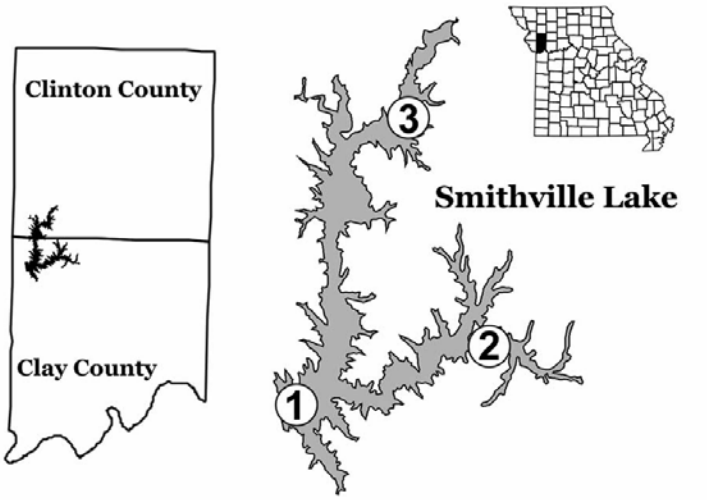
Smithville Lake

Smithville Lake is a 7,087 acre Army Corps of Engineers reservoir with a 134,000 acre watershed consisting of 46% grassland and pasture and 28% cropland. Smithville Lake is located north of the Kansas City metro area.

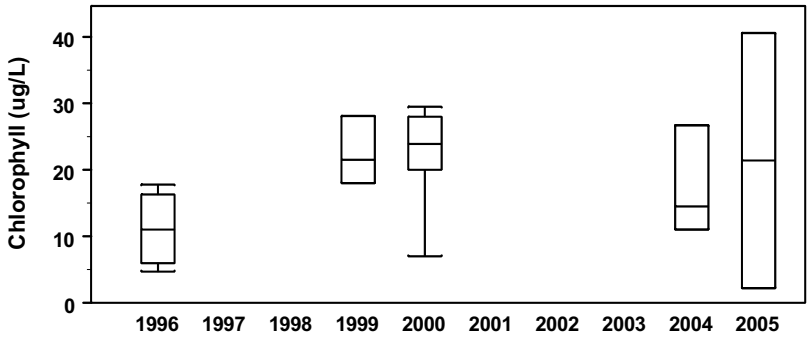


Location of Smithville Lake

There were only 3 samples collected at each site during 2005, making generalizations about water quality difficult. However, Site 1 (dam) had lower concentrations of nutrients and algae, and greater water clarity (Secchi) than either Site 2 or Site 3. This "longitudinal" gradient is typical of reservoirs.

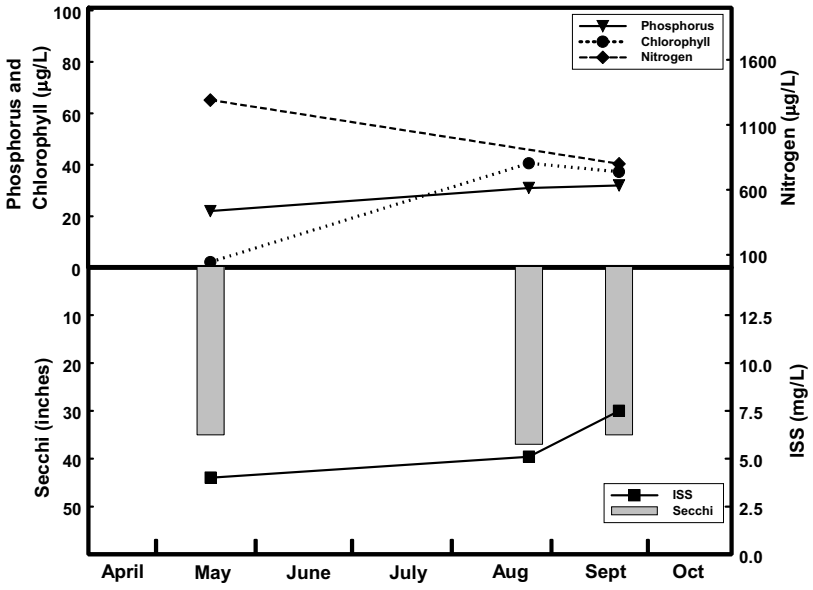
Chlorophyll trends in Smithville Lake, Site 1

Only 2 samples were collected during the "summer" period of May 15 to September 15, making generalizations difficult. However, there was a high chlorophyll value in 2005 that exceeded previously observed values.



Smithville Lake, Site 1

Seasonal fluctuations of parameters for Smithville Lake, Site 1 – 2005



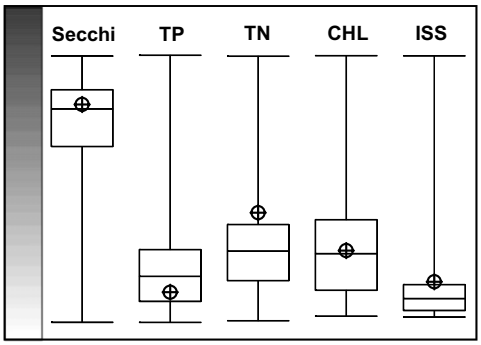
Descriptive statistics for Smithville Lake, Site 1 – 2005

	Secchi (inches)	TP (ug/L)	TN (ug/L)	CHL (ug/L)	ISS (mg/L)
Geometric Mean	**36**	**28**	**953**	**14.9**	**5.3**
Minimum	35	22	800	2.2	4.0
Maximum	37	32	1290	40.6	7.5
Number of Samples	3	3	3	3	3

There were only 3 samples collected for each Smithville lake site in 2005.

There was a significant amount of variation observed in chlorophyll concentrations at the dam. Chlorophyll concentrations were especially low for the mid-May sample, but rose to peak conditions for the remaining two sample dates. Phosphorus showed minimal variability at Site 1.

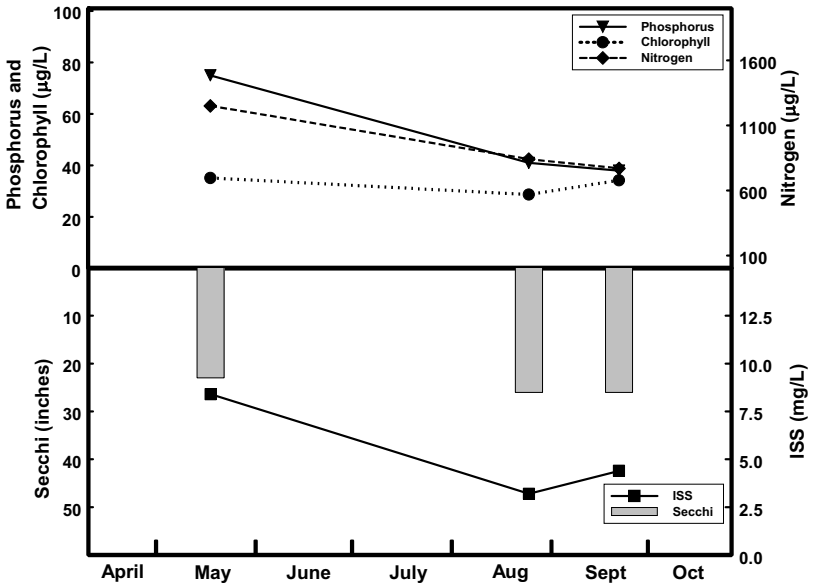
Relative Rank for
Smithville Lake, Site 1



At the dam, Smithville Lake has water clarity similar to most Missouri lakes. Phosphorus and chlorophyll concentrations are also typical of a Missouri lake. Nitrogen and suspended sediment concentrations, however, are higher than 75% of Missouri's lakes.

Smithville Lake, Site 2

Seasonal fluctuations of parameters for Smithville Lake, Site 2 – 2005



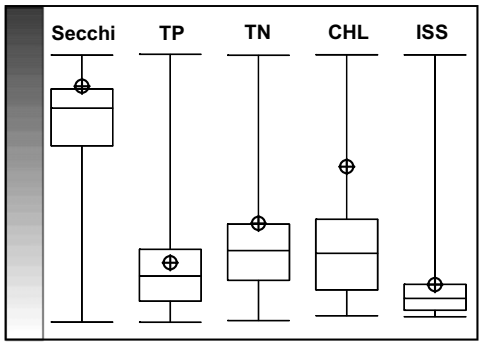
Descriptive statistics for Smithville Lake, Site 2 – 2005

	Secchi (inches)	TP (ug/L)	TN (ug/L)	CHL (ug/L)	ISS (mg/L)
Geometric Mean	**25**	**49**	**932**	**32.5**	**4.9**
Minimum	23	38	770	28.7	3.2
Maximum	26	75	1250	35.1	8.4
Number of Samples	3	3	3	3	3

In contrast to Site 1, Site 2 showed almost no variation in its chlorophyll concentrations. Phosphorus varied slightly more than at Site 1. As expected, phosphorus and chlorophyll concentrations were higher here than at the dam, however nitrogen and ISS concentrations at Site 2 were nearly identical to Site 1.

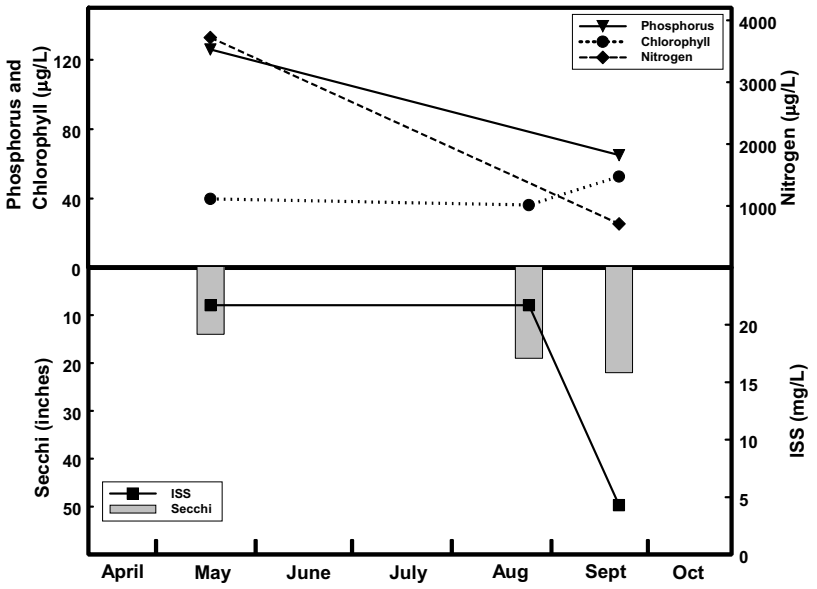
Site 2 had higher concentrations of nitrogen, chlorophyll and suspended sediments and lower water clarity (Secchi) than 75% of Missouri lakes.

Relative Rank for
Smithville Lake, Site 2



Smithville Lake, Site 3

Seasonal fluctuations of parameters for Smithville Lake, Site 3 – 2005



Descriptive statistics for Smithville Lake, Site 3 – 2005

	Secchi (inches)	TP (ug/L)	TN (ug/L)	CHL (ug/L)	ISS (mg/L)
Geometric Mean	**18**	**90**	**1625**	**42.3**	**12.7**
Minimum	14	65	710	36.2	4.3
Maximum	22	126	3720	52.6	21.7
Number of Samples	3	2	2	3	3

One nitrogen value was extremely high at Site 3, reaching nearly 4000 ug/L. Phosphorus concentrations also peaked on this sample date, but the algae (measured as chlorophyll concentration) did not respond, likely due to very high amounts of sediments creating shade.

Site 3 has very high nutrient, chlorophyll and sediment concentrations, and very low water clarity (Secchi). More than 75% of Missouri's lakes have better clarity and fewer nutrients, algae and sediments than observed at this site.

Relative Rank for
Smithville Lake, Site 3