



Camp Lake

DNR ID: 18-0018

Vitals

MN Lake ID: 18-0018-00
 Zoning Authority: Crow Wing County
 Lake Classification: General Development (GD)
 Major Drainage Basin: Upper Mississippi River
 Latitude/Longitude: 46.23809814 / -93.87419891
 Water Body Type: Public
 Invasive Species: None

Physical Characteristics

Surface area (acres): 520
 Littoral area (acres): 206
 % Littoral area: 40%
 Max depth (ft): 42 (m): 13
 Mean depth (ft): N/A
 Inlets / Outlets / Accesses: 2 / 1 / 1
 Lakeshed to lake area ratio: 10:1

Total Phosphorus

Camp Lake is phosphorus limited, which means that algae and aquatic plant growth is dependent upon available phosphorus. Total phosphorus was evaluated in Camp Lake in 2005, 2007-2008. The data tend to increase somewhat as the summer goes on. The majority of the data points fall into the mesotrophic range.

Chlorophyll *a*

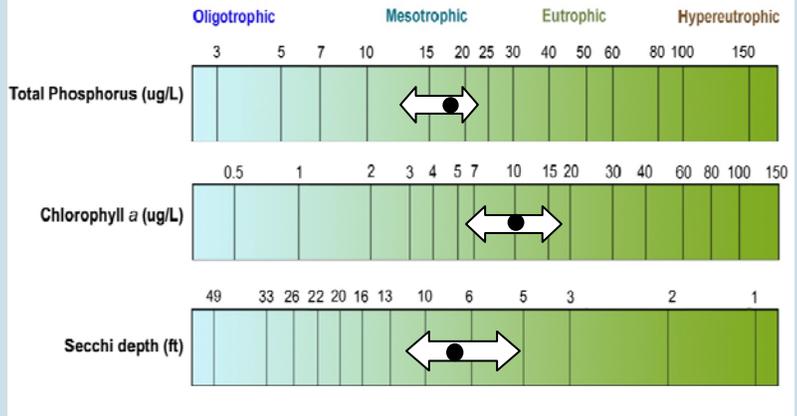
Chlorophyll *a* is the pigment that makes plants and algae green. Chlorophyll *a* is tested in lakes to determine the algae concentration or how "green" the water is. Chlorophyll *a* was evaluated in Camp Lake in 2005, 2007-2008. Chlorophyll *a* concentrations reached 10 ug/L each year, indicating minor algae blooms.

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 annual mean transparency ranges from 6.8 to 9.4 feet. The transparency was better than the long-term average from 2008-2010. Overall, Camp Lake shows no detectable trend in transparency, meaning that transparency is stable.

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 Camp Lake falls on the border between mesotrophic and eutrophic (49-51). Lakes on the mesotrophic/eutrophic border (TSI 49-51) are characteristic of "greenish" water throughout the summer. The bottom of the deep areas of the lake becomes anoxic (no oxygen) during the summer, which is inhospitable to game fish.



Camp Lake total phosphorus, chlorophyll *a* and transparency historical ranges. The arrow represents the range and the black dot represents the historical mean (Primary Site 201). Figure adapted after Moore and Thornton, [Ed.], 1988. Lake and Reservoir Restoration Guidance Manual. (Doc. No. EPA 440/5-88-002)

