



Lake Ossawinnamakee DNR ID: 18-0352

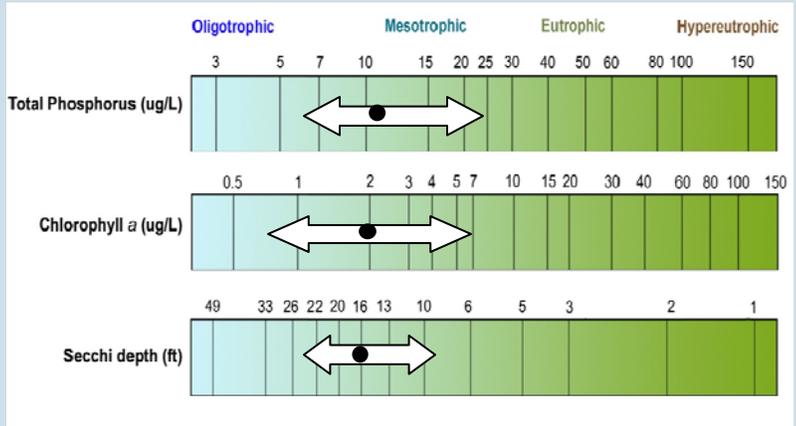
Vitals		Physical Characteristics	
MN Lake ID:	18-0352-00	Surface area (acres):	689
Zoning Authority:	Crow Wing County, Breezy Point	Littoral area (acres):	314
Lake Classification:	Recreational Development (RD)	% Littoral area:	46%
Major Drainage Basin:	Upper Mississippi River	Max depth (ft):	63 (m): 19.2
Latitude/Longitude:	46.62863 / -94.200211	Mean depth (ft):	N/A
Water Body Type:	Public	Inlets / Outlets / Accesses:	6 / 1 / 1
Invasive Species	Zebra Mussels, Eur. Watermilfoil	Lakeshed to lake area ratio:	7:1

Total Phosphorus

Lake Ossawinnamakee is phosphorus limited, which means that algae and aquatic plant growth is dependent upon available phosphorus. Total phosphorus was evaluated in Lake Ossawinnamakee in 1993, 2007-2010 at primary sampling site 211. The data do not indicate much seasonal variability. The majority of the data points fall into the oligotrophic range.

Chlorophyll a

Chlorophyll a is the pigment that makes plants and algae green. Chlorophyll a is tested in lakes to determine the algae concentration or how "green" the water is. Chlorophyll a was evaluated in Lake Ossawinnamakee in 1993, 2007-2010 at the primary sampling site 211. Chlorophyll a concentrations for all dates at all sites remained consistently below 10 ug/L, indicating clear water all summer.



Lake Ossawinnamakee total phosphorus, chlorophyll a and transparency historical ranges. The arrow represents the range and the black dot represents the historical mean (Primary Site 211). Figure adapted after Moore and Thornton, [Ed.]. 1988. Lake and Reservoir Restoration Guidance Manual. (Doc. No. EPA 440/5-88-002)

Transparency (Secchi Depth)

Transparency is how easily light can pass through a substance. In lakes, it is how deep sunlight penetrates through the water. Plants and algae need sunlight to grow, so they are only able to grow in areas of lakes where the sun penetrates. Water transparency depends on the amount of particles in the water. An increase in particulates results in a decrease in transparency. For all the sites that had more than 20 transparency data points, the mean transparency ranges from 15.3 to 18.2 feet. The transparency throughout the lake appears to be relatively uniform, with the best transparency occurring in the western basin. The primary sampling site is showing a significant improving trend in transparency from 1986-2011; however, no trend was observed when looking at just the last decade of data. The transparency has improved an average of approximately 4.5 feet since 1986.

Trophic State Index (TSI)

Phosphorus (nutrients), chlorophyll a (algae concentration) and Secchi depth (transparency) are related. As phosphorus increases, there is more food available for algae, resulting in increased algal concentrations. When algal concentrations increase, the water becomes less transparent and the Secchi depth decreases. The results from these three measurements cover different units and ranges and thus cannot be directly compared to each other or averaged. In order to standardize these three measurements, we convert them to a trophic state index (TSI). The mean TSI for Lake Ossawinnamakee is on the oligotrophic/mesotrophic border (TSI 39-41). Lakes on the oligotrophic/mesotrophic border are characteristic of clear water throughout the summer and are excellent for recreation.

L. Ossawinnamakee

