

Fish Lake.

The Three Rivers Park District and the Commission have established an in-lake phosphorus concentration goal for Fish Lake of 36 pg/L to support direct contact recreational use. Mean phosphorus concentrations for the summer season (May-September) have gradually increased from 39 pg/L in 2001 to 55 pg/L in 2003. The increase in phosphorus concentration in 2002 was due to an excessive amount of precipitation that produced increased phosphorus watershed loading.

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, above average precipitation conditions in May and June further contributed to high phosphorus concentrations ranging between 47 pg/L and 68 pg/L. The amount of precipitation for the remaining portion of the 2003 was considerably below average. However, phosphorus concentrations ranged between 40 pg/L and 94 pg/L from July through September. Although Fish Lake does not have an excessive curlyleaf pondweed problem in comparison to similar metropolitan lakes, the winter conditions in 2003 were conducive for curlyleaf pondweed growth. As a consequence of a high biomass of curlyleaf pondweed in 2003, 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 45 pg/L to 71 pg/L after the senescence of curlyleaf pondweed. The released nutrients from curlyleaf pondweed became available for algae up-take, and resulted in algae blooms that persisted throughout the summer. Chlorophyll-a concentrations increased from 32 pg/L to 53 pg/L shortly after the senescence of curlyleaf pondweed, and concentrations remained between 52 pg/L to 72 pg/L throughout the summer. Consequently, a decrease in water clarity occurred in response to the increased nutrient and chlorophyll-a concentrations.

Fish Lake

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	1.47	8.2	13.3	113	0.428	8.05	79		1.53	50.9	116
07-May-03	4.20	14.4	11.7	114	0.382	8.03	68		1.37	4.3	142
20-May-03	2.30	17.1	8.4	88	0.398	8.24	47	2.5	1.23	16.0	136
03-Jun-03	1.40	19.3	12.4	135	0.423	8.31	55		1.26	22.5	126
18-Jun-03	1.15	24.8	10.8	131	0.418	7.98	45	2.5	1.18	32.2	126
01-Jul-03	0.80	24.7	14.9	180	0.325	8.57	71	2.5	1.34	45.0	118
15-Jul-03	0.85	23.9	9.0	107	0.315	7.94	42	2.5	1.34	52.9	119
29-Jul-03	0.70	26.6	11.5	144	0.392	7.92	40	2.5	1.47	53.3	116
12-Aug-03	0.50	28.0	12.5	160	0.375	8.09	44	2.5	1.49	51.8	117
26-Aug-03	0.61	26.4	12.3	152	0.389	7.91	47	6.1	1.58	72.0	113
09-Sep-03	0.60	23.5	10.2	120	0.399	7.76	49	2.5	1.76	53.3	117
30-Sep-03	1.10	13.7	10.8	104	0.424	8.77	94	16.8	2.04	17.2	133
Mean	1.31		11.5	129	0.389	8.13	57	4.5	1.46	39.3	123
Std.Dev.	1.04		1.80	26.6	0.037	0.29	17.3	4.8	0.24	20.4	9.3
Summer Mean (May-Sept)	1.29		11.3	130.4	0.39	8.14	54.7	4.5	1.5	38.2	123.9

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

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

