RENO LAKE

MN Lake ID: 61-0078-00

RMB Environmental Laboratories

POPE SOIL & WATER CONSERVATION DISTRICT

SUMMARY

Reno Lake is a shallow eutrophic lake and is on the MPCA Impaired Waters List. Over the past 20 years, there is evidence of improving trends in transparency, algae concentration (chlorophyll-a), and total phosphorus. This may be partially attributed to zebra mussels filtering the water column and redepositing nutrients on the lake bottom. These trends should be tracked to determine if they are temporary changes associated with the establishment period of zebra mussels. Continued monitoring will also enable future water quality analyses such as nutrient loading and runoff modeling.

LAKE VITALS

ECOREGION:	North Central Hardwood Forest
MAJOR WATERSHED:	Chippewa River
SURFACE AREA (ACRES):	3,808.61
LITTORAL AREA (ACRES):	2,029.16
% LITTORAL DEPTH:	53.3%
MAX DEPTH (FT):	23
AQUATIC INVASIVE SPECIES:	Zebra Mussels

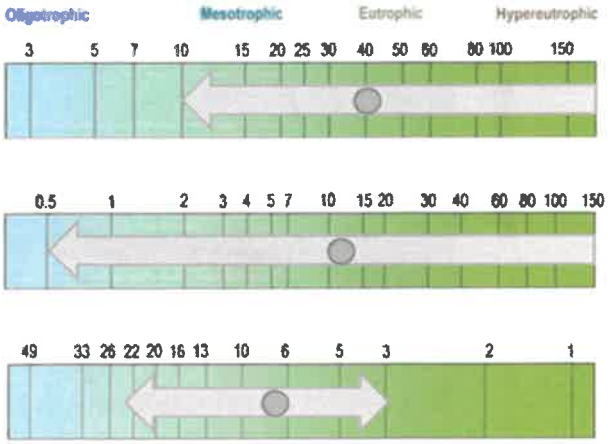
WATER QUALITY CHARACTERISTICS

YEARS MONITORED: 1996 - 2021

PARAMETERS	**201**
TOTAL PHOSPHORUS MIN (UG/L):	10
TOTAL PHOSPHORUS MAX (UG/L):	327
NUMBER OF OBSERVATIONS:	132
TOTAL PHOSPHORUS MEAN (UG/L):	**41.3**
CHLOROPHYLL-A MIN (UG/L):	0.5
CHLOROPHYLL-A MAX (UG/L):	187
NUMBER OF OBSERVATIONS:	120
CHLOROPHYLL-A MEAN (UG/L):	**12.1**
SECCHI DEPTH MIN (FT):	3
SECCHI DEPTH MAX (FT):	22.5
NUMBER OF OBSERVATIONS:	131
SECCHI DEPTH MEAN (FT):	**7.4**

TROPHIC STATE INDEX

Eutrophic (52.2)



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 201

PARAMETERS	**TOTAL PHOSPHORUS** (UG/L)	**CHLOROPHYLL-A** (UG/L)	**SECCHI DEPTH** (FT)
MIN:	10	2	5
MAX:	36	13	15
NUMBER OF OBSERVATIONS:	5	5	5
MEAN:	**25.4**	**6.2**	**9.8**

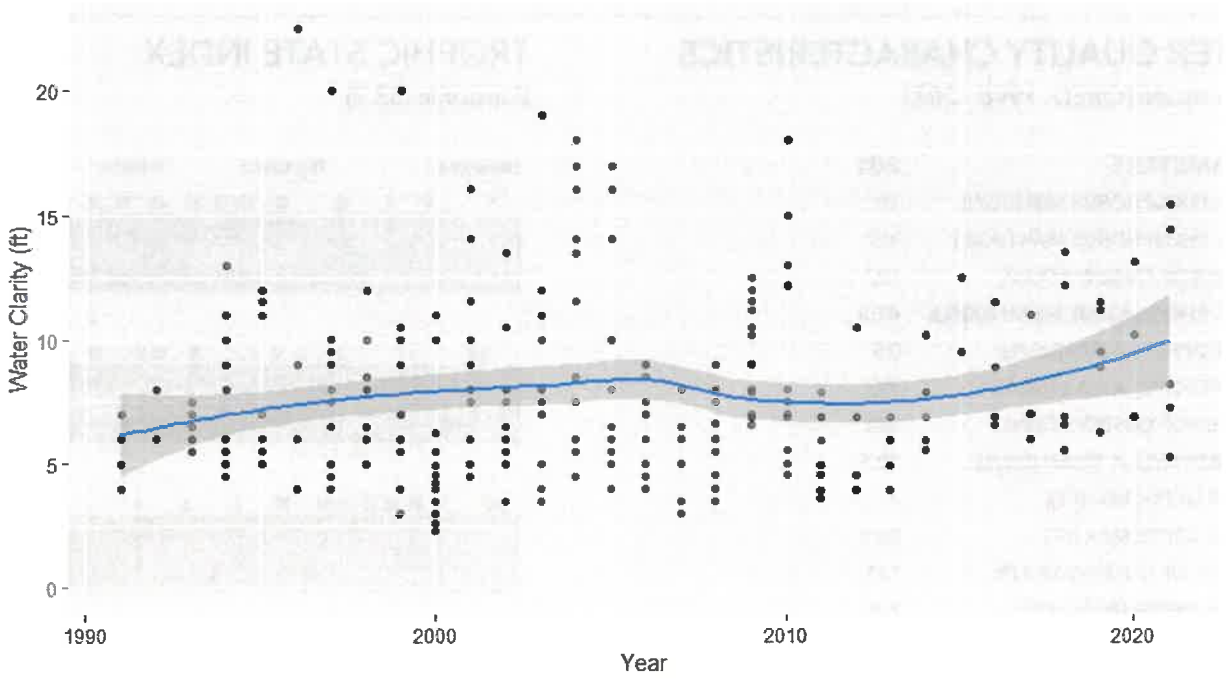
TROPHIC STATE INDEX: 46.8

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**
201	Transparency	1996-2021	Improving with 99% confidence
201	Total phosphorus	1996-2021	Improving with 99.9% confidence
201	Chlorophyll-A	1996-2021	No significant trend exists

RENO LAKE TRANSPARENCY TREND



GRAPH SOURCE: *MINNESOTA POLLUTION CONTROL AGENCY*

Reno Lake's data shows evidence of improving trends in transparency, algae concentration (chlorophyll-a), and total phosphorus as monitoring over the past 22 years. This is likely a result of the establishment of a zebra mussel population in the lake. During the establishment period, zebra mussels filter the water column and redeposit nutrients onto the lake bottom. This effect is usually temporary. Continued monitoring will allow these trends to be tracked in future years, which would be useful in guiding lake protection efforts.