

2022 Eurasian Watermilfoil Delineation

Clearwater Lake (#18-0038)

Crow Wing County, MN

Surveyed August 10, 2022



Survey, Analysis, and Reporting by:

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Certified Lake Manager
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Purpose of Survey

This late-summer survey was conducted to locate and delineate areas of Eurasian watermilfoil (EWM) in the vegetated portion of Clearwater Lake (#18-0038), with additional focus on areas where we found EWM in past years. This information will help to guide EWM management in the lake and is required as a part of the DNR permitting process for controlling aquatic invasive plants (herbicide, harvesting, or manual removal).

Survey Method

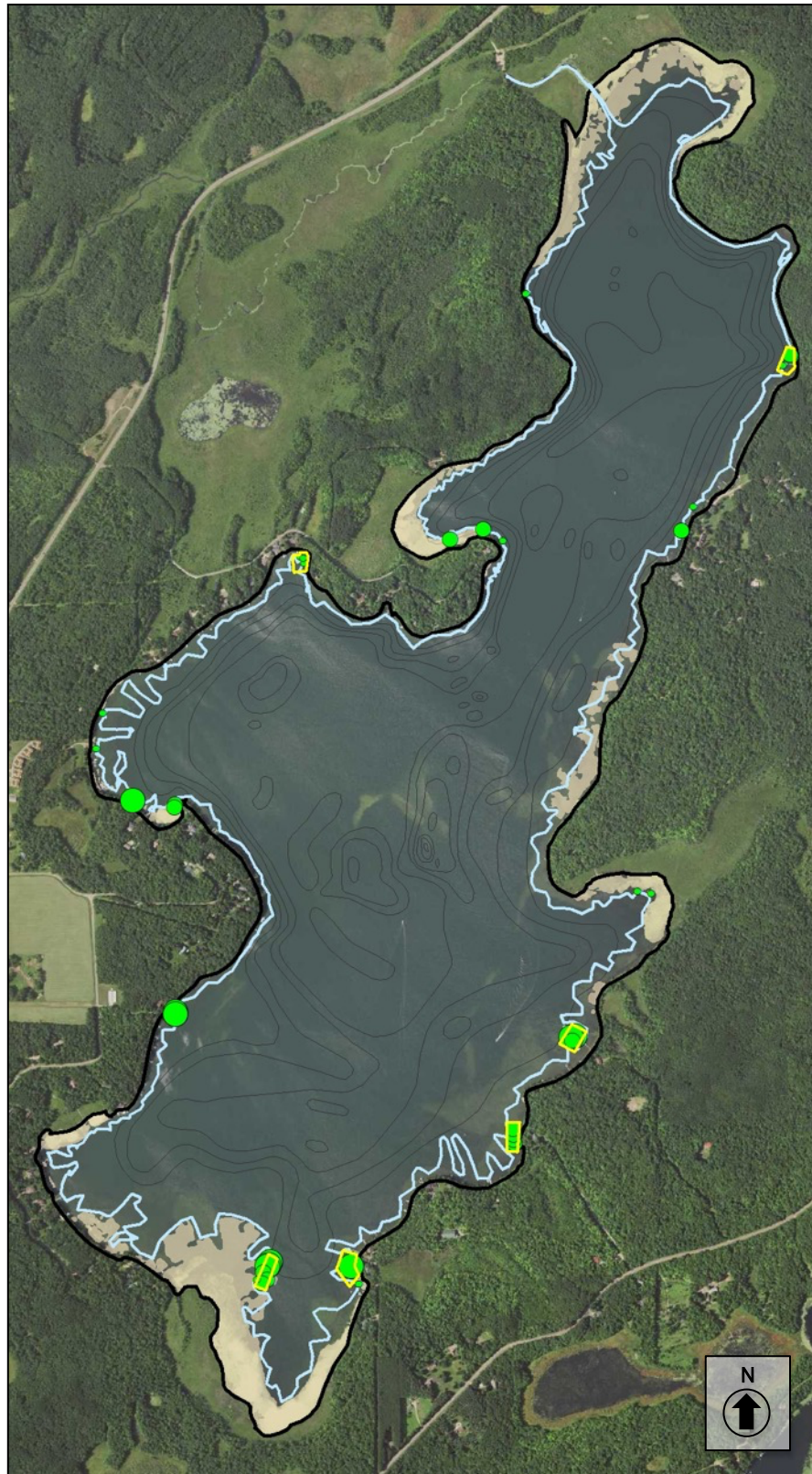
EWM Delineation Survey

Freshwater Scientific Services surveyed Clearwater Lake on August 10, 2022. During this survey, we navigated a meandering path over the search area while using a combination of surface observations, sonar readings, and rake tosses to locate and delineate areas of EWM growth. When we encountered EWM plants, we marked the location, recorded the water depth, and rated the density of the growth using visual or rake density scores as described in the table below. The recorded water depths and density scores were linked to the appropriate GPS locations and then mapped using desktop GIS software.

Score	Visual	Rake
1	Light / Solitary plants	1-2 stems
2	Moderate / Scattered dense patches	3 to 9 stems
3	Dense / Uniform dense growth	10+ stems

2022 Eurasian Watermilfoil Delineation Survey

Clearwater Lake (#18-0038)



- Waterlily/Bulrush
- Surveyed Path
- Management Plots

EWM Density

- 1
- 2
- 3

Surveyed: Aug 10, 2022
Surveyor: JA Johnson
Methods: Visual, Sonar, Rake



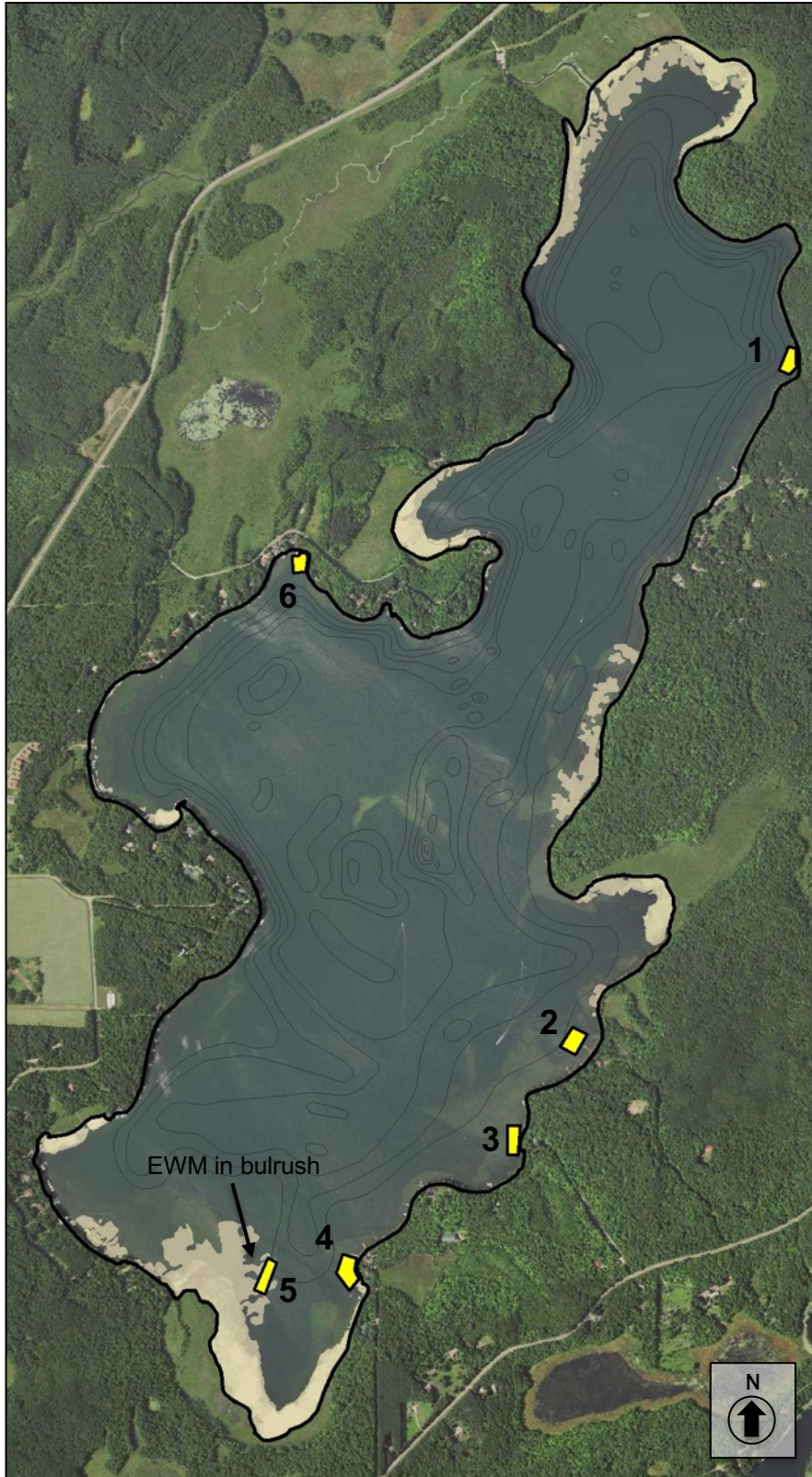
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2022 Eurasian Watermilfoil Management Plots

Clearwater Lake (#18-0038)



Potential Management Plots

Plot	Acres	Mean Depth (ft)	Mean EWM Density (1-3)
1	0.7	4.5	1.7
2	0.8	4.8	2.5
3	0.8	3.4	2.0
4	1.1	3.3	3.0
5	0.8	4.0	2.3
6	0.6	3.8	1.0

Total 4.8 acres

(1) Plot #5 is in a stand of bulrush. Discuss management options with your applicator and AIS Specialist to minimize damage to bulrush.

(2) All of these plots are small and may be difficult to treat effectively due to high dilution and drift. Prior to any treatment, discuss options for treating small plots with your applicator.

Alternative Management Strategy

We found several smaller areas of EWM that were too small to warrant management with herbicides. As an alternative management strategy at these sites, we recommend manual removal by divers (see details on page 5).

Two of the identified plots (#1 and #6) had lighter EWM growth. Although we recommend using herbicide on these areas, manual removal may be a viable alternative.

Surveyed: Aug 10, 2022

Methods: Visual, Sonar, Rake

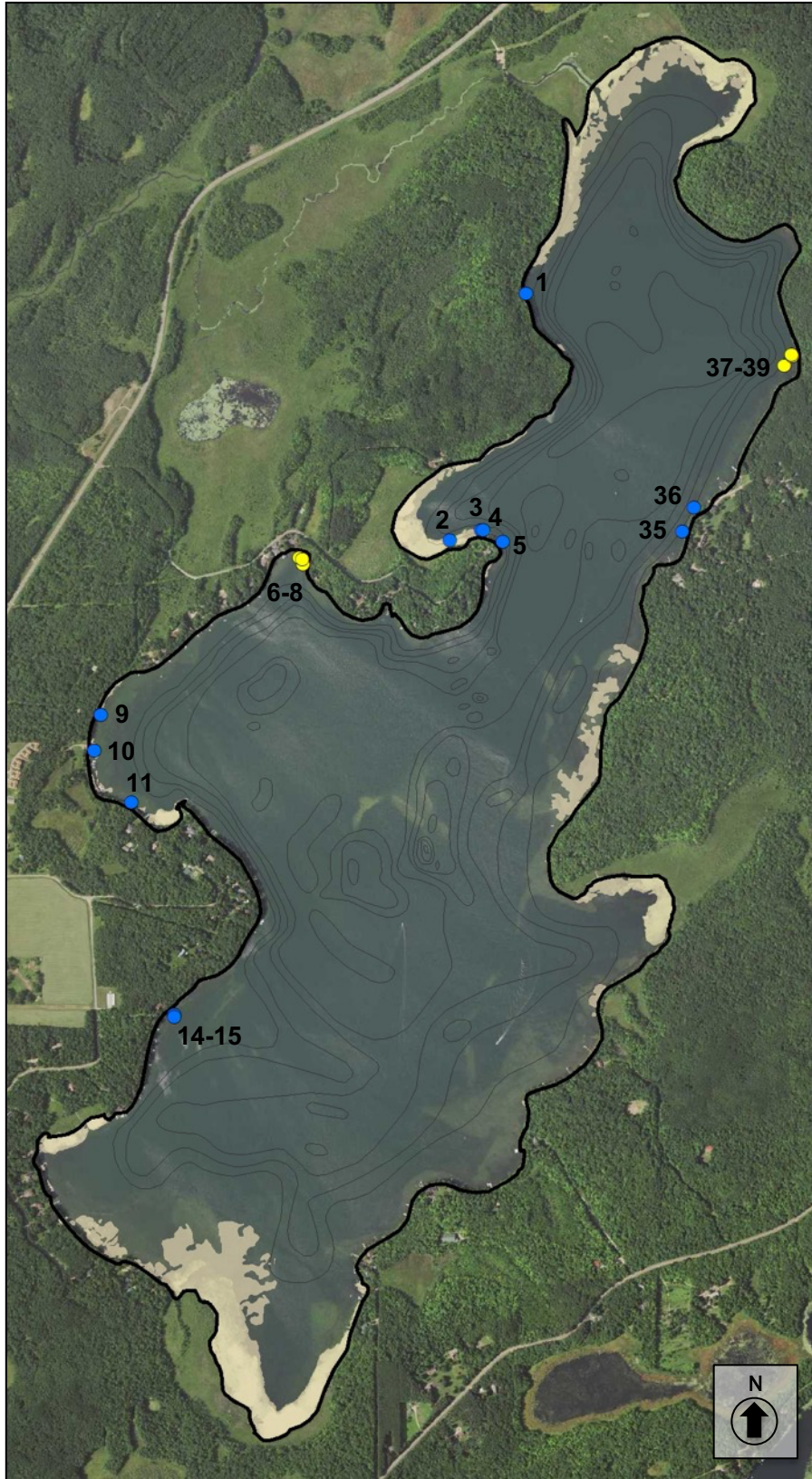
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2022 Eurasian Watermilfoil Manual Removal (Alternative Management)

Clearwater Lake (#18-0038)



Site	Depth (ft)	Lat*	Long*
1	4.6	46.407278	-93.910394
2	3.3	46.400691	-93.913199
3	4.9	46.400975	-93.912008
4	5.9	46.400973	-93.911938
5	5.9	46.400671	-93.911176
6	3.9	46.400012	-93.918848
7	4.3	46.400190	-93.919000
8	3.3	46.400148	-93.918873
9	2.6	46.395937	-93.926547
10	3.0	46.394989	-93.926789
11	2.0	46.393638	-93.925345
14	4.6	46.387995	-93.923584
15	4.3	46.387953	-93.923585
35	5.2	46.400991	-93.904267
36	4.9	46.401635	-93.903838
37	4.9	46.405429	-93.900425
38	3.9	46.405685	-93.900123
39	4.6	46.405735	-93.900170

The points marked with yellow are in identified treatment plots. EWM in these areas was light, but there were substantially more plants than marked with points. If the lake group decides to treat these areas with herbicide (recommended), the yellow points will not require hand-pulling.

* GPS coordinate file (.gpx) provided to client along with report



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Online Resources & Contacts

Minnesota Administrative Rules for Aquatic Plant Management

<https://www.revisor.mn.gov/rules/?id=6280>

Minnesota DNR – Aquatic Plant Management Regulations & Permit Application Forms

<http://www.dnr.state.mn.us/apm/index.html>

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