

Weaver Lake

Weaver Lake has water quality conditions that potentially inhibit recreational use. The water quality for Weaver Lake has remained relatively constant since 1998. Phosphorus concentrations have been above 40 µg/L, which is the concentration recommended by the MPCA to support full recreational use. Since 1999, the five-year average phosphorus concentration was 45 µg/L.

Table 2. Carlson's Trophic State Index (R.E. Carlson)

Lake	TSI	Trophic Status	Expected Conditions
Fish	61.5	Eutrophic	Decreased transparency, anoxic hypolimnion during summer, macrophyte problems evident
Weaver	58.7	Eutrophic	Decreased transparency, anoxic hypolimnion during summer, macrophyte problems evident
French	75.4	Hypereutrophic	Heavy algal blooms possible throughout summer, dense macrophyte beds, but extent limited by light penetration

In 2003, the average phosphorus concentration was 49 µg/L, which is the highest phosphorus concentration observed since 1991. The high phosphorus concentrations can be partially attributed to the high density of curlyleaf pondweed within Weaver Lake. Weaver Lake has dense mats of curlyleaf pondweed that frequently grow to the surface. In 2003, the lack of snow cover created clear ice conditions that were excellent for curlyleaf pondweed growth. Consequently, there was a substantial amount of internal loading due to the plant senescence from the end of June to early July. The in-lake phosphorus concentration increased from 49 µg/L to 72 µg/L after the senescence of curlyleaf pondweed. The released nutrients from curlyleaf pondweed senescence contributed to a substantial algae bloom. Chlorophyll-a concentrations increased from 21 µg/L to 65 µg/L. After the senescence of curlyleaf pondweed, the phosphorus concentrations gradually decreased to concentrations as low as 35 µg/L. Despite the gradual decrease in phosphorus concentrations, the algae blooms persisted throughout the summer in which water clarity conditions did not exceed 1.0 m in depth as measured by a Secchi disk.

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Sample Date	Secchi m	Temp °C	DO mg/L	DO %	Sp. Cond µS/cm	pH	TP µg/L	SRP µg/L	TN mg/L	Chl-a µg/L	Alkalinity mg/L
18-Apr-03	1.55	7.2	13.1	109	0.415	8.23	50		1.01	39.9	102
08-May-03	5.00	13.6	13.4	129	0.361	8.33		6.1	0.88	2.2	118
21-May-03	3.80	16.7	11.7	121	0.369	8.29	28	2.5	0.82	7.4	106
03-Jun-03	2.25	18.8	11.9	127	0.399	8.57	48		1.07	19.5	106
18-Jun-03	1.80	25.1	11.4	139	0.385	8.25	49	2.5	1.15	20.7	96
01-Jul-03	0.96	25.7	14.4	176	0.315	8.78	72	2.5	1.33	39.8	90
15-Jul-03	0.80	23.9	9.6	114	0.298	8.46	53	2.5	1.44	64.8	90
29-Jul-03	0.80	26.9	12.4	155	0.376	8.50	37	2.5	1.57	70.7	92
13-Aug-03	0.51	25.6	11.3	138	0.351	8.41	46	2.5	1.63	58.2	88
26-Aug-03	0.79	27.6	9.8	124	0.378	8.29	49	15.3	1.49	48.8	92
09-Sep-03	1.08	24.1	10.4	124	0.394	7.79	35	2.5	1.31	22.6	98
30-Sep-03	2.90	12.8	9.7	92	0.412	8.56	72	8.7	1.08	10.6	111
Mean	1.85		11.6	129	0.371	8.37	49	4.6	1.23	33.8	99
Std.Dev.	1.40		1.6	22	0.036	0.24	13.7	4.5	0.27	23.3	9.6
Summer Mean (May-Sept)	1.88		11.4	130.7	0.37	8.38	48.9	4.6	1.25	33.2	98.8

Secchi = Secchi Disc Transparency
 Sp. Cond = Specific Conductivity
 TP = Total Phosphorus

SRP = Soluble Reactive Phosphorus
 TN = Total Nitrogen
 Chl-a = Chlorophyll a

