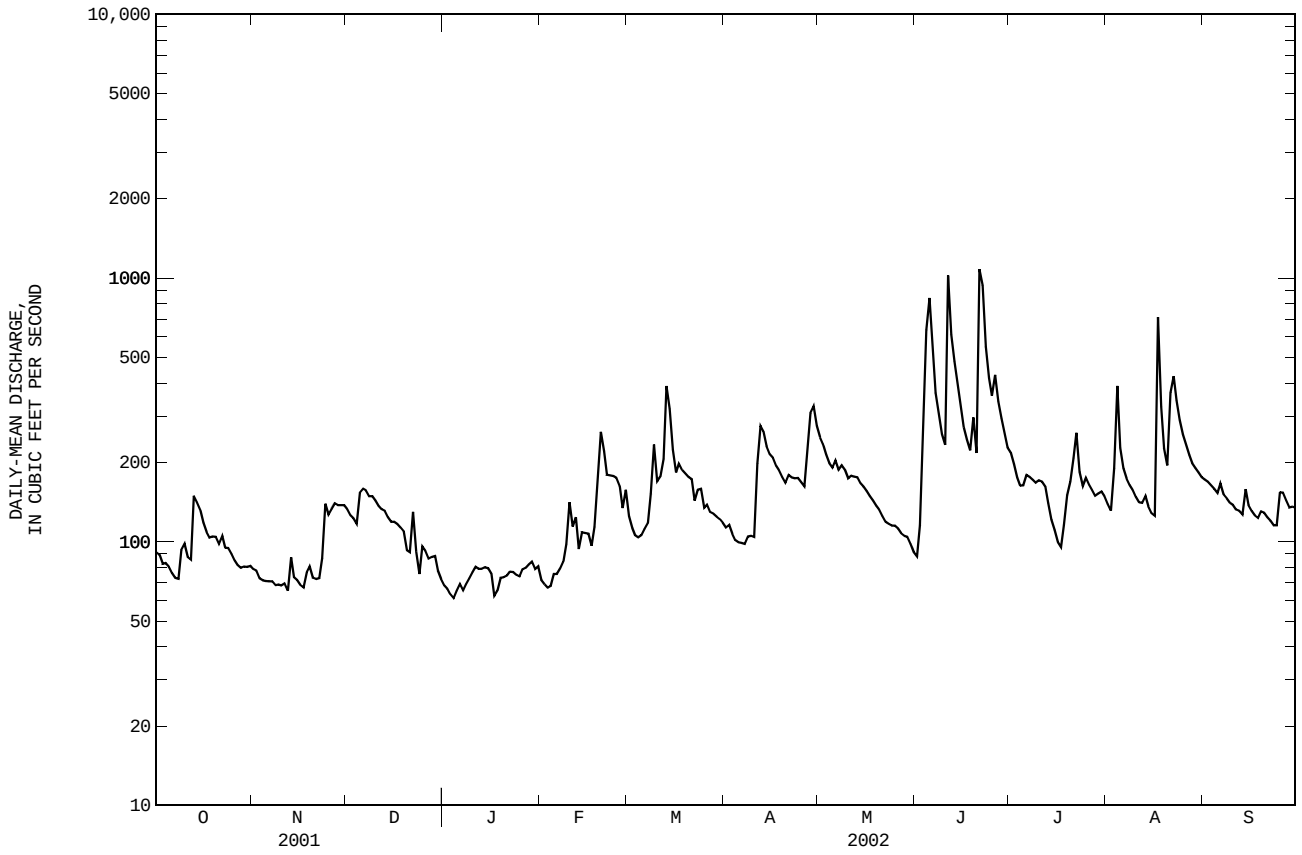
05372995 SOUTH FORK ZUMBRO RIVER AT ROCHESTER, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1981 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	148	141	115	75.5	127	354	430	328	293	244	173	168
MAX	824	338	358	167	454	760	1269	735	1014	663	501	1075
(WY)	1987	1992	1992	1983	1984	1983	2001	2001	1993	1993	1990	1986
MIN	20.0	24.5	21.0	22.5	23.8	109	79.4	88.3	49.0	23.2	24.6	31.5
(WY)	1990	1990	1990	1990	1990	2001	2000	1989	1989	1988	1988	1988

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1981 - 2002	
ANNUAL TOTAL	109051		59194			
ANNUAL MEAN	299		162		218	
HIGHEST ANNUAL MEAN					431	1993
LOWEST ANNUAL MEAN					87.3	1989
HIGHEST DAILY MEAN	4410	Apr 12	1080	Jun 21	7710	Sep 21 1986
LOWEST DAILY MEAN	47	Feb 23	61	Jan 4	12	Sep 12 1988
ANNUAL SEVEN-DAY MINIMUM	49	Feb 17	65	Jan 1	14	Sep 8 1988
MAXIMUM PEAK FLOW			2400	Aug 17	10000	Sep 21 1986
MAXIMUM PEAK STAGE			8.14	Aug 17	20.77	Sep 21 1986
INSTANTANEOUS LOW FLOW			50a	Feb 4	10a	Oct 23 1981
ANNUAL RUNOFF (AC-FT)	216300		117400		157600	
ANNUAL RUNOFF (CFSM)	0.99		0.54		0.72	
10 PERCENT EXCEEDS	783		258		473	
50 PERCENT EXCEEDS	115		134		123	
90 PERCENT EXCEEDS	59		74		49	

a Due in part to regulation.
e Estimated.



05378500 MISSISSIPPI RIVER AT WINONA, MN

LOCATION.--Lat 44°03'21", long 91°38'16", in sec. 23, T.107 N., R.7 W., Winona County, Hydrologic Unit 07040003, on right bank at Winona pumping station in Winona, 9.5 mi upstream from Trempealeau River, and at mile 725.7 upstream from the Ohio River.

DRAINAGE AREA.--59,200 mi^2 (approximately).

PERIOD OF RECORD.--June 1928 to current year. Gage-height records collected in this vicinity since 1878 are contained in reports of Mississippi River Commission.

GAGE.--Water-stage recorder. Datum of gage is 639.64 ft above sea level (NGVD of 1929). June 10,1928 to Apr. 15, 1931, nonrecording gage at site 800 ft upstream. Prior to Oct. 1, 1929, at datum 0.20 ft higher and Oct. 1, 1929 to Apr. 15, 1931, at datum 0.12 ft lower. Apr. 16, 1931 to Nov. 12, 1934, nonrecording gage at present site and datum. Since Mar. 31, 1937, auxiliary water-stage recorder 2.7 mi upstream at tailwater of navigation dam 5A.

REMARKS.-- Records for discharges above 50,000 cfs are good while records for discharge below 50,000 cfs are fair to poor. Some regulation by reservoirs, navigation dams, and power plants at low and medium stages. Daily discharges for some days were based in part on instantaneous discharges obtained from the U.S. Army Corps of Engineers for Lock and Dam 5A.

EXTREMES FOR PERIOD OF RECORD.--Minimum gage height, -3.38 ft, Aug. 31, 1934 (prior to dam construction in 1936); minimum gage height since 1938, after completion of dam, 1.95 ft, Jan. 27, 1944.

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	15500	22100	33000	17000	18100	17400	35300	67400	41200	65800	42100	47000
2	15600	22500	31000	18000	18500	17600	38000	66200	39500	64600	41800	46700
3	15000	22100	28000	19000	17800	17900	41500	65300	40100	64700	41200	45500
4	15400	20600	30000	20000	17500	20300	40900	62700	46000	63400	43000	46300
5	15300	19100	32000	20000	16600	20800	39200	61400	47300	59900	45800	47700
6	15200	18700	33000	21000	16600	19300	38800	56600	50000	56800	46800	49300
7	14200	19200	33000	21000	16500	18300	37100	54300	51400	56300	49500	50900
8	12400	18500	34000	23000	18300	18100	38200	53000	52000	54900	50800	53200
9	12000	19200	39000	24000	19000	18400	39600	54100	52000	52500	50600	57100
10	16300	18800	40000	27000	18300	19400	40900	55200	51000	50700	49100	60800
11	18100	19300	38000	25000	18500	20600	43700	58300	50500	50800	48100	61200
12	18100	19000	37000	24000	17500	21900	50200	63600	50600	53300	47900	57600
13	18100	18700	36000	22900	18100	26100	57000	69300	49200	55100	47800	55000
14	18700	18700	33000	22200	17500	27700	66100	73400	47700	56000	45700	52900
15	19800	18600	31000	22300	17100	27700	82100	74000	47500	57400	43000	52300
16	20600	18900	31000	21900	17000	27900	101000	74100	43500	58100	41600	49100
17	21300	18700	31000	21900	17600	26700	115000	73900	42800	57400	40500	46700
18	21400	19100	30000	21000	17600	25800	121000	73000	42600	57300	40800	44600
19	20800	19600	29000	19600	19000	25200	124000	71400	41800	57100	40800	44200
20	20100	19400	27000	18900	22500	25300	122000	68600	41000	55900	40900	42100
21	19400	19400	24000	17800	23500	25600	117000	65900	42500	55700	41300	40200
22	19800	19700	22000	17800	23800	26100	111000	61700	46000	55500	47700	37500
23	20000	19500	23000	18800	24000	26500	105000	57800	52000	53200	53900	36000
24	20100	19800	24000	20100	24900	25600	99100	56800	56000	51100	56300	36000
25	19700	23300	22000	20200	24900	22700	92900	53800	57700	48900	57600	36400
26	19300	24600	16000	20100	24400	21600	84800	51700	60600	48600	58200	37100
27	18500	24300	13000	19700	22600	22100	78900	50700	64000	47500	57800	37400
28	16100	30000	13000	19600	19200	21600	76700	48400	66600	45000	55700	36900
29	15200	37000	14000	19300	---	24000	74100	46500	66800	43400	53000	37500
30	17000	37000	17000	19100	---	28200	69800	42600	66600	44100	51600	37000
31	20300	---	17000	18400	---	31400	---	42000	---	43900	48500	---
TOTAL	549300	645400	861000	640600	546900	717800	2180900	1873700	1506500	1684900	1479400	1382200
MEAN	17720	21510	27770	20660	19530	23150	72700	60440	50220	54350	47720	46070
MAX	21400	37000	40000	27000	24900	31400	124000	74100	66800	65800	58200	61200
MIN	12000	18500	13000	17000	16500	17400	35300	42000	39500	43400	40500	36000
AC-FT	1090000	1280000	1708000	1271000	1085000	1424000	4326000	3716000	2988000	3342000	2934000	2742000
CFSM	0.30	0.36	0.47	0.35	0.33	0.39	1.23	1.02	0.85	0.92	0.81	0.78

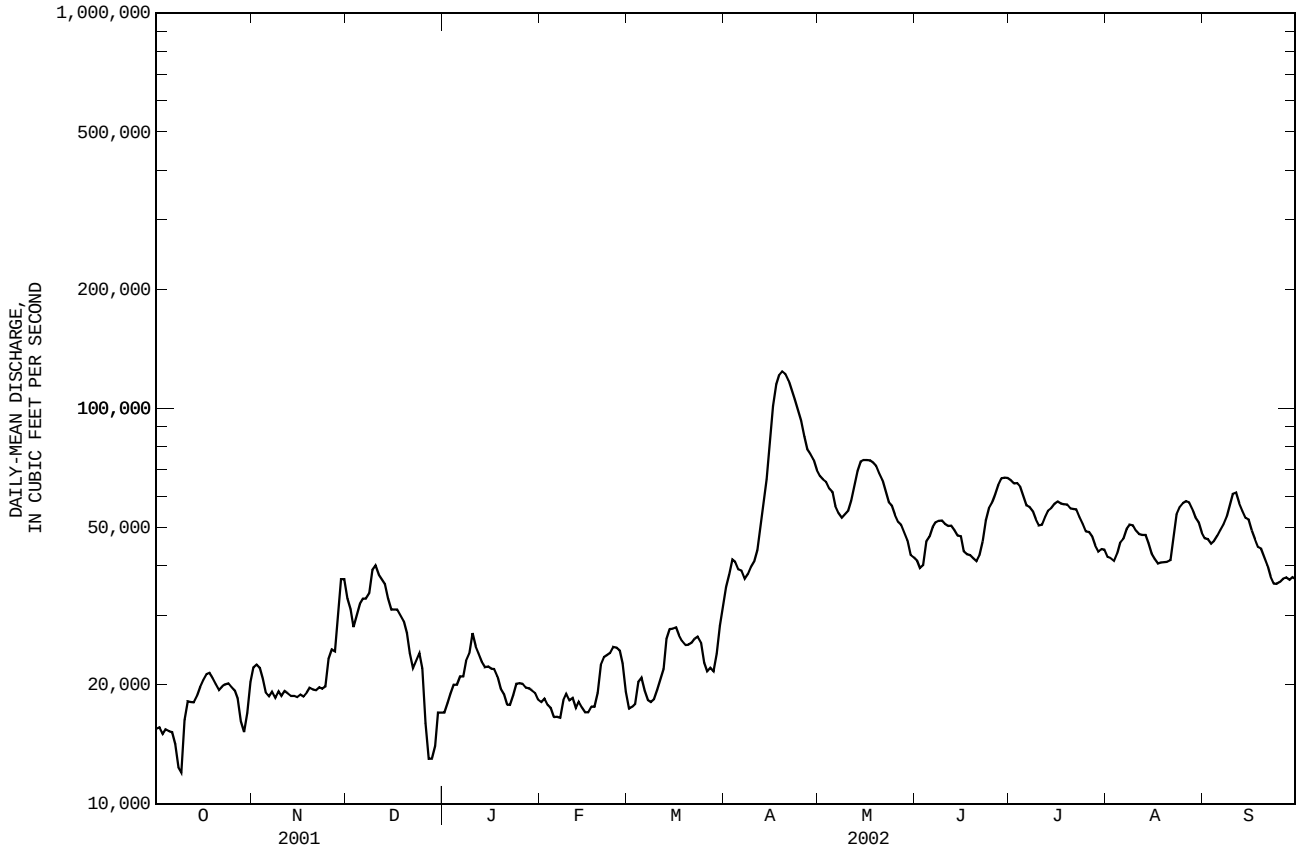
05378500 MISSISSIPPI RIVER AT WINONA, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	22370	23050	17870	15460	15740	30500	62660	49650	40070	32330	21990	22630
MAX	85950	50040	40440	30480	35900	86420	152600	119800	100200	118800	67560	69490
(WY)	1987	1972	1992	1983	1984	1983	1965	2001	1993	1993	1993	1986
MIN	6774	7367	6286	6742	7874	9023	12810	11930	8450	7063	5391	6790
(WY)	1934	1934	1934	1940	1977	1934	1931	1931	1934	1934	1934	1933

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1928 - 2002	
ANNUAL TOTAL	17268900		14068600			
ANNUAL MEAN	47310		38540		29560	
HIGHEST ANNUAL MEAN					56850	1986
LOWEST ANNUAL MEAN					9742	1934
HIGHEST DAILY MEAN	236000	Apr 17	124000	Apr 19	264000	Apr 20 1965
LOWEST DAILY MEAN	12000	Oct 9	12000	Oct 9	2250	Dec 29 1933
ANNUAL SEVEN-DAY MINIMUM	14200	Oct 3	14200	Oct 3	3210	Dec 27 1933
MAXIMUM PEAK FLOW			124000	Apr 19	268000	Apr 19 1965
MAXIMUM PEAK STAGE			13.51	Apr 19	20.77a	Apr 19 1965
INSTANTANEOUS LOW FLOW					1940b	Dec 12 1980
ANNUAL RUNOFF (AC-FT)	34250000		27910000		21410000	
ANNUAL RUNOFF (CFSM)	0.80		0.65		0.50	
10 PERCENT EXCEEDS	106000		63800		60700	
50 PERCENT EXCEEDS	23000		37000		21300	
90 PERCENT EXCEEDS	17700		18000		10000	

a From highwater mark.
b Result of ice jam upstream.



05457000 CEDAR RIVER NEAR AUSTIN, MN

LOCATION.--Lat 43°38'11", long 92°58'26", in NE¼SE¼ sec. 15, T.102 N., R.18 W., Mower County, Hydrologic Unit 07080201, on left bank 200 ft upstream from abandoned powerhouse, 500 ft downstream from highway bridge, 1.1 mi downstream from Turtle Creek, and 1.1 mi south of Austin.

DRAINAGE AREA.--399 mi^2.

PERIOD OF RECORD.--May 1909 to September 1914, October 1944 to current year.

REVISED RECORDS.--WSP 1145: 1945, 1948.

GAGE.--Water-stage recorder. Datum of gage is 1,162.10 ft above sea level (NGVD of 1929). May 1909 to April 1912, nonrecording gage in tailwater of power plant 200 ft downstream at datum 3.1 ft lower. May 1912 to September 1914, nonrecording gage on highway bridge 500 ft downstream at datum 1.1 ft lower.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Some regulation at lower flows by wastewater treatment plant upstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jun 5	1030	*1,650	*6.44	No other peak greater than base discharge.			

Minimum discharge, 56 ft^3/s, Sept. 13, gage height, 2.25 ft.

DISCHARGE, in CFS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	105	88	169	84	75	93	99	404	128	200	82	68
2	100	86	152	86	79	87	105	355	122	179	73	66
3	98	81	148	84	77	82	93	308	216	164	71	65
4	95	80	144	83	74	e80	95	278	925	148	188	62
5	92	80	173	85	76	77	97	253	1570	133	276	61
6	86	82	182	87	71	79	89	258	1160	123	361	67
7	84	81	189	e85	74	79	91	235	761	113	254	74
8	86	82	182	85	80	108	102	219	546	111	181	65
9	94	78	166	89	98	127	105	219	434	105	141	63
10	107	79	168	94	128	106	100	197	371	168	119	69
11	97	75	158	92	114	120	203	201	430	229	103	61
12	95	76	159	91	105	167	448	206	529	172	116	60
13	120	89	158	94	87	330	473	195	441	135	125	59
14	120	86	149	106	94	301	398	186	371	115	114	83
15	128	83	142	97	97	220	341	178	325	106	104	73
16	118	81	140	89	97	159	296	178	292	99	90	72
17	110	79	138	83	90	200	300	168	270	94	95	68
18	110	80	138	82	94	189	281	158	249	89	79	69
19	107	85	131	81	129	188	252	149	231	88	80	72
20	103	79	116	80	202	206	219	143	223	87	75	70
21	100	79	122	84	174	172	225	136	349	93	84	68
22	97	80	145	86	127	116	225	127	823	186	108	66
23	98	81	99	86	137	156	215	131	611	187	156	64
24	92	137	117	82	129	147	222	122	514	130	133	62
25	98	145	148	81	121	109	208	123	390	118	111	78
26	89	150	124	85	82	117	188	122	480	111	101	87
27	85	166	103	87	104	112	217	120	419	127	92	90
28	81	193	101	92	108	114	410	139	309	100	85	87
29	88	186	103	86	---	118	567	199	258	105	81	89
30	86	179	88	80	---	111	490	165	224	96	77	82
31	86	---	e86	82	---	108	---	141	---	83	72	---
TOTAL	3055	3026	4338	2688	2923	4378	7154	6013	13971	3994	3827	2120
MEAN	98.55	100.9	139.9	86.71	104.4	141.2	238.5	194.0	465.7	128.8	123.5	70.67
MAX	128	193	189	106	202	330	567	404	1570	229	361	90
MIN	81	75	86	80	71	77	89	120	122	83	71	59
AC-FT	6060	6000	8600	5330	5800	8680	14190	11930	27710	7920	7590	4210
CFSM	0.25	0.25	0.35	0.22	0.26	0.35	0.60	0.49	1.17	0.32	0.31	0.18
IN.	0.28	0.28	0.40	0.25	0.27	0.41	0.67	0.56	1.30	0.37	0.36	0.20

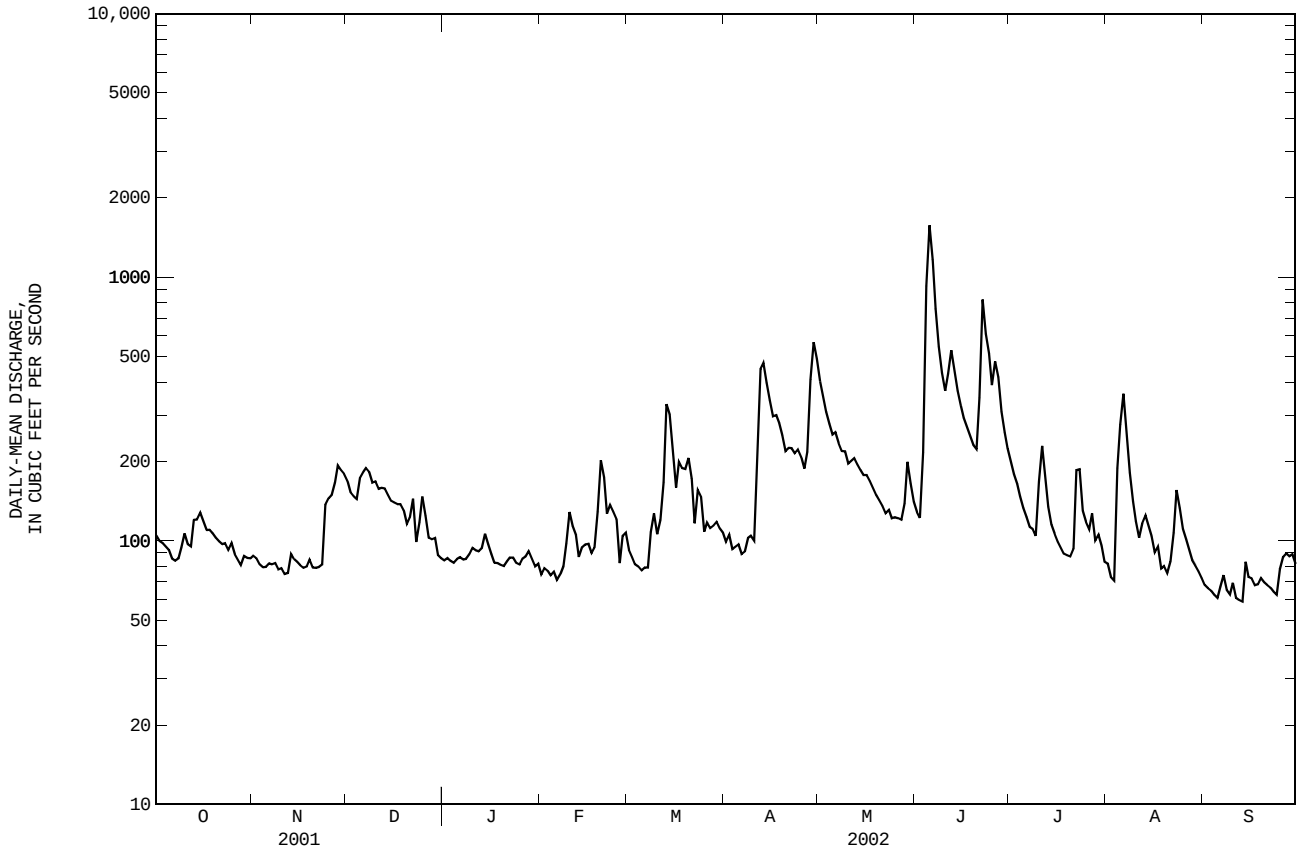
05457000 CEDAR RIVER NEAR AUSTIN, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1909 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	163.0	160.7	107.5	75.33	109.7	468.6	542.4	334.3	328.2	276.1	185.4	145.3
MAX	884	997	431	261	701	1428	2328	1387	1624	1456	1720	734
(WY)	1974	1910	1992	1973	1984	1973	2001	1999	1993	1978	1993	1993
MIN	37.3	35.7	26.6	26.5	25.0	53.3	52.9	67.9	48.9	22.6	32.3	30.9
(WY)	1959	1959	1913	1913	1913	1968	1911	1910	1950	1911	1948	1911

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1909 - 2002	
ANNUAL TOTAL	166723		57487			
ANNUAL MEAN	456.8		157.5		242.0a	
HIGHEST ANNUAL MEAN					824	1993
LOWEST ANNUAL MEAN					58.1	1977
HIGHEST DAILY MEAN	7110	Apr 12	1570	Jun 5	11100	Jul 10 2000
LOWEST DAILY MEAN	71	Sep 5	59	Sep 13	0.00b	Jan 15 1911
ANNUAL SEVEN-DAY MINIMUM	78	Sep 12	64	Sep 7	13	Sep 1 1912
MAXIMUM PEAK FLOW			1650	Jun 5	15300	Jul 10 2000
MAXIMUM PEAK STAGE			6.44	Jun 5	21.49c	Jul 10 2000
INSTANTANEOUS LOW FLOW			56	Sep 13	0.00b	Jan 15 1911
ANNUAL RUNOFF (AC-FT)	330700		114000		175300	
ANNUAL RUNOFF (CFSM)	1.14		0.39		0.61	
ANNUAL RUNOFF (INCHES)	15.54		5.36		8.24	
10 PERCENT EXCEEDS	1100		285		502	
50 PERCENT EXCEEDS	120		108		97	
90 PERCENT EXCEEDS	81		77		45	

a Median of annual mean discharges is 224 ft^3/s.
b Occurred on several days in 1911, result of regulation.
c From floodmark.
e Estimated.



05476000 DES MOINES RIVER AT JACKSON, MN

LOCATION.--Lat 43°37'10", long 94°59'10", in SE¼SW¼ sec. 24, T.102 N., R.35 W., Jackson County, Hydrologic Unit 07100001, on right bank at old dam structure in Jackson.

DRAINAGE AREA.--1,250 mi^2.

PERIOD OF RECORD.--May 1909 to December 1913, August 1930 to current year (winter record incomplete prior to 1936). Published as "Des Moines River near Jackson", 1930-35, as "West Fork Des Moines River near Jackson", 1936-44, and as "West Fork Des Moines River at Jackson", 1945-69.

REVISED RECORDS.--WSP 1115: 1942. WSP 1175: Drainage area. WSP 1238: 1950. WSP 1308: 1938(M).

GAGE.--Water-stage recorder. Datum of gage is 1,287.75 ft above sea level (NGVD of 1929). May 31, 1909 to Dec. 20, 1913, nonrecording gage at site 0.6 mi downstream at datum 0.99 ft lower. Aug. 22, 1930 to Sept. 30, 1944, nonrecording gage at site 7 mi upstream at datum 17.10 ft higher. Oct. 1, 1944 to Oct. 26, 1949, nonrecording gage at site 600 ft upstream at datum 10.64 ft higher. Oct. 27, 1949 to Dec. 15, 1965, water-stage recorder 200 ft downstream at present datum.

REMARKS.--Records good except those for estimated daily discharges, which are fair to poor. Regulation at times from Yankton, Long, Shetek, and Heron Lakes.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 540 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Apr 4	daily	e568	--	May 13	0130	*706	*5.51
May 2	2230	670	5.40	Aug 22	1300	640	5.31

Minimum discharge, 4.4 ft^3/s, Aug. 1, gage height, 2.35 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	23	18	169	e69	e68	e92	e467	553	434	204	6.9	229
2	24	18	151	e67	e67	e96	e520	642	460	167	5.0	178
3	19	17	188	e67	e66	e82	e541	629	444	145	9.3	151
4	19	16	216	e69	e66	e82	e568	602	450	124	15	e130
5	19	16	213	e72	69	e81	e536	555	440	113	29	112
6	16	16	226	e73	64	e82	528	515	440	109	144	106
7	15	18	213	e74	65	e81	520	479	465	100	192	98
8	15	17	210	e75	66	e80	491	483	477	81	227	90
9	17	17	172	e76	70	e79	474	540	456	72	199	81
10	25	15	272	e79	69	e80	469	519	443	72	198	73
11	22	14	277	e80	68	80	507	526	450	68	185	66
12	21	16	278	e83	62	78	502	648	382	64	181	61
13	21	17	258	e84	71	83	502	687	349	73	169	56
14	24	20	191	e86	68	87	518	650	330	63	175	62
15	23	18	250	e86	73	89	525	639	281	53	151	57
16	21	16	264	e88	81	87	520	664	268	49	134	49
17	21	31	265	e87	89	96	556	631	259	43	115	46
18	37	69	240	e86	101	104	521	607	251	37	99	41
19	36	69	197	e82	117	e99	500	564	253	34	101	42
20	26	62	134	e79	132	e97	431	519	278	28	75	37
21	23	45	e110	e78	142	e98	481	480	264	29	186	34
22	19	46	e101	e77	154	e95	502	469	269	31	491	34
23	18	95	e92	e75	e155	e92	484	478	309	21	568	30
24	20	185	e84	e73	e140	e90	485	416	367	19	525	28
25	20	242	e82	e71	e122	e88	445	361	422	18	546	36
26	23	238	e90	e70	e98	e88	384	370	406	13	507	37
27	18	233	e93	e68	e96	e102	431	357	354	12	428	31
28	33	164	e87	e66	e98	e177	510	339	309	9.7	358	27
29	30	140	e82	e65	---	e288	519	341	274	12	303	28
30	24	189	e77	e65	---	e347	529	353	245	13	264	31
31	19	---	e72	e68	---	e410	---	404	---	8.9	239	---
TOTAL	691	2077	5354	2338	2537	3610	14966	16020	10829	1885.6	6825.2	2081
MEAN	22.3	69.2	173	75.4	90.6	116	499	517	361	60.8	220	69.4
MAX	37	242	278	88	155	410	568	687	477	204	568	229
MIN	15	14	72	65	62	78	384	339	245	8.9	5.0	27
AC-FT	1370	4120	10620	4640	5030	7160	29690	31780	21480	3740	13540	4130
CFSM	0.02	0.06	0.14	0.06	0.07	0.09	0.40	0.41	0.29	0.05	0.18	0.06
IN.	0.02	0.06	0.16	0.07	0.08	0.11	0.45	0.48	0.32	0.06	0.20	0.06

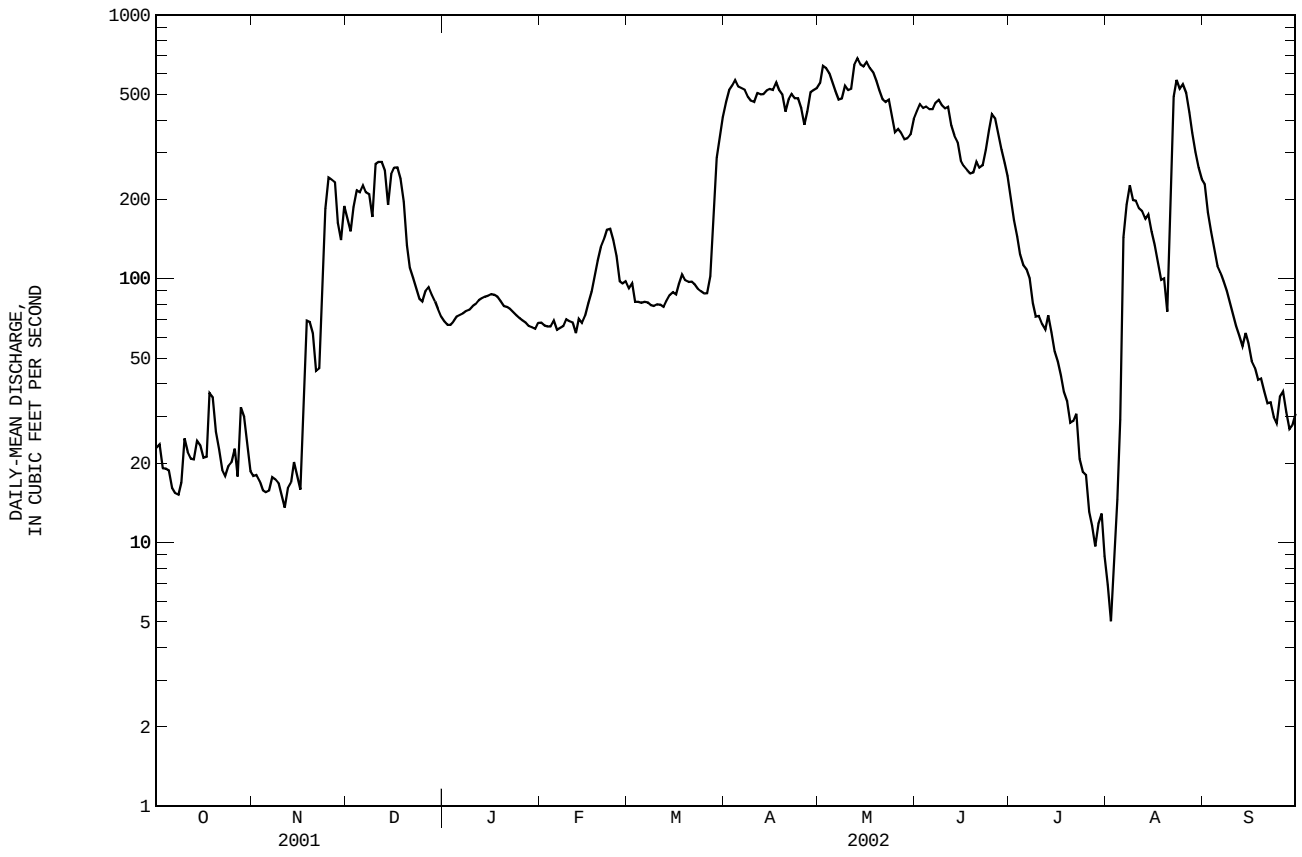
05476000 DES MOINES RIVER AT JACKSON, MN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	162	180	109	50.3	69.7	453	1104	677	636	536	230	172
MAX	1724	1833	792	298	504	2250	6045	3923	4892	6018	2192	2243
(WY)	1987	1980	1980	1980	1983	1983	1969	1993	1993	1993	1993	1942
MIN	0.000	0.000	0.000	0.000	0.000	11.8	9.37	2.59	3.76	1.04	0.13	0.000
(WY)	1956	1956	1956	1956	1936	1959	1959	1934	1931	1931	1955	1931

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1930 - 2002	
ANNUAL TOTAL	318495		69213.8			
ANNUAL MEAN	873		190		385a	
HIGHEST ANNUAL MEAN					2098	1993
LOWEST ANNUAL MEAN					15.1	1956
HIGHEST DAILY MEAN	6400	Apr 28	687	May 13	15500	Apr 11 1969
LOWEST DAILY MEAN	13	Feb 3	5.0	Aug 2	0.00b	Jul 19 1931
ANNUAL SEVEN-DAY MINIMUM	14	Feb 1	9.3	Jul 28	0.00	Jul 19 1931
MAXIMUM PEAK FLOW			706c	May 13	15700	Apr 11 1969
MAXIMUM PEAK STAGE			6.07d	Apr 2	19.45	Apr 11 1969
INSTANTANEOUS LOW FLOW			4.4	Aug 1	0.00b	Jul 19 1931
ANNUAL RUNOFF (AC-FT)	631700		137300		279100	
ANNUAL RUNOFF (CFSM)	0.70		0.15		0.31	
ANNUAL RUNOFF (INCHES)	9.48		2.06		4.19	
10 PERCENT EXCEEDS	3070		507		1070	
50 PERCENT EXCEEDS	82		95		95	
90 PERCENT EXCEEDS	15		19		4.2	

a Median of annual mean discharges is 256 ft^3/s.
b Many days, several years.
c Gage height, 5.51 ft.
d Backwater from ice.
e Estimated.



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Discharge at High-Flow Partial-Record Stations, Low-Flow Sites, and Miscellaneous Sites

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Discharge at High-Flow Partial-Record Stations

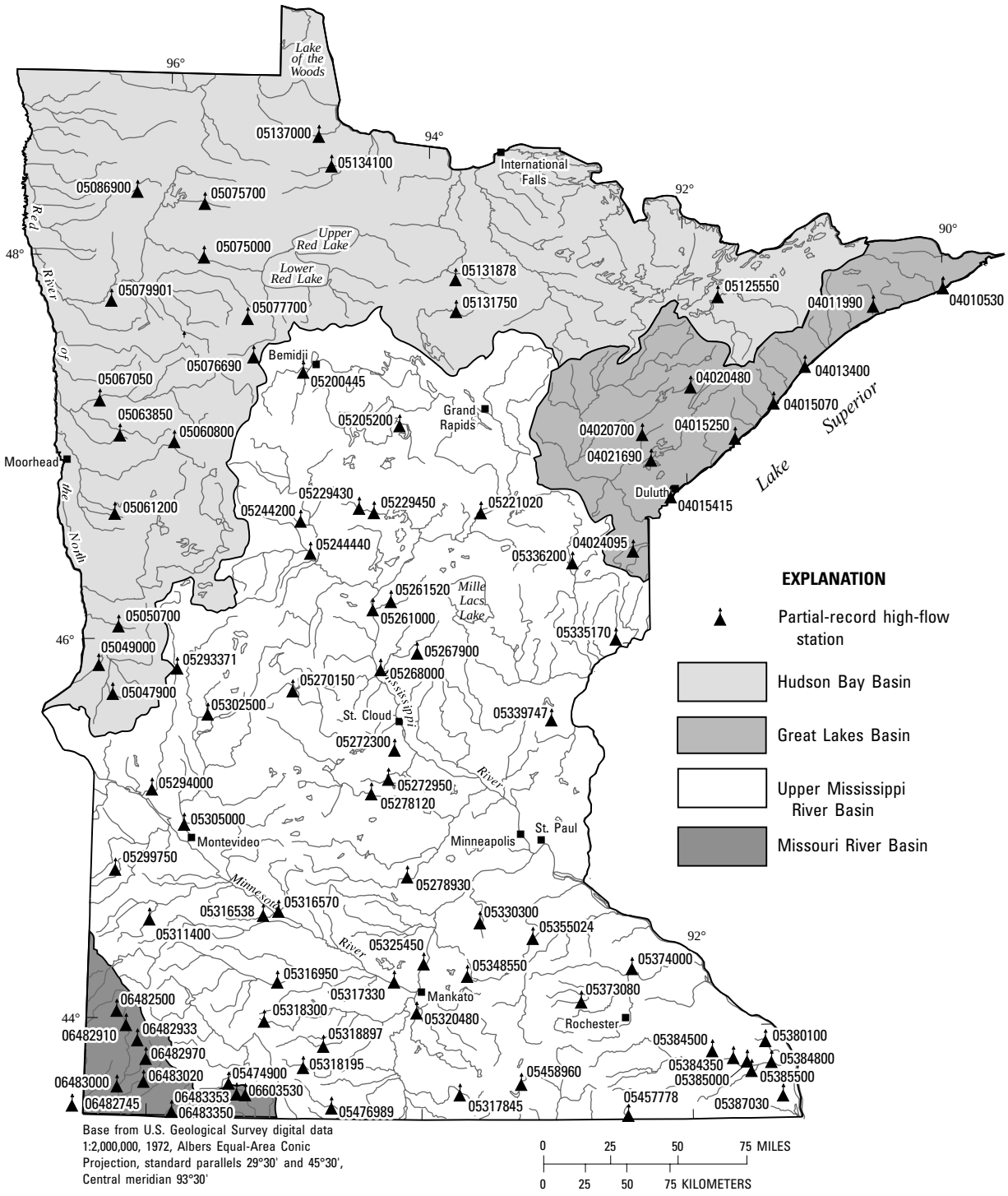


Figure 7. Location of high-flow partial-record stations.

As the number of streams on which streamflow information is likely to be desired far exceeds the number of stream-gaging stations feasible to operate at one time, the Geological Survey collects limited streamflow data at sites other than stream-gaging stations. When limited streamflow data are collected on a systematic basis over a period of years for use in hydrologic analyses, the site at which the data are collected is called a partial-record station. Data collected at these partial-record stations are usable in low-flow or flood-flow analyses, depending on the type of data collected. In addition, discharge measurements are made at other sites not included in the partial-record program. These measurements are generally made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Records collected at high-flow partial-record stations are presented in a table of annual maximum stage and discharge. Discharge measurements made at miscellaneous sites for both low flows and high flows are given in a second table.

The following table contains annual maximum discharges for high-flow (crest-stage) partial-record 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. The years given in the period of record represent water years for which the annual maximum has been determined.

Annual maximum discharge at high-flow sites during water year 2002
[--, data not available]

Station Name and [Station Number]	Location and [Drainage area]	Period of Record	Water year 2002 Maximum			Period of Record Maximum		
			Date	Gage height (feet)	Discharge (ft^3/s)	Date	Gage height (feet)	Discharge (ft^3/s)
Reservation River near Hovland [04010530]	Lat 47°52′38″, long 89°51′45″, in SE¼ SW¼ sec. 6, T.62 N., R.5 E., Cook County, Hydrologic Unit 04010101, at bridge on U.S. Highway 61, on Grand Portage Indian Reservation, 1,200 feet upstream from mouth, and 5.5 miles northeast of Hovland [Drainage area: 16.5 mi^2].	1991-92#, 2000-current year	11-25-01	2.63	349	04-24-01	a3.58	928
Cascade River near Grand Marais [04011990]	Lat 47°47′24″, long 90°31′35″, in SE¼ SW¼ sec. 1., T.61 N., R.2 W., Cook County, Hydrologic Unit 04010101, at bridge on Forest Road 45, 6.6 miles upstream from mouth, 9.5 miles west of Grand Marais [Drainage area: 87.6 mi^2].	1985-current year	04-17-02	10.49	343	04-24-01	13.36	1,810
Little Marais River near Little Marais [04013400]	Lat 47°24′58″, long 91°06′08″, in SW¼ SW¼ sec. 16, T.57 N., R.6 W., Lake County, Hydrologic Unit 04010101, at bridge on U.S. Highway 61, 0.5 mile northeast of Little Marais [Drainage area:4.47 mi^2].	2000-current year	04-11-02	a17.44	b30	11-07-00	a18.14	b400
Lake Superior Trib. at Split Rock State Park [04015070]	Lat 47°11′33′, long 91°23′29″, in SE¼ NE¼ sec. 6, T.54 N., R.8 W., Lake County, Hydrologic Unit 04010102, at culvert on U.S. Highway 61, 1 mile northeast of Split Rock River, 1.5 mile southwest of Split Rock Lighthouse State Park entrance, and 6 miles southwest of Beaver River [Drainage area: 3.27 mi^2].	2001-current year	04-13-02	a16.13	b79	11-07-00	16.68	197
Silver Creek tributary near Two Harbors [04015250]	Lat 47°04′40″, long 91°36′49″, in SW¼NE¼ sec. 16, T.53 N.,R.10 W., Lake County, Hydrologic Unit 04010102, at culvert on County Highway 3, 1.0 mile upstream from mouth, 4.5 miles northeast of Two Harbors [Drainage area: 3.62 mi^2].	1965-current year	06-23-02	c10.62	999	9-20-72	17.08	1,880
Lake Superior Trib. on W. 9th St. in Duluth [04015415]	Lat 46°45′27″, long 92°09′25″, in NE¼ SE¼ sec. 6, T.49 N., R.14 W., St. Louis County, Hydrologic Unit 04010201, at culvert on West 9th St. in Duluth, 1.0 mile above mouth [Drainage area: 1.81 mi^2].	2001-current year	06-24-02	8.90	64	04-23-01	9.22	122

Annual maximum discharge at high-flow sites during water year 2002--Continued

Station Name and [Station Number]	Location and [Drainage area]	Period of Record	Water year 2002 Maximum			Period of Record Maximum		
			Date	Gage height (feet)	Discharge (ft^3/s)	Date	Gage height (feet)	Discharge (ft^3/s)
North Branch Whiteface River near Fairbanks [04020480]	Lat 47°22′20", long 91°56′28", in $NW^1/_4NW^1/_4$ sec. 1, T.56 N., R.13 W., St. Louis County, Hydrologic Unit 04010201, at culvert on County Highway 16, 2 miles upstream from the mouth of Jenkins Creek, 0.7 mile west of Fairbanks [Drainage area: 17.1 mi^2].	1979-current year	04-16-02	11.99	102	04-23-79	13.67	660
Bug Creek at Shaw [04020700]	Lat 47°06′40", long 92°21′03", in $SW^1/_4SE^1/_4$ sec. 34, T.54 N., R.16 W., St. Louis County, Hydrologic Unit 04010201, at culverts on County Road 15 at Shaw, 7.5 miles upstream from mouth [Drainage area: 24.8 mi^2].	1979-current year	06-23-02	17.75	1,250	07-05-99	18.00	1,350
Cloquet River near Toimi [04021690]	Lat 47°21′00", long 91°39′30", in $NE^1/_4SW^1/_4$ sec. 7, T.56 N., R.10 W., Lake County, Hydrologic Unit 04010202, at bridge on County Highway 2, 5.8 miles southeast of Toimi, 23 miles north of Two Harbors [Drainage area: 40.8 mi^2].	1986-current year	06-24-02	6.04	360	07-04-93	9.06	1,540
Nemadji River near Holyoke [04024095]	Lat 46°31′04", long 92°23′22", in $NE^1/_4NE^1/_4$ sec. 32, T.47 N., R.16 W, Carlton County, Hydrologic Unit 04010301, at bridge on State Highway 23, 3.5 miles north of Holyoke and 7 miles south of Wrenshall [Drainage area: 127 mi^2].	1972-current year	04-11-02	12.75	2,410	09-03-85	17.38	4,420
Twelvemile Creek near Dumont [05047900]	Lat 45°42′58″, long 96°20′54″, in $SE^1/_4SW^1/_4$ sec. 17, T.126 N., R.45 W., Traverse County, Hydrologic Unit 09020102, at bridge on Traverse County Road 6, 3 miles east of Dumont.	1996-current year	07-11-02	d4.46	36	04-06-97	13.63	b3,720
Mustinka River above Wheaton [05049000]	Lat 45°49'15", long 96°29'25", in $SW^1/_4$ $SW^1/_4$ sec. 8, T.127 N., R.46 W., Traverse County, Hydrologic Unit 09020102, at bridge on U.S. Highway 75, 1 mile upstream from Chicago, Milwaukee and St. Paul railroad bridge, 0.5 mile north of Wheaton, about 8 miles above Lake Traverse. Prior to 2002 WY at datum 73.77 ft lower [Drainage area: 810 mi^2].	1915-24#, 1930-58#, 1985-current year	07-11-02	83.50	1,450	04-07-97 04-09-01	e97.40 e94.45	8,800 11,000
Rabbit River near Nashua [05050700]	Lat 46°04'30", long 96°18'24", in $SE^1/_4NE^1/_4$ sec. 15, T.130 N., R.45 W., Wilkin County, Hydrologic Unit 09020101, at bridge on County Road 19, 2.6 miles north of Nashua, 4.8 miles upstream from mouth of South Fork Rabbit River [Drainage area: 99.2 mi^2].	1979-current year	07-10-02	14.95	680	04-05-97	a15.76	b1,640
Buffalo River near Callaway [05060800]	Lat 47°01'17", long 95°54'43", in $SW^1/_4SW^1/_4$ sec. 17, T.141 N., R.41 W., Becker County, Hydrologic Unit 09020106, at culvert on U.S. Highway 59, 2.7 miles north of Callaway [Drainage area: 76.4 mi^2].	1960-current year	06-20-02	13.70	265	07-16-93	24.90	1,630

Annual maximum discharge at high-flow sites during water year 2002--Continued

Station Name and [Station Number]	Location and [Drainage area]	Period of Record	Water year 2002 Maximum			Period of Record Maximum		
			Date	Gage height (feet)	Discharge (ft^3/s)	Date	Gage height (feet)	Discharge (ft^3/s)
Whiskey Creek at Barnesville [05061200]	Lat 46°39′35", long 96°23′54", in $SE^1/_4SW^1/_4$ sec. 20, T.137 N., R.45 W., Clay County, Hydrologic Unit 09020106, at culvert on State Highway 34, 0.7 mile upstream from Blue Eagle Lake, 1.0 mile northeast of Barnesville [Drainage area: 76.3 mi^2].	1961-64, 1965-66#, 1967-current year	06-24-02	5.22	180	05-31-85	7.12	660
State Ditch 45 Tributary near Ulen [05063850]	Lat 47°06′28", long 96°25′03", in $SE/_4$ $SW^1/_4$ sec.17, T.142 N., R.45 W., Clay County, Hydrologic Unit 09020108, at culvert on 180th Ave. North, 7.5 miles northwest of Ulen [Drainage area: 3.26 mi^2].	2002-current year	06-09-02	18.27	f376	06-09-02	18.27	f376
Marsh River Ditch near Ada [05067050]	Lat 47°17′46", long 96°26′09", in $NE^1/_4NE^1/_4$ sec. 13, T.144 N., R. 46 W., Norman County, Hydrologic Unit 09020108, at bridge on County Highway 24, 3.5 miles southeast of Ada.	1985-current year	06-24-02	19.64	2,000	06-24-02	19.64	2,000
Red Lake River at High Landing near Goodridge [05075000]	Lat 48°02′34″, long 95°48′28″, in $NW^1/_4NW^1/_4$ sec. 28, T.153 N., R.40 W., Pennington County, Hydrologic Unit 09020303, on left bank 50 ft upstream from County Highway 24 bridge at High Landing, 7 miles south of Goodridge and 33 miles upstream from Thief River Falls [Drainage area: 2,300 mi^2].	1929-2000#, 2001-current year	07-10-02	10.14	2,030	07-07-75	13.39	4,060
Mud River near Grygla [05075700]	Lat 48°19'31", long 95°44'35", in $NE^1/_4NE^1/_4$ sec. 23, T.156 N., R.40 W., Hydrologic Unit 09020304, Marshall County, at bridge on State Highway 89, 6 miles west of Grygla [Drainage area: 150 mi^2].	1979-current year	06-22-02	18.54	2,840	06-22-02	18.54	2,840
Clearwater River Trib. near Bagley [05076690]	Lat 47°30′34″, long 95°24′15″, in $SE^1/_4$ $NE^1/_4$ sec. 31, T.147 N., R.37 W., Clearwater County, Hydrologic Unit 09020305, at culvert on County State Aid Highway 28, 0.5 mile south of Bagley.	2001-current year	06-23-02	c13.50	--	06-23-02	c13.50	--
Ruffy Brook near Gonvick [05077700]	Lat 47°44'50", long 95°24′45", in $SE^1/_4SE^1/_4$ sec. 5, T.149 N., R.37 W., Clearwater County, Hydrologic Unit 09020305, at culvert on County Highway 67, 4.0 miles upstream from mouth, 4.8 miles east of Gonvick [Drainage area: 46.2 mi^2].	1960-78#, 1979-85, 1986#, 1987-current year	06-20-02	5.83	407	04-19-96	5.78	455
Burnham Creek near Crookston [05079901]	Lat 47°43'59", long 96°39'52", in $SE^1/_4SW^1/_4$ sec. 10, T.149 N., R.47 W., Polk County, Hydrologic Unit 09020303, at triple box culvert on U.S. Highway 75, 0.75 mile northeast of Girard, 3 miles southwest of Crookston, 7 miles above mouth [Drainage area: 134 mi^2].	1986-current year	07-11-02	22.0	2,900	04-15-97	22.63	3,000
Middle River near Newfolden [05086900]	Lat 48°22'04", long 96°16'47", in $NE^1/_4NE^1/_4$ sec. 3, T.156 N., R.44 W., Marshall County, Hydrologic Unit 09020309, at bridge on township road, 2.0 miles northeast of Newfolden [Drainage area: 88.8 mi^2].	1979-current year	06-11-02	20.12	1,700	06-11-02 05-18-96	20.12 18.31	-- 2,300

Annual maximum discharge at high-flow sites during water year 2002--Continued

Station Name and [Station Number]	Location and [Drainage area]	Period of Record	Water year 2002 Maximum			Period of Record Maximum		
			Date	Gage height (feet)	Discharge (ft^3/s)	Date	Gage height (feet)	Discharge (ft^3/s)
Stoney River near Babbitt [05125550]	Lat 47°41'36", long 91°45'38", in $SW^1/_4SW^1/_4$ sec. 8, T.60 N., R.11 W., Lake County, Hydrologic Unit 09030001, in Superior National Forest, at bridge on Forest Road 424, 4.7 miles upstream from mouth, 8.5 miles southeast of Babbitt [Drainage area: 215 mi^2].	1975-80#, 1986-current year	04-23-02	5.62	688	04-19-76	8.71	2,490
Big Fork River near Bigfork [05131750]	Lat 47°44'56", long 93°46'31", in $SE^1/_4SE^1/_4$ sec. 1, T.149 N., R.25 W., Itasca County, Hydrologic Unit 09030006, at bridge on State Highway 6, 5.5 miles west of Bigfork [Drainage area: 606 mi^2].	1973-current year	06-24-02	14.29	1,980	04-22-79	15.48	2,830
Bowerman Brook near Craigville [05131878]	Lat 47°55'29", long 93°45'34", in $NE^1/_4NW^1/_4$ sec. 26, T.63 N., R.27 W., Koochiching County, Hydrologic Unit 09030006, at culvert on State Highway 6, 2.4 miles upstream from mouth, 7.0 miles west of Craigville [Drainage area: 25.7 mi^2].	1979-current year	06-23-02	15.83	937	06-23-02	15.83	937
North Branch Rapid River near Baudette [05134100]	Lat 48°31'56", long 94°38'50", in $NW^1/_4SW^1/_4$ sec. 4, T.158 N., R.31 W., Lake of the Woods County, Hydrologic Unit 09030007, at bridge on County Highway 1, 12.7 miles southwest of Baudette [Drainage area: 174 mi^2].	1986-current year	06-11-02	c18.34	6,380	06-11-02	c18.34	6,380
Winter Road River near Baudette [05137000]	Lat 48°42'39", long 94°41'52", in $NW^1/_4NE^1/_4$ sec. 1, T.160 N., R.32 W., Lake of the Woods County, Hydrologic Unit 09030008, at bridge on State Highway 11, 4.5 miles west of Baudette, 1.8 miles east of Pitt, 5 miles upstream of mouth [Drainage area: 140 mi^2].	1986-current year	06-11-02	cd19.35	9,900	06-11-02	cd19.35	9,900
Mississippi River at Bemidji [05200445]	Lat 47°27'04", long 94°54'23", in $NW^1/_4NW^1/_4$ sec. 20, T.146 N., R.33 W., Beltrami County, Hydrologic Unit 07010101, at bridge on County Highway 11, 1.4 miles southwest of intersection of State Highway 197 and County Highway 7 in Bemidji [Drainage area: 358 mi^2].	1973-87, 1988-89#, 1990-current year	06-24-02	12.98	1,440	04-18-97	13.17	1,820
Boy River near Remer [05205200]	Lat 47°04'51", long 94°05'54", in $NE^1/_4NE^1/_4$ sec. 33, T.142 N., R.27 W., Cass County, Hydrologic Unit 07010102, at bridge on County Highway 53, 1.9 miles upstream from Boy Lake and 9 miles northwest of Remer [Drainage area: 289 mi^2].	1986-current year	08-29-02	d10.08	254	04-10-96 07-23-87	a11.59 11.64	b660 660
Willow River below Palisade [05221020]	Lat 46°42'36", long 93°33'21", in $NW^1/_4NE^1/_4$ sec. 30, T.49 N., R.25 W., Aitkin County, Hydrologic Unit 07010103, at bridge on County Highway 3, 3.2 miles west of Palisade [Drainage area: 523 mi^2].	1972-current year	07-08-02	d11.59	1,140	04-25-79	17.25	3,730
Hoblin Creek near Pine River [05229430]	Lat 46°41'06", long 94°30'49", in $SE^1/_4NE^1/_4$ sec. 18, T.137 N., R.30 W., Cass County, Hydrologic Unit 07010105, at culvert on township road, 3.4 miles upstream from mouth, 5.6 miles southwest of Pine River.	2002-current year	07-08-02	8.38	--	07-08-02	8.38	--

Annual maximum discharge at high-flow sites during water year 2002--Continued

Station Name and [Station Number]	Location and [Drainage area]	Period of Record	Water year 2002 Maximum			Period of Record Maximum		
			Date	Gage height (feet)	Discharge (ft^3/s)	Date	Gage height (feet)	Discharge (ft^3/s)
Pine River near Pine River [05229450]	Lat 46°41′39″, long 94°22′11″, in $NE^1/_4SE^1/_4$ sec. 8, T.137 N., R.29 W., Cass County, Hydrologic Unit 07010105, at bridge on U.S. Highway 371, 2.3 miles southeast of Pine River, 4.9 miles upstream of Upper Whitefish Lake [Drainage area: 261 mi^2].	1986-current year	07-10-02	4.64	748	05-14-99	5.15	1,520
Cat River near Nimrod [05244200]	Lat 46°37′49″, long 94°55′51″, in $SW^1/_4SW^1/_4$ sec. 36, T.137 N., R.34 W., Wadena County, Hydrologic Unit 07010106, at bridge on State Highway 227, 2.5 miles west of Nimrod, 3.0 miles upstream from mouth [Drainage area: 57.1 mi^2].	1961-current year	07-11-02	d5.62	120	10-12-73	9.43	560
Leaf River near Aldrich [05244440]	Lat 46°27′25″, long 94°50′29″, in $SW^1/_4SW^1/_4$ sec. 34, T.135 N., R.33 W., Wadena County, Hydrologic Unit 07010107, at bridge on County Highway 29, 3.3 miles upstream from mouth, 7.0 miles northeast of Aldrich [Drainage area: 870 mi^2].	1972-current year	07-11-02	13.34	1,580	04-12-01	16.40	5,800
Mississippi River near Fort Ripley [05261000]	Lat 46°10'50", long 94°21'56", in $SE^1/_4NW^1/_4$ sec. 27, T.43 N., R.32 W., Crow Wing County, on left bank 600 feet. upstream from Nokasippi River and 1.0 mile north of Ft. Ripley. [Drainage area 10,840 mi^2].	1987-00#, 2001-current year	07-14-02	d9.66	14,700	04-08-97	14.15	32,200
Nokasippi River near Fort Ripley [05261520]	Lat 46°12′02″, long 94°19′03″, in $NE^1/_4NE^1/_4$ sec. 24, T.43 N., R.32 W., Crow Wing County, Hydrologic Unit 07010104, at bridge on County Highway 2, 3 miles northeast of Fort Ripley [Drainage area: 193 mi^2].	1967-70†, 1974†, 1976†, 1986-current year	05-09-02	11.12	391	06-15-01	14.83	1,110
Hillman Creek near Pierz [05267900]	Lat 45°58′27″, long 94°04′21″, in $NE^1/_4SE^1/_4$ sec. 9, T.40 N., R.30 W., Morrison County, Hydrologic Unit 07010201, at bridge on county highway, 1.1 miles upstream from mouth, 1.5 miles east of Pierz [Drainage area: 45.0 mi^2].	1964-current year	05-09-02 07-08-02	d13.35 g--	d321 g--	04-09-69	15.48	2,960
Platte River at Royalton [05268000]	Lat 45°50′43″, long 94°17′40″, in $SE^1/_4NW^1/_4$ sec. 26, T.39 N.,R.32 W., Morrison County, Hydrologic Unit 07010201, at bridge on County Highway 27, 0.6 mile north of Royalton, 6.6 miles upstream from mouth [Drainage area: 432 mi^2].	1929-36, 1972-current year	07-11-02	d10.65	972	07-26-72	--	6,850
Ashley Creek near Sauk Centre [05270150]	Lat 45°46′46″, long 94°58′52″, in $NW^1/_4SE^1/_4$ sec. 29, T.127 N., R.34 W., Todd County, Hydrologic Unit 07010202, at bridge on County Highway 11, 3 miles north of Sauk Centre [Drainage area: 119 mi^2].	1963-70†,74†, 1976†, 1986-88, 1989#, 1990-current year	06-24-02	14.88	416	04-08-01	18.00	1,020
Johnson Creek near St.Augusta [05272300]	Lat 45°27′49″, long 94°09′19″, in $NW^1/_4SW^1/_4$ sec. 13, T.123 N.,R.28 W., Stearns County, Hydrologic Unit 07010203, at bridge on County Highway 7, 1.0 mile south of St. Augusta, 3.3 miles upstream from mouth [Drainage area: 45.6 mi^2].	1964-current year	08-04-02	14.21	629	09-09-85	16.37	2,350

Annual maximum discharge at high-flow sites during water year 2002--Continued

Station Name and [Station Number]	Location and [Drainage area]	Period of Record	Water year 2002 Maximum			Period of Record Maximum		
			Date	Gage height (feet)	Discharge (ft^3/s)	Date	Gage height (feet)	Discharge (ft^3/s)
Clearwater River near South Haven [05272950]	Lat 45°16′45″, long 94°15′04″, in $NE^1/_4NW^1/_4$ sec. 19, T.121 N., R.28 W., Wright County, Hydrologic Unit 07010203, at culvert 3.4 miles southeast of Kimball, 0.25 mile downstream of Scott Lake Outlet, 2.0 miles southeast of South Haven [Drainage area: 78.8 mi^2].	1985-current year	08-08-02	d15.89	542	09-09-85	17.11	1,040
North Fork Crow River near Kingston [05278120]	Lat 45°12′13″, long 94°23′16″, in $SW^1/_4SE^1/_4$ sec. 13, T.120 N., R.30 W., Meeker County, Hydrologic Unit 07010204, at bridge on State Highway 24, 3.7 miles west of Kingston, 3.9 miles east of Forest City [Drainage area: 779 mi^2].	1986-current year	06-27-02	16.92	3,970	05-01-86	17.82	4,850
Buffalo Creek near Glencoe [05278930]	Lat 44°45′50″, long 94°05′27″, in $SW^1/_4SW^1/_4$ sec. 16, T.115 N., R.27 W., McLeod County, Hydrologic Unit 07010205, at bridge on County Highway 1, 2.6 miles east of Glencoe [Drainage area: 373 mi^2].	1972-95, 1998-current year	08-04-02	15.85	1,240	09-12-91	11.78	4,300
Pomme de Terre River near Elbow Lake [05293371]	Lat 45°57′47″, long 95°53′07″, in $SE^1/_4$ $SW^1/_4$ sec. 19, T.129 N., R.41 W., Grant County, Hydrologic Unit 07020002, at bridge on County Road 47, 4 miles southeast of Elbow Lake, 2.5 miles south of the outlet of Pomme de Terre Lake [Drainage area: 340 mi^2].	1986-current year	06-21-02	6.40	440	06-15-01	6.85	600
Pomme de Terre River near Appleton [05294000]	Lat 45°12′10″, long 96°01′20″, in $SW^1/_4$ $NW^1/_4$ sec. 14, T.120 N., R.43 W., Swift County, Hydrologic Unit 07020002, on left bank 60 feet upstream from bridge on U.S. Highway 59 and State Highway 119 at Appleton, 8 miles upstream from mouth [Drainage area: 864 mi^2].	1931-35′, 1935-99#, 2000-current year	06-23-02	d5.64	539	04-07-97	18.13	8,890
Florida Creek near Burr [05299750]	Lat 44°44′10″, long 96°25′10″, in $SE^1/_4$ $SE^1/_4$ sec. 29, T.115 N., R.46 W., Yellow Medicine County, Hydrologic Unit 07020003, at culvert on County Road 15, 3.0 miles west of Burr, 7.6 miles northwest of Canby [Drainage area: 77.3 mi^2].	1982, 1983-84#, 1991-current year	03-31-02	a16.62	b214	04-01-97	26.57	2,490
Little Chippewa River near Starbuck [05302500]	Lat 45°36′52″, long 95°37′12″, in $NW^1/_4NE^1/_4$ sec. 30, T.125 N., R.39 W., Pope County, Hydrologic Unit 07020005, at culvert on State Highway 28, 4.4 miles west of Starbuck [Drainage area: 96.2 mi^2].	1979-current year	07-10-02	12.93	213	04-08-01	14.02	980
Chippewa River near Watson [05305000]	Lat 45°01′18″, long 95° 47′25 ″, in $NE^1/_4$ $NW^1/_4$ sec. 22, T.118 N., R.41 W., Chippewa County, Hydrologic Unit 07020005, 150 feet downstream from Chippewa County Road 13 bridge and dam, one mile north of Watson, 5.5 miles northwest of Montevideo, and 12.1 miles above confluence with Minnesota River in Montevideo [Drainage area: 2,050 mi^2].	1910-17, 1931-36, 2001-current year	06-26-02	38.83	627	04-11-01	45.41	4,600

Annual maximum discharge at high-flow sites during water year 2002--Continued

Station Name and [Station Number]	Location and [Drainage area]	Period of Record	Water year 2002 Maximum			Period of Record Maximum		
			Date	Gage height (feet)	Discharge (ft^3/s)	Date	Gage height (feet)	Discharge (ft^3/s)
South Branch Yellow Medicine River near Minneota [05311400]	Lat 44°33′50″, long 95°59′50″, in $SE^1/_4SE^1/_4$, sec. 26, T.113 N., R.43 W., Lyon County, Hydrologic Unit 07020004, at bridge on State Highway 68, on northwest edge of Minneota and 6 miles upstream from mouth [Drainage area: 115 mi^2].	1960-81#, 1981-87, 1998-current year	06-09-99 07-11-00 04-02-02	7.33 6.52 6.98	h384 h274 334	04-18-69	13.41	4,430
Ramsey Creek near Redwood Falls [05316538]	Lat 44°33′08″, long 95°10′38″, in $SE^1/_4NE^1/_4$ sec. 33, T.113 N., R.36 W., Redwood County, Hydrologic Unit 07020006 at bridge on township road 2.3 miles northeast of KLGR radio towers, on west side of Redwood Falls [Drainage area: 629 mi^2].	1991-93, 1995 - current year	06-21-02	21.93	406	06-17-93	25.94	920
Beaver Creek at Beaver Falls [05316570]	Lat 44°35′03″, long 95°02′49″, in $NE^1/_4NW^1/_4$ sec. 22, T.113 N., R.35 W., Renville County, Hydrologic Unit 07020004, at bridge on County Highway 2 in Beaver Falls, 2.2 miles upstream from mouth, 3.8 miles northwest of Morton [Drainage area: 191 mi^2].	1972-current year	03-29-02	a9.21	361	04-02-97	14.73	3,300
Cottonwood River near Springfield [05316950]	Lat 44°12′12″, long 95°02′53″, in $SW^1/_4$ $NW^1/_4$ sec. 34, T.109 N., R.35 W., Brown County, Hydrologic Unit 07020008, at bridge on County Highway 2, 1.3 miles downstream from Mound Creek, 1.0 mile upstream from Coal Mine Creek, 3.5 miles southwest of Springfield [Drainage area: 777 mi^2].	1973-current year	06-04-02	18.14	1,400	06-18-93	31.40	14,500
Minnesota River Tributary at St. Hwy. 68 near Judson [05317330]	Lat 44°11′40″, long 94°12′27′, in $NW^1/_4$ $NW^1/_4$ sec. 4, T.108 N., R.28 W., Blue Earth County, Hydrologic Unit 07020007, at culvert on State Highway 68, 0.5 mile southwest of Judson, 0.4 mile above mouth [Drainage area: 0.97 mi^2].	2001-current year	06-22-02	8.84	--	06-22-02	8.84	--
East Branch Blue Earth River near Walters [05317845]	Lat 43°37′58″, long 93°42′28″, in $SE^1/_4SE^1/_4$ sec. 16, T.102 N., R.24 W., Faribault County, Hydrologic Unit 07020009, at culvert on State Highway 22, 2.5 miles northwest of Walters [Drainage area: 30.2 mi^2].	1979-current year	07-21-02	17.68	622	08-15-93	18.73	657
Elm Creek at Co. Rd. 103 near Trimont [05318195]	Lat 43°45′27″, long 94°50′30″, in $NW^1/_4NW^1/_4$ sec. 5, T.103 N., R.33 W., Martin County, Hydrologic Unit 07020009, at bridge on County Road 103, 12.5 miles northeast of Jackson, 5 miles west of Trimont.	1991-current year	04-02-02	i	<371	06-04-91	22.92	2,000
Watonwan River near Delft [05318300]	Lat 43°59′55″, long 95°07′11″, in $NE^1/_4SE^1/_4$ sec. 11, T.106 N. R.36 W., Cottonwood County, Hydrologic Unit 07020010, at culvert on U.S. Highway 71, 1.7 miles northwest of Delft [Drainage area: 13.5 mi^2].	1960-current year	06-04-02	14.76	37	06-18-93	j17.70	1,000
South Fork Watonwan River near Ormsby [05318897]	Lat 43°53′08″, long 94°41′27″, in $SE^1/_4NW^1/_4$ sec.21, T.105 N., R.32 W., Watonwan County, Hydrologic Unit 07020010, at bridge on township road, 2.6 miles north of Ormsby, 5.0 miles upstream from Willow Creek [Drainage area: 107 mi^2].	1979-current year	04-02-02	i	<136	05-31-80	18.40	1,920

Annual maximum discharge at high-flow sites during water year 2002--Continued

Station Name and [Station Number]	Location and [Drainage area]	Period of Record	Water year 2002 Maximum			Period of Record Maximum		
			Date	Gage height (feet)	Discharge (ft^3/s)	Date	Gage height (feet)	Discharge (ft^3/s)
Maple River near Rapidan [05320480]	Lat 44°03′54″, long 94°01′32″, in $SW^1/_4SW^1/_4$ sec. 13, T.107 N., R.27 W., Blue Earth County, Hydrologic Unit 07020011, at bridge on County Highway 35, 3.0 miles southeast of Rapidan, 3.3 miles upstream from mouth [Drainage area: 338 mi^2].	1972-current year	06-15-02	9.61	1,410	04-12-01	13.79	5,540
Minnesota River Trib. below St. Peter [05325450]	Lat 44°20′13″, long 93°54′45″, in $NE^1/_4NE^1/_4$ sec. 14, T.110 N., R.26 W., Le Sueur County, Hydrologic Unit 07020007, at culvert on County State Aid Highway 23, 1.8 miles east of St. Peter [Drainage area: 2.13 mi^2].	2001-current year	06-22-02	6.82	--	02-25-01	a7.20	--
Sand Creek near New Prague [05330300]	Lat 44°32′37″, long 93°32′16″, in $NE^1/_4NW^1/_4$ sec. 1, T.112 N., R.23 W., Le Sueur County, Hydrologic Unit 07020012, at culvert on State Highway 13 and 19, 1.9 miles east of New Prague [Drainage area: 62.2 mi^2].	1960-current year	06-22-02	10.20	206	05-21-60	14.84	1,100
Crooked Creek near Hinckley [05335170]	Lat 46°00′42″, long 92°31′45″, in $NE^1/_4NE^1/_4$ sec. 30, T.41 N., R.17 W., Pine County, Hydrologic Unit 07030001, at culvert on State Highway 48, 2.7 miles upstream from mouth, 8 miles south of Duxbury, 19 miles east of Hinckley [Drainage area: 94.4 mi^2].	1966-70†,74†, 76†, 79-80†, 1986-current year	04-11-02	d14.05	918	04-23-01	16.65	2,100
Glaisby Brook near Kettle River [05336200]	Lat 46°27′19″, long 92°51′34″, in $SE^1/_4NW^1/_4$ sec. 22, T.46 N., R.20 W., Carlton County, Hydrologic Unit 07030003, at bridge on State Highways 27 and 73, 1.0 mile upstream from mouth, 2.4 miles south of Kettle River [Drainage area: 27.0 mi^2].	1960-70#, 1971-current year	04-12-02	a5.24	254	07-22-72	10.18	1,370
Goose Creek at Harris [05339747]	Lat 45°35′11″, long 92°58′39″, in $SW^1/_4SW^1/_4$ sec. 21, T.36 N., R.21 W., Chisago County, Hydrologic Unit 07030005, at culverts on County Highway 9, 0.15 mile west of County Highway 30 in Harris, 8 miles above mouth [Drainage area: 47.3 mi^2].	1986-current year	04-15-02	d6.21	197	04-23-01	8.11	360
Cannon River below Sabre Lake near Kilkenny [05348550]	Lat 44°17′50″, long 93°37′44″, in $NE^1/_4NE^1/_4$ sec. 31, T.110 N., R.23 W., Le Sueur County, Hydrologic Unit 07040002, at bridge on township road, 0.25 mile downstream of Sabre Lake, 3 miles southeast of Kilkenny [Drainage area: 87.9 mi^2].	1985-current year	06-21-02	12.10	202	04-12-01	13.83	563
Cannon River at Northfield [05355024]	Lat 44°27′19″, long 93°09′46″, in $NE^1/_4NE^1/_4$ sec. 1, T.111 N., R.20 W., Rice County, Hydrologic Unit 07040002, at Fifth Street bridge in Northfield [Drainage area: 929 mi^2].	1980-current year	06-21-02	903.20	3,110	04-12-01	905.40	8,370
Milliken Creek near Concord [05373080]	Lat 44°07′13″, long 92°49′08″, in $NW^1/_4NW^1/_4$ sec. 36, T.108 N., R.17 W., Dodge County, Hydrologic Unit 07040004, at bridge on County Road 9, 8.0 miles upstream from mouth, 2.1 miles southeast of Concord [Drainage area: 22.1 mi^2].	1979-current year	08-21-02	12.01	263	06-13-01	15.80	3,470

Annual maximum discharge at high-flow sites during water year 2002--Continued

Station Name and [Station Number]	Location and [Drainage area]	Period of Record	Water year 2002 Maximum			Period of Record Maximum		
			Date	Gage height (feet)	Discharge (ft^3/s)	Date	Gage height (feet)	Discharge (ft^3/s)
Zumbro River at Zumbro Falls [05374000]	Lat 44°17′12″, long 92°25′56″, in NE¼ SE¼ sec. 36, T.110 N., R.14 W., Wabasha County, Hydrologic Unit 07040004, in Zumbro Falls, 1,000 feet downstream from Cold Creek, 0.7 mi upstream from bridge on U.S. Highway 63, and 6.3 mi downstream from North Fork [Drainage area: 1,150 mi^2].	1909-17#, 1929-80#, 1990-current year	06-22-02	19.45	14,200	07-21-51	30.80	35,900
Cedar River near Ridgeway [05380100]	Lat 43°56′49″, long 91°33′59″, in NW¼NE¼ sec. 32, T.106 N., R.6 W., Winona County, Hydrologic Unit 07040003, at bridge on County Road 9, 2.9 miles northeast of Witoka, 6 miles southeast of Winona (Drainage area: 7.16 mi^2).	2001-current year	06-21-02	11.05	--	04-07-01	11.44	--
Root River at Rushford [05384350]	Lat 43°48′11″, long 91°45′10″, in NE¼NE¼ sec. 23, T.104 N., R.8 W., Fillmore County, Hydrologic Unit 07040008, at U.S. Highway 16 bridge on south side of Rushford [Drainage area: 992 mi^2].	1985-current year	06-05-02	19.63	4,690	06-02-00	26.35	32,400
Rush Creek near Rushford [05384500]	Lat 43°50′00″, long 91°46′40″, in SW¼SW¼ sec. 3, T.104 N., R.8 W., Fillmore County, Hydrologic Unit 07040008, at bridge, 1.5 miles northwest of Rushford, 3.0 miles upstream from mouth [Drainage area: 132 mi^2].	1942-79#, 1980-current year	06-21-02	4.00	740	03-26-50	13.54	11,600
Cambell Valley Creek near Money Creek [05384800]	Lat 43°49′54″, long 91°34′53″, in NE¼ NW¼ sec. 8, T.104 N., R.6 W., Houston County, Hydrologic Unit 07040008, at triple box culvert on County State Aid Highway 26, 1.8 miles north west of Money Creek (Drainage area: 6.82 mi^2).	2001-current year	06-04-02	1.82	--	04-06-01	2.98	--
Root River near Houston [05385000]	Lat 43°46'07", long 91°35'11", in SW¼NW¼, sec. 33, T.104 N., R.6 W., Houston County, Hydrologic Unit 07040008, on right bank 0.2 mile north of Houston, 1.6 miles upstream from confluence with South Fork Root River and 1.2 miles upstream from mouth [Drainage area: 1,250 mi^2].	1909-17, 1929, 1930-83#, 1983-90 1991-00#, 2001-current year	06-06-02	9.31	4,660	04-01-52 03-02-65	-- 18.32	37,000 --
South Fork Root River near Houston [05385500]	Lat 43°44′19″, long 91°33′50″, in NE¼SW¼ sec. 9, T.103 N., R.6 W., Houston County, Hydrologic Unit 07040008, at bridge on State Highway 76, 0.5 mile upstream from Badger Creek, 1.5 mile south of Houston [Drainage area: 275 mi^2].	1953-83#, 1985-current year	06-04-02	5.0	707	06-01-00	14.90	13,800
Crooked Creek at Freeburg [05387030]	Lat 43°36′37″, long 91°21′39″, in SW¼NE¼ sec. 30, T.102 N., R.4 W., Houston County, Hydrologic Unit 07060001, at bridge on State Highway 249 at Freeburg 6.5 miles upstream from mouth [Drainage area: 44.8 mi^2].	1979-current year	03-09-02	10.00	310	03-04-92	19.02	2,200

Annual maximum discharge at high-flow sites during water year 2002--Continued

Station Name and [Station Number]	Location and [Drainage area]	Period of Record	Water year 2002 Maximum			Period of Record Maximum		
			Date	Gage height (feet)	Discharge (ft^3/s)	Date	Gage height (feet)	Discharge (ft^3/s)
Little Cedar River near Johnsburg [05457778]	Lat 43°30′52″, long 92°45′19″, in $NW^1/_4NE^1/_4$ sec. 33, T.101 N., R.16 W., Mower County, Hydrologic Unit 07080201, at bridge on County Road 6, 1 mile northeast of Johnsburg, 1 mile north of Minnesota-Iowa border [Drainage area: 45.8 mi^2].	1986-current year	06-04-02	10.96	362	08-16-93	17.58	9,280
Bancroft Creek at Bancroft [05458960]	Lat 43°42′09″, long 93°21′23″, in $SW^1/_4SE^1/_4$ sec. 21, T.103 N., R.21 W., Freeborn County, Hydrologic Unit 07080202, at bridge on County Road 14, 1.6 miles northeast of Fountain Lake, 1 mile north of Interstate 90 [Drainage area: 28.7 mi^2].	1985†, 1986-current year	07-11-02	4.40	126	06-14-01	8.81	1,070
Elk Creek near Brewster [05474900]	Lat 43°40′43″, long 95°27′10″, in $NE^1/_4SE^1/_4$ sec. 36, T.102 N., R.39 W., Nobles County, Hydrologic Unit 07100001, at bridge on County Highway 1, 0.7 miles south of Brewster.	1996-current year	08-21-02	20.26	611	05-30-01	25.29	4,000
East Fork Des Moines River near Ceylon [05476989]	Lat 43°33′53″, long 94°39′15″, in $NW^1/_4SW^1/_4$ sec. 11, T.101 N., R.32 W., Martin County, Hydrologic Unit 07010003, at bridge on County Road 23, 2.4 miles northwest of Ceylon [Drainage area: 128 mi^2].	1986-current year	08-22-02	16.28	305	07-05-93	21.65	1,350
North Branch Pipestone Creek near Pipestone [06482500]	Lat 44°04′54″, long 96°18′27″, in $SE^1/_4SE^1/_4$ sec. 12, T.107 N., R.46 W., Pipestone County, Hydrologic Unit 10170203, at bridge on U.S. Highway 75, 5.5 miles north of Pipestone. Formerly “Pipestone Creek near Pipestone” [Drainage area: 31.5 mi^2].	1991-current year	03-28-02	a17.78	362	05-08-93	20.28	2,650
Beaver Creek at Valley Springs, South Dakota [06482745]	Lat 43°35′10″, long 96°28′20″, in $NW^1/_4NW^1/_4$ sec. 3, T.101 N., R.47 W., Minnehaha County, South Dakota, Hydrologic Unit 10170203, at bridge on County Road 103 (Valley Drive), 1 mile west of South Dakota-Minnesota border, 2.5 miles south of Interstate 90 [Drainage area: 104 mi^2].	1986-current year	08-21-02	15.56	206	06-13-94	24.89	2,280
Rock River Trib. at Co. Hwy. 18 near Hatfield [06482910]	Lat 43°56′38″, long 96°06′13″, in $SW^1/_4NW^1/_4$ sec. 35, T.106 N., R.44 W., Pipestone County, Hydrologic Unit 10170204, at culvert on County State Aid Highway 18, 1.5 miles upstream of mouth, 4 miles east of Hatfield, 5 miles north of Edgerton [Drainage area: 3.28 mi^2].	2001-current year	03-28-02	a6.48	105	06-26-01	6.16	186
Chanarambi Creek near Edgerton [06482933]	Lat 43°53′59″, long 96°03′39″, in $NW^1/_4SW^1/_4$ sec. 18, T.105 N., R.43 W., Murray County, Hydrologic Unit 10170204, at bridge on township road, 3.8 miles northeast of Edgerton, 7.4 miles upstream from mouth [Drainage area: 57.3 mi^2].	1979-current year	03-28-02	a12.91	260	04-23-01 05-03-01	16.79 18.14	928 850
Champepadan Creek at Co. Rd. 18 near Leota [06482970]	Lat 43°47′24″, long 96°00′40″, in $NW^1/_4NW^1/_4$ sec. 28, T.104 N., R. 43 W., Nobles County, Hydrologic Unit 10170204, at bridge on County Road 18, near junction with County Road 19, 3 miles south of Leota [Drainage area: --].	1996-current year	03-28-02	a13.28	205	04-23-01	17.54	895

Annual maximum discharge at high-flow sites during water year 2002--Continued

Station Name and [Station Number]	Location and [Drainage area]	Period of Record	Water year 2002 Maximum			Period of Record Maximum		
			Date	Gage height (feet)	Discharge (ft^3/s)	Date	Gage height (feet)	Discharge (ft^3/s)
Rock River at Luverne [06483000]	Lat 43°39′15″, long 96°12′03″, in SW¼ NE¼ sec. 11, T.102 N., R45 W., Rock County, Hydrologic Unit 10170204, at bridge on Main Street (County Highway 4) in Luverne [Drainage area: 419 mi^2].	1911-14#, 1968-69, 1971-current year	08-22-02	d4.55	542	05-08-93	14.23	35,400
Elk Creek near Lismore [06483020]	Lat 43°41′38″, long 96°00′46″, in NE¼SE¼ sec. 29, T.103 N., R. 43 W., Nobles County, Hydrologic Unit 10170204, at bridge on County Road 19, 4.6 miles southwest of Lismore [Drainage area: 4.62 mi^2].	1996-current year	08-21-02	14.02	--	06-14-01	15.62	--
Little Rock River near Rushmore [06483350]	Lat 43°32′36″, long 95°48′58″, in NE¼NE¼ sec. 24, T.101 N., R.42 W., Nobles County, Hydrologic Unit 10170204, at bridge #4967, on County Road 6, 1.5 miles west of Ransom, 5.1 miles south of Rushmore [Drainage area: 45.8 mi^2].	1991-current year	08-21-02	23.04	134	07-11-93	27.04	4,290
Little Rock Creek near Rushmore [06483353]	Lat 43°32′37″, long 95°50′50″, in NE¼NW¼ sec. 23, T.101 N., R.42 W., Nobles County, Hydrologic Unit 10170204, at bridge on County Road 6, 5.5 miles southwest of Rushmore [Drainage area: 32.1 mi^2].	1996-current year	06-22-96 04-06-97 08-21-02	25.94 24.60 21.70	h1,810 h984 149	05-30-01	27.99	3,070
Little Sioux River near Spafford [06603530]	Lat 43°36′08″, long 95°15′27″, in NE¼NE¼ sec. 34, T.102 N., R.37 W., Jackson County, Hydrologic Unit 10230003, at bridge on county highway, 1.6 miles downstream from Jackson County ditch No. 11, 5.8 miles east of Spafford [Drainage area: 40.5 mi^2].	1962-current year	08-21-02	8.44	168	06-29-69	12.06	4,500

\# Operated as a continuous-record gaging station.
† Operated as a low flow site.
a Backwater from ice.
b Estimated.
c From high water mark.
d Not annual maximum.
e Backwater from Lake Traverse.
f Peak flow determined from indirect measurement.
g Site discontinued not available.
h Revised.
i Did not reach bottom of gage.
j Stage from downstream gage.

Discharge at Miscellaneous Sites

Discharge measurements made at miscellaneous sites during the 2002 water year are listed in the following table. Those measurements of base flow are designated by an asterisk (*) and measurements from earlier water years but not previously published by an (a). Stations previously published as Continuous Record Sites are designated by an (#), those sites published as High-Flow Partial-Record sitesare designated by an (+); estimated values designated by an(a).

Stream Name and [Station No.]	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
		Lake Superior Basin				
Brule River near Hovland (04011000)	Lake Superior	Lat 47°49′06″, long 90°03′04″ in SE1/4 SW1/4 sec. 27, T.62 N., R.3 E., Cook County, Hydrologic Unit 04010101, at bridge on U.S. Highway 61, 0.3 mile upstream from mouth, 4.5 miles southwest of Hovland.	a264	1912, 1970-71 1974, 1976, 1986	04-16-02 04-22-02	568 570
Popular River near Lutsen (04012500)	Lake Superior	Lat 47°38′29″, long 90°42′36″ in SW1/4 NE1/4 sec. 33, T.60 N., R.3 W., Cook County, Hydrologic Unit 04010101, at golf course 500 feet upstream from U.S. Hwy 61, 2 miles southwest of Lutsen (within 300 feet of old gage).	112	#1912-17, #1930-47, #1953-61, +1976-87, 2001	11-29-01 04-16-02 04-22-02	160 295 144
Sucker Creek near Palmers (04015339)	Lake Superior	Lat 46°55′57″, long 91°51′29″, in NW1/4 SE1/4 sec. 4, T.5 N., R.12 W., St. Louis County, Hydrologic Unit 04010102, at culvert on County Road 290, 1 mile northwest of Palmers, 0.4 mile above U.S. Highway 61 and 0.7 mile above site 04015340.	--	2001	04-13-02 04-15-02 06-24-02	247 325 369
Talmadge River at Co. Rd. 281 near Duluth (04015368)	Lake Superior	Lat 46°53′55″, long 91°56′30″, in SE1/4 SE1/4 sec. 14, T.51 N., R.13 W., St. Louis County, Hydrologic Unit 04010102, at bridge on County Road 281, 1.1 miles above site 04015370, 1.3 miles northwest of Clifton.	--	2001	04-13-02 06-24-02 07-08-02	63.8 46.7 179
Amity Creek at Duluth (04015387)	Lake Superior	Lat 46°50′39″, long 92°00′36″, in SE1/4 NE1/4 sec. 5, T.50 N., R.13 W., St. Louis County, Hydrologic Unit 04010102, at bridge on Parkway Road, 0.4 mile upstream from Lester River, 6 miles northeast of aerial bridge in Duluth.	16.2	1970-71, 1974, 1976, 1980, 1983, 1986	04-11-02 04-12-02 06-24-02 07-08-02	260 113 184 302
		Red River of the North Basin				
Otter Tail River below Fergus Falls (05045900)	Red River of the North	Lat 46°16′32″, long 96°08′03″, in SE1/4 NW1/4 sec. 6, T.132 N., R.43 W., Otter Tail County, Hydrologic Unit 09020103, at culverts on road, one mile south and 2.5 miles east of Fergus Falls.	--	2001	10-11-01 11-08-01 12-13-01 02-14-02 04-17-02 05-16-02 06-03-02 06-26-02 07-11-02 07-22-02 08-05-02 08-19-02 09-12-02 09-25-02	*264 *348 *507 *441 738 874 700 484 851 693 656 *463 622 *399
Otter Tail River near Everdell (05046270)	Red River of the North	Lat 46°13′00″, long 96°24′31″, in SE1/4 NE1/4 sec. 26, T.132 N., R.46 W., Wilkin County, Hydrologic Unit 09020103, at bridge on county road, 8.7 miles east and 4.5 miles south of Breckenridge.	--	2001	10-10-01 11-07-01 12-12-01 01-16-02 03-20-02 04-17-02 05-15-02 06-05-02 06-26-02 07-10-02 07-24-02 08-07-02 08-21-02 09-11-02 09-25-02	*384 *440 *577 *481 560 768 932 742 677 1,340 706 605 707 690 *447

Stream Name and [Station No.]	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
		Red River of the North (continued)				
Otter Tail River above Breckenridge (05046450)	Red River of the North	Lat 46°15′42″, long 96°32′45″, in SE1/4 NW1/4 sec. 11, T.132 N., R.47 W., Wilkin County, Hydrologic Unit 09020103, at bridge on county road, 2 miles east of Breckenridge.	--	2001	10-10-01	*468
					11-07-01	*411
					12-12-01	*545
					02-12-02	*488
					03-20-02	*525
					04-17-02	729
					05-15-02	910
					06-05-02	751
					06-26-02	569
					07-10-02	1,190
					07-24-02	677
					08-07-02	604
					08-20-02	*510
					09-11-02	667
					09-24-02	*544
Otter Tail River on 11th St. in Breckenridge (05046502)	Red River of the North	Lat 46°16′28″, long 96°34′47″, in NE1/4 SE1/4 sec. 4, T.132 N., R.47 W., Wilkin County, Hydrologic Unit 09020103, at bridge on 11th St., in Breckenridge.	--	2001	10-10-01	533
					11-07-01	608
					01-16-02	573
					02-13-02	540
					03-20-02	607
					04-17-02	837
					05-15-02	1,000
					06-05-02	793
					06-26-02	829
					07-10-02	1,220
					07-24-02	754
					08-07-02	636
					08-21-02	694
					09-11-02	812
					09-25-02	477
Mustinka River below Norcross (05047010)	Red River of the North	Lat 45°53′15″, long 96°12′48″, in NE1/4 NE1/4 sec. 20, T.128 N., R.45 W., Grant County, Hydrologic Unit 09020102, at bridge on County Highway 9, 1.3 miles northwest of Norcross.	--	1943-44, 1950, 2001	10-09-01	*6.54
					11-05-01	*12.3
					12-11-01	*17.5
					01-15-02	*12.5
					02-12-02	*9.60
					03-19-02	*14.0
					04-16-02	37.7
					05-14-02	95.6
					06-04-02	25.1
					06-25-02	*7.13
					07-09-02	228
					07-23-02	205
					08-06-02	63.2
					08-20-02	30.6
					09-10-02	14.5
					09-24-02	*4.41
Mustinka River above Wheaton (05049000)	Red River of the North	Lat 45°49′15″, long 96°29′25″, in SW1/4 SW1/4 sec. 8, T.127 N., R.46 W., Traverse County, Hydrologic Unit 09020102, at bridge on U.S. Highway 75, 1 mile upstream from Chicago, Milwaukee and St. Paul Railroad bridge, 0.5 mile north of Wheaton, about 8 miles above Lake Traverse.	810	1915-24# 1930-58# +1985-current year	2-12-02	*5.82
					3-19-02	*29.2
Rabbit River near Nashua (05050700)	Red River of the North	Lat 46°04′30″, long 96°18′24″, in SE1/4 NE1/4 sec. 15, T.130 N., R.45 W., Wilkin County, Hydrologic Unit 09020101, at bridge on county road, 4.7 miles east and 2.3 miles south of Campbell.	99.2	+1979-current year	11-06-01	*1.49
					12-11-01	*2.48
					01-15-02	*1.27
					02-12-02	*1.01
					04-16-02	17.8
					05-14-02	30.8
					06-04-02	*3.41
					07-09-02	86.6
					07-23-02	35.1
					08-06-02	11.6
					08-20-02	6.16
					09-12-02	*1.78

Stream Name and [Station No.]	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
		Red River of the North (continued)				
Rabbit River at Campbell (05051000)	Red River of the North	Lat 46°05′40″, long 96°24′37″, in SE1/4 SE1/4 sec. 2, T.130 N., R.46 W., Wilkin County, Hydrologic Unit 09020101, at bridge on County Road 4, at west edge of Campbell.	266	1942, 1952, 1964-65, 1970, 1998, 2001	04-16-02 05-14-02 06-04-02 07-09-02 07-23-02 08-06-02	24.2 51.1 *2.63 170 38.1 *9.43
Rabbit River near Campbell (05051200)	Red River of the North	Lat 46°06′43″, long 96°29′32″, in SE1/4 SE1/4 sec. 31, T.130 N., R.46 W., Wilkin County, Hydrologic Unit 09020101, at bridge on US Highway 75, 4 miles west, and 1.2 miles north of Campbell.	--	2001	11-06-01 12-11-01 01-16-02 02-13-02 03-19-02 04-16-02 05-14-02 06-04-02 07-10-02 07-23-02 08-06-02 08-20-02	*7.68 *3.02 *2.02 *0.90 *6.01 35.2 81.0 *4.05 648 60.7 16.4 *1.27
Whiskey Creek below Brushvale (05051515)	Red River of the North	Lat 46°23′55″, long 96°39′08″, in SW1/4 SW1/4 sec. 19, T.134 N., R.47 W., Wilkin County, Hydrologic Unit 09020104, at culverts on road, 2.7 miles south and 0.4 mile east of Kent.	--	2001	04-15-02 05-13-02	3.53 3.76
Whiskey Creek near Kent (05051520)	Red River of the North	Lat 46°24′48″, long 96°39′30″, in SE1/4 SE1/4 sec. 13, T.134 N., R.48 W., Wilkin County, Hydrologic Unit 09020104, at culverts on County Road 20, 1.6 miles south and 1.5 miles east of Kent.	80.0	1964-66, 1970-74, 1976, 1988, 2001	11-06-01 12-10-01 01-14-02 03-18-02 04-15-02 05-13-02 06-24-02 07-03-02 07-22-02 09-09-02 09-23-02	4.40 0.30 0.17 2.11 12.0 8.44 0.23 5.30 2.13 1.10 a0.04
Whiskey Creek at Kent (05051521)	Red River of the North	Lat 46°26′21″, long 96°40′43″, in NE1/4 NE1/4 sec. 11, T.134 N., R.48 W., Wilkin County, Hydrologic Unit 09020104, at bridge on upstream left bank of US Highway 75, on northeast side of Kent.	--	2001	11-06-01 12-10-01 01-14-02 02-11-02 03-18-02 04-15-02 05-13-02 06-03-02 06-24-02 07-08-02 07-22-02 08-05-02 08-29-02 09-09-02 09-23-02	12.7 *4.02 *3.92 *4.89 *0.95 33.0 48.4 *4.82 8.21 57.6 9.18 *2.70 *1.11 *3.26 *3.78
Judicial Ditch 64 near Mentor (05078470)	Badger Creek	Lat 47°44′16″, long 96°12′09″, in SE1/4 NE1/4 sec. 7, T.149 N., R.43 W., Polk County, Hydrologic Unit 09020303, at culverts on township road, 0.5 mile north of U.S. Highway 2, 4.2 miles northwest of Mentor.	--	--	06-25-02 08-06-02 08-29-02 09-05-02	19.0 *0.22 8.49 20.8
Cyr Creek near Marcoux Corners (05078520)	Red Lake River	Lat 47°48′13″, long 96°16′36″, in NW1/4 NE1/4 sec. 22, T.150 N., R.44 W., Red Lake County, Hydrologic Unit 09020303, at culvert on County State Aid Highway 14, 0.5 mile west of State Highway 32, 3.0 miles north of Marcoux Corners.	--	--	06-25-02 08-06-02 08-29-02 08-29-02 09-05-02	17.9 *0.14 108 107 16.0

Stream Name and [Station No.]	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
		Red River of the North (continued)				
County Ditch 140 near Benoit (05078730)	Gentilly River	Lat 47°41′15″, long 96°22′22″, in NW1/4 NW1/4 sec. 36, T.149 N., R.45 W., Polk County, Hydrologic Unit 09020303, at culvert on field access road, 1.0 mile south of County State Aid Highway 45, 1.4 miles southeast of Benoit.	--	--	06-25-02 08-06-02 08-29-02 08-30-02	16.6 *0.67 *4.82 22.2
Unnamed Ditch near Benoit	Gentilly River	Lat 47°43′52″, long 96°22′22″, in NW1/4 NW1/4 sec. 13, T.149 N., R.45 W., Polk County, Hydrologic Unit 09020303, at culvert on township road, 1.0 mile east of County State Aid Highway 44, 2.3 miles northeast of Benoit.	--	--	06-25-02	10.8
Judicial Ditch 66, near Marcoux Corners (05078770)	Kripple Creek	Lat 47°46′36″, long 96°19′31″, in SW1/4 NW1/4 sec. 29, T.150 N., R.44 W., Red Lake County, Hydrologic Unit 09020303, at culvert on Township Road, 1.5 miles north of U.S. Highway 2, 3.4 miles northwest of Marcoux Corners.	--	--	08-29-02 09-06-02	32.4 23.8
Judicial Ditch 66 on State Hwy 2 near Marcoux Corners	Kripple Creek	Lat 47°45′38″, long 96°18′45″, in SE1/4 SE1/4 sec. 32, T.150 N., R.44 W., Red Lake County, Hydrologic Unit 09020303, at culvert on State Highway 2, 2.1 miles west of Marcoux Corners.	--	--	06-25-02 08-06-02	20.4 *1.35
County Ditch 72 (Burnham Creek) near Maple Bay (05079200)	County Ditch 11	Lat 47°38′19″, long 96°16′48″, in SE1/4 NE1/4 sec. 17, T.148 N., R.44 W., Polk County, Hydrologic Unit 09020303, at culvert on State Highway 32, 2.4 miles west of Maple Bay.	--	--	06-25-02 08-05-02 08-28-02 09-05-02	5.25 *0.57 4.57 23.0
County Ditch 65 near Maple Bay (05079250)	County Ditch 72	Lat 47°36′43″, long 96°16′45″, in SE1/4 NE1/4 sec. 29, T.148 N., R.44 W., Polk County, Hydrologic Unit 09020303, at culvert on State Highway 32, 3.0 miles southwest of Maple Bay.	--	--	06-25-02 08-05-02 08-28-02 09-04-02	11.4 *0.09 2.31 30.7
		Mississippi River Basin				
Mississippi River at Franklin Ave. in Minneapolis (05288930)	Gulf of Mexico	Lat 44°57′49″, long 93°13′22″, in SE1/4 SW1/4 sec. 24, T.29 N., R.24 W., Hennepin County, Hydrologic Unit 07010206, at Franklin Ave. Bridge, at river mile 853.2 above mouth of Ohio River, in Minneapolis.	--	1976-82 1984-86 1990-93 1995-97 1999-2000	10-18-02	15,800
		Minnesota River Basin				
Lake Christina outlet near Ashby (05293255)	Pomme de Terre River	Lat 46°04′18″, long 95°46′15″, in SE1/4 NE1/4 sec. 13, T.130 N. R.41 W., Grant County, Hydrologic Unit 07020002, at downstream side of fish gate at Lake Christina outlet, 2.4 miles southeast of Ashby.	--	--	08-19-02	21.8
Pelican Lake near Ashby (05293280)	Pomme de Terre River	Lat 46°04′27″, long 95°48′59″, in SW1/4 NE1/4 sec. 15, T.130 N., R.41 W., Grant County, Hydrologic Unit 07020002, at culvert under County Road 10, 0.9 mile south of Ashby.	--	--	08-19-02	17.8

Stream Name and [Station No.]	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
		Minnesota River Basin (continued)				
Chippewa River diversion at Watson Sag Wier (05304980)	Chippewa River	Lat 45°01′30″, long 95°47′49″,in SE 1/4 sec. 16, T.118 N., R.41 W., Chippewa County, Hydrologic Unit 07020001, at bridge on county road, 1 mile north of Watson.	--	1945-90, 1991, 2001	04-11-01 10-11-01 04-11-02	8,560 87.7 472
North Branch Rush River at Sibley County Rd. 9, near New Rome (05326090)	Rush Creek	Lat 44°30′48″, long 94°05′26″, in NE1/4 NE1/4 sec. 17, T.112 N. R.27 W., Sibley County, Hydrologic Unit 07020012, at bridge on County Road 9, 6 miles south of Arlington, 2 miles south of New Rome.	--	--	07-11-02	31.1
Middle Branch Rush River at Co. Rd. 13 near New Sweden (05326105)	Rush River	Lat 44°28′32″, long 94°09′00″, in NW1/4 SW1/4 sec. 25, T.112 N. R.28 W., Sibley County, Hydrologic Unit 07020012, at bridge on County Road 13, 5 miles northeast of New Sweden.	--	--	08-01-02	12.9
South Branch Rush River at Co. Rd. 9, near Norseland (05326190)	Rush River	Lat 44°28′04″, long 94°07′12″, in NE1/4 NW1/4 sec. 31, T.112 N. R.27 W., Sibley County, Hydrologic Unit 07020012, at bridge on County Road 9, 3.7 miles north of Norseland.	--	--	07-09-02	15.8
Judicial Ditch 1A near Norseland (05326205)	South Branch Rush River	Lat 44°26′36″, long 94°07′12″, in SE1/4 SW1/4 sec. 6, T.111 N. R.27 W., Nicollet County, Hydrologic Unit 07020012, at bridge on County Road 3, 2.2 miles north of Norseland.	--	--	07-11-02	23.4
Rush River near Henderson (05326400)	Minnesota River	Lat 44°29′57″, long 93°54′18″, in NW1/4 NW1/4 sec. 24, T.112 N. R.26 W., Sibley County, Hydrologic Unit 07020012, at bridge on State Highway 93, 0.4 mile upstream from mouth, and 2.0 miles south of Henderson.	397	1970-71, 1976, 1979-80, 1984-85 1987-92, 2000	7/9/02	109
		Zumbro River Basin				
Bear Creek tributary near Chester (05372915)	Zumbro River	Lat 44°00′43″, long 92°22′10″, in SE1/4 NE1/4 sec. 3, T.106 N., R.13 W., Olmsted County, Hydrologic Unit 07040004, 0.25 mile north of Highway 14, 2.2 miles east of Rochester Community and Technical College and 3 miles east of Rochester.	--	--	08-27-02	*0.42

Water Quality at Miscellaneous Sites

Water quality sampling with plunge sampler, August, 2002

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

Date	Time	Sample type	Medium code	SAMPLING DEPTH (FEET) (00003)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	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)
463712096154001 JWPA SITE POND NEAR PELICAN RAPIDS, MN (LAT 46 37 12N LONG 096 15 40W)													
OCT 2001													
01...	1430	ENVIRONMENTAL		1.00	733	4.6	49	8.3	--	--	688	--	16.8
01...	1432	REPLICATE		--	--	--	--	--	--	--	--	--	--
01...	1530	ENVIRONMENTAL		.05	733	4.9	51	8.3	--	--	688	23.0	16.9
02...	1200	ENVIRONMENTAL		.00	722	--	--	--	--	--	--	23.5	--
454753096303301 TRD WETLAND AT WHEATON HIGH SCHOOL IN WHEATON, MN (LAT 45 47 53N LONG 096 30 33W)													
OCT 2001													
03...	0900	ENVIRONMENTAL		1.00	735	7.8	79	8.7	--	--	1230	--	14.3
03...	1000	ENVIRONMENTAL		.05	735	7.8	79	8.7	--	--	1230	--	14.3
03...	1200	ENVIRONMENTAL		.00	--	--	--	--	--	--	--	--	--
462327093575801 UNNAMED POND NORTH OF L. NOKAY NR ESDEN, MN (CWB) (LAT 46 23 27N LONG 093 57 58W)													
OCT 2001													
09...	0900	ENVIRONMENTAL		1.00	729	8.6	81	7.2	--	--	41	16.5	10.8
09...	1000	ENVIRONMENTAL		.05	735	7.8	79	8.7	--	--	1230	--	14.3
09...	1200	ENVIRONMENTAL		.00	729	--	--	--	--	--	--	16.5	--
483152092572701 WETLAND NEAR QUILL LAKE (V6DB1) NR KABETOGAMA, MN (LAT 48 31 52N LONG 092 57 27W)													
JUL 2002													
16...	1730	ENVIRONMENTAL		--	727	6.0	83	5.9	--	--	24	33.0	30.0
16...	1730	BED MATERIAL		--	--	--	--	--	--	--	--	--	--
482534092482301 WETLAND AT SULLIVAN BAY (V2DF1) NR KABETOGAMA, MN (LAT 48 25 34N LONG 092 48 23W)													
JUL 2002													
16...	1800	ENVIRONMENTAL		--	731	7.4	101	8.3	--	--	148	33.0	29.0
16...	1800	BED MATERIAL		--	--	--	--	--	--	--	--	--	--
482513092400501 WETLAND NEAR JUNCTION BAY (V1BD1) NR KABETOGAMA,MN (LAT 48 25 13N LONG 092 40 05W)													
JUL 2002													
18...	1430	ENVIRONMENTAL		--	738	8.7	122	6.8	--	--	39	31.5	30.5
18...	1430	BED MATERIAL		--	--	--	--	--	--	--	--	--	--
454147092522301 WETLAND BY ST. CROIX R. NR RUSH CITY, MN (SC4DC1) (LAT 45 41 47N LONG 092 52 23W)													
AUG 2002													
25...	1400	ENVIRONMENTAL		--	742	.3	2	6.4	7.0	156	148	23.7	21.1

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

Date	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, DIS-SOLVED (MG/L AS NA) (00930)	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)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)
463712096154001 JWPA SITE POND NEAR PELICAN RAPIDS, MN (LAT 46 37 12N LONG 096 15 40W)													
OCT 2001													
01...	--	--	--	--	353	413	9	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	365	418	13	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--	--
454753096303301 TRD WETLAND AT WHEATON HIGH SCHOOL IN WHEATON, MN (LAT 45 47 53N LONG 096 30 33W)													
OCT 2001													
03...	--	--	--	--	266	290	17	--	--	--	--	--	--
03...	--	--	--	--	264	288	14	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--	--	--
462327093575801 UNNAMED POND NORTH OF L. NOKAY NR ESDEN, MN (CWB) (LAT 46 23 27N LONG 093 57 58W)													
OCT 2001													
09...	--	--	--	--	19	20	--	--	--	--	--	--	--
09...	--	--	--	--	17	21	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--	--	--
483152092572701 WETLAND NEAR QUILL LAKE (V6DB1) NR KABETOGAMA, MN (LAT 48 31 52N LONG 092 57 27W)													
JUL 2002													
16...	--	--	--	--	--	--	--	--	--	--	--	--	.04
16...	--	--	--	--	--	--	--	--	--	--	--	--	--
482534092482301 WETLAND AT SULLIVAN BAY (V2DF1) NR KABETOGAMA, MN (LAT 48 25 34N LONG 092 48 23W)													
JUL 2002													
16...	--	--	--	--	--	--	--	--	--	--	--	--	E.02
16...	--	--	--	--	--	--	--	--	--	--	--	--	--
482513092400501 WETLAND NEAR JUNCTION BAY (V1BD1) NR KABETOGAMA,MN (LAT 48 25 13N LONG 092 40 05W)													
JUL 2002													
18...	--	--	--	--	--	--	--	--	--	--	--	--	.38
18...	--	--	--	--	--	--	--	--	--	--	--	--	--
454147092522301 WETLAND BY ST. CROIX R. NR RUSH CITY, MN (SC4DC1) (LAT 45 41 47N LONG 092 52 23W)													
AUG 2002													
25...	16.4	5.53	1.13	2.01	--	--	--	1.94	E.1	25.7	1.9	126	1.21

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

Date	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	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)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)
463712096154001 JWPA SITE POND NEAR PELICAN RAPIDS, MN (LAT 46 37 12N LONG 096 15 40W)													
OCT 2001													
01...	--	--	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--	--
454753096303301 TRD WETLAND AT WHEATON HIGH SCHOOL IN WHEATON, MN (LAT 45 47 53N LONG 096 30 33W)													
OCT 2001													
03...	--	--	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--	--	--
462327093575801 UNNAMED POND NORTH OF L. NOKAY NR ESDEN, MN (CWB) (LAT 46 23 27N LONG 093 57 58W)													
OCT 2001													
09...	--	--	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--	--	--
483152092572701 WETLAND NEAR QUILL LAKE (V6DB1) NR KABETOGAMA, MN (LAT 48 31 52N LONG 092 57 27W)													
JUL 2002													
16...	.75	1.1	E.03	<.008	.024	<.02	.083	17.0	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--	--	--
482534092482301 WETLAND AT SULLIVAN BAY (V2DF1) NR KABETOGAMA, MN (LAT 48 25 34N LONG 092 48 23W)													
JUL 2002													
16...	.73	.93	E.03	<.008	.018	<.02	.047	17.9	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--	--	--
482513092400501 WETLAND NEAR JUNCTION BAY (V1BD1) NR KABETOGAMA,MN (LAT 48 25 13N LONG 092 40 05W)													
JUL 2002													
18...	1.2	1.2	.05	<.008	.036	E.01	.081	21.2	--	--	--	--	--
18...	--	--	--	--	--	--	--	--	--	--	--	--	--
454147092522301 WETLAND BY ST. CROIX R. NR RUSH CITY, MN (SC4DC1) (LAT 45 41 47N LONG 092 52 23W)													
AUG 2002													
25...	1.8	2.6	.14	.016	.047	.04	.80	11.1	1.6	<.04	.3	2200	<.08

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

Date	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	ZINC, DISSOLVED (UG/L AS ZN) (01090)	Data base number
463712096154001 JWPA SITE POND NEAR PELICAN RAPIDS, MN (LAT 46 37 12N LONG 096 15 40W)			
OCT 2001			
01...	--	--	01
01...	--	--	77
01...	--	--	01
02...	--	--	01
454753096303301 TRD WETLAND AT WHEATON HIGH SCHOOL IN WHEATON, MN (LAT 45 47 53N LONG 096 30 33W)			
OCT 2001			
03...	--	--	01
03...	--	--	01
03...	--	--	01
462327093575801 UNNAMED POND NORTH OF L. NOKAY NR ESDEN, MN (CWB) (LAT 46 23 27N LONG 093 57 58W)			
OCT 2001			
09...	--	--	01
09...	--	--	01
09...	--	--	01
483152092572701 WETLAND NEAR QUILL LAKE (V6DB1) NR KABETOGAMA, MN (LAT 48 31 52N LONG 092 57 27W)			
JUL 2002			
16...	--	--	01
16...	--	--	01
482534092482301 WETLAND AT SULLIVAN BAY (V2DF1) NR KABETOGAMA, MN (LAT 48 25 34N LONG 092 48 23W)			
JUL 2002			
16...	--	--	01
16...	--	--	01
482513092400501 WETLAND NEAR JUNCTION BAY (V1BD1) NR KABETOGAMA,MN (LAT 48 25 13N LONG 092 40 05W)			
JUL 2002			
18...	--	--	01
18...	--	--	01
454147092522301 WETLAND BY ST. CROIX R. NR RUSH CITY, MN (SC4DC1) (LAT 45 41 47N LONG 092 52 23W)			
AUG 2002			
25...	1370	<1	01

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

Date	Time	Sample type	Medium code	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	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)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)
451714092452501 ST. CROIX RIVER WETLAND NEAR OSCEOLA, WI (SC2DD1) (LAT 45 17 14N LONG 092 45 25W)													
AUG 2002													
28...	1000	ENVIRONMENTAL		749	.7	9	6.6	6.7	249	265	25.5	22.1	32.7
435519091153701 SLOUGH BY MISSISSIPPI R. ABOVE MIDWAY, WI (P7DA2) (LAT 43 55 19N LONG 091 15 37W)													
SEP 2002													
03...	1500	ENVIRONMENTAL		745	2.3	26	7.2	7.7	517	534	31.0	21.5	64.6
03...	1502	ENVIRONMENTAL		--	--	--	--	E7.5	519	--	--	--	64.6
03...	1502	REPLICATE		745	2.3	24	7.2	E7.5	519	534	31.0	21.5	64.6
442342092023601 SLOUGH ON MISSISSIPPI RIVER ABV NELSON, WI (P4DA1) (LAT 44 23 42N LONG 092 02 36W)													
SEP 2002													
03...	1000	ENVIRONMENTAL		744	.3	3	6.5	7.3	215	229	22.6	19.5	25.0
425101091043601 SLOUGH ON MISSISSIPPI R. BLW GLEN HAVEN,WI(P10DA1) (LAT 42 51 01N LONG 091 04 36W)													
SEP 2002													
04...	1300	ENVIRONMENTAL		749	9.7	121	8.5	8.4	312	312	32.3	25.7	35.6

Date	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	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)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
451714092452501 ST. CROIX RIVER WETLAND NEAR OSCEOLA, WI (SC2DD1) (LAT 45 17 14N LONG 092 45 25W)													
AUG 2002													
28...	11.8	.66	3.84	1.85	E.1	9.45	3.7	175	<.04	.86	1.3	<.05	<.008
435519091153701 SLOUGH BY MISSISSIPPI R. ABOVE MIDWAY, WI (P7DA2) (LAT 43 55 19N LONG 091 15 37W)													
SEP 2002													
03...	27.2	2.78	7.32	17.8	.1	20.7	14.0	314	<.04	.32	.61	.13	E.005
03...	27.4	2.75	7.34	17.9	.1	20.8	14.1	312	<.04	.32	.45	.13	E.005
03...	27.4	2.75	7.34	17.9	.1	20.8	14.1	312	<.04	.32	.45	.13	E.005
442342092023601 SLOUGH ON MISSISSIPPI RIVER ABV NELSON, WI (P4DA1) (LAT 44 23 42N LONG 092 02 36W)													
SEP 2002													
03...	8.93	1.93	4.23	6.09	E.1	10.0	3.0	138	.17	.63	1.1	<.05	<.008
425101091043601 SLOUGH ON MISSISSIPPI R. BLW GLEN HAVEN,WI(P10DA1) (LAT 42 51 01N LONG 091 04 36W)													
SEP 2002													
04...	14.3	2.44	8.44	12.1	.1	6.85	15.3	195	.05	.64	.90	.35	.012

Date	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)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	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)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	Data base number
451714092452501 ST. CROIX RIVER WETLAND NEAR OSCEOLA, WI (SC2DD1) (LAT 45 17 14N LONG 092 45 25W)												
AUG 2002												
28...	.083	.06	.21	14.7	1.3	<.04	.5	1200	<.08	1210	2	01
435519091153701 SLOUGH BY MISSISSIPPI R. ABOVE MIDWAY, WI (P7DA2) (LAT 43 55 19N LONG 091 15 37W)												
SEP 2002												
03...	.072	.06	.28	5.4	1.0	<.04	.4	58	E.05	114	<1	01
03...	.072	.06	.164	5.1	.9	<.04	.4	33	<.08	97.8	<1	01
03...	.072	.06	.164	--	.9	<.04	.4	33	<.08	97.8	<1	77
442342092023601 SLOUGH ON MISSISSIPPI RIVER ABV NELSON, WI (P4DA1) (LAT 44 23 42N LONG 092 02 36W)												
SEP 2002												
03...	.009	<.02	.27	8.9	1.6	<.04	.2	1400	<.08	2550	<1	01
425101091043601 SLOUGH ON MISSISSIPPI R. BLW GLEN HAVEN,WI(P10DA1) (LAT 42 51 01N LONG 091 04 36W)												
SEP 2002												
04...	.087	.05	.136	8.2	1.6	<.04	1.3	224	.22	94.5	1	01

Streamflow measurement and water quality field readings at Fridley, summer of 2002

MISCELLANEOUS SITES--Continued

TROPHIC STATE INDICATOR PROJECT

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

Date	Time	Sample type	Medium code	DEPTH BOTTOM AT SAMPLE LOC-ATION, (FEET) (81903)	DEPTH TO BOT. FROM SURFACE AT SAMP LOC. METERS (82903)	TRANS-PAR-ENCY (SECCHI DISK) (M) (00078)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	ANC WATER UNFLTRD IT FIELD MG/L AS CACO3 (00419)
482731092574701 KABETOGAMA LAKE NEAR GRAVE ISLAND NEAR RAY, MN (LAT 48 27 31N LONG 092 57 47W)													
OCT 2001													
02...	1440	ENVIRONMENTAL		--	--	--	--	--	--	--	--	--	--
16...	1035	ENVIRONMENTAL		--	14.7	3.25	--	10.2	89	7.6	65	9.6	--
17...	1000	ENVIRONMENTAL		--	--	--	--	--	--	--	--	--	--
MAY 2002													
03...	1055	ENVIRONMENTAL		--	--	2.30	--	4.9	50	8.0	91	15.1	--
14...	1545	ENVIRONMENTAL		--	--	2.70	--	12.8	105	7.5	109	6.8	49
30...	1055	ENVIRONMENTAL		--	--	--	--	--	--	--	--	--	--
JUN													
12...	1340	ENVIRONMENTAL		--	--	2.50	--	--	--	7.4	96	14.7	--
26...	1045	ENVIRONMENTAL		--	--	2.50	--	8.3	89	7.7	72	18.3	--
JUL													
09...	1520	ENVIRONMENTAL		--	--	2.00	--	9.9	116	8.5	94	23.4	--
23...	1420	ENVIRONMENTAL		--	--	2.00	--	8.7	101	7.9	95	22.6	--
AUG													
06...	1500	ENVIRONMENTAL		--	--	1.50	--	9.4	106	8.2	92	21.5	--
21...	1530	ENVIRONMENTAL		16.0	--	1.70	730	10.0	109	8.1	86	19.5	--
21...	1800	ENVIRONMENTAL		--	--	--	--	--	--	--	--	--	--
SEP													
05...	1019	ENVIRONMENTAL		--	15.0	1.50	--	7.9	87	7.8	88	20.1	--
17...	1100	ENVIRONMENTAL		--	14.6	2.25	--	8.4	92	7.6	87	19.7	--
30...	1520	ENVIRONMENTAL		--	14.8	2.00	--	9.1	91	7.6	76	1500	--
483012093035001 KABETOGAMA LAKE AT CEMETARY ISLAND NEAR RAY, MN (LAT 48 30 12N LONG 093 03 50W)													
OCT 2001													
02...	1540	ENVIRONMENTAL		--	--	--	--	--	--	--	--	--	--
17...	0915	ENVIRONMENTAL		--	--	--	--	--	--	--	--	--	--
MAY 2002													
14...	1630	ENVIRONMENTAL		--	--	1.80	--	13.3	112	8.0	102	8.0	45
30...	1010	ENVIRONMENTAL		--	--	2.20	--	5.1	51	7.5	99	14.6	--
JUN													
12...	1415	ENVIRONMENTAL		--	--	2.50	--	--	--	7.4	100	15.8	--
26...	1140	ENVIRONMENTAL		--	--	2.75	--	9.0	99	7.5	76	19.9	--
JUL													
09...	1550	ENVIRONMENTAL		--	--	2.00	--	10.0	117	8.5	94	22.8	--
23...	1515	ENVIRONMENTAL		--	--	1.50	--	7.4	84	7.7	94	22.1	--
AUG													
06...	1540	ENVIRONMENTAL		--	--	1.25	--	11.0	124	8.9	93	21.3	--
21...	1630	ENVIRONMENTAL		7.70	--	1.80	731	11.1	120	8.4	86	19.4	46
SEP													
05...	0945	ENVIRONMENTAL		--	7.20	1.75	--	7.7	86	8.0	88	20.3	--
17...	1015	ENVIRONMENTAL		--	7.60	2.50	--	7.4	81	7.5	87	19.6	--
30...	1440	ENVIRONMENTAL		--	7.20	2.20	--	8.9	86	7.4	75	14.0	--
483511093092801 RAINY LAKE AT BLACK BAY NARROWS NR INT FALLS MN (LAT 48 35 38N LONG 093 09 13W)													
OCT 2001													
01...	1010	ENVIRONMENTAL		--	--	--	--	--	--	--	--	--	--
16...	1025	ENVIRONMENTAL		--	--	--	--	--	--	--	--	--	--

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

Date	ANC BICARBONATE IT FIELD MG/L AS HCO3 (00450)	ANC CARBONATE IT FIELD MG/L AS CO3 (00447)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN,AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	NITROGEN, NITRITE DISSOLVED (MG/L AS N) (00613)	PHOSPHORUS DISSOLVED (MG/L AS P) (00666)	ORTHOPHOSPHATE, DISSOLVED (MG/L AS P) (00671)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	CHLOR-A PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70954)	Data base number
482731092574701 KABETOGAMA LAKE NEAR GRAVE ISLAND NEAR RAY, MN (LAT 48 27 31N LONG 092 57 47W)													
OCT 2001													
02...	--	--	--	--	--	--	--	--	--	.039	<.1	<.1	01
16...	--	--	--	--	--	--	--	--	--	.038	--	--	01
17...	--	--	--	--	--	--	--	--	--	.044	1.9	<.1	01
MAY 2002													
03...	--	--	--	--	--	--	--	--	--	--	--	--	01
14...	60	0	<.015	.43	.49	.037	<.002	.007	<.007	.025	2.2	<.1	01
30...	--	--	--	--	--	--	--	--	--	--	1.9	<.1	01
JUN													
12...	--	--	--	--	--	--	--	--	--	.023	--	--	01
26...	--	--	--	--	--	--	--	--	--	.015	1.5	.1	01
JUL													
09...	--	--	--	--	--	--	--	--	--	.022	--	--	01
23...	--	--	--	--	--	--	--	--	--	.028	--	--	01
AUG													
06...	--	--	--	--	--	--	--	--	--	.060	26.5	<.1	01
21...	--	--	.022	.46	.76	<.013	<.002	.020	.012	.064	7.6	<.1	01
21...	--	--	--	--	--	--	--	--	--	--	--	--	77
SEP													
05...	--	--	--	--	--	--	--	--	--	.082	--	--	01
17...	--	--	--	--	--	--	--	--	--	.051	--	--	01
30...	--	--	--	--	--	--	--	--	--	.080	--	--	01
483012093035001 KABETOGAMA LAKE AT CEMETARY ISLAND NEAR RAY, MN (LAT 48 30 12N LONG 093 03 50W)													
OCT 2001													
02...	--	--	--	--	--	--	--	--	--	.063	7.0	<.1	01
17...	--	--	--	--	--	--	--	--	--	.049	2.1	<.1	01
MAY 2002													
14...	55	0	<.015	.38	.52	<.013	<.002	.006	<.007	.017	6.6	<.1	01
30...	--	--	--	--	--	--	--	--	--	--	.7	<.1	01
JUN													
12...	--	--	--	--	--	--	--	--	--	.081	--	--	01
26...	--	--	--	--	--	--	--	--	--	.019	2.5	.3	01
JUL													
09...	--	--	--	--	--	--	--	--	--	.026	--	--	01
23...	--	--	--	--	--	--	--	--	--	.071	--	--	01
AUG													
06...	--	--	--	--	--	--	--	--	--	.077	23.7	<.1	01
21...	57	0	.015	.46	.69	<.013	<.002	.024	.014	.087	4.9	<.1	01
SEP													
05...	--	--	--	--	--	--	--	--	--	.062	--	--	01
17...	--	--	--	--	--	--	--	--	--	.058	--	--	01
30...	--	--	--	--	--	--	--	--	--	.041	--	--	01
483511093092801 RAINY LAKE AT BLACK BAY NARROWS NR INT FALLS MN (LAT 48 35 38N LONG 093 09 13W)													
OCT 2001													
01...	--	--	--	--	--	--	--	--	--	.042	4.8	.2	01
16...	--	--	--	--	--	--	--	--	--	.053	5.5	<.1	01

MISCELLANEOUS SITES--Continued

TROPHIC STATE INDICATOR PROJECT--Continued

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

Date	Time	Sample type	Medium code	DEPTH BOTTOM AT SAMPLE LOCATION, (FEET) (81903)	DEPTH TO BOT. FROM SURFACE AT SAMP LOC. METERS (82903)	TRANSPARENCY (SECCHI DISK) (M) (00078)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	ANC WATER UNFLTRD IT FIELD MG/L AS CACO3 (00419)
483511093092801 RAINY LAKE AT BLACK BAY NARROWS NR INT FALLS MN (LAT 48 35 38N LONG 093 09 13W)													
MAY 2002													
13...	1330	ENVIRONMENTAL		--	--	.90	--	11.9	109	7.8	103	11.3	39
28...	1010	ENVIRONMENTAL		--	--	1.20	--	6.6	61	7.7	108	14.5	--
JUN													
11...	1115	ENVIRONMENTAL		--	--	1.00	--	--	--	7.5	66	13.9	--
24...	1145	ENVIRONMENTAL		--	--	1.00	--	8.3	91	8.2	81	20.5	--
JUL													
08...	1108	ENVIRONMENTAL		--	--	1.50	--	6.9	80	7.5	107	22.5	--
22...	1015	ENVIRONMENTAL		--	--	1.00	--	10.3	123	7.5	103	24.3	--
AUG													
05...	0935	ENVIRONMENTAL		--	--	.75	--	8.9	100	8.2	93	20.7	--
20...	1300	ENVIRONMENTAL		3.40	--	.70	--	8.6	93	8.1	96	17.6	46
SEP													
04...	1050	ENVIRONMENTAL		--	3.40	.50	--	8.4	92	7.9	79	19.6	--
16...	1045	ENVIRONMENTAL		--	3.10	1.00	--	8.9	94	7.9	62	17.5	--
483341093111501 RAINY LK AT BLACK BAY (WEST) NR INTERNATIONAL FLLS (LAT 48 32 30N LONG 093 11 15W)													
OCT 2001													
01...	0940	ENVIRONMENTAL		--	--	--	--	--	--	--	--	--	--
16...	1000	ENVIRONMENTAL		--	--	--	--	--	--	--	--	--	--
MAY 2002													
13...	1120	ENVIRONMENTAL		--	--	.70	--	10.7	98	7.3	129	11.7	51
28...	0855	ENVIRONMENTAL		--	--	2.20	--	5.5	56	7.6	113	15.6	--
JUN													
11...	0950	ENVIRONMENTAL		--	--	.50	--	--	--	7.9	107	15.8	--
24...	0915	ENVIRONMENTAL		--	--	.75	--	10.5	119	7.8	109	20.1	--
JUL													
08...	1003	ENVIRONMENTAL		--	--	.50	--	6.5	7	7.4	96	21.6	--
22...	0905	ENVIRONMENTAL		--	--	.75	--	9.3	111	7.2	102	23.6	--
AUG													
05...	1007	ENVIRONMENTAL		--	--	.75	--	9.5	106	8.4	93	20.7	--
20...	1330	ENVIRONMENTAL		2.20	--	.60	734	8.7	95	8.2	96	17.9	46
SEP													
04...	0950	ENVIRONMENTAL		--	2.30	.75	--	8.1	87	7.8	88	19.3	--
16...	0950	ENVIRONMENTAL		--	2.20	.50	--	9.2	96	8.1	84	17.4	--
483304093062701 RAINY LAKE AT BLACK BAY NR INT FALLS MN (LAT 48 33 04N LONG 093 06 27W)													
OCT 2001													
01...	0905	ENVIRONMENTAL		--	--	--	--	--	--	--	--	--	--
16...	0917	ENVIRONMENTAL		--	--	--	--	--	--	--	--	--	--
MAY 2002													
13...	1145	ENVIRONMENTAL		--	--	.55	--	11.6	103	7.5	104	10.3	42
28...	0925	ENVIRONMENTAL		--	--	1.30	--	6.2	60	7.7	101	13.8	--
JUN													
11...	1015	ENVIRONMENTAL		--	--	1.00	--	--	--	7.5	98	15.4	--
24...	1000	ENVIRONMENTAL		--	--	1.50	--	7.7	84	8.2	42	19.7	--
JUL													
08...	1030	ENVIRONMENTAL		--	--	1.75	--	8.9	101	7.9	92	21.8	--
22...	0930	ENVIRONMENTAL		--	--	.50	--	11.2	132	7.7	100	24.0	--
AUG													
05...	1022	ENVIRONMENTAL		--	--	1.00	--	9.2	103	8.2	93	20.9	--
20...	1415	ENVIRONMENTAL		2.00	--	.60	731	8.9	99	8.2	95	18.7	45
SEP													
04...	1020	ENVIRONMENTAL		--	2.00	.75	--	7.8	85	7.9	89	19.4	--
16...	1010	ENVIRONMENTAL		--	1.90	1.00	--	8.0	83	7.9	84	17.2	--

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

Date	ANC BICARBONATE IT FIELD MG/L AS HCO3 (00450)	ANC CARBONATE IT FIELD MG/L AS CO3 (00447)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	NITROGEN, NITRITE DISSOLVED (MG/L AS N) (00613)	PHOSPHORUS DISSOLVED (MG/L AS P) (00666)	ORTHOPHOSPHATE, DISSOLVED (MG/L AS P) (00671)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	CHLOR-A PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70954)	Data base number
483511093092801 RAINY LAKE AT BLACK BAY NARROWS NR INT FALLS MN (LAT 48 35 38N LONG 093 09 13W)													
MAY 2002													
13...	48	0	<.015	.45	.69	<.013	E.002	.010	<.007	.035	8.0	<.1	01
28...	--	--	--	--	--	--	--	--	--	.034	2.0	<.1	01
JUN													
11...	--	--	--	--	--	--	--	--	--	.026	--	--	01
24...	--	--	--	--	--	--	--	--	--	.035	3.3	.2	01
JUL													
08...	--	--	--	--	--	--	--	--	--	.043	--	--	01
22...	--	--	--	--	--	--	--	--	--	.064	--	--	01
AUG													
05...	--	--	--	--	--	--	--	--	--	.052	5.6	1.1	01
20...	56	0	.023	.62	.89	.060	.004	.032	.016	.078	4.3	.5	01
SEP													
04...	--	--	--	--	--	--	--	--	--	.051	--	--	01
16...	--	--	--	--	--	--	--	--	--	.032	--	--	01
483341093111501 RAINY LK AT BLACK BAY (WEST) NR INTERNATIONAL FLLS (LAT 48 32 30N LONG 093 11 15W)													
OCT 2001													
01...	--	--	--	--	--	--	--	--	--	.043	5.9	.2	01
16...	--	--	--	--	--	--	--	--	--	.044	5.6	E.1	01
MAY 2002													
13...	62	0	<.015	.65	.87	<.013	.003	.015	<.007	.044	3.0	<.1	01
28...	--	--	--	--	--	--	--	--	--	--	1.2	<.1	01
JUN													
11...	--	--	--	--	--	--	--	--	--	.034	--	--	01
24...	--	--	--	--	--	--	--	--	--	.035	1.6	.1	01
JUL													
08...	--	--	--	--	--	--	--	--	--	.068	--	--	01
22...	--	--	--	--	--	--	--	--	--	.086	--	--	01
AUG													
05...	--	--	--	--	--	--	--	--	--	.058	9.7	1.4	01
20...	57	0	E.013	.56	.72	.064	.003	.027	.013	.064	--	--	01
SEP													
04...	--	--	--	--	--	--	--	--	--	.053	--	--	01
16...	--	--	--	--	--	--	--	--	--	.068	--	--	01
483304093062701 RAINY LAKE AT BLACK BAY NR INT FALLS MN (LAT 48 33 04N LONG 093 06 27W)													
OCT 2001													
01...	--	--	--	--	--	--	--	--	--	.049	6.5	.2	01
16...	--	--	--	--	--	--	--	--	--	.048	5.4	E.1	01
MAY 2002													
13...	51	0	<.015	.48	.72	<.013	E.002	.011	<.007	.056	7.4	<.1	01
28...	--	--	--	--	--	--	--	--	--	.035	1.5	<.1	01
JUN													
11...	--	--	--	--	--	--	--	--	--	.029	--	--	01
24...	--	--	--	--	--	--	--	--	--	.030	1.8	.2	01
JUL													
08...	--	--	--	--	--	--	--	--	--	.031	--	--	01
22...	--	--	--	--	--	--	--	--	--	.101	--	--	01
AUG													
05...	--	--	--	--	--	--	--	--	--	.067	6.9	<.1	01
20...	55	0	E.009	.54	.78	.057	.003	.021	.007	.060	7.8	<.1	01
SEP													
04...	--	--	--	--	--	--	--	--	--	.104	--	--	01
16...	--	--	--	--	--	--	--	--	--	.075	--	--	01

MISCELLANEOUS SITES--Continued

TROPHIC STATE INDICATOR PROJECT--Continued

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

Date	Time	Sample type	Medium code	DEPTH BOTTOM AT SAMPLE LOC-ATION, (FEET) (81903)	DEPTH TO BOT. FROM SURFACE AT SAMP LOC. METERS (82903)	TRANS-PAR-ENCY (SECCHI DISK) (M) (00078)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	ANC WATER UNFLTRD IT FIELD MG/L AS CACO3 (00419)
482607092511701 KABETOGAMA LK AT MOUTH OF MEADWOOD BAY NR RAY MN (LAT 48 26 07N LONG 092 51 17W)													
OCT 2001													
02...	1345	ENVIRONMENTAL		--	--	--	--	--	--	--	--	--	--
17...	1110	ENVIRONMENTAL		--	--	--	--	--	--	--	--	--	--
MAY 2002													
03...	1145	ENVIRONMENTAL		--	--	2.10	--	4.2	39	7.6	67	13.2	--
14...	1500	ENVIRONMENTAL		--	--	1.90	--	12.2	104	7.3	99	8.3	45
30...	1145	ENVIRONMENTAL		--	--	--	--	--	--	--	--	--	--
JUN													
12...	1310	ENVIRONMENTAL		--	--	1.50	--	--	--	7.2	0	15.4	--
26...	0925	ENVIRONMENTAL		--	--	2.50	--	8.7	95	8.1	75	19.8	--
JUL													
09...	1450	ENVIRONMENTAL		--	--	1.50	--	9.2	109	8.1	118	23.6	--
23...	1330	ENVIRONMENTAL		--	--	2.50	--	9.6	113	8.2	99	24.4	--
AUG													
06...	1415	ENVIRONMENTAL		--	--	1.75	--	8.3	94	7.8	90	22.3	--
21...	1445	ENVIRONMENTAL		11.3	--	1.40	731	11.7	129	8.5	80	20.4	41
SEP													
05...	1100	ENVIRONMENTAL		--	12.2	1.50	--	8.3	92	7.9	79	20.0	--
17...	1145	ENVIRONMENTAL		--	13.0	1.50	--	9.8	109	8.3	78	20.5	--
30...	1600	ENVIRONMENTAL		--	12.2	2.00	--	8.9	89	7.6	59	15.5	--
482616092372201 NAMAKAN LAKE NEAR RAY, MN (LAT 48 26 16N LONG 092 37 22W)													
MAY 2002													
14...	0830	BLANK		--	--	--	--	--	--	--	--	--	--
14...	1345	ENVIRONMENTAL		--	--	2.10	--	12.7	100	7.2	55	5.2	16
AUG													
21...	1330	ENVIRONMENTAL		29.3	--	2.70	731	10.1	108	7.4	37	18.9	16
482226092283301 SANDPOINT LK BL HARRISON NARROWS NR CRANE LK, MN (LAT 48 22 26N LONG 092 28 33W)													
MAY 2002													
14...	1130	ENVIRONMENTAL		--	--	1.60	--	11.8	92	7.4	82	4.9	23
AUG													
21...	1130	ENVIRONMENTAL		43.0	--	2.30	730	9.9	108	7.7	55	19.1	22
483622092560701 RAINY LK AT BRULE NARROWS NR INTERNTNL FALLS, MN (LAT 48 36 22N LONG 092 56 07W)													
MAY 2002													
13...	1420	REPLICATE		--	--	2.30	--	12.9	104	7.6	64	6.2	15
13...	1425	ENVIRONMENTAL		--	--	2.30	--	12.9	104	7.6	64	6.2	16
AUG													
20...	1030	ENVIRONMENTAL		8.20	--	2.70	--	8.8	94	8.2	42	17.0	15

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

Date	ANC BICAR-BONATE IT FIELD MG/L AS HCO3 (00450)	ANC CAR-BONATE IT FIELD MG/L AS CO3 (00447)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	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)	CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954)	Data base number
482607092511701 KABETOGAMA LK AT MOUTH OF MEADWOOD BAY NR RAY MN (LAT 48 26 07N LONG 092 51 17W)													
OCT 2001													
02...	--	--	--	--	--	--	--	--	--	.037	2.8	<.1	01
17...	--	--	--	--	--	--	--	--	--	.046	2.8	<.1	01
MAY 2002													
03...	--	--	--	--	--	--	--	--	--	--	--	--	01
14...	55	0	<.015	.37	.48	.035	E.002	.007	<.007	.025	2.7	<.1	01
30...	--	--	--	--	--	--	--	--	--	--	2.5	<.1	01
JUN													
12...	--	--	--	--	--	--	--	--	--	.017	--	--	01
26...	--	--	--	--	--	--	--	--	--	.018	1.5	.1	01
JUL													
09...	--	--	--	--	--	--	--	--	--	.028	--	--	01
23...	--	--	--	--	--	--	--	--	--	.025	--	--	01
AUG													
06...	--	--	--	--	--	--	--	--	--	.033	4.9	<.1	01
21...	50	0	<.015	.44	.78	<.013	<.002	.018	.007	.053	22.1	<.1	01
SEP													
05...	--	--	--	--	--	--	--	--	--	.043	--	--	01
17...	--	--	--	--	--	--	--	--	--	.063	--	--	01
30...	--	--	--	--	--	--	--	--	--	.049	--	--	01
482616092372201 NAMAKAN LAKE NEAR RAY, MN (LAT 48 26 16N LONG 092 37 22W)													
MAY 2002													
14...	--	--	<.015	<.10	<.10	<.013	<.002	<.004	<.007	<.004	--	--	77
14...	19	0	E.014	.33	.38	.092	E.002	.005	<.007	.014	2.1	<.1	01
AUG													
21...	20	0	E.009	.33	.53	.055	E.002	.005	<.007	.028	1.9	<.1	01
482226092283301 SANDPOINT LK BL HARRISON NARROWS NR CRANE LK, MN (LAT 48 22 26N LONG 092 28 33W)													
MAY 2002													
14...	28	0	<.015	.47	.49	.143	.004	.012	<.007	.020	1.0	<.1	01
AUG													
21...	27	0	E.011	.44	.50	.052	.003	.009	<.007	.012	3.0	<.1	01
483622092560701 RAINY LK AT BRULE NARROWS NR INTERNTNL FALLS, MN (LAT 48 36 22N LONG 092 56 07W)													
MAY 2002													
13...	18	0	<.015	.29	.39	.087	<.002	.005	<.007	.012	--	--	77
13...	19	0	<.015	.32	.37	.087	E.002	.005	<.007	.011	1.1	<.01	01
AUG													
20...	19	0	<.015	.34	.37	.094	E.002	.006	<.007	.038	1.2	<.1	01

MISCELLANEOUS SITES--Continued

RAIN GARDENS PROJECT

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

Date	Time	SAMPLE TYPE	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	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)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)
450943092593901 RAIN GARDEN, WELL NO.1 AT HUGO, MN (LAT 45 09 43N LONG 092 59 39W)												
AUG 2002 09...	1345	ENVIRONMENTAL	744	7.4	79	6.1	--	120	24.0	17.9	3.62	--
450943092593902 RAIN GARDEN, LYSIMETER NO.1, AT HUGO, MN (LAT 45 09 43N LONG 092 59 39W)												
AUG 2002 12...	1200	ENVIRONMENTAL	--	--	--	--	205	--	--	--	3.98	--
450943092593903 RAIN GARDEN, AUTO SAMPLER, AT HUGO, MN (LAT 45 09 43N LONG 092 59 39W)												
JUL 2002 27...	1600	ENVIRONMENTAL	--	--	--	7.9	--	518	--	--	9.82	<10
SEP 30...	1200	ENVIRONMENTAL	--	--	--	--	161	--	--	--	2.75	13
450943092593904 RAIN GARDEN, SW GRAB, AT HUGO, MN (LAT 45 09 43N LONG 092 59 39W)												
JUN 2002 25...	1015	ENVIRONMENTAL	737	2.3	20	7.0	--	104	26.5	20.7	2.39	86
450946092593901 RAIN GARDEN WELL NO. 2 AT HUGO, MN (LAT 45 09 46N LONG 092 59 39W)												
JUN 2002 25...	1230	ENVIRONMENTAL	737	10.0	89	6.3	--	161	--	13.7	10.9	--
450946092593902 RAIN GARDEN, LYSIMETER NO. 2, AT HUGO, MN (LAT 45 09 46N LONG 092 59 39W)												
AUG 2002 09...	1200	ENVIRONMENTAL	743	--	--	--	195	--	27.0	--	2.71	--
443914093171801 RAIN GARDEN,WELL NO. 1, AT LAKEVILLE, MN (LAT 44 39 14N LONG 093 17 18W)												
SEP 2002 05...	1215	ENVIRONMENTAL	--	--	--	--	280	--	--	--	5.08	--
443914093171802 RAIN GARDEN,LYSIMETER NO.1,AT LAKVILLE, MN (LAT 44 39 14N LONG 093 17 18W)												
SEP 2002 05...	1200	ENVIRONMENTAL	--	--	--	--	416	--	--	--	1.84	--
443914093173602 RAIN GARDEN,LYSIMETER NO2(BKGRND) AT LAKEVILLE, MN (LAT 44 39 14N LONG 093 17 36W)												
SEP 2002 05...	1045	ENVIRONMENTAL	--	--	--	--	969	--	--	--	38.0	--

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

Date	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)
450943092593901 RAIN GARDEN, WELL NO.1 AT HUGO,MN (LAT 45 09 43N LONG 092 59 39W)							
AUG 2002							
09...	--	<.04	.15	1.79	<.008	.07	.17
450943092593902 RAIN GARDEN, LYSIMETER NO.1, AT HUGO, MN (LAT 45 09 43N LONG 092 59 39W)							
AUG 2002							
12...	--	<.04	.56	.07	.035	.10	.10
450943092593903 RAIN GARDEN, AUTO SAMPLER, AT HUGO, MN (LAT 45 09 43N LONG 092 59 39W)							
JUL 2002							
27...	330	.51	--	.18	.084	1.03	--
SEP							
30...	113	.17	1.3	1.13	.074	.16	.22
450943092593904 RAIN GARDEN, SW GRAB, AT HUGO, MN (LAT 45 09 43N LONG 092 59 39W)							
JUN 2002							
25...	73	<.04	1.1	.11	E.005	.33	.65
450946092593901 RAIN GARDEN WELL NO. 2 AT HUGO, MN (LAT 45 09 46N LONG 092 59 39W)							
JUN 2002							
25...	--	<.04	.20	.98	<.008	E.06	.15
450946092593902 RAIN GARDEN, LYSIMETER NO. 2, AT HUGO, MN (LAT 45 09 46N LONG 092 59 39W)							
AUG 2002							
09...	--	.04	.35	1.09	<.008	E.05	E.03
443914093171801 RAIN GARDEN,WELL NO. 1, AT LAKEVILLE, MN (LAT 44 39 14N LONG 093 17 18W)							
SEP 2002							
05...	--	<.04	.23	.23	.042	<.06	E.03
443914093171802 RAIN GARDEN,LYSIMETER NO.1,AT LAKVILLE, MN (LAT 44 39 14N LONG 093 17 18W)							
SEP 2002							
05...	--	<.04	.49	1.19	.012	<.06	<.06
443914093173602 RAIN GARDEN,LYSIMETER NO2(BKGRND) AT LAKEVILLE, MN (LAT 44 39 14N LONG 093 17 36W)							
SEP 2002							
05...	--	.08	.44	.69	.008	E.03	E.04

Ground-Water Wells by County

Ground-Water
Levels

Water-quality sampling of groundwater well, July, 2002.

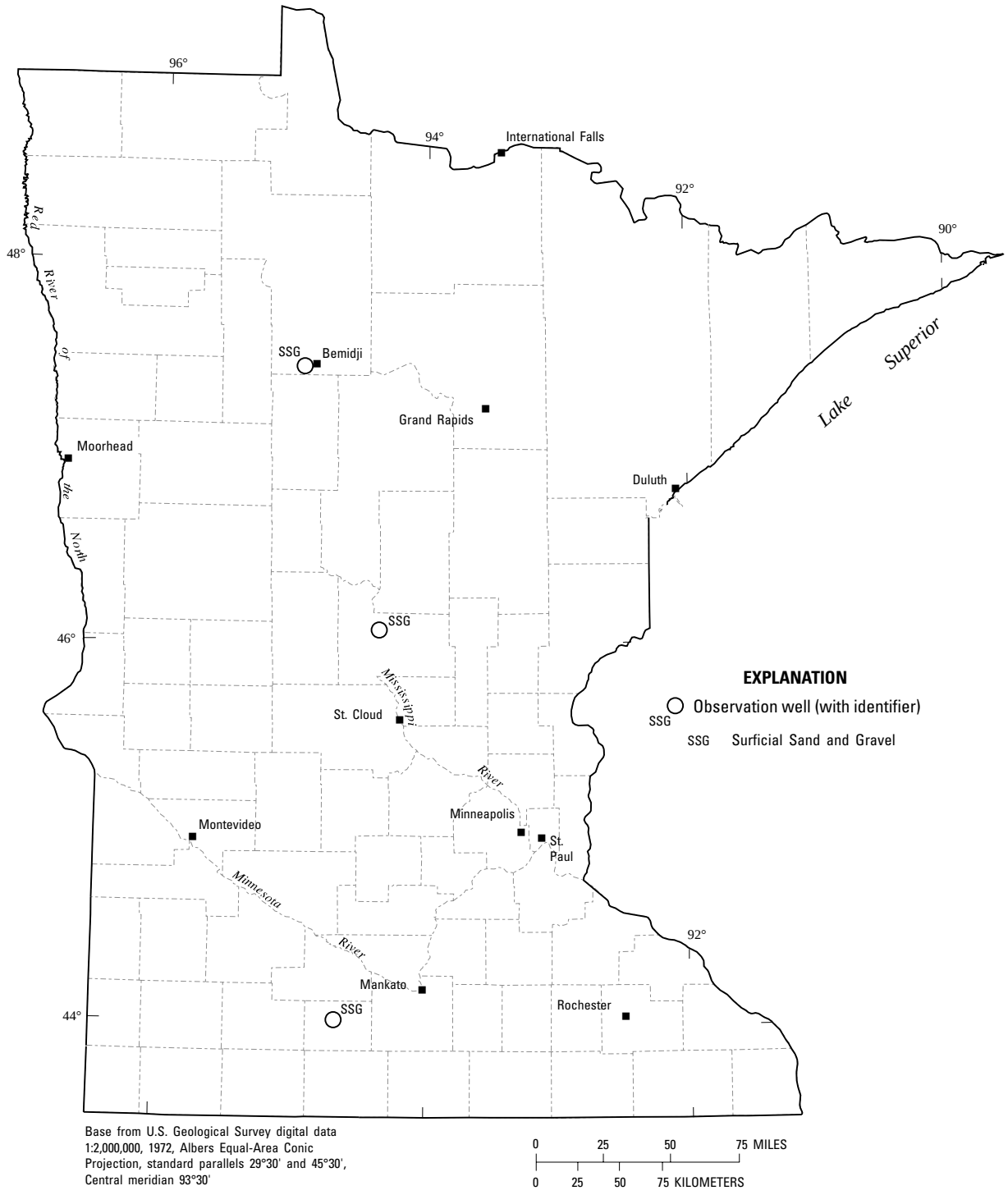


Figure 8. Location of ground-water wells.

BELTRAMI COUNTY

473423095053301. Local number, 147N35W02CDCBDD.

LOCATION.-- Lat 47°34'23", long 95°05'33", in SW ¼ SE ¼ SW ¼ sec.2, T.147 N., R.35 W., Hydrologic Unit 07010101, northwest of Bemidji.
Owner: U.S. Geological Survey
AQUIFER.-- Surficial outwash sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.-- Drilled water-table observation well, diameter 2 in., depth 34.83 ft., screened 30 to 33 ft.
INSTRUMENTATION.-- Monthly measurements by USGS; continuous recordings with a data logger.
DATUM.-- Land-surface datum is 1,420.49 ft above sea level. Measuring point: floor of shelter, 2.70 ft above land-surface datum.
REMARKS.-- Well number 310D, at crude-oil spill site near Bemidji.
PERIOD OF RECORD.-- Apr. 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.-- Highest water level observed, 27.59 ft. below land-surface datum Jun. 21, 2001; lowest observed, 30.69 ft. below land-surface datum, Feb. 27, 1997.
EXTREMES FOR CURRENT WATER YEAR.-- Highest water level observed, 28.89 ft. below land-surface datum, Oct. 29; lowest observed, 29.54 ft. below land-surface datum, Mar 22.
REVISIONS.-- Ground-water levels for water year 2001 were published in meters, those values are reported in feet below land-surface datum in the following table.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

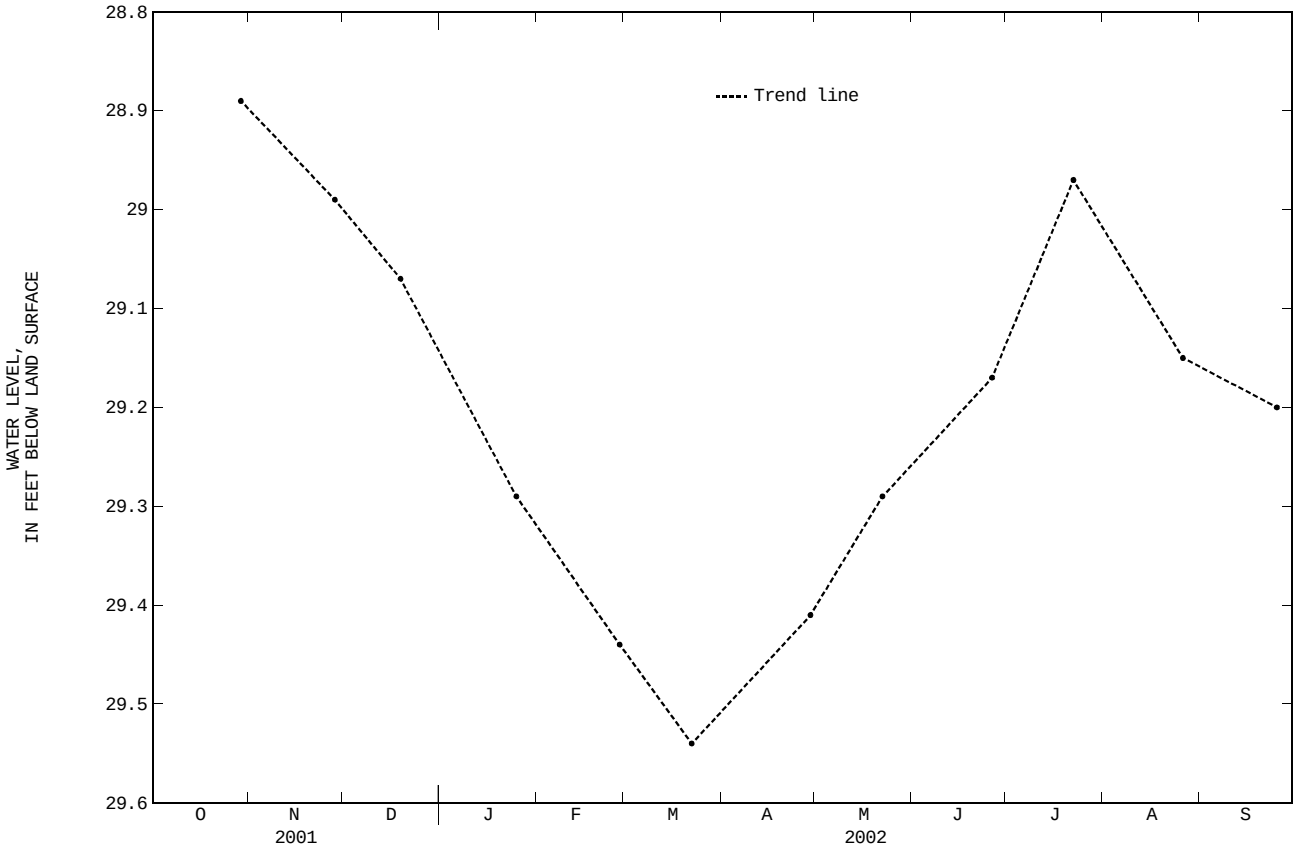
DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 23	29.38	DEC 28	29.06	FEB 19	29.33	APR 30	28.89	JUN 21	27.59	AUG 27	28.46
NOV 29	28.89	JAN 23	29.20	MAR 15	29.44	MAY 30	28.05	JUL 26	28.14	SEP 25	28.69

WATER YEAR 2001 HIGHEST 27.59 JUN 21, 2001 LOWEST 29.44 MAR 15, 2001

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	28.89	DEC 19	29.07	FEB 27	29.44	APR 29	29.41	JUN 26	29.17	AUG 26	29.15
NOV 28	28.99	JAN 25	29.29	MAR 22	29.54	MAY 22	29.29	JUL 22	28.97	SEP 25	29.20

WATER YEAR 2002 HIGHEST 28.89 OCT 29, 2001 LOWEST 29.54 MAR 22, 2002



GROUND WATER LEVELS-Continued

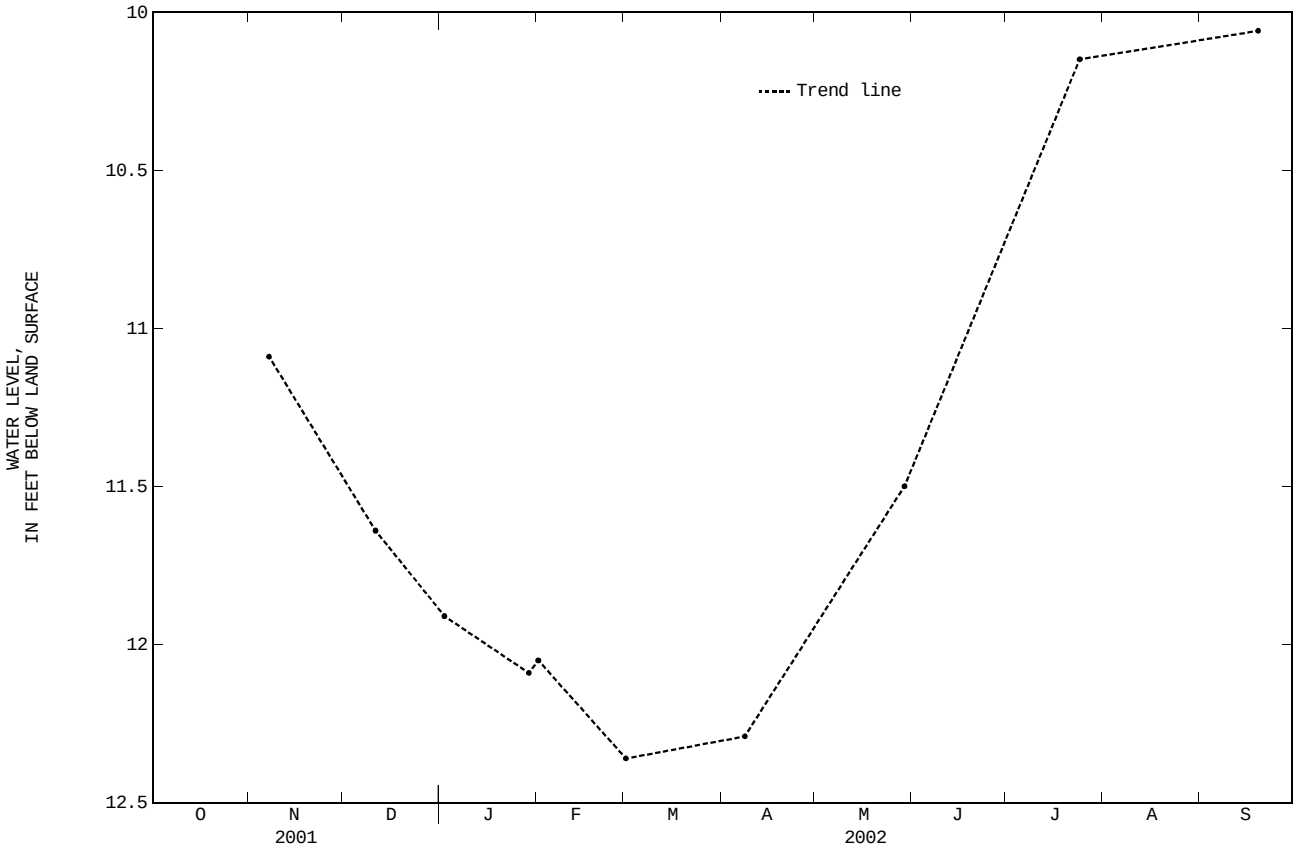
MORRISON COUNTY

460444094212501. Local number, 130N29W08DCC01.

LOCATION.-- Lat 46°04'44", long 94°21'25", in SW ¼ SW ¼ SE ¼ sec.8, T.130 N., R.29 W., Hydrologic Unit 07010104, at Camp Ripley. Owner: Minnesota Army National Guard, Camp Ripley.
AQUIFER.-- Surficial outwash sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.-- Drilled water-table observation well, diameter 2 in., depth 59 ft, screened 56 to 59 ft.
INSTRUMENTATION.-- Monthly measurements by observer.
DATUM.-- Land-surface datum is 1,149.0 ft above sea level. Measuring point: Top of casing, 2.10 ft above land-surface datum.
REMARKS.-- Water levels used in monthly National Water Conditions Report.
PERIOD OF RECORD.-- Apr. 1949 to current year.
EXTREMES FOR PERIOD OF RECORD.-- Highest water level observed, 7.35 ft below land-surface datum, July 28, 1972; lowest observed, 19.75 ft below land-surface datum, Aug. 4, 1961.
EXTREMES FOR CURRENT WATER YEAR.-- Highest water level observed, 10.06 ft below land-surface datum, Sep. 19; lowest observed, 12.36 ft below land-surface datum, Mar. 1.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	11.09	JAN 02	11.91	FEB 01	12.05	APR 08	12.29	JUL 24	10.15
DEC 11	11.64	29	12.09	MAR 01	12.36	MAY 29	11.50	SEP 19	10.06



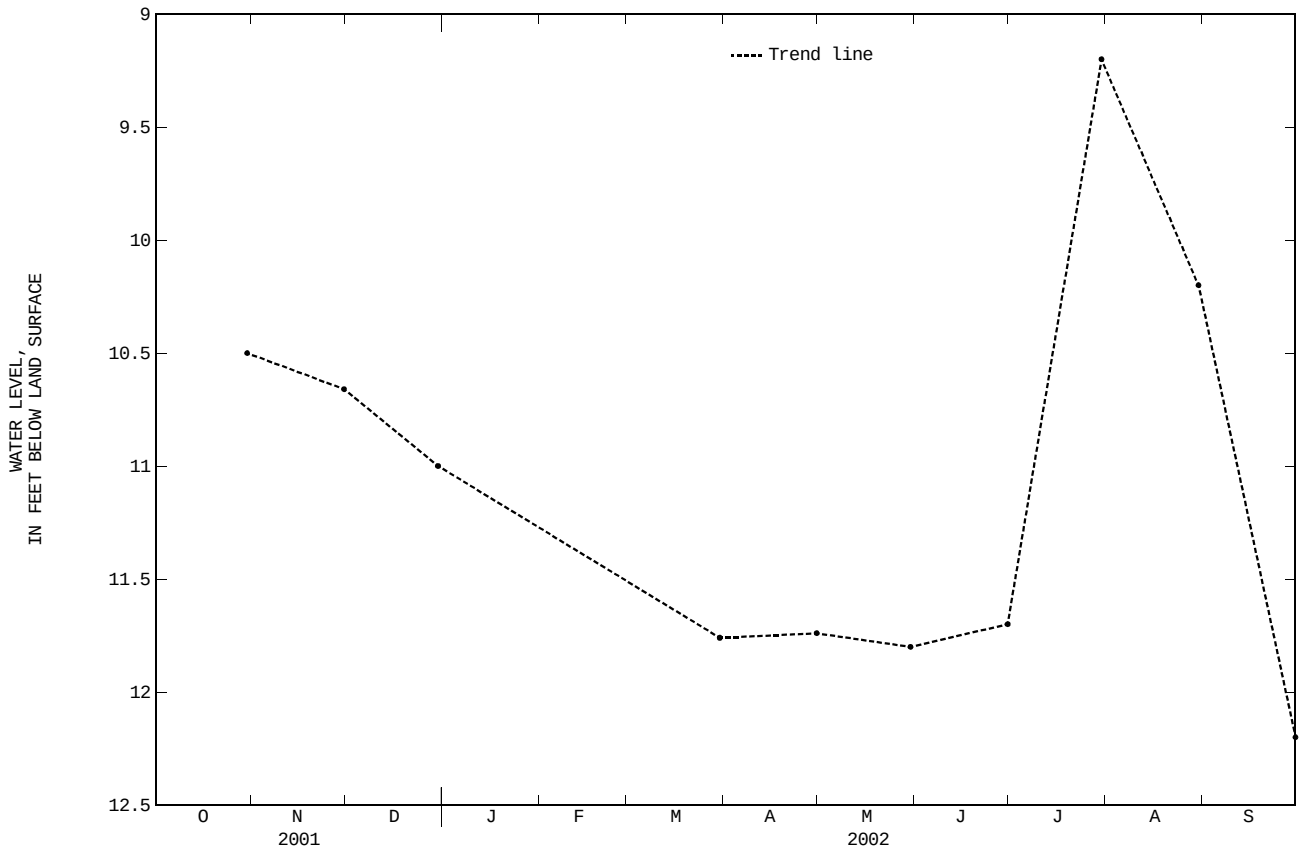
WATONWAN COUNTY

440037094372601. Local number, 106N32W01DDB01.

LOCATION.-- Lat 44°00'37", long 94°37'26", in NW ¼ SE ¼ SE ¼ sec.1, T.106 N., R.32 W., Hydrologic Unit 07020010, north of St. James. Owner: U.S. Geological Survey.
AQUIFER.-- Surficial outwash sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.-- Drilled water-table observation well, diameter 2 in., depth 22 ft, screened 19 to 22 ft.
INSTRUMENTATION.-- Monthly measurements by observer.
DATUM.-- Land-surface datum is 1,056.2 ft above sea level. Measuring point: Top of casing, 4.80 ft above land-surface datum.
REMARKS.-- Water levels used in monthly National Water Conditions Report.
PERIOD OF RECORD.-- Nov. 1965 to current year.
EXTREMES FOR PERIOD OF RECORD.-- Highest observed water level, 4.11 ft below land-surface datum, Apr. 27, 1969; lowest observed, 16.22 ft below land-surface datum, Mar. 7, 1990.
EXTREMES FOR CURRENT WATER YEAR.-- Highest water level observed, 9.20 ft below land-surface datum, Jul. 30; lowest observed, 12.20 ft below land-surface datum, Sep. 30.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 30	10.50	DEC 30	11.00	APR 30	11.74	JUN 30	11.70	AUG 30	10.20
NOV 30	10.66	MAR 30	11.76	MAY 30	11.80	JUL 30	9.20	SEP 30	12.20



MULTIPLE STATION ANALYSIS

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

Local identifier		Date	Time	Sample type	DEPTH OF WELL, TOTAL (FEET) (72008)	TURBIDITY FIELD WATER UNFLTRD (NTU) (61028)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	PH WATER WHOLE LAB (STANDARD UNITS) (00403)
ANOKA COUNTY											
031N24W08CCD	01 CR-G	07-08-02	1400	ENVIRONMENTAL	14	2.7	741	7.5	73	6.6	6.8
032N24W33BDC	01 CR-A	07-09-02	1000	ENVIRONMENTAL	20.75	.4	744	5.1	52	7.3	7.3
BELTRAMI COUNTY											
146N30W34BBB	00FLUS-04	07-23-02	0920	ENVIRONMENTAL	13	.9	739	--	--	8.2	8.0
CASS COUNTY											
144N31W25BBDC	01FLUS-01	07-22-02	1430	ENVIRONMENTAL	17	2.2	731	--	--	7.0	7.1
HENNEPIN COUNTY											
118N21W01CBB	01 HN-N	07-10-02	1000	ENVIRONMENTAL	18	--	745	.8	8	7.1	7.3
119N21W32ACB	01 HN-K	07-11-02	1000	ENVIRONMENTAL	22.5	.8	749	4.6	44	7.2	7.4
		07-11-02	1005	BLANK	22.5	--	749	--	--	--	8.0
119N21W28DCD	01 HN-I	07-09-02	1330	ENVIRONMENTAL	18	1.0	743	.0	0	7.1	7.0
SHERBURNE COUNTY											
033N28W26DCB	01ALUS-21	08-02-02	1200	ENVIRONMENTAL	35	2.3	735	9.9	94	7.1	7.5
033N27W16DCC	01ALUS-30	07-11-02	1330	ENVIRONMENTAL	9	18	747	4.6	46	7.5	7.6
		07-11-02	1331	REPLICATE	9	18	747	4.6	46	7.5	7.5
		07-11-02	1332	SPIKE	9	--	--	--	--	--	--
033N28W13DCC	01ALUS-19	07-30-02	1045	ENVIRONMENTAL	24.2	3.8	736	.8	8	6.9	--
034N29W30DDA	01ALUS-02	08-01-02	1115	ENVIRONMENTAL	20.5	1.5	736	2.6	25	7.0	7.3
034N29W14BBB	01ALUS-07	08-01-02	1400	ENVIRONMENTAL	15.5	7.8	736	7.7	72	7.5	7.7

Local identifier		Date	SPECIFIC CONDUCTANCE LAB (US/CM) (90095)	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	ALKALINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	BICARBONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)
ANOKA COUNTY												
031N24W08CCD	01	07-08-02	308	341	25.0	13.2	37.9	12.6	1.62	7.13	74	93
032N24W33BDC	01	07-09-02	428	437	25.0	16.5	64.3	13.1	1.39	4.77	175	216
BELTRAMI COUNTY												
146N30W34BBB	00F	07-23-02	215	212	19.0	9.1	33.2	6.77	.36	2.08	109	132
CASS COUNTY												
144N31W25BBDC	01F	07-22-02	280	212	21.5	10.5	37.6	7.60	.98	2.74	124	151
HENNEPIN COUNTY												
118N21W01CBB	01	07-10-02	1670	1660	18.5	12.2	145	37.9	4.40	127	271	331
119N21W32ACB	01	07-11-02	952	992	20.0	12.0	88.9	19.7	1.78	99.9	--	--
		07-11-02	<3	--	20.0	--	.04	<.008	<.10	E.07	--	--
119N21W28DCD	01	07-09-02	1320	1360	29.0	12.8	123	35.8	4.39	101	326	397
SHERBURNE COUNTY												
033N28W26DCB	01A	08-02-02	938	969	24.5	11.6	138	34.3	1.29	5.79	208	254
033N27W16DCC	01A	07-11-02	543	552	26.0	14.6	67.3	15.6	.85	22.4	171	209
		07-11-02	549	552	26.0	14.6	67.6	15.6	.84	20.9	171	209
		07-11-02	--	--	--	--	--	--	--	--	--	--
033N28W13DCC	01A	07-30-02	--	404	27.5	12.3	--	--	--	--	210	257
034N29W30DDA	01A	08-01-02	754	790	27.0	11.0	115	31.7	1.89	4.86	267	326
034N29W14BBB	01A	08-01-02	359	350	26.5	10.4	45.5	14.9	16.0	2.15	180	220

MULTIPLE STATION ANALYSIS--Continued

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

Local identifier		Date	CARBONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	BROMIDE DISSOLVED (MG/L AS BR) (71870)	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)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN,AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)
							ANOKA COUNTY					
031N24W08CCD	01	07-08-02	0	<.03	12.8	.1	20.6	25.4	246	<.04	.27	12.4
032N24W33BDC	01	07-09-02	0	<.03	7.43	E.1	18.6	7.8	250	<.04	.10	6.57
							BELTRAMI COUNTY					
146N30W34BBB	00F	07-23-02	0	<.03	.55	E.1	18.8	4.2	124	<.04	E.05	<.05
							CASS COUNTY					
144N31W25BBDC	01F	07-22-02	0	E.02	.81	E.1	19.7	8.3	151	<.04	E.06	E.03
							HENNEPIN COUNTY					
118N21W01CBB	01	07-10-02	0	.10	293	E.1	19.6	99.1	1010	.08	.31	4.74
119N21W32ACB	01	07-11-02	0	.06	90.8	<.1	28.8	23.5	597	<.04	.15	4.93
		07-11-02	--	<.03	<.30	<.1	.15	<.1	<10	<.04	<.10	<.05
119N21W28DCD	01	07-09-02	0	.04	212	.26	21.2	44.3	790	<.04	.33	1.95
							SHERBURNE COUNTY					
033N28W26DCB	01A	08-02-02	0	.11	46.1	E.1	19.7	75.1	697	<.04	.11	37.9
033N27W16DCC	01A	07-11-02	0	<.03	61.3	E.1	14.8	10.9	313	<.04	.17	.48
		07-11-02	--	<.03	61.8	.1	14.8	10.5	314	<.04	.14	.51
		07-11-02	--	--	--	--	--	--	--	--	--	--
033N28W13DCC	01A	07-30-02	0	--	--	--	--	--	--	<.04	E.09	1.02
034N29W30DDA	01A	08-01-02	0	.04	29.9	.1	19.0	38.0	513	<.04	.25	21.1
034N29W14BBB	01A	08-01-02	0	<.03	3.73	.2	10.0	5.5	209	<.04	.11	.64

Local identifier		Date	NITROGEN, NITRITE DISSOLVED (MG/L AS N) (00613)	PHOSPHORUS DISSOLVED (MG/L AS P) (00666)	ORTHOPHOSPHATE, DISSOLVED (MG/L AS P) (00671)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	ANTIMONY, DISSOLVED (UG/L AS SB) (01095)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	BERYLLIUM, DISSOLVED (UG/L AS BE) (01010)	BORON, DISSOLVED (UG/L AS B) (01020)	CADMIUM DISSOLVED (UG/L AS CD) (01025)
							ANOKA COUNTY					
031N24W08CCD	01	07-08-02	<.008	--	.03	1	.23	.3	44	<.06	15	.16
032N24W33BDC	01	07-09-02	<.008	--	E.02	1	<.05	.3	37	<.06	14	<.04
							BELTRAMI COUNTY					
146N30W34BBB	00F	07-23-02	<.008	--	.05	<1	.10	E.1	2	<.06	9	<.04
							CASS COUNTY					
144N31W25BBDC	01F	07-22-02	<.008	--	E.02	<1	.09	E.1	27	<.06	E5	E.02
							HENNEPIN COUNTY					
118N21W01CBB	01	07-10-02	.011	--	<.02	<1	.41	1.6	118	<.06	42	.11
119N21W32ACB	01	07-11-02	<.008	--	.08	<1	.11	2.1	110	<.06	38	<.04
		07-11-02	<.008	--	<.02	<1	E.04	<.2	<1	<.06	<7	<.04
119N21W28DCD	01	07-09-02	.018	--	<.02	<1	1.54	1.5	299	<.06	49	.06
							SHERBURNE COUNTY					
033N28W26DCB	01A	08-02-02	<.008	.012	E.01	<1	E.04	.5	123	<.06	42	<.04
033N27W16DCC	01A	07-11-02	<.008	--	.06	2	.18	1.0	30	<.06	12	<.04
		07-11-02	<.008	--	.05	2	.17	.9	30	<.06	12	<.04
		07-11-02	--	--	--	--	--	--	--	--	--	--
033N28W13DCC	01A	07-30-02	.023	--	<.02	--	--	--	--	--	--	--
034N29W30DDA	01A	08-01-02	.054	--	.03	<1	.07	.7	47	<.06	29	<.04
034N29W14BBB	01A	08-01-02	<.008	--	<.02	<1	.10	E.1	50	<.06	23	<.04

MULTIPLE STATION ANALYSIS--Continued

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

Local identifier		Date	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COPPER, DISSOLVED (UG/L AS CU) (01040)	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)	MOLYBDENUM, DISSOLVED (UG/L AS MO) (01060)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	SELENIUM, DISSOLVED (UG/L AS SE) (01145)
						ANOKA COUNTY						
031N24W08CCD	01	07-08-02	E.5	.73	4.3	<10	<.08	1.6	.5	.3	3.31	.6
032N24W33BDC	01	07-09-02	1.1	.17	3.2	<10	<.08	.9	.1	E.2	.81	1.3
						BELTRAMI COUNTY						
146N30W34BBB	00F	07-23-02	<.8	.12	1.9	<10	E.05	.5	11.8	<.2	.40	<.3
						CASS COUNTY						
144N31W25BBDC	01F	07-22-02	<.8	.27	3.6	93	.38	.8	56.3	<.2	2.13	E.2
						HENNEPIN COUNTY						
118N21W01CBB	01	07-10-02	<.8	1.67	5.9	966	<.08	7.1	1290	.5	3.34	1.4
119N21W32ACB	01	07-11-02	E.7	.18	2.5	<10	.10	4.7	.3	E.1	.31	.4
		07-11-02	<.8	<.02	3.2	<10	<.08	<.3	.1	<.2	.11	<.3
119N21W28DCD	01	07-09-02	<.8	4.19	5.1	28	<.08	6.3	1330	1.5	19.1	2.0
						SHERBURNE COUNTY						
033N28W26DCB	01A	08-02-02	<.8	.33	5.0	<10	<.08	2.3	E.1	E.1	2.19	E.2
033N27W16DCC	01A	07-11-02	E1.3	.17	3.8	<10	E.04	1.0	.2	1.9	.42	.6
		07-11-02	<.8	.16	3.1	<10	E.04	1.0	.2	1.6	.46	.6
		07-11-02	--	--	--	--	--	--	--	--	--	--
033N28W13DCC	01A	07-30-02	--	--	--	--	--	--	--	--	--	--
034N29W30DDA	01A	08-01-02	<.8	.29	5.6	<10	<.08	2.2	.2	<.2	2.42	.9
034N29W14BBB	01A	08-01-02	<.8	.16	5.3	<10	<.08	1.2	.9	.5	1.38	E.2

Local identifier		Date	SILVER, DISSOLVED (UG/L AS AG) (01075)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	THALLIUM, DISSOLVED (UG/L AS TL) (01057)	VANADIUM, DISSOLVED (UG/L AS V) (01085)	ZINC, DISSOLVED (UG/L AS ZN) (01090)	1,4-DICHLOROBENZENE DISSOLV (UG/L) (34572)	1METHYLNAPHTHALENE WATER, FLTERD REC (UG/L) (62054)	2,6-DIETHYLANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	26DIMETHNAPHTHALENE WATER, FLTERD REC (UG/L) (62055)	2METHYLNAPHTHALENE WATER, FLTERD REC (UG/L) (62056)
						ANOKA COUNTY						
031N24W08CCD	01	07-08-02	<1	48.8	<.04	4.5	2	--	--	<.006	--	--
032N24W33BDC	01	07-09-02	<1	146	<.04	1.6	<1	--	--	<.006	--	--
						BELTRAMI COUNTY						
146N30W34BBB	00F	07-23-02	<1	42.2	<.04	1.0	121	--	--	<.006	--	--
						CASS COUNTY						
144N31W25BBDC	01F	07-22-02	<1	65.5	<.04	.5	3740	--	--	<.006	--	--
						HENNEPIN COUNTY						
118N21W01CBB	01	07-10-02	<1	173	.05	.7	2	--	--	--	--	--
119N21W32ACB	01	07-11-02	<1	137	<.04	1.8	1	--	--	<.006	--	--
		07-11-02	<1	.09	<.04	<.2	2	--	--	<.006	--	--
119N21W28DCD	01	07-09-02	<1	283	.12	7.9	3	--	--	<.006	--	--
						SHERBURNE COUNTY						
033N28W26DCB	01A	08-02-02	<1	121	<.04	1.2	1	--	--	<.006	--	--
033N27W16DCC	01A	07-11-02	<1	68.2	<.04	1.3	<1	--	--	<.006	--	--
		07-11-02	<1	68.2	<.04	1.2	<1	--	--	--	--	--
		07-11-02	--	--	--	--	--	--	--	.101	--	--
033N28W13DCC	01A	07-30-02	--	--	--	--	--	--	--	<.006	--	--
034N29W30DDA	01A	08-01-02	<1	117	<.04	2.3	2	--	--	E.002	--	--
034N29W14BBB	01A	08-01-02	<1	48.2	<.04	1.1	1	--	--	<.006	--	--

MULTIPLE STATION ANALYSIS--Continued

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

Local identifier		Date	3-BETA-COPROSTANOL, WATER, FLTERD REC (UG/L) (62057)	3METHYL 1(H)-INDOLE, WATER, FLTERD REC (UG/L) (62058)	3-TERT-BHA, WATER, FLTERD REC (UG/L) (62059)	4-CUMYL PHENOL, WATER, FLTERD REC (UG/L) (62060)	4-OCTYL PHENOL, WATER, FLTERD REC (UG/L) (62061)	4-TERT-OCTYL-PHENOL, WATER, FLTERD REC (UG/L) (62062)	5METHYL 1HBENZOTRIAZLE WATER, FLTERD REC (UG/L) (62063)	ACETOCHLOR, WATER FLTRD REC (UG/L) (49260)	ACETOPHENONE WATER, FLTERD REC (UG/L) (62064)	AHT NAPHTHALENE WATER, FLTERD REC (UG/L) (62065)
						ANOKA COUNTY						
031N24W08CCD	01	07-08-02	--	--	--	--	--	--	--	<.006	--	--
032N24W33BDC	01	07-09-02	--	--	--	--	--	--	--	<.006	--	--
						BELTRAMI COUNTY						
146N30W34BBB	00F	07-23-02	--	--	--	--	--	--	--	<.006	--	--
						CASS COUNTY						
144N31W25BBDC	01F	07-22-02	--	--	--	--	--	--	--	<.006	--	--
						HENNEPIN COUNTY						
118N21W01CBB	01	07-10-02	--	--	--	--	--	--	--	--	--	--
119N21W32ACB	01	07-11-02	--	--	--	--	--	--	--	<.006	--	--
		07-11-02	--	--	--	--	--	--	--	<.006	--	--
119N21W28DCD	01	07-09-02	--	--	--	--	--	--	--	<.006	--	--
						SHERBURNE COUNTY						
033N28W26DCB	01A	08-02-02	--	--	--	--	--	--	--	<.006	--	--
033N27W16DCC	01A	07-11-02	--	--	--	--	--	--	--	<.006	--	--
		07-11-02	--	--	--	--	--	--	--	--	--	--
		07-11-02	--	--	--	--	--	--	--	.118	--	--
033N28W13DCC	01A	07-30-02	--	--	--	--	--	--	--	<.006	--	--
034N29W30DDA	01A	08-01-02	--	--	--	--	--	--	--	<.006	--	--
034N29W14BBB	01A	08-01-02	--	--	--	--	--	--	--	<.006	--	--

Local identifier		Date	ALACHLOR, WATER, DISS, REC, (UG/L) (46342)	ALPHA BHC DISSOLVED (UG/L) (34253)	ANTHRACENE DISSOLV (UG/L) (34221)	ANTHRAQUINONE WATER, FLTERD REC (UG/L) (62066)	ATRAZINE, WATER, DISS, REC (UG/L) (39632)	BENFLURALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)	BENZO-A-PYRENE DISSOLV (UG/L) (34248)	BENZOPHENONE WATER, FLTERD REC (UG/L) (62067)	BETASITOSTEROL, WATER, FLTERD REC (UG/L) (62068)	BISPHENOL A, WATER, FLTERD REC (UG/L) (62069)
						ANOKA COUNTY						
031N24W08CCD	01	07-08-02	<.004	<.005	--	--	<.007	<.010	--	--	--	--
032N24W33BDC	01	07-09-02	<.004	<.005	--	--	<.007	<.010	--	--	--	--
						BELTRAMI COUNTY						
146N30W34BBB	00F	07-23-02	<.004	<.005	--	--	<.007	<.010	--	--	--	--
						CASS COUNTY						
144N31W25BBDC	01F	07-22-02	<.004	<.005	--	--	<.007	<.010	--	--	--	--
						HENNEPIN COUNTY						
118N21W01CBB	01	07-10-02	--	--	--	--	--	--	--	--	--	--
119N21W32ACB	01	07-11-02	<.004	<.005	--	--	.054	<.010	--	--	--	--
		07-11-02	<.004	<.005	--	--	<.007	<.010	--	--	--	--
119N21W28DCD	01	07-09-02	<.004	<.005	--	--	<.007	<.010	--	--	--	--
						SHERBURNE COUNTY						
033N28W26DCB	01A	08-02-02	<.004	<.005	--	--	.224	<.010	--	--	--	--
033N27W16DCC	01A	07-11-02	<.004	<.005	--	--	<.007	<.010	--	--	--	--
		07-11-02	--	--	--	--	--	--	--	--	--	--
		07-11-02	.118	.112	--	--	.125	.089	--	--	--	--
033N28W13DCC	01A	07-30-02	<.004	<.005	--	--	.024	<.010	--	--	--	--
034N29W30DDA	01A	08-01-02	<.004	<.005	--	--	.033	<.010	--	--	--	--
034N29W14BBB	01A	08-01-02	<.004	<.005	--	--	E.003	<.010	--	--	--	--

MULTIPLE STATION ANALYSIS--Continued

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

Local identifier		Date	BISPHENOL A-D3 SURRGTE S2033/ 8033 WAT FLT PERCENT (99583)	BROMACIL, WATER, DISS, REC (UG/L) (04029)	BROMOFORM DISSOLV (UG/L) (34288)	BUTYLATE, WATER, DISS, REC (UG/L) (04028)	CAFFEINE, WATER FLTRD REC (UG/L) (50305)	CAFFEINE-C13 SURRGTE S2033/ 8033 WAT FLT PERCENT (99584)	CAMPHOR WATER, FLTERD REC (UG/L) (62070)	CARBARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	CARBAZOLE, WATER, FLTERD REC (UG/L) (62071)	CARBOFURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)
						ANOKA COUNTY						
031N24W08CCD	01	07-08-02	--	--	--	<.002	--	--	--	<.041	--	<.020
032N24W33BDC	01	07-09-02	--	--	--	<.002	--	--	--	<.041	--	<.020
						BELTRAMI COUNTY						
146N30W34BBB	00F	07-23-02	--	--	--	<.002	--	--	--	<.041	--	<.020
						CASS COUNTY						
144N31W25BBDC	01F	07-22-02	--	--	--	<.002	--	--	--	<.041	--	<.020
						HENNEPIN COUNTY						
118N21W01CBB	01	07-10-02	--	--	--	--	--	--	--	--	--	--
119N21W32ACB	01	07-11-02	--	--	--	<.002	--	--	--	<.041	--	<.020
		07-11-02	--	--	--	<.002	--	--	--	<.041	--	<.020
119N21W28DCD	01	07-09-02	--	--	--	<.002	--	--	--	<.041	--	<.020
						SHERBURNE COUNTY						
033N28W26DCB	01A	08-02-02	--	--	--	<.002	--	--	--	<.041	--	<.020
033N27W16DCC	01A	07-11-02	--	--	--	<.002	--	--	--	<.041	--	<.020
		07-11-02	--	--	--	--	--	--	--	--	--	--
		07-11-02	--	--	--	.110	--	--	--	E.132	--	E.121
033N28W13DCC	01A	07-30-02	--	--	--	<.002	--	--	--	<.041	--	<.020
034N29W30DDA	01A	08-01-02	--	--	--	<.002	--	--	--	<.041	--	<.020
034N29W14BBB	01A	08-01-02	--	--	--	<.002	--	--	--	<.041	--	<.020

Local identifier		Date	CHLORPYRIFOS DISSOLVED (UG/L) (38933)	CHOLESTEROL, WATER, FLTERD REC (UG/L) (62072)	COTININE, WATER, FLTERD REC (UG/L) (62005)	CYANAZINE, WATER, DISS, REC (UG/L) (04041)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	DCFLBIPHENYL, SURRGTE S2033/ 8033 WAT FLT PERCENT (99585)	DEETHYL ATRAZINE, WATER, DISS, REC (UG/L) (04040)	DIAZINON D10 SRG WAT FLT 0.7 U GF, REC PERCENT (91063)	DIAZINON, DISSOLVED (UG/L) (39572)	DIELDRIN DISSOLVED (UG/L) (39381)
						ANOKA COUNTY						
031N24W08CCD	01	07-08-02	<.005	--	--	<.018	<.003	--	<.006	117	<.005	<.005
032N24W33BDC	01	07-09-02	<.005	--	--	<.018	<.003	--	E.006	109	<.005	<.005
						BELTRAMI COUNTY						
146N30W34BBB	00F	07-23-02	<.005	--	--	<.018	<.003	--	<.006	100	<.005	<.005
						CASS COUNTY						
144N31W25BBDC	01F	07-22-02	<.005	--	--	<.018	<.003	--	<.006	96.2	<.005	<.005
						HENNEPIN COUNTY						
118N21W01CBB	01	07-10-02	--	--	--	--	--	--	--	--	--	--
119N21W32ACB	01	07-11-02	<.005	--	--	<.018	<.003	--	E.025	114	<.005	<.005
		07-11-02	<.005	--	--	<.018	<.003	--	<.006	102	<.005	<.005
119N21W28DCD	01	07-09-02	<.005	--	--	<.018	<.003	--	<.006	120	<.005	<.005
						SHERBURNE COUNTY						
033N28W26DCB	01A	08-02-02	<.005	--	--	<.018	<.003	--	E.086	113	<.005	<.005
033N27W16DCC	01A	07-11-02	<.005	--	--	<.018	<.003	--	E.007	116	<.005	<.005
		07-11-02	--	--	--	--	--	--	--	--	--	--
		07-11-02	.052	--	--	.125	.121	--	E.070	114	.089	.104
033N28W13DCC	01A	07-30-02	<.005	--	--	<.018	<.003	--	E.010	106	<.005	<.005
034N29W30DDA	01A	08-01-02	<.005	--	--	<.018	<.003	--	E.113	112	<.005	<.005
034N29W14BBB	01A	08-01-02	<.005	--	--	<.018	<.003	--	E.005	111	<.005	<.005

MULTIPLE STATION ANALYSIS--Continued

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

Local identifier		Date	DISULFOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	D-LIMONENE, WATER, FLTERD REC (UG/L) (62073)	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)	FLUORANTHENE DISSOLV (UG/L) (34377)	FLUORANTHENE D10 SUR S2033/8033 WAT FLT PERCENT (99586)	FONOFOS WATER DISS REC (UG/L) (04095)	HCH ALPHA D6 SRG WAT FLT 0.7 U GF, REC PERCENT (91065)	HHHMCPBENZOPYRAN, WATER, FLTERD REC (UG/L) (62075)
						ANOKA COUNTY						
031N24W08CCD	01	07-08-02	<.02	--	<.002	<.009	<.005	--	--	<.003	98.1	--
032N24W33BDC	01	07-09-02	<.02	--	<.002	<.009	<.005	--	--	<.003	90.4	--
						BELTRAMI COUNTY						
146N30W34BBB	00F	07-23-02	<.02	--	<.002	<.009	<.005	--	--	<.003	83.8	--
						CASS COUNTY						
144N31W25BBDC	01F	07-22-02	<.02	--	<.002	<.009	<.005	--	--	<.003	76.8	--
						HENNEPIN COUNTY						
118N21W01CBB	01	07-10-02	--	--	--	--	--	--	--	--	--	--
119N21W32ACB	01	07-11-02	<.02	--	<.002	<.009	<.005	--	--	<.003	93.5	--
		07-11-02	<.02	--	<.002	<.009	<.005	--	--	<.003	97.2	--
119N21W28DCD	01	07-09-02	<.02	--	<.002	<.009	<.005	--	--	<.003	95.3	--
						SHERBURNE COUNTY						
033N28W26DCB	01A	08-02-02	<.02	--	<.002	<.009	<.005	--	--	<.003	105	--
033N27W16DCC	01A	07-11-02	<.02	--	<.002	<.009	<.005	--	--	<.003	93.5	--
		07-11-02	--	--	--	--	--	--	--	--	--	--
		07-11-02	M	--	.109	.094	.098	--	--	.036	96.3	--
033N28W13DCC	01A	07-30-02	<.02	--	<.002	<.009	<.005	--	--	<.003	91.0	--
034N29W30DDA	01A	08-01-02	<.02	--	<.002	<.009	<.005	--	--	<.003	106	--
034N29W14BBB	01A	08-01-02	<.02	--	<.002	<.009	<.005	--	--	<.003	106	--

Local identifier		Date	INDOLE, WATER, FLTERD REC (UG/L) (62076)	ISOBORNEOL, WATER, FLTERD REC (UG/L) (62077)	ISOPHORONE DISSOLV (UG/L) (34409)	ISOPROPYL BENZENE WATER, FLTERD REC (UG/L) (62078)	ISOQUINOLINE, WATER, FLTERD REC (UG/L) (62079)	LINDANE DISSOLVED (UG/L) (39341)	LINURON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	MALATHION, DISSOLVED (UG/L) (39532)	MENTHOL WATER, FLTERD REC (UG/L) (62080)	METALAXYL WATER FLTRD REC (UG/L) (50359)
						ANOKA COUNTY						
031N24W08CCD	01	07-08-02	--	--	--	--	--	<.004	<.035	<.027	--	--
032N24W33BDC	01	07-09-02	--	--	--	--	--	<.004	<.035	<.027	--	--
						BELTRAMI COUNTY						
146N30W34BBB	00F	07-23-02	--	--	--	--	--	<.004	<.035	<.027	--	--
						CASS COUNTY						
144N31W25BBDC	01F	07-22-02	--	--	--	--	--	<.004	<.035	<.027	--	--
						HENNEPIN COUNTY						
118N21W01CBB	01	07-10-02	--	--	--	--	--	--	--	--	--	--
119N21W32ACB	01	07-11-02	--	--	--	--	--	<.004	<.035	<.027	--	--
		07-11-02	--	--	--	--	--	<.004	<.035	<.027	--	--
119N21W28DCD	01	07-09-02	--	--	--	--	--	<.004	<.035	<.027	--	--
						SHERBURNE COUNTY						
033N28W26DCB	01A	08-02-02	--	--	--	--	--	<.004	<.035	<.027	--	--
033N27W16DCC	01A	07-11-02	--	--	--	--	--	<.004	<.035	<.027	--	--
		07-11-02	--	--	--	--	--	--	--	--	--	--
		07-11-02	--	--	--	--	--	.120	.130	.112	--	--
033N28W13DCC	01A	07-30-02	--	--	--	--	--	<.004	<.035	<.027	--	--
034N29W30DDA	01A	08-01-02	--	--	--	--	--	<.004	<.035	<.027	--	--
034N29W14BBB	01A	08-01-02	--	--	--	--	--	<.004	<.035	<.027	--	--

MULTIPLE STATION ANALYSIS--Continued

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

Local identifier		Date	METHYL AZINPHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	METHYL PARATHION WAT FLT 0.7 U GF, REC (UG/L) (82667)	METHYL SALICYLATE, WATER, FLTERD REC (UG/L) (62081)	METOLACHLOR WATER DISSOLV (UG/L) (39415)	METRIBUZIN SENCOR WATER DISSOLV (UG/L) (82630)	MOLINATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	DEET, WATER, FLTERD REC (UG/L) (62082)	NAPHTHALENE DISSOLV (UG/L) (34443)	NAPROPAMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	NONYLPHENOL, DIETHOX WATER, FLTERD REC (UG/L) (62083)
						ANOKA COUNTY						
031N24W08CCD	01	07-08-02	<.050	<.006	--	<.013	<.006	<.002	--	--	<.007	--
032N24W33BDC	01	07-09-02	<.050	<.006	--	<.013	<.006	<.002	--	--	<.007	--
						BELTRAMI COUNTY						
146N30W34BBB	00F	07-23-02	<.050	<.006	--	<.013	<.006	<.002	--	--	<.007	--
						CASS COUNTY						
144N31W25BBDC	01F	07-22-02	<.050	<.006	--	<.013	<.006	<.002	--	--	<.007	--
						HENNEPIN COUNTY						
118N21W01CBB	01	07-10-02	--	--	--	--	--	--	--	--	--	--
119N21W32ACB	01	07-11-02	<.050	<.006	--	<.013	<.006	<.002	--	--	<.007	--
		07-11-02	<.050	<.006	--	<.013	<.006	<.002	--	--	<.007	--
119N21W28DCD	01	07-09-02	<.050	<.006	--	<.013	<.006	<.002	--	--	<.007	--
						SHERBURNE COUNTY						
033N28W26DCB	01A	08-02-02	<.050	<.006	--	.152	.025	<.002	--	--	<.007	--
033N27W16DCC	01A	07-11-02	<.050	<.006	--	<.013	<.006	<.002	--	--	<.007	--
		07-11-02	--	--	--	--	--	--	--	--	--	--
		07-11-02	E.123	.088	--	.118	.099	.112	--	--	.107	--
033N28W13DCC	01A	07-30-02	<.050	<.006	--	<.013	<.006	<.002	--	--	<.007	--
034N29W30DDA	01A	08-01-02	<.050	<.006	--	<.013	<.006	<.002	--	--	<.007	--
034N29W14BBB	01A	08-01-02	<.050	<.006	--	<.013	<.006	<.002	--	--	<.007	--

Local identifier		Date	DIETHOXYOCTYLPHENOL WAT FLT REC (UG/L) (61705)	MONOETHOXYOCTYLPHENOL WAT FLT REC (UG/L) (61706)	P,P' DDE DISSOLV (UG/L) (34653)	PARACRESOL, WATER, FLTERD REC (UG/L) (62084)	PARANONYLPHENOL, WATER, FLTERD REC (UG/L) (62085)	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)	PENTACHLOROPHENOL DISSOLV (UG/L) (34459)	PERMETHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)
						ANOKA COUNTY						
031N24W08CCD	01	07-08-02	--	--	<.003	--	--	<.010	<.004	<.022	--	<.006
032N24W33BDC	01	07-09-02	--	--	<.003	--	--	<.010	<.004	<.022	--	<.006
						BELTRAMI COUNTY						
146N30W34BBB	00F	07-23-02	--	--	<.003	--	--	<.010	<.004	<.022	--	<.006
						CASS COUNTY						
144N31W25BBDC	01F	07-22-02	--	--	<.003	--	--	<.010	<.004	<.022	--	<.006
						HENNEPIN COUNTY						
118N21W01CBB	01	07-10-02	--	--	--	--	--	--	--	--	--	--
119N21W32ACB	01	07-11-02	--	--	<.004	--	--	<.010	<.004	<.022	--	<.006
		07-11-02	--	--	<.003	--	--	<.010	<.004	<.022	--	<.006
119N21W28DCD	01	07-09-02	--	--	<.003	--	--	<.010	<.004	<.022	--	<.006
						SHERBURNE COUNTY						
033N28W26DCB	01A	08-02-02	--	--	<.003	--	--	<.010	<.004	<.022	--	<.006
033N27W16DCC	01A	07-11-02	--	--	<.003	--	--	<.010	<.004	<.022	--	<.006
		07-11-02	--	--	--	--	--	--	--	--	--	--
		07-11-02	--	--	.076	--	--	.098	.109	.084	--	.063
033N28W13DCC	01A	07-30-02	--	--	<.003	--	--	<.010	<.004	<.022	--	<.006
034N29W30DDA	01A	08-01-02	--	--	<.003	--	--	<.010	<.004	<.022	--	<.006
034N29W14BBB	01A	08-01-02	--	--	<.003	--	--	<.010	<.004	<.022	--	<.006

MULTIPLE STATION ANALYSIS--Continued

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

Local identifier		Date	PHENANTHREN EDISSOLV (UG/L) (34462)	PHENOL WATER FILTRD (UG/L) (34466)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	PROMETON, WATER, DISS, REC (UG/L) (04037)	PRONAMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	PROPACHLOR, WATER, DISS, REC (UG/L) (04024)	PROPANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	PROPARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	PYRENE DISSOLV (UG/L) (34470)	SIMAZINE, WATER, DISS, REC (UG/L) (04035)
ANOKA COUNTY												
031N24W08CCD	01	07-08-02	--	--	<.011	<.01	<.004	<.010	<.011	<.02	--	<.005
032N24W33BDC	01	07-09-02	--	--	<.011	.05	<.004	<.010	<.011	<.02	--	<.005
BELTRAMI COUNTY												
146N30W34BBB	00F	07-23-02	--	--	<.011	<.01	<.004	<.010	<.011	<.02	--	<.005
CASS COUNTY												
144N31W25BBDC	01F	07-22-02	--	--	<.011	<.01	<.004	<.010	<.011	<.02	--	<.005
HENNEPIN COUNTY												
118N21W01CBB	01	07-10-02	--	--	--	--	--	--	--	--	--	--
119N21W32ACB	01	07-11-02	--	--	<.011	<.01	<.004	<.010	<.011	<.02	--	<.005
		07-11-02	--	--	<.011	<.01	<.004	<.010	<.011	<.02	--	<.005
119N21W28DCD	01	07-09-02	--	--	<.011	<.01	<.004	<.010	<.011	<.02	--	<.005
SHERBURNE COUNTY												
033N28W26DCB	01A	08-02-02	--	--	<.011	M	<.004	<.010	<.011	<.02	--	<.005
033N27W16DCC	01A	07-11-02	--	--	<.011	E.01	<.004	<.010	<.011	<.02	--	<.005
		07-11-02	--	--	--	--	--	--	--	--	--	--
		07-11-02	--	--	<.011	.12	.114	.129	.125	.09	--	.081
033N28W13DCC	01A	07-30-02	--	--	<.011	<.01	<.004	<.010	<.011	<.02	--	<.005
034N29W30DDA	01A	08-01-02	--	--	<.011	<.01	<.004	<.010	<.011	<.02	--	<.005
034N29W14BBB	01A	08-01-02	--	--	<.011	<.01	<.004	<.010	<.011	<.02	--	<.005

Local identifier		Date	STIGMASTANOL, WATER, FLTERD REC (UG/L) (62086)	TEBUTHIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	TERBACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TERBUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	TETRACHLOROETHYLENE DISSOLV (UG/L) (34476)	THIOBENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	FYROL CEF, WATER, FLTERD REC (UG/L) (62087)	FYROL PCF, WATER, FLTERD REC (UG/L) (62088)	TRIALLATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRIBUTLPHOSPHATE, WATER, FLTERD REC (UG/L) (62089)
ANOKA COUNTY												
031N24W08CCD	01	07-08-02	--	<.02	<.034	<.02	--	<.005	--	--	<.002	--
032N24W33BDC	01	07-09-02	--	<.02	<.034	<.02	--	<.005	--	--	<.002	--
BELTRAMI COUNTY												
146N30W34BBB	00F	07-23-02	--	<.02	<.034	<.02	--	<.005	--	--	<.002	--
CASS COUNTY												
144N31W25BBDC	01F	07-22-02	--	<.02	<.034	<.02	--	<.005	--	--	<.002	--
HENNEPIN COUNTY												
118N21W01CBB	01	07-10-02	--	--	--	--	--	--	--	--	--	--
119N21W32ACB	01	07-11-02	--	<.02	<.034	<.02	--	<.005	--	--	<.002	--
		07-11-02	--	<.02	<.034	<.02	--	<.005	--	--	<.002	--
119N21W28DCD	01	07-09-02	--	<.02	<.034	<.02	--	<.005	--	--	<.002	--
SHERBURNE COUNTY												
033N28W26DCB	01A	08-02-02	--	<.02	<.034	<.02	--	<.005	--	--	<.002	--
033N27W16DCC	01A	07-11-02	--	<.02	<.034	<.02	--	<.005	--	--	<.002	--
		07-11-02	--	--	--	--	--	--	--	--	--	--
		07-11-02	--	.15	E.112	E.01	--	.113	--	--	.097	--
033N28W13DCC	01A	07-30-02	--	<.02	<.034	<.02	--	<.005	--	--	<.002	--
034N29W30DDA	01A	08-01-02	--	<.02	<.034	<.02	--	<.005	--	--	<.002	--
034N29W14BBB	01A	08-01-02	--	<.02	<.034	<.02	--	<.005	--	--	<.002	--

MULTIPLE STATION ANALYSIS--Continued

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

Local identifier		Date	TRICLOSAN, WATER, FLTERD REC (UG/L) (62090)	TRIETHYL CITRATE WATER, FLTERD REC (UG/L) (62091)	TRIFLURALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	TRIPHNL PHOSPHATE, WATER, FLTERD REC (UG/L) (62092)	TRIS(2-BUTOXE—PHOSPHATE, WATER, FLTERD (UG/L) (62093)	1,1,1-TRICHLOROETHANE TOTAL (UG/L) (34506)	1,1,2-TRICHLOROETHANE TOTAL (UG/L) (34511)	1,1-DICHLOROETHANE TOTAL (UG/L) (34496)	1,1-DICHLOROETHYLENE TOTAL (UG/L) (34501)	1,1-DICHLOROPROPENE, WAT, WH TOTAL (UG/L) (77168)
						ANOKA COUNTY						
031N24W08CCD	01	07-08-02	--	--	<.009	--	--	<.03	<.06	<.04	<.04	<.05
032N24W33BDC	01	07-09-02	--	--	<.009	--	--	--	--	--	--	--
						BELTRAMI COUNTY						
146N30W34BBB	00F	07-23-02	--	--	<.009	--	--	<.03	<.06	<.04	<.04	<.05
						CASS COUNTY						
144N31W25BBDC	01F	07-22-02	--	--	<.009	--	--	<.03	<.06	<.04	<.04	<.05
						HENNEPIN COUNTY						
118N21W01CBB	01	07-10-02	--	--	--	--	--	<.03	<.06	<.04	<.04	<.05
119N21W32ACB	01	07-11-02	--	--	<.009	--	--	<.03	<.06	<.04	<.04	<.05
		07-11-02	--	--	<.009	--	--	<.03	<.06	<.04	<.04	<.05
119N21W28DCD	01	07-09-02	--	--	<.009	--	--	<.03	<.06	<.04	<.04	<.05
						SHERBURNE COUNTY						
033N28W26DCB	01A	08-02-02	--	--	<.009	--	--	<.03	<.06	<.04	<.04	<.05
033N27W16DCC	01A	07-11-02	--	--	<.009	--	--	<.03	<.06	<.04	<.04	<.05
		07-11-02	--	--	--	--	--	--	--	--	--	--
		07-11-02	--	--	.093	--	--	.46	.58	.78	.47	.62
033N28W13DCC	01A	07-30-02	--	--	<.009	--	--	<.03	<.06	<.04	<.04	<.05
034N29W30DDA	01A	08-01-02	--	--	<.009	--	--	<.03	<.06	<.04	<.04	<.05
034N29W14BBB	01A	08-01-02	--	--	<.009	--	--	<.03	<.06	<.04	<.04	<.05

Local identifier		Date	123-TRICHLOROPROPANE WATER WHOLE TOTAL (UG/L) (77443)	1,2-DIBROMOETHANE WATER WHOLE TOTAL (UG/L) (77651)	1,2-DICHLOROETHANE TOTAL (UG/L) (32103)	1,2-DICHLOROPROPANE TOTAL (UG/L) (34541)	TRANS-1,2-DICHLOROETHENE TOTAL (UG/L) (34546)	2,2-DICHLOROPROPANE WAT, WH TOTAL (UG/L) (77170)	2BUTENE TRANS-1 4-DICHLORO UNFLTRD RECOVER (UG/L) (73547)	2-HEXANONE WATER WHOLE TOTAL (UG/L) (77103)	ACETONE WATER WHOLE TOTAL (UG/L) (81552)	ACRYLONITRILE TOTAL (UG/L) (34215)
						ANOKA COUNTY						
031N24W08CCD	01	07-08-02	<.16	<.04	<.1	<.03	<.03	<.05	<.7	<.7	<7	<1
032N24W33BDC	01	07-09-02	--	--	--	--	--	--	--	--	--	--
						BELTRAMI COUNTY						
146N30W34BBB	00F	07-23-02	<.16	<.04	<.1	<.03	<.03	<.05	<.7	<.7	<7	<1
						CASS COUNTY						
144N31W25BBDC	01F	07-22-02	<.16	<.04	<.1	<.03	<.03	<.05	<.7	<.7	<7	<1
						HENNEPIN COUNTY						
118N21W01CBB	01	07-10-02	<.16	<.04	<.1	<.03	<.03	<.05	<.7	<.7	<7	<1
119N21W32ACB	01	07-11-02	<.16	<.04	<.1	<.03	<.03	<.05	<.7	<.7	<7	<1
		07-11-02	<.16	<.04	<.1	<.03	<.03	<.05	<.7	<.7	<7	<1
119N21W28DCD	01	07-09-02	<.16	<.04	<.1	<.03	<.03	<.05	<.7	<.7	<7	<1
						SHERBURNE COUNTY						
033N28W26DCB	01A	08-02-02	<.16	<.04	<.1	<.03	<.03	<.05	<.7	<.7	<7	<1
033N27W16DCC	01A	07-11-02	<.16	<.04	<.1	<.03	<.03	<.05	<.7	<.7	<7	<1
		07-11-02	--	--	--	--	--	--	--	--	--	--
		07-11-02	2.87	.50	2.1	.69	.48	.69	6.8	6.9	69	25
033N28W13DCC	01A	07-30-02	<.16	<.04	<.1	<.03	<.03	<.05	<.7	<.7	<7	<1
034N29W30DDA	01A	08-01-02	<.16	<.04	<.1	<.03	<.03	<.05	<.7	<.7	<7	<1
034N29W14BBB	01A	08-01-02	<.16	<.04	<.1	<.03	<.03	<.05	<.7	<.7	<7	<1

MULTIPLE STATION ANALYSIS--Continued

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

Local identifier		Date	1,2,3-TRICHLOROBENZENE WAT, WH REC (UG/L) (77613)	BENZENE 123-TRIMETHYL- WATER UNFLTRD RECOVER (UG/L) (77221)	BENZENE 1,2,4-TRICHLORO- WAT UNF REC (UG/L) (34551)	BENZENE 124-TRIMETHYL UNFILT RECOVER (UG/L) (77222)	BENZENE 135-TRIMETHYL WATER UNFLTRD REC (UG/L) (77226)	BENZENE 1,3-DICHLORO- WATER UNFLTRD REC (UG/L) (34566)	BENZENE 14BRFL- SURROG VOC UNFLTRD REC PERCENT (99834)	BENZENE 1,4-DICHLORO- WATER UNFLTRD REC (UG/L) (34571)	ISOPROPYL- BENZENE WATER WHOLE REC (UG/L) (77223)	BENZENE N-BUTYL WATER UNFLTRD REC (UG/L) (77342)
						ANOKA COUNTY						
031N24W08CCD	01	07-08-02	<.3	<.1	<.1	<.06	<.04	<.03	86.6	<.05	<.06	<.2
032N24W33BDC	01	07-09-02	--	--	--	--	--	--	--	--	--	--
						BELTRAMI COUNTY						
146N30W34BBB	00F	07-23-02	<.3	<.1	<.1	<.06	<.04	<.03	79.3	<.05	<.06	<.2
						CASS COUNTY						
144N31W25BBDC	01F	07-22-02	<.3	<.1	<.1	<.06	<.04	<.03	79.4	<.05	<.06	<.2
						HENNEPIN COUNTY						
118N21W01CBB	01	07-10-02	<.3	<.1	<.1	<.06	<.04	<.03	85.8	<.05	<.06	<.2
119N21W32ACB	01	07-11-02	<.3	<.1	<.1	<.06	<.04	<.03	77.6	<.05	<.06	<.2
		07-11-02	<.3	<.1	<.1	<.06	<.04	<.03	87.0	<.05	<.06	<.2
119N21W28DCD	01	07-09-02	<.3	<.1	<.1	<.06	<.04	<.03	88.6	<.05	<.06	<.2
						SHERBURNE COUNTY						
033N28W26DCB	01A	08-02-02	<.3	<.1	<.1	<.06	<.04	<.03	97.1	<.05	<.06	<.2
033N27W16DCC	01A	07-11-02	<.3	<.1	<.1	<.06	<.04	<.03	79.4	<.05	<.06	<.2
		07-11-02	--	--	--	--	--	--	--	--	--	--
		07-11-02	2.7	1.1	1.7	.62	.49	.49	93.0	.47	.47	1.9
033N28W13DCC	01A	07-30-02	<.3	<.1	<.1	<.06	<.04	<.03	91.5	<.05	<.06	<.2
034N29W30DDA	01A	08-01-02	<.3	<.1	<.1	<.06	<.04	<.03	96.9	<.05	<.06	<.2
034N29W14BBB	01A	08-01-02	<.3	<.1	<.1	<.06	<.04	<.03	96.2	<.05	<.06	<.2

Local identifier		Date	BENZENE N-PROPY WATER UNFLTRD REC (UG/L) (77224)	BENZENE O-DICHLORO- WATER UNFLTRD REC (UG/L) (34536)	BENZENE SEC BUTYL- WATER UNFLTRD REC (UG/L) (77350)	BENZENE TERT-BUTYL- WATER UNFLTRD REC (UG/L) (77353)	BENZENE TOTAL (UG/L) (34030)	BROMOBENZENE WATER, WHOLE, TOTAL (UG/L) (81555)	BROMOETHENE WATER UNFLTRD RECOVER (UG/L) (50002)	BROMOFORM TOTAL (UG/L) (32104)	CARBON DISULFIDE WATER WHOLE TOTAL (UG/L) (77041)	CARBON TETRACHLORIDE TOTAL (UG/L) (32102)
						ANOKA COUNTY						
031N24W08CCD	01	07-08-02	<.04	<.03	<.03	<.05	<.04	<.04	<.1	<.06	<.07	<.06
032N24W33BDC	01	07-09-02	--	--	--	--	--	--	--	--	--	--
						BELTRAMI COUNTY						
146N30W34BBB	00F	07-23-02	<.04	<.03	<.03	<.05	<.04	<.04	<.1	<.06	<.07	<.06
						CASS COUNTY						
144N31W25BBDC	01F	07-22-02	<.04	<.03	<.03	<.05	<.04	<.04	<.1	<.06	<.07	<.06
						HENNEPIN COUNTY						
118N21W01CBB	01	07-10-02	<.04	<.03	<.03	<.05	<.04	<.04	<.1	<.06	<.07	<.06
119N21W32ACB	01	07-11-02	<.04	<.03	<.03	<.05	<.04	<.04	<.1	<.06	<.07	<.06
		07-11-02	<.04	<.03	<.03	<.05	<.04	<.04	<.1	<.06	<.07	<.06
119N21W28DCD	01	07-09-02	<.04	<.03	<.03	<.05	<.04	<.04	<.1	<.06	<.07	<.06
						SHERBURNE COUNTY						
033N28W26DCB	01A	08-02-02	<.04	<.03	<.03	<.05	<.04	<.04	<.1	<.06	<.07	<.06
033N27W16DCC	01A	07-11-02	<.04	<.03	<.03	<.05	<.04	<.04	<.1	<.06	<.07	<.06
		07-11-02	--	--	--	--	--	--	--	--	--	--
		07-11-02	.46	.49	.50	1.00	.52	.43	1.8	1.76	.61	.87
033N28W13DCC	01A	07-30-02	<.04	<.03	<.03	<.05	<.04	<.04	<.1	<.06	<.07	<.06
034N29W30DDA	01A	08-01-02	<.04	<.03	<.03	<.05	<.04	<.04	<.1	<.06	<.07	<.06
034N29W14BBB	01A	08-01-02	<.04	<.03	<.03	<.05	<.04	<.04	<.1	<.06	<.07	<.06

MULTIPLE STATION ANALYSIS--Continued

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

Local identifier		Date	CHLOROBENZENE TOTAL (UG/L) (34301)	CHLORODIBROMOMETHANE TOTAL (UG/L) (32105)	CHLOROETHANE TOTAL (UG/L) (34311)	CHLOROFORM TOTAL (UG/L) (32106)	CIS-1,2-DICHLOROETHENE WATER TOTAL (UG/L) (77093)	CIS 1,3-DICHLOROPROPENE TOTAL (UG/L) (34704)	DIBROMOCHLOROPROPANE WATER WHOLE TOT.REC (UG/L) (82625)	DIBROMOMETHANE WATER WHOLE RECOVER (UG/L) (30217)	BROMODICHLOROMETHANE TOTAL (UG/L) (32101)	DICHLORODIFLUOROMETHANE TOTAL (UG/L) (34668)
						ANOKA COUNTY						
031N24W08CCD	01	07-08-02	<.03	<.2	<.1	<.02	<.04	<.09	<.5	<.05	<.05	<.18
032N24W33BDC	01	07-09-02	--	--	--	--	--	--	--	--	--	--
						BELTRAMI COUNTY						
146N30W34BBB	00F	07-23-02	<.03	<.2	<.1	<.02	<.04	<.09	<.5	<.05	<.05	<.18
						CASS COUNTY						
144N31W25BBDC	01F	07-22-02	<.03	<.2	<.1	<.02	<.04	<.09	<.5	<.05	<.05	<.18
						HENNEPIN COUNTY						
118N21W01CBB	01	07-10-02	<.03	<.2	<.1	<.02	.12	<.09	<.5	<.05	<.05	<.18
119N21W32ACB	01	07-11-02	<.03	<.2	<.1	<.02	<.04	<.09	<.5	<.05	<.05	<.18
		07-11-02	<.03	<.2	<.1	<.02	<.04	<.09	<.5	<.05	<.05	<.18
119N21W28DCD	01	07-09-02	<.03	<.2	<.1	<.02	<.04	<.09	<.5	<.05	<.05	E.13
						SHERBURNE COUNTY						
033N28W26DCB	01A	08-02-02	<.03	<.2	<.1	<.02	<.04	<.09	<.5	<.05	<.05	<.18
033N27W16DCC	01A	07-11-02	<.03	<.2	<.1	<.02	<.04	<.09	<.5	<.05	<.05	<.18
		07-11-02	--	--	--	--	--	--	--	--	--	--
		07-11-02	.45	1.7	1.2	.51	.46	.77	4.7	.51	.51	E4.81
033N28W13DCC	01A	07-30-02	<.03	<.2	<.1	<.02	<.04	<.09	<.5	<.05	<.05	<.18
034N29W30DDA	01A	08-01-02	<.03	<.2	<.1	<.02	<.04	<.09	<.5	<.05	<.05	<.18
034N29W14BBB	01A	08-01-02	<.03	<.2	<.1	<.02	<.04	<.09	<.5	<.05	<.05	<.18

Local identifier		Date	DI-ISOPROPYL-ETHER, WATER, UNFLTRD RECOVER (UG/L) (81577)	ETHANE, 1112-TETRACHLORO-WAT UNF REC (UG/L) (77562)	ETHANE, 1,1,2,2 TETRACHLORO-WAT UNF REC (UG/L) (34516)	ETHANE 12DICL SURROG VOC UNFLTRD REC PERCENT (99832)	ETHANE HEXACHLORO-WATER UNFLTRD RECOVER (UG/L) (34396)	ETHER ETHYL WATER UNFLTRD RECOVER (UG/L) (81576)	ETHER TERT-BUTYL ETHYL UNFLTRD RECOVER (UG/L) (50004)	ETHER TERT-PENTYL METHYL UNFLTRD RECOVER (UG/L) (50005)	ETHYLBENZENE TOTAL (UG/L) (34371)	FREON-113 WATER UNFLTRD REC (UG/L) (77652)
						ANOKA COUNTY						
031N24W08CCD	01	07-08-02	<.10	<.03	<.09	122	<.2	<.2	<.05	<.08	<.03	<.06
032N24W33BDC	01	07-09-02	--	--	--	--	--	--	--	--	--	--
						BELTRAMI COUNTY						
146N30W34BBB	00F	07-23-02	<.10	<.03	<.09	102	<.2	<.2	<.05	<.08	<.03	<.06
						CASS COUNTY						
144N31W25BBDC	01F	07-22-02	<.10	<.03	<.09	103	<.2	<.2	<.05	<.08	<.03	<.06
						HENNEPIN COUNTY						
118N21W01CBB	01	07-10-02	<.10	<.03	<.09	118	<.2	<.2	<.05	<.08	<.03	<.06
119N21W32ACB	01	07-11-02	<.10	<.03	<.09	122	<.2	<.2	<.05	<.08	<.03	<.06
		07-11-02	<.10	<.03	<.09	116	<.2	<.2	<.05	<.08	<.03	<.06
119N21W28DCD	01	07-09-02	<.10	<.03	<.09	110	<.2	<.2	<.05	<.08	<.03	<.06
						SHERBURNE COUNTY						
033N28W26DCB	01A	08-02-02	<.10	<.03	<.09	113	<.2	<.2	<.05	<.08	<.03	<.06
033N27W16DCC	01A	07-11-02	<.10	<.03	<.09	122	<.2	<.2	<.05	<.08	<.03	<.06
		07-11-02	--	--	--	--	--	--	--	--	--	--
		07-11-02	.87	.49	1.28	106	1.9	1.5	.40	.90	.47	.46
033N28W13DCC	01A	07-30-02	<.10	<.03	<.09	117	<.2	<.2	<.05	<.08	<.03	<.06
034N29W30DDA	01A	08-01-02	<.10	<.03	<.09	112	<.2	<.2	<.05	<.08	<.03	<.06
034N29W14BBB	01A	08-01-02	<.10	<.03	<.09	112	<.2	<.2	<.05	<.08	<.03	<.06

MULTIPLE STATION ANALYSIS--Continued

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

Local identifier		Date	FURAN, TETRAHYDRO- WATER UNFLTRD RECOVER (UG/L) (81607)	HEXACHLORO-BUTADIENE TOTAL (UG/L) (39702)	ISODURENE WATER UNFLTRD RECOVER (UG/L) (50000)	METHACRYLATE ETHYL- WATER UNFLTRD RECOVER (UG/L) (73570)	METHACRYLATE METHYL WATER UNFLTRD RECOVER (UG/L) (81597)	METHACRYLONITRILE WATER UNFLTRD RECOVER (UG/L) (81593)	METHANE BROMO CHLORO-WAT UNFLTRD REC (UG/L) (77297)	METHYL ACRYLATE WATER UNFLTRD RECOVER (UG/L) (49991)	METHYL IODIDE WATER UNFLTRD RECOVER (UG/L) (77424)	METHYL TERT-BUTYL ETHER WAT UNF REC (UG/L) (78032)
						ANOKA COUNTY						
031N24W08CCD	01	07-08-02	<2	<.1	<.2	<.2	<.3	<.6	<.07	<2.0	<.25	<.2
032N24W33BDC	01	07-09-02	--	--	--	--	--	--	--	--	--	--
						BELTRAMI COUNTY						
146N30W34BBB	00F	07-23-02	<2	<.1	<.2	<.2	<.3	<.6	<.07	<2.0	<.25	<.2
						CASS COUNTY						
144N31W25BBDC	01F	07-22-02	<2	<.1	<.2	<.2	<.3	<.6	<.07	<2.0	<.25	<.2
						HENNEPIN COUNTY						
118N21W01CBB	01	07-10-02	<2	<.1	<.2	<.2	<.3	<.6	<.07	<2.0	<.25	<.2
119N21W32ACB	01	07-11-02	<2	<.1	<.2	<.2	<.3	<.6	<.07	<2.0	<.25	<.2
		07-11-02	<2	<.1	<.2	<.2	<.3	<.6	<.07	<2.0	<.25	<.2
119N21W28DCD	01	07-09-02	<2	<.1	<.2	<.2	<.3	<.6	<.07	<2.0	<.25	<.2
						SHERBURNE COUNTY						
033N28W26DCB	01A	08-02-02	<2	<.1	<.2	<.2	<.3	<.6	<.07	<2.0	<.25	<.2
033N27W16DCC	01A	07-11-02	<2	<.1	<.2	<.2	<.3	<.6	<.07	<2.0	<.25	<.2
		07-11-02	--	--	--	--	--	--	--	--	--	--
		07-11-02	19	1.4	2.4	2.3	5.7	9.8	1.96	22.3	E3.51	1.7
033N28W13DCC	01A	07-30-02	<2	<.1	<.2	<.2	<.3	<.6	<.07	<2.0	<.25	<.2
034N29W30DDA	01A	08-01-02	<2	<.1	<.2	<.2	<.3	<.6	<.07	<2.0	<.25	<.2
034N29W14BBB	01A	08-01-02	<2	<.1	<.2	<.2	<.3	<.6	<.07	<2.0	<.25	<.2

Local identifier		Date	METHYL-BROMIDE TOTAL (UG/L) (34413)	METHYL-CHLORIDE TOTAL (UG/L) (34418)	METHYL ENE CHLORIDE TOTAL (UG/L) (34423)	METHYL-ETHYL-KETONE WATER WHOLE TOTAL (UG/L) (81595)	METHYL ISOBUTYL KETONE WAT.WH. TOTAL (UG/L) (78133)	META/PARA-XYLENE WATER UNFLTRD REC (UG/L) (85795)	NAPHTHALENE TOTAL (UG/L) (34696)	O-CHLOROTOLUENE WATER WHOLE TOTAL (UG/L) (77275)	O-XYLENE WATER WHOLE TOTAL (UG/L) (77135)	P-ISOPROPYLTOLUENE WATER WHOLE REC (UG/L) (77356)
						ANOKA COUNTY						
031N24W08CCD	01	07-08-02	<.3	<.2	<.2	<5.0	<.4	<.06	<.5	<.03	<.07	<.07
032N24W33BDC	01	07-09-02	--	--	--	--	--	--	--	--	--	--
						BELTRAMI COUNTY						
146N30W34BBB	00F	07-23-02	<.3	<.2	<.2	<5.0	<.4	<.06	<.5	<.03	<.07	<.07
						CASS COUNTY						
144N31W25BBDC	01F	07-22-02	<.3	<.2	<.2	<5.0	<.4	<.06	<.5	<.03	<.07	<.07
						HENNEPIN COUNTY						
118N21W01CBB	01	07-10-02	<.3	<.2	<.2	<5.0	<.4	<.06	<.5	<.03	<.07	<.07
119N21W32ACB	01	07-11-02	<.3	<.2	<.2	<5.0	<.4	<.06	<.5	<.03	<.07	<.07
		07-11-02	<.3	<.2	<.2	<5.0	<.4	<.06	<.5	<.03	<.07	<.07
119N21W28DCD	01	07-09-02	<.3	<.2	<.2	<5.0	<.4	<.06	<.5	<.03	<.07	<.07
						SHERBURNE COUNTY						
033N28W26DCB	01A	08-02-02	<.3	<.2	<.2	<5.0	<.4	<.06	<.5	<.03	<.07	<.07
033N27W16DCC	01A	07-11-02	<.3	<.2	<.2	<5.0	<.4	<.06	<.5	<.03	<.07	<.07
		07-11-02	--	--	--	--	--	--	--	--	--	--
		07-11-02	E3.6	E2.5	1.7	38.7	4.8	1.20	4.6	.45	.59	1.05
033N28W13DCC	01A	07-30-02	<.3	<.2	<.2	<5.0	<.4	<.06	<.5	<.03	<.07	<.07
034N29W30DDA	01A	08-01-02	<.3	<.2	<.2	<5.0	<.4	<.06	<.5	<.03	<.07	<.07
034N29W14BBB	01A	08-01-02	<.3	<.2	<.2	<5.0	<.4	<.06	<.5	<.03	<.07	<.07

MULTIPLE STATION ANALYSIS--Continued

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

Local identifier		Date	1234-TETRA METHYL BENZENE UNFLTRD REC (UG/L) (49999)	1,3-DI-CHLORO-PROPANE WAT. WH TOTAL (UG/L) (77173)	PROPENE 3-CHLORO-WATER UNFLTRD RECOVER (UG/L) (78109)	STYRENE TOTAL (UG/L) (77128)	TETRA-CHLORO-ETHYL-ENE TOTAL (UG/L) (34475)	TOLUENE D8 SURROG VOC UNFLTRD REC PERCENT (99833)	TOLUENE O-ETHYL WATER UNFLTRD RECOVER (UG/L) (77220)	TOLUENE P-CHLOR WATER UNFLTRD REC (UG/L) (77277)	TOLUENE TOTAL (UG/L) (34010)	TRANS-1,3-DI-CHLORO-PROPENE TOTAL (UG/L) (34699)
						ANOKA COUNTY						
031N24W08CCD	01	07-08-02	<.2	<.1	<.07	<.04	<.03	101	<.06	<.05	<.05	<.09
032N24W33BDC	01	07-09-02	--	--	--	--	--	--	--	--	--	--
						BELTRAMI COUNTY						
146N30W34BBB	00F	07-23-02	<.2	<.1	<.07	<.04	<.03	93.1	<.06	<.05	<.05	<.09
						CASS COUNTY						
144N31W25BBDC	01F	07-22-02	<.2	<.1	<.07	<.04	<.03	92.8	<.06	<.05	<.05	<.09
						HENNEPIN COUNTY						
118N21W01CBB	01	07-10-02	<.2	<.1	<.07	<.04	<.03	100	<.06	<.05	<.05	<.09
119N21W32ACB	01	07-11-02	<.2	<.1	<.07	<.04	E.02	99.1	<.06	<.05	<.05	<.09
		07-11-02	<.2	<.1	<.07	<.04	<.03	99.3	<.06	<.05	<.05	<.09
119N21W28DCD	01	07-09-02	<.2	<.1	<.07	<.04	<.03	96.2	<.06	<.05	<.05	<.09
						SHERBURNE COUNTY						
033N28W26DCB	01A	08-02-02	<.2	<.1	<.07	<.04	<.03	99.4	<.06	<.05	<.05	<.09
033N27W16DCC	01A	07-11-02	<.2	<.1	<.07	<.04	<.03	99.3	<.06	<.05	<.05	<.09
		07-11-02	--	--	--	--	--	--	--	--	--	--
		07-11-02	2.2	1.2	E1.98	.42	1.02	103	.91	.54	.48	1.17
033N28W13DCC	01A	07-30-02	<.2	<.1	<.07	<.04	<.03	99.2	<.06	<.05	<.05	<.09
034N29W30DDA	01A	08-01-02	<.2	<.1	<.07	<.04	.49	98.9	<.06	<.05	<.05	<.09
034N29W14BBB	01A	08-01-02	<.2	<.1	<.07	<.04	<.03	99.8	<.06	<.05	<.05	<.09

Local identifier		Date	TRI-CHLORO-ETHYL-ENE TOTAL (UG/L) (39180)	TRI-CHLORO-FLUORO-METHANE TOTAL (UG/L) (34488)	VINYL CHLO-RIDE TOTAL (UG/L) (39175)	DICHLOR VOS, WATER FLTRD REC (UG/L) (38775)	URANIUM NATURAL DIS-SOLVED (UG/L AS U) (22703)	TICS FROM VOC BY GCMS NUMBER (99871)	SAMPLE VOLUME SCHED-ULE 2001 (ML) (99856)	SAMPLE WEIGHT, WASTE-WATER METHOD, WAT FLT (ML) (99587)	County	Data base number
						ANOKA COUNTY						
031N24W08CCD	01	07-08-02	<.04	<.09	<.1	--	.13	0	939	--	003	01
032N24W33BDC	01	07-09-02	--	--	--	--	.37	--	921	--	003	01
						BELTRAMI COUNTY						
146N30W34BBB	00F	07-23-02	<.04	<.09	<.1	--	.07	0	943	--	007	01
						CASS COUNTY						
144N31W25BBDC	01F	07-22-02	<.04	<.09	<.1	--	.10	0	947	--	021	01
						HENNEPIN COUNTY						
118N21W01CBB	01	07-10-02	E.08	<.09	<.1	--	12.2	0	--	--	053	01
119N21W32ACB	01	07-11-02	<.04	<.09	<.1	--	.26	0	930	--	053	01
		07-11-02	<.04	<.09	<.1	--	<.02	0	944	--	053	77
119N21W28DCD	01	07-09-02	<.04	<.09	<.1	--	7.29	0	943	--	053	01
						SHERBURNE COUNTY						
033N28W26DCB	01A	08-02-02	<.04	<.09	<.1	--	.24	0	939	--	141	01
033N27W16DCC	01A	07-11-02	<.04	<.09	<.1	--	.52	0	922	--	141	01
		07-11-02	--	--	--	--	.47	--	--	--	141	77
		07-11-02	.43	1.89	1.0	--	--	1	937	--	141	77
033N28W13DCC	01A	07-30-02	<.04	<.09	<.1	--	--	0	953	--	141	01
034N29W30DDA	01A	08-01-02	<.04	<.09	<.1	--	.60	0	914	--	141	01
034N29W14BBB	01A	08-01-02	<.04	<.09	<.1	--	1.56	0	915	--	141	01

Page

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