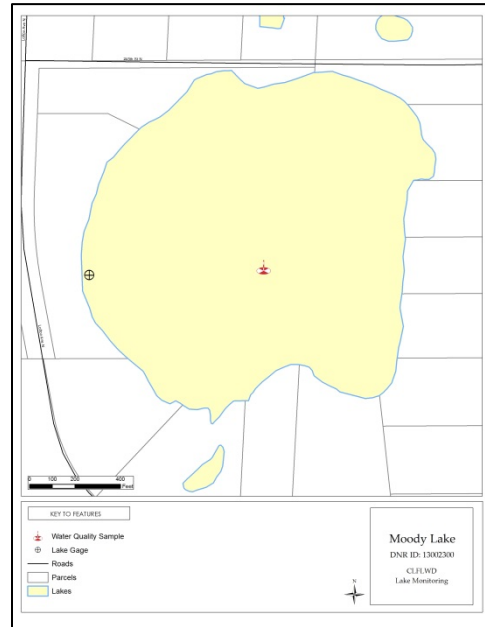


Moody Lake

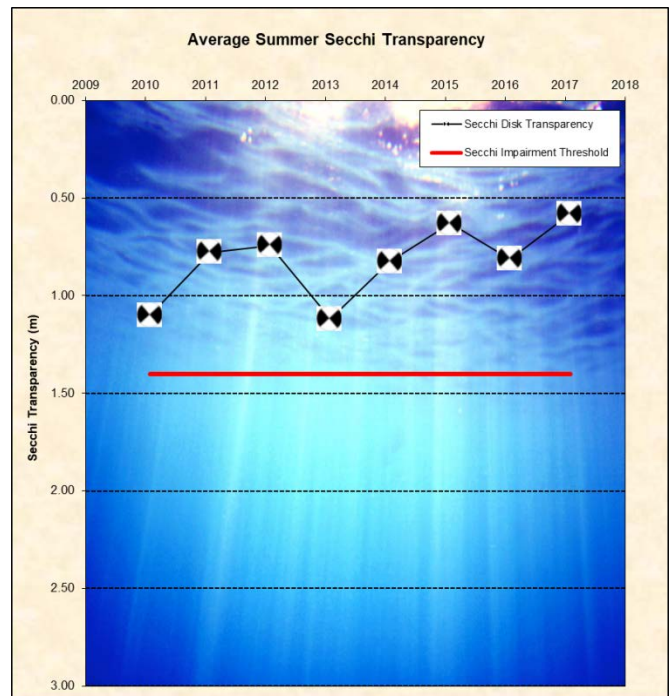
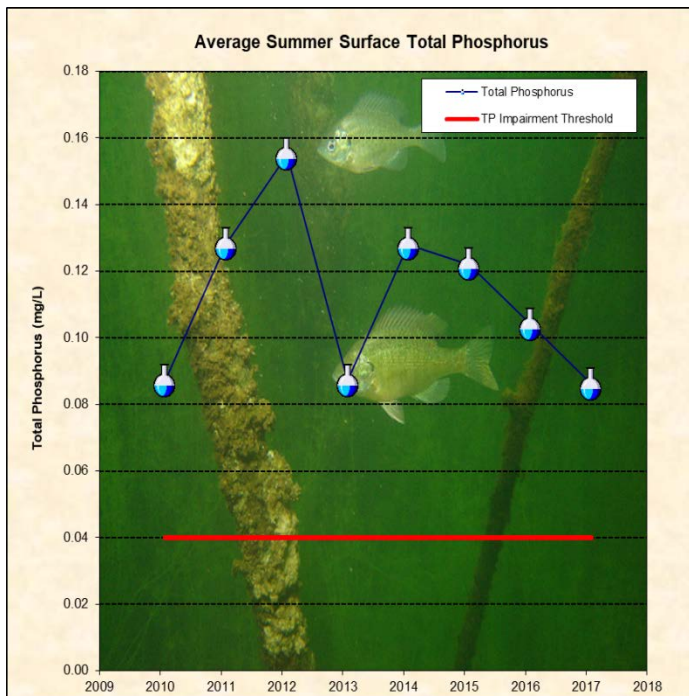
2017 Lake Grade: D+

- DNR ID #: 13002300
 - Municipality: Chisago Lakes Township
 - Location: SW^{1/4} Section 32 T33N-R20W
 - Lake Size: 45.33 acres
 - Maximum Depth (2017): 49 ft.
 - Ordinary High Water Mark: N/A
 - 49% Littoral
- Note: Littoral area is the portion of the lake <15 ft. and dominated by aquatic vegetation.

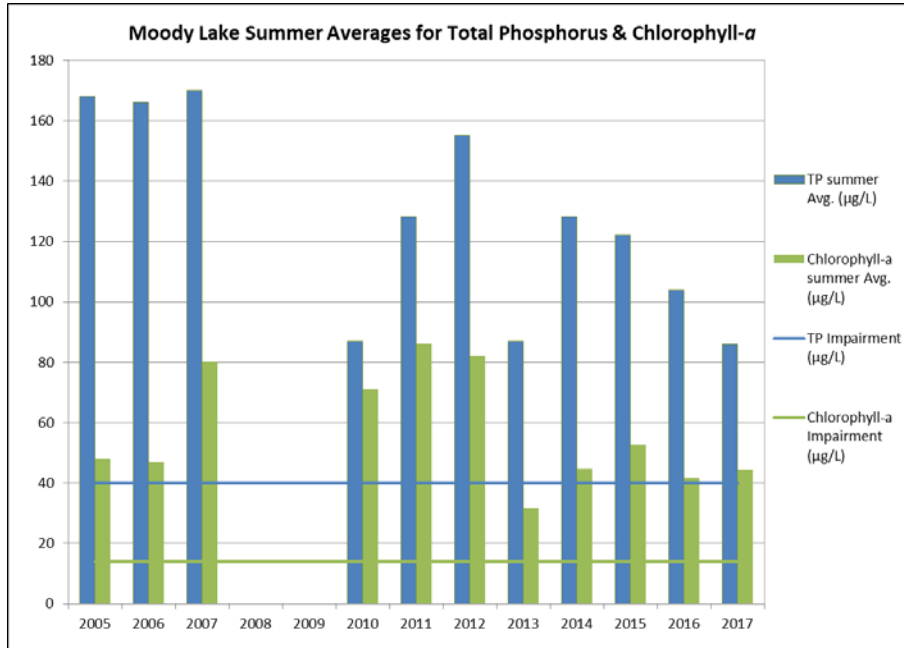


Summary Points

- Based on the chlorophyll-*a* results Moody Lake was considered eutrophic in 2017, according to the Carlson Trophic State Index.
- Using the 2-tailed Kendall Tau correlation test ($p < 0.05$) there is a statistically significant **improving** trend for the average total phosphorus and no trend for the average Secchi transparency or average chlorophyll-*a* at this time.
- The major land use is rural/agricultural.
- The lake stratified in 2017 with the thermocline varying between 3 and 4 meters.
- Moody Lake is listed as impaired for nutrients on the Minnesota Pollution Control Agency's Impaired Waters List.
- Curly-leaf pondweed (an invasive aquatic plant) is present in this lake.



Date/Time	Total Phosphorus (mg/L)	Uncorrected Trichromatic Chlorophyll-a (µg/L)	Pheophytin-Corrected Chlorophyll-a (µg/L)	Total Kjeldahl Nitrogen (mg/L)	Secchi Disk Depth (m)	Surface Temperature (Celsius)	Surface Dissolved Oxygen (mg/L)
4/19/2017 10:57	0.073	21.0	17.0	1.20	1.22	11.7	9.96
5/3/2017 8:25	0.071	12.0	10.0	1.20	1.68	10.1	10.03
5/16/2017 13:41	0.047	9.0	8.0	1.00	1.22	19.0	9.12
5/31/2017 14:08	0.069	20.0	18.0	1.10	1.07	16.6	8.67
6/14/2017 10:54	0.101	24.0	22.0	1.70	1.22	23.6	5.91
6/27/2017 13:21	0.107	82.0	80.0	2.30	0.30	21.3	12.27
7/11/2017 12:00	0.152	69.0	66.0	2.30	0.38	26.8	9.54
7/25/2017 9:38	0.063	84.0	72.0	0.97	0.46	24.6	5.20
8/8/2017 14:15	0.068	38.0	34.0	1.90	0.46	24.6	9.72
8/21/2017 9:00	0.072	30.0	27.0	1.40	0.61	23.4	7.61
9/6/2017 11:46	0.071	35.0	30.0	1.30	0.61	18.8	6.14
9/20/2017 10:33	0.054	28.0	24.0	1.10	0.61	19.7	6.36
10/4/2017 12:33	0.065	19.0	16.0	1.10	1.07	16.5	7.28
10/19/17 9:28	0.055	25.0	22.0	1.10	1.07	12.2	7.26
2017 Average	0.076	35.4	31.9	1.41	0.85	19.2	8.22
2017 Summer Average	0.086	48.8	44.4	1.62	0.58	22.9	7.84
Volunteer Data							
04/23/2017 17:30	0.052	4.8	2.7	1.10	2.00	11.9	NA
05/07/2017 17:30	0.043	4.1	4.6	1.00	2.40	17.7	NA
05/21/2017 09:00	0.061	12.0	9.4	1.10	1.70	17.6	NA
06/04/2017 09:00	0.082	57.0	55.0	1.70	0.80	22.3	NA
06/18/2017 19:00	0.107	58.0	53.0	1.60	0.70	23.9	NA
07/02/2017 17:00	0.125	190.0	190.0	3.00	0.40	27.5	NA
07/16/2017 17:30	0.105	99.0	88.0	1.90	0.50	26.9	NA
07/30/2017 19:00	0.073	48.0	47.0	1.60	0.60	27.6	NA
08/13/2017 15:00	0.073	30.0	23.0	1.40	0.90	22.7	NA
08/27/2017 17:30	0.076	42.0	36.0	1.20	0.60	20.1	NA
09/10/2017 17:00	0.037	24.0	20.0	0.94	0.80	19.7	NA
09/24/2017 16:30	0.046	19.0	15.0	1.20	0.90	24.6	NA
10/08/2017 17:00	0.051	18.0	13.0	1.20	1.10	17.3	NA
10/22/2017 08:30	0.182	33.0	30.0	1.40	1.10	12.3	NA
2017 Average	0.080	45.6	41.9	1.45	1.04	20.9	NA
2017 Summer Average	0.080	63.0	58.6	1.62	0.69	23.9	NA
Water quality thresholds are 0.04 mg/L TP, 14 µg/L CL-a, 1.4 m Secchi depth*							
Shallow lake water quality thresholds are 0.06 mg/L TP, 20 µg/L CL-a, 1.0 m Secchi depth*							
2017 Elevation (ft)	High	High Date	Low	Low Date	Average		
	912.00	5/3/2017	911.32	9/20/2017	911.60		
*Data requirements and determinations of use assessment according to the MPCA's Guidance Manual for Assessing the Quality of Minnesota Surface Waters: "Samples must be collected over a minimum of 2 years and data used for assessments must be collected from June to September. Typically, a minimum of 8 individual data points for TP, corrected chlorophyll-a (chl-a corrected for pheophytin), and Secchi are required. Data used for phosphorus and chlorophyll-a calculations are limited to those collected from the upper most 3 meters of the water column (surface). If more than one sample is collected in a lake per day, these values are averaged to yield a daily average value. Following this step, all June to September data for the 10-year assessment window are averaged to determine summer-mean values for TP, corrected chl-a, and Secchi depth. These values are then compared to the standards and the assessment is made."							



Lake Water Quality Summary										
	Lake Grades									
	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
Total Phosphorus (mg/L)	D	D	D	D	D	F	D	D	NA	NA
Chlorophyll-a (µg/L)	C	C	D	C	C	F	F	D	NA	NA
Secchi depth (ft)	D	D	F	D	D	D	D	D	NA	NA
Overall	D+	D+	D-	D+	D+	F+	D-	D	NA	NA

Moody Lake Water Surface Elevation Statistics

Ordinary High Water Level (OHW) Elevation: N/A

100 Year Flood Elevation (CLFLWD): 892.1 ft.

Highest Recorded Elevation: 913.32 ft. (09/22/2015)

Lowest Recorded Elevation: 911.32 ft. (9/20/2017)

Datum: NGVD 29 (ft.)

