

Resolution 19-2 of the Horseshoe Lake Property Association (HLP), Washburn County  
November 16, 2019

**Aquatic Invasive Species Education, Prevention, and Planning (AEPP) Grant  
Resolution**

WHEREAS, the HLP is interested in obtaining a cost-share grant from the Wisconsin Department of Natural Resources (WDNR) for the purpose of supporting an aquatic invasive species information and Eurasian watermilfoil (EWM) management planning and implementation project on Horseshoe Lake in Washburn County in 2020 and 2021;

WHEREAS, the applicant attests to the validity and veracity of the statements and representations contained in the grant application;

WHEREAS, a grant agreement is requested to carry out the project; and

NOW, THEREFORE, BE IT RESOLVED, that the HLP has budgeted a sum sufficient to fully and satisfactorily complete the project and hereby authorized and empower the following officials or employees to submit the following documents to the Wisconsin Department of Natural Resources for financial assistance that may be available:

Task	Title of Authorized Representative
Sign and submit a grant application	Secretary/Treasurer
Enter into a grant agreement with the WDNR	Secretary/Treasurer
Submit quarterly and/or final reports to the WDNR to satisfy the grant agreement, as appropriate	Secretary/Treasurer
Submit reimbursement requests(s) to the WDNR no later than the date specified in the grant agreement	Secretary/Treasurer
Sign and submit any other documents as necessary	Secretary/Treasurer

BE IT FURTHER RESOLVED that the applicant will comply with all local, state and federal rules, regulations and ordinances relating to this project and the cost-share agreement.

Adopted on the 22nd day of January, 2019

I hereby certify that the foregoing resolution was duly adopted by the HLP by a vote of: 9 in favor, 0 against, and 0 abstain.

Authorized Signature 

Title: Secretary/Treasurer

Date Certified November 16, 2019



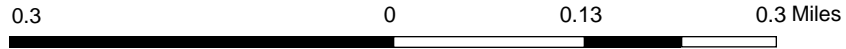
# Surface Water Data Viewer Map



## Legend

- Station Points with Historic Data
- Station Points with Recent Data (10 years)
- Station Points without Data (Active, Usable)
- Station Points without Data (New Station, Pending)
- Parking Lot
- Shore Fishing
- Boat Access
- CARRY-IN
- RAMP
- UNKNOWN
- Municipality
- State Boundaries
- County Boundaries
- Major Roads**
  - Interstate Highway
  - State Highway
  - US Highway
- County and Local Roads**
  - County HWY
  - Local Road
- Railroads
- Tribal Lands
- Rivers and Streams
- Intermittent Streams
- Lakes and Open water

## Notes



NAD\_1983\_HARN\_Wisconsin\_TM

1: 7,920

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Project Name: DRAFT-Version 3 Horseshoe Lake, Washburn County 2020-21 AEPP Grant Budget																	
Project Years: 2020-2021 Start Date: February 1, 2020 End Date: December 31, 2021.																	
Goal	Objective	Action	Task	Time Frame	Budget Line Numbers	LEAPS		Support Consultants		Lake Association (time)		Donated Services		Equipment/Paid Services		Sub-Total	
						Time	Dollars	Who	Dollars	Time	Dollars	Who	Dollars	Who/What	Dollars		
Aquatic Plant Community, Lake, and Shoreland Health	The current health and makeup of the aquatic plant community will be measured and compared to previous data	A whole-lake, warm water, point-intercept, aquatic plant survey will be completed in 2020 (the last one was done in 2013)	A summer, whole lake, point-intercept survey will be completed by Endangered Resource Sciences in 2020.	2020		4	\$320.00	ERS	\$3,421.00	8	\$96.00					\$3,837.00	
	Current water quality conditions will be documented and compared to prior data	Surface water quality testing at two sites including Total Phosphorus (TP), chlorophyll A (Chl), water clarity (Secchi), and Temperature (Temp) Profiling will be completed monthly from May-October in year one of this project	Monthly collection of water quality samples May-October in both the Deep Hole (east basin) and the West Basin. The west basin is a part of the CLMN expanded monitoring program.	2020		8	\$400.00	SLOH	\$432.00	112	\$1,344.00	Boat Use (42 hours)	\$420.00	Shipping	\$208.00	\$2,804.00	
	The amount of coarse woody habitat in the lake will be documented	A Coarse Woody Habitat Survey will be surveyed in 2020	Evaluate the amount of coarse woody habitat in the lake and determine what needs to be done to increase or maintain it	2020		12	\$600.00			8	\$96.00	Boat Use (8 hours)	\$80.00			\$776.00	
AIS Education	The Lake Group constituency will be more aware and knowledgeable about AIS and how they can impact a lake.	AIS information including the dates and times of AIS workshops and related events, videos, and brochures will be posted on the lake group's webpage and Facebook page	Identify and post AIS education and information to increase awareness and knowledge of the constituency on the Lake Groups webpage and/or Facebook page	2020-2021						24	\$288.00					\$288.00	
	Property owners will monitoring and remove AIS from around their docks and on their shoreland.	Property owners will be taught how to identify and remove AIS from around their docks and on their shoreland by offering an AIS identification and Removal Training Session in each year of this project	Volunteers on the lake will sponsor at least one workshop annually to teach lake property owners how to identify and then remove AIS from the waters near their docks	2020-2021		12	\$600.00			16	\$192.00	Boat Use (8 hours)	\$80.00			\$872.00	
AIS Prevention	AIS signage and display of other information at the public access will be reviewed an evaluated for effectiveness	A review existing AIS Signage at the public access will be completed in 2020	A review of the AIS signage and other aspects of the public access will be completed using the WDNR Aquatic Invasive Species Signage Report - Form 3200-152	2020						4	\$48.00					\$48.00	
	AIS signage at the public access will be repaired, replaced, or updated to improve effectiveness	Existing AIS signage and information at the public access will be repaired, replaced, modified, or added anew	Based on findings from the review of AIS signage, what is posted/available at the public access will be updated.	2020-2021						16	\$192.00			Materials	\$200.00	\$392.00	
	Lake users launching or removing boats and other watercraft from the lake will be educated on how to prevent the spread of AIS from one lake to the next	A watercraft inspection program following Clean Boats Clean Waters (CBCW) guidelines will be implemented in each year of this project	The Lake Group contributes \$1000 to the Minong Town Lakes Committee to support their CBCW program of which Horseshoe Lake is included.	2020-2021													\$0.00
	New AIS that may get introduced to the lake will not go undetected	Trained AIS monitors will complete visual surveys of the lake littoral zone, adjacent shoreline, and surrounding area at least three times between June and September each year	Trained volunteers will search the littoral zone of the lake and adjacent shoreland for AIS following CLMN AIS Monitoring guidelines. All data will be submitted to the SWIMS database.	2020-2021							48	\$576.00	Boat Use (12 hours kayak, 12 hours motorboat)	\$146.04			\$722.04
	Determine the present or not of zebra mussels in the lake	Lake Association volunteers will install three zebra mussel plate samplers in the lake and check them weekly for zebra mussels. Property owners will be taught to inspect their docks and other structures in the water when they are pulled from the lake in the fall.	Zebra mussel plate samples will be installed and monitored in Horseshoe Lake in both years of this project	2020-2021							52	\$624.00	Boat Use(48 hours)	\$480.00			\$1,104.00
AIS Management Planning Support	Eurasian watermilfoil (EWM) management planning will be completed by a Consultant in cooperation with the Lake Group, other stakeholders, and WDNR	Management planning for the control of EWM will be completed in both years of this project	Final treatment planning in 2020, preliminary and final treatment planning in 2021 will be completed as a part of this project. 2022 management planning will be included in the update of the APM Plan	2020-2021		16	\$1,280.00			12	\$144.00					\$1,424.00	
	WDNR herbicide application permits and/or harvesting permits will be prepared by the Consultant in cooperation with the Lake Group, other stakeholders, and WDNR	The appropriate aquatic plant management permits will be completed and submitted to the WDNR for approval	The Consultant will complete and WDNR herbicide application permit for EWM	2020-2021		4	\$320.00			8	\$96.00			Permit Application Fee (5 acres for 1 yr)	\$145.00	\$561.00	
	Follow-up post-treatment, point-intercept aquatic plant survey work will be completed in the 2019 ProcellaCOR treatment area	33 points established in 2019 within the 2019 ProcellaCOR treatment area will be surveyed in early summer 2020.	LEAPS will redo the point-intercept survey setup in the 2019 ProcellaCOR treatment area in early summer 2020	2020		6	\$480.00					Boat Use (2 hours)	\$20.00			\$500.00	
	Any areas of EWM that are chemically treated will have both pre and post-treatment, point-intercept, aquatic plant survey work completed.	Pre and post-treatment, point-intercept, aquatic plant survey work will be completed by a plant specialist in second year of this project	Pre and post EWM chemical treatment surveys will be completed in 2021 by ERS	2021		4	\$320.00	ERS	\$1,124.00	18	\$216.00					\$1,660.00	
	The distribution and density of EWM in the lake will be quantified in the fall	Fall EWM bedmapping will be completed by a plant specialist in each year of this project	Fall EWM bed mapping surveys will be completed in 2020 and 2021 by ERS	2020-2021		8	\$640.00	ERS	\$2,456.00	18	\$216.00					\$3,312.00	
	The existing Aquatic Plant Management Plan for the lake will be updated by the Consultant in cooperation with the Lake Group, other stakeholders, and WDNR.	A consultant will complete an update of the existing APM Plan based on new point-intercept data from the lake.	The Consultant will update the APM Plan in 2021	2021		64	\$5,120.00			24	\$288.00					\$5,408.00	
Project Management	Project materials and results will be shared with the lake constituency and the general public	Lake Group personnel will maintain current and accurate posting of grant related documents on the webpage and/or Facebook	Accurate and up-to-date grant related information and EWM management planning and implementation will be posted on the Lake Group webpage/Facebook page	2020-2021						24	\$288.00					\$288.00	
	General project management including sponsor and consultant administrative support, mileage, and materials will be documented.	General project management provided by the Consultant includes meeting attendance, daily phone and email, annual project updates, mileage, materials, and printing costs.	The consultant will attend at least three meetings of the Lake Group during this project, provide general management support, and prepare of end of year summary reports for 2020 and 2021	2020-2021		24	\$1,920.00							Mileage/Misc Expenses	\$500.00	\$2,420.00	
		General project and administrative support provided by the Lake Group includes daily interaction with the project consultant, data and information tracking and documentation, filing for reimbursements,	Volunteers will administer this project including record keeping and final reimbursement requests		2020-2021						80	\$960.00			Printing and Postage	\$600.00	\$1,560.00
						<b>162</b>	<b>\$12,000.00</b>		<b>\$7,433.00</b>	<b>472</b>	<b>\$5,664.00</b>		<b>\$1,226.04</b>		<b>\$1,653.00</b>	<b>\$27,976.04</b>	

**Total Project Cost** \$27,976.04  
**State Share Requested (75%)** \$20,982.03  
**Sponsor Share (25%)** \$6,994.01  
**Match Included in this Application** \$6,890.04  
**Match Still Needed (over two years)** **\$103.97**

AIS - Aquatic Invasive Species  
PL - purple loosestrife  
CLP - curly-leaf pondweed  
HWM-Hybrid watermilfoil  
PI survey - Point-intercept survey  
ERS - Endangered Resource Services (Plant survey consultant, Matt Berg)  
SLOH - WI State Lab of Hygiene (water sample processing)  
CBCW - Clean Boats Clean Waters

\$27,976.04

## Horseshoe Lake, Washburn County 2020-21 AEPP GAP Narrative

### A. Phased Projects

#### B. Project Summary

The purpose of this project is to provide financial support in 2020 and 2021 for AIS education and prevention activities, redoing aquatic plant survey work, updating an existing Aquatic Plant Management (APM) Plan, and completing EWM/AIS management planning for Horseshoe Lake in Washburn Co. The Horseshoe Lake Property Association (HLPAs) bears the cost of any AIS management action, but is asking for state assistance for associated planning, survey, and expanded AIS education efforts.

#### C. Project Area and Public Access/Use

Horseshoe Lake is a 194-ac seepage lake in north-central Washburn County in the Town of Minong. It has a maximum depth of 21 feet. The lake is separated into two distinct basins (east and west) by a navigation channel maintained by the HLPAs. Visitors have access to the lake from a public boat landing in the east basin that has parking for half-a-dozen cars w/trailers. Because of its decent water clarity, most of the lake is considered littoral zone, although only about 66% of the lake actually has aquatic plant growth. The lake is visited primarily for swimming, fishing, and some recreational boating.

The watershed of the lake is 947.2 acres. Land use and land cover in the watershed is comprised of forests (53.57%), wetlands (21.34%), open water (20.04%), and grassland/shrub land (1.21%). The balance of the land use is developed land (3.85%). The shores of the lake are fairly well-developed, but most residents are currently practicing good shoreline conservation.

In 2011, a total of 41 native plants were identified during the last point-intercept (PI) survey. They produced a Floristic Quality Index (FQI) of 35.4. This value is well above the median FQI of 24.3 for the Northern Lakes and Forest Region reported by Nichols, 1999. A mean C value of 7.4 driven by many pristine shoreline areas and a variety of different habitats and several high-value species of note including Waterwort, Pipewort, Creeping spearwort, Crested arrowhead, Narrow-leaved bur-reed, Three-way sedge (all w/C-values = 9); Dwarf water-milfoil (w/C-value=10); a State Species of Special Concern – Small purple bladderwort; and two other high value species Narrow-leaved woolly sedge and Smooth sawgrass found growing on the shoreline put Horseshoe Lake well above average for this part of the state. Critical habitat has not been officially designated, but these plants would not be present if Horseshoe Lake had not enjoyed a history of apparent good water clarity and quality, and sensible development.

#### D. Problem Statement

EWM was first discovered in the lake in May 2011. The HLPAs qualified for and received an AIS Early Detection and Rapid Response (AIRR) grant to survey the entire lake for EWM and to complete a whole-lake, summer, PI, aquatic plant survey in early August 2011. Diquat was used to treat EWM in the fall of 2011, followed by a 3.67-acre spring treatment using granular 2,4-D in 2012. The AIRR grant was used to

fund the development of an APM Plan in 2014. Technically, the last year of implementation of the 2014 Plan was in 2018, however, chemical management of EWM occurred only once during that time frame. In 2016, 4.5-ac of EWM were treated in the spring using granular 2,4-D. Only meandering surveys supported by rake and diver removal occurred at any other time during implementation of the 2014 APM Plan. No EWM was found in 2013, 14, or 17. 2018 plant survey work found EWM widely dispersed but sparsely populated in 7-ac of the lake. This level of EWM was too much to be managed effectively by physical removal so a chemical treatment plan was developed. In 2019, the HLPa funded a 3.65-ac experimental chemical treatment using ProcellaCOR including the cost of pre and post-treatment PI survey work.

The HLPa submitted an AIS control (ACEI) grant in Feb. 2019, but it was not accepted by the WDNR because they felt the management actions in the 2014 plan were no longer appropriate for the lake and as a result, not eligible for ACEI funding. The HLPa recognizes the need to update its current APM Plan and to redo the whole-lake, PI survey, and is requesting AEPP grant funding to support these actions; management planning in 2020 and 2021; and AIS education and prevention activities. The new APM Plan will be ready for implementation with the 2021 season. No other grant funding has been requested by the HLPa since the AIRR grant in 2011. EWM survey and physical removal have been completed in every year since 2014.

## E. Project Description and Timeline Matrix

### E.1 Goal/Job Objective

The first goal of this project is to document aquatic plant community, water quality, and shoreland health in the lake. The first objective is to redo a whole-lake, point-intercept, aquatic plant survey, on the lake. The last PI survey was completed in 2011. Aquatic plant community statistics in this application are taken from the results of the 2011 survey. New data from 2020 will be compared to 2011 data and incorporated into the new APM Plan. The second objective is to evaluate changes in water quality since the last plan was completed. Both basins of the lake have been a part of the Citizen Lake Monitoring Network (CLMN) since 2014. Expanded testing including total phosphorus (TP), Chlorophyll-a (Chl), water clarity (Secchi) and temperature profiling is done in the East Basin May-Aug. Only Secchi and temperature are done in the West Basin. The CLMN program does not document water quality in the late summer and fall when many lakes experience water quality issues. This project continues CLMN monitoring, adds TP and Chl sampling to the East Basin in Sept and Oct of 2020; and adds TP (May-Oct) and Chl (Jun-Oct) in the East Basin in 2020. Lab analysis and shipping covered by the CLMN is not included in this project – only expenses associated with additional testing. Finally, while the shoreland adjacent to Horseshoe Lake is in pretty decent shape, there does not appear to be much coarse woody habitat (CWH) in the lake. This project adds a CWH survey following guidelines established by the WDNR. Data collected will be used to encourage the installation of “fishsticks” projects with future Healthy Lakes grant funding and incorporated into the update of the APM Plan.

#### E.1.a Activity

The first activity under this goal is to complete a warm-water, whole-lake, summer PI aquatic plant

survey of the lake to evaluate changes in the native aquatic plant community since 2011 when the last PI survey was completed. A cold-water, PI survey specifically to look for curly-leaf pondweed will not be done given that no CLP has been found in the past. Aquatic plant community health parameters including frequency of occurrence; Simpson's Diversity Index; max, mean, and median depth of plants; average number of species per site sampled, species richness, average rake fullness; relative frequency; Floristic Quality Index; and Mean C will be calculated using the methods outlined by the WDNR. The survey will be completed in 2020 by ERS. Survey results from 2020 will be compared to those from 2011. New data will be incorporated into the updated APM Plan to be completed in early 2021. Past surveys have used a map of 387 points with more than 250 expected to be in the littoral zone.

#### E.1.a Method and Data Collected

Prior to beginning the summer PI survey, a general boat survey of the lake to regain familiarity with the lake's macrophytes is conducted. All plants found are identified and a data sheet will be built from the species present. Each survey point is located with a GPS, and a depth reading recorded with a metered pole rake or hand held sonar. A rake sample is taken that covers approximately a 2.5-ft<sup>2</sup> area of the bottom. All plants on the rake, as well as any that are dislodged by the rake are identified and assigned a rake fullness value of 1-3 as an estimation of abundance. Visual sightings of all plants within 6-ft of the sample point not found in the rake are recorded. In addition to a rake rating for each species, a total rake fullness rating is also noted. Substrate (bottom) type is assigned at each site where the bottom was visible or where it could be reliably determined using the rake.

#### E.1.a Deliverable/Outcomes

All data collected in the field will be entered into an Excel spreadsheet, and uploaded into GIS software for the purpose of generating species distribution and habitat maps. All GIS files will be shared with the lake group and WDNR as part of the final report. This data may be used in any further planning as needed by the lake group or their consultant for the lake now or in the future. A final report that includes general background information about the watershed, a detailed explanation of the methods used, and highlights of pertinent results will be included in the body of the paper. Appendices will include copies of data sheets, maps for all habitat variables measured, maps for all plant species found, supplemental information on exotic species and a copy of all raw data in spreadsheet form.

#### E.1.b Activity

Water quality monitoring is completed in both the east and west basins of the lake as a part of the CLMN program. The West Basin is a part of the expanded program that includes TP and Chl; and the East Basin is only doing Secchi disk and temperature profiles. Nearly all past and current EWM management occurred in the East Basin, so it is more likely that it would be impacted directly by the management of EWM. While this is not expected to be the case, doing more monitoring in the East Basin will help document changes. This project will complete TP, Chl, Secchi, and temperature monitoring in both basins between May and Oct in the first year of this project. Sampling in the West Basin between May and Aug is covered by the CLMN program. All other sampling in both basins is covered by the grant. Training and support is provided by the consultant.

#### E.1.b Method and Data Collected

Volunteers will complete water quality sampling in both basins through Aug following guidelines in the CLMN Program. Time, boat use, and data entry to SWIMS are included as match for this project. This project adds water sampling in Sep and Oct 2020 in the West Basin; and May through Oct 2020 in the East Basin following the same guidelines except Chl samples will be lab-filtered instead of field-filtered by volunteers. All Chl samples collected in the East Basin will be lab-filtered. Water samples will be collected using an integrated sampler. The consultant will prepare extra sampling materials and labslips, and train volunteers. Lab analysis and shipping for non-CLMN water samples are covered in this grant. Secchi readings and temperature profiles will continue through Oct of each year. All data will be entered into SWIMS by volunteers. In 2021, water sampling will go back to regular CLMN activities; however expanded monitoring may be moved to the basin with the most EWM management.

#### E.1.b Deliverable/Outcomes

Water quality data collected as a part of this two-year project will be compared to past data to determine if there are any trends of interest that may be attributed to management of EWM. If more EWM management is done in one basin over the other, there might be comparable data that could be used to determine if it is reasonable to assume that differences in data might be related to chemical management. Data collected for only one year can serve as a baseline for future comparisons. All water quality data will be entered into the SWIMS database by volunteers. SLOH analysis of water samples is automatically submitted to SWIMS. Lab results will also be sent directly to the consultant. Bottles and acid will come from the SLOH, but labslips, bottle labeling, and shipping coolers will be provided by the consultant. Volunteers will cover the cost of shipping but this is considered a reimbursable expense.

#### E.1.c ivity

Coarse woody habitat (CWH) in lakes is classified as trees, limbs, branches, roots, and wood fragments at least 4-in in diameter that enter a lake by natural or human means. CWH in the littoral or near-shore zone serves many functions within a lake ecosystem including erosion control, as a carbon source, and as a surface for algal growth which is an important food base for aquatic macroinvertebrates. Presence of CWH has also been shown to prevent suspension of sediments, thereby improving water clarity. CWH serves as important refuge, foraging, and spawning habitat for fish, aquatic invertebrates, turtles, birds, and other animals. CWH is often removed by shoreline residents to improve aesthetics or select recreational opportunities like swimming and boating. A negative relationship between lakeshore development and the amount of CWH in northern Wisconsin lakes has been established. This project completes a CWH survey of Horseshoe Lake in 2020.

#### E.1.c Method and Data Collected

The CWH survey will be completed following guidelines setup by the WDNR in its Shoreland and Shallows Habitat Monitoring Field Protocol first presented in 2016 (WDNR, 2016). Volunteers will work under the guidance of their consultant to complete the survey. It will be conducted using a small boat or kayaks supplied by volunteers driven or paddled at about the 2-ft depth contour of the lake. Large

wood, defined as 4" in diameter and at least 5-ft long between the ordinary high water mark of the lake and the 2-ft contour will be documented. GPS points will be taken at each location where CWH is identified and a map made showing its distribution in the lake. A full report of the survey results will be prepared by the consultant.

#### E.1.c Deliverable/Outcomes

Survey results will be presented to the lake group during one of the meetings attended by the consultant, and property owners encouraged to consider the installation of "fishsticks" projects defined in the Healthy Lake Initiative grant program. With this report it may be possible for the HLPAs to identify projects to apply for a Healthy Lakes grant in February 2021. Deliverables include the final CWH summary report and a map that can be distributed to property owners and other interested parties.

#### E.2 Goal/Job Objective

During this project, efforts will be continued to educate lake property owners about AIS and the issues they can cause to the lake. The lake already has an established population of EWM, but to date, no other AIS has been found. Furthermore, now that zebra mussels are established in northwestern WI (Big McKenzie Lake), there is added concern about this AIS being introduced into the lake. Having an educated lake constituency is the first step toward protection the lake from new invasions.

#### E.2.a Activity

The lake group will provide the lake constituency with AIS information including videos and brochures posted on their web/Facebook page and handed out to the constituency during meetings and workshops. The lake group will also sponsor at least one AIS education workshop each year focused on teaching the constituency how to identify and remove AIS (specifically EWM) near docks and around the lake. The consultant working with the lake group will help find materials, and lead the educational workshop each year. Boat use will be donated by the lake group.

#### E.2.a Method and Data Collected

There are many outstanding resources available on the web and from the WDNR related to AIS. Lake volunteers will look for materials that provide information about EWM, zebra mussels, and other AIS and will post these materials on their web/Facebook page and/or hand them out directly to their constituency. In addition, the lake group will sponsor at least one workshop each year that will include both a classroom and an on-lake component. The on-lake component will focus on looking for and removing EWM, but also identify native plants and discuss their benefits to the lake, and discuss other AIS. Lake volunteers will provide the necessary boats to complete the on-lake component of the workshop.

#### E.2.a Deliverable/Outcomes

A list of materials identified and posted on the web/Facebook page will be included as a deliverable for this project. Presentations, or materials handed out during the AIS workshop will also be included. Lake



volunteers completing survey and removal activities will be encouraged to document where in the lake they find AIS and how much is removed. To date, physical removal of EWM has been effective at keeping the amount of EWM in the lake at low levels, often making it possible to skip at least one year between chemical applications. The lake constituency has always shown an interest in what they can do to prevent AIS from getting into the lake in the first place, and controlling its spread when it does get in the lake.

### E.3 Goal/Job Objective

Although the lake currently has EWM, other AIS have had limited or no impact on the lake either because they are not present, or because they are kept to a minimum once in the lake. Preventing other AIS from getting into the lake is extremely important. Several activities are included in this project to educate lake users about and monitor the lake for new AIS. These activities include improving AIS signage at the landing, completing watercraft inspection, monitoring the lake for AIS, and additional monitoring for zebra mussels by installing and monitoring three zebra mussel plate samplers supplied by Washburn Co. More than 1060 hours of watercraft inspection has been logged at the landing on Horseshoe Lake since 2015. Much of this has been due to a cooperative project between the HLPAs and the Town of Minong Lakes Committee. The HLPAs contribute money to support the Town's CBCW project each year, they in turn, spend time at the Horseshoe Lake landing.

#### E.3.a Activity

Signs at the boat landings are the first line of prevention for protecting a lake from the introduction of a new AIS. In the absence of people to remind lake users about AIS, signs at the landing can present a clear and concise message to lake users. Members of the lake group will evaluate the signage at the landing and then work with Washburn County to make modifications or improvements if necessary. The lake is considered unsuitable for zebra mussels to be introduced and thrive, which is a good thing because there really isn't any place to consider the construction of a Decontamination Station. The HLPAs will again work with the Town of Minong in 2020 and 2021 to complete watercraft inspection at the landing.

#### E.3.a Method and Data Collected

Inspection of the boat landing will be guided by WDNR Form 3200-152 – Aquatic Invasive Species Signage Report. Existing signs will be documented via photographs. If it is determined that existing signs need to be moved, modified, or repaired; and/or if it is determined that new signage would be beneficial, lake volunteers will discuss their options with their consultant, Washburn Co., Town of Minong, and the WDNR, and then set about to make the changes. Watercraft inspection will follow CBCW guidelines and be funded through annual CBCW grants applied for by the Town of Minong Lakes Committee and supported by the HLPAs. CBCW forms will be used to document inspection time with all data being entered into the SWIMS database before the end of each year of this project.

#### E.3.a Deliverable/Outcomes

The combined effect of appropriate AIS signage and in-person watercraft inspection time at the boat landing will keep lake users aware of and vigilant in their efforts to prevent the spread of AIS to new lakes. EWM is present in this lake, so it is just as important to make sure boaters are cleaning off their boats and trailers when they leave the lake as it is to do so when entering the lake. All CBCW data will be entered into the SWIMS database. Documentation will be kept as to what is done with AIS signage at the landing including keeping receipts for materials.

#### E.3.b Activity

Lake volunteers will be trained to identify and survey the lake for existing and new AIS, and encouraged to implement removal actions if appropriate. Lake volunteers will be trained by attending a CLMN AIS monitoring workshop sponsored by Washburn Co. or by their consultant on how to monitor the lake for AIS following CLMN Aquatic Invasive Species Lake Monitoring protocol. Trained volunteers will then complete whole-lake AIS monitoring at least three times between Jun and Sept each year. Lake volunteers may search for AIS at other times, but will formally document each of the three official monitoring dates using WDNR Form 3200-154 AIS Early Detection and Monitoring Data Form. In addition, the lake group will put added emphasis on zebra mussel monitoring by installing and monitoring three ZM plate samplers and training constituents to check docks and boat lifts when they are removed from the lake in the fall.

#### E.3.b Method and Data Collected

Volunteers will follow the guidelines in the CLMN AIS Monitoring Handbook for each species they look for. CLP will be searched for in Jun. Purple Loosestrife will be searched for in Aug. Rusty Crayfish will be looked for in the shallows along rocky shores between Jun and Aug. Zebra Mussels will be looked for throughout the open water season, with greatest emphasis in the late summer and early fall when docks are removed from the lake. Mystery Snails will be searched for from ice out to ice on. Waterflea, Hydrilla, and New Zealand Mudsnaileds will not be focused on, but will be included with samples if suspect items are found. The lake group will reach out to lake residents to remind and encourage them to take the time to inspect equipment removed from the water in the fall. Volunteers will report each of their official monitoring surveys to the SWIMS database. Three ZM plate samplers supplied by Washburn Co. will be installed in the lake and monitored weekly by volunteers.

#### E.3.b Deliverable/Outcomes

Through AIS monitoring including installation of ZM plate samplers, lake volunteers will help prevent the introduction of new AIS into the lake. A CLMN AIS Monitoring report will be completed after each official AIS survey of the lake and volunteers will record their time in the SWIMS database. Any suspect plants or animals found will be taken to the WDNR, Washburn Co., or their consultant for vouchering. If necessary, additional AIS signs will be added to the landings after vouchering.

#### E.4 Goal/Job Objective:

EWM has been present and effectively managed in the lake since 2011. This has been accomplished because of both short and long-term management planning. This project and this goal continues those planning efforts including AIS management planning support for the next two years, collecting management implementation data that will be used to update the existing plan, and updating the existing APM Plan. Preliminary EWM management planning for 2020 has already been started but will be completed with this project. In 2019, the HLP treated EWM with a new aquatic herbicide, ProcellaCOR. To do so, the WDNR requested that a pre and post treatment PI survey be completed in the treated area. Thirty-three points were set up in the 3.45-treatment zone. These same points will be resampled in 2020, and perhaps 2021 to determine the longevity of the ProcellaCOR treatment.

EWM management planning for 2021 is part of this project. Pre and post-chemical treatment PI aquatic plant survey work and fall EWM meandering bedmapping survey work in 2020 and 2021 are included to support management implementation. The following steps are included in annual EWM management planning: evaluating prior year management results; completing fall bedmapping; drafting preliminary management plans that include total acreage, herbicide type and concentration, and plans for monitoring; completing permit applications; doing pre-treatment survey work and making modifications to the initial plan; and then actual management implementation and follow-up. During this process other AIS are addressed, as is education of the Lake Constituency, and AIS prevention activities.

Each of these steps in the process is detailed in the APM Plan for the lake. 2020 planning has already started. Planning in 2021 will be guided by the updated APM Plan. The updated APM Plan is expected to be completed for review by the lake group in mid-2021, and for final review by the WDNR before the end of 2021.

#### E.4.a Activity

Goal 2, Objective 2 in the existing APM Plan for the lake set up an integrated approach to management including physical removal by property owners, rake and diver removal in deeper water, and the use of herbicides. Management planning in 2020 will still be based on the existing plan. Based on 2019 fall EWM meandering survey work, 2020 may be another year where only physical removal of EWM will be implemented. Management planning in 2021 will be dependent on the results of aquatic plant survey work completed in 2020. All 2021 management planning is included in this and will be based on goals and objectives from the updated APM Plan. Only planning efforts are included in this project. There is no actual management cost included.

#### E.4.a Method and Data Collected

Preliminary and final EWM management planning is based on the results of aquatic plant survey work in the year prior to treatment and in the year of proposed management. The consultant works with the lake group, applicator, aquatic plant surveyor, and WDNR to set up preliminary management plans that include maps of where management is to take place, total acreage to be treated, and the type and concentration of herbicide to be used. The consultant sets up any aquatic plant survey work that is to be done to support the management action. The consultant prepares any WDNR management permit applications that are necessary, and passes treatment information onto the herbicide applicator.

Treatment records submitted by the applicator are reviewed, and a summary of the year's management results is prepared.

#### E.4.a Deliverable/Outcomes

Deliverables in this portion of the project include preliminary and final EWM management plans, completed and approved permit applications, applicator treatment records, and summary reports of results.

#### E.4.b Activity

Two different types of aquatic plant surveys are included in this goal/job objective to aid in annual management planning. The first is a meandering survey of the lake's littoral zone in the fall of each year of this project to map EWM beds and individual plants. These surveys are completed by an aquatic plant survey specialist, typically between early Sept and mid-Oct. The second type of aquatic plant survey is a pre and post treatment, point-intercept (PI), survey within the treated areas of the lake. This survey is also completed by an aquatic plant survey specialist. Both types of surveys come with reports written by the specialist summarizing the findings.

#### E.4.b Method and Data Collected

The fall meandering survey of the littoral zone consists of the specialist spending several hours on the lake documenting beds of EWM. A bed is defined as an area of EWM that has a definable edge and where at least 50% of the plants present are EWM. If there is a definable edge, but EWM makes up less than 50% of the plants present, it is considered a high density area. Individual EWM plants throughout the lake are also documented. A GPS unit is used to record the location of beds and individual plants and then transferred to maps that are used to help subsequent year management planning. This survey will be done in both years of this project. A pre/post, PI survey will be completed by the specialist within the chemically treated areas of the lake. Points will be established within the treated area by the specialist based on WDNR PI survey guidelines. Pre-post points will be surveyed prior to the treatment and again after the treatment. This survey is only planned for 2021.

#### E.4.b Deliverable/Outcomes

Results from fall EWM meandering surveys of the littoral zone will be used to set up preliminary chemical treatment plans in 2021 and 2022. Preliminary plans for EWM management in 2020 have already been setup, and at the present time only include physical/diver removal. The pre and post treatment PI survey is used to determine impacts on both the target species and on non-target species within the treated areas and will only be done if a chemical treatment actually occurs. In 2020, the 33 points surveyed in 2019 during the ProcellaCOR treatment will be resurveyed to determine the longevity of the treatment. Deliverables for this activity will include Aquatic Plant Survey Reports completed by the Specialist and the associated spreadsheets and GIS data.

#### E.4.c ivity

The WDNR recommends updating APM Plans at least every five years when active management is occurring. The last APM Plan for the lake was approved in 2013. The last whole-lake, PI survey was completed in 2011. It is time to update the Horseshoe Lake APM Plan. The lake group has been managing EWM since it was first discovered in 2011, albeit not every year, and not always with aquatic herbicides. Management has included physical removal, diver removal, and use of aquatic herbicides. All of these management actions still occur on some level. An updated APM Plan will evaluate their success, help determine what previous goals and objectives have or have not been met, and make new recommendations for how to move forward with EWM management in the lake.

#### E.4.c Method and Data Collected

The WDNR suggests the following 7 steps to plant management planning: Goal setting – organizing the effort, identifying problems, & agreeing on goals; Inventory – collecting baseline information defining past & existing conditions; Analysis – quantifying & comparing the current conditions to desired conditions, researching opportunities & constraints, & setting directions to achieving the goals; Alternatives – listing all possible management alternatives & evaluating their strengths, weaknesses, and general feasibility; Recommendations – prioritizing & selecting preferred management options, setting objectives, drafting the plan; Implementation – adopting the plan, lining up funding, & scheduling activities to achieve the goals; & Monitor & Modify – developing a mechanism for tracking activities & adjusting the plan as it evolves. This project helps to make it possible to follow these steps for the new/updated plan.

#### E.4.c Deliverable/Outcomes

The main deliverable for this action is the updated APM Plan for Horseshoe Lake that is approved by the lake group and the WDNR. WDNR approval with the ability to apply for implementation funding would be a bonus. It is expected that this plan will guide the next five years of aquatic plant management according to what is accepted and appropriate to maintain or improve the health and habitat of the lake. The updated APM Plan will review past management actions and how well goals in the old plan were met. It will lay out new management goals, objectives, and actions and make recommendations for monitoring and measurement of results. The final APM Plan will be made available to any and all stakeholders who are interested in it.

#### E.5 Goal/Job Objective

The HLPAs have only received state grant funds to aid management planning and implementation one time since 2011. When EWM was first found in the lake, the HLPAs were awarded an Early Detection and Rapid Response (AIRR) in 2011. The AIRR grant supported planning and management into 2016 and has been completed. Since 2016, the HLPAs have covered the cost of all management planning and implementation in the lake. The HLPAs have never been awarded an AEPP grant. Management has been implemented successfully since 2011 thanks to the efforts of the HLPAs, their constituency, plant survey guide, and their consultant. This last goal/job objective enables this project to be implemented effectively and efficiently as well. To do this, both the lake group and their consultants must work together to plan and implement the actions in this project. For the lake group, this means effective

communication with their constituency, their consultant, and the WDNR. For the consultant this means attending meetings of the lake group and responding to questions and concerns expressed by both the lake group and the WDNR. As a part of this project, the consultant will prepare end of year progress reports in 2020 and 2021. The lake group may request partial reimbursements throughout this project. All record keeping will be completed by the lake group and their consultant.

#### E.5.a Activity

Between the lake group and their consultant, the actions included in this project will be implemented in their entirety. Open communication is had between the lake group and their consultant, and the WDNR is involved if something comes up that can't be addressed by other means. The lake group will track volunteer time in support of this project, complete the necessary administrative tasks, and file for reimbursements when appropriate. The consultant will help the lake group accomplish these tasks, work to keep the lake group on task and within the time constraints of this project, and guide them through the project.

#### E.5.a Method and Data Collected

The HLPAs will share information about the project and the activities completed with their constituency via their lake association webpage at [www.horseshoelake.org](http://www.horseshoelake.org). Project information will also be posted on their consultant's project webpage at <https://leapsllc.com/index.php/current-clients/>. The consultant has scheduled at least three trips to the lake to meet with the lake group and its constituency. The lake group will use the appropriate WDNR grant documents to prepare and submit their reimbursement requests.

#### E.5.a Deliverable/Outcomes

Annual summary reports prepared by the consultant are considered deliverables. Documents tracking volunteer time, donated services, and expenses are included. Dates of meetings attended, workshops, education events, etc. and the materials used during those events will be included. The outcome is a project executed to the best of the ability of the lake group and consultant, and that satisfies the requirements of the WDNR for implementation and documentation.

#### F. Role of Project in Planning/Management of Water Body

EWM was first identified in Horseshoe Lake in 2011. An AIRR grant was awarded shortly thereafter that was used to survey the lake, develop an APM Plan, complete several years of small-scale EWM management, and provide resources for AIS education and prevention activities. Because EWM in the lake has been kept at a very low frequency of occurrence, meandering survey work with physical removal has been a very effective management action. In 2018, there was a spike in EWM, found to be present in 7-ac of the lake. The acreage chemically treated in 2019 was the highest total since 3.67-ac were treated in 2012 and 4.5 acres were treated in 2016. Treatments in 2012 and 2016 used conventional herbicides (2,4-D). Treatment in 2019 used a new, supposed more effective and longer lasting herbicide (ProcellaCOR). Earlier in 2019, the WDNR did not accept an ACEI grant application from

the HLPAs because they (the DNR) felt that the management actions being implemented were no longer appropriate for a lake with an established EWM population. The HLPAs realize that EWM may be on the verge of becoming a greater issue in the lake and they want their new APM Plan to be ready for it.

Property owners on Horseshoe Lake and lake users have been treated to a lake with terrific water quality, a healthy but not overwhelming aquatic plant community, and beautiful shoreline. No one wants to lose these qualities and want to make sure management actions taken to control EWM do not negatively impact them. This project repeats the original whole-lake, PI survey of aquatic plants to see if anything has changed between 2011 and 2020. New plant data will be used to update the existing APM Plan, which will be used to guide management of EWM in the lake for at least the next five years. If necessary, the HLPAs will continue to cover the costs of management, but if the new APM Plan is determined to be ACEI grant eligible, that would be better.

#### G. Existing and Proposed Partnerships

The HLPAs have worked with the Minong Town Lakes Committee for several years, partnering with them to provide watercraft inspection at the Horseshoe Lake boat landing. The Minong Town Lakes Committee is a nonprofit volunteer organization established way back in 2008 to help guide the Town of Minong on matters related to protecting and managing the town's most valuable resources. They are supported entirely through volunteer efforts and financed by contributions, by grants and sponsorship by the Town of Minong. In 2018, the HLPAs participated in a Summer Education series provided by the Committee focused on zebra mussels in Washburn County. The HLPAs will work with Washburn County as it evaluates signage at the Horseshoe public boat landing. The HLPAs have maintained a working relationship with Endangered Resource Services (aquatic plant survey work) whereby most of the management done has been physical and diver removal provided by ERS. The HLPAs consult with the WDNR when it has questions about management planning and implementation and AIS education.

#### H. Plan for Sharing Results

This initial project was put together based on discussions with the HLPAs. Project components were then discussed in a conference call between the WDNR, the HLPAs, and the consultant preparing the project grant application. After the conversation with the WDNR the initial project was modified to what it is now. If this project is funded, the HLPAs will work through the Board, their constituency, and with their consultant to implement the activities included. This will start with an introductory meeting at the beginning of the 2020 season. Updates on project completion will be provided during the annual meeting and during HLPAs board meetings and through their newsletter sent out twice a year. The HLPAs currently have a webpage where many informational items are posted. AIS materials and project related materials will be posted there. The consultant also has a webpage where information and materials related to active projects is posted.

Documents generated as a part of this project will be shared with the appropriate parties. Meeting notes, EWM treatment proposals, and pertinent documents are posted on their webpage. The HLPAs hold several meetings and an Annual Meeting each year where updates on what is happening on the lake are made. All project related documents required to be shared with the WDNR will be included with

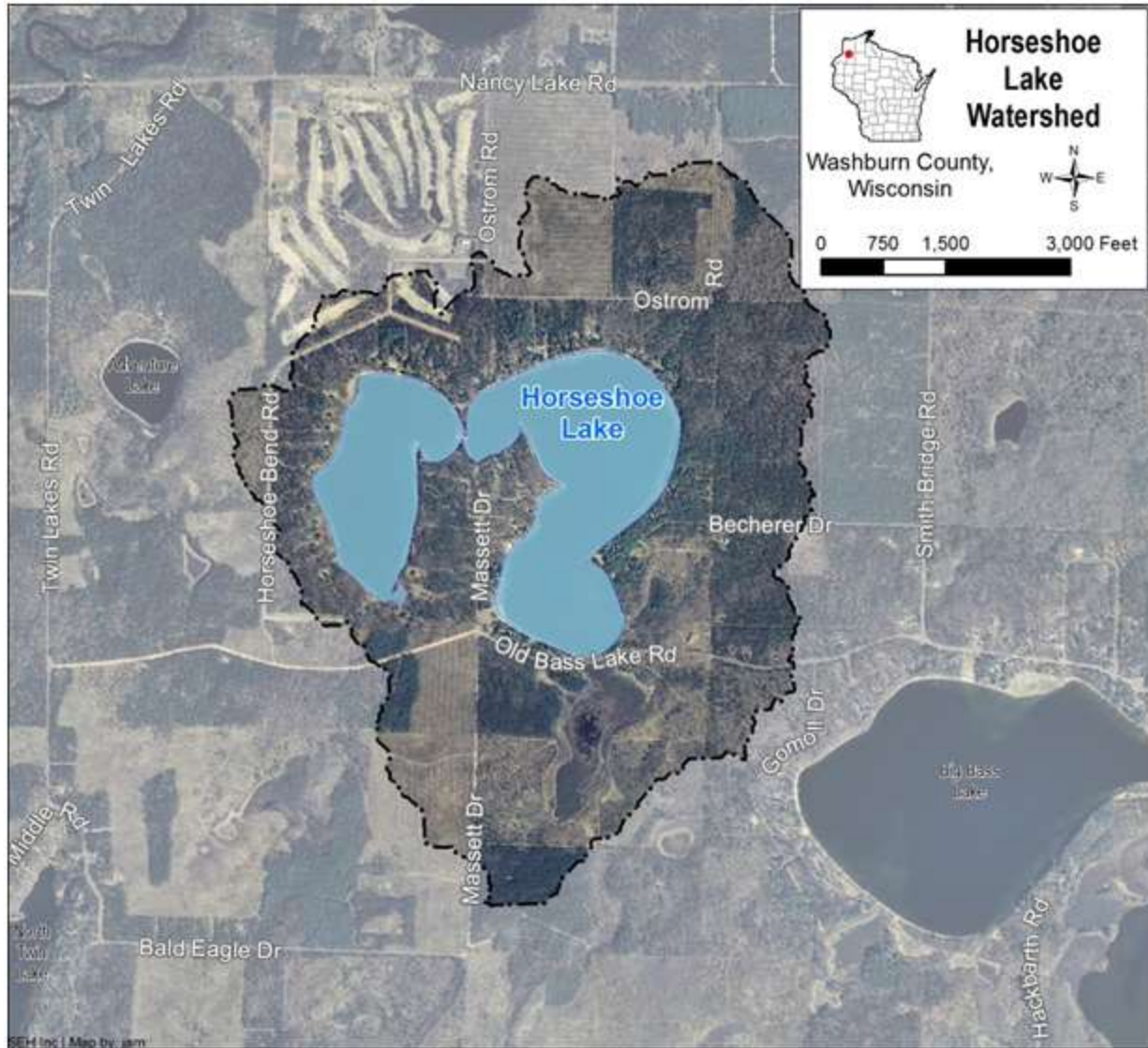
project summaries and a final project report. Grant reimbursement requests will include documents utilized during the timeframe of the reimbursement. A final reimbursement request will include all data/materials generated as a part of this project. The lake group and their consultant will utilize print, digital, and verbal media to share project related materials, outcomes, updates, and results.

I Other

The following documents are being added to this application for the benefit of reviewers.

1) Letter of Resolution, 2) Public Access and Monitoring Sites, 3) Budget and Task List, 4) Project Narrative, 5) Watershed and Land Use 6) 2020 EWM Survey and Removal Contract - ERS, 7) 2020 Whole-lake, PI Survey Contract - ERS, 8) 2021 Pre/Post Chemical Treatment PI Survey Contract - ERS, 9) SLOH Spreadsheet





**Table 3  
Land Use and Cover in the Horseshoe Lake Watershed**

<b>Land Use/Cover</b>	<b>Acres</b>	<b>Percent of Total</b>
Medium density residential	10.3	1.09
Low density residential	14.3	1.51
Agriculture	11.8	1.25
Forest	507.7	53.57
Grassland/ <u>shrubland</u>	11.5	1.21
Wetland	202.2	21.34
Open Water	189.9	20.04
<b>Total Watershed</b>	<b>947.2</b>	<b>100.0</b>

*Source: 2006 National Land Cover Database (USGS)*



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*Specializing in Aquatic Plant, Mussel, Dragonfly and Bird Surveys  
Habitat Assessment and Endangered Species Mitigation*

This document is to serve as an itemized contract proposal between the Horseshoe Lake Property Association (HLPa) and Endangered Resource Services, LLC (ERS). At the request of Dave Blumer – Lake Education and Planning Services, LLC (LEAPS) on behalf of the HLPa, we propose to complete two meandering shoreline surveys during the 2020 growing season to gauge the effectiveness of the 2019 treatment and to search for any surviving plants. If EWM is found, the data will be used to determine where management might be considered in the future. If treatment **does not** occur in 2021, this contract shall be renewed in its entirety in lieu of the accompanying pre/post/fall bed mapping survey for 2021.

Details of the contract are as follows:

- |   |       |
|---|-------|
| A. Mileage to the lake – 150 miles * \$0.58/mile (\$87) X 2 trips   | \$174 |
| B. June/July meandering shoreline survey and rake removal as time allows  | \$300 |
| C. September/October meandering shoreline littoral zone survey of the entire shoreline and an expanded search in the west basin/2019 treatment area in the east basin – rake removal as time allows | \$500 |
| D. Brief summary report of year’s surveys/shapefile creation of any new beds  | \$150 |

Total Cost for Surveys, Analysis and Reports	\$ 1,124
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Detailed Description of Cost Breakdown:

- A. Standard mileage rates from 2019 (time of contract origination) will apply.
- B. Early in the growing season (June/July), we will conduct a meandering littoral zone survey to look for EWM along the lake's entire shoreline. We will spend extra time in areas where EWM was found the previous fall and where the 2019 treatment occurred.
- C. A final September or early October survey will be performed to look for EWM and pinpoint bed locations for possible treatment in spring 2021. At this point in the growing season, if EWM is present, it will likely have canopied making it possible to locate new beds that wouldn't have been visible earlier in the growing season. Because of this, we will spend extended time looking in areas where EWM has been found in the past. If it is found, the survey will produce a map of locations and densities that will be displayed in the final report.
- D. Following the final survey, a brief summative report will be provided electronically for the lake, LEAPS, and the WDNR.

Payment in full is expected approximately 30 days following the delivery of the final report by ERS, and the satisfied acceptance of said report by LEAPS and the HLP. It is understood by all parties that the acceptance of the final report by LEAPS and the HLP may take time due to unavoidable 3<sup>rd</sup> party time constraints tied to availability of reviewing board members, grant funds, etc. All parties further understand that a good faith effort will be made to bring the contract to completion as soon as possible. If payment will be later than 30 days past delivery/acceptance of the final report due to unexpected 3<sup>rd</sup> party constraints, it is requested that HLP notify ERS.

Signature below indicates that both parties understand the services to be rendered at the costs outlined and agree to all provisions as stated. No change to this contract shall be made without written approval and acceptance by both parties.



11/25/19

\_\_\_\_\_  
Matthew S. Berg  
Endangered Resource Services, LLC

\_\_\_\_\_  
Date:

\_\_\_\_\_  
Edward Wink  
Horseshoe Lake Property Association

\_\_\_\_\_  
Date:



**Matthew S. Berg, Research Biologist**  
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*Specializing in Aquatic Plant, Mussel, Dragonfly and Bird Surveys  
 Habitat Assessment and Endangered Species Mitigation*

This document is to serve as an itemized contract proposal between the Horseshoe Lake Property Association (HLPa) and Endangered Resource Services, LLC (ERS). At the request of HLPa, the Wisconsin Department of Natural Resources (WDNR), and Lake Education and Planning Services, LLC (LEAPS – Dave Blumer), we propose to complete a full point-intercept aquatic plant survey using the methods outlined by the WDNR on Horseshoe Lake during July/August 2020.

Details of the contract are as follows:

A. Mileage to the lake – 150 miles * \$0.58/mile (\$87) + lodging/meals (\$149)	\$236
B. Collection and preparation of 2 sets of herbarium voucher specimens of any previously undocumented species	Pro Bono
C. Point/Intercept aquatic plant survey in late July/early August 387 littoral points X \$5/pt. (based on 2011 survey)	\$1,935
D. Statistical analysis of data including comparison to 2011 data and plant species maps generated in ArcMap 1 person for 25 hours @ \$25/hr	\$ 625
E. Final Report of all Surveys 1 person for 25 hours @ \$25/hr	\$ 625
<hr/>	
Total Cost for Surveys, Analysis and Reporting	\$ 3,421

Detailed Description of Cost Breakdown:

- A. Standard mileage and per diem rates (2019 rates used based on the timing of the proposal) will apply with the expectation that an overnight stay will be required to finish the survey.
- B. On the first day of the aquatic plant survey in July/August, a rapid boat survey of Horseshoe Lake will be conducted to refamiliarize ourselves with the species present. If any previously undocumented species are found, we will collect voucher specimens that will be identified and preserved using methods established by the WDNR. All specimens will be mounted on high grade herbarium paper. One set will go to the state herbarium in Stevens Point while the other will be presented to the lake association along with the final report.
- C. The 2020 survey will use the same 387 point grid established by Michelle Nault, WDNR in 2011. Based on that survey, we expect that the entire lake will again fall within the littoral zone. Depending on conditions, density and diversity of the plant community, etc. the survey will again likely take about 15hours for a two person crew using the standard methods as outlined by the WDNR.
- D. All data collected in the field will be entered into an Excel spreadsheet for analysis. These data will also be compared to the 2011 survey to determine if any significant changes have occurred to the lake's plants over that time. Additionally, we will upload the data into ArcMap for the purpose of generating species distribution and habitat maps. All Arc files will be burned to a CD and presented to the HLP/LEAPS, and the WDNR as part of the final report. This data **may be** used in any further planning as needed by the HLP, LEAPS, or the WDNR to directly assist the HLP now or in the future. These data remain the intellectual property of ERS, LLC and may not be sold, published by or distributed to a party other than the HLP, LEAPS, or the WDNR without the expressed written consent of ERS, LLC.
- E. A final report that includes general background information about the watershed, a detailed explanation of the methods used, highlights of pertinent results and ideas for the HLP to consider as they move forward in the management of their resource will be included in the body of the paper. Appendixes will include copies of field data sheets, maps for all habitat variables measured, maps for all plant species found, supplemental information on exotic species and a copy of all raw data in spreadsheet form.

Payment in full is expected approximately 30 days following the delivery of the final report by ERS, and the satisfied acceptance of said report by LEAPS and the HLP. It is understood by all parties that the acceptance of the final report by LEAPS and the HLP may take time due to unavoidable 3<sup>rd</sup> party time constraints tied to availability of reviewing board members, grant funds, etc. All parties further understand that a good faith effort will be made to bring the contract to completion as soon as possible. If payment will be later than 30 days past delivery/acceptance of the final report due to unexpected 3<sup>rd</sup> party constraints, it is requested that HLP notify ERS.

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11/25/19

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Matthew S. Berg  
Endangered Resource Services, LLC

Date: \_\_\_\_\_

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Edward Wink  
Horseshoe Lake Property Association

Date: \_\_\_\_\_



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*Specializing in Aquatic Plant, Mussel, Dragonfly and Bird Surveys  
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This document is to serve as an itemized contract proposal between the Horseshoe Lake Property Owners Association (HLPAs) and Endangered Resource Services, LLC (ERS). At the request of the HLPAs, the Wisconsin Department of Natural Resources (WDNR), and Lake Education and Planning Services, LLC (LEAPS – Dave Blumer), we propose to complete pre/posttreatment surveys and a fall EWM bed mapping survey using the methods outlined by the Wisconsin Department of Natural Resources on Horseshoe Lake in 2021.

Details of the contract are as follows:

A. Mileage to the lake – 150 miles * \$0.58/mile (\$87) X 3 trips	\$261
B. GIS to generate pre/posttreatment survey points	\$125
C. Pretreatment survey of EWM proposed treatment area (50 points @ \$5/pt)	\$ 250
D. Posttreatment survey of EWM treatment areas (50 points @ \$5/pt)	\$ 250
E. September/October littoral zone survey of the entire shoreline and an expanded look in areas where EWM treatment has occurred.	\$500
F. Statistical analysis of data 1 person for 20 hours @ \$25/hr	\$ 500
G. Final reports of surveys 1 person for 30 hours @ \$25/hr	\$750
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Total cost for surveys, analysis and reporting	\$ 2,456



Detailed Description of Cost Breakdown:

- A. Standard mileage rates from 2019 (time of contract origination) will apply.
- B. Pre/Post points will be generated based on the size of the potential treatment area to meet WDNR protocol/get adequate coverage throughout the treatment areas – 50 points were chosen as an estimate because it's assumed any treatment will be small in scale..
- C. A pretreatment survey of all plants in the proposed treatment areas will be conducted to help finalize treatment areas and further delineate beds. A preliminary report of this data will be generated and distributed to LEAPS, the HLPAs, and the applicator of their choosing.
- D. Following the treatment, we will conduct a posttreatment survey of all aquatic macrophytes to determine the effectiveness of the treatment, and document any impact on the native plant community.
- E. We will also conduct a final September or early October survey along the shoreline and throughout the areas that were treated in the past to look for EWM and pinpoint bed locations for possible treatment in fall 2021 or spring 2022. If it is found, the survey will produce a map of locations and densities that will be displayed in the final report.
- F. All data collected in the field during the pre/post treatment surveys will be entered into Excel spreadsheets to determine the effectiveness of the treatment and to upload into ArcMap for the purpose of generating species distribution maps. Changes in the plant community will be determined using the WDNR's Pre/post treatment worksheet. All ArcMap files will be burned to a cd and presented to LEAPS, the lake association, and the WDNR as part of the final report. These data may be used in any further planning as needed by LEAPS/HLPAs now or in the future, or the WDNR to assist LEAPS/HLPAs to that end. These data remains the intellectual property of ERS, and may not be sold, published or distributed by a party other than LEAPS/HLPAs, or the WDNR without the expressed written consent of ERS.
- G. A final report that includes study background and rationale, a detailed explanation of the methods used, highlights of pertinent results, and suggestions for the lake association to consider as they move forward in the management of their resource will be included in the body of the paper. Appendixes will include habitat variable maps, pre and post EWM and native species maps, and fall EWM survey maps.

Payment in full is expected approximately 30 days following the delivery of the final report by ERS, and the satisfied acceptance of said report by LEAPS and the HLPAs. It is understood by all parties that the acceptance of the final report by LEAPS and the HLPAs may take time due to unavoidable 3<sup>rd</sup> party time constraints tied to availability of reviewing board members, grant funds, etc. All parties further understand that a good faith effort will be made to bring the contract to completion as soon as possible. If payment will be later than 30 days past delivery/acceptance of the final report due to unexpected 3<sup>rd</sup> party constraints, it is requested that HLPAs notify ERS.

Signature below indicates that both parties understand the services to be rendered at the costs outlined and agree to all provisions as stated. No change to this contract shall be made without written approval and acceptance by both parties.



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Matthew S. Berg  
Endangered Resource Services, LLC

Date:

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Edward Wink  
Horseshoe Lake Property Owners Association

Date: