

# Sturgeon Chain of Lakes Assessment Report Summary

Feb 2024

Seven lakes around the Sturgeon Chain of Lakes area were sampled five times throughout the summer of 2023. This monitoring effort was consistent with a historical effort to monitor these seven lakes for the basic water quality parameters and analytes to determine trends in the water quality over time. These seven lakes consisted of Big Sturgeon Lake, West Sturgeon Lake, South Sturgeon Lake, Little Sturgeon Lake, Side Lake, Perch Lake, and Beatrice Lake. They were monitored once per month, May – Sept for water clarity and for chemical analysis of Total Phosphorus and Chlorophyll-a.

This is a summary of the raw data compiled for the summer season of 2023. A more robust report on the seven lakes continuing water quality trends will follow will be available in a presentation format. The following gives a view of the 2023 averages for Chlorophyll-a, Total Phosphorus, and Secchi Depth

**Chlorophyll-a** is a parameter which can indicate trophic status of a lake, phytoplankton abundance, and to some extent, nutrient loading in a water body. The MPCA standard for the Northern Lakes and Forests Eco-region is to have concentrations **less than 9 µg/L**. With regards to Chlorophyll-a, all seven lakes of the Sturgeon chain, fortunately, average below these thresholds. West Sturgeon was the highest (**6.3 µg/L**) and Little Sturgeon was second highest (**5.7 µg/L**.) While South Sturgeon (**4.2 µg/L**), Side (**4.3 µg/L**), and Beatrice (**3.9 µg/L**) lakes all had median average values. Big Sturgeon (**3.1 µg/L**) and Perch (**3.6 µg/L**) were in the lowest with their average Chlorophyll-a concentrations.

Average Chl-a (µg/L) 2023- MN Standard is 9 µg/L		
Big Sturgeon	3.1	µg/L
West Sturgeon	6.3	µg/L
South Sturgeon	4.2	µg/L
Little Sturgeon	5.7	µg/L
Perch	3.6	µg/L
Side	4.3	µg/L
Beatrice	3.9	µg/L

**Total Phosphorus (TP)** is often considered the limiting nutrient in freshwater systems for plant and algae growth. The MPCA standard for TP concentrations to be **less than 30 µg/L** and is a fairly typical concentration for lakes in the Northern Lakes and Forests Eco-region. All the lakes in the Sturgeon chain are below this concentration. Little Sturgeon showed the highest concentration (**23 µg/L**). West Sturgeon was the second highest concentration (**19 µg/L**), followed by South Sturgeon (**17 µg/L**). The median ranges of the average Total Phosphorus concentrations were; Beatrice (**15 µg/L**), Side (**14 µg/L**), and Perch (**12 µg/L**). Big Sturgeon (**11 µg/L**) had the lowest average concentration for 2023.

Average Total Phosphorus 2023– MN Standard is 30 µg/L		
Big Sturgeon	11	µg/L
West Sturgeon	19	µg/L
South Sturgeon	17	µg/L
Little Sturgeon	23	µg/L
Perch	12	µg/L
Side	14	µg/L
Beatrice	15	µg/L

**Secchi disk** depths are a measure of water column transparency, which is a cost-effective way to keep tabs on lake health. Often, as water clarity decreases, phosphorus and Chlorophyll increase (and vice versa when water clarity improves). The MPCA standard for water clarity is **6.6ft**. Big Sturgeon (**12.3 ft**), and Perch (**12.1 ft**) had the deepest (most clarity) Secchi average depths for 2023. Beatrice (**11.7 ft**) and Side (**11.3 ft**) Lakes had the median average Secchi depths. West Sturgeon (**5.4 ft**), Little Sturgeon (**4.7 ft**), and South Sturgeon (**4.3 ft**) Lakes had the lowest average Secchi depth readings.

Average Secchi Depth 2023 – MN Standard is 6.6ft		
Big Sturgeon	12.3	Ft
West Sturgeon	5.4	Ft
South Sturgeon	4.3	Ft
Little Sturgeon	4.7	Ft
Perch	12.1	Ft
Side	11.3	Ft
Beatrice	11.7	Ft

10 years of water sampling is often the fewest amount of samples to start looking at trends. Most of the lakes on the Sturgeon Chain have only been sampled for water chemistry 4-6 times over that last 35 years, with the exception of Beatrice Lake which has 13 and nine samples of Phosphorus and Chlorophyll-a. Fortunately, thanks to dedicated volunteer water monitors there have been consistent Secchi disk readings on all of the lakes for water clarity for decades! All the water quality data that the volunteers have taken have been entered and are stored in the MPCA database which is extraordinarily helpful for looking at water quality in the lakes. Based on those readings, some trends can be taken from that. West Sturgeon, South Sturgeon and Perch Lakes are all showing improvements in water clarity, which often is a sign of improving water quality in general. Big and Little Sturgeon Lakes have slight declines, while Side and Beatrices Lakes show a bit steeper decline in water clarity.

## **Looking Ahead**

In general, the water quality is still within the confines of suitability for recreational use and aesthetics defined by the MPCA for the Northern Lakes and Forests Eco-region. While all the lakes remain below the impaired threshold for Total Phosphorus and Chlorophyll-a, it is rather concerning that three lakes (West Sturgeon, South Sturgeon, and Little Sturgeon Lakes) have water clarity averages below the 6.6 ft standard. Lakes will likely continue to see an increase in pressures, some from development and use and some from increasing environmental pressures. Property owners can still have a positive impact on water quality by doing things like maintaining a natural shoreline with native vegetation, minimize turf-grass lawns, stop using fertilizer, and keeping a properly maintained septic system.

Continuing to monitor lakes and water quality through the volunteer Citizen Water Monitoring Program is a great way to engage people in the community, monitor trends, and gather water quality metrics for the health of the lakes. However, it's the changes on the shoreline that have the biggest impacts on the health of the lakes. Contact your local Soil and Water Conservation District for more information and options (big and small) for how to improve your shoreline for water quality:

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