

## 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 seventh year that Valentine Lake has been involved in CAMP (2001-2006 being the others). In fact, the 2001-2006 CAMP data were the only data found through STORET nationwide water quality database search. Therefore 2001-2007 represents the only water quality data readily available for the lake.

The lake was monitored 12 times between early-May and early-October 2007. 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.

### 2007 summer (May-September) data summary

<i>Parameter</i>	<i>Mean</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Grade</i>
<b>TP</b> (µg/l)	78.9	53.0	113.0	D
<b>CLA</b> (µg/l)	22.5	3.0	75.0	C
<b>Secchi</b> (m)	1.5	0.8	2.4	C
<b>TKN</b> (mg/l)	2.20	1.85	3.20	
<b>Water Quality</b>				C

The resulting water quality grade for 2007 (C) is similar to those of 2001-2006. However, 2007 was the first year that the total phosphorus grade dropped to a D; it usually is a C. The lake's 2007 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 long- or short-term trends is not possible. A recently conducted trend analysis by the MPCA on the lake's Secchi transparency data revealed a statistically significant improvement in recent water clarity (MPCA 2008). 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 1.9 (between 1- "crystal clear" and 2- "some algae present"), while the mean recreational suitability ranking was 3.5 (between 3- "swimming slightly impaired" and 4- "no swimming; boating ok").

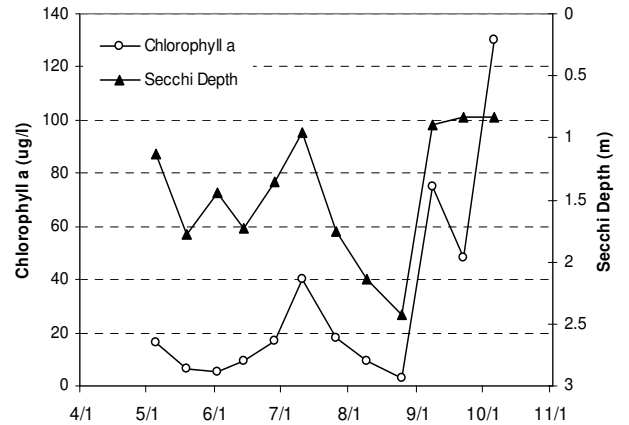
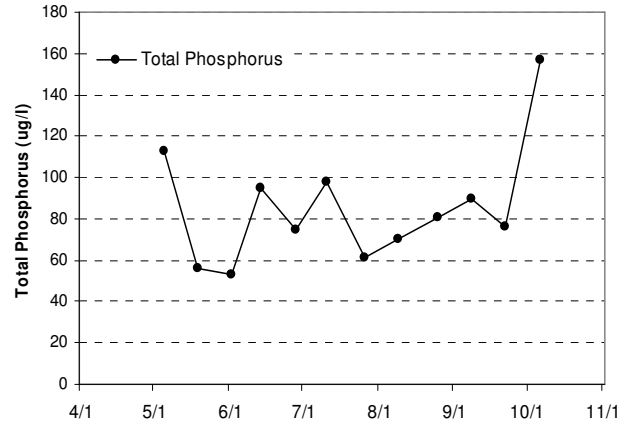
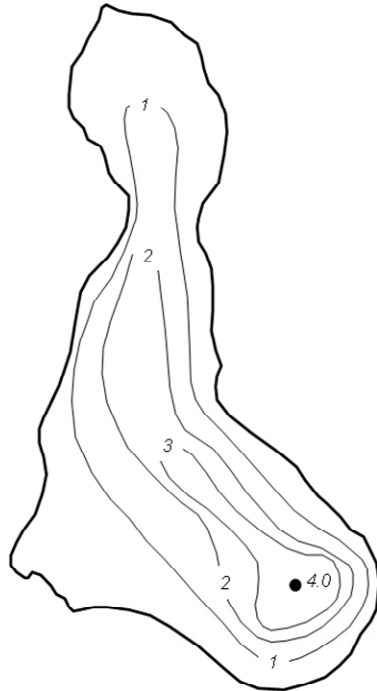
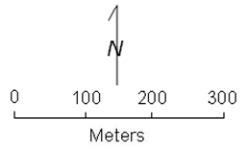
If you notice any errors in the lake's data or physical information, or are aware of any additional or missing information, please contact Brian Johnson of the Metropolitan Council at (651) 602-8743 or [brian.johnson@metc.state.mn.us](mailto:brian.johnson@metc.state.mn.us).

# Valentine Lake

## Arden Hills, Ramsey Co.

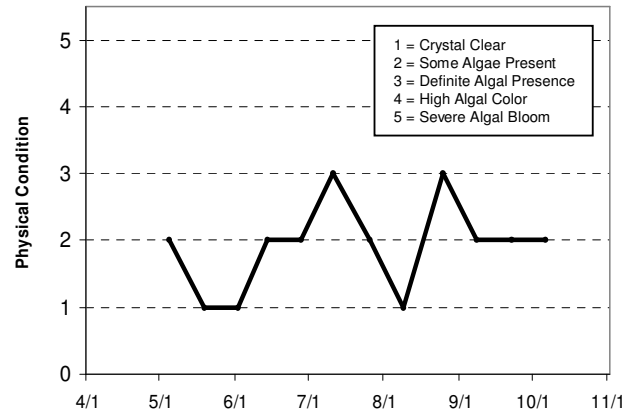
Lake ID: 620071  
 WD: Rice Creek  
 Volunteer: Bob Kistler

● Sampling site  
 Contours in meters



### 2007 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 thru 5	RS 1 thru 5
05/05/07	16.2				16	113		1.13	2	1
05/19/07	19.9				6.5	56		1.78	1	1
06/02/07	23.1				5	53		1.44	1	4
06/14/07	25.6				9.1	95		1.73	2	4
06/28/07	25				17	75		1.36	2	4
07/11/07	24.3				40	98		0.96	3	4
07/26/07	28				18	61		1.75	2	4
08/09/07	25.8				9.4	70		2.14	1	4
08/25/07	22.3				3	81		2.43	3	4
09/08/07	23.3				75	90		0.9	2	4
09/22/07	19				48	76		0.84	2	4
10/06/07	18.2				130	157		0.84	2	4



### Lake Water Quality Grades Based on Summertime Averages

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Total Phosphorus														
Chlorophyll a														
Secchi Depth														
Overall														

Year	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total Phosphorus								C	C	C	C	C	C	D
Chlorophyll a								B	B	C	C	C	B	C
Secchi Depth								C	C	D	C	C	C	C
Overall								C	C	C	C	C	C	C

Source: Metropolitan Council and STORET data

