

Matteson Lake 2021 Water Quality Summary

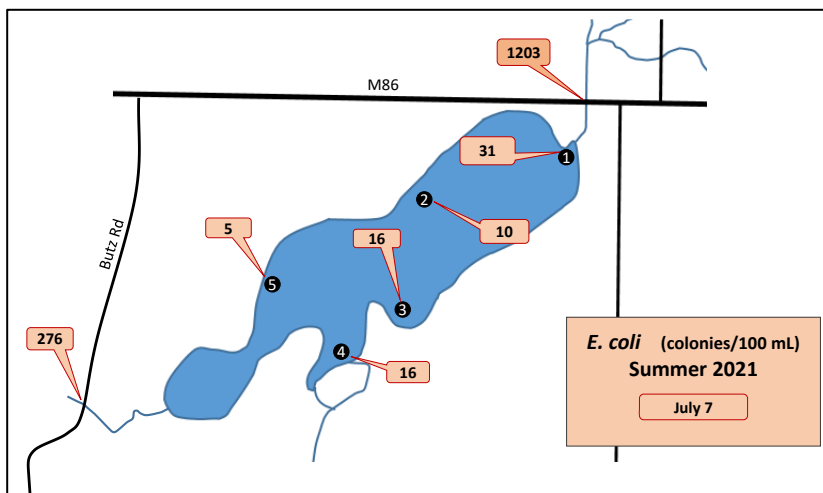
This year, we sampled Matteson Lake and its inlet and outlet on July 7, 2021. The weather was dry that day (and in the preceding days) so the information we collected represents a mid-summer snapshot of water quality in the lake following a busy holiday weekend.

2021 Matteson Lake Inlet-Outlet Sampling Results						
Date	Nitrogen (mg/L)		Phosphorus (ug/L)		TSS (mg/L)	
	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet
07/07/21	2.8	11	30	<27.0	11	11

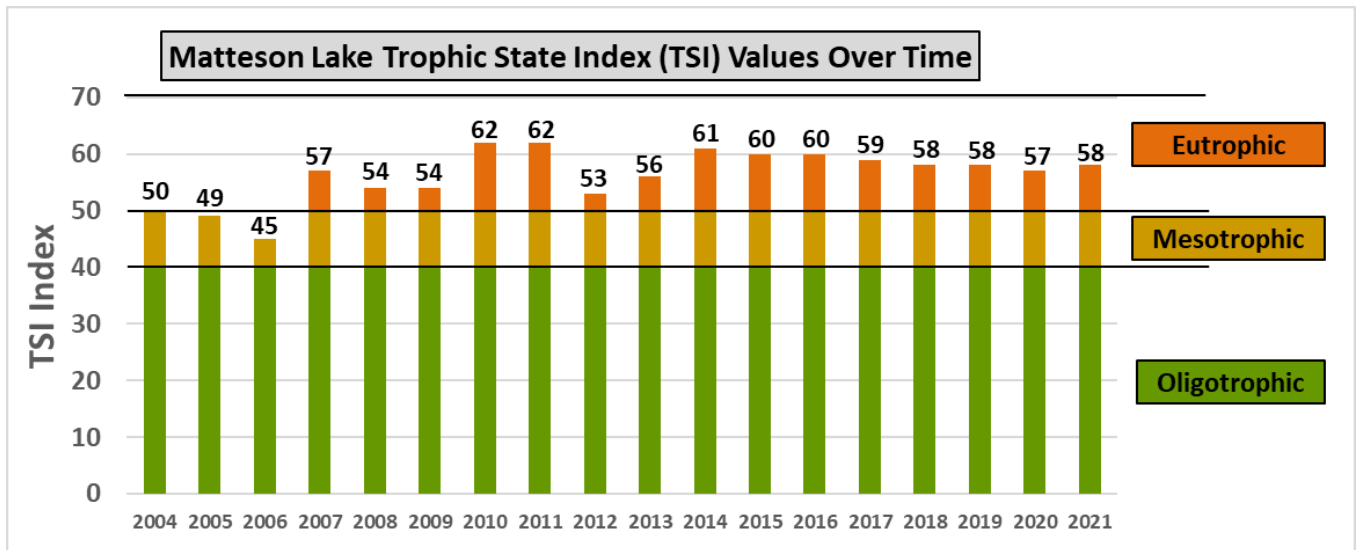
Our measurements indicate that on the day we sampled, water flowing into the lake at the M-86 bridge contained higher concentrations of **Phosphorus** than water flowing out at the Butz Road dam. The opposite was observed for **Nitrogen**. The mass of **Total Suspended Solids (TSS)** in incoming and outgoing water was approximately equal.

2021 Matteson Center-of-Lake Sampling Results							
Date	Nitrogen (mg/L)			Phosphorus (ug/L)			TSS (mg/L)
	3 ft	16 ft	30 ft	3 ft	16 ft	30 ft	3 ft
07/07/21	2.4	2.0	3.0	<27.0	<27.0	<27.0	10.2

In the lake center, we sampled near the surface, half-way down to the bottom, and just above the bottom of the lake. Nitrogen values were similar to those flowing into the lake. Phosphorous values were below the detection limit (27 micrograms per liter) at all depths, and Total Suspended Solids were similar to the water flowing in and out of the lake.



***E. coli* sampling** at the inlet, outlet, and five locations within the lake found bacteria values that were similar to those seen in prior years. All values in the lake were safe for swimming. Higher values were found at the inlet and the outlet, however, with bacteria levels at the M-86 bridge well above healthy levels for body contact. Swimming in the river is not recommended at any time because of the high bacteria counts there!



The **Trophic State Index (TSI)** combines three water quality variables (phosphorous concentration, green algae abundance, and water clarity) into a single score that we track over time. The TSI score for 2021 was 58, essentially the same value that Progressive AE measured in August last year. However, this value was calculated assuming a phosphorous concentration of 13.5 ppb, equal to ½ the laboratory reporting limit of 27 ppb. This means that there is uncertainty in the 2021 TSI estimate, and it could be as high as 61. It could also be lower than 58, but that is not as likely based on recent past data. To reduce uncertainty in future measurements, we need to use a laboratory method with a lower reporting limit.

Regardless, of the uncertainty, Matteson Lake remains *eutrophic*, with excess nutrients that contribute to algae blooms and cloudy water. When plants and algae die, their decomposition robs the water of oxygen that fish need to live. This is not good for water quality in our lake.

Our long-term goal is to return Matteson Lake to mesotrophic conditions and to keep it there. Over the past eight years, we appear to be experiencing stable to slowly declining TSI values within the range of eutrophic conditions. Further progress is needed to improve the lake water clarity and to ensure that we maintain a healthy ecosystem to support diverse aquatic plant and animal life in our lake.

Special thanks to Katie Shultz and Sam Bray (Bill Shultz’s grandchildren) for their assistance gathering water quality samples and taking measurements on July 7th!