## **General Project Information**

Project ID:	LPL-924-04
Name:	FOREST LAKE IMPROVEMENT ASSOCIATION: Forest Lake Watershed & Lake Management Plan
Туре:	Lakes Grant
Subtype:	Large Scale Lake Planning
Status:	COMPLETE
Start Date:	4/1/2004
End Date:	6/30/2007
Purpose:	The Forest Lake Improvement Assn proposes to conduct a project focused on developing a comprehensive appraisal and plan document, to include:
	<ol> <li>2 year Water Quality appraisal via USGS procedure</li> <li>An aquatic plant survey including mapping of EWM and ID of all species</li> <li>Nutrient Budget including watershed modeling for P delivery</li> <li>Lake sediment characterization</li> <li>Community survey of shore owners and lake users</li> <li>Prepare a final report (Lake Management Plan).</li> <li>Specific actions are identified within the original planning grant proposal</li> </ol>

#### **Objective:**

Comments: Grantee is FOREST LAKE IMPROVEMENT ASSOCIATION

- Outcome:
- Study Design:

#### **QA Measures:**

#### People

Name	Role	Status	Start Date	End Date	Organization	Comments
Forest Lake Improvement Associ	GRANT_RECIPI ENT	ACTIVE	4/1/2004	6/30/2007	Forest Lake Improvement Association	
Project Statuses						

Date	Reported By	Status	Comments			
Actions						
Action		Detailed Description		Start Date	End Date	Status
Lake Managem	ent Plan Development	10099704		4/1/2004		PROPOSED

The Forest Lake Improvement Assn proposes to conduct a project focused on developing a comprehensive appraisal and plan document, to include: 1. 2 year Water Quality appraisal via USGS procedure 2. An aquatic plant survey including mapping of EWM and ID of all species 3. Nutrient Budget including watershed modeling for P delivery 4. Lake sediment characterization 5. Community survey of shore owners and lake users 6. Prepare a final report (Lake Management Plan).	4/1/2004	COMPLETE
10099704	4/1/2004	PROPOSED
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## **Monitoring Stations**

Station ID	Name	Comments
203076	Forest Lake - Deep Hole	

### **Assessment Units**

WBIC	Segment	Local Name	Official Name		
8900	1	Forest Lake	Forest Lake		

#### Lab Account Codes

Account Code	Description	Start Date	End Date
Forms			
Form Code	Form Name		

## Methods

Method Code

# Method Description

## Fieldwork Events

Start Date	Status	Field ID	Station ID	Station Name
5/3/2004 11:20	COMPLETE	L-1	203076	Forest Lake - Deep Hole
5/3/2004 11:25	COMPLETE	L-2	203076	Forest Lake - Deep Hole
6/9/2004 13:45	COMPLETE	40	203076	Forest Lake - Deep Hole
6/9/2004 13:50	COMPLETE	41	203076	Forest Lake - Deep Hole
7/14/2004 10:50	COMPLETE	1	203076	Forest Lake - Deep Hole
7/14/2004 10:55	COMPLETE	2	203076	Forest Lake - Deep Hole
8/18/2004 10:25	COMPLETE	27	203076	Forest Lake - Deep Hole

8/18/2004 10:30	COMPLETE	28	203076	Forest Lake - Deep Hole
2/23/2005 14:50	COMPLETE	19	203076	Forest Lake - Deep Hole
2/23/2005 14:59	COMPLETE	20	203076	Forest Lake - Deep Hole
4/19/2005 10:35	COMPLETE	L-9	203076	Forest Lake - Deep Hole
4/19/2005 10:40	COMPLETE	L-10	203076	Forest Lake - Deep Hole
6/9/2005 15:20	COMPLETE	25	203076	Forest Lake - Deep Hole
6/9/2005 15:28	COMPLETE	26	203076	Forest Lake - Deep Hole
7/19/2005 13:00	COMPLETE	32	203076	Forest Lake - Deep Hole
7/19/2005 13:13	COMPLETE	33	203076	Forest Lake - Deep Hole
8/23/2005 11:30	COMPLETE	9	203076	Forest Lake - Deep Hole
8/23/2005 11:40	COMPLETE	10	203076	Forest Lake - Deep Hole

### Documents

Title	Description	Author	Published	Comments
Aquatic Macrophyte Assessment of Forest Lake, Fond Du Lac Co., WI [2006]	Healthy EWM is still present in the lake based on this visual survey and the plant samples collected from transect sites 1, 2, 5, 8, 20 (June 2006) and sent to me for plant identification verification by C. Kendzierski. Herbicide treatments appeared to have been effective in reducing milfoil growth. Healthy stands of EWM plants were observed during this brief assessment, however, it should be noted that these were small in size. Those EWM stands of greatest concern were found at transect sites 4 and 20.	D. Timothy Gerber	7/11/2006	
Aquatic Macrophyte Assessment of Forest Lake, Fond DuLac Co., WI	Water clarity and DO were low relative to previous years during the month of July (water quality data for 1994-1996). Presumably, these lower levels are due do herbicide treatments used to control rnilfoil growth. Large amounts of decaying plant material introduce both nutrients (e.g., nitrogen, phosphorus) and organics into the lake water, which encourages increased algae growth in the water column (reduced water clarity and light levels) and increased aerobic bacterial degradation (lower DO).Continued secchi-depth and DO monitoring is important. Milfoil was present in the lake in the form of dead and decaying plants. Herbicide treatments appeared to be effective in reducing milfoil growth, at least for the	D. Timothy Gerber	8/5/2003	

short term. No large, healthy milfoil plants were observed during this brief assessment, however, it should be noted that small, healthy stem fragments (as described above) were found on the west side of the lake. Presumably, these fragments have the potential to recolonize the lake, therefore, their growth and distribution should be monitored. Monitoring milfoil sites using snorkeling or scuba equipment provides the best visual assessment of rnilfoil growth and distribution. Continued monitoring is important since, with the decrease in milfoil, large areas of the lake sediment are open for plants to colonize. If milfoil recolonizes disturbed areas, it can potentially become a nuisance in Forest Lake. Milfoil management is a site specific process. Different treatment strategies (i.e., mechanical, chemical, biological) for rnilfoil have been outlined in Hoffman & Kearns (1997). Each strategy has its advantages and disadvantages (see attached copy of recommendations for Eurasian Water Milfoil). Each of these strategies have been used to manage milfoil in Forest Lake with varying degrees of success. Benthic barriers (mechanical) and hand cutting were used in the early 1990's. The hard cutting followed with benthic barriers was a very effective strategy for killing milfoil but the treatment area was small. Beetles were used (biological) with little success (Kenziorski, pers. comm.). Recent herbicide treatments (chemical) seem to be effective in the short term, however, note the associated disadvantages of chemical treatment (see Hoffman & Kearns 1997).

Aquatic Macrophyte Survey of Forest Lake, Fond DuLac Co., Wisconsin [2004]	In conclusion, herbicide treatments appeared to have been very effective in reducing exotic milfoil growth, at least for the short term. No large, healthy M spicatum plants were observed along transects during this survey, however, it should be noted that small, healthy stem fragments (as described above) were found on the shore of the lake. Presumably, these fragments have the potential to recolonize the lake. It is recommended that the plants in Forest Lake continue to be monitored to determine I) if and where M spicatum is growing and 2) the health and abundance of native aquatics for the entire lake in genera!. Monitoring and prevention of M spicatum reestablishment is the best method for control (Hoffman & Kearns 1997). Monitoring milfoil sites using snorkeling or scuba equipment provides a good visual assessment of milfoil growth and distribution. Milfoil management is a sitespecific process. Different treatment strategies (i.e., mechanical, chemical, biological) for milfoil have been outlined in Hoffman & Kearns (1997). Each strategy has its advantages and disadvantages.	D. Timothy Gerber	8/27/2004	
Forest Lake Sediment Analysis 2009	Email correspondence between the authors listed and Phosphorus sediment data.	William Rose & Casmir Kendziorski	1/5/2009	

Management of Aquatic Plants in Forest Lake	It is evident from this survey that the greatest management concerns for Forest Lake are exotic aquatic plants; in particular Eurasian water milfoil and purple loosestrife. Due to its aggressive growth and rapid dispersal, Eurasian water milfoil represents a substantial threat to Wisconsin's Lakes. Because Eurasian water milfoil grows quickly to the water's surface and forms dense canopies that block sunlight, it can displace nearly all native submergent species. This has been attributed to significant declines in the habitat diversity of lakes. The dense canopy and surface mat formations of mature Eurasian water milfoil beds can greatly inhibit recreational values such as swimming boating and fishing. Eurasian water milfoil has also been linked to declines in fishery quality, invertebrate abundance and water quality (Pullman, 1993) Purple loosestrife can be found in a wide variety of habitats from shallow water to moist soils. Like Eurasian water milfoil it is a very aggressive plant that cart displace many native wetland plants including cattails (Typha.1pp.). Unlike cattails, purple loosestrife bas little food or cover value for wildlife (Bonnan, et. al. 1997). When food and cover disappear, so do the species that depend on it.	Aquatic Biologists, Inc.	12/18/2002	
Nutrient Budget [Forest Lake, Fond du Lac County, 2007]	The 2007 estimated phosphorus load from external sources is 30% lower than the load estimated in 1993 by the FLIA, and 43% lower than the load reported by DNR in 1970. Does this indicate that the phosphorus loading to Forest Lake has declined substantially over the past decades? Probably not. The reduced load is likely the result of the more accurate methodologies used to calculate the loading. The Trophic State Analysis described in the next section also does not suggest a long-term trend in lake water quality conditions.	Wisconsin Department of Natural Resources	1/15/2015	
Property Owner Survey Results [Forest Lake, Fond du Lac County, 2005]	Results of a sociological survey done on the property owners on Forest Lake.	Forest Lake Improvement Association, Inc.	5/15/2005	

Summary of water-quality data for Forest Lake for 2005 [Fond du Lac County]	Water quality data for Forest Lak the course of 2005.	ke over Bill F	Rose 4/1	18/2006		
Budget						
Combined Budgets: Combined WSLH: Combined Total:	\$0.00					
Funding						
Organization	Source		Туре	Amount	Start Date	End Date