

Fish Lake

The Three Rivers Park District established an in-lake phosphorus concentration goal for Fish Lake of 36 $\mu\text{g/L}$ to support direct contact recreational use. The average phosphorus concentration for Fish Lake was 47 $\mu\text{g/L}$ in 2004 with values ranging between 36 $\mu\text{g/L}$ to 82 $\mu\text{g/L}$. These high phosphorus concentrations were partially due to the excessive amount of precipitation that contributed to increased watershed loading. The excess in-lake phosphorus was conducive for the development of algae blooms. Consequently, the average chlorophyll-a concentration was 28.8 $\mu\text{g/L}$. These phosphorus and chlorophyll-a concentrations are similar to those conditions observed in 2002 and 2003. Despite the high phosphorus and chlorophyll-a concentrations, the water clarity conditions were not as significantly impaired. The average secchi depth transparency was 2.37 m in 2004, which is relatively high in comparison to 2002 and 2003. This value was relatively high because of a clear water phase that occurred in early May that contributed to a secchi depth measurements of 6.7 m and 4.2 m. The remaining secchi depth measurements ranged between 0.9 and 2.9 m. The total phosphorus and chlorophyll-a concentrations became significantly impaired in mid-June, which coincides with the senescence of curlyleaf pondweed. Although Fish Lake does not have an excessive curlyleaf pondweed problem in comparison to similar lakes within the eco-region, the senescence process can result in a substantial amount of internal nutrient loading. After the senescence of curlyleaf pondweed, phosphorus concentrations increased from 36 $\mu\text{g/L}$ to 57 $\mu\text{g/L}$. The released nutrients from curlyleaf pondweed became available for algae up-take, and resulted in algae blooms that persisted throughout the summer. These excess nutrients can have dramatic effects on seasonal variation in water quality conditions.

Sample Id	Sample Date	Secchi m	Temp °C	DO mg/L	DO %	Sp. Cond $\mu\text{S/cm}$	pH	TP $\mu\text{g/L}$	SRP $\mu\text{g/L}$	TN mg/L	Chl-a $\mu\text{g/L}$
FISH	26-Apr-04	1.50	11.6	14.5	134	0.386	10.05	82	5.7	1.72	28.9
FISH	11-May-04	6.70	16.6	10.9	111	0.436	8.63	58	10.5	1.71	3.3
FISH	25-May-04	4.20	14.9	10.7	106	0.401	8.4	41		1.39	7.9
FISH	09-Jun-04	2.90	21.1	10.0	113	0.393	8.27	42		1.16	9.1
FISH	21-Jun-04	1.52	21.7	10.7	121	0.374	8.3	36		1.20	24.0
FISH	06-Jul-04	1.40	23.0	7.9	92	0.413	9.13	48		1.50	22.0
FISH	19-Jul-04	0.90	25.9	11.1	136	0.407	9.19	57		1.69	64.1
FISH	02-Aug-04	1.45	25.3	9.6	117	0.423	8.63	39		1.28	31.7
FISH	16-Aug-04	1.10	22.5	10.2	118	0.399	7.71	47		1.47	37.9
FISH	07-Sep-04	2.51	22.1	9.3	107	0.402	7.76	41		1.44	37.4
FISH	27-Sep-04	1.06	19.6	10.0	109	0.406	7.32	63	1.7	1.57	50.7
	Mean	2.29		10.4	115	0.404	8.49	50	6.0	1.47	28.8
	Std.Dev.	1.76		1.61	12.4	0.017	0.77	13.6	4.4	0.20	18.5
	Summer Mean (May-Sept)	2.37		10.0	113.0	0.41	8.33	47.0	6.1	1.4	28.8

Secchi = Secchi Disc Transparency TP = Total Phosphorus TN = Total Nitrogen
 Sp. Cond = Specific Conductivity SRP = Soluble Reactive Phosphorus Chl-a = Chlorophyll a
 Note: Temperature, DO, DO %, Specific Conductivity and Ph are measured at the surface.



