

South Sturgeon Lake

DNR Lake ID: 31-0003-00
 County: Itasca
 Major Watershed: Little Fork River
 Ecoregion: Northern Lakes and Forests
 Surface Area: 199 acres
 Maximum Depth: 43 feet
 Water Quality Data: 5 years
 Secchi Data: 27 years



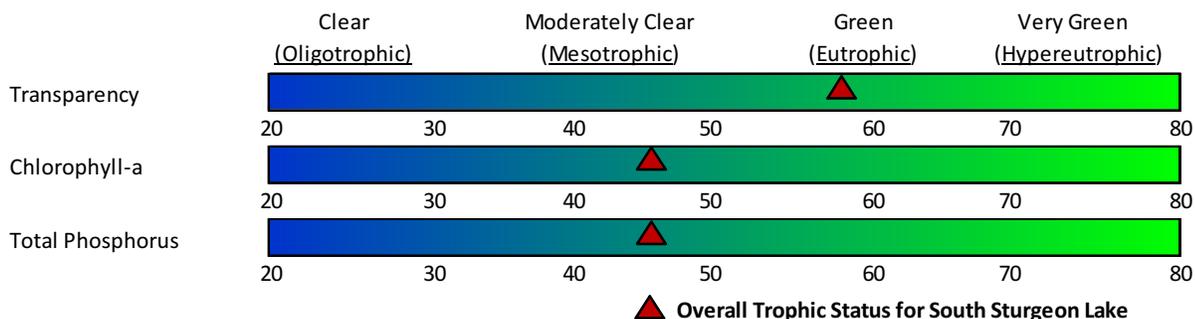
2013 Water Quality Summary

Sampling results for chlorophyll-a (algae) and water clarity (secchi) for South Sturgeon Lake were very similar to the lake's historical average but phosphorus levels were substantially higher in 2013. Although the high phosphorus level for 2013 was primarily due to a single sample collected in late September, the lake should be monitored closely in the future. The overall trophic status of South Sturgeon is mesotrophic, but with years like 2013 it is bordering eutrophic conditions where algae blooms can begin to become a problem during certain periods of the summer by restricting recreational use. South Sturgeon Lake has a very dark tannin stained color, which is natural and can actually benefit the lake by limiting algae growth due to the limitation of light penetration.

South Sturgeon Lake Water Quality

Parameter	2013 Sampling South Sturgeon Lake	Historical Average South Sturgeon Lake	MN Northern Lakes & Forests Ecoregion
Total Phosphorus (ug/l)	25	18	14 - 27
Chlorophyll mean (ug/l)	4	4	4 - 10
Secchi Disk (feet)	4.1	4.0	8 - 15
Secchi Disk (meters)	1.3	1.2	(2.4 - 4.6)
TSI-Phosphorus	51	46	42 - 52
TSI-Chlorophyll-a	45	46	44 - 53
TSI-Secchi	57	58	38 - 47

Carlson's Trophic Status Index (TSI)



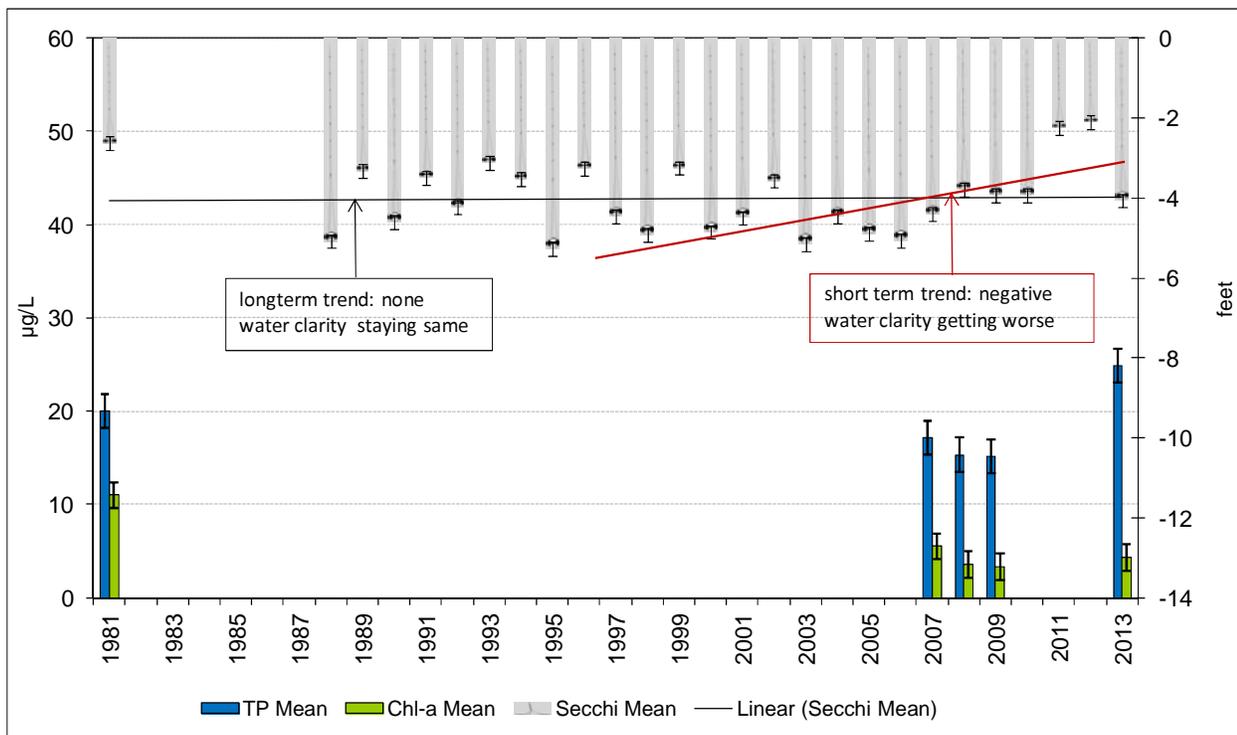
Note: Trophic State Indices (TSIs) are an attempt to provide a single quantitative index for the purpose of classifying and ranking lakes, most often from the standpoint of assessing water quality. TSI ranges from clear lakes, low in nutrients (oligotrophic), to green lakes, with very high nutrient levels (hypereutrophic).

Historical Water Quality Summary

South Sturgeon Lake's historical data for total phosphorus and chlorophyll-a do not meet the minimum requirements for looking at trends. There is however 27 years of secchi data, which provides an excellent database to perform long term trend analysis.

MPCA reports: *The median transparency of South Sturgeon from 1981 to 2011 increased by 0.00 feet per decade. Given the variability over these years, there is no evidence yet of a long-term trend in either direction. A plausible range for the long-term trend is between a decrease of 0.35 and an increase of 0.29 feet per decade.*

Basically, amidst the highs and lows, the lake's water clarity has remained the same since 1981. That being said, when we look at trends since 2000, we do start seeing a negative trend and a loss in depth of water clarity (how deep we can see the secchi disk). This negative trend is primarily driven by the poor water clarity years in 2011-12. Continued monitoring is important to substantiate this trend, which could be due to natural variation since the full record shows no trend.



Note: For detecting trends, a minimum of 8-10 years of data with 4 or more readings per season are recommended. Minimum confidence accepted by the MPCA is 90%. This means that there is a 90% chance that the data are showing a true trend and a 10% chance that the trend is a random result of the data.

Monitoring Recommendations

Transparency monitoring at site 201 should be continued annually. It is important to continue transparency monitoring weekly or at least bimonthly every year to enable year-to-year comparisons and to determine if the negative trend analyses is significant. It is also recommended that phosphorus and chlorophyll a monitoring should continue at site 201 annually or as the budget allows, to track future water quality trends and determine if the declining trend in clarity is an indication of a declining trend in water quality.