

Lake Minnesuing Sanitary District

Bacterial near-shore results

Summary

There were 19 samples taken for near-shore bacteria. These samples were taken to fill in areas on the lakes shoreline that had wide spaces between test sites. We used a method of grab samples by inverting a sterile bottle and inserting it into the water to approximately one half meter, turning the mouth upwards until full and placing the cap onto the bottle (never touching the rim, inside cap, or bottle interior). The samples were then iced and sent to the State lab in a cooler by over-night delivery.

The results from the lab show <10 per mil. on all sites for Fecal Strep; Fecal coli; and E. coli. As a non-limnologist I would say that it is good indication that the near-shore health of the lake is fairly good. That said, it would be foolish not to continue some effort to educate the property owners on the Best shore-line Management Practices and attention to their septic issues. The Sanitary District's board has sent each property owner material to make them aware of the issues.

**Lake Minnesuing Sanitary District
Bacterial Analysis**

July 27, 1998-9:00 AM

Grab Samples in approximately 2 (two) feet of water.

Sample # & Reference	MFFCC	Fecal Strep.	E- Coli.
#19 Smith's Bay	< 10	<10	<10
#20 W. Carlson	<10	<10	<10
#21 Cordt'S	<10	<10	<10
#22 Bergstrom	<10	<10	<10
#23 Edward's	<10	<10	<10
#24 Marlowe's	<10	<10	<10
#25 So. Shore	<10	<10	<10
#26 So. Shore	<10	<10	<10
#27 So. Shore	<10	<10	<10
#28 Olson Bay	<10	<10	<10
#29 Willis Bay	<10	<10	<10
#30 Sw Bay N. shore.	<10	<10	<10
#31 W. of Perthree	<10	<10	<10
#32W. Shore (stienke)	<10	<10	<10
#33 W. Shore Robinson	<10	<10	<10
#34 W. shore Giffen point	<10	<10	<10
#35 Hanson creek	<10	<10	<10
#36 Josephson's	<10	<10	<10
#37 G. Bergren	<10	<10	<10
#38 Old 1996 site #12	<10	<10	<10

Lake Minnesuing Sanitary District

Near shore conductivity tests

Summary

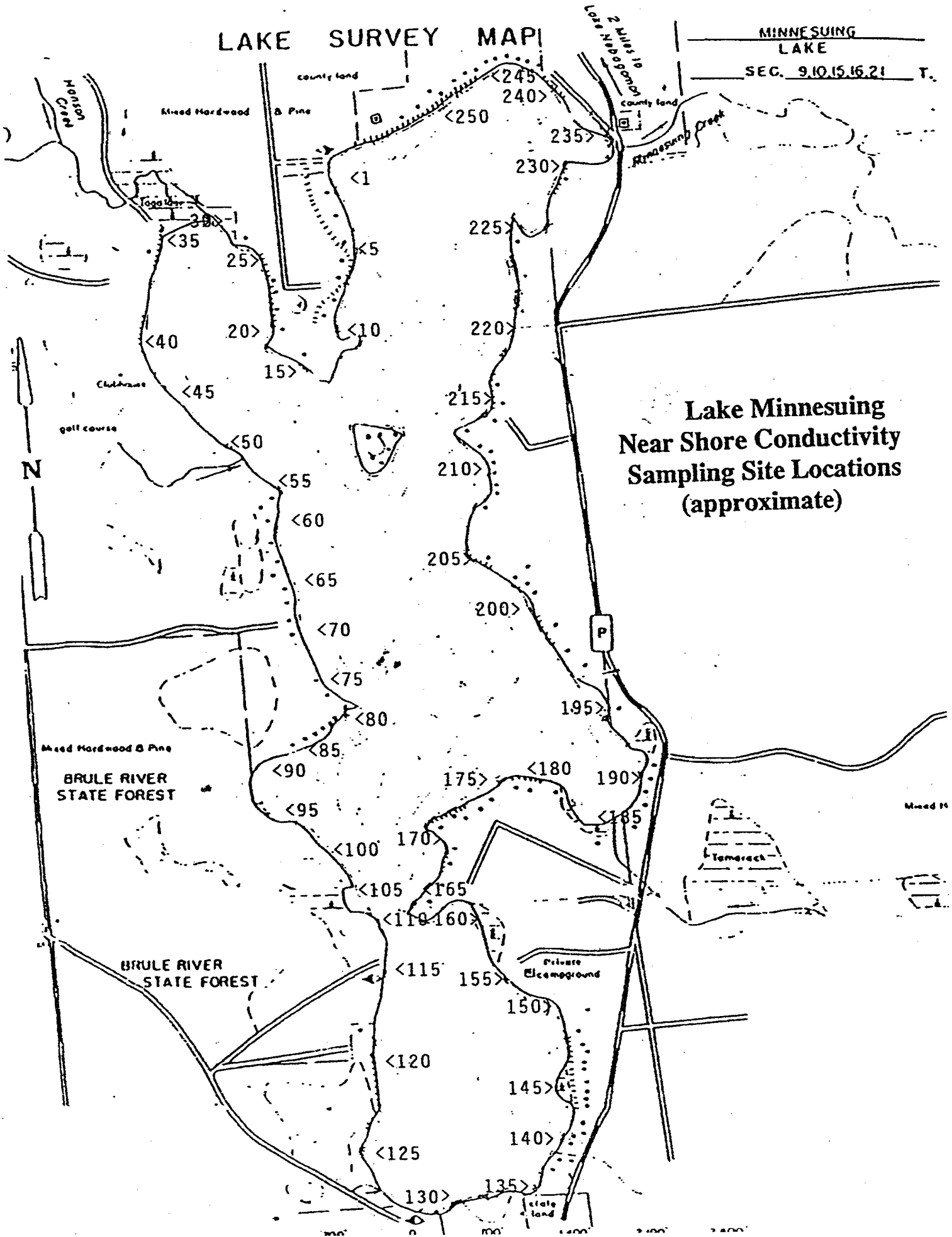
The near shore conductivity tests were taken at locations that closely correlate to the August 4, 1996 tests. Those results are reported in the final limnology study prepared by C.J. Owen & Associates in 1997. This years' tests were taken using a YSI 85 meter and probe adjusted for temperature and conductance. The probe was fixed at a depth of 10 inches on a pontoon boat moving in two to three feet of water depth. Two hundred and fifty eight (258) sites were tested including the Island and One deep-hole site at the north end of the lake. The tests were taken on October 10 and 11, 2000

The sample shows a fairly consistent reading around the main lake shoreline with elevated readings as you go through the narrows into the south-bay. The reading is highest at the south-east corner of the south-bay and needs to have some further investigation in the future.

LAKE SURVEY MAP

MINNESUING
LAKE

SEC. 9, 10, 15, 16, 21 T.



**Lake Minnesuing
Near Shore Conductivity
Sampling Site Locations
(approximate)**

Lake Minnesuing Sanitary District

Dissolved Oxygen, Temperature, Conductivity Summary

The Dissolved Oxygen, Temperature, and Conductivity Tests were all done over a three year period of time. The YSI 85 meter with 50-foot cable and compensating probe were used. Two sites were chosen at deep holes on the lake. The south site GPS N46-27-943 and W91-44-571 and the north site at GPS N46-28-635 and W91-44-522. Secchi depth readings were taken at each location except during iced over periods.

The D.O. readings indicate an average lake spring and fall turnover and a stratification of the D.O. over the summer as the temperature of the water increases. The disturbing indicator is the narrow oxygen figures at the less than 5-meter range. Most fish and especially walleye, northern, and bass need higher than 5 parts per mil. of oxygen to be in a healthy state. The fishing pressure is then always in the shallow water range during the mid summer months. The spring, fall and winter months have a more consistent oxygen level in the water column.

As for the conductivity there seems to be a fairly uniform reading at the surface to moderate depths and then an increase as you near the bottom range. At or near bottom you find cooler temperatures and more particulates to add to the ability of a current to conduct. All this is not a great deal different from the 1996 and 1997 study done by C.J. Owen & Associates.

The temperature tests show a rather quick and good mix in the water column and indicates the lake's ability to turn over during spring and fall changes.

The lake is more than likely in a mid eutrophic state and needs some attention to its shore-line management and probably a water-shed management program to limit its further decline. The continued use of the equipment purchased with the DNR Grant will be a great tool for further information gathering. We need to set a schedule for future testing and recording lake data.

Lake Minnesuing Sanitary District
Temperature, Dissolved Oxygen, Conductivity Profile
 March 2, 1998

Deep hole GPS 46-27-943
 91-44-571

Secchi depth:

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface			
1 meter	2.4 C	11.50 mg/l	78.2 uS
2 meters	3.3 C	10.53 mg/l	104.0 uS
3 meters	3.6 C	9.65 mg/l	105.8 uS
4 meters	3.8 C	8.6 mg/l	106.8 uS
5 meters	3.8 C	7.94 mg/l	108.1 uS
6 meters	4.0 C	6.96 mg/l	111.6 uS
7 meters	4.1 C	6.45 mg/l	112.9 uS
8 meters	4.1 C	6.2 mg/l	115.5 uS
9 meters	4.2 C	5.7 mg/l	118.3 uS
10 meters	4.4 C	2.5 mg/l	122.3 uS
11 meters	4.6 C	1.25 mg/l	126.7 uS
12 meters			
13 meters			

Deep hole North GPS 46-28-635
 91-44-522

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface			
1 meter	3.3C	9.5 mg/l	61.7 uS
2 meters	3.5 C	8.46 mg/l	107.1 uS
3 meters	3.7 C	8.46 mg/l	107.1 uS
4 meters	3.9 C	8.45 mg/l	107.0 uS
5 meters	4.1 C	6.42 mg/l	108.0 uS
6 meters	4.4 C	5.95 mg/l	112.0 uS
7 meters	4.5 C	5.30 mg/l	115.5 uS
8 meters	4.6 C	4.60 mg/l	121.4 uS
9 meters			

Lake Minnesuing Sanitary District
Temperature, Dissolved Oxygen, Conductivity Profile
 March 25, 1998

Deep hole GPS 46-27-943
 91-44-571

Secchi depth:

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface			
1 meter	3.3 C	11.33 mg/l	103.1 uS
2 meters	3.5 C	9.3 mg/l	105.3 uS
3 meters	3.8 C	8.25 mg/l	106.6 uS
4 meters	3.7 C	7.9 mg/l	110.7 uS
5 meters	3.6 C	8.20 mg/l	113.3 uS
6 meters	3.8 C	7.72 mg/l	113.6 uS
7 meters	3.9 C	7.31 mg/l	115.3 uS
8 meters	4.0 C	6.5 mg/l	118.2 uS
9 meters	4.1 C	4.55 mg/l	121.0 uS
10 meters	4.3 C	2.55 mg/l	126.0 uS
11 meters	4.6 C	.10 mg/l	133.2uS
12 meters			
13 meters			

Deep hole North GPS 46-28-635
 91-44-522

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface			
1 meter	3.0 C	13.25 mg/l	97.3 uS
2 meters	3.5 C	10.65 mg/l	106.7 uS
3 meters	3.9 C	9.43 mg/l	107.3 uS
4 meters	4.1 C	7.82 mg/l	109.3 uS
5 meters	4.3 C	6.99 mg/l	112.1 uS
6 meters	4.3 C	6.51 mg/l	115.4 uS
7 meters	4.4 C	6.17 mg/l	118.0 uS
8 meters	4.7 C	mg/l	139.2 uS
9 meters			

Lake Minnesuing Sanitary District
Temperature, Dissolved Oxygen, Conductivity Profile
 April 19, 1998

Deep hole GPS 46-27-943
 South 91-44-571

Secchi depth: 6.25 ft

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface			
1 meter	8.5 C	12.15 mg/l	94.3 uS
2 meters	8.3 C	12.19 mg/l	94.4 uS
3 meters	8.0 C	12.8 mg/l	94.5 uS
4 meters	7.9 C	11.98 mg/l	94.7 uS
5 meters	7.7 C	11.68 mg/l	94.9 uS
6 meters	7.4 C	11.30 mg/l	94.9 uS
7 meters	7.2 C	11.12 mg/l	94.5 uS
8 meters	7.2 C	11.15 mg/l	94.5 uS
9 meters	7.2 C	11.08 mg/l	94.6 uS
10 meters	7.2 C	10.97 mg/l	94.6 uS
11 meters	7.2 C	10.85 mg/l	93.7 uS
12 meters			
13 meters			

Deep hole North GPS 46-28-635
 91-44-522

Secchi Depth 6.5 ft

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface			
1 meter	8.2C	12.40 mg/l	94.7 uS
2 meters	7.5 C	12.05 mg/l	95.2 uS
3 meters	7.4 C	9.90 mg/l	95.3 uS
4 meters	7.3 C	10.19 mg/l	95.6 uS
5 meters	7.3 C	9.03 mg/l	95.8 uS
6 meters	7.2 C	9.20 mg/l	95.9 uS
7 meters	7.2 C	8.78 mg/l	95.9 uS
8 meters	7.1 C	8.72 mg/l	95.9 uS
9 meters	7.0 C	8.28 mg/l	96.2 uS

Lake Minnesuing Sanitary District
Temperature, Dissolved Oxygen, Conductivity Profile
 May 20, 1998

Deep hole GPS 46-27-943
 South 91-44-571

Secchi depth: 11.25 ft

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface			
1 meter	19.8 C	8.30 mg/l	100.1 uS
2 meters	19.5 C	8.30 mg/l	100.1 uS
3 meters	19.1 C	7.80 mg/l	94.9 uS
4 meters	18.3 C	7.75 mg/l	99.9 uS
5 meters	15.9 C	6.50 mg/l	98.9 uS
6 meters	11.7 C	5.6 mg/l	97.8 uS
7 meters	10.2 C	5.40 mg/l	97.7 uS
8 meters	9.3 C	5.34 mg/l	97.4 uS
9 meters	9.1 C	5.48 mg/l	97.1 uS
10 meters	8.9 C	4.71 mg/l	97.1 uS
11 meters	8.7 C	3.67 mg/l	97.8 uS
12 meters	8.4 C	3.25 mg/l	98.0 uS
13 meters			

Deep hole North GPS 46-28-635
 91-44-522

Secchi Depth 10.5 ft

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface			
1 meter	19.8 C	8.0 mg/l	99.9 uS
2 meters	19.3 C	7.50 mg/l	99.8 uS
3 meters	18.6 C	7.15 mg/l	99.6 uS
4 meters	17.8 C	7.10 mg/l	99.2 uS
5 meters	15.8 C	7.10 mg/l	98.5 uS
6 meters	12.4 C	5.75 mg/l	98.4 uS
7 meters	10.0 C	4.30 mg/l	98.0 uS
8 meters	9.2 C	4.50 mg/l	98.5 uS
9 meters	8.9 C	2.37 mg/l	99.6 uS

Lake Minnesuing Sanitary District
Temperature, Dissolved Oxygen, Conductivity Profile
 June 26, 1998

Deep hole GPS 46-27-943
 91-44-571

Secchi depth: 9 ft

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface			
1 meter	22.7 C	9.0 mg/l	100.6 uS
2 meters	22.2 C	8.8 mg/l	100.8 uS
3 meters	19.9 C	8.3 mg/l	100.5 uS
4 meters	18.5 C	7.20 mg/l	100.7 uS
5 meters	15.9 C	4.85 mg/l	101.3 uS
6 meters	14.3 C	2.02 mg/l	102.4 uS
7 meters	12.5 C	0.18 mg/l	103.1 uS
8 meters	10.9 C	0.03 mg/l	104.0 uS
9 meters	10.1 C	0.00 mg/l	104.7 uS
10 meters	9.3 C	0.00 mg/l	106.8 uS
11 meters	9.1 C	0.00 mg/l	109.1 uS
12 meters			
13 meters			

Deep hole North GPS 46-28-635
 91-44-522

Secchi depth: 8.5 ft

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface			
1 meter	22.7 C	8.8 mg/l	100.8 uS
2 meters	20.7 C	7.9 mg/l	100.3 uS
3 meters	17.3 C	6.7 mg/l	101.4 uS
4 meters	15.7 C	4.7 mg/l	101.3 uS
5 meters	14.5 C	4.2 mg/l	101.6 uS
6 meters	14.1C	2.4 mg/l	104.5 uS
7 meters	12.4 C	0.07 mg/l	104.5 uS
8 meters	10.9 C	0.00 mg/l	112.3 uS
9 meters	10.2 C	0.00 mg/l	132.9 uS

Lake Minnesuing Sanitary District
Temperature, Dissolved Oxygen, Conductivity Profile
 July 9, 1998

Deep hole GPS 46-27-943
 91-44-571

Secchi depth: 9.5 ft

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface			
1 meter	23.5 C	8.3 mg/l	102.5 uS
2 meters	22.5 C	8.2 mg/l	102.1 uS
3 meters	22.1 C	7.8 mg/l	102.1 uS
4 meters	19.7 C	4.7 mg/l	102.1 uS
5 meters	16.3 C	2.1 mg/l	102.1 uS
6 meters	14.0 C	0.0 mg/l	103.2 uS
7 meters	12.2 C	0.0 mg/l	107.0 uS
8 meters	11.0 C	0.0 mg/l	107.4 uS
9 meters	10.4 C	0.0 mg/l	107.2 uS
10 meters	9.7 C	0.0 mg/l	112.4 uS
11 meters	9.4 C	0.0 mg/l	123.2 uS
12 meters	9.2 C	0.0 mg/l	126.0 uS
13 meters			

Deep hole North GPS 46-28-635
 91-44-522

Secchi depth: 9.5 ft

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface			
1 meter	23.3 C	8.4 mg/l	102.6 uS
2 meters	22.9 C	8.0 mg/l	102.3 uS
3 meters	22.0 C	7.7 mg/l	101.2 uS
4 meters	19.5 C	4.30 mg/l	100.9 uS
5 meters	15.5 C	1.42 mg/l	102.0 uS
6 meters	13.5 C	0.0 mg/l	103.8 uS
7 meters	12.1 C	0	111.2 uS
8 meters	11.0 C	0	125.8 uS
9 meters	10.1 C	0	148.4 uS

Lake Minnesuing Sanitary District

Temperature, Dissolved Oxygen, Conductivity Profile

July 25, 1998

Deep hole GPS 46-27-943
91-44-571

Secchi depth: 8 ft

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface			
1 meter	24.0 C	6.9 mg/l	105.7 uS
2 meters	23.5 C	7.3 mg/l	105.6 uS
3 meters	23.1 C	7.5 mg/l	105.5 uS
4 meters	22.8 C	7.05 mg/l	105.5 uS
5 meters	16.5 C	0.10 mg/l	106.2 uS
6 meters	13.7 C	0.0 mg/l	111.2 uS
7 meters	12.3 C	0.02 mg/l	115.6 uS
8 meters	11.7 C	0	116.3 uS
9 meters	11.0 C	0	117.3 uS
10 meters	10.2 C	0	121.3 uS
11 meters	9.7 C	0	127.1 uS
12 meters	9.7 C	0	134.7 uS
13 meters			

Deep hole North GPS 46-28-635
91-44-522

Secchi depth 8.75 ft

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface			
1 meter	24.1 C	7.4 mg/l	105.6 uS
2 meters	23.4 C	7.3 mg/l	105.3 uS
3 meters	23.2 C	6.3 mg/l	105.2 uS
4 meters	22.5 C	5.8 mg/l	104.9 uS
5 meters	17.5 C	0.0 mg/l	103.9 uS
6 meters	14.0 C	0	110.0 uS
7 meters	12.5 C	0	115.6 uS
8 meters	11.0 C	0	139.5 uS
9 meters	10.7 C	0	149.1 uS

Lake Minnesuing Sanitary District
Temperature, Dissolved Oxygen, Conductivity Profile

Aug. 30, 1998

Deep hole GPS 46-27-943
 91-44-571

Secchi depth: 6.75 ft

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface			
1 meter	23.2 C	7.8 mg/l	109.6 uS
2 meters	23.0 C	8.1 mg/l	109.5 uS
3 meters	22.6 C	7.8 mg/l	109.5 uS
4 meters	22.4 C	7.3 mg/l	109.6 uS
5 meters	21.7 C	4.6 mg/l	109.8 uS
6 meters	16.8 C	0.0 mg/l	123.2 uS
7 meters	13.4 C	0	127.9 uS
8 meters	11.6 C	0	128.7 uS
9 meters	10.9 C	0	133.2 uS
10 meters	10.0 C	0	141.2 uS
11 meters	9.8 C	0	149.2 uS
12 meters	10.2 C	0	(>) 149.2 uS
13 meters			

Deep hole North GPS 46-28-635
 91-44-522

Secchi depth 7 ft

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface			
1 meter	23.4 C	7.42 mg/l	109.9 uS
2 meters	22.7 C	7.38 mg/l	109.4 uS
3 meters	22.6 C	7.5 mg/l	109.4 uS
4 meters	22.3 C	6.6 mg/l	109.6 uS
5 meters	20.6 C	2.55 mg/l	109.3 uS
6 meters	16.5 C	.01 mg/l	123.2 uS
7 meters	13.4 C	0	130.5 uS
8 meters	12.0 C	0	141.2 uS
9 meters	12.1 C	0	252.0 uS

Lake Minnesuing Sanitary District

Temperature, Dissolved Oxygen, Conductivity Profile

Oct. 10, 1998

Deep hole GPS 46-27-943

Secchi depth: 5.5 ft

91-44-571

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface			
1 meter	14.3 C	7.7 mg/l	112.1 uS
2 meters	14.0 C	6.9 mg/l	112.0 uS
3 meters	13.2 C	7.38 mg/l	112.0 uS
4 meters	13.1 C	6.9 mg/l	112.1 uS
5 meters	13.1 C	6.8 mg/l	112.1 uS
6 meters	13.1 C	6.1 mg/l	112.2 uS
7 meters	13.0 C	4.96 mg/l	113.3 uS
8 meters	13.0 C	5.7 mg/l	113.5 uS
9 meters	12.8 C	4.4 mg/l	114.4 uS
10 meters	12.6 C	3.1 mg/l	118.5 uS
11 meters	10.1 C	0.0 mg/l	167.0 uS
12 meters	9.9 C	0.05 mg/l	193.2 uS
13 meters			

Deep hole North GPS 46-28-635

Secchi depth: 5.25 ft

91-44-522

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface			
1 meter	14.4C	7.9 mg/l	112.0 uS
2 meters	14.3 C	7.15 mg/l	111.7 uS
3 meters	13.8 C	7.7 mg/l	111.8 uS
4 meters	13.4 C	7.0 mg/l	111.9 uS
5 meters	13.3 C	7.2 mg/l	111.9 uS
6 meters	13.3 C	5.95 mg/l	111.7 uS
7 meters	13.3 C	5.6 mg/l	111.9 uS
8 meters	13.3 C	6.1 mg/l	111.8 uS
9 meters	13.3 C	5.9 mg/l	112.5 uS

Lake Minnesuing Sanitary District
Temperature, Dissolved Oxygen, Conductivity Profile
 Oct. 27, 1998

Deep hole GPS 46-27-943
 91-44-571

Secchi depth: 7.5 ft

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface			
1 meter	11.5 C	7.9 mg/l	111.0 uS
2 meters	11.1 C	8.09 mg/l	111.0 uS
3 meters	10.8 C	7.77 mg/l	111.1 uS
4 meters	10.8 C	7.96 mg/l	111.1 uS
5 meters	10.8 C	7.90 mg/l	111.2 uS
6 meters	10.8 C	7.65 mg/l	111.1 uS
7 meters	10.8 C	7.70 mg/l	111.2 uS
8 meters	10.7 C	7.70 mg/l	111.3 uS
9 meters	10.7 C	7.30 mg/l	111.5 uS
10 meters	10.7 C	7.12 mg/l	111.6 uS
11 meters	10.7 C	7.11 mg/l	111.7 uS
12 meters			
13 meters			

Deep hole North GPS 46-28-635
 91-44-522

Secchi depth: 7 ft

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface	11.7 C		
1 meter	11.3 C	8.52 mg/l	110.5 uS
2 meters	10.9 C	8.0 mg/l	110.7 uS
3 meters	10.9 C	8.05 mg/l	110.7 uS
4 meters	10.9 C	8.08 mg/l	110.7 uS
5 meters	10.8 C	7.67 mg/l	110.7 uS
6 meters	10.8 C	7.75 mg/l	110.8 uS
7 meters	10.8 C	7.6 mg/l	111.0 uS
8 meters	10.8 C	7.4 mg/l	111.1 uS
9 meters	10.8 C	7.5 mg/l	111.2 uS

Lake Minnesuing Sanitary District
Temperature, Dissolved Oxygen, Conductivity Profile
 June 25, 1999

Deep hole GPS 46-27-943
 91-44-571

Secchi depth: 7 ft

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface	24.0C		
1 meter	22.7 C	6.73 mg/l	94.7 uS
2 meters	21.7 C	5.70 mg/l	92.1 uS
3 meters	20.8 C	5.32 mg/l	90.4 uS
4 meters	20.1 C	4.53 mg/l	87.3 uS
5 meters	18.4 C	3.54 mg/l	100.1 uS
6 meters	14.4 C	1.80 mg/l	110.2 uS
7 meters	12.7 C	0.97 mg/l	112.3 uS
8 meters	11.4 C	0.23 mg/l	114.8 uS
9 meters	10.8 C	0.19 mg/l	114.7 uS
10 meters	10.3 C	0.03 mg/l	114.3 uS
11 meters	9.6 C	0.0 mg/l	115.9 uS
12 meters	8.9 C	0.0 mg/l	126.5 uS
13 meters	8.7 C	0.0 mg/l	184.0 uS

Deep hole North GPS 46-28-635
 91-44-522

Water levels are 18" to 24" high.
 Secchi depth 7.75 ft

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface	24.9 C		
1 meter	23.2 C	6.89 mg/l	97.9 uS
2 meters	22.6 C	6.25 mg/l	98.1 uS
3 meters	21.0 C	6.10 mg/l	97.3 uS
4 meters	20.1 C	5.53 mg/l	95.7 uS
5 meters	18.2 C	4.03 mg/l	100.5 uS
6 meters	14.8 C	1.95 mg/l	109.5 uS
7 meters	12.3 C	0.55 mg/l	115.0 uS
8 meters	11.1 C	0.05 mg/l	119.8 uS
9 meters	10.2 C	0.03 mg/l	135.5 uS

Lake Minnesuing Sanitary District
Temperature, Dissolved Oxygen, Conductivity Profile
 Sept. 11, 1999

Deep hole GPS 46-27-943
 91-44-571

Secchi depth: 4.5 ft

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface	18.6 C		
1 meter	18.4 C	5.60 mg/l	80.6 uS
2 meters	18.2 C	5.31 mg/l	80.6 uS
3 meters	18.2 C	5.25 mg/l	80.5 uS
4 meters	18.2 C	4.82 mg/l	80.6 uS
5 meters	18.1 C	4.91 mg/l	80.6 uS
6 meters	17.6 C	4.43 mg/l	81.7 uS
7 meters	14.8 C	0.13 mg/l	123.6 uS
8 meters	13.2 C	0.03 mg/l	135.6 uS
9 meters	12.2 C	0	138.8 uS
10 meters	11.9 C	0	142.0 uS
11 meters	11.3 C	0	147.5 uS
12 meters	10.8 C	0	154.8 uS
13 meters	10.6 C	0	215.0 uS

Deep hole North GPS 46-28-635
 91-44-522

Secchi depth 4 ft

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface	19.6 C		
1 meter	18.6 C	5.10 mg/l	84.1 uS
2 meters	18.5 C	4.89 mg/l	81.2 uS
3 meters	18.5 C	5.16 mg/l	81.0 uS
4 meters	18.4 C	4.68 mg/l	80.9 uS
5 meters	18.4 C	5.45 mg/l	82.0 uS
6 meters	17.4 C	2.51 mg/l	89.1 uS
7 meters	14.9 C	0.15 mg/l	122.1 uS
8 meters	13.0 C	0.02 mg/l	144.8 uS
9 meters	12.2 C	.00 mg/l	160.0 uS

Lake Minnesuing Sanitary District
Temperature, Dissolved Oxygen, Conductivity Profile
 April 25, 2000

Deep hole GPS 46-27-943
 91-44-571

Secchi depth: 5.5 ft

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface	9.9 C	11.6 mg/l	96.5 uS
1 meter	8.7 C	10.7 mg/l	95.1 uS
2 meters	8.3 C	10.6 mg/l	95.6 uS
3 meters	7.2 C	10.1 mg/l	95.5 uS
4 meters	6.8 C	10.3 mg/l	94.4 uS
5 meters	6.2 C	10.3 mg/l	95.6 uS
6 meters	6.1 C	10.4 mg/l	95.6 uS
7 meters	5.9 C	10.5 mg/l	95.7 uS
8 meters	5.5 C	10.4 mg/l	95.7 uS
9 meters	5.4 C	10.1 mg/l	95.8 uS
10 meters	5.2 C	10.3 mg/l	95.9 uS
11 meters	5.2 C	10.05 mg/l	95.9 uS
12 meters	5.2 C	10.0 mg/l	95.8 uS
13 meters			

Deep hole North GPS 46-28-635
 91-44-522

Secchi depth 5.3 ft

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface	9.5 C	10.7 mg/l	95.0 uS
1 meter	8.3 C	10.4 mg/l	94.8 uS
2 meters	7.6 C	10.7 mg/l	94.9 uS
3 meters	7.3 C	9.8 mg/l	95.2 uS
4 meters	7.1 C	9.13 mg/l	95.3 uS
5 meters	6.8 C	8.6 mg/l	95.4 uS
6 meters	5.9 C	9.8 mg/l	95.8 uS
7 meters	5.7 C	9.4 mg/l	95.9 uS
8 meters	5.6 C	9.9 mg/l	95.8 uS
9 meters	5.4 C	9.9 mg/l	95.7 uS

Lake Minnesuing Sanitary District
Temperature, Dissolved Oxygen, Conductivity Profile
 June 25, 2000

Deep hole GPS 46-27-943
 91-44-571

Secchi depth: 6.25 ft

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface	21.7 C		
1 meter	21.0 C	8.02 mg/l	98.2 uS
2 meters	20.0 C	7.64 mg/l	98.2 uS
3 meters	18.4 C	7.04 mg/l	98.0 uS
4 meters	17.6 C	6.55 mg/l	97.4 uS
5 meters	16.6 C	6.40 mg/l	98.2 uS
6 meters	13.8 C	4.30 mg/l	100.5 uS
7 meters	11.8 C	3.45 mg/l	100.5 uS
8 meters	10.8 C	2.45 mg/l	101.1 uS
9 meters	10.3 C	2.37 mg/l	101.5 uS
10 meters	9.8 C	1.79 mg/l	102.3 uS
11 meters	9.1 C	1.08 mg/l	103.8 uS
12 meters	8.8 C	0.35 mg/l	105.1 uS
13 meters	8.5 C	0.0 mg/l	155.0 uS

Deep hole North GPS 46-28-635
 91-44-522

Secchi depth: 6.25 ft.

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface	21.0 C		
1 meter	20.7 C	7.80 mg/l	97.8 uS
2 meters	19.4 C	7.77 mg/l	97.9 uS
3 meters	18.0 C	7.51 mg/l	98.0 uS
4 meters	17.5 C	6.91 mg/l	98.2 uS
5 meters	16.2 C	6.04 mg/l	98.6 uS
6 meters	13.5 C	4.24 mg/l	100.3 uS
7 meters	11.9 C	2.88 mg/l	100.6 uS
8 meters	10.5 C	1.35 mg/l	105.3 uS
9 meters	9.7 C	0.0 mg/l	112.6 uS

Lake Minnesuing Sanitary District
Temperature, Dissolved Oxygen, Conductivity Profile
 July 11, 2000

Deep hole GPS 46-27-943
 91-44-571

Secchi depth: 6.5 ft

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface	23.6 C	8.57 mg/l	99.5 uS
1 meter	23.7 C	8.42 mg/l	99.6 uS
2 meters	22.7 C	8.53 mg/l	98.9 uS
3 meters	20.7 C	7.32 mg/l	99.3 uS
4 meters	19.2 C	5.91 mg/l	100.4 uS
5 meters	16.9 C	3.65 mg/l	100.3 uS
6 meters	14.3 C	2.26 mg/l	101.6 uS
7 meters	12.7 C	1.38 mg/l	103.3 uS
8 meters	11.2 C	0.78 mg/l	105.1 uS
9 meters	10.7 C	0.65 mg/l	104.9 uS
10 meters	9.9 C	0.25 mg/l	106.8 uS
11 meters	9.6 C	0.0 mg/l	108.3 uS
12 meters	9.6 C	0.0 mg/l	108.2 uS
13 meters	9.3 C	0.0 mg/l	111.5 uS

Deep hole North GPS 46-28-635
 91-44-522

Secchi depth: 7 ft

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface	22.7 C	8.50 mg/l	99.0 uS
1 meter	22.0 C	8.20 mg/l	98.9 uS
2 meters	21.9 C	8.07 mg/l	99.1 uS
3 meters	21.5 C	7.80 mg/l	99.3 uS
4 meters	20.1 C	6.80 mg/l	99.6 uS
5 meters	17.3 C	3.88 mg/l	100.0 uS
6 meters	14.4 C	2.46 mg/l	101.4 uS
7 meters	12.2 C	0.99 mg/l	105.0 uS
8 meters	10.9 C	0.0 mg/l	111.1 uS
9 meters	10.2 C	0.0 mg/l	125.6 uS

Lake Minnesuing Sanitary District
Temperature, Dissolved Oxygen, Conductivity Profile
 July 27, 2000

Deep hole GPS 46-27-943
 91-44-571

Secchi depth: 7 ft

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface	22.2 C	7.42 mg/l	99.9 uS
1 meter	22.2 C	7.47 mg/l	100.5 uS
2 meters	22.2 C	7.43 mg/l	100.6 uS
3 meters	22.1 C	7.44 mg/l	100.6 uS
4 meters	21.5 C	6.41 mg/l	101.1 uS
5 meters	19.1 C	3.91 mg/l	102.3 uS
6 meters	14.7 C	0.04 mg/l	104.8 uS
7 meters	12.5 C	0.0 mg/l	108.9 uS
8 meters	11.3 C	0	109.1 uS
9 meters	10.7 C	0	109.6 uS
10 meters	10.1 C	0	111.9 uS
11 meters	9.6 C	0	118.8 uS
12 meters	9.5 C	0	125.5 uS
13 meters	9.4 C	0	128.0 uS

Deep hole North GPS 46-28-635
 91-44-522

Secchi depth: 7 ft

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface	22.0C	7.38 mg/l	100.4 uS
1 meter	22.1 C	7.43 mg/l	100.3 uS
2 meters	21.9 C	7.10 mg/l	100.6 uS
3 meters	21.7 C	6.82 mg/l	100.6 uS
4 meters	20.7 C	5.15 mg/l	101.3 uS
5 meters	17.3 C	0.57 mg/l	103.4 uS
6 meters	13.9 C	0	106.6 uS
7 meters	12.1 C	0	110.6 uS
8 meters	11.1 C	0	125.9 uS
9 meters	10.4 C	0	144.6 uS

Lake Minnesuing Sanitary District
Temperature, Dissolved Oxygen, Conductivity Profile
 Aug. 29, 2000

Deep hole GPS 46-27-943
 91-44-571

Secchi depth: 8.5 ft

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface	21.8 C	7.39 mg/l	103.1 uS
1 meter	21.6 C	7.20 mg/l	103.0 uS
2 meters	21.1 C	7.53 mg/l	102.8 uS
3 meters	21.0 C	7.40 mg/l	102.9 uS
4 meters	20.8 C	7.02 mg/l	103.0 uS
5 meters	20.4 C	6.58 mg/l	103.1 uS
6 meters	17.0 C	0.15 mg/l	110.8 uS
7 meters	13.6 C	0	121.9 uS
8 meters	11.9 C	0	127.9 uS
9 meters	11.3 C	0	128.7 uS
10 meters	10.7 C	0	130.7 uS
11 meters	10.2 C	0	136.3 uS
12 meters	10.1 C	0	138.5 uS
13 meters	9.9 C	0	265.5 uS

Deep hole North GPS 46-28-635
 91-44-522

Secchi depth: 8.5 ft

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface	22.4 C	7.37 mg/l	102.4 uS
1 meter	22.1 C	8.15 mg/l	102.7 Us
2 meters	21.7 C	7.98 mg/l	103.0 uS
3 meters	21.6 C	7.90 mg/l	103.0 uS
4 meters	20.7 C	5.81 mg/l	102.9 uS
5 meters	19.3 C	3.85 mg/l	104.3 uS
6 meters	15.9 C	0.04 mg/l	119.1 uS
7 meters	13.3 C	0	123.1 uS
8 meters	11.6 C	0	144.0 uS
9 meters	10.9 C	0	160.0 uS

Lake Minnesuing Sanitary District
Temperature, Dissolved Oxygen, Conductivity Profile
 Oct. 16, 2000

Deep hole GPS 46-27-943
 91-44-571

Secchi depth: 5.75 ft

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface	11.9 C	9.50 mg/l	108.1 uS
1 meter	11.4 C	9.59 mg/l	108.2 uS
2 meters	11.3 C	9.47 mg/l	108.3 uS
3 meters	11.3 C	9.42 mg/l	108.3 uS
4 meters	11.3 C	9.34 mg/l	108.3 uS
5 meters	11.2 C	9.24 mg/l	108.5 uS
6 meters	11.2 C	8.97 mg/l	108.8 uS
7 meters	11.0 C	8.11 mg/l	109.2 uS
8 meters	10.8 C	8.16 mg/l	109.3 uS
9 meters	10.8 C	8.20 mg/l	109.2 uS
10 meters	10.7 C	7.96 mg/l	109.2 uS
11 meters	10.7 C	7.54 mg/l	109.6 uS
12 meters	10.6 C	6.64 mg/l	111.2 uS
13 meters	10.4 C	1.40 mg/l	119.2 uS

Deep hole North GPS 46-28-635
 91-44-522

Secchi depth: 5.75

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface	11.6 C	8.66 mg/l	108.1 uS
1 meter	11.5 C	9.43 mg/l	108.4 uS
2 meters	11.2 C	9.17 mg/l	108.2 uS
3 meters	11.2 C	9.13 mg/l	108.4 uS
4 meters	11.1 C	9.01 mg/l	108.4 uS
5 meters	11.1 C	9.01 mg/l	108.4 uS
6 meters	11.1 C	8.96 mg/l	108.4 uS
7 meters	11.0 C	8.75 mg/l	109.1 uS
8 meters	11.0 C	8.42 mg/l	109.2 uS
9 meters	11.0 C	8.44 mg/l	109.2 uS

Lake Minnesuing Sanitary District

Temperature, Dissolved Oxygen, Conductivity Profile

Oct. 31, 2000

Deep hole GPS 46-27-943

Secchi depth: 6 ft

91-44-571

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface	11.4 C	9.25 mg/l	108.5 uS
1 meter	11.1 C	9.10 mg/l	108.6 uS
2 meters	10.9 C	9.13 mg/l	108.8 uS
3 meters	10.8 C	9.07 mg/l	108.9 uS
4 meters	10.8 C	9.10 mg/l	109.0 uS
5 meters	10.8 C	8.97 mg/l	109.0 uS
6 meters	10.7 C	8.97 mg/l	109.2 uS
7 meters	10.7 C	8.75 mg/l	109.3 uS
8 meters	10.7 C	8.79 mg/l	109.4 uS
9 meters	10.6 C	8.77 mg/l	109.5 uS
10 meters	10.6 C	8.61 mg/l	109.5 uS
11 meters	10.5 C	8.50 mg/l	109.7 uS
12 meters	10.4 C	8.27 mg/l	109.7 uS
13 meters			

Deep hole North GPS 46-28-635

Lake change-over

91-44-522

Secchi depth: 6 ft

Depth	Temperature	Dissolved Oxy.	Conductivity
Surface	11.6 C	9.25 mg/l	108.9 uS
1 meter	11.3 C	9.30 mg/l	108.9 uS
2 meters	11.1 C	9.22 mg/l	109.1 uS
3 meters	11.0 C	9.18 mg/l	109.0 uS
4 meters	11.0 C	9.12 mg/l	109.1 uS
5 meters	10.9 C	9.12 mg/l	109.0 uS
6 meters	11.0 C	9.14 mg/l	109.1 uS
7 meters	11.0 C	9.10 mg/l	109.0 uS
8 meters	10.9 C	9.02 mg/l	109.1 uS
9 meters	10.9 C	8.75 mg/l	109.1 uS

Lake Minnesuing Sanitary District
Inorganic Chemistry
Summary

Looking at the data from the 1996 limnology study, it is hard to find a correlation between the two sets of figures. We have included the lab reports from the 1998 samples in hopes of getting some indication from DNR limnologists as to the relevance of the information from 1996 to 1998. Please, if you could let us know of the significance of a comparison of the two sets of figures. It is a problem when we do not have the expertise to understand the results. We look forward to your communication. Thank-you.

Lake Minnesuing Sanitary District
Inorganic chemistry

Deep hole south GPS 46-27-943
91-44-571 Top (1 meter)

CHEMISTRY	FEB. 16, 1998	MARCH 2, 1998	MARCH 24, 1998	APRIL 15, 1998
Chlorophyll A	1.65 UG/L Temp 2 C	2.76 UG/L Temp 1.8 C	7.4 UG/L Temp.2 C	6.47 UG/L Temp.7.4 C holding time ex 39 days
Ammonia (as N)	-0.006 MG/L	0.084 MG/L	0.019 MG/L	ND(LOD=0.013 MG/L)
Nitrate + Nitrite (as N)	0.103 MG/L	0.299 MG/L	0.212 MG/L	0.104 MG/L
Total Phosphorus	0.038 MG/L	0.034 MG/L	0.032 MG/L	0.34 MG/L
Ortho - P	0.013 MG/L	ND(LOD=0.002 MG/L)	0.002 MG/L	0.003 MG/L

Deep hole south bottom (12 meters)

CHEMISTRY	February 16, 1998	March 2, 1998	March 24, 1998	April 15, 1998
Chlorophyll A	Temp. 4.0 C	Temp 4.7 C	Temp 4.5 C	Temp. 7 C
Ammonia (as N)	0.321 MG/L	0.041 MG/L	0.149 MG/L	ND (LOD=0.013 MG/L)
Nitrate + Nitrite (as N)	0.076 MG/L	0.276 MG/L	0.153 MG/L	0.105 MG/L
Total Phosphorus	0.093 MG/L	0.056 MG/L	0.05328 MG/L	0.036 MG/L
Ortho - P	0.038 MG/L	0.023 MG/L	0.020 MG/L	0.004 MG/L

Lake Minnesuing Sanitary District
Inorganic chemistry

Deep hole North GPS 46-28-635
91-44-522 Top (1 meter)

CHEMISTRY	FEB. 16, 1998	MARCH 2, 1998	MARCH 24, 1998	APRIL 15, 1998
Chlorophyll A	4.34 UG/L Temp. 1 C	2.85 UG/L Temp 3.5 C	5.83 UG/L holding time ex 55 days	5.54 UG/L holding time ex. 39 days Temp. 7.1 C
Ammonia (as N)	0.021 MG/L	0.085 MG/L	ND(LOD=0.013 MG/L)	ND(LOD=0.13 MG/L)
Nitrate + Nitrite (as N)	0.096 MG/L	0.241 MG/L	0.170 MG/L	0.105 MG/L
Total Phosphorus	0.039 MG/L	0.028 MG/L	0.037 MG/L	0.032 MG/L
Ortho - P	0.015 MG/L	0.004 MG/L	NIY(LOD=0.002 MG/L)	0.004 MG/L

Deep hole North bottom (9 meters)

CHEMISTRY	February 16, 1998	March 2, 1998	March 24, 1998	April 15, 1998
Chlorophyll A			Temp 4 C	Temp 7 C
Ammonia (as N)	< 0.013 MG/L Temp. 4 C	0.020 MG/L Temp 4.7C	ND (LOD=0.013 MG/L)	ND (LOD=0.013 MG/L)
Nitrate + Nitrite (as N)	0.265 MG/L	0.283 MG/L	0.130 MG/L	0.110 MG/L
Total Phosphorus	0.046 MG/L	0.032 MG/L	0.03055 MG/L	0.033 MG/L
Ortho - P	0.013 MG/L	0.008 MG/L	0.005 MG/L	0.004 MG/L