

WISCONSIN DEPARTMENT OF NATURAL RESOURCES
AQUATIC INVASIVE SPECIES GRANT PROGRAM

Application Materials

***Shawano Lake AIS Control and
Prevention Project – Phase 1: Trial
EWM Treatment***

Prepared for the

***Shawano Area
Waterways Management, Inc.***

February 1, 2014

Onterra, LLC
Lake Management Planning

INTRODUCTION

Shawano Lake, Shawano County, is an approximate 6,060-acre drainage lake with a mean depth of 9 feet and a maximum depth of 42 feet (Map 1). The roughly 74-square mile watershed drains mixed agriculture, rural residential areas, forested lands, and urbanized areas. Water leaving Shawano Lake via its outlet moves through the City of Shawano and enters the Wolf River as it travels south through Shawano County.

There is an abundance of public access to Shawano Lake with a total of eight public boat landings offering parking for 250 vehicles with trailers and numerous areas for roadside parking providing additional sites. These access options exceed the maximum public boating access, as defined by NR 1.9,1 by having one or more access sites with a total of more than 167 car-trailer parking spaces. Walk-in and non-motorized watercraft access is available at another 14 locations around Shawano Lake. Most of these locations are public roads that dead-end at Shawano Lake. Two of the landings offer flush toilets (Shawano County Park on the north shore and Huckleberry Harbor in the City of Shawano). In addition, Huckleberry Harbor offers a fishing pier and picnic area, while the county park supports a public swimming beach. The public also utilizes Shawano Lake through the 19 resorts/rentals properties and five campgrounds that surround the lake, as well as through the numerous fishing tournaments that occur on it. In fact, in 2012, Shawano Lake hosted 12 permitted fishing tournaments during the ice and open-water seasons.

Shawano Lake is classified as an Area of Special Natural Resource Interest (ASNRI) by the Wisconsin Department of Natural Resources (WDNR). Additionally, several areas of the lake are listed as sensitive, Public Rights Features (PRF). These features include important fish and wildlife habitat, physical features that ensure protection of water quality, reaches of natural shoreland, and other Sensitive Areas (SA). The Natural Heritage Inventory lists several species for Township N26 Range 16-17E, which is where Shawano Lake is located. These include several fish species such as lake sturgeon (*Acipenser fulvescens*) SC/H G3G4, the longear sunfish (*Lepomis megalotis*), western sand darter (*Ammocrypta clara*), redbfin shiner (*Lythrurus umbratilis*) and weed shiner (*Notropis texanus*). Also, several mussel species may be found here, including the salamander mussel (*Simpsonaias ambigua*), snuffbox (*Epioblasma triquetra*) and elktoe mussel (*Alasmidonta marginata*). Two state threatened turtles, the wood turtle (*Glyptemys insculpta*) and blanding's turtle (*Emydoidea blandingii*) have been found in this area according to the NHI list. One native emergent species located during the 2013 surveys, square-stem spike-rush, is listed as endangered, or critically imperiled in Wisconsin due to its extreme rarity and vulnerability to extirpation from the state.

Shawano Area Waterways Management, Inc. (SAWM) was created over a decade ago by members of the Shawano Lake Property Owners Association. SAWM currently works to manage the lake by sponsoring many of the studies described below, participating in recent planning processes, owning, operating, and maintaining the harvesting equipment used on the lake, and initiating the permitting and application of herbicide treatments. SAWM also participates in and supports the county Clean Boats Clean Waters program as well as the Shawano County Lakes Fair held during the fall of 2012.

The lake and its watershed have been studied since 1991 when the Shawano Lake Property Owners Association was awarded the first of many WDNR Grants. This was the first phase in a three-phase management planning project assessing the lake's water quality, watershed, aquatic plants, and stakeholder perceptions. In 2003, the second of the lake's multi-phase assessment projects began with watershed tributary and in-lake water quality monitoring; aquatic plant assessments; and capacity building and management planning exercises. These studies were completed in 2006. More intense studies of the lake's nutrient budget were led by the UW-Stevens Point Center for Watershed Science and Education and discussed, along with applicable management actions, in a final report produced in 2008. In 2009, results of the studies described above were used to create the Shawano Lake Watershed Strategic Management Plan and the Shawano Lake Aquatic Plant Management Plan.

The 2009 Aquatic Plant Management Plan contains 16 recommendations, including further studies, implementation of watershed best management practices, potential funding sources, and the control of native and non-native aquatic plants. Aquatic plant management activities include a combination of herbicide use, mechanical harvesting, and hand-removal to control both native and exotic plants.

The Watershed Strategic Management Plan contains 22 goals/objectives within eight categories, including monitoring, harvesting, chemical treatment, property owner participation, funding, education, research, and governance. Many of these goal/objectives directly overlap with the recommendations contained within the aquatic plant management plan.

SAWM has been conducting aquatic plant control on Shawano Lake as outlined in the 2009 Aquatic Plant Management Plan, including limited use of an association-owned harvester and nuisance herbicide applications by an association-employed applicator. After three years of implementing the plan's recommendations, the WDNR requested a more precise plan that gives comprehensive guidance on controlling exotics, in addition to the natives, using both chemical and harvesting techniques. SAWM would also like to discover ways to protecting the native aquatic plant community by controlling exotics on a lake-wide scale.

During the winter of 2012-2103, SAWM contracted with Onterra to develop an updated Aquatic Plant Management Plan that addresses the following issues:

1. Updated actions for the control of nuisance levels of native and non-native aquatic plants. These actions would likely include the use of hand-harvesting, mechanical harvesting, and herbicide applications aimed at assuring recreational accessibility of the lake while minimizing impacts to native habitat.
2. Management alternatives for reducing non-native plant species within Shawano Lake on a lake-wide basis with the intention of restoring native aquatic plant habitat. These actions may include mechanical harvesting of specific species, early-season herbicide treatments, and/or water level drawdown. Likely, in tandem with this outcome, nuisance aquatic plant control would be completed as described above.

PROBLEM IDENTIFICATION

Eurasian water milfoil (EWM, *Myriophyllum spicatum*) and curly leaf pondweed (CLP, *Potamogeton crispus*) are aquatic invasive species (AIS) both known to exist within Shawano Lake. It is not known when CLP was first introduced to Shawano Lake, but studies conducted in 1993 documented its presence indicating it has been present in Shawano Lake for at least 20 years. EWM was officially documented in Shawano Lake in 1994, though studies conducted prior to 1994 indicated its presence in the lake.

In 2010, samples of EWM were sent to the Annis Water Resources Institute at Grand Valley State University in Michigan to determine if the EWM in Shawano Lake was of hybrid origin; a cross between EWM and the indigenous northern water milfoil (*M. sibiricum*). Hybrid water milfoil presents some complications for management as research is indicating that certain strains may have higher tolerance to aquatic herbicides. The specimens processed in 2010 from Shawano Lake were confirmed as hybrid water milfoil. In 2013, another milfoil specimen from Shawano Lake was sent in for DNA analysis, and the results indicated it was pure-strain EWM. These results indicate that there are likely populations of both hybrid water milfoil and pure-strain EWM in Shawano Lake.

Onterra ecologists mapped areas of EWM and CLP in Shawano Lake during the Early-Season Aquatic Invasive Species Survey, and later revisited these areas in September 2013 to refine the EWM mapping as necessary (Figure 1, Map 2). The majority of the CLP acreage (68%) was of lower density categories (*scattered* and *highly scattered*), while the majority of the EWM acreage (52%) were comprised of *dominant*, *highly dominant*, and *surface matted*. During the whole-lake point-intercept survey conducted during the summer of 2013, EWM was found to contain a littoral frequency of occurrence of 17.4%.

During the Aquatic Plant Management (APM) Planning project, the SAWM Planning Committee decided to focus their management attention away from attempting to control the population of CLP within Shawano Lake. During the meetings with this group, several CLP control strategies were discussed, all of which were cost prohibitive and unclear as to whether control objectives would be met. Overviews of these discussions are included within the draft APM document (December 2013).

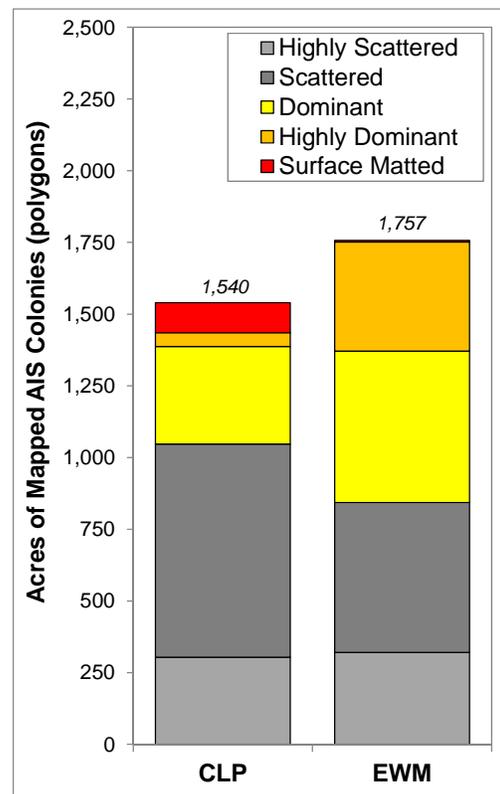


Figure 1. Acres of CLP & EWM colonies (polygons) mapped in June and September 2013 in Shawano Lake.

At this time, it appears that a whole-lake herbicide treatment would be the most appropriate method for targeting the EWM population within Shawano Lake. While implemented on many lakes throughout the state, whole-lake treatment strategies remain experimental in nature and have not been conducted on a lake in Wisconsin the size of Shawano Lake. Lake managers and SAWM Planning Committee members discussed several implementation challenges of a whole-lake treatment that require information before implementation of a whole-lake strategy is warranted: logistical feasibility, efficacy concerns, uncertainty in ecological response, financial constraints, and ability to gain sociological backing (i.e. stakeholder support) (Figure 2).

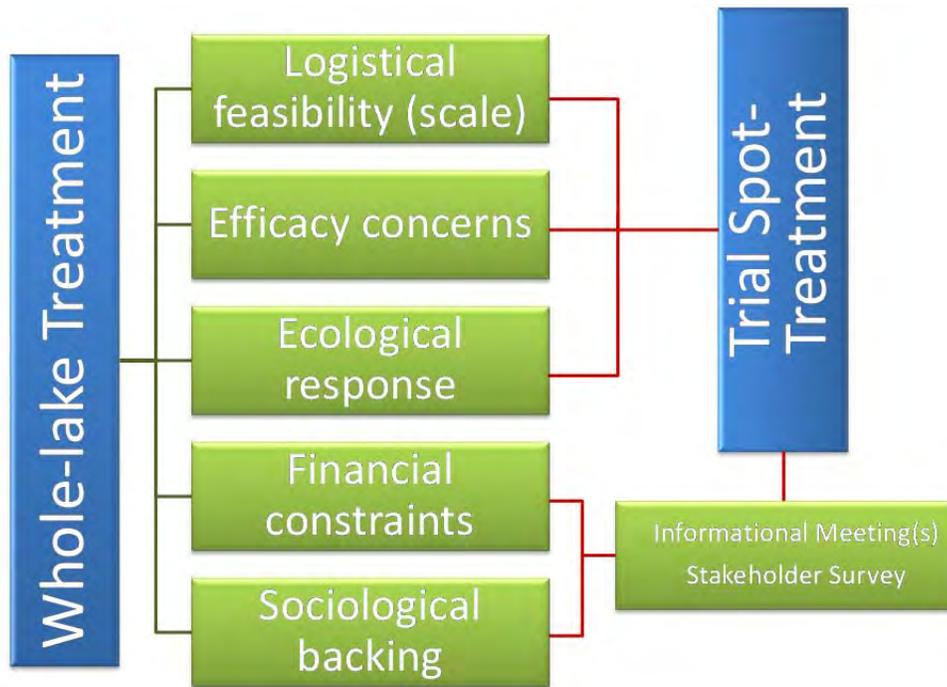


Figure 2. Flow chart addressing concerns of implementing a whole-lake treatment on Shawano Lake.

PROJECT GOALS

It has been proposed that conducting a smaller scale trial 2,4-D treatment on Shawano Lake would directly address aspects of the logistical feasibility, efficacy concerns, and ecological response (Map 2). Proper monitoring of a trial treatment would produce sound data on the management action that can be presented to the general public through a distributed written report and potentially several informational meetings. Along with conveying this information to the public, additional awareness campaigns, including an anonymous, written stakeholder survey, could be conducted to understand the broader wishes of the Shawano Lake user group. If the trial treatment satisfactorily addresses the first three implementation challenges listed above, a positive feedback loop of sociological backing (stakeholder support) resulting in additional financial contributions (e.g. individual, municipal, business, agency, etc.) for implementation of a whole-lake treatment strategy may occur. If the trial treatment does not adequately address these implementation challenges, a modified experimental approach may be warranted until the desired goals are met.

PROJECT OUTLINE & TIMELINE

Figure 3 provides an approximate timeline for completion of the tasks. The schedule needs to be flexible to accommodate for weather, scheduling conflicts, etc., but it provides a general indication of the dates for completing the proposed components. The proposed project includes project components up to, but not including, the implementation of a whole-lake treatment (up to dashed line).

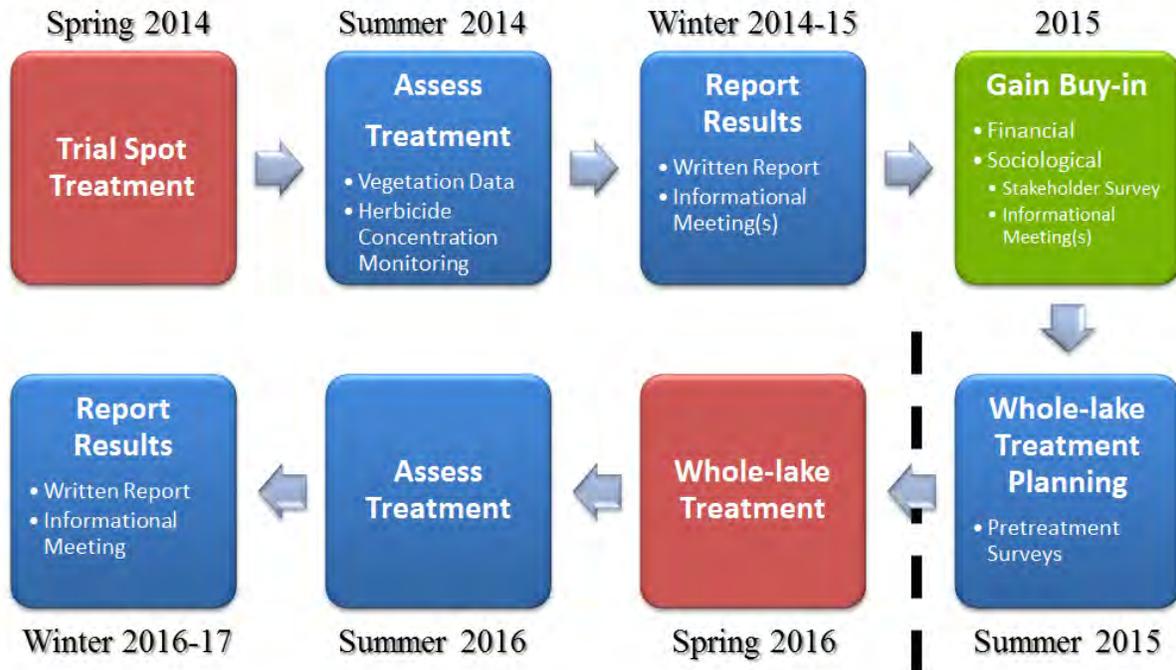


Figure 3. Flow chart outlining tentative project timeline.

PROJECT SCOPE

Ecological Study Components

Spring Pretreatment Confirmation & Refinement Survey (Early-Spring 2014)

A qualitative assessment would be completed prior to the early-season trial herbicide treatment to verify treatment area extents and to inspect the condition of the target species. Proposed treatment areas would be verified through the use of a combination of surface surveys, rake tows, and submersible video monitoring.

Upon completion of the inspections, Onterra would provide a brief email letter report to the SAWM and WDNR describing the results of the assessment and any recommended changes to that year's treatment strategy. If changes are suggested, Onterra would provide the updated treatment areas to the applicator once the updated strategy is approved by the WDNR and SAWM.

Acoustic Survey (Early-Spring 2014 & Late-Summer 2014)

The partial success of any herbicide treatment strategy relies upon accurate dosing. One component of accurately determining how much herbicide is required is understanding the water depth within the treatment site. During the 2014 Spring Pretreatment Confirmation & Refinement Survey, Onterra would systematically collect continuous, advanced sonar data within the proposed trial treatment site, of which the data would be sent to a Minnesota-based firm for processing. The resulting data would produce an updated bathymetric map for this area to allow for a more-accurate and updated dosing strategy to be developed for this treatment.

Along with providing updated depth information, the acoustic mapping survey would also indicate the percent biomass of aquatic plants within the areas the data was collected at. While the map output would not differentiate between aquatic plant species, it would indicate where high bio-volumes of vegetation exist in the lake. This information may be important for fisheries and lake managers to understand the structural impacts of the macrophyte communities in association with the trial treatment. Pairing this data with additional quantitative plant data (discussed below) may provide indication of the plant species/type contributing to the bio-volume present following the treatment.

Chemical Applications (Spring 2014)

It would be the responsibility of SAWM to contract with a commercial aquatic pesticide applicator, certified with the Wisconsin Department of Agriculture and Consumer Protection and licensed by the WDNR to perform the *early season* trial treatment of EWM per the specifications outlined on Map 2. The treatment would occur before June 1 and/or water temperatures reach 60°F, preferable closer to 55°F. Onterra would create the treatment areas in the form of polygons within their Geographic Information System (GIS) and then transmit them to the applicator in native shapefile format or similar format recognized by the applicator's GPS technology. If applicable, the applicators treatment paths would be included in the annual and final reports.

Early-Season AIS Survey (Late-Spring 2014)

During these June surveys, the entire littoral zone of Shawano Lake would be searched for EWM. All incidences would be mapped with a sub-meter GPS data collector using either points or polygons, depending on the size of the finding. Large colonies over 40 feet in diameter would be mapped using polygons (areas), while small colonies, clumps of plants, and single plants would be mapped using points. Colonies marked with polygons would also be designated using a 5-tiered density scale from *Highly Scattered* to *Surface Matting*. It is advantageous to complete this survey in the early summer because water clarity is typically better and the EWM is standing taller than most native species. All areas found to contain EWM would be reassessed during the peak-biomass survey described below.

EWM Peak-Biomass Survey (Late-Summer 2014 & 2015)

As the name implies, the EWM peak-biomass survey is completed when the plant is at its peak growth, allowing for a true assessment of the amount of this exotic within the waterbody. This survey would include a complete meander survey of the littoral zone by

professional ecologists. As with the Early-Season AIS Survey, all incidences of EWM would be mapped with a sub-meter GPS data collector using either points or polygons, depending on the size of the finding.

The result of the early-season AIS survey and the EWM peak-biomass survey will be documentation of the EWM population with the lake in 2014. These data will be compared against those collected in 2013 to allow a qualitative understanding of how the EWM population changed within areas treated and not treated. Qualitatively, a successful treatment would include a reduction of EWM density within the trial treatment area as demonstrated by a decrease in two density ratings (e.g. *Highly Dominant* to *Scattered*).

Quantitative Aquatic Plant Monitoring (Early-Spring 2014 & Late-Summer 2014)

The 2014 trial treatment monitoring strategy will implement quantitative methods using a modified point-intercept methodology consistent with the Appendix D of the WDNR Guidance Document, *Aquatic Plant Management in Wisconsin* (WDNR 2010). In general, a sub-sample point-intercept grid will be placed over the treatment site to yield approximately 200 sampling locations.

These sub-sample locations would be sampled the spring (April-May) before the treatment (pretreatment) and the late-summer following the treatment (post treatment). Data collected at these locations would be analyzed in terms of EWM treatment efficacy (statistical difference in pre and post EWM presence). Unfortunately, the quantitative methodology described above will not allow an understanding of how non-target native plants were impacted by the treatment strategy. To that end, a sub-set of the whole-lake point-intercept survey data collected during the summer prior to the treatment will be compared to the data collected within the sub-sampling efforts conducted during the late-summer of 2014. Quantitatively, a successful treatment would include a statistically valid reduction in EWM frequency following the treatments as exhibited by at least a 75% decrease in exotic frequency from the pre- and post-treatment point-intercept sampling.

Volunteer-based Herbicide Concentration Monitoring (Spring 2014)

In conjunction with the WDNR and US Army Corps of Engineers (USACE), herbicide concentration monitoring at strategic locations throughout the system would take place to understand the concentration/exposure time of the herbicide at different time periods and locations following the treatment. This information would indicate whether or not the amount of herbicide applied is sufficient for causing EWM mortality and if any adjustments in treatment strategy need to be made in the future.

Water samples would be collected by trained volunteers from SAWM. The properly preserved samples would be sent to the USACE for laboratory analysis. Under the current program, there would be no analysis costs for the USACE to run the samples. Coupling the herbicide concentration data with the point-intercept data will be valuable for assessing the trial treatment.

Point-intercept Survey Pretreatment Survey (Summer 2015)

As discussed above, a whole-lake herbicide treatment may be the most appropriate method for targeting the EWM population within Shawano Lake. Unlike the spot treatments that rely on a short exposure (hours) of a high herbicide concentration, a whole-lake treatment strategy involves applying a low concentration of 2,4-D to the entire lake understanding that the effective exposure time of the herbicide would be much longer (7-21 days, depending on the body of water). While this technique can be extremely effective at controlling EWM, particular native plants may also be impacted by this strategy. Because of the whole-lake impacts of this type of treatment strategy, additional aquatic plant monitoring steps (pre- and post whole-lake point-intercept surveys) are required to understand the target and non-target effects of the treatment strategy

Conducting a whole-lake point-intercept survey during the summer of 2015 would be an important step in preparing for a potential whole-lake treatment in the spring of 2016. If the project timeline shifts such that a whole-lake treatment is not going to occur in 2016, the whole-lake point-intercept survey would be postponed until the summer prior to the likely implantation of the whole-lake treatment strategy.

Sociological and Public Participation Components

Kick-off Meeting (Early-Spring 2014)

Near the start of the proposed project, a general public meeting would be held to go over the results of the APM planning project (*Wrap-up*) and inform stakeholders about the proposed AIS control project and its goals (*Kick-off*).

News Release (October/November 2014, Spring 2015, February 2016)

In addition to the general membership meetings, public awareness of the project would be promoted by association-submitted news releases to local newspapers.

- ***October/November 2014***
 - Release would contain information regarding project and results of 2014 trial treatment
 - Potentially, this would lead to interview-based article by newspaper
 - Article would end by stating SAWM will be developing an AIS management plan in 2015
- ***Spring 2015***
 - This release would, if applicable, disclose that a whole-lake treatment is being considered
 - Expected benefits and potential risks would be discussed
 - Project costs would be outlined
 - Public information meeting discussed below would be announced
- ***February 2016***
 - Release would contain information regarding proposed control in spring 2016
 - Early spring public information meeting would be announced

Project Status/Informational Meeting (June/July 2015, Early-Spring 2016)

Informational meetings are tentatively planned for early-summer 2015 and early-spring 2016 (or later)

- **June/July 2015**
 - Duplicate meetings would be held; one during a weekday evening and one on a weekend
 - Presentation content would include:
 - Benefits and risks of utilizing herbicides on spot and whole-lake treatment levels
 - Proposed treatment plan for Shawano Lake during 2016 (or later)
 - Importance and contents of written stakeholder survey (see below)
- **Public Information Meeting – Early Spring 2016 (or later)**
 - Meeting would layout specific plan for AIS control in 2016 (or later)

Stakeholder Survey (July/August 2015)

Comments and opinions would be solicited from Shawano Lake stakeholders to gain important information regarding their understanding of the lake and thoughts on how it should be managed. The information would be collected through a written survey/comment form sent via mail to each member household. This information would be critical to the development of a realistic plan by supplying an indication of the needs of the stakeholders and their perspective on the management of the lake. It would be the responsibility of the Planning Committee to prepare the survey mailing and collect and summarize the results. Onterra would create the survey content and lead the interpretation of the results. Below is an outline of these activities:

1. Onterra distributes standard survey to planning committee
2. Planning committee develops additional questions and options to be included within the survey
3. Onterra updates survey and submits to WDNR for approval
4. WDNR approved survey is provided to planning committee
5. Planning committee prints survey, stuffs surveys in envelopes, and mails out surveys to distribution list they develop
6. Completed surveys are returned to planning committee and then provided to third party contractor to tally survey results into an Onterra-provided Excel spreadsheet.
7. Excel spreadsheet of entered data is emailed to Onterra for analysis

Committee-Level Meetings

An important component of the proposed project is to ensure a bi-directional flow of information occurs between Onterra ecologists and SAWM Planning Committee Members. Up to six committee-level meetings are included within the proposed project with the sole intention of discussing components of the proposed project.

- **Proposed Meeting Timeline**
 - Prior to or following Project Kick-off Meeting
 - Following completion of 2014 Treatment Report (see below)
 - Early spring 2015

- Summer 2015, prior to Public Information Meeting
- Late summer 2015, after stakeholder survey results are tallied and analyzed
- Fall 2015 (or later) to finalize AIS-EPC Grant project funding whole-lake treatment

Partnerships

SAWM has successfully partnered with the Town of Washington, Town of Westcott, Village of Cecil, Town of Richmond, and City of Shawano. Combined, SAWM receives annual contributions that exceed 10% of the total cash costs of the proposed project (~\$4,000). SAWM also partners with Shawano County regarding the power wash

Clean Boats Clean Waters Program

Shawano Lake is an extremely popular destination by recreationists and anglers, making the lake vulnerable to new infestations of exotic species. The intent of the boat inspections is not only to prevent additional invasives from entering the lake through its public access points, but also to prevent the infestation of other waterways with invasives that originated in Shawano Lake. The goal of this effort is to cover the landings during the busiest times in order to maximize contact with lake users, spreading the word about the negative impacts of AIS on lakes and educating people about how they are the primary vector of its spread.

Currently public boat landing on Shawano Lake are monitored through training provided by the Clean Boats Clean Waters (CBCW) program. The majority of past effort were conducted by paid limited term employees through Oconto County (Table 1). SAWM will be applying for a stream-lined CBCW WDNR Grant to ensure at least 200 hours of watercraft inspections occur in 2014.

Table 1. Watercraft inspections conducted on Shawano Lake. WDNR 2013.

Landing	Boats Inspected		
	2010	2011	2012
Access at Shawano Lake Outlet (CTH HHH)	2	2	0
Access Nr Cattau Beach Dr	0	6	5
Access Nr County HHH And Lake Dr	0	7	0
Access Nr Stark Rd And Washington Lake	0	13	372
Access Nr Swan Acre Dr	0	116	327
Access Off Hwy H Nr Sunset Circle	0	205	114
Boat Ramp By Cecil	26	82	212
Shawano County Park Access	0	8	274
Shawano Lake Outlet Channel	0	144	238
Total	28	583	1542

Boat Decontamination

Dovetailing with the watercraft inspections, the Shawano County Park recently installed and currently maintains two boat washing stations, offered to lake visitors free of charge (Photo 1). Boat owners are encouraged to power wash their watercrafts prior to entering the lake, limiting Shawano Lake's exposure to new AIS. Boats should also be power washed after visiting Shawano Lake, to ensure the AIS from Shawano Lake are not exposed to other lakes.



Photo 1. Boat wash station on Shawano Lake

Shoreland Restoration Demonstration

One of the most vulnerable areas of a lake's watershed is the immediate shoreland zone (approximately from the water's edge to at least 35 feet shoreland). When a lake's shoreland is developed, the increased impervious surface, removal of natural vegetation, and other human practices can severely increase pollutant loads to the lake while degrading important habitat. Limiting these anthropogenic (man-made) effects on the lake is important in maintaining the quality of the lake's water and habitat. Along with this, the immediate shoreland area is often one of the easiest areas to restore.

SAWM has entered a partnership with Shawano County to construct shoreland restoration demonstration sites on private lands. Two preliminary sites have been proposed (Whispering Pines Retreat Center and a private residence). Scot Frank, Shawano County Conservationist, will be leading the effort with assistance from SAWM as appropriate.

Volunteer AIS Surveillance Monitoring

In lakes without AIS, early detection of pioneer colonies commonly leads to successful control and in cases of very small infestations, possibly even eradication. Even in lakes where these plants occur, monitoring for new colonies is essential to successful control.

Multiple SAWM members have been trained to be active Stream Monitors on the waters leading to and from Shawano Lake. These same members would be trained by a WDNR associate (David Zelinger) on AIS monitoring strategies, particularly new AIS located within these stream corridors. Data would be collected on the grant-funded GPS unit and input all records into the online SWIMS database in accordance with CLMN protocols. This would include surveys where aquatic invasive species were not identified.

Improved Management Actions

SAWM understands the importance of native aquatic vegetation on Shawano Lake. However, nuisance aquatic plant conditions exist in certain parts of the lake, caused by both non-native and native vegetation. In order to alleviate navigation impediments caused by the vegetation, herbicide applications by an association-employed applicator have been conducted in 2012 and prior within these areas.

Management Goal #3 within the Shawano Lake Aquatic Plant Management Plan outlines a refined strategy for maintaining navigability on Shawano Lake. The proposed project would implement a change in management strategies that will provide additional protection to the aquatic plant community of Shawano Lake.

Moving forward, an onboard hand-held GPS (grant-funded) will be used by the association-employed applicator during the herbicide application to ensure proper dosing and herbicide coverage, provide proper records of where the activities took place, and to allow lake managers and stakeholders to create and modify treatment lanes prior to implementation. Basemaps of the application areas shown on Map 3 will be loaded onto the GPS unit prior to the herbicide application. This will also allow fisheries and resource managers to update the position of the navigation lanes prior to the treatment if conflicts arise.

PROJECT DELIVERABLES

Annual Report

During the winter months of 2014/2015, a report documenting the results of the 2014 trial treatment would be provided to SAWM. This report would include comparisons of the 1) pre- and post treatment EWM mapping surveys (qualitative data), 2) aquatic plant point-intercept sub-sample and sub-set analysis (quantitative data), and 3) herbicide concentration monitoring results.

The report would also include a discussion regarding the 2015 stakeholder involvement components and steps that will be taken towards conducting a whole-lake herbicide treatment in 2015 or beyond. All reports would be presented in electronic format via email.

Stakeholder Participation

Unless otherwise indicated, SAWM would be responsible for providing the necessary deliverables for those components listed within the Stakeholder Participation Section. The deliverables for these activities include entering the appropriate information within the WDNR's Surface Water Integrated Monitoring System (SWIMS).

PROJECT COST BREAKDOWN

	Cash Costs	Donated Value
Monitoring and Stakeholder Participation		
Project Administration & Communications	\$2,830.00	
Public Meetings	\$2,445.00	
Committee Level Meetings	\$3,780.00	
Stakeholder Survey	\$1,350.00	
News Releases	\$1,195.00	
Pretreatment Confirmation Survey - 2014	\$945.00	
Sub-Sample Point-Intercept Survey - Spring 2014	\$1,080.00	
Early-Season AIS Survey - 2014	\$8,895.00	
EWM Peak-Biomass Survey - 2014	\$5,685.00	
Sub-Sample Point-Intercept Survey - Late-summer 2014	\$1,080.00	
EWM Peak-Biomass Survey - 2015 (or later)	\$7,665.00	
Point-Intercept Aquatic Plant Survey - 2015 (or later)	\$10,740.00	
Bio-Acoustic Surveys	\$1,610.00	
Herbicide Concentration Monitoring	\$490.00	
Data Analysis & Report/Plan Creation	\$2,120.00	
Travel Costs (mileage at \$0.58/mi)	\$2,285.00	
Printing, Shipping, and Voucher Materials	\$180.00	
Bio-Acoustic Processing by Contour Innovations, Inc. (Paid by Onterra)	\$1,000.00	
GPS Basemap Creation for Association-applicator	\$175.00	
<i>Monitoring and Stakeholder Participation Subtotal</i>	\$55,550.00	\$0.00
Other Project Costs		
Stakeholder Survey Printing and Postage (1,500)	\$4,500.00	
Stakeholder Survey Entry by Contractor (75% returns)	\$2,250.00	
GPS Unit	\$300.00	
<i>Total Other Project Costs</i>	\$7,050.00	\$0.00
Herbicide Application and Related Fees		
145-acre Trial Spot Treatment (Liquid 2,4-D @ 3.0 ppm ae)	\$59,600.00	
WDNR Permit Fees	\$1,270.00	
<i>Total 2014 Trial Treatment Costs</i>	\$60,870.00	\$0.00
Volunteer & In-kind Match Opportunities		
CBCW Paid Monitors	<i>Within Separate Grant</i>	
Herbicide Concentration Monitoring (40 hrs)		\$480.00
AIS Surveillance Monitoring (25 hrs)		\$300.00
Kick-off Meeting Attendance (50 peop. X 1 hr)		\$600.00
News Release Prep - Oct/Nov 2014 (4 hrs)		\$48.00
News Release Prep - Spring 2015 (4 hrs)		\$48.00
News Release Prep - Feb 2016 (4 hrs)		\$48.00
Public Info Mtgs (2) Prep - June/July 2015 (4 hrs)		\$48.00
Stakeholder Survey Distribution Prep (16 hrs)		\$192.00
Public Info Mtg Prep - Early Spring 2016 (4 hrs)		\$48.00
Committee Level Mtgs (6) (60 hrs)		\$720.00
SAWM Grant Project Administration (100 hrs)		\$1,200.00
<i>Total Volunteer & In-kind Match Opportunities</i>	\$0.00	\$3,732.00
Project Subtotals	\$123,470.00	\$3,732.00
Total Project	\$127,202.00	
State Share Requested (65%)	\$82,681.30	

Aquatic Invasive Species (AIS) Control Grant Application

Form 8700-307 (12/11)

Notice: Use of this form is required by the DNR for any application filed pursuant to ch. NR 198, Wis. Adm. Code. Personal information collected on this form, including such data as your name, address, phone number, etc., will be used for management and enforcement of DNR programs, and is not intended to be used for any other purpose. Information will be made accessible to requesters under Wisconsin's Open Records laws (s. 19.32-19.39, Wis. Stats.) and requirements.

Section I: Application Type

Check one:

- Education, Prevention & Planning
 Early Detection & Response
 Established Infestation Control

Legislative District Numbers		To determine your legislative district, go to http://165.189.139.210/WAML/ Type in complete address, next screen shows information
Senate	Assembly	
2	6	

Section II: Applicant Information

Applicant			Type of Eligible Lake or River Applicants			
Shawano Area Waterways Management, Inc.			<input type="checkbox"/> County	<input type="checkbox"/> Tribe	<input type="checkbox"/> Other Gov't Unit	<input type="checkbox"/> Federal
Waterbody Name			<input type="checkbox"/> City	<input type="checkbox"/> Sanitary Dist.	<input type="checkbox"/> Nonprofit Org.	<input type="checkbox"/> State
Shawano Lake			<input type="checkbox"/> Village	<input type="checkbox"/> Dist.	<input type="checkbox"/> College, School, etc.	<input type="checkbox"/> Other
Project County/Township/Section/Range			<input type="checkbox"/> Town	<input checked="" type="checkbox"/> Assoc.		
Shawano T27N, R16E Sect 28						
Authorized Representative Named by Resolution			Project Contact Name			
Raymond Zuelke			Tim Hoyman			
Authorized Representative Title			Project Contact Title			
Board Member			Aquatic Ecologist			
Address			Address			
138 Ombre Rose Dr			815 Prosper Road			
City	State	ZIP Code	City	State	ZIP Code	
Combined Locks	WI	54113	De Pere	WI	54115	
Daytime Phone (area code)	Evening Phone (area code)		Daytime Phone (area code)	Evening Phone (area code)		
920.766.2013			920.338.8860			
E-Mail Address			E-Mail Address			
rayjoyzuelke@new.rr.com			thoyman@onterra-eco.com			

Mail Check to: (if different from applicant)

Name and Title			Address		
Organization			City	State	ZIP Code

For DNR Use Only

Application Type	Date Received	Date Reviewed (AIS/LC/RC)	AIS/Lake/River Coordinator Approval/Date
Waterbody ID #	Adequate Public Access <input type="checkbox"/> Yes <input type="checkbox"/> No		Environmental Grants Specialist Approval / Date
Eligible Project <input type="checkbox"/> Yes <input type="checkbox"/> No	Eligible Applicant <input type="checkbox"/> Yes <input type="checkbox"/> No	Project Priority Rank	Research / Demo Project <input type="checkbox"/> Yes <input type="checkbox"/> No
Prior Grant Award(s) <input type="checkbox"/> Yes <input type="checkbox"/> No	Fiscal Year(s)	Amount Received to Date \$	Project Awarded <input type="checkbox"/> Yes <input type="checkbox"/> No

Aquatic Invasive Species (AIS) Control Grant Application

Section III: Project Information

Project Title Shawano Lake AIS Control and Prevention Project – Phase 1: Trial EWM Treatment	Proposed Ending Date December 31, 2016
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Other Management Units	Letter of Support	Other Management Units	Letter of Support
1. Village of Cecil	<input type="checkbox"/>	4. Town of Wescott	<input type="checkbox"/>
2. Shawano County Land Conservation Division	<input type="checkbox"/>	5. Town of Washington	<input type="checkbox"/>
3. City of Shawano	<input type="checkbox"/>	6.	<input type="checkbox"/>

Section IV: Public Access

Number of Public Vehicle Trailer Parking Spaces Available at Public Access Sites: 110

Number of Public Access Sites Including Boat Launches and Walk-ins: 14 boat landings, 5 walk-in sites

Section V: Cost Estimate and Grant Request

Section V must be completed or application will be returned.
 Details in support of Section V are welcome.

	Project Costs		
	Column 1 Cash Costs	Column 2 Donated Value	<i>DNR Use Only</i>
1. Salaries, wages and employee benefits			
2. Consulting services (includes shipping/voucher materials & acoustic processing)	\$55,550.00		
3. Purchased services (Herbicide Applications)	\$59,600.00		
4. Other purchased services (specify) (WDNR Permit Fees)	\$1,270.00		
5. Plant material			
6. Supplies (specify): (Stakeholder Printing & Mailing, survey tallying, GPS unit)	\$7,050.00		
7. Depreciation on equipment			
8. Hourly equipment use charges			
9. State Lab of Hygiene (SLOH) Costs			
10. Non-SLOH Lab Costs			
11. Other (specify) (Volunteer In-kind Labor)		\$3,732.00	
12. Subtotals (Sum each column)	\$123,470.00	\$3,732.00	
13. Total Project Cost Estimate (sum of column 1 plus sum of column 2)	\$127,202.00		
14. State Share Requested (up to 75% of total costs may be requested)	\$82,681.30		

Subject to the following maximum grant amounts:

- Education, Prevention and Planning Projects—up to \$150,000
- Early Detection and Response Projects—up to \$20,000
- Established Infestation Control Projects—up to \$200,000

65% State Share Requested

Use of Federal funding as match: (check box below if applicable)

We are using or planning to apply for Federal funds to be used as match.
 If known, indicate source of funding:

Section VI: Attachments (check all that are included)

A. For all applicants: (Refer to instructions for applicability.)

- 1. Authorizing resolution
- 2. Letters of support
- 3. Map of project location and boundaries
- 4. Lake map with public access sites identified (per Section VI of this application and page 20 of the guidelines)
- 5. Itemized breakdown of expenses
- 6. For projects that entail sending samples to the State Laboratory of Hygiene (SLOH) only: a completed SLOH Projected Cost Form
- 7. Project scope/description:
 - a. Description of project area
 - b. Description of problem to be addressed by project
 - c. Discussion of project goal and objectives
 - d. Description of methods and activities
 - e. Description of project products or deliverables
 - f. Description of data to be collected, if applicable
 - g. Description of existing and proposed partnerships
 - h. Discussion of role of project in planning and/or management of lake
 - i. Timetable for implementation of key activities
 - j. Plan for sharing project results
 - k. Other information in support of project not described above

B. For applicants that are Lake Management Organizations (LMOs), River Management Organizations (RMOs) or Qualified Non-profit Organizations:

- 1. For first time applicant LMOs/RMOs only: A completed Form 8700-226 (Lake Association Organizational Application) or 8700-287 (River Management Organization Application)
- 2. For first time applicant Qualified Nonprofit Organizations only: Copy of IRS 501(c)(3) determination letter and copies of your Articles of Incorporation and Bylaws
- 3. List of national and/or statewide organizations with which you are affiliated
- 4. List of board members' names, including municipality and county of residence. Designate officers
- 5. Documentation of current financial status
- 6. Brochures, newsletters, annual reports or other information about your organization

C. Education, Prevention and Planning Projects: (No additional attachments required.)

D. Early Detection and Response Projects:

- 1. APM Permit

E. Established Infestation Control Projects:

- 1. Management Plan
- 2. APM Permit

Section VII: Certification

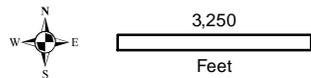
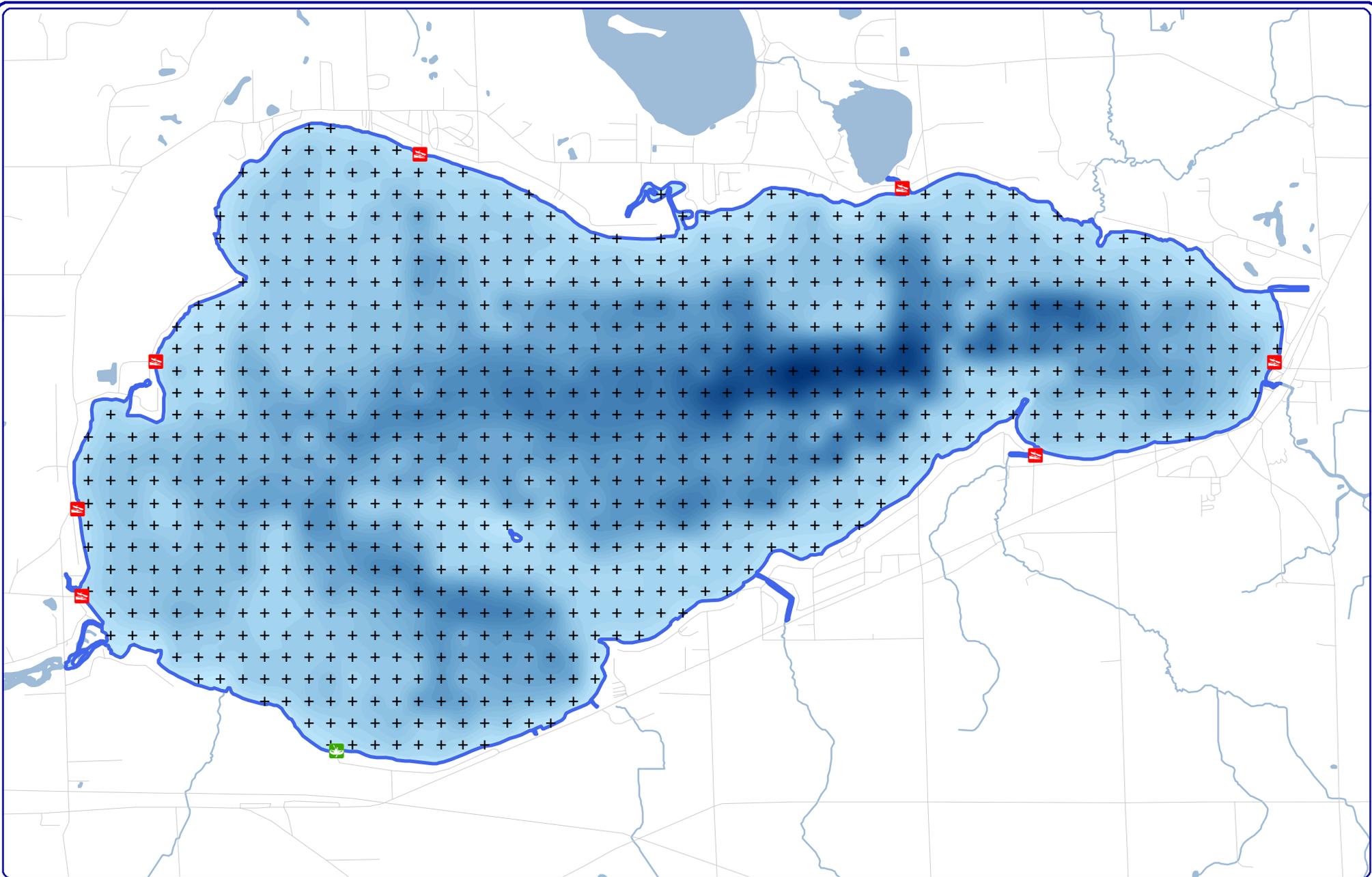
I certify that information on this application and all its attachments are true and correct and in conformity with applicable Wis. Statutes

Print/Type Name of Authorized Representative
Raymond Zuelke

Signature of Authorized Representative

Title of Authorized Representative
Board Member, SAWM

Date Signed



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

Sources:
 Roads and Hydro: WDNR
 Bathymetry: Onterra, 2013
 Map Date: November 1, 2013
 Filename: Map1_Shawano_Location.mxd



Project Location in Wisconsin

Legend



Shawano Lake ~6,063 acres
 WDNR Definition



Point-Intercept Survey Location
 165-meter spacing, 925 total points



Public Boat Landing

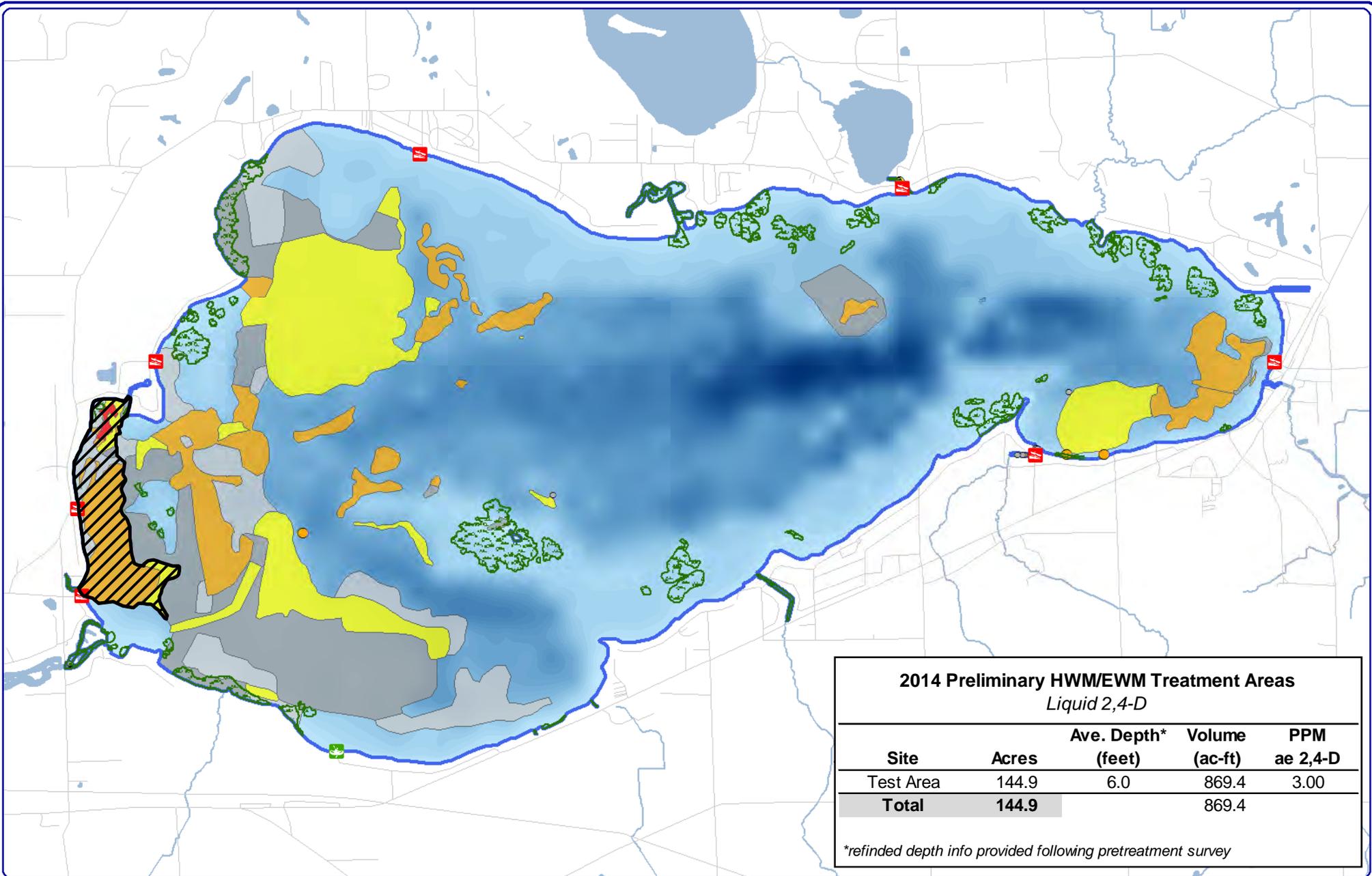


Carry-in Access

Map 1

Shawano Lake
 Shawano County, Wisconsin

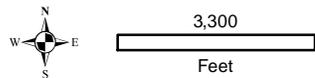
Project Location & Lake Boundaries



2014 Preliminary HWM/EWM Treatment Areas
Liquid 2,4-D

Site	Acres	Ave. Depth* (feet)	Volume (ac-ft)	PPM ae 2,4-D
Test Area	144.9	6.0	869.4	3.00
Total	144.9		869.4	

**refined depth info provided following pretreatment survey*



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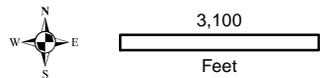
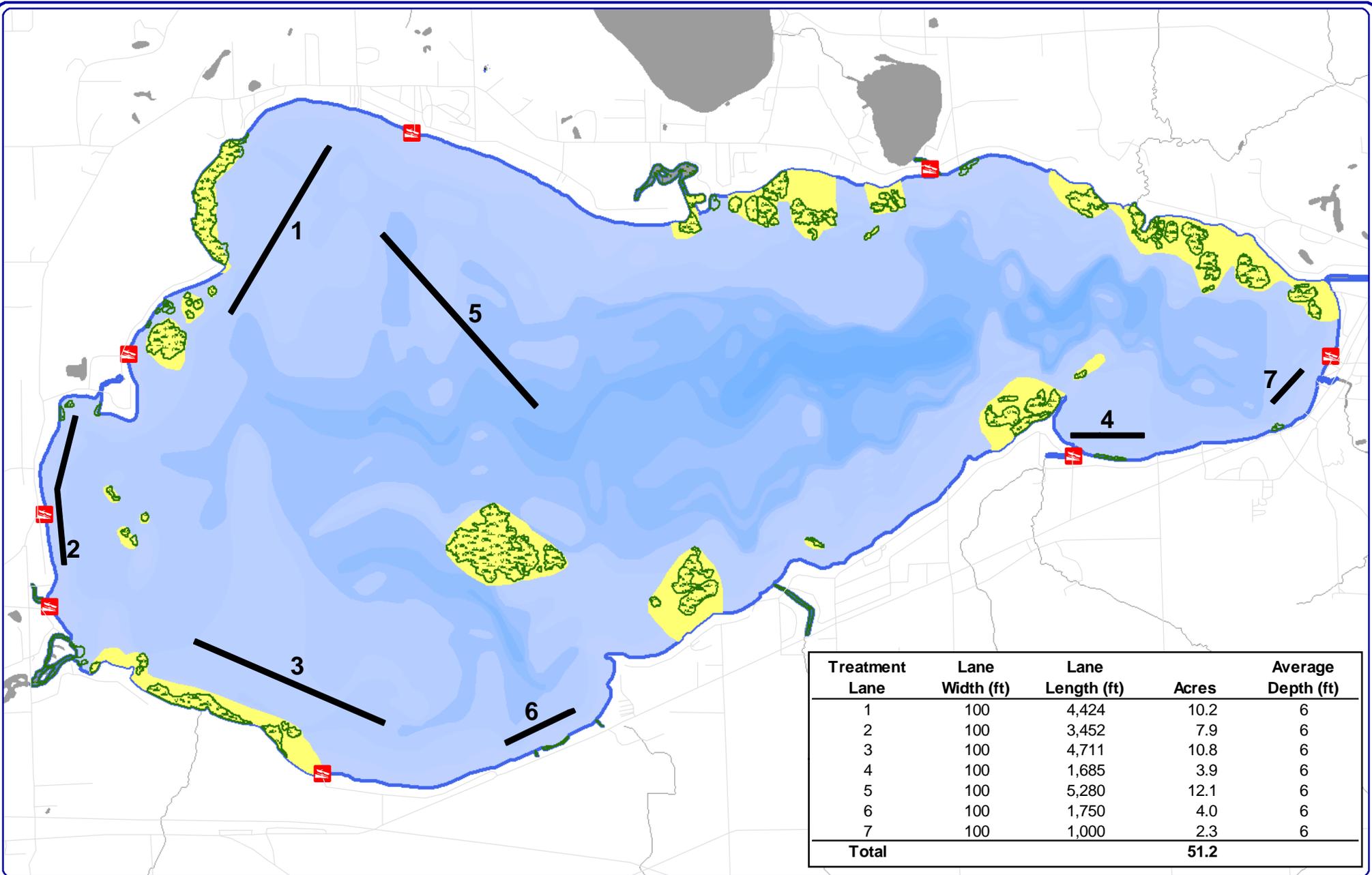
Sources:
Roads and Hydro: WDNR
Bathymetry: Onterra, 2013
Map Date: November 1, 2013
Filename: Map7_Shawano_EWMPB_June13.mxd



- Legend**
- Eurasian water milfoil (June 2013, refined Sept 2013)**
- Large EWM Community**
- Highly Scattered
 - Scattered
 - Dominant
 - Highly Dominant
 - Surface Matting
- Small EWM Community**
- Single or Few Plants
 - Clumps of Plants
 - Small Plant Colony

- Floating-leaf and/or Emergent Plant Community
- 2014 Proposed EWM/HWM Trial Treatment Area

Map 2
Shawano Lake
Shawano County, Wisconsin
**2014 Proposed EWM
Control Strategy v1**



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

Sources:
 Roads and Hydro: WDNR
 Aquatic Plants: Onterra, 2013
 Sensitive Areas: WDNR, 2003
 Nuisance Lanes: Digitized by Onterra
 from WDNR permit records
 Map Date: December 2, 2013
 Filename: Map8_Shawano_NuisanceControl.mxd



Project Location in Wisconsin

Legend

- Nuisance Navigation Treatment Lane
- Public Access
- Floating-leaf and/or Emergent Plant Community
- WDNR Sensitive Area

Map 3

Shawano Lake
 Shawano County, Wisconsin

**Nuisance Navigation
 Herbicide Lanes**

**Wisconsin Department of Natural Resources
Grant Project
Resolution**

**RESOLUTION OF
Shawano Area Waterways Management, Inc.
Shawano County, Wisconsin**

WHEREAS **Shawano Lake**, Shawano County, is an important resource used by the public for recreation and enjoyment of natural beauty; and

WHEREAS we recognize that a well-planned and holistic lake *and* aquatic invasive species management project will better the lake now and for future users, and

WHEREAS the control and prevention of aquatic invasive species are important to the health and well-being of the lake; and

WHEREAS we are qualified to carry out the responsibilities of the planning project

IT IS, THEREFORE, RESOLVED THAT:

Shawano Area Waterways Management, Inc. requests the funds and assistance available from the Wisconsin Department of Natural Resources under and

HEREBY AUTHORIZES **Ray Zuelke** to act on behalf of **Shawano Area Waterways Management, Inc.** to: submit an application to the State of Wisconsin for financial aid for monitoring, planning and education purposes; sign documents; and take necessary action to undertake, direct, and complete an approved grant.

BE IT FURTHER RESOLVED THAT **Shawano Area Waterways Management, Inc.** will meet the obligations of the planning project including timely publication of the results and meet the financial obligations under this grant including the prompt payment of our 35% commitment to project costs.

We understand the importance of a continuing management program for **Shawano Lake** and intend to proceed on that course.

Adopted this 12th day of December, 2013

By unanimous vote of the Board of Directors

BY: _____
Gary DeFere, President
Shawano Area Waterways Management, Inc.

Aquatic Invasive Species Control Grants Established Population Control Ranking Questions 36 Maximum Points	Ranking Points	Score
A. The degree to which the project includes a prevention and control strategy. (6 points possible)		
1) The water being controlled has, or the project includes, a Clean Boats, Clean Waters watercraft inspection program per the requirements of s. NR 198.22 (1)(d) or an approved Alternative Equivalent (see guidance).	2 points	2
2) The project will conduct other complimentary source containment activities that go above and beyond minimum level of inspection and signage e.g. boat washing or cleaning stations, augmented enforcement.	2 points	2
3) The water being controlled has, or the project will train, volunteers to identify AIS and conduct water body surveillance monitoring for early detection using accepted WDNR or citizen-based monitoring (CLMN/Project RED, etc.) protocols where data is being entered into SWIMS.	2 points	2
B. The degree to which the project will prevent the spread of aquatic invasive species. (7 points possible)		
1a) The control activity will take place on a Statewide AIS Source Water listed on the following table. OR	5 points	5
1b) The control activity will take place on a major AIS source water with high public use (lakes greater than 500 acres and all boat-able rivers that meet or exceed the minimum boating access criteria in NR 1.91(4) or wetlands greater than 500 acres in public ownership) or the project includes a Statewide AIS Source Water where less than 50% of the activities are directed. OR	4 points	got 1a
1c) The control activity takes place on a significant AIS source water with high public use (lakes between 500 and 100 acres and all rivers that meet or exceed the minimum boating access criteria in NR 1.91(4); wade-able streams with public access or wetlands between 500 and 100 acres in public ownership). OR	3 points	got 1a
1d) The control activity takes place on an a minor AIS source water (lakes less than 100 acres that meet or exceed the minimum boating access criteria in NR 1.91(4); any river or stream with public access or wetlands less than 100 acres in public ownership).	2 points	got 1a
2) The project will control a NR40 prohibited species e.g. Hydrilla, yellow floating heart, spiny water flea, red swamp crayfish, etc.	2 points	0
C. The degree to which the project protects or improves the aquatic ecosystem's diversity, ecological stability or recreational uses. (3 points possible)		
1) Project plan implementation includes stocking or planting to reintroduce native (plant) community species or implements other actions or changes in management strategies that will provide <u>added</u> protection to native species beyond herbicide treatments alone.	2 points	2
2) Project area has a high degree of native biodiversity or is critical habitat, as expressed by: <ul style="list-style-type: none"> • an above eco-region average aquatic or wetland plant FQI • the presence of a listed aquatic species (NHI endangered, threatened or watch) • is an ERW or ORW water • has a Sensitive Area or Critical Habitat designation • is within or adjacent to a State Natural Area, State Park, other publicly owned unique natural area or such an area owned/managed by a nonprofit conservation organization (e.g., Nature Conservancy). 	1 point	1
D. The stage of the infestation in the water body. (4 points possible)		
1) Project addresses a pioneer population (as defined by s.198.12 (8)), or was a past early response project.	2 points	0
2) The target species is low in density and still at a controllable level as determined by being found in 25%, or less, of the colonizable area of the project water body (e.g. only the littoral zone of a lake can be colonized by EWM).	1 point	1
3) It is well documented (P/I surveys or GIS mapping, verified) that the target species is a rapidly expanding population (doubling annual increase in areal coverage or FOO). Population is still under 25% threshold above.	1 point	0
E. The degree to which the project will be likely to result in successful long-term control. (4 points possible)		
1) As also included in the approved management plan, the project employs multiple strategies (for the same species) to achieve and maintain control objectives. [e.g. hand pulling in combination with chemical treatment and biocontrol, draw downs, etc.]	2 points	0
2) The sponsor has had a pre-application grant scoping consultation with the Department and the application is consistent with the results of those discussions.	1 point	1
3) There is a low risk of reestablishment and spread after control activity occurs. All of the following apply: the project site is not impounded; is not tributary to or connected to any other AIS populated water and; the entire AIS population is being targeted for control.	1 point	0

Aquatic Invasive Species Control Grants Established Population Control Ranking Questions 36 Maximum Points		Ranking Points	Score
F. The availability of public access to, and public use of, the water body. (2 points possible)			
1) Any lake of 100 surface acres or greater and any boat-able river that has more than the minimum public boating access as defined in s. NR 1.91(4) or any wetland greater than 50 acres in public ownership.	1 point	1	8 public landings, >250 parking spaces
2) The water provides significant alternative public access and use opportunities that include <u>two</u> of the following at separate locations: public swimming beach; park or other public land with accessible frontage; public fishing pier or wildlife observation area; two or more private resorts, youth camps or sportsmen clubs; or where more than 50% of the lake or river shore in the project area is in public ownership.	1 point	1	Multiple Resorts, swimming beaches, resorts, campgrounds
G. The degree to which the proposed project includes or is complemented by other management efforts including watershed pollution prevention and control, native vegetation protection and restoration and other actions that help control aquatic invasive species or resist future colonization. (2 points possible)			
Applicant demonstrates that they have implemented, or been a significant participant in, or the project proposes, a shoreland restoration, habitat protection, sediment and nutrient control, water level management or other substantial lake stewardship activity (not including education or planning) that protects the lake ecosystem. (Score 1point per action, provide documentation).			
Activity 1	1 point	1	Shoreland Demonstration Project, led by Shawano County Conservationist (on 2 sites)
Activity 2	1 point	0	Need activity to get this point
2) The sponsor is a Green Tier Community Charter Member. (City of Middleton, Bayfield, Fitchburg, Appleton, Weston, Monona, Eau Claire, La Crosse, & the Village of Bayside)	1 point	0	Not a Green Tier Community
H. Community support and commitment, including past efforts to control aquatic invasive species. (5 points possible)			
1) This is demonstrated by requesting less than the maximum state share cost rate (cash costs) for the total project costs. No more than 25% of the project match can be in-kind or donated labor. The sponsor is requesting: 65% State Share (1 point)	1 point	1	Selects this lesser state share
OR 50% State Share (2 point)	2 points	0	
2) The project has financial support from additional management units, interest groups or organizations committing > 10% of the hard cash local match .	1 point	1	Municipal partners will donate more than 10% of hard cash local match (~\$4K)
3) The sponsor conducted AIS control, consistent with their Department-approved plan, in the previous season without financial assistance from the State. They may have begun implementation without a grant or received grants in past but not the past season.	1 point	0	No strategic AIS Control in previous year
I. Whether the sponsor has previously received a grant for a similar project for the same water body. (2 points)			
1) There has not been an AIS Established Population Control grant for the same species in the same waterbody in the last five years.	2 points	2	This will be the first AIS-EPC grant
J. The degree to which the project will advance the knowledge and understanding of the prevention and control of aquatic invasive species. (1 point possible)			
1) Project has an evaluation component that will be conducted by an objective outside entity to assess project outcomes or is a participant in a Department-sponsored research and demonstration project on the AIS research priority list.	1 point	1	Trial Treatment will be monitored as a part of joint WDNR & USACE herbicide concentration monitoring project. Has third-party evaluation component.

24

Overview

Category	Points
The degree to which the project includes a prevention and control strategy.	A 6 / 6
The degree to which the project will prevent the spread of aquatic invasive species.	B 5 / 7
The degree to which the project protects or improves the aquatic ecosystem's diversity, ecological stability or recreational uses.	C 3 / 3
The stage of the infestation in the water body.	D 1 / 4
The degree to which the project will be likely to result in successful long-term control.	E 1 / 4
The availability of public access to, and public use of, the water body.	F 2 / 2
The degree to which the proposed project includes or is complemented by other management efforts including watershed pollution prevention and control, native vegetation protection and restoration and other actions that help control aquatic invasive species or resist future colonization.	G 1 / 3
Community support and commitment, including past efforts to control aquatic invasive species.	H 2 / 5
Whether the sponsor has previously received a grant for a similar project for the same water body.	I 2 / 2
The degree to which the project will advance the knowledge and understanding of the prevention and control of aquatic invasive species.	J 1 / 1

24 / 37