

# Lily Lake

Macrophyte Survey 06/25/2024

This document contains a report detailing the methods and findings of a point-intercept survey of macrophyte vegetation collected on Lily Lake.

Prepared for:



Data collected and prepared by:



# Lily Lake Macrophyte Survey

June 25, 2024

## Methods:

The point-intercept method was used to assess the aquatic macrophyte community on Lily Lake (Figure 1) on June 25, 2024. Samples were taken at 41 evenly spaced georeferenced points (Figure 2). Data on depth, plant species, and abundance rank were recorded as displayed in Table 2 and 3 and in the maps of this report.

A double-tined metal rake and a block with metal tines attached to an 8-meter rope and 10-meter rope respectively, were used to collect specimens. At each point, the devices were thrown out approximately one meter and then dragged across the substrate for approximately one meter. Species were identified and given a ranking based on cover of rake tines (Table 1). Plant species that were floating in the water at the collection points were also counted.

Table 1.

<i>Abundance rankings for percent of tines</i>	
Percent Cover of Tines	Abundance Ranking
41-100	3
21-40	2
1-20	1

## Results:

Aquatic macrophytes were found at 26 of the 41 points surveyed (Figure 2). The four macrophyte species found were: Fern leaf pondweed (*Potamogeton robbinsii*), Small pondweed (*Potamogeton pusillus*), Coontail (*Ceratophyllum demersum*), and Large leaf pondweed (*Potamogeton amplifolius*). Three additional floating species included: Floating pondweed (*Potamogeton natans*), White water lily (*Nymphaea odorata*), and Yellow pond lily (*Nuphar lutea*). No non-native plants were found.

The species observed during the survey displayed the following frequency of occurrence as a percentage (Table 2).

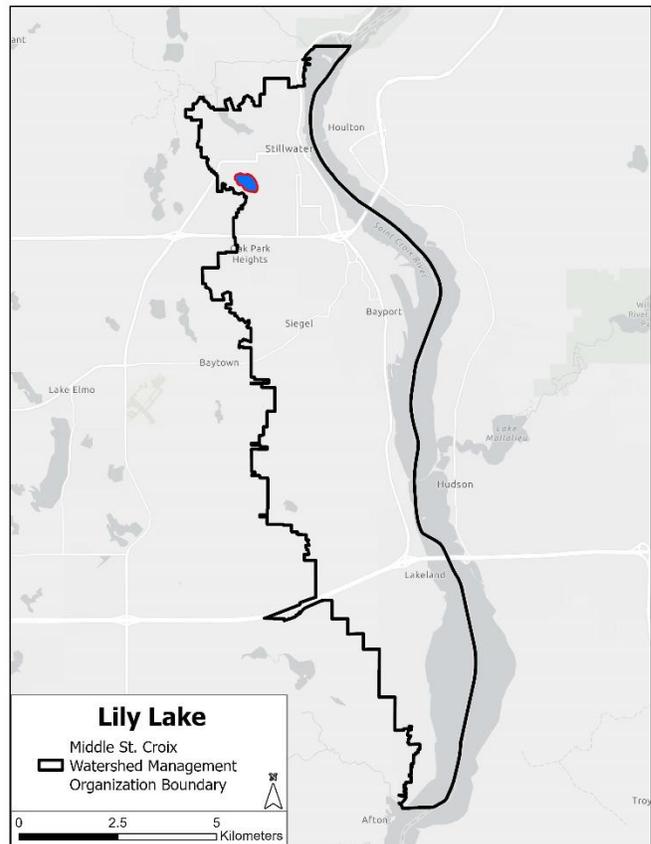


Figure 1. Location of Lily Lake outlined in red within Middle St. Croix Watershed Management Organization boundaries.

Frequency of occurrence for Fern leaf pondweed (*Potamogeton robbinsii*) was 45%, Small pondweed (*Potamogeton pusillus*) 33%, Coontail (*Ceratophyllum demersum*) 34%, and Large leaf pondweed (*Potamogeton amplifolius*) 2%. Floating species frequency of occurrence was: Floating pondweed (*Potamogeton natans*) 48%, White water lily (*Nymphaea odorata*) 29%, and Yellow pond lily (*Nuphar lutea*) 17%. Average rake abundance across all species was two.

Table 2. Percent occurrence or percent of vegetated sites and average abundance of aquatic plant taxa present during Lily Lake point-intercept survey.

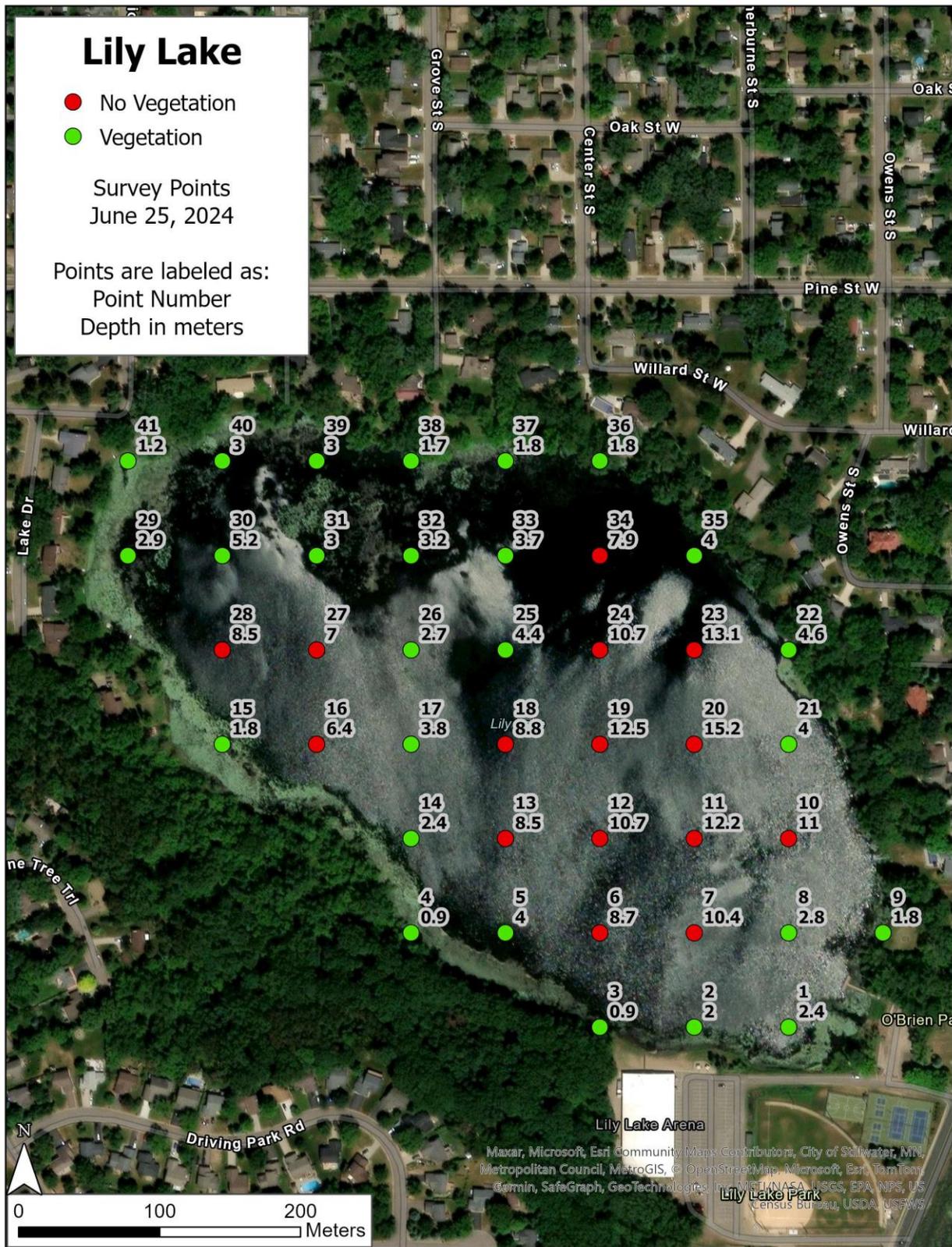
Species	Common Name	Scientific Name	Average Abundance (1-4 scale)	Frequency of Occurrence
1	Floating Pondweed	<i>Potamogeton natans</i>	2	48%
2	Fern Leaf Pondweed	<i>Potamogeton robbinsii</i>	1	45%
3	Small Pondweed	<i>Potamogeton pusillus</i>	2	33%
4	White Water Lily	<i>Nymphaea odorata</i>	2	29%
5	Coontail	<i>Ceratophyllum demersum</i>	1	24%
6	Yellow Pond Lily	<i>Nuphar lutea</i>	1	17%
7	Large Leaf Pondweed	<i>Potamogeton amplifolius</i>	1	2%

*Note: Frequency of occurrence represents the number of points a plant species was observed divided by the number of total sample sites in the littoral zone. Average abundance is calculated as the average of the abundance ranking for an individual species present.*

Table 3. Depth and vegetation abundance point survey results on June 25, 2024.

Sample ID	Depth (ft)	Depth (m)	<i>Potamogeton natans</i>	<i>Potamogeton robbinsii</i>	<i>Potamogeton pusillus</i>	<i>Nymphaea odorata</i>	<i>Ceratophyllum demersum</i>	<i>Nuphar lutea</i>	<i>Potamogeton amplifolius</i>
1	8	2.4	3	1			1		
2	6.5	2.0	3	1	1	3			
3	3	0.9		1	3	1			
4	3	0.9		3	1		1	2	
5	13	4.0	2				1		
6	28.5	8.7							
7	34	10.4							
8	9.2	2.8	2						
9	6	1.8	2	2	1	3		2	
10	36	11.0							
11	40	12.2							
12	35	10.7							
13	28	8.5							
14	8	2.4	3	1	1		1	1	
15	6	1.8	3	1		3	2	1	
16	21	6.4							
17	12.5	3.8	2				1		
18	29	8.8							
19	41	12.5							
20	50	15.2							
21	13	4.0	3	1		1			
22	15	4.6	2						
23	43	13.1							
24	35	10.7							
25	14.5	4.4		1	1				1
26	9	2.7	3	1	1			1	
27	23	7.0							
28	28	8.5							
29	9.5	2.9	2	2	1		2		
30	17	5.2					1		
31	10	3.0	1	1				1	
32	10.5	3.2	2	1	1				
33	12	3.7	2						
34	26	7.9							
35	13	4.0	2	1		1			
36	6	1.8	1	1	2	2			
37	6	1.8	1	2	2	3			
38	5.5	1.7	2	2	2	1		2	
39	10	3.0		1	2	1			
40	10	3.0	1		2	2	1		
41	4	1.2		1		2	2		
Average Abundance			2	1	2	2	1	1	1
Frequency of Occurrence %			48	45	33	29	24	17	2

Figure 2. Lily Lake vegetation point-intercept survey locations (N=41).



# McKusick Lake

Macrophyte Survey 06/24/2024

This document contains a report detailing the methods and findings of a point-intercept survey of macrophyte vegetation collected on McKusick Lake.

Prepared for:



Data collected and prepared by:



# McKusick Lake Macrophyte Survey

June 24, 2024

## Methods:

The point-intercept method was used to assess the aquatic macrophyte community on McKusick Lake (Figure 1) on June 24, 2024. Samples were taken at 42 evenly spaced georeferenced points (Figure 2). Data on depth, plant species, and abundance rank were recorded as displayed in Table 2 and 3 and in the maps of this report.

A double-tined metal rake and a block with metal tines attached to an 8-meter rope and 10-meter rope respectively, were used to collect specimens. At each point, the devices were thrown out approximately one meter and then dragged across the substrate for approximately one meter. Species were identified and given a ranking based on cover of rake tines (Table 1). Plant species that were floating in the water at the collection points were also counted.

Table 1.

<i>Abundance rankings for percent of tines</i>	
Percent Cover of Tines	Abundance Ranking
41-100	3
21-40	2
1-20	1

## Results:

Aquatic macrophytes were found at 41 of the 42 points surveyed (Figure 2). The six macrophyte species found were: Small pondweed (*Potamogeton pusillus*), Coontail (*Ceratophyllum demersum*), Canada waterweed (*Elodea canadensis*), **Curly-leaf pondweed (*Potamogeton crispus*)**, Large leaf pondweed (*Potamogeton amplifolius*), and Leafy pondweed (*Potamogeton foliosus*). Five additional floating species included: White water lily (*Nymphaea odorata*), Watermeal (*Wolffia spp.*), Duckweed (*Lemna major & minor*), Floating pondweed (*Potamogeton natans*) and Yellow pond lily (*Nuphar lutea*). Species highlighted in red font are non-native plants. One emergent species was present: Water willow (*Decodon verticillatus*).

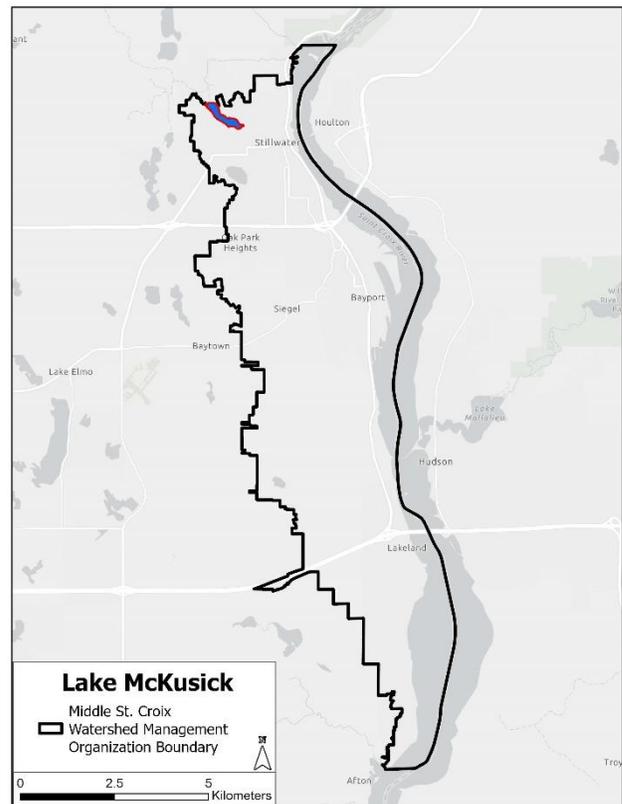


Figure 1. Location of McKusick Lake outlined in red within Middle St. Croix Watershed Management Organization boundaries.

The species observed during the survey displayed the following frequency of occurrence as a percentage (Table 2). Frequency of occurrence for Small pondweed (*Potamogeton pusillus*) was 88%, Coontail (*Ceratophyllum demersum*) 86%, Canada waterweed (*Elodea canadensis*) 52%, **Curly-leaf pondweed (*Potamogeton crispus*)** 19%, Large leaf pondweed (*Potamogeton amplifolius*) 5%, and Leafy pondweed (*Potamogeton foliosus*) 2%. Floating species frequency of occurrence was: White water lily (*Nymphaea odorata*) 48%, Watermeal (*Wolffia spp.*) 35%, Duckweed (*Lemna major & minor*) 21%, Floating pondweed (*Potamogeton natans*) 14%, and Yellow pond lily (*Nuphar lutea*) 2%. Average rake abundance across all species was one. One emergent species occurrence was: Water willow (*Decodon verticillatus*) 2%.

Table 2. Percent occurrence or percent of vegetated sites and average abundance of aquatic plant taxa present during McKusick Lake point-intercept survey.

Species	Common Name	Scientific Name	Average Abundance (1-4 scale)	Frequency of Occurrence
1	Small Pondweed	<i>Potamogeton pusillus</i>	3	88%
2	Coontail	<i>Ceratophyllum demersum</i>	2	86%
3	Canada Waterweed	<i>Elodea canadensis</i>	1	52%
4	White Water Lily	<i>Nymphaea odorata</i>	1	48%
5	Watermeal	<i>Wolffia spp.</i>	1	35%
6	Duckweed	<i>Lemna major &amp; minor</i>	1	21%
7	Curly-Leaf Pondweed	<i>Potamogeton crispus</i>	1	19%
8	Floating Pondweed	<i>Potamogeton natans</i>	1	14%
9	Large Leaf Pondweed	<i>Potamogeton amplifolius</i>	1	5%
10	Yellow Pond Lily	<i>Nuphar lutea</i>	1	2%
11	Water Willow	<i>Decodon verticillatus</i>	1	2%
12	Leafy Pondweed	<i>Potamogeton foliosus</i>	1	2%

*Note: Frequency of occurrence represents the number of points a plant species was observed divided by the number of total sample sites in the littoral zone. Average abundance is calculated as the average of the abundance ranking for an individual species present. Species in red text is an aquatic invasive.*

Table 3. Depth and vegetation abundance point survey results on June 24, 2024.

Sample ID	Depth (ft)	Depth (m)	<i>Potamogeton pusillus</i>	<i>Ceratophyllum demersum</i>	<i>Elothea canadensis</i>	<i>Nymphaea odorata</i>	<i>Wolffia</i> spp.	<i>Lemna major &amp; minor</i>	<i>Potamogeton crispus</i>	<i>Potamogeton natans</i>	<i>Potamogeton amplifolius</i>	<i>Nuphar lutea</i>	<i>Decodon verticillatus</i>	<i>Potamogeton foliosus</i>
1	6	1.8	1	3	2	1								
2	8	2.4	3	1	1	1				1	1			1
3	5.5	1.7	3	3	1	1								
4	8	2.4	2			1								
5	6.5	2.0	2	2	2					1	1			
6	7.5	2.3	2	1		2								
7	7	2.1	3	1	2	1								
8	4	1.2	2	3			2	1						
9	7	2.1	3	2	2									
10	6	1.8	3	3	1									
11	4.5	1.4	2	3		2	2	2						
12	6.5	2.0	2	2		2	1							
13	6.5	2.0	3	2			1							
14	7.5	2.3	3	3	1									
15	7.5	2.3	3	2	1									
16	6.5	2.0	3	2	1	1	1	1	1					
17	6.5	2.0	3	2	1	2	1							
18	9	2.7	3	1	1									
19	9	2.7	3	1	1									
20	6	1.8	2	2		2	1	1						
21	6	1.8	2	2	1	3	1	1						
22	7	2.1		3			2							
23	7	2.1	1	3	2		1							
24	6	1.8	2	3		1	1	1						
25	7	2.1		3	2		1	1	1					
26	4	1.2		3			2	2					1	
27	3	0.9		3			1	1						
28	6	1.8	3			1			2					
29	12	3.7	2	3										
30	6.5	2.0	3	2			2		1	1				
31	8	2.4	3	2		1								
32	15	4.6												
33	7	2.1	3	1	1	2						1		
34	6	1.8	2	2	2	1								
35	7	2.1	2	1										
36	7	2.1	3	1		1								
37	6	1.8	3						1	1				
38	7.5	2.3	3			1			1					
39	6.5	2.0	1	1	2	2								
40	7.5	2.3	3	1	1				2					
41	6	1.8	3		1				2	1				
42	7	2.1	3	1	1					1				
Average Abundance			3	2	1	1	1	1	1	1	1	1	1	1
Frequency of Occurrence %			88	86	52	48	36	21	19	14	5	2	2	2

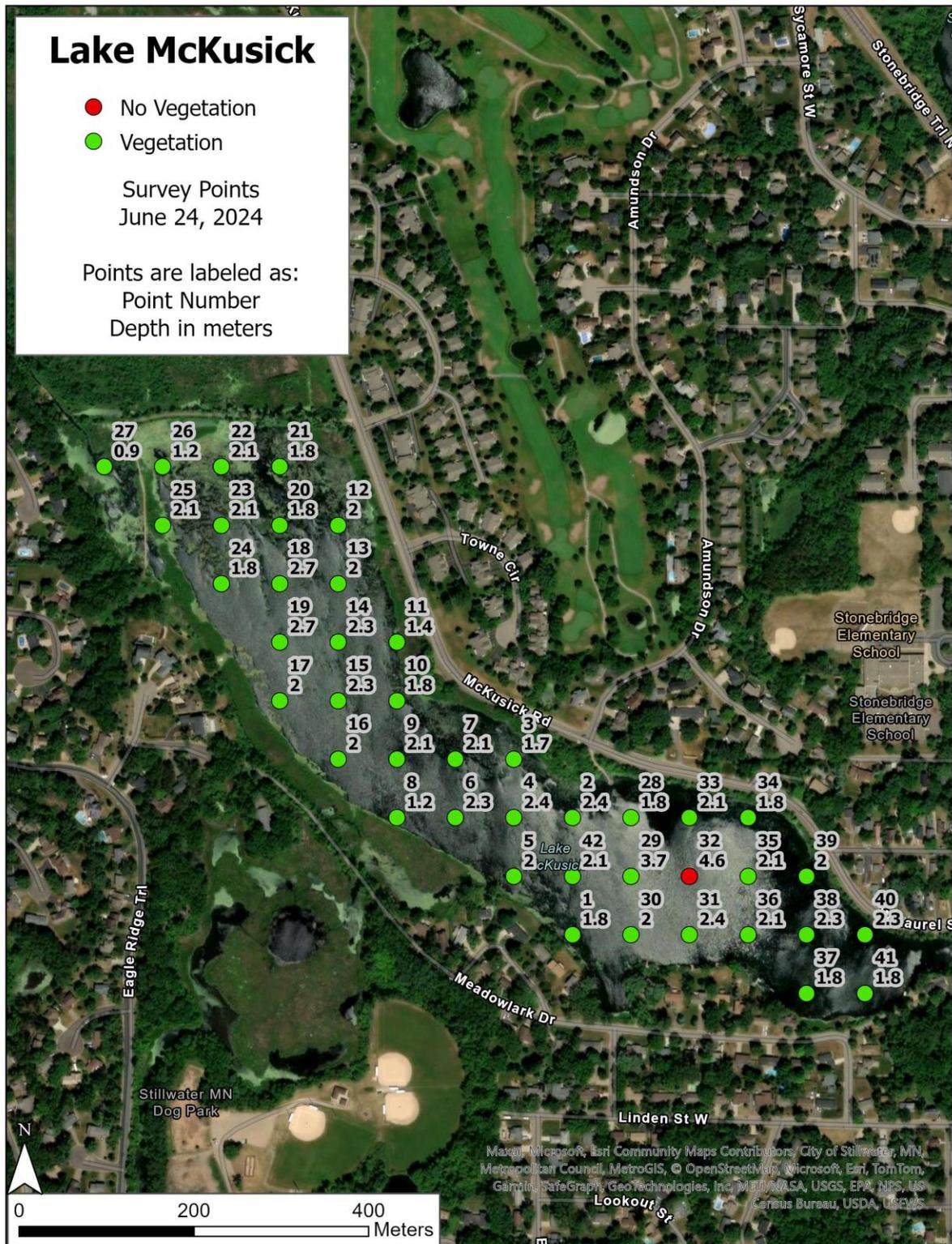


Figure 2. McKusick Lake vegetation point-intercept survey locations (N=42).