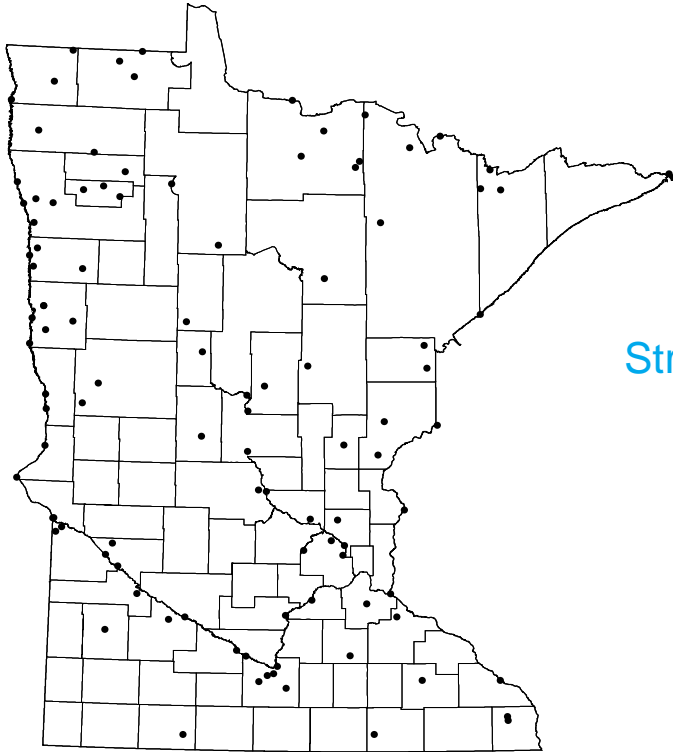
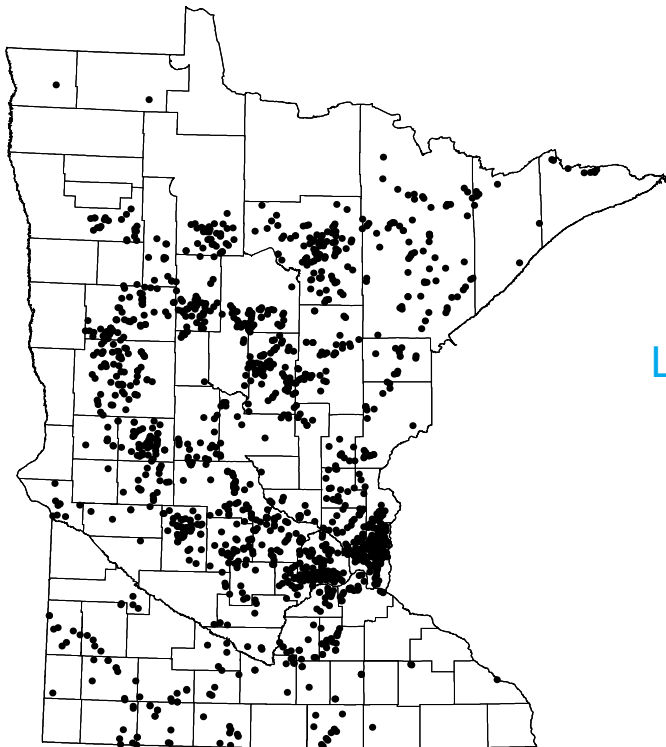


surface water



Stream Gage Network
2004
(101 Gages)



Lake Gage Network
2004
(984 Gages)

Stream Flow

Introduction

The Stream Hydrology Unit is responsible for collecting, analyzing and distributing flow data for rivers and streams in Minnesota. Data for these activities comes from a network of stream gages located throughout Minnesota. Figure 1 shows the 81 major watersheds of the state and the location of the continuous recording gages that the DNR uses to monitor statewide watershed stream flow conditions. These gages are used to gather data including historic high and low flows, and information for computing statistics such as flood frequencies and exceedence values (see sidebar).

Engineers use stream flow data to design the hydraulic capacity of bridges, culverts and control structures. Planners use stream flow data for land use development and to determine water availability for industrial, domestic and agricultural consumption. Biologists use stream flow data to assist in evaluating aquatic habitat potential in streams. Knowing how much water is flowing or available in a stream is very important for flood and drought planning, as well as for the development of municipal and industrial works.

Stream Drainage Systems

There are many types of rivers and streams in Minnesota. Along the North Shore of Lake Superior, and along the Mississippi River bluffs in the southeast, are high gradient streams that have scoured channels into bedrock. In the northwest are highly meandered streams that are situated in an ancient lake bed and are prone to flooding. In the southern third of the state, streams are often entrenched with well developed channels and are largely impacted by agricultural practices. North central streams can be impacted by both agricultural and forest land uses.

Minnesota is unique in that two of the three continental divides in North America pass through it. These two continental divides separate river flows into three major drainage basins: the Hudson Bay/Arctic Ocean, the Great Lakes/Atlantic Ocean and the Mississippi River/Gulf of Mexico. Within these three basins are nine major river basins: the Red River of the North, Rainy River, Lake Superior, Upper and Lower Mississippi River, St. Croix River, Minnesota River, Missouri River and the Des Moines - Cedar River (Figure 2).

EXCEEDENCE VALUE

An exceedence value is a statistical parameter, based upon historical discharge records, and is the probability of stream flow *exceeding* a certain value. A 50% exceedence value (Q50) indicates that the discharge at that reporting station has been *equalled* or *exceeded* 50% of the time during a specific period. Exceedence values can be calculated on a daily, monthly or annual basis.

Stream flow reports are based upon the following exceedence values during the open water season.

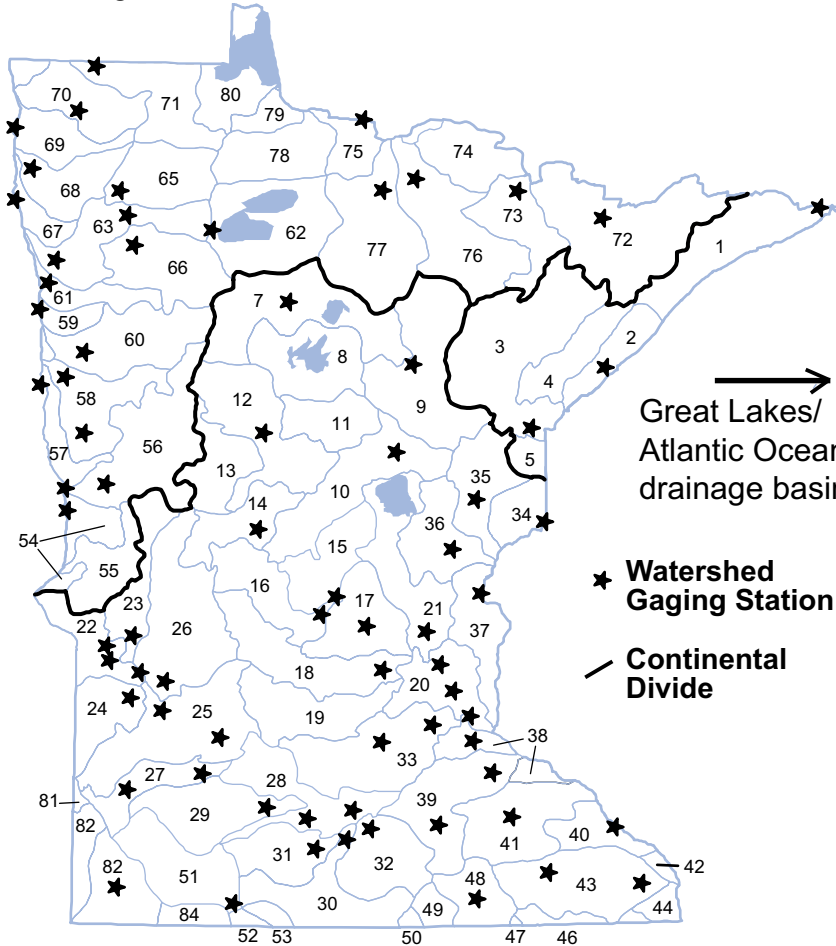
- Critical Flow = < annual Q90
- Low Flow = < monthly Q75
- Normal Flow = monthly Q75 to Q25
- High Flow = > monthly Q25
- Flood Flow = > NWS* flood stage
(or highest monthly Q10)

* National Weather Service

Figure 1

81 Major Watersheds Stream Flow Condition Network

↑ Hudson Bay/
Arctic Ocean
drainage basin



- 32 Le Sueur River★
- 33 Minnesota River (Shakopee)★
- 34 St. Croix River (Upper)★
- 35 Kettle River★
- 36 Snake River★
- 37 St. Croix River (St. Croix Falls)★
- 38 Vermillion River (Empire)★
- 39 Cannon River★
- 40 Mississippi River (Winona)★
- 41 Zumbro River★
- 42 Mississippi River (La Crescent)
- 43 Root River★
- 44 Mississippi River (Nevo)
- *
- 46 Upper Iowa River
- 47 Wapsipinicon River (Headwaters)
- 48 Cedar River★
- 49 Shell Rock River
- 50 Winnebago River (Lime Creek)
- 51 West Fork Des Moines River (Headwaters)★
- 52 West Fork Des Moines River (Lower)
- 53 East Fork Des Moines River
- 54 Bois de Sioux River★
- 55 Mustinka River
- 56 Otter Tail River★
- 57 Red River of the North (Headwaters)★
- 58 Buffalo River★
- 59 Marsh River★
- 60 Wild Rice River★
- 61 Sandhill River★
- 62 Upper and Lower Red Lake★
- 63 Red Lake River★
- *
- 65 Thief River★
- 66 Clearwater River★
- 67 Grand Marais Creek (Red River of the North)★
- 68 Snake River★
- 69 Tamarack River (Red River of the North)★
- 70 Two River★
- 71 Roseau River★
- 72 Rainy River (Headwaters)★
- 73 Vermillion River★
- 74 Rainy River (Rainy Lake)
- 75 Rainy River (Manitou)★
- 76 Little Fork River★
- 77 Big Fork River★
- 78 Rapid River
- 79 Rainy River (Baudette)
- 80 Lake of the Woods
- 81 Big Sioux River (Medary Creek)
- 82 Big Sioux River (Pipestone)★
- 83 Rock River
- 84 Little Sioux River

→ Great Lakes/
Atlantic Ocean
drainage basin

★ Watershed
Gaging Station
— Continental
Divide

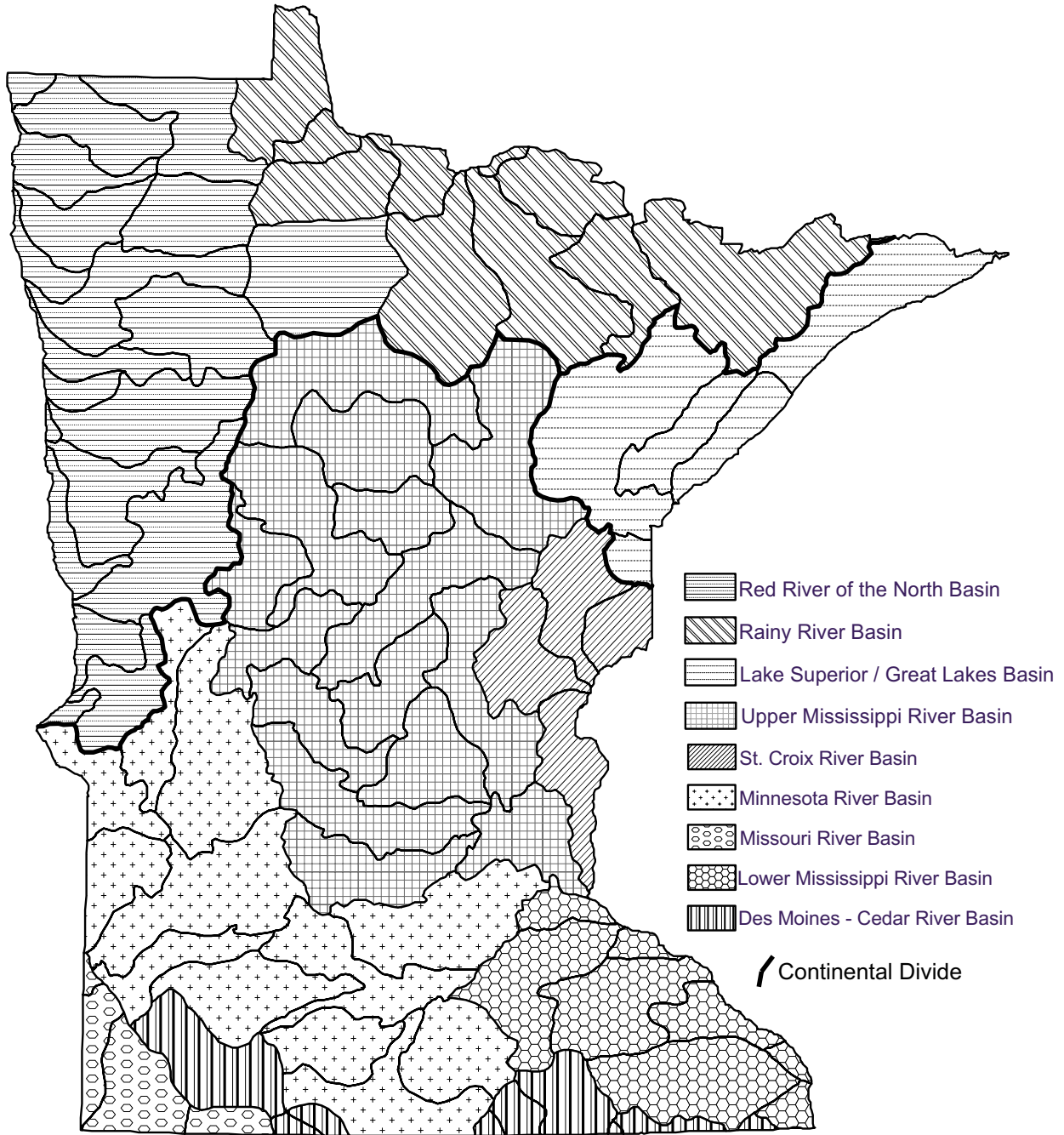
↓ Mississippi River/Gulf of Mexico
drainage basin

- 1 Lake Superior (north)★
- 2 Lake Superior (south)★
- 3 St. Louis River★
- 4 Cloquet River
- 5 Nemadji River
- *
- 7 Mississippi River (Headwaters, Lake Winnibigoshish)★
- 8 Leech Lake River
- 9 Mississippi River (Grand Rapids)★
- 10 Mississippi River (Brainerd)★
- 11 Pine River
- 12 Crow Wing River★
- 13 Redeye River (Leaf River)
- 14 Long Prairie River★
- 15 Mississippi River (St. Cloud)★

- 16 Sauk River★
- 17 Elk River (Elk River)★
- 18 North Fork Crow River★
- 19 South Fork Crow River
- 20 Mississippi River (Metro)★
- 21 Rum River★
- 22 Minnesota River (Headwaters)★
- 23 Pomme de Terre River★
- 24 Lac qui Parle River★
- 25 Minnesota River (Montevideo)★
- 26 Chippewa River★
- 27 Redwood River★
- 28 Minnesota River (Mankato)★
- 29 Cottonwood River★
- 30 Blue Earth River★
- 31 Watonwan River★

Figure 2

Nine Major Stream Basins



Minnesota is further unique in that very little water flows into the state. Only two rivers receive out-of-state water: the headwaters of the Minnesota River from South Dakota and the Blue Earth River from Iowa. Minnesota exports large volumes of water via the Red, Rainy, Mississippi (including the Minnesota and St. Croix Rivers), and through the numerous North Shore streams and streams in the southeast bluffslands.

Stream Gaging in Minnesota

Gaging is an essential tool in analyzing stream flows in Minnesota. A stream gage is used to record the water elevation of a stream at a specific location. Measurements of stream discharge must be made periodically at the gage location to develop the relationship between stream elevation and the quantity of flow in the stream. If this relationship is developed, recorded stream elevations can be converted to discharge in cubic feet per second (cfs). State-of-the-art gages in Minnesota record stream elevations continuously and transmit the data to a central location for conversion to discharge and use in hydrologic analysis.

Most continuous recording stream gages in Minnesota are operated by the United States Geological Survey. DNR Waters supports about one third of these network gages through the USGS's Cooperative Water Resource Data program. In addition, the DNR maintains approximately forty flood warning gages. The USGS has been gaging Minnesota streams for over 100 years.

Currently, there are nearly 100 continuous recording stream gages maintained by the USGS. Additional stream gages are operated and maintained by the Corps of Engineers, the Department of Natural Resources, the Department of Transportation, the Pollution

Control Agency, the Metropolitan Council and other state and local agencies, including watershed districts and lake associations.

Unfortunately, at least five stream gages were eliminated in 2000 due to budget constraints and another was destroyed by flooding. The loss of a stream gage can significantly impact flood prediction and low flow protection. The loss of a stream gage with a long-term record also can seriously degrade the historical record of the stream. It is this long-term record that is important in determining stream flow trends, drought and flood frequency calculations and other historical parameters.

Water Year 2003

Stream flow conditions at the end of Water Year 2002 were generally in the high or the high side of normal range. The exception was along the Canadian border in the northeast where flows were in the protected range.

Due to below-normal snowfall totals (statewide) during the winter of 2002-2003, April 2003 stream flows for approximately half of the state were in the low range, and were on the dry side of normal for the rest of the state. As April progressed into May, increased precipitation moved stream flow conditions for the southern half of the state into the normal range, and a few streams into the high range. Spring flooding, which was somewhat common in the past decade, generally did not occur although minor flooding was observed in the Cannon River and the lower St. Croix River watersheds.

By early June, most of the state experienced normal stream flow conditions. The exceptions were the Mississippi River headwaters with very low (protected) flows, and the Mississippi in the central part of the state with high flow conditions. As June progressed, conditions in the central part of Minnesota regressed to normal, while the dry Mississippi River headwaters area expanded to include most of the northeast.

Major storms occurred over much of central Minnesota in late June, including the lower two-thirds of the Red River Valley. As a result, stream flows quickly moved into the high range for much of the state, and flooding was observed at several sites in the headwaters of the Red River, the Twin Cities metropolitan area and the Long Prairie River. Conditions would remain above flood stage for almost a month in the Long Prairie River watershed.

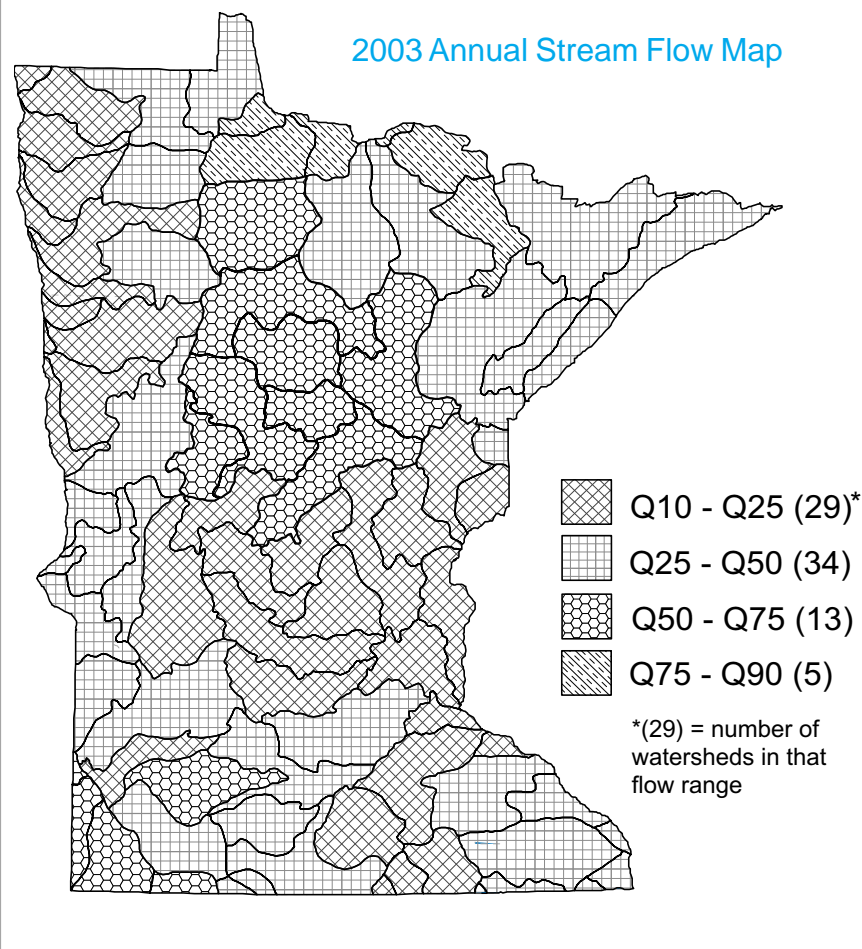
Throughout July, stream flow conditions in the high-flow areas of the state gradually receded into the normal range, while other rivers continued to experience normal flows. However, by mid-August, low and protected flow conditions returned to the upper Mississippi River basin, extending into the northeast. Additional low and protected flows occurred in the Minnesota River basin by the end of August.

Low flow conditions dominated the early half of September, with 27 watersheds in the protected flow range and 21 in the low flow range on September 8. The protected flow conditions were predominantly located in the Upper Mississippi River basin and in the St. Louis River basin. Rains improved conditions

slightly by mid-month for much of the state, but protected flow conditions remained in the Mississippi River headwaters well into winter.

Figure 3 is the annual stream flow map for Water Year 2003. By definition, the range of stream flow conditions from Q25 to Q75 is classified as the “normal” flow range. For 2003, the normal flow range was divided into the Q25 to Q50 range and the Q50 to Q75 range to differentiate those watersheds that were on the wet side of normal from those on the dry side of normal. Those watersheds in the high flow range, predominantly the Mississippi River below the headwaters and the Red River of the North watersheds, moved into the high flow range primarily as a result of the heavy rains in late June.

Figure 3



Water Year 2004

April 2004 stream flow conditions were in the normal range over Minnesota. However, some high flows and flooding occurred in the northwest corner of the state and some low flows occurred in the upper Minnesota River basin and in the lower Mississippi River basin. Stream flow conditions remained in the low to normal ranges well into May, although conditions for most of the state could be found in the normal range by late May. Heavy rains in the upper portion of the Red River of the North produced flooding in that part of the state for the remainder of the month.

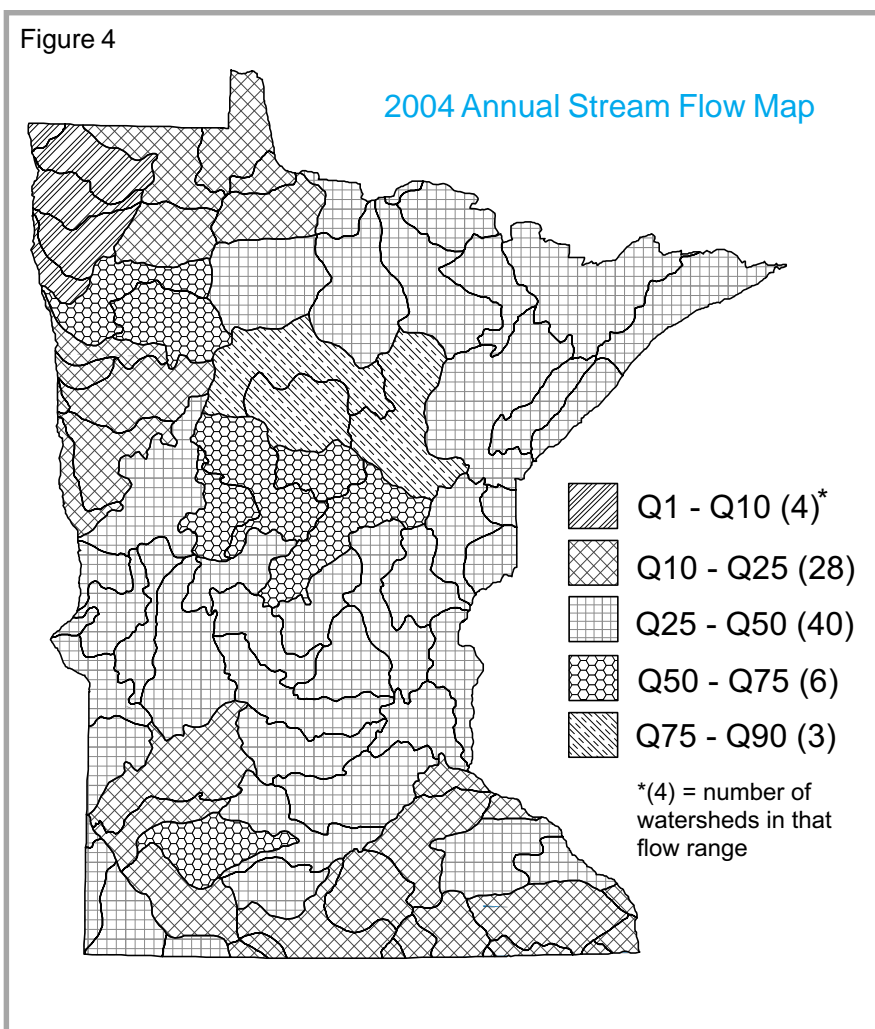
Heavy rains over much of the state in May continued the flooding in the northwest, and moved most of the remainder of the state into the high flow range in early June. As June diminished, stream flows declined. By the end of June, low flow conditions returned to much of the upper Mississippi River and Great Lakes watersheds, while normal to high flow conditions could be found in the southern half of the state.

Normal conditions existed throughout much of the state in July, with an occasional low flow in the north. However, a series of strong thunderstorms in northern Iowa created high flow conditions in the watersheds along the Minnesota-Iowa border well into August. A lack of precipitation for most of August caused stream flows to fall into the protected range in the northern half of the upper Mississippi River

basins and much of the northeast. In early September, weather patterns changed and precipitation occurred over much of the state. Stream flows improved from slightly higher than normal in the early days to high flows statewide by the end of the month.

Figure 4 is the annual stream flow map for Water Year 2004. A high (Q10-Q25) to very high (Q1-10)

flow region existed in the Red River of the North watershed as a result of May and June storms, while a second zone of high flows occurred along the Iowa border due to July storms. Average flows, on the low side of normal (Q50-Q75) to low flows (Q75-Q90), could be found in the upper Mississippi River basin. Flows for the remainder of the state averaged in the normal range.



Hydrographs

Stream hydrographs show the volume of water discharged during a specific time period. Figure 5 shows the location of ten rivers and stream gaging stations where discharge hydrographs have been created.

Figures 6 and 8 show two-year hydrographs for the ten selected sites. In addition to the mean daily discharge, the daily Q25 and Q75 exceedence levels are shown.

Figures 7 and 9 are period of record hydrographs for the same ten sites. The hydrographs show the average annual volume of water discharged during the water year, the annual Q25 and Q75 exceedence values and a 30-year moving average of the annual discharges. The 30-year moving average shows the trend in the volume of water flowing in a stream.

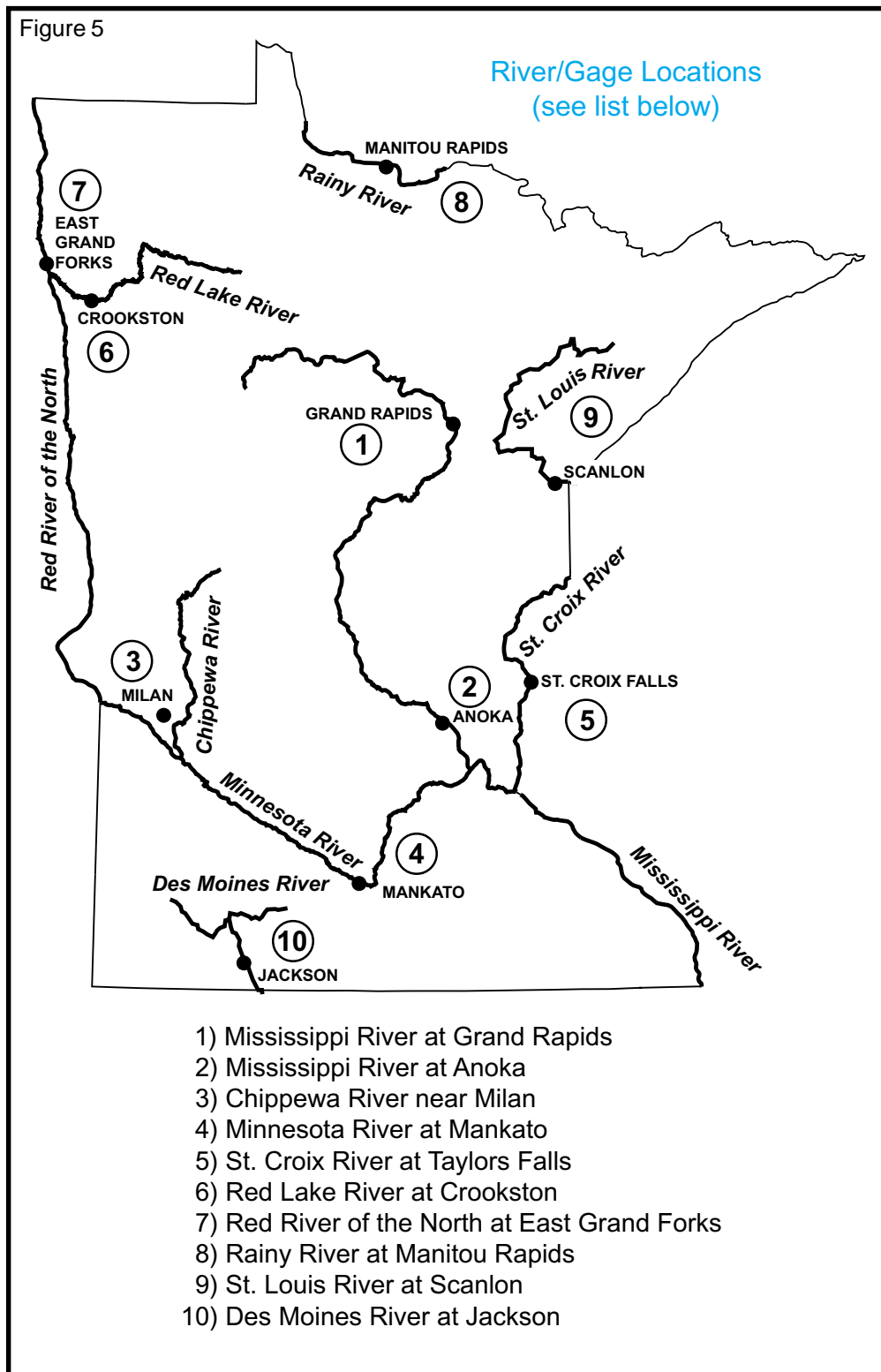
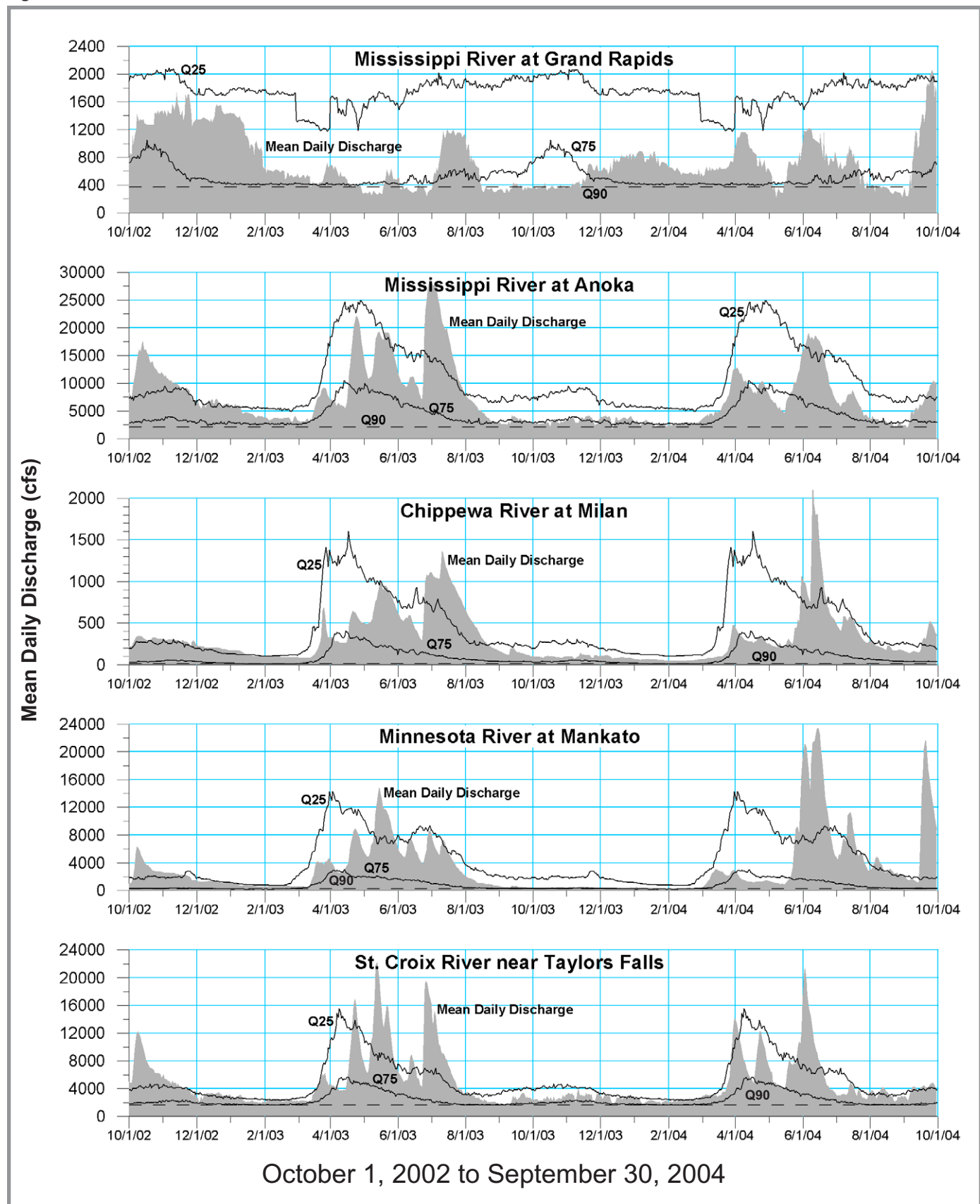


Figure 6



October 1, 2002 to September 30, 2004

Figure 7

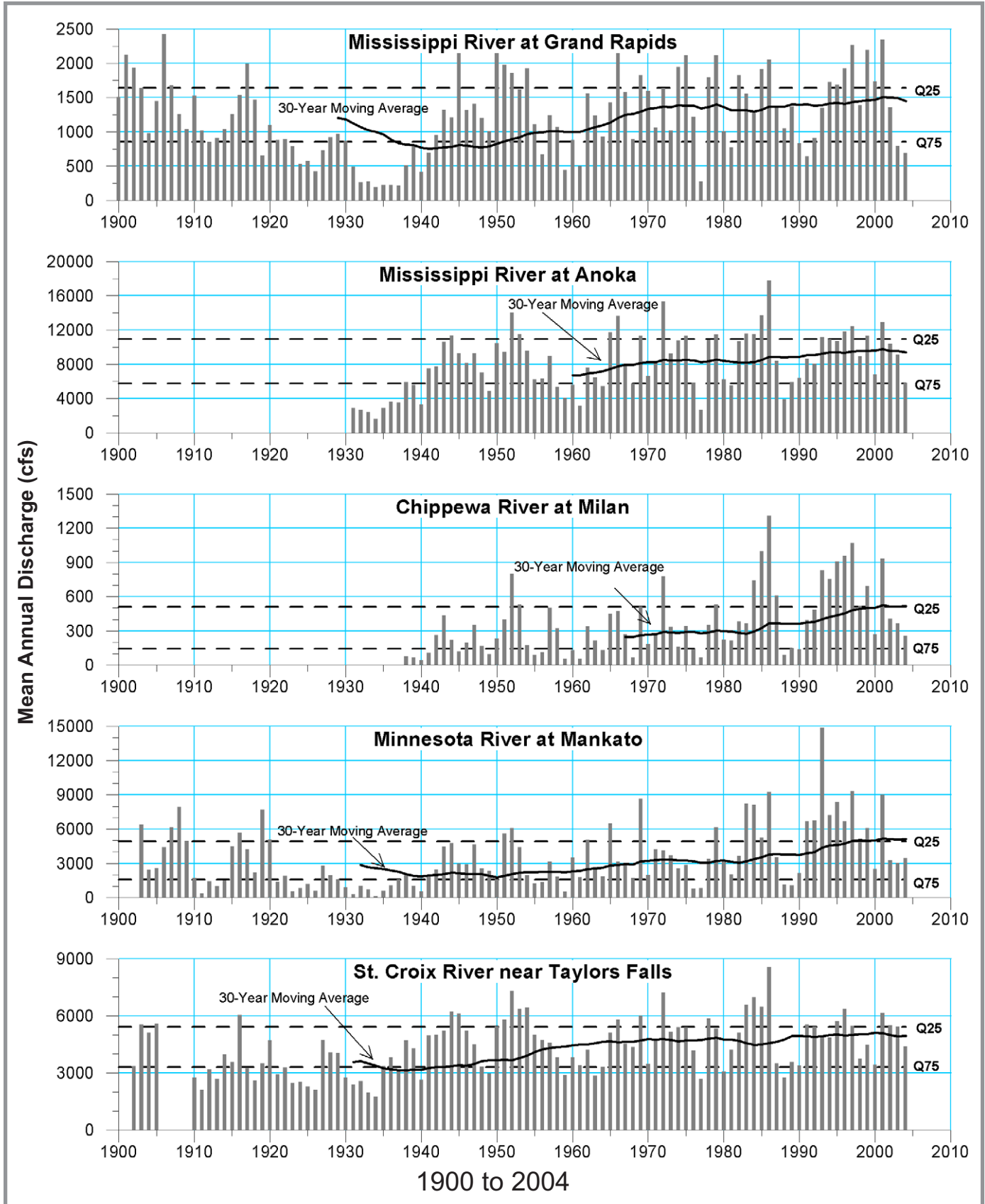


Figure 8

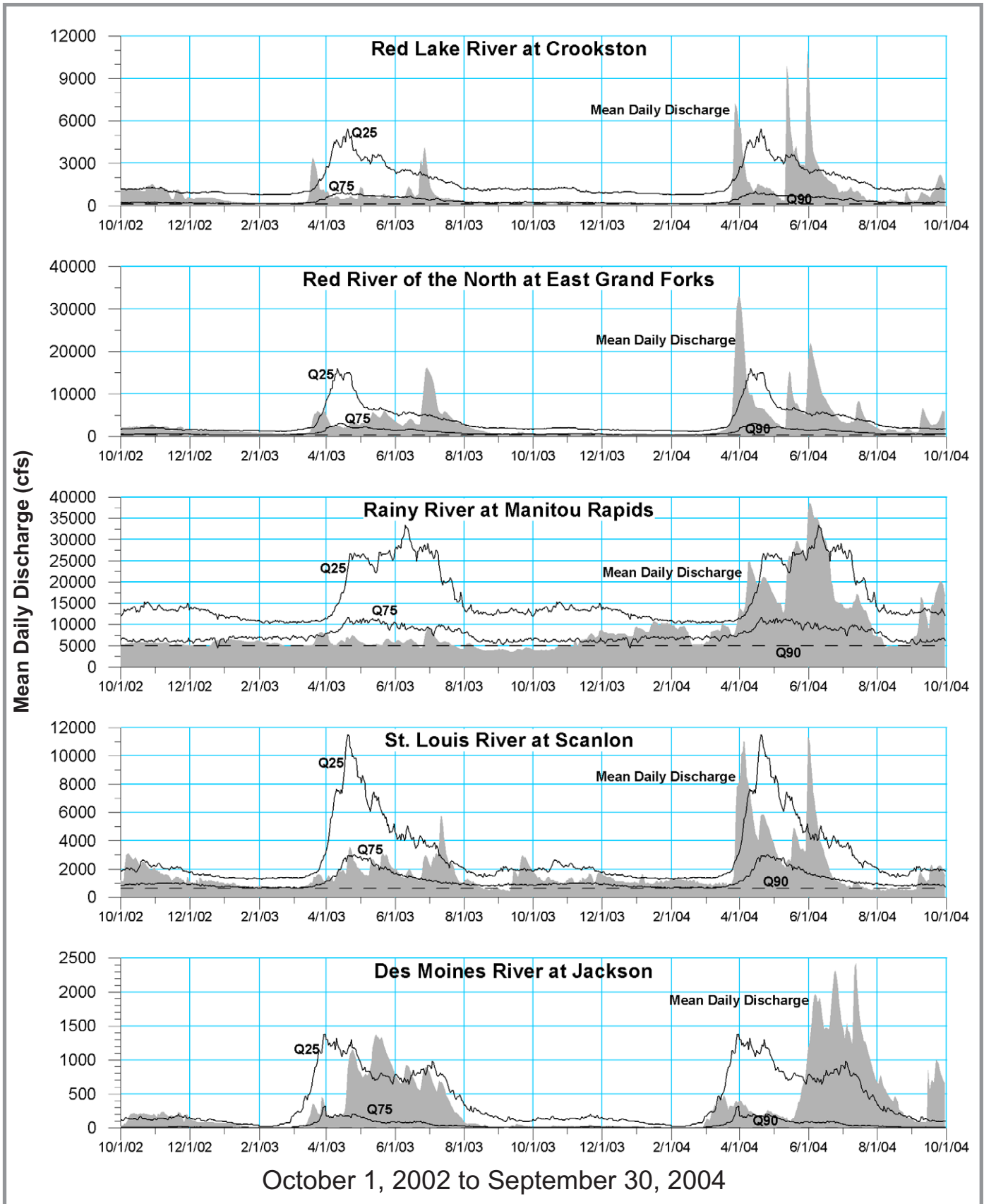
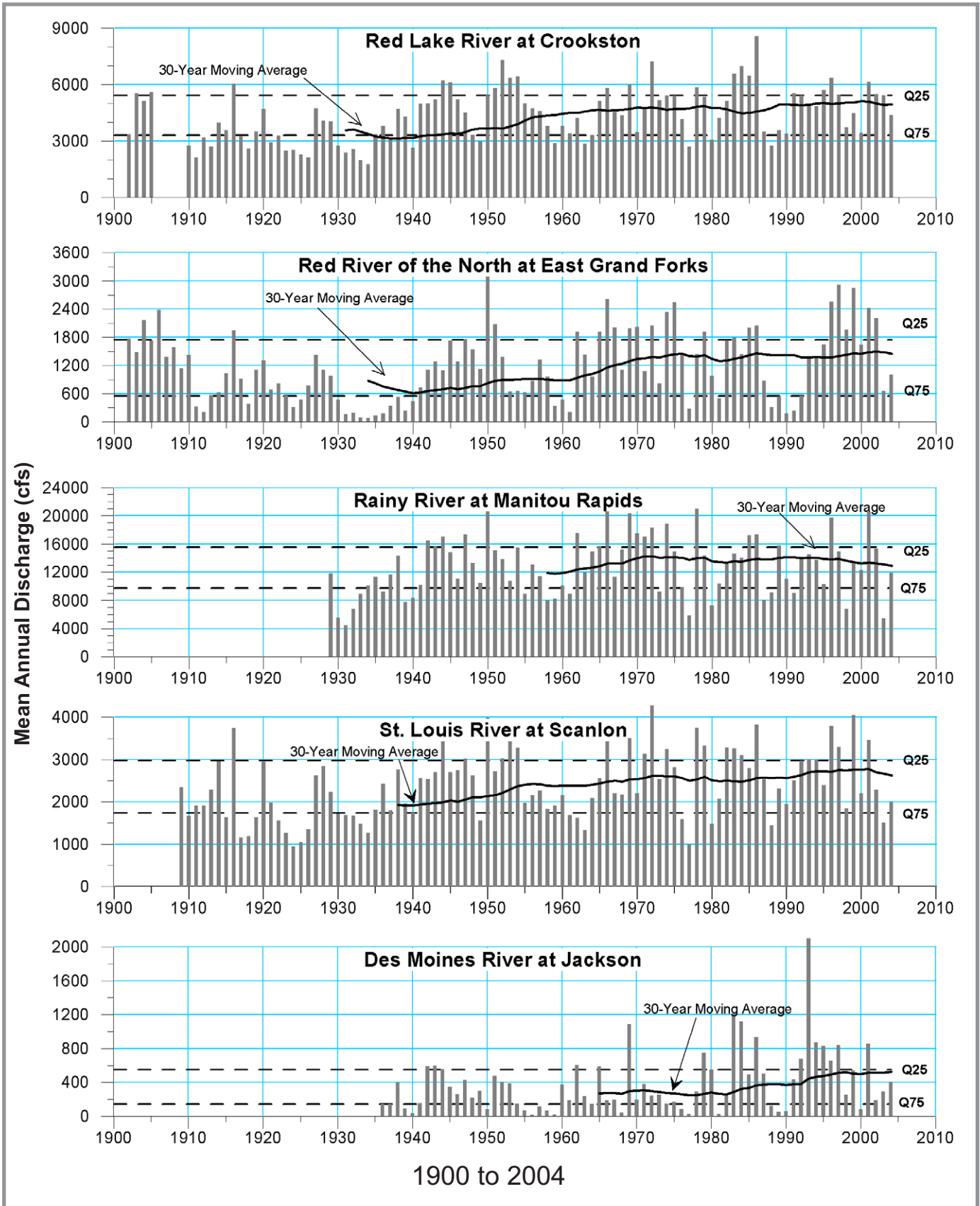


Figure 9



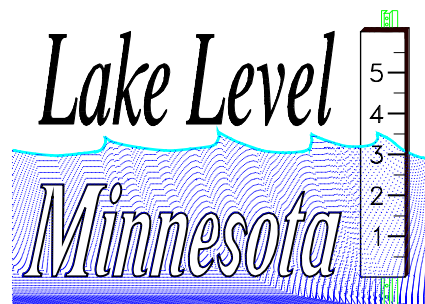
Lake Levels

The water levels of all lakes fluctuate, some more than others. The primary factor that affects water level changes is the quantity and distribution of precipitation (rain and snow). Other factors that contribute to water level changes are outlet conditions, beaver dams, ground water movement and watershed characteristics. Knowing and understanding the history of water level fluctuations can help lake users deal with problems associated with the changing levels.

Historical water level data are useful in calibrating hydrologic and hydraulic computer models. These

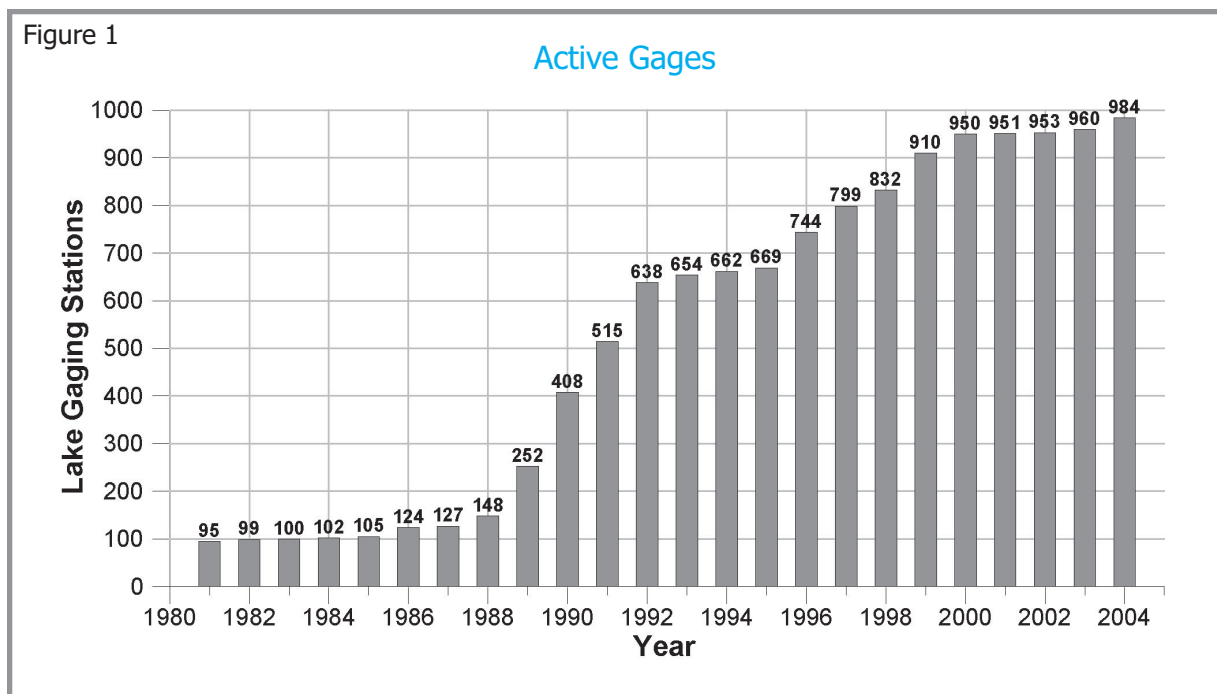
data also help watershed management authorities and other governmental units to prepare local water management plans and to locate building and sewage treatment sites.

The success of monitoring water levels is greatly dependent on citizen volunteers and cooperating organizations who participate in the DNR Waters Lake Level Minnesota (LLM) program. Lake levels were actively monitored at nearly 1000 sites in 2004 by citizen volunteers and cooperative organizations (Figure 1). Volunteer observers usually live on or near a lake, which makes it convenient to obtain



weekly or more frequent readings. There is no cost to the volunteers to be in this program as the gage and installation are provided by DNR Waters. Each year the volunteer receives an updated water level graph and summary sheet that contains the information they provided.

Figure 1



Lake Level Trends

Lake level monitoring has also been accomplished in cooperation with various public and private organizations including:

- Federal (USGS, COE, NRCS)
- State (DNR)
- Counties
- Cities
- Soil & Water Conservation Districts
- Watershed Districts
- Consulting Land Surveyors and Engineers
- Power and Mining Companies

In order to improve geographic coverage, pull together all available data and eliminate possible duplication of efforts, DNR Waters has initiated cooperative programs with these organizations. This component of LLM accounts for approximately 300 lakes.

All lake level readings received are entered into Lakes-DB©, a database program for easy management and access of recorded lake levels and other useful information. This information is now available on the internet (Figure 2).

November 2002 through March 2003 was one of the driest five-month periods in Minnesota's climate history. In response to the lack of precipitation, many lakes throughout the state receded to low water levels. Others were at their all-time recorded low water levels, including many in the north and northeast.

On the heels of this dry spell another three-month dry period, from mid-July through mid-October 2003, intensified across most of central and southern Minnesota. Rainfall totals ranked among the lowest on record in many areas of central, south central and southeastern Minnesota. Lake levels continued to drop significantly across the entire region and many additional lakes experienced their lowest recorded water levels. However, several isolated thunderstorms in late June and early July in west central Minnesota elevated many lakes to their highest recorded water levels, including approximately 30 lakes in the Alexandria and Brainerd areas.

Precipitation increased in 2004 and lake levels rebounded across the state, except in the northeast. Total precipitation for the April through October period exceeded 30 inches across most of southern Minnesota. Contributing to the totals were two extraordinarily wet months, May and September. As a result, much of the state exhibited saturated soils and many lakes, particularly in central and southern locations, returned to more average water levels.

Figure 2

Lake Level Data on the DNR Website

Storing and Retrieving Data

Lake level readings received from volunteers and organizations are entered into Lakes-DB©, a data base program for easy management and access of recorded lake levels and other useful information.

“Lake Finder” is a feature of both the DNR website (www.dnr.state.mn.us) and the DNR Waters website (www.dnr.state.mn.us/waters). Lake Finder provides access to DNR Fisheries lake surveys and lake maps, Pollution Control Agency water quality and clarity data and the Health Department fish consumption advisory.

In 2000, DNR Waters added a new option titled “lake water levels”. A single click on the checkmark below “lake water levels” will display a concise summary of recorded lake levels for the indicated period of record, a lake level graph for the last ten years (if enough data points are available), the ordinary high water (OHW) elevation, datum adjustment and reference benchmark (see sample lake below).

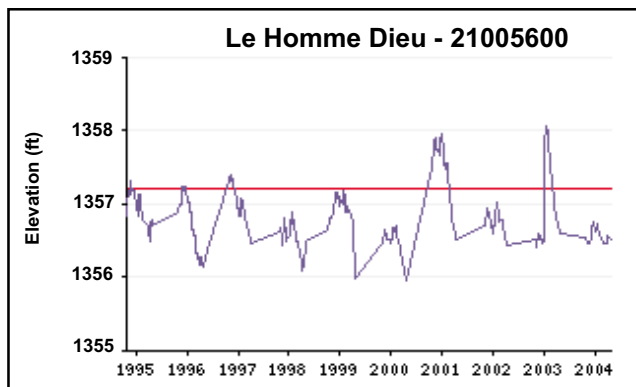
Most of the recorded water levels for each lake are collected by volunteers involved with the Lake Level Minnesota program. DNR Waters presently has water level information (10 or more readings) for approximately 4000 lakes.

Lake Name: Le Homme Dieu

County: Douglas

Water Level Data

Period of record: 05/1/1991 to 10/12/2004
 # of readings: 474
 Highest recorded: 1358.06 ft (07/10/2003)
 Lowest recorded: 1355.78 ft (10/19/1992)
 Recorded range: 2.28 ft
 Average Water Level: 1356.83 ft
 Last reading: 1356.50 ft (10/12/2004)
[OHW](#) elevation: 1357.20 ft
 Datum: 1929 (ft)



Last 10 years of data, click to enlarge.

Download lake level data as: [\[dBase\]](#) [\[ASCII\]](#) (If you have trouble, try right clicking on the appropriate link and choosing the “Save...As” option.)

Benchmarks

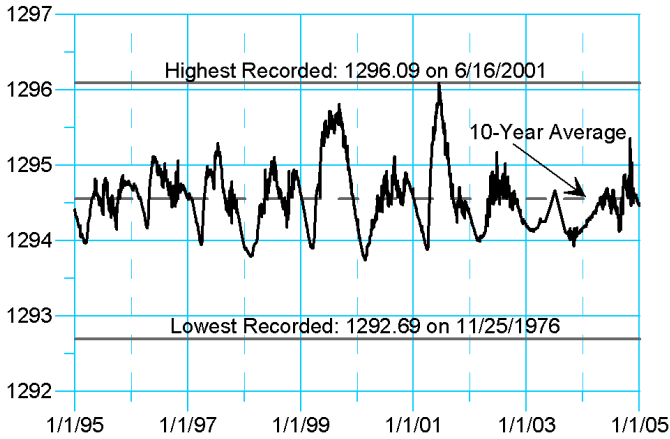
Elevation: 1366.73 ft **Date Set:** 07/09/1985
Datum: 1929 (ft)

Benchmark Location

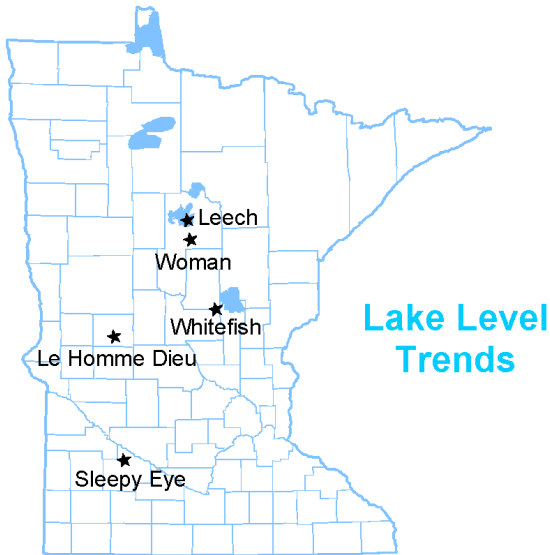
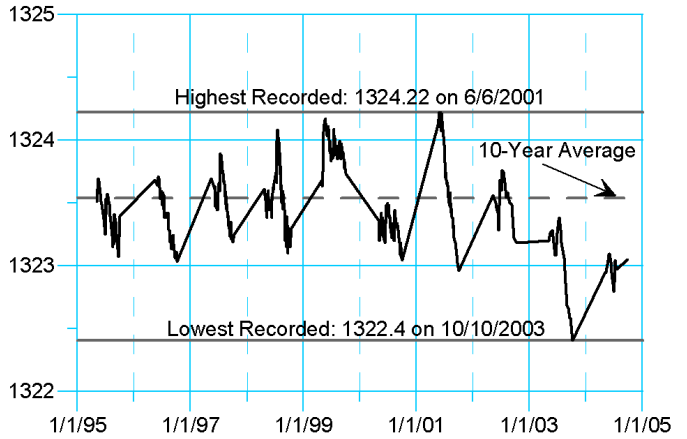
Township: 129 Range: 37 Section: 32

Description: Top of concrete ledge at SE corner of bridge, directly below SW corner of south concrete guardrail (BM + 2.71' to corner of guardrail).

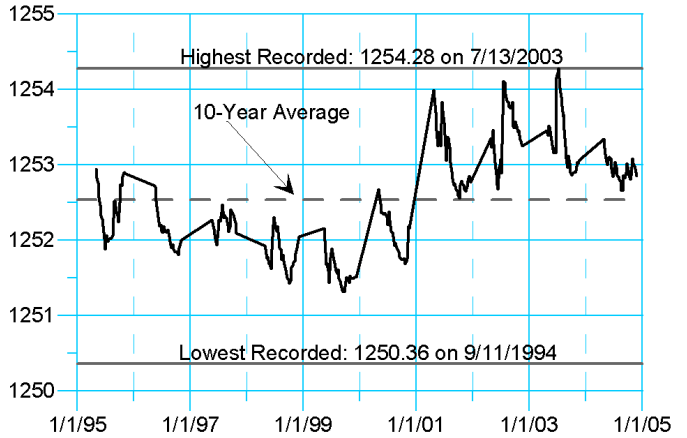
Leech Lake (11-203) Cass County



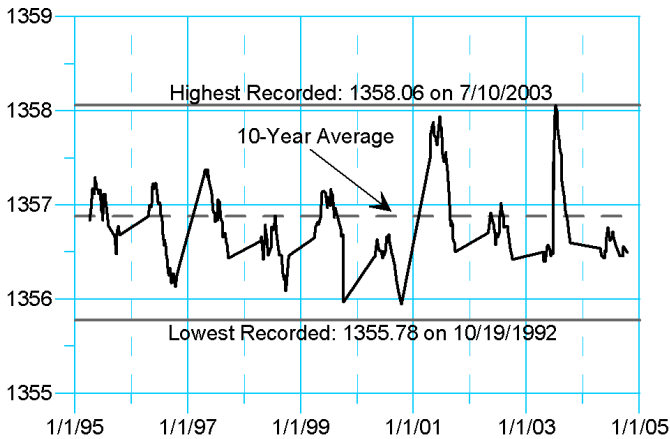
Woman Lake (11-201) Cass County



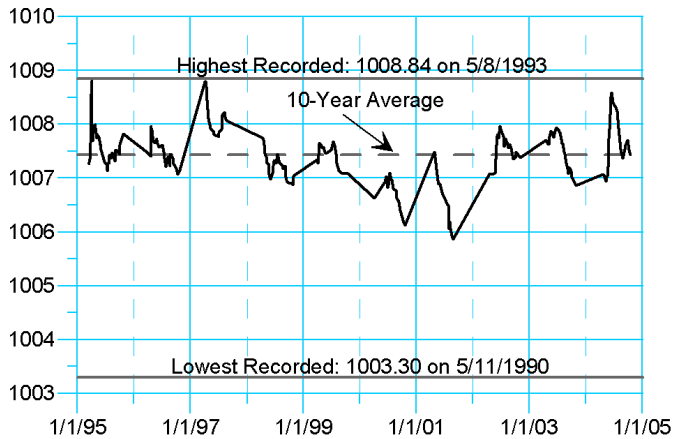
Whitefish Lake (18-1) Crow Wing County



Le Homme Dieu Lake (21-56) Douglas County



Sleepy Eye Lake (8-45) Brown County



Landlocked Basins

A landlocked lake has no regularly-functioning surface outlet channel, a small watershed and typically experiences large, long-term water level fluctuations. The importance of ground water contributions to landlocked lakes can make them a good indicator of local ground water levels and movement.

The graphs on page 29 represent water levels for five landlocked basins that have receded a bit, largely due to the exceptionally dry conditions in 2003.

Annual Lake Level Fluctuation

Minnesota lakes typically fluctuate one to two vertical feet in a given year, but historical fluctuations have been recorded in excess of ten feet. Statewide average fluctuation for Water Year 2003 was 1.42 feet, while average fluctuation during Water Year 2004 was 1.24 feet (averages for the past ten years are shown in Figure 3). The tables on pages 32 to 38 display fluctuations for Water Year 2003, Water Year 2004, an average fluctuation for the indicated period of record and the range between the historical high and low.

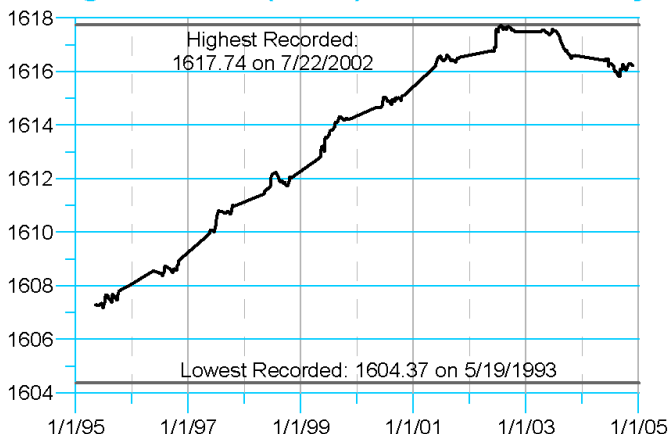
Ten-Year Trends

For many lakes that are presently monitored, reliable information has been collected for more than ten years. A ten-year average is used as a reference mark when comparing water year data to a longer-term average, and is useful in locating trends in a particular basin.

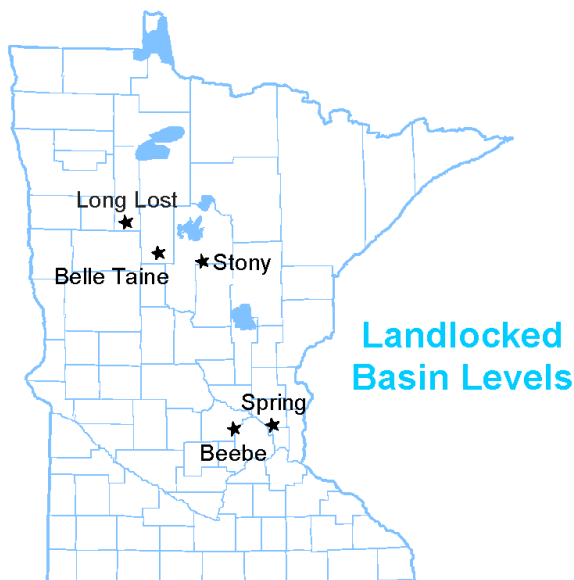
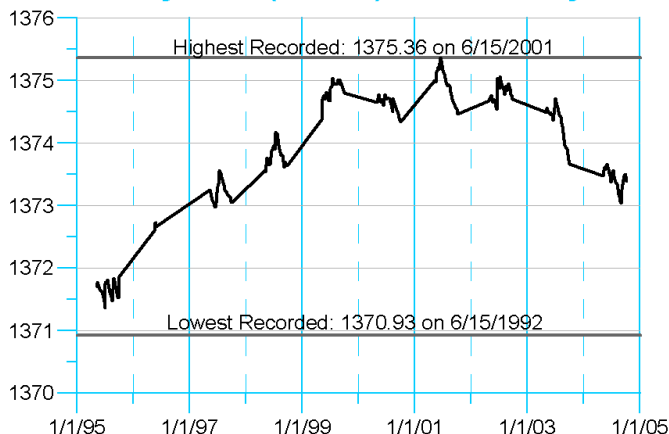
The lakes graphed on pages 30 and 31 show levels generally receding toward (and below) normal in Water Year 2003 in response to below-average precipitation (see Figure 6 on page 6). Many lakes rebounded in Water Year 2004 in response to above-normal precipitation across most of the state (see Figure 12 on page 12).

Water Year	Average Fluctuation Statewide (ft)
1995	1.03
1996	1.24
1997	1.55
1998	1.04
1999	1.24
2000	1.05
2001	1.97
2002	1.33
2003	1.42
2004	1.24

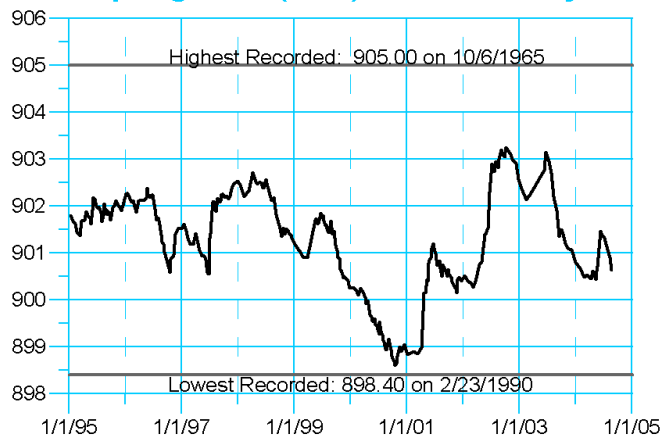
Long Lost Lake (15-68) Clearwater County



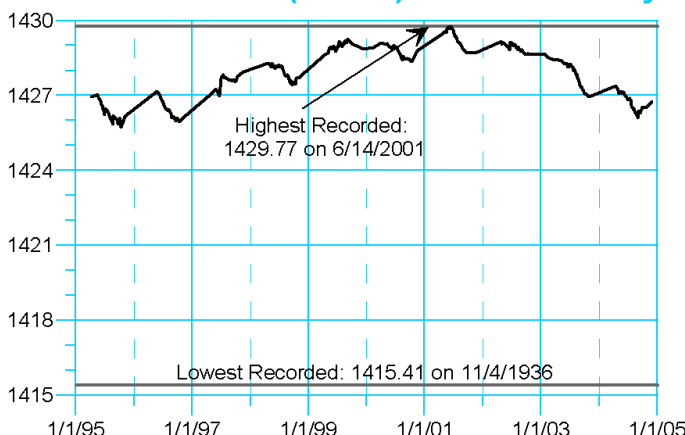
Stony Lake (11-371) Cass County



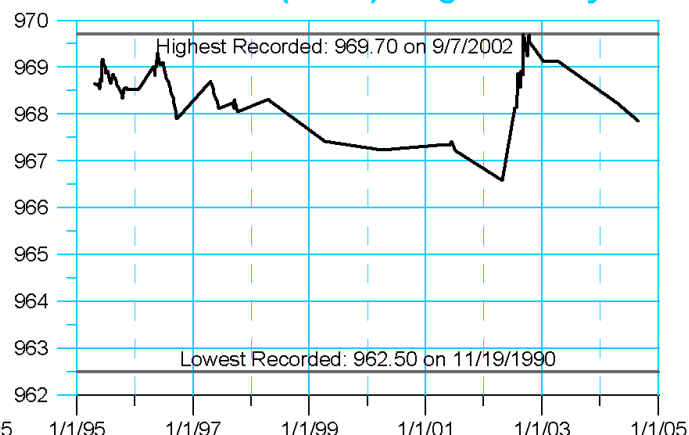
Spring Lake (2-71) Anoka County



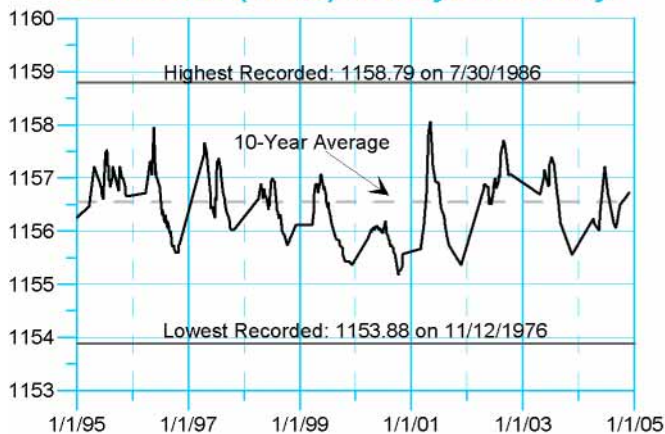
Belle Taine Lake (29-146) Hubbard County



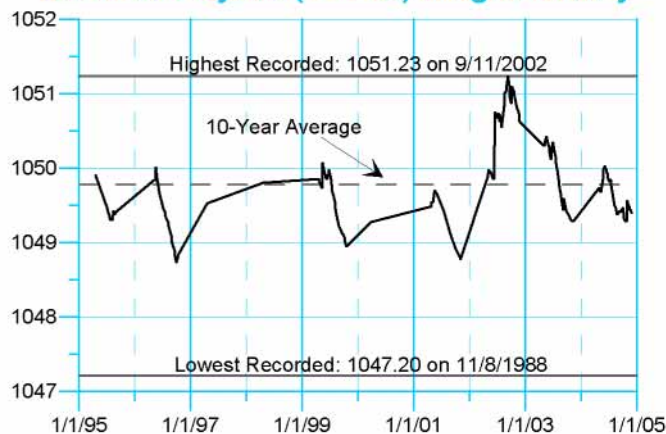
Beebe Lake (86-23) Wright County



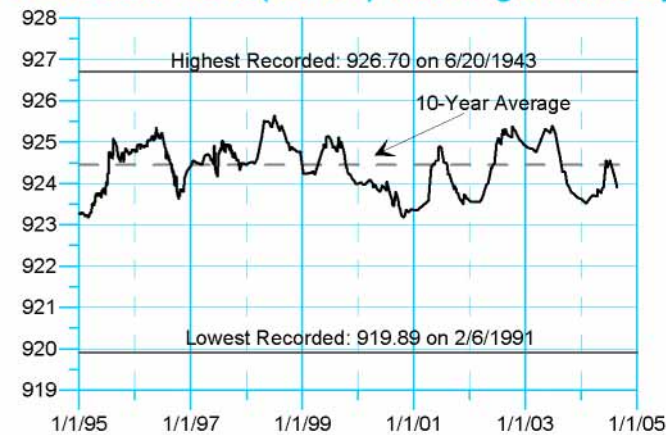
Green Lake (34-79) Kandiyohi County



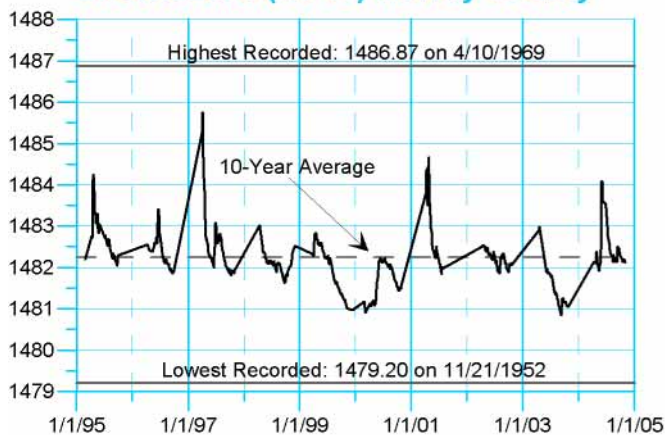
East Lake Sylvia (86-289) Wright County



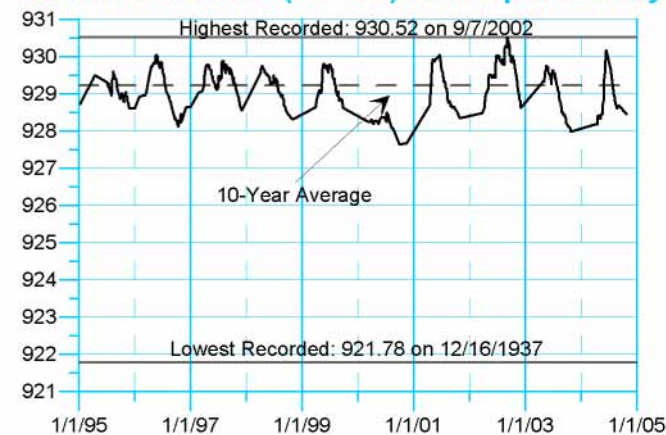
White Bear Lake (82-167) Washington County



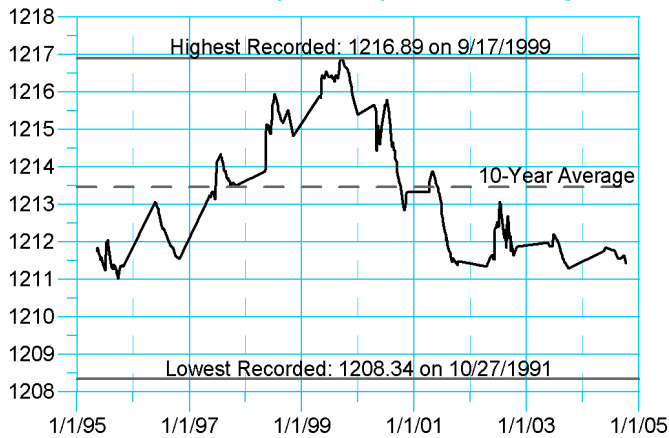
Shetek Lake (51-46) Murray County



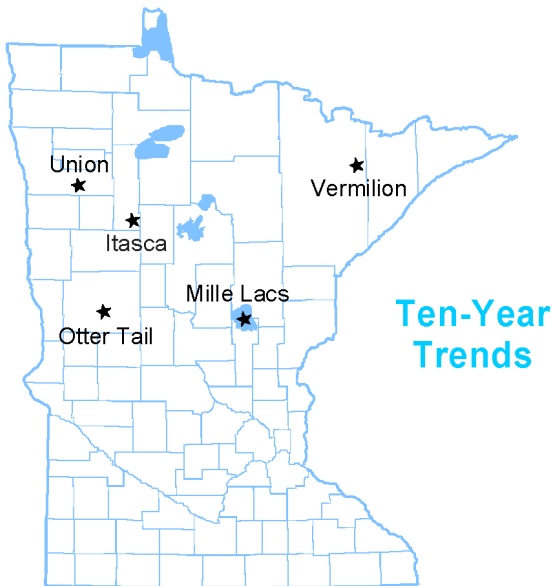
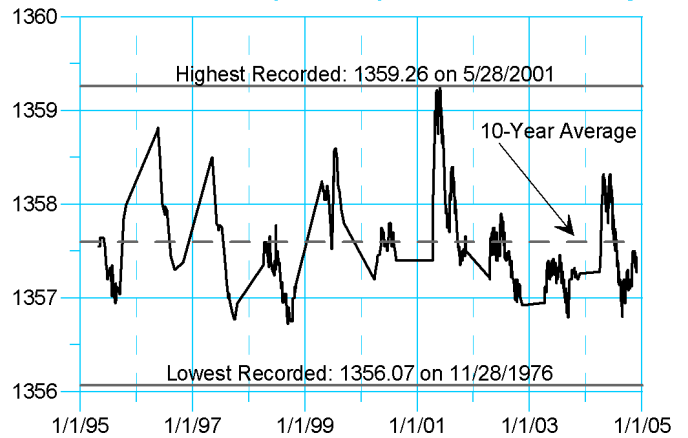
Lake Minnetonka (27-133) Hennepin County



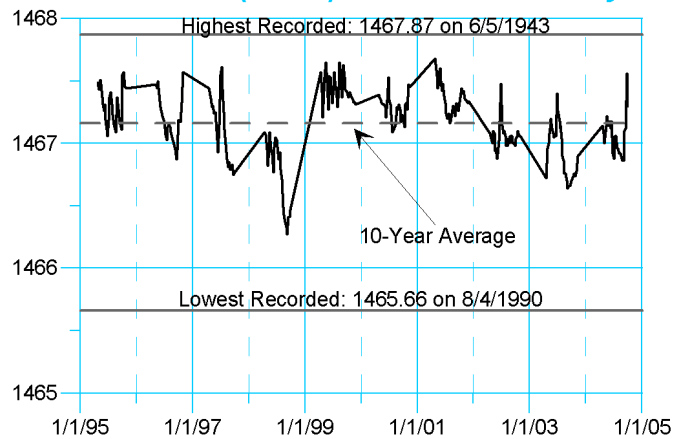
Union Lake (60-217) Polk County



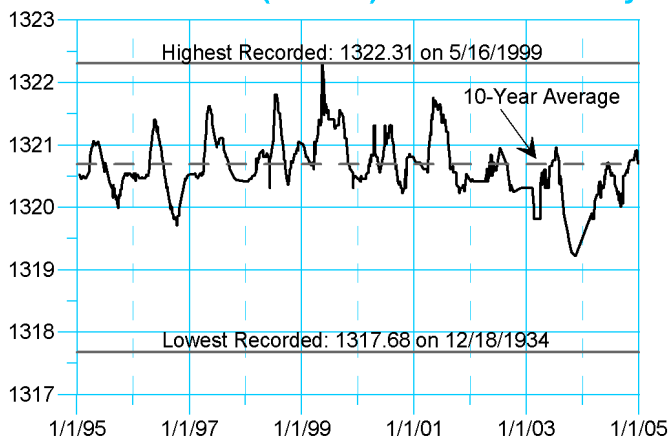
Vermilion Lake (69-378) St. Louis County



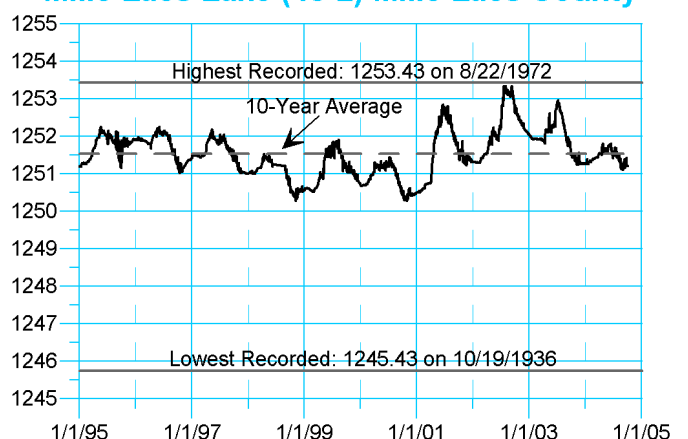
Lake Itasca (15-16) Clearwater County



Otter Tail Lake (56-242) Otter Tail County



Mille Lacs Lake (48-2) Mille Lacs County



Annual Lake Level Fluctuation (feet)

Lake Name	WY03	WY04	WYAv.	#Yrs.	Range	Lake Name	WY03	WY04	WYAv.	#Yrs.	Range
AITKIN COUNTY						<i>(Becker County continued)</i>					
Blackface (1-45)	1.03	0.59	0.76	(13 yrs.)	1.53	Melissa (3-475)	0.89	1.25	1.07	(29 yrs.)	6.30
Cedar (1-209)	1.26	0.94	1.66	(53 yrs.)	4.02	Middle Cormorant (3-602)	0.98	0.84	0.77	(9 yrs.)	4.27
Clear (1-93)	0.73	0.49	0.85	(34 yrs.)	4.39	Muskrat (3-360)	1.03	1.06	0.90	(31 yrs.)	2.81
Dam (1-96)	1.66	1.26	1.30	(21 yrs.)	2.77	Pickerel (3-287)	1.16	0.87	0.98	(13 yrs.)	5.83
Davis (1-71)	2.92	1.45	2.76	(7 yrs.)	4.53	Round (3-155)	1.16	1.11	1.23	(22 yrs.)	2.97
Elm Island (1-123)	2.10	0.59	1.60	(11 yrs.)	2.84	Sallie (3-359)	0.96	1.63	1.25	(36 yrs.)	5.58
Farm Island (1-159)	1.10	0.58	1.08	(27 yrs.)	3.64	Straight (3-10)	0.25	0.20	0.47	(19 yrs.)	6.16
Fleming (1-105)	1.06	0.75	0.82	(14 yrs.)	1.93	Strawberry (3-323)	0.99	0.77	0.91	(6 yrs.)	3.96
French (1-104)	0.94	1.30	1.32	(7 yrs.)	3.52	Talac (3-619)	0.95	0.95	1.22	(12 yrs.)	9.72
Hanging Kettle (1-170)	1.76	0.50	1.49	(19 yrs.)	3.77	Toad (3-107)	0.80	1.14	1.18	(24 yrs.)	5.20
Lone (1-125)	0.73	0.52	0.72	(14 yrs.)	4.65	Turtle (3-657)	1.36	1.34	1.36	(8 yrs.)	6.53
Long (1-101)	0.64	0.32	0.54	(12 yrs.)	1.40	Two Inlets (3-17)	1.15	0.61	1.19	(23 yrs.)	3.91
Minnewawa (1-33)	0.60	0.54	0.83	(22 yrs.)	1.82	Upper Cormorant (3-588)	0.93	0.86	1.04	(29 yrs.)	3.89
Rabbit (1-91)	0.65	0.70	0.91	(13 yrs.)	1.72	White Earth (3-328)	1.06	1.42	1.06	(23 yrs.)	3.34
Rat (1-77)	1.27	1.22	1.11	(12 yrs.)	4.29	BELTRAMI COUNTY					
Rock (1-72)	0.87	0.64	0.82	(11 yrs.)	2.05	Bemidji (4-130)	1.24	1.24	1.80	(21 yrs.)	4.25
Round (1-23)	0.56	0.46	0.63	(12 yrs.)	1.43	Big (4-49)	0.70	0.30	0.93	(7 yrs.)	1.91
Sugar (1-87)	0.76	0.49	0.72	(34 yrs.)	2.65	Blackduck (4-69)	0.54	0.90	0.65	(7 yrs.)	3.58
Waukenabo (1-136)	0.50	0.78	1.34	(23 yrs.)	4.34	Cass (4-30)	1.30	1.15	1.90	(58 yrs.)	4.83
Wilkins (1-102)	0.68	0.75	0.83	(8 yrs.)	2.51	Long (4-76)	0.63	0.80	0.74	(18 yrs.)	2.85
ANOKA COUNTY						Movil (4-152)	0.56	0.60	0.74	(20 yrs.)	1.91
Baldwin (2-13)	4.62	4.11	3.21	(30 yrs.)	6.86	Pimushe (4-32)	0.65	1.35	1.63	(8 yrs.)	3.22
Bunker (2-90)	1.58	0.79	1.81	(19 yrs.)	7.87	Stump (4-130)	1.26	1.13	2.16	(21 yrs.)	5.70
Coon (2-42)	1.05	1.11	1.11	(36 yrs.)	4.84	Turtle River (4-111)	1.22	1.02	1.76	(32 yrs.)	5.06
Crooked (2-84)	1.17	0.76	0.98	(20 yrs.)	3.40	Wolf (4-79)	2.36	1.81	2.31	(6 yrs.)	4.04
Fawn (2-35)	0.94	0.70	1.03	(16 yrs.)	4.64	BIG STONE COUNTY					
George (2-91)	0.82	1.27	1.21	(19 yrs.)	6.14	Big Stone (6-152)	1.60	1.35	2.40	(35 yrs.)	10.83
Golden (2-45)	1.04	1.09	0.91	(16 yrs.)	2.44	East Toqua (6-138)	1.04	1.15	1.44	(14 yrs.)	5.01
Ham (2-53)	1.37	0.75	1.24	(20 yrs.)	4.78	BLUE EARTH COUNTY					
Howard (2-16)	1.59	1.52	1.10	(15 yrs.)	2.46	Duck (7-53)	0.94	1.86	1.21	(14 yrs.)	3.21
Itasca (2-110)	1.09	0.72	1.62	(15 yrs.)	8.25	Madison (7-44)	1.10	2.31	1.68	(47 yrs.)	15.98
Laddie (2-72)	1.54	1.20	1.21	(13 yrs.)	4.19	BROWN COUNTY					
Linwood (2-26)	1.09	0.88	0.75	(28 yrs.)	2.29	Hanska (8-26)	1.30	1.61	1.99	(12 yrs.)	5.79
Martin (2-34)	1.50	1.36	1.22	(26 yrs.)	4.08	Sleepy Eye (8-45)	0.86	1.73	1.44	(17 yrs.)	5.54
Moore (2-75)	1.29	1.34	1.01	(16 yrs.)	2.06	Somsen (8-18)	1.64	2.80	3.21	(14 yrs.)	8.93
Netta (2-52)	1.25	0.79	1.25	(21 yrs.)	5.56	CARLTON COUNTY					
Otter (2-3)	1.04	1.54	1.62	(82 yrs.)	6.72	Bear (9-34)	1.54	1.19	1.26	(7 yrs.)	2.15
Pet (2-36)	0.79	0.80	1.12	(9 yrs.)	3.41	Big (9-32)	0.71	0.44	0.65	(12 yrs.)	1.99
Reshanau (2-9)	1.73	2.43	2.01	(15 yrs.)	4.54	Chub (9-8)	1.08	0.60	0.93	(18 yrs.)	3.94
Rice (2-8)	4.62	4.11	3.50	(16 yrs.)	6.64	Eagle (9-57)	0.64	0.52	0.72	(12 yrs.)	1.88
Rogers (2-104)	1.20	0.84	1.53	(16 yrs.)	5.35	Eddy (9-39)	1.95	2.05	2.68	(11 yrs.)	4.55
Rondeau (2-15)	1.38	1.22	1.04	(13 yrs.)	1.94	Hay (9-10)	0.60	0.24	0.90	(7 yrs.)	3.56
Round (2-89)	1.31	0.74	1.24	(20 yrs.)	5.93	Park (9-29)	0.80	0.58	0.74	(14 yrs.)	2.02
Sand Shore (2-102)	1.02	0.94	1.03	(13 yrs.)	2.41	Torch Light (9-25)	0.86	0.73	0.91	(12 yrs.)	2.16
Sandy (2-80)	1.45	0.73	1.46	(13 yrs.)	3.44	CARVER COUNTY					
Spring (2-71)	1.90	1.07	1.63	(50 yrs.)	6.60	Assumption (10-63)	1.22	1.61	1.16	(7 yrs.)	1.99
BECKER COUNTY						Bavaria (10-19)	1.37	1.40	1.21	(7 yrs.)	2.35
Bad Medicine (3-85)	1.05	0.70	0.90	(18 yrs.)	6.99	Benton (10-69)	1.20	1.90	1.48	(7 yrs.)	2.31
Big Cormorant (3-576)	0.95	1.60	1.09	(39 yrs.)	10.30	Berliner (10-103)	0.42	0.98	1.28	(14 yrs.)	3.95
Big Sugar Bush (3-304)	1.25	0.50	0.99	(10 yrs.)	4.76	Church (10-46)	1.22	2.22	1.57	(7 yrs.)	3.21
Cotton (3-286)	0.92	0.74	0.97	(38 yrs.)	5.15	Eagle (10-121)	1.11	1.08	1.25	(7 yrs.)	2.47
Detroit (3-381)	1.24	0.94	0.95	(26 yrs.)	2.44	Firemen's Clayhole (10-226)	0.78	1.07	0.81	(6 yrs.)	1.58
Elbow (3-159)	0.73	1.19	1.13	(13 yrs.)	3.73	Goose (10-89)	1.34	1.76	1.49	(7 yrs.)	3.11
Eunice (3-503)	1.02	0.99	0.64	(14 yrs.)	1.55	Hazeltine (10-14)	1.37	2.10	1.44	(6 yrs.)	3.09
Fox (3-358)	0.61	0.46	0.36	(11 yrs.)	0.91	Hydes (10-88)	1.22	1.60	1.06	(11 yrs.)	4.31
Height of Land (3-195)	1.82	1.36	1.52	(47 yrs.)	4.45	Kelser's Pond (10-47)	1.35	2.12	1.27	(7 yrs.)	2.45
Ida (3-582)	0.94	0.71	0.94	(17 yrs.)	4.50	Lotus (10-6)	1.28	2.01	1.38	(34 yrs.)	3.90
Island (3-153)	1.02	0.84	0.66	(9 yrs.)	1.74	Maria (10-58)	0.40	0.64	1.03	(7 yrs.)	2.70
Juggler (3-136)	1.04	0.78	0.81	(12 yrs.)	5.62						
Little Bemidji (3-234)	0.44	1.03	0.90	(9 yrs.)	2.74						
Little Cormorant (3-506)	1.10	0.78	0.85	(6 yrs.)	3.81						
Little Floyd (3-386)	0.84	1.05	1.01	(22 yrs.)	2.16						
Little Toad (3-189)	0.64	0.30	0.62	(11 yrs.)	1.81						
Long (3-383)	0.74	0.60	0.52	(18 yrs.)	1.64						

Annual Lake Level Fluctuation (feet)

Lake Name	WY03	WY04	WYAv.	#Yrs.	Range	Lake Name	WY03	WY04	WYAv.	#Yrs.	Range
<i>(Carver County continued)</i>						COOK COUNTY					
Meuwissen (10-70)	1.06	1.98	1.68	(7 yrs.)	2.66	Bearskin (16-228)	0.84	1.34	1.12	(6 yrs.)	2.01
Miller (10-29)	1.95	2.81	2.24	(7 yrs.)	3.61	Clearwater (16-139)	0.79	1.12	1.06	(10 yrs.)	1.57
Minnewashta (10-9)	1.28	2.05	1.37	(19 yrs.)	3.46	Flour (16-147)	0.26	0.68	0.62	(15 yrs.)	1.88
Oak (10-93)	1.68	1.34	1.43	(10 yrs.)	3.85	Gunflint (16-356)	1.00	1.96	1.72	(13 yrs.)	3.43
Parley (10-42)	1.87	2.80	1.63	(21 yrs.)	4.87	Poplar (16-239)	0.75	1.20	1.10	(14 yrs.)	3.70
Patterson (10-86)	1.28	1.63	1.36	(15 yrs.)	3.40	Saganaga (16-633)	1.18	2.80	1.88	(14 yrs.)	5.26
Piersons (10-53)	1.40	2.00	1.38	(7 yrs.)	2.02	COTTONWOOD COUNTY					
Reitz (10-52)	2.34	2.52	2.05	(7 yrs.)	3.42	Cottonwood (17-22)	0.77	2.69	2.14	(17 yrs.)	9.90
Riley (10-2)	1.32	2.27	1.47	(34 yrs.)	4.74	Mountain (17-3)	0.70	1.98	1.52	(21 yrs.)	5.00
St. Joe (10-11)	1.19	1.28	1.13	(7 yrs.)	1.65	CROW WING COUNTY					
Stone (10-56)	0.94	1.22	1.17	(6 yrs.)	3.16	Bass (18-256)	0.94	0.71	0.69	(16 yrs.)	3.21
Swede (10-95)	1.29	1.09	1.19	(9 yrs.)	6.06	Bonnie (18-259)	0.40	0.67	0.63	(15 yrs.)	3.10
Tamarack (10-10)	1.42	1.50	1.41	(7 yrs.)	3.36	Clark (18-374)	0.72	0.36	0.78	(16 yrs.)	1.73
Tiger (10-108)	1.42	1.58	1.26	(7 yrs.)	2.29	Crooked (18-41)	0.96	0.60	0.86	(16 yrs.)	2.39
Turbid (10-51)	1.48	2.36	1.31	(6 yrs.)	2.36	Crow Wing (18-155)	1.64	0.78	1.38	(13 yrs.)	3.85
Unnamed (Grace 10-218)	1.08	1.32	0.93	(6 yrs.)	1.49	East Fox (18-298)	0.58	0.44	0.57	(24 yrs.)	2.32
Virginia (10-15)	1.50	1.70	1.39	(7 yrs.)	2.50	Edna (18-396)	0.92	0.52	0.78	(7 yrs.)	1.90
Waconia (10-59)	1.31	2.23	1.23	(36 yrs.)	5.90	Edward (18-305)	0.90	0.97	0.89	(37 yrs.)	7.18
Wassermann (10-48)	1.82	3.01	1.87	(7 yrs.)	8.12	Emily (18-203)	0.80	0.56	1.21	(37 yrs.)	3.39
Winkler (10-66)	2.09	2.16	2.12	(7 yrs.)	4.03	Garden (18-329)	0.67	1.08	0.55	(16 yrs.)	1.36
Zumbra-Sunny (10-41)	1.63	1.98	1.96	(20 yrs.)	7.28	Gilbert (18-320)	1.34	1.30	1.20	(15 yrs.)	4.71
CASS COUNTY						Gladstone (18-338)	0.74	0.64	0.65	(16 yrs.)	1.23
Ada (11-250)	1.14	0.60	0.84	(15 yrs.)	2.87	Goodrich (18-226)	0.67	0.61	0.55	(12 yrs.)	1.30
Agate (11-216)	0.44	0.94	0.76	(14 yrs.)	3.62	Grave (18-110)	1.58	0.38	1.08	(27 yrs.)	3.54
Barnum (11-281)	0.89	0.44	0.67	(11 yrs.)	2.12	Hamlet (18-70)	0.84	0.60	1.03	(41 yrs.)	6.70
Bass (11-69)	0.76	0.46	0.68	(9 yrs.)	2.46	Horseshoe (18-251)	1.04	0.69	0.72	(16 yrs.)	2.72
Big Rice (11-73)	1.70	1.80	2.19	(37 yrs.)	5.23	Hubert (18-375)	0.96	0.62	0.96	(24 yrs.)	3.56
Birch (11-412)	0.96	0.53	0.92	(14 yrs.)	2.18	Island (18-183)	0.81	1.43	1.47	(16 yrs.)	2.98
Blackwater (11-274)	0.50	0.83	0.55	(10 yrs.)	3.93	Little Hubert (18-340)	1.94	1.62	1.05	(16 yrs.)	3.64
Child (11-263)	1.12	0.62	0.95	(15 yrs.)	1.98	Little Pelican (18-351)	0.86	0.36	0.68	(16 yrs.)	1.94
Five Point (11-351)	0.08	0.10	0.29	(11 yrs.)	1.09	Lougee (18-342)	0.66	0.88	0.74	(16 yrs.)	2.49
Hand (11-242)	0.91	0.68	0.84	(21 yrs.)	4.90	Lower Mission (18-243)	0.76	0.53	0.68	(28 yrs.)	2.20
Hay (11-199)	0.66	0.84	0.84	(14 yrs.)	3.52	Markee (18-343)	0.62	0.62	0.98	(9 yrs.)	2.42
Inguadona (11-120)	0.93	1.50	1.39	(11 yrs.)	3.10	Mary (18-185)	0.80	0.41	1.27	(27 yrs.)	3.16
Island (11-257)	0.52	0.70	0.58	(6 yrs.)	1.41	Mollie (18-335)	0.88	0.79	0.78	(16 yrs.)	3.27
Laura (11-104)	0.69	0.88	0.74	(19 yrs.)	2.23	North Long (18-372)	0.84	0.58	0.90	(34 yrs.)	2.88
Little Boy (11-167)	0.60	1.02	1.07	(12 yrs.)	2.50	O'Brien (18-227)	0.58	0.50	0.43	(12 yrs.)	1.79
Long (11-142)	0.87	0.16	0.88	(14 yrs.)	5.16	Ossawinamakee (18-352)	0.56	0.62	0.76	(21 yrs.)	1.82
Lower Trelipe (11-129)	0.70	0.67	1.05	(25 yrs.)	4.63	Pelican (18-308)	0.84	0.46	0.85	(48 yrs.)	4.56
Norway (11-307)	0.24	0.30	0.44	(8 yrs.)	0.94	Perch (18-304)	0.91	1.05	0.76	(16 yrs.)	2.90
Paquet (11-381)	1.98	0.18	1.04	(12 yrs.)	2.32	Portage (18-50)	0.88	0.58	0.94	(14 yrs.)	3.11
Pine Mountain (11-411)	0.94	0.74	1.10	(13 yrs.)	2.38	Rogers (18-184)	1.10	0.45	0.82	(17 yrs.)	2.30
Pleasant (11-383)	0.83	0.43	0.71	(8 yrs.)	2.65	Ross (18-165)	0.83	0.59	1.36	(21 yrs.)	3.05
Ponto (11-234)	1.16	0.53	0.79	(6 yrs.)	7.62	Ruth (18-212)	1.09	0.82	0.86	(38 yrs.)	6.31
Portage (11-476)	0.99	0.55	0.92	(14 yrs.)	4.62	Shaffer (18-348)	1.03	1.07	0.78	(17 yrs.)	3.28
Stony (11-371)	0.98	0.63	0.61	(13 yrs.)	4.43	Sorenson (18-323)	0.92	0.73	0.94	(16 yrs.)	3.17
Ten Mile (11-413)	0.99	0.90	0.79	(30 yrs.)	2.74	South Long (18-136)	1.68	1.02	1.19	(39 yrs.)	3.24
Woman (11-201)	0.80	0.69	0.84	(15 yrs.)	1.82	Stevens (18-325)	0.90	0.60	0.83	(8 yrs.)	2.00
CHISAGO COUNTY						Upper South Long (18-96)	1.84	0.73	1.20	(35 yrs.)	4.13
Comfort (13-53)	1.92	1.60	1.22	(31 yrs.)	3.52	Whitefish (18-1)	1.38	0.68	1.26	(13 yrs.)	3.92
Ellen (13-47)	0.92	0.60	0.85	(8 yrs.)	2.02	Young (18-252)	0.72	0.77	0.79	(16 yrs.)	2.74
Goose (13-83)	2.70	2.98	1.83	(17 yrs.)	3.70	DAKOTA COUNTY					
Green (13-41)	0.53	0.46	1.03	(27 yrs.)	9.10	Byllesby (19-6)	4.16	4.78	5.21	(24 yrs.)	28.20
Kroon (13-13)	0.86	1.08	1.06	(9 yrs.)	2.63	Marion (19-26)	2.20	0.64	2.08	(46 yrs.)	13.22
North Center (13-32)	1.66	1.38	1.65	(32 yrs.)	7.26	Orchard (19-31)	1.10	0.89	0.84	(13 yrs.)	1.69
North Lindstrom (13-35)	1.58	1.34	1.75	(28 yrs.)	11.42	Sunfish (19-50)	1.14	0.80	1.03	(14 yrs.)	3.42
Rush (13-69)	1.73	1.91	1.44	(38 yrs.)	3.28	Wood Park (19-24)	1.00	1.60	1.10	(7 yrs.)	1.83
South Center (13-27)	1.66	1.38	1.64	(32 yrs.)	7.26	DOUGLAS COUNTY					
South Lindstrom (13-28)	1.52	1.24	1.70	(42 yrs.)	15.59	Aaron (21-242)	1.16	0.52	0.84	(10 yrs.)	2.60
Sunrise (13-31)	1.05	0.50	0.99	(17 yrs.)	4.00	Andrew (21-85)	2.06	0.48	1.02	(13 yrs.)	4.37
Wallmark (13-29)	0.94	0.94	0.90	(9 yrs.)	2.19	Burgen (21-49)	2.06	0.70	0.92	(12 yrs.)	3.38
CLEARWATER COUNTY						Chippewa (21-145)	1.37	0.96	1.23	(21 yrs.)	3.81
Itasca (15-16)	0.76	0.82	0.71	(37 yrs.)	2.21	Devils (21-213)	0.72	0.62	0.94	(9 yrs.)	2.77
Long Lost (15-68)	0.84	0.86	1.33	(13 yrs.)	13.37	Geneva (21-52)	2.04	0.44	1.07	(11 yrs.)	2.79
Upper Rice (15-59)	0.66	2.26	1.47	(8 yrs.)	3.66						
Upper Rice (HW) (15-59)	2.90	0.74	1.28	(7 yrs.)	4.10						

Annual Lake Level Fluctuation (feet)

Lake Name	WY03	WY04	WYAv.	#Yrs.	Range	Lake Name	WY03	WY04	WYAv.	#Yrs.	Range
<i>(Douglas County continued)</i>						<i>(Hubbard County continued)</i>					
Ida (21-123)	1.04	0.52	1.05	(22 yrs.)	7.94	First Crow Wing (29-86)	0.31	0.60	0.57	(7 yrs.)	2.02
Latoka (21-106)	1.07	0.48	0.63	(12 yrs.)	6.15	Fish Hook (29-242)	0.70	0.77	0.97	(14 yrs.)	2.12
Le Homme Dieu (21-56)	1.66	0.32	1.01	(14 yrs.)	2.28	Garfield (29-61)	0.66	0.67	0.58	(7 yrs.)	1.05
Little Chippewa (21-212)	0.90	0.70	1.37	(19 yrs.)	9.09	Gilmore (29-188)	0.51	0.60	0.56	(11 yrs.)	1.66
Lobster (21-144)	2.01	1.05	1.23	(32 yrs.)	11.25	Grace (29-71)	0.83	0.54	0.73	(14 yrs.)	2.75
Louise (21-94)	2.55	0.88	1.60	(18 yrs.)	5.94	Island (29-88)	0.78	0.56	0.97	(6 yrs.)	2.35
Mary (21-92)	2.00	0.45	1.41	(14 yrs.)	5.31	Island (29-254)	1.32	1.16	1.99	(14 yrs.)	3.92
Miltona (21-83)	1.12	0.68	1.08	(29 yrs.)	4.77	Kabekona (29-75)	1.05	1.58	1.22	(9 yrs.)	3.05
Moon (21-226)	1.10	0.86	1.25	(20 yrs.)	10.59	Little Mantrap (29-313)	1.15	0.88	0.96	(8 yrs.)	2.53
Pocket (21-140)	2.34	1.23	1.13	(8 yrs.)	3.15	Little Sand (29-150)	0.80	0.52	0.71	(31 yrs.)	3.48
Red Rock (21-291)	1.67	0.62	1.40	(14 yrs.)	4.21	Long (29-161)	0.43	0.47	0.49	(18 yrs.)	1.18
Union (21-41)	1.28	0.61	0.84	(7 yrs.)	1.44	Mantrap (29-151)	0.42	0.27	0.42	(10 yrs.)	1.08
Vermont (21-73)	1.28	1.01	1.12	(8 yrs.)	2.98	Palmer (29-87)	1.20	0.64	0.85	(14 yrs.)	2.91
Victoria (21-54)	1.81	0.48	1.18	(23 yrs.)	4.16	Plantagenet (29-156)	1.36	1.48	1.45	(23 yrs.)	3.47
Winona (21-81)	1.68	0.56	0.81	(11 yrs.)	2.00	Potato (29-243)	0.89	1.00	0.81	(13 yrs.)	1.71
GRANT COUNTY						Potato (HW at outlet dam) (29-243)	0.89	0.70	0.72	(25 yrs.)	1.72
Elk (26-40)	1.27	0.91	0.95	(10 yrs.)	3.85	Potato (TW at outlet dam) (29-243)	0.59	0.92	1.19	(14 yrs.)	2.78
Pomme de Terre (26-97)	0.92	1.28	1.09	(16 yrs.)	3.20	Third Crow Wing (29-77)	1.24	1.52	1.11	(8 yrs.)	2.13
HENNEPIN COUNTY						West Crooked (29-101)	0.88	0.83	0.73	(11 yrs.)	2.02
Calhoun (27-31)	2.21	1.66	1.88	(77 yrs.)	6.36	ISANTI COUNTY					
Cedar Island (27-119)	1.51	1.52	1.21	(18 yrs.)	6.50	Green (30-136)	1.56	0.22	1.51	(22 yrs.)	4.93
Christmas (27-137)	1.28	1.35	1.12	(6 yrs.)	3.10	Long (30-72)	0.44	0.34	0.51	(11 yrs.)	1.82
Eagle/Pike (27-111)	1.65	1.30	1.11	(18 yrs.)	3.27	Skogman (30-22)	1.52	1.64	1.32	(26 yrs.)	4.29
Edward (27-121)	1.63	1.13	1.06	(17 yrs.)	3.75	Spectacle (30-135)	0.63	0.68	0.63	(12 yrs.)	3.15
Fish (27-118)	1.64	1.81	1.55	(17 yrs.)	2.87	Typo (30-9)	1.64	1.98	1.61	(15 yrs.)	3.57
Galpin (27-144)	1.58	2.18	1.64	(7 yrs.)	2.75	ITASCA COUNTY					
Gleason (27-95)	1.52	1.94	1.73	(16 yrs.)	5.14	Balsam (31-259)	0.74	1.08	1.16	(22 yrs.)	3.26
Harriet (27-16)	1.75	1.15	1.23	(74 yrs.)	4.90	Bass (31-576)	0.54	0.95	0.81	(25 yrs.)	2.47
Hiawatha (27-18)	3.04	3.23	2.84	(38 yrs.)	12.00	Beatrice (31-58)	0.38	0.51	0.81	(13 yrs.)	2.03
Holy Name (27-158)	0.85	1.72	1.17	(7 yrs.)	2.13	Bello (31-726)	0.40	1.00	0.76	(10 yrs.)	1.87
Independence (27-176)	1.68	1.98	1.68	(24 yrs.)	7.88	Bowstring (31-813)	1.38	1.38	1.67	(26 yrs.)	4.40
Indianhead (27-44)	1.51	1.88	1.41	(12 yrs.)	3.19	Buck (31-69)	0.62	0.66	0.59	(20 yrs.)	1.38
Long (27-160)	1.65	3.79	1.52	(19 yrs.)	4.15	Burnt Shanty (31-424)	0.63	0.46	0.66	(15 yrs.)	2.40
Loring (27-655)	0.75	0.66	0.91	(22 yrs.)	3.57	Burrows (31-413)	0.96	0.50	0.72	(15 yrs.)	2.20
Lydiard (27-159)	0.75	1.25	0.99	(7 yrs.)	3.33	Carlson (31-366)	0.40	0.92	0.74	(10 yrs.)	1.62
Magda (27-65)	1.34	1.37	1.26	(6 yrs.)	2.16	Chase (31-749)	1.05	0.56	0.97	(6 yrs.)	2.61
Medicine (27-104)	2.30	2.18	1.60	(32 yrs.)	5.08	Clearwater (31-214)	0.59	1.06	0.97	(9 yrs.)	1.75
Minnetoga (27-88)	0.96	0.64	1.00	(31 yrs.)	3.00	Crooked (31-193)	2.65	6.20	6.15	(12 yrs.)	10.78
Minnetonka (27-133)	1.81	2.18	1.46	(99 yrs.)	8.74	Dixon (31-921)	2.52	1.80	2.74	(11 yrs.)	4.43
Mooney (27-134)	1.82	0.33	1.48	(11 yrs.)	7.40	Dora (31-882)	1.44	2.26	2.02	(24 yrs.)	4.35
Nokomis (27-19)	2.25	0.88	2.05	(55 yrs.)	8.76	Grave (31-624)	0.65	0.88	0.72	(12 yrs.)	1.62
Ox Yoke (27-178)	4.60	6.54	3.96	(9 yrs.)	7.23	Hale (31-361)	1.17	1.26	1.13	(12 yrs.)	2.46
Parkers (27-107)	3.70	2.34	2.58	(32 yrs.)	11.65	Hale (31-373)	0.64	0.87	0.83	(46 yrs.)	3.26
Rice (27-116)	6.37	2.06	2.08	(17 yrs.)	10.94	Island (31-913)	0.58	0.85	0.77	(9 yrs.)	2.00
Sarah (27-191)	2.48	1.77	1.96	(13 yrs.)	4.60	Jessie (31-786)	1.98	1.97	1.39	(15 yrs.)	5.07
Snyder (27-108)	1.58	2.24	2.00	(7 yrs.)	4.43	Johnson (31-586)	1.30	0.80	0.95	(15 yrs.)	3.05
Twin (27-42)	3.30	1.82	1.46	(14 yrs.)	4.68	Kelly (31-299)	0.89	0.73	0.91	(9 yrs.)	2.39
Weaver (27-117)	1.14	1.40	0.99	(17 yrs.)	3.19	Lawrence (31-231)	2.50	3.54	5.06	(10 yrs.)	10.98
Wirth (27-37)	2.24	0.38	1.56	(50 yrs.)	5.86	Link (31-304)	0.42	0.24	0.54	(9 yrs.)	2.31
HUBBARD COUNTY						Little Bowstring (31-758)	1.30	1.71	1.30	(11 yrs.)	2.56
Bad Axe (29-208)	0.92	1.36	0.65	(9 yrs.)	2.42	Little Long (31-613)	1.46	0.41	0.82	(14 yrs.)	5.68
Belle Taine (29-146)	1.53	1.29	1.35	(51 yrs.)	14.36	Little Wabana (31-399)	0.70	0.48	0.55	(6 yrs.)	1.92
Big Sand (29-185)	0.86	0.53	0.83	(14 yrs.)	2.91	Long (31-570)	0.59	0.34	0.83	(39 yrs.)	3.39
Big Stony (29-143)	1.08	0.68	0.79	(11 yrs.)	3.26	Loon (31-571)	0.58	0.72	1.01	(40 yrs.)	3.62
Blue (29-184)	0.70	0.74	0.62	(10 yrs.)	1.16	Lost Moose (31-432)	0.30	0.45	0.50	(10 yrs.)	1.69
Eagle (29-256)	1.45	1.72	1.62	(14 yrs.)	2.78	McAvity (31-585)	1.09	1.06	0.96	(7 yrs.)	3.06
East Crooked (29-101)	0.76	0.62	0.78	(11 yrs.)	3.69	McGuire (31-78)	0.73	1.88	2.65	(13 yrs.)	4.99
Eighth Crow Wing (29-72)	1.02	0.84	0.55	(9 yrs.)	1.12	Moose (31-722)	0.48	1.03	0.76	(16 yrs.)	1.77
Eleventh Crow Wing (29-36)	0.43	0.22	0.29	(8 yrs.)	0.58	Mud (31-206)	0.58	0.88	0.95	(7 yrs.)	1.68
Fifth Crow Wing (29-92)	0.56	0.76	0.71	(11 yrs.)	1.39	Owen (31-292)	0.86	0.50	0.75	(15 yrs.)	2.32
						Pigeon Dam (31-894)	1.77	1.92	1.37	(17 yrs.)	3.30

Annual Lake Level Fluctuation (feet)

Lake Name	WY03	WY04	WYAv.	#Yrs.	Range	Lake Name	WY03	WY04	WYAv.	#Yrs.	Range
<i>(Itasca County continued)</i>						LE SUEUR COUNTY					
Prairie (31-384)	0.10	0.19	1.13	(6 yrs.)	3.79	Frances (40-57)	1.32	1.76	1.05	(13 yrs.)	13.14
Pughole (31-602)	1.16	0.62	0.93	(14 yrs.)	3.32	Jefferson (40-92)	1.24	2.02	1.25	(31 yrs.)	6.64
Ruby (31-422)	0.73	0.60	0.60	(15 yrs.)	2.21	Tetonka (40-31)	1.80	3.85	1.84	(40 yrs.)	5.50
Sand (31-438)	1.83	0.66	0.89	(13 yrs.)	3.39	Volney (40-33)	1.38	1.87	1.39	(14 yrs.)	3.60
Sand (31-826)	1.75	1.52	1.73	(22 yrs.)	4.40	Washington (40-117)	1.08	2.42	1.51	(26 yrs.)	5.35
Shallow (31-84)	0.90	0.21	0.61	(13 yrs.)	1.23	West Jefferson (40-92)	1.24	2.02	1.41	(30 yrs.)	6.92
Shoal (31-141)	0.54	0.96	1.03	(11 yrs.)	2.27	LINCOLN COUNTY					
Siseebakwet (31-554)	0.76	1.16	0.75	(56 yrs.)	2.19	Benton (41-43)	1.14	0.84	1.52	(30 yrs.)	5.98
Smith (31-650)	0.88	0.35	0.80	(15 yrs.)	3.17	MCLEOD COUNTY					
Snaptail (31-255)	0.53	1.26	1.19	(13 yrs.)	3.08	Winsted (43-12)	1.30	1.86	1.66	(14 yrs.)	3.54
Snowball (31-108)	0.27	0.66	0.97	(39 yrs.)	4.28	MAHNOMEN COUNTY					
South Sturgeon (31-3)	0.95	1.48	1.43	(11 yrs.)	3.40	Tulaby (44-3)	0.90	0.90	1.06	(12 yrs.)	2.44
Spider (31-538)	0.82	0.46	0.78	(15 yrs.)	2.40	MARTIN COUNTY					
Split Hand (31-353)	0.73	1.30	1.48	(23 yrs.)	3.65	Amber (46-34)	1.20	2.50	1.52	(12 yrs.)	3.91
Swan (31-67)	0.57	0.87	1.51	(56 yrs.)	4.65	Budd (46-30)	1.28	3.96	1.78	(11 yrs.)	5.32
Three Island (31-542)	2.09	0.82	0.90	(6 yrs.)	3.87	George (46-24)	1.26	2.62	1.49	(12 yrs.)	8.84
Trout (31-216)	0.76	1.07	1.09	(44 yrs.)	6.09	South Silver (46-20)	1.04	1.06	1.28	(7 yrs.)	2.62
Turtle (31-725)	0.74	1.15	0.70	(13 yrs.)	2.09	MEEKER COUNTY					
White Swan (31-260)	0.74	1.19	0.69	(15 yrs.)	3.44	Belle (47-49)	1.13	0.85	1.34	(13 yrs.)	11.69
JACKSON COUNTY						Big Swan (47-38)	4.58	4.55	5.30	(10 yrs.)	9.86
Clear (32-22)	0.80	1.15	1.11	(11 yrs.)	4.88	Clear (47-95)	1.90	1.08	1.37	(15 yrs.)	4.21
Fish (32-18)	1.06	1.13	1.27	(16 yrs.)	7.45	Dunns (47-82)	1.62	1.25	1.56	(9 yrs.)	2.94
Heron (Duck) (32-57)	1.30	0.82	1.59	(14 yrs.)	7.00	Francis (47-2)	1.71	0.61	0.93	(22 yrs.)	4.95
Heron (North Marsh) (32-57)	3.19	4.60	4.28	(28 yrs.)	10.33	Long (47-177)	2.90	2.11	2.10	(8 yrs.)	4.05
Heron (South Heron) (32-57)	3.11	6.27	3.68	(35 yrs.)	8.94	Manuella (47-50)	2.60	1.56	1.50	(14 yrs.)	4.47
Heron (TW) (32-57)	3.47	4.41	4.49	(14 yrs.)	9.90	Minnie-Belle (47-119)	1.38	1.06	1.33	(16 yrs.)	5.92
Loon (32-20)	0.86	1.44	1.40	(19 yrs.)	4.58	Richardson (47-88)	1.46	1.16	1.26	(9 yrs.)	2.59
Pearl (32-33)	1.18	1.94	1.67	(14 yrs.)	4.21	Ripley (47-134)	0.24	0.87	0.96	(12 yrs.)	9.61
Round (32-69)	0.38	1.05	1.00	(8 yrs.)	2.86	Spring (47-32)	1.53	1.26	1.04	(10 yrs.)	2.57
KANABEC COUNTY						Stella (47-68)	1.40	1.10	1.13	(16 yrs.)	2.55
Fish (33-36)	6.67	3.87	3.28	(13 yrs.)	8.26	MILLE LACS COUNTY					
Knife (33-28)	2.84	1.08	2.09	(37 yrs.)	11.99	Mille Lacs (48-2)	1.43	0.64	1.35	(74 yrs.)	7.69
KANDIYOHI COUNTY						Onamia (48-9)	0.94	0.48	1.57	(39 yrs.)	6.12
Andrew (34-206)	0.99	1.79	1.48	(38 yrs.)	13.60	Onamia (TW) (48-9)	0.88	0.56	1.87	(20 yrs.)	5.77
Big Kandiyohti (34-86)	2.12	1.44	1.39	(40 yrs.)	5.81	MORRISON COUNTY					
Calhoun (34-62)	1.12	1.00	1.36	(33 yrs.)	3.85	Fish Trap (49-137)	1.21	1.06	1.08	(22 yrs.)	4.36
Diamond (34-44)	1.48	1.25	1.09	(23 yrs.)	3.95	Green Prairie Fish (49-35)	2.15	0.86	1.27	(9 yrs.)	2.68
Eagle (34-171)	0.78	1.02	1.11	(35 yrs.)	5.22	Long (49-15)	1.30	0.54	0.73	(8 yrs.)	1.73
Elizabeth (34-22)	2.07	1.14	1.24	(25 yrs.)	3.12	Pierz (49-24)	0.56	0.18	0.30	(7 yrs.)	0.60
Elkhorn (34-119)	0.84	0.54	0.84	(23 yrs.)	11.65	Round (49-56)	1.16	0.60	0.89	(10 yrs.)	1.75
Florida (34-217)	1.04	1.12	1.50	(24 yrs.)	5.22	Shamineau (49-127)	0.69	0.47	0.87	(11 yrs.)	5.39
Foot (34-181)	1.30	1.19	1.01	(21 yrs.)	3.41	Sullivan (49-16)	2.37	0.90	1.42	(26 yrs.)	4.19
Games (34-224)	0.35	1.08	1.01	(27 yrs.)	4.09	MURRAY COUNTY					
George (34-142)	0.86	0.93	1.06	(29 yrs.)	3.88	Sarah (51-63)	1.26	1.96	1.37	(10 yrs.)	4.46
Green (34-79)	1.24	1.65	1.57	(49 yrs.)	4.91	Second Fulda (51-20)	3.76	2.79	1.96	(6 yrs.)	4.37
Henderson (34-116)	0.96	0.70	1.08	(22 yrs.)	5.57	Shetek (51-46)	2.14	3.04	2.02	(55 yrs.)	7.67
Long (34-66)	0.45	0.67	0.51	(22 yrs.)	1.69	Wilson (51-81)	0.84	1.00	0.76	(8 yrs.)	8.92
Long (34-192)	1.82	0.80	1.15	(24 yrs.)	12.31	NOBLES COUNTY					
Mud (34-158)	1.02	0.69	1.31	(37 yrs.)	7.32	Bella (53-45)	0.90	2.08	2.23	(15 yrs.)	9.68
Nest (34-154)	1.88	2.23	1.30	(36 yrs.)	3.96	Indian (53-7)	1.60	1.24	1.67	(17 yrs.)	4.48
Norway (34-251)	1.78	1.15	1.32	(22 yrs.)	4.29	Ocheda (53-24)	1.58	1.76	1.43	(37 yrs.)	5.42
Point (34-193)	1.19	0.86	1.05	(17 yrs.)	11.23	OTTER TAIL COUNTY					
Ringo (34-172)	1.00	0.90	1.14	(20 yrs.)	7.64	Big McDonald (56-386)	1.11	1.09	0.92	(10 yrs.)	1.83
Skataas (34-196)	1.36	1.21	1.21	(17 yrs.)	4.81	Blanche (56-240)	0.59	0.40	0.60	(13 yrs.)	1.94
Swenson (34-321)	1.22	0.88	1.14	(17 yrs.)	5.63	Clitherall (56-238)	1.10	1.01	0.79	(11 yrs.)	2.11
Unnamed (Golden Pond) (34-355)	1.00	0.50	0.83	(10 yrs.)	2.54						
Wagonga (34-169)	2.50	2.19	1.78	(20 yrs.)	4.92						
LAKE COUNTY											
Farm (38-779)	0.25	0.50	0.43	(12 yrs.)	0.96						
Garden (38-782)	0.34	0.80	1.14	(13 yrs.)	3.24						

Annual Lake Level Fluctuation (feet)

Lake Name	WY03	WY04	WYAv.	#Yrs.	Range	Lake Name	WY03	WY04	WYAv.	#Yrs.	Range
<i>(Otter Tail County continued)</i>						<i>(Ramsey County continued)</i>					
Dead (56-383)	0.85	1.05	0.82	(9 yrs.)	2.88	Grass (62-74)	3.11	2.73	3.52	(23 yrs.)	9.70
Deer (56-298)	2.02	0.84	1.61	(8 yrs.)	3.22	Island (62-75)	1.55	1.16	1.41	(59 yrs.)	9.32
Eagle (56-253)	0.82	0.89	0.87	(9 yrs.)	9.43	Johanna (62-78)	1.36	1.64	1.97	(81 yrs.)	10.92
East Battle (56-138)	1.20	1.25	1.13	(18 yrs.)	4.21	Josephine (62-57)	1.13	1.38	1.18	(81 yrs.)	4.20
East Leaf (56-116)	1.53	1.72	1.92	(10 yrs.)	3.32	Long (62-67)	2.25	2.13	1.75	(81 yrs.)	5.20
East Loon (56-523)	1.10	0.82	0.89	(6 yrs.)	1.87	McCarron (62-54)	1.15	1.44	1.15	(81 yrs.)	4.45
East Lost (56-378)	2.29	2.00	2.04	(12 yrs.)	3.97	Owasso (62-56)	1.14	1.42	1.17	(81 yrs.)	5.79
East Spirit (56-501)	1.14	0.25	0.69	(6 yrs.)	6.22	Phalen (62-13)	2.75	3.55	3.45	(81 yrs.)	12.32
Leek (Trowbridge)						Pike (62-69)	1.85	0.84	1.36	(36 yrs.)	4.57
(56-532)	1.18	1.26	0.94	(6 yrs.)	1.38	Round (62-9)	1.40	1.79	2.01	(71 yrs.)	11.67
Lida (56-747)	1.09	1.79	0.93	(10 yrs.)	2.82	Silver (East) (62-1)	1.75	1.95	1.69	(80 yrs.)	10.05
Little McDonald						Silver (West) (62-83)	1.62	1.63	1.70	(71 yrs.)	13.25
(56-328)	1.10	0.45	1.01	(13 yrs.)	4.55	Snail (62-73)	1.48	1.96	1.62	(81 yrs.)	7.20
Little Pine (56-142)	0.81	0.75	1.05	(40 yrs.)	3.30	Teal Pond (North)					
Lizzie (56-760)	0.92	1.55	1.18	(57 yrs.)	4.56	(62-26)	1.31	1.81	1.54	(9 yrs.)	4.47
Long (56-388)	1.15	0.70	0.81	(12 yrs.)	2.08	Turtle (62-61)	1.25	0.97	1.00	(82 yrs.)	4.40
Long (56-784)	1.20	1.22	1.19	(13 yrs.)	2.08	Valentine (62-71)	3.40	1.76	1.84	(80 yrs.)	6.95
Middle Leaf (56-116)	1.74	1.24	1.75	(10 yrs.)	3.61	Wabasso (62-82)	1.79	2.32	1.47	(67 yrs.)	5.53
Otter Tail (56-242)	1.37	1.48	1.42	(75 yrs.)	4.63	Wakefield (62-11)	1.55	1.07	2.24	(52 yrs.)	10.53
Otter Tail (TW)						Willow (62-40)	1.37	0.82	1.02	(18 yrs.)	2.01
(56-242)	1.98	0.85	1.71	(15 yrs.)	3.78						
Pelican (56-786)	1.02	1.24	1.27	(31 yrs.)	4.94	RENVILLE COUNTY					
Pickerel (56-204)	1.64	1.14	1.20	(11 yrs.)	3.42	Allie (65-6)	1.78	2.04	1.47	(15 yrs.)	8.56
Pickerel (56-475)	0.34	0.55	0.67	(26 yrs.)	3.03	Preston (65-2)	1.30	2.04	1.48	(12 yrs.)	3.74
Prairie (56-915)	0.50	0.66	0.78	(24 yrs.)	4.70						
Round (56-297)	1.00	0.86	0.80	(7 yrs.)	2.13	RICE COUNTY					
Rush (56-141)	1.24	1.40	1.55	(65 yrs.)	3.87	Cedar (66-52)	1.08	1.34	1.12	(18 yrs.)	3.22
Silver (56-302)	1.03	0.43	0.92	(8 yrs.)	3.10	French (66-38)	1.33	1.34	1.14	(13 yrs.)	2.87
Six (56-369)	0.82	0.50	0.51	(8 yrs.)	1.53						
South Turtle (56-377)	1.46	0.89	0.98	(8 yrs.)	4.43	ST. LOUIS COUNTY					
Star (56-385)	0.94	1.00	1.01	(28 yrs.)	3.79	Aerie (69-701)	0.45	1.04	0.73	(8 yrs.)	1.80
Stuart (56-191)	1.00	0.70	1.18	(9 yrs.)	6.26	Beaver (69-501)	0.80	0.61	0.90	(16 yrs.)	3.38
Swan (56-781)	0.91	1.34	1.01	(13 yrs.)	3.63	Big Rice (69-669)	1.40	1.76	1.20	(15 yrs.)	2.43
Sybil (56-387)	1.05	0.90	0.78	(9 yrs.)	3.04	Black Duck (69-842)	0.89	0.71	0.92	(6 yrs.)	2.28
Ten Mile (56-613)	0.81	0.93	1.15	(13 yrs.)	2.69	Burntside (69-118)	0.58	0.90	0.95	(14 yrs.)	4.76
Wall (56-658)	0.43	0.90	0.41	(13 yrs.)	0.90	Comstock (69-412)	1.00	0.84	1.47	(11 yrs.)	2.64
West Battle (56-239)	1.32	0.92	1.11	(32 yrs.)	8.42	Crooked (69-703)	1.16	1.63	1.01	(8 yrs.)	2.01
West McDonald						Dark (69-790)	0.50	1.40	1.45	(17 yrs.)	4.69
(56-386)	1.32	0.86	0.91	(11 yrs.)	2.25	Eagles Nest #1					
						(69-285)	0.58	0.71	0.74	(12 yrs.)	3.10
PINE COUNTY						Eagles Nest #3					
Grindstone (58-123)	2.65	1.53	1.17	(28 yrs.)	3.21	(69-285)	0.55	1.52	0.94	(13 yrs.)	1.77
Island (58-62)	1.54	1.13	1.47	(24 yrs.)	3.15	Eagles Nest No. Four					
Pokegama (58-142)	4.62	3.38	3.76	(25 yrs.)	8.20	(69-218)	0.41	0.34	0.40	(12 yrs.)	0.97
Sand (58-81)	0.24	0.60	1.40	(30 yrs.)	5.99	Ely (69-660)	0.50	0.56	0.80	(51 yrs.)	2.80
Sturgeon (58-67)	0.60	0.36	0.90	(28 yrs.)	4.04	Embarrass (69-496)	1.50	0.72	2.27	(46 yrs.)	6.29
Upper Pine (58-130)	1.52	0.46	0.80	(12 yrs.)	2.03	Esquagama (69-565)	0.85	0.90	2.29	(30 yrs.)	8.10
						Fourteen (69-793)	0.29	0.65	0.55	(13 yrs.)	1.34
POLK COUNTY						Horseshoe (69-232)	0.43	1.00	0.76	(8 yrs.)	1.91
Cable (60-293)	1.17	1.44	0.98	(13 yrs.)	7.90	Jacobs (69-231)	0.64	0.59	0.79	(14 yrs.)	2.31
Oak (60-185)	0.68	0.52	1.11	(6 yrs.)	2.28	Janette (69-887)	0.60	0.72	0.76	(12 yrs.)	2.37
Sarah (60-202)	1.91	1.29	2.75	(16 yrs.)	14.89	Leora (69-521)	0.60	0.65	0.80	(8 yrs.)	1.56
Union (60-217)	0.76	0.56	1.50	(19 yrs.)	8.55	Lieung (69-123)	1.40	1.54	1.13	(9 yrs.)	3.01
						Little Stone (69-28)	0.50	1.22	0.96	(13 yrs.)	2.99
POPE COUNTY						Long (69-495)	0.56	0.79	1.21	(7 yrs.)	2.06
Gilchrist (61-72)	2.58	1.65	2.39	(14 yrs.)	5.50	Long (69-653)	0.44	1.10	0.79	(13 yrs.)	1.47
Leven (61-66)	2.46	1.08	1.86	(11 yrs.)	3.38	Maple Leaf (69-700)	0.60	1.07	0.89	(14 yrs.)	1.78
Linka (61-37)	1.48	0.40	0.93	(11 yrs.)	2.07	Merrill (69-891)	0.52	0.78	0.75	(12 yrs.)	1.55
Marlu (61-60)	1.30	0.57	1.11	(11 yrs.)	2.70	Nichols (69-627)	0.79	0.56	0.72	(16 yrs.)	1.71
Pelican (61-111)	2.68	0.80	1.46	(12 yrs.)	6.83	Pelican (69-841)	0.35	0.84	1.03	(23 yrs.)	2.88
Signalness (61-149)	1.06	0.75	0.84	(8 yrs.)	2.16	Perch (69-932)	0.30	0.56	0.51	(14 yrs.)	2.91
Villard (61-67)	5.42	1.00	2.36	(11 yrs.)	6.51	Prairie (69-848)	1.18	2.29	1.29	(21 yrs.)	3.86
						Sabin (69-434)	2.42	2.42	2.73	(9 yrs.)	5.68
RAMSEY COUNTY						Schubert (69-546)	0.38	0.80	1.08	(10 yrs.)	2.27
Bald Eagle (62-2)	1.05	1.33	1.25	(82 yrs.)	6.69	Snowshoe (69-900)	0.82	0.55	1.50	(35 yrs.)	4.50
Beaver (62-16)	2.25	1.20	1.93	(50 yrs.)	7.10	St. Mary's (69-651)	1.04	0.78	1.20	(47 yrs.)	4.57
Bennett (62-48)	2.21	2.38	2.73	(18 yrs.)	6.60	Stone (69-27)	3.44	1.08	1.02	(15 yrs.)	3.52
Birch (62-24)	1.09	1.44	1.33	(75 yrs.)	7.13	Stone (69-686)	1.11	1.37	1.14	(12 yrs.)	3.01
Como (62-55)	2.47	2.27	1.75	(27 yrs.)	4.19	Sturgeon (69-939)	1.01	1.15	1.52	(21 yrs.)	3.00
Gervais (62-7)	2.20	1.03	2.12	(81 yrs.)	7.20	Thirteen (69-794)	0.34	0.66	0.53	(8 yrs.)	1.71

Annual Lake Level Fluctuation (feet)

Lake Name	WY03	WY04	WYAv.	#Yrs.	Range	Lake Name	WY03	WY04	WYAv.	#Yrs.	Range
<i>(St. Louis County continued)</i>						Stocking (80-37)	0.52	0.68	0.58	(17 yrs.)	1.62
Thompson (69-241)	1.24	0.65	1.12	(7 yrs.)	2.19	WASHINGTON COUNTY					
Unnamed (Kumpala) (69-424)	0.91	1.30	1.44	(7 yrs.)	2.94	Armstrong-South Portion (82-116)	1.82	1.72	1.14	(6 yrs.)	1.82
Vermilion (69-378)	0.67	1.52	1.58	(54 yrs.)	3.19	Barker (82-76)	1.34	1.68	1.55	(8 yrs.)	4.71
SCOTT COUNTY						Bass (82-35)	1.17	1.18	1.34	(10 yrs.)	3.75
Dean (70-74)	1.02	1.07	1.53	(6 yrs.)	4.92	Bass (82-123)	1.18	1.02	1.18	(8 yrs.)	8.50
Lower Prior (70-26)	1.86	2.35	2.34	(32 yrs.)	10.22	Battle Creek (82-91)	2.03	0.68	1.27	(15 yrs.)	3.02
Spring (70-54)	2.52	1.74	1.68	(15 yrs.)	3.45	Benz (82-120)	1.50	1.26	1.14	(7 yrs.)	2.14
Upper Prior (70-72)	1.86	2.35	2.30	(33 yrs.)	12.20	Big Carnelian (82-49)	1.06	1.05	1.25	(28 yrs.)	14.26
SHERBURNE COUNTY						Big Marine (82-52)	1.02	1.48	1.06	(31 yrs.)	7.10
Elk (71-141)	4.57	2.65	2.17	(10 yrs.)	5.32	Carol (82-17)	1.15	0.88	1.14	(9 yrs.)	1.63
Long (71-159)	0.96	0.63	1.25	(13 yrs.)	9.04	Carver (82-166)	1.26	0.23	1.28	(14 yrs.)	3.22
Rush (71-147)	3.75	1.80	2.18	(15 yrs.)	6.50	Cloverdale (82-9)	1.59	1.37	2.10	(11 yrs.)	9.21
SIBLEY COUNTY						Colby (82-94)	2.50	1.87	1.82	(6 yrs.)	2.96
Swan (72-93)	1.09	1.55	1.46	(7 yrs.)	4.62	DeMontreville (82-101)	0.93	1.52	1.45	(37 yrs.)	6.40
STEARNS COUNTY						Downs (82-110)	2.13	1.58	2.54	(23 yrs.)	7.73
Bankers (73-286)	0.85	1.19	0.87	(6 yrs.)	1.86	Eagle Point (82-109)	2.37	1.59	2.21	(30 yrs.)	7.40
Bear (73-190)	0.80	1.46	1.01	(6 yrs.)	1.88	Echo (82-129)	1.10	0.86	1.12	(7 yrs.)	2.02
Big (73-159)	1.42	1.27	1.44	(15 yrs.)	5.20	Elmo (82-106)	0.50	0.47	1.17	(30 yrs.)	9.58
Big Fish (73-106)	0.89	1.03	1.02	(28 yrs.)	4.06	Fish (82-64)	3.17	1.24	1.46	(7 yrs.)	3.79
Carnelian (73-38)	0.21	1.15	1.38	(13 yrs.)	10.56	Forest (82-159)	1.06	1.07	0.77	(30 yrs.)	2.78
Eden (73-150)	4.22	1.88	2.69	(17 yrs.)	10.38	Goose (82-59)	2.38	1.22	1.87	(11 yrs.)	6.00
Grand (73-55)	0.87	0.87	1.04	(24 yrs.)	3.21	Halfbreed (82-80)	0.96	0.84	0.93	(15 yrs.)	3.48
Knaus (73-86)	1.88	1.08	1.45	(10 yrs.)	4.66	Hay (82-65)	0.90	1.10	1.10	(7 yrs.)	2.41
Koronis (73-200)	1.50	1.53	2.02	(24 yrs.)	6.00	Horseshoe (82-74)	1.12	1.03	1.62	(27 yrs.)	15.74
Kraemer (73-64)	1.20	0.99	1.25	(9 yrs.)	3.65	Jane (82-104)	0.82	0.62	1.50	(37 yrs.)	9.33
Kreigle (73-97)	0.66	0.66	0.98	(6 yrs.)	2.57	Lily (82-23)	2.61	3.11	1.93	(10 yrs.)	11.98
Long (73-4)	1.56	0.66	1.37	(12 yrs.)	3.38	Little Carnelian (82-14)	1.70	1.29	3.27	(13 yrs.)	35.67
Lower Spunk (73-123)	2.46	2.13	1.91	(8 yrs.)	3.07	Long (82-21)	2.52	1.65	2.01	(9 yrs.)	3.19
Maria (73-215)	1.09	0.80	1.04	(7 yrs.)	3.76	Long (82-30)	1.20	1.30	0.98	(9 yrs.)	5.25
Marie (73-14)	0.90	0.77	1.10	(6 yrs.)	1.95	Long (82-68)	1.92	1.38	1.79	(7 yrs.)	5.40
North Brown's (73-147)	2.00	1.84	2.15	(13 yrs.)	4.93	Long (82-118)	3.22	2.88	3.33	(31 yrs.)	10.34
Rossier (73-72)	1.43	1.44	1.25	(6 yrs.)	2.52	Long (82-130)	1.84	1.82	1.74	(8 yrs.)	2.97
School Section (73-35)	1.10	0.17	1.34	(8 yrs.)	9.28	Loon (82-15)	1.44	1.32	1.32	(9 yrs.)	3.10
Two Rivers (73-138)	2.80	1.90	3.25	(21 yrs.)	7.51	Louise (82-25)	1.20	0.76	1.17	(9 yrs.)	3.24
Willow (73-34)	1.27	1.14	1.23	(8 yrs.)	2.65	Lynch (82-42)	1.20	0.84	1.16	(7 yrs.)	2.30
SWIFT COUNTY						Markgrafs (82-89)	1.85	1.64	1.44	(7 yrs.)	2.81
Camp (76-72)	1.80	0.86	1.68	(10 yrs.)	4.65	Masterman (82-126)	1.38	0.78	1.04	(8 yrs.)	2.06
TODD COUNTY						McDonald (82-10)	1.30	0.80	1.07	(11 yrs.)	3.92
Beauty (77-35)	1.67	1.47	0.93	(11 yrs.)	2.55	McKusick (82-20)	3.49	1.32	1.40	(9 yrs.)	6.02
Big (77-63)	0.56	0.87	0.94	(12 yrs.)	2.19	Mud (82-26)	0.86	0.47	0.50	(10 yrs.)	1.03
Big Birch (77-84)	1.02	0.92	1.06	(28 yrs.)	3.23	Mud-wetland so of Co. 4 (82-26)	1.48	0.92	0.97	(11 yrs.)	1.73
Big Swan (77-23)	2.51	0.87	1.79	(7 yrs.)	4.11	North Twin (82-18)	1.07	0.66	0.90	(9 yrs.)	2.18
Fairy (77-154)	1.58	1.44	1.39	(16 yrs.)	9.91	Oneka (82-140)	0.94	0.90	0.98	(26 yrs.)	4.13
Latimer (77-105)	1.25	0.72	1.17	(7 yrs.)	2.56	Pat (82-125)	1.09	0.91	1.23	(8 yrs.)	4.28
Little Birch (77-89)	0.70	0.72	1.04	(25 yrs.)	3.42	Plaisted (82-148)	1.49	1.04	1.29	(7 yrs.)	4.73
Long (77-27)	1.52	0.76	0.89	(12 yrs.)	2.10	Powers (82-92)	3.34	1.38	3.92	(8 yrs.)	23.10
Long (77-149)	1.12	0.63	1.08	(8 yrs.)	6.83	Rice (82-146)	1.45	1.19	1.12	(7 yrs.)	2.04
Maple (77-181)	1.74	0.76	1.35	(16 yrs.)	3.08	Shields (82-162)	2.53	0.73	1.33	(9 yrs.)	2.71
Mound (77-7)	0.82	0.62	0.67	(12 yrs.)	1.65	Silver (82-16)	1.50	0.74	1.47	(9 yrs.)	3.12
Osakis (77-215)	3.15	0.68	1.62	(44 yrs.)	8.33	South School Section (82-151)	0.69	1.00	1.38	(9 yrs.)	4.91
Pine Island (77-67)	0.94	0.44	0.93	(7 yrs.)	2.41	South Twin (82-19)	1.20	0.70	1.49	(9 yrs.)	4.71
Sauk (77-150)	3.55	2.36	1.99	(22 yrs.)	5.47	Square (82-46)	0.33	0.34	0.67	(28 yrs.)	5.34
WADENA COUNTY						Staples (82-28)	1.06	1.06	1.08	(8 yrs.)	3.33
Hazel (80-5)	0.90	0.46	0.91	(25 yrs.)	3.33	Sunfish (82-107)	0.80	1.01	1.49	(30 yrs.)	18.15
Spirit (80-39)	1.26	0.82	1.74	(6 yrs.)	6.07	Sunnybrook (82-133)	2.86	1.40	2.10	(12 yrs.)	3.60
						Sunset (82-153)	1.95	1.37	1.28	(11 yrs.)	3.47
						Tanners (82-115)	1.35	0.35	1.17	(14 yrs.)	2.80
						Terrapin (82-31)	0.10	0.72	1.07	(6 yrs.)	2.62
						Turtle (82-36)	1.53	0.66	1.03	(11 yrs.)	3.52
						Twin (82-48)	2.28	2.26	2.33	(8 yrs.)	3.84
						Unnamed (82-87)	0.69	0.90	0.82	(6 yrs.)	1.56
						Unnamed (82-128)	1.32	0.82	1.33	(7 yrs.)	3.39
						Unnamed (82-303)	1.45	0.96	1.22	(7 yrs.)	3.08
						Unnamed (82-349)	1.53	1.34	1.67	(7 yrs.)	4.67

Annual Lake Level Fluctuation (feet)

Lake Name	WY03	WY04	WYAv.	#Yrs.	Range
<i>(Washington County continued)</i>					
Unnamed (Bailey) (82-456)	6.68	4.79	4.63	(6 yrs.)	7.22
Unnamed (Goetschel) (82-313)	1.08	0.91	1.11	(6 yrs.)	3.66
Unnamed (Goggins) (82-77)	1.12	0.96	1.63	(7 yrs.)	4.10
Unnamed (Jackson WMA) (82-305)	3.10	2.78	2.31	(8 yrs.)	3.54
Unnamed (July Ave.) (82-318)	2.91	1.72	3.13	(8 yrs.)	6.63
Unnamed (Maple Marsh) (82-38)	1.56	0.94	1.35	(8 yrs.)	2.61
Unnamed (May Ave. Wetland) (82-296)	1.20	1.34	0.99	(11 yrs.)	2.36
Unnamed (Vandeberg) (82-84)	2.22	1.14	1.42	(6 yrs.)	4.41
Unnamed (Kismet Basin) (82-334)	1.35	0.85	1.31	(9 yrs.)	4.82
Unnamed (Perro Pond) (82-310)	2.16	0.98	2.74	(7 yrs.)	6.49
West Boot (82-44)	0.81	0.60	0.77	(10 yrs.)	2.13
White Bear (82-167)	1.13	1.03	1.20	(81 yrs.)	6.81
Wilmes (82-90)	3.55	3.05	2.76	(6 yrs.)	4.65
Wood Pile (82-132)	1.36	0.78	1.28	(8 yrs.)	4.18
WATONWAN COUNTY					
Kansas (83-36)	1.53	2.41	1.54	(11 yrs.)	5.01
Long (83-40)	0.57	8.97	1.81	(20 yrs.)	16.17
St. James (83-43)	1.20	1.74	1.53	(13 yrs.)	6.20
WRIGHT COUNTY					
Ann (86-190)	3.22	2.81	3.59	(9 yrs.)	7.33
Augusta (86-284)	1.26	0.90	1.12	(11 yrs.)	2.97
Bass (86-234)	0.88	0.73	1.37	(6 yrs.)	4.60
Birch (86-66)	1.42	0.90	1.26	(12 yrs.)	6.19
Charlotte (86-11)	2.07	1.28	1.51	(20 yrs.)	8.68
Collinwood (86-293)	1.30	1.00	1.16	(10 yrs.)	3.88
Emma (86-188)	2.60	1.81	2.59	(6 yrs.)	6.20
Howard (86-199)	1.90	0.84	1.18	(6 yrs.)	2.51
Ida (86-146)	0.84	0.48	0.61	(9 yrs.)	3.59
Indian (86-223)	0.40	0.92	1.42	(19 yrs.)	9.76
Little Waverly (86-106)	1.50	1.30	1.39	(15 yrs.)	6.82
Maple (86-134)	1.66	0.78	1.27	(19 yrs.)	5.34
Mary (86-193)	1.38	1.07	1.21	(8 yrs.)	2.85
Pulaski (86-53)	3.13	1.13	1.58	(29 yrs.)	17.69
Sugar (86-233)	1.28	0.82	0.82	(28 yrs.)	4.43
West Lake Sylvia (86-279)	1.67	0.74	0.94	(26 yrs.)	4.03