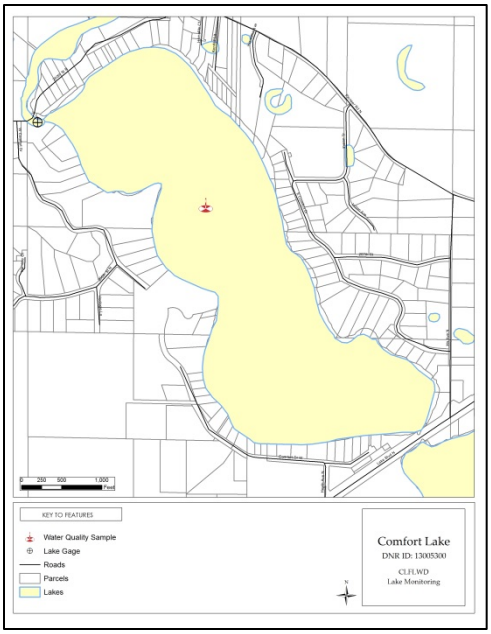
Comfort Lake

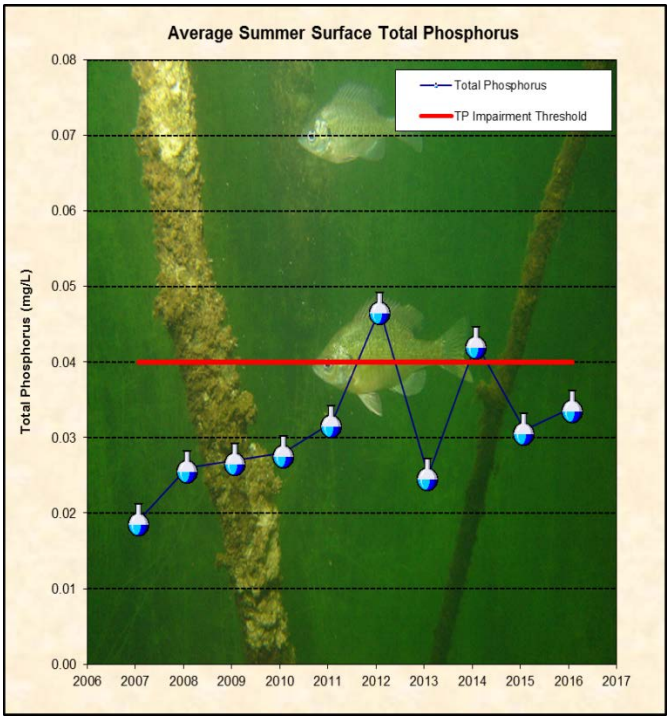
2016 Lake Grade: B-

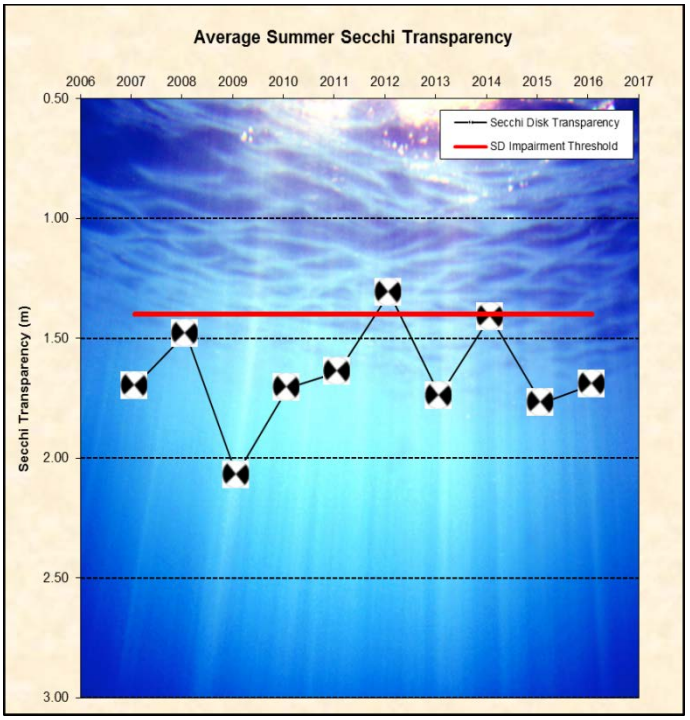
- DNR ID #: 13005300
- Municipality: City of Wyoming
- Location: Section 27 T33N-R21W
- Lake Size: 217.82 acres
- Maximum Depth (2016): 45 ft.
- Ordinary High Water Mark: 887.2 ft.
- 41% Littoral
  Note: Littoral area is the portion of the lake <15 ft. and dominated by aquatic vegetation.



Summary Points

- Based on the chlorophyll-*a* results Comfort Lake was considered eutrophic in 2016, 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 a statistically significant **declining** trend for the average Secchi transparency.
- The major land use is a mix of semi-urban, rural, and agricultural.
- The lake stratified in 2016 with the thermocline varying between 5 and 6 meters.
- Comfort Lake is listed as impaired for nutrients on the Minnesota Pollution Control Agency's Impaired Waters List.
- Eurasian watermilfoil and Curly-leaf pondweed (invasive aquatic plants) are present in this lake.





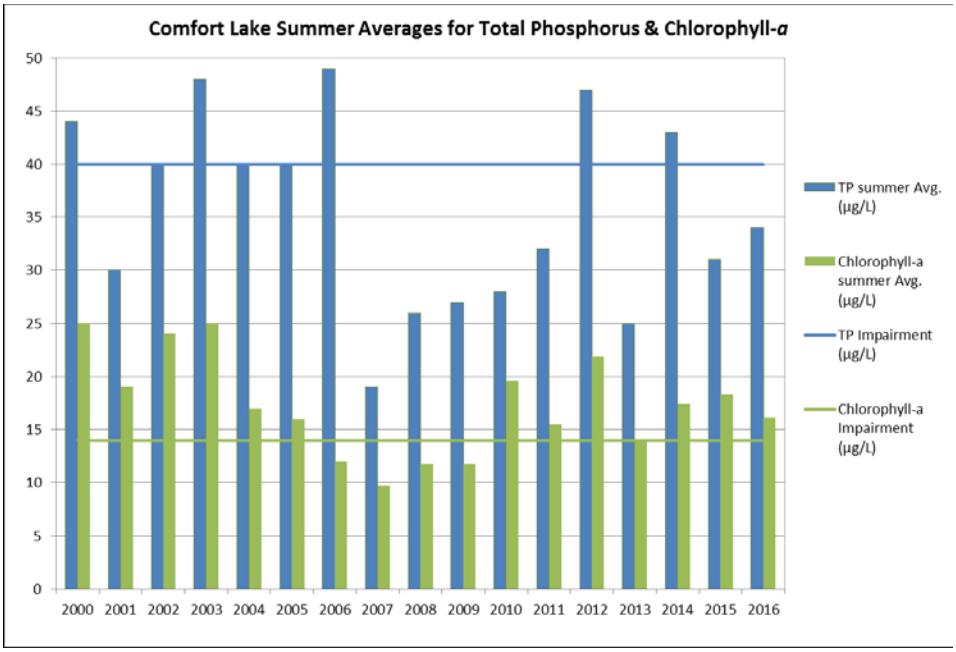
Date/Time	Total Phosphorus (mg/L)	Uncorrected Trichromatic Chlorophyll-*a* (µg/L)	Pheophytin-Corrected Chlorophyll-a (µg/L)	Total Kjeldahl Nitrogen (mg/L)	Secchi Disk Depth (m)	Surface Temperature (Celsius)	Surface Dissolved Oxygen (mg/L)
4/20/2016 11:15	0.026	8.1	6.5	0.89	2.29	11.8	11.04
5/3/2016 13:06	0.017	6.4	5.6	1.00	3.20	13.3	11.72
5/17/2016 15:09	0.020	5.6	4.8	0.97	2.44	15.5	11.48
6/2/2016 12:59	0.031	5.4	2.8	1.40	2.29	19.9	8.81
6/16/2016 12:04	0.016	8.3	7.2	0.82	2.44	22.1	8.36
6/28/2016 11:50	0.027	12.0	10.0	1.20	1.83	24.6	8.13
7/12/2016 12:45	0.086	9.9	8.9	1.20	1.98	25.2	7.82
7/26/2016 11:26	0.028	15.0	14.0	1.10	1.83	27.2	8.73
8/10/2016 8:35	0.032	32.0	31.0	1.30	0.91	26.3	9.17
8/25/2016 11:45	0.029	25.0	22.0	1.00	1.37	23.3	7.24
9/8/2016 11:39	0.029	27.0	25.0	1.40	1.22	22.4	7.98
9/19/2016 11:43	0.027	26.0	23.0	1.00	1.37	20.4	7.29
10/6/2016 9:56	0.031	25.0	24.0	1.40	1.22	16.4	7.29
10/20/2016 10:18	0.036	11.0	10.0	1.50	1.68	13.0	6.28
2016 Average	0.031	15.5	13.9	1.16	1.86	20.1	8.67
2016 Summer Average	0.034	17.8	16.0	1.16	1.69	23.5	8.17
Volunteer Data							
4/21/2016 13:15	0.023	6.9	5.7	0.85	2.20	13.5	NA
5/5/2016 13:10	0.037	5.7	4.2	0.90	2.80	13.7	NA
5/19/2016 13:50	0.019	5.5	4.3	0.86	2.00	18.0	NA
6/2/2016 13:45	0.023	5.2	3.0	0.82	1.75	20.6	NA
6/18/2016 13:45	0.027	9.0	6.3	0.84	2.00	24.2	NA
7/5/2016 13:10	0.026	8.1	7.6	1.00	1.80	26.6	NA
7/16/2016 14:25	0.025	8.1	7.9	0.98	1.80	26.0	NA
7/28/2016 13:15	0.032	23.0	22.0	0.92	1.35	25.9	NA
8/13/2016 13:15	0.027	33.0	32.0	1.00	0.95	27.1	NA
8/23/2016 14:00	0.026	27.0	25.0	1.50	0.95	24.1	NA
9/8/2016 13:40	0.029	29.0	25.0	1.10	1.20	23.1	NA
9/23/2016 14:30	0.026	24.0	23.0	0.81	1.20	19.8	NA
10/6/2016 12:30	0.028	27.0	24.0	0.98	1.30	17.8	NA
2016 Average	0.027	16.3	14.6	0.97	1.64	21.6	NA
2016 Summer Average	0.027	18.5	16.9	1.00	1.44	24.2	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*

	High	High Date	Low	Low Date	Average
2016 Elevation (ft)	886.62	9/6/2016	885.66	7/14/2016	886.12

*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-acorrected 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									
	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007
Total Phosphorus (mg/L)	B	B	C	B	C	B	B	B	B	A
Chlorophyll-*a* (µg/L)	B	C	B	B	C	B	B-	B	A	A
Secchi depth (ft)	C	C	C	C	C	C	C	C	C	C
Overall	**B-**	**C+**	**C+**	**B-**	**C**	**B-**	**B-**	**B**	**B**	**B+**

Comfort Lake
Water Surface Elevation Statistics

Outlet Elevation (rock weir): 885.4 ft.

Ordinary High Water Level (OHW) Elevation: 887.2 ft.

100 Year Flood Elevation (CLFLWD): 889.5 ft.

Highest Recorded Elevation: 888.32 ft. (07/02/1975)

Lowest Recorded Elevation: 884.8 ft. (10/08/1969)

Datum: NGVD 29 (ft.)