



# Cedar Lake

**DNR ID: 01-0209**

Vitals		Physical Characteristics	
MN Lake ID:	01-0209-00	Surface area (acres):	1,745
County:	Crow Wing & Aitkin	Littoral area (acres):	547
Lake Classification:	Residential Development (RD)	% Littoral area:	31%
Major Watershed:	Mississippi River - Brainerd	Max depth (ft):	105 (m): 31.8
Latitude/Longitude:	46.64583333 / 93.52111111	Mean depth (ft):	28 (m): 8.5
Water Body Type:	Public	Lakeshed : lake area ratio	17:1
Invasive Species	None (as of 2012)	Inlets / Outlets / Accesses	9 / 1 / 1

### Total Phosphorus

Cedar Lake is phosphorus limited, which means that algae and aquatic plant growth is dependent upon available phosphorus. Total phosphorus was evaluated in Cedar Lake in 1981 and 2002. The majority of the data points fall into the mesotrophic range.

### Chlorophyll *a*

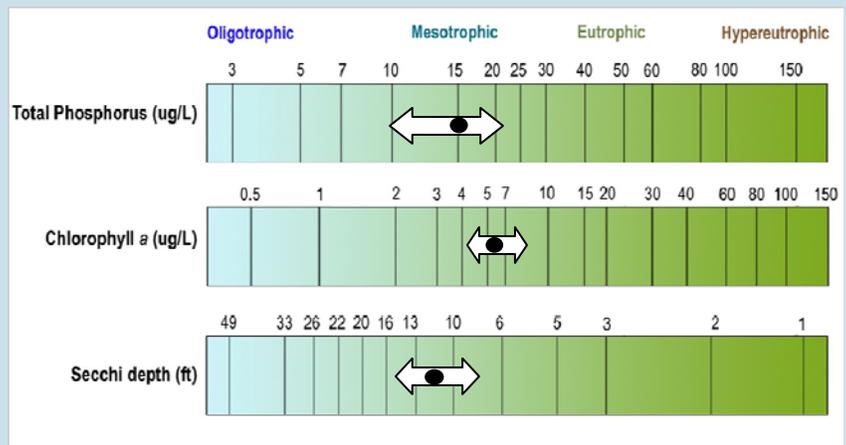
Chlorophyll *a* is the pigment that makes plants and algae green. Chlorophyll *a* is tested in lakes to determine the algae concentration or how "green" the water is. Chlorophyll *a* was evaluated at four sites in Cedar Lake in 2002. Chlorophyll *a* concentrations remained below 10 ug/L on all sample dates except for one, 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. For all the sites, the mean transparency ranges from 4.7 to 14.5 feet. All of the sites have relatively similar transparency means with the highest means occurring in the deeper sites. All of the sites follow the same patterns of ups and downs indicating seasonal variability. Transparency does not vary much throughout the year on Cedar Lake. Cedar Lake shows no evidence of water quality trends. That means that the water quality 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. In order to standardize these three measurements to make them directly comparable, we convert them to a trophic state index (TSI). The mean TSI (45) for Cedar Lake falls into the mesotrophic range. There is good agreement between the TSI for phosphorus (44), chlorophyll *a* (49) and transparency (44), indicating that these variables are strongly related. Mesotrophic lakes (TSI 40-50) are characterized by moderately clear water most of the summer.



Cedar Lake total phosphorus, chlorophyll *a* and transparency historical ranges. The arrow represents the range and the black dot represents the historical mean (Primary Site 206). Figure adapted after Moore and Thornton, [Ed.]. 1988. Lake and Reservoir Restoration Guidance Manual. (Doc. No. EPA 440/5-88-002)

