

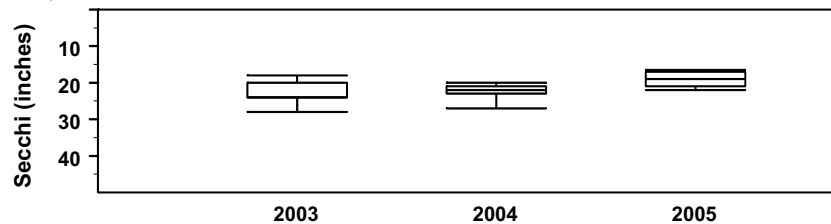
Lake Springfield



Location of Lake Springfield and its sample sites

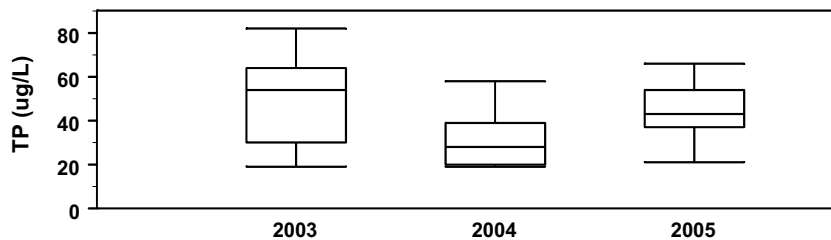
Lake Springfield is used as a source of cooling water for the James River Power Plant. This 206 acre lake has a 165,000 acre watershed that is 34% forest, 9% cropland, 54% grassland and 3% urban. Construction on Lake Springfield was completed in 1956.

Secchi trends in Lake Springfield, Site 1



Phosphorus trends in Lake Springfield, Site 2

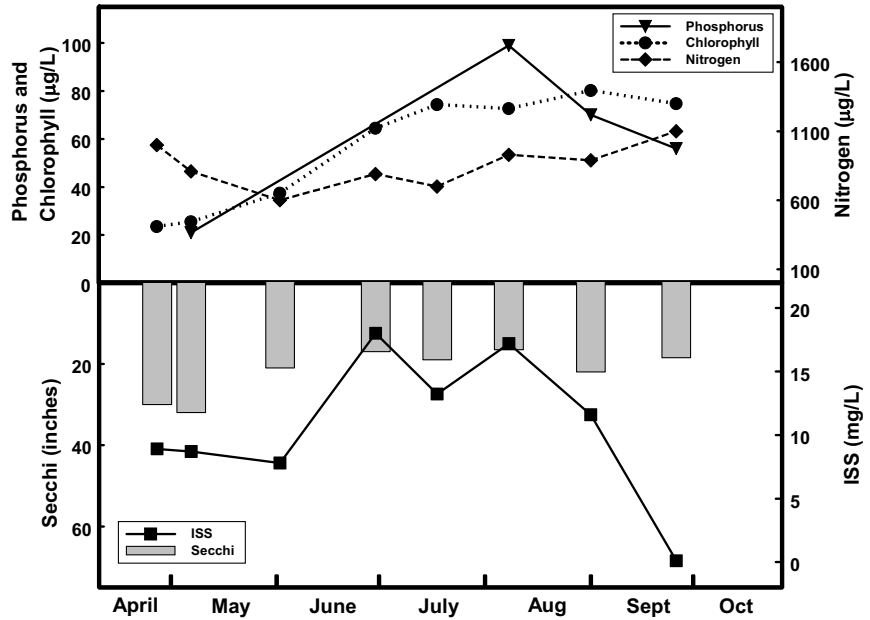
The influence of the power plant at Lake Springfield results in warm, turbid water at the dam. The constant



mixing and the warm temperatures led to high phosphorus and chlorophyll concentrations at the dam. By contrast, Site 2 averaged half the phosphorus and a fifth of the chlorophyll seen at the dam in 2005. This is notable because reservoirs typically exhibit lower concentrations of chlorophyll and nutrients at their dam rather than at inflowing sites. With three years of monitoring data for Lake Springfield, no water quality trends are apparent.

Lake Springfield, Site 1

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



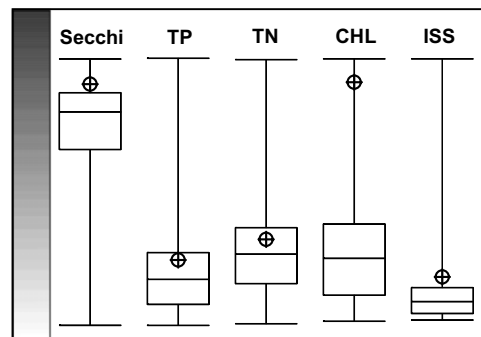
Descriptive statistics for Lake Springfield, Site 1 – 2005

	Secchi (inches)	TP (ug/L)	TN (ug/L)	CHL (ug/L)	ISS (mg/L)
Geometric Mean	21	53	839	51.1	6.4
Minimum	17	21	600	23.5	0.1
Maximum	32	99	1100	80.2	18.0
Number of Samples	8	4	8	8	8

Site 1 had half the Secchi transparency and twice the phosphorus seen at Site 2. Chlorophyll concentrations were very high relative to phosphorus, probably due to the warming and mixing caused by the power plant. Nitrogen concentrations were comparable at both sites.

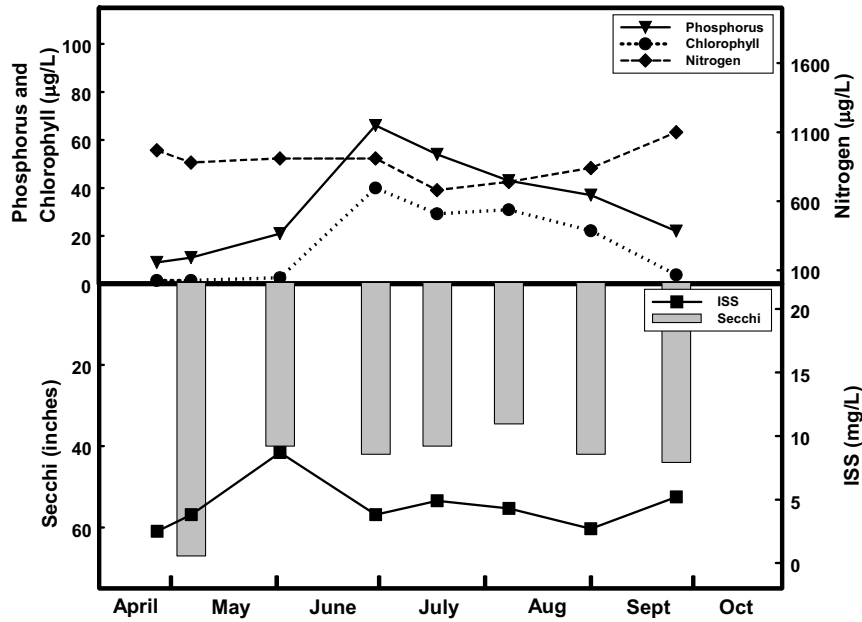
Nutrient, chlorophyll and ISS values are higher than seen in most Missouri lakes. The 2005 mean chlorophyll concentration is among the highest observed in Missouri.

Relative Rank for Lake Springfield, Site 1



Lake Springfield, Site 2

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



Descriptive statistics for Lake Springfield, Site 2 – 2005

	Secchi (inches)	TP (ug/L)	TN (ug/L)	CHL (ug/L)	ISS (mg/L)
Geometric Mean	43	27	870	8.1	4.2
Minimum	35	9	680	1.5	2.5
Maximum	67	66	1100	40.0	8.7
Number of Samples	7	8	8	8	8

In contrast to Site 1, Site 2 has less phosphorus and chlorophyll, and is clearer than most Missouri lakes. However, the average suspended sediment and nitrogen concentrations are above the median for Missouri. Even so, all values rank within the middle 50% of Missouri lakes.

Relative Rank for Lake Springfield, Site 2

