

Grindstone Reservoir

Grindstone Reservoir is located about 4 miles northwest of Cameron. The very large watershed of this 180 acre reservoir covers 13,417 acres and is dominated by agricultural land use (55%). The large ratio of watershed size to lake volume reduces the reservoir's ability to process the nonpoint source inputs associated with agriculture.

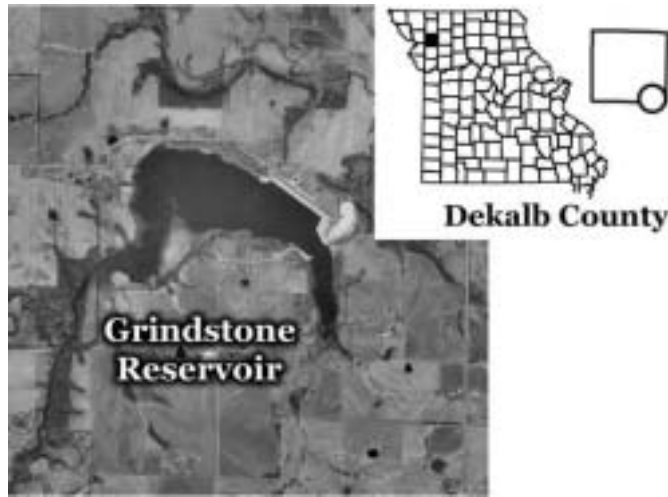


Figure 39. Location of Grindstone Reservoir.

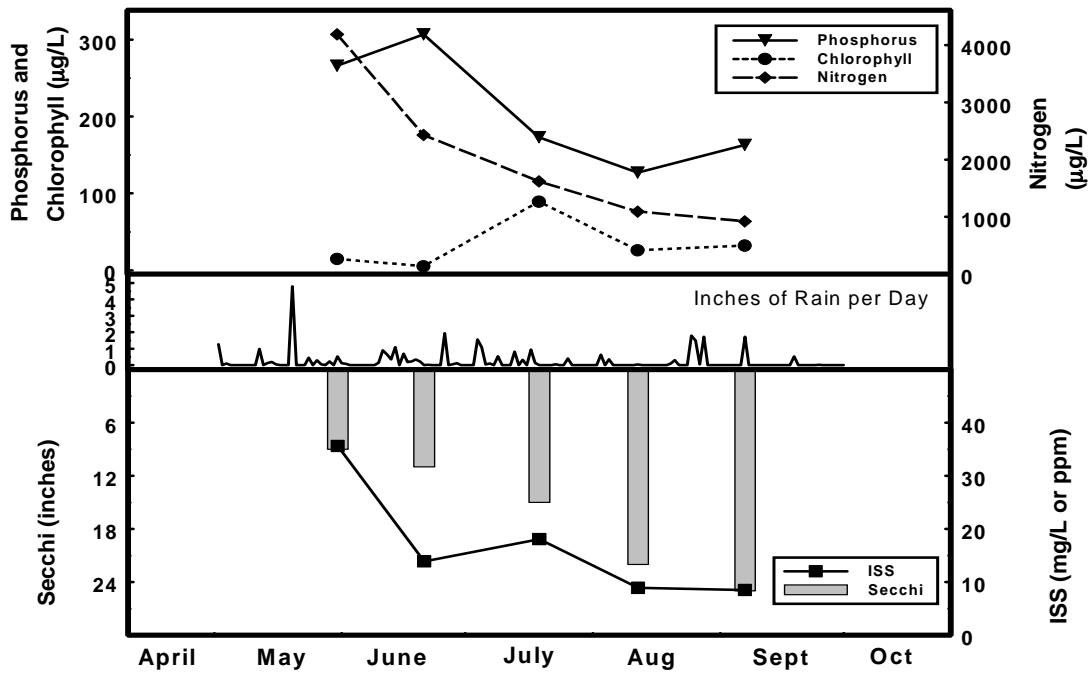


Figure 40. Seasonal fluctuations of parameters for Grindstone Reservoir – 2004.

Table 11. Descriptive statistics for Grindstone Reservoir – 2004.

	Secchi (inches)	TP (ug/L)	TN (ug/L)	CHL (ug/L)	ISS (mg/L)
Geometric Mean	15	196	1753	22.5	14.7
Minimum	9	127	920	5.2	8.5
Maximum	25	307	4190	89.3	35.6
Number of Samples	5	5	5	5	5

2004 Results

Figure 40 shows how the parameters nitrogen, phosphorus, algal chlorophyll, inorganic suspended solids and Secchi transparency varied in Grindstone Reservoir during 2004. The descriptive statistics appear in Table 11.

A brief description of the results:

- Hydrology and land use within the watershed are the reason Grindstone Lake is extremely nutrient-rich. Over 50% of the watershed has agricultural land use. Grindstone also has a low residence time (high watershed area relative to volume), which reduces the ability of inflowing material to settle out of the water column.
- TN started out extremely high and decreased throughout the season.
- Algal biomass (as measured by chlorophyll concentration) was kept low due to shading by suspended sediments, especially in the May and June observations.
- A huge rain event on May 19 brought 4.8 inches of rain in a single day (as measured in nearby Hamilton, MO). ISS observation 11 days afterward is Grindstone’s seasonal high of 35.6 mg/L. Only 2 other lakes had higher ISS observations in 2004.
- Maximum values of 307 ug/L of phosphorus and 4190 ug/L of nitrogen are extremely high.