

Mark Twain Lake

Glacial Plains Region

Mark Twain Lake is a large reservoir (18,600 acres at normal pool) that lies in Monroe and Ralls counties. Construction of the Clarence Cannon Dam and power plant was completed in 1983. Row crops cover just over half of the land in Mark Twain Lake’s watershed and grass/pasture land covers slightly more than a quarter. This reservoir provides drinking water, electricity and flood control in addition to the usual recreational amenities.

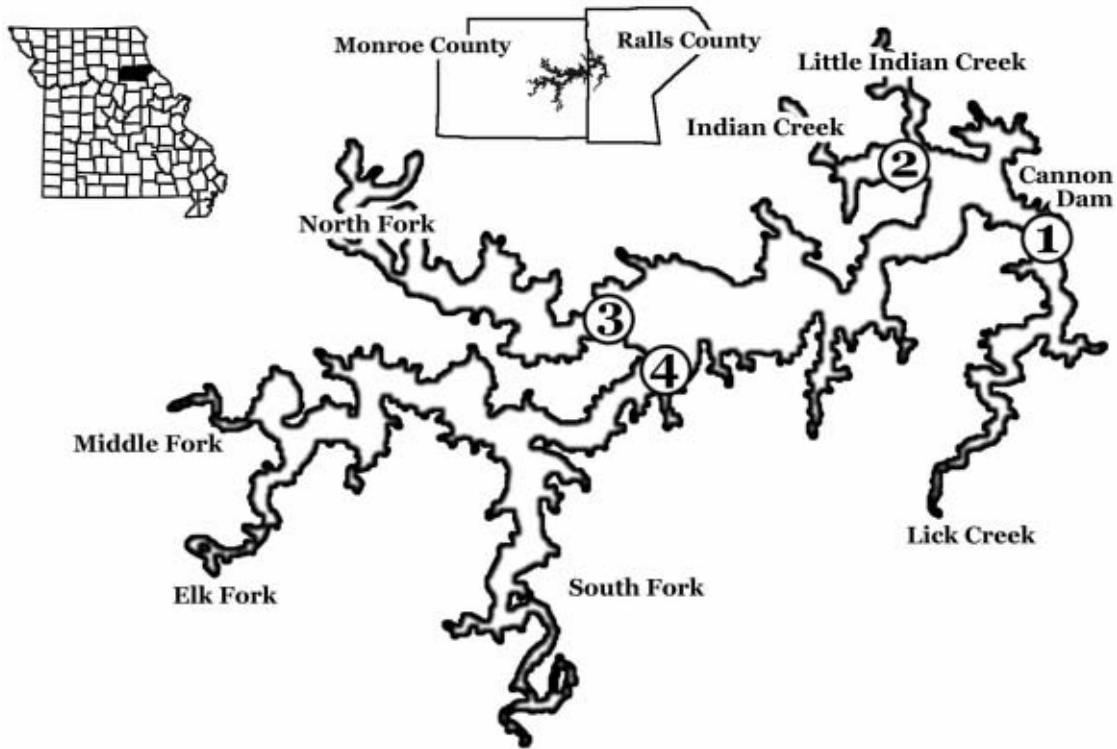


Figure 39. Location of Mark Twain Lake and sample sites

2002 Results

Figures 40 – 43 show how the parameters phosphorus, nitrogen, algal chlorophyll, inorganic suspended solids and Secchi transparency varied in Mark Twain Lake during the 2002 sampling season. Descriptive statistics precede the figures. A brief description of these results:

- Samples were collected at four sites between June 9 and October 13.
- Values and patterns were very similar among sites, indicating there is no real spatial trend.
- Nutrient and ISS values were high early in the season and decreased with time.
- As ISS values decreased, Secchi transparency increased.
- Mark Twain Lake was eutrophic at all four sites based on geometric mean chlorophyll, nitrogen and phosphorus values.

Table 16. Descriptive statistics for Mark Twain Lake, Site 1 - 2002.

Parameters	# of Geometric				
	Samples	Mean	Minimum	Maximum	Median
Secchi Transparency (inches)	7	26	16	60	34
Phosphorus ($\mu\text{g/L}$)	7	47	22	167	48
Nitrogen ($\mu\text{g/L}$)	7	1054	600	2100	1110
Chlorophyll ($\mu\text{g/L}$)	7	15.4	8.8	43.6	12.1
ISS (mg/L)	6	0.9	0.0	5.2	2.2

ISS=Inorganic Suspended Solids

Samples were collected between June 9 and October 11

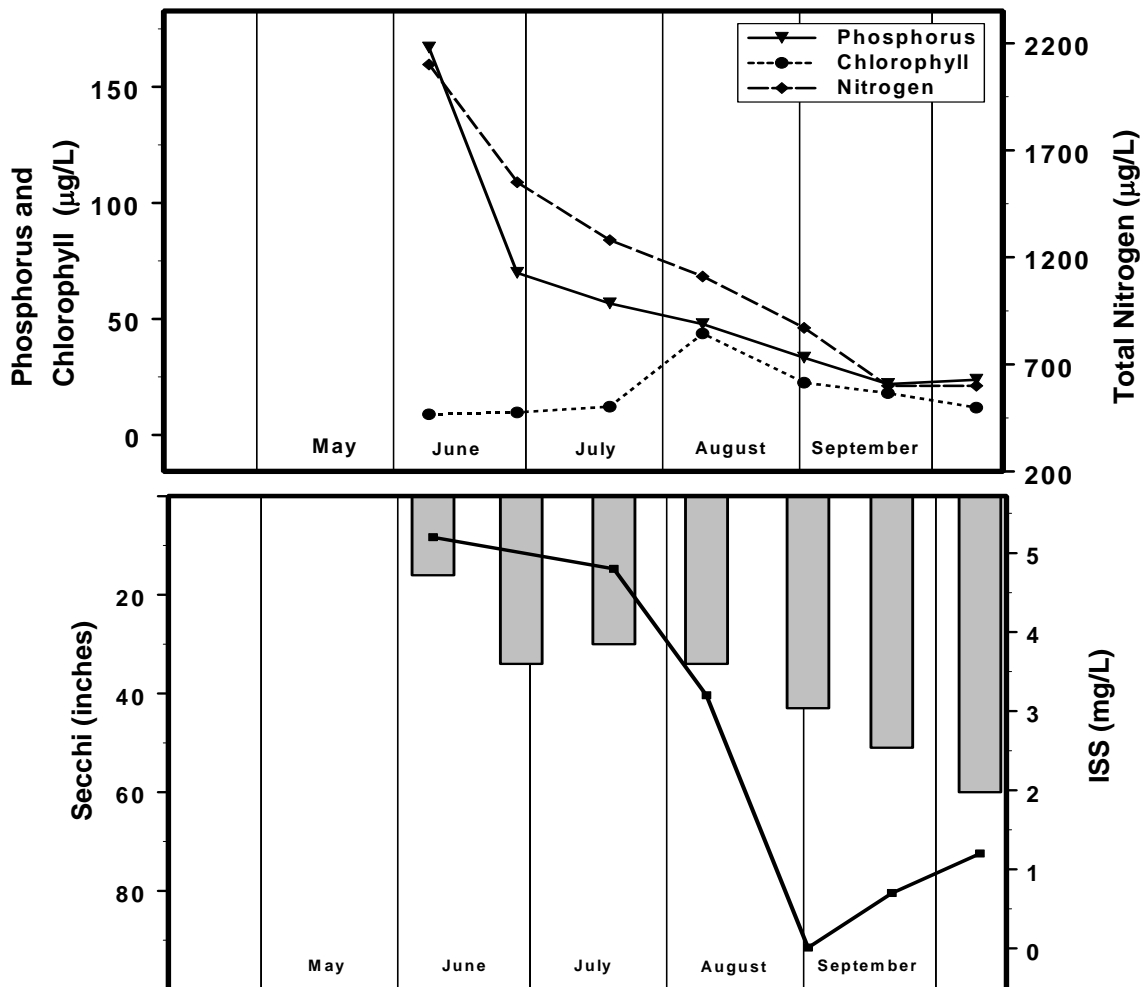


Figure 40. Seasonal fluctuations of parameters in Mark Twain Lake, Site 1 – 2002. Bars represent Secchi, line represents ISS.

Table 17. Descriptive statistics for Mark Twain Lake, Site 2 - 2002.

Parameters	# of Geometric				
	Samples	Mean	Minimum	Maximum	Median
Secchi Transparency (inches)	7	30	14	54	28
Phosphorus ($\mu\text{g/L}$)	7	46	22	168	32
Nitrogen ($\mu\text{g/L}$)	7	983	600	1990	870
Chlorophyll ($\mu\text{g/L}$)	7	17.3	12.5	25.5	18.5
ISS (mg/L)	7	3.4	1.2	7.1	4.7

ISS=Inorganic Suspended Solids

Samples were collected between June 9 and October 11

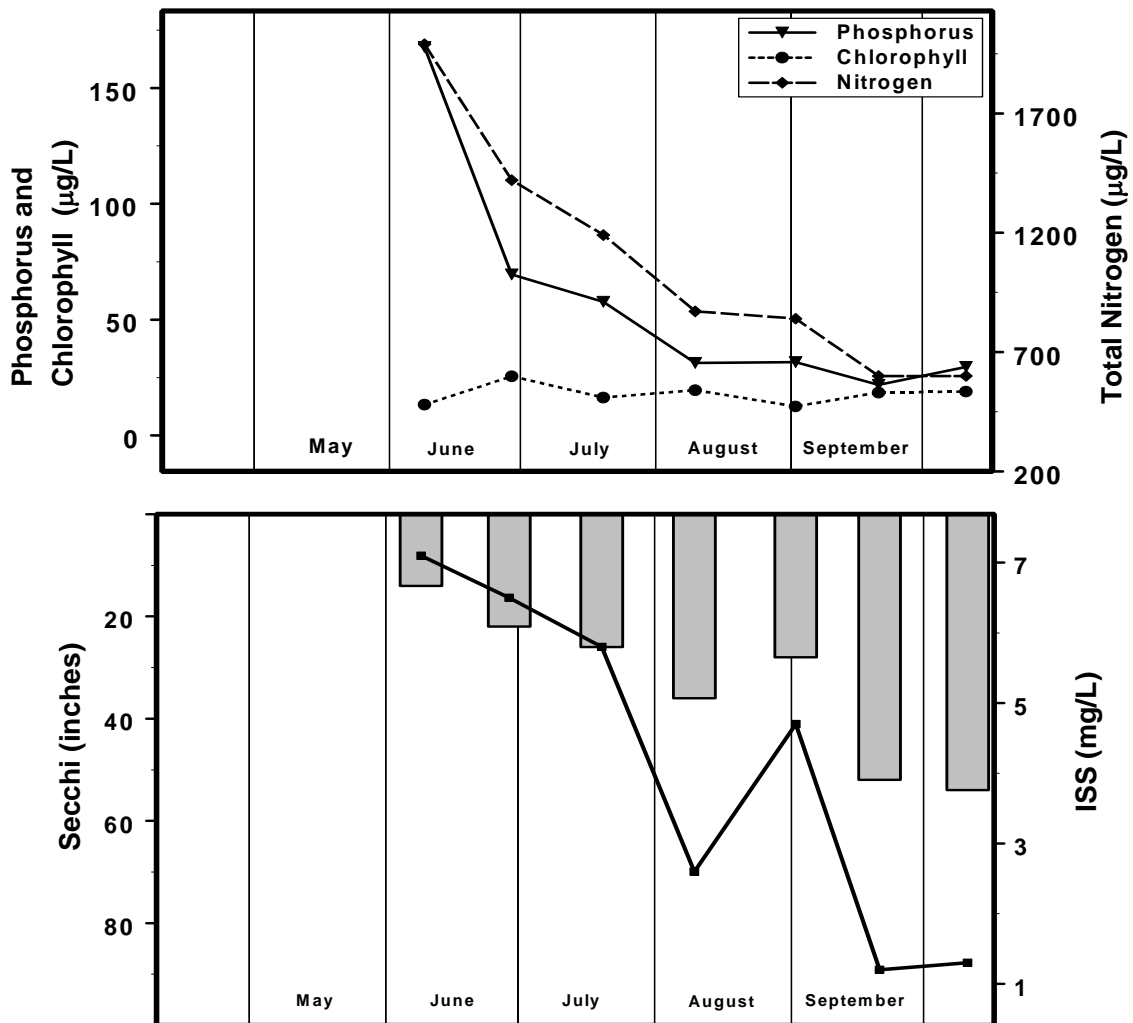


Figure 41. Seasonal fluctuations of parameters in Mark Twain Lake, Site 2 – 2002. Bars represent Secchi, line represents ISS.

Table 18. Descriptive statistics for Mark Twain Lake, Site 3 - 2002.

Parameters	# of Geometric				
	Samples	Mean	Minimum	Maximum	Median
Secchi Transparency (inches)	7	24	7	44	28
Phosphorus ($\mu\text{g/L}$)	7	58	28	180	41
Nitrogen ($\mu\text{g/L}$)	7	1036	680	1800	980
Chlorophyll ($\mu\text{g/L}$)	7	14.2	4.0	22.0	17.0
ISS (mg/L)	6	4.3	2.6	7.4	4.4

ISS=Inorganic Suspended Solids

Samples were collected between June 9 and October 13

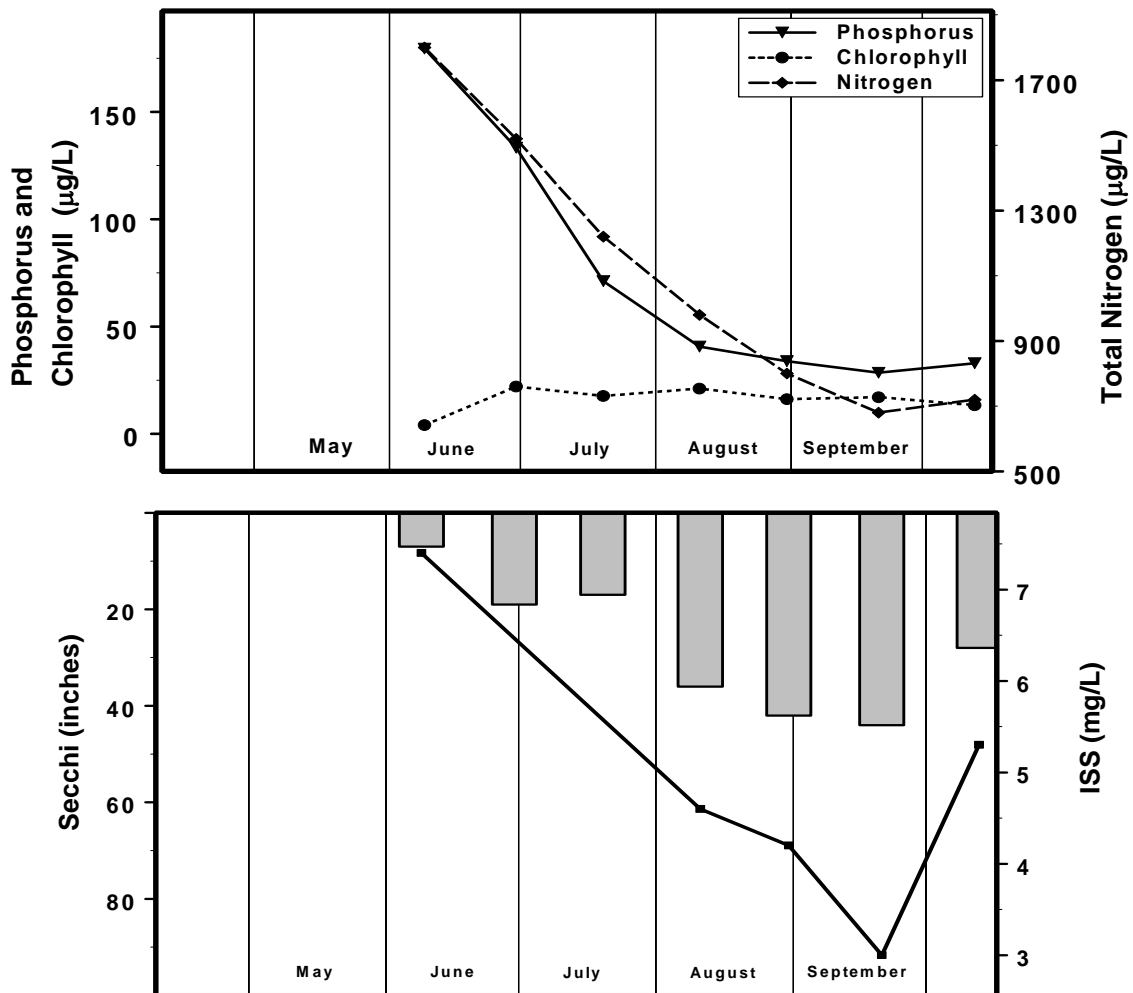


Figure 42. Seasonal fluctuations of parameters in Mark Twain Lake, Site 3 – 2002. Bars represent Secchi, line represents ISS.

Table 19. Descriptive statistics for Mark Twain Lake, Site 4 - 2002.

Parameters	# of Geometric				
	Samples	Mean	Minimum	Maximum	Median
Secchi Transparency (inches)	6	24	11	46	30
Phosphorus ($\mu\text{g/L}$)	6	60	23	205	60
Nitrogen ($\mu\text{g/L}$)	6	1141	700	1740	1180
Chlorophyll ($\mu\text{g/L}$)	6	15.9	6.8	47.8	13.2
ISS (mg/L)	6	3.7	2.2	5.6	3.9

ISS=Inorganic Suspended Solids

Samples were collected between June 9 and September 31

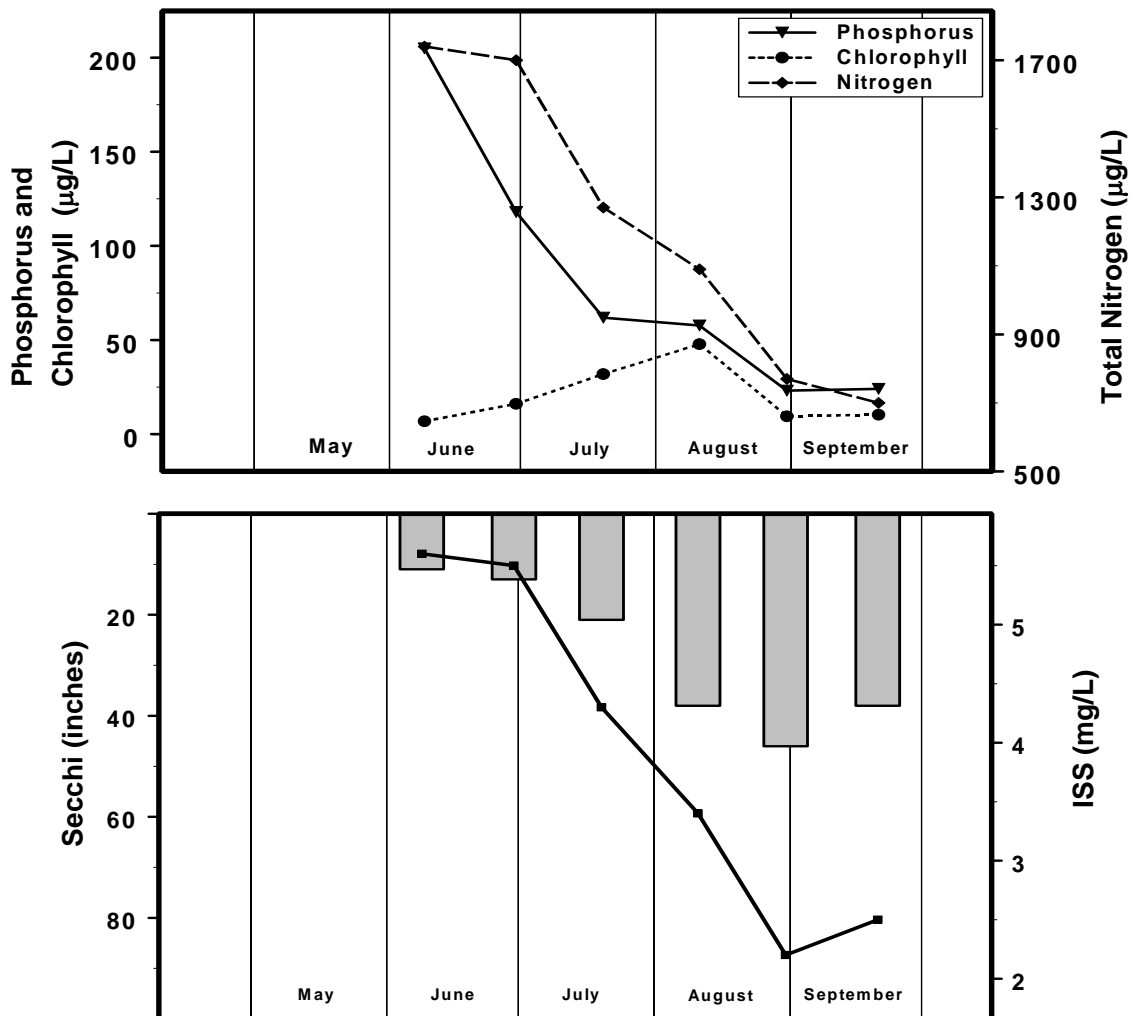


Figure 43. Seasonal fluctuations of parameters in Mark Twain Lake, Site 4 – 2002. Bars represent Secchi, line represents ISS.