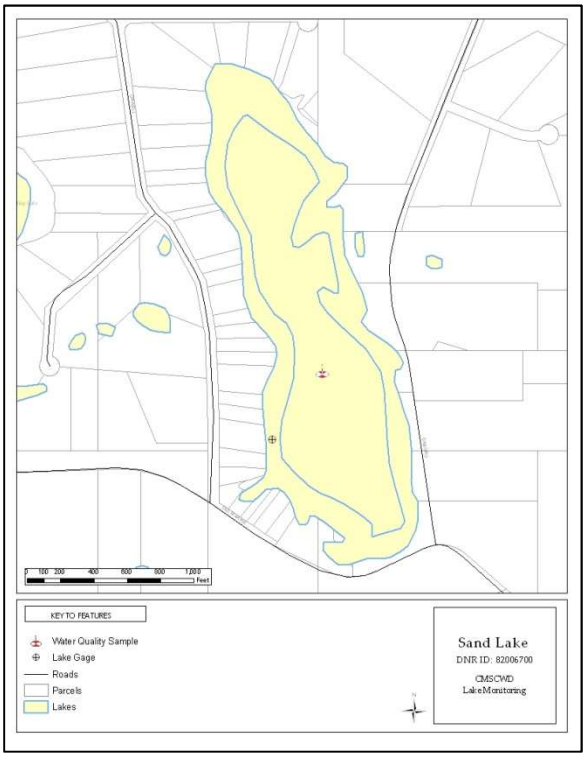
Sand Lake

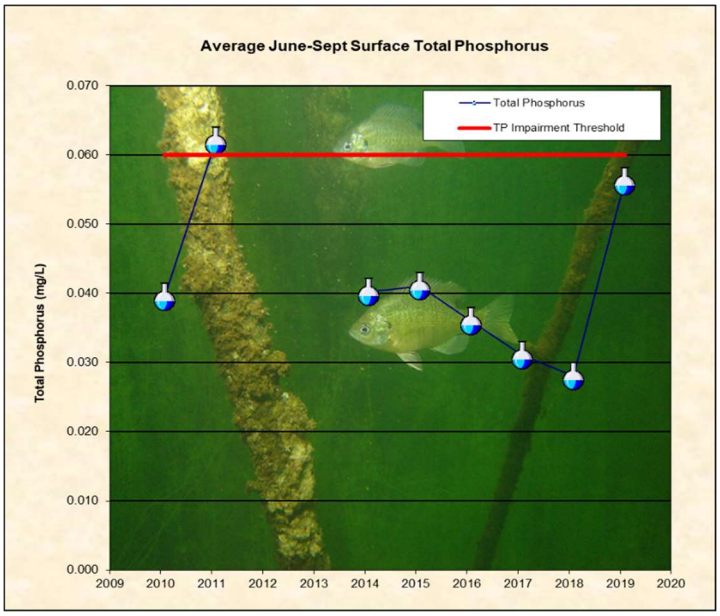
2019 Lake Grade: C-

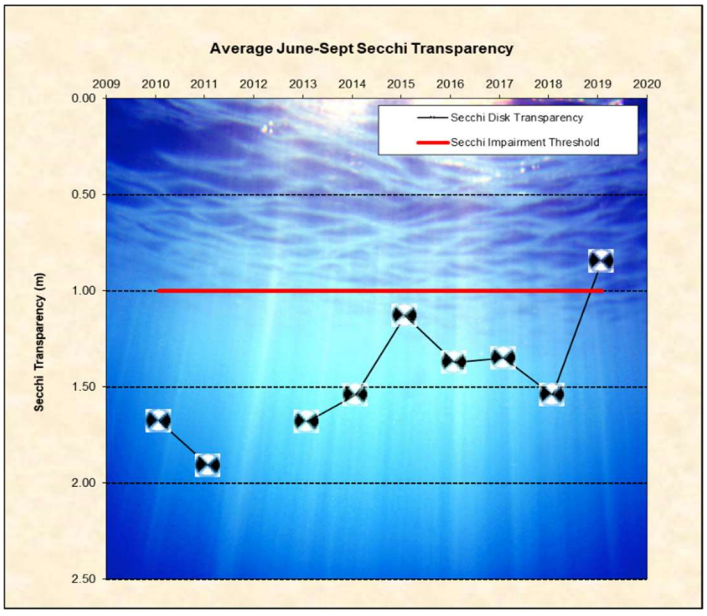
- DNR ID #: 82006700
- Municipality: Scandia Township
- Location: Section 26, T32N-R20W
- Lake Size: 45 Acres
- Maximum Depth (2019): 18 ft.
- Ordinary High Water Mark: 963.20 ft.
- 91% Littoral
  Note: Littoral area is the portion of the lake <15 ft and dominated by aquatic vegetation.



Summary Points

- Based on the chlorophyll-α results Sand Lake was considered eutrophic in 2019, according to the Carlson Trophic State Index.
- Using the Kendall's Tau correlation test ($p<0.05$) there is a statistically significant **improving** trend for the average total phosphorus, and no trend for the average chlorophyll-α and average Secchi transparency at this time.
- The major land use is rural/agricultural.
- It is unknown if the lake stratified in 2019, as the temperature/dissolved oxygen profile was not measured.





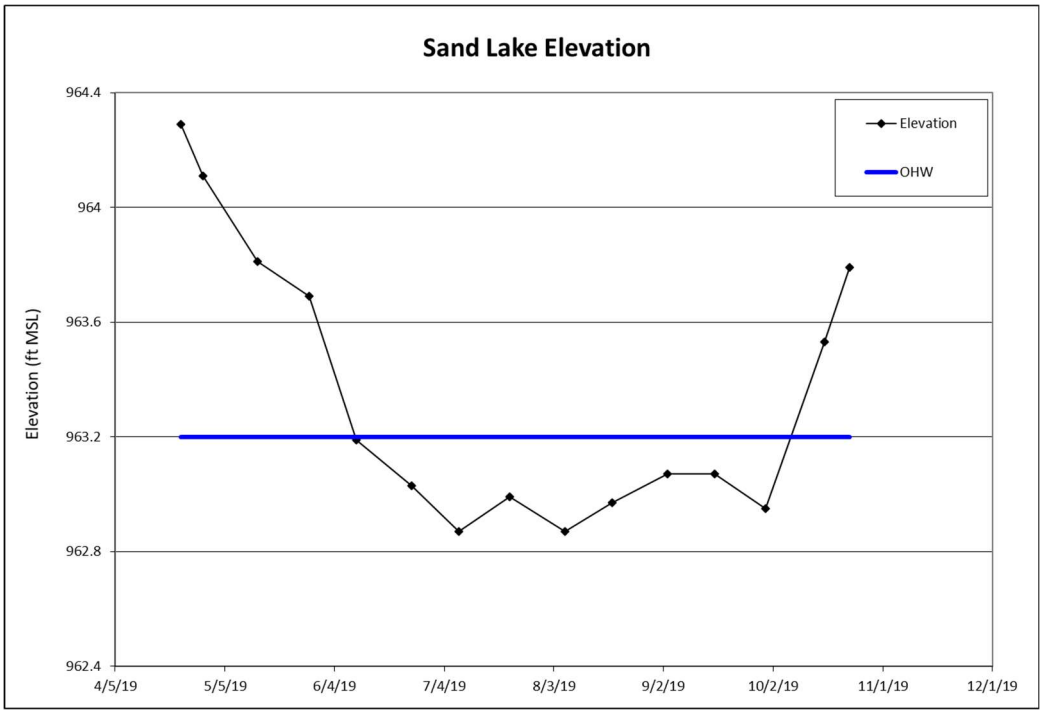
Date/Time	Total Phosphorus (mg/L)	Uncorrected Trichromatic Chlorophyll-*a* (µg/L)	Pheophytin-Corrected Chlorophyll-*a* (µg/L)	Total Kjeldahl Nitrogen (mg/L)	Secchi Disk Depth (m)	Surface Temperature (Celsius)	Surface Dissolved Oxygen (mg/L)
4/29/2019 14:29	0.059	17.0	13.0	1.00	1.07	11.3	10.07
5/14/2019 14:15	0.041	1.4	1.0	0.81	1.98	17.6	7.10
5/28/2019 14:13	0.038	14.0	12.0	0.78	1.60	16.2	8.74
6/11/2019 13:33	0.047	30.0	26.0	0.92	1.07	21.9	8.11
6/25/2019 13:53	0.054	80.0	77.0	1.50	0.30	24.3	10.22
7/8/2019 11:03	0.063	18.0	16.0	1.20	1.07	26.8	8.04
7/22/2019 13:31	0.054	78.0	72.0	1.70	0.46	25.6	8.44
8/6/2019 13:44	0.084	22.0	19.0	1.40	1.07	27.8	7.25
8/19/2019 12:38	0.075	10.0	9.2	1.00	0.91	24.7	8.02
9/3/2019 13:29	0.045	36.0	34.0	1.10	0.91	21.6	8.96
9/16/2019 14:27	0.045	29.0	26.0	1.10	1.07	20.9	8.72
9/30/2019 13:44	0.038	27.0	23.0	1.40	0.76	17.7	11.11
10/16/2019 8:35	0.044	21.0	20.0	1.40	1.37	9.8	6.70
2019 Average	0.053	29.5	26.8	1.18	1.05	20.5	8.58
2019 Summer Average	0.056	36.7	33.6	1.26	0.85	23.5	8.76

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*

	High	High Date	Low	Low Date	Average
2019 Elevation (ft)	964.29	4/23/2019	962.87	7/8/2019	963.35

*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 (May-Sept)									
	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Total Phosphorus (mg/L)	C	B	B	C	C	C	NA	NA	C	C
Chlorophyll-*a* (µg/L)	C	B	B	B	C	C	NA	NA	D	B
Secchi depth (ft)	D	C	C	C	D	C	C	NA	C	C
Overall	**C-**	**B-**	**B-**	**C+**	**C-**	**C**	**C**	**NA**	**C-**	**C+**