Sand Lake (82-0067) *Carnelian - Marine - St. Croix Watershed District*

Sand Lake is a 46-acre lake located within City of Scandia (Washington County). The lake has a surface area of 46 acres.

On each sampling day the lake was monitored for total phosphorus (TP), chlorophyll-a (CLA), total kjeldahl nitrogen (TKN), and secchi transparency, as well as the lake's perceived physical condition and recreational suitability. Depth profiles for temperature and dissolved oxygen were also measured. The resulting data are summarized in tables and figures on the following page.

2009 summer (May-September) data summary

Parameter	*Mean*	*Minimum*	*Maximum*	*Grade*
TP (µg/l)	37.2	19.0	82.0	C
CLA (µg/l)	10.9	3.4	28.0	B
Secchi (m)	3.1	1.4	4.3	A
TKN (mg/l)	0.95	0.78	1.10	
			Lake Grade	B

The lake received a lake grade of B for 2009. The lake appears to be characterized as a C lake, though it occassionaly has received B lake grades. A finding of note is the better water clarity observed in 2009. The lake received a Secchi grade of A for the first time according to its historical water quality database.

Throughout the monitoring period, the volunteer's opinions of the lake's physical condition and recreational suitability were ranked on a 1-to-5 scale. These user perception rankings are shown on the following page.

The Fisheries Section of the Minnesota Department of Natural Resources (MDNR) has conducted a fisheries survey on the lake. Information on the survey can be obtained through the MDNR Fisheries Section by calling (651) 259-5831 or by downloading the information off the Internet at http://www.dnr.state.mn.us/lakefind/.

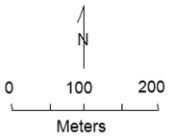
If you notice any errors in the lake's data or physical information, or are aware of any additional or missing information, please contact Brian Johnson of the Metropolitan Council at (651) 602-8743 or brian.johnson@metc.state.mn.us.

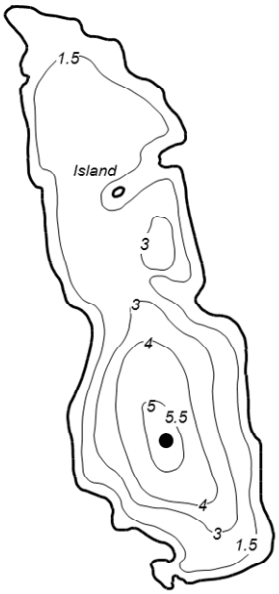
Sand Lake

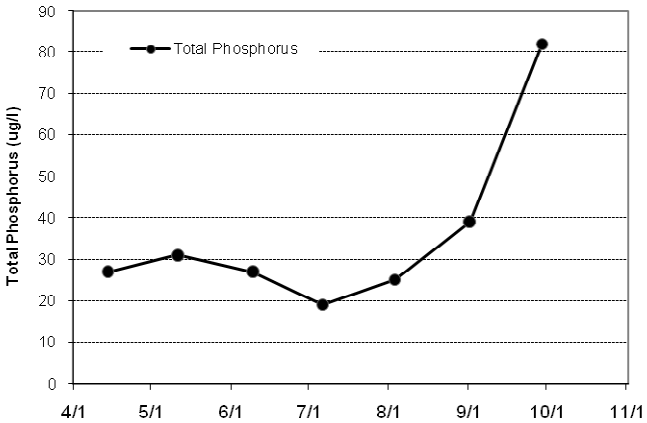
Scandia, Washington Co.

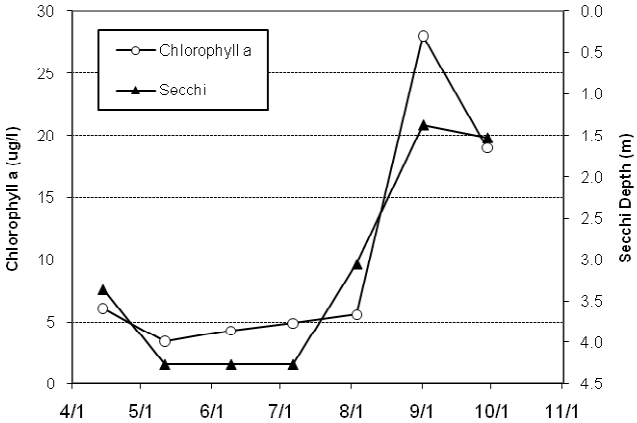
Lake ID: 820067-00
WD: Carnelian-Marine-St. Croix
Volunteer: Washington Conservation District

● Sampling site
Contours in meters



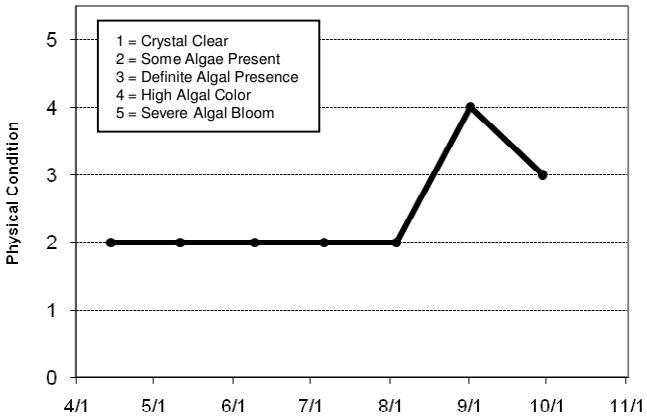






2009 Data

DATE	Surf Tmp (ºC)	Bot Tmp (ºC)	Surf DO (mg/L)	Bot DO (mg/L)	CLA (µg/L)	Surf TP (µg/L)	Bot TP (µg/L)	Secchi (m)	PC	RS
4/14	10.1	8.2	10.67	9.52	6.1	27		3.4	2	1
5/11	16.3	14.4	8.72	6.63	3.4	31		4.3	2	2
6/9	18.6	16.8	7.62	0.11	4.3	27		4.3	2	2
7/6	25.1	20.1	8.55	0.11	4.9	19		4.3	2	2
8/3	22.8	21.3	7.72	0.11	5.6	25		3.0	2	3
9/1	20.4	20.2	9.13	0.03	28	39		1.4	4	3
9/29	16.5	15.9	6.76	0.42	19	82		1.5	3	3



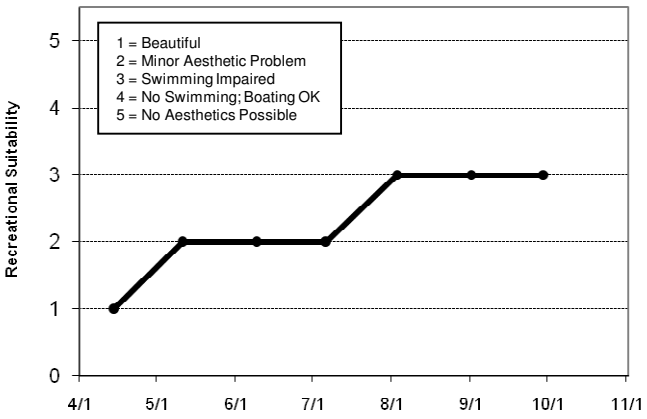
Lake Water Quality Grades Based on Summertime Averages

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Total Phosphorus												
Chlorophyll a												
Secchi Depth												
Lake Grade												

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total Phosphorus		C	C	C	C						C	C
Chlorophyll a		C	C	B	C						B	C
Secchi Depth		D	D	C	C						C	C
Lake Grade		**C**	**C**	**C**	**C**						**C**	**C**

Year	2004	2005	2006	2007	2008	2009
Total Phosphorus	B	C	C	B	C	C
Chlorophyll a	B	C	B	B	C	B
Secchi Depth	C	C	C	B	C	A
Lake Grade	**B**	**C**	**C**	**B**	**C**	**B**

Source: Metropolitan Council and STORET data



School Lake (13-0057) *Comfort Lake Forest Lake Watershed District*

School Lake is located in Wyoming Township (Chisago County). There are few morphological data available for the lake.

On each sampling day the lake was monitored for total phosphorus (TP), chlorophyll-a (CLA), total kjeldahl nitrogen (TKN), and secchi transparency, as well as the lake's perceived physical condition and recreational suitability. The resulting data are summarized in tables and figures on the following page.

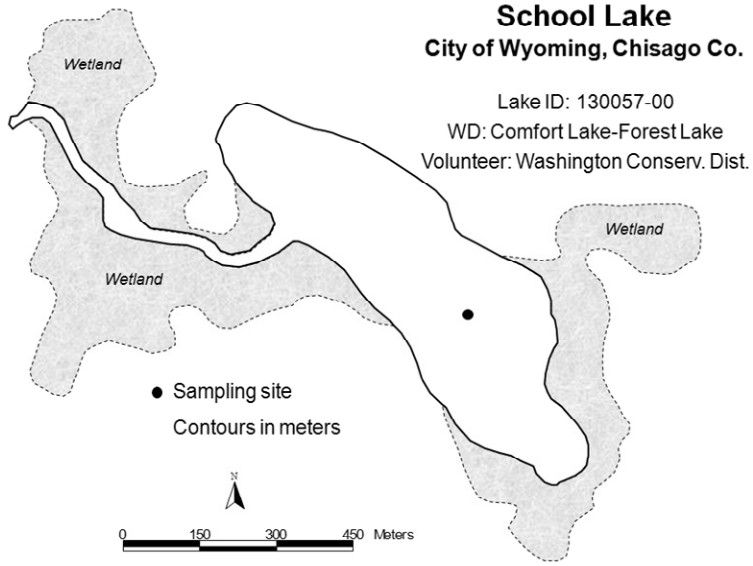
2009 summer (May-September) data summary

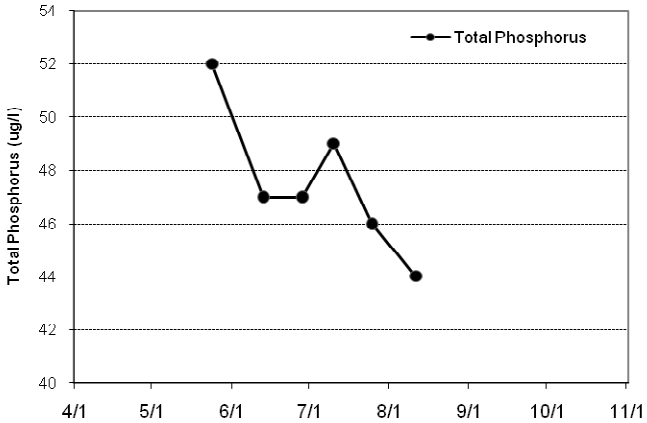
Parameter	*Mean*	*Minimum*	*Maximum*	*Grade*
TP (µg/l)	47.5	44.0	52.0	C
CLA (µg/l)	29.3	28.0	30.0	C
Secchi (m)	1.4	1.1	1.7	C
TKN (mg/l)	0.90	0.82	0.98	
			Lake Grade	C

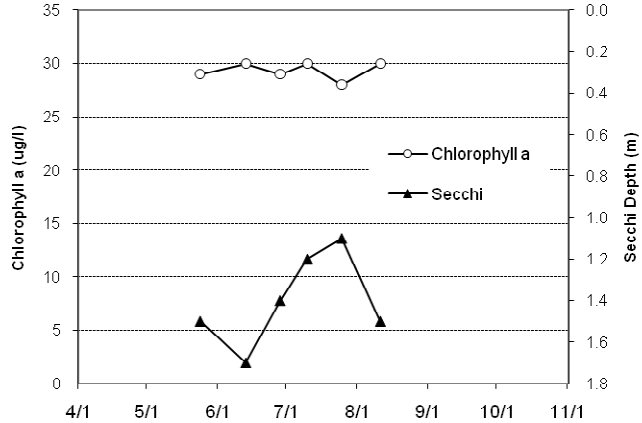
The lake received a lake grade of C in 2009, which is consistent with its limited historical database. Additional years of monitoring are suggested for continuing to build the water quality database so as to better understand the lake's water quality and determine potential water quality trends.

Throughout the monitoring period, the volunteer's opinions of the lake's physical condition and recreational suitability were ranked on a 1-to-5 scale. These user perception rankings are shown on the following page.

If you notice any errors in the lake's data or physical information, or are aware of any additional or missing information, please contact Brian Johnson of the Metropolitan Council at (651) 602-8743 or brian.johnson@metc.state.mn.us.

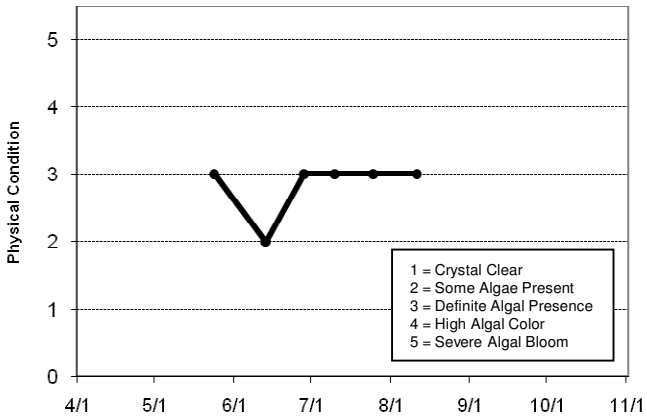






2009 Data

DATE	Surf Tmp (ºC)	Bot Tmp (ºC)	Surf DO (mg/L)	Bot DO (mg/L)	CLA (µg/L)	Surf TP (µg/L)	Bot TP (µg/L)	Secchi (m)	PC	RS
5/24	15.7				29	52		1.5	3	3
6/13	21				30	47		1.7	2	2
6/28	23.1				29	47		1.4	3	2
7/10	23.5				30	49		1.2	3	3
7/25	23.8				28	46		1.1	3	3
8/11	24				30	44		1.5	3	3



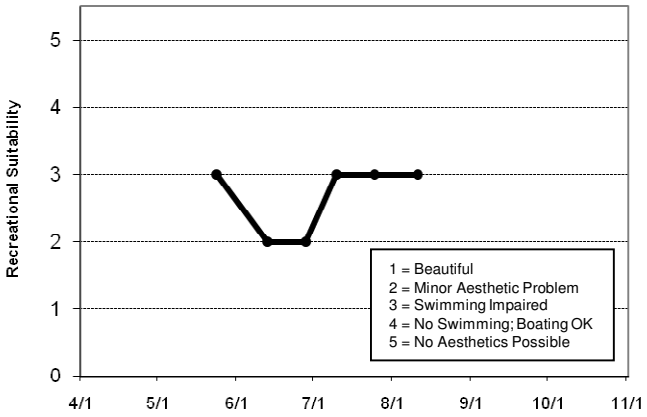
Lake Water Quality Grades Based on Summertime Averages

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Total Phosphorus												
Chlorophyll a												
Secchi Depth												
Lake Grade												

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total Phosphorus												
Chlorophyll a												
Secchi Depth												
Lake Grade												

Year	2004	2005	2006	2007	2008	2009
Total Phosphorus		C	D	C		C
Chlorophyll a		C	C	C		C
Secchi Depth		C	C	C		C
Lake Grade		**C**	**C**	**C**		**C**

Source: Metropolitan Council and STORET data



Scout Lake (19-0198) *City of Apple Valley*

Scout Lake is a small lake located in Apple Valley. Little information is available on the morphology of the lake. The maximum depth of the lake is 2.9 m (9.5 feet). The entire area of the lake is considered littoral zone which is the 0-15 feet depth zone of aquatic plant dominance. Furthermore, the lake does not maintain a thermocline, which is a density gradient caused by changing water temperatures throughout the water column.

On each sampling day the lake was monitored for total phosphorus (TP), chlorophyll-a (CLA), total kjeldahl nitrogen (TKN), and secchi transparency, as well as the lake's perceived physical condition and recreational suitability. The resulting data are summarized in tables and figures on the following page.

2009 summer (May-September) data summary

Parameter	*Mean*	*Minimum*	*Maximum*	*Grade*
TP (µg/l)	125.7	52.0	508.0	D
CLA (µg/l)	36.3	13.0	67.0	C
Secchi (m)	0.8	0.5	1.2	D
TKN (mg/l)	2.16	1.60	4.00	
			Lake Grade	D

The lake received a lake grade of D for 2009. Additional years of monitoring are suggested for continuing to build the water quality database so as to better understand the lake's water quality and determine potential water quality trends.

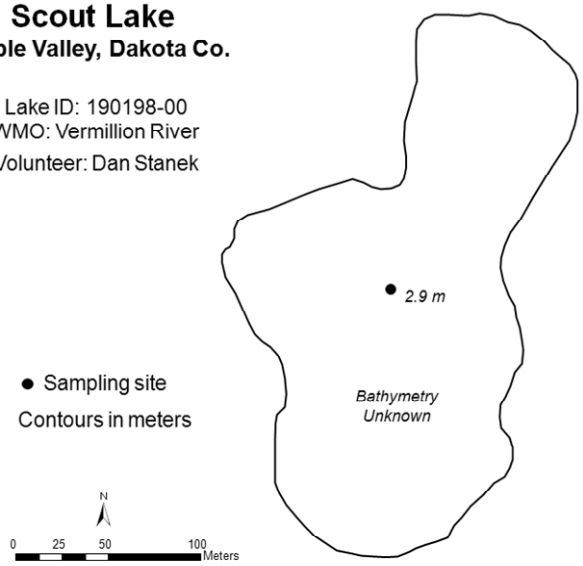
The volunteer's perceptions of the physical and recreational conditions of the lake are shown on the next page. Each of the conditions was ranked on a scale of 1 to 5. The average physical condition ranking was 1.7 (between 1- "crystal clear" and 2- "some algae present"). The average recreational suitability ranking was 1.5 (between 1- "beautiful" and 2- "minor aesthetic problem").

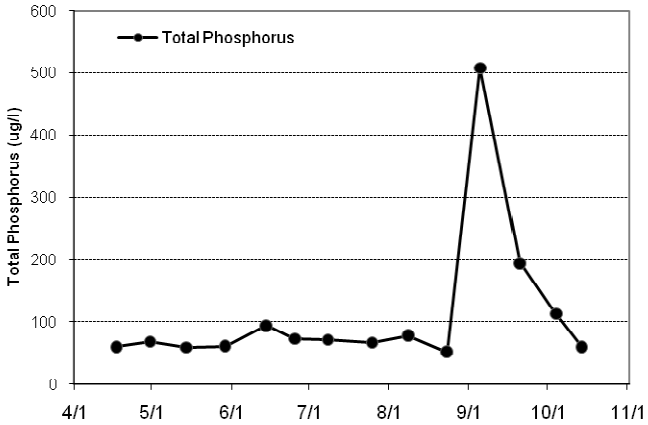
If you notice any errors in the lake's data or physical information, or are aware of any additional or missing information, please contact Brian Johnson of the Metropolitan Council at (651) 602-8743 or brian.johnson@metc.state.mn.us.

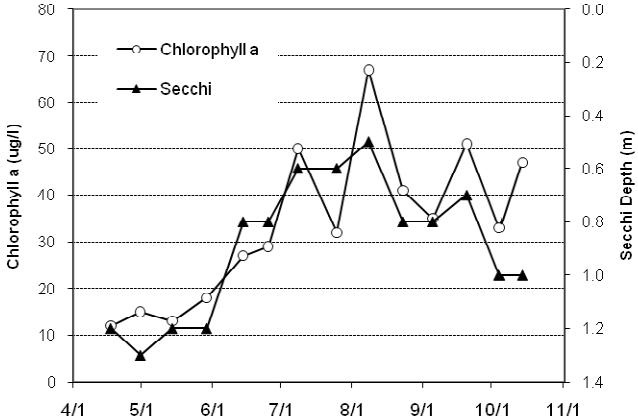
Scout Lake

Apple Valley, Dakota Co.

Lake ID: 190198-00
WMO: Vermillion River
Volunteer: Dan Stanek

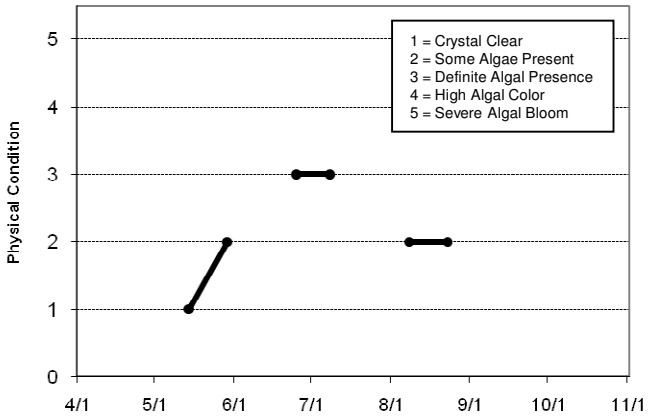






2009 Data

DATE	Surf Tmp (ºC)	Bot Tmp (ºC)	Surf DO (mg/L)	Bot DO (mg/L)	CLA (µg/L)	Surf TP (µg/L)	Bot TP (µg/L)	Secchi (m)	PC	RS
4/17	18				12	60		1.2		1
4/30	14.8				15	68		1.3		
5/14	18.3				13	59		1.2	1	1
5/29	22.8				18	61		1.2	2	2
6/14	24				27	94		0.8		
6/25	31.3				29	73		0.8	3	
7/8	26.4				50	71		0.6	3	
7/25	23.9				32	67		0.6		
8/8	25.6				67	78		0.5	2	
8/23	23.1				41	52		0.8	2	
9/5	23.1				35	508		0.8		
9/20	19.2				51	194		0.7		
10/4	13				33	113		1.0		
10/14	8.2				47	60		1.0		



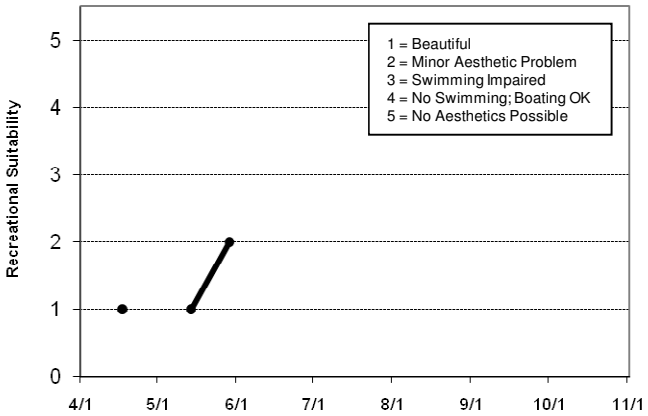
Lake Water Quality Grades Based on Summertime Averages

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Total Phosphorus												
Chlorophyll a												
Secchi Depth												
Lake Grade												

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total Phosphorus												
Chlorophyll a												
Secchi Depth												
Lake Grade												

Year	2004	2005	2006	2007	2008	2009
Total Phosphorus				D	C	D
Chlorophyll a				C	C	C
Secchi Depth				F	C	D
Lake Grade				**D**	**C**	**D**

Source: Metropolitan Council and STORET data



Sea Lake (82-0053) *Forest Lake – Comfort Lake Watershed District*

Sea Lake is a small lake located in Scandia (Washington County). Little information is available on the morphology of the lake.

On each sampling day the lake was monitored for total phosphorus (TP), chlorophyll-a (CLA), total kjeldahl nitrogen (TKN), and secchi transparency, as well as the lake's perceived physical condition and recreational suitability. The resulting data are summarized in tables and figures on the following page.

2009 summer (May-September) data summary

Parameter	*Mean*	*Minimum*	*Maximum*	*Grade*
TP (µg/l)	121.9	73.0	230.0	D
CLA (µg/l)	45.9	24.0	100.0	C
Secchi (m)	0.6	0.5	0.8	F
TKN (mg/l)	1.73	1.60	2.10	
			Lake Grade	D

The lake received a lake grade of D for 2009. The Secchi grade of F does not correlate well with the CLA grade of C. A possible explanation may be that the water clarity may be affected by higher levels of total suspended solids from surface runoff. It is possible for higher suspend solids loadings to decrease water clarity which would decrease light penetration thereby inhibiting algal growth. Additional years of monitoring are suggested for continuing to build the water quality database so as to better understand the lake's water quality and determine potential water quality trends.

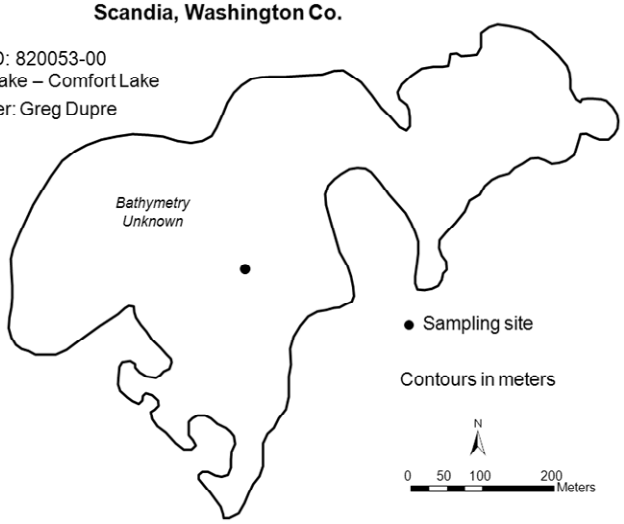
Throughout the monitoring period, the volunteer's opinions of the lake's physical condition and recreational suitability were ranked on a 1-to-5 scale. These user perception rankings are shown on the following page.

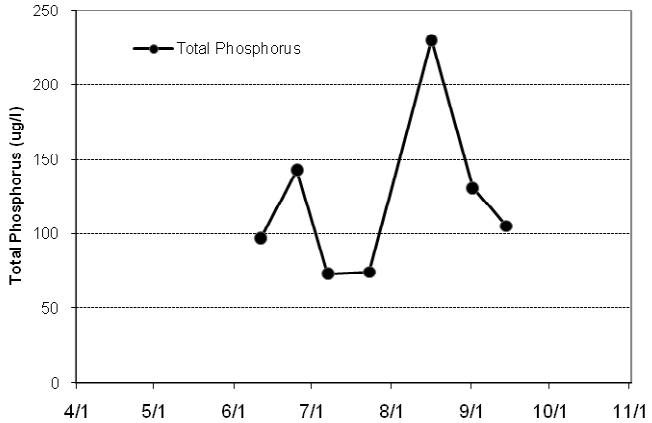
If you notice any errors in the lake's data or physical information, or are aware of any additional or missing information, please contact Brian Johnson of the Metropolitan Council at (651) 602-8743 or brian.johnson@metc.state.mn.us.

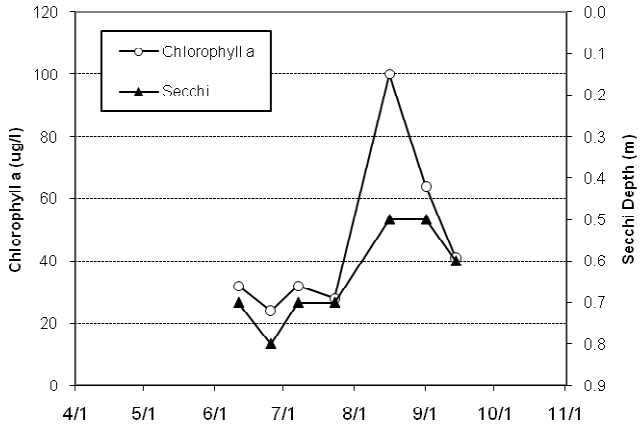
Sea Lake

Scandia, Washington Co.

Lake ID: 820053-00
WD: Forest Lake – Comfort Lake
Volunteer: Greg Dupre

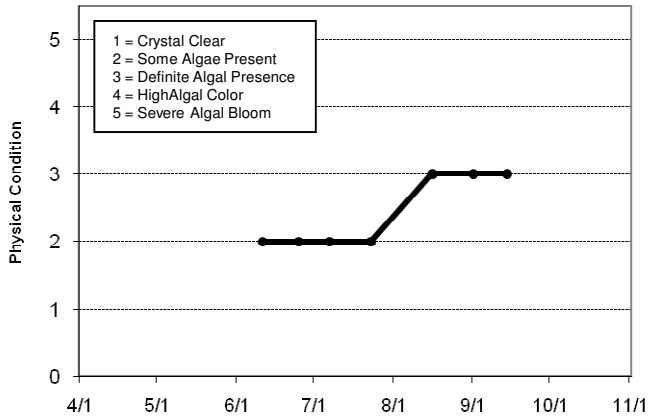






2009 Data

DATE	Surf Tmp (ºC)	Bot Tmp (ºC)	Surf DO (mg/L)	Bot DO (mg/L)	CLA (µg/L)	Surf TP (µg/L)	Bot TP (µg/L)	Secchi (m)	PC	RS
6/11	21				32	97		0.7	2	4
6/25	28.8				24	143		0.8	2	4
7/7	27.1				32	73		0.7	2	4
7/23	26.8				28	74		0.7	2	4
8/16	25.4				100	230		0.5	3	4
9/1	21.5				64	131		0.5	3	4
9/14	25.3				41	105		0.6	3	4



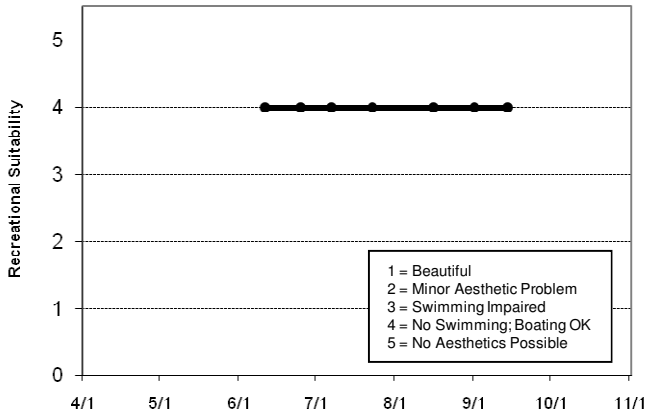
Lake Water Quality Grades Based on Summertime Averages

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Total Phosphorus												
Chlorophyll a												
Secchi Depth												
Lake Grade												

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total Phosphorus												
Chlorophyll a												
Secchi Depth												
Lake Grade												

Year	2004	2005	2006	2007	2008	2009
Total Phosphorus					C	D
Chlorophyll a					B	C
Secchi Depth					D	F
Lake Grade					**C**	**D**

Source: Metropolitan Council and STORET data



Seidl's Lake (19-0095) Cities of ***Inver Grove Heights and South St. Paul***

Seidl's Lake is a 14-acre lake located in the City of Inver Grove Heights (Dakota County) which receives inflow from five inlets. The maximum depth of the lake is approximately 5.0 m (17 feet). There are little known morphological data available.

On each sampling day the lake was monitored for total phosphorus (TP), chlorophyll-a (CLA), total kjeldahl nitrogen (TKN), and secchi transparency, as well as the lake's perceived physical condition and recreational suitability. The resulting data are summarized in tables and figures on the following page.

2009 summer (May-September) data summary

Parameter	***Mean***	***Minimum***	***Maximum***	***Grade***
TP (µg/l)	50.0	48.0	52.0	N/A
CLA (µg/l)	17.0	17.0	17.0	N/A
Secchi (m)	1.0	1.0	1.0	N/A
TKN (mg/l)	1.65	1.60	1.70	
			Lake Grade	N/A

No lake grade or parameter grades were issued this year because of too few monitoring events. At least 5 monitoring events during the summer-time period are required to determine grades.

Throughout the monitoring period, the volunteer's opinions of the lake's physical condition and recreational suitability were ranked on a 1-to-5 scale. These user perception rankings are shown on the following page.

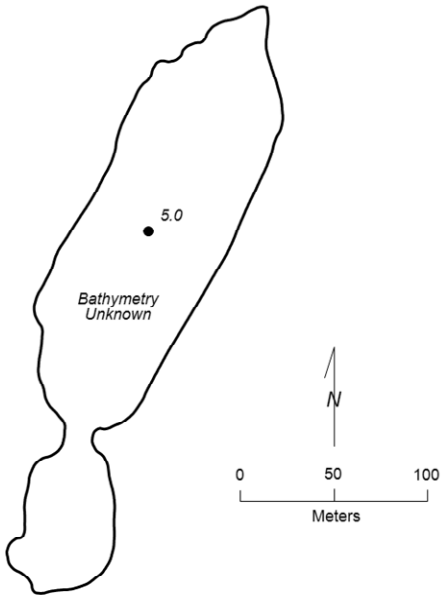
If you notice any errors in the lake's data or physical information, or are aware of any additional or missing information, please contact Brian Johnson of the Metropolitan Council at (651) 602-8743 or brian.johnson@metc.state.mn.us.

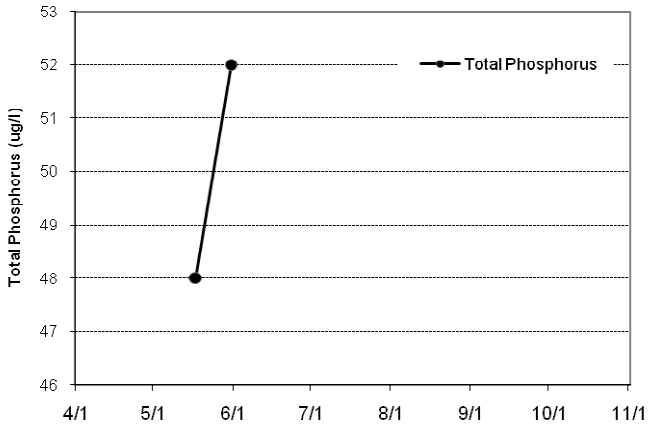
Seidl Lake

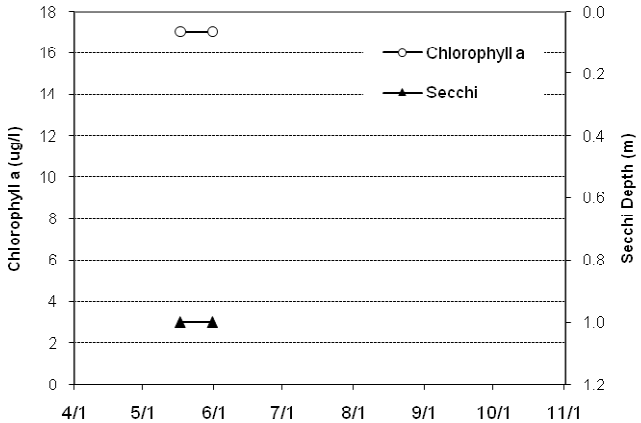
Inver Grove Heights, Dakota Co.

Lake ID: 190095-00
WMO: Lower Mississippi River
Volunteer: Randy Bjorklund

● Sampling site
Contours in meters

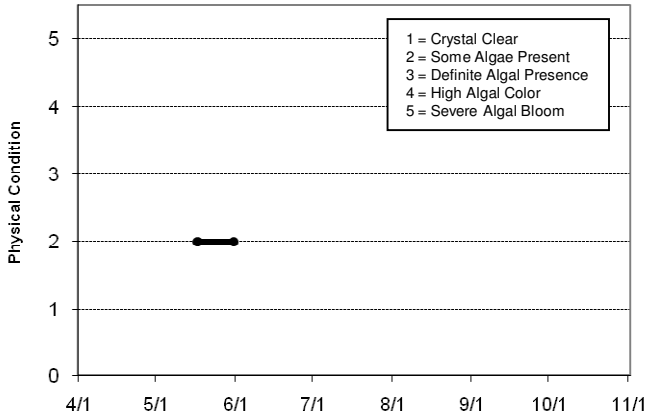






2009 Data

DATE	Surf Tmp (ºC)	Bot Tmp (ºC)	Surf DO (mg/L)	Bot DO (mg/L)	CLA (µg/L)	Surf TP (µg/L)	Bot TP (µg/L)	Secchi (m)	PC	RS
5/17	21.5				17	48		1.0	2	4
5/31	22.9				17	52		1.0	2	4



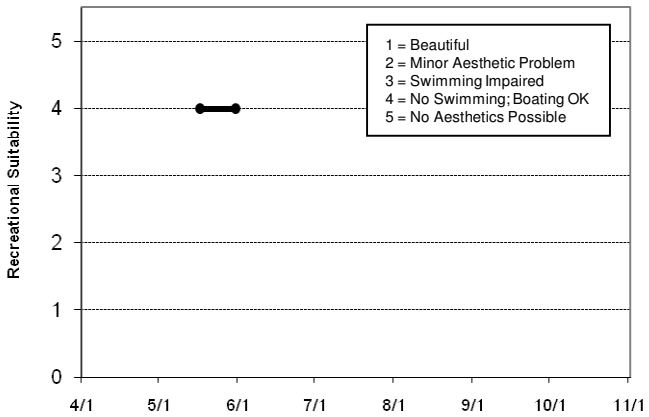
Lake Water Quality Grades Based on Summertime Averages

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Total Phosphorus												C
Chlorophyll a												C
Secchi Depth												D
Lake Grade												**C**

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total Phosphorus				C	C	C	C	D	C	C	D	C
Chlorophyll a				A	B	B	C	C	C	C	C	B
Secchi Depth		D	D	B	B	C	D	D	C	C	D	D
Lake Grade				**B**	**B**	**C**	**C**	**D**	**C**	**C**	**D**	**C**

Year	2004	2005	2006	2007	2008	2009
Total Phosphorus	D	C	D	D		
Chlorophyll a	B	C	C	C		
Secchi Depth	C	D	F	F		
Lake Grade	**C**	**C**	**D**	**D**		**NA**

Source: Metropolitan Council and STORET data



Shady Oak Lake (27-0089-02) *City of Minnetonka*

Shady Oak Lake is located in the City of Minnetonka (Hennepin County). It has a maximum depth of 10.7 m (35 feet). The lake has 3 distinct basins. The monitoring for 2009 occurred in the middle basin, which is also the deepest basin. This was the first year the lake was enrolled in the CAMP.

On each sampling day the lake was monitored for total phosphorus (TP), chlorophyll-a (CLA), total kjeldahl nitrogen (TKN), and secchi transparency, as well as the lake's perceived physical condition and recreational suitability. The resulting data are summarized in tables and figures on the following page.

2009 summer (May-September) data summary

Parameter	*Mean*	*Minimum*	*Maximum*	*Grade*
TP (µg/l)	14.9	8.0	21.0	A
CLA (µg/l)	3.3	1.0	7.3	A
Secchi (m)	4.0	3.5	4.8	A
TKN (mg/l)	0.59	0.36	0.70	
			Lake Grade	A

The lake received a lake grade of A in 2009. The lake received the distinction of being the 9th best water quality lake in 2009 for the METC lake monitoring program. Additional years of monitoring are suggested for continuing to build the water quality database so as to better understand the lake's water quality and determine potential water quality trends.

Throughout the monitoring period, the volunteer's opinions of the lake's physical condition and recreational suitability were ranked on a 1-to-5 scale. These user perception rankings are shown on the following page.

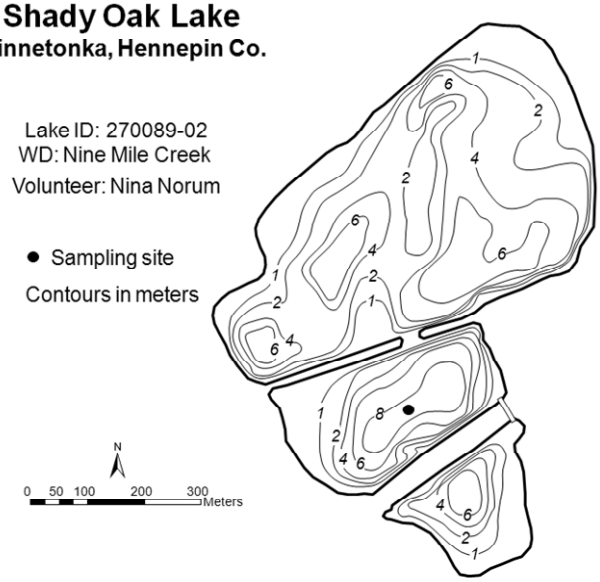
The Fisheries Section of the Minnesota Department of Natural Resources (MDNR) has conducted a fisheries survey on the lake. Information on the survey can be obtained through the MDNR Fisheries Section by calling (651) 259-5831 or by downloading the information off the Internet at http://www.dnr.state.mn.us/lakefind/.

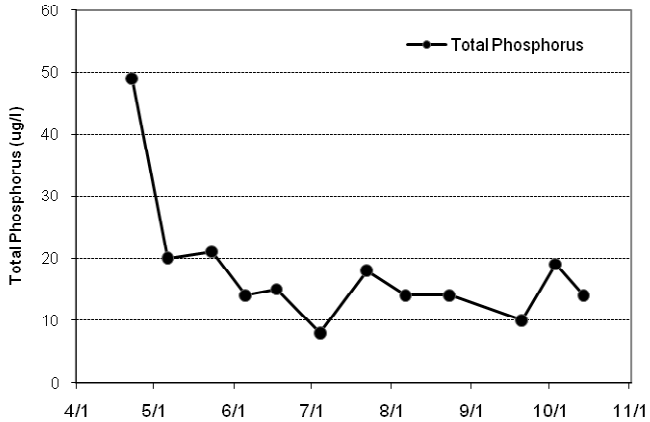
If you notice any errors in the lake's data or physical information, or are aware of any additional or missing information, please contact Brian Johnson of the Metropolitan Council at (651) 602-8743 or brian.johnson@metc.state.mn.us.

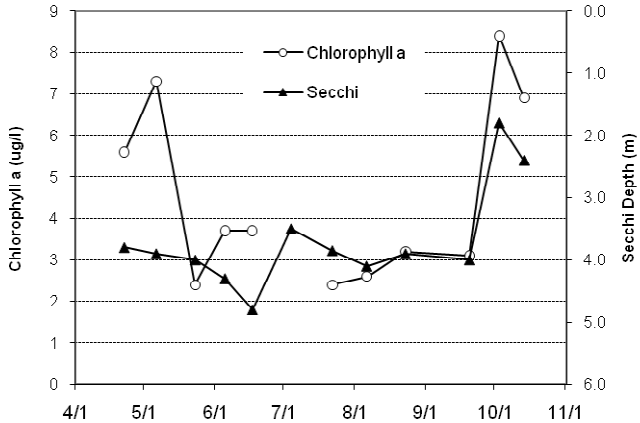
Shady Oak Lake
Minnetonka, Hennepin Co.

Lake ID: 270089-02
WD: Nine Mile Creek
Volunteer: Nina Norum

● Sampling site
Contours in meters

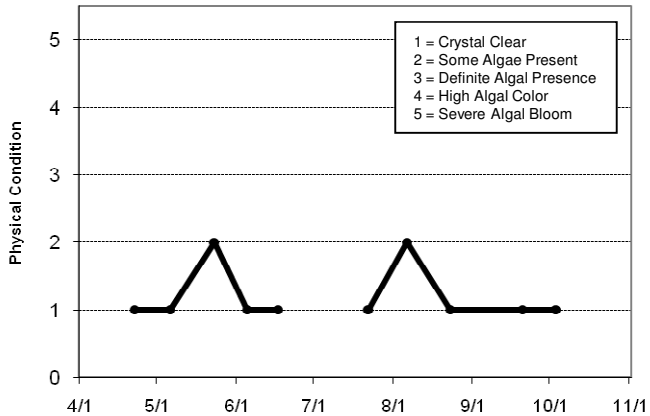






2009 Data

DATE	Surf Tmp (ºC)	Bot Tmp (ºC)	Surf DO (mg/L)	Bot DO (mg/L)	CLA (µg/L)	Surf TP (µg/L)	Bot TP (µg/L)	Secchi (m)	PC	RS
4/22	12.6				5.6	49		3.8	1	1
5/6	18				7.3	20		3.9	1	1
5/23	21.7				2.4	21		4.0	2	1
6/5	22.2				3.7	14		4.3	1	1
6/17	21				3.7	15		4.8	1	1
7/4	24.8					8		3.5		
7/22	24.7				2.4	18		3.9	1	1
8/6	25.5				2.6	14		4.1	2	1
8/23	23.9				3.2	14		3.9	1	1
9/20	23.6				3.1	10		4.0	1	1
10/3	15.1				8.4	19		1.8	1	1
10/14	10.4				6.9	14		2.4		1



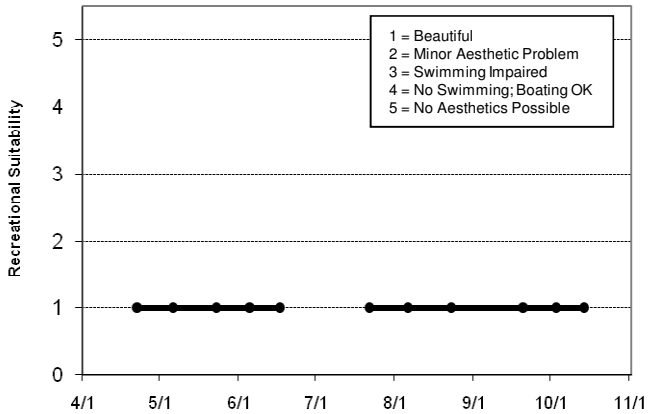
Lake Water Quality Grades Based on Summertime Averages

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Total Phosphorus												
Chlorophyll a												
Secchi Depth												
Lake Grade												

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total Phosphorus												
Chlorophyll a												
Secchi Depth					A	A						
Lake Grade												

Year	2004	2005	2006	2007	2008	2009
Total Phosphorus						A
Chlorophyll a						A
Secchi Depth						A
Lake Grade						**A**

Source: Metropolitan Council and STORET data



Silver Lake [Washington County] (82-0016) *Carnelian - Marine - St. Croix Watershed District*

Silver Lake is a 98-acre lake located within Stillwater Township (Washington County). The maximum and mean depths of the lake are 3.4 m (11 ft) and 1.7 m (5.6 ft), respectively. The entire lake is considered littoral zone, which is the shallow 0 – 15 feet depth zone that is typically dominated by aquatic plants. Since the lake is relatively shallow, it does not maintain a thermocline, which is a density gradient caused by changing water temperatures throughout the water column.

On each sampling day the lake was monitored for total phosphorus (TP), chlorophyll-a (CLA), total kjeldahl nitrogen (TKN), and secchi transparency, as well as the lake's perceived physical condition and recreational suitability. The resulting data are summarized in tables and figures on the following page.

2009 summer (May-September) data summary

Parameter	*Mean*	*Minimum*	*Maximum*	*Grade*
TP (µg/l)	36.5	29.0	48.0	C
CLA (µg/l)	9.7	4.1	24.0	A
Secchi (m)	1.8	1.4	2.3	C
TKN (mg/l)	0.97	0.76	1.20	
			Lake Grade	B

The lake received a lake grade of B for 2009. The water quality database shows that the lake has varied in range from B to D grades since 1996. Further monitoring is suggested to continue to build the water quality database for increasing power to detect water quality trends.

Throughout the monitoring period, the volunteer's opinions of the lake's physical condition and recreational suitability were ranked on a 1-to-5 scale. These user perception rankings are shown on the following page.

If you notice any errors in the lake's data or physical information, or are aware of any additional or missing information, please contact Brian Johnson of the Metropolitan Council at (651) 602-8743 or brian.johnson@metc.state.mn.us.

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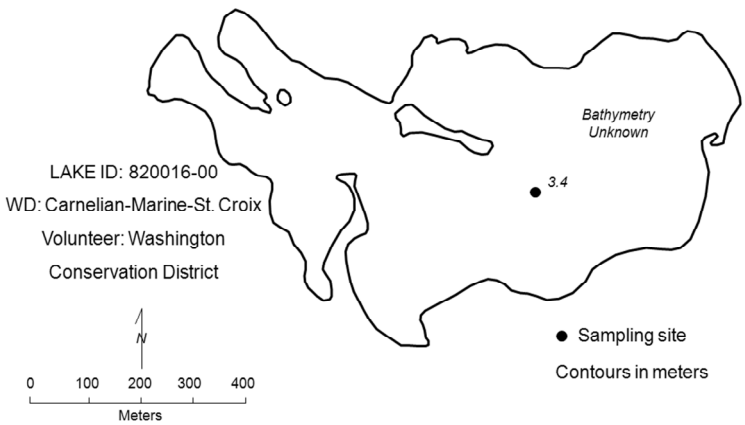
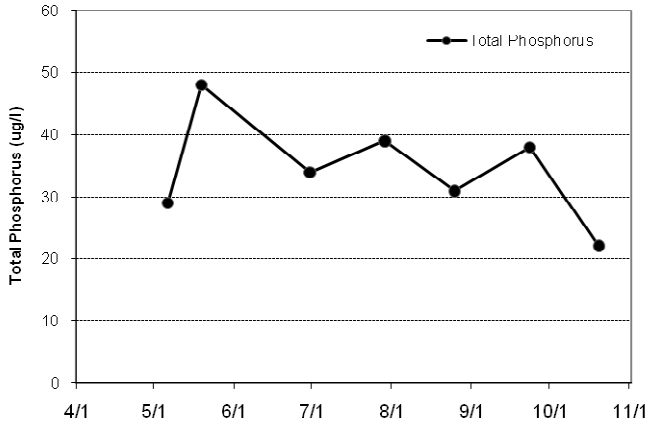
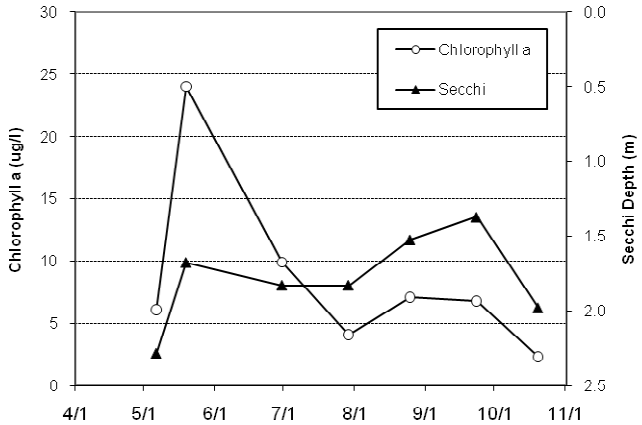
Silver Lake

Stillwater Twp., Washington Co.

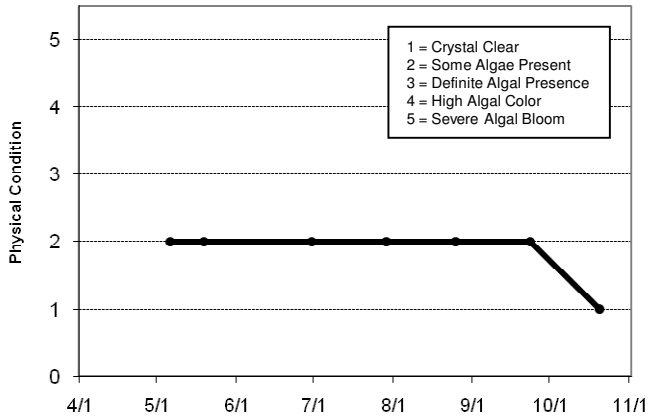






2009 Data

DATE	Surf Tmp (ºC)	Bot Tmp (ºC)	Surf DO (mg/L)	Bot DO (mg/L)	CLA (µg/L)	Surf TP (µg/L)	Bot TP (µg/L)	Secchi (m)	PC	RS
5/6	15	15.9	10.78	7.96	6.1	29		2.3	2	2
5/19	17.7	15.2	11.61	1.76	24	48		1.7	2	3
6/30	20.9	20.8	7.42	0.56	9.9	34		1.8	2	2
7/29	22.8	22.3	9.26	1.25	4.1	39		1.8	2	2
8/25	22.5	19.8	8.89	0.28	7.1	31		1.5	2	2
9/23	21.1	20.6	4.62	0.27	6.8	38		1.4	2	2
10/20	8.5	8.4	12.73	10.74	2.3	22		2.0	1	2



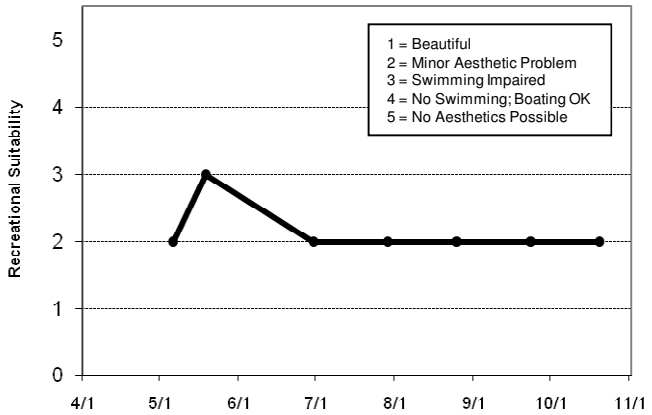
Lake Water Quality Grades Based on Summertime Averages

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Total Phosphorus												
Chlorophyll a												
Secchi Depth												
Lake Grade												

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total Phosphorus					C	C	C	D	C	C		
Chlorophyll a					C	C	C	D	B	B		
Secchi Depth					C	D	D	D	C	C	C	B
Lake Grade					**C**	**C**	**C**	**D**	**C**	**C**		

Year	2004	2005	2006	2007	2008	2009
Total Phosphorus	B	C	C	C	C	C
Chlorophyll a	A	A	B	B	B	A
Secchi Depth	B	B	C	C	C	C
Lake Grade	**B**	**B**	**C**	**C**	**C**	**B**

Source: Metropolitan Council and STORET data



South Oak Lake (27-0661) *City of St. Louis Park*

South Oak is a small shallow lake located within City of St. Louis Park (Hennepin County). There is little known morphological data available for the lake.

On each sampling day the lake was monitored for total phosphorus (TP), chlorophyll-a (CLA), total kjeldahl nitrogen (TKN), and secchi transparency, as well as the lake's perceived physical condition and recreational suitability. The resulting data are summarized in tables and figures on the following page.

2009 summer (May-September) data summary

Parameter	*Mean*	*Minimum*	*Maximum*	*Grade*
TP (µg/l)	36.0	17.0	82.0	C
CLA (µg/l)	25.8	2.2	86.0	C
Secchi (m)		> 1.2	> 1.5	*
TKN (mg/l)	0.92	0.56	1.60	
			Lake Grade	N/A*

* See discussion below.

The summer-time mean Secchi depth was not calculated because the Secchi disk was visible on the lake bottom for each monitoring event. Therefore a lake grade could not be determined.

Throughout the monitoring period, the volunteer's opinions of the lake's physical condition and recreational suitability were ranked on a 1-to-5 scale. These user perception rankings are shown on the following page.

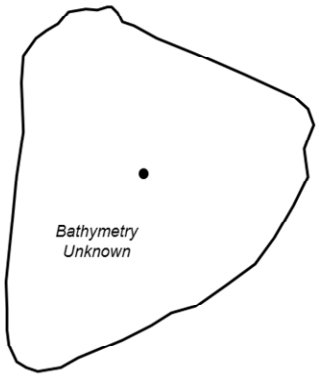
If you notice any errors in the lake's data or physical information, or are aware of any additional or missing information, please contact Brian Johnson of the Metropolitan Council at (651) 602-8743 or brian.johnson@metc.state.mn.us.

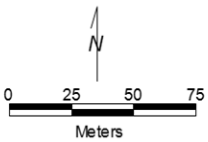
South Oak Lake

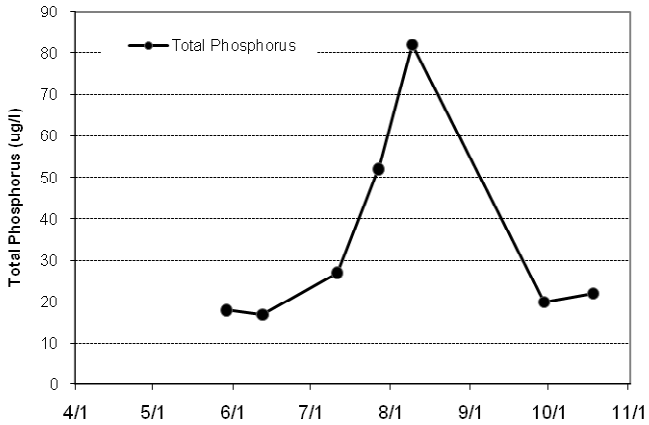
St. Louis Park, Hennepin Co.

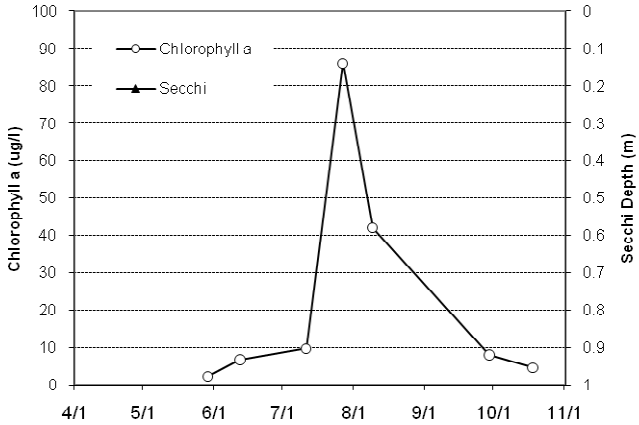
Lake ID: 270661-00
WD: Minnehaha Creek
Volunteer: David Boraas

● Sampling site
Contours in meters





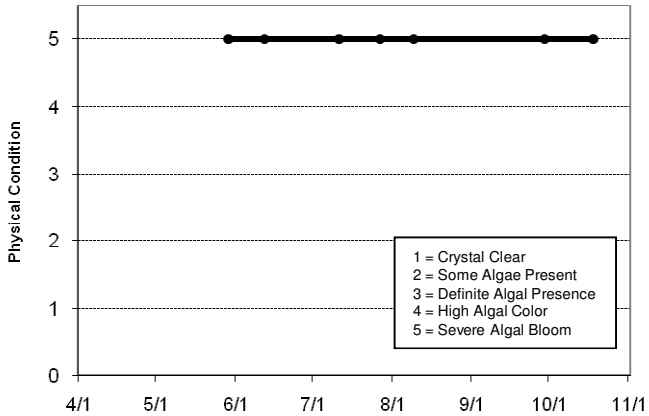




2009 Data

DATE	Surf Tmp (ºC)	Bot Tmp (ºC)	Surf DO (mg/L)	Bot DO (mg/L)	CLA (µg/L)	Surf TP (µg/L)	Bot TP (µg/L)	Secchi (m)	PC	RS
5/29	19.5				2.2	18		1.2+	5	5
6/12	17.4				6.7	17		1.5+	5	5
7/11	22.1				9.7	27		1.3+	5	5
7/27	23.1				86	52		1.2+	5	5
8/9	19.7				42	82		1.3+	5	5
9/29	15.2				8	20		1.3+	5	5
10/18	6.7				4.5	22		1.2+	5	5

+ Indicates that the Secchi Disk was visible on the lake bottom



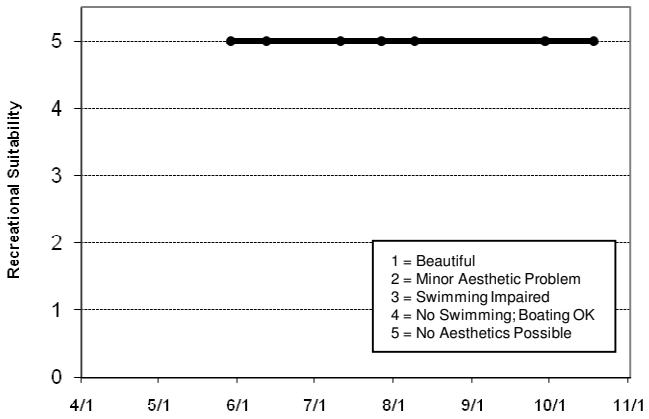
Lake Water Quality Grades Based on Summertime Averages

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Total Phosphorus												
Chlorophyll a												
Secchi Depth												
Lake Grade												

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total Phosphorus											D	D
Chlorophyll a											D	C
Secchi Depth											D	F
Lake Grade											**D**	**D**

Year	2004	2005	2006	2007	2008	2009
Total Phosphorus			D	F	F	C
Chlorophyll a			C	F	F	C
Secchi Depth			D	F	F	C*
Lake Grade			**D**	**F**	**F**	**C**

Source: Metropolitan Council and STORET data



South School Section Lake (82-0151) *Browns Creek Watershed District*

South School Section Lake is located in southeastern Hugo Township in Washington County. The 125-acre lake has a maximum depth of 8.0 m (26 feet).

On each sampling day the lake was monitored for total phosphorus (TP), chlorophyll-a (CLA), total kjeldahl nitrogen (TKN), and secchi transparency, as well as the lake's perceived physical condition and recreational suitability. Depth profiles for temperature and dissolved oxygen were also measured. The resulting data are summarized in tables and figures on the following page.

2009 summer (May-September) data summary

Parameter	*Mean*	*Minimum*	*Maximum*	*Grade*
TP (µg/l)	36.2	21.0	53.0	C
CLA (µg/l)	11.1	3.2	19.0	B
Secchi (m)	2.6	1.4	4.6	B
TKN (mg/l)	1.02	0.86	1.30	
			Lake Grade	B

The lake received a lake grade of B for 2009, which is the best lake grade received yet on the basis of its historical water quality database. Otherwise, the lake has consistently received C lake grades during monitoring years since 1995.

Throughout the monitoring period, the volunteer's opinions of the lake's physical condition and recreational suitability were ranked on a 1-to-5 scale. These user perception rankings are shown on the following page.

The Fisheries Section of the Minnesota Department of Natural Resources (MDNR) has conducted a fisheries survey on the lake. Information on the survey can be obtained through the MDNR Fisheries Section by calling (651) 259-5831 or by downloading the information off the Internet at http://www.dnr.state.mn.us/lakefind/.

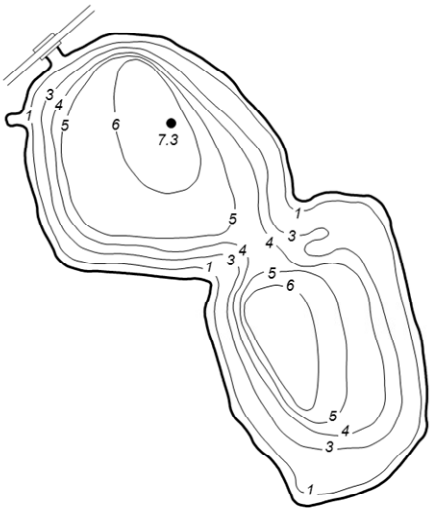
If you notice any errors in the lake's data or physical information, or are aware of any additional or missing information, please contact Brian Johnson of the Metropolitan Council at (651) 602-8743 or brian.johnson@metc.state.mn.us.

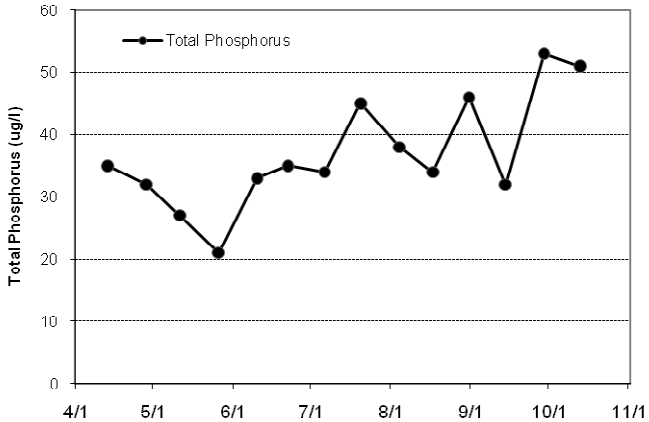
South School Section Lake,
Hugo, Washington Co.

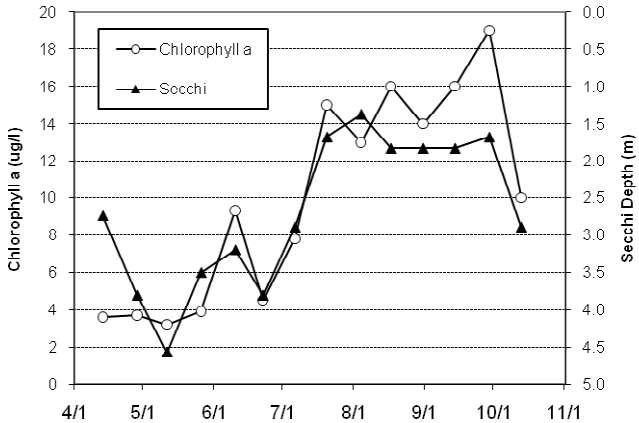
Lake ID: 820151-00
WD: Browns Creek
Volunteer: Washington Conservation District

● Sampling site

Contours in meters

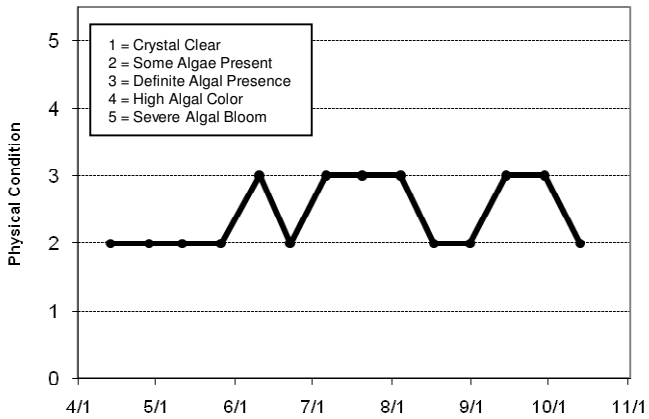






2009 Data

DATE	Surf Tmp (ºC)	Bot Tmp (ºC)	Surf DO (mg/L)	Bot DO (mg/L)	CLA (µg/L)	Surf TP (µg/L)	Bot TP (µg/L)	Secchi (m)	PC	RS
4/13	7.9	7.8	11.54	10.75	3.6	35	74	2.7	2	2
4/28	11.6	11.5	9.85	0.09	3.7	32	30	3.8	2	2
5/11	14.3	14.1	8.58	0.24	3.2	27	25	4.6	2	2
5/26	18.7	18.6	7.81	7.79	3.9	21	18	3.5	2	3
6/10	17.2	16.7	8.45	7.86	9.3	33	24	3.2	3	3
6/22	23.6	17.9	9.32	0.15	4.5	35	42	3.8	2	3
7/6	22.9	20.3	9.69	0.1	7.8	34	57	2.9	3	3
7/20	20.5	19.7	8.86	0.14	15	45	44	1.7	3	3
8/4	22.5	21.2	8.94	0.11	13	38	39	1.4	3	3
8/17	24.1	21.5	7.65	0.06	16	34	65	1.8	2	3
8/31	20.5	20.4	5.52	0.12	14	46	51	1.8	2	3
9/14	23	20.6	9.98	0.09	16	32	93	1.8	3	4
9/29	16.6	16.6	6.46	0.11	19	53	42	1.7	3	3
10/13	8.1	8.2	10.51	0.11	10	51	32	2.9	2	3



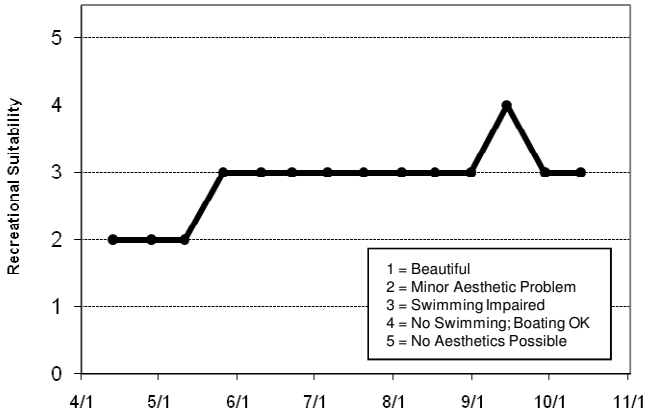
Lake Water Quality Grades Based on Summertime Averages

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Total Phosphorus												
Chlorophyll a												
Secchi Depth												
Lake Grade												

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total Phosphorus				C	C		C					
Chlorophyll a				C	C		C					
Secchi Depth				C	C		C					
Lake Grade				**C**	**C**		**C**					

Year	2004	2005	2006	2007	2008	2009
Total Phosphorus		C	C	C	C	C
Chlorophyll a		C	C	C	B	B
Secchi Depth		B	C	C	C	B
Lake Grade		**C**	**C**	**C**	**C**	**B**

Source: Metropolitan Council and STORET data



South Twin Lake (82-0019) *Carnelian - Marine - St. Croix Watershed District*

South Twin Lake is a 54-acre lake located within Stillwater Township (Washington County). The maximum and mean depths of the lake are 4.0 m (13 ft) and 2.0 m (6.5 ft), respectively. The entire area of the lake is considered littoral zone which is the 0-15 feet depth zone of aquatic plant dominance. Furthermore, the lake does not maintain a thermocline, which is a density gradient caused by changing water temperatures throughout the water column.

On each sampling day the lake was monitored for total phosphorus (TP), chlorophyll-a (CLA), total kjeldahl nitrogen (TKN), and secchi transparency, as well as the lake's perceived physical condition and recreational suitability. The resulting data are summarized in tables and figures on the following page.

2009 summer (May-September) data summary

Parameter	*Mean*	*Minimum*	*Maximum*	*Grade*
TP (µg/l)	65.3	47.0	79.0	C
CLA (µg/l)	19.7	8.3	45.0	B
Secchi (m)	1.7	0.9	2.7	C
TKN (mg/l)	1.80	1.40	2.00	
			Lake Grade	C

The lake received a lake grade of C for 2009. The lake has received various lake grades within the C to F range. Further monitoring is suggested to continue to build the water quality database for increasing power to detect water quality trends.

Throughout the monitoring period, the volunteer's opinions of the lake's physical condition and recreational suitability were ranked on a 1-to-5 scale. These user perception rankings are shown on the following page.

If you notice any errors in the lake's data or physical information, or are aware of any additional or missing information, please contact Brian Johnson of the Metropolitan Council at (651) 602-8743 or brian.johnson@metc.state.mn.us.

South Twin Lake
Stillwater Twp., Washington Co.

LAKE ID: 820019-00

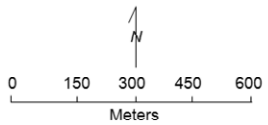
WD: Carnelian-Marine-St. Croix

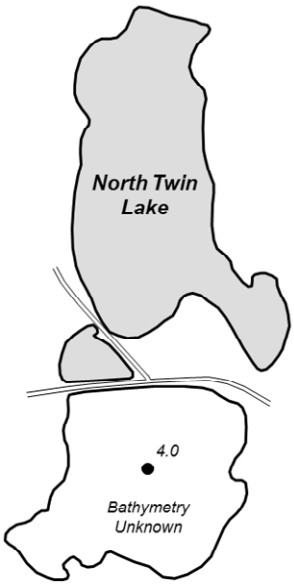
Volunteer: Washington

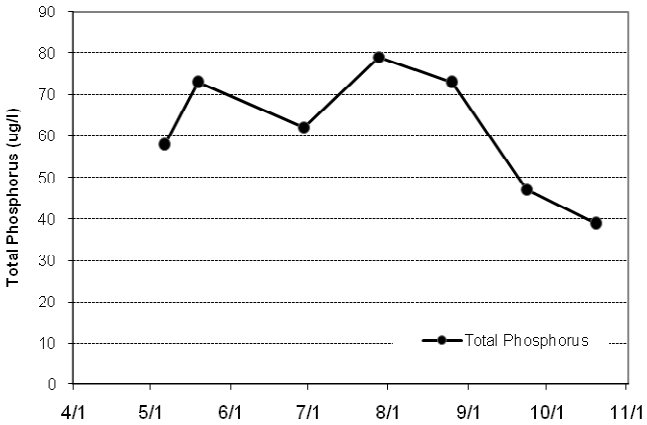
Conservation District

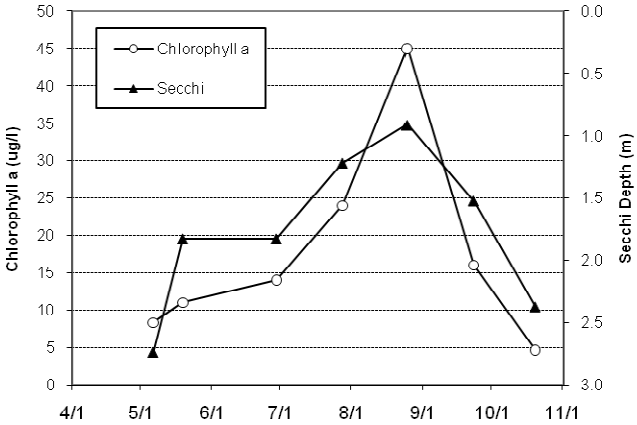
● Sampling site

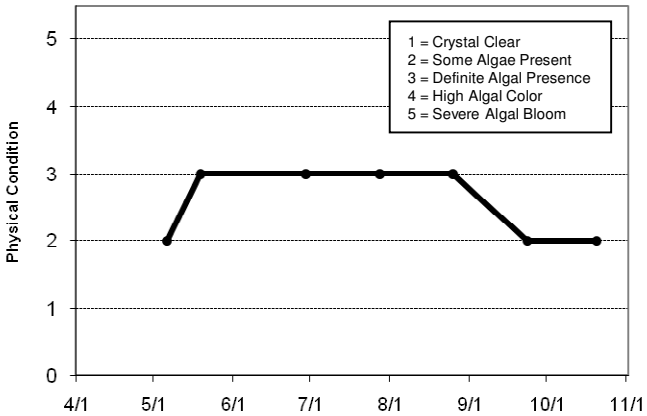
Contours in meters

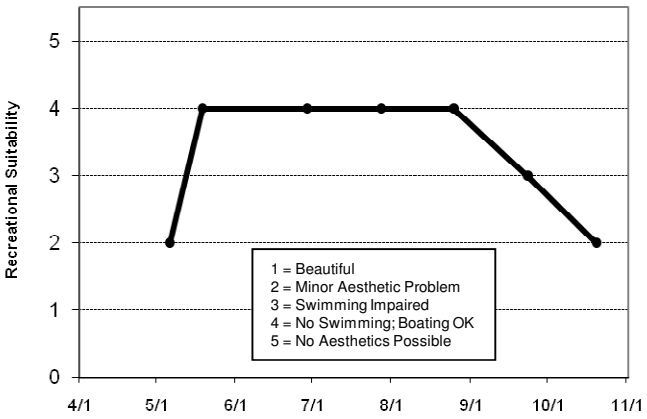












2009 Data

DATE	Surf Tmp (ºC)	Bot Tmp (ºC)	Surf DO (mg/L)	Bot DO (mg/L)	CLA (µg/L)	Surf TP (µg/L)	Bot TP (µg/L)	Secchi (m)	PC	RS
5/6	15.9	15.3	10.1	0.9	8.3	58		2.7	2	2
5/19	17.2	16	10.71	0.1	11	73		1.8	3	4
6/29	22.9	22.8	6.09	0.03	14	62		1.8	3	4
7/28	23.6	21.8	9.63	0.11	24	79		1.2	3	4
8/25	23	21.1	9.75	0.13	45	73		0.9	3	4
9/23	21.7	21.6	7.55	1.51	16	47		1.5	2	3
10/20	8.3	8.3	13.57	13.66	4.6	39		2.4	2	2

Lake Water Quality Grades Based on Summertime Averages

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Total Phosphorus												
Chlorophyll a												
Secchi Depth												
Lake Grade												

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total Phosphorus					C	C	D	D	C	D		
Chlorophyll a					D	D	D	F	C	D		
Secchi Depth					D	D	F	F	D	F	D	C
Lake Grade					**D**	**D**	**D**	**F**	**C**	**D**		

Year	2004	2005	2006	2007	2008	2009
Total Phosphorus	C	C	D	D	D	C
Chlorophyll a	B	C	C	C	C	B
Secchi Depth	C	C	D	D	D	C
Lake Grade	**C**	**C**	**D**	**D**	**D**	**C**

Source: Metropolitan Council and STORET data

Spring Lake (70-0054) *Prior Lake - Spring Lake Watershed District*

Spring Lake is located in Spring Lake Township (Scott County). It is considered a Priority Lake by the Metropolitan Council for its high regional recreation value (METC 2007). The lake has a surface area of 630 acres. The maximum and mean depths of the lake are 11.3 and 5.6 m (37 and 18 feet), respectively.

In an attempt to improve the lake's water quality, a ferric chloride ($FeCl_3$) addition system was constructed at the outlet of the Highway 13 wetland in 1998. Continuous operation started in 1999. The system was designed to enhance phosphorus (P) removal from the discharge of the wetland prior to entering the lake. The system consists of a dosing station at the outlet of the wetland, followed by a settling basin. The dosing station meters $FeCl_3$ into the wetland outlet. The $FeCl_3$ dissassociates into free iron (Fe) where it combines with P to form an insoluble Fe-P complex called floc. The desiltation basin then provides an area where the floc can settle out and be removed. The watershed district continues to monitor the effectiveness of the system.

On each sampling day the lake was monitored for total phosphorus (TP), chlorophyll-a (CLA), total kjeldahl nitrogen (TKN), and secchi transparency, as well as the lake's perceived physical condition and recreational suitability. The resulting data are summarized in tables and figures on the following page.

2009 summer (May-September) data summary

Parameter	*Mean*	*Minimum*	*Maximum*	*Grade*
TP (µg/l)	79.7	41.0	120.0	D
CLA (µg/l)	29.4	13.0	76.0	C
Secchi (m)	1.1	0.6	2.2	D
TKN (mg/l)	1.77	1.50	2.20	
			Lake Grade	D

The lake received a lake grade of D in 2009. The lake grades have varied from Cs to Ds since 1980. Continued monitoring is suggested to provide water quality data for supporting the PLSLWD's efforts in managing Spring Lake.

Throughout the monitoring period, the volunteer's opinions of the lake's physical condition and recreational suitability were ranked on a 1-to-5 scale. These user perception rankings are shown on the following page.

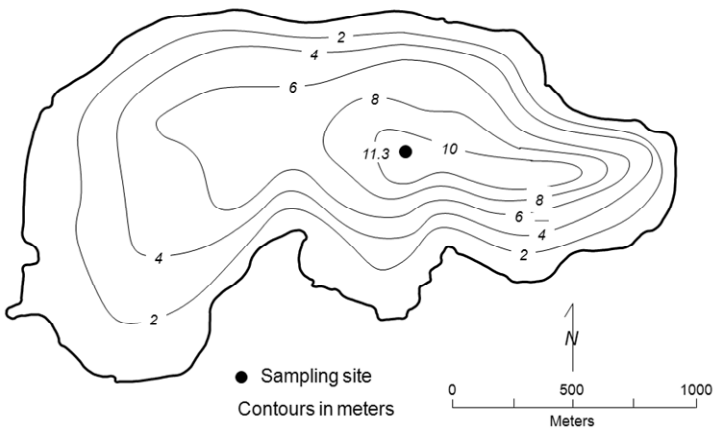
The Fisheries Section of the Minnesota Department of Natural Resources (MDNR) has conducted a fisheries survey on the lake. Information on the survey can be obtained through the MDNR Fisheries Section by calling (651) 259-5831 or by downloading the information off the Internet at http://www.dnr.state.mn.us/lakefind/.

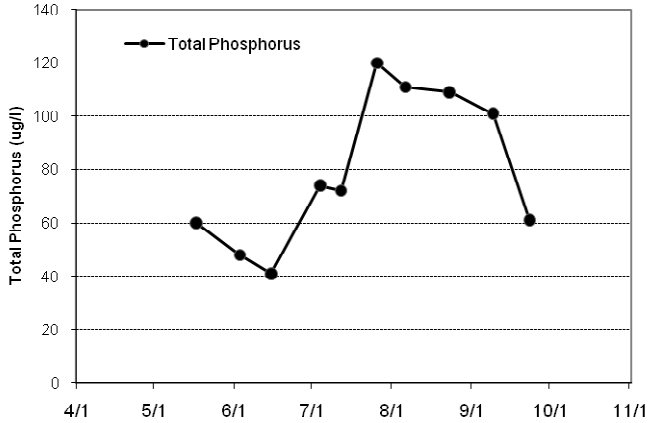
If you notice any errors in the lake's data or physical information, or are aware of any additional or missing information, please contact Brian Johnson of the Metropolitan Council at (651) 602-8743 or brian.johnson@metc.state.mn.us.

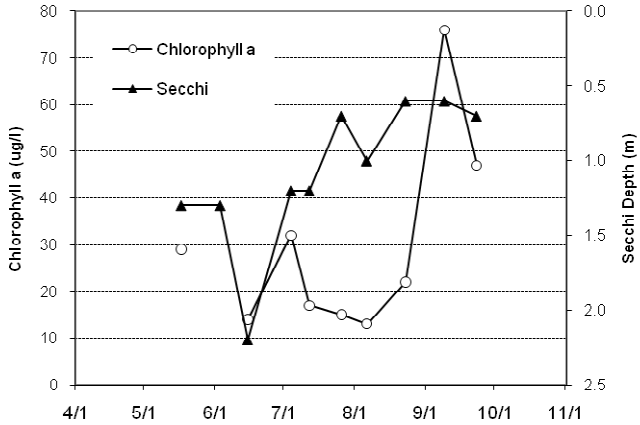
Spring Lake

Prior Lake/Spring Lake Twp., Scott Co.

Lake ID: 700054-00
WD: Prior Lake-Spring Lake
Volunteer: Jim Weninger

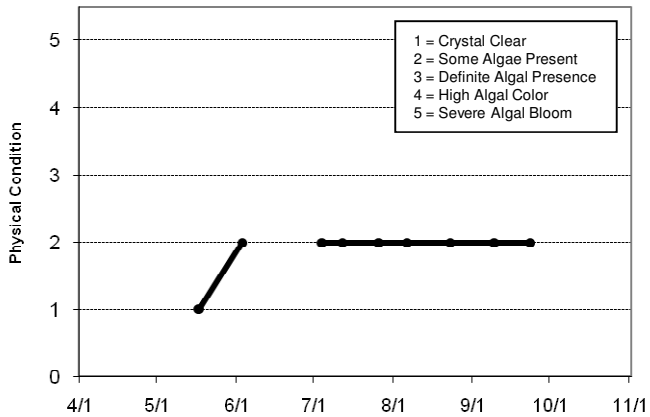






2009 Data

DATE	Surf Tmp (ºC)	Bot Tmp (ºC)	Surf DO (mg/L)	Bot DO (mg/L)	CLA (µg/L)	Surf TP (µg/L)	Bot TP (µg/L)	Secchi (m)	PC	RS
5/17	15.6				29	60		1.3	1	1
6/3	21.1					48		1.3	2	1
6/15	22.2				14	41		2.2		
7/4	23.3				32	74		1.2	2	1
7/12	25.8				17	72		1.2	2	1
7/26	23.7				15	120		0.7	2	2
8/6	22				13	111		1.0	2	1
8/23	23.3				22	109		0.6	2	2
9/9	22.5				76	101		0.6	2	2
9/23	22				47	61		0.7	2	1



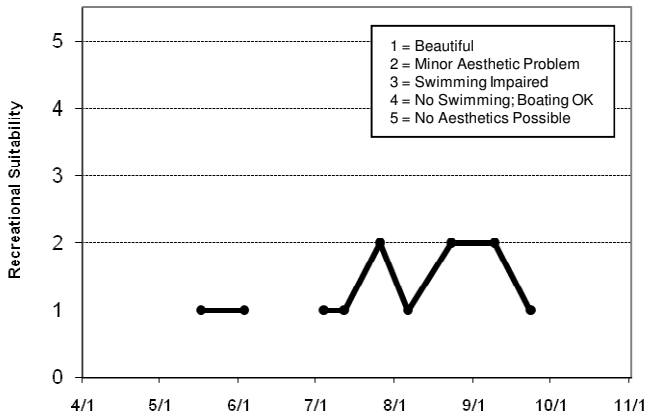
Lake Water Quality Grades Based on Summertime Averages

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Total Phosphorus	F	D	D		D							
Chlorophyll a	C	C	C		D						C	
Secchi Depth	C	B	C	C	C	D	D	D	D	C	B	D
Lake Grade	**D**	**C**	**C**		**D**							

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total Phosphorus					D	D			F	D	D	D
Chlorophyll a					C	C			D	D	F	C
Secchi Depth	C	C	C	C	D	D			C	D	F	C
Lake Grade					**D**	**D**			**D**	**D**	**F**	**C**

Year	2004	2005	2006	2007	2008	2009
Total Phosphorus	D	D	D	C	C	D
Chlorophyll a	D	C	C		D	C
Secchi Depth	D	C	C	D	D	D
Lake Grade	**D**	**C**	**C**	**C**	**D**	**D**

Source: Metropolitan Council and STORET data



Square Lake (82-0046) *Carnelian - Marine - St. Croix Watershed District*

Square Lake is located in May Township (Washington County). It is considered a Priority Lake by the Metropolitan Council for its high regional recreation value and exceptional water clarity (METC 2007). The lake has a surface area of 193 acres, and a maximum and mean depth of 20.7 and 9.0 m, respectively. The lake has a trout fishery (MDNR 1996).

On each sampling day the lake was monitored for secchi transparency, perceived physical condition, and recreational suitability. Depth profiles for temperature and dissolved oxygen were also measured. The resulting data are summarized in tables and figures on the following page.

2009 summer (May-September) data summary

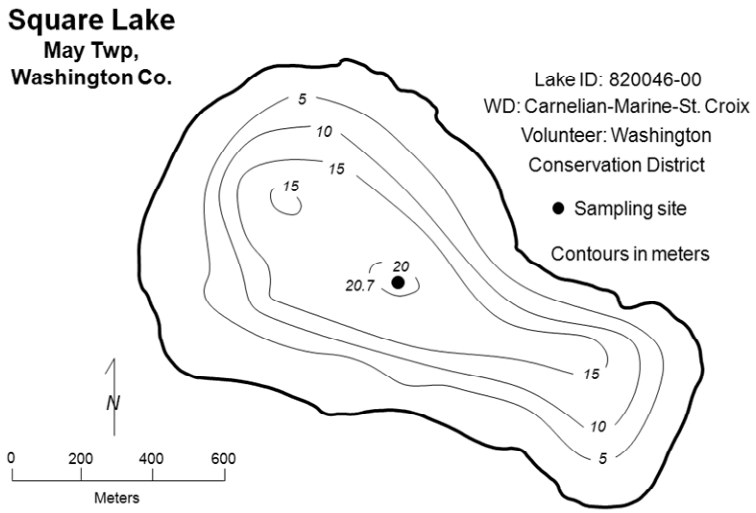
Parameter	*Mean*	*Minimum*	*Maximum*	*Grade*
Secchi (m)	6.6	5.3	7.6	A

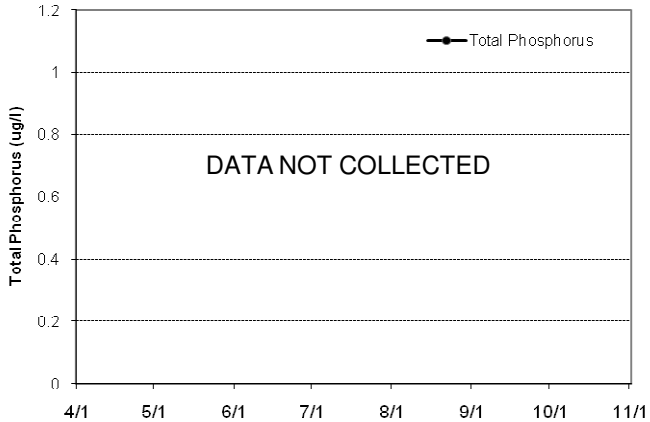
The lake continues to receive an A grade for water clarity.

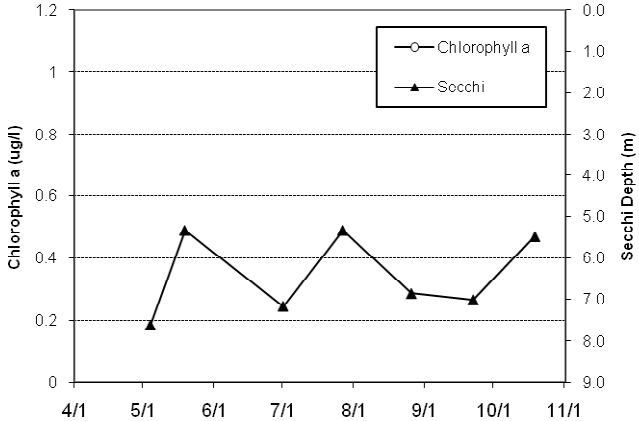
Throughout the monitoring period, the volunteer's opinions of the lake's physical condition and recreational suitability were ranked on a 1-to-5 scale. These user perception rankings are shown on the following page.

The Fisheries Section of the Minnesota Department of Natural Resources (MDNR) has conducted a fisheries survey on the lake. Information on the survey can be obtained through the MDNR Fisheries Section by calling (651) 259-5831 or by downloading the information off the Internet at http://www.dnr.state.mn.us/lakefind/.

If you notice any errors in the lake's data or physical information, or are aware of any additional or missing information, please contact Brian Johnson of the Metropolitan Council at (651) 602-8743 or brian.johnson@metc.state.mn.us.

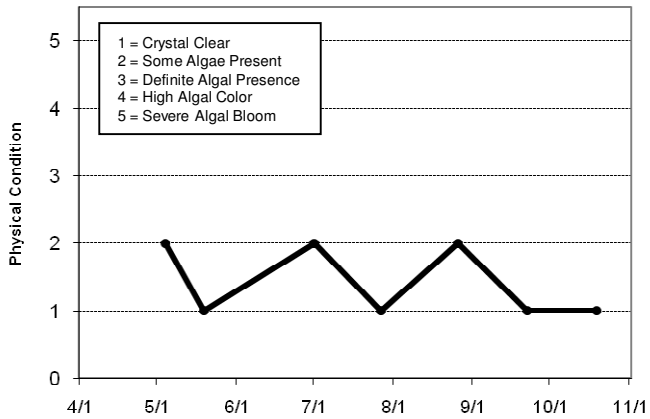






2009 Data

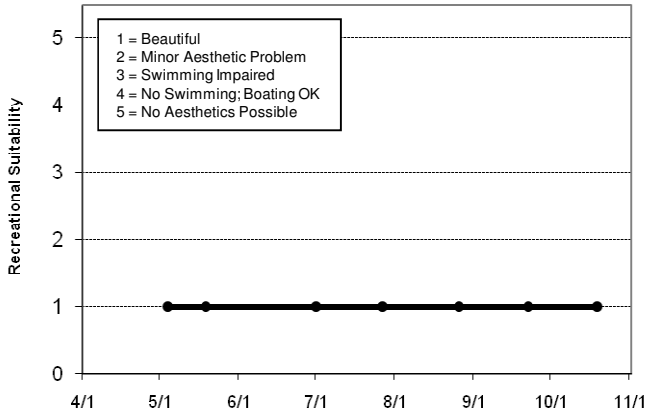
DATE	Surf Tmp (ºC)	Bot Tmp (ºC)	Surf DO (mg/L)	Bot DO (mg/L)	CLA (µg/L)	Surf TP (µg/L)	Bot TP (µg/L)	Secchi (m)	PC	RS
5/4	12.3	5.2	11.81	0.01				7.6	2	1
5/19	15.4	5.7	11.53	0.05				5.3	1	1
7/1	21.2	6.3	8.38	0.06				7.2	2	1
7/27	22.4	6.4	9.17	0.04				5.3	1	1
8/26	22.9	6.6	9.01	0.04				6.9	2	1
9/22	22.6	6.7	8.6	0.03				7.0	1	1
10/19	10.5	6.9	10.12	0.04				5.5	1	1



Lake Water Quality Grades Based on Summertime Averages

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Total Phosphorus	B	A	A	A	A	A				A		
Chlorophyll a	A	A	A	A	A	A				A		
Secchi Depth	A	A	A	A	A	A	A	A	A	A	A	
Lake Grade	**A**	**A**	**A**	**A**	**A**	**A**				**A**		

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total Phosphorus		A	A	A	A	A	A	A	A	A	A	A
Chlorophyll a		A	A	A	A	A	A	A	A	A	A	A
Secchi Depth		A	A	A	A	A	A	A	A	A	A	A
Lake Grade		**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**

Year	2004	2005	2006	2007	2008	2009
Total Phosphorus	A	A	A	A		
Chlorophyll a	A	A	A	A		
Secchi Depth	A	A	A	A	A	A
Lake Grade	**A**	**A**	**A**	**A**		

Source: Metropolitan Council and STORET data