



West Fox Lake

DNR ID: 18-0297

Vitals		Physical Characteristics	
MN Lake ID:	18-0297-00	Surface area (acres):	449
Zoning Authority:	City of Fifty Lakes	Littoral area (acres):	138
Lake Classification:	General Development (GD)	% Littoral area:	31%
Major Watershed:	Pine River	Max depth (ft):	55 (m): 16.8
Latitude/Longitude:	46.7454 / -94.0941	Mean depth (ft):	N/A
Water Body Type:	Public	Lakeshed : lake area ratio	3:1
Invasive Species	None (as of 2012)	Inlets / Outlets / Accesses	1 / 1 / 1 (shared w/East Fox)

Total Phosphorus

West Fox Lake is phosphorus limited, which means that algae and aquatic plant growth is dependent upon available phosphorus. Total phosphorus was evaluated in 2003-2005 and 2007-2011. The higher phosphorus levels in spring and fall could be due to turnover. The majority of the data points fall into the mesotrophic range.

Chlorophyll a

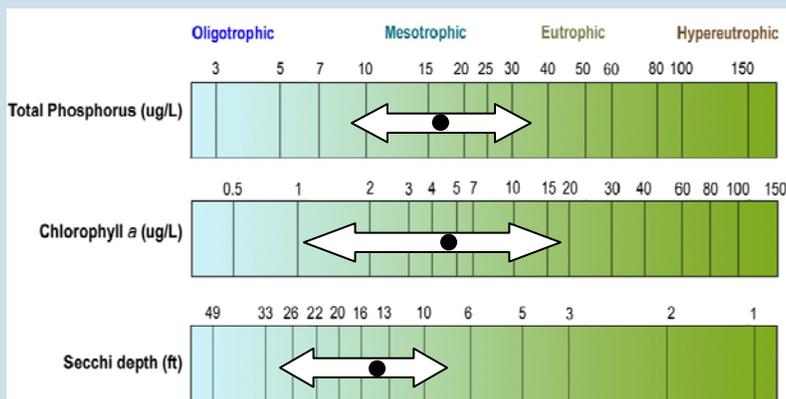
Chlorophyll a is the pigment that makes plants and algae green. Chlorophyll a is tested in lakes to determine the algae concentration or how "green" the water is. Chlorophyll a was evaluated in West Fox from 2003-2005 and 2007-2011. Chlorophyll a concentrations remained below 10 ug/L on all sample dates except for three, indicating clear water most of the summer.

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. The mean West Fox Lake transparency ranges from 19.3 to 12 feet and appears to be relatively uniform throughout the lake. West Fox shows no statistically significant water quality trends, although it appears that the spring maximum transparency has declined since 2005.

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 (43) for West Fox falls into the mesotrophic range. There is good agreement between the TSI for phosphorus (45) and chlorophyll a (46) indicating that these variables are strongly related. The TSI for transparency is slightly lower (39). Mesotrophic lakes (TSI 40-50) are characterized by moderately clear water most of the summer.



West Fox Lake total phosphorus, chlorophyll a and transparency historical ranges. The arrow represents the range and the black dot represents the historical mean (Primary Site 204). Figure adapted after Moore and Thornton, [Ed.]. 1988. Lake and Reservoir Restoration Guidance Manual. (Doc. No. EPA 440/5-88-002)

