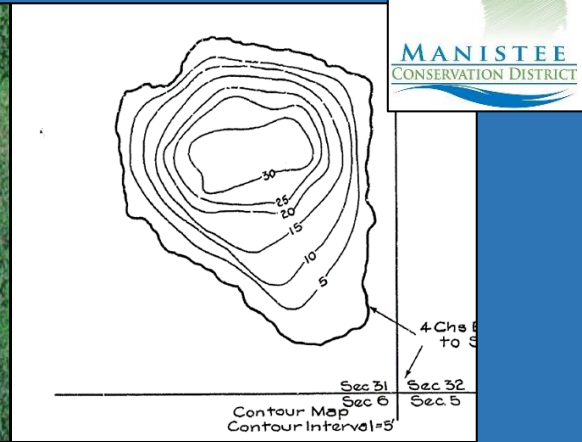
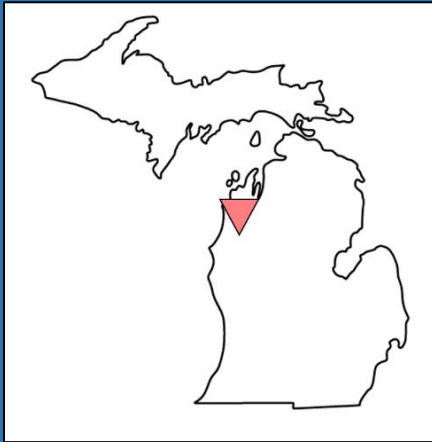


Lake of the Woods

Water Quality Report – 2017



Michigan DNR bathymetric map

Overview:

Lake of the Woods is located in the northwest portion of Michigan's Lower Peninsula, within the Manistee National Forest. It has a maximum depth is 33 feet and has a surface area of 63 acres. The land surrounding Lake of the Woods is dominated by mixed hardwoods, aspen, & cedar and the soil consists of poorly-drained muck. Great Lakes Restoration Initiative funding was provided by the US Forest Service to complete this project. All data was collected using the Michigan Clean Water Corps' Cooperative Lakes Monitoring Program which enables citizen volunteers to monitor the health of their lakes. To learn more about the CLMP program or any of the water quality parameters used in this report, visit <https://micorps.net/lake-monitoring/>

We need your help. Collecting consistent data year after year is critical to ensuring the long-term health of Lake of the Woods. We need the help of local volunteers to keep this monitoring going. To become a volunteer, contact the Manistee Conservation District 231-889-9666 or Chris Riley (USFS) 231-

Parameters:

Secchi Transparency refers to the depth to which a black and white Secchi disk can be seen in the lake water. Water clarity is affected by two primary factors, algae and suspended particulate matter.

Chlorophyll-a is the most dominant chlorophyll pigment in algae and is often used as a direct estimate of algal mass.

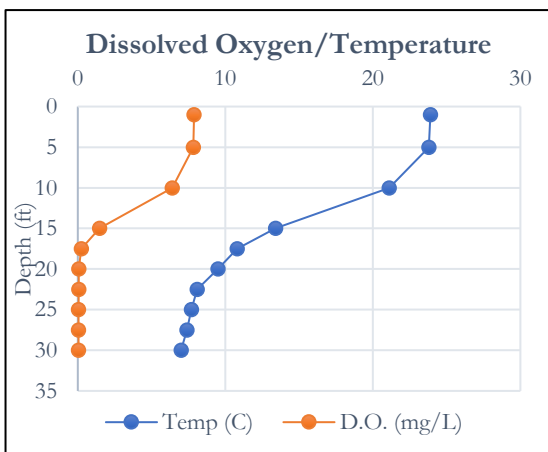
Phosphorus is an essential plant nutrient and most often controls aquatic plant growth. It is found in fertilizers, animal waste, and yard waste.

Dissolved Oxygen (DO) is the dissolved gaseous form of oxygen. It is essential for respiration of fish and other organisms. In general, a minimum of 7 mg/L is required for cold-water fish and 5 mg/L is needed for warm-water fish.

Carlson TSI Score uses summer measurements of secchi transparency, total phosphorus, and chlorophyll-a to assign a trophic state index value to a lake. Values range from 0-100.

Summer 2017 Water Quality Results:

Parameter	# Readings	Min	Max	Average	St. Dev	Carlson TSI
Secchi Disk Transparency (feet)	11	7	12	8.7	1.5	46
Chlorophyll-a (parts per billion)	5	1	3	1.6	0.6	35
Spring Total Phosphorus (parts per billion)	1	4	4	4.0	NA	NA
Summer Total Phosphorus (parts per billion)	1	5	5	5.0	NA	27



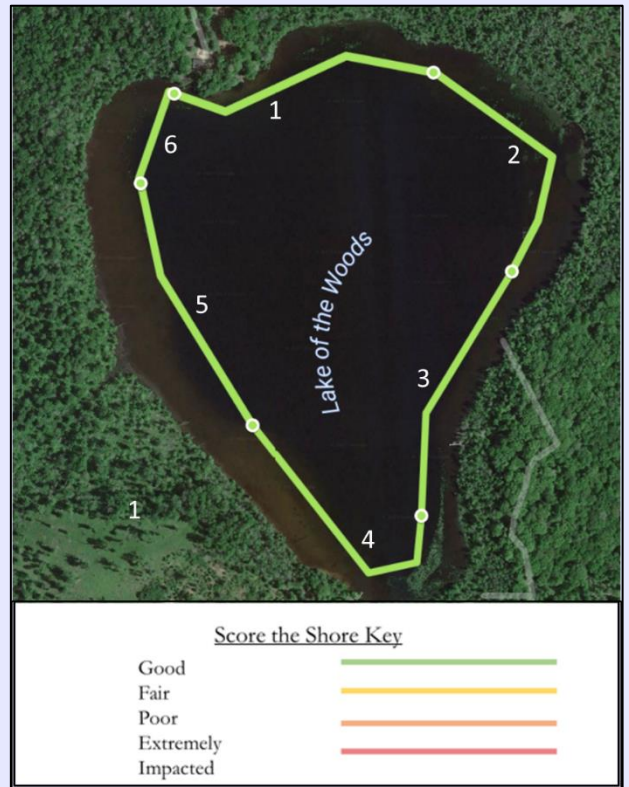
Summary:

With an **average TSI score of 36** based on secchi transparency, chlorophyll-a, and summer total phosphorus, this lake is rated between the oligotrophic and mesotrophic classification. This lake leans slightly more oligo than meso. This classification is characterized by having low nutrient content, low levels of algae, and clear water with high quality. Lake of the Woods keeps some dissolved oxygen in the bottom waters through early summer, but by late summer the bottom water is mostly devoid of oxygen.

Overall, water quality in Lake of the Woods is good but long-term monitoring is necessary for establishing a baseline and investigating trends.

Score the Shore:

Shorelines are the primary habitat for many animals that live on or near a lake. Healthy shorelines are vital for preventing erosion, maintaining water quality, and slowing and filtering rain runoff. Shorelines are threatened by excessive development including construction of lawns, beaches, and sea walls. Using MiCorps' Score the Shore assessment, each 1000' section of the lake was rated based on three categories: littoral (aquatic) zone, riparian zone (land near shore), and shoreline erosion control practices. All six of Lake of the Woods' shoreline sections were rated as 'Good'. To learn more about shoreline health, visit <http://www.mishorelinepartnership.org/>



Section	Littoral Zone Score	Riparian Zone Score	Erosion Control Score	Overall Section Score	Section Rating
1	100	91	89	93	Good
2	100	100	100	100	Good
3	100	100	100	100	Good
4	100	91	100	97	Good
5	100	100	100	100	Good
6	100	91	100	97	Good

Aquatic Plant Mapping:

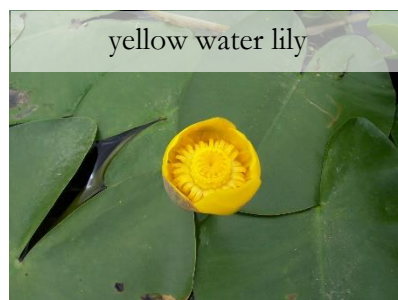
Lake of the Woods has a very high aquatic plant biodiversity with a total of 26 native species found in 2017. No non-native, invasive aquatic plants were found during the survey. Aquatic plants are an essential part of the lake and provide many services including holding sediments in place, reducing erosion and maintaining stability. Overall, Lake of the Woods supports a healthy community of native plant species and should be protected from new invasions of potentially harmful invasives.

Learn more: michiganlakes.msue.msu.edu/uploads/files/WQ-55-1.pdf



Plant Density Rating

Density	Rating
4 - 5	Dense
3 - 4	Heavy
2 - 3	Moderate
1 - 2	Sparse
0 - 1	Found



Plant Name	Density	Rating
chara	2.43	Moderate
yellow water lily	1.57	Sparse
naiad	1.53	Sparse
variable-leaf pondweed	1.40	Sparse
water marigold	1.40	Sparse
narrow-leaf pondweed	0.97	Found
white water lily	0.97	Found
Robbin's spikerush	0.93	Found
water shield	0.70	Found
bladderwort	0.57	Found
Illinois pondweed	0.57	Found
pickerelweed	0.50	Found
bulrush	0.43	Found
water celery	0.43	Found
coontail	0.40	Found
large-leaf pondweed	0.40	Found
floating-leaf pondweed	0.33	Found
elodea	0.27	Found
flatstem pondweed	0.23	Found
leafy pondweed	0.23	Found
cattail	0.20	Found
whitestem pondweed	0.20	Found
arrowhead	0.17	Found
needle spikerush	0.07	Found
swamp milkweed	0.07	Found
aquatic moss	0.03	Found