

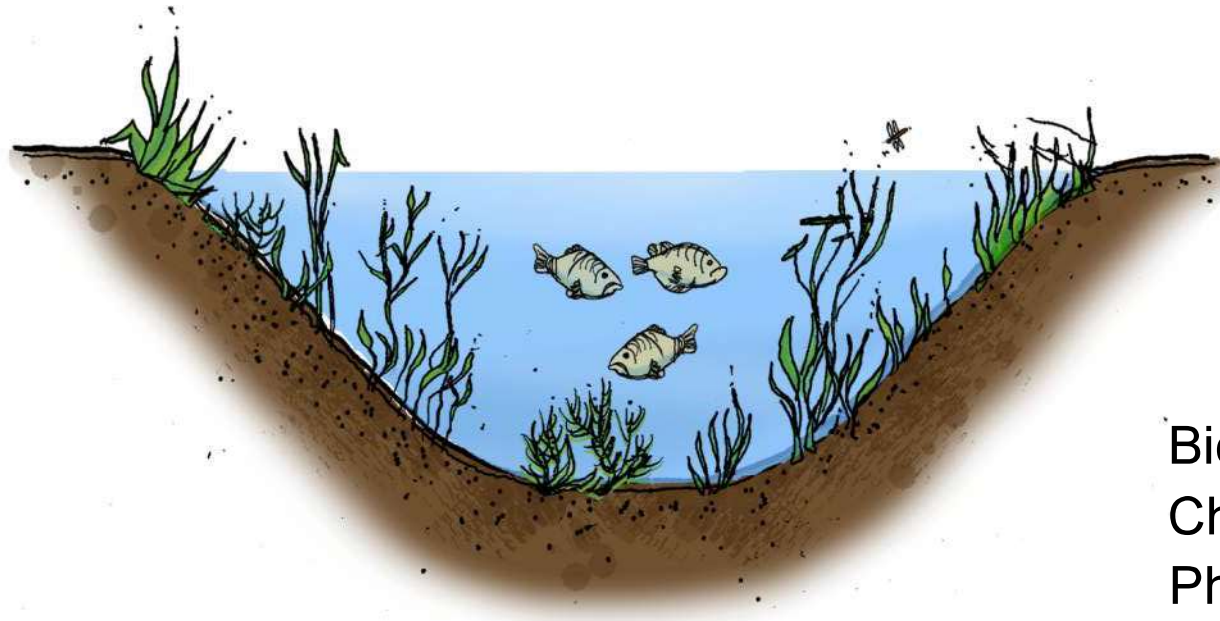
April 22, 2026

# **WHITE LAKE OAKLAND COUNTY, MI LIMNOLOGICAL UPDATE**

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# Limnology

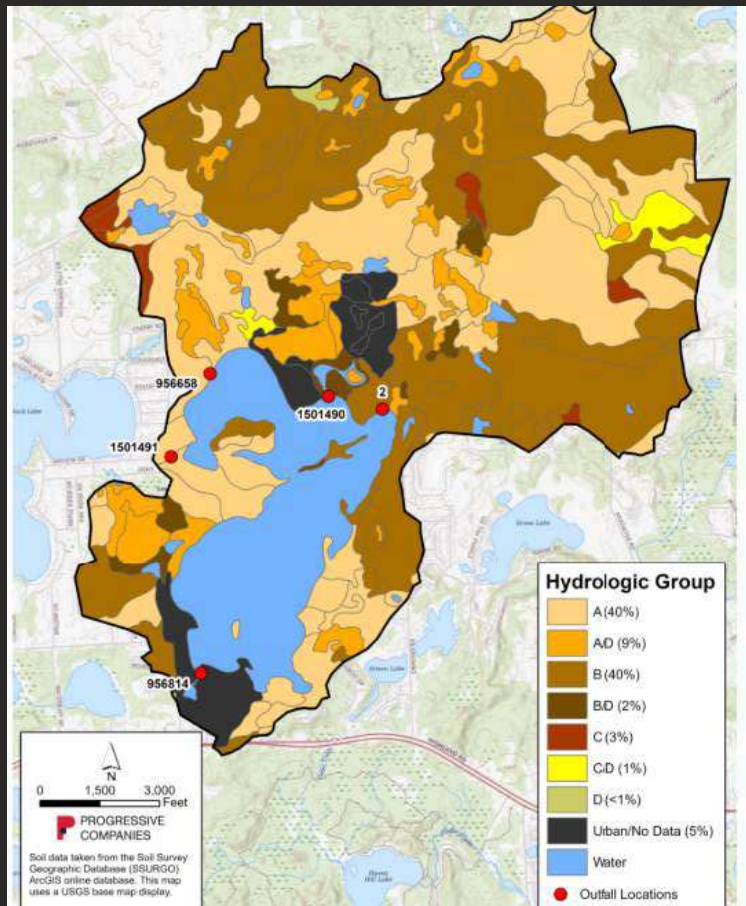


Biological  
Chemical  
Physical

## White Lake – Physical Characteristics

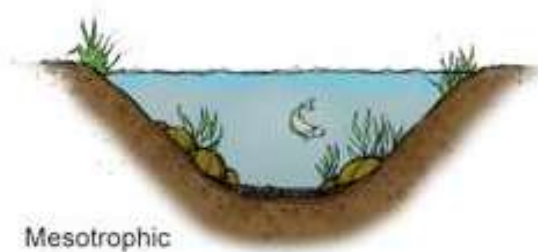
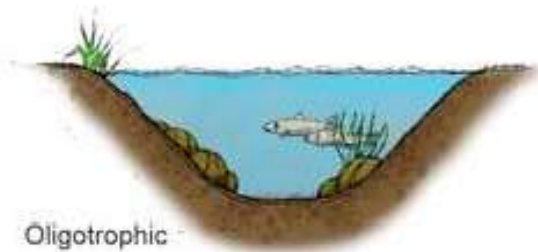
- Surface area 577 acres
- Maximum depth 32 feet
- Mean (average) depth 10.1 feet
- Lake volume 6,016 acre-feet
- Shoreline length 8.7 miles
- Shoreline development factor 3.7
- Water retention time 854 days
- Ratio of lake area to watershed area 1:6

# WATERSHED CHARACTERISTICS



- Most areas in the watershed have good infiltration rates (A/B Hydrologic Groups).
- Some nearshore areas contain urbanized-disturbed soils and may have significantly lower infiltration rates – potentially increasing the negative influence of stormwater runoff.
- Implementing green infrastructure (GI) techniques to manage nearshore stormwater in the dark brown areas of the lake (see map) could reduce the influence of stormwater runoff to the lake's overall water quality.
- Examples of GI include rain gardens, bio-swales, and rain barrels.

Lake  
Classification  
(by Trophic  
State)

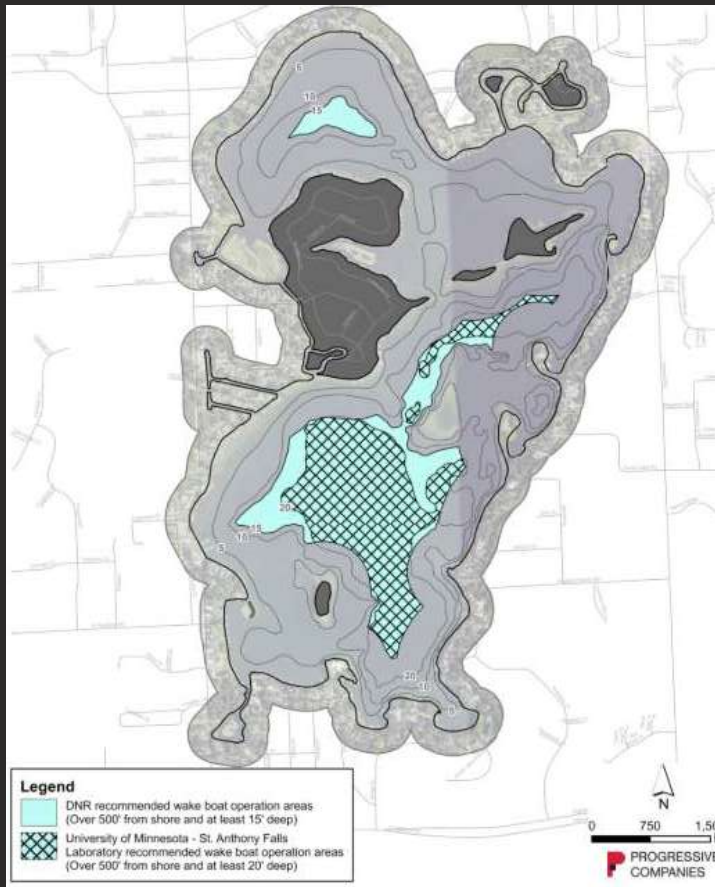


# WATER QUALITY TRENDS (2018-2025)



- White Lake is polymictic (mixes several times during the year) and remains mesotrophic
- Positive improvement since 2018 include lower total phosphorus concentrations (30% decrease) and lower chloride concentrations (28% decrease)
- Negative results indicate lower water transparency (50% decrease) in 2025 versus 2018 – possibly due to suspended solids during peak summer boat usage
- Chlorophyll-*a* concentrations remain low
- Wake boat usage patterns could be driving increased suspended solids

# RECOMMENDED WAKE BOAT USAGE MAP



- MDNR-Fisheries Division 2023 Literature Review recommends:
- “Boats operating in wake-surfing or wake-boarding mode should operate in water that is at least 15-feet deep.”
- Boats utilizing these same modes should only operate in areas of the lake at least 500 feet from docks or the shoreline - regardless of water depth.
- A more recent study by the Univ. of MN – St. Anthony Falls Research Lab (2025) – indicates that newer (more powerful) wake boats should only operate in waters deeper than 20 feet and 700 feet from shore.

***Aquatic plants are part of a healthy lake. They produce oxygen, provide food and habitat for fish, and help to stabilize shoreline and bottom sediments.***

Insects and other invertebrates live on or near aquatic plants, and become food for fish, birds, amphibians, and other wildlife.

Plants and algae are the base of the food chain. Lakes with a healthy fishery have a moderate density of aquatic plants.

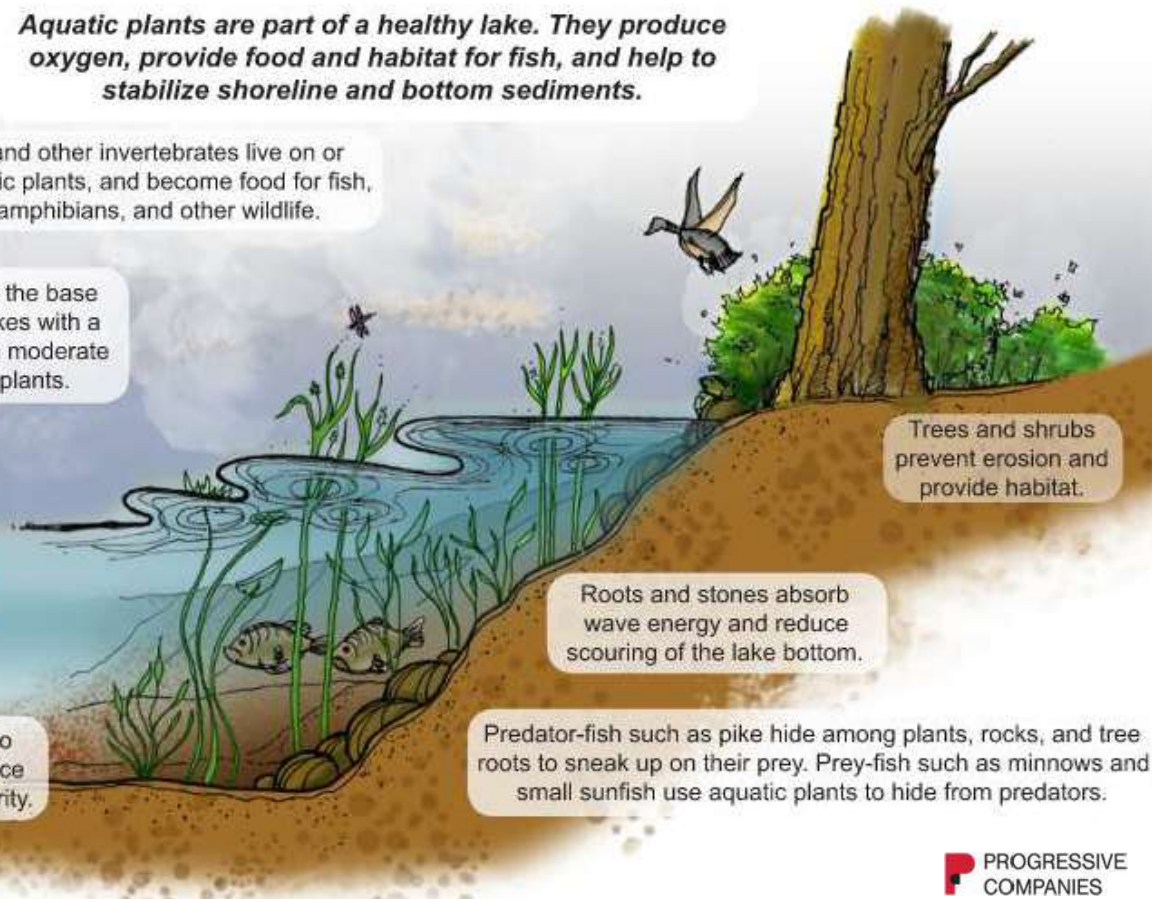
Aquatic plants provide habitat for fish and other aquatic life.

Aquatic plants help to hold sediments in place and improve water clarity.

Roots and stones absorb wave energy and reduce scouring of the lake bottom.

Predator-fish such as pike hide among plants, rocks, and tree roots to sneak up on their prey. Prey-fish such as minnows and small sunfish use aquatic plants to hide from predators.

Trees and shrubs prevent erosion and provide habitat.



# PROGRAM RECOMMENDATIONS

- **Control invasive aquatic plant populations in White Lake primarily through utilizing selective systemic herbicides.**
  - **Maintain a moderate abundance of beneficial native plant species to obtain a healthy balance.**
  - **Maintain navigable water through occasional mechanical harvesting\* of nuisance native plant growth.**
  - **Periodically monitor water quality in White Lake**
  - **Utilize and implement green infrastructure concepts to protect & improve water quality**
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