

Vadnais Lake Area Water Management Organization

2017 Water Monitoring Report: Summary



VLAWMO's Monitoring Program consists of:

- 12 Lakes
- Lambert Creek
- Water quality sampling every other week from May to September
Phosphorus, nitrates, chlorophyll-A, chloride, turbidity, bacteria, and pH



See the complete report at www.VLAWMO.org/news

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Gem Lake: Gem Lake's chemistry has improved over the last 5 years which coincides with the work that was done on Highway 61 and the reconstructed grass swales flowing into the lake. Water quality parameters are below state standards. The MNPCA is currently looking into delisting Gem Lake from the impaired list.

Lake Gilfillan: Gilfillan is also on the State Impaired List. Since the augmentation system went in (2012) to raise the water level, the water quality has improved (most likely due to dilution). We have been told that no augmentation has occurred the last five years so it has been maintaining its water level on its own. Nutrient levels look to be slightly rising over the last five years near state standards.

East & West Goose: Both Goose Lakes are still very high nutrient levels. Bullhead removal did not make the water quality impact we hoped, but it did reduce nutrient levels a little, and a 2017 fish survey indicated the bullhead population is still under control. Sediment cores and enhanced sampling were completed in 2017 for possible future alum treatment.

Wilkinson Lake: Wilkinson's phosphorus is well over state standards but Chlorophyll A is well below standard. Wilkinson acts more like a wetland and therefore what goes on in the watershed has a greater effect on the chemistry. A special study was done on the wetland complex connecting Amelia to Wilkinson and results indicate nutrient loading from that system

Tamarack Lake: Data for nutrient levels are still high. The floating wetland has not shown any effect as of yet. This is the fifth full year of monitoring the island. Samples were taken right next to the island and compared it to samples taken off the dock. There is no difference between the two spots. So far the water chemistry is similar to what was seen in the past. Monitoring will continue. The floating island currently provides good habitat and educational opportunities and will hopefully help improve water quality over the next few years.

The **automated storm sampler** was installed at 4th and Otter Lake Rd. This area drains stormwater into Birch Lake. Results showed very high nutrient levels during storms.

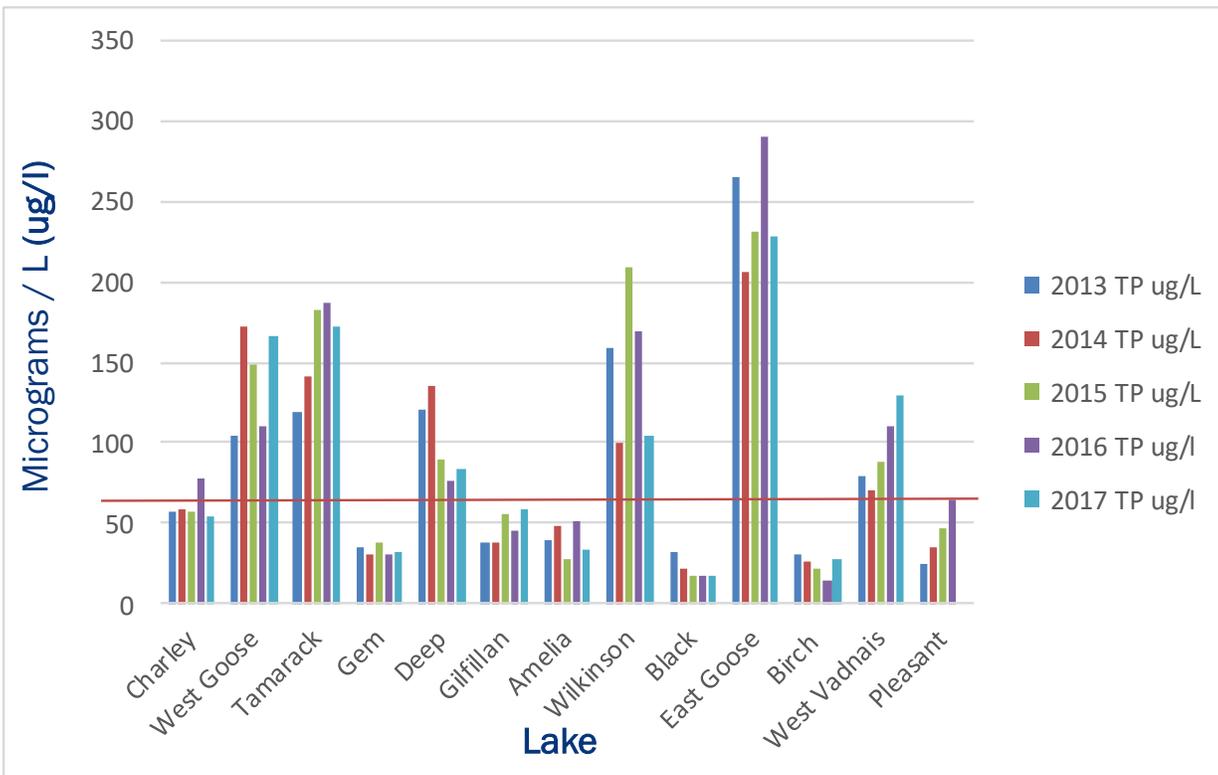
The treatment wetlands system at Whitaker was installed and is about 90% complete. Sampling will begin next spring on the system.

Chloride levels overall were similar to last year. We have been sampling for 8 years and there have been no significant changes within the lakes. Black Lake has the lowest levels. Birch Lake and East Goose are the highest which makes sense due to the proximity to major roads. All of the lakes are below the current State standards. The creek samples are difficult to catch because it has to be done when water is flowing. Year round chloride sampling on Birch Lake was done for the second year and levels have stayed steady

The **wet weather E. coli study** showed that the flow from storm events in the creek has a correlation to the amount of E. coli in the samples. Stormwater runoff seems to be the source of high E. coli levels in the Whitaker and Goose subwatersheds, mainly from the runoff carrying high levels of e.coli off of terrestrial soils and road gutters.

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VLAWMO Average Total Phosphorus: 2013-2017

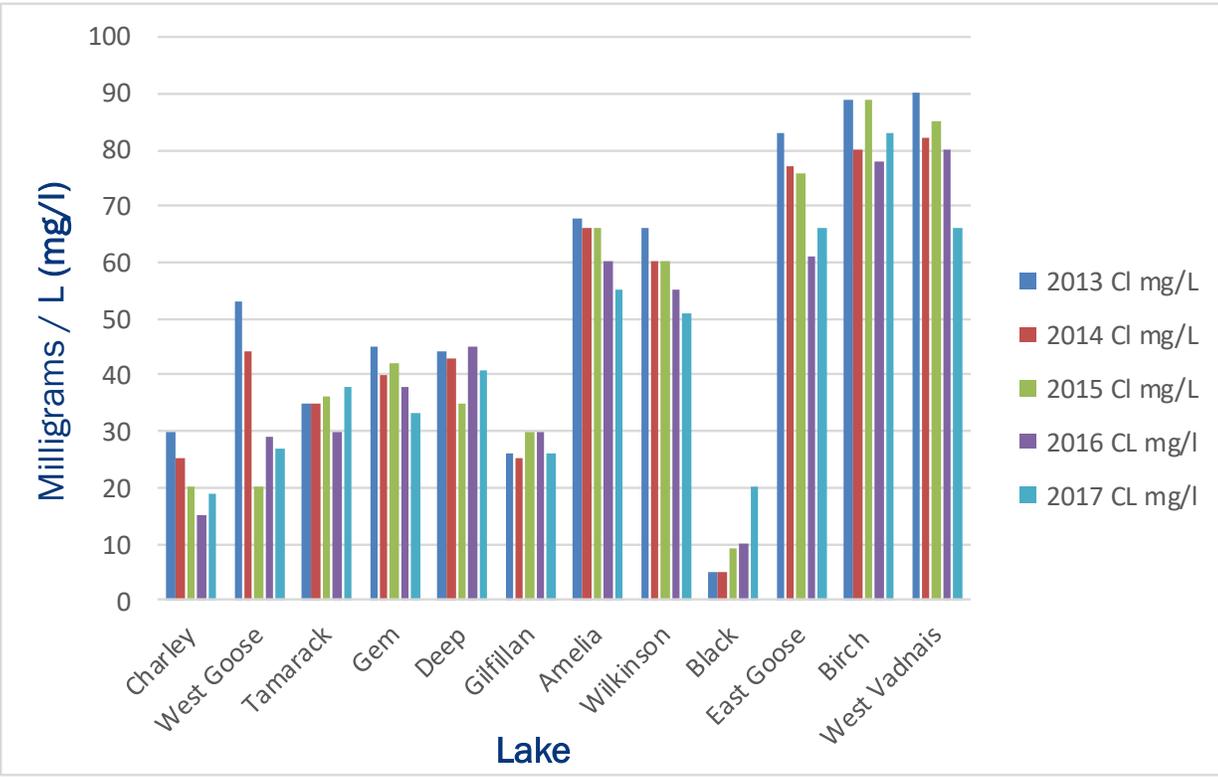


Phosphorus is a main contributor in algae growth.

The red line marks the State Standard; when a water body becomes impaired.

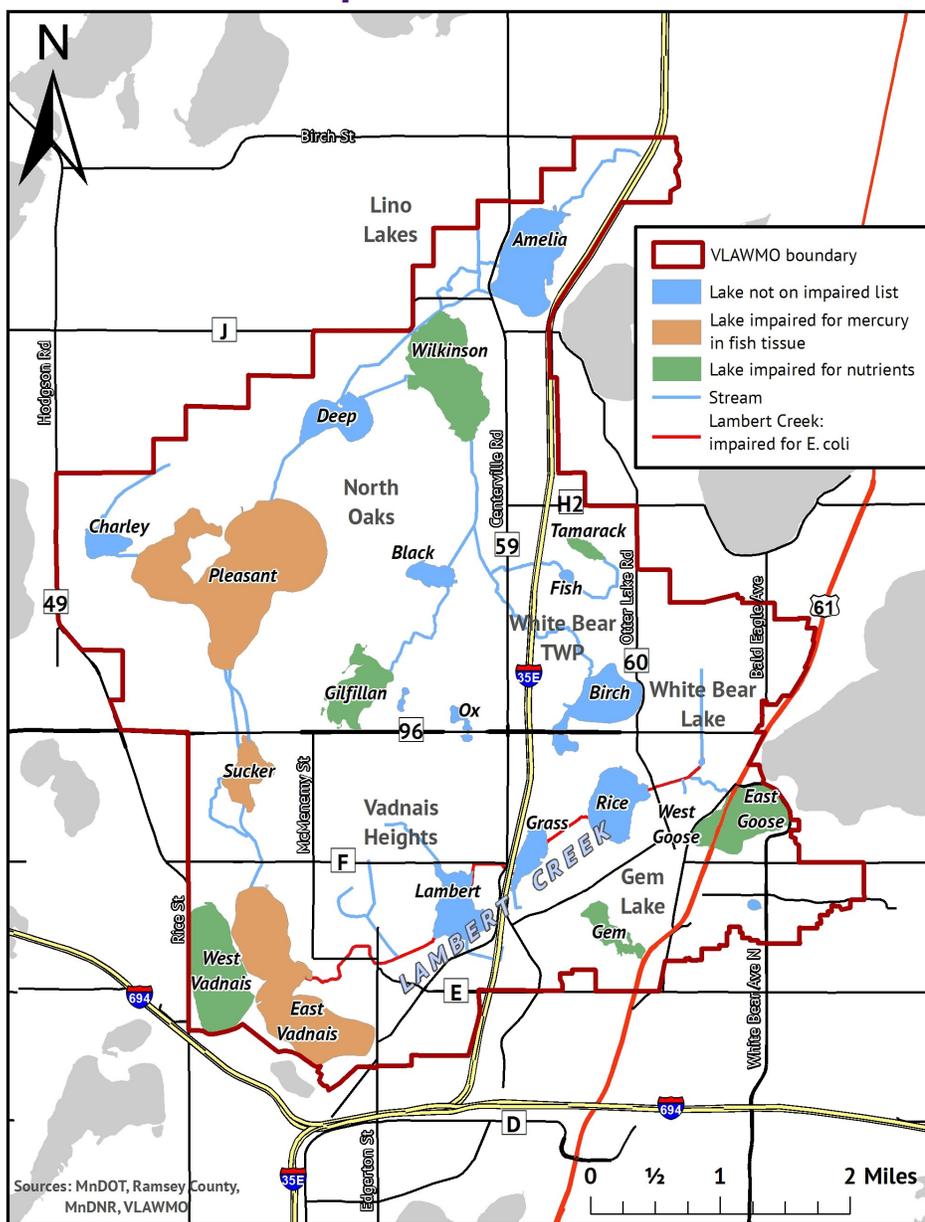


VLAWMO Chloride Levels: 2013-2017



Chloride is the ingredient in many salts and de-icers that also have a negative impact on water quality. None of VLAWMO's lakes are currently impaired, but keeping them that way will take effort and teamwork.

VLAWMO Lake Impairments



Our watershed has several water bodies listed on the MPCA 303(d) list for impaired waters.

Lakes shown in orange have been listed for high mercury content in fish tissue. These lakes have also been infested with zebra mussels, an aquatic invasive species, though this is not a condition of the impaired waters listing. This chain of lakes (Charley to East Vadnais) is fed by the Mississippi River through a pump in Fridley, MN.

Lakes shown in green are impaired for nutrients. This includes Gem Lake, Gilfillan Lake, Goose Lake and Wilkinson Lake. Lambert Creek (including Goose Lake and nearby Whitaker Pond) has been added to the impaired list for bacteria, specifically fecal coliform, or E. coli (shown in red). These water bodies are now scheduled for studies to determine the extent of pollution and if possible, find where the pollutant is coming from.

What does the TSI Status mean? TSI stands for the Trophic State Index, pertaining to nutrient levels.

Eutrophic High in nutrients and low in oxygen. Shallow, green, with poor fish and plant life.

Hypereutrophic A very nutrient-rich lake with murky water, frequent algal blooms and fish kills, foul odor, and rough fish (bullhead, carp)

Mesotrophic: Moderately clear water, late-summer algal blooms, moderate macrophytes (plants), and occasional fish kills.

VLAWMO Lake Grades

Lake	2016	2017	TSI Status
Amelia	B	B+	Eutrophic
Birch	B	B+	Mesotrophic
Black	A-	A-	Mesotrophic
Charlie	C	C+	Eutrophic
Deep	C	C	Eutrophic
Gem	B	B	Mesotrophic
Gilfillan	C+	C	Eutrophic
E. Goose	D-	D	Eutrophic - Hypereutrophic
W. Goose	D	D	Eutrophic - Hypereutrophic
Tamarack	D	D-	Eutrophic - Hypereutrophic
West Vadnais	D-	D-	Eutrophic - Hypereutrophic
Wilkinson	D+	C	Eutrophic