

## 2023 VLAWMO Lake Vegetation and Bathymetric Survey Proposal Gilfillan Lake

**November 16, 2022**

Prepared for:  
Vadnais Lake Area Water Management Organization

Prepared by:  
Ramsey County Parks & Recreation-Soil and Water Conservation Division (SWCD)

### Scope of Services

#### Macrophyte Surveys

Macrophyte surveys will consist of data sampling at evenly spaced geo-referenced points throughout the lake to characterize the diversity and abundance of aquatic vegetation using a point intercept survey method. SWCD staff members will also use Lowrance unit and transducer to generate data to produce a biovolume map showing concentration of aquatic vegetation growing in the lake.

#### Bathymetry Surveys

Bathymetric surveys are completed by connecting a Lowrance unit and transducer to the boat and following pre-determined transect lines across the lake to capture lake bottom depth data. This data is then processed, corrected using physically measured field data points where necessary, and then used to create new contour lines with the BioBase application. It may be completed in conjunction with macrophyte surveys when there is a clear enough sonar signal in the lake.

### GILFILLAN LAKE

#### Bathymetry and Macrophyte Survey Cost Estimate

Task	Cost/Hour	Hours	Cost
Boat Use	unit	-	\$50
BioBase Upload	unit	-	\$300
Lake Survey Prepwork	\$75	7	\$525
Field Work: 1, 8-hour day (2 people)	\$75	16	\$1,200
Data entry (Species & Depths)	\$75	4	\$300
GIS Post-processing and Mapping	\$75	2	\$150
Report Completion, Contour Generation	\$75	6	\$450
<b>TOTAL</b>		35	\$2,975

\*VLAWMO staff as the second staff for field work will reduce total by \$600 to \$2,375

## Deliverables

Under this proposal the field work, table of plants, BioBase report, and basic maps produced by BioBase will be completed under the not-to-exceed price. In addition, bathymetry, biovolume, and calculations on plant prevalence will be made available in a report.

The Bathymetric Report will include the following as funds allow:

- Description of Methods
- Tables of aquatic plants surveyed
- Bathymetry Map, Biovolume Map, numbered Survey point map to match with aquatic species tables, and shoreline polygons
- Shapefiles including biovolume, 2023 Contour Lines, and Point intercept location layers

## **2023 Eurasian Watermilfoil and Curly Leaf Pondweed Delineation, Post Removal Survey, and Turion Survey Proposal Birch Lake**

**November 16, 2022**

Prepared for:

Vadnais Lake Area Water Management Organization

Prepared by:

Ramsey County Parks & Recreation, SWCD

### **Scope of Services**

#### **Delineation Surveys**

Delineation surveys will be used to collect data on the abundance of aquatic vegetation, specifically Eurasian Watermilfoil (EWM) and Curly Leaf Pondweed (CLP), using a meandering survey method consistent with DNR requirements for permitting.

#### **Turion Survey**

The turion survey will be used to collect data on the abundance of the reproductive vegetative mass of CLP, using a predefined point intercept survey method consistent with DNR protocol. At each point an Ekman dredge will be dropped to take a lake sediment sample. These sediment samples are sifted and turions are separated, tested for viability, and counted.

#### **Bathymetry and Biovolume Surveys (optional)**

Bathymetric surveys are completed by connecting a Lowrance unit + transducer to the boat to capture lake bottom depth data. This data is then processed, corrected using physically measured field data points where necessary, and then used to create new contour lines with the BioBase application. It may be completed in conjunction with the delineation survey if desired. SWCD staff members will also use the Lowrance unit and transducer to generate data that produces a biovolume map showing concentration of aquatic vegetation growing in the lake if desired.

**BIRCH LAKE**

**Eurasian Watermilfoil and Curly Leaf Pondweed Delineation, Post Removal, and Turion Survey**

**Birch Lake Survey Estimate, May-July 2023**

Task	Cost/hr	Hours	Cost
Boat Use	unit	\$50/visit X 3 visits	\$150
Field Work, 3 days (2 people)*	\$75	24	\$1,800
GIS Post-processing and Mapping	\$75	4	\$300
<b>TOTAL</b>		<b>28</b>	<b>\$2,250</b>

\*Total field work cost would be \$900 if VLAWMO staff will be second person in the boat. Total survey cost would then be \$1,275.

**Deliverables**

The macrophyte report will include:

- Static map, in PDF format, of the delimitation of Eurasian Watermilfoil (EWM) and Curly Leaf Pondweed (CLP) shown as a survey point heat maps with rake density of EWM and CLP at each survey point.
- Shapefiles including EWM and CLP recommended removal area and point location layers
- Turion survey will include survey points and a spreadsheet with amount of viable, partial, and non-viable turions found

**Bathymetry, Biovolume, and Hybrid Milfoil Genetic Test Survey (optional)**

**Birch Lake Bathymetry, depth, genetic Survey Estimate, June-July 2023**

Task	Cost/hr	Hours	Cost
BioBase Upload	unit	-	\$300
GIS Post-processing and Mapping	\$75	4	\$300
Report/Contour Creation	\$75	3	\$225
EWM genetic testing	\$50/stem	Min 4	\$200 min
EWM sample collection, prep, & mail	\$75	2	\$150
<b>TOTAL</b>		<b>9</b>	<b>\$1,175</b>



**Deliverables**

The bathymetry report will include:

- Bathymetry and biovolume map
- Shapefile of 2022 contour lines and biovolume heat map
- Genotyping report from the Thum Lab at the University of Montana