

## 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.

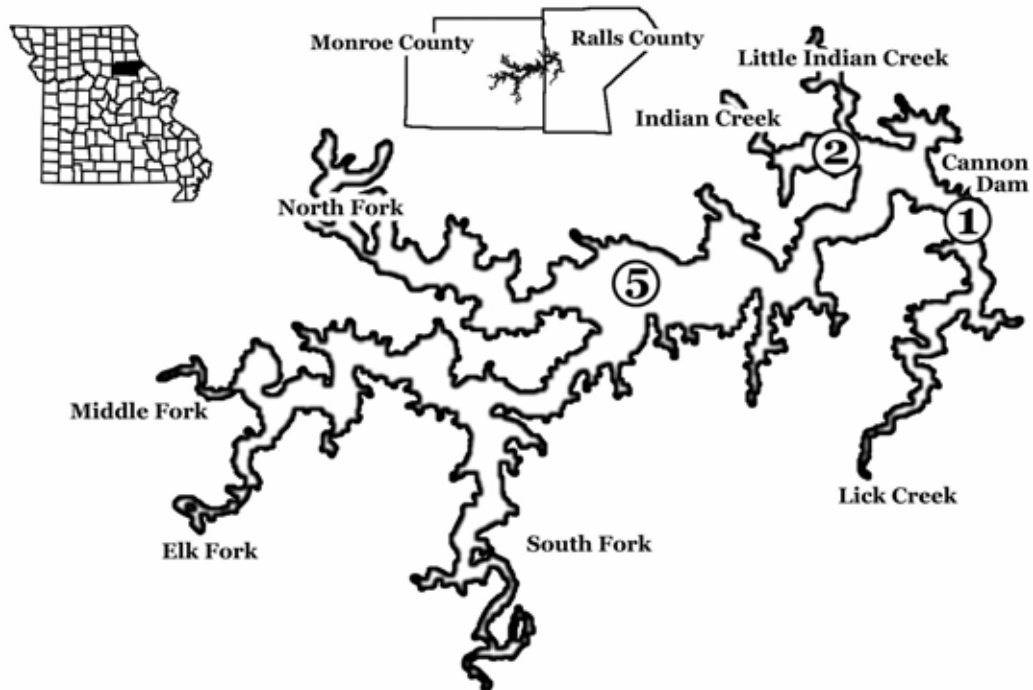


Figure 51. Location of Mark Twain Lake and sample sites

### 2003 Results

Figures 52 – 54 show how the parameters phosphorus, nitrogen, algal chlorophyll, inorganic suspended solids and Secchi transparency varied in Mark Twain Lake during the 2003 sampling season. Descriptive statistics precede the figures. A brief description of these results:

- Samples were collected at three sites between April 26 and October 10
- Geometric mean phosphorus values were similar for the three sites, though Sites 1 and 5 were more variable than Site 2
- Inorganic suspended sediment concentrations generally decreased and Secchi transparencies increased at all three sites as the sampling season progressed
- Site 1 was the most variable, having both the highest and the lowest phosphorus concentrations and Secchi transparencies
- All three sites were eutrophic in 2003, based on geometric mean concentrations of chlorophyll, nitrogen and phosphorus

Table 24. Descriptive statistics for Mark Twain Lake, Site 1 - 2003.

	<b>Secchi (inches)</b>	<b>TP (<math>\mu\text{g/L}</math>)</b>	<b>TN (<math>\mu\text{g/L}</math>)</b>	<b>CHL (<math>\mu\text{g/L}</math>)</b>	<b>ISS (mg/L)</b>
# of Samples	8	8	8	8	8
Median	48	24	875	15.0	2.6
Minimum	19	14	430	5.3	0.7
Maximum	80	100	1330	79.4	6.6
Geometric Mean	45	32	824	17.0	2.3

Samples were collected between April 26 and October 10

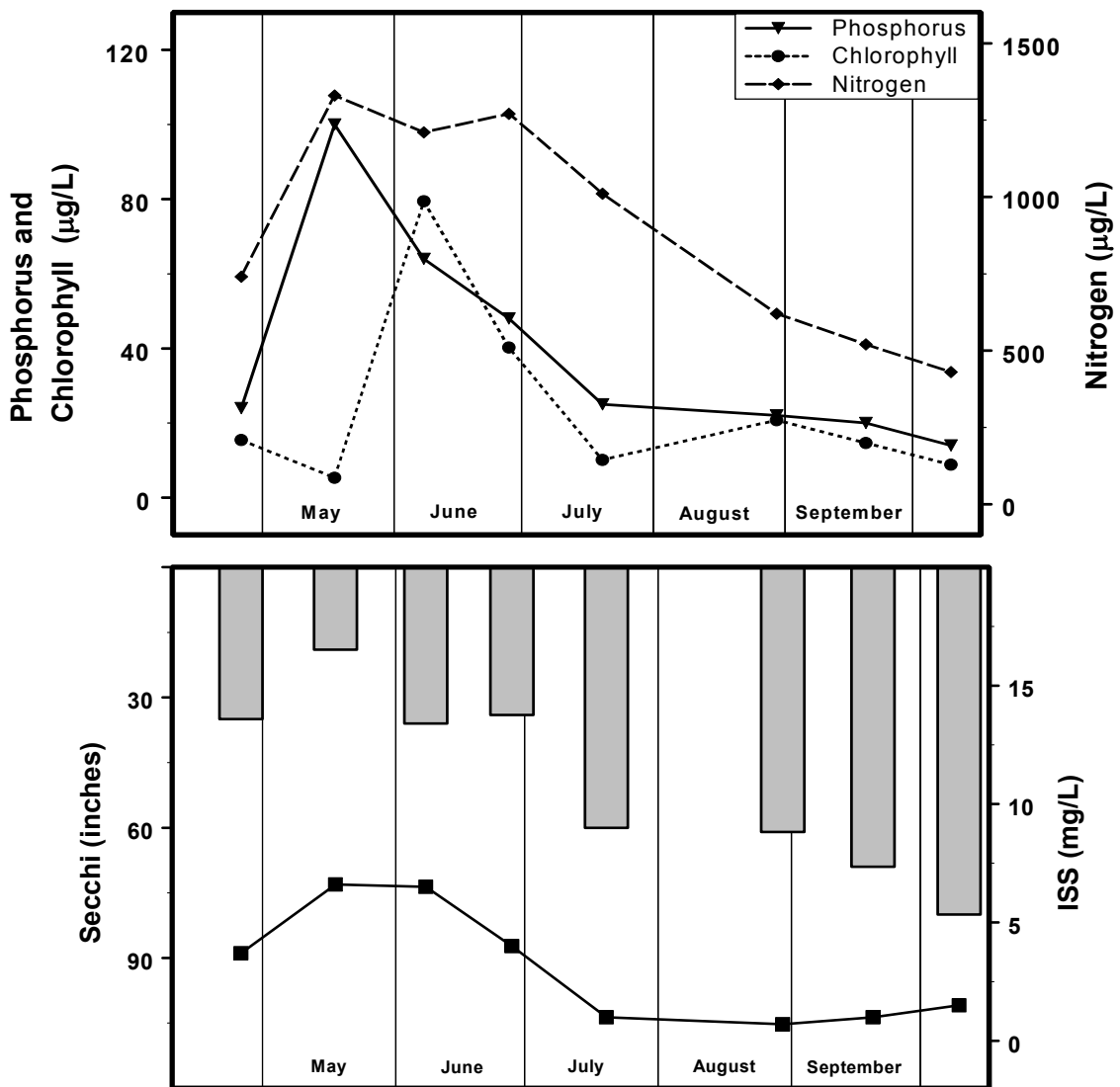


Figure 52. Seasonal fluctuations of parameters in Mark Twain Lake, Site 1 – 2003. Bars represent Secchi, line represents ISS.

Table 25. Descriptive statistics for Mark Twain Lake, Site 2 - 2003.

	<b>Secchi (inches)</b>	<b>TP (<math>\mu\text{g/L}</math>)</b>	<b>TN (<math>\mu\text{g/L}</math>)</b>	<b>CHL (<math>\mu\text{g/L}</math>)</b>	<b>ISS (mg/L)</b>
# of Samples	8	8	8	8	8
Median	45	29	760	15.2	3.3
Minimum	30	20	580	9.9	1.4
Maximum	76	41	1110	22.2	7.5
Geometric Mean	48	28	799	15.3	2.8

Samples were collected between April 26 and October 10

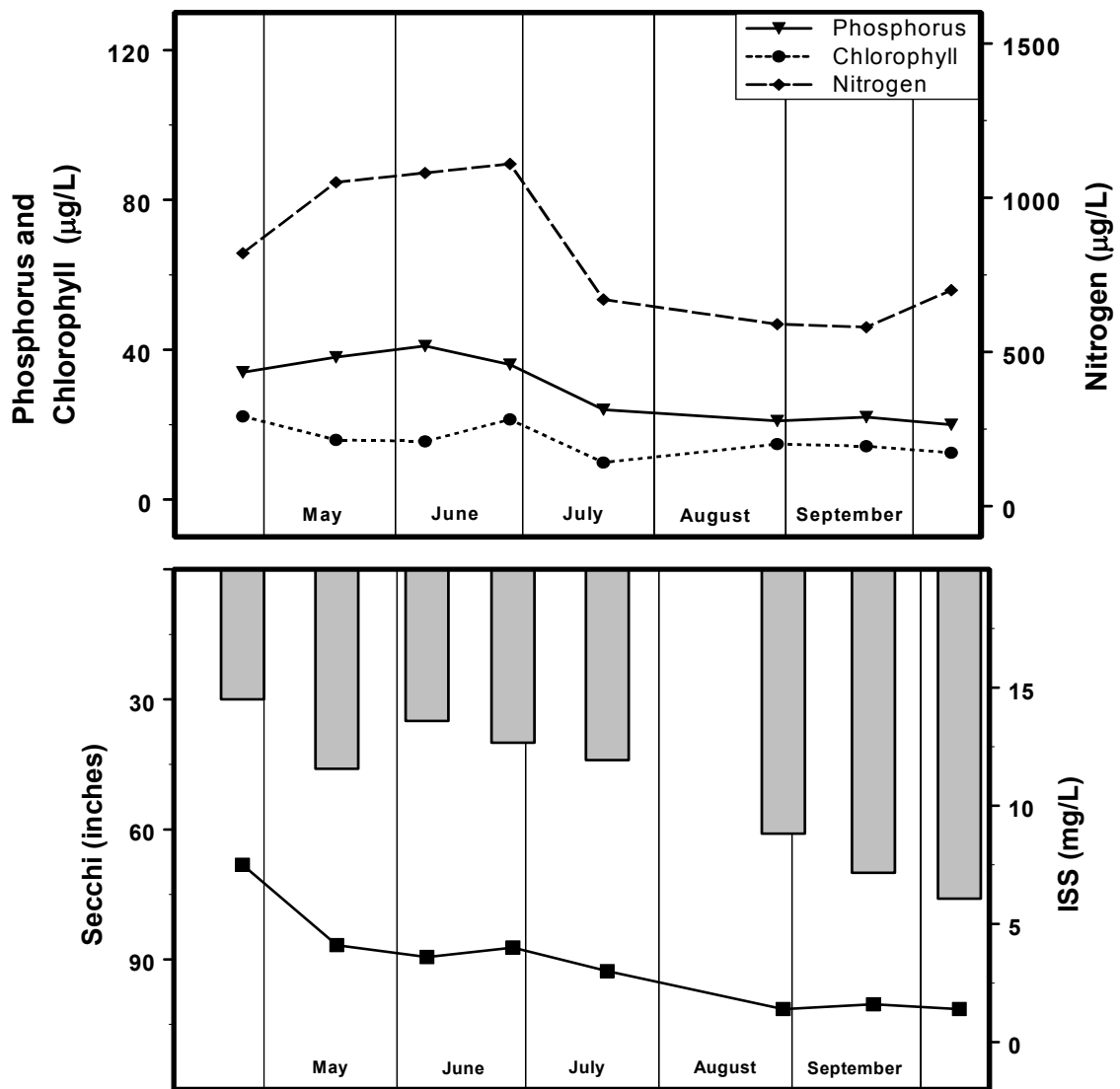


Figure 53. Seasonal fluctuations of parameters in Mark Twain Lake, Site 2 – 2003. Bars represent Secchi, line represents ISS.

Table 26. Descriptive statistics for Mark Twain Lake, Site 5 - 2003.

	Secchi (inches)	TP ( $\mu\text{g/L}$ )	TN ( $\mu\text{g/L}$ )	CHL ( $\mu\text{g/L}$ )	ISS (mg/L)
# of Samples	8	8	8	8	8
Median	42	27	950	21.0	3.8
Minimum	24	18	460	4.6	0.5
Maximum	67	76	1770	38.0	6.2
Geometric Mean	41	36	906	15.8	2.6

Samples were collected between April 26 and October 10

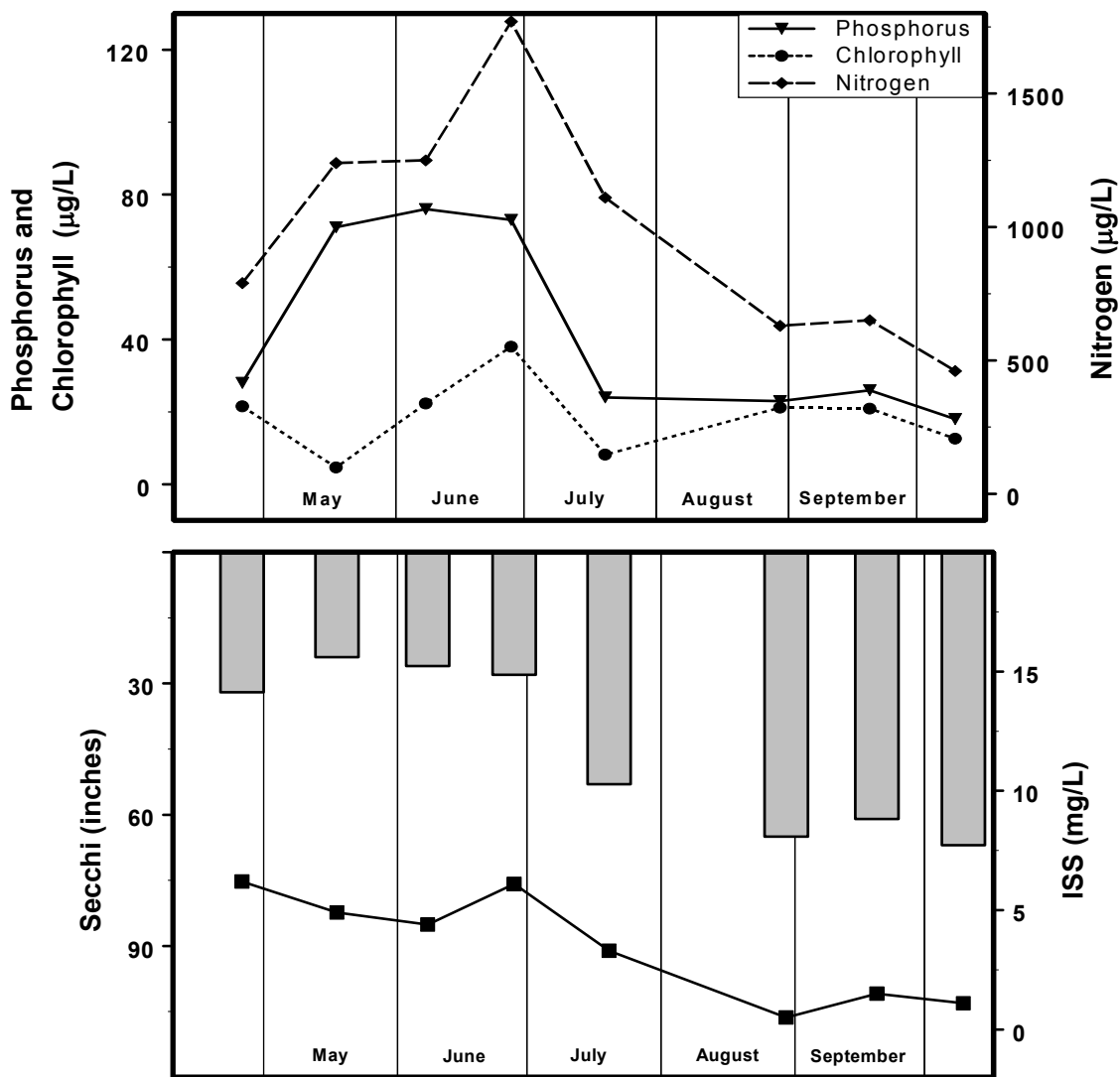


Figure 54. Seasonal fluctuations of parameters in Mark Twain Lake, Site 5 – 2003. Bars represent Secchi, line represents ISS.