

## 2021 Eurasian Watermilfoil Delineation

**Clearwater Lake** (#18-0038)  
Crow Wing County, MN

Surveyed September 13, 2021



### Survey, Analysis, and Reporting by:

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**Certified Lake Manager**  
[www.NALMS.org](http://www.NALMS.org)

## *Purpose of Survey*

This late-summer survey was designed to locate and delineate areas of Eurasian watermilfoil (EWM) in designated portions of Clearwater Lake (#18-0038) where EWM was found 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*

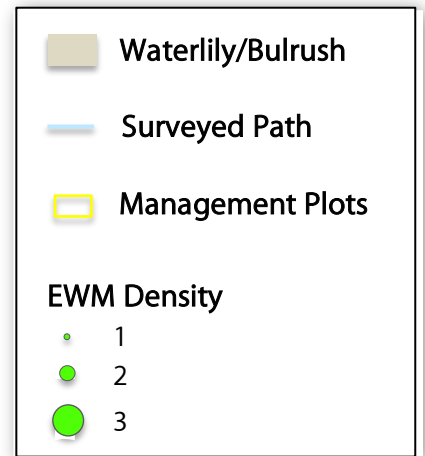
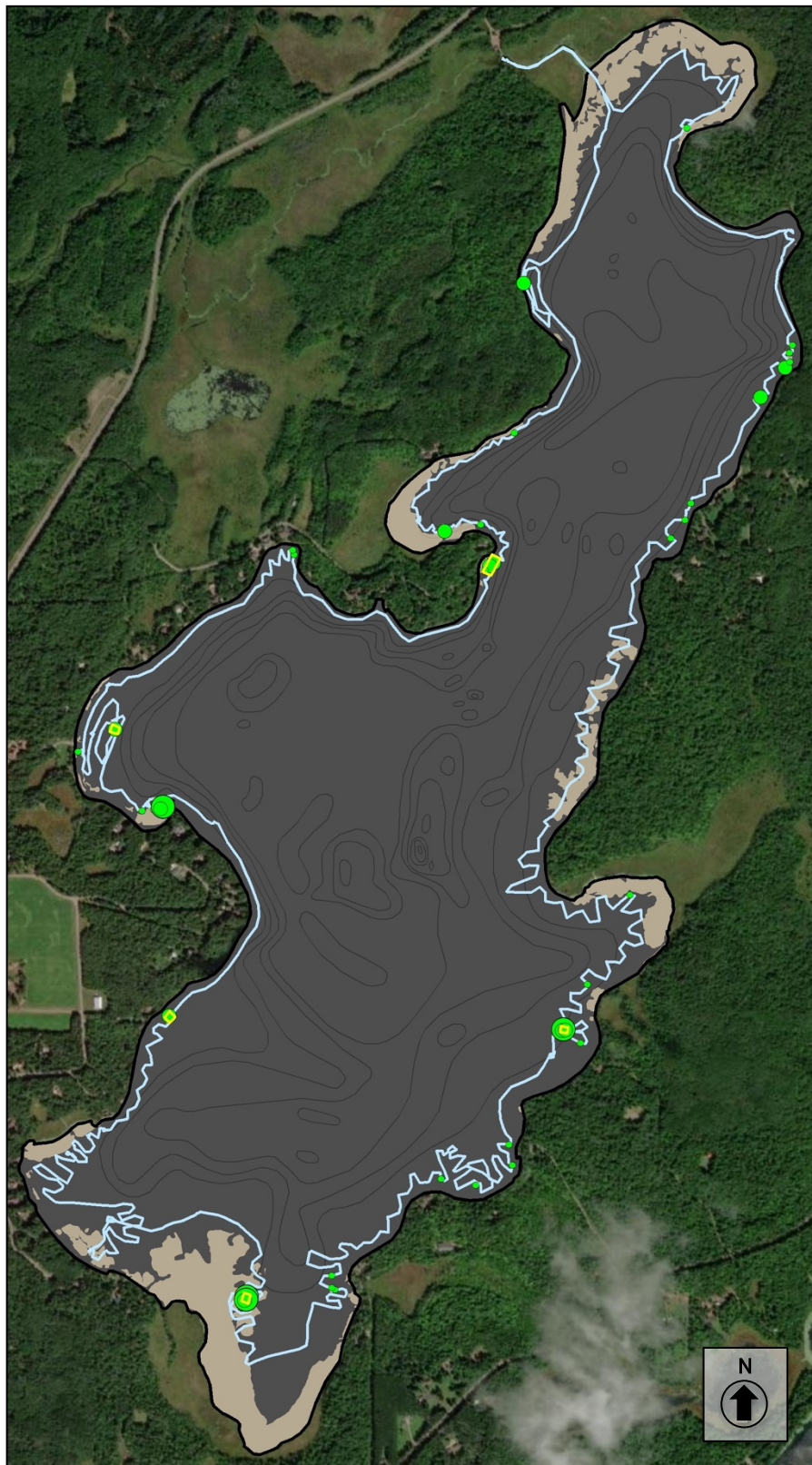
### **EWM Delineation Survey**

Freshwater Scientific Services surveyed Clearwater Lake on Sept 13, 2021. During this survey, we navigated a meandering path over the designated 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.

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

## 2021 Eurasian Watermilfoil Delineation Survey

Clearwater Lake (#18-0038)



**Surveyed:** Sept 13, 2021  
**Surveyor:** JA Johnson  
**Methods:** Visual, Sonar, Rake



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## 2021 Eurasian Watermilfoil Management Plots

### Clearwater Lake (#18-0038)



### Potential Management Plots

Plot	Acres	Mean Depth (ft)	Mean EWM Density (1-3)
1	0.19	4.2	1.7
2	0.12	5.9	2.0
3	0.13	4.0	2.0
4	0.13	3.0	2.7
5	0.10	5.0	2.3

**Total 0.67**

All of these plots are very small and will be difficult to treat effectively due to high dilution and drift of any applied herbicide. If you decide to pursue herbicide treatment of any plots, discuss options for treating small plots with your hired applicator.

Plots 1, 2, and 3 have only a few very small patches (2-3 feet across); plots 4 and 5 have larger and denser patches of EWM (20-30 feet across). There is an additional dense patch of EWM south of plot 2 where the property owner has requested no herbicide treatment.

### Alternative Management Strategy

Manual removal of EWM by divers would be a feasible and effective management strategy for the identified areas of EWM. Hand-pulling would also allow for removal of solitary plants located outside of identified plots and surgical removal of EWM in areas adjacent to lilies, bulrush, and other desirable plants. The DNR would still require a permit for manual removal – contact your AIS specialist for additional details.

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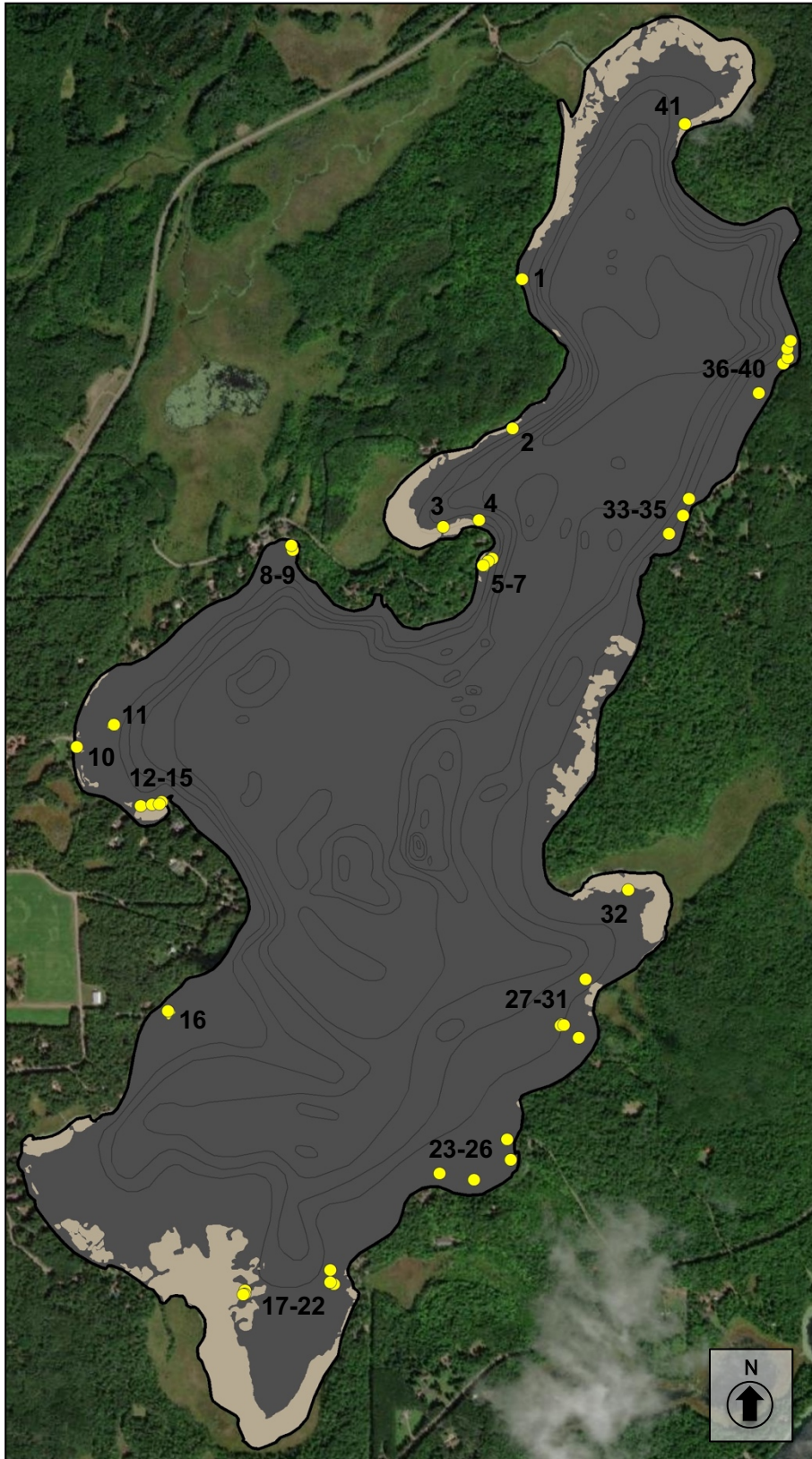
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## 2021 Eurasian Watermilfoil Manual Removal (Alternative Management) Clearwater Lake (#18-0038)



Site	Depth (ft)	Lat	Long
1	6.6	46.407238	-93.910343
2	4.9	46.403342	-93.910645
3	3.9	46.400765	-93.913200
4	4.9	46.400955	-93.911862
5	4.9	46.399954	-93.911350
6	4.9	46.399875	-93.911500
7	2.6	46.399767	-93.911694
8	3.0	46.400112	-93.918862
9	2.6	46.400229	-93.918918
10	1.0	46.394925	-93.926898
11	5.9	46.395516	-93.925514
12	2.0	46.393406	-93.924468
13	5.9	46.393448	-93.924041
14	4.9	46.393520	-93.923693
15	4.9	46.393466	-93.923764
16	3.9	46.388074	-93.923351
17	3.3	46.380823	-93.920327
18	3.0	46.380729	-93.920343
19	2.6	46.380716	-93.920391
20	5.2	46.381016	-93.916999
21	5.2	46.381063	-93.917133
22	4.9	46.381382	-93.917128
23	3.9	46.383937	-93.913060
24	2.3	46.383778	-93.911756
25	3.0	46.384309	-93.910387
26	2.3	46.384845	-93.910540
27	2.6	46.387509	-93.907881
28	5.2	46.387860	-93.908543
29	5.2	46.387820	-93.908566
30	4.6	46.387836	-93.908448
31	4.3	46.389030	-93.907645
32	3.0	46.391374	-93.906087
33	3.9	46.400652	-93.904711
34	4.6	46.401128	-93.904190
35	4.9	46.401568	-93.903974
36	3.3	46.404345	-93.901385
37	2.3	46.405115	-93.900476
38	2.6	46.405267	-93.900313
39	4.3	46.405501	-93.900336
40	4.3	46.405709	-93.900205
41	4.3	46.411319	-93.904283

Higher priority sites highlighted

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

## *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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