



March 1, 2019

To whom it may concern:

Wolf Lake in Fond du Lac County is part of the DNR Directed Lakes Monitoring Program. The purpose of this monitoring is to assess overall lake health. 2017 was the first year of a three-year monitoring effort for this lake. During 2017, an aquatic invasive species survey was completed. During 2018, water chemistry samples were collected three times. This report summarizes the 2017 and 2018 monitoring results. It also includes water clarity (secchi) data from dedicated volunteers that collect readings on Wolf Lake and enter their data into the statewide database. Secchi data on Wolf Lake date back to 1987 and are essential to assessing the long-term condition of the lake.

A link to the DNR Directed Lake Monitoring protocols are available on our website at:
<https://dnrx.wisconsin.gov/swims/downloadDocument.do?id=163086662>.

Water Chemistry

The following information is taken from the Wolf Lake webpage provided by the DNR.
<https://dnr.wi.gov/lakes/lakepages/LakeDetail.aspx?wbic=60800>

Wolf Lake - Deep Hole was sampled 13 different days during the 2018 season. Parameters sampled included:

- water clarity
- temperature
- dissolved oxygen
- total phosphorus
- chlorophyll

The average summer (July-Aug) secchi disk reading for Wolf Lake - Deep Hole (Fond du Lac County, WBIC: 60800) was 5 feet. The average for the Southeast Georegion was 7.4 feet. Typically, the summer (July-Aug) water was reported as MURKY and BROWN. This suggests that the secchi depth may have been mostly impacted by suspended sediments, tiny particles of soil or organic matter that are suspended in the water. Shallow lakes are often turbid because wind stirs up sediment from the bottom. High suspended sediments are often found in flowages and impoundments where precipitation runoff from the watershed transports solids via an incoming stream. Chemistry data was collected on Wolf Lake - Deep Hole. The average summer Chlorophyll was 11.2 µg/l (compared to a Southeast Georegion summer average of 31.6 µg/l). The summer Total Phosphorus average was 32.9 µg/l. Lakes that have more than 20 µg/l and impoundments that have more than 30 µg/l of total phosphorus may experience noticeable algae blooms.

The overall Trophic State Index (based on chlorophyll) for Wolf Lake - Deep Hole was 53. The TSI suggests that Wolf Lake - Deep Hole was eutrophic. This TSI usually suggests decreased clarity, fewer algal species, oxygen-depleted bottom waters during the summer, plant overgrowth evident, warm-water fisheries (pike, perch, bass, etc.) only.

Lake Water Quality 2018 Annual Report

Wolf Lake

Fond du Lac County

Waterbody Number: 60800

Lake Type: DRAINAGE

DNR Region: NE

GEO Region: SE

Site Name	Storet #
Wolf Lake - Deep Hole	203058

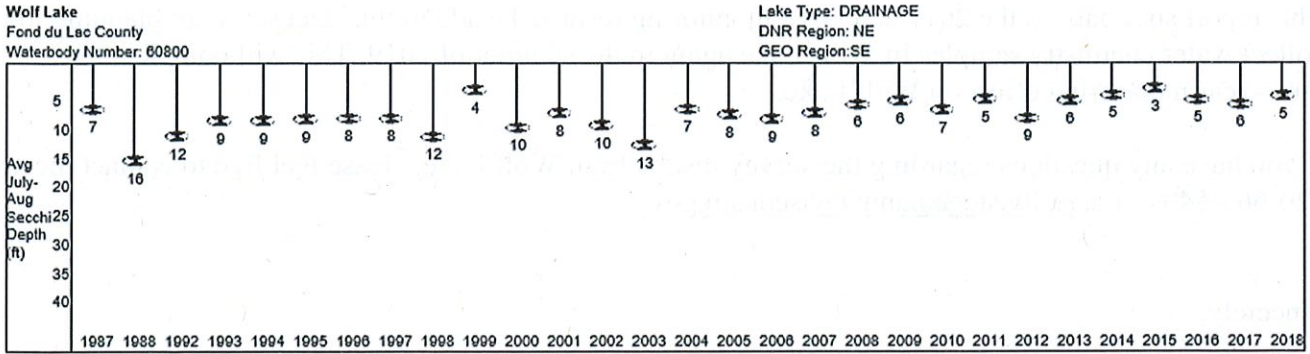
Date	SD (ft)	SD (m)	Hit Bottom	CHL	TP	TSI (SD)	TSI (CHL)	TSI (TP)	Lake Level	Clarity	Color	Perception
05/04/2018	7.5	2.3	NO			48			HIGH	MURKY	BROWN	4-Would not swim but boating OK (algae)
05/15/2018	7.5	2.3	NO			48			HIGH	MURKY	GREEN	3-Enjoyment somewhat impaired (algae)
06/01/2018	1	0.3	NO			77			LOW	MURKY	GREEN	4-Would not swim but boating OK (algae)
06/16/2018	2	0.6	NO			67			LOW	MURKY	GREEN	3-Enjoyment somewhat impaired (algae)
07/02/2018	4.5	1.4	NO			55			LOW	MURKY	GREEN	4-Would not swim but boating OK (algae)
07/16/2018	5	1.5	NO			54			LOW	MURKY	GREEN	4-Would not swim but boating OK (algae)
07/18/2018	5.5	1.7	NO	11.4	43.2	53	53	57				
08/01/2018	5	1.5	NO			54			LOW	MURKY	GREEN	4-Would not swim but boating OK (algae)
08/10/2018	4.7	1.4	NO	11	22.6	55	53	52			GREEN	
08/15/2018	4.5	1.4	NO			55			LOW	MURKY	BROWN	3-Enjoyment somewhat impaired (algae)
09/01/2018	3	0.9	NO			61			HIGH	MURKY	BROWN	3-Enjoyment somewhat impaired (algae)
09/11/2018	3.2	1	NO	21.7	61.7	60	58	60	NORMAL		GREEN	
09/15/2018	3	0.9	NO			61			LOW	MURKY	GREEN	5-Enjoyment substantially impaired (algae)

07/18/2018		
Depth METERS	Temp. DEGREES C	D.O. MG/L
1	26.5	6.3
2	26.1	5.5
3	24.2	.4
4	15.8	.2
5	9.8	.2
6	6.9	1.2
7	5.8	.3
8	4.9	.2
9	4.5	.1
10	4.5	.1
11	4.5	.1
12	4.5	.1
13	4.5	.1

08/10/2018		
Depth METERS	Temp. DEGREES C	D.O. MG/L
1	25.7	9.4
2	25.2	9.2
3	23.7	6.6
4	18.4	.6
5	11.2	.3
6	7.6	.2
7	5.9	.2
8	5	.2
9	4.8	.2
10	4.7	.2
11	4.6	.2
12	4.6	.1
13	4.6	.1

09/11/2018		
Depth METERS	Temp. DEGREES C	D.O. MG/L
1	20.7	8.8
2	20.6	8.8
3	20.5	8.6
4	19.3	3.8
5	16.5	.3
6	9.9	.2
7	6.9	.1
8	5.7	.1
9	5.1	.1
10	5	.1
11	4.9	.1
12	4.8	.1
13	4.8	.1

SD = Secchi depth measured in feet converted to meters; Chl = Chlorophyll a in micrograms per liter(ug/l); TP = Total phosphorus in ug/l, surface sample only; TSI(SD), TSI(CHL), TSI(TP) = Trophic state index based on SD, CHL, TP respectively; Depth measured in meters.



Past secchi averages in feet (July and August only).

Year	Secchi Mean	Secchi Min	Secchi Max	Secchi Count
1987	7	7	7	1
1988	16	16	16	2
1992	11.5	11	12	2
1993	9	7.5	10.5	2
1994	9	8	10	2
1995	8.75	8	9.5	2
1996	8.5	8.5	8.5	1
1997	8.5	8	9	2
1998	11.75	11.5	12	2
1999	3.5	3	4	2
2000	10.25	9	11.25	5
2001	7.5	4.5	10.5	5
2002	9.75	9	10.5	2
2003	13.2	12	14	5
2004	7	5	9	5
2005	8	5	10	7
2006	8.79	5	13.5	7
2007	7.63	3.5	11.5	8
2008	6.25	4	8.5	6
2009	5.5	4	6.5	3
2010	7.1	6	8	5
2011	5.13	3.5	6	4
2012	8.63	7.5	10	4
2013	5.63	4	6.5	4
2014	4.63	4	6	4
2015	3.38	3	4	4
2016	5.3	3.5	9	5
2017	6.25	4	8	4
2018	4.87	4.5	5.5	6

Aquatic Invasive (AIS) Species Survey

An AIS survey was conducted in 2017. AIS that were found while monitoring consisted of hybrid Cattails (*Typha* sp.), Eurasian Water Milfoil (*Myriophyllum spicatum*), and Curly leaf pondweed (*Potamogeton crispus*). Zebra Mussel, Spiny Water Flea and Fishhook Water Flea tows were also conducted but not found in Wolf Lake. To learn more about aquatic invasive species and become more familiar with each specific species please visit the WDNR aquatic invasive species webpage: <http://dnr.wi.gov/topic/Invasives/>.

This report summarizes the 2017 and 2018 monitoring results. To add to this data set, I am planning to collect water chemistry samples in Wolf Lake again in the summer of 2019. This will complete the three-year monitoring effort on Wolf Lake.

If you have any questions regarding the survey results from Wolf Lake, please feel free to contact me at 920-662-5497 or at holly.stegemann@wisconsin.gov.

Sincerely,

A handwritten signature in cursive script that reads "Holly Stegemann".

Holly Stegemann

Water Resources Management Specialist
Wisconsin Department of Natural Resources