

Wycamp Lake Aquatic Plant Survey 2006

by Tip of the Mitt Watershed Council

**Completed by Kevin L. Cronk
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SUMMARY

Aquatic plants provide many benefits to aquatic ecosystems, but can become a recreational nuisance when growth is excessive. Excessive aquatic plant growth also has the potential to disrupt lake ecosystems, particularly when non-native species are introduced. To aid lake management efforts, the Little Traverse Bay Bands of Odawa Indians' Natural Resource Department contracted the Tip of the Mitt Watershed Council to conduct an aquatic plant survey on Wycamp Lake in northwest Emmet County, Michigan. The aquatic plant survey was conducted during the months of July through October in 2006. Aquatic plant specimens were collected and documented at 212 sites throughout the lake and major plant communities were also mapped. A total of 35 aquatic plant taxa were documented, all native to Michigan. The majority of Wycamp Lake contains aquatic vegetation (>83%). Muskgrass (*Chara spp.*) and common bladderwort (*Utricularia vulgaris*) were the most commonly collected species while muskgrass and swaying bulrush (*Scheonoplectus subterminalis*) most commonly dominated plant communities. At sample sites, aquatic plant densities were fairly evenly distributed among the seven classification categories that ranged from very light to very heavy whereas community mapping showed a greater percentage of heavy density. Areas of little or no vegetation primarily occurred in the eastern ends of the major basins, a phenomenon observed in other aquatic vegetation surveys.

INTRODUCTION

Background:

Aquatic plant communities provide numerous benefits to lake ecosystems. Aquatic plants provide habitat, refuge and act as a food source for a large variety of waterfowl, fish, aquatic insects, and other aquatic organisms. Like their terrestrial counterparts, aquatic plants produce oxygen as a by-product of photosynthesis. Aquatic plants utilize nutrients in the water that would otherwise be used by algae and potentially result in nuisance algae blooms. A number of aquatic plants, including bulrush, water lily, cattails, and pickerel weed help prevent shoreline erosion by absorbing wave energy and moderating currents. Soft sediments along the lake bottom are held in place by rooted aquatic plants.

Lake systems with unhealthy or reduced aquatic plant communities will likely experience declining fisheries due to habitat and food source losses. Aquatic plant loss may also cause a drop in daytime dissolved oxygen levels and increased shoreline erosion. If native aquatic plants are removed through harvesting or herbicide application, resistance of the naturally occurring plant community is weakened and can open the door for invasive species such as curly-leaf pondweed or Eurasian watermilfoil.

In spite of all the benefits associated with aquatic plants, some aquatic ecosystems suffer from overabundance, particularly where non-native nuisance species have been introduced. Excessive plant growth can create a recreational nuisance by making it difficult or undesirable to boat, fish and swim, but it also has the potential to cause aquatic ecosystem disruptions. In lakes plagued by nuisance plant species, it sometimes becomes necessary to develop and implement programs to control excessive growth and non-native species.

Aquatic plant management is a critical component of lake management. Thus, an important first step in developing a sound lake management program is to survey the aquatic plant communities to document species, abundance, density, and the presence or absence of non-native species. In 2006 the Little Traverse Bay Bands of Odawa Indians contracted with Tip of the Mitt Watershed Council to perform a comprehensive aquatic plant survey of Wycamp Lake. The results of this survey will provide the Little Traverse

Bay Bands of Odawa Indians' Natural Resources Department with an informational tool to assist in lake management. Watershed Council staff collected field data during the summer of 2006. Survey field methods, data management procedures, project results, and discussion of results are contained in this report.

Study area:

Wycamp Lake is located in the northwest tip of the Lower Peninsula of Michigan; in Bliss and Cross Village Townships of Emmet County. Based upon data acquired from the Emmet County GIS Department (2004), the shoreline measures 9.78 miles and lake surface area totals 704 acres. Peninsulas extending from the north and south divide Wycamp Lake near the middle into east and west basins. The western basin is elongate, measures approximately 340 acres, and narrows toward the western end. The eastern basin is circular in shape, measures approximately 363 acres, and contains numerous vegetated islets scattered throughout the northeast corner. Both basins are relatively shallow; the deepest areas (7 feet, MDNR) are located in the eastern end of the western basin.

Wycamp Lake is a drainage lake with water flowing into and out of the lake. The primary inlet to Wycamp Lake is Collins Creek (USGS, 1990), which flows into the east end of the lake. The only outlet is Wycamp Creek, which flows out of the west end of the lake. There is a dam at the outlet that allows the lake level to be regulated.

According to GIS files developed by the Watershed Council using watershed boundary and elevation data acquired from the State of Michigan, the Wycamp Lake watershed encompasses approximately 12,583 acres, which includes the lake area (Figure 1). By dividing the lake surface area into the watershed area (not including the lake), a watershed area to lake area ratio of 16.87 was calculated. Thus, there are nearly 17 acres of land in the watershed for each acre of Wycamp Lake water surface. The ratio provides a statistic for gauging susceptibility of lake water quality to changes in watershed land cover.

Land cover statistics were generated for the watershed using remotely sensed data from the year 2000, which was produced as part of the Coastal Great Lakes Land Cover project (Table 1). Based on these data, there is very little urban landcover within the

watershed (~1%) and a moderate amount of agriculture (~17%). The majority of the watershed's landcover is natural; consisting of forest, wetlands, and grassland.

Table 1. Wycamp Lake watershed land cover.

Land Cover Type	Acreage	Percent
Agriculture	2141.98	17.01
Barren	4.51	0.04
Forested	4308.70	34.22
Grassland	2343.61	18.61
Scrub/shrub	307.38	2.44
Urban	150.98	1.20
Water	699.31	5.55
Wetlands	2634.48	20.92
TOTAL	12590.95	100.00

Results from water quality data collected by the Little Traverse Bay Bands of Odawa Indians' Environmental Services indicate that Wycamp Lake's trophic status falls in the oligotrophic-mesotrophic category (LTBB, 2006). An oligotrophic-mesotrophic lake characteristically has low to moderate biological productivity.

METHODS

Watershed Council staff began the field data collection component of the Wycamp Lake aquatic plant survey on July 13, 2007 and completed field work on October 6, 2006. Aquatic vegetation was documented in all lake areas except where dense emergent growth limited access near the outlet in the northwest corner of the west basin and in the northeast corner of the east basin, which resulted in 689 of the total 704 acres being surveyed. The aquatic plant communities of Wycamp Lake were documented using two primary methods: 1) documenting aquatic plants at sample sites, and 2) mapping aquatic plant community lines. Both methods were carried out using a small boat. After performing surveys, data collected in the field was processed and used to produce a map of the lake's aquatic plant communities.

Documenting aquatic plants at sample sites:

Specimens were collected, identified, photographed and recorded in a notebook at 212 sample sites throughout the lake to document aquatic plant taxa. Sample site locations (Figure 2) were not random, but rather selected with the intent of collecting representative information on all aquatic plant communities currently inhabiting the lake. Transects across the lake were sampled at intervals that varied depending upon plant community changes that were observable from the surface. In areas where plant communities were not visible, sample sites were selected at regular intervals across the transect. Sampling was also conducted in areas of the lake with no visible plants to confirm the areal extent of plant communities.

At each sample site, the boat was anchored, water and muck depth measured, and GPS (global positioning system) data recorded. Water depth was measured using a nylon measuring tape with a 20-centimeter Secchi disc attached to prevent sinking into the muck. Muck depth was measured to the nearest half foot by pushing an oar into the substrate as far as possible; i.e., until encountering a solid substrate layer or until out of reach due to excessively deep muck and/or water depth. The location of each sampling station was recorded using a Trimble GeoExplorer3 GPS unit with a reported accuracy of 1-3 meters.

Plant specimens were collected using a sampling device consisting of two garden rake heads fastened together back to back with a length of rope attached. Using the sampling device, a minimum of three throws were made at each site, collecting from both sides of the boat. Sampling continued until collector was satisfied that all plant taxa present at the site were represented in the sample.

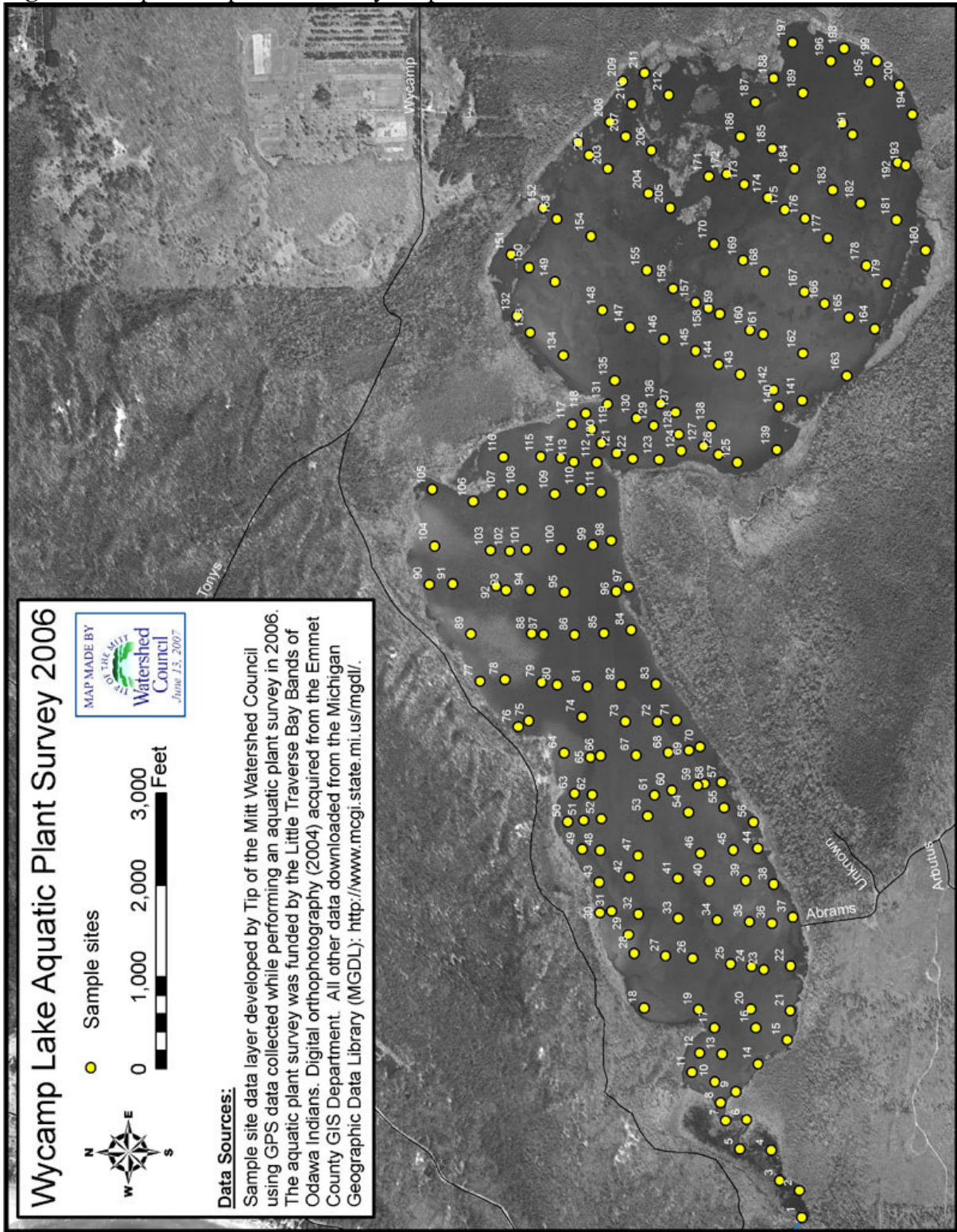
Specimens were identified to the lowest taxonomic level possible and representative samples of each species were laid out and photographed with a paper indicating the number assigned to that site. Taxon density was subjectively determined (in relation to all plant taxa collected in the sample) and recorded as light (L), medium (M), or heavy (H), but also including the sub-categories of very light (VL), medium-light (ML), medium-heavy (MH) and very heavy (VH) (Appendix A). Furthermore, overall plant density for the site was subjectively determined and noted using the same categorization system. If a specimen could not be identified immediately, it was stored in a sealed bag and identified later with the aid of taxonomic keys, mounted herbarium specimens, and, if necessary, assistance from other aquatic plant experts. All taxa names, relative taxa densities, overall site density and comments were recorded in a field notebook. If no plants were encountered during sampling, 'no vegetation' was recorded in the field notebook.

To assist mapping the extensive aquatic vegetation in Wycamp Lake, additional photographs were taken to document emergent vegetation. At each sample site a Ricoh Pro G3 GPS camera (accuracy = 3-10 meters) was used to take a minimum of four pictures; starting in a northerly direction and working around in a counter-clockwise direction. The lake riparian area was also comprehensively photographed with the GPS camera.

Mapping aquatic plant community lines:

Information about aquatic plant communities that were visible from the water surface was collected to improve the accuracy of delineations between plant communities. Aquatic plant community information was noted at sample sites and visible community lines were mapped using the Trimble GPS unit. Plant specimens were not collected when mapping community lines.

Figure 2. Map of sample sites on Wycamp Lake.



While sampling, comments about aquatic plant communities in the vicinity of the sample site were often recorded in the field notebook. Plant communities were described in terms of areal extent, shape, and density. Changes in plant communities between sample sites and the absence of vegetation in any direction were also noted.

Emergent vegetation and distinct plant beds were mapped directly by navigating around the feature being surveyed. Where feasible, the perimeter of the plant bed was followed as closely as possible in the boat and GPS data collected at major vertices to develop polygons representing plant beds. On occasion, emergent plants and distinct submergent plant communities were mapped in shallow areas by wading.

Data processing and map development:

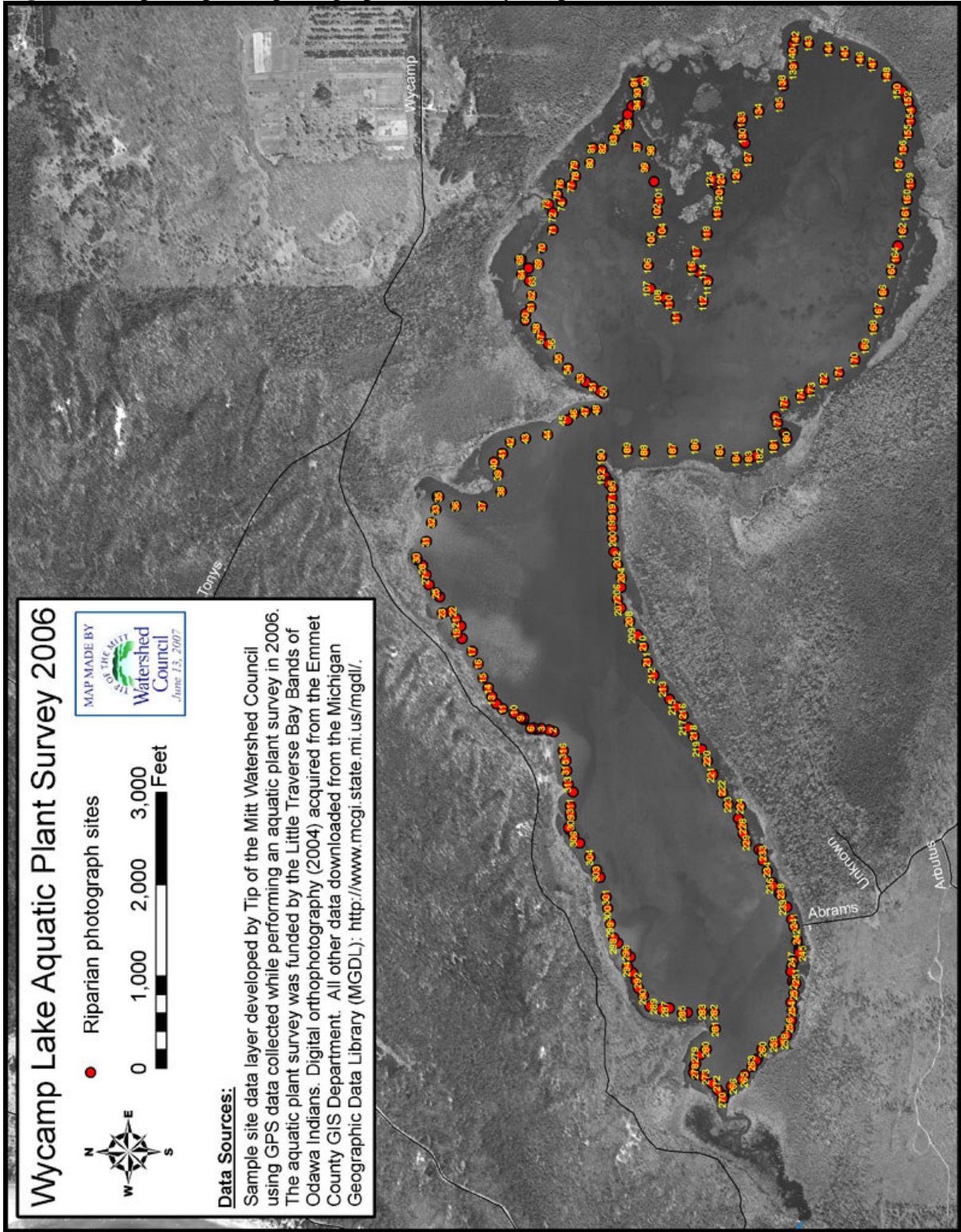
GPS data collected with the Trimble GeoExplorer3 were post-processed and exported into a GIS (Geographical Information System) file format using GPS Pathfinder Office 2.90 software. Two GIS data layers were developed using the field GPS data collected with the Trimble; a point layer using the GPS data collected at sample sites and a polygon layer using a combination of information collected at sample site points and plant community mapping line data. Where possible, polygons were developed directly from line features mapped with GPS in the field. Otherwise, polygons were created based on data collected at sample sites. All GIS work was performed using the ESRI GIS software package ArcView 9.2.

Digital photographs taken with the Ricoh Pro G3 GPS camera were processed and linked to a GIS data layer using GPS-Photo Link, Version 3.1.0 Ricoh Edition. Photographs were rotated and light levels adjusted as necessary. The date, time, and location (latitude and longitude in the WGS84 datum) were included when processing the photographs and appear on the “tagged” digital photographic files. The photographs were organized into two groups: riparian photographs and sample site photographs. Separate ESRI shapefiles were produced for both groups for display in a GIS. Riparian photographs were renamed in sequence around Wycamp Lake, starting at the boat ramp in the north side of the west basin and moving around the lake in a clockwise direction. Photographs taken at sample sites were renamed according to the sample site number.

Data collected at sample sites and recorded in the field notebook (water depth, muck depth, taxa names, taxa densities, areas of little/no vegetation, overall community density, and comments) were entered into a spreadsheet organized by site number. Columns were added to the spreadsheet to include number of taxa, dominant taxa, and the dominant community at each site. Data recorded in the spreadsheet were saved to a *.dbf format and imported into a GIS. The *.dbf file was joined to the sample site GIS point data layer, and then exported to a new GIS point data layer containing all attribute information collected in the field for each sample site. Upon completing GIS work to develop polygons representing plant communities and vegetation types, area statistics for specific plant communities and vegetation types were calculated.

The final products include both maps and statistics generated from digital map layers. All GPS, tabular and photographic data were combined in an ArcView project to develop interactive and hard-copy maps. Hard-copy maps depict sample site locations, riparian photograph locations, plant community density at sample sites, and dominant plant communities in the lake. The interactive map allows GIS users to view photographs taken at sample sites (by clicking on the point representing the sample site), which includes specimens collected in the field as well as all tabular data associated with the site. In addition, photographs of riparian areas can be interactively viewed in a GIS.

Figure 3. Map of riparian photograph sites on Wycamp Lake.



RESULTS

Sample site results:

A total of 35 aquatic plant taxa were collected or documented during the survey conducted on Wycamp Lake (Appendix A). Of the 212 locations sampled on the lake, aquatic plant specimens were found at all but nine sites. A total of 38 sites had little or no vegetation. The number of aquatic plant taxa encountered at a site ranged from zero to 15, with an average of 4.9 species per sample site. All taxa found were native to Michigan.

Table 2. Aquatic plant species occurrence at sample sites.

Genus and species	Common Name	# of sites	Occurrence*
<i>Utricularia vulgaris</i>	Common bladderwort	149	common
<i>Chara</i> spp.	Muskgrass	145	common
<i>Najas flexilis</i>	Slender naiad	114	common
<i>Potamogeton illinoensis</i>	Illinois pondweed	95	common
<i>Schoenoplectus subterminalis</i>	Swaying bulrush	77	common
<i>Nuphar variegata</i>	Yellow pond lily	70	common
<i>Schoenoplectus tabernaemontani</i>	Softstem bulrush	64	common
<i>Potamogeton gramineus</i>	Variable-leaf pondweed	62	common
<i>Potamogeton natans</i>	Floating-leaf pondweed	55	common
<i>Schoenoplectus acutus</i>	Hardstem bulrush	51	common
<i>Myriophyllum heterophyllum</i>	Variable-leaf watermilfoil	45	uncommon
<i>Nymphaea odorata</i>	White pond lily	25	uncommon
<i>Sagittaria</i> spp.	Arrowhead	24	uncommon
<i>Potamogeton praelongus</i>	Whitestem pondweed	16	uncommon
<i>Stuckenia pectinata</i>	Sago-pondweed	12	uncommon
<i>Brasenia schreberi</i>	Water-shield	11	uncommon
<i>Utricularia intermedia</i>	Flatleaf bladderwort	7	rare
<i>Potamogeton zosteriformis</i>	Flatstem pondweed	6	rare
<i>Carex</i> spp.	Sedge	3	rare
<i>Ceratophyllum demersum</i>	Coontail	3	rare
<i>Hippuris vulgaris</i>	Mare's Tail	2	rare
<i>Megalondonta beckii</i>	Water marigold	2	rare
<i>Myrica gale</i>	Sweetgale	2	rare
<i>Potamogeton richardonii</i>	Richardsons' pondweed	2	rare
<i>Potamogeton xhybrid</i>	Pondweed hybrid	2	rare
<i>Sparganium angustifolium</i>	Narrow leaf Bur-reed	2	rare
<i>Typhus</i> spp.	Cattail	2	rare
<i>Equisetum fluviatile</i>	Water horsetail	1	rare
<i>Juncus</i> spp.	Rush	1	rare
<i>Potamogeton amplifolius</i>	Broad-leaved pondweed	1	rare
<i>Potamogeton robbinsii</i>	Robbins' pondweed	1	rare
<i>Potamogeton strictifolius</i>	Narrow-leaf pondweed	1	rare
<i>Scirpus pungens</i>	Three-square bulrush	1	rare
<i>Sparganium macrocarpum</i>	Giant Bur-reed	1	rare
<i>Vallisneria americana</i>	Eel-grass	1	rare

*Occurrence categories determined by Watershed Council staff based on natural breaks: 1-10 = rare, 11-50 = uncommon, and 51+ = common.

Common bladderwort and muskgrass were the most commonly encountered species; collected at approximately 70% of sites (Table 2). Eight other species were commonly collected, including naiads, pondweeds, bulrushes, and pond-lilies. Six species were uncommonly encountered and 19 species rarely collected.

The most common dominant aquatic plant at the sample sites was muskgrass (Table 3). Bulrushes, pondweeds, naiads and pond-lilies were also found to commonly dominate the aquatic plant communities.

Table 3. Aquatic plant species dominance at sample sites.

Aquatic Plant Species	Common Name	Percent Dominance
<i>Chara</i> spp.	Muskgrass	27.5
<i>Schoenoplectus subterminalis</i>	Swaying bulrush	13.6
<i>Potamogeton illinoensis</i>	Illinois pondweed	11.8
<i>Najas flexilis</i>	Slender naiad	9.5
<i>Potamogeton gramineus</i>	Variable-leaf pondweed	7.5
<i>Schoenoplectus tabernaemontani</i>	Softstem bulrush	7.3
<i>Nymphaea odorata</i>	White pond lily	5.4
<i>Utricularia vulgaris</i>	Common bladderwort	4.5
<i>Schoenoplectus acutus</i>	Hardstem bulrush	3.6
<i>Potamogeton praelongus</i>	Whitestem pondweed	2.8
<i>Nuphar variegata</i>	Yellow pond lily	2.3
<i>Brasenia schreberi</i>	Water-shield	1.4
<i>Potamogeton natans</i>	Floating-leaf pondweed	0.7
<i>Utricularia intermedia</i>	Flatleaf bladderwort	0.6
<i>Potamogeton xhybrid</i>	Hybrid pondweed	0.5
<i>Myriophyllum heterophyllum</i>	Variable-leaf watermilfoil	0.2
<i>Potamogeton zosteriformis</i>	Flatstem pondweed	0.2
<i>Hippuris vulgaris</i>	Mare's Tail	0.2
<i>Potamogeton robbinsii</i>	Robbins' pondweed	0.2
<i>Stuckenia pectinata</i>	Sago-pondweed	0.2
<i>Sparganium angustifolium</i>	Narrow leaf Bur-reed	0.1

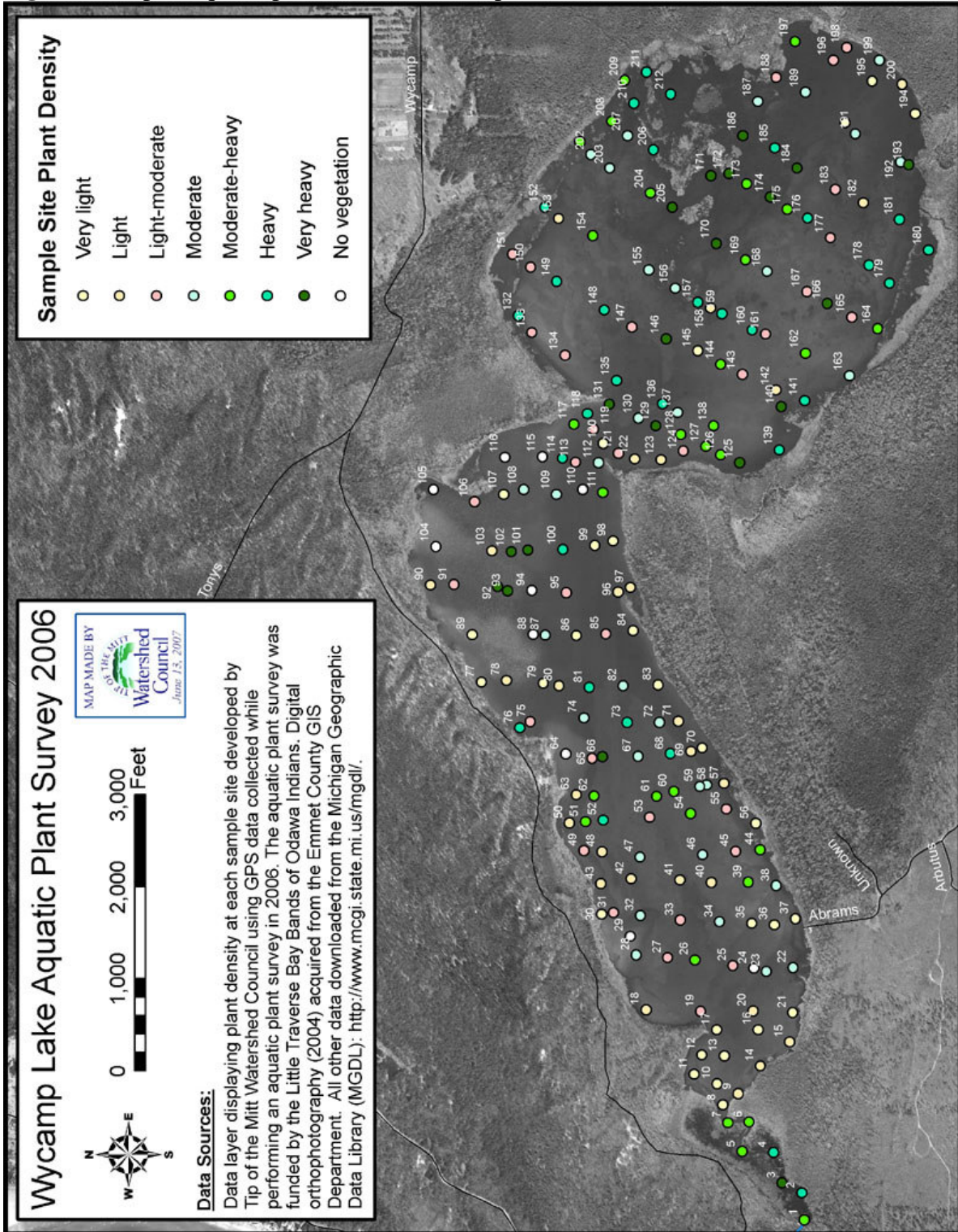
The *Potamogetonaceae* family had the greatest representation among taxa found in Wycamp Lake (11 taxa found), which is typical as *Potamogetonaceae* is the most speciose family of vascular plants in Michigan waters. Five different taxa in the *Cyperaceae* family were documented, though this number would likely be higher if specimens of the *Carex* genus had been identified to the species level.

Aquatic plant density was fairly evenly distributed among the various density categories. Nearly 50% of sites were within the moderate categories (LM, M, & MH) and the remaining 50% split between the light and heavy categories. Although statistics were not generated to compare basins, it appears that the east basin had heavier aquatic plant densities (Figure 4).

Table 4. Aquatic plant densities at sample sites.

Density Category	Number of sites	Percentage of sites
No Vegetation	9	4.25
Very Light (VL)	29	13.68
Light (L)	28	13.21
Light to Moderate (LM)	33	15.57
Moderate (M)	32	15.09
Moderate to Heavy (MH)	30	14.15
Heavy (H)	31	14.62
Very Heavy (VH)	20	9.43
TOTAL	212	100

Figure 4. Map of aquatic plant densities at sample sites.



Community mapping results:

Statistics generated from GIS files revealed that 114 of the 689 acres (~17%) mapped on Wycamp Lake contained little or no aquatic vegetation (Table 5 & Figure 5). Vegetated areas were divided into broad categories of emergent vegetation (bulrush, cattails, pond-lilies, etc.), submergent vegetation (muskgrass, pondweed, naiad, etc.), and a mix of the two. Of the 575 acres of Wycamp Lake that possessed aquatic vegetation, approximately 47% was dominated by submergent vegetation, 34% by emergent vegetation, and the remaining 19% consisted of a mix of emergent and submergent.

Table 5. Lake and vegetated area statistics.

Lake & Vegetation	Surface Area (acres)	Percent of Total Surface Area
Wycamp Lake	689.14	100.00
Aquatic vegetation	574.65	83.39
Little or no vegetation	114.48	16.61
Emergent vegetation	197.20	28.62
Submergent vegetation	272.75	39.58
Mixed emergent & submergent	104.70	15.19

Similar to dominance numbers from sample sites, the aquatic plant community mapping of Wycamp Lake showed muskgrass (mixed with pondweed) to be a dominant aquatic plant (Table 6). However, the abundance of swaying bulrush became much more evident when plant communities were mapped, which showed that it dominated the greatest percentage of the vegetated lake area.

There were differences between aquatic plant densities recorded at sample sites (Table 4) and densities from community mapping data (Table 7). In particular, the percentages of light and very light plant density were much lower in the community mapping data than in the sample site data. The combined percentage of these categories was ~11% for community mapping data and ~27% for sample site data. In addition, the percentage of heavy and very heavy plant density was found to be ~5% greater in the plant community mapping data.

Figure 5. Map of dominant aquatic plant communities of Wycamp Lake.

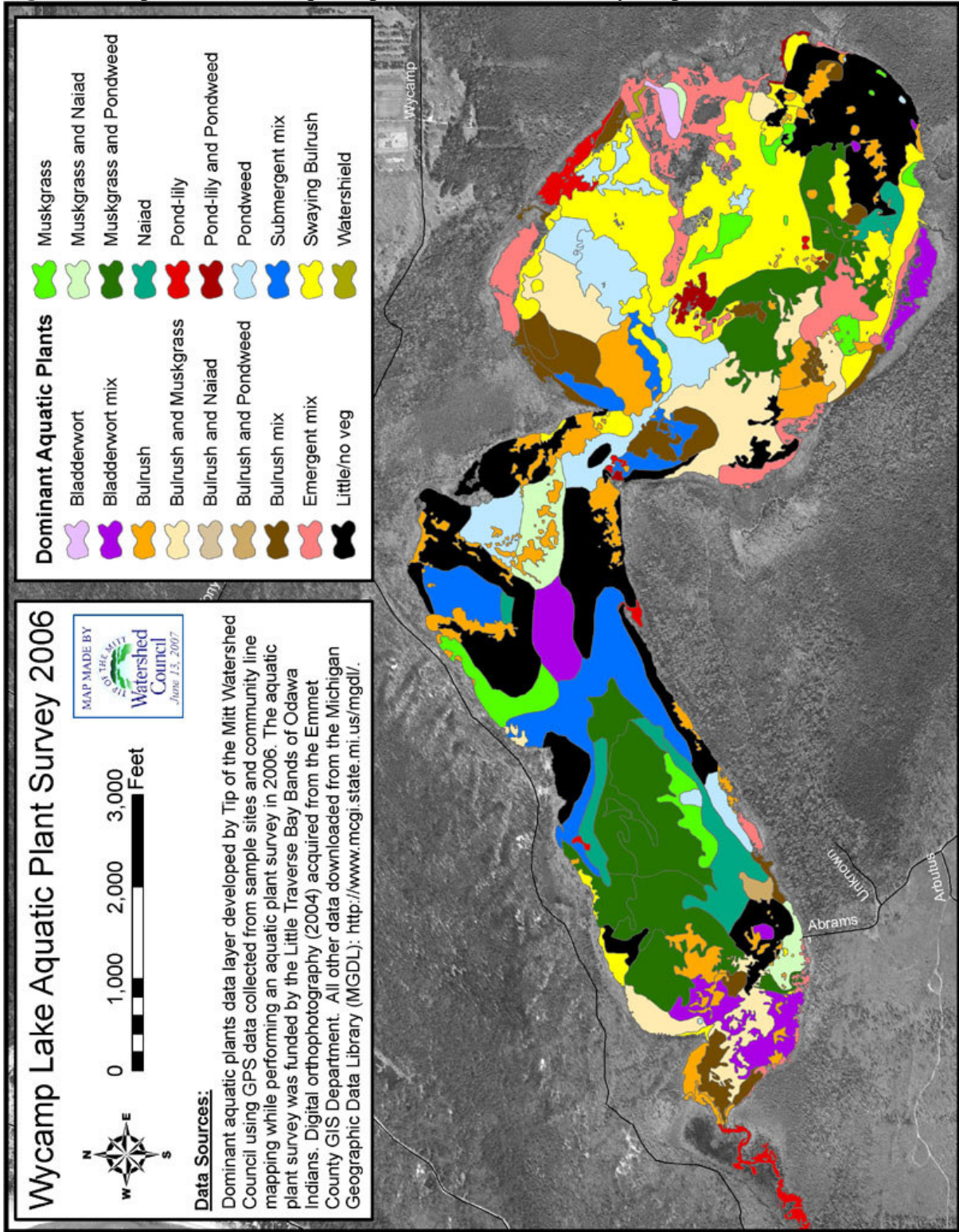


Table 6. Dominant aquatic plant community statistics.

Dominant Community	Acreage	Percentage
Swaying Bulrush	98.73	14.33
Muskgrass and Pondweed	97.05	14.08
Bulrush and Muskgrass	53.06	7.70
Bulrush	52.17	7.57
Submergent mix	47.37	6.87
Pondweed	43.84	6.36
Emergent mix	41.34	6.00
Bulrush mix	34.37	4.99
Bladderwort mix	28.07	4.07
Naiad	23.67	3.44
Muskgrass	21.04	3.05
Muskgrass and Naiad	14.41	2.09
Pond-lily	10.81	1.57
Pond-lily and Pondweed	3.94	0.57
Bladderwort	2.44	0.35
Bulrush and Pondweed	1.75	0.25
Watershield	0.56	0.08
Bulrush and Naiad	0.02	0.00
Little/no veg	114.48	16.61
TOTAL	689.14	100.00

Table 7. Aquatic plant community densities.

Density Category	Acres	Percent
No vegetation	114.48	16.61
Very Light	37.09	5.38
Light	36.27	5.26
Light to Moderate	140.71	20.42
Moderate	63.80	9.26
Moderate to Heavy	94.95	13.78
Heavy	80.28	11.65
Very Heavy	121.55	17.64
TOTAL	689.14	100.00

DISCUSSION

Wycamp Lake contains very abundant and diverse aquatic plant life. In terms of surface area, over 80% of the lake is vegetated. A total of 35 aquatic plant taxa were documented during the survey with an average of ~5 aquatic plant taxa found per site. Wycamp Lake possessed the greatest aquatic plant diversity of any lake surveyed by the Watershed Council (Table 8). As would be expected due to the inability of aquatic plants to survive in deep waters (> ~20 feet), the percent of lake with aquatic vegetation appears to be related to maximum water depth. Although aquatic vegetation statistics are limited to four lakes, these data show that the total number of taxa is not related to lake size or maximum depth.

Table 8. Statistics from aquatic plant surveys performed by Watershed Council.

Lake Name	Acreage	Maximum Depth (ft)	Percent with Vegetation	Number of Total Taxa	Number of Taxa/site
Black	10,133	50	13%	32	3.7
Long	388	61	9%	18	3.8
Millecoquin	1,116	12	95%	20	6.0
Wycamp	689	7	83%	35	4.9

Surprisingly, there were several relatively large areas of the lake with little or no vegetation. In general, the areas lacking vegetation occurred in deeper waters and on the eastern ends of the basins. As evidenced from other aquatic plant surveys conducted in the region, the eastern sides of lakes are often devoid of plants as a result of wave action generated by prevailing winds from the west and northwest. In addition, it was observed that the substrate in areas without plant growth contained less organic material and thus, had a lower muck depth. The fetch, wind, and wave action likely influence substrate conditions, which in turn influences the amount of plant growth.

Streams flowing into Wycamp Lake and a lake level control structure at the outlet have resulted in an accumulation of organic muck that is probably unnatural. Wycamp Lake is a drainage lake with water flowing into the east basin and flowing out an outlet in the west end of the west basin. Due to the dam built at the outlet, sediments and organic materials do not flow through the system, but are rather deposited in the lake. Muck depth was measured at sample sites and found to be two feet or more at nearly 70% of

sample sites. The accumulated organic material likely contributes to the extensive and dense aquatic vegetation that exists in the lake.

Ecosystem disruptions may also affect aquatic plant coverage, distribution and density. Human activity impacts all aspects of the lake ecosystem, from fisheries to phytoplanktonic algae blooms to aquatic plant growth. Recreational activities, such as boating damage aquatic plants and can lead to the introduction of invasive species. Human activity can also augment plant growth by adding excess nutrients to the water as a result of fertilizers, stormwater, and septic systems. There are only two private land owners on Wycamp Lake, whose impact is probably minimal. In addition, recreational boating, fishing and hunting probably have limited impacts on the Wycamp Lake ecosystem. Perhaps the greatest human impact to the ecosystem is the dam at the outlet.

Potentially more substantial in terms of ecosystem disruption, though often more subtle, is the impact of invasive (i.e., non-native or exotic) species introduced by humans. Non-native species have the potential to cause fundamental changes in an aquatic ecosystem, whether through predation on native species, displacement of native species, or disruption of the natural food chain. Fortunately, no aquatic invasive species were observed during this survey.

There are a number of factors that may have affected the quality of this survey's data and final products. In spite of sampling at 212 sites and subsequent community line mapping, some small or isolated plant communities may have been missed. Fairly rigorous sampling techniques and effort were employed, but there is a possibility that not all species were collected at each site. In addition, time did not allow for all plant communities to be directly mapped. Finally, it should be noted that water depths recorded in the field may not be reliable as there were substantial lake water level fluctuations in the time period that the survey was performed.

Watershed Council staff collected the most accurate field data possible. A considerable amount of time was devoted to quality control during data collection, data processing, and data analyses. The Watershed Council is confident that the final results in this report represent a high-quality product.

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Appendix A: Sample Site Data.

Site ID	Depth (feet)	Muck Depth (feet)	Brasenia schreberi	Carex spp	Cerato-phylum demersum	Chara spp.	Equi-setum fluviatile	Hippuris vulgaris	Juncus spp.
1	2.90	0.25	No	No	No	M	No	No	No
2	1.90	2.50	No	No	No	VL	No	No	No
3	2.50	3.00	No	No	No	L	No	No	No
4	1.80	4.00	No	No	No	No	No	No	No
5	2.80	4.00	No	No	No	L	No	No	No
6	2.80	3.00	No	No	No	L	VL	No	No
7	3.50	3.00	No	H	No	MH	No	No	No
8	1.00	0.75	No	No	No	L	No	No	No
9	0.70	1.00	No	No	No	L	No	No	No
10	1.20	1.50	No	No	No	L	No	No	No
11	0.25	1.50	No	No	No	LM	No	No	No
12	1.00	1.25	No	No	No	M	No	No	No
13	1.40	1.00	No	No	No	VL	No	No	No
14	0.80	2.50	No	No	No	M	No	No	No
15	0.90	0.75	No	No	No	L	No	No	No
16	1.60	1.50	No	No	No	LM	No	No	No
17	1.60	1.25	No	No	No	L	No	No	No
18	0.50	2.50	No	No	No	M	No	No	No
19	1.70	1.25	No	No	No	L	No	No	No
20	1.80	2.00	No	No	No	LM	No	No	No
21	1.00	0.25	No	No	No	VL	No	No	No
22	1.40	0.50	No	No	No	MH	No	No	No
23	2.10	2.00	No	No	No	LM	No	No	No
24	1.10	0.25	No	No	No	No	No	No	No
25	2.60	3.00	No	No	No	M	No	No	No
26	2.80	4.00	No	No	No	No	No	No	No
27	1.90	5.00	No	No	No	MH	No	No	No
28	2.00	4.00	No	No	No	M	No	No	No
29	0.80	0.25	No	No	No	No	No	No	No
30	1.10	0.25	No	No	No	L	No	No	No
31	2.00	2.50	No	No	No	M	No	No	No
32	3.00	1.75	No	No	No	L	No	No	No
33	2.80	5.00	No	No	No	M	No	No	No
34	2.20	5.00	No	No	No	MH	No	No	No
35	2.20	4.50	No	No	No	VL	No	No	No
36	1.60	0.25	No	No	No	No	No	No	No
37	1.00	0.25	No	No	No	VL	No	No	No
38	0.90	2.50	No	No	No	No	No	No	No
39	1.70	4.00	No	No	No	M	No	No	No
40	1.90	5.00	No	No	No	L	No	No	No
41	3.20	5.00	No	No	No	LM	No	No	No
42	2.00	5.00	No	No	No	H	No	No	No
43	1.50	1.25	No	No	No	LM	No	No	No
44	1.10	3.50	No	No	No	No	No	No	No
45	0.90	5.00	No	No	No	LM	No	No	No
46	1.80	5.00	No	No	No	H	No	No	No
47	2.10	5.00	No	No	No	MH	No	No	No
48	1.30	5.00	No	No	No	L	No	No	No
49	2.50	2.50	No	No	No	M	No	No	No

Site ID	Mega-lon-donta beckii	Myrica gale	Myrio-phyllum hetero-phyllum	Najas flexilis	Nuphar variegata	Nymphaea odorata	Potamo-geton ampli-folius	Potamo-geton gramin-eus	Potamo-geton illino-ensis
1	L	No	M	M	No	No	H	No	No
2	No	No	No	MH	No	VH	No	M	No
3	No	No	No	MH	L	VH	No	No	No
4	No	No	No	L	No	VH	No	No	No
5	No	No	LM	VL	LM	H	No	L	No
6	No	MH	No	LM	No	H	No	No	No
7	No	M	No	L	L	H	No	No	L
8	No	No	No	VL	No	No	No	VL	No
9	No	No	No	L	L	No	No	No	No
10	No	No	No	No	No	No	No	No	No
11	No	No	No	No	No	No	No	No	No
12	No	No	No	No	No	No	No	No	No
13	No	No	No	No	No	No	No	No	No
14	No	No	No	No	L	No	No	No	No
15	No	No	No	VL	No	No	No	M	No
16	No	No	No	No	No	No	No	No	No
17	No	No	No	No	No	No	No	No	No
18	No	No	No	No	No	No	No	No	No
19	No	No	No	No	L	No	No	No	MH
20	No	No	No	VL	No	No	No	No	No
21	No	No	No	No	No	No	No	No	No
22	No	No	No	VL	VL	No	No	MH	No
23	No	No	No	No	L	No	No	No	No
24	No	No	No	No	No	No	No	No	No
25	No	No	No	No	L	No	No	No	No
26	No	No	No	No	No	No	No	No	L
27	No	No	No	M	No	No	No	No	No
28	No	No	No	No	No	No	No	No	No
29	No	No	No	No	No	No	No	No	No
30	No	No	VL	No	No	No	No	No	No
31	No	No	No	No	No	No	No	No	LM
32	No	No	No	No	No	No	No	No	MH
33	No	No	L	No	No	No	No	No	No
34	No	No	No	LM	No	No	No	No	LM
35	No	No	No	No	No	No	No	No	No
36	No	No	No	No	No	No	No	No	VL
37	No	No	No	VL	No	No	No	No	No
38	No	No	No	H	No	No	No	LM	No
39	No	No	LM	VL	L	No	No	L	No
40	No	No	LM	MH	No	No	No	No	No
41	No	No	No	No	No	No	No	L	No
42	No	No	No	VL	No	No	No	H	No
43	No	No	No	No	L	No	No	No	No
44	No	No	VL	M	LM	No	No	No	No
45	No	No	L	M	No	No	No	No	No
46	No	No	L	LM	No	No	No	M	No
47	No	No	No	VL	No	No	No	M	No
48	No	No	VL	MH	No	No	No	No	No
49	No	No	No	VL	No	No	No	M	No

Site ID	Potamogeton natans	Potamogeton prae-longus	Potamogeton richardsonii	Potamogeton robbinsii	Potamogeton strictifolius	Potamogeton zosteriformis	Potamogeton hybrid	Sagittaria spp.	Schoenoplectus acutus
1	M	No	No	No	No	No	No	L	No
2	VL	L	No	No	No	L	No	No	No
3	MH	No	No	No	No	No	No	No	No
4	H	No	No	No	No	No	No	No	No
5	L	No	No	No	No	No	No	M	M
6	L	No	No	No	No	No	No	L	No
7	L	No	No	No	No	No	No	No	No
8	No	No	No	No	No	No	No	No	No
9	No	No	No	M	No	No	No	L	M
10	No	No	No	No	No	No	No	No	No
11	VL	No	No	No	No	No	No	No	M
12	No	No	No	No	No	No	No	No	L
13	No	No	No	No	No	No	No	No	No
14	L	No	No	No	No	No	No	No	No
15	No	No	No	No	No	No	No	No	No
16	No	No	No	No	No	No	No	No	No
17	No	No	No	No	No	No	No	No	L
18	No	No	No	No	No	No	No	No	No
19	No	No	No	No	No	No	No	No	No
20	No	No	No	No	No	No	No	No	LM
21	No	No	No	No	No	No	No	No	No
22	MH	No	No	No	No	No	No	No	L
23	No	MH	No	No	No	No	No	No	No
24	No	No	No	No	No	No	No	No	No
25	No	M	No	No	No	No	No	No	M
26	No	M	No	No	No	No	No	No	M
27	No	L	No	No	No	No	No	No	No
28	No	M	No	No	No	No	No	No	No
29	No	No	No	No	No	No	No	No	No
30	No	No	No	No	No	No	No	No	No
31	No	M	No	No	No	No	No	No	L
32	No	M	No	No	No	No	No	No	No
33	No	M	No	No	No	No	No	No	No
34	No	No	No	No	No	No	No	No	No
35	No	No	No	No	No	No	No	No	No
36	No	No	No	No	No	No	No	No	No
37	No	No	No	No	No	No	No	No	No
38	H	No	No	No	No	No	No	No	No
39	No	MH	No	No	No	No	No	No	L
40	No	L	No	No	No	No	No	No	No
41	VL	LM	No	No	No	No	No	No	No
42	L	No	No	No	No	No	No	No	No
43	No	L	No	No	No	No	No	No	No
44	MH	MH	No	No	No	No	No	No	No
45	No	No	No	No	No	No	No	No	L
46	No	No	No	No	No	No	No	No	L
47	No	No	No	No	No	No	No	No	L
48	VL	No	No	No	No	No	No	No	No
49	No	No	No	No	No	No	No	No	No

Site ID	Schoeno- -plectus subterm- inalis	Schoeno- -plectus tabernae- montani	Scirpus pungens	Spar- ganium angust- ifolium	Spar- ganium macro- carpum	Stucken- ia pectinata	Typhus spp.	Utricu- laria inter- media	Utricu- laria vulgaris
1	MH	MH	L	No	No	No	No	No	L
2	No	No	No	No	No	No	No	No	L
3	No	No	No	No	No	No	No	No	VL
4	M	L	No	No	No	No	No	No	L
5	H	M	No	No	No	No	No	No	L
6	H	No	No	No	No	No	L	No	No
7	H	No	No	No	No	No	M	No	VL
8	No	No	No	No	No	No	No	No	L
9	No	M	No	No	No	VL	No	No	L
10	L	L	No	No	No	No	No	No	L
11	M	M	No	No	No	L	No	No	L
12	M	L	No	No	No	No	No	No	L
13	No	L	No	No	No	No	No	No	No
14	M	M	No	No	No	L	No	No	No
15	No	L	No	No	No	No	No	No	L
16	No	M	No	No	No	No	No	No	No
17	No	No	No	No	No	No	No	No	No
18	No	M	No	No	No	No	No	No	No
19	No	L	No	No	No	No	No	No	LM
20	No	LM	No	No	No	No	No	No	L
21	No	No	No	No	No	No	No	No	VL
22	L	L	No	No	No	VL	No	No	VL
23	No	No	No	No	No	No	No	No	M
24	No	No	No	No	No	No	No	No	No
25	No	M	No	No	No	No	No	No	LM
26	No	H	No	No	No	No	No	No	M
27	No	No	No	No	No	LM	No	No	L
28	No	No	No	No	No	No	No	No	L
29	No	No	No	No	No	No	No	No	No
30	No	No	No	No	No	No	No	No	VL
31	No	No	No	No	No	No	No	No	LM
32	No	L	No	No	No	No	No	No	L
33	No	No	No	No	No	No	No	No	No
34	No	No	No	No	No	No	No	No	LM
35	No	No	No	No	No	No	No	No	No
36	No	No	No	No	No	VL	No	No	VL
37	No	No	No	No	No	No	No	No	No
38	H	No	No	H	No	No	No	No	LM
39	No	MH	No	No	No	No	No	No	LM
40	No	No	No	No	No	No	No	No	No
41	No	No	No	No	No	No	No	No	No
42	No	No	No	No	No	No	No	No	No
43	No	No	No	No	No	No	No	No	No
44	M	No	No	No	No	No	No	No	L
45	No	No	No	No	No	No	No	No	VL
46	No	No	No	No	No	No	No	No	No
47	No	LM	No	No	No	No	No	No	L
48	No	No	No	No	No	No	No	No	No
49	No	No	No	No	No	No	No	No	VL

Site ID	Valisneria americana	Little/no Vegetation	Number of Taxa	Plant Community Density	Dominant Plant Community
1	No	No	11	MH	Lily
2	VL	No	9	H	Lily
3	No	No	6	VH	Lily
4	No	No	4	H	Lily
5	No	No	9	MH	Lily
6	No	No	6	MH	Lily
7	No	No	7	MH	Lily
8	No	No	4	VL	Bladderwort and Muskgrass
9	No	No	9	L	Bulrush and Pondweed
10	No	No	4	VL	Bladderwort, Bulrush, and Muskgrass
11	No	No	7	VL	Bulrush
12	No	No	5	VL	Bulrush and Muskgrass
13	No	No	2	VL	Bulrush
14	No	No	6	L	Bulrush and Muskgrass
15	No	No	5	L	Pondweed
16	No	No	2	VL	Bulrush
17	No	No	2	VL	Bulrush and Muskgrass
18	No	No	2	L	Bulrush and Muskgrass
19	No	No	5	LM	Pondweed
20	No	No	5	L	Bulrush and Muskgrass
21	No	Yes	2	VL	Bladderwort and Muskgrass
22	No	No	10	M	Muskgrass and Pondweed
23	No	No	4	M	Pondweed
24	No	Yes	0	No Veg	None
25	No	No	6	LM	Bulrush, Muskgrass, and Pondweed
26	No	No	5	MH	Bulrush
27	No	No	5	LM	Muskgrass
28	No	No	3	M	Muskgrass and Pondweed
29	No	Yes	0	No Veg	None
30	No	No	4	VL	Bulrush and Muskgrass
31	No	No	4	LM	Muskgrass and Pondweed
32	No	No	5	M	Pondweed
33	No	No	3	LM	Muskgrass and Pondweed
34	No	No	4	M	Muskgrass
35	No	Yes	1	VL	Muskgrass
36	No	Yes	3	VL	Bladderwort and Pondweed
37	No	Yes	2	VL	Muskgrass and Naiad
38	No	No	6	M	Bulrush, Bur-reed, Naiad, and Pondweed
39	No	No	9	MH	Bulrush and Pondweed
40	No	No	4	L	Naiad
41	No	No	4	L	Muskgrass and Pondweed
42	No	No	4	L	Muskgrass and Pondweed
43	No	No	3	L	Muskgrass
44	No	No	7	MH	Pondweed
45	No	No	5	LM	Naiad
46	No	No	5	M	Muskgrass
47	No	No	6	M	Muskgrass
48	No	No	4	L	Naiad
49	No	No	4	LM	Chara, P. gramineus

Site ID	Depth (feet)	Muck Depth (feet)	Brasenia schreberi	Carex spp	Cerato-phylum demersum	Chara spp.	Equi-setum fluviatile	Hippuris vulgaris	Juncus spp.
50	2.20	3.00	No	No	No	VL	No	No	No
51	1.30	5.00	No	No	No	L	No	No	No
52	1.50	5.00	No	No	No	H	No	No	No
53	2.10	5.00	No	No	No	M	No	No	No
54	1.50	5.00	No	No	No	H	No	No	No
55	1.70	5.00	No	No	No	No	No	No	No
56	0.30	2.50	No	No	No	No	No	No	No
57	2.20	3.75	No	No	No	No	No	No	No
58	1.30	5.00	No	No	No	L	No	No	No
59	1.50	5.00	No	No	No	No	No	No	No
60	1.80	5.00	No	No	No	H	No	No	No
61	2.40	5.00	No	No	No	H	No	No	No
62	1.80	5.00	No	No	No	VL	No	No	No
63	3.00	1.75	No	No	No	M	No	No	No
64	1.10	0.25	No	No	No	No	No	No	No
65	4.10	4.00	No	No	No	M	No	No	No
66	2.10	5.00	No	No	No	L	No	No	No
67	1.90	5.00	No	No	No	MH	No	No	No
68	0.90	5.00	No	No	No	VH	No	No	No
69	2.80	4.00	No	No	No	LM	No	No	No
70	2.50	1.00	No	No	No	L	No	No	No
71	3.10	1.00	No	No	No	M	No	No	No
72	2.50	5.00	No	No	No	VL	No	No	No
73	2.10	5.00	No	No	No	H	No	No	No
74	5.60	2.50	No	No	No	L	No	No	No
75	2.40	0.75	No	No	No	L	No	No	No
76	1.20	0.25	No	No	No	H	No	No	No
77	1.10	0.25	No	No	No	L	No	No	No
78	3.30	2.20	No	No	No	L	No	No	No
79	4.40	1.00	No	No	No	VL	No	No	No
80	4.60	1.00	No	No	No	M	No	No	No
81	2.90	4.50	No	No	No	H	No	No	No
82	3.60	4.50	No	No	No	H	No	No	No
83	3.30	0.75	No	No	No	L	No	No	No
84	3.10	0.50	No	No	No	VL	No	No	No
85	5.30	2.00	No	No	No	VL	No	No	No
86	4.30	3.00	No	No	No	No	No	No	No
87	5.00	2.50	No	No	No	No	No	No	No
88	3.10	0.50	No	No	No	VL	No	No	No
89	1.10	0.50	No	No	No	VL	No	No	No
90	2.30	1.50	No	No	No	L	No	No	No
91	3.60	4.00	No	No	No	VL	No	No	No
92	2.70	1.50	No	No	No	H	No	No	No
93	2.20	2.50	No	No	No	No	No	No	No
94	3.30	1.00	No	No	No	No	No	No	No
95	4.40	0.90	No	No	No	No	No	No	No
96	4.10	1.75	No	No	No	VL	No	No	No
97	2.20	1.10	No	No	No	VL	No	No	No
98	2.80	0.50	No	No	No	L	No	No	No

Site ID	Mega-lon-donta beckii	Myrica gale	Myriophyllum heterophyllum	Najas flexilis	Nuphar variegata	Nymphaea odorata	Potamogeton amplifolius	Potamogeton gramineus	Potamogeton illinoensis
50	No	No	No	No	No	No	No	L	No
51	No	No	LM	H	No	No	No	No	No
52	No	No	L	MH	No	No	No	H	No
53	No	No	No	VL	No	No	No	M	No
54	No	No	MH	MH	No	No	No	No	No
55	No	No	L	LM	No	No	No	M	No
56	No	No	No	No	L	L	No	No	No
57	No	No	No	VL	No	No	No	M	No
58	No	No	MH	H	LM	No	No	No	No
59	No	No	LM	M	No	No	No	MH	No
60	No	No	L	L	No	No	No	No	No
61	No	No	VL	L	VL	No	No	No	MH
62	No	No	No	H	No	No	No	No	No
63	No	No	No	No	No	No	No	VL	No
64	No	No	No	No	No	No	No	No	No
65	No	No	No	No	No	No	No	L	No
66	No	No	H	H	No	No	No	M	No
67	No	No	L	VL	No	No	No	L	No
68	No	No	H	H	L	No	No	No	No
69	No	No	L	L	No	No	No	LM	No
70	No	No	No	No	No	No	No	No	No
71	No	No	No	VL	No	No	No	L	No
72	No	No	M	MH	L	No	No	LM	No
73	No	No	M	No	No	No	No	H	No
74	No	No	LM	VL	No	No	No	MH	M
75	No	No	No	No	No	No	No	MH	M
76	No	No	No	No	No	No	No	L	No
77	No	No	No	No	No	No	No	No	No
78	No	No	No	No	No	No	No	No	No
79	No	No	No	No	No	No	No	No	No
80	No	No	No	No	L	No	No	No	L
81	No	No	M	L	No	No	No	L	MH
82	No	No	MH	MH	L	No	No	M	L
83	No	No	VL	VL	No	No	No	No	VL
84	No	No	No	No	VL	No	No	No	No
85	No	No	L	VL	LM	No	No	No	M
86	No	No	No	No	No	No	No	No	L
87	No	No	L	No	L	No	No	No	MH
88	No	No	No	No	No	No	No	No	No
89	No	No	No	No	No	No	No	No	No
90	No	No	No	No	No	No	No	No	LM
91	No	No	No	No	No	No	No	M	M
92	No	No	No	L	L	No	No	No	H
93	No	No	MH	VH	No	No	No	L	No
94	No	No	No	No	No	No	No	No	No
95	No	No	No	VL	LM	No	No	No	M
96	No	No	No	No	No	No	No	M	M
97	No	No	VL	VL	No	No	No	M	M
98	No	No	No	No	No	No	No	No	No

Site ID	Potamogeton natans	Potamogeton praelongus	Potamogeton richardsonii	Potamogeton robbinsii	Potamogeton strictifolius	Potamogeton zosteriformis	Potamogeton hybrid	Sagittaria spp.	Schoenoplectus acutus
50	No	No	No	No	No	No	No	No	No
51	L	No	No	No	No	No	No	LM	No
52	No	No	No	No	No	No	No	No	No
53	No	No	No	No	No	No	No	No	No
54	No	No	No	No	No	No	No	No	No
55	No	No	No	No	No	No	No	No	No
56	No	No	No	No	No	No	No	No	No
57	LM	No	No	No	No	No	No	No	No
58	No	No	No	No	No	No	No	M	No
59	No	No	No	No	No	No	No	No	No
60	L	No	No	No	No	No	No	No	No
61	No	No	No	No	No	No	No	No	L
62	VL	No	No	No	No	No	No	No	No
63	No	No	No	No	No	No	No	No	No
64	No	No	No	No	No	No	No	No	No
65	No	No	No	No	No	No	No	No	No
66	M	No	No	No	No	No	No	MH	No
67	No	No	No	No	No	No	No	No	No
68	M	No	No	No	No	No	No	MH	No
69	No	No	No	No	No	No	No	No	No
70	No	No	No	No	No	No	No	No	No
71	No	No	No	No	No	No	No	No	No
72	No	No	No	No	No	No	No	LM	M
73	No	No	No	No	No	No	No	L	M
74	No	No	No	No	No	No	No	L	No
75	No	No	No	No	No	No	No	No	No
76	No	No	No	No	No	No	No	No	MH
77	No	No	No	No	No	No	No	No	No
78	No	No	No	No	No	No	No	No	No
79	No	No	No	No	No	No	No	No	No
80	No	No	No	No	No	No	No	No	No
81	No	No	No	No	No	No	No	L	No
82	No	No	No	No	No	No	No	M	No
83	No	No	No	No	No	No	No	No	No
84	No	No	No	No	No	No	No	No	No
85	No	No	No	No	No	No	No	No	No
86	No	No	No	No	No	No	No	No	No
87	No	No	No	No	No	No	No	No	No
88	No	No	No	No	No	No	No	No	No
89	No	No	No	No	No	No	No	No	No
90	No	No	No	No	No	No	No	No	No
91	No	No	No	No	No	No	No	No	No
92	No	No	No	No	No	No	No	No	No
93	No	No	No	No	No	No	No	M	L
94	No	No	No	No	No	No	No	No	No
95	No	No	No	No	No	No	No	No	No
96	No	No	No	No	No	No	No	No	No
97	No	No	No	No	No	No	No	No	No
98	No	No	No	No	No	No	No	No	No

Site ID	Schoeno- -plectus subterm- inalis	Schoeno- -plectus tabernae- montani	Scirpus pungens	Spar- ganium angust- ifolium	Spar- ganium macro- carpum	Stucken- ia pectinata	Typhus spp.	Utricu- laria inter- media	Utricu- laria vulgaris
50	No	No	No	No	No	No	No	No	No
51	No	No	No	No	No	No	No	No	No
52	No	No	No	No	No	No	No	No	No
53	No	No	No	No	No	No	No	No	No
54	No	No	No	No	No	No	No	No	No
55	No	No	No	No	No	No	No	No	VL
56	L	L	No	No	No	No	No	No	No
57	No	No	No	No	No	No	No	No	No
58	No	No	No	No	No	MH	No	No	L
59	No	No	No	No	No	No	No	No	L
60	No	LM	No	No	No	No	No	No	No
61	No	L	No	No	No	No	No	No	L
62	No	No	No	No	No	No	No	No	No
63	No	No	No	No	No	No	No	No	L
64	No	No	No	No	No	No	No	No	No
65	No	No	No	No	No	No	No	No	L
66	No	No	No	No	No	No	No	No	No
67	No	M	No	No	No	No	No	No	No
68	No	No	No	No	No	No	No	No	No
69	No	L	No	No	No	No	No	No	No
70	No	No	No	No	No	No	No	No	No
71	No	No	No	No	No	No	No	No	VL
72	No	No	No	No	No	No	No	No	LM
73	No	M	No	No	No	No	No	No	L
74	No	No	No	No	No	No	No	No	L
75	No	No	No	No	No	No	No	No	M
76	No	No	No	No	No	No	No	No	L
77	No	No	No	No	No	No	No	No	VL
78	No	No	No	No	No	No	No	No	VL
79	No	No	No	No	No	No	No	No	No
80	No	No	No	No	No	No	No	No	No
81	No	No	No	No	No	No	No	No	L
82	No	No	No	No	No	No	No	No	L
83	No	No	No	No	No	No	No	No	L
84	No	No	No	No	No	No	No	No	VL
85	No	No	No	No	No	No	No	No	M
86	No	No	No	No	No	No	No	No	VL
87	No	No	No	No	No	No	No	No	MH
88	No	No	No	No	No	No	No	No	No
89	No	No	No	No	No	No	No	No	No
90	No	No	No	No	No	No	No	No	No
91	No	No	No	No	No	No	No	No	LM
92	No	No	No	No	No	No	No	No	H
93	No	L	No	No	No	No	No	No	No
94	No	No	No	No	No	No	No	No	No
95	No	No	No	No	No	No	No	No	VL
96	No	No	No	No	No	No	No	No	L
97	No	No	No	No	No	No	No	No	L
98	No	No	No	No	No	No	No	No	No

Site ID	Valisneria americana	Little/no Vegetation	Number of Taxa	Plant Community Density	Dominant Plant Community
50	No	No	2	L	Pondweed
51	No	No	5	MH	Naiad
52	No	No	4	H	Muskgrass and Pondweed
53	No	No	3	LM	Muskgrass and Pondweed
54	No	No	3	MH	Muskgrass
55	No	No	4	LM	Pondweed
56	No	Yes	4	VL	Bulrush and Lily
57	No	No	3	L	Pondweed
58	No	No	7	M	Naiad
59	No	No	4	M	Pondweed
60	No	No	5	MH	Muskgrass
61	No	No	8	MH	Muskgrass
62	No	No	3	MH	Naiad
63	No	No	3	L	Muskgrass
64	No	Yes	0	No Veg	None
65	No	No	3	LM	Muskgrass
66	No	No	6	VH	Naiad and Watermilfoil
67	No	No	5	M	Muskgrass
68	No	No	6	H	Muskgrass
69	No	No	5	L	Muskgrass and Pondweed
70	No	Yes	1	VL	Muskgrass
71	No	Yes	4	L	Muskgrass
72	No	No	8	M	Naiad
73	No	No	7	H	Muskgrass and Pondweed
74	No	No	7	M	Pondweed
75	No	No	4	LM	Pondweed
76	No	No	4	H	Muskgrass
77	No	No	2	VL	Muskgrass
78	No	No	2	L	Muskgrass
79	No	No	1	VL	Muskgrass
80	No	No	3	L	Muskgrass
81	No	No	7	H	Muskgrass
82	No	No	9	M	Muskgrass
83	No	Yes	5	VL	Bladderwort and Muskgrass
84	No	Yes	3	VL	Bladderwort, Lily and Muskgrass
85	No	No	6	LM	Bladderwort and Pondweed
86	No	Yes	2	VL	Pondweed
87	No	No	4	M	Bladderwort and Pondweed
88	No	Yes	1	No Veg	Muskgrass
89	No	Yes	1	VL	Muskgrass
90	No	Yes	2	L	Pondweed
91	No	No	4	LM	Pondweed
92	No	No	5	VH	Bladderwort, Muskgrass, and Pondweed
93	No	No	6	VH	Naiad
94	No	Yes	0	No Veg	None
95	No	No	4	LM	Pondweed
96	No	No	4	L	Pondweed
97	No	No	6	L	Pondweed
98	No	Yes	1	VL	Muskgrass

Site ID	Depth (feet)	Muck Depth (feet)	Brasenia schreberi	Carex spp	Cerato- phyllum demersum	Chara spp.	Equi- setum fluviatile	Hippuris vulgaris	Juncus spp.
99	5.30	2.50	No	No	No	No	No	No	No
100	4.70	3.00	No	No	No	H	No	No	No
101	1.70	5.00	No	No	No	No	No	No	No
102	2.20	5.00	No	No	No	L	No	No	No
103	2.70	0.50	No	No	No	No	No	No	No
104	1.40	0.50	No	No	No	No	No	No	No
105	2.30	0.75	No	No	No	No	No	No	No
106	2.90	2.50	No	No	No	L	No	No	No
107	3.10	1.50	No	No	No	No	No	No	No
108	2.70	1.75	No	No	No	No	No	No	No
109	2.50	5.00	No	No	No	M	No	No	No
110	5.40	2.00	No	No	No	No	No	No	No
111	3.40	2.00	No	No	No	L	No	No	No
112	4.60	3.00	No	No	No	M	No	No	No
113	5.30	2.50	No	No	No	No	No	No	No
114	2.90	5.00	No	No	No	H	No	No	No
115	1.30	0.25	No	No	No	No	No	No	No
116	1.90	0.25	No	No	No	No	No	No	No
117	2.40	1.50	No	No	No	VL	No	No	No
118	2.60	2.80	No	No	No	L	No	No	No
119	3.70	3.50	No	No	No	No	No	No	No
120	5.10	2.50	No	No	No	No	No	No	No
121	3.20	4.00	No	No	No	L	No	No	No
122	2.30	1.25	No	No	No	L	No	No	No
123	1.60	0.75	No	No	No	L	No	No	No
124	1.90	1.00	No	No	No	LM	No	No	No
125	2.20	1.50	H	No	L	No	No	No	No
126	1.90	0.50	No	No	No	M	No	No	No
127	1.40	0.50	No	No	No	LM	No	No	No
128	1.10	5.00	No	No	No	MH	No	No	No
129	1.80	5.00	No	No	No	H	No	No	No
130	3.40	4.00	No	No	No	No	No	No	No
131	2.20	3.00	No	No	No	No	No	No	No
132	0.60	3.50	H	No	No	No	No	No	No
133	0.50	4.80	No	No	No	M	No	No	No
134	1.30	4.80	No	No	No	M	No	No	No
135	2.90	4.00	No	No	No	No	No	No	No
136	2.50	4.50	No	No	No	LM	No	No	No
137	2.40	4.50	No	No	No	LM	No	No	No
138	1.50	3.80	No	No	No	H	No	No	No
139	1.10	3.00	H	LM	No	No	No	No	No
140	1.80	4.70	No	No	No	M	No	No	No
141	1.10	4.50	M	No	No	M	No	No	No
142	1.90	4.80	No	No	No	L	No	No	No
143	1.20	4.80	No	No	No	MH	No	No	No
144	1.10	5.50	No	No	No	H	No	No	No
145	2.40	4.20	No	No	No	No	No	No	No
146	2.00	4.40	No	No	No	H	No	No	No
147	3.60	2.80	No	No	No	M	No	No	No

Site ID	Megalon-donta beckii	Myrica gale	Myriophyllum heterophyllum	Najas flexilis	Nuphar variegata	Nymphaea odorata	Potamogeton amplifolius	Potamogeton gramineus	Potamogeton illinoensis
99	No	No	No	No	L	No	No	No	No
100	No	No	L	H	No	No	No	No	M
101	No	No	M	VH	No	No	No	No	No
102	No	No	MH	H	L	No	No	H	H
103	No	No	No	No	No	No	No	No	No
104	No	No	No	No	No	No	No	No	No
105	No	No	No	No	No	No	No	No	No
106	No	No	No	L	L	No	No	M	M
107	No	No	No	No	No	No	No	No	L
108	No	No	L	H	No	No	No	LM	LM
109	No	No	No	M	LM	No	No	No	L
110	No	No	No	No	No	No	No	No	No
111	No	No	No	No	No	No	No	No	LM
112	No	No	No	VL	No	No	No	No	M
113	No	No	No	L	No	No	No	No	MH
114	No	No	No	H	LM	No	No	No	MH
115	No	No	No	No	No	No	No	No	No
116	No	No	No	No	No	No	No	No	No
117	No	No	No	No	LM	No	No	No	L
118	No	No	VL	L	No	No	No	No	M
119	No	No	No	L	No	No	No	No	LM
120	No	No	No	L	VL	No	No	No	No
121	No	No	No	L	No	No	No	No	M
122	No	No	No	No	No	No	No	M	M
123	No	No	No	No	No	No	No	No	LM
124	No	No	No	No	No	No	No	L	LM
125	No	No	No	M	No	No	No	L	L
126	No	No	No	L	No	No	No	No	LM
127	No	No	No	No	VL	No	No	L	No
128	No	No	No	MH	No	No	No	No	MH
129	No	No	No	H	H	No	No	MH	MH
130	No	No	No	M	No	No	No	No	MH
131	No	No	No	L	VL	No	No	No	LM
132	No	No	No	No	No	H	No	No	L
133	No	No	No	M	L	L	No	No	L
134	No	No	No	VL	No	No	No	No	M
135	No	No	No	VL	No	No	No	No	M
136	No	No	No	No	H	No	No	No	LM
137	No	No	No	L	No	No	No	No	MH
138	No	No	No	H	No	No	No	L	L
139	VL	No	No	H	M	H	No	L	L
140	No	No	No	No	MH	MH	No	No	LM
141	No	No	No	LM	M	No	No	No	M
142	No	No	No	No	No	No	No	No	No
143	No	No	No	No	No	No	No	No	LM
144	No	No	No	MH	No	No	No	No	L
145	No	No	No	VL	No	No	No	No	L
146	No	No	No	VH	No	No	No	H	L
147	No	No	No	No	L	No	No	No	M

Site ID	Potamogeton natans	Potamogeton prae-longus	Potamogeton richardsonii	Potamogeton robbinsii	Potamogeton strictifolius	Potamogeton zosteriformis	Potamogeton hybrid	Sagittaria spp.	Schoenoplectus acutus
99	No	No	No	No	No	No	No	No	No
100	No	No	No	No	No	No	No	No	No
101	No	No	No	No	No	No	No	M	MH
102	No	No	No	No	No	No	No	MH	H
103	No	No	No	No	No	No	No	No	L
104	No	No	No	No	No	No	No	No	No
105	No	No	No	No	No	No	No	No	No
106	L	No	No	No	No	No	No	No	No
107	No	No	No	No	No	No	No	No	No
108	No	No	No	No	No	No	No	No	No
109	No	No	No	No	No	No	No	No	M
110	No	No	No	No	No	No	No	No	No
111	No	No	No	No	No	No	No	No	M
112	VL	No	No	No	No	No	No	No	No
113	No	No	No	No	No	No	No	No	No
114	No	No	No	No	No	No	No	L	L
115	No	No	No	No	No	No	No	No	No
116	No	No	No	No	No	No	No	No	No
117	No	No	No	No	No	No	No	No	H
118	L	No	No	No	No	No	No	No	H
119	No	No	No	No	No	No	No	No	No
120	No	No	No	No	No	No	No	No	No
121	No	No	No	No	No	No	No	No	No
122	No	No	No	No	No	No	No	No	No
123	No	No	No	No	No	No	No	No	No
124	No	No	No	No	VL	No	No	No	L
125	No	No	No	No	No	No	No	No	No
126	No	No	No	No	No	No	No	No	MH
127	No	No	No	No	No	No	No	No	H
128	No	No	No	No	No	No	No	No	M
129	L	No	No	No	No	No	No	No	H
130	No	No	No	No	No	No	No	No	No
131	L	No	No	No	No	No	No	No	No
132	No	No	No	No	No	No	No	No	No
133	No	No	No	No	No	No	No	No	No
134	No	No	No	No	No	No	No	No	LM
135	L	No	No	No	No	No	No	No	L
136	No	No	No	No	No	No	No	No	No
137	No	No	No	No	No	No	No	No	LM
138	LM	No	No	No	No	No	No	No	M
139	No	No	No	No	No	LM	No	No	No
140	No	No	No	No	No	No	No	No	LM
141	No	No	No	No	No	No	No	No	H
142	No	No	No	No	No	No	No	No	L
143	No	No	No	No	No	No	No	No	No
144	No	No	No	No	No	No	No	No	No
145	No	No	No	No	No	No	No	No	No
146	No	No	No	No	No	No	No	No	No
147	L	No	No	No	No	No	No	No	No

Site ID	Schoenoplectus subterminalis	Schoenoplectus tabernaemontani	Scirpus pungens	Sparganium angustifolium	Sparganium macrocarpum	Stuckenia pectinata	Typhus spp.	Utricularia intermedia	Utricularia vulgaris
99	No	No	No	No	No	No	No	No	No
100	No	No	No	No	No	No	No	No	No
101	No	No	No	No	No	No	No	No	No
102	No	No	No	No	No	No	No	No	No
103	No	M	No	No	No	No	No	No	No
104	No	No	No	No	No	No	No	No	No
105	No	No	No	No	No	No	No	No	No
106	No	No	No	No	No	No	No	No	L
107	No	No	No	No	No	No	No	No	No
108	No	No	No	No	No	No	No	No	L
109	No	No	No	No	No	No	No	No	LM
110	No	No	No	No	No	No	No	No	No
111	No	H	No	No	No	No	No	No	L
112	No	No	No	No	No	No	No	No	LM
113	No	No	No	No	No	No	No	No	M
114	No	No	No	No	No	No	No	No	L
115	No	No	No	No	No	No	No	No	No
116	No	No	No	No	No	No	No	No	No
117	No	H	No	No	No	No	No	No	L
118	No	H	No	No	No	No	No	No	MH
119	No	L	No	No	No	No	No	No	No
120	No	No	No	No	No	No	No	No	No
121	LM	No	No	No	No	No	No	No	M
122	No	No	No	No	No	No	No	No	M
123	LM	No	No	No	No	No	No	No	L
124	No	L	No	No	No	No	No	No	LM
125	H	No	No	No	No	No	No	No	MH
126	MH	MH	No	No	No	L	No	No	MH
127	No	L	No	No	No	No	No	No	LM
128	No	M	No	No	No	M	No	No	No
129	MH	No	No	No	No	No	No	No	M
130	No	No	No	No	No	No	No	No	L
131	VH	H	No	No	No	No	No	No	No
132	H	H	No	No	No	No	No	No	MH
133	L	L	No	No	No	No	No	No	L
134	No	M	No	No	No	No	No	No	M
135	L	H	No	No	No	No	No	No	L
136	VH	M	No	No	No	No	No	No	L
137	LM	LM	No	No	No	No	No	No	LM
138	No	No	No	No	No	No	No	No	L
139	H	No	No	No	No	No	No	No	M
140	VH	LM	No	No	No	No	No	No	MH
141	H	H	No	No	No	No	No	No	M
142	No	L	No	No	No	No	No	No	VL
143	No	MH	No	No	No	No	No	No	M
144	MH	M	No	No	No	No	No	No	No
145	No	No	No	No	No	No	No	No	No
146	L	No	No	No	No	No	No	No	M
147	No	M	No	No	No	No	No	No	M

Site ID	Valisneria americana	Little/no Vegetation	Number of Taxa	Plant Community Density	Dominant Plant Community
99	No	Yes	1	VL	Lily
100	No	No	4	H	Muskgrass and Naiad
101	No	No	4	VH	Naiad
102	No	No	8	VH	Bulrush, Naiad, and Pondweed
103	No	No	2	L	Bulrush
104	No	Yes	0	No Veg	None
105	No	Yes	0	No Veg	None
106	No	No	7	LM	Pondweed
107	No	No	1	VL	Pondweed
108	No	No	5	M	Naiad
109	No	No	6	M	Muskgrass and Naiad
110	No	Yes	0	No Veg	None
111	No	No	5	MH	Bulrush
112	No	No	5	M	Muskgrass and Pondweed
113	No	No	3	LM	Pondweed
114	No	No	7	H	Muskgrass and Naiad
115	No	Yes	0	No Veg	None
116	No	Yes	0	No Veg	None
117	No	Yes	6	MH	Bulrush
118	No	No	8	H	Bulrush
119	No	No	3	LM	Pondweed
120	No	No	2	VL	Naiad
121	No	No	5	LM	Bladderwort and Pondweed
122	No	Yes	4	L	Bladderwort and Pondweed
123	No	Yes	4	L	Bulrush and Pondweed
124	No	Yes	7	LM	Bladderwort, Muskgrass, and Pondweed
125	No	No	7	VH	Bulrush and Watershield
126	No	No	8	MH	Bladderwort and Bulrush
127	No	No	6	MH	Bulrush
128	No	No	6	MH	Muskgrass, Naiad, and Pondweed
129	No	No	9	VH	Bulrush, Lily, Muskgrass, and Naiad
130	No	No	3	M	Pondweeds
131	No	No	6	VH	Bulrush
132	No	No	6	H	Bulrush, Lily, and Watershield
133	No	No	8	LM	Muskgrass and Naiad
134	No	No	6	LM	Bladderwort, Bulrush, Muskgrass and Pondweed
135	No	No	7	H	Bulrush
136	No	No	6	H	Bulrush
137	No	No	7	M	Pondweed
138	No	No	7	MH	Muskgrass and Naiad
139	No	No	11	H	Bulrush, Lily, Naiad, and Watershield
140	No	No	7	VH	Bulrush
141	No	No	9	H	Bulrush
142	No	Yes	4	L	Bulrush and Muskgrass
143	No	No	4	LM	Bulrush and Muskgrass
144	No	No	5	MH	Muskgrass
145	No	Yes	2	VL	Pondweed
146	No	No	6	VH	Naiad
147	No	No	6	LM	Bladderwort, Bulrush, Muskgrass and Pondweed

Site ID	Depth (feet)	Muck Depth (feet)	Brasenia schreberi	Carex spp	Cerato-phylum demersum	Chara spp.	Equi-setum fluviatile	Hippuris vulgaris	Juncus spp.
148	1.90	5.00	No	No	No	L	No	No	No
149	1.00	5.20	No	No	No	H	No	No	No
150	0.60	5.20	No	No	No	MH	No	No	No
151	0.30	4.00	No	No	No	No	No	No	No
152	1.00	4.50	No	No	No	L	No	H	No
153	1.50	4.50	No	No	No	No	No	No	No
154	1.80	4.50	No	No	No	No	No	No	No
155	1.40	5.00	No	No	No	L	No	No	No
156	2.50	4.80	No	No	No	No	No	No	No
157	1.10	5.00	No	No	No	No	No	No	No
158	2.50	5.00	No	No	No	No	No	No	No
159	2.20	5.00	No	No	No	No	No	No	No
160	1.10	5.00	No	No	No	H	No	No	No
161	1.70	5.00	No	No	No	M	No	No	No
162	1.30	5.00	No	No	No	MH	No	No	No
163	1.60	1.20	No	No	No	VL	No	No	No
164	1.00	5.00	No	No	No	No	No	No	No
165	1.70	4.60	No	No	No	M	No	No	No
166	1.50	5.00	MH	No	No	L	No	No	No
167	1.30	5.00	No	No	No	M	No	No	No
168	1.40	5.00	No	No	No	MH	No	No	No
169	1.70	5.00	No	No	No	No	No	No	No
170	2.10	4.60	No	No	No	VH	No	No	No
171	2.20	4.10	No	No	No	No	No	No	No
172	2.60	3.10	No	No	L	No	No	No	No
173	2.60	4.00	No	No	No	M	No	No	No
174	2.70	4.00	No	No	No	No	No	No	No
175	1.70	5.10	No	No	No	H	No	No	No
176	1.20	5.00	No	No	No	MH	No	No	No
177	1.80	4.60	No	No	No	LM	No	No	No
178	1.70	5.00	No	No	No	M	No	No	No
179	1.20	5.00	No	No	No	LM	No	No	No
180	0.80	4.10	No	No	No	No	No	No	No
181	1.30	3.90	No	No	No	H	No	No	No
182	2.70	2.70	No	No	No	L	No	No	No
183	1.80	4.00	No	No	No	LM	No	No	No
184	1.60	3.60	No	No	No	LM	No	No	No
185	2.60	3.00	No	No	No	H	No	No	No
186	2.40	2.80	No	No	No	No	No	No	No
187	1.30	0.40	No	No	No	MH	No	No	No
188	1.90	2.20	No	No	No	No	No	No	No
189	2.60	3.20	No	No	No	No	No	No	No
190	2.30	0.50	No	No	No	No	No	No	No
191	2.20	1.00	No	No	No	No	No	No	No
192	2.20	1.10	No	No	No	No	No	No	No
193	0.40	1.00	No	LM	No	VH	No	MH	LM
194	1.60	0.40	No	No	No	No	No	No	No
195	2.00	0.70	No	No	No	LM	No	No	No
196	2.10	0.60	No	No	VL	VL	No	No	No

Site ID	Mega-lon-donta beckii	Myrica gale	Myriophyllum heterophyllum	Najas flexilis	Nuphar variegata	Nymphaea odorata	Potamogeton amplifolius	Potamogeton gramineus	Potamogeton illinoensis
148	No	No	No	L	LM	No	No	No	LM
149	No	No	No	MH	M	No	No	MH	No
150	No	No	No	M	No	No	No	No	L
151	No	No	No	No	MH	MH	No	L	No
152	No	No	No	L	MH	LM	No	No	No
153	No	No	No	VL	LM	No	No	No	M
154	No	No	No	L	No	No	No	No	MH
155	No	No	VL	M	No	No	No	No	MH
156	No	No	No	LM	MH	M	No	No	L
157	No	No	L	VH	MH	No	No	VL	No
158	No	No	No	VL	No	No	No	No	L
159	No	No	No	No	H	No	No	No	MH
160	No	No	No	No	No	No	No	No	No
161	No	No	No	No	No	No	No	No	M
162	No	No	L	MH	LM	No	No	No	M
163	No	No	No	VL	No	LM	No	LM	No
164	No	No	VL	LM	L	MH	No	L	L
165	No	No	No	No	No	No	No	No	LM
166	No	No	No	No	H	No	No	No	LM
167	No	No	No	No	LM	No	No	No	LM
168	No	No	No	L	No	No	No	No	M
169	No	No	No	M	No	No	No	No	MH
170	No	No	No	No	No	No	No	No	L
171	No	No	No	VL	No	No	No	No	No
172	No	No	No	VH	No	No	No	No	No
173	No	No	No	No	No	No	No	No	No
174	No	No	LM	LM	No	No	No	No	No
175	No	No	VL	VL	LM	No	No	No	No
176	No	No	No	VL	No	No	No	LM	L
177	No	No	No	VL	LM	No	No	No	M
178	No	No	No	No	LM	No	No	No	MH
179	No	No	No	No	M	No	No	No	LM
180	No	No	No	No	LM	H	No	L	No
181	No	No	No	M	L	No	No	No	No
182	No	No	No	No	L	No	No	No	L
183	No	No	No	No	No	No	No	No	L
184	No	No	L	H	No	No	No	No	No
185	No	No	No	L	L	No	No	LM	LM
186	No	No	No	No	No	No	No	No	LM
187	No	No	No	No	L	No	No	No	No
188	No	No	No	No	L	No	No	No	LM
189	No	No	No	No	No	No	No	No	No
190	No	No	No	No	No	No	No	VL	No
191	No	No	No	No	No	No	No	No	No
192	No	No	No	VL	No	No	No	L	No
193	No	No	L	MH	M	H	No	No	No
194	No	No	No	VL	No	No	No	No	No
195	No	No	No	No	No	No	No	No	VL
196	No	No	No	VL	L	No	No	No	LM

Site ID	Potamogeton natans	Potamogeton prae-longus	Potamogeton richardsonii	Potamogeton robbinsii	Potamogeton strictifolius	Potamogeton zosteriformis	Potamogeton hybrid	Sagittaria spp.	Schoenoplectus acutus
148	LM	No	No	No	No	No	No	No	No
149	No	No	No	No	No	No	No	No	H
150	No	No	No	No	No	No	No	No	No
151	No	No	No	No	No	No	No	No	No
152	H	No	No	No	No	No	No	No	No
153	No	No	No	No	No	No	No	No	No
154	LM	No	No	No	No	No	No	No	No
155	No	No	No	No	No	No	No	LM	No
156	M	No	No	No	No	No	No	No	No
157	MH	No	No	No	No	M	No	LM	No
158	No	No	No	No	No	No	No	No	No
159	L	No	No	No	No	No	No	No	No
160	No	No	No	No	No	No	No	No	No
161	No	No	No	No	No	No	No	No	No
162	M	No	No	No	No	No	No	No	No
163	No	No	No	No	No	No	No	No	M
164	L	No	No	No	No	No	No	No	LM
165	No	No	No	No	No	No	No	No	No
166	L	No	No	No	No	No	No	No	No
167	No	No	No	No	No	No	No	No	No
168	No	No	No	No	No	No	No	No	No
169	No	No	No	No	No	No	No	No	No
170	No	No	No	No	No	No	No	No	No
171	L	No	No	No	No	No	No	No	No
172	No	No	LM	No	No	VH	No	L	No
173	M	No	No	No	No	No	MH	No	No
174	No	H	MH	No	No	MH	No	No	No
175	No	No	No	No	No	No	No	No	No
176	No	No	No	No	No	No	No	No	No
177	VL	No	No	No	No	No	No	No	No
178	No	No	No	No	No	No	No	No	M
179	LM	No	No	No	No	No	No	No	M
180	L	No	No	No	No	No	No	No	No
181	No	No	No	No	No	No	No	No	No
182	No	No	No	No	No	No	No	No	No
183	No	No	No	No	No	No	No	No	No
184	MH	No	No	No	No	No	No	LM	No
185	L	No	No	No	No	No	No	L	No
186	No	No	No	No	No	No	No	No	MH
187	No	No	No	No	No	No	No	No	No
188	L	No	No	No	No	No	No	No	No
189	No	No	No	No	No	No	L	No	No
190	No	No	No	No	No	No	No	No	No
191	No	No	No	No	No	No	No	No	No
192	No	No	No	No	No	No	No	No	No
193	M	No	No	No	No	MH	No	H	No
194	No	No	No	No	No	No	No	No	No
195	No	No	No	No	No	No	No	No	No
196	No	No	No	No	No	No	No	No	No

Site ID	Schoenoplectus subterminalis	Schoenoplectus tabernaemontani	Scirpus pungens	Sparganium angustifolium	Sparganium macrocarpum	Stuckenia pectinata	Typhus spp.	Utricularia intermedia	Utricularia vulgaris
148	MH	H	No	No	No	No	No	No	LM
149	MH	H	No	No	No	No	No	No	L
150	M	No	No	No	No	No	No	No	L
151	MH	LM	No	No	No	No	No	No	No
152	H	No	No	No	No	No	No	No	No
153	No	No	No	No	No	No	No	No	L
154	MH	No	No	No	No	No	No	No	M
155	MH	No	No	No	No	No	No	No	L
156	MH	No	No	No	No	No	No	No	M
157	VH	No	No	No	No	No	No	No	No
158	No	No	No	No	No	No	No	No	No
159	H	No	No	No	No	No	No	No	LM
160	No	LM	No	No	No	No	No	No	LM
161	No	No	No	No	No	No	No	No	L
162	MH	No	No	No	No	No	No	No	LM
163	MH	No	No	No	No	No	No	No	L
164	MH	MH	No	No	No	No	No	No	LM
165	No	No	No	No	No	No	No	No	LM
166	H	LM	No	No	No	No	No	No	MH
167	L	M	No	No	No	No	No	No	L
168	No	No	No	No	No	L	No	No	LM
169	VH	No	No	No	No	No	No	No	LM
170	No	No	No	No	No	No	No	No	H
171	VH	No	No	No	No	No	No	No	L
172	H	No	No	No	No	No	No	No	LM
173	M	No	No	No	No	No	No	No	M
174	VH	No	No	No	No	No	No	No	LM
175	M	No	No	No	No	No	No	No	M
176	H	No	No	No	No	No	No	No	LM
177	No	No	No	No	No	No	No	No	LM
178	H	L	No	No	No	No	No	No	M
179	H	M	No	No	No	No	No	No	M
180	H	LM	No	No	No	No	No	H	M
181	H	No	No	No	No	No	No	VL	L
182	L	No	No	No	No	No	No	No	L
183	LM	No	No	No	No	No	No	No	LM
184	VH	No	No	No	No	No	No	No	M
185	L	No	No	No	No	VL	No	No	M
186	VH	No	No	No	No	No	No	No	LM
187	No	No	No	No	No	No	No	No	L
188	M	No	No	No	No	No	No	No	L
189	M	M	No	No	No	No	No	No	L
190	No	No	No	No	No	No	No	No	No
191	M	No	No	No	No	No	No	No	M
192	MH	No	No	No	No	No	No	No	L
193	No	No	No	MH	H	M	No	No	L
194	No	No	No	No	No	No	No	No	VL
195	No	No	No	No	No	No	No	No	L
196	L	LM	No	No	No	No	No	No	LM

Site ID	Valisneria americana	Little/no Vegetation	Number of Taxa	Plant Community Density	Dominant Plant Community
148	No	No	8	H	Bulrush
149	No	No	8	H	Bulrush and Muskgrass
150	No	No	5	LM	Muskgrass
151	No	No	5	LM	Bulrush and Lily
152	No	No	7	H	Bulrush, Mare's Tail, and Pondweed
153	No	No	4	L	Pondweed
154	No	No	5	MH	Naiad and Pondweed
155	No	No	7	M	Bulrush and Pondweed
156	No	No	7	M	Bulrush and Lily
157	No	No	8	H	Bulrush and Naiad
158	No	No	2	L	Pondweed
159	No	No	5	H	Bulrush and Lily
160	No	No	3	H	Muskgrass
161	No	No	3	LM	Muskgrass and Pondweed
162	No	No	8	MH	Bulrush, Muskgrass, and Naiad
163	No	No	7	M	Bulrush
164	No	No	11	MH	Bulrush and Lily
165	No	No	3	LM	Muskgrass
166	No	No	8	VH	Swaying Bulrush and Lily
167	No	No	6	LM	Bulrush and Muskgrass
168	No	No	5	M	Muskgrass
169	No	No	4	MH	Bulrush
170	No	No	3	VH	Muskgrass
171	No	No	4	VH	Bulrush
172	No	No	7	VH	Naiad and Pondweed
173	No	No	5	MH	Pondweed
174	No	No	7	VH	Bulrush
175	No	No	6	MH	Muskgrass
176	No	No	6	H	Bulrush
177	No	No	6	LM	Pondweed
178	No	No	7	H	Bulrush
179	No	No	8	H	Bulrush
180	No	No	8	H	Bladderwort, Bulrush, and Lily
181	No	No	6	H	Bulrush and Muskgrass
182	No	No	5	L	Bladderwort, Bulrush, Lily, Muskgrass, and Pondweed
183	No	No	4	LM	Bladderwort, Bulrush, and Muskgrass
184	No	No	7	VH	Bulrush
185	No	No	10	H	Muskgrass
186	No	No	3	VH	Bulrush
187	No	No	4	M	Bulrush and Muskgrass
188	No	No	5	LM	Bulrush
189	No	Yes	4	M	Bulrush
190	No	No	1	VL	Pondweed
191	No	Yes	2	M	Bladderwort and Bulrush
192	No	No	4	M	Bulrush
193	No	No	15	VH	Muskgrass
194	No	Yes	2	VL	Bladderwort and Naiad
195	No	Yes	3	VL	Muskgrass
196	No	Yes	8	LM	Bladderwort, Bulrush, and Pondweed

Site ID	Depth (feet)	Muck Depth (feet)	Brasenia schreberi	Carex spp	Ceratophyllum demersum	Chara spp.	Equisetum fluviatile	Hippuris vulgaris	Juncus spp.
197	1.70	0.70	No	No	No	VL	No	No	No
198	1.40	0.90	No	No	No	No	No	No	No
199	1.50	0.50	No	No	No	MH	No	No	No
200	1.10	0.70	No	No	No	No	No	No	No
201	0.70	2.60	MH	No	No	No	No	No	No
202	1.40	3.40	No	No	No	L	No	No	No
203	1.30	4.20	No	No	No	M	No	No	No
204	1.90	4.80	No	No	No	No	No	No	No
205	1.90	4.80	VH	No	No	No	No	No	No
206	1.10	2.80	H	No	No	No	No	No	No
207	1.50	2.90	No	No	No	L	No	No	No
208	1.00	3.20	L	No	No	No	No	No	No
209	0.70	1.00	LM	No	No	No	No	No	No
210	1.10	3.10	H	No	No	No	No	No	No
211	1.40	1.30	No	No	No	L	No	No	No
212	1.40	3.40	No	No	No	No	No	No	No

Site ID	Megalondonta beckii	Myricagale	Myriophyllum heterophyllum	Najas flexilis	Nuphar variegata	Nymphaea odorata	Potamogeton amplifolius	Potamogeton gramineus	Potamogeton illinoensis
197	No	No	No	No	No	No	No	No	No
198	No	No	No	No	No	No	No	L	No
199	No	No	No	L	No	No	No	M	No
200	No	No	No	No	L	No	No	LM	L
201	No	No	No	No	No	H	No	No	No
202	No	No	No	VL	No	No	No	M	M
203	No	No	No	No	No	No	No	No	M
204	No	No	No	No	No	No	No	No	No
205	No	No	No	No	No	VH	No	No	No
206	No	No	No	L	M	H	No	No	No
207	No	No	No	LM	No	No	No	No	M
208	No	No	No	No	LM	M	No	No	M
209	No	No	No	No	MH	M	No	LM	No
210	No	No	No	LM	No	M	No	LM	No
211	No	No	No	L	H	H	No	No	No
212	No	No	No	No	L	No	No	No	MH

Site ID	Potamogeton natans	Potamogeton praelongus	Potamogeton richardonii	Potamogeton robbinsii	Potamogeton strictifolius	Potamogeton zosteriformis	Potamogeton hybrid	Sagittaria spp.	Schoenoplectus acutus
197	No	No	No	No	No	No	No	No	No
198	No	M	No	No	No	No	No	No	LM
199	L	No	No	No	No	No	No	No	No
200	No	No	No	No	No	No	No	No	No
201	L	No	No	No	No	No	No	No	No
202	No	No	No	No	No	No	No	No	No
203	No	No	No	No	No	No	No	No	No
204	No	No	No	No	No	No	No	No	No
205	M	No	No	No	No	No	No	No	No
206	LM	No	No	No	No	No	No	LM	No
207	No	No	No	No	No	No	No	No	No
208	L	No	No	No	No	No	No	No	LM
209	No	No	No	No	No	No	No	No	MH
210	LM	No	No	No	No	No	No	No	LM
211	LM	No	No	No	No	No	No	No	M
212	LM	No	No	No	No	No	No	No	L

Site ID	Schoenoplectus subterminalis	Schoenoplectus tabernaemontani	Scirpus pungens	Sparganium angustifolium	Sparganium macrocarpum	Stuckenia pectinata	Typhus spp.	Utricularia intermedia	Utricularia vulgaris
197	H	No	No	No	No	No	No	No	LM
198	No	L	No	No	No	No	No	No	No
199	No	No	No	No	No	No	No	No	M
200	No	No	No	No	No	No	No	No	L
201	LM	LM	No	No	No	No	No	L	L
202	M	No	No	No	No	No	No	No	LM
203	M	No	No	No	No	No	No	No	M
204	MH	No	No	No	No	No	No	No	MH
205	VH	No	No	No	No	No	No	No	L
206	No	No	No	No	No	No	No	No	LM
207	M	No	No	No	No	No	No	No	L
208	MH	L	No	No	No	No	No	LM	MH
209	L	No	No	No	No	No	No	LM	LM
210	MH	No	No	No	No	No	No	No	M
211	MH	No	No	No	No	No	No	H	MH
212	H	No	No	No	No	No	No	VH	VH

Site ID	Valisneria americana	Little/no Vegetation	Number of Taxa	Plant Community Density	Dominant Plant Community
197	No	Yes	3	MH	Bulrush
198	No	Yes	4	LM	Pondweed
199	No	Yes	5	M	Muskgrass
200	No	No	4	L	Pondweed
201	No	No	7	MH	Lily
202	No	No	6	M	Bulrush and Pondweed
203	No	No	4	M	Bladderwort, Bulrush, Muskgrass and Pondweed
204	No	No	3	MH	Bladderwort, Bulrush, and Pondweed
205	No	No	5	VH	Bulrush, Lily, and Watershield
206	No	No	7	H	Lily and Watershield
207	No	No	5	M	Bulrush and Pondweed
208	No	No	10	MH	Bulrush and Bladderwort
209	No	No	8	MH	Bulrush and Lily
210	No	No	8	H	Watershield
211	No	No	9	H	Bladderwort and Lily
212	No	No	7	H	Bladderwort