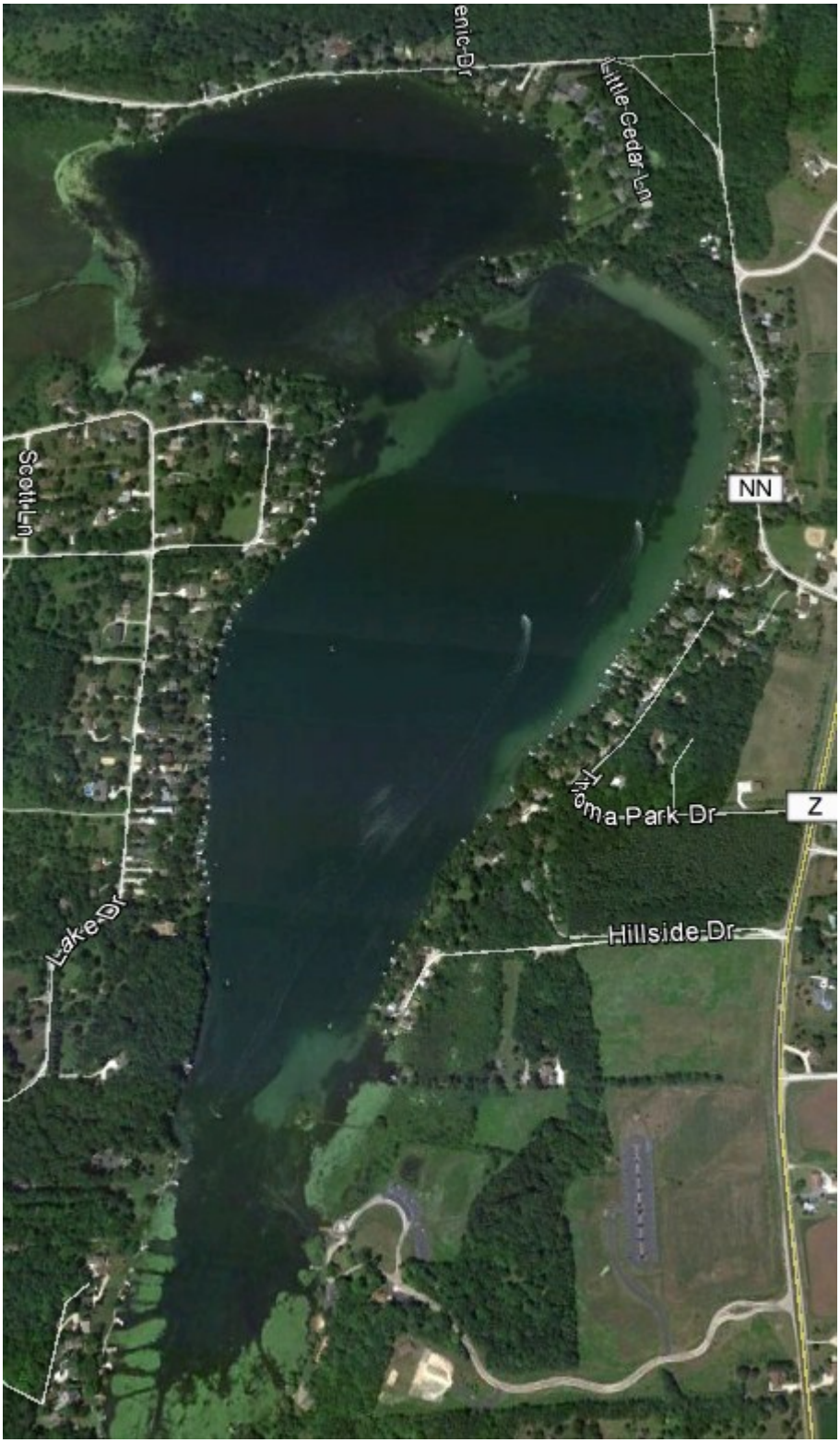
An Aquatic Plant Survey and Management Plan Update for Little Cedar Lake—Washington County, WI

January, 2014



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Acknowledgements

Marine Biochemists wishes to recognize the following individuals and organizations whose work assisted with the completion of this Aquatic Plant Study and Plan:

- The Wisconsin Department of Natural Resources for PI Protocol and Plan requirements , historical treatment records and 1991 Sensitive Area Assessment.
- The Southeast Wisconsin Regional Plan Commission (SEWRPC) for their earlier work in 2000 (Aquatic Plant Survey) and 2000 Aquatic Plant Management Plan that provides a historical reference for the aquatic plant community.
- Washington County Planning and Parks Department staff, including Paul Klein for their collection of plant data in the July/August 2012 survey used in this Report.

Finally, Marine Biochemists wishes to thank the membership of the Little Cedar Lake Protection and Rehabilitation for this opportunity to continue to assist them with the management of the lake.

Published January, 2014 by Marine Biochemists, a LONZA business

Introduction

Little Cedar Lake is a 260 acre drainage lake with its' inlet and outlet consisting of Cedar Creek, a tributary of the Milwaukee River system. Located in the Towns of West Bend and Polk in Washington County, Wisconsin, Little Cedar Lake serves as an important recreational asset to both the lake residents and surrounding community. A Pubic Access is available at Ackermann's Grove Park, a part of the Washington County Park System.

A relatively deep lake with a maximum depth of 56 feet, Little Cedar has significant amounts of both deep and shallow water habitat, with slightly less than one-half of the lake having a depth of greater than 15 feet. Bottom sediments are highly variable, from fine organic silts and clay to sand and gravel. The fishery consists of Largemouth Bass, Panfish, Walleye and Northern Pike. In addition to fishing, other lake uses include power-boating, water-skiing, canoeing and swimming. It is also has important wildlife values, providing habitat for fish, waterfowl, amphibians, and furbearers.

Aquatic plant growth in the lake is fairly extensive, as a little more than 50% of the lake lies within the littoral zone (Figure 1). While beneficial in terms of contributing to good water quality and providing habitat for fish and aquatic insects and as a source of food for waterfowl, conflicts with boating and other recreational activities have occurred.

The Little Cedar Lake Protection and Rehabilitation District is the organization primarily responsible for lake management activities, including aquatic plant management and lake related studies.

The most recent formal investigation into the plant community within the lake was reported in "An Aquatic Plant Management Plan for Little Cedar Lake Washington County, WI" (2004) by the Southeast Wisconsin Regional Planning Commission. This Plan was developed using plant data obtained in the year 2000., and included restrictions placed upon certain aquatic plant management activities as a result of the WI DNR Sensitive Area Assessment conducted in August, 1991 (Appendix).

During the summer and fall of 2012, two separate surveys were conducted by Washington County (WI) staff (July/August) and Marine Biochemists, a Lonza Business, of Mequon, WI. (October), with the latter being hired as a consultant by the Little Cedar Lake Protection and Rehabilitation District (LLPRD). Unlike the 2000 investigation by SEWRPC that used the modified Jesson & Lound transect-based survey technique customary for the time, the 2012 surveys utilized the Point/Intercept Survey Method developed by Wisconsin Department of Resources. The results of these surveys serve as a basis for completing this Update to the Aquatic Plant Management Plan, a guide for future management activities and to provide information and education to the membership of the LCLPRD.

The following Section of the report describes the methodology used to access the aquatic plant population and presents the survey results.

2012 Aquatic Plant Survey Methodology and Results

The protocol for this aquatic plant survey called for the sampling the vegetation at 614 pre-determined sites within the lake. These locations were spaced apart by approximately 35 meters in general north-south and east-west transects across Little Cedar Lake using waypoints (longitude and latitude coordinates) established by the Wisconsin Department of Natural Resources (see fig. #2).

During the July /August (Washington County) and October Surveys (Marine Biochemists), crews navigated to waypoints using a Global Positioning System (GPS). At each point where water depth was at or below the maximum plant rooting depth (approximately 16 feet), plants were sampled using a rake head attached to either a Pole (P) or Rope (R). Water depth was recorded and the dominant bottom sediment type (muck, sand, rock) noted. Plants collected were identified to genus and/or species, individual plant species density (rake fullness for a single plant type) determined, along with total plant density (rake fullness for all plants). This data was then recorded for each site. An example of this "rake fullness" density determination is found on fig #3.

The continuing drought of 2012 and low water levels within the lake made access to some of the P/I points difficult, with several being too shallow to navigate, and others "dry" altogether. This made identification of emergent plant types to genus and species impossible during the October survey. While cattail observations could be recorded in Data sheets as Typha, sp., there was no similar opportunity to record bulrush as "Schoenoplectus" (genus).

A brief summary and comparison of the results between the July/August and October surveys is as follows:

	# of Species	
Vegetation Type	July/August	October
Floating Leaf	4	1
Submergent*	21	16
Emergent	3	2
Macro Algae	1	1
Total	29	20

*Includes (2) Aquatic Invasive Species (AIS), Eurasian Watermilfoil and Curlyleaf Pondweed present on July/August Survey and (1), Eurasian Watermilfoil during October survey.

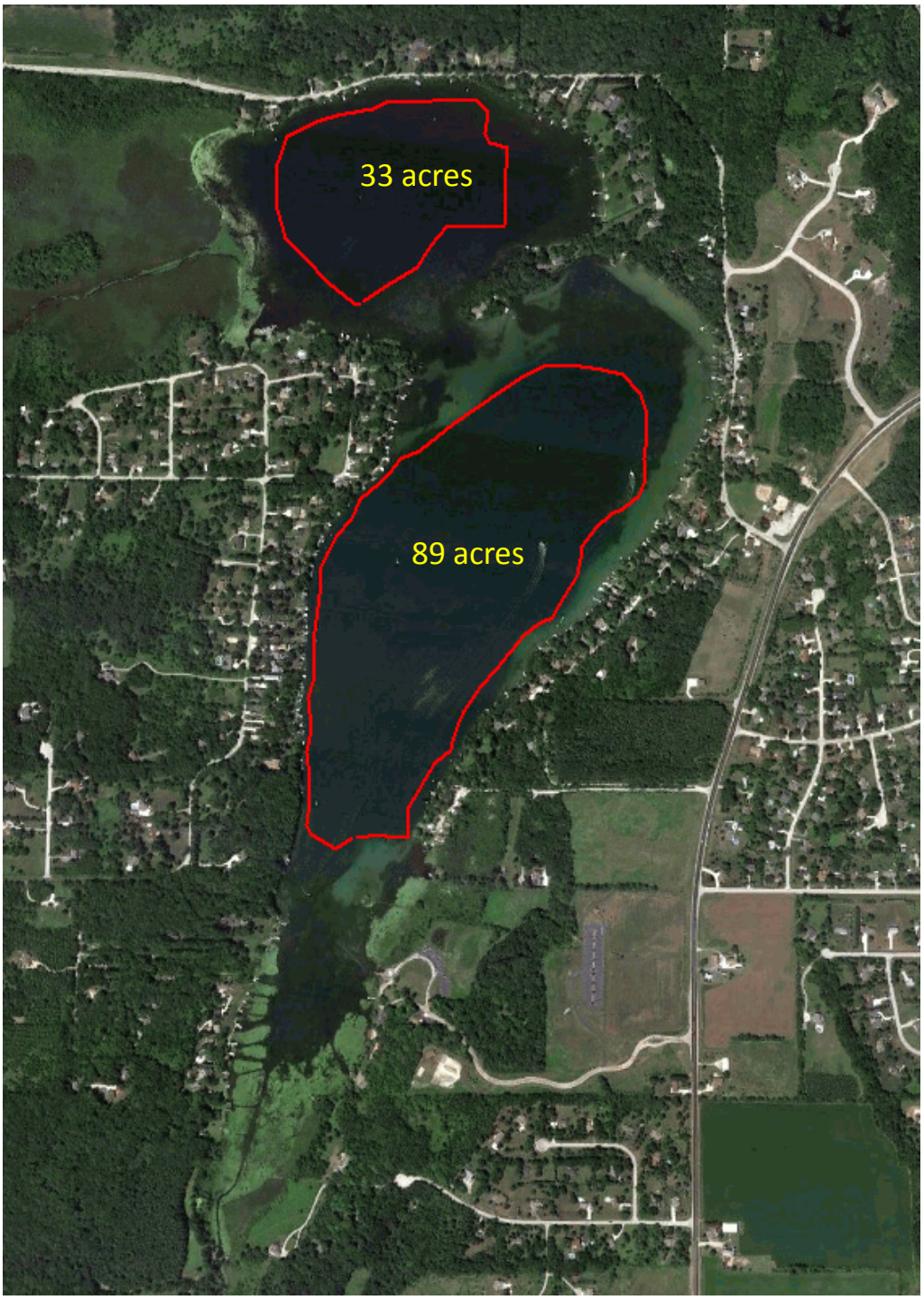
The aquatic plant survey indicated that the lake contains a diverse aquatic plant community. Plants were collected at depths of up to 17 ft. (July/August) and 15 ft. (October). Figures #4 and 5 graph the relationship between water depth and the number of sites where aquatic vegetation was found. Figure 6 provides the location of sites with aquatic vegetation (native or non-native).

The locations where AIS (Eurasian Watermilfoil and/or Curlyleaf Pondweed) were found are shown on Figures #7 and #8. It is important to note that Figure #7 provides Pre and Post Treatment Data showing a significant reduction of Eurasian Watermilfoil following the treatment on August 14. The complete decline of Curlyleaf Pondweed is expected as it typically reaches a maximum biomass in late May/mid June, then dies back after the 4th of July.

Figure 1

Delineation of Deep (> 15 ft.) vs. Shallow Waters

Little Cedar Lake, Washington County, WI



Lake Size: 260 acres Area >15 ft.: 122 acres <15 ft.: 138 acres

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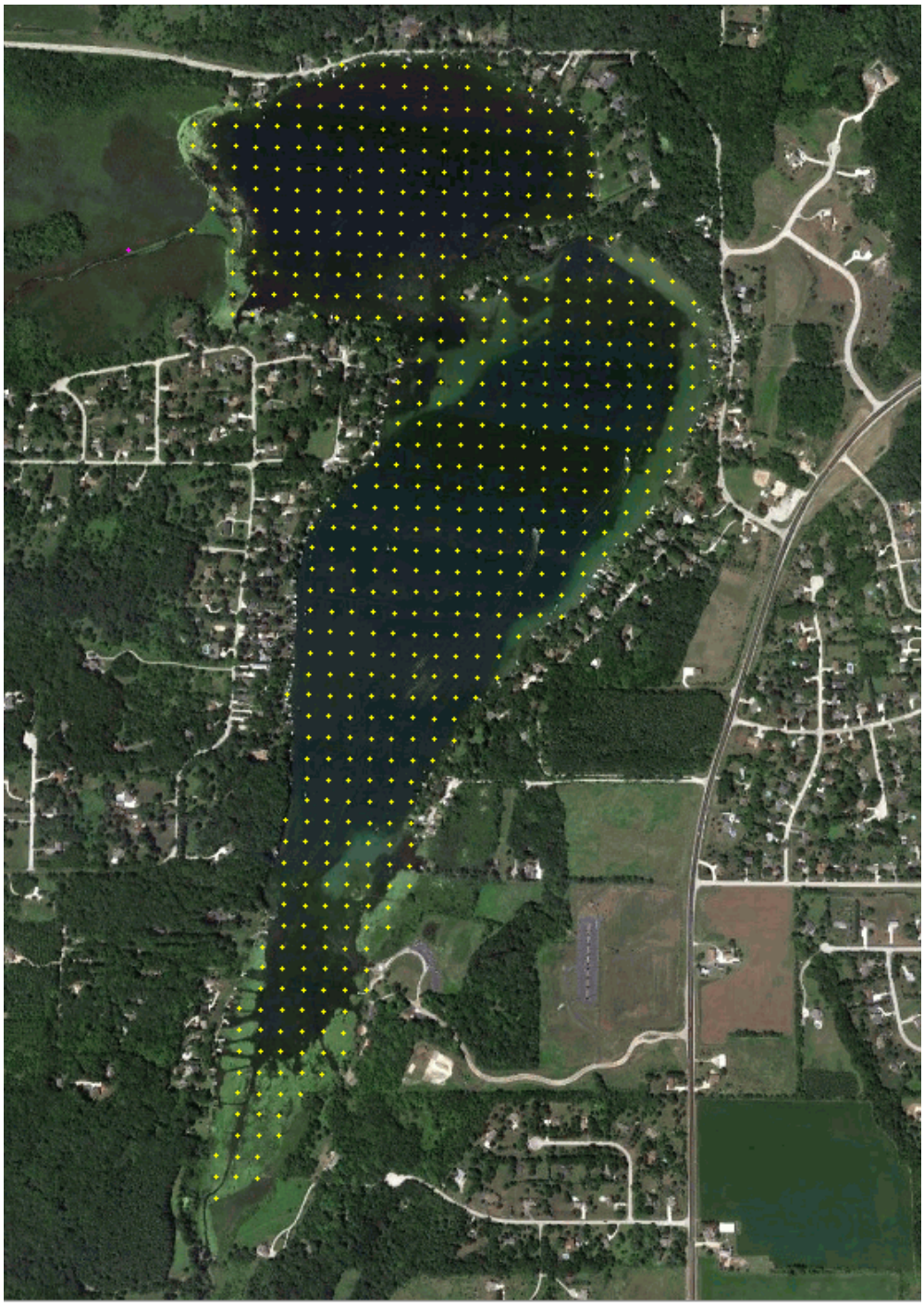
Figure 2

Location of WI DNR Sampling Waypoints

Little Cedar Lake, Washington County, WI



Total # of Sampling Points: 614

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Figure 3

Aquatic Plant Fullness Ratings

Fullness Rating	Coverage	Description
1		Only few plants. There are not enough plants to entirely cover the length of the rake head in a single layer.
2		There are enough plants to cover the length of the rake head in a single layer, but not enough to fully cover the tines.
3		The rake is completely covered and tines are not visible.

Figure 4

Depth of Plant Colonization-Little Cedar Lake, Washington County, WI

Washington County Parks & Planning Survey, July/August , 2012

DEPTH BIN (FT)	# SITES
1	30
2	37
3	51
4	39
5	23
6	15
7	15
8	11
9	2
10	7
11	2
12	3
13	2
14	1
15	0
16	1
17	1
18	0
19	0
20	0

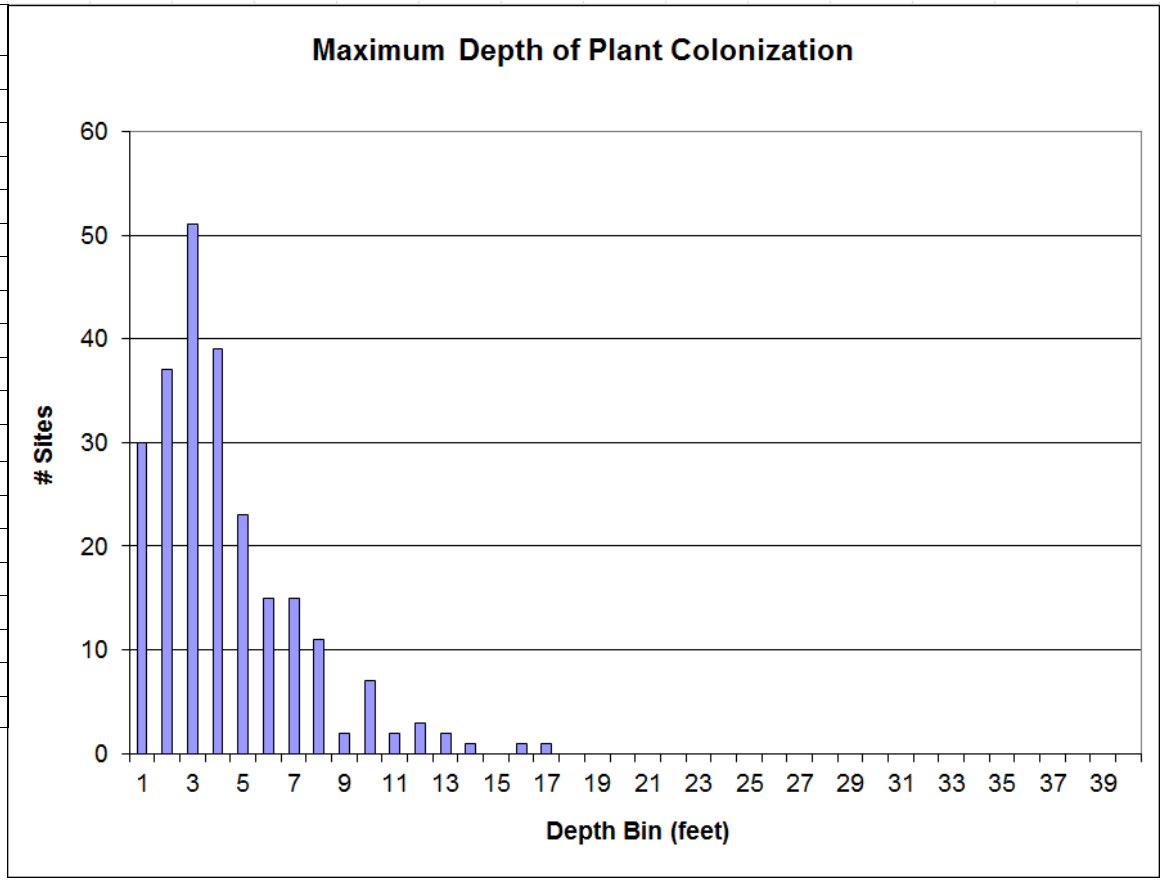

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Figure 5

Depth of Plant Colonization-Little Cedar Lake, Washington County, WI

Marine Biochemists Survey, October, 2012

DEPTH BIN	# SITES
1	30
2	37
3	51
4	39
5	23
6	15
7	15
8	11
9	2
10	7
11	2
12	3
13	2
14	1
15	0
16	1
17	1
18	0
19	0
20	0

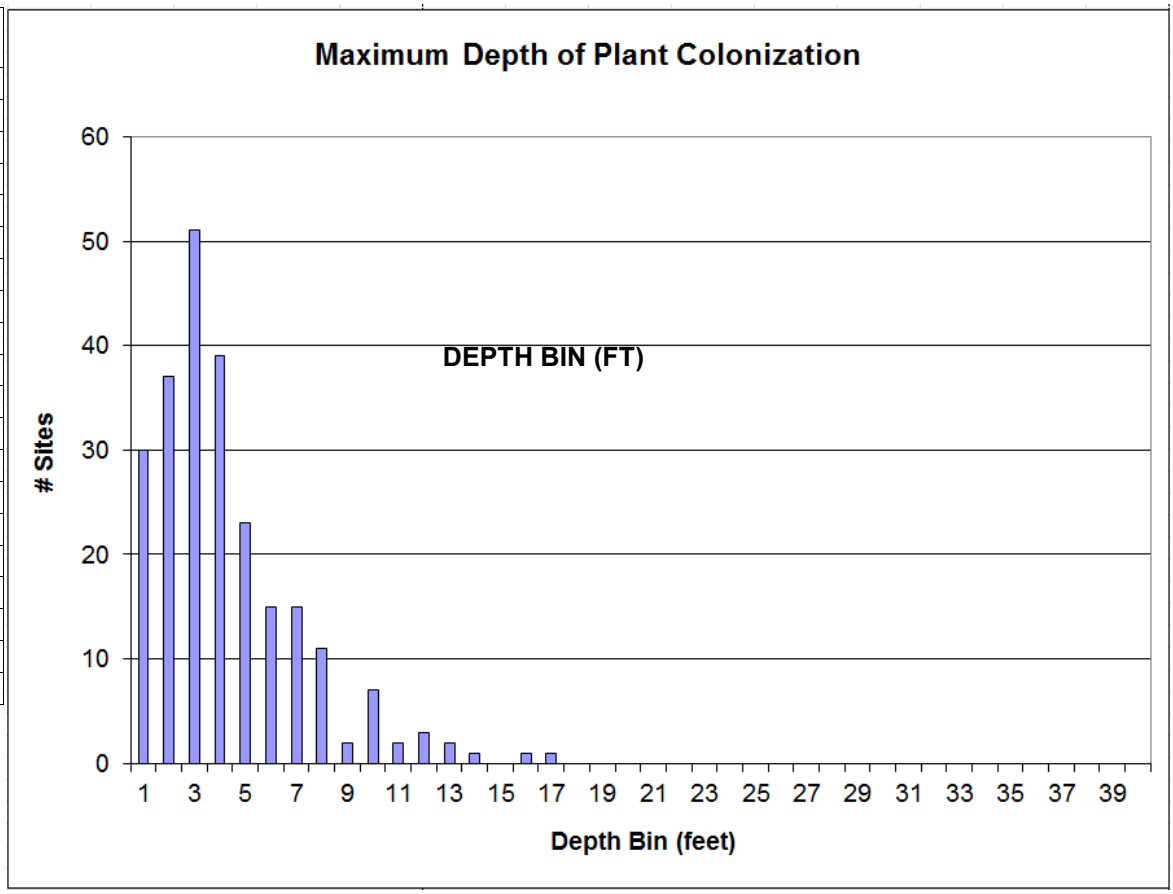

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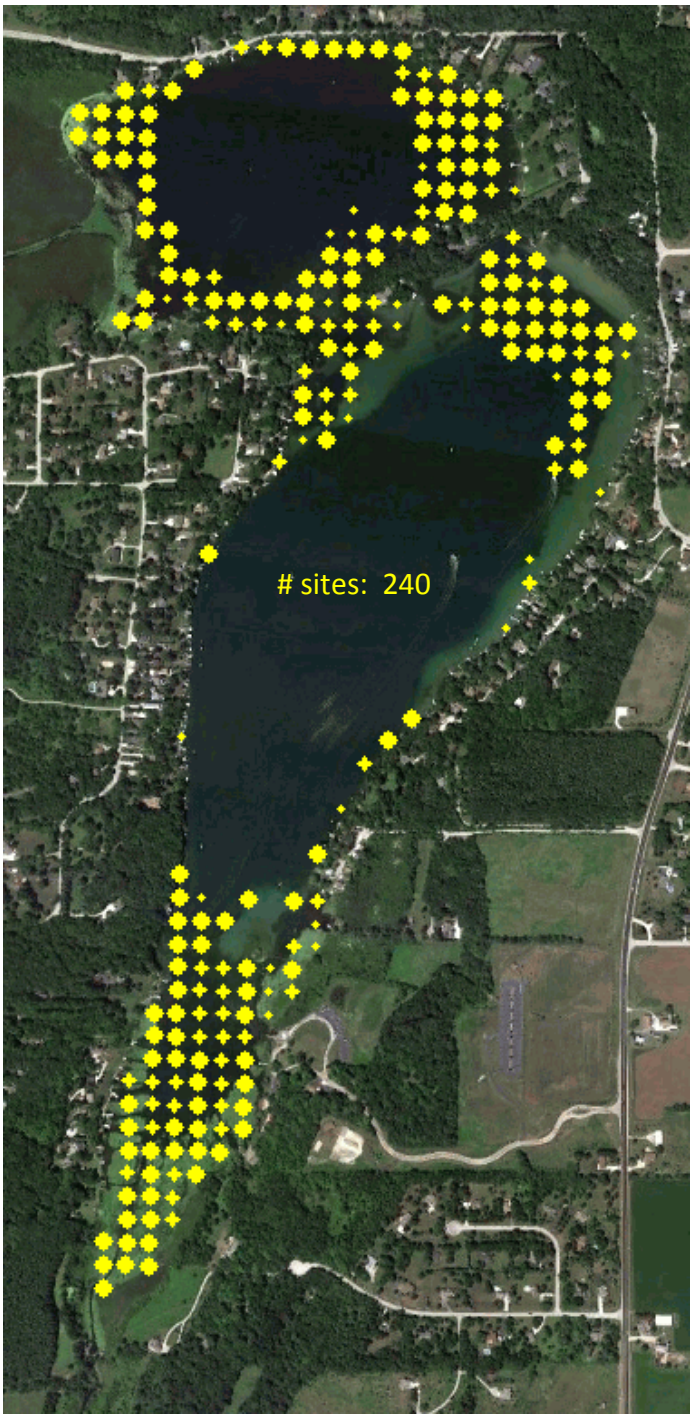
Figure 6

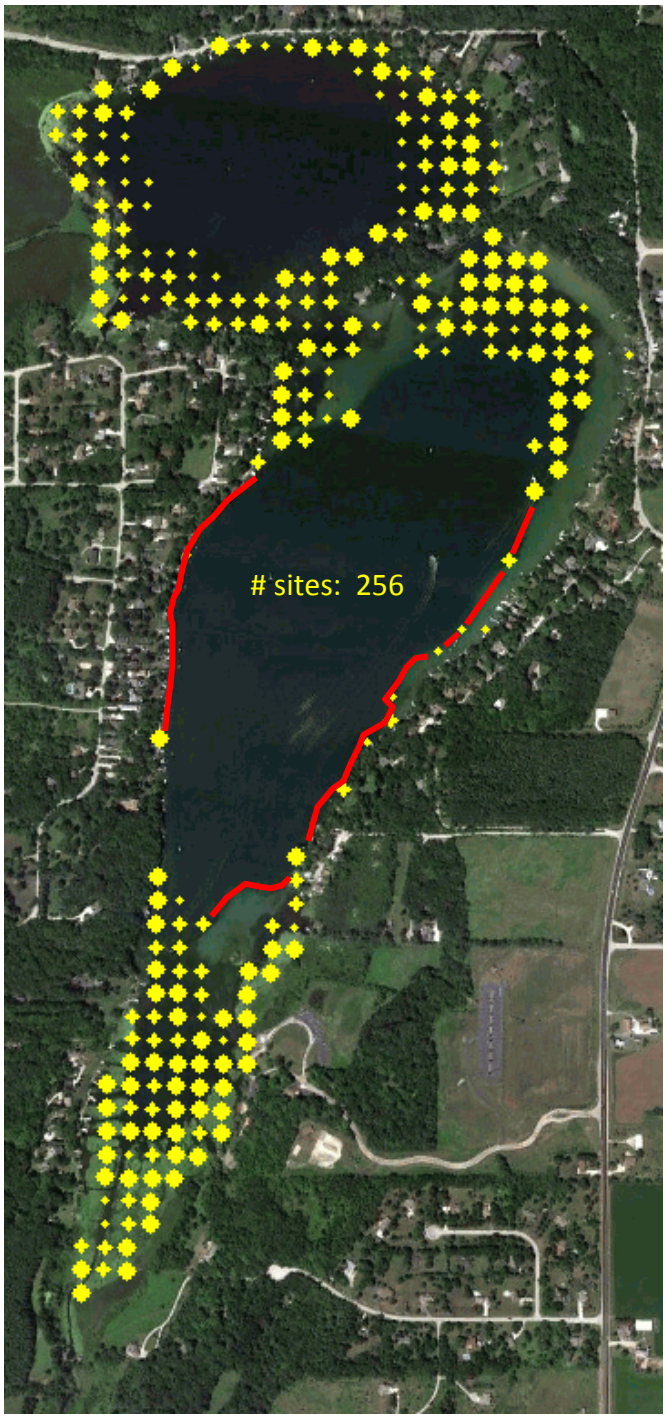
Little Cedar Lake, Washington County, WI

Sites with Aquatic Vegetation (all species)

July/August, 2012



October, 2012



Rake Fullness: ◇ = 3
◇ = 2
◇ = 1

Eurasian Watermilfoil (visual observations-October, 2012

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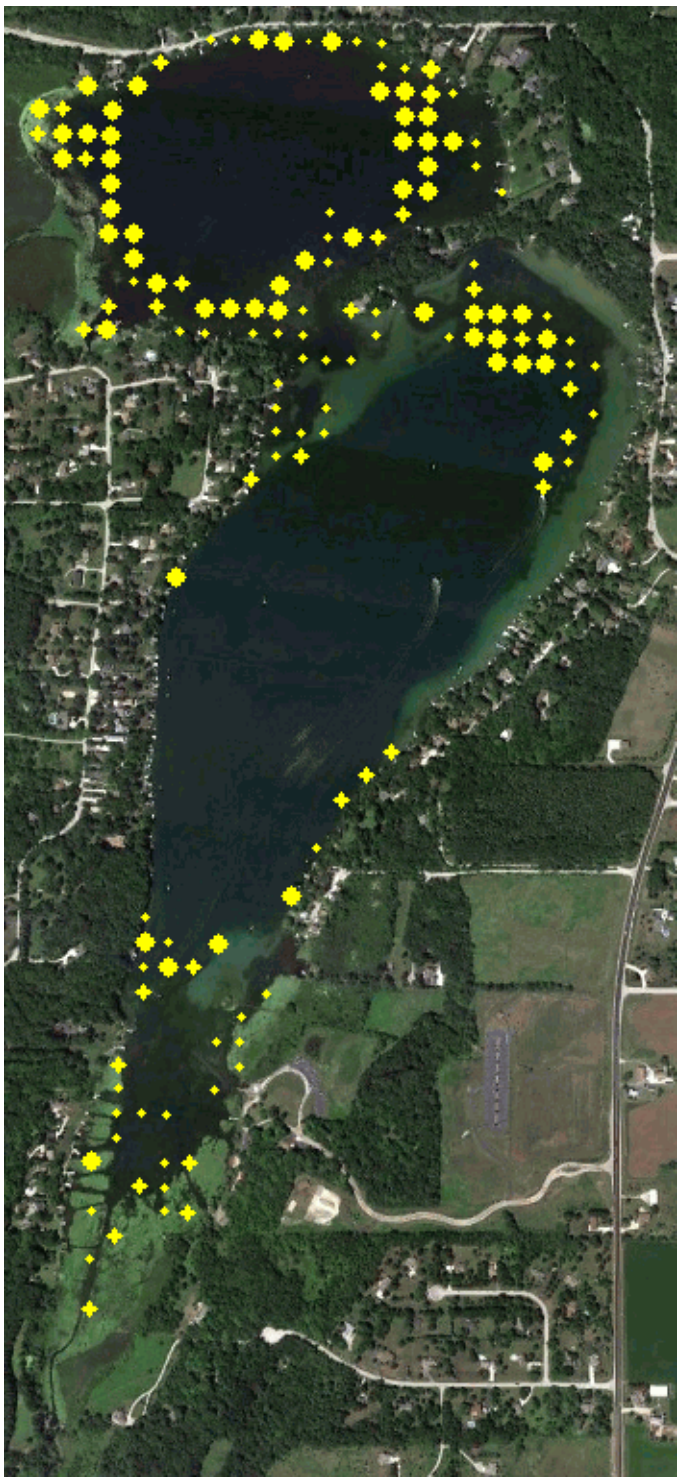
Figure 7

Little Cedar Lake, Washington County, WI

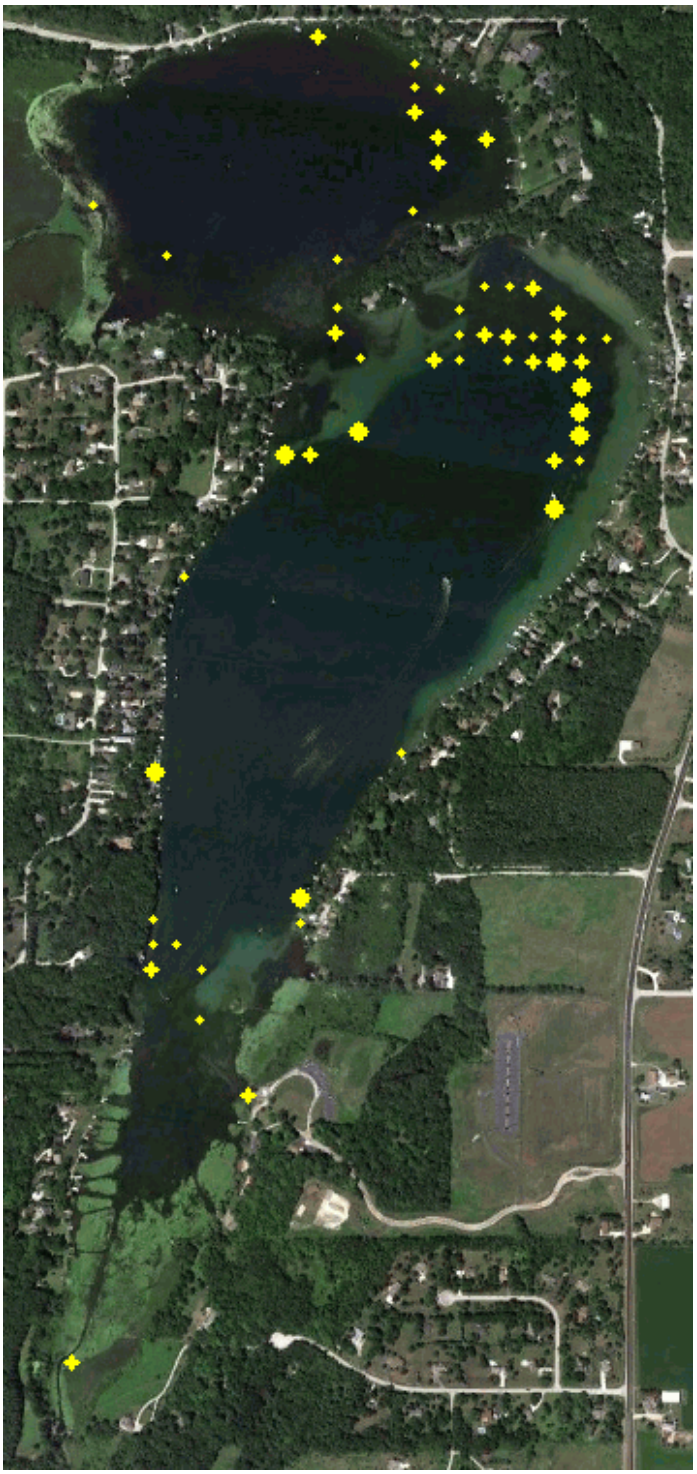
Sites with Eurasian Watermilfoil (Myriophyllum spicatum)

July/August, 2012



Total # Sites Present: 145

October, 2012



Total # Sites Present: 55

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Figure 8

Little Cedar Lake, Washington County, WI

Sites with Curlyleaf Pondweed (*Potamogeton crispus*)

July/August, 2012

Total # Sites Present: 2 (July/August)

No Observations in October, 2012 Survey

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2012 Aquatic Plant Survey Methodology and Results cont'd

The top eight native species ranked in order of abundance (July/August survey) are listed below and compared to the ranking for the October Survey and the 2000 SEWRPC Survey:

July/August Survey Rankings	October Rankings
1) Eelgrass (*Vallisneria americana*)	1) Eelgrass (*Vallisneria americana*)
2) Illinois Pondweed (*Potamogeton illoensis*)	2) Illinois Pondweed (*Potamogeton illoensis*)
3) Flatstem Pondweed (*Potamogeton zosteriformes*)	3) Muskgrass (*Chara* sp.)
4) Muskgrass (Chara, sp.)	4) White Water Lily (*Nymphae odorata*)
5) Sago Pondweed (*Stukenia pectinata)*	*5)* Waterstargrass (*Heteranthia dubia*)
6) Slender Naiad (*Najas flexilis)*	6) Flatstem Pondweed (*Potamogeton zosteriformes*)
7) White Water Lily (*Nymphae odorata*)	7) Coontail (*Ceratophyllum demersum*) and (tied)
8) Waterstargrass (*Heteranathia dubia)*	Large-leaf Pondweed *(Potamogeton amplifolius*

SEWRPC 2000 Plant Survey
Eight Most Abundant Native Aquatic Plant Species

1) Muskgrass (Chara, sp.)
2) Coontail (*Ceratophyllum demersum*)
3) Flatstem Pondweed (*Potamogeton zosteriformes*)
4) Common Waterweed (*Elodea canadensis*) and Waterstargrass (*Heteranthi dubia*)
5) Eelgrass (*Vallisneria americana*)
6) Native milfoils (*Myriophyllum, sp.)*
7) Slender Naiad (*Najas flexilis)*

Distribution maps for the most abundant species found during the July/August survey are found on figures #9-16. The distribution for these same species during the October survey is provided as a comparison.

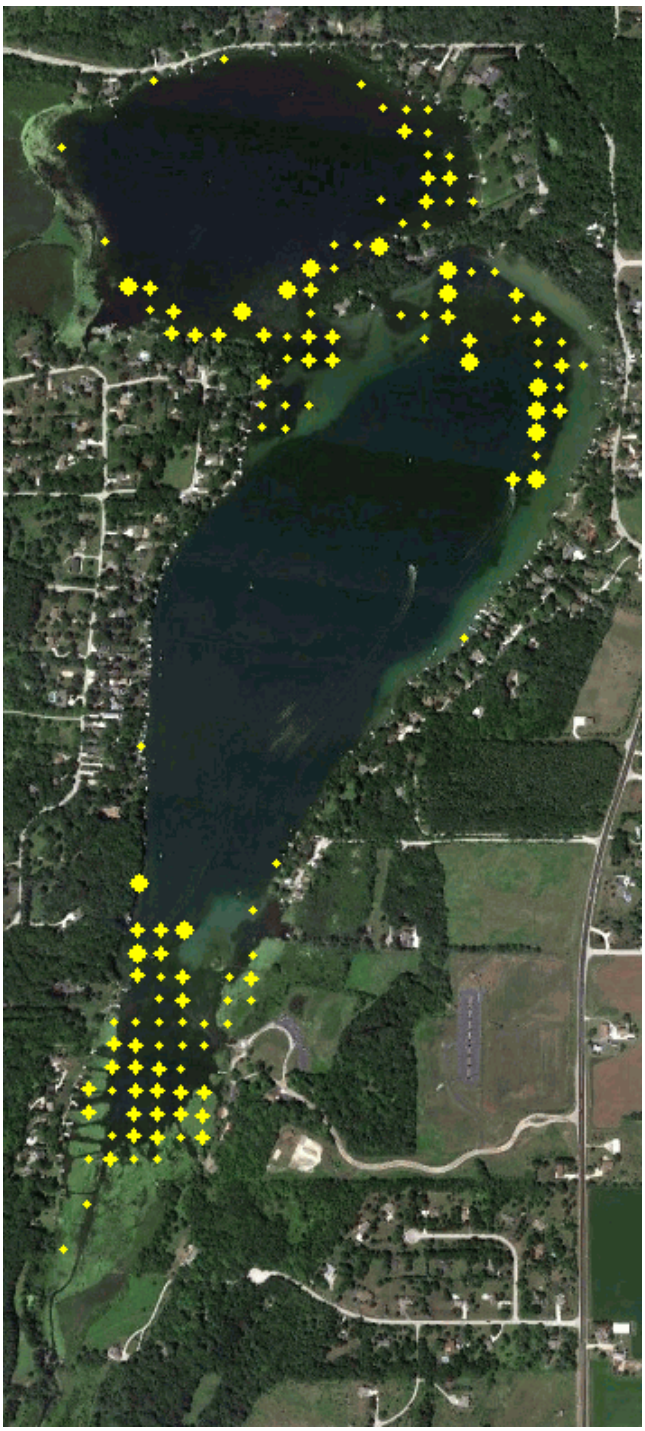
Figure 9

Location and Rake Fullness of

Eelgrass (*Vallisneria americana*) in Little Cedar Lake, Washington County, WI

July/August, 2012

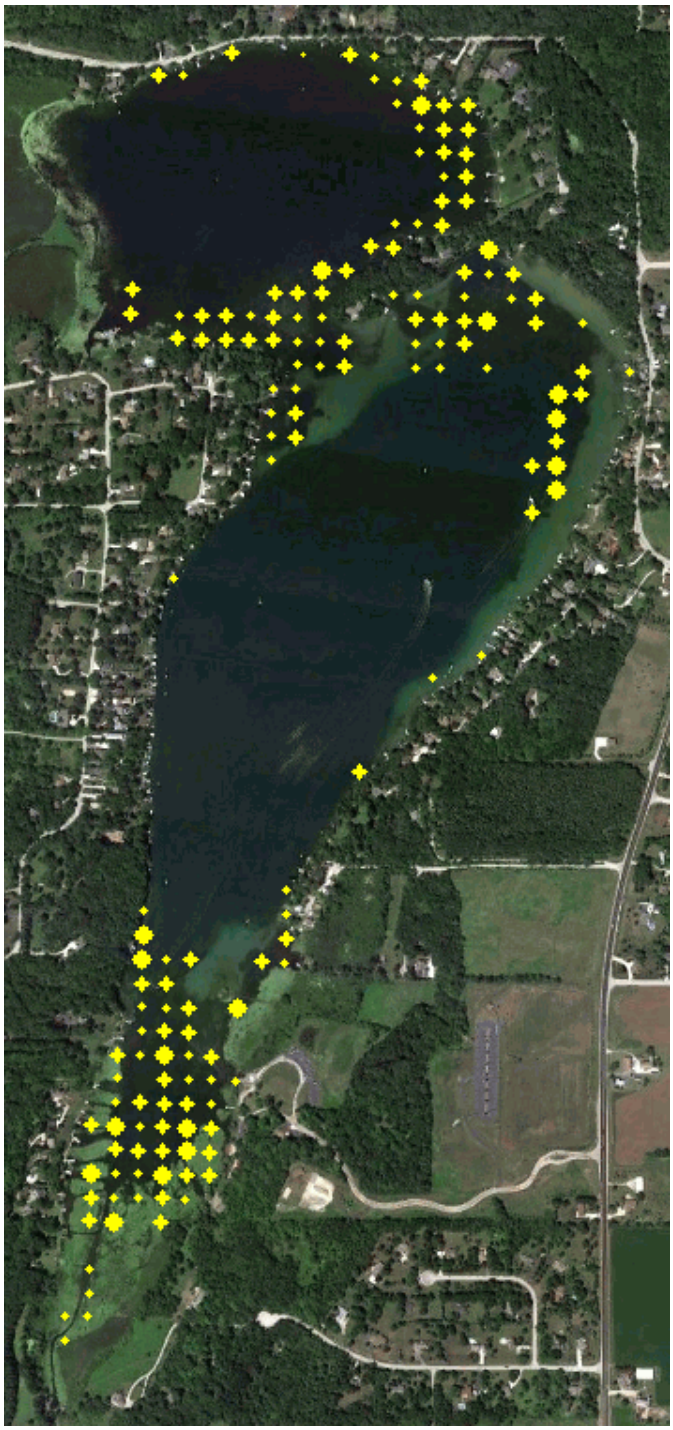
Abundance Rank (Native Plants): 1



Total # Sites Present: 132

October, 2012

Abundance Rank (Native Species): 1



Total # Sites Present: 156

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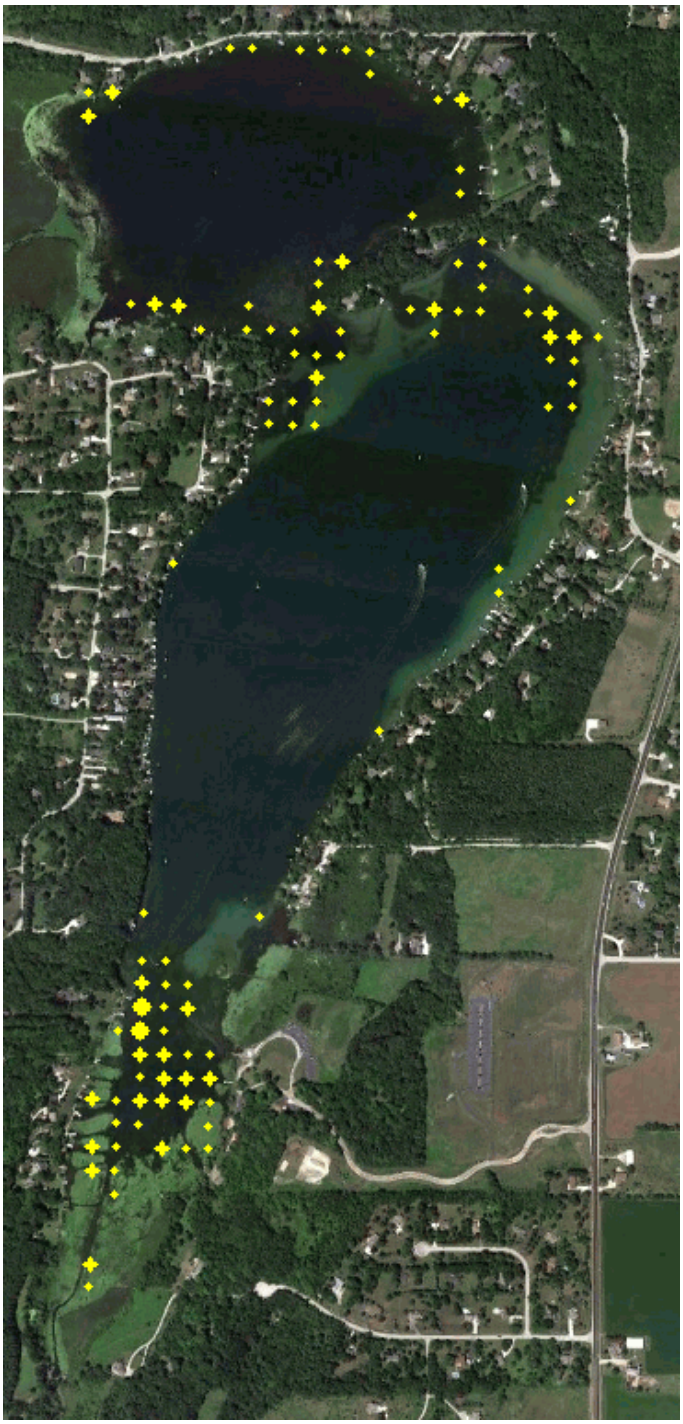
Figure 10

Location and Rake Fullness of

Illinois Pondweed (*Potamogeton illoensis*) in Little Cedar Lake, Washington County, WI

July/August, 2012

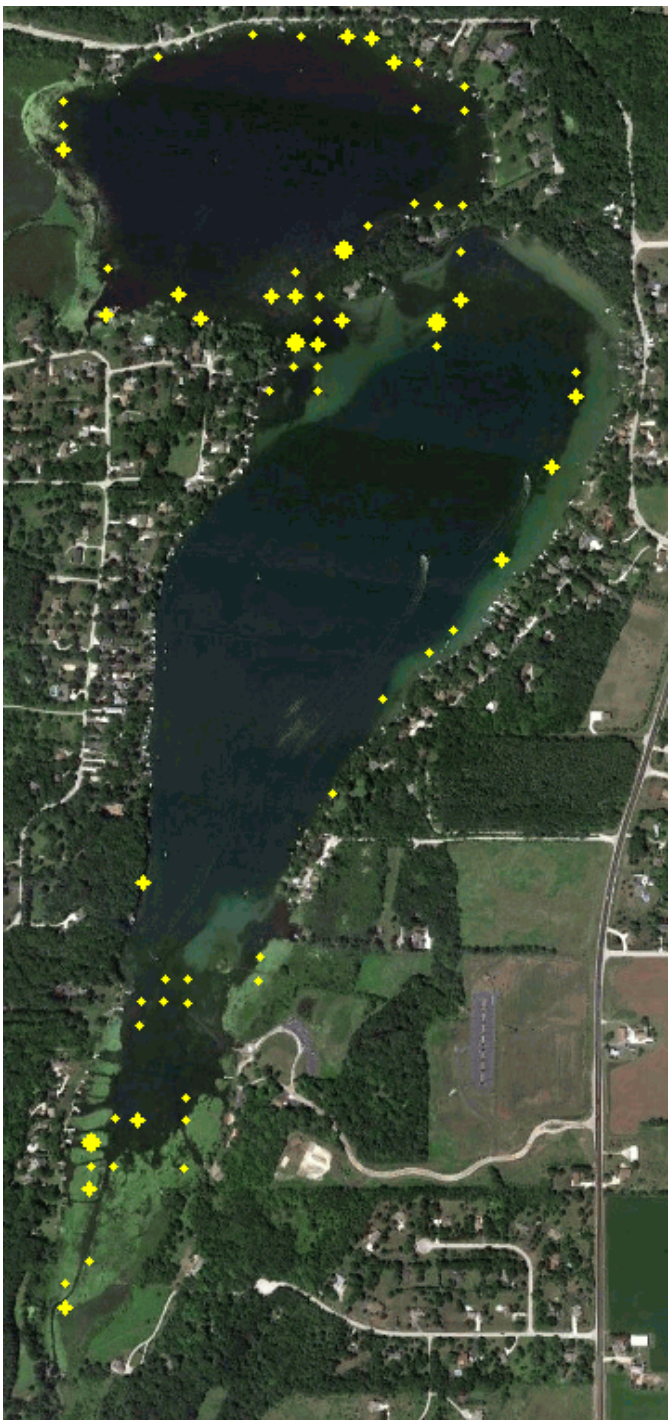
Abundance Rank (Native Species): 2



Total # Sites Present: 103

October, 2012

Abundance Rank (Native Species): 2



Total # Sites Present: 67

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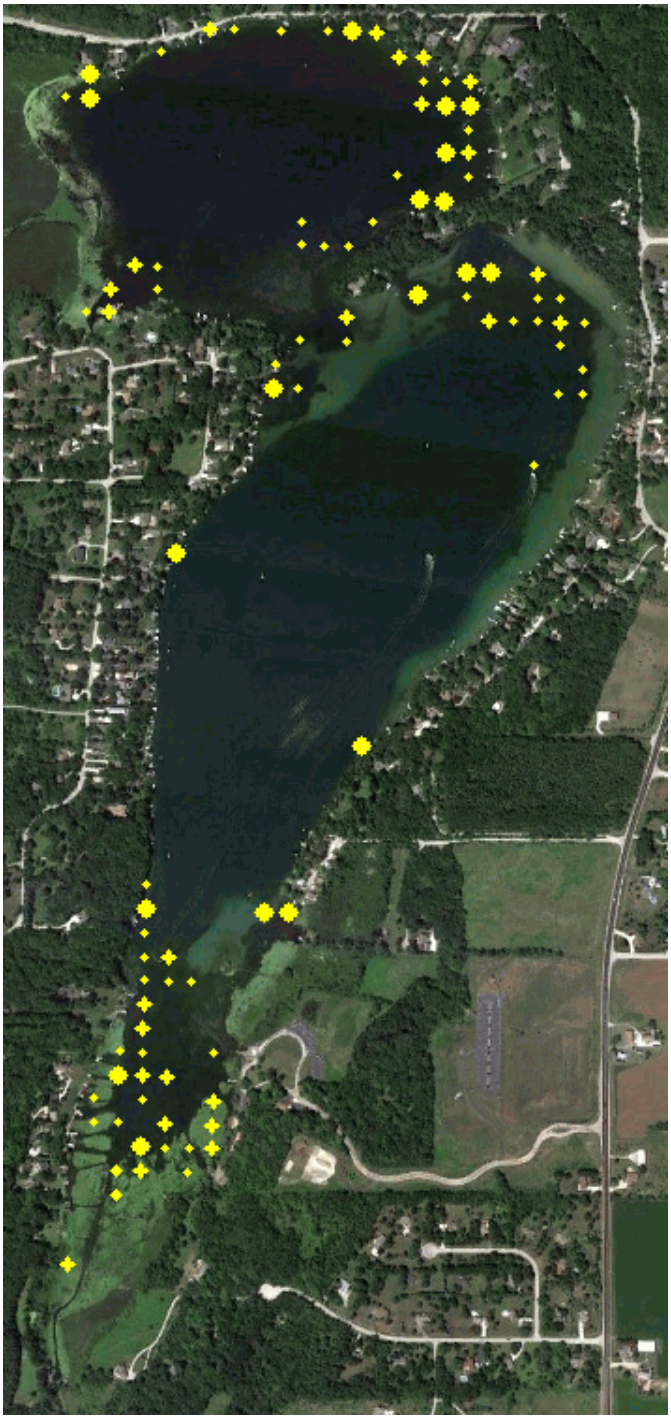
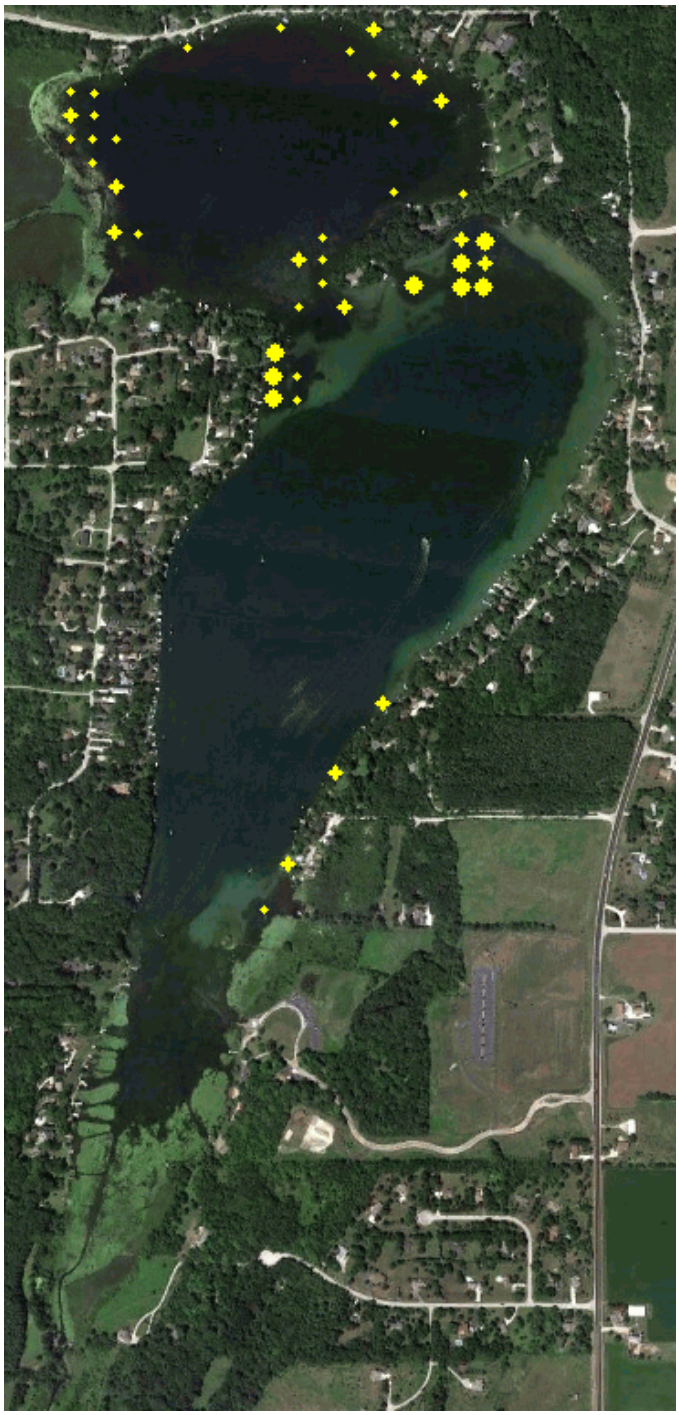
Figure 11
Location and Rake Fullness of
Flatstem Pondweed (*Potamogeton zosteriformes*)
in Little Cedar Lake, Washington County, WI

July/August, 2012
Abundance Rank (Native Species): 3



Total # Sites Present: 95

October, 2012
Abundance Rank (Native Species): 6



Total # Sites Present: 44

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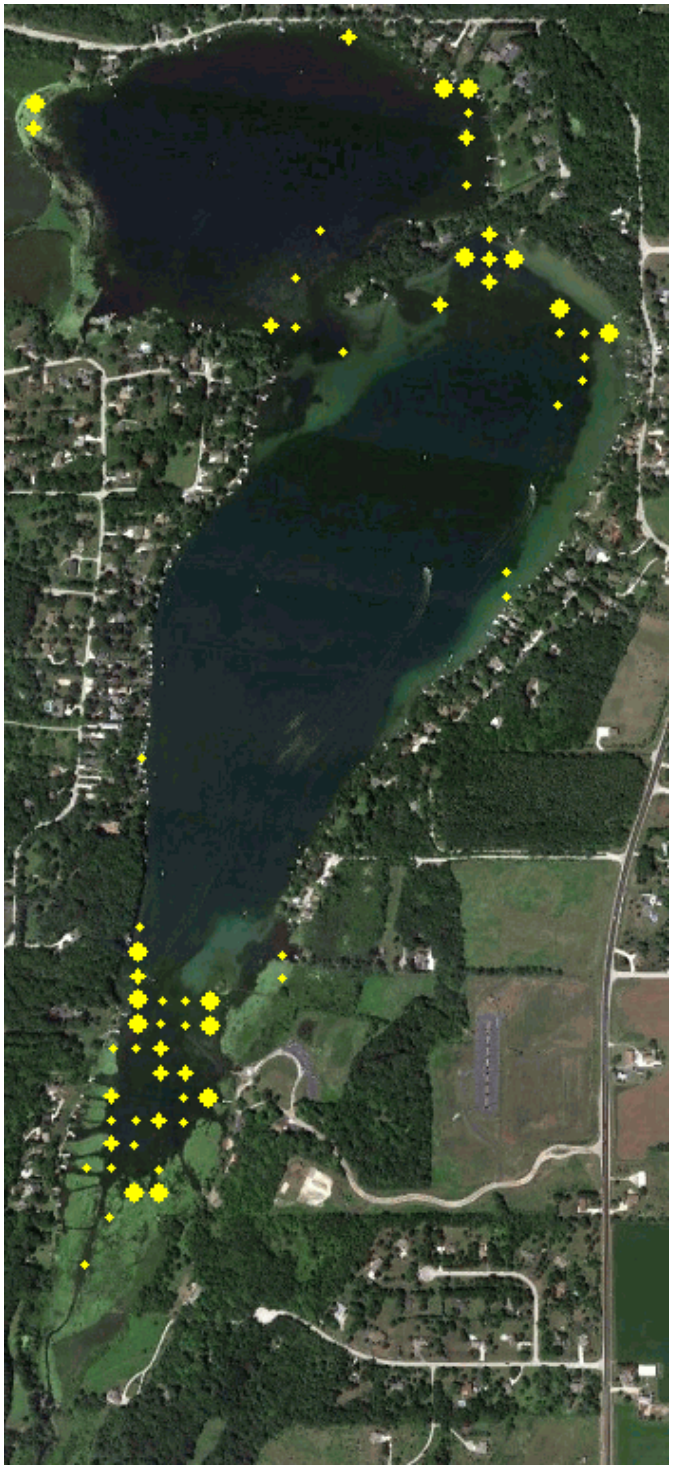
Figure 12

Location and Rake Fullness of

Muskgrass (*Chara sp.*) in Little Cedar Lake, Washington County, WI

July/August, 2012

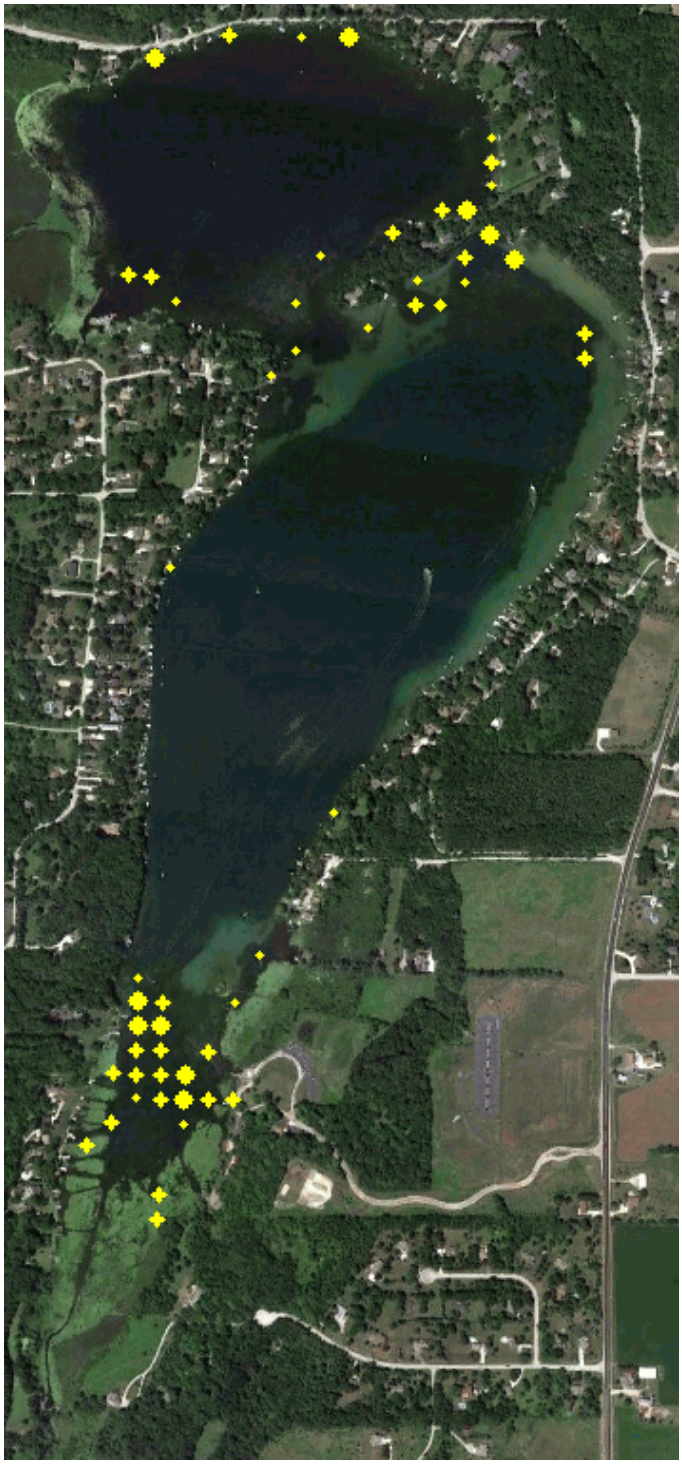
Abundance Rank (Native Species): 4



Total # Sites Present: 63

October, 2012

Abundance Rank (Native Species): 3



Total # Sites Present: 53

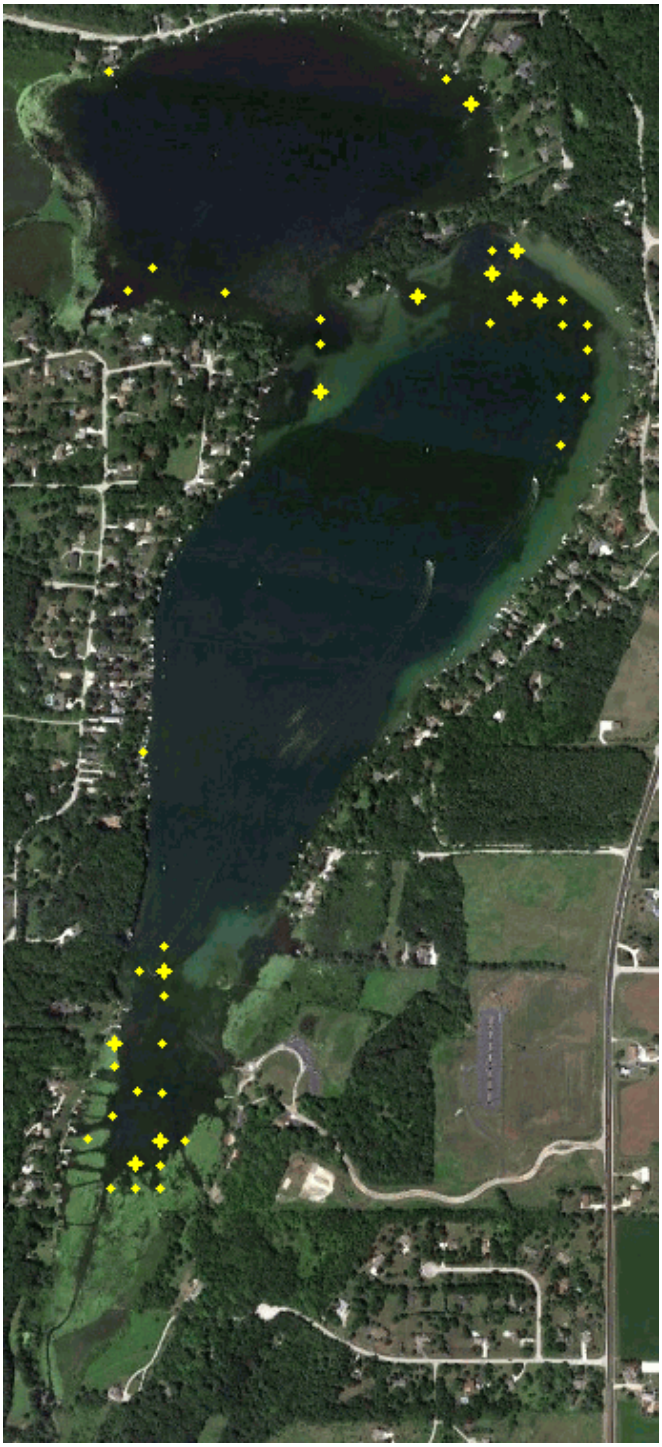
Figure 13

Location and Rake Fullness of

Sago Pondweed (*Stuckenia pectinata*) in Little Cedar Lake, Washington County, WI

July/August, 2012

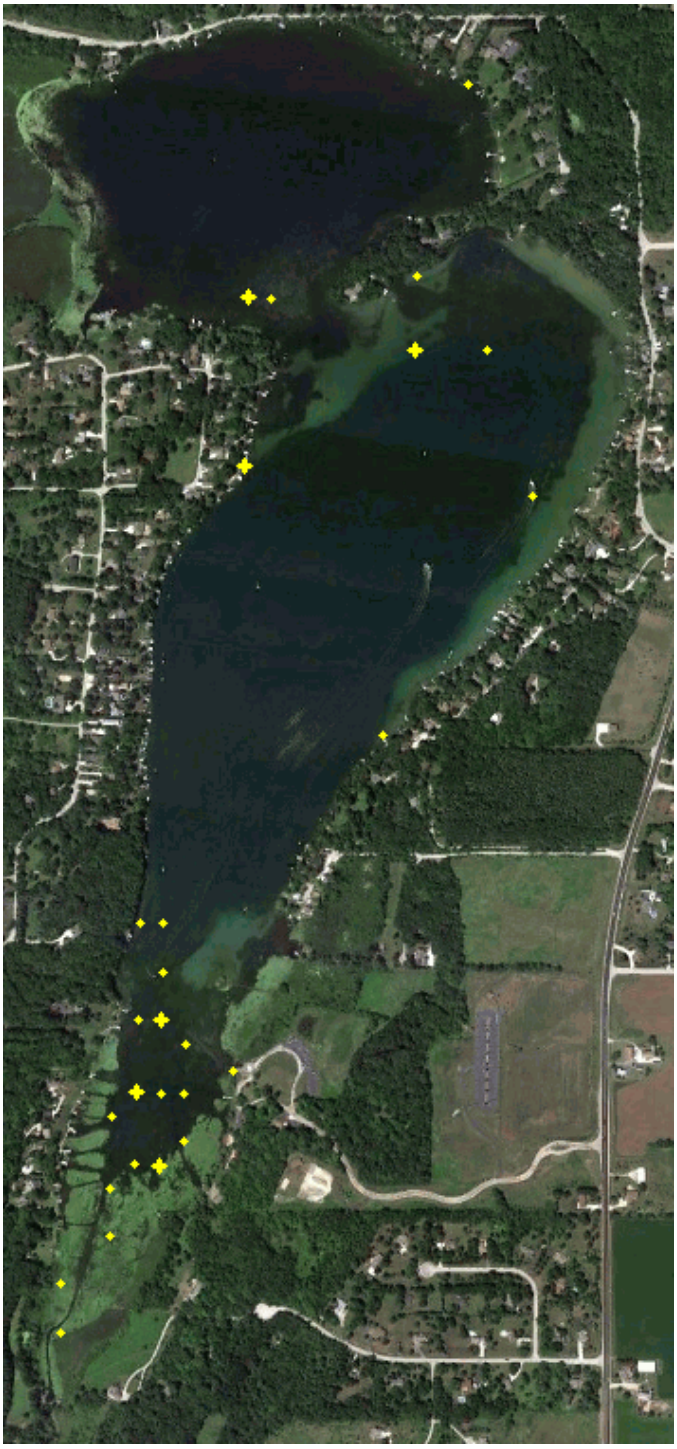
Abundance Rank (Native Species): 5



Total # Sites Present: 42

October, 2012

Abundance Rank (Native Species): 9



Total # Sites Present: 27

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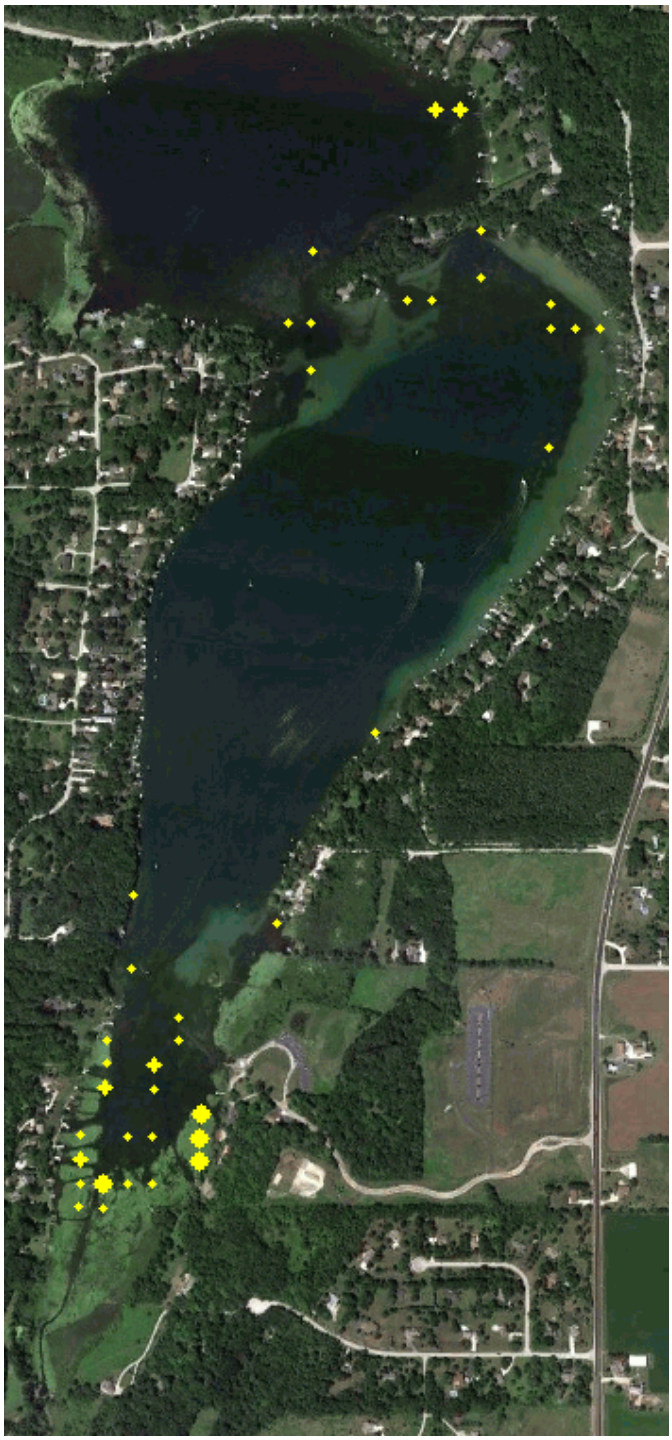
Figure 14

Location and Rake Fullness of

Slender Naiad (*Najas flexilis*) in Little Cedar Lake, Washington County, WI

July/August, 2012

Abundance Rank (Native Species): 6



Total # Sites Present: 39

October, 2012

Abundance Rank (Native Species): 10

Total # Sites Present: 8

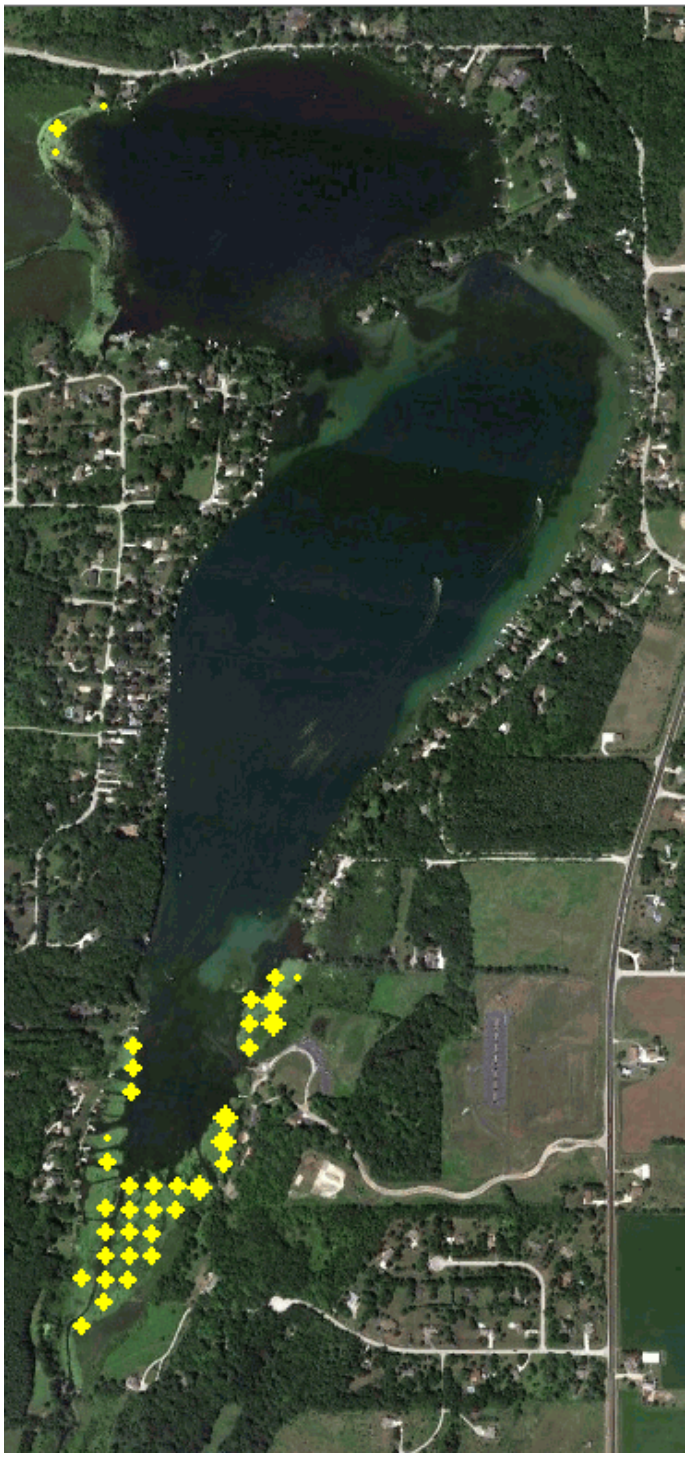
Figure 15

Location and Rake Fullness of

White Water Lily *(Nymphaea odorata*) in Little Cedar Lake, Washington County, WI

July/August, 2012

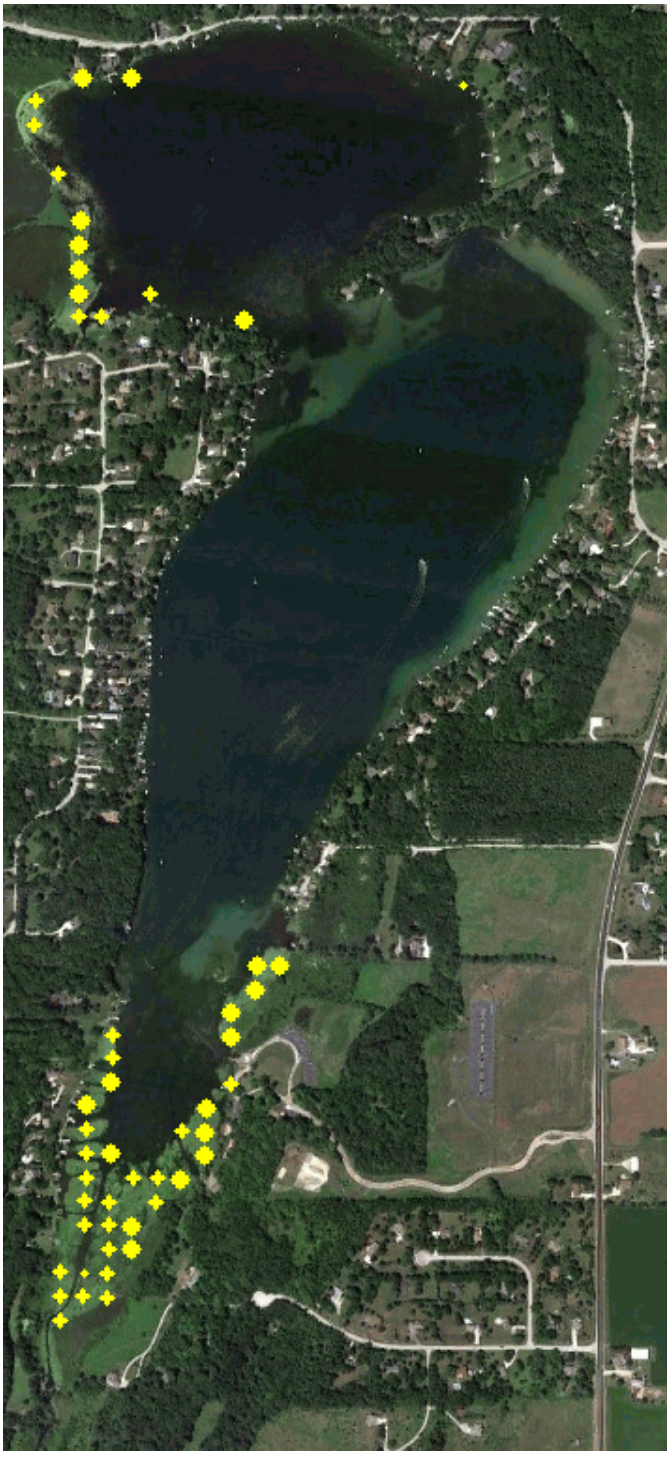
Abundance Rank (Native Species): 7



Total # Sites Present: 37

October, 2012

Abundance Rank (Native Species): 4



Total # Sites Present: 50

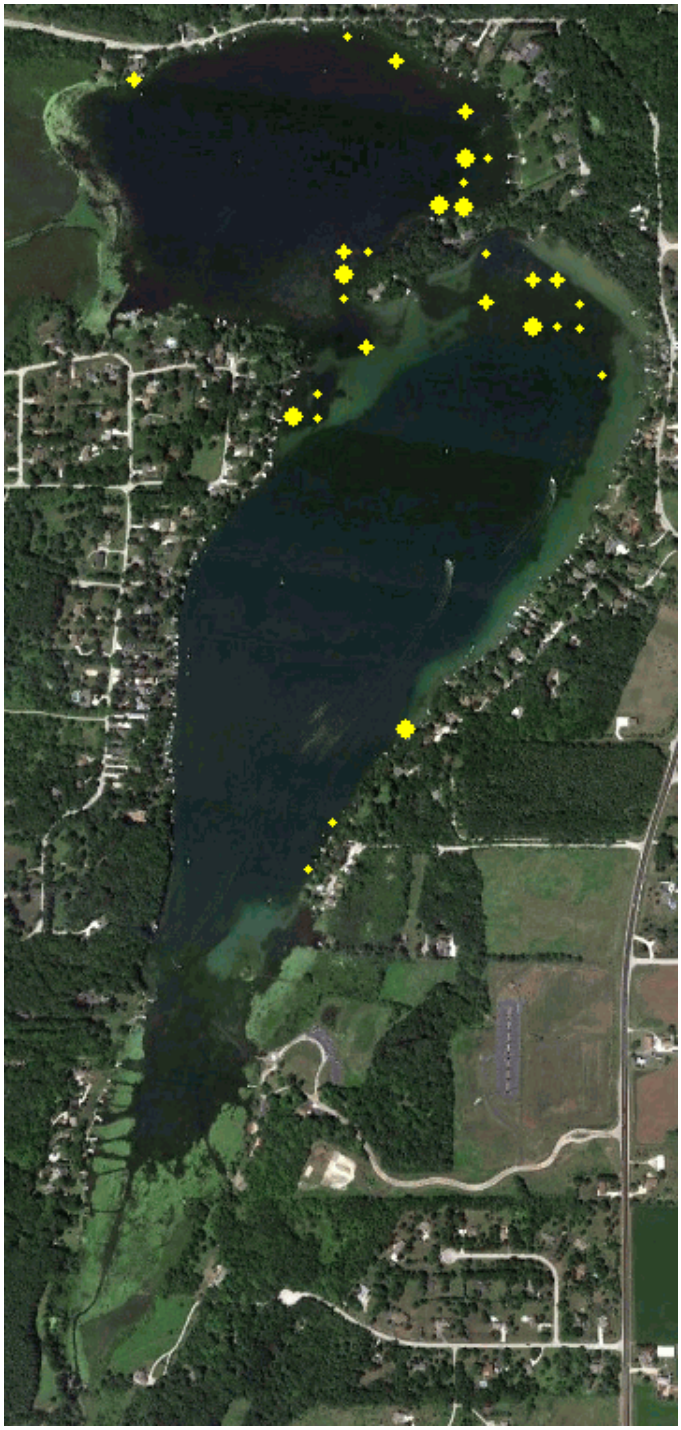
Figure 16

Location and Rake Fullness of

Watergrass *(Heteranthia dubia)* in Little Cedar Lake, Washington County, WI

July/August, 2012

Abundance Rank (Native Species): 8



Total # Sites Present: 29

October, 2012

Abundance Rank (Native Species): 4

Total # Sites Present: 50

2012 Aquatic Plant Survey Methodology and Results cont'd

Figures 17 and 18 provides a Floristic Quality Index (FQI), along with Summary Statistics for each of the two surveys. A brief discussion of the importance and meaning of this Data, and a comparison between the two surveys follows.

Total # of Sites w/ Vegetation

The number of sites having vegetation in Little Cedar Lake during the July/August and October surveys were similar in number, 240 and 256, respectively. One interesting note for Little Cedar Lake is that while much of the lake consists of water less than 15 ft. deep (slightly greater than one-half, or approximately 138 acres), less than one-half of the 614 sample sites (or 307 in number) contained vegetation. This is attributable to the rather inorganic bottom (sand, gravel, etc) in a significant portion of the lake. Conversely, areas of the lake having a more organic-rich ("muck") type bottom contained much more vegetation.

Total # Sites Shallower Than Maximum Depth of Plants

The number of sites shallower tan the maximum depth of plants for the two surveys were quite similar, 320 and 322 (July/August and October) respectively.

Frequency of Occurrence

Frequency of Occurrence, presented as a percentage, is the number of sites shallower than the maximum depth that contained vegetation. Again, the data was similar, with 75.0 percent of the sites having vegetation at the time of the earlier survey, and 79.50 percent in October.

Simpson Diversity Index

The Simpson Diversity Index (SDI) measures the diversity of a plant population, using the number of species surveyed and the number of species per site. The decimal scale ranges from 0 (low diversity) to 1 (high diversity). The SDI for the surveys were 0.91 and 0.89, respectively. This indicates a high level of diversity is found in Little Cedar Lake.

Maximum Depth of Plants

Maximum depth of plants was 17 feet and 14 feet for the surveys. It is important to note, that as per Figures 4 and Figure 5, very few sites within this depth range contained any vegetation.

Average # of Species Per Site (Shallower than maximum depth) and Average # of Species (vegetated sites only)

The values for the July/August survey were 2.70 and 3.60, and for the October survey, 1.95 and 2.45, respectively. The difference between these two surveys is due to the lower number of species being found during the October survey, potentially due to the time of year and/or dominance of a particular species that continues to grow late into the season. As shown on the distribution map for Eurasian Watermilfoil, the number of sites where it was found declined considerably, which had an impact upon this value as well.

Avg. # of Native Species/Site (shallower than max. depth) and Avg. # of Native Species/ Site (vegetated sites only)

Again the numbers for the earlier survey were somewhat higher, 2.23 and 3.29, versus 1.77 and 2.33 for the October survey.

Species Richness

Species richness is simply the number of species observed in the lake during the surveys. The number for the earlier survey was much higher (28) versus the October survey (18). The continuing drought and declining water levels, along with the lateness in the season (October survey) were all factors. Access to the emergent plant communities to identify genus and species had quite literally, "dried up". Curlyleaf Pondweed, an early season plant, typically dies after the 4th of July. Finally, a number of relatively "uncommon" plant species found during the earlier survey in relative low frequencies (number of sites found) inhabit inhabit rather unique "niches" in shallow water that were impacted by the drought and declining water levels. These include Water Marigold (*Bidens bekii ,* present one site), White Water Crowfoot (*Ranunculus aquatilis*, present 17 sites) and Common Bladderwort (*Utricularia vulgaris,* present four sites).

Floristic Quality of Index

The Floristic Quality Index (FQI) is a measure of a plant community's closeness to an undisturbed condition. Urban lakes, or those with a high level of boat traffic have lower FQI's, meaning fewer species or lacking specific native species that are often associated with undisturbed conditions. The FQI for the July/August survey was 27.4, and October, 20.5.

FQI's for any particular lake are often compared to regional or state-wide averages in order to provide perspective. FQI values representing the highest value of the lowest quartile, mean and bottom of the highest quartile of all Wisconsin lakes are 16.9, 20.9, and 27.5. This places Little Cedar in the average to good category in terms of disturbance. For additional perspective, the lowest FQI measured 3.0 (most disturbed), and the highest, 44.6 (most undisturbed).

Figure 17

Floristic Quality Index (FQI) and Summary Statistics

July/August, 2012 Aquatic Plant Survey - Little Cedar Lake, Washington County, WI

Floristic Quality Index

Species	Common Name	C	species present=1
Bidens beckii	Water marigold	8	1
Ceratophyllum demersum	Coontail	3	1
Chara	Muskgrasses	7	1
Elodea canadensis	Common waterweed	3	1
Heteranthera dubia	Water star-grass	6	1
Lemna trisulca	Forked duckweed	6	1
Myriophyllum sibiricum	Northern water-milfoil	6	1
Myriophyllum verticillatum	Whorled water-milfoil	8	1
Najas flexilis	Slender naiad	6	1
Nuphar variegata	Spatterdock	6	1
Nymphaea odorata	White water lily	6	1
Polygonum amphibium	Water smartweed	5	1
Potamogeton amplifolius	Large-leaf pondweed	7	1
Potamogeton foliosus	Leafy pondweed	6	1
Potamogeton illinoensis	Illinois pondweed	6	1
Potamogeton natans	Floating-leaf pondweed	5	1
Potamogeton richardsonii	Clasping-leaf pondweed	5	1
Potamogeton zosteriformis	Flat-stem pondweed	6	1
Ranunculus aquatilis	White water crowfoot	8	1
Schoenoplectus acutus	Hardstem bulrush	6	1
Stuckenia pectinata	Sago pondweed	3	1
Typha angustifolium	Narrow-leaved cattail	1	1
Typha latifolia	Broad-leaved cattail	1	1
Utricularia vulgaris	Common bladderwort	7	1
Vallisneria americana	Wild celery	6	1

Summary Statistics

Total number of sites visited	**387**
Total number of sites with vegetation	**240**
Total number of sites shallower than maximum depth of plants	**320**
Frequency of occurrence at sites shallower than maximum depth of plants	**75.00**
Simpson Diversity Index	**0.91**
Maximum depth of plants (ft)**	**17.00**
Number of sites sampled using rake on Rope (R)	**340**
Number of sites sampled using rake on Pole (P)	**0**
Average number of all species per site (shallower than max depth)	**2.70**
Average number of all species per site (veg. sites only)	**3.60**
Average number of native species per site (shallower than max depth)	**2.23**
Average number of native species per site (veg. sites only)	**3.29**
Species Richness	**28**
Species Richness (including visuals)	**28**

N= 25 (number of native species present)

mean C = 5.48

FQI=27.4

CITATION: **Nichols, SA. 1999. Floristic Quality Assessment of Wisconsin Lake Plant Communities with Example Applications. Journal of Lake and Reservoir Management, 15(2):133-141.**

CITATION: **University of Wisconsin-Madison, 2001. Wisconsin Floristic Quality Assessment (WFQA). Retrieved October 27, 2009 from: http://www.botany.wisc.edu/WFQA.asp**

Figure 18

Floristic Quality Index (FQI) and Summary Statistics

October, 2012 Plant Survey - Little Cedar Lake, Washington County, WI

Floristic Quality Index

Species	Common Name	C	species present=1
Ceratophyllum demersum	Coontail	3	1
Chara	Muskgrasses	7	1
Elodea canadensis	Common waterweed	3	1
Heteranthera dubia	Water star-grass	6	1
Myriophyllum sibiricum	Northern water-milfoil	6	1
Najas flexilis	Slender naiad	6	1
Nymphaea odorata	White water lily	6	1
Potamogeton amplifolius	Large-leaf pondweed	7	1
Potamogeton foliosus	Leafy pondweed	6	1
Potamogeton illinoensis	Illinois pondweed	6	1
Potamogeton natans	Floating-leaf pondweed	5	1
Potamogeton richardsonii	Clasping-leaf pondweed	5	1
Potamogeton zosteriformis	Flat-stem pondweed	6	1
Schoenoplectus acutus	Hardstem bulrush	6	1
Stuckenia pectinata	Sago pondweed	3	1
Typha sp.	Cattail	1	1
Vallisneria americana	Wild celery	6	1

Summary Statistics

Total number of sites visited	**610**
Total number of sites with vegetation	**256**
Total number of sites shallower than maximum depth of plants	**322**
Frequency of occurrence at sites shallower than maximum depth of plants	**79.50**
Simpson Diversity Index	**0.89**
Maximum depth of plants (ft)**	**14.00**
Number of sites sampled using rake on Rope (R)	**309**
Number of sites sampled using rake on Pole (P)	**0**
Average number of all species per site (shallower than max depth)	**1.95**
Average number of all species per site (veg. sites only)	**2.46**
Average number of native species per site (shallower than max depth)	**1.77**
Average number of native species per site (veg. sites only)	**2.33**
Species Richness	**18**
Species Richness (including visuals)	**18**

N= 16 (number of native species present)

mean C = 5.125

FQI=20.5

CITATION: **Nichols, SA. 1999. Floristic Quality Assessment of Wisconsin Lake Plant Communities with Example Applications. Journal of Lake and Reservoir Management, 15(2):133-141.**

CITATION: **University of Wisconsin-Madison, 2001. Wisconsin Floristic Quality Assessment (WFQA). Retrieved October 27, 2009 from: http://www.botany.wisc.edu/WFQA.asp**

Aquatic Plant Management Alternatives and Recommendations

As indicated in the Introduction, the primary intent of this endeavor was to document the aquatic plant community of Little Cedar Lake as it exists now, with the last field survey occurring in the summer of the year 2000. However, at the same time it is desirable to re-visit the recommendations offered in the 2004 SEWRPC report, and make revisions, as needed.

Chapter IV of the SEWRPC report reviews in great detail both long-term management measures to protect the lake and the surrounding watershed as well as to meet the (then) needs of the residents in terms of aquatic plant control. Our discussion here will be limited solely to the topic of Aquatic Plant Control. Control alternatives and recommendations made in the earlier Plan, along with efforts made by the District in recent years will be reviewed. Finally, recommendations on changes to the existing Aquatic Plant Management Plan will be offered.

Once it has been determined that plants, whether by species (native and/or non-native), abundance, or location within high-use recreational waters are causing a nuisance, an attempt can be made to review and select amongst the control alternatives available. These can be selected based upon the degree of control desired, species present, growth habits of the nuisance plant, location in the lake, size and/or depth of the proposed control area, as well as applicable regulations. Several control methods are currently available to lake residents or organizations within the State of Wisconsin. These include:

1) *Manual (physical) Removal*, including hand-pulling, raking, or cutting. Labor intensive, these are best suited to relatively shallow, near-shore areas where a very high degree of control is desired, such as in a swimming beach.

   State regulations currently allow residents to manually cut/pull and remove aquatic vegetation along their shoreline *without a state (DNR) permit* providing that the activity occurs along *no more than thirty (linear) feet of shoreline* in the event that the vegetation targeted consists of *native aquatic plant species*. In the event that *more than thirty feet of shoreline is to be managed*, a permit is required except for instances where the target species is non-native (invasive), such as the case of Eurasian Watermilfoil and/or Curlyleaf Pondweed.

2) *Habitat Manipulation* can include temporary activities, such as the installation of bottom-barriers, or more permanent, such as the deposition of sand on the lake bottom (ex., Washington County beach at Ackermann's Grove). In either event a permit is required. Dredging (permit required), may also be an option for plant control under some limited circumstances, as its' primary function is to improve navigation.

3) Biological Controls*,* that include plant eating fish (White Amur or Grass Carp), insects that live within and feed upon host plants during a part of their life cycle. While the import of the White Amur is banned within the State of Wisconsin, use of the other organisms (Milfoil weevil, Purple Loosestrife beetles) are an option under an approved DNR permit.

4) *Public Information and Education,* includes informing the public about the benefits of a native plant population, how to identify aquatic invasive species from their native counterparts, preventing the spread of aquatic invasive species, the types of tools available for control (should it be necessary) and regulations pertaining to their use.

Aquatic Plant Management Alternatives (continued)

5) *Aquatic Herbicides and/or Algaecides* are chemical compounds specifically formulated to control excessive plant and/or algae growth. These products may be utilized for aquatic plant control only if they are registered for use by the United States Environmental Protection Agency (U.S.E.P.A.) and the Wisconsin Department of Agriculture (W.D.A.T.C.P.) in lakes, ponds, etc. Additionally, the application of these compounds is regulated under a permit system by the Wisconsin Department of Natural Resources. Further, the type of product that can be applied to a public body of water by individuals is limited to granular formulations to sites under 0.25 acre in size unless it is applied by an certified applicator (WDATCP). Finally, it is important to note that some compounds may be effective upon a limited number of species. Additional selectivity may be achieved, if desired, by other factors, including treatment timing time of season).

Existing Aquatic Plant Management Control Recommendations

The 2004 *Aquatic Plant Management Plan for Little Cedar Lake* (SEWRPC) recommended a variety of activities (beginning, page 56), including aquatic herbicides, mechanical harvesting, manual (physical) removal, and public information/education efforts. Furthermore, the recommended plant control measures were prescribed according to particular areas of the lake, or to particular species.

It should also be noted that certain areas of the lake were set aside as Designated Sensitive areas. As such, the primary objective of management within these areas is the preservation of valuable habitat, whether for waterfowl, songbirds, furbearers, amphibians, fish and/or insects. This Designation specifies what aquatic plant management activities (if any) may occur within these areas. Figure 19, taken from page 39 of the SEWRPC report details the location of areas designated by the WI DNR as *Sensitive Areas.*

Activities restricted within these are summarized on Figure 20 and are excerpts taken directly from the August, 1991 Sensitive Area Assessment made by the WI DNR.

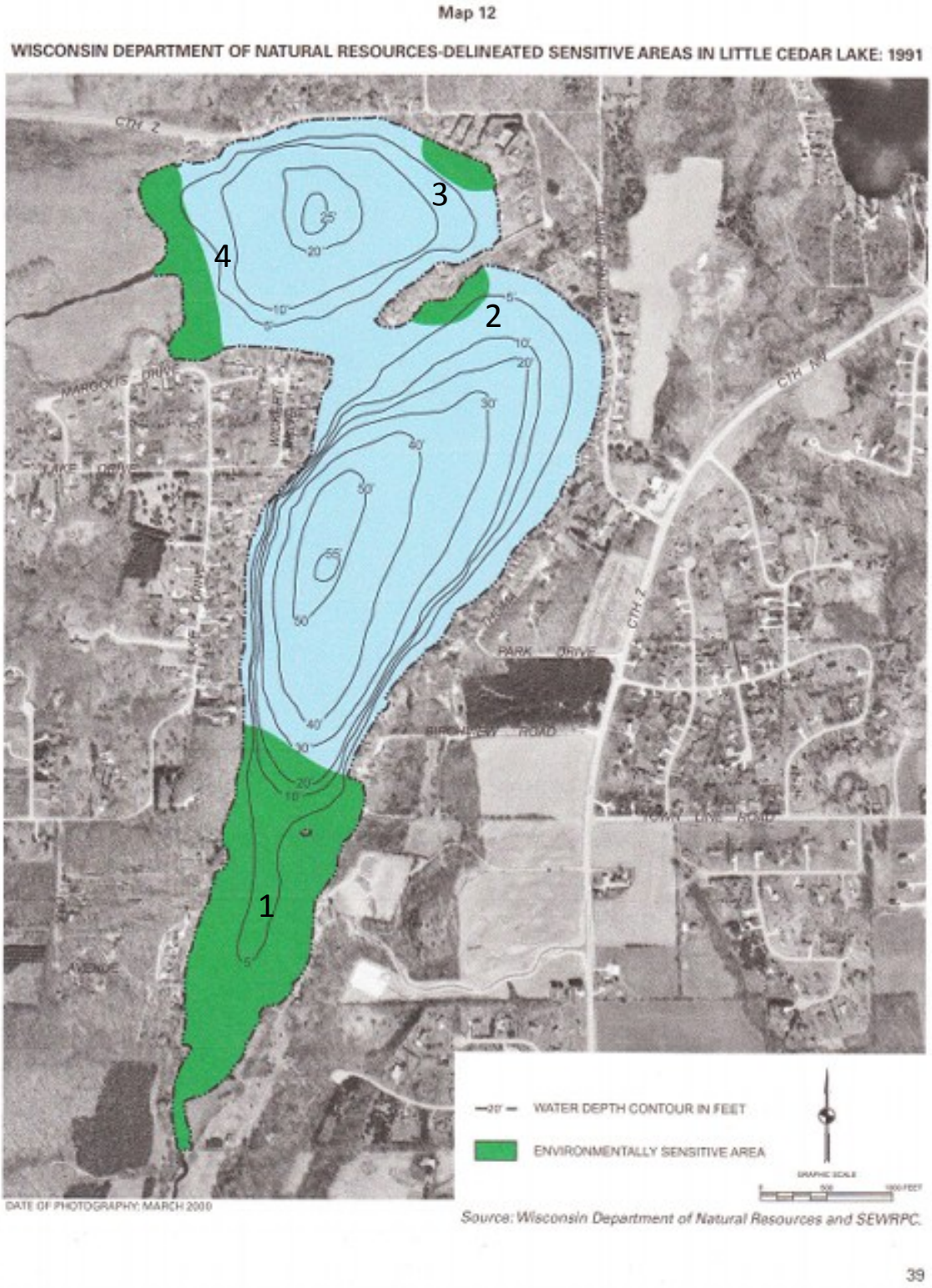
Figure 21, Map 16 from the 2004 SEWRPC Plan details the recommended plant management activity (including “None”) within the various portions of Little Cedar Lake, according to factors such as water depth, adjacent shoreline use (residential vs. “natural”), degree and type of recreational use and plant species present (native vs. non-native).

The SEWRPC Plan, in general, recommended that the District consider the (limited) use of herbicides for selective control of Eurasian Watermilfoil, as needed along developed shorelines, and within designated “control zones” offshore. Harvesting was recommended to provide specifically for navigation lanes to and from the “Kettle” as well as the Ackermann’s Grove Boat Launch, and where needed at intermediate water depths (5-10 ft.) to control native plant populations interspersed with Eurasian Watermilfoil. Hand removal was encouraged immediately around piers and docks. Deep water areas required no management, and “No Control” was recommended in shallow areas dominated by emergent vegetation and/or water lily and having limited access to watercraft.

Figure 19

DNR Designated Sensitive Areas within Little Cedar Lake

Source: WI DNR Sensitiv Area Assessment (1991), SEWRPC (2004)



39

Figure 20

Water Use Restrictions within DNR Designated Sensitive Areas—Little Cedar Lake—Washington County, WI

Source: August, 1991 Sensitive Area Assessment by WI DNR

MANAGEMENT RESTRICTIONS FOR SENSITIVE AREAS

The Department of Natural Resources currently has regulatory authority over a wide variety of activities that take place in or near surface waters of the state. Placing restrictions on specific activities that would disturb the aquatic plant community in Little Cedar Lake will help to protect the fish, wildlife, and water quality of the lake.

1. The use of aquatic herbicides is not allowed for the control of aquatic vegetation.

Contact Person: Rob McLennan, Water Resources Manager, 263-8714

2. The use of aquatic herbicides for the control of aquatic plants and algae will be allowed only for Eurasian Water Milfoil.

Contact Person: John Nelson, Fish Manager, 892-8756
Rob McLennan, Water Resource Manager, 263-8714

3. None of the following inlake activities allowed.
   a) Filling
   b) Pea Gravel/Sand Blankets
   c) Aquascreen
   d) Concrete, Timber, or Steel Seawalls

Contact Person: Joanne Kline, Water Regulations and Zoning, 263-8673

4. Rock riprap will be allowed for shoreline protection in areas with erosion problems.

Contact Person: Joanne Kline, Water Regulations and Zoning, 263-8673

5. Individual piers will be allowed and proposals for marina piers will be evaluated on a case by case basis.

Contact Person: Joanne Kline, Water Regulations and Zoning, 263-8673

MANAGEMENT RESTRICTIONS BY SENSITIVE AREA

Sensitive Area 1	Restrictions 1, 3-5
Sensitive Area 2	Restrictions 2-5
Sensitive Area 3	Restrictions 2-5
Sensitive Area 4	Restrictions 1, 3-5

MANAGEMENT RECOMMENDATIONS

Additional recommendations are also made to provide management guidance in areas which the department does not have regulatory control or can be better implemented at the local level.

1. The department staff recommends that no mechanical harvesting take place in designated sensitive areas unless associated with a research program to increase the diversity of aquatic plants. Small hand cleared areas for swimming or navigation is acceptable.

Contact Person: Rob McLennan, Water Resources Manager, 263-8714

2. Strictly enforce or encourage adoption of construction site erosion control ordinance.

3. Strictly enforce shoreland and wetland ordinance.

Historical Plant Management Activities

The Wisconsin Department of Natural Resources has records of herbicide use within Little Cedar lake going back as far as 1950. These early records indicate intermittent use of herbicides between the years 1950-2000, becoming fairly regular in the years 1984-91. Treatments during the 1980's occurred as "spot-treatments" on individual (participating) properties for control of both native and/or non-native plants, "as needed", under supervision of the Wisconsin DNR. A review of treatment records for Little Cedar Lake occurring between the years 1950-2000 (WI DNR and SEWRPC) and 2003-2013 (Marine Biochemists) is found in Figure (22).

This reliance on chemical controls on an individual frontage basis began to shift with the formation of Little Cedar lake Protection and Rehabilitation District ("District") in 1990. As reported by SERPC in 2005, mechanical harvesting of aquatic plants became the "preferred method of managing nuisance growths of aquatic plants within Little Cedar Lake".

Citing an expansion of Eurasian Watermilfoil during the late 1990's and early 2000's, the District began investigating the use of selective herbicides for controlling EWM. The first treatment of Little Cedar Lake under the sponsorship of the District occurred in 2003. In 2003 a permit covering (up to) approximately 46 acres was obtained from the WI DNR. Figure 23 (Map 10, SEWRPC Plan) shows the Distribution of Non-Native Aquatic Plants (Eurasian Watermilfoil and Curlyleaf Pondweed) according to the 2000 survey. Approximately 31.44 acres were treated in 2003.

Since 2003, EWM has been treated annually with the exception of the years of 2009 and 2010. Beginning in 2006 a noticeable decline in EWM was noted (B. Suffern, field notes, 2006). This was attributable in part due to earlier (successful) treatments, reduced water clarity, and recovery/expansion of the native plant population. Utilization of an underwater camera also showed denuded EWM stems covered with Zebra Mussels. These mussels can interfere with normal growth by "weighting down" the stems, preventing them from reaching the water surface and forming dense canopies often associated with "nuisance growth" of this species.

Data collected during the period 2003-2013 (11 years) indicate the following:

1) EWM treated *nine of eleven years*.
2) Treatment *minimum of 3.25 acres* (2006), *maximum of 31.44 acres* (2003).
3) *Average* of *12.8 acres* (nine years lake was treated), *median of 11 acres and mode of 8.0 acres*.

The resurgence seen in 2012 (21.5 acres) was the *second highest during that period, with the third highest being in 2011 (15.5 acres).* This was attributable to the drought, which brought declining water levels and improved water clarity. This combination led to a dramatic increase in EWM populations in lakes across southern and southeastern Wisconsin.

One final note, the 2013 treatment included two new areas (not previously treated) covering a total of 10.5 acres. This included the west shore (main lake) and the northeast corner of the main lake, which had not been treated for several years.

A copy of the approved 2012 Mechanical Aquatic Plant Control Permit Application is located in the Appendix. This includes Amendments (Notes) by Heidi Bunk, WI DNR Biologists as to where Harvesting *could occur in an area not exceeding 30 acres in size.*

Figure 21

Recommended Aquatic Plant Management Activities—Little Cedar Lake

Source: SEWRPC, 2000

Map 16

RECOMMENDED AQUATIC PLANT MANAGEMENT PLAN FOR LITTLE CEDAR LAKE

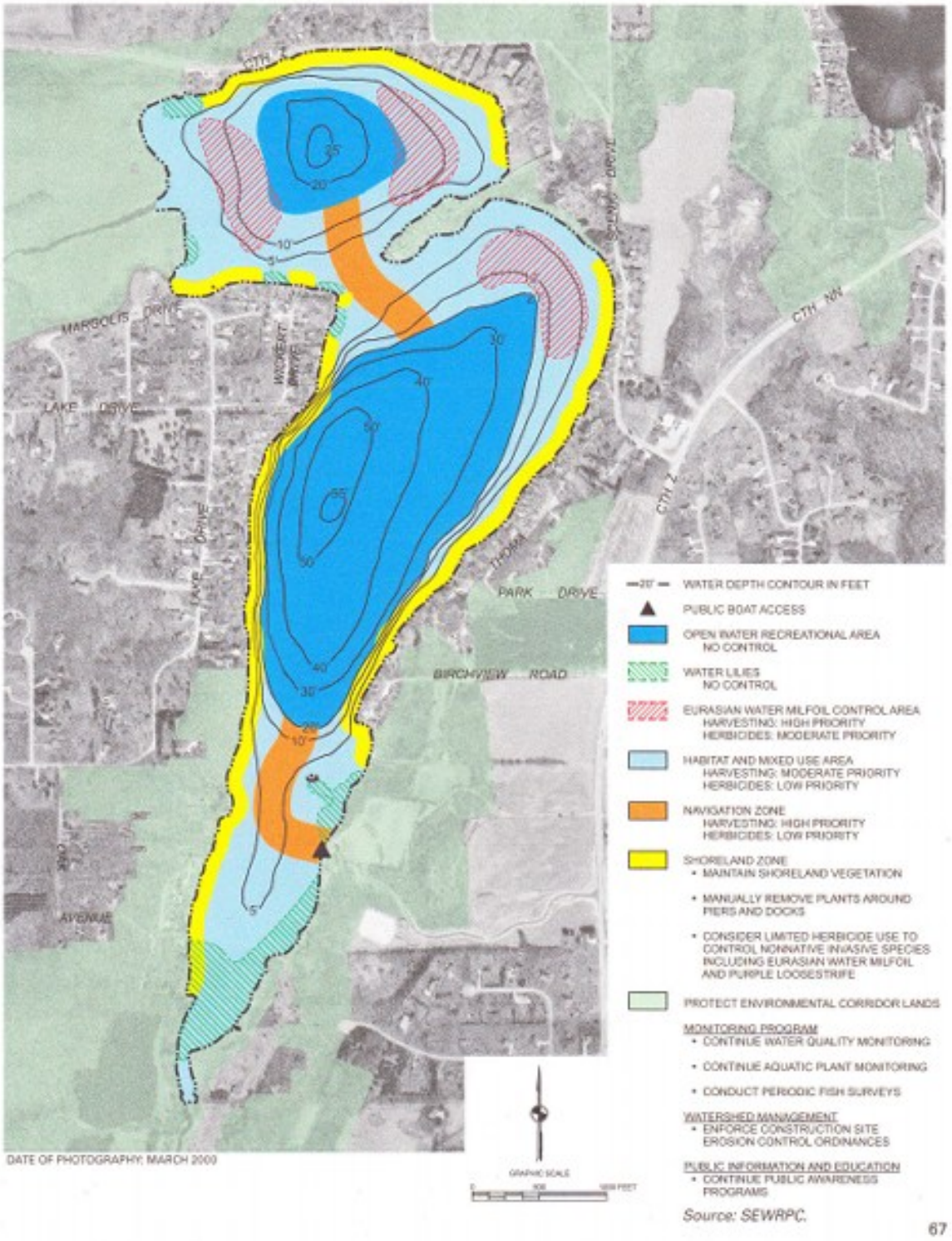


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Figure 22

Use of Herbicides in Little Cedar Lake 1950-2000 9table 9, SEWRPC, 2005)

And 2003-2013 (below, Marine Biochemists)

Table 9

CHEMICAL CONTROLS ON LITTLE CEDAR LAKE: 1950-2000

Year	Macrophyte Control						Algal Control	
	Sodium Arsenite (pounds)	Diquat (gallons)	Aquathol-K		2,4-D		Cutrine-Plus (gallons)	Copper Sulfate (pounds)
			Gallons	Pounds	Gallons	Pounds		
1950-1969	--	--	--	--	--	--	--	700
1970	--	5.00	--	--	--	--	--	--
1971[a]	--	--	--	--	--	--	--	--
1972	--	--	100.0	--	--	--	--	--
1973[a]	--	--	--	--	--	--	--	--
1974[a]	--	--	--	--	--	--	--	--
1975[a]	--	--	--	--	--	--	--	--
1976[a]	--	--	--	--	--	--	--	--
1977	--	--	--	50	--	--	--	--
1978[a]	--	--	--	--	--	--	--	--
1979[a]	--	--	--	--	--	--	--	--
1980[a]	--	--	--	--	--	--	--	--
1981[a]	--	--	--	--	--	--	--	--
1982[a]	--	--	--	--	--	--	--	--
1983[a]	--	--	--	--	--	--	--	--
1984	--	--	4.0	--	61	--	37.00	--
1985	--	--	105.0	--	44	--	11.00	--
1986[a]	--	--	--	--	--	--	--	--
1987	--	6.50	1.5	--	--	--	8.00	--
1988	--	--	--	--	--	5	--	--
1989	--	1.50	4.3	--	15	--	6.00	--
1990	--	6.78	--	--	53	--	9.53	--
1991	--	59.00	1.5	--	16	--	5.75	--
1992	--	--	--	--	--	--	--	--
1993-2000[a]	--	--	--	--	--	--	--	--
Total	--	78.78	216.3	50	189	5	77.28	700

[a]*No chemical controls were reported during these years.*

Source: Wisconsin Department of Natural Resources and SEWRPC

Herbicide Use in Little Cedar Lake 2003-2013*

Year	Permit Acreage	Treated Acreage	2,4-D Liquid (gal)	2,4-D (Liq.) Acres	2,4-D Granular (#)	2,4-D (Gran.) Acres
2003	45.48	31.44	110	18.44	1300	13.0
2004	45.48	8	-	-	800	8.0
2005	17.54	4.0	-	-	400	4.0
2006	?	3.25	-	-	325	3.25
2007	?	11.0	-	-	1100	11.00
2008	29.94	8.0	-	-	800	8.00
2009	?	?	?	?	?	?
2010	18.0	0	-	-	-	-
2011	19.9	15.5	-	-	1600	-
2012	26.5	21.5	155	21.5	-	-
2013	56.7	12.9	57	5.9	700	7.00

*Source: Marine Biochemists Treatment Records

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Proposed Aquatic Plant Management Plan

In both the 2000 and this 2012 survey, Little Cedar Lake was found to have a very healthy and diverse native plant populations. That being said, both surveys indicated a strong presence of non-native plants, Eurasian Watermilfoil in particular. In the May, 2004 SEWRPC Plan, it was suggested that selective use of herbicides be considered to control Eurasian Watermilfoil and/or Curlyleaf Pondweed.

The use of herbicides in Little Cedar Lake has demonstrated that selective controls, such as 2,4-D, can be effective in controlling EWM in a manner that has minimal effect upon most native species of plants. Once dominant within the west and east portions of the Kettle, as well as northeast portion of the main lake (SEWRPC, 2004), it is more interspersed with native species, particularly in the shallows (0-5 ft. in depth). EWM typically becomes problematic, forming dense canopies that impede motor traffic and shade native plant species between 5-10 feet, particularly in the main lake.

Native plant species also occur at densities that can impede recreational activities, such as swimming and boating within high use areas. Manual and mechanical techniques are generally preferred for control of native plants, as they control, rather than kill the entire plants.

As a healthy and diverse native aquatic plant population is a necessary component of a lake ecosystem, it is important to manage them in a manner that protects them in the long term by limiting controls to areas where they *significantly impair from the waters recreational usage.* Aquatic plants play as vital role in the health of a lake system, including:

- Serve as a food source for waterfowl
- Provide as habitat for small fish and the aquatic insects they feed upon.
- Contribute to good water clarity by binding up sediments that would otherwise be stirred up by wind and wave action. They can also assist in reducing the likelihood of troublesome algal blooms (both filamentous and/or planktonic, “Pea Soup” variety) by taking up space and nutrients (phosphorus and nitrogen).
- Native plants by their presence can reduce the severity of invasions by non-native species, such as Curly-leaf Pondweed and/or Eurasian Watermilfoil.

We therefore recommend a strategy that favors protection of the native aquatic plant community while providing for their control in *high use recreational areas*. Rather than an *eradication* strategy for Eurasian Watermilfoil and/or Curlyleaf Pondweed, we recommend a strategy that minimizes the formation of dense surface canopies that can interfere with recreational use and may pose a risk to the native plant populations.

Recommended control measures will now be discussed in greater detail in the following Section of this Report.

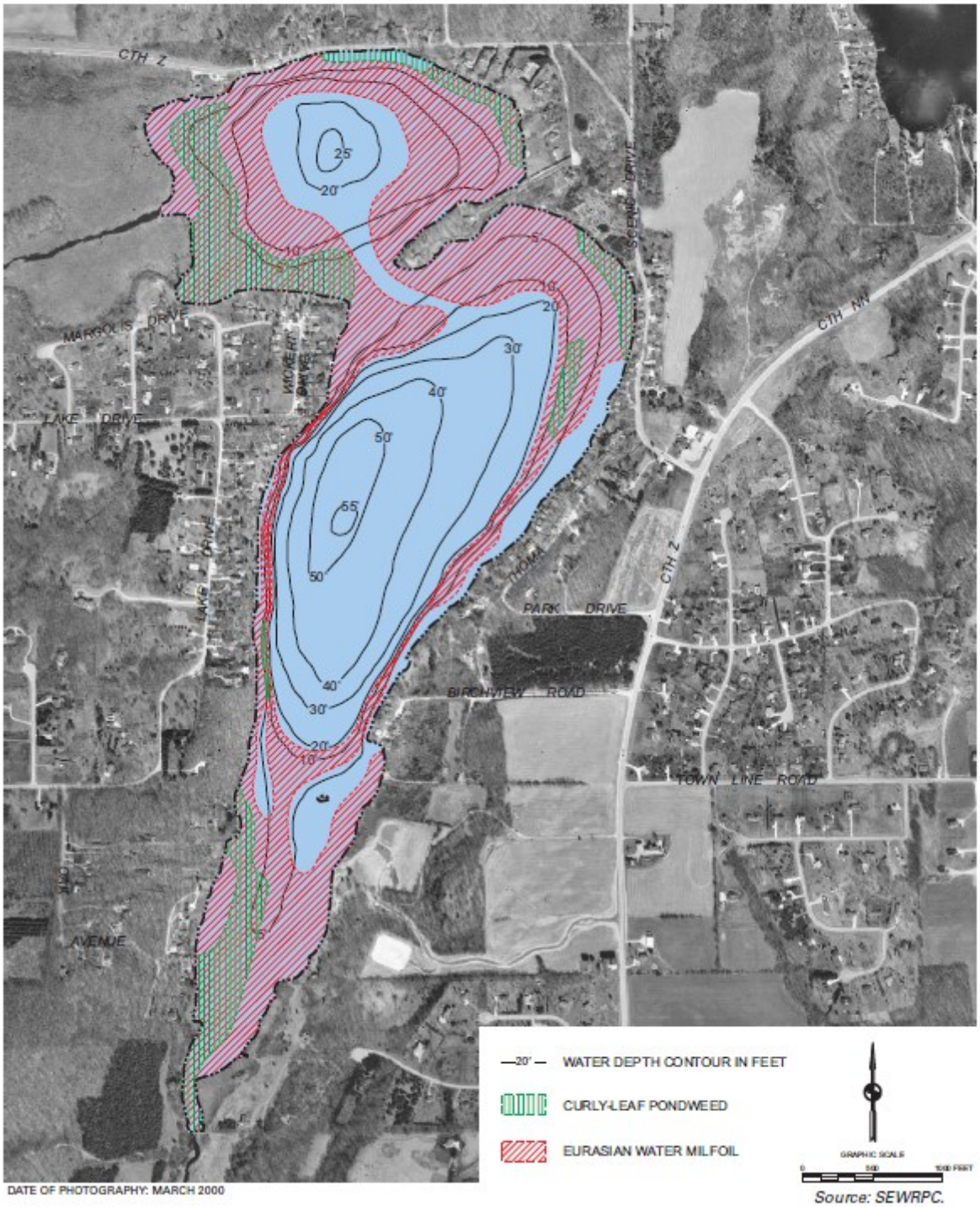
Figure 23

SEWRPC (2000) Distribution Map of Non-Native Plant Species

Little Cedar Lake—Washington County, WI

Map 10

DISTRIBUTION OF NONNATIVE AQUATIC PLANT SPECIES IN LITTLE CEDAR LAKE: 2000



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Recommended Aquatic Plant Control Strategies

The following are recommend to be considered in the Little Cedar Lake Management Plan.

A. Information and Education

While many individuals on the lake are life-long residents, many residences have changed ownership or have been passed on to the next generation since the last Plan was developed and discussed. It is important to remember "What the lake was like" years ago. During the late 90's it was common to hear concerns over "Pea Soup" (personal recollection) as compared to today's discussion of "too many" weeds. It is also important that residents living on the lake realize that the lake/plant conditions are subject to change, sometimes in quite an unpredictable pattern. Recent examples of this unpredictability include the low water levels of 2012 and the apparent "explosion" of plants, both native and exotic, and the "lack" of Eurasian Watermilfoil in some years. What a nice problem to have!

This process is clearly an on-going effort. The District is encouraged to disperse information to their residents regarding the importance of plants, the controls available, as well as the circumstances where control may be necessary. Information can be distributed by many forms of media, including:

1) Electronic: Via e-mail, or the District website.
2) Newsletter
3) Availability of Literature at regular Meetings
4) Volunteer Opportunities such as participation in the Clean Boats, Clean Waters, for example.
5) Sponsorship of Annual Lake Workshops where area lake residents may learn about lakes, whether it be about fish, plants, water quality or wildlife from a variety of providers.

B. Manual (Physical) Removal

Hand removal can be an effective tool in small, relatively shallow, near-shore areas. Residents should be encouraged to utilize this technique in and around piers and swim areas.

Residents should also be notified that a permit for this activity is required *unless:*

- *Removal of plants is restricted to less than thirty feet of shoreline*
- *Plants targeted include Eurasian Watermilfoil or Curlyleaf Pondweed (aquatic invasive species)*

C. Mechanical Harvesting

Mechanical harvesting of native aquatic plants, or in beds containing a mixture of both native and non-native species is recommended, as needed to maintain recreational access.

These areas include:

1. Public Navigation: To and from the Ackermann's Grove Boat Launch and also the main lake and "Kettle".
2. Private Access : Allow for boats to navigate to and from their mooring location. This will generally require a large (wide) enough area for a boat to back away from the pier, turn around and exit towards deeper water.

The exact area and depth to harvest will be dependent upon water depth, species present (low vs. "tall" growing species) and contour of the lake bottom. Shorelines having a steep "drop-off" (west shore main lake) will require minimal harvesting as compared to areas having a more gradual bottom slope (east kettle, northeast corner of main lake).

Recommended Aquatic Plant Control Strategies (cont'd)

Figures 24 and 25 are detailed maps of recommended harvesting areas. Plant density data is also provided as a reference. The areas selected as candidates for harvesting have been chosen based on the following:

1. Density of plant growth (interferes with navigation).
2. Location is within a "high-use" area.

These areas also fall within the area permitted by the Wisconsin DNR during the 2012 season (Figure 26) and are consistent with earlier recommendations made by SEWRPC in 2004.

It is important to note that the areas recommended for harvesting are considered to be a *maximum* for planning purposes (permits and cost of harvesting). The actual area harvested may vary year to year based upon weather, degree of plant growth, etc. Harvesting may be further restricted on the approved Harvesting Permit or by an on-site DNR supervisor.

Common restrictions on harvesting include the following:

1. Minimum water depth of 3 feet (keeps harvester from disturbing lake bottom).
2. Growth occurring more than 2-3 feet from water surface (minimal or no interference with navigation).
3. Depth of cut may be restricted. This again may be based upon water depth and species present, typically one to three feet of "cut" depth is considered adequate for navigation.

Other considerations for Harvesting include:

- Start Date: A typical start date of approximately June 1 is anticipated. Weather, growth stage of plants, and DNR permit restrictions may require a later or earlier start.
- Frequency of Harvesting: A maximum of (4) monthly harvests between June and September is anticipated. It is also anticipated that the September management be restricted primarily to "skimming" of Eelgrass.
- Size and location of areas to be harvested: This will be dependent upon water depth, as well as the plant density and height. The Harvesting Map details the maximum width that will be harvested in each area. Aquatic plant growth generally reaches the surface at depths of up to 7-8 feet. Thus, it may be necessary to cut plants out to this depth to maintain plant growth at a point 2-3 feet below the surface.
- Disposal Site: The disposal site is at Ackerman's Grove County Park, part of the Wasington County Park system.

Figure 24

Recommended Harvesting Areas—Little Cedar Lake. Washington County, WI

North End

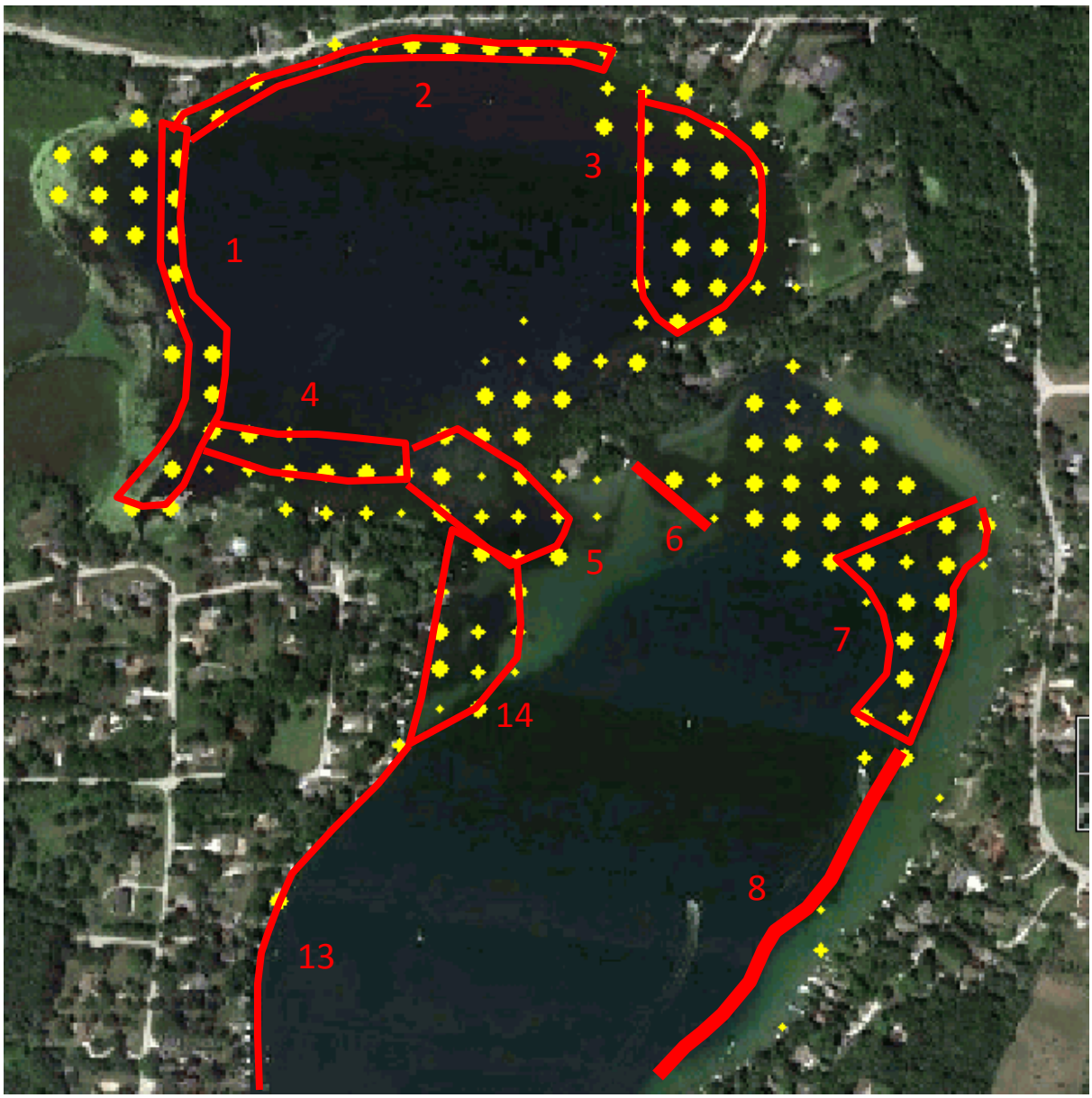

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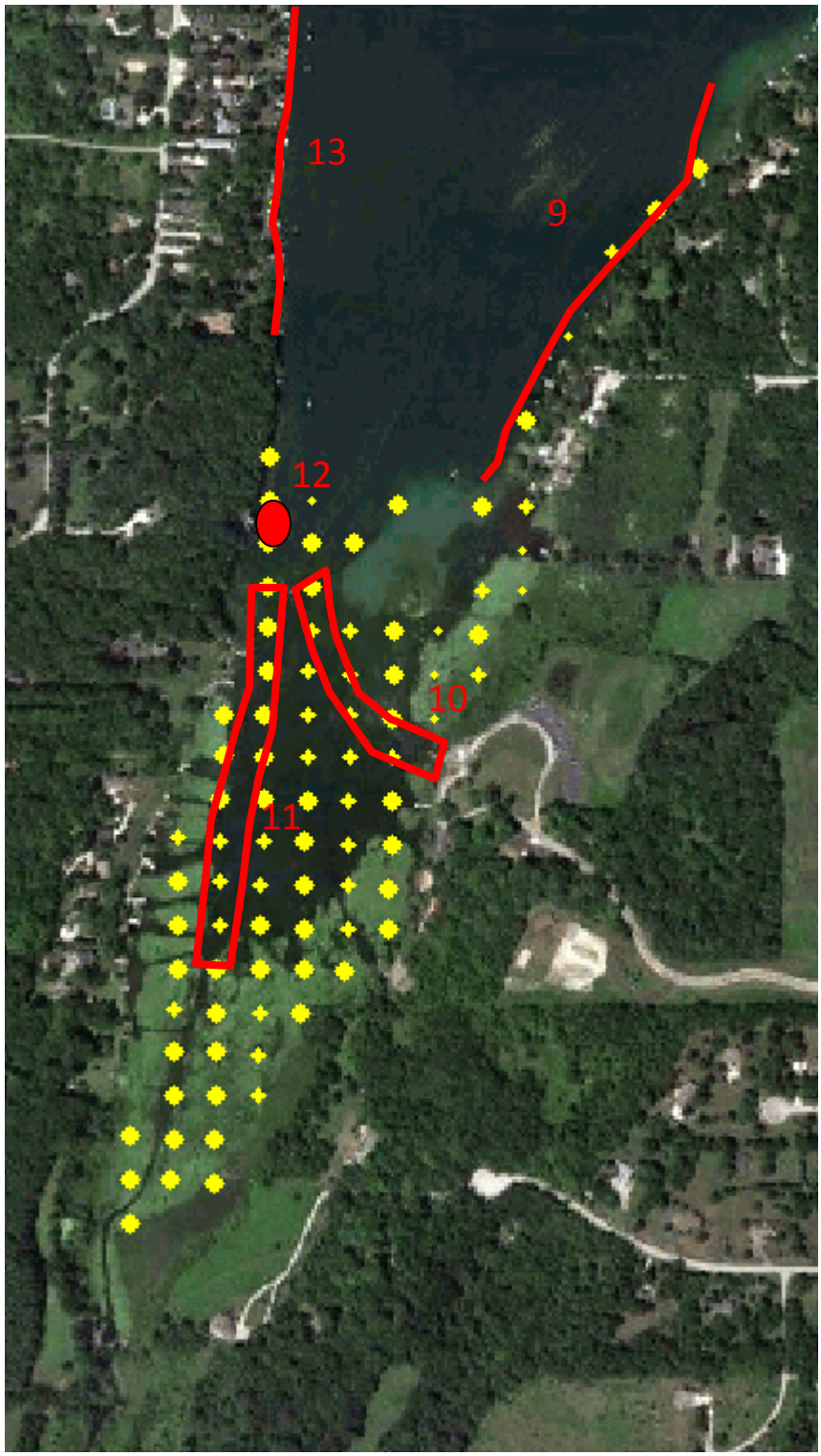
Figure 25

Recommended Harvesting Areas—Little Cedar Lake. Washington County, WI

South End



Area	Acreage	Length	Avg. Width
1	2.50	1100	100
2	1.50	1300	50
3	6.40	700	400
4	1.40	600	100
5	1.90	420	200
6	0.20	300	30
7	5.00	1050	200
8	1.40	1200	50
9	0.80	1400	25
10	1.60	700	100
11	2.50	1100	100
12	0.20	100	100
13	1.40	2400	25
14	2.70	600	200

Total: 29.5 acres

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Figure 26

Areas Approved on 2012 WI DNR Harvesting Permit Application

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Recommended Aquatic Plant Control Strategies (cont'd)

D. Herbicides

As indicated earlier, the District has been utilizing controls since 2003 to control one aquatic invasive plant species, Eurasian Watermilfoil (EWM). We recommend that treatments for EWM and/or Curlyleaf Pondweed (CLP) continue in the future.

Some discussion has occurred over the past few years regarding treatment of native species within riparian areas (docks/piers, swimming areas). Participation has been on a sign-up basis with the cost of the treatment being the responsibility of the property owner. Permits including the treatment of individual properties have been approved in 2012 and 2013. However, *actual treatment has not occurred* (few exceptions) due to the degree of plant growth falling below a threshold considered to be a a *nuisance* by the on-site DNR supervisor present on the day of treatment.

While harvesting of native plants is recommended, its' use is restricted to waters greater than three feet in depth. Therefore, in the instance where the degree of infestation is too severe to remove plants by manual means, some other tool may be needed. It is under these circumstances where treatment for native species may *be appropriate*.

Treatment will require DNR permit approval, and most likely, on-site supervision on the treatment date. Treatment of native plants will most likely be limited to thirty feet of shoreline, consistent with those in place regulating manual removal of plants.

Following is a discussion of the treatment options available for the primary nuisance species in the lake, Eurasian Watermilfoil.

Selective Control of Eurasian Watermilfoil

While some herbicidal compounds control a broad range of plant species equally ("Broad-Spectrum"), others may control only a few species. These herbicides may be referred to "Selective" or "Narrow-Spectrum".

The active ingredient, 2,4-D has been utilized for decades in the control of dicots, plants having two cotyledons, or more commonly referred to as "Broad-Leaved Plants". In the aquatic plant world, there are only a few "Broad-Leaved Plants". In Little Cedar Lake these include members of the Milfoil family, including both the non-native and native species, White and Yellow Water Lily, Coontail, White and Yellow Water Crowfoot , and Bladderwort. The degree to which the selectivity of 2,4-D can be managed is dependent upon a variety of factors, such as application rate, water temperature, treatment timing and location of species.

There has been a considerable amount of discussion devoted to timing of treatments in recent years, with "early season treatments" (mid April to mid May) becoming more popular. They are most advantageous in lakes where the treatment area is rather large and well defined and uniform in depth, or where the objective is to treat the entire lake volume at a very low concentration.

In Little Cedar Lake a single, early-season treatment may prove logistically difficult. Plants can develop at different times according to water depth. Plants may also develop more quickly along shorelines exposed to the early Spring sun. Early Springs, late Springs, rising, then falling water temperatures are all common to Wisconsin. It is therefore important to note that EWM may be successfully treated between April and as late as October. The limiting factor appears to be that EWM must be *actively growing,* green and healthy in appearance.

Recommended Aquatic Plant Control Strategies (cont'd)

2,4-D compounds are available in two formulations, liquid and granular. Both are effective, but have their own advantages and disadvantages. Granular herbicides, particularly at higher application rates may be cost prohibitive for large areas. Conversely, liquid herbicides are more prone to "Drift", so they are most effective when used in larger, more regularly shaped, or quiescent areas. A combination of the two formulations, with granular formulations used along treatment areas with a steep "drop-off" is recommended for Little Cedar Lake.

As mentioned earlier, Figure 23 details the areas of Little Cedar Lake containing exotic (non-native) species during the 2000 field survey. Figure 27 details the current distribution of EWM *and those areas having a potential to develop problematic growth*. A Treatment Plan based upon a monitoring strategy (discussed below) developed over the past several years is recommended.

E. Aquatic Plant Monitoring

As indicated previously, EWM, while the predominate aquatic invasive species, is not the only one present in Little Cedar Lake. The other, Curlyleaf Pondweed has existed in Little Cedar Lake for many years.

Since 2003, informal surveys have been conducted prior to submittal of annual WI DNR "Chemical Aquatic Plant Control Permit Application". These were limited to a visual survey of well established "Problem Areas", rather than a Point Intercept Survey of the entire lake conducted in 2012. The information gained was used to help establish what areas of the lake would be permitted, and the potential maximum cost. They also indicated at what time of the season the EWM population may require treatment, if at all, such as in 2009-2010.

It is recommended that the District consider implementing a monitoring strategy that will assist in the identification and timing of any required mechanical harvesting or chemical treatment. An initial survey should be conducted in mid-April to early May. These will indicate when treatment for EWM or harvesting for native plants should begin, and potentially, which should occur first. Early season growth of EWM will indicate that treatment occur first, a general lack of EWM and a dominance of native plants, harvesting.

The survey should be conducted with a Global Positioning System (GPS) that combined with the appropriate mapping software, result in a highly accurate map outlining the boundaries of problem areas, the estimated acreage, and treatment cost. These maps will be able to be generated quickly (a few days) and disseminated electronically to the DNR, the District Board, it's vendors and/or interested members.

During the middle of the season (late-June to mid July), a second survey can be conducted in the event that a second that growth of EWM is delayed. Otherwise, a final survey, conducted in August, to determine the extent of EWM growth and/or possible need for a Fall treatment (for re-growth or for areas not treated in Spring) is suggested.

Finally, it is likely that the WI DNR will require updates to the Aquatic Plant Survey in the future. The District should plan for conducting another survey in 8-10 years.

Figure 28 summarizes the recommended components and activities within this Plan in Table form. The Appendix contains the original DNR Sensitive Area Assessment conducted in 1991, and a copy of the approved 2012 Mechanical Harvesting Permit, along with Field Notes from the WI DDNR.

Figure 27

Distribution of Eurasian Watermilfoil in

Little Cedar Lake—Washington County, WI

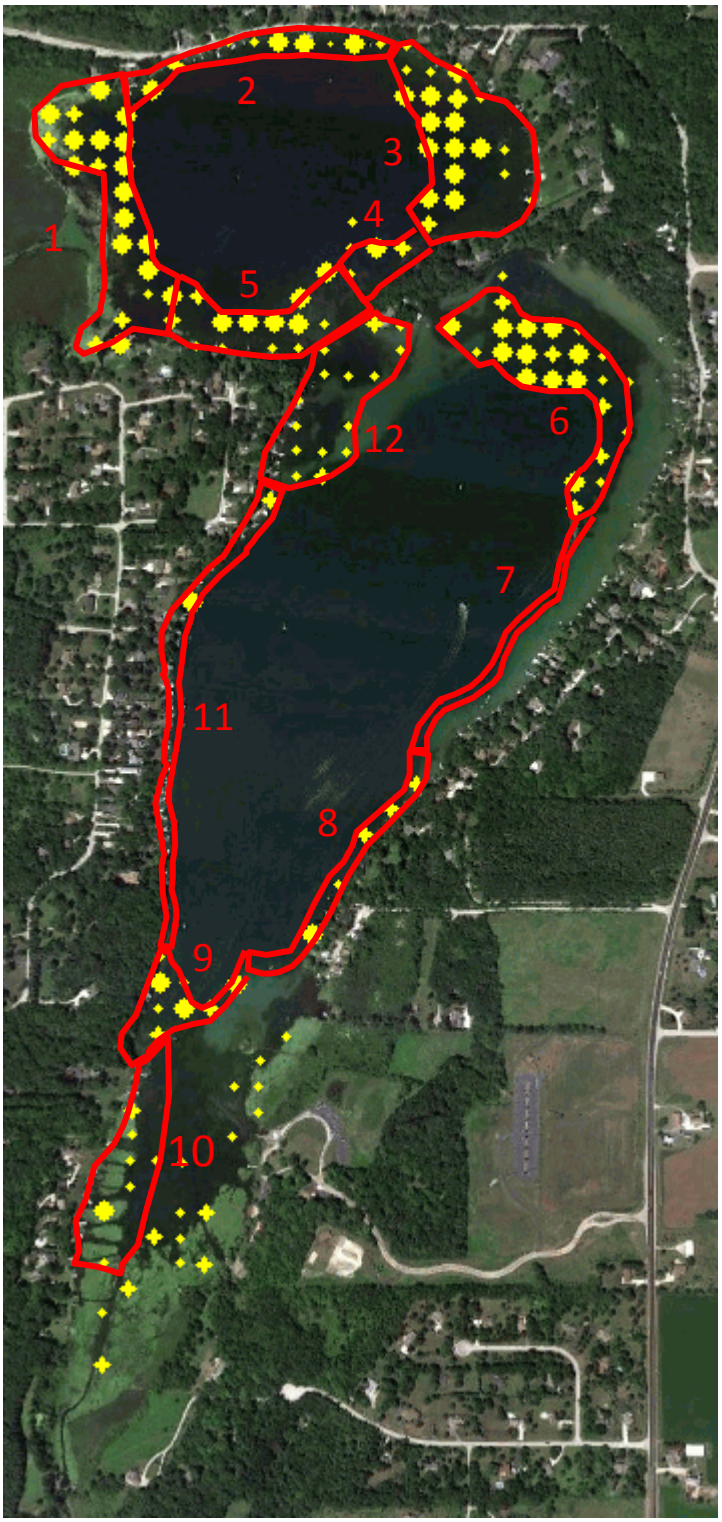
June/July 2012*

Areas with Potential For Problematic ("Topped-Out") Beds** of Eurasian Watermilfoil

Area	Acreage	Length (ft.)	Avg. Width (ft.)	Avg. Depth (ft.)
1	9.00	1400	275	5
2	3.90	1700	100	5
3	11.40	800	620	5
4	1.50	850	75	5
5	5.40	800	200	5
6	7.40	1700	200	5
7	1.50	1300	50	8
8	2.00	1700	50	5
9	2.80	700	175	5
10	5.75	1000	250	3
11	3.00	2600	50	3
12	7.30	800	400	3

Total: 60.95 acres

**Note that this is a maximum estimate. Herbicide treatment is typically confined to continuous beds reaching surface (Rake Density = 2 or 3).



* Data collected by Washington County, Dept. of Parks and Planning

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Figure 28

Summary of the Little Cedar Lake -Washington County

Aquatic Plant Management Plan—Recommended Activities

Information and Education	Ongoing. This includes, but is not limited to familiarization with aquatic plants (identification of AIS), and Aquatic Plant Management Plan, and restrictions upon certain management activities (see "Sensitive Area Designations", Figures 19-20).
Physical Removal	As needed in pier/swim areas, by property owner. Thirty feet of shoreline may be maintained by manual means w/o WI DNR permit approval. Exception: Non-native species. No permit required, no limit on amount of frontage that may be managed. Objective: High degree of control in swim areas.
Mechanical Harvesting	Annual harvesting for native/mixed plant beds within designated areas (as needed). Frequency 4x/yr. (max.), Monthly, (June-Sept.). Apply for permit by April 1. Designation of Plant Disposal site required on permit application. Objective: Maintain private/public access to high use areas of lake.
Aquatic Plant Monitoring	Access plant community prior to management activity (Spring) to access type(s) and scope of plant control required. Re-access in mid-summer to coordinate harvesting activities. Access AIS in August to determine need for Fall treatment or Plan for following year. Full PI Survey required every ten years.
Herbicide Treatments	Native Plant Control limited to high use areas in water less than 3 ft. deep, where nuisance conditions exist. Annual treatments (1-2x/yr.) for selective control of Aquatic Invasive Species (AIS). Objective: To minimize formation of plant beds dominated by AIS and impacts upon recreation.

APPENDIX

Aquatic Plant Survey and Management Plan Update
for Little Cedar Lake—Washington County, WI

January, 2014

Appendix A. 1991 DNR Sensitive Area Assessment
Appendix B. 2012 Approved Mechanical Harvesting Permit and Field Notes

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AQUATIC PLANT MANAGEMENT

SUMMARY OF SENSITIVE AREA ASSESSMENT

Lake: Little Cedar County: Washington

Date of Assessment: August, 1991

RESOURCE VALUE

Little Cedar is a 246 acre lake with a shoreline of 4.3 miles located in the Towns of Polk and West Bend. Submergent plant species on Little Cedar include Chara, Coontail, Eel Grass, Eurasian Water Milfoil, Naiad, Water Star Grass, and a variety of pondweeds. The pondweeds include Sago, Flat-stem, Curly-leaf, Illinois, and Large-leaf. The pondweeds were observed in low densities with the exception of Illinois Pondweed which was observed in high densities at areas previously treated for Eurasian Water Milfoil.

Emergent plants include Bulrush, Cattail, and several unidentified Sedges. The floating leaved plants include White and Yellow Water Lilies, and Floating-leaf Pondweed. The emergent and floating leaved plants were confined to Sensitive Areas 1 and 4 (Figure 1).

Chemical treatment of aquatic plants in Little Cedar Lake is performed annually, during the summer, for Eurasian Water Milfoil and Curly-leaf pondweed.

The substrate in Little Cedar Lake is mostly muck, with the areas near shore being sandier. Some areas have boulders along the shoreline.

The fish population in Little Cedar Lake includes Bluegill, Largemouth Bass, and Northern Pike. Aquatic insects that are associated with aquatic plants are a very important food source in Little Cedar Lake. Sensitive Area 4 is excellent habitat for all three species, whereas Sensitive Area 1 is good Bluegill spawning habitat. All designated sensitive areas are good nursery and feeding habitats.

Wood Ducks, Mallards, and the Blue-winged Teal use Little Cedar Lake during the spring and fall for feeding, shelter, and migration. Great Blue Heron and Great Egert use Sensitive Areas 1 and 4 primarily for feeding and shelter.

Muskrat, Mink, Short-tail Weasel, and Raccoon use the lake for shelter, feeding, and rearing of their young year round.

The wetland areas located in Sensitive Areas 1 and 4 support a

wide variety of marsh mammals, birds, reptiles, and amphibians. These same areas act as nutrient and sediment traps for the lake. The emergent aquatic vegetation helps prevent shoreline erosion. Protection of the existing native aquatic plants is an important method of limiting the expansion of the exotic plant species Eurasian Water Milfoil and Curlyleaf Pondweed.

MANAGEMENT RESTRICTIONS FOR SENSITIVE AREAS

The Department of Natural Resources currently has regulatory authority over a wide variety of activities that take place in or near surface waters of the state. Placing restrictions on specific activities that would disturb the aquatic plant community in Little Cedar Lake will help to protect the fish, wildlife, and water quality of the lake.

1. The use of aquatic herbicides is not allowed for the control of aquatic vegetation.

   Contact Person: Rob McLennan, Water Resources Manager, 263-8714

2. The use of aquatic herbicides for the control of aquatic plants and algae will be allowed only for Eurasian Water Milfoil.

   Contact Person: John Nelson, Fish Manager, 892-8756
   Rob McLennan, Water Resource Manager, 263-8714

3. None of the following inlake activities allowed.
   a) Filling
   b) Pea Gravel/Sand Blankets
   c) Aquascreen
   d) Concrete, Timber, or Steel Seawalls

   Contact Person: Joanne Kline, Water Regulations and Zoning, 263-8673

4. Rock riprap will be allowed for shoreline protection in areas with erosion problems.

   Contact Person: Joanne Kline, Water Regulations and Zoning, 263-8673

5. Individual piers will be allowed and proposals for marina piers will be evaluated on a case by case basis.

   Contact Person: Joanne Kline, Water Regulations and Zoning, 263-8673

MANAGEMENT RESTRICTIONS BY SENSITIVE AREA

Sensitive Area 1	Restrictions 1, 3-5
Sensitive Area 2	Restrictions 2-5
Sensitive Area 3	Restrictions 2-5
Sensitive Area 4	Restrictions 1, 3-5

MANAGEMENT RECOMMENDATIONS

Additional recommendations are also made to provide management guidance in areas which the department does not have regulatory control or can be better implemented at the local level.

1. The department staff recommends that no mechanical harvesting take place in designated sensitive areas unless associated with a research program to increase the diversity of aquatic plants. Small hand cleared areas for swimming or navigation is acceptable.

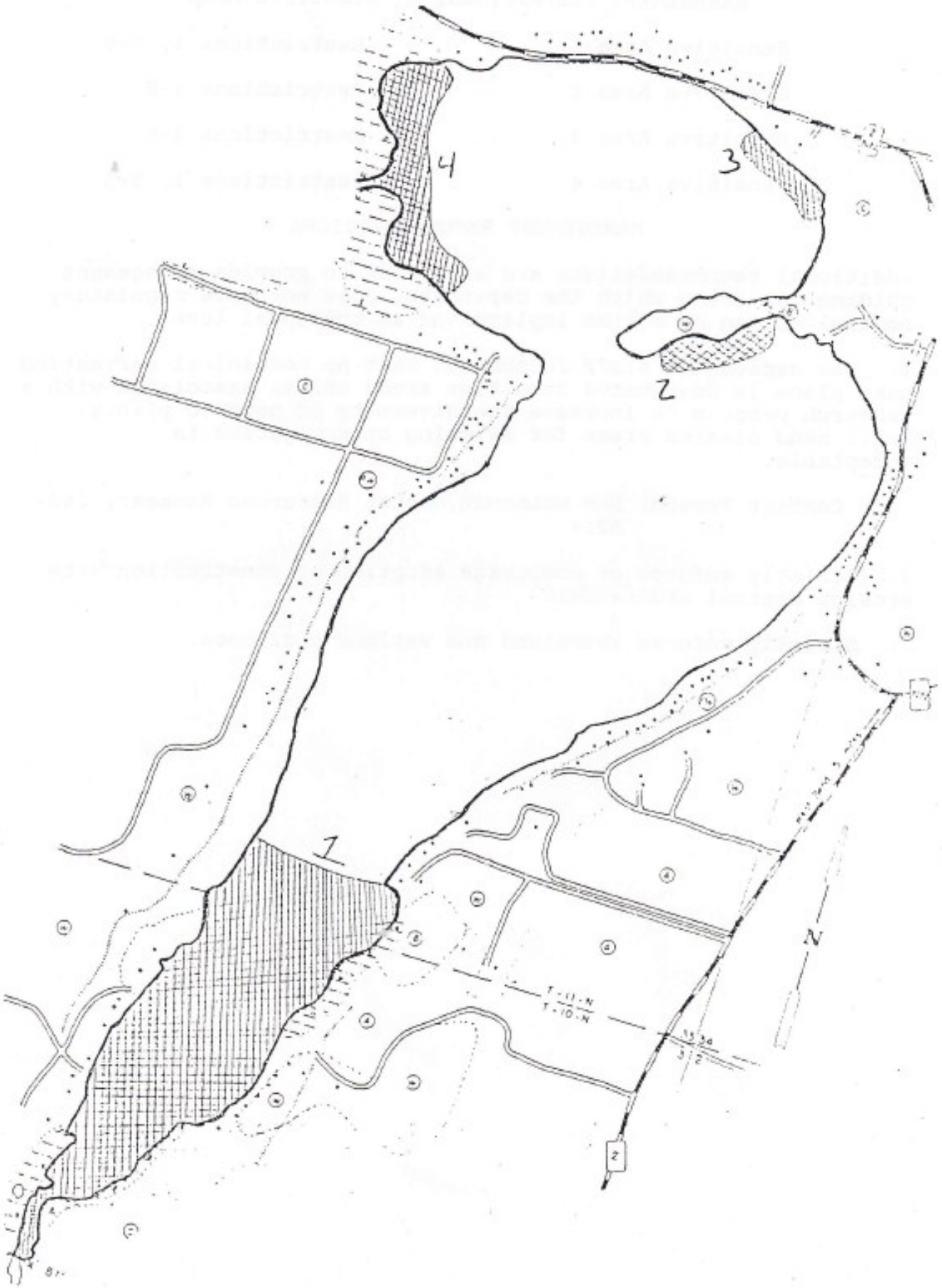
Contact Person: Rob McLennan, Water Resources Manager, 263-8714

2. Strictly enforce or encourage adoption of construction site erosion control ordinance.

3. Strictly enforce shoreland and wetland ordinance.

FIGURE 1

LITTLE CEDAR LAKE SENSITIVE AREAS



Scale: 1 inch = 800 feet

#1

AQUATIC PLANT MANAGEMENT

SENSITIVE AREA DESIGNATION

Lake Name LITTLE CEDAR LAKE County WASH

Date 8/27/91 Water Body Identification Code _____

Evaluators NORM KROEGER
SUSAN KLINE
JOHN NELSON
TOM ISAAC

The sensitive areas on this lake were designated to protect them from human perturbation either from water regulation and zoning projects or aquatic plant management activities. Sensitive areas are defined in NR107.05 (3) (i) (1) as:

... areas of aquatic vegetation identified by the department as offering critical or unique fish and wildlife habitat, including seasonal or lifestage requirements, or offering water quality or erosion control benefits to the area.

This evaluation will identify the sensitive areas on the lake and will recommend what and when management activities can be allowed without disturbing the ecological value of the area. In addition this evaluation will provide valuable information on future management strategies for the entire lake to ensure continued protection of existing fish and wildlife habitat and water quality.

I. SITE DESCRIPTION

Lake Name LITTLE CEDAR PICTURES 1, 2 + 3

A. Location

1. Field Site Number 1
2. Name of Adjacent Property Owners (Use back of form for additional space).

B. Site Description

1. **Physical** SEE MAP

a. Total shoreline length 2400 Ft.
b. Distance from shore that is considered to be valuable [illegible] Ft.
c. Water Depth at site: Maximum 10 Ft., Average 3 Ft.

d. Substrate Type. (Use back for additional information)

	% in zone A	% in zone B	% in zone C	% in zone D
Rubble	____ %	____ %	____ %	____ %
Gravel	____ %	____ %	____ %	____ %
Sand	____ %	____ %	____ %	____ %
Silt	100 %	____ %	____ %	____ %
Clay	____ %	____ %	____ %	____ %
Muck	____ %	____ %	____ %	____ %
Detritus	____ %	____ %	____ %	____ %

Percent of area with mix: A ____, B ____, C ____, D ____,
E ____, F ____, G ____, H ____.

Comments

SENSITIVE AREA 1

e Name ______________________

2. **Biological**

a. Maximum rooting depth 10 Ft.

b. Vegetation (Percent of area covered by individual species: 1 = 0-25%, 2 = 25-50%, 3 = 50-75%, 4 = 75-100%

Water depth (ft)

	Plant Species	0-3	3-6	6-9	9-16+
1	Milfoil (Spicatum)	2	2		
2	Chara		3		
3	Cattail	3			
4	Bulrush	1	1		
5	Sedges				
6	Lg leaf Pondweed	1	2		
7	Narrow lf pondwd				
8	Curly lf pondwd	1			
9	Ylw lily pad				
10	Wht lily pad	3	3		
11	P. Loosestrife				
12	Filamentous algae				
13	Elodea				
14	Floating leafed/natans	1	1		
15	Utricularia	1			
16					
17					
18					
19					
20					
21					

Comments (ie. Seasonal conditions, Currently controlled, etc.)

DEVELOPED SHORELINE, IN AREAS CURRENTLY UNDERGOING CHEMICAL TREATMENT

c. Riparian vegetation

1. Wetland (Type ______________________)
   a. Mapped wetlands present Yes/No
   b. Regulated by Corps, County, City, Village, DNR
2. Agriculture (N/A)
3. Wooded ( )
4. Developed (75%)
5. Other (SMALL PARK/BOAT LANDING)

ke Name _____

II. Resource Value

A. Fish

Species

1. Bluegill	(A) B C D	4. Northern pike	A B (C) D
2. Lg mouth bass	A (B) C D	5. Walleye	A B C D
3. Crappie	A B C D	6. _____	A B C D
_____	A B C D	_____	A B C D

	Fish Species A	B	C	D
% Area used for **Spawning**	10%	20%	5%	
Period of use (April - July)	(A-M-J-J)	(A-M-J-J)	(A)M-J-J	A-M-J-J
Habitat needs for spawning				
Substrate	[illegible]	SAND	VEGETATION	
Vegetation			[illegible]	
Tributary				
Other				
Specify other:				

% Area used for **Nursery**	80 %	80%	80%	
Period of use (April - August)	A-M-(J-J-A)	A-M-(J-J-A)	(A-M-J-J-A)	A-M-J-J-A
Habitat needs for nursery				
Substrate				
Vegetation	[illegible] + EMERGENT			
Pelagic				
Structure				
Other				
Specify other:				

% Area used for **Feeding**	80%	90%	80%	
Period of use	J-J-A	J-J-A	A-M-J-J	
Habitat needs for feeding				
Substrate				
Vegetation				
Pelagic				
Structure				
Other				
Specify other:				

Lake Name Little Cedar, S. end (#1) Page 5

II. Resource Value (Con't)

B. Wildlife

Species or Group	Period of Use	Essential Feature
Waterfowl wood ducks	spring & fall	feeding X
ducks blue-winged teal	year round	shelter X
geese N. pintail	other than freeze-up	rearing X
possible diving ducks		nesting X
		migrating X
Wading birds	spring & fall	feeding X
great & blue herons	year round	shelter X
great egret	+ summer	rearing
		nesting
		migrating
Song birds	spring & fall	feeding X
Red-winged black bird	year round	shelter X
tree swallows	+ summer	rearing X
barn swallows		nesting X
marsh wren		migrating
Purple martin		
Shore birds	spring & fall	feeding X
sora rails	year round	shelter X
	+ summer	rearing X
		nesting X
		migrating
Aquatic furbearers	spring & fall	feeding X
muskrat	year round	shelter X
mink		rearing X
striped weasel		nesting breeding
		migrating
Terrestrial furbearers	spring & fall	feeding X
raccoon	year round	shelter X
		rearing X
		nesting breeding
		migrating
	spring & fall	feeding
	year round	shelter
		rearing
		nesting
		migrating

Comments painted turtle. Waterfowl use would be higher during spring + fall migration.

II. Resource Value (Cont)

C. Water Quality

1. Sediment trap/retention (Yes)/No
2. Nutrient trap/retention (Yes)/No
3. Erosion Control Yes/(No) SOME
4. Other _____

D. Ecological Value

1. Uniqueness to water body/region FILLED WITH MILFOIL HOWEVER PONDWEEDS ARE PRESENT AND SHOULD BE ALLOWED TO GROW TO COMPETE W/MILFOIL, CHARA. GOOD TO KEEP OUT MILFOIL, UNDEVELOPED SHORELINE
2. Species diversity reservoir GOOD
3. Buffer against non-native species NOT VERY GOOD TO SOME EXTENT Whitestem Lily may help keep milfoil down

III. Management Recomendations

A. Aquatic Plant Management

1. Chemical Control
   - ____ No treatment allowed
   - X Treatment allowed with conditions TRAVEL LANE ONLY
     - X Treatment allowed during specified time of year: SUMMER
     - X Treatment limited to specified species: MILFOIL, CURLY LEAF
     - X Treatment limited to specified size limits
       - X 25 ft. private navigational channel
       - ____ Designated swim area of ___ x ___ ft.
       - ____ Other _____
     - ____ Treatment limited to research: _____
2. Mechanical Control
   - X No mechanical control allowed
   - ____ Mechanical control allowed with conditions
     - ____ Harvesting allowed during specified time of year: _____
     - ____ Harvesting restricted to the identified areas (See Map)

Appendix B

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
Waukesha Service Center
141 Barstow Street, Room 180
Waukesha WI 53188

Scott Walker, Governor
Cathy Stepp, Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711

July 28, 2012

Mr. Bob Ramsthal
Little Cedar Lake Protection and Rehabilitation District
3936 Hwy NN
West Bend, WI 53095

Re: 2012 Harvesting Permit

Dear Mr. Ramsthal:

The Department has received your application for a permit for harvesting aquatic plants by mechanical means in up to 30 acres of Little Cedar Lake, Washington County. We have found your application to be complete and are issuing a one season permit with conditions that expires December 31st, 2012.

Attached is a copy of the harvesting permit with the conditions of the permit outlined. In addition, a copy of the findings of fact, conclusions of law and notice of appeal rights are included. A copy of the permit must be kept on the harvester at all times during operation. Please read your permit conditions carefully so that you are fully aware of what is expected.

Your next step will be to notify Department staff at least 4 days prior to the day in which you plan to begin harvesting. Please contact me if you have any questions at 262-574-2130.

Sincerely,

Heidi Bunk
Lakes Biologist

Cc: Travis Motl, Fisheries Biologist

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

Permit for Mechanical Harvesting of Aquatic Plants

The Little Cedar Lake Protection and Rehabilitation District is hereby granted under Section 23.24, Wisconsin Statutes and Administrative Code NR 109, a permit to conduct mechanical harvesting of aquatic plants in up to 30 acres of Little Cedar Lake in the Towns of Polk and West Bend, Washington County, Township 10 North, Range 19 East, Section 3 and Township 11 North, Range 19 East, Section 33 subject to the following conditions. This permit is issued for a 1-year term and will expire on December 31, 2012.

PERMIT CONDITIONS

1. The Little Cedar Lake Protection and Rehabilitation District shall notify Lakes Biologist, Heidi Bunk at 262-574-2130, 4 working days prior to the anticipated start of the harvesting operation. Department staff may schedule and conduct an onsite supervision of harvesting.

2. A copy of the permit and accompanying maps shall be maintained onboard the harvester(s) at all times during harvesting operations.

3. All aquatic plant cuttings must be removed immediately from the water. Disposal of the harvested aquatic plants must be located in the area specified in the permit application (Stoffel Farm, 5880 Division Road, West Bend, WI) and must be in accordance with any applicable county and local regulations.

4. The quantity and species of plants to be mechanically harvested must be in accordance with the permit application. Maps A, B and C denote eight areas to be harvested. Table 1 lists the allowable harvesting in each of the eight areas.

5. The mechanical harvester may only be operated in three feet or greater water depth.

6. A minimum of 1 foot of uncut plant material must be left growing on the bottom of the lake to stabilize sediment.

7. All equipment transferred into Little Cedar Lake must be sterilized before launching and must abide by all provisions of NR 40. The harvester and trailer must be both completely pressure washed and all plant fragments removed. Hot water (at least 140 degrees Fahrenheit) or chlorine bleach can be used to achieve sterilization.

8. All equipment transferred into Little Cedar Lake must be inspected by Department staff before launching into the water. All the equipment must be completed cleaned and free of any plants or animals.

9. All mechanical harvesting records must be maintained and made available to the Department upon request. A report summarizing harvesting activities shall be given to the Department by November 1st, 2012. The report must include a map showing the area harvested, the number of acres harvested, the total **cubic yards** of plant material removed from each area of the lake harvested and the number of times harvesting took place.

FINDINGS OF FACT (Facts which were considered in making this decision.)

1. The Little Cedar Lake Protection and Rehabilitation District has filed an application for a permit to conduct a mechanical harvesting operation in the Towns of Polk and West Bend, Washington County, Township 10 North, Range 19 East, Section 3 and Township 11 North, Range 19 East, Section 33. The specific areas to be harvested are shown on the map(s) submitted with the permit application and incorporated into this permit.

2. The Department has determined the proposed mechanical harvesting will provide aquatic plant nuisance relief in the designated areas. The mechanical harvesting will allow for increased navigation and recreational opportunities.

3. The total harvesting area is 30 acres in the areas shown on the permit application maps as approved in the conditions above.

4. The Department has determined that a portion of the proposed harvesting operation is in Department-designated sensitive areas.

CONCLUSIONS OF LAW (These are the legal reasons why the Department can make these decisions)

The Department has authority under the above indicated Statutes and Administrative Codes, to issue a permit for mechanical harvesting of aquatic plants.

NOTICE OF APPEAL RIGHTS

If you believe that you have a right to challenge this decision, you should know that Wisconsin Statutes and Wisconsin Administrative Code establish time periods within which requests to review Department decisions must be filed.

For judicial review of a decision pursuant to Ss. 227.52 and 227.53, Wis. Stats., you have 30 days after the decision is mailed or otherwise served by the Department, to serve a petition within the appropriate circuit court and serve the petition on the Department. Such a petition for judicial review shall name the Department of Natural Resources as the respondent.

To request a contested case hearing pursuant to Section 227.42, Wisconsin Statutes, you have 30 days after the decision is mailed or otherwise served by the Department, to serve a petition for hearing on the Secretary of the Department of Natural Resources. The filing of a request for a contested case hearing is not a prerequisite for judicial review and does not extend the 30-day period for filing a petition for judicial review. This notice is provided pursuant to Section 227.48(2), Wisconsin Statutes.

Dated at Waukesha, WI July 28th, 2012

STATE OF WISCONSIN DEPARTMENT OF NATURAL RESOURCES
For the Secretary

By Heidi Bunk

Heidi Bunk
Lakes Biologist

State of Wisconsin
Department of Natural Resources
PO Box 7921, Madison WI 53707-7921

Mechanical / Manual Aquatic Plant Control Application

Form 3200-113 (R 3/04)

Notice: Information requested on this form is required to permit mechanical and/or manual aquatic plant control application, per s. 23.24, Wis. Stats. The Department will not issue a permit unless you complete and submit this application. Personally identifiable information collected will be used for program administration and will be available to requesters under Wisconsin's Open Records law [ss. 19.31 - 19.39, Wis. Stats.].

FOR DNR USE ONLY	
Date Received 7/18/12	ID Number 17
Fee Received $300.00	County Code 67
Exp. Date 12/31/12	WBIC 25100

Section I: Applicant Data

Permit Applicant Name	Applicant is
LITTLE CEDAR LAKE PRD	☐ Private individual ☐ Contractor
Applicant Mailing Address: 3936 COUNTY HWY NN	☒ Lake Organization (Specify) LITTLE CEDAR LAKE PRD
City: WEST BEND; State: WI; ZIP Code: 53095	Lake Property Address, City, State, ZIP (if different)
Telephone Number: 262.335.7411; E-Mail Address: bobk@tnet.net	Telephone Number; E-Mail Address

Individuals and organizations (e.g., Lake District, Lake Association, Property Owners Association, County Department of Recreation), sponsoring removal. Attach additional sheets if necessary.

	Name	Address	Phone	E-mail Address
A.	same as above			
B.				
C.				
D.				

Has a Lake Management plan been provided to the DNR?	If Yes, date approved of most current copy	Location of Applicant file copy
☐ Yes ☒ No		

Does the proposed plant removal agree with the approved plan? ☐ Yes ☐ No
If NO, explain. Attach additional sheets if necessary.

Is this area within or adjacent to a Sensitive Area designated by the Wisconsin Department of Natural Resources? HJB 7/28/12
HJB 7/28/12 ☒ Yes ☐ No ☒ Don't Know If yes, list sites Sensitive Areas 1, 2 and 3

Section II: Location of Aquatic Plant Removal and Disposal

Waterbody of proposed plant removal	Lake Surface Area (acres)	County	Town	Range	Section
LITTLE CEDAR LAKE	246	WASHINGTON			

Name of Firm (if sub-contracted)	Telephone Number
MIDWEST AQUATICS	262.385.5874
Street Address: N105 W14564 WILSON DR	City, State and ZIP: GERMANTOWN WI 53022

	¼ / ¼	¼	Section	Township	Range E / W	County
Name of 1st Plant Disposal Site (if applicable): ACKERMAN'S GROVE PARK				N		
Name of 2nd Plant Disposal Site (if applicable): WEST BEND STOFFEL FARM, 5880 DIVISION RD.				N		

Area(s) Proposed for Plant Removal (Note details in permit cover letter for final permitted sizes). Please see attached sample drawing for guidance

1. Length from shore _____ ft. x Shoreline or area width _____ ft. / 43,560 ft. = _____ Estimated Acreage Avg. Depth _____ ft.
2. Length from shore _____ ft. x Shoreline or area width _____ ft. / 43,560 ft. = _____ Estimated Acreage Avg. Depth _____ ft.
3. Length from shore _____ ft. x Shoreline or area width _____ ft. / 43,560 ft. = _____ Estimated Acreage Avg. Depth _____ ft.
4. Offshore Control Site Length _____ ft. x Shoreline or area width _____ ft. / 43,560 ft. = _____ Estimated Acreage Avg. Depth _____ ft.
5. Offshore Control Site Length _____ ft. x Shoreline or area width _____ ft. / 43,560 ft. = _____ Estimated Acreage Avg. Depth _____ ft.

TOTAL ESTIMATED ACREAGE 30?

Section II: Location of Aquatic Plant Removal (cont.)

What type of aquatic plants below the Ordinary High Water Mark are proposed to be removed? (check all that apply)

☒ Emergent (above water level) ☒ Submergent (below water level) ☒ Floating Leaf (at the surface i.e. lilly pads)

Section III: Map & Property Ownership

Attach a copy of a lake map that includes the property(s) to be harvested. If no printed map is available, provide a sketch of the site at the bottom of this page. On the map, identify the following required information.

- Area and dimensions of each proposed plant removal area.
- Location of all riparian neighbors (property owners riparian to and adjacent to the proposed removal area) including project participants and non-participants. Consecutively number each riparian neighbor (both project participants and non-participants). In the space below:
- Name all riparian owners, including project participants & non-participants. The number should correspond with the numbered properties on the map. Attach additional sheets if necessary.
- Check Yes box to indicate project participants and No box for non-participants.

No.	Name of Riparian Neighbor	Project Participant	Control dimensions (calculated acreage)
1.		☐ Yes ☐ No	
2.		☐ Yes ☐ No	
3.		☐ Yes ☐ No	
4.		☐ Yes ☐ No	
5.		☐ Yes ☐ No	
6.		☐ Yes ☐ No	

☒ Check here if separate sheets are attached identifying additional neighbor riparian owners. Indicate project participants and/or non-participants.

☒ Check here if printed map attached. If no printed map, use this space to sketch the site and provide required information.

Map

Heidi ~

Hard to get accurate measurement of what needs to be cut because we have so many weeds floating from being cut by props. The area marked in yellow is a combination of weeds that are floating + need to be collected and weeds that need to be cut.

If you need further clarification, please call me, 262.335.7411 (w), or email bob@serigraph.com

Section IV: Methods

What mechanical or manual methods to remove plants are proposed? (check all that apply)

☒ Mechanical harvesting ☐ Raking Other _____

☐ Hand Pulling ☐ Cutting _____

Please explain why you selected the proposed method(s).

Large area with a lot of floating material.

Note: Other control methods (i.e. bottom barriers, weed rollers, herbicides) also need DNR permits. Contact this office for more details.

Section V: Fees

Fees are not refundable and are calculated as follows:

Check box for type of project:

1. ☐ single riparian area, one property owner, less than one acre $30.00
2. ☒ multiple riparian areas, offshore control areas, multiple riparian properties, one acre or greater $30.00/acre (round up to the nearest whole acre) If proposed removal is greater than 10 acres fee caps at $300.00

_____ acres x $30.00 per acre = $ _____

Total non-refundable fee enclosed (max $300.00) ..... $ 300.00

Section VI: Reasons for Aquatic Plant Removal

Purpose of Aquatic Plant Removal

☒ Maintain navigational channel for common use

☐ Maintain private access for boating

☐ Maintain private access for fishing

☐ Improve swimming

☐ Other _____

Nuisance Caused By

☒ Emergent water plants

☒ Submergent water plants

☒ Floating water plants

☐ Other _____

Name of plants, if known

Section VII: Alternatives Considered

	A. Previously Done?		B. Presently Proposed?	
1. Chemical	☒ Yes	☐ No	☒ Yes	☐ No
2. Sediment screens	☐ Yes	☒ No	☐ Yes	☒ No
3. Dredging	☐ Yes	☒ No	☐ Yes	☒ No
4. Drawdown	☐ Yes	☒ No	☐ Yes	☒ No
5. Nutrient controls in watershed	☐ Yes	☒ No	☐ Yes	☒ No
6. Nutrient controls on property	☐ Yes	☒ No	☐ Yes	☒ No
7. Other	☐ Yes	☒ No	☐ Yes	☒ No

NOTE: Consider feasibility of alternatives for each control site. This information not only helps the department make a decision on this application but also helps you evaluate your investment in aquatic plant management.

Describe the level of success for alternative methods previously used:

1. Chemical — good success on EWL
2. Sediment screens
3. Dredging
4. Drawdown
5. Nutrient controls in watershed
6. Nutrient controls on property
7. Other

Section VIII: Applicants Responsibilities

1. The applicant has prepared a detailed map, which shows the length, width and average depth of each area proposed for the control of rooted vegetation.

2. The applicant understands that the Department of Natural Resources may require supervision of any aquatic plant management project involving removal. Supervision may include inspection of the proposed treatment area and/or equipment, before, during, or after removal. The applicant is required to notify the regional office 4 working days in advance of each anticipated date of plant removal with the date, time, location and size of plant removal unless the Department waives this requirement. The advance notification may be specified in your permit.

3. The applicant agrees to inform all operators of harvesting equipment of the conditions and terms of this permit and to insure that all operators understand and abide by those terms and conditions.

4. The applicant agrees to comply with all terms and conditions of this permit, if used, as well as applicable Wisconsin Administrative Rules. The required fee is attached.

I hereby certify that the above information is true and correct and that copies of the application have been provided to the appropriate parties name in Section II and that the conditions of the permit will be adhered to. All portions of this permit, map and accompanying cover letter must be in possession of the applicant or their agent at time of plant removal. During plant removal activities, all provisions of applicable Wisconsin Administrative Rules must be complied with, as well as the specific conditions contained in the permit cover letter.

Bob Ramsthal — Applicant's Signature

7/10/12 — Date Signed

DNR Use Only

Review Notes:

☐ Natural Heritage Inventory Review

Section IX: Permit to Carry Out Mechanical or Manual Removal of Aquatic Plants

The foregoing application is approved. Permission is hereby granted to the applicant to mechanically or manually remove aquatic plants described in the application during the season. The approval of an aquatic plant management permit may not represent an endorsement of the permitted activity, but represents that the applicant has complied with Wisconsin Administrative Rules.

Season Year: 20 12

Application fee if received?
☒ Yes ☐ No

State of Wisconsin
Department of Natural Resources For the Secretary

By Adeide Burk
Regional Director or Designee

7/28/12 — Date Signed

7/30/12 — Date Mailed

If you believe that you have a right to challenge this decision, you should know that Wisconsin statutes and administrative rules establish time periods within which requests to review Department decisions must be filed.

For Judicial review of a decision pursuant to ss. 227.52 and 227.53, Wis. Stats., you have 30 days after the decision is mailed or otherwise served by the Department, to file your petition with the appropriate circuit court and serve the petition on the Department. Such a petition for review shall name the Department of Natural Resources as the respondent.

To request a contested case hearing pursuant to s. 227.42, Wis. Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to serve a petition for hearing on the Secretary of the Department of Natural Resources. The filling of a request for a contested case hearing is not a prerequisite for judicial review and does not extend the 30-day period for filing a petition for judicial review.

This notice is provided pursuant to s. 227.48(2), Wis. Stats.

Table 1 – Harvesting Permitted in Each Denoted Area
Field Visit by Bunk and Nothohm on Friday, July 27th, 2012

Map	Area	Harvesting Instructions
A	1	1 foot deep, 30 feet wide along pier line
A	2	No cutting or skimming along shoreline 1 foot deep, 30 feet wide cut at 10 foot depth contour
A	3	No cutting or skimming along shoreline due to dying milfoil
A	4	1 foot deep, 30 feet wide along pier line
A	5	2 feet deep, 30 feet wide along beds of topped out milfoil
B	6	No cutting or skimming along pier line due to high value plant community 1 foot cut of Eurasian water milfoil beds along buoy line
B	7	2 feet deep, 50 feet wide as drawn on map Skimming allowed for floating plant masses in the bay between 5 and 10 foot depth contour
C	8	1 foot deep, 15 feet wide along pier line if water depth is 3 feet or greater 2 or 3 lateral lanes perpendicular to shore may be cut Lateral lanes may be cut 1 foot deep and 30 feet wide

7/28/12
HDB

bing Maps

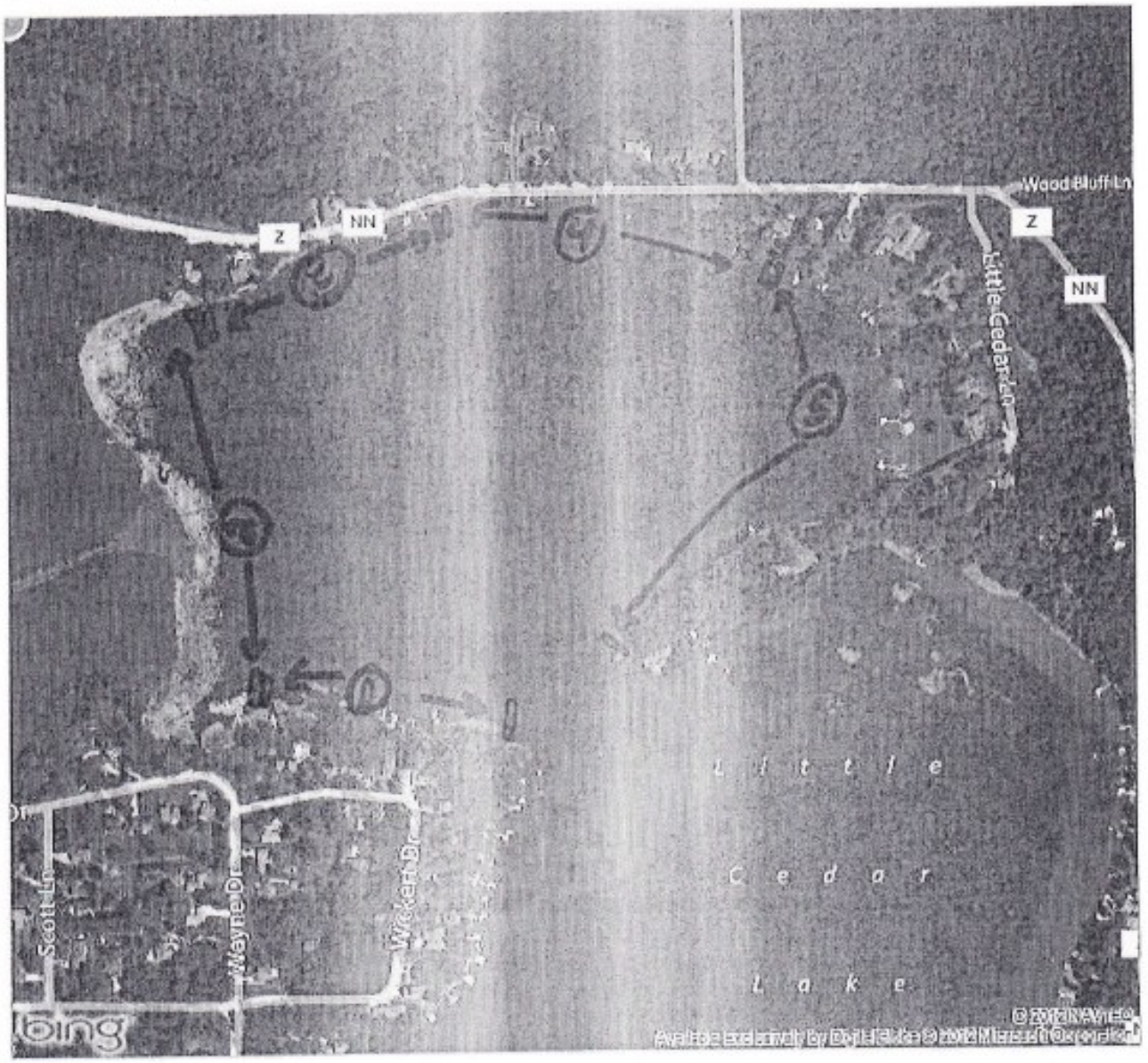
5880 Division Rd, West Bend, WI 53095

Map "A"
1- 1 ft deep 30ft wide by piers
2 - No cut or skimming close to shore
30 foot wide 1ft deep cut further out at
10 foot deep contour

3 - No cut or skimming - dying milfoil

4 - 1 ft deep 30ft wide by piers

5 - 2ft deep, 30ft wide



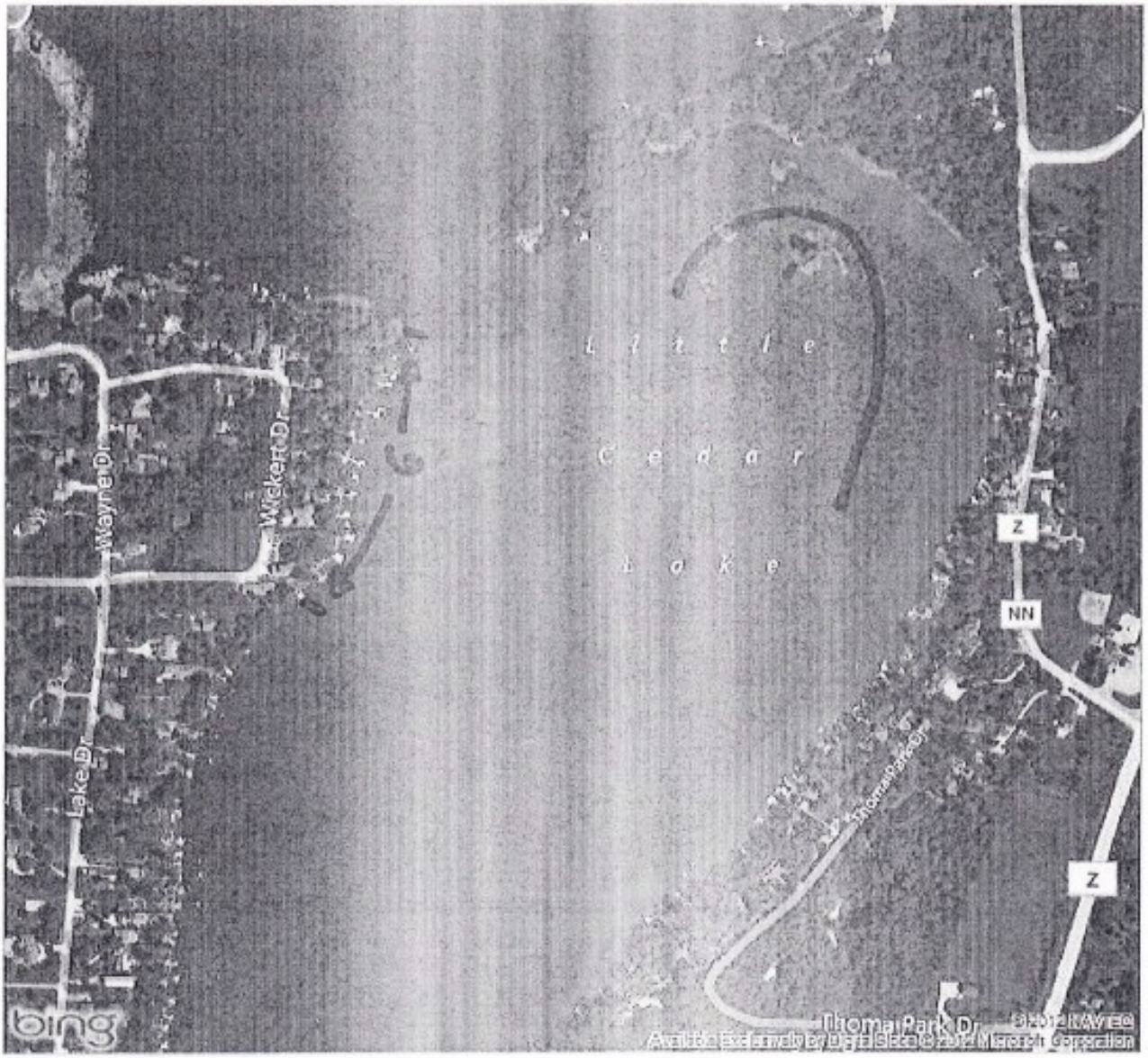
Bird's eye view maps can't be printed, so another map view has been substituted.

bing Maps

5880 Division Rd, West Bend, WI 53095

Map "B"
6- No cutting or skimming by pier line 1 ft cut of EWM beds along buoy line
7- 2 ft deep 50 foot wide skim for floating plants in area

7/28/12
HJB



Bird's eye view maps can't be printed, so another map view has been substituted.

bing Maps

5880 Division Rd, West Bend, WI 53095

Map "C"
8 - 1 ft deep, 15 feet wide
along pier line if water depth
3 ft or greater
Laterals to lake 1 ft deep 30 feet
wide

7/28/12
HJB