A

APPENDIX A

Long Lake Aquatic Plant Frequencies Table (2007, 2010, 2013, and 2018 Point-Intercept Survey Results)

	Scientific Name	Common Name	LFOO (%)			
			2007	2010	2013	2018
Dicots	*Myriophyllum spicatum*	Eurasian watermilfoil	0.0	0.0	0.0	0.3
	Ceratophyllum demersum	Coontail	24.8	35.2	35.1	32.8
	Myriophyllum heterophyllum	Various-leaved watermilfoil	0.0	19.9	34.4	28.3
	Myriophyllum sibiricum	Northern watermilfoil	30.1	14.6	1.1	2.2
	Ranunculus aquatilis	White water crowfoot	25.2	6.6	0.0	7.0
	Utricularia vulgaris	Common bladderwort	1.5	5.6	6.4	8.9
	Nymphaea odorata	White water lily	6.8	2.3	6.0	5.1
	Myriophyllum farwellii	Farwell's watermilfoil	25.9	0.0	0.0	0.0
	Nuphar variegata	Spatterdock	1.5	0.3	1.1	1.3
	Bidens beckii	Water marigold	0.0	0.3	0.4	1.0
	Brasenia schreberi	Watershield	0.0	0.0	0.4	0.0
Non-dicots	*Potamogeton crispus*	Curly-leaf pondweed	28.2	0.7	0.4	0.3
	Chara spp.	Muskgrasses	36.1	44.5	48.6	39.2
	Myriophyllum sp., M. sibiricum, & M.heterophyllum	Watermilfoil sp., Northern watermilfoil, & Various-leaved watermilfoil	50.0	31.2	34.8	30.6
	Filamentous algae	Filamentous algae	35.7	59.8	31.6	0.3
	Heteranthera dubia	Water stargrass	6.0	13.6	6.0	8.0
	Lemna trisulca	Forked duckweed	12.8	8.0	0.7	9.9
	Elodea canadensis	Common waterweed	7.1	10.0	3.9	8.3
	Stuckenia pectinata	Sago pondweed	11.3	7.6	3.2	6.7
	Potamogeton richardsonii	Clasping-leaf pondweed	7.9	8.3	1.8	1.9
	Potamogeton sp., P. foliosus, & P. friesii	Pondweed sp., Leafy pondweed, & Fries' pondweed	10.9	5.0	0.0	1.6
	Spirodela polyrhiza	Greater duckweed	4.5	1.0	0.0	3.5
	Potamogeton friesii	Fries' pondweed	8.6	2.0	0.0	1.3
	Vallisneria americana	Wild celery	0.4	3.7	0.0	3.8
	Potamogeton zosteriformis	Flat-stem pondweed	5.3	2.0	0.0	0.6
	Potamogeton illinoensis	Illinois pondweed	0.0	4.0	1.4	1.3
	Nitella spp.	Stoneworts	1.1	2.3	1.1	1.6
	Potamogeton amplifolius	Large-leaf pondweed	4.5	0.7	0.4	1.0
	Wolffia spp.	Watermeal spp.	3.4	0.0	0.4	1.6
	Lemna minor	Lesser duckweed	3.4	1.7	0.4	0.3
	Schoenoplectus acutus	Hardstem bulrush	0.8	0.3	0.0	0.3
	Potamogeton foliosus	Leafy pondweed	1.1	0.0	0.0	0.3
	Sparganium fluctuans	Floating-leaf bur-reed	1.5	0.0	0.0	0.0
	Sparganium sp.	Bur-reed sp.	1.1	0.0	0.0	0.0
	Najas flexilis	Slender naiad	0.0	0.0	0.4	0.3
	Freshwater sponge	Freshwater sponge	1.1	0.0	0.0	0.0
	Potamogeton hybrid 1	Pondweed Hybrid 1	0.8	0.0	0.0	0.0
	Isoetes spp.	Quillwort spp.	0.0	0.0	0.0	0.3

▲ or ▼ = Change Statistically Valid (Chi-square; α = 0.05)
▲ or ▼ = Change Statistically Valid (Chi-square; α = 0.05)

B

APPENDIX B

Long Lake 2016 Mechanical Harvesting Plan

INTRODUCTION

Long Lake, Fond du Lac County, is an approximately 460-acre drainage lake (including the northwest basin known as Tittle Lake) with a maximum depth of 48 (Map 1, left). The LLPA completed an update of their management plan in 2015 (*Long Lake Comprehensive Management Plan, Onterra, March 2015*). The updated plan created new thresholds and triggers for the continued control of CLP and EWM within Long Lake. The updated plan also included a management goal to *Support responsible actions to gain reasonable navigational access to open water areas of Long Lake.*

The LLPA understands the importance of native aquatic vegetation on Long Lake. However, nuisance aquatic plant conditions exist in certain parts of the lake, caused largely by native vegetation such as various-leaved water milfoil (*Myriophyllum heterophyllum*). Various-leaved water milfoil, one of seven native milfoil species that can be found in Wisconsin, was the third-most abundant aquatic plant in Long Lake in 2013 with a littoral frequency of occurrence of approximately 33%. Like most of the other milfoil species in Wisconsin, various-leaved water milfoil has dense whorls of finely-dissected leaves which provide habitat for periphyton and trap detritus. In Long Lake, various-leaved water milfoil can be found growing in dense beds throughout shallower areas around the lake. These beds provide valuable structural habitat for aquatic organisms.

Onterra ecologists had not observed various-leaved water milfoil growing to the high densities present in Long Lake on any other system (Photo 1). In the northeastern United States, there is an invasive strain of various-leaved water milfoil, and because of its behavior in Long Lake, Onterra ecologists sent specimens from Long Lake to the Annis Water Resources Institute at Grand Valley State University in Michigan to undergo DNA analysis. Their results revealed that the various-leaved water milfoil present in Long Lake is of the *continental* strain, the strain that is not considered to be invasive.

Photo 1. Various-leaved water milfoil (*Myriophyllum heterophyllum*) in Long Lake.

The LLPA supports the reasonable and environmentally sound actions to facilitate navigability on Long Lake. These actions target nuisance levels of aquatic plants in order to benefit watercraft navigation patterns. Reasonable and environmentally sound actions are those that meet WDNR regulatory and permitting requirements and do not impact anymore shoreland or lake surface area than absolutely necessary.

A stakeholder survey was sent to Long Lake riparians during November 2014. The response rate was relatively low (24%), therefore the results *may* follow public opinion but cannot be interpreted as being a statistical representation of the population.

Question 24: What is your level of support for the responsible use of Mechanical Harvesting on Long Lake?

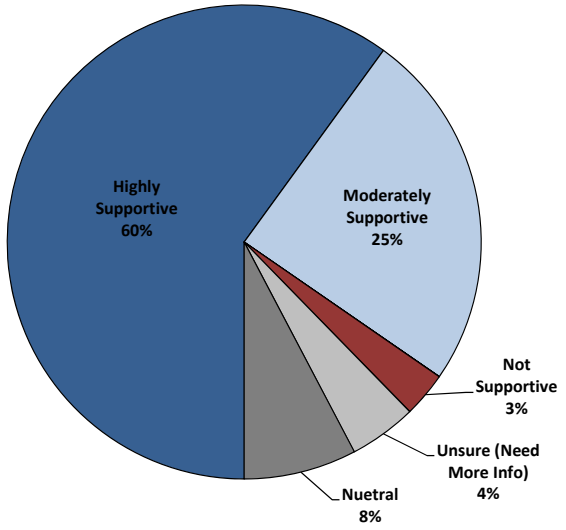


Figure 1. Select survey responses from the Long Lake Stakeholder Survey.

Approximately 89% of stakeholder respondents indicated they believe aquatic plant control is need on Long Lake by answering either *Definitely Yes* or *Probably Yes*, whereas approximately 6% of respondents did not feel aquatic plant control was needed by answering either *Definitely No* or *Probably No*. Figure 1 shows the level of stakeholder respondent support for the responsible use of mechanical harvesting of aquatic plants on Long Lake. The majority (85%) of respondents were supportive (pooled *Highly Support* and *Moderately Supportive*) of this technique, whereas just 3% were not supportive (pooled *Not Supportive* and *Moderately Unsupportive*). Approximately 12% of stakeholder respondents indicated they were *Neutral* or *Unsure* regarding the responsible use of mechanical harvesting to manage aquatic plants in Long Lake.

Along with other state statues, the WDNR administrative code NR 109 is followed regarding permit issuance for removal of aquatic plants. The purpose of this code is to ensure that control of aquatic plants is permitted "in a manner consistent with sound ecosystem management, shall consider cumulative impacts, and shall minimize the loss of ecological values in the body of water." The WDNR has requested a more precise plan that gives comprehensive guidance on the use of a mechanical harvesting operation, some of which are outlined below:

- Documentation of conditions that warrant mechanical harvesting
  - Navigation impediment due to aquatic plant growth
  - Justification for needing to transverse areas that have aquatic plant growth impeding navigation
- Practicality of mechanical harvesting
  - Plant composition, plant densities, and depth of plant growth
  - Project Design (e.g. water depth, transportation corridor, etc)
  - Logistics (e.g. cutting depth, off-loading location, disposal sites, decontamination procedures)
- Development of thresholds (i.e. triggers) of when mechanical harvesting would be implemented

This report discussed the surveys that were conducted in 2015 that have resulted in a formal mechanical harvesting plan per the specifics outlined above.

ACOUSTIC SURVEY RESULTS

On July 30-31, 2015, Onterra ecologists systematically collected continuous, advanced sonar data across Long Lake. This survey was timed to coincide with the potential peak growth of the aquatic plant community within the lake. This would allow the acoustic survey to produce a model of where the highest biomass of submersed aquatic vegetation exists in the lake (Map 1, center). While the map output does not differentiate between aquatic plant species, it indicates where differing bio-volumes of vegetation exist in the lake. It is unrealistic to quantitatively define the term "nuisance," as this designation is subjective by nature. However, the results of this survey document high bio-volumes of aquatic plants in many parts of the Long Lake littoral zone.

Another result of this survey produced an updated bathymetric map of the lake (Map 1, left). In regards to developing a mechanical harvesting plan for a lake, it is important to understand the depths at which the proposed activities would take place. Mechanical harvesters are produced in many sizes that can cut to depths ranging from 3 to 6 feet. Mechanical operations are advised not to occur in waters less than 3 feet of water, as the operation of the harvester can cause large sediment disturbances that increase turbidity, release nutrients, and potentially favor non-native plant in these areas.

While less-useful for the development of a mechanical harvesting plan than the bathymetric and submersed aquatic vegetation components of the acoustic survey, a sediment hardness model was also produced by the 2015 survey (Map 1, right). As many riparians know, the lake contains a large proportion of hard sediments (i.e. sand) and only a few areas that are soft (i.e. muck).

MECHANICAL HARVESTING SPECIFICS

The LLPA has a history of mechanically harvesting native aquatic plants to alleviate conditions caused by excessive native plants. Previous mechanical harvesting plans were slightly informal, indicating approximate areas of the lake that were targeted. The historic mechanical harvesting efforts were conducted approximately at the end of riparian docks to reduce plant material within this high use area of the lake. Previous mechanical harvesting reports indicate that the vast majority was various-leaved water milfoil (informally around 90%), lesser amounts of white water crowfoot (buttercup) and common waterweed (informally around 3% each), and trace amounts of coontail, muskgrasses, and pondweed species.

Map 2 shows a more precise mechanical harvesting plan for Long Lake. This plan includes a 30 ft-wide common-use navigation lane only in areas where riparian properties exist. Mechanical harvesting would not occur in front of the natural shorelines owned by the Boy Scouts of America nor the Kettle Moraine State Forest Northern Unit. This lane will reduce plant material in front of riparian properties as well as create a navigation framework to allow navigation access to the deeper parts of the lake. Lake-ward access spokes (30-ft wide) would periodically connect the center navigation lane with deeper water and cut on an "as needed" basis.

In some areas, a 10-ft wide riparian access spoke has been constructed to allow access to the common-use center lane. The LLPA would visit the need for each of the riparian access lanes to be harvested on an annual basis. Landowners in these areas would be responsible for funding these lanes and if nuisance conditions do not exist in a given year, they would be less likely to pay for the activity.

The contracted mechanical harvesting firm would utilize GPS technology to ensure mechanical harvesting occurs as designed for that year. Each year, updated spatial data would be provided to the chosen mechanical harvesting firm. If documentation of cutting (i.e. GPS tracklog) is required by the WDNR, it would be the responsibility of the mechanical harvesting firm to forward that information on as appropriate.

Depending on what part of the lake the mechanical harvester is operating in, one of two off-load sites would be utilized (Map 2). When operating in the north and east parts of the lake, the Chinatown private boat landing would be used as an offloading location. If operations are occurring on the west and south sides of the lake, an established private offloading location would be used. An agriculture field east of Chinatown (Figure 2) will be used to dispose of the removed aquatic plants.

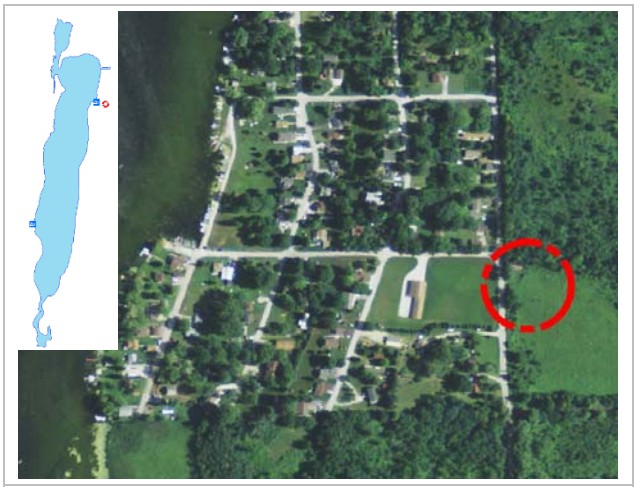


Figure 2. Harvester disposal site.

AQUATIC PLANTS TARGETED

As discussed above, much of the navigational impediments on Long Lake are thought to be caused by the dense various-leaved water milfoil populations on the lake. The most recent point-intercept survey was conducted by the WDNR in 2013. In order to quantify the aquatic plants within the mechanical harvesting plan, all point-intercept sampling locations within 30 meters of the mechanical harvest lanes were analyzed (Figure 3). The most common species within the mechanical harvesting areas is muskgrasses. Because of the low-growing nature of this plant, the mechanical harvesting efforts are not likely to remove much of this species. Mechanical harvesting depth should be at least 1.5 feet off the bottom to avoid major impacts to the muskgrass "mats."

The second and third most abundant species are coontail and various-leaved water milfoil (Figure 3). Various-leaved water milfoil is one of the primary plants being targeted by the mechanical harvesting operations. Staying at least a 1.5 feet off the bottom, the longevity of control from mechanical harvesting this species will be increased by cutting as deep as possible. This may also limit the number of times mechanical harvesting is needed in these areas, reducing costs and general disturbance caused by the mechanical harvesting operations.

Lacking true roots, coontail can grow entangled amongst rooted vegetation and obtain all of its nutrients directly from the water. Also able to tolerate low-light conditions, it is often one of the most abundant aquatic plants in highly productive lakes. Coontail has the capacity to grow to levels which can hinder navigation. It is likely that the amount of coontail in the mechanical harvesting areas is a result of entanglement from the various-leaved water milfoil.

Numerous other native plant species are present in low populations within the mechanical harvesting lanes.

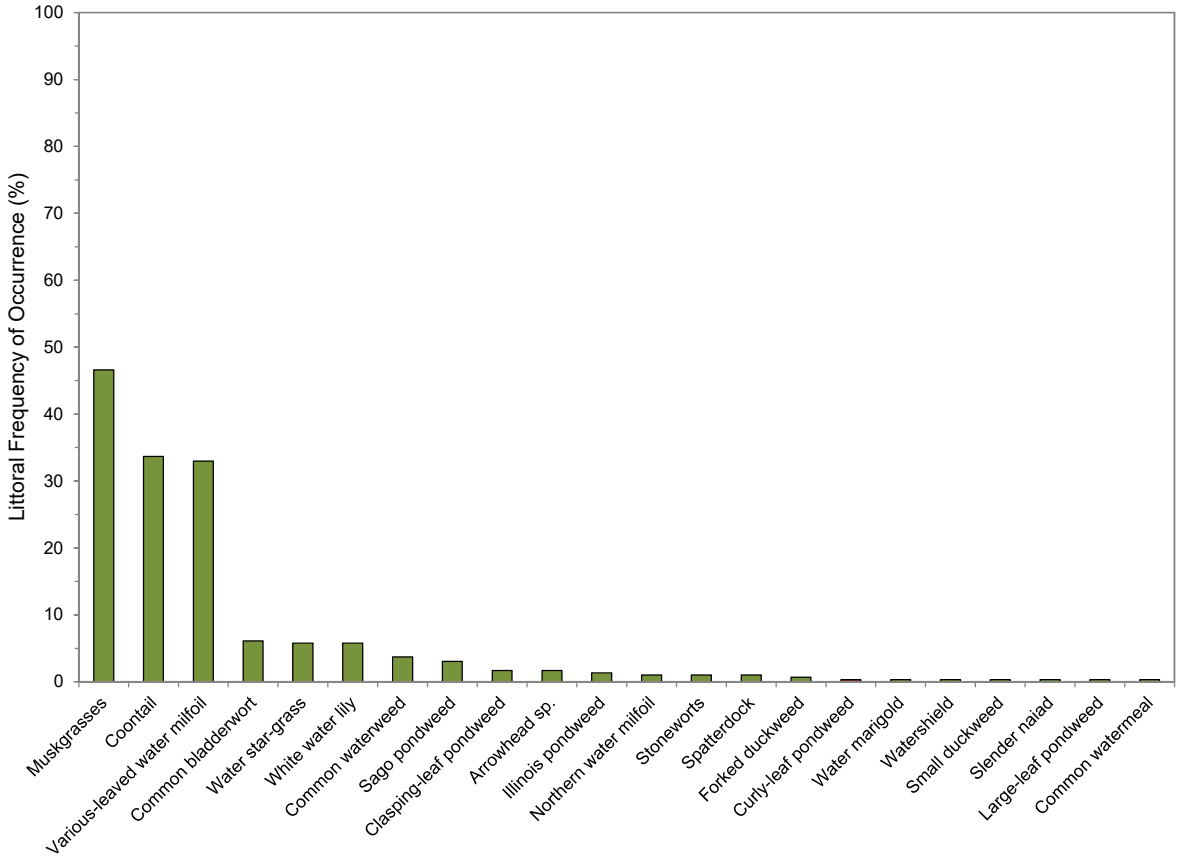


Figure 3. 2013 littoral frequency of occurrence of aquatic plant species within the 2016 mechanical harvesting plan. Created using data collected from 118 littoral sampling locations during the WDNR 2013 whole-lake point-intercept survey within 30 meters from the mechanical harvesting plan (Map 2).

Based on the 2013 point-intercept survey, no AIS exist within proximity to the mechanical harvesting lanes. However, these data may be too coarse-scale to identify precise locations where CLP and EWM exist within Long Lake. It is important to not mechanically harvest AIS (particularly EWM), as non-captured plant fragments may have the capacity to spread to other areas of the lake. Prior to mechanical harvesting of each year, an Early Season AIS (ESAIS) Survey will be conducted to locate AIS within Long Lake. The data from the ESAIS Survey would be overlaid on the Mechanical Harvesting Map. Colonies of EWM located during the ESAIS Survey would either be targeted for professionally-based hand-harvesting prior to mechanical harvesting, or these areas would be avoided for mechanical harvesting through an updated map and strategy. In areas where CLP was located, mechanical harvesting would not occur until after the week of Independence Day, when CLP populations would have mostly senesced (died back) for the year.

SUMMARY & CONCLUSIONS

Based upon the 2015 acoustic bio-volume survey, abundant aquatic plant growth was documented in littoral areas of the lake. Overall, this document outlines a minimally invasive plan for allowing riparian access to deeper parts of Long Lake. The mechanically harvesting plan that was developed attempts to have the lowest footprint possible while allowing a transportation network to be devised that would reduce navigation impediments that limit access to the lake.

The WDNR will include a list of conditions each year for the mechanical harvesting firm to comply with. Below is a summary of a portion of the conditions, with additional legal definitions being included on the permit and updated following best management practices:

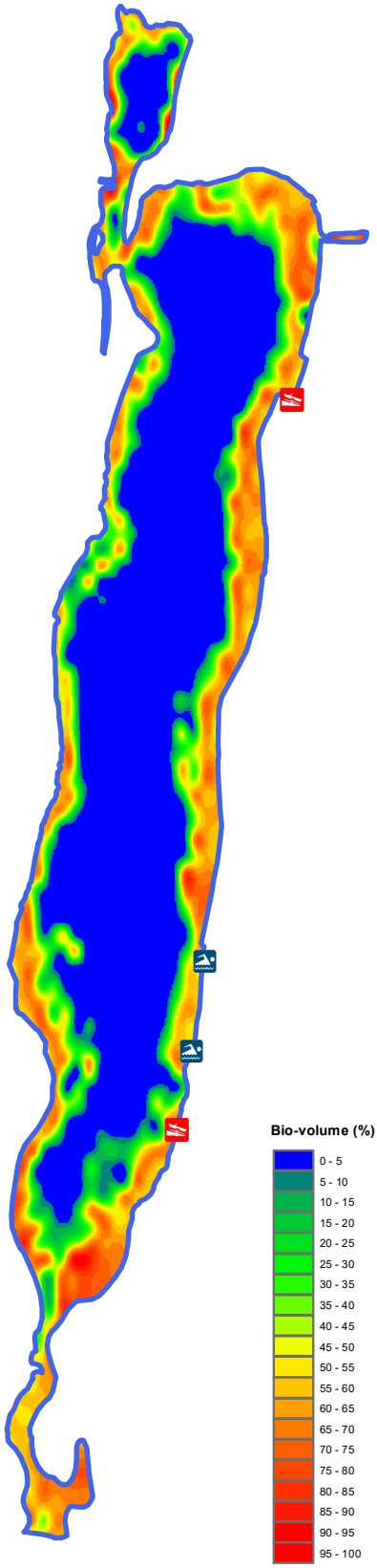
- Advance notification (> 1 week) to WDNR of mechanical harvesting schedule. WDNR may conduct onsite supervision.
- Hard copy of permit needs to be on mechanical harvesting vessel. Operator needs to be familiar with permitted areas (GPS-guided) and conditions listed on permit.
- No harvesting can occur before the ESAIS survey and a final strategy has been approved.
- Harvesting should occur only at depths greater than 3 feet of water and cutting head should always be at least 1.5 feet off bottom.
- Accumulations of plant material near shore (i.e. floaters) may only be removed if the cutter blades are not running and only the conveyer is being used.
- Floating-leaf and emergent plants should be avoided if possible.
- All harvested plants must be removed from the water and properly disposed of.
- Harvesting operations should not disturb spawning or nesting fish. Any game fish accidently captured need to be released.
- Mechanical harvesting summary report will be required by WDNR by November 30 of each year that includes:
    - Map of final permitted areas
    - Amount of plant material removed
    - Species composition (proportional) of harvested material
    - Approximate effort (time & amount of plant material removed) within the various harvesting lane types
- All equipment need to follow proper disinfection protocols. The most current WDNR standard is shown below and can be found here: http://dnr.wi.gov/topic/Invasives/disinfection.html

A. Inspect and remove aquatic plants, animals, and mud from your equipment.
B. Drain all water from your equipment, including but not limited to tracked vehicles, barges, boats, silt or turbidity curtain, hoses, sheet pile and pumps.
C. Dispose of aquatic plants, animals in the trash. Never release or transfer aquatic plants, animals or water from one waterbody to another.
D. Disinfect your boat, equipment and gear by either:
    - Washing with ~212º F water (steam clean), OR
    - Drying thoroughly for 5 days after cleaning with soap and water and/or high pressure water, OR
    - Disinfecting with a 1:100 solution (38 grams per gallon) of Virkon® Aquatic for 20- to 30-minute contact time. Note: Virkon® is not registered to kill zebra mussel veligers nor invertebrates like spiny water flea. Therefore this disinfect should be used in conjunction with a hot water (>104º F) application.

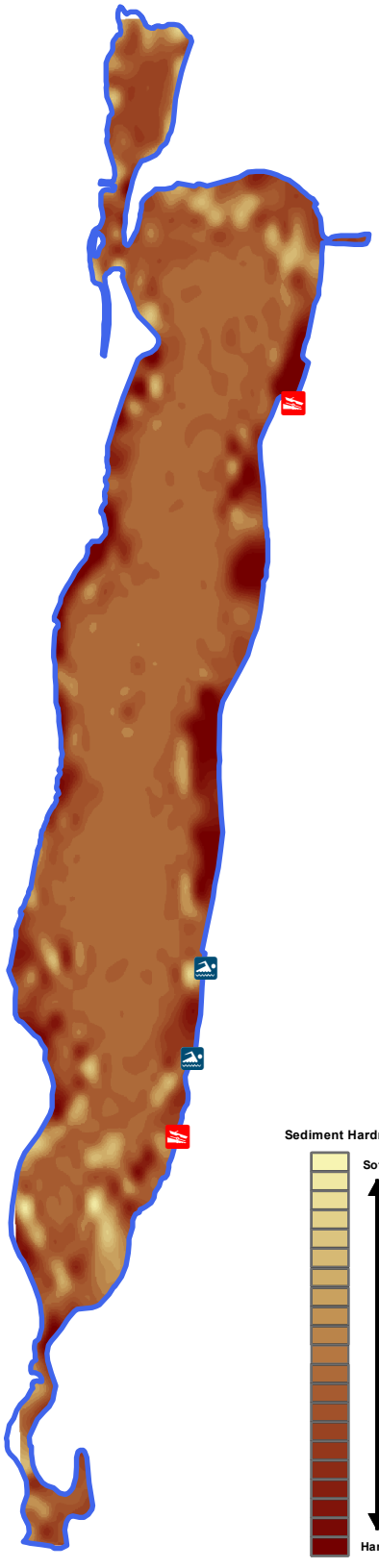
The LLPA would like the WDNR to consider granting a multi-year permit after an agreed upon strategy has been implemented successfully for a number of years.

Bathymetry

Submersed Aquatic Vegetation



Sediment Hardness



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Onterra LLC
Lake Management Planning
815 Prosper Rd
De Pere, WI 54115
920.338.8860
www.onterra-eco.com

Sources:
Roads and Hydro: WDNR
Acoustic Survey: Onterra, 2015

Map Date: October 8, 2015

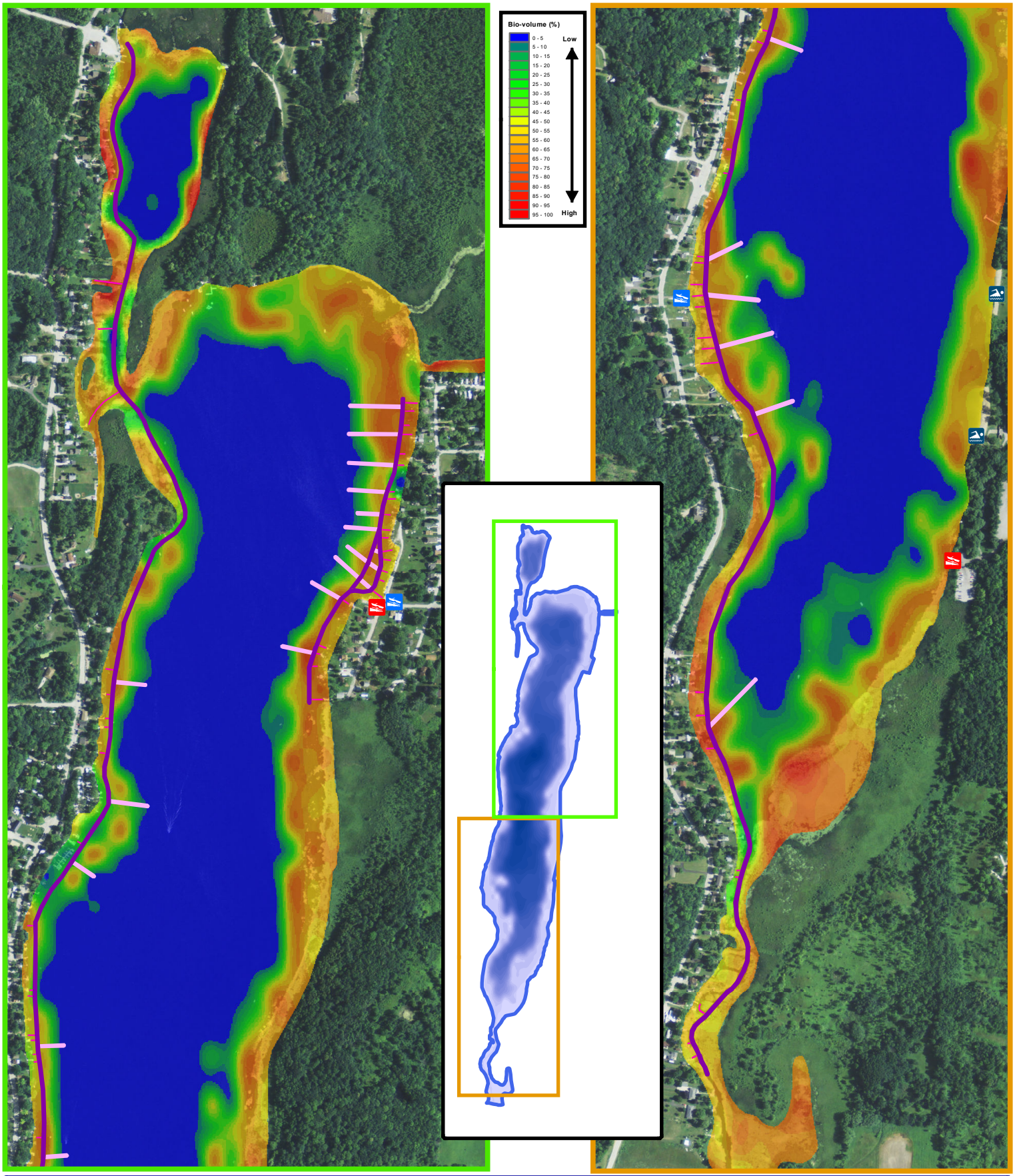
Filename: LongFDL_Acoustic_Summer15.mxd

Project Location in Wisconsin

Legend

- Boat Landing
- State Park Beach

Map 1
Long Lake
Fond du Lac County, Wisconsin
Summer 2015 Acoustic Survey



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De Pere, WI 54115
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www.onterra-eco.com

Sources:
Roads and Hyrdo: WDNR
Bathymetry: WDNR 197, Digitized by Onterra
Aquatic Plants: Onterra, 2015
Map Date: March 2, 2016
Filename: LongFDL_MechHarvest_2014_v1.mxd

Project Location in Wisconsin

Legend

- Common Use Center Lane (30-ft wide, 13.0 acres)
- Common Use Lakeward Spoke (30-ft wide, 3.7 acres)
- Potential Riparian Access Spoke (10-ft wide, 0.8 acres)

Map 2

Long Lake

Fond du Lac County, Wisconsin

2016 Mechanical Harvest Plan

C

APPENDIX C

Eco Waterway Services 2018 DASH Harvest Summary Report

July 25, 2018

State of Wisconsin
Department of Natural Resources
2984 Shawano Avenue
Green Bay, WI 54313-6727

Annual Summary Report - DASH HARVESTING
Permit #NE-2018-20-0038M
Holder: Long Lake Preservation Association
Dave Murphy
P.O. Box 155
Wautoma, WI 54982
Lake: Long Lake

Starting and Ending Dates of Project:
DASH Weed Harvesting took place 6/27 – 6/30

Dive Hours: 20 hours

Map of the area harvested:
Attached

Total Acreage of the lake harvested:
423 acres lake surface area
0.8 Acres harvested area of lake

Total amount of plant material removed:
(261) 19" x 32" onion bags at 50 lbs each or 13,050 lbs of weeds

Types of plants harvested by area:
EWM
Target removal of EWM
90% non-native; 10% native – Chara, Eel Grass

Weather Conditions
6/27 – 79 degrees, cloudy, 7 mph N winds
6/28 – 86 degrees, mostly cloudy, 8 mph S winds
6/29 – 94 degrees, fair, 13 mph S/SSW winds
6/30 – 87 degrees, fair, 10 mph S/SSW winds

Submitted by: Pat Dalman
Eco Waterway Services, LLC
W346 S4109 Virgin Forest Drive
Dousman, WI 53118

D

APPENDIX D

Long Lake Preservation Association Summary Report of Grant Deliverables and Stakeholder Activities

FDL Long Lake Preservation Association
Final Report ACEI-159-15

The Long Lake Preservation Association obtained the above grant on March 26, 2015. This final report covers the entire grant period of April 15, 2015 through June 30, 2019.

The grant deliverables below include invasive species education and prevention strategies that include hiring of specialized consultants and treatment vendors as well as obtaining member volunteers to complete the lake and boat landing inspections and to be the eyes and ears on the lake for the consultant in Green Bay. With this partnership, the deliverables were met to the best of our ability.

Project Goals

1. Conducting pre and post treatment surveys with volunteers and consultant to monitor the presence and results of AIS treatments in Long Lake.
2. Treating AIS infested areas in waters of Long and Tittle with aquatic herbicide.
3. Develop an updated aquatic plant management plan that will include mechanical harvesting as well as professional hand harvesting
4. Conducting 200 hours of water craft inspections at boat landings.
5. Continue with mechanical harvesting to help with navigation in areas of high boating traffic.
6. Complete an acoustic survey with whole take point intercept survey.
7. Complete a stakeholder's survey.
8. Hold public and committee meeting s to ensure the tracking of the project goals and to mail educational information to Association members.

The results of our efforts are described below:

Goal 1: Conducting pre and post treatment surveys with volunteers and consultant to monitor the presence and results of AIS treatments in Long Lake.

We hired Onterra to conduct our Pre and Post treatment surveys on Long and Tittle Lake. Dave Murphy our Treatment Chairman does the initial monitoring of the weeds to determine the exact location of invasives and when the time is right, he calls Onterra to complete the formal survey. The lake is GPS'd to include data and maps of areas treated and monitored. The end result is to continually monitor the effects of the treatment.

LongFDL Survey Dates		
Spring Pre-Treat	**ESAIS/Post Treat**	**EWM Peak Bio**
04/2720/15	06/9-10/15	08/13/2015
05/05/2016	06/22/2016	09/26/2016
04/25/2017	06/09&12/2017	09/25/2017
05/14/2018	06/6-7/2018	10/11/2018

Goal 2: Treating AIS infested areas in waters of Long and Tittle with aquatic herbicide.

In 2011 we gave consideration to other non-chemical based treatment such as controlled drawdowns of the lake levels. We discussed the drawdown with Onterra and all agree this is not for Long Lake for three reasons. 1) It would enhance weed growth, 2) do damage to the dam, 3) negative impact on the economy of the local businesses if the lake were not at its full potential.

In addition to treatment, through our newsletters, we have encouraged our members to manually control weeds by hand pulling and raking. The phone number of a member who pulls the weeds for a fee was included in our newsletters.

In 2014 we sent out bids to hire a treatment vendor and based on the results of the bid we hired Aquatic Biologists to conduct the treatments in 2015-2019.

Below is listed the acres treated:

2015 12.8 acres
2016 16.3 acres
2017 9.9 acres
2018 20.6 acres

Goal 3: Develop an updated aquatic plant management plan that will include mechanical harvesting as well as professional hand harvesting.

In 2015 the Association developed a plan to reduce lake treatments to areas with low concentration of AIS and supplement it with professional hand harvesting. During 2016 we obtained bids and recommendations on vendors that we should consider using. The successful bid went to ECO Waterway Services. The areas hand harvested was determined by our consultant Onterra. Using a Diver Assisted Suction Harvest unit, Ecowaterways removed the following pounds of aquatic plants.

Below are the pounds removed and dollars spent on hand harvesting

2017 7,250 pounds - $6360.00
2018 13,050 pounds - $6910.00

Mechanical harvesting in navigation lanes continued in each summer.

Goal 4: Conducting water craft inspections at boat landings.

Each summer greater than 200 hours was spent on Long and Tittle Lake conducting boat inspections and educating the public on the health of our lakes and the prevention of spreading invasive species. All hours were entered into the Citizen Based Monitoring System Data Base (SWIMS) by our CBCW chairperson.

2015 219 hours
2016 204 hours
2017 202 hours
2018 202 hours

Prior to obtaining this grant we had an Early Detection, Rapid Response and Established Infestation Grant which also required monitoring of the boat landings. For this grant we enrolled 10 of our Board of Directors in the Clean Boat Clean Water Workshop. As a result of that training,

an internal training manual and check lists were created to keep our members up to date on the procedures required at our boat landing. Since it is very hard to get members to step up to volunteer time at the landing, let alone a day of formal training up state, in 2011 we asked the DNR if we could use an in-house trainer to train at the local level. This was approved and Tom Hinchliffe, a past formal corporate trainer for Blue Cross Blue Shield conducted the training on an as needed basis as we obtained new recruits.

Goal 5: Continue with mechanical harvesting to help with navigation in areas of high boating traffic.

Each summer the Association hired Midwest Aquatics to conduct the harvesting in areas with high concentration of AIS in and around navigation lanes. All harvesting was conducted in areas with a DNR permit and identified by the Association. Dave Murphy one of our directors was on the lake overseeing the project.

2015	500	cubic yards of plant material - $6,075
2016	1175	cubic yards of plant material - $8,983
2017	105	cubic yards of plant material - $8,369
2018	35	cubic yards of plant material - $5,260
2019	84	cubic yards of plant material - $8,500

Goal 6: Complete an acoustic survey with whole take point intercept survey.

This goal was performed by Onterra in 2015, and used to guide the mechanical harvesting plan. This survey was originally planned for replication in 2018, but was opted against based upon lack of perceived utility.

Goal 7: Complete a stakeholder's survey

We did not conduct a formal survey but conducted an informal survey at each year's annual meeting. At this meeting we provide treatment and harvesting statistics to the membership and ask for input on "where do we go from here". Our meetings are open to the public and advertised with a poster on the door of the local Mini-Mart. We encourage participation from members and non-members. Each year new members join as a result of our message. In 2019 to encourage further participation, we offered food and door prizes.

Year	Date of Annual Meeting.
2015	06/20/15
2016	06/18/16
2017	06/17/17
2018	06/16/18
2019	06/15/19

Goal 8: Hold public and committee meeting s to ensure the tracking of the project goals and to mail educational information to Association members.

Each year we reach out to members and none members to attend our annual meeting. We use this format to educate our members and also to attract new members. The meeting is promoted on a poster and posted at the Mini – Mart three weeks before the meeting. Turn out has been good.

The LLPA Grant Committee meets several times a year to track our progress on the grant and to ensure we are on track with our goals.

In 2010 we created an invasive species page on our Internet web-site to education readers on CLP and EWM. The web page as well as our brochure was also updated to include the "Stop Aquatic Hitch Hiker" Logo. The web-site is at http://www.longlakepreservation.org.

In each year of our grant we issued several newsletters that provided the reader with current information on the lake and surrounding areas. An example of topics were:

Long Lake Watershed
Mechanical Weed Harvesting Project
Flood Plane Changes
Dive Teams Survey Lake Bed for Invasive Species
Herbicide used to treat Invasive Plants and is it Harmful?
Nutrients in Polluted Runoff: Effects on Lakes
Clean Boats Clean Waters Program Needs YOU

At our annual meetings we have explained the benefits of native water plants, such as bulrushes.

Summary

This grant has allowed the Association to fight and significantly reduce CLP and EWM infested areas in the waters on Long and Title Lake. Each summer annual pre and post treatment surveys were initiated to measure the effectiveness of the treatment program as well as for planning the following year's treatment.

With the summer of 2015 treatment, the total treatment over the 5 year period has been reduced from 50 acres to 12.7 acres. Without action over this five year period, the AIS threatened to overtake the native aquatic plants as well as disrupt the public's enjoyment of the lakes by clogging the boat motors and reducing the fishing on the lake. The reduction of AIS is restoring the natural balance of the lakes for the benefit of all.

Coupled with the chemical treatment was the continuation of the CBCW program we started prior to receiving this grant. In our initial year of boat landing monitoring, most boaters had no idea about the effects of transferring weeds to another lake as well as the effects of water left in their boat or on their trailers. This summer we found 95% of our contacts were aware and could re-site the rules to us. Between our attempts at educating and the DNR's through their public announcements, much change has taken place to stop the spread of Invasive species.

Long Lake is a body of water with residents on only about 25% of the lake and the Boy Scouts of America and the Department of Natural Resources owning the other 75% of the lake. As a result the association is limited in the amount of dues it can raise and relation to a whole lake treatment and hand harvesting plan. For example from 01/01/15 and through 12/31/18, the association raised $40,164 in dues and donations a paid out $99,676 in survey, treatment and hand harvesting expenses. As can be seen in these numbers, the importance of the grant to the lake.

E

APPENDIX E

Comment Response Document for the Official First Draft

Comments to Long Lake Draft Aquatic Plant Management Plan Update (7/1/19) – Comments Received 7/3/2019

Response by Eddie Heath, Onterra

WDNR Official Comments: Mary Gansberg
(WDNR Water Resources Management Specialist)

1. I am wondering how to address the condition of the harvesting permit that requires an annual ESAIS survey and final strategy be approved prior to harvesting each year? We understand that the condition of not harvesting within areas of AIS is to limit the spread within the lake. We believe the CLP footprint is currently lake-wide and there is not a concern for spreading this species to new places. If the WDNR had concern about spreading CLP, perhaps conditioning the harvesting to occur after the second week in July when CLP has senesced. For unknown reasons, the EWM/HWM population has remained low in Long Lake – confined to point-based mapping. On projects we have in other parts of the state: mechanical harvesting may need to avoid colonized areas of EWM (polygon-based areas), but not be overly concerned about these isolated occurrences. Additional text was added to the description of the mechanical harvesting management action under Management Goal 5.
2. How do we address the action items of the grant that were not completed such as planning committee meetings and stakeholder survey? The project would not be invoiced these activities, leaving remaining funds within the grant.
3. One goal of the Comp management plan (Goal #2) was to continue monitoring water quality through the Citizen Lake Monitoring Network. The volunteer (Dave Simon) has not collected water chemistry samples since 2015. I have tried multiple times to contact him with no luck. Does Long Lake Preservation Association have a volunteer(s) willing to conduct this monitoring? For address by LLPA.
4. Long Lake Preservation Assoc. will need to provide a summary of the CBCW and other volunteer monitoring activities as part of this final report. The LLPA has created this document for inclusion within the final report as Appendix D.
5. The grant proposal indicated that Endothall herbicide concentration monitoring would occur in 2015 and 2016. Was that completed as planned? Herbicide concentration monitoring was conducted in 2015 and reported on within that annual report. It was not completed in 2016. Building off your comment, we will work with the WDNR to make sure the reports conducted under this project are properly loaded to the WDNR website under this grant.
6. And lastly, I have a few really minor typos in case you want them – Page 19 second line says “save one”. Page 26 under 3, has an extra “continue” on bullet one. Page 27 first line has an extra “and”. Page 29 an extra “M” after 2018 second to last paragraph. Edits have been made.