LINKA LAKE

MN Lake ID: 61-0037-00

RMB Environmental Laboratories

POPE SOIL & WATER CONSERVATION DISTRICT

SUMMARY

Linka Lake is a moderately deep mesotrophic lake. Algae concentration results (chlorophyll-a) show that the lake experiences minor algae blooms occasionally in the summer. There is indication of an improving trend in total phosphorus over the past 25 years. However, neither chlorophyll-a nor transparency reveal statistically significant trends. This means that the lake is stable, with no indication of declining water quality. Linka Lake has adequate historical water quality monitoring data, which makes a lake evaluation like this possible. Monitoring should continue to enable future water quality, nutrient loading, and runoff reduction analyses.

LAKE VITALS

ECOREGION:	North Central Hardwood Forest
MAJOR WATERSHED:	Chippewa River
SURFACE AREA (ACRES):	177.81
LITTORAL AREA (ACRES):	70.78
% LITTORAL DEPTH:	39.8%
MAX DEPTH (FT):	50
AQUATIC INVASIVE SPECIES:	None

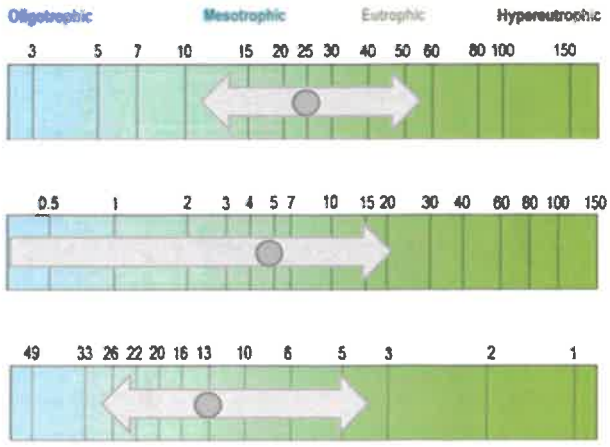
WATER QUALITY CHARACTERISTICS

YEARS MONITORED: 1996 - 2021

PARAMETERS	**202**
TOTAL PHOSPHORUS MIN (UG/L):	12
TOTAL PHOSPHORUS MAX (UG/L):	56
NUMBER OF OBSERVATIONS:	125
TOTAL PHOSPHORUS MEAN (UG/L):	**24.9**
CHLOROPHYLL-A MIN (UG/L):	-0.9
CHLOROPHYLL-A MAX (UG/L):	20.5
NUMBER OF OBSERVATIONS:	115
CHLOROPHYLL-A MEAN (UG/L):	**4.7**
SECCHI DEPTH MIN (FT):	4
SECCHI DEPTH MAX (FT):	28
NUMBER OF OBSERVATIONS:	124
SECCHI DEPTH MEAN (FT):	**13.8**

TROPHIC STATE INDEX

Mesotrophic (44.4)



ECOREGION COMPARISONS

ECOREGION: North Central Hardwood Forest

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

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

2021 WATER QUALITY CHARACTERISTICS

SITE 202

PARAMETERS	**TOTAL PHOSPHORUS** (UG/L)	**CHLOROPHYLL-A** (UG/L)	**SECCHI DEPTH** (FT)
MIN:	12	2	8
MAX:	49	9	15
NUMBER OF OBSERVATIONS:	5	5	5
MEAN:	**22.2**	**3.8**	**12**

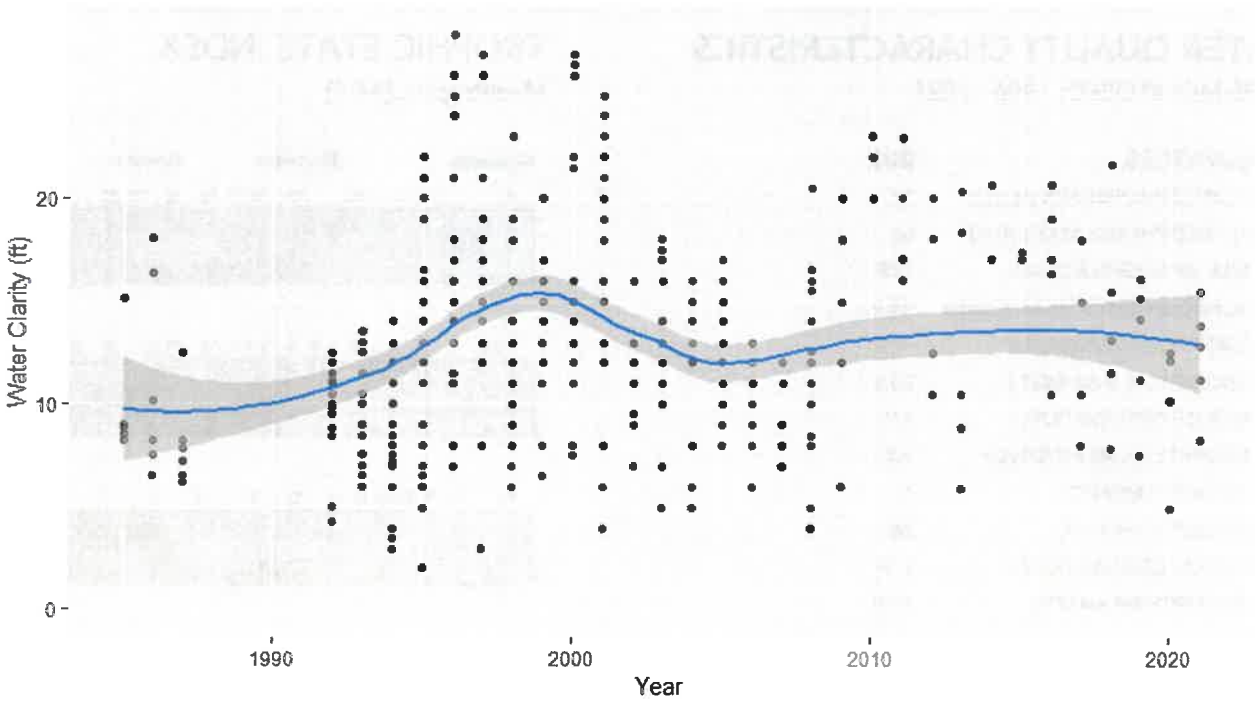
TROPHIC STATE INDEX: 43.6

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**
202	Transparency	1996-2021	No significant trend exists
202	Total phosphorus	1996-2021	Improving with 95% confidence
202	Chlorophyll-A	1996-2021	No significant trend exists

LINKA LAKE TRANSPARENCY TREND



GRAPH SOURCE: *MINNESOTA POLLUTION CONTROL AGENCY*

Linka Lake shows evidence of decreasing total phosphorus concentrations over the past 25 years. This indicates an improving water quality trend. Phosphorous feeds algae growth, which causes reduced clarity in lakes. Therefore, Linka Lake appears to be improving in terms of water quality. There are currently no statistically significant trends for transparency or chlorophyll-a. Overall, these trend results show that the water quality in Linka Lake is stable, with no indication of decline. Continued monitoring will enable future water quality, nutrient loading, and runoff reduction analyses.