Aquatic Invasive Species Control Grant Application – Established Infestation Control Projects

Project Scope/Description

Project Name:
Management of a Unique Hybrid Watermilfoil in Loon Lake

Project Location:
Loon Lake, Wescott Township, Shawano County, WI

Applicant:
Loon Lake – Wescott Management District (Lake Association)

Representative:
Larry Philbrick
N6863 Loon Lake Drive
Shawano, WI 54166
715-745-6415

Proposal Date:
February 2009

Management of a Unique Hybrid Watermilfoil in Loon Lake
Project Scope/Description

CONTENTS

Project Area	1
Problem Addressed by Project	1
Purpose of Project	1
Project Background	1
Project Goals, Objectives & Schedule	3
Methods & Activities	3
Control of Hybrid Watermilfoil	3
Boat Landing Improvements for Decontamination of Hybrid Watermilfoil	4
Exotic & Native Species Monitoring	4
Update to Comprehensive Management Plan	5
Project Products, Deliverables & Data Sharing	5
Existing & Proposed Partnerships	5
Ongoing Partnerships	5
Volunteer Involvement	6
Project's Role in Planning & Management of Loon Lake and Beyond	7
Project Satisfaction of Grant Ranking Criteria	8
Pre-Qualification Items	8
Ranking Criteria	8

PROPOSAL ATTACHMENTS

AIS Control Grant Application Form
Letter from Kathy Dax re: treatment area and update to Aquatic Plant Management Plan
Authorizing Resolution of Loon Lake – Wescott Management District
Letters of Support
Letter from Planning and Zoning Commissioner re: public boat landing parking
Loon Lake Hybrid Watermilfoil, John Skogerboe, USACoE, July 2008
Tables – Project Budget & Estimated Volunteer Contributions
Board Members of Loon Lake – Wescott Management District
Financial Status Documentation
Brochures & Reports about Management District and Clean Boats, Clean Waters Program
Current APM Permit

Project Area

Loon Lake, located in Wescott Township of Shawano County, has a surface area of 305 acres and a maximum depth of 22 feet (see attached map). This fertile, dark-water lake is fed by groundwater seepage and by two inlets: Lulu Creek and Loon Creek. Loon Lake's 8,465-acre watershed is predominantly upland forest and swamp. Loon Lake is drained by one outlet, Loon Creek, which flows into Washington Lake, then Shawano Lake, which ultimately drains to the Wolf River. The east side of Loon Lake is upland and is developed with cottages. The west side of the lake is predominantly wetland and remains in a natural state. A public boat landing equipped with a wheelchair-accessible pier is located on the south end of the lake.

Problem Addressed by Project

Loon Lake contains a hybrid watermilfoil variety recently discovered to reproduce itself and spread by turions (i.e., budding). This trait has hampered efforts to bring the watermilfoil under long-term control in Loon Lake. Furthermore, Loon Lake's recreational usage and its location within the upstream of a number of waterbodies including the Wolf River present risks that this tenacious invasive plant may spread farther afield.

Purpose of Project

This project is intended to provide a better understanding of a unique and dangerous aquatic weed, to halt or slow its spread into the greater watershed, and ultimately to manage its occurrence within Loon Lake itself. Unfortunately, Loon Lake is now the experimental laboratory. Fortunately, a program and a team are in place to learn how to control this new environmental disturbance; we just need additional resources.

Project Background

Since at least 1995 Loon Lake has been infested with Eurasian watermilfoil (*Myriophyllum spicatum*), an invasive exotic plant. This aquatic invasive species (AIS) quickly formed dense beds that occupied a large percentage of the littoral area – greater than 25% by 2001 – significantly impairing recreational uses, aesthetics, and the native plant community. Prior to 2002 mechanical weed harvesting and stocking of the milfoil weevil (*Euhrychiopsis lecontei*) were employed in attempts to control the watermilfoil. Neither method met expectations; it is thought these methods may have actually set back efforts to control the invasive watermilfoil in Loon Lake.

A comprehensive survey conducted in 2002 found Eurasian watermilfoil beds occupying a total of 88 acres in Loon Lake (29%). Following that survey an aquatic plant management plan was written. Based on the *Loon Lake Comprehensive Survey Results and Management Plan* approved by the Department of Natural Resources (DNR), a change in management strategy was established: chemical herbicide treatments were selected to control the AIS. Different chemical agents and application methods (delivery, concentration, timing, limnologic conditions) were employed from 2003 to 2006 in an experimental fashion to determine the optimum approach for managing watermilfoil in Loon Lake. The table on the next page summarizes the control measures implemented over time and the consequent areas of watermilfoil infestation:

Year	Milfoil Acreage		Species Richness	Treated Acreage		Treatment Approach*			Contractor
	Spring	Fall		Spring	Fall	Agent	State	Quantity	
1995	First Observed					Weed Harvesting			
2000	~80					Weevils	Adult	15,000	Env-Sci.
2001	>25%		Declining			Weevils	Adult	9,500	Env-Sci.
2002	88		30			Comp. Survey & Mgmt. Plan			ABI
2003	84+	49	25	84	47	2,4-D	Gran.	100-183	ABI
2004	49+		26	49	3**	Endothall	Liquid	1 ppm	ABI
2005	40+	25		40		2,4-D	Gran.	125-200	WLPR
2006	88	55	40	62		2,4-D & Endothall	Liquid	0.5 & 1 ppm	L & P Soln
2007	88	>80	Excellent	88		2,4-D & Endothall	Liquid	0.5 & 1 ppm	WLPR
2008	88	>80	Excellent	68***		2,4-D & Endothall	Liquid	0.75 & 1.5 ppm	WLPR

* For granular 2,4-D, quantity is in lbs/acre.
** The Fall 2004 treatment consisted of pilot tests using liquid endothall and granular 2,4-D.
***Test bed of 20 acres was left for USACoE research on turions.

Due to early mixed results and apparent plant resilience following some types of treatment, lake managers investigated the genetic makeup of the Eurasian watermilfoil in Loon Lake after the 2003 season. Through DNA analysis it was determined that the watermilfoil was actually a hybrid cross between Eurasian watermilfoil and a native watermilfoil. This realization has had a substantial influence on the treatment and monitoring approach over the past several years. The Loon Lake - Wescott Management District applied for and won a three-year DNR AIS grant in 2004 that allowed us to approach the problem in a more systematic fashion. Over the past several years, the U.S. Army Corps of Engineers (USACoE) has become very engaged in the ongoing study and treatment of the hybrid watermilfoil in Loon Lake.

In 2007, confident that we had honed the approach to reliably control the hybrid watermilfoil on a long-term basis, we sought another three-year DNR AIS grant to demonstrate the effectiveness of our approach and to continue enhancing the health of Loon Lake. Sadly, that funding request was unsuccessful, and the ongoing efforts were instead self-financed by a special taxation on members of the Loon Lake – Wescott Management District. More troubling: the apparent early-season success of the treatments eroded later in 2007, and in the fall it was discovered that the hybrid watermilfoil reproduces by turions (i.e., budding). This type of reproduction had not been reported previously in Eurasian or hybrid watermilfoils, and thus caused some alarm to the Management District, USACoE researchers, and DNR personnel. It was subsequently decided that 20 acres would be left untreated as a test bed area for the study of turion production and growth. John Skogerboe from the USACoE began research on turion production and growth in the summer and fall of 2008.

Project Goals, Objectives & Schedule

The continuing goals of the project are three-fold:

- To study the turion reproduction process in the hybrid watermilfoil in order to determine how and why it occurs and to target potential weaknesses;
- To gain long-term control of the hybrid watermilfoil throughout the lake by reducing its occurrence to sub-nuisance levels (15% frequency);
- To hamper the spread of exotic species near Loon Lake through enhanced ongoing prevention and education.

The objectives for meeting these goals are substantial annual reductions in hybrid watermilfoil distribution and density during the growing season, and thus more limited treatments over time.

Methods & Activities

Control of Hybrid Watermilfoil

The level of hybrid watermilfoil in Loon Lake – both distribution and density – has fluctuated in recent years along with the varying "experimental" treatment techniques. Following each treatment, some degree of re-growth is evident and additional acres of the lake continue to be susceptible to invasion. This appears as new growth on the stems of previously treated milfoil plants. Following recommendations from the DNR and the USACoE, the Management District plans to continue with a treatment approach similar to what was established in 2006 and implemented full-scale in 2007 and 2008, with the understanding that this approach maybe need to be modified based on the ongoing research conducted by the USACoE. Wisconsin Lake & Pond Resources will conduct the treatments as described below.

It is anticipated that one treatment will be conducted per year. Annual treatments will begin in spring or early summer and will target the early growth stage of the hybrid watermilfoil within the treatment area. Watermilfoil distribution will be reassessed at the time of treatment. Floating markers and GPS technology will be used to delineate the milfoil beds and facilitate application accuracy.

Through numerous conversations with the District, Wisconsin DNR, USACoE, and Wisconsin Lake & Pond Resource staff, it was decided that in 2009 the following treatment approach will be utilized (see also attached map):

- 19.6 acres along the west shore will remain untreated for use by the UASCoE.
- 17.9 acres along the northwest shore and nearest the island will be treated with a combination of granular 2,4-D (Navigate®) applied at a rate of 81 lbs/acre (1.5 ppm) and granular endothall (Aquathol Super K®) applied at a rate o 5.5 lbs/ac-ft (1.25 ppm).
- The remaining 50.5 acres in the southern half of the lake will be treated as before with a combination of liquid 2,4-D (DMA4 IVM®) applied at a rate of 0.5 gal/ac-ft (0.75 ppm) and liquid endothall (Aquathol K®) applied at a rate of 1.0 gal/ac-ft (1.5 ppm).

These application rates were determined through discussions and recommendations from John Skogerboe. Liquid herbicides will be applied through subsurface injection to all milfoil beds

within the treatment areas. Likewise, granular herbicides will be broadcasted onto the surface. Based on previous results, the USACoE has recommended that the treatment take place when mid-depth water temperatures are at or near 55 to 57°F and wind speeds are below 10 mph (ideally for a 24 hour period). If conditions are too windy, temperature is outside the optimal zone, or target areas are too small, the treatments will consist of direct application of granular 2,4-D at a rate of 150 lbs/acre.

A number of factors were used to estimate these treatment areas:

- The locations of previous treatments;
- The remaining watermilfoil believed to exist in the lake;
- The expectation of limited survival and possible re-expansion following each treatment.

It is expected that some level of success will be gained through this approach. However, due to the experimental nature of these treatments, and the history of varied success with treatment of the hybrid milfoil in Loon Lake, treatment needs for 2010 and 2011 are very difficult to predict. As a result the same treatment approach has been included in this proposal for the second and third year. Each year treatment success will be discussed and possible changes to the treatment approach will be determined. If changes are warranted, the grant application can and will be amended accordingly.

Boat Landing Improvements for Decontamination of Hybrid Watermilfoil

Regardless of treatment results, the Clean Boats, Clean Waters program will continue at the public boat landing with volunteer assistance from our members to educate the public and limit the spread of exotic species. The public boat landing at the south end of the lake is monitored by volunteers on weekends during the summer boating season. New education and prevention signs were installed at the boat landing. All of this is being done in hopes that the public will be more informed and help to prevent the spread of this hybrid milfoil from Loon Lake to other water bodies.

Exotic & Native Species Monitoring

An annual spring survey will be conducted to document the extent of hybrid watermilfoil and any other exotic species located in Loon Lake. In addition, prior to each herbicide treatment members of the District and the consultant/contractor will monitor the results of previous treatments and map the extent of the hybrid watermilfoil to best determine the locations needing further treatment. Watermilfoil will be identified visually and with rake tows. The dimensions of the beds, minimum and maximum depths, and distances from shore will be measured and recorded on a contour map. GPS technology will also be used to determine total acreage. Care will be taken to accurately document milfoil distribution and density during each survey in order to track the progress made by management efforts. Where applicable, surveys will follow protocols established by the DNR.

In addition, because of the experimental basis of this treatment approach and the research value this project holds in terms of better understanding hybrid watermilfoil control, a research collaboration has been established with the USACoE. Its personnel will monitor the effectiveness of the treatments on hybrid watermilfoil, study the biology of the hybrid variety,

and provide recommendations on necessary adjustments to the application methods. The Corps views the ongoing efforts at Loon Lake as a valuable demonstration project that will help other communities in Wisconsin and elsewhere. The lead researcher is John Skogerboe. Due to the significance of this project, the USACoE will provide its biologic monitoring services gratis. The USACoE offer will cover all necessary monitoring costs to substantially offset costs to the management district, while providing valuable data to the USACoE.

Members of the Loon Lake – Wescott Management District have agreed to assist the USACoE with field work. During the remainder of the year District members will also regularly monitor other lakes in the area for the possible spread of water milfoil and the possible introduction of other exotic species.

Update to Comprehensive Management Plan

The Loon Lake – Wescott Management District continues to operate under the 20003 Comprehensive Management Plan for (on file with DNR). Based on DNR (see attached letter from Kathy Dax) and USACoE input, the Comprehensive Management Plan has been tentatively scheduled to be updated after the USACoE completes its research. The update of this plan is expected to take place within the timeframe of this grant (2009-2011). In addition, the DNR Bureau of Research conducted a thorough point-intercept aquatic plant survey in 2006, 2007 and 2008.

Components of the updated plan will include analysis of annual survey data, comparisons with previous plant survey data, and review of results from the research conducted by the USACoE. Other elements will include a review of recent lake management practices, as well as collection and review of water quality data. The plan will also include a discussion of plant management options and recommendations for future management of Loon Lake.

Project Products, Deliverables & Data Sharing

In addition to the eventual updated management plan, deliverables will include annual progress reports to the DNR, Shawano County, and USACoE following each field season. The reports will present a summary of educational and control activities, survey results, and recommendations for the following season. Data generated during this project will be used to evaluate the effectiveness of management efforts and to determine the best course of action for future management of Loon Lake. We view this as a demonstration project; the management district will be pleased to participate in data sharing arrangements that DNR may establish in coming years in order to assist other communities with their efforts to control AIS.

Existing & Proposed Partnerships

Ongoing Partnerships

The long-term process of attempting to control hybrid watermilfoil on Loon Lake has grown into a collaborative effort involving not only the Loon Lake – Wescott Management District. The team now includes active DNR and USACoE participation, as these public agencies see the potential public good from our education, research, and control efforts.

Over time, Mr. Chad Cason of Wisconsin Lake & Pond Resource (formerly of Aquatic Biologists) has acquired immeasurable experience with our peculiar circumstances and provided invaluable input on moving forward with our efforts. For these reasons, we anticipate that Wisconsin Lake & Pond Resource will remain our consultant/contractor throughout the duration of the grant period. We will contact the DNR and other project partners should conditions require a change during the grant period.

In addition, the Wisconsin DNR and USACoE now have a formal agreement to provide technical assistance and monitoring of large scale herbicide treatments in Wisconsin, including those funded by AIS grants. This agreement covers John Skogerboe's time and involvement in various projects, including Loon Lake. This agreement also covers the analysis of herbicide residues on projects where the DNR is interested in understanding more about the efficacy and long term persistence of herbicides. Because of John' Skogerboe's continued involvement with the Loon Lake project, the hybrid milfoil issues, and the plan to use a combination of liquid herbicides, Loon Lake will be included in this monitoring program.

We have also recently sought partial funding from a special one-time environmental improvement fund in Shawano County, which could possibly serve to diminish the project reimbursement actually requested from the DNR. A determination on County financial participation will not be available until later this spring, so the Management District is seeking the maximum contribution available from the DNR AIS grant program at this time. While we are confident that we are approaching genuine long-term control of the unique watermilfoil in Loon Lake, there is a sense the current level of support by property owners is unsustainable without additional financial assistance.

Volunteer Involvement

The volunteer members of the Loon Lake – Wescott Management District will take additional steps to address exotic species prevention and education. Members have pledged volunteer time and money to assist with this project. The following volunteer activities are planned over the next three years:

- A majority of the volunteer time will be spent continuing the boat-landing monitoring program started in 2004. Members of the District have participated in the DNR Clean Boats, Clean Waters program and will use the knowledge gained to maintain an ongoing monitoring program at the public boat pier on Loon Lake. Monitoring will occur every weekend from Memorial Day through Labor Day. Volunteers will also distribute DNR educational literature to public lake users. The literature will focus on preventing the spread of exotic species. As volunteers distribute literature, they will also conduct watercraft inspections. Watercraft inspections will be tailored to preventing exotic species introductions and documenting potential watercraft infestations. Each week the results of inspections will be returned to a volunteer coordinator who will compile all data and maintain the volunteer schedule.
- Volunteers will also take a proactive approach to exotic species management by assisting the USACoE, ERDC, DNR, and the consultant/contractor with monitoring of exotic species, dissolved oxygen, temperature and herbicide residue in the lake.
- The value of all District volunteer contributions is outlined on the attached itemization.

Project's Role in Planning & Management of Loon Lake and Beyond

In the simplest terms, without this project Loon Lake would likely become infested by a hybrid watermilfoil monoculture that would irrevocably disrupt recreation, aesthetics, the native plant community, and the lake ecosystem as a whole. As disconcerting, there is a strong potential for this invasive species to spread farther if unchecked. Continuation of this project is vital to the long-term health and value of Loon Lake and the entire Wolf River watershed.

It is important to reiterate that – over the past several years of controlled experimentation – chemical treatments have proven a useful tool in managing hybrid watermilfoil in Loon Lake. Often the acreage of infestation was reduced, and in almost every case milfoil density was significantly diminished. District members have noted that re-expansion of the watermilfoil typically follows the initial treatment; fall treatments have proven useful in resisting re-establishment of watermilfoil beds that might otherwise winter over and expand farther during the following spring. Therefore, this control measure will be considered while we study the watermilfoil reproduction further.

A number of aquatic plant surveys have been conducted on Loon Lake during the course of milfoil treatments over the past several years. These results have shown a tremendously positive response from the native aquatic plant community. Prior to the 2003 treatments recreational activities on Loon Lake were impaired due to the density of the milfoil beds. Since then boating, fishing, swimming, hunting, and bird-watching (osprey, loons, and other visitors) have all benefited from the reduced density of watermilfoil. In addition, quantitative monitoring in recent years has shown that water quality was not adversely impacted by the large-scale herbicide treatments; water quality has actually improved in recent years.

As is evident, the Loon Lake – Wescott Management District has taken an active role at hybrid watermilfoil control. Several members have spent countless hours working on the control program. It is a testament to these efforts that reliable long-term control of the hybrid watermilfoil to sub-nuisance levels may be well within reach, lessening the danger that it will be transmitted to other water bodies in Wisconsin.

As a sign of our commitment, we have cobbled together various resources to satisfy the local match, including Management District funds from regular annual levies, ongoing commitments from Wescott Township, donated services from the USACoE, and volunteer contributions from members of our community. We are concurrently soliciting funding for the Use of Environmental Impact Fees from the Shawano County Transmission Line Fund for 2009 to 2011; any award granted through that program will be used to supplement and off-set costs in the proposed project budget. We are not confident that the Management District's local match will allow a reduction of the DNR's commitment from the maximum allowable grant reimbursement, but that is our goal if possible.

We firmly believe that many hands make light work, and we welcome participation from many parties to address our challenge in Loon Lake. Through this very focused project, we hope to contribute to improving the general environment of Shawano County and the State of Wisconsin.

Project Satisfaction of Grant Ranking Criteria

This section of the grant application has been provided to assist reviewers in ranking this project for potential funding. A response addresses each ranking criterion below, followed by an estimate of the eligible points for that criterion [in brackets]. According to our understanding of the ranking criteria, the estimated project score is 22 to 24 out of a possible 29.

Pre-Qualification Items

Water body has adequate public boating access per NR 1.91. YES

Required permits have been applied for. YES

Ranking Criteria

A) The degree to which the project includes a prevention and control strategy

1) *There is a local prevention program, such as "Clean Boats, Clean Waters" in place, or the project includes the implementation of such a program to prevent reintroduction following control. [2]*

A Clean Boats, Clean Waters program has been in place since 2004 and actively implemented since 2005. The current grant request includes funds to assist with on-going implementation of the existing program to discourage the spread of AIS to or from Loon Lake. [2]

2) *Project includes a long-term post-control monitoring plan to detect re-emergence/re-infestation. [2]*

The project does include a plan for long-term monitoring. In 2007, our past monitoring efforts were integrated with critical USACoE research programs. [2]

3) *Project includes a plan for how re-emergence/re-infestation will be managed. [2]*

The project does include a plan to address re-infestation as have past efforts. In particular, the project team will study the turion reproductive process to evaluate the optimal timing and means of AIS control applications. [2]

B) The degree to which the project will prevent the spread of aquatic invasive species

1) *AIS is an isolated infestation where there are no other infestations of the targeted AIS within 5 miles. [1]*

Based on the observed plant physiology and the recalcitrance of the watermilfoil to previous control approaches, genetic tests were conducted in 2003 that determined the infestation consists of a hybrid watermilfoil; in 2007 it was determined that this AIS utilizes an alternative means of reproduction not previously identified in other hybrids. The presence of this hybrid variety has

not been noted in nearby lakes, where control efforts have not encountered similar persistence. Due to its unique character, the hybrid watermilfoil in Loon Lake is now part of an ongoing USACoE study. [1]

2) *Project location is in the headwaters of a drainage system, upstream of un-infested waters. [1]*

Loon Lake is located in the headwaters of the Shawano lakes chain, which ultimately drains into the Wolf River. While downstream water bodies contain both native watermilfoil and EWM, the hybrid variety does not appear to have infested downstream water bodies yet. This project is intended to diminish that likelihood. [1]

3) *Project location is likely a major source or destination for AIS spread as indicated by high public use, including: significant use by transient boaters, one or more fishing tournaments (involving boats) annually, and/or a popular destination for recreational boaters. [2]*

If nearby water bodies have not been infested by the hybrid watermilfoil, it is not for lack of use. Loon Lake is located within a cluster of lakes popular for boating and fishing. During busy summer weekends, many transient boaters access Loon Lake at the public pier. Personal-powered watercraft are often observed entering/exiting the lake via Loon Creek. [2]

C) The degree to which the project protects or improves the aquatic ecosystem's diversity, ecological stability or recreational uses

1) *Project plan implementation includes actions to restore the native community. [1]*

The establishment of the invasive hybrid watermilfoil by 2000 wrought havoc on the native submergent plant community, which had experienced a dramatic die-back earlier this decade. Experimental herbicide treatments over the past several years – particularly in early 2007 – have disrupted the ability of the watermilfoil to crowd out other plants native to the lake; last year, the native plant community was obviously more diverse and widespread, even to the naked eye. Ongoing surveys over the next several years will monitor the positive trend. Stocking of native species does not appear necessary at this time, but may be considered in the future if it becomes necessary. [1]

2) *Project plan implementation utilizes native biocontrol to <u>specifically</u> target the AIS (examples – weevils for EWM, beetles for PL, predatory fish to eat gobies, carp, etc.). [1]*

Native biocontrol has been attempted in the past and failed miserably. After weevils were introduced in 2000, the watermilfoil quickly decreased. It is not at all clear the reduction of watermilfoil was a result of the weevil introduction; there was already a substantial native population that dwarfed the introduction. Despite promising early signs, the die-back also affected the weevil population, which did not appear to recover. With diminished predation, the

watermilfoil recovered later in the season. Whereas before the watermilfoil had consisted of a mix of EWM, native, and hybrid varieties, the hybrid proved the true beneficiary of the weevil treatment and today makes up 95% of the watermilfoil in Loon Lake. [0-1]

3) *Project area has a high degree of native biodiversity or is critical habitat, as expressed by an above state average aquatic or wetland plant FQI; the presence of a listed aquatic species (NHI endangered, threatened, or watch); is an ERW or ORW water; designated as a Sensitive Area; or is within or adjacent to a State Natural Area, State Park, other publicly owned unique natural area or an area owned/managed by a non-profit conservation organization (e.g., Nature Conservancy). [1]*

The entire western shore of Loon Lake is taken up by a wetland complex owned by the Loon Lake – Wescott Management District. The wetland area remains unimproved and is only modestly utilized for recreational purposes (mainly in the winter). The intention of the association is to protect the wetlands from development which would disrupt the lake ecosystem and disturb the tranquil aesthetic for residents. In addition, Osprey Island has become a critical nesting habitat for osprey and loons which depend on healthy populations of aquatic prey. [1]

D) The stage of the infestation in the water body

1) *Target invasive species is found in 25% or less of the water body surface area or total animal biomass. [2]* ***OR*** *Target invasive species composes greater than 25% of the water body surface area or total animal biomass. [1]*

Over the past several years of experimental control measures, the coverage of hybrid watermilfoil has fluctuated between about 15% and 30% of the lake's acreage. Herbicide treatments in 2007 and 2008 diminished the hybrid watermilfoil coverage to a point where less than 25% of the water body will be treated in 2009. We expect to further decrease coverage over the next few years. [2]

E) The degree to which the project will be likely to result in successful long-term control

1) *Follow-up surveys will be conducted on a yearly basis (for at least 3 years after implementation) to determine the effectiveness of the plan implementation. [1]*

Follow-up annual surveys are planned. In addition, the USACoE is undertaking more detailed analysis of the plant community in Loon Lake as part of research efforts directed at control of invasive species. [1]

2) *The project recommends using sound methodology as demonstrated by the following: an approved statewide management plan for a specific AIS, or presenting peer reviewed literature supporting the proposed control methodology, or presenting documentation of a successful application of the proposed control methodology in a similar water body. [1]*

The project will be conducted in accordance with the existing management plan completed in 2003 and approved by the DNR. Experimental herbicide treatments over the past several years have allowed us to improve our approach for long-term full-scale implementation. An update to the management plan is targeted for 2010 but may be delayed due to DNR and USACoE suggestions to fully evaluate results of the full-scale herbicide treatments before committing to a "permanent" strategy. [1]

3) *Project design employs multiple and redundant strategies to achieve control objectives (e.g., handpulling in combination with chemical treatment and biocontrol). [2]*

In addition to the liquid herbicide treatments for long-term control of the hybrid watermilfoil in Loon Lake, property owners will rake milfoil fragments out from around their docks that were caused by auto-fragmentation of the milfoil. Property owners will also hand pull milfoil that is found growing around the docks, because these areas are not chemically treated. These methods will help prevent spreading of the watermilfoil. [2]

Various strategies have been utilized over time to control nuisance plants in Loon Lake: weed-cutter harvesting (introduced AIS); weevils (ineffectual, may have harmed plant diversity); granular herbicides (limited effectiveness); liquid herbicides (most effective); and test herbicide treatment beds (learned effectiveness depends on various application factors). In effect, we have volunteered as the guinea pig for new approaches, and thereby subsidized the public's understanding of hybrid watermilfoil AIS control.

F) The availability of public access to and public use of the water body

4) *The lake or river has more than the minimum public boating access as defined in NR 1.91 (4), (5), or (6). [1]* ***OR*** *Wetland has public access. [1]*

To meet the minimum public boating access definition of 1 car-trailer unit per 30 acres, Loon Lake (305 acres) currently has 15 parking spaces available at the public boat launch. However, Town of Wescott intends to expand this area to 20 parking spaces (See attached letter from the Town of Wescott Planning and Zoning Commissioner) [1]

5) *The lake or river exceeds maximum access as defined in NR 1.91 (4), (5), or (6). [1]*

In order to exceed the maximum access definition of 1 car-trailer unit per 15 acres, Loon Lake would need 20 parking spaces. As of May 1, 2009 our boat landing will meet this criteria [1]

6) *The water body is a heavily used public destination as indicated by significant other public access opportunities such as swimming beaches, park lands, public piers, multiple resorts, etc. [1]*

As noted previously, Loon Lake is frequently visited by transient boaters and fishers. In addition, the Girl Scouts camp located on the southeast shore sports a swimming beach which is frequented by out-of-town guests throughout the summer.

There is public pier at the boat landing which is handicap accessible and is extensively used by the public as a place for them to fish and swim from. [1]

G) The degree to which the proposed project complements other management efforts

a. The project is specifically recommended in a plan other than the sponsor's (county land and water resource plan, local comprehensive plan, or other non-state plan). [1]

Loon Lake is included in the Shawano County Lakes and Streams Plan. [1]

b. Project overlaps or dovetails with another stakeholder group's (lake association, another unit of government, non-profit natural resource group) AIS educational or management effort. [1]

The project dovetails with USACoE ongoing research into control of recalcitrant AIS and has thus been inducted into an active research program on hybrid watermilfoil. A small but significant portion of the project tasks and costs will be borne by the Corps, with the understanding that the lessons learned at Loon Lake will contribute to AIS educational and management efforts in Wisconsin and elsewhere. Per attached letter from John Skogerboe, the USACoE has committed to 3 years of ongoing research at Loon Lake. [1]

H) Community support and commitment, including past efforts to control aquatic invasive species

a. The project has financial support from additional management units, interest groups, or organizations committing >10% of the total project costs. [1]

We understand the Town of Westcott will contribute $5,000 per year to the project, although that must be reauthorized annually. USACoE is providing substantial financial support for turion and hybrid watermilfoil research on Loon Lake. The Town of Westcott and USACoE financial support is greater than 10% of the total project cost. [1]

b. Project implements one or more recommendations from a DNR-approved plan that was funded by an AIS Subchapter II Grant or a Lake Planning Grant in the last five years. [1]

The project continues implementation of the 2003 management plan which was funded by a Lake Planning Grant. The first three years of plan implementation were funded in part by a 2004 AIS grant, prior to our apprehension of just how recalcitrant Loon Lake's strain of hybrid

watermilfoil is. It was recently decided that the update to the existing management plan would be considered by the DNR as "in progress" given current USACoE research into treatment of the hybrid milfoil. Much of the long-range planning for Loon Lake will depend on the results of this research. [1]

I) Whether the sponsor has previously received a grant for a similar project for the same water body

a. The sponsor has not received an AIS grant for a similar project on this water body(s) in the last five years. [1]

We received an AIS grant in 2004 (#ALPT-007-04, May 2004 to Dec 2007) which was utilized for the development/experimental phase of this project. We hope to use a new grant for optimization and full-scale implementation of the management plan. [1]

J) Whether the project involves multiple water bodies

a. Project covers multiple water bodies (a county-wide, town-wide effort) and involves multiple management groups (multiple lake associations, districts, etc.). [2] ***OR*** *Project involves a chain of lakes or a watershed under a single management group. [1]*

The project applies to Loon Lake only, although control of the hybrid watermilfoil in Loon Lake will provide some confidence that other nearby lakes in the Shawano chain and the Wolf River regional watershed will also be protected. [0]