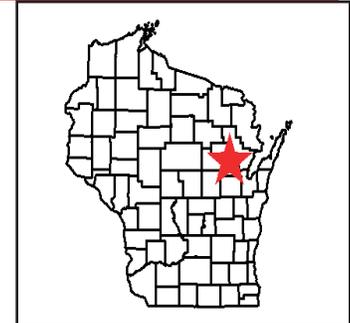


2010 Water Quality Management Plan Update

Wolf River Basin, Wisconsin

August, 2010

The Shawano Lake Watershed lies within the Wolf River Basin and covers 71.2 square miles in Shawano, Menominee and Oconto Counties (Map 1). This watershed contains many lake, wetland, and river resources but the main water resource in this watershed is Shawano Lake, a 6,178-acre hardwater drainage lake with a maximum depth of 40 feet. Other smaller lakes in this watershed include Loon Lake, Washington Lake, Lulu Lake, and White Clay Lake, to name a few. Rivers and streams associated with this watershed include the Shawano Lake Outlet, Duchess Creek, Pickerel Creek, Loon Creek, Murray Creek, and several others.



Map 1: Shawano Lake Watershed

Plan Contents

- Watershed Detail 1**
 - Population and Land Use 1
 - Hydrology 2
 - Ecological Landscapes 2
 - Historical Note 2
- Water Condition 3**
 - Priority Issues. 3
 - Water Quality Goals. 4
 - Overall Condition 4
 - Point and Nonpoint Sources. 4
 - Rivers and Streams 4
 - Lake Health. 5
 - Wetland Health 5
 - Waters of Note 6
- Watershed Actions 6**
 - Grants and Projects 6
 - Monitoring 7
 - Reports, Plans and Studies 8
 - Recommendations 9
- Appendices. 11**
 - Watershed Map 11
 - Impaired and ORW/ERW Waters 12
 - Outfalls and Dams 13
 - Land Use 14
 - Potentially Restorable Wetlands 15

Watershed Details

Population and Land Use

Table 1 and Figure 1 display watershed land use and cover. The landscape in the watershed is covered by a relatively balanced mix of forests (30%), agriculture (29%), open water (16%), and wetlands (15%). Additionally, within the 71.2 square mile watershed, there are 76 miles of streams, 6,948 acres of wetlands, and 7,528 total lake acres. Municipalities in the watershed include the City of Shawano (partial) and the Village of Cecil. Cecil is the only point source discharger in the watershed.

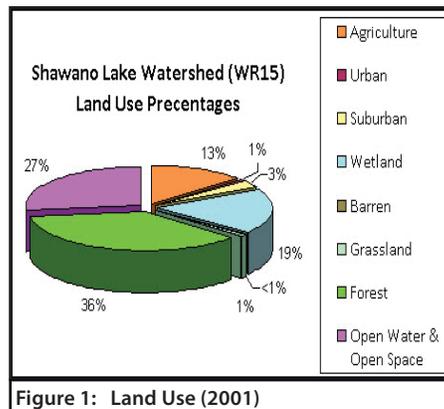


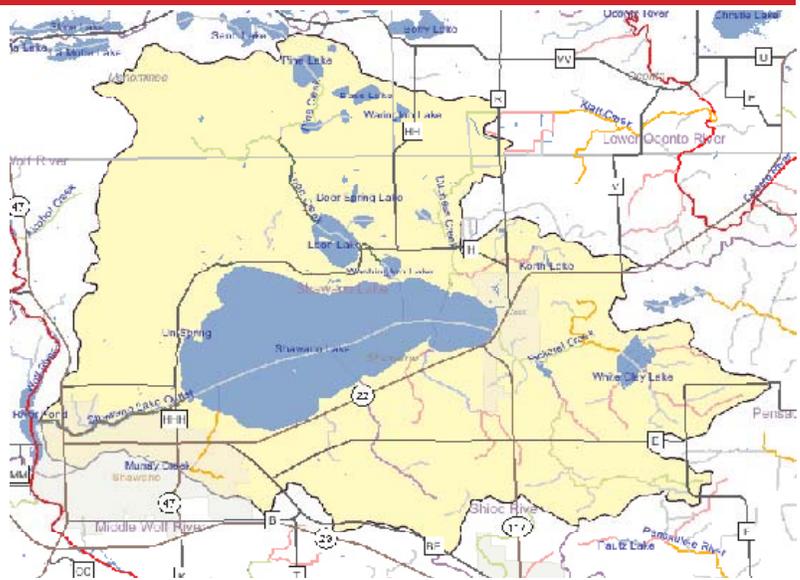
Figure 1: Land Use (2001)

Table 1. The Shawano Lake watershed is covered by a mix of landscapes.

Land Use	Total Acreage	Percent of Watershed
Agriculture	13,076	28.7%
Urban	359	0.8%
Suburban	1,046	2.3%
Wetland	6,948	15.3%
Barren	22	0.1%
Grassland	341	0.8%
Forest	13,778	30.3%
Open Water	7,528	16.5%
Open Space	2,445	5.4%
Total	45,542	

Hydrology

The Shawano Lake Watershed's dominant feature is Shawano Lake, which is interconnected to a series of inlet and outlet tributaries. Map 2 shows the results of stream model based natural communities in the watershed. The streams are differentiated by model results depicting flow and temperature, resulting in an estimate of 4.7 miles of coldwater streams, 1.8 miles of cool (cold transition) headwaters, 14.7 miles of cool (warm transition) headwaters, 2.48 miles of cool (warm transition) mainstem streams, 11.5 miles of macroinvertebrate streams, 4.2 miles of warm headwaters, 3 miles of Warm mainstem streams, and 30 miles where no classification is determined (likely due to the small size of the waters).



Map 2. Natural Communities in the Shawano Lake Watershed

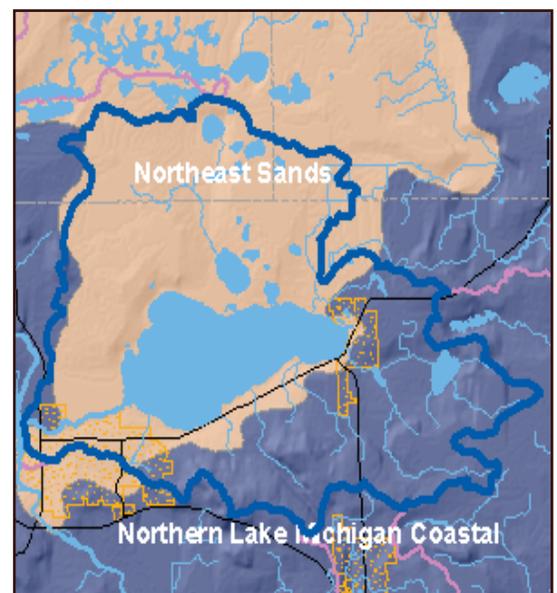
Ecological Landscapes

The Shawano Lake Watershed lies in two ecological landscapes: the Northeast Sands and the Northern Lake Michigan Coastal (Map 3).

The Northeast Sands Ecological Landscape occupies a relatively narrow, vertical band of land in northeast Wisconsin. This landscape formed in glacial outwash sand plains (some of them pitted), and has steep outcropping Precambrian bedrock knolls of basalt, rhyolite, or granite. Sandy ground moraines and end moraines are also interspersed in the landscape.

Historically, extensive oak/jack pine barrens and jack pine forests were found in the outwash sand portions of this Ecological Landscape. Moraines supported forests of hardwoods, red pine, and white pine. Outwash plains often contained pitted depressions, resulting in numerous wetlands and kettle lakes. Most of this Ecological Landscape is still forested; aspen predominates, followed by northern hardwoods. Jack pine remains on the outwash plains along with northern pin oak. There are several important occurrences of jack pine/oak barren communities. A small percentage of this Ecological Landscape contains spruce-fir-cedar forest and lowland hardwood forest. The Brazeau Swamp is one of the best representations of large cedar swamp forests in northern Wisconsin.

The Northern Lake Michigan Coastal Ecological Landscape is located in northeastern Wisconsin, and includes Green Bay and the northern part of the Door Peninsula. Its landforms consist of the Niagara escarpment, a prominent dolomite outcropping along the east side of Green Bay, a lacustrine plain along the west side of Green Bay, and ground moraine elsewhere. Low sand dunes and beach ridges that support Great Lakes endemics and many other rare species are found along the Great Lakes shoreline. The influence of Lake Michigan moderates extreme temperatures. Soils are very diverse; in some areas, lacustrine sands are found overlying clays or bedrock within only a few feet of the surface. In the



Map 3: Ecological Landscapes

Door Peninsula, soils are typically stony loamy sands to loams. Poorly drained sands are common in the lake plain or in depressions between dunes and beach ridges. On the western side of Green Bay, the ground moraine is composed mostly of moderately well drained, rocky sandy loams, interspersed with lacustrine sands and clays, and peat and muck also common.

Historic vegetation included maple-basswood-beech forest, hemlock-hardwood forest, northern white cedar swamp, hardwood-conifer swamp, wet meadows, and coastal marshes. Conifer dominated upland forests that resemble the boreal forest were present along Lake Michigan; they contain a significant component of white spruce and balsam fir. Cliffs, sinkholes, and dolomite ledges are associated with the Niagara Escarpment. Current vegetation consists of more than 60% non-forested land, most of which is in agricultural crops, with smaller amounts of grassland, wetland, shrubland, and urbanized areas. Forested lands are dominated by maple-basswood, with smaller amounts of lowland hardwoods, aspen-birch, and lowland conifers. High quality areas of exposed alkaline bedrock beach occur on the northern Door Peninsula, providing habitat for many rare plants. Several islands lie off the Door Peninsula and these also provide critical habitat for rare species and colonially nesting birds.

Historical Note

The Shawano Lake Watershed is located in Menomonee and Shawano counties. The Menominee leader, Chief Sawanoh, once lived upon the banks of the lake. His band is said to be the first residents of this area, where they were able to harvest wild rice, fish for sturgeon and hunt game in the surrounding forests. Although the band travelled extensively, Shawano Lake was the band's traditional gathering area and favorite place to live.

In 1854, a treaty was signed, and the Menominee relinquished all claims to the lands given to them under previous treaties. They were given 432 square miles on the Wolf River, and the band moved north near Keshena. One hundred years later, in 1954, Congress passed a law which phased out the Menominee reservation, effectively terminating its tribal status on April 30, 1961. Commonly held tribal property was transferred to a corporation, Menominee Enterprises, Inc. (MEI). The area of the former reservation became a new county.

The plan was a failure, resulting in diminished standards of living for the members of the tribe, and forcing the closure of the hospital and some schools. The tribal industry alone could not sustain the community, and the tax base could not fund basic services for the Menominee. A 1967 plan by MEI, to raise money by selling off former tribal lands to non-Native Americans, resulted in a fierce backlash. Community members began organizing a campaign to restore political sovereignty to the Menominee. Former tribe members formed a group called the Determination of Rights and Unity for Menominee Stockholders (DRUMS) in 1970. The organization was successful at blocking the sale of tribal land to non-Indian developers. They successfully fought for control of the MEI board of directors and lobbied Congress to restore their status as a federally recognized sovereign tribe.

The lobbying was successful, resulting in a bill signed by Richard Nixon on December 22, 1973, which recognized the tribe again and started them on the path towards reforming a reservation. The reservation was reformed in 1975, a tribal constitution was signed in 1976, and the new tribal government took over in 1979. In 1993, the College of the Menominee Nation was founded, and the Sustainable Development Institute was started as a research and resource support institute to the college.

Watershed Condition

Priority Issues

Priority issues for this watershed include the quantity and quality of agricultural runoff reaching surface waters and groundwater, and its impact on drinking water and surface water quality. Additional issues for this watershed include invasion by non-native invasive species, loss of wetlands and the need for riparian vegetation buffers, runoff from urban areas, and the lack of water quality and biological assessment data.

Water Quality Goals

Water quality goals for the watershed include:

- Minimizing agricultural runoff from rural areas
- Minimizing urban stormwater runoff
- Protecting groundwater resources
- Restoring key wetlands for water quality improvement and protection
- Establishing riparian buffers to protect water quality
- Monitoring and controlling non-native invasive species
- Obtaining water quality and biological monitoring data to adequately assess water resource conditions
- Increasing citizens' watershed awareness, understanding and stewardship activities

Overall Condition

This watershed contains many lake, wetland, and river resources, but the main water resource in this watershed is Shawano Lake, a 6,178-acre hard water drainage lake with a maximum depth of 40 feet. Other smaller lakes in this watershed include Loon Lake, Washington Lake, Lulu Lake, and White Clay Lake, to name a few. Rivers and streams associated with this watershed include the Shawano Lake Outlet, Duchess Creek, Pickerel Creek, Loon Creek, Murray Creek, and several others.

Point and Nonpoint Sources

The watershed, which had been predominantly wooded, has been partially developed by the Shawano Industrial Park. This has caused problems with nonpoint pollution in the headwaters from street and parking lot runoff. The southern and eastern portions of the watershed are primarily agricultural (accounting for approximately 10% of the watershed) and runoff from this area can have a negative impact on the water quality of the lakes. Municipalities in the watershed include the City of Shawano (partial) and the Village of Cecil. Cecil is the only point source discharger in the watershed.

River and Stream Condition

Shawano Lake Outlet

The Shawano Lake Outlet carries flow out of Shawano Lake and empties into the Wolf River Pond, just above Shawano. The channel provides critical spawning habitat and nursery areas for fish. The Outlet is a major boating thoroughfare, connecting Shawano Lake with the Wolf River.

Duchess Creek

Duchess Creek is a medium hard water stream and a tributary to Shawano Lake on the northeast corner. Northern pike, walleye and suckers make use of this stream on their spring spawning runs. Wooded and undisturbed lands, as well as swamp wetlands, are predominant in the creek's drainage area. The headwaters have been ditched to facilitate some agricultural production. Unnamed tributaries to Duchess Creek contribute water from Lily, Korth, and Bahr Lakes. The wastewater treatment lagoons for the Village of Cecil also contribute flow to Duchess Creek prior to it entering Shawano Lake.

Loon Creek

Loon Creek is a medium hard water stream containing a warm water forage fishery. Draining large wooded wetlands, Pine Lake and Rice Lake (north of Shawano Lake), the creek flows south into Loon Lake and eventually into Washington Lake, finally terminating at Shawano Lake. The Wisconsin Department of Natural Resources owns the section of stream connecting these lakes.

Murray Creek

Murray Creek is a hard water stream and tributary to Shawano Lake, entering from the southwest. The creek originates in the City of Shawano and is ditched for most of its short length. Minnows, northern pike, and suckers make use of this stream on their spring spawning runs.

Pickerel Creek

Pickerel Creek is a hard water stream and a tributary to Shawano Lake, entering from the southeast. Northern pike and walleye utilize this creek during spring spawning runs. Other fish, found particularly at the mouth of the creek, include walleye, bullhead, largemouth bass, bluegill, pumpkinseed and sucker. The creek drains out of White Clay Lake, and a

number of intermittent tributaries contribute flow from wetland and agricultural areas. A portion of the stream flows through the Mud Lake Wildlife Area and is of value to nesting and migratory waterfowl. The lower portions of Pickerel Creek flow through the Village of Cecil, which contributes stormwater runoff to the creek.

Lake Health

The Shawano Lake watershed has approximately 15 named lakes, ranging in size from the six-acre Bahr Lake to the 6,178 acre Shawano Lake. There are also a number of small, unnamed lakes and ponds scattered across the watershed. These lakes are generally moderate to hard water lakes with abundant aquatic plant communities and abundant fish populations. Shawano Lake has a well-developed shoreline but many of the other lakes in the watershed have large undeveloped shorelines, due primarily to the presence of wetlands, which limit building opportunities. Bahr, Korth, and White Clay Lakes are located in the eastern portion of the watershed, which has more intensive agricultural land use. As a result, these lakes are more influenced by runoff and pollutants, which may be carried by the runoff.

A number of the lakes have a management organization associated with them. These organizations include Lake Districts (Lulu, Loon, White Clay, Washington), a Lake Association (Shawano Area Waterways Management Association), and/or a Sanitary District (Shawano Lake). These organizations can be a key component in any management activities involving the lakes since they are eligible to apply for grant funds from the State of Wisconsin.

Aquatic invasive species are present in a number of the lakes. Shawano Lake is a popular fishing destination for many anglers, and the number of boats transporting invasive species from other lakes likely contributes to the number of invasive species found there. Green Bay, Lake Michigan, and Lake Winnebago are all nearby and all have a number of invasive species. Many of the other watershed's lakes are connected to Shawano Lake, via streams, thus allowing for a high potential for invasive species to become established. Table 2 ?? summarizes the invasive species known to be found in the watershed.

Shawano Lake

Shawano Lake is a 6,178-acre drainage lake with a mean depth of 9 feet and maximum of 40 feet. It is an important recreational water body (year-around) offering an excellent opportunity for hunting, swimming, boating, and fishing. Its versatility for recreational use makes it important economically for the local economies. In general, Shawano Lake has relatively good water quality for a shallow drainage lake. The lake tends to have enriched sediment and relatively shallow depths, which results in ideal growing conditions and light penetration needed for aquatic plant growth. This plant growth is seen in more than half of the lake. In addition to the natural complexity associated with a relatively shallow lake, Shawano Lake's ecosystem appears to be in flux due to the introduction of many non native aquatic organisms including zebra mussels, Eurasian water milfoil, and curly leaf pondweed.

Water quality in Shawano Lake is dependent upon internal and external factors. The watershed, as a whole, contributes about half of the annual phosphorus load to the lake. These factors include direct runoff and loading from tributaries. Land use practices near shore and within the watershed are probably the most manageable aspect in terms of phosphorus reduction and reduction of runoff and improved infiltration. It is also important to address land management issues further out in the watershed including reducing phosphorus inputs to groundwater. The greatest single contributor of total phosphorus to Shawano Lake is internal sediment release; this is difficult and expensive to directly manage.

Aquatic invasive species have become a nuisance to the Shawano Lake in recent years. The invasive aquatic plant curly leaf pondweed (*Potamogeton crispus*) is abundant. A large pulse of phosphorus is released after it dies off in June, which then becomes available for algae to utilize. In addition, Eurasian water milfoil (*Myriophyllum spicatum*), zebra mussels (*Dreissena polymorpha*), rusty crayfish (*Orconectes rusticus*), and banded mystery snails (*Viviparus georgianus*) inhabit the lake.

Approximately 90% of the Shawano Lake shoreline is highly developed with residences. Municipal sanitary sewer and public water supply systems have been in place since the mid-1970s. This infrastructure has helped to improve water quality but probably has led to increased residential development. Uncontrolled stormwater runoff and fertilizer use likely add nutrients and potentially toxic substances to the lake.

Extensive scientific studies needed to evaluate the hydrology and water quality entering and within Shawano Lake have been conducted recently as part of a cooperative effort between Shawano County, Shawano Area Waterways Management, Inc. (SAWM), the University of Wisconsin–Stevens Point (UWSP) Center for Watershed Science and Education (CWSE), the U.S. Army Corps of Engineers (USACOE), the Wisconsin Department of Natural Resources (WDNR), the Fox Wolf Watershed Alliance (FWWA), Northern Environmental (Bonestroo), and the dedicated volunteers and citizens of the Shawano Lake area. The concerns of local citizens and SAWM members about excessive aquatic plants, blue green algae blooms, and reduced water clarity resulted in this study.

White Clay Lake

White Clay Lake is a 234-acre spring lake in Shawano County. This is one of the Long Term Trend Lakes and is monitored several times each year by the DNR, in addition to the Citizen volunteers that also monitor it. Previous studies have concluded that the lake water quality is impacted by nonpoint sources of pollution. There is no current management on White Clay Lake.

Washington Lake

Washington Lake is a 75-acre lake connected to Shawano Lake via a small channel. Maximum lake depth is 18 feet. The Washington Lake Management District is currently extensively managing Eurasian water milfoil on an annual basis. The Lake District has received DNR Aquatic Invasive Species grants to help pay for planning and management activities. Citizen volunteers monitor Washington Lake..

Lulu Lake

Lulu Lake is a 34-acre lake, managed by the Lulu Lake Management District. Eurasian water milfoil is being actively managed with the help of DNR Aquatic Invasive Species grants. The DNR monitors Lulu Lake’s aquatic plant community.

Loon Lake

Loon Lake is a 305-acre lake that drains to Washington Lake. The Loon Lake-Wescott Management District actively manages the lake. A hybrid milfoil, a cross between the native Northern milfoil (*Myriophyllum sibiricum*) and the invasive Eurasian water milfoil, is present and has been treated chemically for the past several years. The Lake District has applied for DNR Aquatic Invasive Species grants to help pay for planning and management activities. The US Army Engineers Research and Development Center and the DNR have monitored the Loon Lake aquatic plant community for several years.

Wetland Health

The Shawano Lake watershed currently contains either 6,768 wetland acres (from WWI and wetland analysis) or,6,948 wetland acres (from NLCD analysis) depending on which wetland analysis data is used. Almost 80% of these wetland acres are classified as wooded. Recent analysis, using soil information, suggests the watershed historically had 9,736 wetland acres. Only 30% (2,968) of the historical wetlands have been lost, possibly due to the wooded nature of the wetland complexes in the watershed. Of those lost wetland acres, 83% are projected to be potentially restorable. Figures 2 and 3 summarize lost and restorable wetlands in the watershed.

Figure 2 Wetlands are estimated to historically cover over 9,000 acres of the Shawano Lake watershed. Today, less than 7,000 acres remain, a loss of 30%.

Figure 3 About 84% of the lost wetland acreage is potentially restorable.

Waters of Note:

Outstanding or Exceptional Waters (ORW/ERW) of WR15

As of 2010, there are no outstanding or exceptional waters within the Shawano Lake watershed.

Wetland Loss in Shawano Lake Watershed

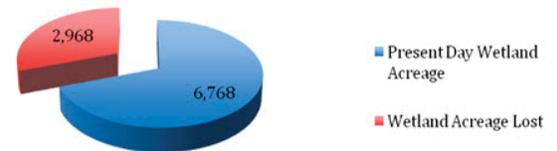


Figure 2: Wetland Loss

Restorability of Lost Wetlands

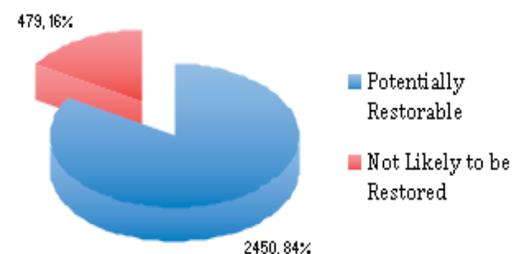


Figure 3: Wetland Restorability

Trout Waters

As of 2010, there are no trout waters identified within the Shawano Lake watershed.

Impaired Waters

Shawano Lake is listed on Wisconsin's Impaired Waters List as required by section 303(d) of the federal Clean Water Act. The pollutant of concern in Shawano Lake is mercury, which is causing contaminated fish tissue. Atmospheric deposition is the primary means by which mercury is entering the lake.

Watershed Actions

Projects and Grants

A number of DNR grants have been secured over the years to fund projects within the watershed, including:

- Lakes Grant to Loon Lake Management District for a management and watershed land use planning. 1991.
- Lakes Grant to Shawano Area Waterway's Management Association for Phase 2 of the Shawano Lake Strategic Plan. 2006.
- Lakes Grant to Shawano Area Waterway's Management Association for Phase 1 of the Shawano Lake Strategic Plan. 2006.
- Lakes Grant to Shawano Area Waterway's Management Association for phase 4 of the Shawano Lake water quality assessment. 2004.
- Lakes Grant to Shawano Area Waterway's Management Association for phase 1 of the Shawano Lake water quality assessment, preliminary survey, and capacity building. 2003.
- Lakes Grant to Shawano Area Waterway's Management Association for phase 2 of the Shawano Lake water quality assessment, preliminary survey, and capacity building. 2003.
- Lakes Grant to Oconto County for county lake classification ordinance development. 2004.
- Lakes Grant to Oconto County for county lake classification project. 2001.
- Lakes Grant to Shawano County for county lake classification study. 2000.
- Lakes Grant to Loon Lake Management District for land acquisition. 1998.
- Lakes Grant to Shawano County for Shawano Lake diagnostic feasibility study. 2005.
- Lakes Grant to Shawano Area Waterway's Management Association for phase 3 of Shawano Lake aquatic plant survey. 2004.
- Lakes Grant to Loon Lake Management District for aquatic plant management and water quality survey. 2003.
- Lakes Grant to Loon Lake Management District for comprehensive management plan. 2002.
- Lakes Grant to Lulu Lake District for phase 1 of management project. 2002.
- Lakes Grant to Shawano County for Shawano Lake Leyogonimus parasite study. 1998.
- Lakes Grant to Shawano Area Waterway's Management Association for Shawano Lake management plan. 1991.
- Lakes Grant to Loon Lake Management District for land acquisition. 1996.
- Lakes Grant to Loon Lake Management District for water quality monitoring and aquatic plant survey. 1991.
- Aquatic Invasives Grant to Washington Lake District for a long term Eurasian water milfoil control project. 2005.
- Aquatic Invasives Grant to Loon Lake Management District for Eurasian water milfoil treatment. 2004.
- Aquatic Invasives Grant to Oconto County for a county Clean Boats, Clean Waters project. 2006.
- Aquatic Invasives Grant to Washington Lake District for an aquatic invasive species study. 2004.

Monitoring

A number of projects have occurred in the Shawano Lake watershed throughout the years. These projects fall into the categories of aquatic invasive species monitoring, citizen lake monitoring, fisheries surveys, water quality monitoring, loon monitoring, and watercraft inspections.

Citizen Lake Monitoring Network (CLMN) volunteers monitor water quality and invasive species in Shawano Lake, White Clay Lake, Loon Lake, and Washington Lake. Clean Boats, Clean Waters (CBCW) volunteers monitor public access sites on Shawano Lake, Loon Lake, and White Clay Lake to help prevent the spread of aquatic invasive species from one waterbody to another.

Reports, Plans and Studies

The residents of the Shawano Lake watershed are fortunate in that there have been many agencies and groups active in studying water resources in the area. The list of reports, plans, and studies add to the collective knowledge of the watershed. This document provides an overview of the watershed but the resources below provide more specific information.

- Shawano County Land and Water Resource Management Plan. 2009. Prepared by Shawano County Land & Water Conservation Department.
- Oconto County Land and Water Resource Management Plan. Prepared by Oconto County Land Conservation Department.
- Menominee County Land and Water Resource Management Plan. Prepared by Menominee County Land and Water Conservation Department.
- Aquatic Plant Management Plan for Shawano Lake. 2009. Prepared by Northern Environmental for Shawano Area Waterways Management, Inc.
- Loon Lake Hybrid Milfoil Treatment Report. 2009. Prepared by Cason & Associates, LLC for Loon Lake Management District.
- Loon Lake Hybrid Milfoil Study. 2009?. Prepared by U.S. Army Engineer Research and Development Center.
- Watershed Assessment of Shawano Lake. 2008. Prepared by UW-Stevens Point Center for Watershed Science and Education.
- Rapid Watershed Assessment, Wolf River Watershed. 2008. Prepared by U.S. Department of Agriculture Natural Resources Conservation Services.
- The Shawano Lake Watershed Strategic Management Plan. 2009. Prepared by Bonestroo for Shawano Area Waterways Management, Inc
- White Clay Lake "Clean Lakes" Project. 1976. Wisconsin Department of Natural Resources.
- White Clay Lake Macrophyte Survey. 1987 and 1991. Wisconsin Department of Natural Resources.
- Lulu Lake Aquatic Plant Management Plan. 2002. Prepared by Blue Iris Environmental for Lulu Lake Management District.
- Loon Lake Study. 1991. Prepared by Foth and Van Dyke for Loon Lake-Wescott Management District.
- Loon Lake Study. 1993. Prepared by Foth and Van Dyke for Loon Lake-Wescott Management District.
- Loon Lake Comprehensive Management Plan. 2003. Prepared by Aquatic Biologist, Inc for Loon Lake-Wescott Management District.

Shawano Lake, Photos by Chad Cook, UW Extension



Recommendations

- Minimize agricultural runoff from rural areas.
Provide funding needed for nutrient management programs.
Work with County Land and Water Conservation Department staff to implement Agricultural Performance Standards and Prohibitions.
- Minimize urban stormwater runoff.
- Protect groundwater resources.
Increase private well testing.
Conduct an inventory of unused wells and increase funding for proper abandonment.
Increase groundwater protection work.
- Restore key wetlands to improve and protect water quality.
Restore wetlands for lake and stream water quality protection.
Increase funding to Counties to restore wetlands.
- Establish riparian buffers to protect water quality.
Re-establish shoreland buffers around lakes, streams, and drainage ways in the watershed to decrease pollutant loads and to provide habitat for aquatic wildlife.
- Monitor and control non-native invasive species.
Establish and maintain Clean Boats, Clean Waters volunteers to monitor lake and stream public access sites to educate water users about aquatic invasive species prevention steps.
Hire an aquatic invasive species coordinator for Shawano County.
- Obtain water quality and biological monitoring data to adequately assess water resource conditions.
Collect updated water quality data to assess the current overall lake health for all lakes in the watershed. These data could be collected by Citizen Lake Monitoring Network volunteers.
Conduct assessment monitoring on streams in the watershed to further define nonpoint source pollution problems. Assessment monitoring should include fisheries and stream habitat surveys to help identify stream segments that are degraded because of the lack of adequate buffers and vegetative filter strips. This information will help guide Conservation Reserve Enhancement (CREP), Targeted Runoff Management (TRM), and other conservation funding programs to the areas of greatest need.
- Increase citizen watershed awareness, understanding, and stewardship ethic.
Encourage and promote the formation of lake and river management organizations where none exist.
Encourage and promote comprehensive management planning and implementation of management recommendations to protect, enhance, and restore water quality and habitat of the water resources.
Educate riparian residents about waterfront owner stewardship, the value and protection of shoreline habitat, and native aquatic plant species.
Educate residents and users of the water resources in the watershed about preventing the spread of nuisance invasive species that threaten native species.

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UW
Extension
Basin Education Initiative

Wisconsin DNR's mission involves preserving, protecting, and restoring natural resources. Watershed Planning provides a strategic review of water condition to enhance awareness, partnership outreach, and the quality of natural resource management.

Shawano Lake