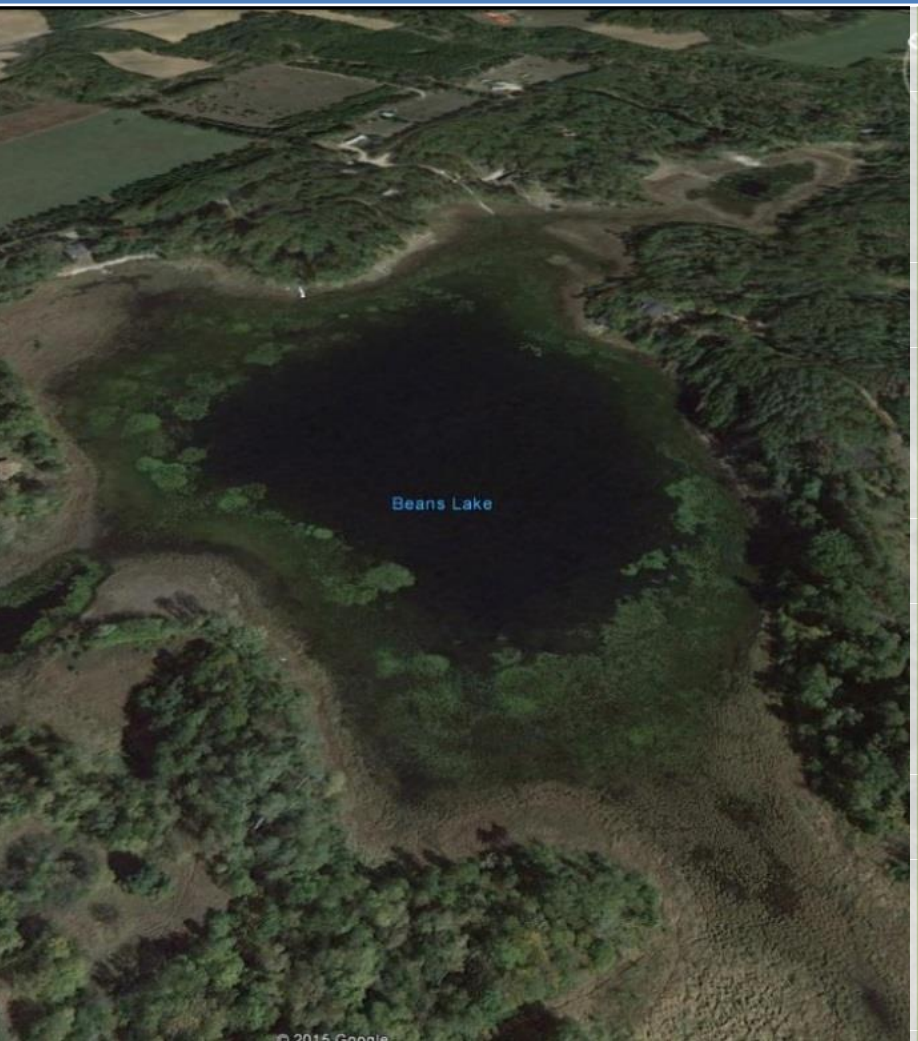
2016

Beans Lake, Waushara County, Wisconsin
Lake Management Plan



Prepared in 2016 by staff from the Center for Watershed Science and Education
University of Wisconsin-Stevens Point

Center for Watershed Science and Education
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Lake Management Plan for Beans Lake, Waushara County, Wisconsin

The Beans Lake Management Plan was developed with input from residents and lake users at a series of four public planning sessions held at the Wild Rose Community Center and the Wild Rose Village Hall in Wild Rose, Wisconsin on January 8, February 10, March 10 and April 14, 2015. The inclusive community sessions were designed to learn about and identify key community opportunities, assets, concerns, and priorities. Representatives of state and local agencies, as well as nonprofit organizations, also attended the planning sessions to offer their assistance to the group in developing a strategic lake management plan (LMP).

The plan was accepted by lake planning participants on: September 25, 2015.
Date

The plan was adopted by the Town of Wautoma on March 29, 2017.
Date

The plan was accepted by Waushara County on: January 6, 2016.
Date

The plan was approved by the Wisconsin Department of Natural Resources on: March 29, 2017.
Date

Any changes, updates or revisions to this document after the last date on this page do not reflect contributions made or approved by University of Wisconsin-Stevens Point.

A special thanks to all who helped to create the 2016 Beans Lake Management Plan and provided guidance during the plan's development.

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Contents

Overarching Vision for Beans Lake

Beans Lake will be a quiet refuge where residents enjoy abundant clean water, great swimming, and good fishing amongst the wildlife that thrives there.

Introduction

Beans Lake is a 21-acre seepage lake located in the township of Wautoma, north of the city of Wautoma. Its watershed, with almost one-half in forested land and one-quarter in agriculture, extends into the Town of Rose. The lake's shorelands are minimally developed and comprised mostly of long-term residents. In 2015, community members came together in partnership with Waushara County and technical professionals to develop this lake management plan (LMP). In recent years, there has been a notable decline in water levels in Beans Lake.

The purpose of this plan is to provide a framework for the protection and improvement of Beans Lake. Implementing the content of this LMP will enable citizens and other supporters to achieve the vision for Beans Lake now and in the years to come. The plan was developed by community members who learned about the lake and identified features important to the Beans Lake community to help guide the fate of the lake. It is a dynamic document that identifies goals and action items for the purpose of maintaining, protecting and/or creating desired conditions in a lake and identifies steps to correct past problems, improve on current conditions, and provide guidance for future boards, lake users, and technical experts. Because many entities are involved in lake and land management, it can be challenging to navigate the roles, partnerships and resources that are available; the planning process and content of this plan have been designed to identify where some key assistance exists. The actions identified in this LMP can serve as a gateway for obtaining grant funding and other resources to help implement activities outlined in the plan.

Who can use the Beans Lake Management Plan, and how can it be used?

- **Individuals**: Individuals can use this plan to learn about the lake they love and their connection to it. People living near Beans Lake can have the greatest influence on the lake by understanding and choosing lake-friendly options to manage their land and the lake.
- **Friends of Beans Lake:** This plan provides a future Beans Lake organization with a well thought-out plan for the whole lake and lists options that can easily be prioritized. Annual review of the plan could also help the organization to realize its accomplishments. Resources and funding opportunities for management activities are made more available by placement of goals into the lake management plan, and partners can be identified to help achieve their goals for Beans Lake.

- **Neighboring lake groups, sporting and conservation clubs**: Neighboring groups with similar goals for lake stewardship can combine their efforts and provide each other with support, improve competitiveness for funding opportunities, and make efforts more enjoyable.
- **The township of Wautoma and the city of Wautoma:** The municipalities can utilize the visions, wishes, and goals documented in this lake management plan when considering town-level management planning or decisions within the watershed that may affect the lake.
- **Waushara County:** County professionals will better know how to identify needs, provide support, base decisions, and allocate resources to assist in lake-related efforts documented in this plan. This plan can also inform county board supervisors in decisions related to Waushara County lakes, streams, wetlands, and groundwater.
- **Wisconsin Department of Natural Resources**: Professionals working with lakes in Waushara County can use this plan as guidance for management activities and decisions related to the management of the resource, including the fishery, and invasive species. Lake management plans help the Wisconsin Department of Natural Resources to identify and prioritize needs within Wisconsin's lake community, and decide where to apply resources and funding. A well thought-out lake management plan increases an application's competitiveness for funding from the State – if multiple Waushara County lakes have similar goals in their lake management plans, they can join together when seeking grant support to increase competitiveness for statewide resources.

Background

One of the first steps in creating this plan was to gather and compile data about the lake and its ecosystem to understand past and current lake conditions. This was done alongside 32 other lakes as part of the Waushara County Lakes Project. The Waushara County Lakes Project was initiated by citizens in the Waushara County Watershed Lakes Council who encouraged Waushara County to work in partnership with personnel from UW-Stevens Point to assess 33 lakes in the county. This effort received funding from the Wisconsin Department of Natural Resources' Lake Protection Grant Program. There was insufficient data available for many of the lakes to evaluate current water quality, aquatic plant communities, invasive species, and shorelands. The data that were available had been collected at differing frequencies or periods of time, making it difficult to compare lake conditions. Professionals and students from UW-Stevens Point and the Waushara County Land Conservation Department conducted the Waushara County Lakes Study and interpreted data for use in the development of lake management plans. Data collected by citizens, consultants, and professionals at the Wisconsin Department of Natural Resources were also incorporated into the planning process to provide a robust set of information from which informed decisions could be made. Sources of information used in the planning process are listed at the end of this document.

Several reports from the Beans Lake Study and the materials associated with the planning process and reports can be found on the Waushara County website: http://www.co.waushara.wi.us/ (select "Departments", "Zoning and Land Conservation", "Land Conservation", and "Lake Management Planning"). Unless otherwise noted, the data used in the development of this plan were detailed in the 2014 report *Waushara County Lakes Study - Beans Lake*, University of Wisconsin-Stevens Point.

The Planning Process

The planning process included a series of four public planning sessions held between January and April 2015 at the Wild Rose Community Center and Wild Rose Village Hall. The Beans Lake Planning Committee consisted of primarily of property owners. Technical assistance during the planning process was provided by the Waushara County Conservationist, the Waushara County Community, Natural Resources and Economic Development Extension Agent, and professionals from the Wisconsin Department of Natural Resources (WDNR), Golden Sands Resource Conservation & Development Council, Inc. (RC&D), University of Wisconsin-Extension (UWEX), and the University of Wisconsin-Stevens Point Center for Watershed Science and Education (CWSE).

Participation in the planning process was open to everyone and was encouraged by letters sent directly to Beans Lake waterfront property owners and by press releases in local newspapers. In addition, members of the planning committee were provided with emails about upcoming meetings which could be forwarded to others. To involve and collect input from as many people as possible, a topic-specific survey related to the subject of each upcoming planning session was made available prior to each planning session. Property owners and interested lake users were notified about the surveys and how to access them (via postcards mailed to waterfront property owners and press releases in local newspapers). The surveys could be filled out anonymously online, or paper copies were available upon request. Survey questions and responses were shared at the planning sessions and can be found in Appendix E. Lake User Survey Results.

Guest experts and professionals attended the planning sessions. They presented information and participated in discussions with participants to provide context, insight and recommendations for the lake management plan, including environmental and regulatory considerations. This information was organized with the survey results into discussion topics, which included: the fishery and recreation; the aquatic plant community; water quality and land use; shoreland health; and communication. After learning about the current conditions of each topic, planning committee members identified goals, objectives, and actions for the lake management plan that were recorded by professionals from UW-Stevens Point. Planning session notes and presentations are available on the Waushara County website.

Implementing the content of this lake management plan will enable citizens and other supporters to achieve the vision for Beans Lake now and in the years to come.

Goals, Objectives and Actions

The following goals, objectives and associated actions were derived from the values and concerns of citizens interested in Beans Lake and members of the Beans Lake Management Planning Committee, as well as the known science about Beans Lake, its ecosystem and the landscape within its watershed. A lake management plan is a living document that changes over time to meet the current needs, challenges and desires of the lake and its community. Implementing and regularly updating the goals and actions in the Beans Lake Management Plan will ensure that the vision is supported and that changes or new challenges are incorporated into the plan. **The goals, objectives and actions listed in this plan should be reviewed annually and updated with any necessary changes.**

Although each lake is different, the Wisconsin Department of Natural Resources requires that each comprehensive LMP address a specific list of topics affecting the character of a lake, whether each topic has been identified as a priority or as simply something to preserve. In this way, every LMP considers the many aspects associated with lakes. These topics comprise the chapters in this plan and have been grouped as follows:

In-Lake Habitat and a Healthy Lake

Fish Community—fish species, abundance, size, important habitat and other needs
Aquatic Plant Community—habitat, food, health, native species, and invasive species
Critical Habitat—areas of special importance to the wildlife, fish, water quality, and aesthetics of the lake

Landscapes and the Lake

Water Quality and Quantity—water chemistry, clarity, contaminants, lake levels
Shorelands—habitat, erosion, contaminant filtering, water quality, vegetation, access
Watershed Land Use—land use, management practices, conservation programs

People and the Lake

Recreation—access, sharing the lake, informing lake users, rules
Communication and Organization—maintaining connections for partnerships, implementation, community involvement
Updates and Revisions—continuing the process
Governance—protection of the lake, constitution, state, county, local municipalities

List of Goals

Goal 1. Improve the quality of the fishery on Beans Lake through sustainable management practices.

Goal 2. Reduce but protect native aquatic plants in the lake.

Goal 3. Prevent AIS from becoming established in Beans Lake.

Goal 4. Identify and inform others of quality habitat in and near Beans Lake.

Goal 5. Monitor water quality to understand trends. Reduce local nutrient delivery to Beans Lake.

Goal 6. Healthy shorelands around Beans Lake will be protected and less healthy shorelands will be improved.

Goal 7. Watershed property owners and Town and City board members will implement land management practices and decisions that minimize impacts to Beans Lake.

Goal 8. Beans Lake will not be adversely impacted by fluctuating water levels.

Goal 9. Restore more of Beans Lake's recreational opportunities.

Goal 10. Maintain communications with residents and others associated with lake stewardship.

Goal 11. This plan will be kept up to date and adjusted if needed, for new topics associated with Beans Lake.

The following goals/objectives were identified as 'high priority':

Goal 8. Beans Lake will not be adversely impacted by fluctuating water levels.

Objective 8.1. Understand and monitor water quantity related to natural and human-induced reductions in and near Beans Lake.
Objective 8.2. Lake stewards will be represented in decisions that affect the water levels in Beans Lake.
Objective 8.3. Land owners will make choices that minimize impacts to the amount of water in Beans Lake.

Goal 1. Improve the quality of the fishery on Beans Lake through sustainable management practices.

Objective 1.1. Work with WDNR to solve dissolved oxygen issues in Beans Lake.

Goal 3. Prevent AIS from becoming established in Beans Lake.

Objective 3.1. Promote community awareness about invasive species prevention.
Objective 3.2. Closely monitor for new AIS species in Beans Lake.

Lead persons and resources are given under each objective of this plan. These individuals and organizations are able to provide information, suggestions, or services to accomplish objectives and achieve goals. The following table lists organizations and their common acronyms used in this plan. This list should not be considered all-inclusive – assistance may also be provided by other entities, consultants, and organizations.

Resource	Acronym
WDNR Citizen Lake Monitoring Network	CLMN
Central Sands Water Action Coalition	CSWAC
UWSP Center for Watershed Science and Education	CWSE
Wisconsin Department of Agriculture, Trade and Consumer Protection	DATCP
North Central Conservancy Trust	NCCT
USDA Natural Resources Conservation Service	NRCS
Golden Sands Resource Conservation & Development Council, Inc.	RC&D
United States Geological Survey	USGS
University of Wisconsin Extension	UWEX
University of Wisconsin-Stevens Point	UWSP
Waushara County Land Conservation Department	WCLCD
Waushara County Watershed Lakes Council	WCWLC
Wisconsin Department of Natural Resources	WDNR
Wisconsin Department of Transportation	WDOT
UWSP Wisconsin Environmental Analysis Laboratory	WEAL

Contact information for organizations and individuals who support lake management in Waushara County can be found in Appendix A. Waushara County Lake Information Directory.

In-Lake Habitat and a Healthy Lake

Many lake users value Beans Lake for its wildlife and good water quality. These attributes are all interrelated; the health of one part of the lake system affects the health of the rest of the plant and animal community, the experiences of the people seeking pleasure at the lake, and the quality and quantity of water in the lake. Habitat is the structure for a healthy fishery and wildlife community. It can provide shelter for some animals and food for others.


Photo: Bob Korth

Lake habitat occurs within the lake, along all of its shorelands, and even extends into its watershed for some species. Many animals that live in and near the lake are only successful if their needs – food, a healthy environment, and shelter – are met. Native vegetation including wetlands along the shoreline and adjacent to the lake provides habitat for safety, reproduction, and food, and can improve water quality and balance water quantity. Some lake visitors such as birds, frogs, and turtles use limbs from trees that are sticking out of the water for perches or to warm themselves in the sun. Aquatic plants infuse oxygen into the water and provide food and shelter for waterfowl, small mammals, and people. The types and abundance of plants and animals that comprise the lake community also vary based on the water quality, and the health and characteristics of the shoreland and watershed. Healthy habitat in Beans Lake includes the aquatic plants, branches, and tree limbs above and below the water.

Fish Community

A balanced fish community has a mix of predator and prey species, each with different food, habitat, nesting substrate, and water quality needs in order to flourish. Activities in and around a lake that can affect a fishery may involve disturbances to the native aquatic plant community or substrate, excessive additions of nutrients or harmful chemicals, removal of woody habitat, shoreline alterations, and/or an imbalance in the fishery. Shoreland erosion can cause sediment to settle onto the substrate, causing the deterioration of spawning habitat. Habitat can be improved by allowing shoreland vegetation to grow, minimizing the removal of aquatic plants, providing fallen trees or limbs in suitable areas, and protecting wetlands and other areas of critical habitat.

People are an important part of a sustainable fish community; their actions on the landscape and the numbers and sizes of fish taken out of the lake can influence the entire lake ecosystem. Putting appropriate fishing regulations in place and adhering to them can help to balance the fishery with healthy prey and predatory species, can be adjusted as the fish community changes, and can provide for excellent fishing. Managing a lake for a balanced fishery can result in fewer expenses to lake stewards and the public. While some efforts may be needed to provide a more suitable environment to meet the needs of the fish, they usually do not have to be repeated on a frequently reoccurring basis. Protecting existing habitat such as emergent, aquatic, and shoreland vegetation, and allowing trees that naturally fall into the lake to remain in the lake are free of cost. Alternatively, restoring habitat in and around a lake can have an up-front cost, but the effects will often continue for decades. Costs in time, travel, and other expenses are associated with

routine efforts such as fish stocking and aeration. Ideally, a lake contains the habitat, water quality, and food necessary to support the fish communities that are present within the lake and provide fishing opportunities for people without a lot of supplemental effort and associated expenses to maintain these conditions.

Summary of Management Planning Session Discussion – April 28, 2015

According to the Wisconsin Department of Natural Resources, there is no current fisheries data for Beans Lake. Historically, the lake has experienced winter fish kills due to low dissolved oxygen concentrations during periods of ice cover.

Table 1. History of fish stocking by the Wisconsin Department of Natural Resources.

Year	Species	Age Class	Number Stocked	Average Length (inches)
1998	LARGEMOUTH BASS	SMALL FINGERLING	1,000	2
1997	LARGEMOUTH BASS	LARGE FINGERLING	1,085	2
1997	NORTHERN PIKE	LARGE FINGERLING	100	8
1996	LARGEMOUTH BASS	FINGERLING	1,000	2.5
1995	LARGEMOUTH BASS	FINGERLING	1,000	3.9
1993	NORTHERN PIKE	FINGERLING	110	8.6
1992	NORTHERN PIKE	FINGERLING	100	8
1992	LARGEMOUTH BASS	FINGERLING	1,000	3.9
1991	NORTHERN PIKE	FINGERLING	102	7
1989	NORTHERN PIKE	FINGERLING	100	9
1987	NORTHERN PIKE	FRY	90,000	1
1987	NORTHERN PIKE	FINGERLING	300	9
1987	LARGEMOUTH BASS	FINGERLING	1,365	5
1986	NORTHERN PIKE	FINGERLING	111	9
1986	NORTHERN PIKE	FRY	30,000	1
1986	LARGEMOUTH BASS	FINGERLING	200	4
1985	NORTHERN PIKE	FINGERLING	110	9
1984	NORTHERN PIKE	FINGERLING	85	9
1982	LARGEMOUTH BASS	FINGERLING	2,000	3
1982	NORTHERN PIKE	FRY	25,000	
1979	NORTHERN PIKE	FRY	20,000	
1978	LARGEMOUTH BASS	FINGERLING	6,500	3
1978	NORTHERN PIKE	FRY	20,000	
1975	NORTHERN PIKE	FRY	50,000	
1975	LARGEMOUTH BASS	FINGERLING	6,500	3

Guiding Vision for the Fish Community

The planning committee for Beans Lake envisions a lake with a balanced and sustainable fishery.

Goal 1. Improve the quality of the fishery on Beans Lake through sustainable management practices.
We will know we have achieved this goal when the current fishery surveys indicate a healthy, balanced and fishable community with self-sustaining populations.

Objective 1.1. Work with Fisheries Biologists with the WDNR to resolve dissolved oxygen issues in Beans Lake.

Actions	Lead person/group	Resources	Timeline
Work with WDNR fisheries biologist to determine whether an aerator would be suitable for Beans Lake (look into types of aerators, costs, location of aeration equipment, etc.). Speak with Wilson Lake group to see how they managed aeration strategies on their lake.	Dave Bartz, WDNR Fisheries Biologist	Wilson Lake Protection and Rehabilitation District	
If development and management of an aeration strategy is successful, consider following up with fish stocking for Beans Lake.	Dave Bartz, WDNR Fisheries Biologist		After aeration

Objective 1.2. Work to improve fish habitat along shoreland and near-shore areas.

Actions	Lead person/group	Resources	Timeline
When fielding questions about the Beans Lake fishery, inform individuals about the importance of woody habitat in shallow water near-shore areas of Beans Lake and encourage placement in appropriate areas.	Dave Bartz, WDNR Fisheries Biologist	WDNR WCLCD	Ongoing
To improve fish habitat, continue to protect and restore shoreland areas and avoid shoreland alterations.	Shoreland property owners	UWEX Lakes	Ongoing

Aquatic Plants

Aquatic plants provide the forested landscape within Beans Lake. They provide food and habitat for spawning, breeding, and survival for a wide range of inhabitants and lake visitors including fish, waterfowl, turtles, amphibians, as well as invertebrates and other animals. They improve water quality by releasing oxygen into the water and utilizing nutrients that would otherwise be used by algae. A healthy lake typically has a variety of aquatic plant species which creates diversity that makes the aquatic plant community more resilient and can help to prevent the establishment of non-native aquatic species.

Aquatic plants near shore and in shallows provide food, shelter and nesting material for shoreland mammals, shorebirds and waterfowl. It is not unusual for otters, beavers, muskrats, weasels, and deer to be seen along a shoreline in their search for food, water, or nesting material. The aquatic plants that attract the animals to these areas contribute to the beauty of the shoreland and lake.

During the 2011 aquatic plant survey, eleven species of aquatic plants were found in Beans Lake, which was below average when compared with other lakes in the Waushara County Lakes Study (McNelly 2012). However, Beans Lake had above- average biodiversity (based on the number of species surveyed and the number of individuals per site) when compared with the other lakes in the Waushara County Lakes Study. The greatest plant species diversity was observed in the northeastern and southwestern corners of the lake. The plants encountered most frequently were muskgrasses, flat-stem pondweed and common waterweed.

The dominant plant species in the survey was muskgrass (*Chara* spp.), followed by flat-stem pondweed (*Potamogeton zosteriformis*) and common waterweed (*Elodea canadensis*). Muskgrass is a favorite food source for a wide variety of waterfowl. Beds of muskgrass offer cover and food for fish, especially young trout, largemouth bass, and smallmouth bass. Flat-stem pondweed can also be an important food source for waterfowl and deer. Branches and stems of common waterweed provide food and cover for fish (Borman et al., 2001). No non-native aquatic plant species were found. This is a good indicator of overall aquatic health within the lake. The lack of non-native species also demonstrates diligence by lake users in cleaning watercraft before entering the lake to prevent non-native species transfer. The amount of disturbed lake bed from raking or pulling of plants should be minimized, since these open spaces are simply “open real estate” for aquatic invasive plants to establish. Monitoring for AIS should be conducted routinely throughout the lake.

More detailed information can be found in the Aquatic Plant Survey of Beans Lake, Waushara County; Waushara County Lakes Study – Beans Lake; and, Appendix C. Aquatic Plants.

Guiding Vision for Aquatic Plants in Beans Lake

Beans Lake will have a healthy and diverse native aquatic plant community while still allowing for recreational access.

Goal 2. Reduce but protect native aquatic plants in the lake.

Objective 2.1. Avoid disturbing native aquatic plants as much as possible.

Actions	Lead person/group	Resources	Timeline
Minimize the amount of exposed sediment from the removal of native vegetation via educational materials (provided in annual mailing, website re:available mitigation methods).	Shoreland property owners	WCWLC	Ongoing
Evaluate harvesting of native aquatic plants in Beans Lake and discontinue or limit if possible.	Shoreland property owners	WDNR Lake Manager	Ongoing
If harvesting is conducted, establish specific areas for harvesting that do not include sensitive habitat and are not in water less than 3 feet deep.		WDNR Lake Manager Consultant	If necessary
Encourage property owners to refrain from using fertilizers. Implement runoff management techniques such as rain gardens, rain barrels and increased shoreland vegetation on shoreland properties to limit the growth of dense plant beds (see Shoreland Section of this plan).	Interested citizen	UWEX Lakes WCWLC	Ongoing

Aquatic Invasive Species (AIS)

Aquatic invasive species are non-native aquatic plants and animals that are most often unintentionally introduced into lakes by lake users. This most commonly occurs on trailers, boats, equipment, and from the release of bait. No aquatic invasive plant species were identified during the 2011 aquatic plant survey; however, the non-native invasive banded mystery snail was documented in the lake by the Wisconsin Department of Natural Resources in 2013.

If an invasive plant or animal species is observed or suspected by any lake user, he/she is encouraged to refer to Appendix B. Rapid Response Plan for information on how to report it.

Guiding Vision for Aquatic Invasive Species

Proactive approaches to invasive species will prevent it from becoming a problem in Beans Lake.

Goal 3. Prevent AIS from becoming established in Beans Lake.

Objective 3.1. Promote community awareness about invasive species prevention.

Actions	Lead person/group	Resources	Timeline
Organize educational AIS identification program for Beans Lake shoreland owners to learn to identify AIS.	Volunteer	RC&D	2016
Provide educational materials about AIS at boat launch.	Volunteer	RC&D	Ongoing
Distribute placemats with information about AIS to local churches, businesses and organizations that show interest.	Volunteer	UWEX Lakes	Ongoing
Include information about the threat of AIS in a welcome packet or newsletter and remind lake users to clean plants off trailers, drain motors and live wells, and wash boats before and after entering/leaving the lake.	Volunteer	UWEX Lakes WCWLC	Ongoing
Provide information about AIS to rental properties to remind lake users to clean plants off trailers, drain motors and live wells, and wash boats before and after entering/leaving the lake.	Volunteer	UWEX RC&D	Ongoing

Objective 3.2. Monitor and quickly eradicate AIS in Beans Lake.

Actions	Lead person/group	Resources	Timeline
Learn how to identify and monitor for aquatic invasive species (AIS).	Volunteer	RC&D	Ongoing
Monitor routinely for early AIS outbreaks. If one is found or suspected, refer to Appendix B. Rapid Response Plan.	Volunteer	RC&D	Ongoing

Objective 3.3. Eradicate or control terrestrial invasive species.

Actions	Lead person/group	Resources	Timeline
Explore removal methods for terrestrial upland invasive species (buckthorn, garlic mustard).	Volunteer	RC&D	Ongoing

Critical Habitat

Special areas harbor habitat that is essential to the health of a lake and its inhabitants. In Wisconsin, critical habitat areas are identified by biologists and other lake professionals from the Wisconsin Department of Natural Resources in order to protect features that are important to the overall health and integrity of the lake, including aquatic plants and animals. While every lake contains important natural features, not all lakes have official critical habitat designations. Designating areas of the lake in this way creates special protections for these areas, and recognizes these areas by mapping and sharing information about them so many can know the locations and importance of areas that could be vulnerable to damage by human activity. Critical habitat designations on a lake can help lake groups and landowners plan waterfront projects to protect habitat that will help to ensure the long-term health of the lake.

Photo: Eddie Heath

Although Beans Lake does not have an official critical habitat area designation, there are areas within Beans Lake that are important for fish and wildlife. Natural, minimally-impacted areas with woody habitat such as logs, branches, and stumps; areas with emergent and other forms of aquatic vegetation; areas with overhanging vegetation; and wetlands are elements of good quality habitat. Identifying other important areas around the lake that are important habitat and informing lake users of their value can help raise awareness for the protection of these areas.

Guiding Vision Beans Lake's Critical Habitat

Sensitive areas in and around Beans Lake will be enhanced and protected from degradation.

Goal 4. Identify and inform others of quality habitat in and near Beans Lake.

Objective 4.1. Explore options for official identification of important habitat areas to inform others and to better protect habitat in the lake.

Actions	Lead person/group	Resources	Timeline
Request critical habitat designations from WDNR.	Volunteer	WDNR Lake Specialists	2016
If critical habitat is designated on Beans Lake, communicate to property owners, visitors, and Town Board as to why these areas are important.	Volunteer	WDNR Critical Habitat Report	As needed

Landscapes and the Lake

Land use and land management practices within a lake's watershed can affect both its water quantity and quality. While forests, grasslands, and wetlands allow a fair amount of precipitation to soak into the ground, resulting in more groundwater and good water quality, other types of land uses may result in increased runoff and less groundwater recharge, and may also be sources of pollutants that can impact the lake and its inhabitants. Areas of land with exposed soil can produce soil erosion. Soil entering the lake can make the water cloudy and cover fish spawning beds. Soil also contains nutrients that increase the growth of algae and aquatic plants. Development on the land may result in changes to natural drainage patterns and alterations to vegetation on the landscape, and may be a source of pollutants. Impervious (hard) surfaces such as roads, rooftops, and compacted soil prevent rainfall from soaking into the ground, which may result in more runoff that carries pollutants to the lake. Wastewater, animal waste, and fertilizers used on lawns, gardens and crops can contribute nutrients that enhance the growth of algae and aquatic plants in our lakes. Land management practices can be put into place that better mimic some of the natural processes, and reduction or elimination of nutrients added to the landscape will help prevent the nutrients from reaching the water. In general, the land nearest the lake has the greatest impact on the lake water quality and habitat.

Shoreland vegetation is critical to a healthy lake's ecosystem. It helps improve the quality of the runoff that is flowing across the landscape towards the lake. It also provides habitat for many aquatic and terrestrial animals including birds, frogs, turtles, and many small and large mammals. Healthy shoreland vegetation includes a mix of tall grasses/flowers, shrubs, and trees which extend at least 35 feet landward from the water's edge. Shorelands include adjacent wetlands, which also serve the lake by allowing contaminants to settle out, providing shelter for fish and wildlife, and decreasing the hazard of shoreline erosion by providing a shoreland barrier from waves and wind.

The water quality in Beans Lake is the result of many factors, including the underlying geology, the climate, and land management practices. Since we have little control over the climate and cannot change the geology, changes to land management practices are the primary actions that can have positive impacts on the lake's water quality. The water quality in Beans Lake was assessed by measuring different characteristics including temperature, dissolved oxygen, water clarity, water chemistry, and algae. All of these factors were taken into consideration when management planning decisions were made.

Water Quality

All survey respondents indicated water quality has an impact on their personal enjoyment and economic value of the lake. Although divided on perceptions of current water quality, three-fourths of the survey respondents felt the water quality had decreased during their time with the lake, and most often identified water level decline as the reason.

Beans Lake's water quality was assessed during the 2010-2012 lake study using a number of measures including temperature, dissolved oxygen, water chemistry, and nutrients (phosphorus and nitrogen). Each of these interrelated measures plays a part in the lake's overall water quality. Water quality data collected in past years was also reviewed to determine trends in Beans Lake's water quality. Overall, Beans Lake had good water quality.

Dissolved oxygen is an important measure in Beans Lake because a majority of organisms in the water depend on oxygen to survive. Oxygen is dissolved into the water from contact with air, which is increased by wind and wave action. Algae and aquatic plants also produce oxygen when sunlight enters the water, but the decomposition of dead plants and algae reduces oxygen in the lake. Dissolved oxygen concentrations were quite low below the ice on February 19, 2012. These concentrations are sufficient to support some species of fish, but would result in stress or fish kills of cold water species if concentrations dropped much lower.

Water clarity measured in Beans Lake during the study was considered good (Figure 1). For Beans Lake, water clarity ranged from 6.5 feet to 12 feet over the monitoring period. When compared to historic data, the average water clarity measured during the study was better in the months of June, July, August, and September, and was worse in May and November. Water clarity in Beans Lake was typically poorer during the late summer. This corresponds with the period when algae growth is greatest.

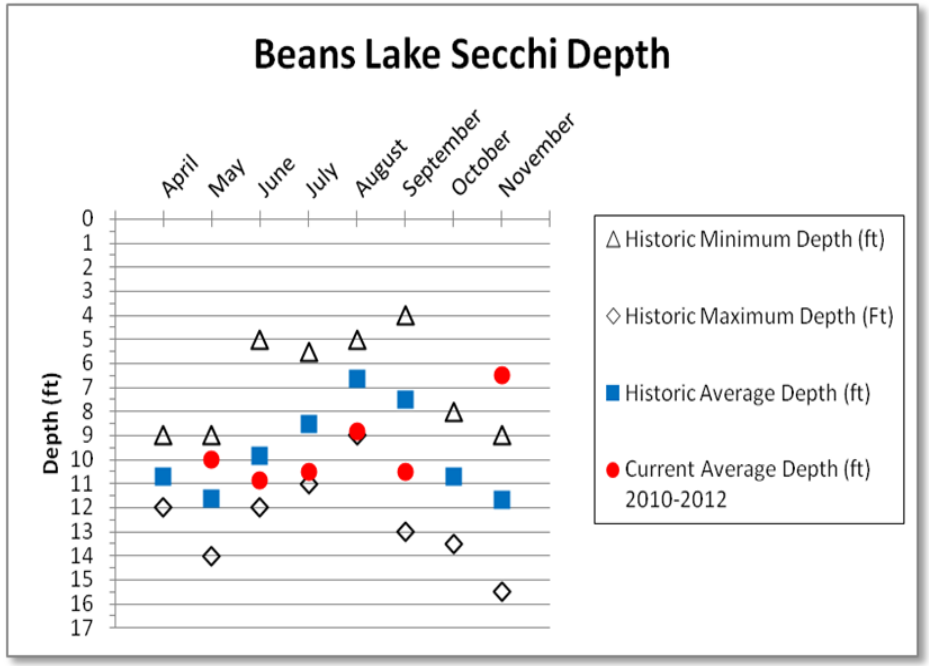


Figure 1. Water clarity in Beans Lake, 2010 and historic.

Chloride, sodium and potassium concentrations are commonly used as indicators of how a lake is being impacted by human activity. The presence of these compounds where they do not naturally occur indicates sources of water contaminants. Concentrations of the pollutant indicators chloride, sodium, potassium, and inorganic nitrogen were low, and atrazine (an herbicide) was not detected in samples collected from Beans Lake.

Phosphorus is an element that is essential in trace amounts to most living organisms, including aquatic plants and algae. Sources of phosphorus can include naturally-occurring phosphorus in soils and wetlands, and

groundwater. Common sources from human activities include soil erosion, animal waste, fertilizers, and septic systems. Although a variety of compounds are important to biological growth, phosphorus receives so much attention because it is commonly the "limiting nutrient" in many Wisconsin lakes. Due to its relatively short supply compared to other substances necessary for growth, relatively small increases in phosphorus result in significant increases in aquatic plants and algae.

Nutrients (phosphorus and nitrogen) are important measures of water quality because they are used for growth by algae and aquatic plants. Phosphorus is an element that is essential in trace amounts to most living organisms, including aquatic plants and algae. Sources of phosphorus can include naturally-occurring phosphorus in soils, wetlands and groundwater. Common sources from human activities include soil erosion, animal waste, fertilizers and septic systems. Although a variety of compounds are important to biological growth, phosphorus gets the most attention because it is commonly the "limiting nutrient" in many Wisconsin lakes. Due to its relatively short supply compared to other substances necessary for growth, relatively small increases in phosphorus result in significant increases in aquatic plants and algae. Total phosphorus concentrations for Beans Lake ranged from 37 µg/L to11 µg/L during the study period. The summer median total phosphorus concentrations in Beans Lake were 22 and 17.1 µg/L in 2011 and 2012, respectively. This is below the state phosphorus water quality standard of 40 µg/L for a shallow seepage lake such as Beans Lake, but above the proposed flag value of 15 µg/L. The median total phosphorus concentrations in Beans Lake were higher than average compared with other shallow seepage lakes in the Waushara County Lakes Study. Inorganic nitrogen concentrations were low.

One pound of phosphorus entering a lake can result in up to 500 pounds of algal growth! (Vallentyne, 1974)

Managing nitrogen, phosphorus and soil erosion throughout the Beans Lake watershed is one of the keys to protecting the lake itself. Near shore activities that may increase the input of phosphorus to the lake include applying fertilizer, removing native vegetation (trees, bushes and grasses), mowing vegetation, and increasing the amount of exposed soil. Nitrogen inputs to Beans Lake can be controlled by using lake-friendly land management decisions, such as the restoration of shoreland vegetation, elimination/reduction of fertilizers, proper management of animal waste and septic systems, and the use of water quality-based management practices.

Guiding Vision for Water Quality in Beans Lake

Beans Lake will maintain good water quality and water clarity.

Goal 5. Monitor water quality to understand trends. Reduce local nutrient delivery to Beans Lake.

Objective 5.1. Routinely monitor water quality for lake and human health. Maintain median summer phosphorus concentrations of less than 20 ug/L and average chlorophyll-*a* (algae) concentrations less than 5 ug/L.

Actions	Lead person/group	Resources	Timeline
Encourage Beans Lake residents to test their drinking/well water for nitrates and atrazine. Consider a group sample submission.	Volunteer	WC UWEX WEAL or other state certified labs	Annually
Establish a lake water quality monitoring program. Water clarity should be measured at least every three weeks between June 1 and Sept. 15.	Volunteer	CLMN Coordinator	Annually during the growing season.
Collect samples for the analysis of phosphorus and chlorophyll-*a* (algae) to evaluate changes over time. Samples should be collected a minimum of 3 times/summer.	Volunteer	CLMN Coordinator	Annually June-Sept 15
Monitor dates of ice-on/ice-off and submit the information to the state database.	Volunteer	WDNR	Annually
Explore possibilities for further monitoring initiatives, such as surface and groundwater monitoring for contaminants, with findings provided to stakeholders.	Interested citizen	WDNR Lake Manager WEAL Consultants	Ongoing
Disseminate information to Beans Lake residents regarding water quality.	Volunteer	CLMN Coordinator	Ongoing
Submit lake data to the WDNR SWIMS database for long term storage.	Volunteer	CLMN Coordinator	Ongoing

Objective 5.2. Develop strategies to ensure healthy shorelands remain intact and improvements are made to those that have disturbance.

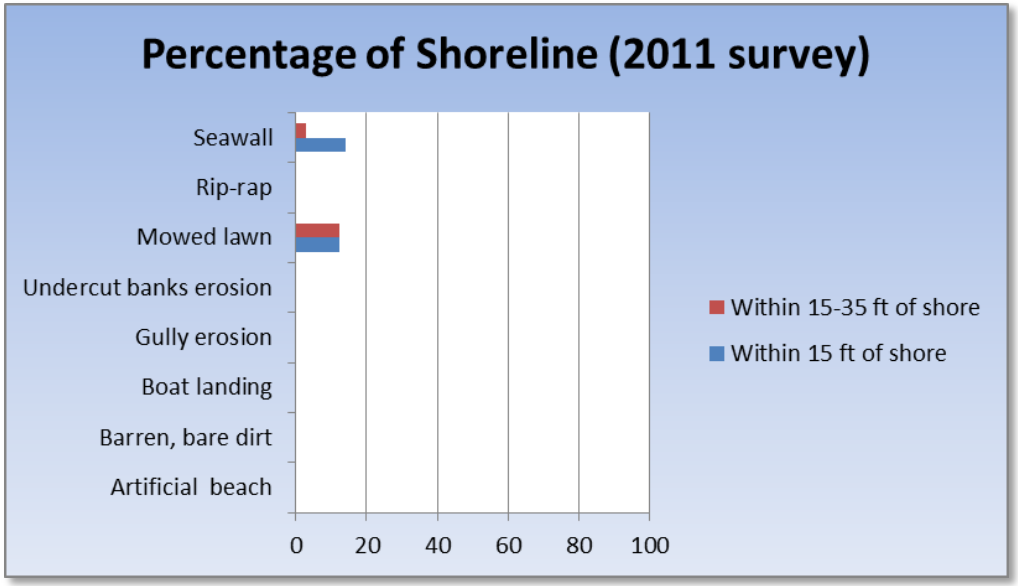
Actions	Lead person/group	Resources	Timeline
See **Shorelands** section.			

Shorelands

Shoreland vegetation is critical to a healthy lake ecosystem. It provides habitat for many aquatic and terrestrial animals including birds, frogs, turtles, and small and large mammals. It also helps to improve the quality of the runoff that is flowing across the landscape towards the lake. Healthy shoreland vegetation includes a mix of unmowed grasses/flowers, shrubs, trees, and wetlands which extends at least 35 feet landward from the water's edge.

To better understand the health of the Waushara County lakes, shorelands were evaluated. The survey inventoried the type and extent of shoreland vegetation. Areas with erosion, rip-rap, barren ground, sea walls, structures and docks were also inventoried. A scoring system was developed for the collected data to provide a more holistic assessment. Areas that are healthy will need strategies to keep them healthy, and areas with potential problem areas and where management and conservation may be warranted may need strategies for improvement. The scoring system is based on the presence/absence and abundance of shoreline features, as well as their proximity to the water's edge. Values were tallied for each shoreline category and then summed to produce an overall score. Higher scores denote a healthier shoreline with good land management practices. These are areas where protection and/or conservation should be targeted. On the other hand, lower scores signify an ecologically unhealthy shoreline. These are areas where management and/or mitigation practices may be desirable for improving water quality and habitat.

The summary of scores for shorelands around Beans Lake is displayed on the map in Appendix D. Shoreland Survey – 2011. Long stretches of Beans Lake's shorelands are in good shape, but some portions have challenges that should be addressed. There were no stretches of Beans Lake shoreland ranked as poor.



Shoreland ordinances were enacted to improve water quality and habitat, and to protect our lakes. To protect our lakes, county and state (NR 115) shoreland ordinances state that vegetation should extend at least 35 feet inland from the water's edge, with the exception of an optional 30 foot viewing corridor for each shoreland lot. With a total of 7 lakefront lots, 210 feet (3%) of disturbed shoreland is permitted. Based on the 2011 shoreland inventory, 13% (1,064 feet) of Beans' shoreland was mowed lawn. Although some properties were grandfathered in when the ordinance was adopted in 1966, following this guidance will benefit the health of the lake and its inhabitants.

Guiding Vision for Beans Lake's Shorelands

Beans Lake will have healthy and naturally vegetated shorelands.

Goal 6. Healthy shorelands around Beans Lake will be protected and less healthy shorelands will be improved. Over the next five years, there will be a 10% increase (approximately 85 feet) in healthy shoreland vegetation.

Objective 6.1. Allow for access to the lake, but beyond the access path, maintain and protect healthy shorelands and improves areas where the shorelands are mowed to the edge.

Actions	Lead person/group	Resources	Timeline
Distribute welcome packets to all new shoreland property owners. Packets should contain information regarding the importance of healthy shoreland habitat and steps to restore areas near or surrounding the lake.	Waushara County	WCWLC WC UWEX	As needed
If desired, seek assistance for formal restoration of shoreland vegetation.	Shoreland property owners	WCLCD Consultants WDNR Healthy Lakes grants	Ongoing
Support property owners interested in conservation easements, purchase of development rights, etc.	Interested property owners	NCCT WDNR Lake Protection grants Knowles-Nelson Stewardship Funds	As needed

Watershed Land Use

It is important to understand where Beans Lake's water originates in order to understand the lake's health. During snowmelt or rainstorms, water moves across the surface of the landscape (runoff) towards lower elevations such as lakes, streams, and wetlands. The land area that contributes runoff to a lake is called the surface watershed. Groundwater also feeds Beans Lake; its land area may be slightly different than the surface watershed.

The capacity of the landscape to shed or hold water and contribute or filter particles determines the amount of erosion that may occur, the amount of groundwater feeding a lake, and ultimately, the lake's water quality and quantity. Essentially, landscapes with greater capacities to hold water during rain events and snowmelt slow the delivery of the water to the lake. Less runoff is desirable because it allows more water to recharge the groundwater, which feeds the lake year-round - even during dry periods or when the lake is covered with ice.

A variety of land management practices can be put in place to help reduce impacts to our lakes. Some practices are designed to reduce runoff. These include protecting/restoring wetlands, installing rain gardens, swales, rain barrels, and routing drainage from pavement and roofs away from the lake. Some practices are used to help reduce nutrients from moving across the landscape towards the lake. Examples include manure management practices, eliminating/reducing the use of fertilizers, increasing the distance between the lake and a septic drainfield, protecting/restoring wetlands and native vegetation in the shoreland, and using erosion control practices.

The surface watershed for Beans Lake is 4,557 acres. Primary land use is forest with agriculture scattered throughout (Figure 2).

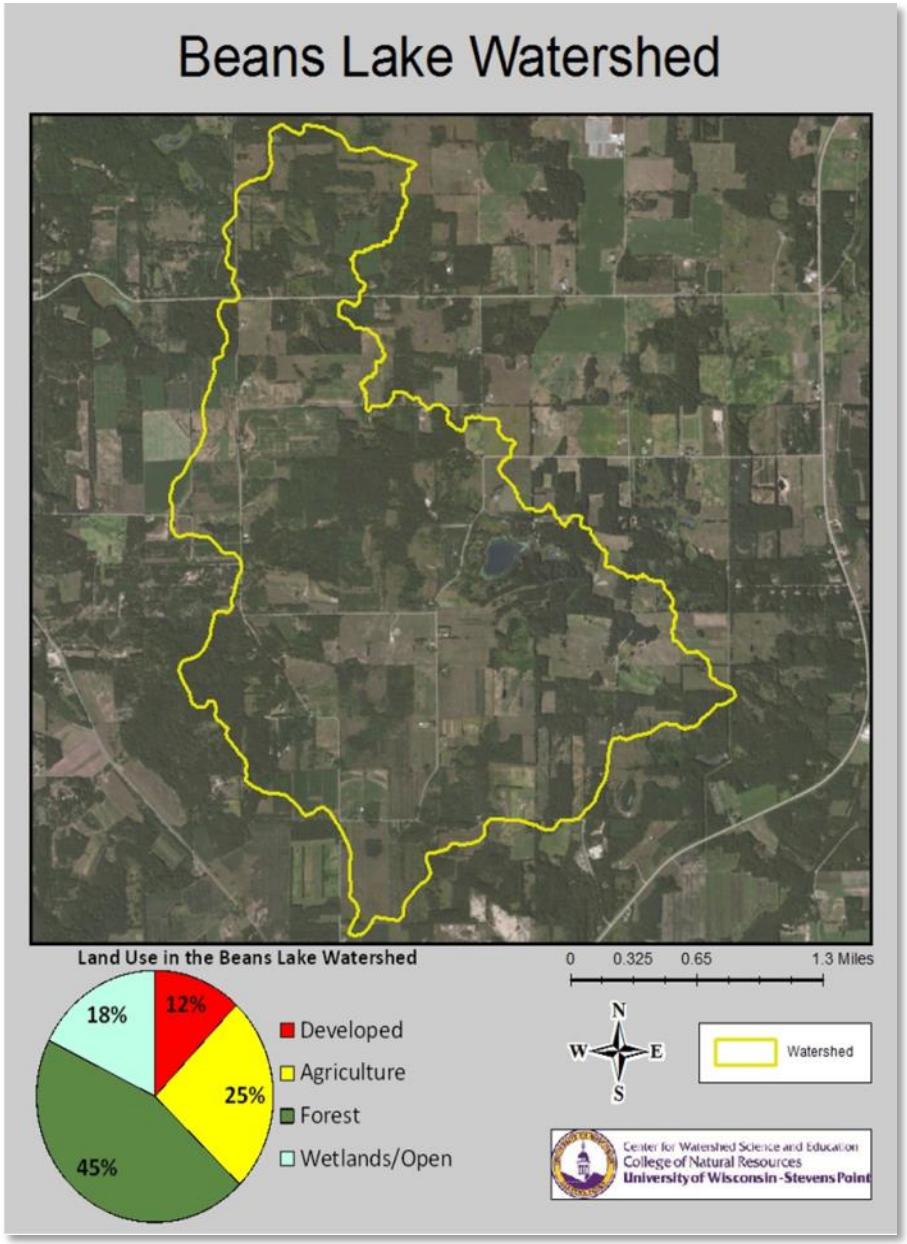
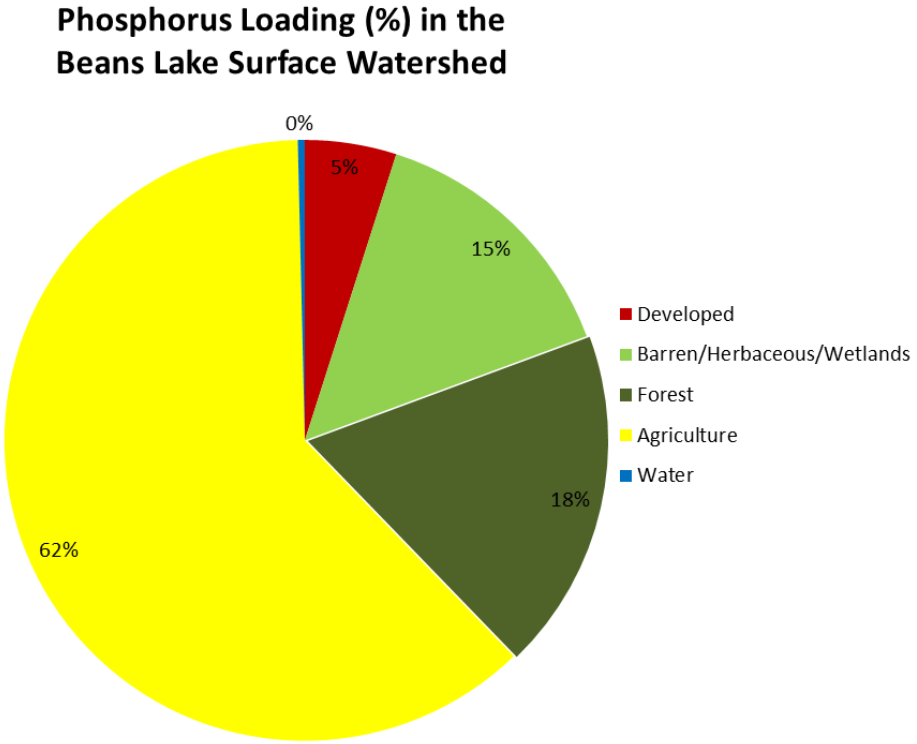


Figure 2. Surface watershed of Beans Lake.

Estimates of phosphorus from the landscape can help to understand the phosphorus sources to Beans Lake. Land use in the surface watershed was evaluated and used to populate the Wisconsin Lakes Modeling Suite (WILMS) model. In general, each type of land use contributes different amounts of phosphorus in runoff and groundwater. The types of land management practices that are used and their distances from the lake also affect the contributions to the lake from a parcel of land. Based on modeling results, forest and agriculture had the greatest percentages of phosphorus contributions from the watershed to Beans Lake. Modeling results indicate that agriculture is the greatest contributor of phosphorus to the lake.



Water Levels

Fluctuating water levels in lakes can be a natural response to changes in climate and weather patterns. In lakes where this occurs at fairly routine intervals over many decades or centuries, the plant and animal life in some of these lakes have adapted and sometimes depend on these fluctuations for survival. However, a large withdrawal of groundwater can potentially enhance these natural fluctuations, affecting the extent and duration of low water levels. In recent decades, fluctuations not related to weather have been measured in some of the lakes in Waushara County.

When water levels are low, lakebed (anything below the ordinary high water mark) is often exposed. Exposed lakebeds remain public property; however, shoreland property owners can access this area. These are fragile areas, which provide habitat when water levels rebound. Therefore, care should be taken to avoid "cleaning up" the exposed area, especially woody structure. In Waushara County, the endangered species, Facette's Locoweed grows on some of the lakes' exposed shorelines. Care should be taken to protect these unique species. Activities such as cutting an area larger than 30 feet wide, driving a motor vehicle on the lakebed, tilling, and chemically treating vegetation if the area is wet should be avoided, if possible. If there is

reason for one of these activities, a permit from the WDNR is required. In addition to water quality and habitat benefits, maintaining healthy shoreland vegetation will help to keep the shoreline from eroding during periods of low water.

Summary of Management Planning Session Discussion – March 10, 2015

Citizens from Beans Lake who attended the management planning session identified low water levels as a major concern for Beans Lake. Dr. George Kraft, UW-Stevens Point Center for Watershed Science and Education (CWSE), presented information on groundwater pumping and lake levels, and answered some of their questions related to groundwater science. The amount of water present in Beans Lake is significantly less than its potential, which can be observed in the following image.

Guiding Vision for Beans Lake's Watershed

The land around Beans Lake will be managed in a way that supports clean and abundant water and a healthy lake.

Goal 7. Watershed property owners and Town and City board members will implement land management practices and decisions that minimize impacts to Beans Lake.

Objective 7.1. Encourage and support healthy land management activities around Beans Lake.

Actions	Lead person/group	Resources	Timeline
The County and the NRCS will encourage and provide support for water quality-based Best Management Practices (BMPs) within the watershed.	WCLCD NRCS	DATCP and other grant funds	Ongoing
Continue to use WCLCD as a resource for land management activities.	Interested land managers	WCLCD	Ongoing
Support landowners interested in the protection of their land via a land conservation program (i.e. conservation easement, purchase of development rights, or sale of land for protection).	Interested citizen	NCCT WDNR Lake Protection grants Knowles-Nelson Stewardship Funds	As needed
Divert road runoff away from Beans Lake on new road projects.	WDOT WC Highway Dept. Towns and Village	WCLCD	As needed
Work with new developments to ensure that storm water is retained on their land.	Towns, Village WC Planning & Zoning	WCLCD	As needed

Goal 8. Beans Lake will not be adversely impacted by fluctuating water levels.

Objective 8.1. Understand and monitor water quantity related to natural and human-induced reductions in and near Beans Lake.

Actions	Lead person/group	Resources	Timeline
Monitor lake levels by working with the WCLCD to Install a monitoring well. Collect measurements on a routine basis, at least monthly. Report monitoring to WCLCD annually.	Volunteer	WCLCD WDNR Water Quality Specialist	2016 and ongoing - monthly
Work with lakes in the nearby area to monitor the high capacity well situation in and near the Town of Wild Rose.	Volunteer	Local lake groups	Ongoing as needed
Disseminate information about groundwater pumping and lake levels to shoreland property owners through emails/mailings.	Volunteer	USGS	Ongoing as needed

Objective 8.2. Lake stewards will be represented in decisions that affect the water levels in Beans Lake.

Actions	Lead person/group	Resources	Timeline
Work with others on the CSWAC by sending a lake group representative to one of their quarterly meetings.	Individuals	CSWAC Wisconsin Lakes	Ongoing – as needed
Keep informed about local and statewide groundwater issues at public hearings and communicating with elected officials.	Individuals	CSWAC Wisconsin Lakes Waushara Co. Board Elected officials	Ongoing – as needed

Objective 8.3. Land owners will make choices that minimize impacts to the amount of water in Beans Lake.

Actions	Lead person/group	Resources	Timeline
Work with landowners to reduce runoff and increase infiltrations and reduce the need for irrigation through crop and farming choices.	WCLCD	DATCP and other grant programs	Ongoing

People and the Lake

The people that interact with the lake are a key component of the lake and its management. In essence, a lake management plan is a venue by which people decide how they would like people to positively impact the lake. The plan summarizes the decisions of the people to take proactive steps to improve their lake and their community. Individual decisions by lake residents and visitors can have positive impacts on the lake and on those who enjoy this common resource. Collaborative efforts may have bigger positive impacts; therefore, communication and cooperation between a lake district, community, and suite of lake users are essential to maximize the effects of plan implementation.

Boating hours, regulations, and fishing limits are examples of principles that are put into place to minimize conflicts between lake users and balance human activities with environmental considerations for the lake.

Recreation

Beans Lake is enjoyed by people who birdwatch, canoe/kayak, and appreciate its beauty. According to the survey, most enjoy the lake with family members. Beans Lake is a 21-acre, no wake lake. There is one public boat landing owned by the Town of Wautoma on the eastern end. The boat launch is narrow and lengthy; therefore, it is best for small boats. The low water levels further preclude access to this shallow lake.

Guiding Vision for Recreation

Beans Lake will remain a place for quality non-motorized recreation with abundant wildlife and great fishing.

Goal 9. Restore more of Beans Lake's recreational opportunities.

Objective 9.1. Explore and advocate for ways to raise water levels in Beans Lake to natural levels.

Actions	Lead person/group	Resources	Timeline
See **Water Levels** section.			

Communication and Organization

Many of the goals outlined in this plan focus on distributing information to lake and watershed residents and lake users in order to help them make informed decisions that will result in a healthy ecosystem in Beans Lake enjoyed by many people. Working together on common values will help to achieve the goals that are outlined in this plan.

Guiding Vision for Communication

The Beans Lake planning committee will maintain and build communications internally ad within the community.

Goal 10. Maintain communications with residents and others associated with lake stewardship.

Objective 10.1. Communicate with other lake residents.

Actions	Lead person/group	Resources	Timeline
Continue the distribution of a welcome packet to all new and current residents of Beans Lake via the WCLWC.	WCLWC	WCLWC	Ongoing
Establish an email list serve of property owners around Beans Lake.	Volunteer	UWEX	2016
Start annual newsletter; post information on the town website.	Volunteer	UWEX Lakes	2016
Announce lake happenings, lake management activities, and events via email/newsletter.	Volunteer	UWEX Lakes	Ongoing
Plan a community "social hour".	Volunteer	UWEX	

Objective 10.2. Stay informed about lake stewardship and network/learn from others.

Action	Lead person/group	Resources	Timeline
Shoreland property owners and lake users can obtain "Lake Tides", a quarterly newsletter about Wisconsin lakes.	Shoreland property owners	UWEX Lakes	As needed
Become a member of Waushara County Watershed Lakes Council.	Shoreland property owner	WC UWEX	Ongoing
Interested shoreland property owners and stewards can attend the Wisconsin Lakes Convention in Stevens Point.	Interested citizens	UWEX Lakes	Annually in spring
Interested shoreland property owners and stewards can participate in the Lake Leaders Institute.	Shoreland property owners	UWEX Lakes	Even calendar years - fall

Updates and Revisions

A management plan is a living document that changes over time to meet the current needs, challenges and desires of the lake and its community. The goals, objectives and actions listed in this plan should be reviewed annually and updated with any necessary changes.

Goal 11. This plan will be kept up to date and adjusted if needed, for new topics associated with Beans Lake.

Objective 11.1. Receive input from and communicate updates with community members.

Actions	Lead person/group	Resources	Timeline
Meet with other shoreland property owners to review the progress on goals in this plan. Check with partners in the plan for updates about their activities.	Interested shoreland property owners or lake users	WC UWEX	2016
Notify partners is potential changes to this plan are needed.	Volunteer	WC UWEX	As needed
Notify organizations that adopted this Beans Lake Management Plan of proposed changes to the plan.	Volunteer	WCLCD Town of Wautoma WDNR Lake Manager	As needed

Governance

Written by Patrick Nehring, Community Agent, UW-Extension Waushara County.

Lake Management Plan Approval

The draft lake management plan will be completed by the lake association/district board, a committee, or a committee of the whole. The final draft of the lake management plan will be approved through a vote of the lake association/district membership or board. The final draft will be approved by the Wisconsin Department of Natural Resources (DNR) to have met the lake management plan requirements and grant requirements. If the DNR requires modifications or additional information before approving the plan, the plan will be changed to meet DNR requirements that are acceptable to the lake association/district. The completed plan that has been approved by the lake association/district and the DNR will be presented to the municipalities containing the lake and Waushara County. The municipality may reference the lake management plan or parts of the plan in their comprehensive plan to guide municipal or county decisions.

Lake Assistance

The lake management plan will enhance the ability of the lake to apply for financial assistance. The lake management plan will be considered as part of the application for grants through the Wisconsin Department of Natural Resources. Current listings of grants available from the DNR can be found at http://dnr.wi.gov/aid/. Waushara County offers technical and financial assistance through the Land Conservation and Zoning Department and University of Wisconsin-Extension Department. Additional assistance may be available from other agencies and organizations, including DNR, UW-Extension Lakes Program, Golden Sands RC&D, Wisconsin Wetlands Association, and Wisconsin Trout Unlimited.

Lake Regulations

The lake management plan is superseded by federal, state, county, and municipal laws and court rulings. However, the lake management plan may influence county and municipal ordinances and enforcement, which is why the lake management plan will be reviewed and included or referenced in the county and related municipal comprehensive plans. Federal laws contain regulations related to water quality, wetlands, dredging, and filling. State laws contain regulations related to water quality, water and lake use, aquatic plants and animals, shoreline vegetation, safety, and development. County laws contain regulations related to development, safety, use, and aquatic plants and animals. Municipal laws contain regulation of use and safety. The court system interprets these rules and regulations. The rules and regulations are primarily enforced by the US Army Corps of Engineers, the Wisconsin Department of Natural Resources, the Waushara County Sheriff Department, and the Waushara County Land Conservation and Zoning Office. If considering development near or on a lake, addressing problem plants or animals, or changing the lake bottom contact the Waushara County Land Conservation & Zoning Department at the Waushara County Courthouse (920) 787-0443 and/or the Wisconsin Department of Natural Resources (888) 936-7463.

Comprehensive Plans

The lake management plan and changes to the plan will be presented to the County and the Municipality for review and possible incorporation into their comprehensive plans. The comprehensive plan is intended to be used to guide future decision. Zoning, subdivision, and official mapping decisions must be consistent with the comprehensive plan.

Process for Inclusion in the Municipal Comprehensive Plan

The Municipal Plan Commission will review the lake management plan to determine if it is consistent with the municipality's comprehensive plan. If the lake management plan is found by the Municipal Plan Commission to not be consistent with the municipality's comprehensive plan, the plan commission may (a) recommend changes to the comprehensive plan or (b) ask that an aspect of the lake management plan be revisited. When the Municipal Plan Commission has reached a consensus that the lake management plan aligns with the municipality's vision, the Municipal Plan Commission will develop an amendment to the comprehensive plan referencing the lake management plan. This could include a reference to the lake management plan under local policies in the agricultural, natural and cultural resources background information and the addition of a recommendation to support the lake management plan and to implement the applicable recommendations contained in the lake management. The Municipal Plan Commission will recommend by resolution that the amendment to the comprehensive plan be adopted by the Municipal Board. A public hearing on the changes to the comprehensive plan will be held with a thirty-day class one notice. The Municipal Board will consider the recommendations from the Municipal Plan Commission. The Municipal Board may (a) adopt the recommendations to the comprehensive plan by ordinance, (b) adopt by ordinance the recommendations with changes, or (c) request the plan commission revisit the changes to the comprehensive plan.

Process for Inclusion in the County Comprehensive Plan

Waushara County Land Use Committee will review the updates to the municipality's comprehensive plan and the lake management plan as referenced by the municipality's comprehensive plan to determine if they are consistent with the County's comprehensive plan. If they are found by the land use committee to not be consistent with the municipality's comprehensive plan, the land use committee may (a) recommend changes to the County's comprehensive plan or (b) ask that an aspect of the lake management plan or municipality's comprehensive plan be revisited. When the Land Use Committee has reached a consensus that the updates to the municipality's comprehensive plan and the lake management plan aligns with the county's vision, and if it is not already consistent, it will develop an amendment to the County's comprehensive plan. The amendment may include a reference to the lake management plan under local policies in the agricultural, natural and cultural resources background information and the addition of a recommendation to support the lake management plan and to implement the applicable recommendations contained in the lake management. The Land Use Committee will recommend the amendment to the comprehensive plan to the Land, Water, and Education Committee.

The Land, Water, and Education Committee will review the amendment and if it concurs with the recommendation from the Land Use Committee, it will make a recommendation to the Planning & Zoning Committee. The Planning & Zoning Committee will hold a public hearing with a thirty-day class one notice. The Planning & Zoning Committee will recommend by resolution the amendment to the comprehensive plan or the amendment with changes be adopted by the County Board.

The County Board will consider the recommendations from the Planning & Zoning Committee. The County Board may (a) adopt the amendment to the comprehensive plan by ordinance, (b) adopt the amendment with changes, or (c) request the Land Use Committee or Planning & Zoning Committee revisit the changes to the comprehensive plan.

Use of the Comprehensive Plan

The lake management plans as referenced in the comprehensive plans will be used by the County and the Municipality to consider certain actions or in the implementation of zoning and other applicable regulations. The County Board of Adjustments and the County Planning and Zoning Committee may reference the lake management plans as referenced in the comprehensive plan when considering zone changes, variances, conditional uses, and suitable mitigation measures. The Municipality and County may take action as called for in the lake management plan as referenced in the comprehensive plan, including changes to zoning and other applicable regulations, shortly after the County's comprehensive plan has been updated or may take action as needed.

The lake organization, lake residents, riparian property owners, or other citizens may request that the Municipality or County take a specific action to implement aspects of the lake management plan as referenced in the comprehensive plan. The lake organization lake residents, riparian property owners, or other citizens may provide written or oral support to encourage the Municipality and County to reference the lake management plan when considering regulation or action that may impact the lake. The lake organization will inform the Municipality and the County when the lake management plan is updated and allow the Municipality and County an opportunity to participate in the update process.

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Appendices

Appendix A. Waushara County Lake Information Directory

Algae - Blue-Green

Contact: Ted Johnson
Wisconsin Department of Natural Resources
Phone: 920-424-2104
E-mail: TedM.Johnson@wisconsin.gov
Website: http://dnr.wi.gov/lakes/bluegreenalgae/

Contact: Wisconsin Department of Health Services
1 West Wilson Street, Madison, WI 53703
Phone: 608-267-3242
Website:
http://www.dhs.wisconsin.gov/eh/bluegreenalgae/contactus.htm

Aquatic Invasive Species/Clean Boats Clean Water

Contact: Golden Sands RC&D
1100 Main St., Suite 150, Stevens Point, WI 54481
Phone: 715-343-6215
Websites: www.goldensandsrcd.org
http://dnr.wi.gov/invasives/

Aquatic Plant Management (Native and Invasive)

Contact: Ted Johnson
Wisconsin Department of Natural Resources
Phone: 920-424-2104
E-mail: TedM.Johnson@wisconsin.gov
Website: http://dnr.wi.gov/lakes/plants/

Aquatic Plant Identification

Contact: Golden Sands RC&D
1100 Main St., Suite 150, Stevens Point, WI 54481
Phone: 715-343-6215
Website: www.goldensandsrcd.org

Contact: Dr. Emmet Judziewicz
UWSP Freckmann Herbarium
TNR 301, 800 Reserve St., Stevens Point, WI 54481
Phone: 715-346-4248
E-mail: ejudziew@uwsp.edu

Contact: Ted Johnson
Wisconsin Department of Natural Resources
Phone: 920-424-2104
E-mail: TedM.Johnson@wisconsin.gov

Aquatic Plant Surveys/Management

Contact: Ted Johnson
Wisconsin Department of Natural Resources
Phone: 920-424-2104
E-mail: TedM.Johnson@wisconsin.gov
Website: http://dnr.wi.gov/lakes/plants/

Best Management Practices (rain gardens, shoreland buffers, agricultural practices, runoff controls)

Contact: Ed Hernandez
Waushara County Land Conservation Department
PO Box 1109, Wautoma, WI 54982
Phone: 920-787-0453
E-mail: lcdzoning.courthouse@co.waushara.wi.us
Website: http://www.co.waushara.wi.us/zoning.htm

Boat Landings, Signage, Permissions (County)

Contact: Scott Schuman
Waushara County Parks
PO Box 300, Wautoma, WI 54982
Phone: 920-787-7037
E-mail: wcparks.parks@co.waushara.wi.us
Website: http://www.co.waushara.wi.us/parks.htm

Boat Landings (State)

Contact: Dave Bartz
Wisconsin Department of Natural Resources
Hwy 22N, Box 430, Montello, WI 53949
Phone: 608-635-4989
E-mail: David.Bartz@wisconsin.gov
Website:
http://dnr.wi.gov/org/land/facilities/boataccess/

Boat Landings (Town)

Contact the clerk for the specific town/village in which the boat landing is located.

Citizen Lake Monitoring Network
Contact: Brenda Nordin
Wisconsin Department of Natural Resources
Phone: 920-662-5141
E-mail: brenda.nordin@wisconsin.gov

Conservation Easements

Contact: Gathering Waters Conservancy
211 S. Paterson St., Suite 270, Madison, WI 53703
Phone: 608-251-9131
E-mail: info@gatheringwaters.org
Website: http://gatheringwaters.org/

Contact: Ted Johnson
Wisconsin Department of Natural Resources
Phone: 920-424-2104
E-mail: TedM.Johnson@wisconsin.gov

Contact: Patrick Sorge
Wisconsin Department of Natural Resources
PO Box 4001, Eau Claire, WI 54702
Phone: 715-839-3794
E-mail: Patrick.Sorge@wisconsin.gov

Contact: North Central Conservancy Trust
PO Box 124, Stevens Point, WI 54481
Phone: 715-344-1910
E-mail: info@ncctwi.org
Website: http://www.ncctwi.org/

Contact: NRCS Stevens Point Service Center
1462 Strongs Ave., Stevens Point, WI 54481
Phone: 715-346-1325

Critical Habitat and Sensitive Areas

Contact: Ted Johnson
Wisconsin Department of Natural Resources
Phone: 920-424-2104
E-mail: TedM.Johnson@wisconsin.gov
Website: http://dnr.wi.gov/lakes/criticalhabitat/

Dams

Contact: Joe Behlen
Wisconsin Department of Natural Resources
473 Griffith Ave., Wisconsin Rapids, WI 54494
Phone: 715-421-9940
E-mail: joseph.behlen@wisconsin.gov
Website: http://dnr.wi.gov/org/water/wm/dsfm/dams/

Fertilizers/Soil Testing

Contact: Ken Williams
Waushara County UW- Extension
209 S St. Marie St, PO Box 487, Wautoma, WI 54982
Phone: 920-787-0416
E-mail: ken.williams@ces.uwex.edu
http://waushara.uwex.edu/agriculture/services

Fisheries Biologist (management, habitat)

Contact: Dave Bartz
Wisconsin Department of Natural Resources
Hwy 22N, Box 430, Montello, WI 53949
Phone: 608-635-4989
E-mail: David.Bartz@wisconsin.gov
Website: http://dnr.wi.gov/fish/

Frog Monitoring—Citizen Based
Contact: Andrew Badje
Wisconsin Department of Natural Resources
Phone: 608-266-3336
E-mail: Andrew.badje@wisconsin.gov
E-mail: WFTS@wisconsin.gov

Grants

Contact: Ted Johnson
Wisconsin Department of Natural Resources
Phone: 920-424-2104
E-mail: TedM.Johnson@wisconsin.gov
Website: http://dnr.wi.gov/Aid/Grants.html#tabx8

Contact: Ed Hernandez
Waushara County Land Conservation Department
PO Box 1109, Wautoma, WI 54982
Phone: 920-787-0453
E-mail: lcdzoning.courthouse@co.waushara.wi.us
Website: http://www.co.waushara.wi.us/zoning.htm

Groundwater Quality

Contact: Kevin Masarik
UWSP Center for Watershed Science & Education
TNR 224, 800 Reserve St., Stevens Point, WI 54481
Phone: 715-346-4276
E-mail: kmasarik@uwsp.edu
Website: http://www.uwsp.edu/cnr/watersheds/

Groundwater Levels/Quantity

Contact: Ed Hernandez
Waushara County Land Conservation Department
Address: PO Box 1109 Wautoma, WI 54982
Phone: 920-787-0453
E-mail: lcdzoning.courthouse@co.waushara.wi.us

Contact: George Kraft
UWSP Center for Watershed Science & Education
TNR 224, 800 Reserve St., Stevens Point, WI 54481
Phone: 715-346-2984
E-mail: george.kraft@uwsp.edu

Groundwater Levels/Quantity (cont'd)

Contact: Scott Provost
Wisconsin Department of Natural Resources
473 Griffith Ave., Wisconsin Rapids, WI 54494
Phone: 715-421-7881
E-mail: scott.provost@wisconsin.gov
http://prodoasext.dnr.wi.gov/inter1/hicap$.startup

Informational Packets

Contact: UWSP Center for Watershed Science & Education
TNR 224, 800 Reserve St. Stevens Point, WI 54481
Phone: 715-346-2497
E-mail: pclakes@uwsp.edu

Lake Groups – Friends, Associations, Districts

Contact: Patrick Nehring
UWEX Economic Resource Development Agent
PO Box 487, Wautoma, WI 54982
Phone: 920-787-0416
E-mail: Patrick.nehring@ces.uwex.edu

Contact: Patrick Goggin
UWEX Lakes
TNR 203, 800 Reserve St., Stevens Point, WI 54481
Phone: 715-365-8943
E-mail: pgoggin@uwsp.edu
Website:
http://www.uwsp.edu/cnr/uwexlakes/organizations/

Contact: Eric Olson
UWEX Lakes
TNR 206, 800 Reserve St., Stevens Point, WI 54481
Phone: 715-346-2192
E-mail: eolson@uwsp.edu
Website:
http://www.uwsp.edu/cnr/uwexlakes/organizations/

Contact: Susan Tesarik
Wisconsin Lakes
4513 Vernon Blvd., Suite 101, Madison, WI 53705
Phone: 1-800-542-5253
E-mail: lakeinfo@wisconsinlakes.org
Website: http://wisconsinlakes.org/

Lake Levels

See: Groundwater

Lake-Related Law Enforcement (no-wake, transporting invasives, etc.)

Contact: Ben Mott
State Conservation Warden
Wisconsin Department of Natural Resources
427 E. Tower Drive, Suite 100, Wautoma, WI 54982
Phone: 920-896-3383
Website: http://www.wigamewarden.com/

Land Use Plans and Zoning Ordinances

Contact: Terri Dopp-Paukstat
Waushara County Planning and Zoning
PO Box 1109, Wautoma, WI 54982
Phone: 920-787-0453
E-mail: lcdzoning.courthouse@co.waushara.wi.us
Website: http://www.co.waushara.wi.us/zoning.htm

Contact: UWSP Center for Land Use Education
TNR 208, 800 Reserve St., Stevens Point, WI 54481
Phone: 715-346-3783
E-mail: Center.for.Land.Use.Education@uwsp.edu
Website: http://www.uwsp.edu/cnr/landcenter/

Nutrient Management Plans

Contact: Ed Hernandez
Waushara County Land Conservation Department
PO Box 1109, Wautoma, WI 54982
Phone: 920-787-0453
E-mail: lcdzoning.courthouse@co.waushara.wi.us
Website: http://www.co.waushara.wi.us/zoning.htm

Contact: NRCS Stevens Point Service Center
1462 Strongs Ave., Stevens Point, WI 54481
Phone: 715-346-1325

Parks (County)

Contact: Scott Schuman
Waushara County Parks
PO Box 300, Wautoma, WI 54982
Phone: 920-787-7037
E-mail: wcparks.parks@co.waushara.wi.us
Website: http://www.co.waushara.wi.us/parks.htm

Purchase of Development Rights

Contact: North Central Conservancy Trust
PO Box 124, Stevens Point, WI 54481
Phone: 715-341-7741
E-mail: info@ncctwi.org
Website: http://www.ncctwi.org/

Purchase of Land

Contact: Ted Johnson
Wisconsin Department of Natural Resources
Phone: 920-424-2104
E-mail: TedM.Johnson@wisconsin.gov
Website: http://dnr.wi.gov/topic/stewardship/

Rain Barrels – Order

Contact: Golden Sands RC&D
1100 Main St., Suite 150, Stevens Point, WI 54481
Phone: 715-343-6215
Website: http://www.goldensandsrcd.org/store

Rain Gardens and Stormwater Runoff

Contact: Ed Hernandez
Waushara County Land Conservation Department
PO Box 1109, Wautoma, WI 54982
Phone: 920-787-0453
E-mail: lcdzoning.courthouse@co.waushara.wi.us
Website: http://www.co.waushara.wi.us/zoning.htm

Septic Systems/Onsite Waste

Contact: Terri Dopp-Paukstat
Waushara County Planning and Zoning
PO Box 1109, Wautoma, WI 54982
Phone: 920-787-0453
E-mail: lcdzoning.courthouse@co.waushara.wi.us
Website: http://www.co.waushara.wi.us/zoning.htm

Shoreland Management

Contact: Ed Hernandez
Waushara County Land Conservation Department
PO Box 1109, Wautoma, WI 54982
Phone: 920-787-0453
E-mail: lcdzoning.courthouse@co.waushara.wi.us
Website: http://www.co.waushara.wi.us/zoning.htm

Shoreland Vegetation

http://dnr.wi.gov/topic/ShorelandZoning/

Shoreland Zoning Ordinances

See: Land Use Plans and Zoning Ordinances

Soil Fertility Testing

Contact: Ken Williams
Waushara County UW- Extension
209 S St. Marie Street, PO Box 487, Wautoma, WI 54982
Phone: 920-787-0416
E-mail: Ken.williams@ces.uwex.edu
Website: http://waushara.uwex.edu/index.html

Water Quality Monitoring

Contact: Ted Johnson
Wisconsin Department of Natural Resources
Phone: 920-424-2104
E-mail: TedM.Johnson@wisconsin.gov

Water Quality Problems

Contact: Ted Johnson
Wisconsin Department of Natural Resources
Phone: 920-424-2104
E-mail: TedM.Johnson@wisconsin.gov

Contact: Nancy Turyk
UWSP Center for Watershed Science and Education
TNR 216, 800 Reserve St., Stevens Point, WI 54481
Phone: 715-346-4155
E-mail: nturyk@uwsp.edu

Wetlands

Contact: Keith Patrick
Wisconsin Department of Natural Resources
5301 Rib Mountain Drive, Wausau, WI 54401
Phone: 715-241-7502
E-mail: keith.patrick@wisconsin.gov
Website: http://dnr.wi.gov/wetlands/

Contact: Wisconsin Wetlands Association
214 N. Hamilton Street, #201, Madison, WI 53703
Phone: 608-250-9971
Email: info@wisconsinwetlands.org

Wetland Inventory

Contact: Dr. Emmet Judziewicz
UWSP Freckmann Herbarium
TNR 301, 800 Reserve St., Stevens Point, WI 54481
Phone: 715-346-4248
E-mail: ejudziew@uwsp.edu

Woody Habitat

Contact: Dave Bartz
Wisconsin Department of Natural Resources
Phone:608-635-4989
Address: Hwy 22N Box 430, Montello, WI 53949
E-mail: David.Bartz@wisconsin.gov

Appendix B. Rapid Response Plan

SURVEY/MONITOR

1. Learn how to survey/monitor the lake.	**Contacts:** **Water Resource Management Specialist** Wisconsin Department of Natural Resources Phone: 920-424-2104 E-Mail: TedM.Johnson@wisconsin.gov **Regional Aquatic Invasive Species (AIS) Coordinator** Golden Sands RC&D 1100 Main St., Suite #150 Stevens Point, WI 54481 Phone: 715-343-6278 E-Mail: info@goldensandsrcd.org
2. Survey/monitor the lake monthly/seasonally/annually.	If you find a suspected invasive species, report it as soon as possible using the procedure below.

REPORTING A SUSPECTED INVASIVE SPECIES

1. Collect specimens or take photos. Regardless of the method used, provide as much information as possible. Try to include flowers, seeds or fruit, buds, full leaves, stems, roots and other distinctive features. In photos, place a coin, pencil or ruler for scale. Deliver or send specimen ASAP.	Collect, press and dry a complete sample. This method is best because a plant expert can then examine the specimen. **-OR-** Collect a fresh sample. Enclose in a plastic bag with a moist paper towel and refrigerate. **-OR-** Take detailed photos (digital or film).
2. Note the location where the specimen was found. If possible, give the exact geographic location using a GPS (global positioning system) unit, topographic map, or the Wisconsin Gazetteer map book. If using a map, include a photocopy with a dot showing the plant's location. You can use TopoZone.com to find the precise location on a digital topographic map. Click the cursor on the exact collection site and note the coordinates (choose UTM or Latitude/Longitude).	Provide one or more of the following: • Latitude & Longitude • UTM (Universal Transverse Mercator) coordinates • County, Township, Range, Section, Part-section • Precise written site description, noting nearest city & road names, landmarks, local topography

3. Gather information to aid in positive species identification.	• Collection date and county • Your name, address, phone, email • Exact location (Latitude/Longitude or UTM preferred, or Township/Range/Section) • Plant name (common or scientific) • Land ownership (if known) • Population description (estimated number of plants and area covered) • Habitat type(s) where found (forest, field, prairie, wetland, open water)
4. Mail or bring specimens and information to any of the following locations: Digital photos may be emailed.	**Wisconsin Dept. Natural Resources** 427 E. Tower Drive, Suite 100 Wautoma, WI 54982 Phone: (920) 787-4686 **Regional AIS Coordinator** Golden Sands RC&D 1100 Main St., Suite #150 Stevens Point, WI 54481 Phone: 715-343-6214 E-Mail : info@goldensandsrcd.org **UW-Stevens Point Herbarium** 301 Trainer Natural Resources Building 800 Reserve Street Stevens Point, WI 54481 Phone: 715-346-4248 E-Mail: ejudziew@uwsp.edu **Wisconsin Invasive Plants Reporting & Prevention Project** Herbarium-UW-Madison 430 Lincoln Drive Madison, WI 53706 Phone: (608) 267-7612 E-Mail: invasiveplants@mailplus.wisc.edu
5. Once the specimen is dropped off or sent for positive identification, be sure to contact:	**Regional AIS Coordinator** Golden Sands RC&D 1100 Main St., Suite #150 Stevens Point, WI 54481 Phone: 715-343-6214 E-Mail : info@goldensandsrcd.org

If an invasive species is confirmed, the Regional AIS Coordinator will make the following public information contacts:

- **Wisconsin Department of Natural Resources**
  427 E. Tower Drive, Suite 100
  Wautoma, WI 54982
  Phone: (920) 787-4686

- **The town** in which the waterbody is located.
  Town of: Wautoma
  Contact: Mary Charette

- **University of Wisconsin-Stevens Point**
  Water Resource Scientist
  Nancy Turyk
  Trainer Natural Resources Building
  800 Reserve Street
  Stevens Point, WI 54481Telephone: 715-346-4155
  E-mail: nturyk@uwsp.edu

- **Local Residents**

If an invasive species is confirmed, the Town clerk will make the following public information contacts:

- **Newspapers**: Argus, Resorter

Contact the WDNR to post notice(s) at the access point(s) to the water body.

Appendix C. Aquatic Plants

Beans Lake aquatic plant survey summary, 2011.

	Lake Average	Statewide Average	North Central Hardwood Forests Ecoregion Average
Littoral Frequency of Occurrence (%)	96.6	74.3	76
Maximum Depth of Plant Growth (ft)	16	15.3	15.9
Species Richness (Including visuals)	11	16.8	16.2
Floristic Quality Index (FQI)	18	24.1	23.3

Frequency of occurrence of aquatic plant species observed in Beans Lake, 2011.

Scientific Name	Common Name	Coefficient of Conservatism Value (C Value)	2011 % Frequency of Occurrence
Floating Leaf Species			
Nymphaea odorata	White Water Lily	6	28.57
Submergent Species			
Chara	Muskgrasses	7	58.33
Potamogeton zosteriformis	Flat-stem pondweed	6	50
Elodea canadensis	Common waterweed	3	38.1
Utricularia vulgaris	Common bladderwort	7	32.14
Myriophyllum sibiricum	Northern watermilfoil	6	20.24
Nuphar variegata	Spatterdock	6	15.48
Potamogeton illinoensis	Illinois pondweed	6	15.48
Ceratophyllum demersum	Coontail	3	14.29
Potamogeton gramineus	Variable pondweed	7	8.33

Appendix D. Shoreland Survey – 2011

A scoring system was developed for the collected data to provide a more holistic assessment. Areas that are healthy will need strategies to keep them healthy, and areas with potential problem areas and where management and conservation may be warranted may need a different set of strategies for improvement. The scoring system is based on the presence/absence and abundance of shoreline features, as well as their proximity to the water's edge. Values were tallied for each shoreline category and then summed to produce an overall score. Higher scores denote a healthier shoreline with good land management practices. These are areas where protection and/or conservation should be targeted. On the other hand, lower scores signify an ecologically unhealthy shoreline. These are areas where management and/or mitigation practices may be desirable for improving water quality.

The summary of scores for shorelands around Beans Lake are displayed on the next page. The shorelands were color-coded to show their overall health based on natural and physical characteristics. Blue shorelands identify healthy shorelands with sufficient vegetation and few disturbances. Red shorelands indicate locations where changes in management or mitigation may be warranted. Long stretches of Beans Lake's shorelands are in good shape, but some portions have challenges that should be addressed. There were no stretches of Beans Lake shoreland ranked as poor. For a more complete understanding of the ranking, an interactive map showing results of the shoreland surveys can be found on Waushara County's website at http://gis.co.waushara.wi.us/ShorelineViewer/.

Waushara County Shoreline Assessment

Map Date -- July, 2011
Aerial Date -- April, 2010

BEANS LAKE

Summary

Shorelines are color-coded to show their overall health based on natural and physical characteristics. For example, shorelines shown in red indicate locations where management or mitigation may be warrented. Blue shorelines mark healthy riparian areas with natural vegetation and few human influences.

Calculating Shoreline Scores

Scores are based on the presence/absence of:

+ Natural vegetation
+ Human influences (docks, boathouses, etc)
+ Erosion
+ Structures

Center for Land Use Education

Map created by Dan McFarlane
Center for Land Use Education

Appendix E. Lake User Survey Results