

Stockton Lake

Ozark Highlands Region

Stockton Lake is a U.S. Army Corps of Engineers lake, located in Cedar, Dade, and Polk counties. Stockton Lake was constructed by damming the Sac River, creating a large lake with a surface area of 25,000 acres and a watershed of 742,400 acres. The project was completed in 1969 and the lake had filled by 1971. 58% of the land in Stockton Lake’s watershed is covered by grassland/pasture and 28% is forested. Stockton Lake is an important recreational resource.

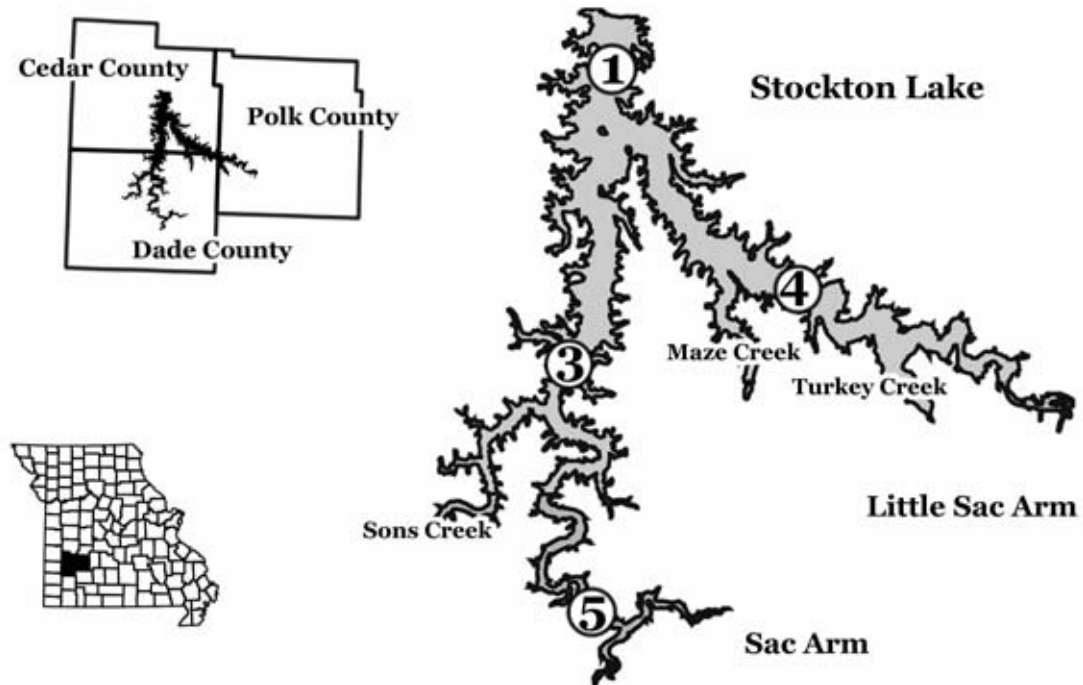


Figure 66. Location of Stockton Lake and sample sites.

2003 Results

Figures 67-72 show how the parameters phosphorus, nitrogen, algal chlorophyll, inorganic suspended solids and Secchi transparency varied in Stockton Lake during the 2003 sampling season. The descriptive statistics appear in Table 33. A brief description of these results:

- Stockton Lake was sampled at 4 sites between late May and early October
- The maximum Secchi transparency at Site 1 was 300 inches, the highest LMVP reading in 2003
- The Sac River Arm has higher concentrations of nutrients and chlorophyll than the Little Sac River Arm
- The differences in concentrations of nutrients, chlorophyll and inorganic suspended solids between Site 3 and Site 5 suggest that there is either a nonpoint or point source of pollution between the two sites on the Sac Arm, or somewhere along Sons Creek

- For all sites, the highest chlorophyll concentrations occurred in July
- Site 1 was oligotrophic and Site 4 was mesotrophic in 2003, based on concentrations of chlorophyll, nitrogen and phosphorus
- Site 3 was eutrophic based on chlorophyll, nitrogen and phosphorus, nearly hypereutrophic in the case of chlorophyll
- Site 5 was eutrophic based on chlorophyll and nitrogen and mesotrophic based on phosphorus

Table 33. Descriptive Statistics For Stockton Lake, 2003

Parameters		Dam	Little Sac Arm	Sac Arm	
		Site 1	Site 4	Site 3	Site 5
Secchi Transparency (inches)	# samples	6	6	6	6
	median	165	108	21	50
	minimum	120	78	15	11
	maximum	300	228	43	115
	geomean	174	116	23	44
Phosphorus ($\mu\text{g/L}$)	# samples	6	6	6	6
	median	8	12	54	18
	minimum	7	8	35	15
	maximum	9	14	90	29
	geomean	8	11	54	20
Nitrogen ($\mu\text{g/L}$)	# samples	6	6	6	6
	median	340	365	920	755
	minimum	270	240	550	360
	maximum	500	500	2210	1300
	geomean	361	357	968	690
Chlorophyll ($\mu\text{g/L}$)	# samples	6	6	6	6
	median	2.4	4.6	39.3	6.8
	minimum	1.3	2.5	21.9	2.3
	maximum	7.2	16.2	64.3	25.9
	geomean	2.6	5.2	39.9	8
Inorganic Suspended Solids (mg/L)	# samples			6	5
	median			4.6	2.5
	minimum			1.1	1.7
	maximum			11.9	2.6
	geomean			4.3	2.3

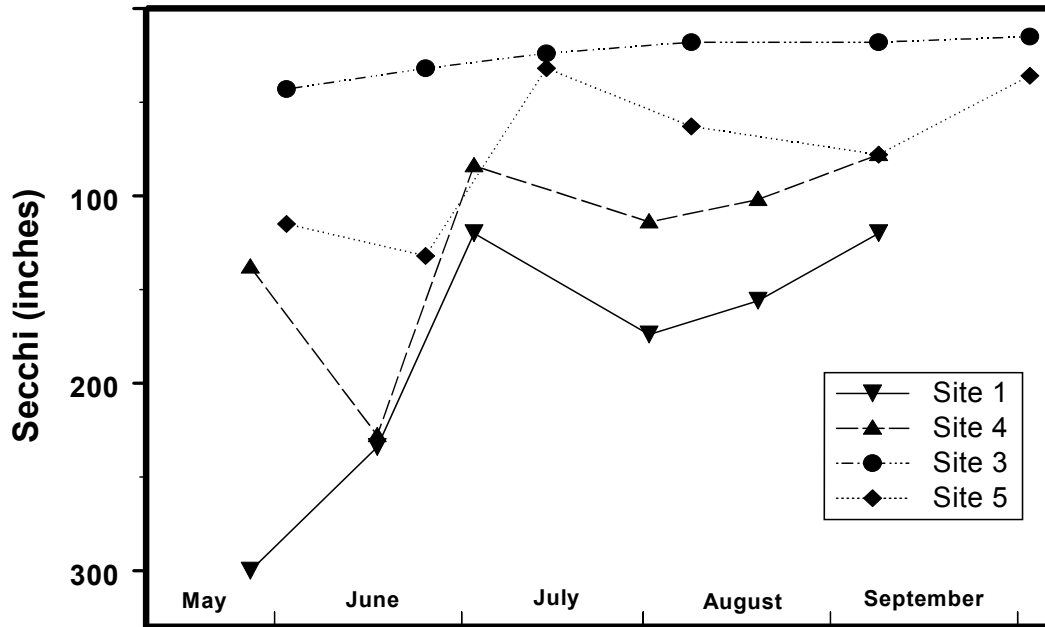


Figure 67. Secchi values for Stockton Lake, 2003

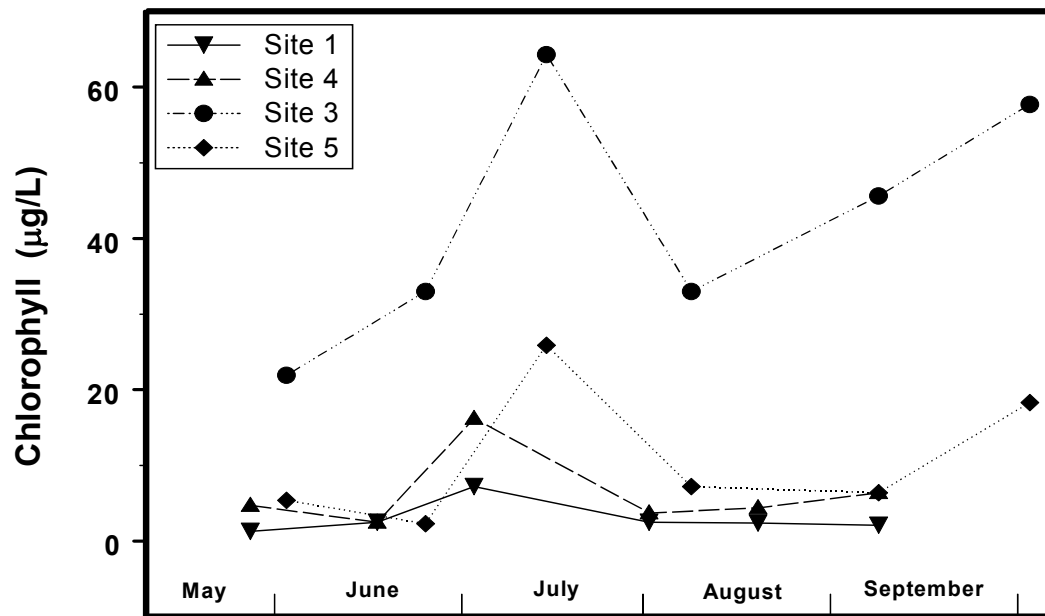


Figure 68. Chlorophyll concentrations in Stockton Lake, 2003

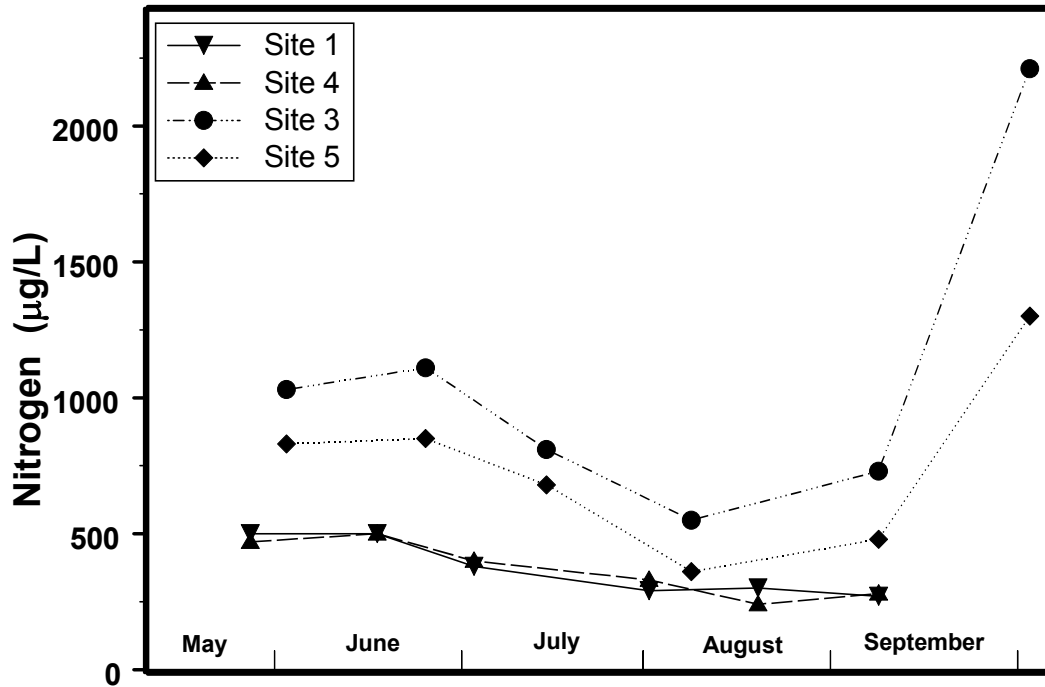


Figure 69. Nitrogen concentrations in Stockton Lake, 2003

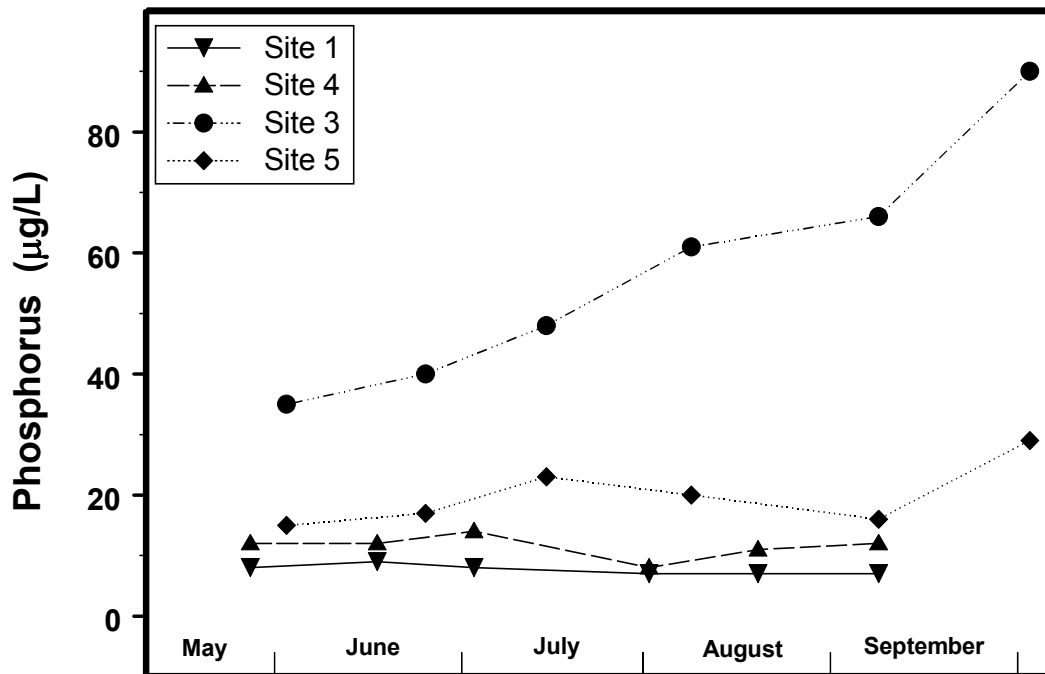


Figure 70. Phosphorus concentrations in Stockton Lake, 2003

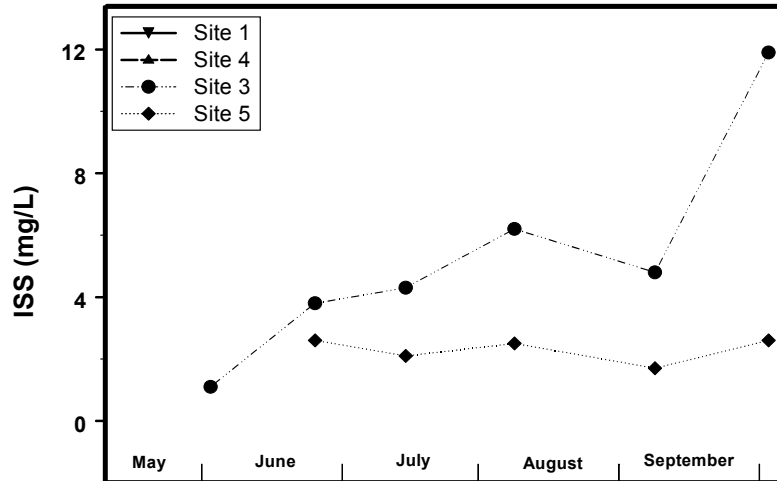


Figure 71. Inorganic Suspended Solids Concentrations in the Sac Arm of Stockton Lake

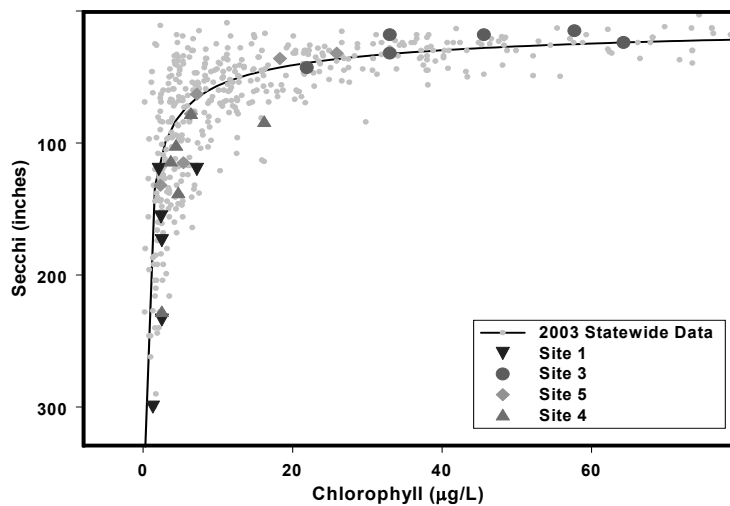


Figure 72. Secchi/Chlorophyll relationship in Stockton Lake

Figure 72 shows data from Stockton Lake superimposed over the relationship between chlorophyll concentrations and Secchi transparency in Missouri lakes. Note that changes in chlorophyll concentrations at Site 1 lead to large changes in Secchi transparency, while clarity at Site 3 varies little over a range of chlorophyll concentrations. Sites 4 and 5 are intermediate.