

Valentine Lake (62-0071) Rice Creek Watershed District

Valentine Lake is located within the City of Arden Hills in Ramsey County. The lake has a surface area of 60-acres, and a maximum and mean depth of 4.0 m (13.1 feet) and 1.5 m (4.9 feet), respectively. Because of the shallowness of the lake, its entire surface area is considered littoral, the shallow (0-15 foot depth) area dominated by aquatic vegetation, and it does not maintain a thermocline (a density gradient owed to changing water temperatures throughout the lake's water column). The mean depth and surface area of the lake translates to an approximate volume of 300 ac-ft. The result of comparing the lake's surface area to its 2,237-acre drainage area (watershed) is a rather large 37:1 watershed-to-lake size ratio (the greater the ratio, the greater the potential stress on the lake from surface runoff).

This was the fourth year that Valentine Lake has been involved in CAMP (2001-2003 being the others). In fact, the 2001-2003 CAMP data were the only data found through STORET nationwide water quality database search. Therefore 2001-2004 represents the only water quality data readily available for the lake.

The lake was monitored 12 times between mid-April and mid-October, 2004. On each sampling day the lake was monitored for TP, CLA, TKN, and Secchi transparency, as well as the lake's perceived physical condition and recreational suitability.

2004 summer (May-September) data summary

Parameter	Mean	Minimum	Maximum	Grade
TP ($\mu\text{g/l}$)	56.4	40.0	76.0	C
CLA ($\mu\text{g/l}$)	24.3	13.0	41.0	C
Secchi (m)	1.3	1.1	1.6	C
TKN (mg/l)	0.77	0.57	0.96	
Overall Grade				C

While the resulting overall grade for 2004 (C) is identical to those of 2001-2003, the individual grades of 2001-2002 were better. The lake's 2004 nutrient concentrations and Secchi transparencies are graphed on the following page.

Because of the limitedness of the lake's water quality database, the determination of any only long- or short-term trends are not possible to determine. It is reported on the MPCA website, however, that a recently conducted trend analysis on the lake's Secchi transparency data revealed a statistically significant improvement in recent water clarity. To better understand the lake's water quality and what direction it may be heading, more years of data collection are needed.

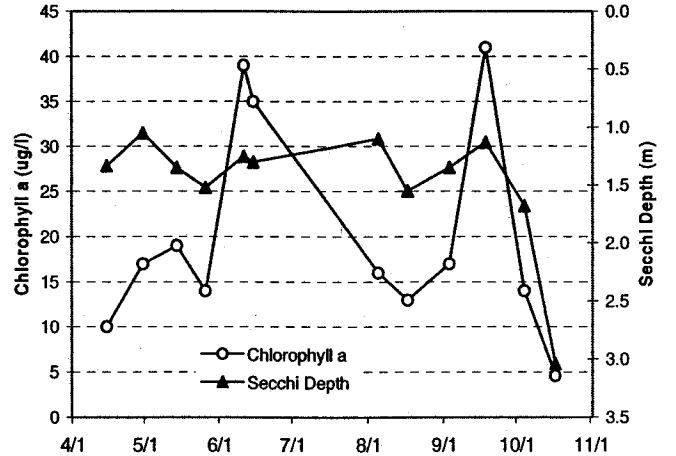
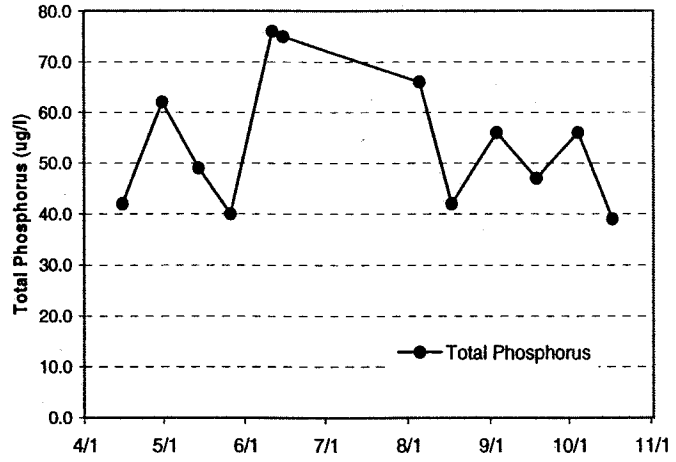
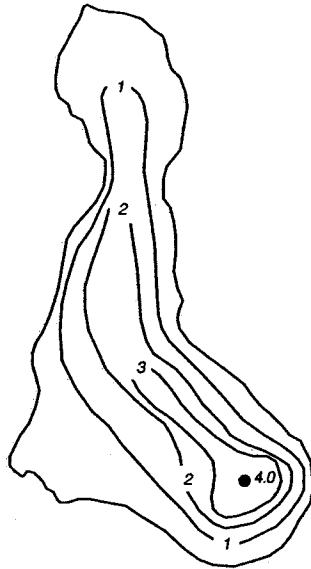
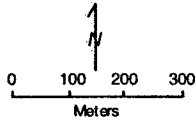
The perceived physical and recreational conditions of the lake, recorded by the volunteers, were ranked on a 1-to-5 scale. The rankings are shown in both tabular and graphical form on the lake's associated information sheet. The mean physical condition ranking was 2.1 (between 2- "some algae present" and 3- "definite algae present"), while the mean recreational suitability ranking was 1.4 (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 Randy Anhorn of the Metropolitan Council at (651) 602-8743 or randy.anhorn@metc.state.mn.us.

Valentine Lake
Arden Hills, Ramsey Co.

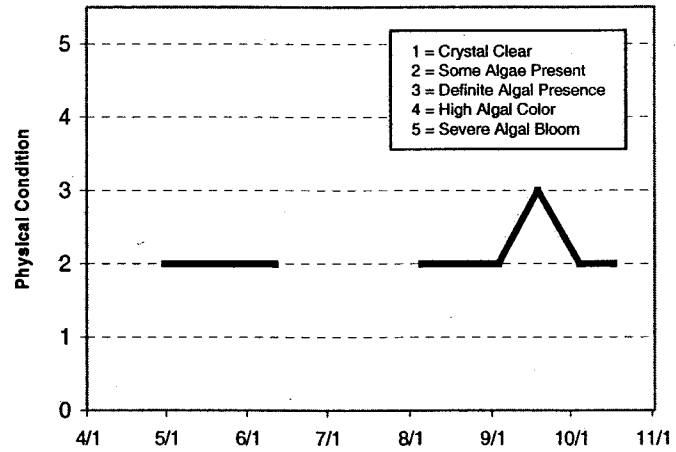
Lake ID: 620071
WD: Rice Creek
Volunteer: Bob Kistler

● Sampling site
Contours in meters



2004 Data

DATE	Surf. Temp (C)	Bot. Temp (C)	Surf. DO (mg/L)	Bot. DO (mg/L)	CLA (ug/L)	Surf. TP (ug/L)	Bot. TP (ug/L)	Secchi (m)	PC (1-5)	RS (1-5)
4/15/04	11		11.4		10	42.0		1.3		
4/30/04	14.2		10.5		17	62.0		1.1	2	1
5/14/04	15.4		8.76		19	49.0		1.4	2	1
5/28/04	16.1		10.23		14	40.0		1.5	2	1
6/11/04	19				39	76.0		1.3	2	1
6/15/04	21				35	75.0		1.3		
8/5/04	24		7.89		16	66.0		1.1	2	2
8/17/04	21.5				13	42.0		1.6	2	2
9/3/04	23		8.38		17	56.0		1.4	2	1
9/18/04	20		8.3		41	47.0		1.1	3	2
10/4/04	13.4				14	56.0		1.7	2	2
10/17/04	9				4.6	39.0		3.0	2	2



Lake Water Quality Grades Based on Summertime Averages

Year 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994

Total Phosphorus														
Chlorophyll a														
Secchi Depth														
Overall														

Year 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004

Total Phosphorus														
Chlorophyll a														
Secchi Depth														
Overall														

Source: Metropolitan Council and SPORIS data

