

GROVE LAKE

MN Lake ID: 61-0023-00



POPE SOIL & WATER



SUMMARY

Grove Lake is a moderately deep eutrophic lake. Algae concentration results (chlorophyll-a) show that the lake experiences minor algae blooms every summer. The water chemistry in Grove Lake is relatively stable, with no indications of declining water quality. Algae levels appear to have stabilized in recent years. Grove Lake has adequate historical water quality monitoring data, which makes a lake evaluation like this possible. Monitoring should continue to inform future water quality protection efforts.

LAKE VITALS

ECOREGION:	North Central Hardwood Forest
MAJOR WATERSHED:	North Fork Crow River
SURFACE AREA (ACRES):	345.46
LITTORAL AREA (ACRES):	229.65
% LITTORAL DEPTH:	66.5%
MAX DEPTH (FT):	31
AQUATIC INVASIVE SPECIES:	None



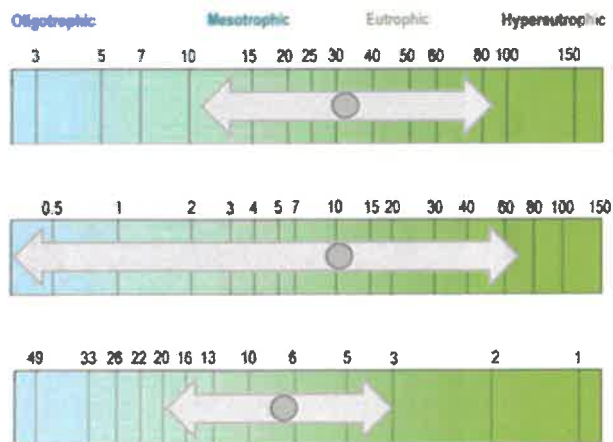
WATER QUALITY CHARACTERISTICS

YEARS MONITORED: 1996 - 2021

PARAMETERS	201	204	205
TOTAL PHOSPHORUS MIN (UG/L):	14	11	15
TOTAL PHOSPHORUS MAX (UG/L):	40	84	71
NUMBER OF OBSERVATIONS:	21	124	33
TOTAL PHOSPHORUS MEAN (UG/L):	29.6	32.8	30.3
CHLOROPHYLL-A MIN (UG/L):	0	0	1
CHLOROPHYLL-A MAX (UG/L):	26	65	27
NUMBER OF OBSERVATIONS:	21	112	32
CHLOROPHYLL-A MEAN (UG/L):	9.6	10.9	10.1
SECCHI DEPTH MIN (FT):	5.5	3	3.5
SECCHI DEPTH MAX (FT):	16	19	15
NUMBER OF OBSERVATIONS:	21	123	23
SECCHI DEPTH MEAN (FT):	7.2	7.5	7.3

TROPHIC STATE INDEX

Eutrophic (51.3) - Site 204



ECOREGION COMPARISONS

ECOREGION: North Central Hardwood Forest

TOTAL PHOSPHORUS:	Within Expected Range
CHLOROPHYLL-A:	Within Expected Range
SECCHI DEPTH:	Within Expected Range

PRIMARY SITE ONLY. COMPARISONS ARE BASED ON INTERQUARTILE RANGE, 25TH - 75TH PERCENTILE, FOR ECOREGION REFERENCE LAKES.



2021 WATER QUALITY CHARACTERISTICS

SITE 204

PARAMETERS	TOTAL PHOSPHORUS (UG/L)	CHLOROPHYLL-A (UG/L)	SECCHI DEPTH (FT)
MIN:	11	< 1	5
MAX:	32	15	19
NUMBER OF OBSERVATIONS:	5	5	5
MEAN:	20.4	5.4	9.3

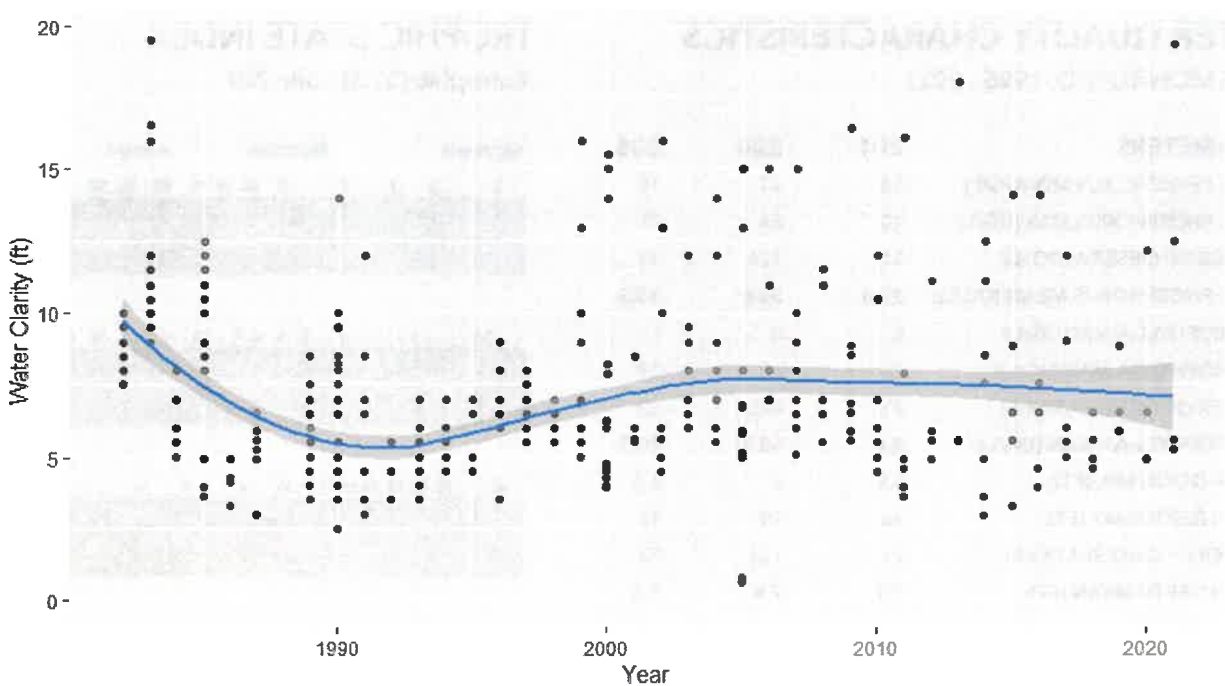
TROPHIC STATE INDEX: 45.6

TREND ANALYSIS REPORT

For detecting trends, a minimum of 8-10 years of data with four or more readings per season are recommended by the MPCA. Where data does not cover at least eight years or where there are only few samples within a year, trends can be misidentified because there can be different wet years and dry years, water levels, weather, etc., that affect the water quality naturally. The data was analyzed using the Mann Kendall Trend Analysis.

SITE	PARAMETERS	DATE RANGE	TREND
204	Transparency	2000-2021	No significant trend exists
204	Total phosphorus	2000-2021	No significant trend exists
204	Chlorophyll-A	2005-2021	Improving with 95% confidence

GROVE LAKE TRANSPARENCY TREND



GRAPH SOURCE: MINNESOTA POLLUTION CONTROL AGENCY

According to MPCA, Grove Lake is "suitable for swimming and wading, with good clarity and low algae levels throughout the open water season. Available data indicate a thriving community of fish and other aquatic organisms." Grove Lake shows evidence of an improving chlorophyll-a trend (declining levels) for data from 2000-2021; however, there are a few gap years in this data. For both transparency and total phosphorus there is no significant trend. Overall, these trend results show that the water quality in Grove Lake is stable, with no indication of decline. Levels of algae appear to be lower in recent years, indicating fewer days of nuisance algae. Transparency and chlorophyll-a monitoring should continue so that this trend can be tracked in future years.