2016 Update

McDill Pond Management Plan
Portage County, Wisconsin


Photo: Heather Pezewski

McDill Pond Management Planning Committee

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Prepared by UW-Stevens Point
Center for Watershed Science and Education

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A special thanks to all who helped to create the McDill Pond Management Plan and provided the necessary data in the Portage County Lakes Study.

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Goal 10. For successful implementation of this plan, communication will occur between MILPRD members, watershed residents, and other partners identified in this plan.

Goal 11. Keep the information and resources within the McDill Pond Management Plan current and up to date.

Introduction

McDill Pond is a 261-acre impoundment of the Plover River located in the City of Stevens Point and the Village of Whiting in Portage County, Wisconsin. It has a maximum depth of 14 feet (Wisconsin Department of Natural Resources, 2005). A public boat launch is located on the eastern shore. This urban pond has a small park below the dam that serves an abundance of waterfowl and an osprey near the northern tip. The original dam was constructed in 1853 for logging operations. The pond is used and enjoyed by shoreland property owners. Many visitors also value the pond for its natural beauty, peace and tranquility, wildlife viewing, and recreational opportunities including fishing, enjoying scenery, kayaking, and motor boating.

The purpose of lake management plans is to provide guidance to prevent or solve problems that may harm lake ecosystems. The development of lake management plans for McDill Pond and 28 other Portage County lakes is the second phase of the Portage County Lakes Study. During the first phase, data collection was completed for the 29 lakes. Researchers focused on data related to topics affecting lake health, including water quality, shoreline development, amphibian habitat, fisheries, and aquatic plants. A summary of the study result can be found in the Background Information (from 2002-2003 study) section of this document.

The purpose of this lake management plan is to provide guidance to prevent or solve problems that may harm McDill Pond and its watershed.

As important as data collection is to any management plan, the success of the plan depends upon citizen involvement. The McDill Pond management plan was developed by interested citizens, local organizations, and professionals who applied the data while actively gathering additional citizen input. A citizen survey was conducted to learn about values, opinions, and any perceived issues with the pond. The survey was sent to 146 residences within the McDill Inland Lake Protection and Rehabilitation District and 283 residences outside of the District within the watershed. The survey was also available online for any members of the public interested in participating. Fifty-four citizen surveys from within the District were returned, for a response rate of 37%. Forty-five surveys from outside the District within the watershed were returned, for a response rate of 16%.

The members of the McDill Pond management planning committee met monthly for four months, learning about topics related to the pond and developing this lake management plan.

Who can use this 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 McDill Pond can have the greatest influence on the pond by understanding and choosing lake-friendly options to manage their land and the pond.
- **McDill Inland Lake Protection and Rehabilitation District (MILPRD):** This plan provides the District with a well thought-out plan for the pond and lists options that can easily be prioritized. Annual review of the plan will also help realize accomplishments related to the pond. Resources and funding opportunities for lake management activities are made more available by placement of goals into the lake management plan, and the local organizations can identify partners to help achieve their goals for McDill Pond.

- **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 City of Stevens Point and Village of Whiting:** The City and Village can consider the visions, wishes, and goals documented in this lake management plan when considering municipal-level management planning or decisions within the watershed that may affect McDill Pond.
- **Portage 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 Portage County lakes, streams, wetlands and groundwater.
- **Wisconsin Department of Natural Resources (WDNR)**: Professionals working with lakes in Portage 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 WDNR 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 state funding– if multiple Portage County lakes have similar goals in their lake management plans, they can join together when seeking grant support to increase competitiveness for statewide resources.

Goals, Objectives and Actions

The overall goal for McDill Pond is to keep it as it is or better than it is.

The following goals, objectives, and associated actions were derived from the values and concerns of citizens and members of the McDill Pond Management Planning Committee, and the known science about McDill Pond, its ecosystem and the landscape within its watershed. Implementing and regularly updating the goals and actions in the McDill Pond Management Plan will ensure that the vision is supported and that changes or new challenges are incorporated into the plan. 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.**

Although each lake is different, to ensure a lake management plan considers the many aspects associated with a lake, the Wisconsin Department of Natural Resources requires that a comprehensive lake management plan address, at a minimum, a list of topics that affect the character of a lake, whether each topic has been identified as a priority or as simply something to preserve. These topics comprise the chapters in this plan. For the purposes of this plan, the chapters 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, McDill Inland Lake Protection & Rehabilitation District

In-Lake Habitat and a Healthy Lake

Many lake users value McDill Pond for its fishing, 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: Heather Pezewski

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 McDill Pond includes the aquatic plants, branches, and tree limbs above and below the water.

The 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. The fishing regulations for McDill Pond can be found on the WDNR website: http://cida.usgs.gov/wdnr_regs/apex/f?p=wdnr_fishing_regulations:lake_regulations:0::NO:20:P20_WBIC:1403200#R770266518172521259.

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2014 Updates: The fish community of McDill Pond was surveyed by the Wisconsin Department of Natural Resources (WDNR) prior to the 2008 drawdown. The WDNR has scheduled another fish survey to be conducted in 2017. Additionally, northern pike regulation evaluations were currently underway statewide. According to Tom Meronek, WDNR Fisheries Biologist, the tree drop project that took place on McDill Pond in 2013 was successful, but its contribution to the fisheries is not yet determined.

According to Lake District notes: In May 2013, 3,000 perch and 4,500 bluegills were stocked in McDill Pond. At the end of August, fisheries biologists with the WDNR released 12,000 largemouth bass in the pond. The Izaak Walton League donated $4,950 towards fish restocking. Fishing was reopened on 5/1/2013 for catch-and-release and to allow for carp removal. The Lake District board worked with the City attorney to revise a city ordinance that now allows a bow to be discharged for bow fishing of carp in McDill Pond. During summer 2013, Dave Muraski trapped 2,614 carp.

Numerous post-drawdown fishery surveys have been conducted. A fyke netting survey was done by the UW-Stevens Point Ichthyology and Aquarium Sciences Society in 2014 and another survey was done by students from the local high school in October 2014. To date, the survey data and interpretation have not been provided to the Lake District.

There are plans to stock crappie in 2016; the number will depend on available funding.

Guiding Vision for the Fish Community

The McDill Pond planning committee envisions a healthy fishery that is comprised of quality-sized fish that are edible.

Goal 1. The fishery in McDill Pond will resemble pre-drawdown 2008/2009 ratios.

Objective 1.1. Work with fisheries biologists with the WDNR to develop management strategies to reach 2008/2009 ratios and verify strategies are achieving the strategic goals.

Action	Lead person/group	Start/end dates	Resources
WDNR Fisheries Biologists will routinely survey the fishery in McDill Pond.	MILPRD	Scheduled for 2017 Completed in 2008	WDNR Fisheries Biologist
Request the results of fishery surveys from the WDNR and work with the WDNR Fisheries Biologist to interpret results and determine if the fishery is healthy.	MILPRD	2015 and Ongoing	WDNR Fisheries Biologist
Check on the health/quality of the fish annually.	MILPRD	Survey conducted in 2014 by UWSP Ichthyology and Aquarium Science Society (Dr. Sipiorski)	Isaak Walton League WDNR Fisheries Biologist Ichthyology and Aquarium Science Society UWSP Fisheries Society
Obtain data from the Isaak Walton League about their annual fishery catches.	MILPRD	Annually	Izaak Walton League
Work with the WDNR Fisheries Biologist to explore using a creel survey to collect data on catch rates. Explore having water craft inspector do creel surveys – check with Tom Meronek.	MILPRD		WDNR Fisheries Biologist UWSP Fisheries Society Izaak Walton League
Continue to monitor the carp population to determine if it is growing. Communicate with the WDNR Fisheries Biologist and explore taking action if the situation becomes more serious.	MILPRD		WDNR Fisheries Biologist Izaak Walton League
Provide education about using catch and release for larger size fish in McDill Pond – ask watercraft inspector(s) to remind people about it.	MILPRD	Ongoing	WDNR Fisheries Biologist UW-Extension Lakes

The Aquatic Plant Community

Aquatic plants comprise an essential part of McDill Pond's ecosystem. 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. Healthy aquatic plant communities, along with vigilant watch, will help to limit new aquatic invasive species from becoming established in McDill Pond. Aquatic plant growth is dense in some areas. This can negatively affect recreation on the pond, enjoyment by users, and economic benefits.

2014 Updates: Citizens and District members who attended the McDill Pond plan update session reported an overabundance of aquatic plants. Since 1992, management of invasive Eurasian watermilfoil (EWM) has occurred annually through various techniques, including hand-pulling, chemical treatments and mechanical harvesting. See the **Aquatic Invasive Species (AIS)** section for more details.

Enforcement action was issued in 2015, due to non-compliance with permit conditions for mechanical harvesting of invasive EWM. The District should take steps to add the appropriate harvester maps/technology to the harvesting equipment, and to follow the guidance provided in permits to avoid future infractions.

Guiding Vision for the Aquatic Plant Community

McDill Pond will have healthy native vegetation that provides habitat and reduces algal blooms. Steps will be taken to manage the current AIS and new AIS will be prevented.

Goal 2. District board/members, shoreland property owners and lake users will be informed about aquatic plants to help them make appropriate decisions about aquatic plant management.

Objective 2.1. Inform users about aquatic plants through dissemination of information.

Actions	Lead person/group	Start/end dates	Resources
Conduct a survey of the aquatic plant community and share results.	MILPRD		Golden Sands RC&D WDNR Water Resource Specialist Consultant

Share information about the importance and maintenance of native aquatic plants in the pond through lake meetings, e-mails, welcome packet, newsletter, website.	MILPRD	Ongoing	UW-Extension Lakes WDNR Water Resource Specialist City of Stevens Point
Property owners will reduce/eliminate the use of fertilizer and take steps to reduce runoff that would deliver nutrients to the pond that feed aquatic plants and algae.	Shoreland and District property owners	Ongoing	Portage Co. UWEX Portage Co. Land Conservation Dept. City of Stevens Point

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. In some lakes, aquatic invasive plant species can exist as part of the plant community, while in other lakes populations explode, creating dense beds that can damage boat motors, make areas non-navigable, inhibit activities like swimming and fishing, and disrupt the lakes' ecosystems.

Invasive aquatic and/or terrestrial species that have been documented in McDill Pond include *curly-leaf pondweed* (2000), *Eurasian watermilfoil* (1992), *hybrid watermilfoil* (2011), *Japanese knotweed* (2009), *phragmites (non-native)* (2013), and *rusty crayfish* (2009).

See the Aquatic Plant Management Plan section for more information on EWM/HWM management options as well as related goals and objectives.

General recommendations for managing and reducing the spread of AIS:

AIS are being brought into McDill Pond on boats/trailers and on fishing equipment used directly in the pond and upstream of McDill Pond. To prevent the further spread and/or establishment of new AIS in McDill Pond, shoreland property owners and users of Bentley Pond, Jordan Pond, McDill Pond and the Plover River should be informed of proper cleaning techniques for boating and fishing equipment.

Reducing nutrients that travel across the landscape and into the lake can help lessen excessive plant growth. Maintaining a healthy amount of native aquatic plants can help to reduce the frequency and intensity of algal blooms. Denuded lakebeds can increase the potential for AIS establishment, and sediment stirred up by wind or boats can mix phosphorus into the water where algae can use it for growth.

AIS can be better managed if routine monitoring is done annually (or more frequently) by volunteers trained in AIS identification and proper removal methods. If other AIS are found or suspected, lake users/residents can refer to the AIS Rapid Response Plan in the appendices for instructions. Monitoring efforts can be coordinated with local lake citizens, Golden Sands Resource Conservation & Development Council, Inc. (Golden Sands RC&D), and WDNR aquatic plant biologists.

AIS can be removed from the pond by non-mechanical means without a permit. The plant material should be discarded on land away from the pond or channels. Since EWM/HWM can spread from fragments, proper techniques should be followed to avoid spread and to ensure the plant and its deep roots are completely removed.

Rusty crayfish

Rusty crayfish are more aggressive than native crayfish so they are likely to displace native crayfish. Feeding habitats are different for the two species, so reductions in the abundance and diversity of aquatic plants have been observed in some lakes. Aquatic plants provide important habitat for fish and other aquatic animals, as well as prevent erosion. By damaging underwater habitat, fish may lose spawning habitat, protective cover, and food. Many species of fish that normally eat native crayfish do not eat the larger and more aggressive rusty crayfish. Rusty crayfish reproduce quickly and females lay 80-575 eggs! For more information, visit: www.dnr.wi.gov/topic/invasives/fact/rustycrayfish2012.

Rusty Crayfish

Rusty crayfish have been identified in McDill Pond since 2006. They are established upriver, so successfully managing them in McDill Pond is not realistic.

Curly-leaf pondweed (CLP)

Curly-leaf pondweed (CLP) can live in harmony within the aquatic plant community, but may become invasive. The die-off of large beds of CLP in June can contribute to nuisance algal blooms throughout the summer. Harvesting CLP in McDill Pond in late May or early June can remove nutrients from the pond.

Curly-leaf pondweed (CLP)

CLP has been identified in McDill Pond since 2000, but has not been abundant enough to cause concern. CLP is also present in Jordan Pond.

Eurasian watermilfoil/Hybrid watermilfoil (EWM/HWM)

In some lakes, Eurasian watermilfoil (EWM) can exist as part of the plant community, while in others EWM can create dense beds that can damage boat motors, make areas non-navigable, and inhibit swimming and fishing. This plant can produce viable seed; however, it often spreads by fragmentation. Just a small fragment of the stem is enough to start a new plant, so spread can occur quickly if plants are located near areas of activity such as beaches and boat launches. EWM can hybridize with native milfoil. Hybrid watermilfoil (HWM) appears to be more resistant to chemical treatment. EWM has been identified in McDill Pond since 1992, and HWM was confirmed in 2011. Monitoring, developing, and following strategies for controlling EWM/HWM are essential for keeping populations manageable.

Eurasian watermilfoil (EWM)

Since EWM was first identified in McDill Pond in 1992 and HWM in 2011, removal efforts including chemical treatment and mechanical harvesting have been conducted (Table 1). The most recent point-intercept (P.I.) survey was conducted in <2013/2014?>. Post treatment in 2014???

Table 1. History of EWM/HWM management in McDill Pond.

Year		Point-Intercept (P.I.) Survey	Other Survey	Hand-pulling	Hand-pulling (Divers)	Milfoil Weevil Assessment	Water Level Manipulation	Mechanical Harvesting	Chemical Treatment	
									"Spot"	*Whole-Lake*
1992	EWM first documented in McDill Pond.									
2008						X				
2009	Applied for WDNR AIS grant.									
2010										
2011	HWM confirmed in McDill Pond.									
2012										
2013		X?								
2014		X?								
2015										
2016										

Goal 3. Prevent new aquatic invasive species (AIS) from becoming established in McDill Pond.

Objective 3.1. Prevent any new AIS from entering McDill Pond through monitoring and disseminating information. If a species is professionally confirmed in the pond, quickly assess the extent of its presence and remove it using proper procedures and techniques.

Actions	Lead person/group	Start/end dates	Resources
Learn about native plants and AIS through plant identification workshops.	MILPRD	2016	Golden Sands RC&D
Form a group of citizens to routinely monitor for new AIS.	MILPRD	2016	Golden Sands RC&D UW-Extension Lakes
Consider hiring a UWSP student intern to organize hand-pulling efforts and/or AIS education on McDill Pond.	MILPRD	2016	UWSP Water Resources intern
Continue monitoring for AIS in the area in the vicinity of Koziczkowski Park and the Godfrey and Maybelle Erickson Natural Area.	Dr. Kent Hall		Golden Sands RC&D
Install and maintain signage about AIS at the boat landings.	MILPRD	Ongoing	WDNR City of Stevens Point
Establish a Clean Boat, Clean Waters (CBCW) program at boat landing on Opening Fishing, Memorial, and Labor Day weekends.	MILPRD	Ongoing	UW-Extension Lakes Golden Sands RC&D Isaak Walton League
Monitor for new AIS. Use the AIS Rapid Response Plan if new AIS are found or suspected (appendices). Update the AIS Rapid Response plan annually.	MILPRD	Ongoing	UW-Extension Lakes WDNR Golden Sands RC&D
Work with other lakes, UW-Extension Lakes, and AIS coordinator on marketing (coasters, bags, posters, etc.) to prevent the spread of AIS.	MILPRD	Ongoing	UW-Extension Lakes Golden Sands RC&D Isaak Walton League Nature Treks

Aquatic Plant Management Plan

Purpose: To Maintain Navigation and Manage Existing AIS

The management options outlined in this plan were selected to achieve a balance between healthy aquatic habitat, a healthy fishery, good water quality, and recreational access. Responses to control efforts differ within McDill Pond from year-to-year. No single approach should be applied every year; often the selection of multiple options and adaptive year-to-year changes in strategy will be most successful in achieving the management goals. Each year, the state of the aquatic plants in McDill Pond should be assessed. During fall or winter, the results of the assessment (surveys, maps marked with CLP beds, etc.) should be reviewed by the MILPRD with assistance from the WDNR Water Resource Specialist, a consultant, and Golden Sands RC&D. Others may also be involved. With this team, the strategy for the upcoming year should be developed based on conditions. The strategy may include one or more of the following options. Some of the options require a WDNR permit.

Annual discussions to select the options for upcoming management activities should include identifying strategies to 1) allow for access and navigation; 2) control EWM/HWM; and, 3) reduce CLP biomass. The following information should be used to guide the discussions for a given year.

1) Aquatic plant survey - conducted annually

a. Visual Survey (target species: CLP, EWM)
   i. Use for CLP beds.
   ii. Only appropriate for EWM/HWM when large-scale (greater than 10 acres) chemical treatments are NOT being conducted.

b. *Point-Intercept (P.I.) Survey*
   i. Conducted by professionals.
   ii. Required before and after a large scale (greater than 10 acres) chemical treatment is conducted.
   iii. To obtain a harvesting permit.
   iv. To establish the extent of EWM/HWM in the pond for decisions about harvesting or drawdown of the pond.
   v. Required every 5 years for updates to this aquatic plant management plan.

2) Success and problems reported by shoreland residents, lake users, professionals.

3) Adjust/review the management strategy annually in fall/winter

a. Review the most recent aquatic plant surveys to determine management strategies for upcoming year.
b. At a minimum, the meeting to discuss the upcoming strategy should include MILPRD, WDNR water resource specialist and a consultant.

Reducing the movement of nutrients to the pond and nutrients in the pond can help to reduce the frequency and duration of algal blooms and the amount of aquatic plant growth. Managing nutrients from the landscape by eliminating or reducing fertilizers, managing manure, and controlling runoff can reduce nutrient delivery to the pond. Refer to the Water Quality and Land Use section of this plan for more details. The removal of aquatic plant material through harvesting can help to reduce the nutrients already in the pond, while chemical treatments allow nutrients in the dead plant tissue to continue cycling within the pond.

Harvesting in McDill Pond

Permit Required

Harvesting is a management technique allowed in McDill Pond in water depths greater than 3 feet in approved zones (Figure 1). Harvesting in the pond can be done for two distinct reasons: 1. management for navigation and access (native species), and 2. removal of CLP biomass/nutrients. To avoid the spread of EWM/HWM by fragmentation, EWM/HWM beds should be avoided by the harvester. If the percent EWM/HWM in the pond is the most dominant species (based on professionally generated surveys), the EWM/HWM would be considered excessive in the pond and mechanical harvesting would be allowed if it becomes the dominant species or ahead of a drawdown. Maintain a record of the truckloads of aquatic plants removed during harvesting.

Skimming

Permit Required

Skimming is allowed in McDill Pond for the purpose of removing dislodged plant material and floating algal mats that impair navigation or waterway use. During the skimming process, no harvesting of emergent vegetation (cattails, bulrushes, lilies, pickerelweed, etc.) can be removed outside of the general harvesting map. These plants must be avoided. Skimming could be conducted in the approved zones of the pond after June 15th (Figure 2). Before operations may commence, approval from the WDNR Aquatic Plant Management Coordinator must be obtained by contacting him/her 24 hours ahead of time. Skimming must be conducted during normal business hours, Monday through Friday. To avoid disturbance of sediment, skimming will be achieved with harvesters using the conveyor or cutting deck that is being operated at one foot or less below the water. To avoid disturbance of sediment in shallower locations, a smaller harvester unit may be used to skim. Skimming may also occur with a harvester boom (cranberry boom) or "lake comb" to pull floating mats from shallow areas to deeper locations where larger harvesters can then remove the material.

Goal 4. Harvesting in McDill Pond will be conducted by trained personnel in a manner that is safe and follows the guidance laid out in this plan and WDNR permits.

Objective 4.1. Harvesting in McDill Pond will be conducted using appropriate equipment with personnel that understand this guidance and are trained in the use of the technology, harvester, safety rules, and how to identify EWM/HWM.

Actions	Lead person/group	Start/end dates	Resources
*Address with WDNR: harvester operator training and non-compliance issues.	MILPRD	2016	WDNR Water Resource Specialist
To ensure that MILPRD are harvesting in water depths greater than 3 feet and in the approved zones, the following should be mounted on the cutter end of the harvesters: 1. depth finder that includes a geo-referenced map of allowable harvesting zone or 2. depth finder plus a hand held GPS with the geo-referenced harvesting map	MILPRD	2016 and ongoing	WDNR Water Resource Specialist
Ensure that safety guidelines are followed and necessary safety gear is provided on the harvester. Maintain the equipment to be safe for operators and operation.	MILPRD	Ongoing	
Conduct training sessions for harvester operators.	MILPRD	Annually and as needed	WDNR Water Resource Specialist Consultants
To avoid EWM/HWM beds, harvester operators should learn to identify EWM/HWM.	MILPRD	Annually	Golden Sands RC&D
Document the number of truckloads of aquatic plants removed during harvesting. Keep logs for use in future management decisions.	MILPRD	Ongoing during harvesting	WDNR Water Resource Specialist

Goal 5. Reduce nutrients and algal blooms in McDill Pond by harvesting CLP.

Objective 5.1. Manage curly-leaf pondweed (CLP) in McDill Pond so that less than 20% of McDill Pond is infested in early June.

Action	Lead person/group	Start/end dates	Resources
Volunteers and harvester operators should learn to identify and monitor CLP.	MILPRD	Annually	Golden Sands RC&D
Routinely monitor CLP, and document the presence of CLP beds on a map in June.	MILPRD	Annually (early/mid-June)	WDNR Water Resource Specialist Golden Sands RC&D Consultant
Harvest CLP to reduce nutrients in McDill Pond in water depths greater than 3 feet.	MILPRD	Annually in early/mid-June or as needed	WDNR Water Resource Specialist

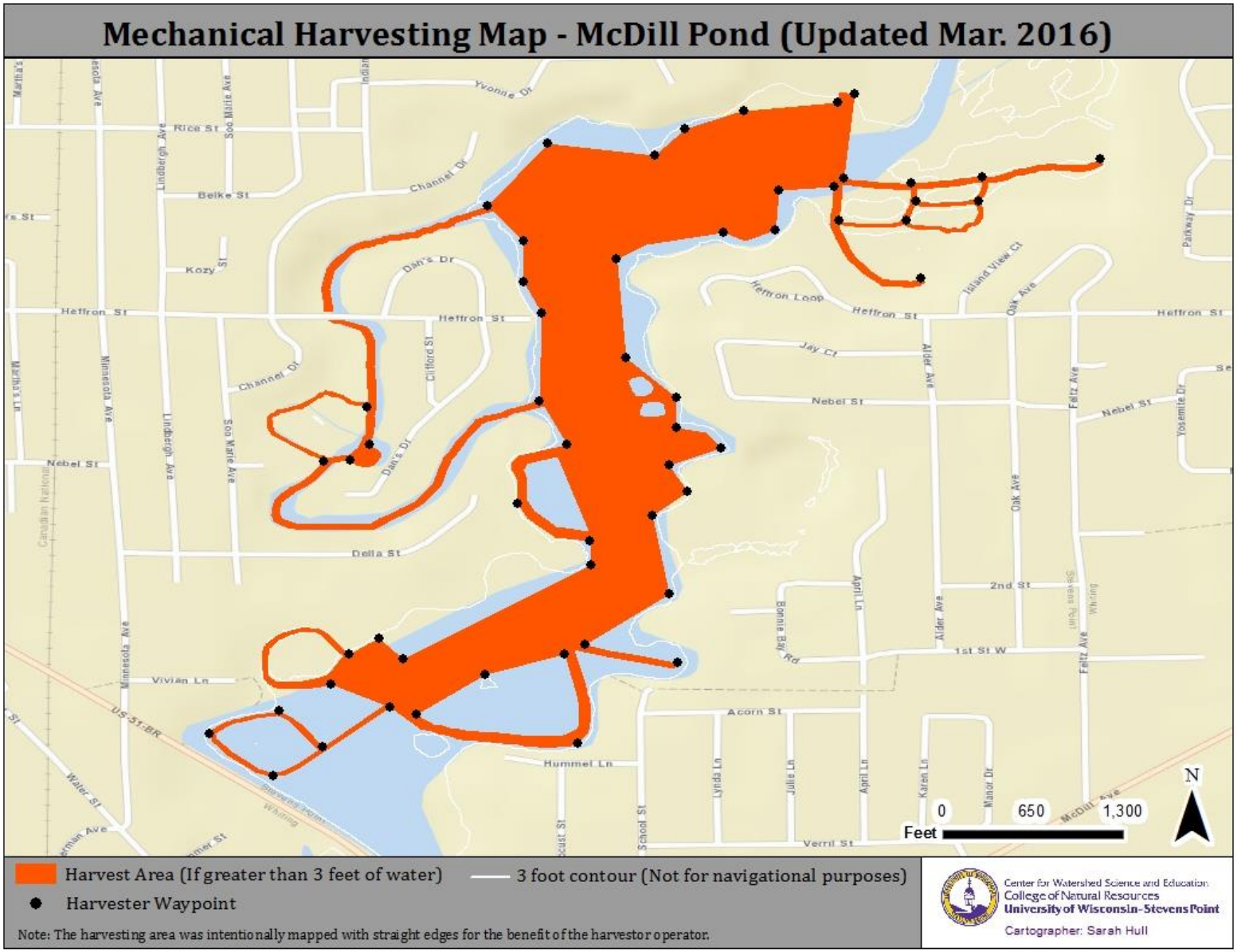


Figure 1. Allowable harvestable areas in McDill Pond. Waypoint coordinates are located in the appendix.

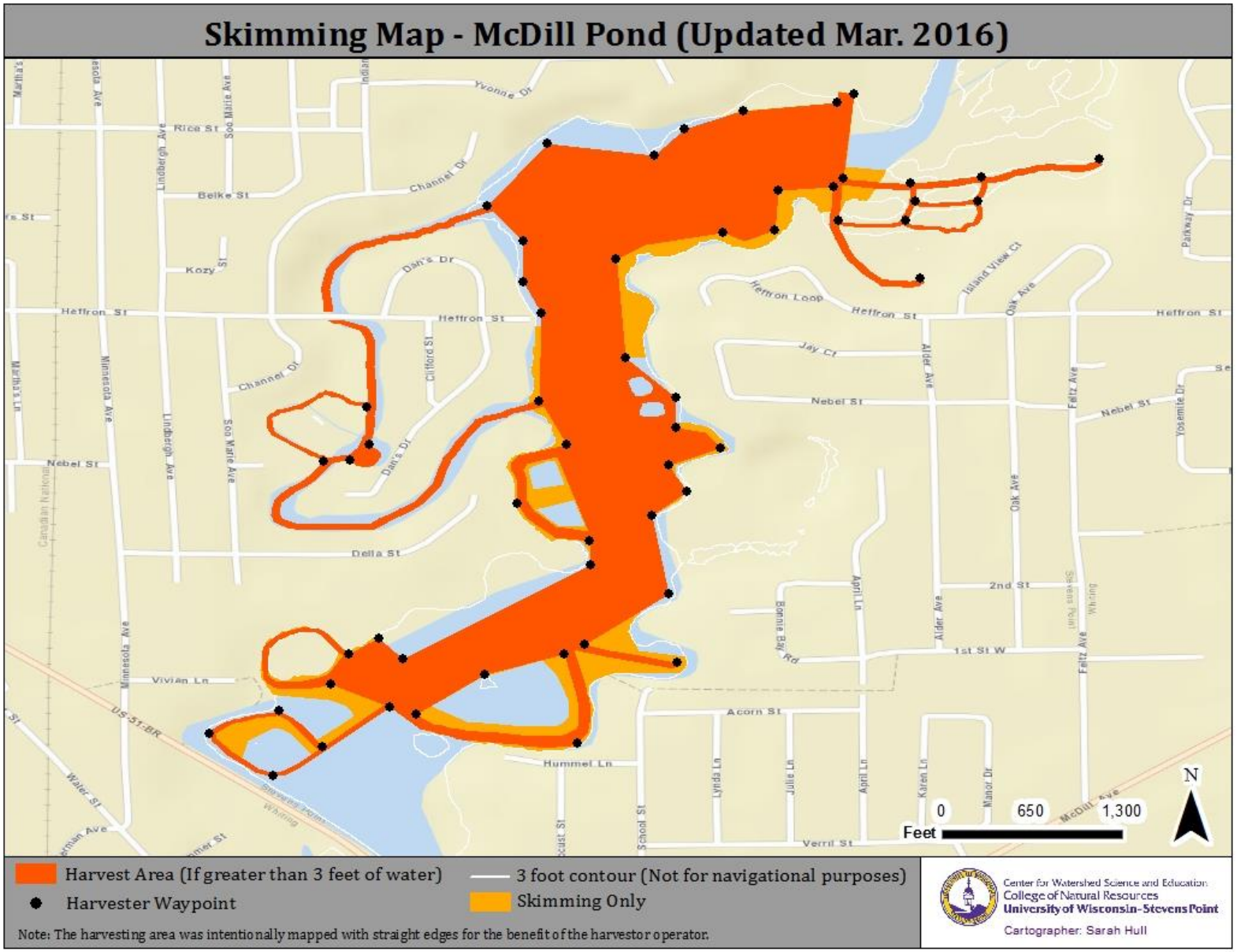


Figure 2. Allowable skimming areas in McDill Pond.

Managing EWM/HWM in McDill Pond

The following table is a summary of actions associated with the management of EWM/HWM in McDill Pond. It is not all-inclusive; please review the entirety of this plan before choosing management options.

Goal 6. Manage EWM/HWM in McDill Pond to minimize spread, ensure a healthy aquatic ecosystem, and provide recreational opportunities.

Objective 6.1. Work to eradicate or manage EWM/HWM in a way that no more than 20% of McDill Pond is infested.

Actions	Lead person/group	Start/end dates	Resources
Continue efforts to eradicate EWM/HWM in McDill Pond. Annually review surveys, management options, and meet with professionals to choose the appropriate EWM/HWM management strategies for the upcoming year.	MILPRD	Annually in fall	WDNR Water Resource Specialist Consultant Golden Sands RC&D
Conduct a survey of EWM/HWM before and after chemical treatments greater than 10 acres to obtain a permit for chemical treatment, evaluate treatment success, and inform future decisions. If large scale chemical treatments are not being used, use visual surveys in years between point-intercept (P.I.) surveys to monitor the extent of EWM/HWM. Review survey information and adjust strategies for the upcoming year.	MILPRD	*P.I. Survey:* Every 5 years *Visual:* Annually when PI isn't done	WDNR Water Resource Specialist Consultant Golden Sands RC&D
If a chemical treatment is conducted, follow up with a plan to continue to manage EWM/HWM (hand-pulling).	MILPRD	If chemical treatment done	Golden Sands RC&D WDNR Lakes Specialist
Consider hiring a college student intern to organize hand-pulling efforts and/or AIS education on McDill Pond.	MILPRD	As needed	UWSP Water Resources Intern Coordinator
Inform lake residents/users prior to chemical treatment.	MILPRD	As needed	Permit guidance Consultant
Consider the use of milfoil weevils as a control method for EWM/HWM in bays where chemicals are not used and healthy shorelands are present.	MILPRD	As needed	UWSP – Dr. Ron Crunkilton Golden Sands RC&D
If chemical treatments are ineffective, conduct hybridity/challenge tests.			Golden Sands RC&D Consultant
Review **Water Quality and Land Use** goals, actions and objectives to encourage and implement practices to reduce nutrient loading within the watershed.	MILPRD	2016	Portage Co. Land Conservation County Board Supervisors NRCS WDNR Lake Protection grants WI DATCP

EWM/HWM Management Options for McDill Pond

Changes may occur within the pond that change how the pond responds to control attempts for EWM/HWM. It is essential that management methods be carefully evaluated on an annual basis before implementation. Since multiple approaches and adaptive year-to-year changes in approach/strategy are most successful, the population of EWM/HWM should be evaluated using a 'point-intercept' method, which includes a visual survey of the littoral zone before and after treatment to determine the effectiveness of a strategy in a given year. Strategies for the subsequent year should be adjusted accordingly. EWM/HWM management involves evolving scientific knowledge; therefore, the management strategies for the management of EWM/HWM in McDill Pond should be adapted as EWM/HWM populations in the lake change and as new information becomes available.

Management options will change depending upon the amount and location of EWM/HWM in McDill Pond; therefore, annual monitoring of these species is essential. The presence of EWM/HWM and other AIS will also define the type of aquatic plant management that can be conducted to address recreational impediments. The following EWM/HWM management strategies have been determined to be the most practical and effective options that would minimize impacts to McDill Pond as a whole:

Manual Removal – training is recommended - Permit is not required

ADVANTAGES	LIMITATIONS
∗ Can target specific plants - with proper training	∗ Removes near-shore wildlife and fish habitat
∗ Can be effective in controlling small EWM/HWM infestations	∗ Opens up areas where other AIS can become established
∗ No associated cost	∗ If EWM/HWM are not removed properly, could worsen the problem
	∗ Training required for proper identification/removal methods

Manual removal can be done by individual waterfront property owners who have been trained in removal techniques intended to be successful in removal while minimizing fragmentation of the plant. Volunteers who have learned proper techniques in identifying and removing EWM/HWM and other AIS can remove plants by hand-pulling at any time, without a permit. This technique can be employed following a chemical treatment to remove individual plants.

Manual Removal, Diver-Assisted (With or Without Suction) – training is recommended - permit is not required

ADVANTAGES	LIMITATIONS
∗ Can be used in deeper areas	∗ Costs associated with hiring a diver may be comparable to chemical treatment expenses
∗ Can target specific plants with proper training	∗ Currently an experimental treatment – not readily available
∗ Can be effective in controlling small EWM/HWM infestations	∗ If EWM/HWM are not pulled properly, could worsen the problem
∗ May be useful in helping to remove upper root mass	

Divers trained in proper EWM removal techniques can be hired to manually remove AIS in deeper parts of the pond. If populations are low enough, this is the recommended option for controlling EWM/HWM at depths too great for hand-removal without additional gear**.** Hand removal of EWM/HWM may stir up bottom sediments, which can greatly reduce visibility. In this case, divers should use suction techniques to minimize sediment disturbance. Grants may be available to support manual-removal efforts. This technique can be employed following a chemical treatment to remove individual plants. To improve grant competition, MILPRD members could work with other area lake groups to jointly apply for a grant.

Chemical Treatment with Contact Herbicide (Early Season) – Permit required

ADVANTAGES	LIMITATIONS
∗ May reduce EWM/HWM for a time	∗ Usually not fully effective in eradicating target species
∗ Treatment not needed as frequently	∗ Contaminants may remain in sediment
	∗ Does not remove dead vegetation, which depletes oxygen and releases nutrients, adds to build-up of muck
	∗ Extra nutrients may spur additional aquatic plant and algae growth
	∗ May negatively affect native vegetation
	∗ Effects on lake ecosystem not fully understood
	∗ Can open up areas once taken up by natives for AIS to colonize again
	∗ Can be costly

All chemical treatments in McDill Pond will require a permit from the WNDR. See the Portage County Lake Information Directory (appendices) for contact information. Visit the WDNR website for permit requirements and guidance: http://dnr.wi.gov/topic/wastewater/aquaticpesticides.html. Follow WDNR guidelines for informing lake users of the use of chemicals in the lake, which includes providing documentation about the chemical to all shoreland property owners.

Often multiple approaches and adaptive year-to-year changes in approach are most successful. Strategies for the subsequent year should be adjusted accordingly. EWM/HWM management involves evolving scientific knowledge; therefore, management strategies for EWM in McDill Pond should be adapted as EWM populations in the lake change and as new information becomes available.

Hybrid watermilfoil (HWM) results from a hybridization of native watermilfoil with EWM. HWM is present in McDill Pond. There is evidence suggesting HWM can be more tolerant of certain herbicides such as 2,4-D products. If the plants are not responsive to chemical treatments, a *challenge test* should be conducted to determine which combination of chemicals will be effective in controlling the particular strain of HWM. This will entail obtaining live specimens from McDill Pond. A lab will than grow them in a controlled setting where different combinations of herbicides are applied at differing rates to evaluate their effectiveness. There are many combinations of herbicides and concentrations that can potentially be used to treat HWM. The only way to know the appropriate combination is by sending samples to be challenge tested. Treating HWM without knowing the appropriate combination of chemicals can create an even more resilient strain in the lake, damage the native aquatic plant population, and waste money.

Although the chemicals used are approved for use in aquatic environments by the US Environmental Protection Agency (EPA) and WDNR, the full impacts to the aquatic ecosystem are still unknown (WDNR, 2012). For more information, see the "Aquatic Plant Management Strategies" section and Large-Scale Treatment Research in Wisconsin (appendices). The appropriate herbicide, concentration, and contact time should be determined using the most up-to-date determinations.

Chemical Spot Treatment with Contact Herbicide (Early Season) – Permit required

Action: A *point-intercept* (P.I.) survey is required before and after large scale (greater than 10 acres) chemical treatments. The decision-making group should review the results in fall/winter to determine if chemical treatment is warranted in the upcoming year.

Treatment should occur early in the season, prior to emergence of native plants. In McDill Pond, a chemical spot treatment should be conducted using Reward (diquat bromide) applied at rates to achieve concentrations of 0.37 ppm**.** If the *challenge test* for the HWM in McDill Pond suggests that a different suite of chemicals would be more effective to treat the HWM, adjustments should be made to this plan.

Following a chemical treatment, monitoring for the target species must be conducted during that summer at least 30 days after the treatment, and the results of its effectiveness on the target and non-target species should be documented and provided to the WDNR.

Water Level Manipulation – Permit required

ADVANTAGES	LIMITATIONS
∗ Controls aquatic plants in shallower, near-shore areas	∗ Requires a controlling structure on the lake
∗ Can be low cost	∗ May cause undesired stress on ecosystem
	∗ Cannot be used frequently

A partial winter drawdown of McDill Pond could be used to help control EWM/HWM. Partial drawdowns can restore near-shore habitat and protect the quality of the fishery. Historical drawdowns on McDill Pond have been fairly successful for AIS management if EWM/HWM is a dominant species and biodiversity decreases. The magnitude of drawdown would be based on the extent and depth of target species. Drawdown typically occurs between Oct 1 and May 1. Drawdown planning should begin at least one year prior to the drawdown.

Mechanical Harvesting – Permit requried

ADVANTAGES	LIMITATIONS
∗ Removes plant material and nutrients	∗ Will spread EWM/HWM
∗ Can target specific locations	∗ Not used in water depths less than 3 feet
	∗ Some harm to aquatic organisms

EWM/HWM beds should be avoided by the harvester. Harvesting beds of EWM/HWM can only be conducted if the following circumstances exist and the WDNR Water Quality Specialist signs off: 1) the year prior to a drawdown, and, 2) if the EWM/HWM has become the dominant species and biodiversity is diminished. See the harvesting maps and the Harvesting in McDill Pond section earlier in this plan for additional details.

Milfoil Weevils - EWM - *(Note: Not viable if chemical treatment options are being pursued.)*

ADVANTAGES	LIMITATIONS
∗ Natural, native maintenance of native and exotic milfoils	∗ Require healthy shoreline habitat for overwintering
∗ Prefers the aquatic invasive Eurasian Watermilfoil	∗ Cannot survive in areas of mechanical harvesting or herbicide application
∗ Some lakes may already have a native populations.	∗ Effectiveness highly variable between lakes (works well for some lakes)
∗ Doesn't harm lake ecosystem	∗ Limited access to weevils for purchase in WI
	∗ Still considered experimental
	∗ Requires unmowed/natural shorelines for weevil habitat
	∗ Too many panfish may prevent weevil population growth

This option can be considered in areas of the lake with native or restored shorelines. Potential effectiveness in the desired areas of McDill Pond should be determined with a professional population estimate and assessment of shoreland health, abundance of predatory fish, etc. Milfoil weevils are expensive; therefore, obtaining a starter population and rearing them in predator-free conditions may be desirable from a financial standpoint. Professional assistance from consultants or Golden Sands RC&D staff should be sought if stocking or rearing is pursued. It is unknown if native milfoil weevil populations are present in McDill Pond.

No Action *(Note: This option is not recommended in McDill Pond at this time.)*

ADVANTAGES	LIMITATIONS
∗ No associated cost	∗ May not be effective in obtaining aquatic plant management objectives
∗ Least disruptive to lake ecosystem	

No action over time can be an option in McDill Pond, particularly to evaluate how the EWM/HWM in McDill Pond responds without management. In some cases, EWM has been observed to establish itself as a population that remains small and becomes a component of the ecosystem. If this option is chosen, routine monitoring should take place to ensure that EWM does not reach nuisance levels.

Landscapes and the Lake

Photo: Heather Pezewski

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 McDill Pond. 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 McDill Pond 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 McDill Pond 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. A summary of these results can be found in the Background Information (from 2002-2003 study) section.

As part of the water quality monitoring for the Wisconsin River Total Maximum Daily Load (TMDL) study, data were obtained from the Plover River near US Highway 10 and below McDill Pond between 2010 and 2013. This information can be accessed through the WDNR. In addition, a water quality study of the Plover River system was conducted from 2000-2001 (Freihoefer et al., 2001).

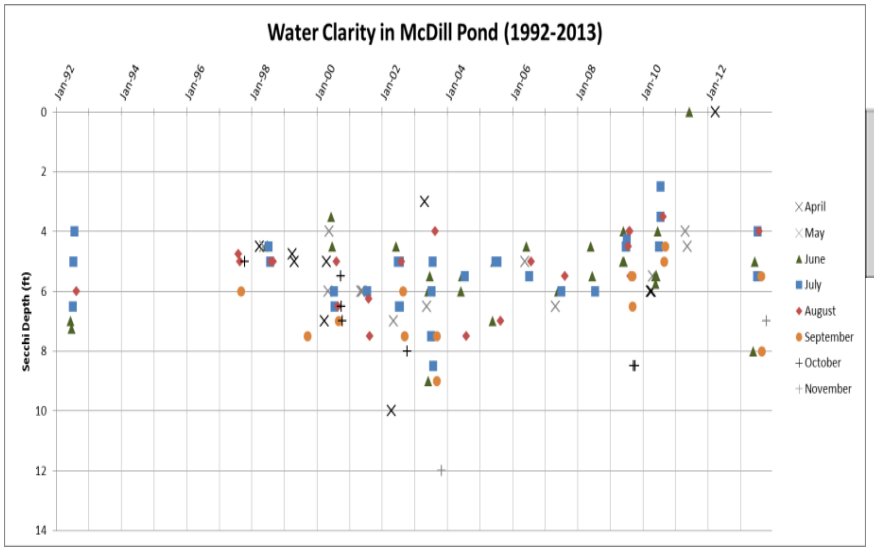
Water Quality and Land Use

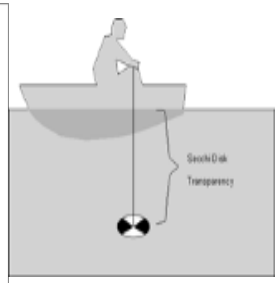
A variety of water chemistry measurements were used to characterize the water quality in McDill Pond. Water quality was assessed during the 2002-2003 lake study and involved a number of measures including temperature, dissolved oxygen, water chemistry, and nutrients (phosphorus and nitrogen). Nutrients are important measures of water quality in lakes because they are used for growth by algae and aquatic plants. Each of these interrelated measures plays a part in the lake's overall water quality. In addition, water quality data collected in past years was also reviewed to determine trends in McDill Pond's water quality.

McDill Pond is host to a variety of plants, insects, fish, amphibians, and a variety of other animals that all depend on good water quality in the pond. Planning participants and survey respondents indicated water quality influenced their enjoyment of the pond and impacted their perceived aesthetic value. The results from the Portage County Lakes Study indicated McDill Pond has fair water quality that could use some improvement. At that time, the pond had periodically high concentrations of phosphorus during parts of the year, and nitrogen at concentrations that could fuel excessive plant and algae growth.

2014 Updates: A fertilizer ban was established for McDill Pond District residents in 2015. The MPIRD should consider approaching the county to discuss the steps needed to reduce nutrient and sediments in the watershed and inform them of the steps that have been taken by residents to improve water quality in McDill Pond and encourage a focused effort to reduce nutrient loading within the Plover River watershed. Such an effort would benefit many others beyond McDill Pond.

Water clarity measurements taken in McDill Pond from 1992 to 2013 are displayed in the graph to the right. In recent years, measurements have been taken by Krista Olson and John Vollrath and reported to the WDNR's CLMN database. Water clarity in McDill Pond is considered fair. Observations noted at the time of measurement indicate that on many occasions, water clarity was limited due to the brown-stained water. Some of the observations indicated there were also reductions due to the presence of algae. While there is year-to-year variability, water clarity has remained relatively consistent; however, some of the poorest measurements were taken between 2008 and 2010. It is unclear how the drawdown will affect water clarity in McDill Pond. Continued water clarity measurements will help to identify changes over time.



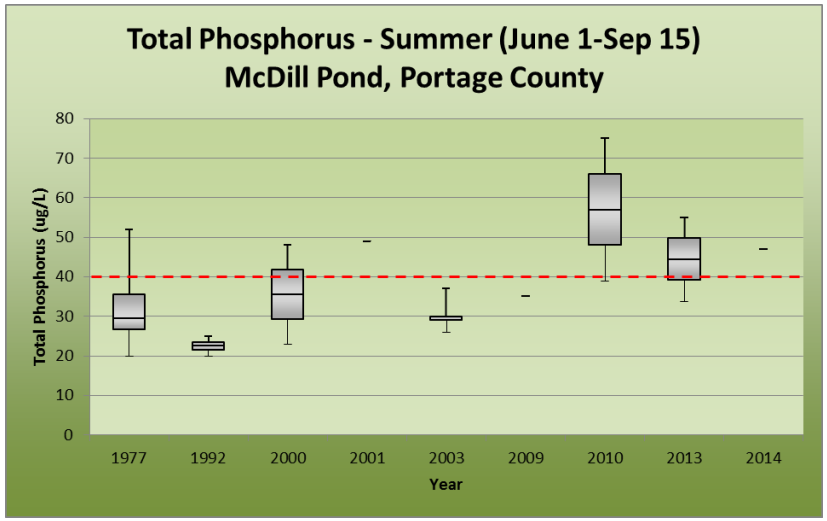


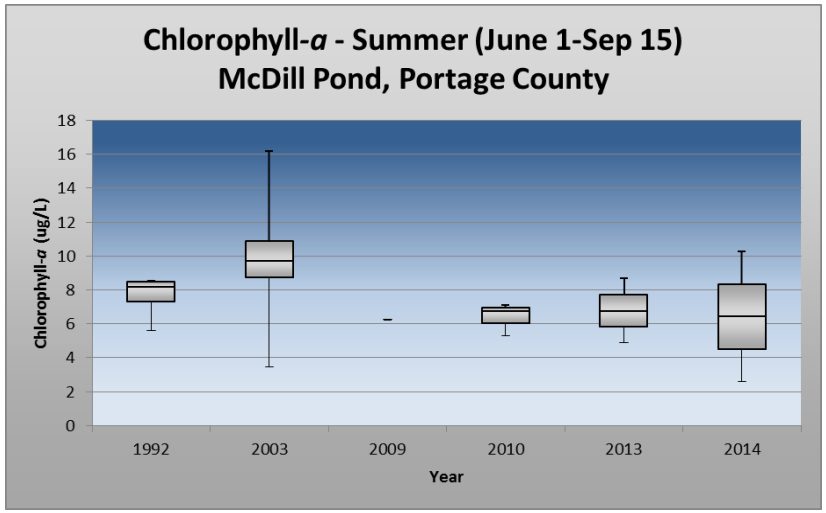
Nutrients (phosphorus and nitrogen) are used by algae and aquatic plants for growth, much like houseplants and crops. Phosphorus is present naturally throughout the watershed in soil, plants, animals and wetlands. Common sources from human activities include soil erosion, animal waste, fertilizers and septic systems.

The most common mechanism for the transport of phosphorus from the land to the water is through surface runoff, but it can also travel to the lake in groundwater. Once in a lake, a portion of the phosphorus becomes part of the aquatic system in the forms of plant tissue, animal tissue and sediment. The phosphorus continues to cycle within the lake for many years.

Phosphorus standards in Wisconsin vary by lake type. For shallow impoundments like McDill Pond, median total phosphorus concentrations during the summer should be less than 40 ug/L. Above this concentration, changes to the aquatic ecosystem, including an increase in plant and algal growth and changes to the fish community, are likely to occur. In nearly all of the samples collected from McDill Pond between 2010 and 2014, total phosphorus concentrations exceeded 40 ug/L.

Chlorophyll-*a* is a measurement of algae in the water. Concentrations greater than 20 µg/L are perceived by many as problem blooms. According to the World Health Organization, chlorophyll-*a* concentrations greater than 10 µg/L result in a moderate increase in risk to health due to the increased growth of blue-green algae. Concentrations of chlorophyll-*a* measured in samples collected from McDill Pond showed little year-to-year variability in recent years. This algal growth is fueled by the phosphorus and nitrogen in the lake water.





Guiding Vision for Water Quality

McDill Pond will be a clear, easily navigable, beautiful pond without excessive maintenance. It will be a pond that supports a healthy fishery, wildlife, a healthy ecosystem, and a variety of recreational uses.

Goal 7. Water quality in McDill Pond will be below problematic concentrations.

Median summer phosphorus concentrations will be at or below 35 ug/L, inorganic nitrogen at or below 0.3 mg/L in spring, and Secchi disk (water clarity) readings of 10 feet throughout the summer.

Objective 7.1. Continue monitoring to determine if the water quality goals are being met.

Action	Lead person/group	Start/end dates	Resources
Continue monitoring phosphorus and chlorophyll-*a* in McDill Pond during the summer using CLMN methods. Nutrient monitoring should also be conducted in McDill Pond channels.	MILPRD	Annually - minimum 3 times/summer	CLMN UW-Stevens Point WEAL Other state-certified water labs
Continue monitoring water clarity in McDill Pond and sharing results with the State CLMN program.	MILPRD		WDNR
Collect samples during spring overturn for analysis of inorganic nitrogen.	MILPRD	Annually - spring	UW-Stevens Point WEAL Other state-certified water labs
Submit all data collected to the WDNR SWIMS database for storage and access.	Volunteer monitors	Ongoing	WDNR SWIMS database manager
Develop flow monitoring sites on the channels in McDill Pond.	MILPRD		UWSP Center for Watershed Science and Education WDNR Lake Grants
Periodically, have a professional evaluate the available water quality data in "State of Water Quality in McDill Pond and the Plover River" report.			UWSP Center for Watershed Science and Education Consultants

Objective 7.2. Shoreland and watershed landowners will minimize their impacts to McDill Pond through land management practices that reduce runoff and minimize the use of fertilizers and chemicals.

Action	Lead person/group	Start/end dates	Resources
Inform MILPRD members about the fertilizer ban that was established by the MILPRD and the relationship with water quality.	MILPRD	Reminder – annually in winter	
Establish the leadership shown by shoreland property owners who are complying with the ban by asking them to sign on each year. Share this information to encourage participation by others in the watershed.	MILPRD		Portage Co. Land Cons

Inform shoreland property owners about how to implement healthy practices on their property related to stormwater management, including installation of rain gardens, swales, rain barrels, reducing impervious pavement, etc. Host demo sites, backyard "garden walks", and workshops. Create challenges and other incentives.	MILPRD	Summer	Portage Co. Land Conservation UW-Extension Lakes Consultants WDNR Lake Protection grants WDNR Healthy Lakes grants
Host a shoreland soil testing program for participants to learn what kinds of amendments are/are not needed for gardens and lawns.	MILPRD		Portage Co. UW-Extension Ag Agent Portage Co. Land Conservation
Inform MILPRD members about changes they could make on their property related to nutrients and chemical use.	MILPRD	Ongoing	UW-Extension Lakes Portage Co. Land Conservation
Encourage landowners to take advantage of Portage County Land Conservation staff and programs that lead to improved water quality and habitat.	MILPRD		Portage Co. Land Conservation WDNR Lake Protection grants WDNR Healthy Lakes grants
When boat launch/parking is redone, ensure that runoff from parking lot is managed and reduced.	MILPRD		Property owner and WDNR
Work with City to provide incentive to property owners "up" from the Heffron Street boat launch to manage runoff.	MILPRD		City of Stevens Point Portage Co. Land Conservation
The County and the NRCS will support and follow-up with water quality-based Best Management Practices (BMPs) within the watershed.	Portage Co. Land Conservation NRCS		Portage Co. Land Conservation WI DATCP WDNR Lake Protection grants

Objective 7.3. The City of Stevens Point and the Village of Whiting will understand how their decisions impact the water quality of McDill Pond and will make good decisions.

Action	Lead person/group	Start/end dates	Resources
The City Plan Commission and municipal boards will be knowledgeable about the impact their decisions have on the pond and river. They will seek decisions that minimize negative impacts.	City of Stevens Point Plan Commission Village of Whiting Towns of Dewey, Hull, Sharon, Stockton		UWSP Center for Land Use Education
Work with the City as it develops its stormwater management plan to choose strategies that protect McDill Pond water quality. Invite a City representative to attend a meeting and explain what is being developed.	MILPRD		City of Stevens Point UWSP Center for Land Use Education

Continue to work with City to divert storm sewer drainage from old Fleet Farm to drainage ponds.	MILPRD		Portage Co. Land Conservation City of Stevens Point Plan Commission
When possible during road reconstruction, direct runoff away from the pond (swales, infiltration basins, etc.).	City of Stevens Point WI DOT Towns	As needed	

Objective 7.4. Initiate partnerships to work together towards good water quality in the Plover River, Bentley, Jordan, and McDill Ponds.

Action	Lead person/group	Start/end dates	Resources
Identify partners monitoring water quality upriver from McDill Pond or who would be interested in monitoring upriver.	MILPRD		CLMN coordinator Water Action Volunteer coordinator UWSP student AWRA club UWSP Water faculty
Work with partners to host a gathering to discuss current and future water quality in the Plover River watershed which includes Langlade, Marathon and Portage counties. Potential Partners: Isaak Walton League, Trout Unlimited, Pike Lake Sportsman Club, Nature Treks, Stevens Point Country Club, agricultural producer clubs, County LCD and Parks staff, elected officials, Stevens Point/Whiting staff, WDNR.	MILPRD		WDNR small scale grant UWSP student AWRA club UWSP Center for Watershed Science and Education UW-Extension Lakes
Consider approaching the County to notify them of steps that have been taken to improve water quality in McDill Pond, and encourage a county-wide effort to reduce nutrient loading within the watershed.	MILPRD	2016	Portage Co. Land Conservation City of Stevens Point Elected officials

Shorelands and Critical Habitat

Shorelines are some of the most important habitat near lakes and ponds for aquatic and terrestrial wildlife, such as turtles, frogs, birds, and many other creatures. Shoreland vegetation helps to slow runoff moving to the pond which allows some of the sediment and pollutants to settle onto the landscape before it enters the pond. Restoring and protecting shorelines can help provide scenery, solitude, and privacy, as well as natural space for pond residents to enjoy nature, which was valued by citizens in the survey. This important region around the lake is the primary area where shoreland owners can positively or negatively impact the pond's water quality and ecosystem by choosing the ways they manage their property. 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. There are many landscaping options to choose from that comprise good land management practices and will result in improved habitat and water quality.

Critical habitat areas or sensitive areas are important places in and near the pond that are essential to maintaining a healthy, sustainable ecosystem. The sensitive areas within McDill Pond may offer critical or unique fish and wildlife habitat, or water quality or erosion control benefits to the pond (see Sensitive Areas in the appendices). More details about critical habitat areas are available online: http://dnr.wi.gov/lakes/criticalhabitat/.

2014 Updates: Many property owners on McDill Pond have made shoreland improvements. Shorelands around McDill Pond range from healthy to very disturbed. Based on comparisons between the 2010 and 2013 surveys of McDill Pond, vegetative buffers falling into the 'greater than 5-15 feet' and 'greater than 15-35 feet' categories have increased, which corresponds to a decrease in buffer depths less than 5 feet inland from the water's edge. This demonstrates that vegetative buffers along the shoreland of McDill Pond have increased over the past three years; however, the total length of shoreline in the 'vegetative buffers greater than 35 feet inland from the water's edge' category has decreased since the 2010 survey.

Disturbances on McDill Pond include boat landings, docks/piers, dam/spillways, culverts, shoreline erosion, stretches of rip-rap, seawalls, barren sections of the shoreland, and structures in close proximity to the shoreland interface. Structures such as seawalls, rip-rap (rocked shoreline), and artificial beach result in habitat loss. Erosion contributes sediment to the pond, which can alter spawning habitat and carry nutrients into the pond. Unmanaged runoff from rooftops of structures contributes additional runoff to the pond, often resulting in delivery of more sediment to the pond. Docks result in altered in-lake habitat. Denuded lakebeds adjacent to docks provide opportunities for invasive species to become established and reduce habitat that is important to fish and other lake inhabitants.

Guiding Vision for Shorelands

McDill Pond will have healthy shoreland vegetation that supports healthy wildlife, fisheries, and ecosystems that also provides access and visual enjoyment by shoreland property owners.

Goal 8. Healthy shoreland vegetation will be protected, and disturbed shoreland vegetation will be restored.

Objective 8.1. Shoreland property owners around McDill Pond will understand why this land is so important and what their roles are in protecting these areas. They will make informed land management decisions that minimize their water quality and habitat impacts.

Actions	Lead person/group	Start/end dates	Resources
Inform shoreland property owners about how to implement healthy shoreland practices on their property and why healthy shoreland vegetation helps the pond. Host demo sites, backyard "garden walks", and workshops. Create challenges and other incentives.	MILPRD	Summer	Portage Co. Land Conservation UW-Extension Lakes Consultants WDNR Lake Protection grants WDNR Healthy Lakes grants
Provide informational material about the MILPRD fertilizer ban and why it helps the pond.	MILPRD	Ongoing	
Explore financial and other incentives for people that have large (greater than 35 feet deep) vegetative buffers (examples: competitions, recognition, reductions in dues/taxes).	MILPRD	Has already been started	UW-Extension Lakes WDNR Healthy Lakes grants City of Stevens Point
Encourage landowners to take advantage of Portage County Land Conservation staff and programs that lead to improved water quality and habitat.	MILPRD		Portage Co. Land Conservation WDNR Lake Protection grants WDNR Healthy Lakes grants
Work with school groups, scout groups, and others to restore shorelines.	MILPRD	Ongoing	UW-Extension Lakes Portage Co. Land Conservation Portage Co. Master Gardeners
Connect with other local lakes to share healthy shoreland ideas and examples. Combine shoreland garden walks, etc.			Local lake groups Portage Co. Land Conservation pclakes@uwsp.edu
When the boat landing is redone, encourage the use of native vegetation along the shoreland buffer.	MILPRD		Property owner and WDNR

Objective 8.2. Ninety-three percent of the shore around McDill Pond will be vegetated. Increase shoreland buffers by 10% in the next three years.

Actions	Lead person/group	Start/end dates	Resources
Protect existing healthy shoreland vegetative buffers through shoreline credits (discount on district fees) and continuing education.	MILPRD	Ongoing	Portage Co. Land Conservation UW-Extension Lakes
Restore disturbed shoreland by providing education, technical, and financial assistance for shoreland owners.	MILPRD	Ongoing	WDNR Healthy Lakes Grants
Monitor the shoreland vegetation around McDill Pond annually and share the results with property owners. Initiate friendly competitions for shoreland restoration.	MILPRD	Ongoing Annually	Portage Co. Land Conservation UW-Extension Lakes
Request that a shoreland survey be conducted every three years.	MILPRD	2016	UWSP Center for Watershed Science and Education WDNR Lake grants Portage Co. Land Conservation

Objective 8.3. Protect undeveloped and vegetated areas around McDill Pond.

Actions	Lead person/group	Start/end dates	Resources
Encourage the continued protection of undeveloped City-owned property.	MILPRD	Ongoing	City of Stevens Point
Support the use of conservation easements by landowners to protect their land.	MILPRD	As needed	North Central Conservancy Trust WDNR Lake Protection grants
Place covenants on undeveloped lots to maintain healthy vegetative buffers when lots are eventually developed.	MILPRD		City of Stevens Point UW-Extension Lakes

Objective 8.4. Work to ensure that shoreland zoning ordinances are developed and implemented to protect the health of McDill Pond (if local rules are allowed by the State).

Actions	Lead person/group	Start/end dates	Resources
Work with proper officials to develop a shoreland zoning ordinance for McDill Pond.	MILPRD		City of Stevens Point UW-Extension Lakes UWSP
Ensure landowners and local officials understand the shoreland zoning ordinance and how to implement it (see Objective 8.2).	MILPRD		

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 MILPRD, 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

McDill Pond provides many recreational opportunities enjoyed by residents, local residents, and visitors. MILPRD board members feel that in recent years, the use of the pond and the variety of recreational uses associated with the pond have increased.

Iverson Park is located just upstream of McDill Pond, providing habitat and home for fish and wildlife, a beach, walking trails, cross country skiing trails, picnic grounds, a sledding hill and toboggan runs. A local business, Nature Treks, rents kayaks in Iverson Park, making it easy to access McDill Pond.

On the northwestern shore of the pond, Koziczkowski Park (14 acres) and the Godfrey and Maybelle Erickson Natural Area (5.5 acres) comprise a total of 19.5 acres. These properties are part of the Green Circle Birding Trail. One hundred seventy-one bird species have been observed on or near this important property, including three endangered species: peregrine falcon, yellow-throated warbler, and hooded warbler. In recent years, a loon has taken up residence on the pond. Many birders visit these properties. In addition to use by birders, the trails on these properties are also enjoyed by bikers, runners, dog walkers, and nature enthusiasts. Koziczkowski Park also offers a playground and swimming beach.

Some of the most popular recreational activities on McDill Pond include canoeing/kayaking, walking, enjoying wildlife, solitude, and enjoying scenery. Although a number of people use McDill Pond each day, most of the activities are quite quiet which results in few user conflicts; however, in recent years, noisier activities, such as jet skiing, waterskiing, wakeboarding, and tubing, have become more popular. The MILPRD needs to be aware of the potential for conflicting activities and consider options to reduce conflicts, particularly those that involve safety concerns.

The urban setting of McDill Pond provides easy access to relaxing recreational opportunities right in town. Angling is enjoyed by individuals and families living on or near McDill Pond. Management of the shorelands, the lake bed, aquatic plants, and stormwater runoff can all affect the fishery in positive or negative ways.

During the winter, the pond is used for ice skating, hockey, broomball, snowshoeing, ice fishing, snowmobiling, driving ATVs, and winter campfire gatherings. McDill Pond is home to the Bill Cook Chapter of the Izaak Walton League's Winter Jamboree, which draws hundreds of attendees each year in January.

2014 Updates: Citizens reported that waterfowl hunting was occurring near the pond, creating what they felt was a dangerous situation.

Guiding Vision for Recreation

McDill Pond will have navigable waters for a variety of recreational purposes.

Goal 9. A variety of recreational opportunities will be available on and near McDill Pond that protect the healthy ecosystem and safety of lake users.

Objective 9.1. Continue to support silent sports/low impact recreational opportunities on McDill Pond that promote the scenic nature of the pond.

Actions	Lead person/group	Start/end dates	Resources
Make sure the waters of McDill Pond are navigable for recreational use.	MILPRD	Ongoing	
Maintain the silt trap as needed.	MILPRD	Ongoing	City of Stevens Point WDNR Lake Manager
Provide information to lake residents and lake users about the no-wake zone 100 feet from shore through courtesy code, sign and newsletter.	MILPRD	Ongoing	UW-Extension Lakes WDNR
Maintain a no-wake zone in Spring Slough due to the sensitive areas there.	MILPRD	Ongoing	City of Stevens Point
Ask Tom Meronek (WDNR) if he can notify MILPRD when they will pull out the dock. MILPRD will then notify lake residents via the newsletter.	MILPRD		WDNR Fisheries Biologist
Do not install a dock at Heffron Street due to limited parking space for existing neighbors.	MILPRD	Ongoing	
Work with the Sheriff's Office to have a boat patrol on McDill Pond.	MILPRD		Portage Co. Sheriff's Office
Look into hunting rules and regulations around McDill Pond.	MILPRD	2015	WDNR Warden

(Source: http://greencircletrail.org/birding/Koziczkowski_park_map.pdf)

History and Ownership of the Dam

This information was taken directly from the MILPRD website http://mcdillpond.com/wp/history-of-mcdill-pond-and-our-lake-district/.

In 1853 Amos Courtwright and Luther Hanchett first dammed the Plover River near the site of the current dam for logging purposes. In 1864 ownership of the dam was transferred to Dr. Alexander S. McDill and his brother Thomas H. McDill who operated a sawmill there as well as a grist mill. As pioneer lumbermen and merchants they made the Plover River integral in the local lumber Industry, and at that time the area was known locally as "McDillville". In the 1870s lumber rafting on the Plover River began to decline due to the development of the railroad, and logs were hauled by rail vs. water. In 1895 a fire destroyed the McDill sawmill.

The McDill Pond grist mill was erected in 1885 at the same site as the sawmill. The site originally contained two dams. The grist mill was used to grind grain for local farmers, and later served as a graphite mill for graphite that was mined in the Junction City area. Near the turn of the century the site was purchased by a paper company and a Kraft pulp mill was operated. Locally termed the "stink mill" it operated on and off until after World War II.

In 1954 the Village of Whiting bought the land and mill buildings for $7000. At that time the size of the pond created by the dam was much smaller than it is today. After the Village of Whiting purchased the land, they raised the water level to approximately where it is today. By the late 1950s the McDill dam was in poor condition. In 1959 the village of Whiting drained the pond to build a new dam. During the three-year drawdown, previously submerged tree stumps were collected and burned, and muck was removed from some channels. Several areas of the pond were deepened, including a trout pond that was dug by a local sports club. A few property owners also drag-lined and bulldozed channels. In some areas bottom material was used to create and expand some of the islands in the pond.

In 1962 the Village of Whiting completed the construction of the new concrete dam for $31,000, which contained three adjustable gates for water flow. Upon completion of the dam it took about one week for the water levels to return back to its previous levels. Until 1999 the Village of Whiting manually adjusted the water level on the pond for fluctuations, often requiring almost daily monitoring and adjustment of the dam gates. In 1999 a new dam was constructed by the Department of Transportation and Portage County as part of the Highway HH reconstruction. In June 2011 the dam failed, causing a 2-year drawdown while the Village of Whiting, City of Stevens Point, McDill Lake District, WI DNR and Portage County worked out a mutual repair agreement and completed repair with a DNR Grant. McDill was refilled in May 2013, and restocking will be completed over the next two years. The McDill Inland Lake District has taken over ownership of the dam, with shared expense maintenance of the dam between the Lake District and City of Stevens Point.

Communication and Organization

Working together on common values will help to achieve the goals that have been outlined in this plan. Many of the goals outlined in this plan are focused on disseminating information to pond and watershed residents and pond users, ultimately to help them make informed decisions that will result in a healthy ecosystem in McDill Pond that is enjoyed by many people. There is no single best way to distribute information to those that enjoy and/or affect McDill Pond, so the planning committee has identified a variety of options to communicate with one another and in the community.

Goal 10. For successful implementation of this plan, communication will occur between MILPRD members, watershed residents, and other partners identified in this plan.

Objective 10.1. McDill Pond landowners and the community will be informed through a variety of methods.

Action	Lead person/group	Start/end dates	Resources
Host annual social opportunities for MILPRD members (parties, cookouts, etc.).	MILPRD	Annually	
Continue the annual Winter Jamboree on the pond.	Isaak Walton League	Annually	
Continue to utilize welcome packet to distribute information to landowners. Communicate with the City about how to be notified about new property owners. UWEX Lakes can share examples of welcome packets.	MILPRD	Ongoing	UW-Extension Lakes City of Stevens Point
Continue to use the newsletter via e-mail and mail drops.	MILPRD	Ongoing	
Continue use of the website.	MILPRD	Ongoing	
Meet with other businesses (such as the Stevens Point Country Club) and other organizations (lake associations, etc.) to discuss management strategies.	MILPRD		UW-Extension Lakes Stevens Point Country Club Lake associations
Keep in touch with other landowners along the entire Plover River through email and mailings. Create and maintain mailing and email list.	MILPRD	Ongoing	UWSP Center for Watershed Science and Education Portage County
Routinely update officer contacts with UW-Extension Lakes.	MILPRD	As needed	UW-Extension Lakes
Send a lake district representative to annual Lakes Convention. This is frequently held in Stevens Point.	MILPRD	Annually - spring	UW-Extension Lakes
Send a lake district representative to Lake Leaders Institute.	MILPRD	Even numbered years in fall	UW-Extension Lakes

Objective 10.2. Work towards plan implementation with existing and new partners.

Action	Lead person/group	Start/end dates	Resources
Meet with other businesses (such as the Stevens Point Country Club) and other organizations (lake associations, etc.) to discuss management strategies.	MILPRD		UW-Extension Lakes Stevens Point Country Club Lake associations
Keep in touch with other landowners along the entire Plover River through email and mailings. Create and maintain mailing and email list.	MILPRD	Ongoing	UWSP
Work with partners to host a gathering to discuss common interests about the Plover River watershed (Langlade, Marathon, and Portage counties). Potential Partners: Isaak Walton League, Trout Unlimited, Pike Lake Sportsman Club, Nature Treks, Stevens Point Country Club, County LCD and Parks staff, elected officials, Stevens Point/Whiting staff, WDNR.	MILPRD		WDNR small scale grant UWSP student AWRA club UWSP Center for Watershed Science and Education UW-Extension Lakes
Work with Marathon County Lakes on management strategies for the Plover River.	MILPRD	Ongoing	UWSP Marathon Co. Lakes
Be sure to routinely update officer contacts with UW-Extension Lakes.	MILPRD	As needed	UW-Extension Lakes

Objective 10.3. Keep up-to-date with current lake-related information and develop new leadership.

Action	Lead person/group	Start/end dates	Resources
Have MILPRD commissioners complete Commissioners training at the annual Wisconsin Lakes Convention.	MILPRD	Annually – as needed	UW-Extension Lakes
Send a lake district representative to the Wisconsin Lakes Convention. This is frequently held in Stevens Point.	MILPRD	Annually - spring	UW-Extension Lakes
Send a lake district representative to Lake Leaders Institute.	MILPRD	Even numbered years in fall	UW-Extension Lakes

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. It is important to communicate with partners listed in this plan to understand what they have accomplished, if impediments to success exist, or conditions have changed.

Goal 11. Keep the information and resources within the McDill Pond Management Plan current and up to date.

Action	Lead person/group	Start/end dates	Resources
Annually review the McDill Pond Management Plan to identify successes and plan for the upcoming year. Share this information with District members.	MILPRD	Annually review	Portage County
Connect with partners listed in the plan for updates to their efforts. Share everyone's updates with all partners.	MILPRD	Annually	Partners listed in the plan
If situations warrant, revisions to this plan may be made at any time. Barring this need, this plan should be updated every 5 years.	MILPRD	2021	Partners listed in the plan WDNR Planning Grant

Background Information (from 2002-2003 study)

A lake or pond is the reflection of the health and activities that occur in the lake or pond, near its shore, and in the surrounding watershed. A healthy aquatic ecosystem is comprised of components that support aquatic plants, fish, wildlife and more – not only in the water body, but also in the surrounding landscape.

Data collected during the first phase of the Portage County Lakes Study are summarized in this section. For more detail, see the complete study reports. These reports, as well as citizen survey results collected during plan development, can be found at: http://www.co.portage.wi.us/planningzoning/PCL/Main%20Page/Main%20Page.shtm

Updated information is located in each section of this plan and when available, is appended to this plan. More information about McDill Pond can be found at: http://dnr.wi.gov/lakes/lakepages/Results.aspx?location=50.

Description

McDill Pond is a 261 acre impoundment of the Plover River located in the City of Stevens Point and the Village of Whiting, Portage County, Wisconsin. It has a maximum depth of 14 feet (Wisconsin Department of Natural Resources, 2005). This urban pond has a small park below the dam that serves an abundance of waterfowl and an osprey near the northern tip. A public boat launch is present on the eastern shore of the pond. The original dam was constructed in 1853 for logging purposes, and was replaced in 1959. The dam is owned by the McDill Inland Lake District. Maintenance expenses are shared with the City of Stevens Point.

Watershed

McDill Pond's surface watershed, the land area where surface water from higher elevations drains towards the pond, is approximately 120,992 acres, extending north along the Plover River through Portage and Marathon counties, and into Langlade County. The Portage County portion of the watershed is displayed below.

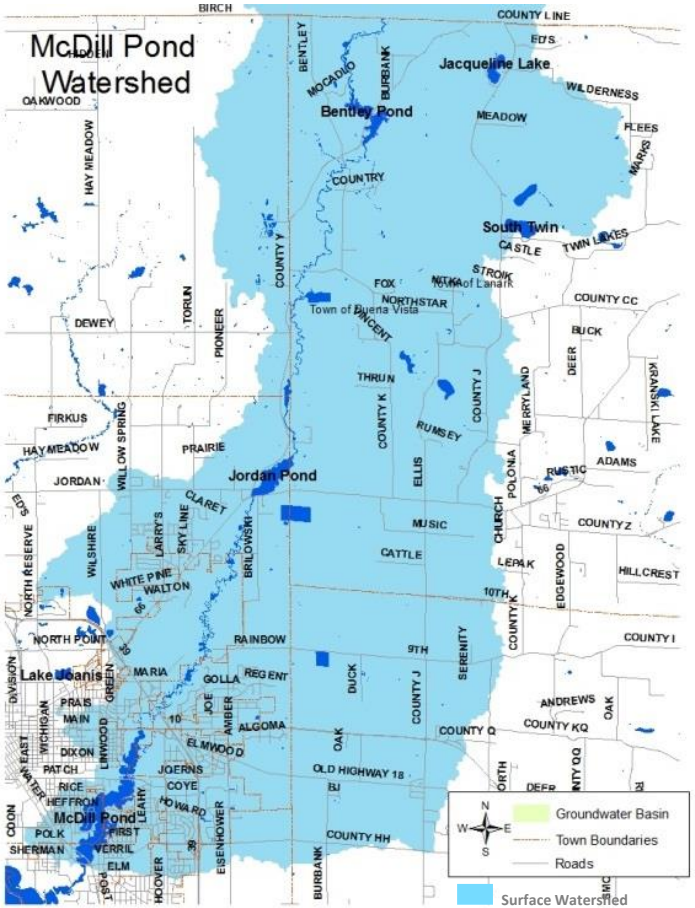


Figure 3. The McDill Pond surface watershed in Portage County.

The groundwater watershed is similar to the surface watershed, except it is the land area where groundwater, instead of surface water, drains towards the pond. Within the groundwater watershed, precipitation soaks into the ground and recharges the groundwater. The groundwater slowly moves towards the pond, and enters it via springs and seeps. Surface watersheds and groundwater watersheds often do not match each other; in the case of McDill Pond, the groundwater watershed is very similar to the surface watershed.

Sensitive Areas

Sensitive areas associated with McDill Pond are defined by lands adjacent to the water that are particularly valuable to the pond's ecosystem or would be significantly impacted by disturbances or development. These areas include undeveloped urban areas adjacent to the pond that are important to migratory birds (Appendix), and a good-sized wetland north of the pond that follows the Plover River. Currently, it is included in Iverson Park.

Amphibians and reptiles depend on both aquatic and terrestrial habitats and the shoreline interface between the two. **These areas are also important to other aquatic and terrestrial species.** Ideally, much of the shoreland around McDill would be maintained by landowners in ways that would provide habitat for wildlife.

The primary amphibian habitat on McDill Pond is located in several areas around the pond. Key features of this habitat include protected areas of marsh with submergent, emergent, and floating-leaf vegetation, as well as downed trees. Several frog species are present, along with a number of large sections of natural shoreline; however, high levels of shoreline development have significantly altered the shoreline habitat (Appendix).

Shoreline

Portions of McDill Pond's shoreline are considered disturbed. According to the 2010 shoreland vegetation survey, 19% of the shorelands lack vegetation, 8% have vegetation less than one foot deep, 19% have vegetation 1-5 feet deep, 16% have vegetation 5-15 feet deep, 13% have vegetation 15-30 feet deep, and 24% have vegetation greater than 30 feet deep (Appendix).

County and state shoreland zoning rules were developed to help protect lake water and habitat by regulating vegetation buffer areas along shorelines. Current zoning requires a buffer depth of 35 feet from the water's edge.

According to the citizen survey, 39 of the 54 respondents from within the District owned shoreline property. Of the 39 shoreline property owners, 21 indicated they had shoreland buffers that were greater than 35 feet deep.

Protecting undisturbed shoreline areas and restoring disturbed areas would positively impact the near shore habitat, water quality, algae and aquatic plant growth, and the fishery and other inhabitants. Vegetated shorelines act as buffers for runoff from surfaces such as roofs, driveways, roads, patios and compacted soils, especially where steeper shorelines occur. Runoff that enters the pond can carry a variety of pollutants. Negative impacts to the pond due to increased runoff include the introduction of more nutrients (such as phosphorus), which can cause algae blooms and excessive plant growth, and an increased amount of sediment, which can create cloudy or turbid water and bury fish spawning areas and other critical habitat. Sediment can also transport additional contaminants to the pond, such as bacteria, debris, metals and pesticides.

Aquatic Plants

Aquatic plants play many important roles in aquatic ecosystems. They provide habitat for aquatic and semi-aquatic organisms, and food for fish, waterfowl, and other animals. Aquatic plants take up nutrients that would otherwise be used by algae, and moderate water temperatures on hot days.

By 2003, **65** species of aquatic macrophytes, or aquatic plants, had been identified in McDill Pond or on the wet areas of shore. Many of these species were found in the back bays which provide unique habitat. This number of species is above average when compared to other Portage County lakes.

The increase in the abundance of curly-leaf pondweed, the recent arrival of Eurasian watermilfoil, and techniques used to control these aquatic invasive species threaten the quality and diversity of native aquatic plants in McDill Pond. Although much of the shoreline consists of houses and lots with considerable lawn areas, some areas of native vegetation remain. Diverse, mostly native vegetation can be found in the vicinity of Koziczkowski Park and the Godfrey and Maybelle Erickson Natural Area. These areas should be monitored for non-native invasive aquatic and terrestrial plants.

When asked about the abundance of aquatic plants in McDill Pond, survey respondents indicated they were unsure or felt plant growth was dense or choked. When asked if plant growth affected their enjoyment of the pond, respondents were virtually tied between yes and no. Respondents also indicated July was the month with the densest plant growth, which is typical for most Wisconsin lakes.

Water Quality and Land Use

Land use types and associated management practices can have a significant impact on water quality. Land uses within McDill Pond's surface watershed are predominantly forested areas (34%), followed by agriculture (23%). Wetlands (20%) and grasslands (18%) also make up a large area of the watershed. The areas near shore have the most direct impact on habitat and water quality. Around McDill Pond, these areas have heavy residential development (Appendix).

Although land uses may not easily be changed, land management practices can be modified to improve water quality. Survey respondents indicated a willingness to change how they manage their lands to protect/improve the McDill Pond ecosystem. The top motivators included improving the water quality, increasing their property values, improving the water quantity, improving the fish/wildlife habitat, and saving money on maintenance and landscaping.

When asked about McDill Pond's water quality, a majority of survey respondents felt the water quality was good or fair, and had not changed since they first became familiar with the pond. They also indicated the quality of pond water had some impact both economically and on their personal enjoyment of the pond.

Assessing a lake's water quality involves a number of measures, including temperature, dissolved oxygen, water chemistry, chlorophyll *a*, and algae. Each of these measures plays a part in the lake's overall water quality.

Chloride concentrations, and to lesser degrees sodium and potassium concentrations, are commonly used as indicators of how strongly a lake is being impacted by human activity. In McDill Pond, potassium levels measured in 2002-2003 were low, but sulfate, chloride, and sodium were all elevated. Although these are not detrimental to the aquatic ecosystem, they indicated contaminants (road salt, fertilizer, and/or animal waste) are entering the pond from surface runoff and/or groundwater.

Atrazine, an agricultural herbicide, was also detected in McDill Pond. Some toxicity studies have indicated reproductive system abnormalities can occur in frogs at low levels. The presence of atrazine indicated other agri-chemicals may also be entering McDill Pond.

The temperature in McDill Pond was generally mixed top to bottom throughout much of the year. Dissolved oxygen was plentiful enough to support many species of aquatic biota throughout the year.

Water clarity is a measure of how deep light can penetrate the water. It is an aesthetic measure and is related to the depth that rooted aquatic plants can grow. Water clarity can be affected by sediment, algae, and color in water. Clarity measurements in McDill Pond ranged from 4.5 feet to 9 feet, with a 2002-2003 average of 6 feet. June had the best water clarity and May had the poorest. Fluctuations in water clarity throughout the summer are normal as algae and aquatic plant populations and sedimentation increase and decrease. Changes in water quality are best determined with long-term record-keeping, which is currently being done by trained citizen volunteers and should be continued.

Chlorophyll *a* is a measure of algae. Chlorophyll *a* concentrations in the pond ranged from 2.6 mg/L to 16.18 mg/L. Readings greater than 5 mg/L are considered high and indicative of algae blooms.

The 27 algal genera identified during the sample periods were relatively common and none were associated with toxins or health issues. The algal community relative to the chlorophyll *a*, phosphorus, and nitrogen values for McDill Pond presented a picture of a mesotrophic (middle aged) lake.

Nutrients

Nutrients (nitrogen and phosphorus) are important measures of water quality in lakes and ponds because they are used for growth by algae and aquatic plants.

In McDill Pond, the phosphorus concentrations are variable throughout the year, with some being high. Nitrogen concentrations, especially in the form of nitrate, were also elevated and can enhance the growth of plants and support algae blooms throughout the summer.

Nitrogen concentrations, especially nitrate that is easily used for growth by aquatic plants and algae, were elevated. Concentrations in 2002-2003 ranged from 1.5 mg/L to 3.17 mg/L and readings were well above the spring concentrations of 0.3 mg/L needed to fuel algae growth throughout the summer.

Phosphorus is an element that is essential to most living organisms, including plants. Sources of phosphorus can include naturally occurring phosphorus in soils, wetlands and groundwater. Sources from human influence include soil erosion, agricultural and residential runoff, septic systems, and animal waste.

In McDill Pond, the aquatic plant and algae growth is highly responsive to phosphorus due to its limited supply relative to other elements necessary for growth. Small increases in phosphorus result in increased growth rates and abundance of aquatic plants and algae.

Phosphorus concentrations in McDill Pond were variable throughout the year and ranged from 12 ug/L to 59 ug/L. The average total phosphorus concentration in spring/fall in 2002-2003 was 29.2 ug/L.

Currently, the Wisconsin Department of Natural Resources has phosphorus criteria values for lakes in Wisconsin. The phosphorus criteria value for an impoundment is 40 ug/L. Average summer

concentrations at or above this value would result in noticeably degraded water quality. The average summer total phosphorus concentration in McDill Pond was 34.2 ug/L in 2002-2003. Total phosphorus is currently monitored in McDill Pond by citizen volunteers, and should be continued so any changes can be noted before problems occur.

Managing phosphorus in the McDill Pond watershed is key to protecting the pond itself. Landowners throughout the watershed should make changes that reduce phosphorus and sediment movement from the land to the water. This is particularly important for properties near shore or that drain directly to the Plover River or McDill Pond.

Positive land management practices and land uses can result in good water quality in the pond. Phosphorus inputs to the pond can be controlled through the use of many different best management practices (BMP's) that minimize the movement of runoff, sediments, nutrients, and pesticides to the pond. BMPs that should be used near shore and throughout the watershed include the development of water quality-based nutrient management plans for agricultural land, only applying phosphorus and nitrogen from fertilizer or manure based on soil tests for turf or specific crops, providing cover on the landscape and/or appropriate mitigation when open soils are necessary during construction or cropping, use of cover crops, properly storing manure, and manure application only when the ground is not frozen. Some of the near shore land use practices that can decrease the inputs of phosphorus to the pond include native vegetation buffers (trees, bushes, and grasses), eliminating the use of fertilizers, minimizing runoff and protecting exposed soil.

Landowners can reduce stormwater runoff by planting rain gardens, installing swales and other depressions on the landscape, using rain barrels, and when possible, minimizing impervious surfaces. The Portage County Land Conservation Department is one of many organizations that can provide assistance to landowners who want to reduce impacts to McDill Pond from their properties.

Municipalities should design road ditches to infiltrate water into the ground rather than move it quickly to the Plover River and McDill Pond. This is relatively easy to accomplish with the sandy soils found in Portage County.

Estimates of phosphorus from the landscape can help to understand the phosphorus sources to McDill Pond. 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 through 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, irrigated agriculture had the greatest percentage of phosphorus contribution from the watershed to McDill Pond (Figure 4).

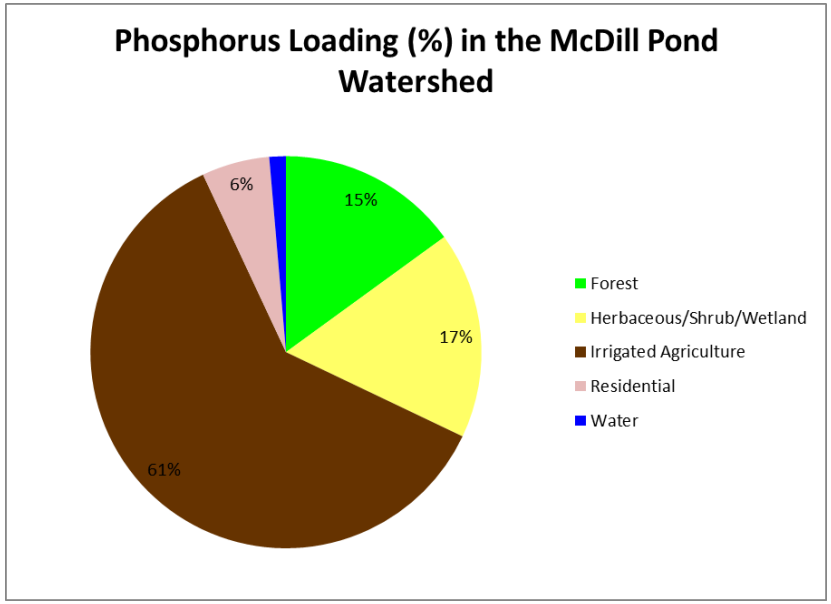


Figure 4. WILMS modeling results for McDill Pond (McGinley, 2008).

Future degradation of water quality in McDill Pond can be minimized with thoughtful land use planning throughout the watershed. This includes locating roads away from the pond, diverting runoff to areas where it can infiltrate the soil rather than run towards the pond, limiting withdrawal of groundwater, and controlling runoff, nutrient, and chemical inputs from new and existing developments/agriculture.

Recreation

According to respondents of the citizen survey, the **most popular activities on McDill Pond included canoeing/kayaking, walking, biking, enjoying wildlife, solitude, and enjoying scenery.**

Conflict between users does not appear to be an issue for McDill Pond. A majority of respondents indicated they saw others on the pond, but were not bothered by them.

Fishing is a popular recreational activity on the pond. McDill Pond supports a fishery containing panfish, bass, and northern pike. Fish populations in McDill Pond are still recovering from the water level manipulation that was done in 2009. The Wisconsin Department of Natural Resources fisheries biologist for this region has expressed concern over the high number of carp present in the pond. The carp population should be monitored to see if it becomes a nuisance.

When survey respondents were asked to rate their fishing experiences on McDill Pond, a majority of respondents felt the quality of fishing was poor, reporting they rarely caught fish.

Governance

There are management plans, regulations and ordinances that provide guidance for the development, use and protection of natural resources in and around McDill Pond. They can serve as tools to help achieve the goals, objectives and actions outlined in the McDill Pond Management Plan.

Land management plans that influence the land uses around McDill Pond and in its watersheds include:

- Wolf River DNR Basin Plan that covers a regional area: http://dnr.wi.gov/water/basin/wolf/wolf_final_801.pdf
- Portage County Comprehensive Plan: http://www.co.portage.wi.us/Comprehensive%20Plan/Index.html
- Portage County Land and Water Conservation Plan: http://www.co.portage.wi.us/planningzoning/LWRM%20PLAN%20LCC%20Approved%20Draft%205-5-09.pdf
- Village of Whiting Comprehensive Plan: http://www.co.portage.wi.us/Comprehensive%20Plan/Planning%20Program/Whiting/Whiting.html
- City of Stevens Point Comprehensive Plan: http://www.co.portage.wi.us/Comprehensive%20Plan/Planning%20Program/Stevens%20Point/Stevens%20Point.html

Portage County has eight ordinances that may impact the water quality of McDill Pond: the Zoning Ordinance, Shoreland Zoning Ordinance, Wellhead Protection Zone Ordinance, Subdivision Ordinance, Open Space Design Ordinance, Floodplain Zoning Ordinance, Private Sewage Septic System Ordinance, and Animal Manure Storage and Nutrient Management Plan Ordinance. These ordinances can be found at http://www.co.portage.wi.us/ordinances/Chapter%207.pdf

See the appendices for a map of the Atrazine Prohibition Area.

In addition to these county ordinances, there are several state regulations that have a direct impact on water quality in McDill Pond. These regulations include:

- Agricultural Runoff Regulation: http://dnr.wi.gov/topic/nonpoint/AgPerformanceStandards.html
- Storm Water Runoff Regulation – including NR 151, 152, 153, 155, 216, 243, and ATCP 50: http://dnr.wi.gov/topic/stormwater/learn_more/regulations.html
- Shoreland-Wetland Zoning Regulations: http://www.legis.state.wi.us/rsb/code/nr/nr115.pdf
- Critical Habitat Areas Regulations: http://dnr.wi.gov/lakes/criticalhabitat/
- Pesticide prohibitions and use restrictions including ATCP 30 which regulates atrazine applications: http://datcp.wi.gov/Plants/Pesticides/?AspxAutoDetectCookieSupport=1

In addition to pieces of governance that will assist with the goals, objectives and actions outlined in this plan, there are a number of community groups and organizations that can provide support and assistance. These include citizen and professional organizations, UW-Extension, and others. Please see the appendices for a list of resources and contact information.

References

Fassbender, R.L., and L.M. Nelson. 1971. Surface Water Resources of Portage County. Wisconsin Department of Natural Resources, Madison, Wisconsin.

Freihoefer, A., N. Turyk, B. Shaw. 2001. Water Quality Assessment of the Plover River Watershed – Langlade, Marathon, and Portage Counties, Wisconsin. Final report to the Wisconsin Dept. of Natural Resources. https://www.uwsp.edu/cnr-ap/watershed/Documents/ploverriver_final.pdf

Turyk, N; R. Bell; R. Cook; T. Ginnett; R. Crunkilton; L. Markham; P. McGinley; B. Shaw; and E. Wild. 2006. Final report to Portage County and Wisconsin Dept. of Natural Resources. http://www.co.portage.wi.us/plzo/lakes.html

Glossary

Algae:

One-celled (phytoplankton) or multi-cellular plants either suspended in water (Plankton) or attached to rocks and other substrates (periphyton). Their abundance, as measured by the amount of chlorophyll *a* (green pigment) in an open water sample, is commonly used to classify the trophic status of a lake. Numerous species occur. Algae are an essential part of the lake ecosystem and provide the food base for most lake organisms, including fish. Phytoplankton populations vary widely from day to day, as life cycles are short.

Atrazine:

A widely used herbicide.

Blue-Green Algae:

Algae often associated with problem blooms in lakes. Some produce chemicals toxic to other organisms, including humans. They often form floating scum as they die. Many can fix nitrogen (N_2) from the air to provide their own nutrient.

Calcium (Ca++):

The most abundant cation found in Wisconsin lakes. Its abundance is related to the presence of calcium-bearing minerals in the lake watershed. Reported as milligrams per liter (mg/l) as calcium carbonate ($CaCO_3$), or milligrams per liter as calcium ion (Ca++).

Chloride (Cl-):

Chlorine in the chloride ion (Cl-) form has very different properties from chlorine gas (Cl2), which is used for disinfecting. The chloride ion (Cl-) in lake water is commonly considered an indicator of human activity. Agricultural chemicals, human and animal wastes, and road salt are the major sources of chloride in lake water.

Chlorophyll *a*:

Green pigment present in all plant life and necessary for photosynthesis. The amount present in lake water depends on the amount of algae and is therefore used as a common indicator of algae and water quality.

Clarity:

See "Secchi disc".

Color:

Measured in color units that relate to a standard. A yellow-brown natural color is associated with lakes or rivers receiving wetland drainage. The average color value for Wisconsin lakes is 39 units, with the color of state lakes ranging from zero to 320 units. Color also affects light penetration and therefore the depth at which plants can grow.

Concentration units:

Express the amount of a chemical dissolved in water. The most common ways chemical data is expressed is in milligrams per liter (mg/l) and micrograms per liter (ug/L). One milligram per liter is equal to one part per million (ppm). To convert micrograms per liter (ug/l) to milligrams per liter (mg/l), divide by 1000 (e.g. 30 ug/l = 0.03 mg/l). To convert milligrams per liter (mg/l) to micrograms per liter (ug/l), multiply by 1000 (e.g. 0.5 mg/l = 500 ug/l). Microequivalents per liter (ueq/l) is also sometimes used, especially for alkalinity; it is calculated by dividing the weight of the compound by 1000 and then dividing that number into the milligrams per liter.

Cyanobacteria:

See “Blue-Green Algae”.

Dissolved Oxygen:

The amount of oxygen dissolved or carried in the water.

Drainage Basin:

The total land area that drains towards a lake.

Drainage lakes:

Lakes fed primarily by streams and with outlets into streams or rivers. They are more subject to surface runoff problems but generally have shorter residence times than seepage lakes. Watershed protection is usually needed to manage lake water quality.

Emergent:

A plant rooted in shallow water that has most of its vegetative growth above water.

Eutrophication:

The process by which lakes and streams are enriched by nutrients, and the resulting increase in plants and algae. The extent to which this process has occurred is reflected in a lake's trophic classification: oligotrophic (nutrient poor), mesotrophic (moderately productive), and eutrophic (very productive and fertile).

Groundwater Drainage Lake:

Often referred to as a spring-fed lake, has large amounts of groundwater as its source, and a surface outlet. Areas of high groundwater in-flow may be visible as springs or sand boils. Groundwater drainage lakes often have intermediate retention times with water quality dependent on groundwater quality.

Hardness:

The quantity of multivalent cations (cations with more than one +), primarily calcium (Ca++) and magnesium (Mg++), in the water expressed as milligrams per liter of CaCO3. Amount of hardness relates to the presence of soluble minerals, especially limestone, in the lake watershed.

Intermittent:

Coming and going at intervals, not continuous.

Macrophytes:

See "Rooted aquatic plants."

Marl:

White to gray accumulation on lake bottoms caused by precipitation of calcium carbonate (CaCO3) in hard-water lakes. Marl may contain many snail and clam shells, which are also calcium carbonate. While it gradually fills in lakes, marl also precipitates phosphorus, resulting in low algae populations and good water clarity. In the past, marl was recovered and used to lime agricultural fields.

Mesotrophic:

A lake with an intermediate level of productivity. Commonly clear water lakes and ponds with beds of submerged aquatic plants and medium levels of nutrients. See also “eutrophication”.

Nitrate (NO3-):

An inorganic form of nitrogen important for plant growth. Nitrate often contaminates groundwater when water originates from manure, fertilized fields, lawns, or septic systems. High levels of nitrate-nitrogen (over 10 mg/L) are dangerous to infants and expectant mothers. A concentration of nitrate-nitrogen (NO3-N) plus ammonium-nitrogen (NH4-N) of 0.3 mg/L in spring will support summer algae blooms if enough phosphorus is present.

Oligotrophic:

Lakes with low productivity, the result of low nutrients. Often these lakes have very clear waters with lots of oxygen and little vegetative growth. See also "eutrophication".

Overturn:

Fall cooling and spring warming of surface water increases density, and gradually makes temperature and density uniform from top to bottom. This allows wind and wave action to mix the entire lake. Mixing allows bottom waters to contact the atmosphere, raising the water's oxygen content. However, warming may occur too rapidly in the spring for mixing to be effective, especially in small, sheltered kettle lakes.

Phosphorus:

Key nutrient influencing plant growth in more than 80% of Wisconsin lakes. Soluble reactive phosphorus is the amount of phosphorus in solution that is available to plants. Total phosphorus includes the amount of phosphorus in solution (reactive) and in particulate form.

Rooted Aquatic Plants: (macrophytes)

Refers to multi-celled plants growing in or near water. Macrophytes are beneficial to lakes because they produce oxygen and provide substrate for fish habitat and aquatic insects. Overabundance of such plants, especially problem species, is related to shallow water depth and high nutrient levels.

Secchi Disc (Secchi Disk):

An 8-inch diameter plate with alternating quadrants painted black and white that is used to measure water clarity (light penetration). The disc is lowered into water until it disappears from view. It is then raised until just visible. An average of the two depths, taken from the shaded side of the boat, is recorded as the Secchi disc reading. For best results, the readings should be taken on sunny, calm days.

Sedimentation:

Materials that are deposited after settling out of the water.

Stratification:

The layering of water due to differences in density. Water's greatest density occurs at 39 Deg.F (4 Deg.C). As water warms during the summer, it remains near the surface while colder water remains near the bottom. Wind mixing determines the thickness of the warm surface water layer (epilimnion), which usually extends to a depth of about 20 ft. The narrow transition zone between the epilimnion and cold bottom water (hypolimnion) is called the metalimnion or thermocline.

Watershed: See "drainage basin".

APPENDICES

Aquatic Invasive Species Rapid Response Plan

Survey/Monitor

1. **Learn to survey/monitor the lake** from:

   Water Resources Management Specialist
   Wisconsin Dept. of Natural Resources
   Scott Provost
   473 Griffith Ave.
   Wisconsin Rapids, WI, 54494
   Phone: 715-421-7881
   E-Mail: Scott.provost@wisconsin.gov

   Portage County Aquatic Invasive Species (AIS) Coordinator
   Golden Sands RC&D
   Address: 1100 Main St, Suite #150
   Stevens Point, WI 54481
   Phone: 715-343-6215
   E-Mail : info@goldensandsrcd.org

2. **Survey the lake monthly/seasonally/annually**

What to do when you find a suspected invasive species

1. **Collect specimens or take pictures**
   - 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) and send them by mail or e-mail.

   Regardless of 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.

   Note location (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

   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).

2. **To positively I.D. the species, send or bring specimen and additional information:**
   - Collection date & 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 (estimate number of plants, area covered)
   - Habitat type(s) where found (forest, field, prairie, wetland, open water)

   Send or bring specimen to:

   Portage County AIS Coordinator
   Golden Sands RC&D
   Address: 1100 Main St, Suite #150
   Stevens Point, WI 54481
   Phone: 715-343-6215
   E-Mail : info@goldensandsrcd.org

   Wisconsin Dept. Natural Resources
   Invasive Plant Education, Early Detection,
   and Mapping Specialist
   Brendon Panke
   WI Dept. of Natural Resources
   P.O. Box 7921, Madison, WI 53707-7921
   Phone: (608) 267-7438
   E-Mail: invasiveplants@mailplus.wisc.edu

   UW-Stevens Point Herbarium
   301 Daniel O. Trainer Natural Resources Building
   Stevens Point, WI 54481
   Phone: 715-346-4248
   E-Mail: ejudziew@uwsp.edu

3. **Once the specimen is dropped off or sent for confirmation, make sure to contact:**

   Portage County AIS Coordinator
   Golden Sands RC&D
   Address: 1100 Main St, Suite #150
   Stevens Point, WI 54481
   Phone: 715-343-6215
   E-Mail : info@goldensandsrcd.org

4. **If an invasive species is confirmed, Portage County AIS Coordinator will contact the following people, along with the contact list of citizens (Appendix):**

   Wisconsin Department of Natural Resources
   Water Resources Management Specialist
   Scott Provost
   473 Griffith Ave, Wisconsin Rapids, WI, 54494
   Phone: 715-421-7881
   E-Mail: Scott.provost@wisconsin.gov
   Who will contact them: Portage County AIS Coordinator

McDill Pond Protection and Rehabilitation District
Contact: Krista Olson (or current President)
E-mail: McDillPond@charter.net
Who will contact them: Portage County AIS Coordinator

The Village in which the waterbody is situated
Village of: Whiting
Contact: Paul Stroik- Village President
Address: 3600 Water St. Stevens Point, WI 54481
Phone: 715-341-2742
Who will contact them:
McDill Protection & Rehabilitation District

The City in which the waterbody is situated
City of: City of Stevens Point
Planning Commission and Parks Dept.
Contact: Alderman Jeremy Slowinski
Address: 4501 Pleasant View Dr.
Phone:
Who will contact them:
McDill Protection & Rehabilitation District

The City of Stevens Point Parks Department
Contact: Tom Schrader - Director
Address: 2442 Sims Ave. Stevens Point, WI
Phone: 715-346-1531
Who will contact them:
McDill Protection & Rehabilitation District

University of Wisconsin-Stevens Point
Water Resource Scientist
Contact: Nancy Turyk
Address: 216 TNR 800 Reserve St, Stevens Point, WI 54481
Telephone: 715-346-4155
E-mail: pclakes@uwsp.edu

Who will contact them:
McDill Protection & Rehabilitation District

Newspapers
Portage County Gazette
Stevens Point Journal
Who will contact them:
McDill Protection & Rehabilitation District

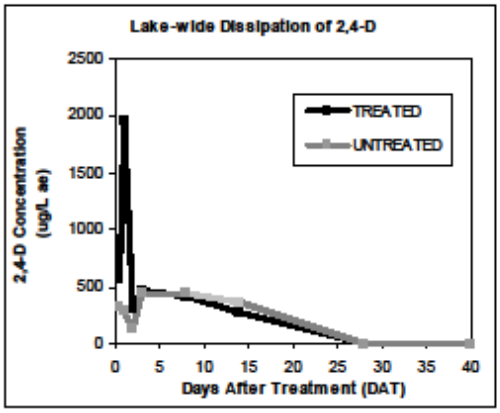
Post notice at the access points to the waterbody

Large-Scale Treatment Research in Wisconsin

LARGE-SCALE TREATMENT RESEARCH IN WISCONSIN

Research scientists with the Wisconsin DNR and US Army Corps of Engineers ERDC have been working to evaluate large- to whole-lake scale early spring herbicide treatments for managing invasive aquatic plants. Multi-year monitoring of 2,4-D applications for Eurasian watermilfoil (EWM) and endothall for curly-leaf pondweed (CLP) are ongoing, and evaluations have been completed of fluridone for EWM[1]. This page summarizes what researchers have learned so far from monitoring herbicide residuals following treatments.

Herbicides can dissipate to untreated lake areas quite rapidly.

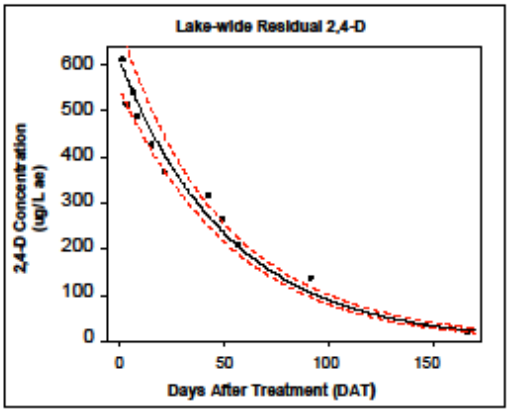


This figure shows 2,4-D applied to a northern Wisconsin lake May 25-26th, 2010. 2,4-D was fully mixed lake-wide within three days after treatment.

The rapid dissipation of herbicide into untreated water means that the concentrations in treated areas may be lower than needed for effective control and the whole lake is exposed to a low level of herbicide. Herbicide dissipation time is affected by:

- Wind
- Water flow
- Shoreline morphometry (slower from protected bays and faster along exposed/steep littoral areas)
- Density and size of plant beds being treated

Degradation of 2,4-D occurs more slowly than once believed.



This figure shows 2,4-D degradation in a northern Wisconsin oligotrophic seepage lake treated on May 20th, 2008.

Under certain conditions, residual concentrations of 2,4-D above 100 ug/L may be present well past label irrigation restriction guidelines of 21 days.

Degradation takes longer in some lakes:

- Oligotrophic lakes
- Low alkalinity lakes
- Lakes with no history of herbicide usage
- When water temperatures are cool

Granular formulations of 2,4-D have been observed to dissipate lake-wide similarly to liquid formulations.

Higher bottom concentrations with granular mix vertically in the water column within a day after treatment, and then dissipate off-site to untreated areas.

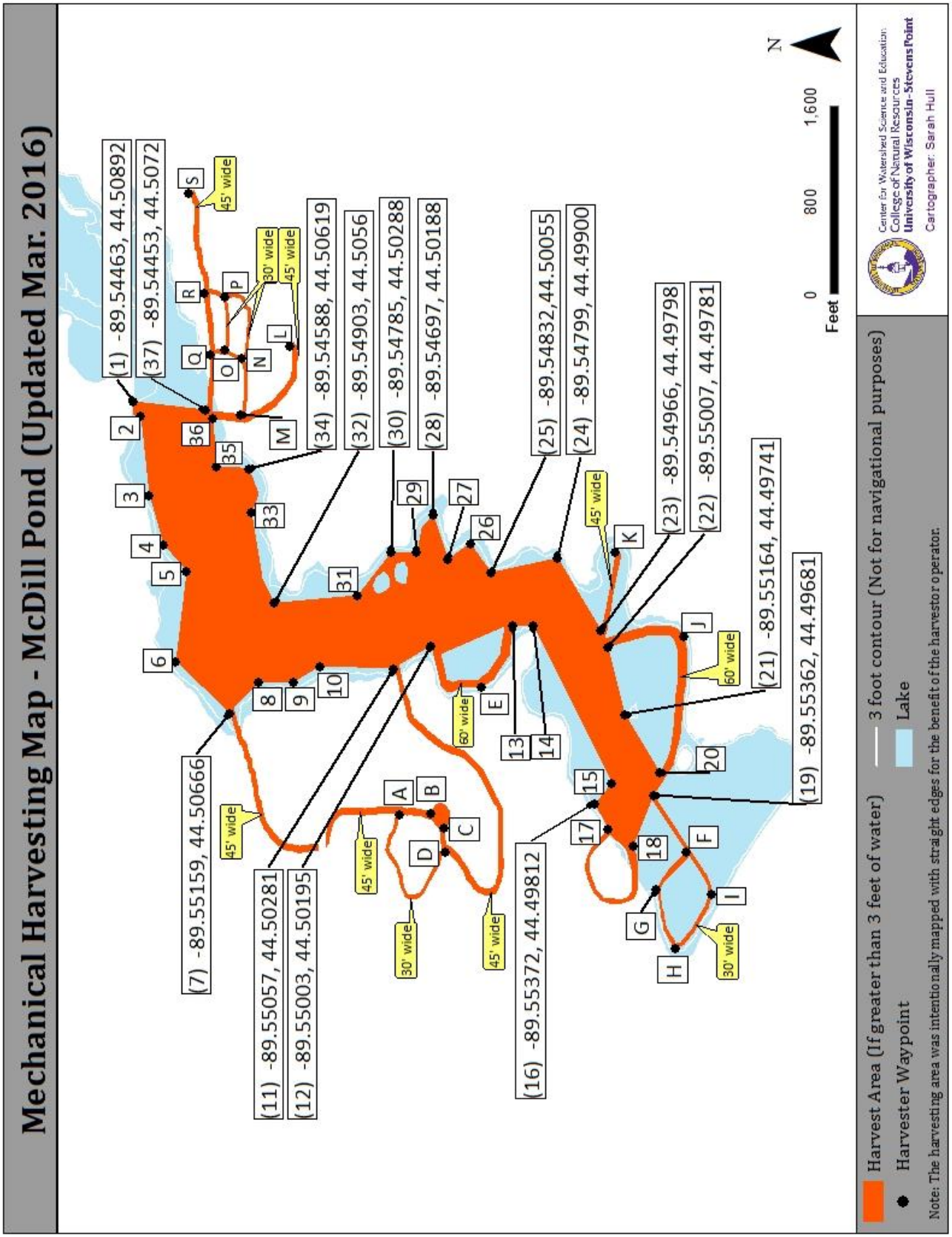
Large-scale partial lake treatments have whole-lake effects due to rapid dissipation and slow degradation.

Rapid dissipation has been observed for fluridone, 2,4-D and endothall. If the volume of water treated is more than 10% of the volume of the lake, effects can be expected at a whole-lake scale.

[1]Wagner et al. 2007. Whole-lake Herbicide Treatments for Eurasian Watermilfoil in Four Wisconsin Lakes. *Lake and Reservoir Management* 23:83-94.

Misc. Publication PUB-SS-1077 2011.

Harvesting Map with Coordinates

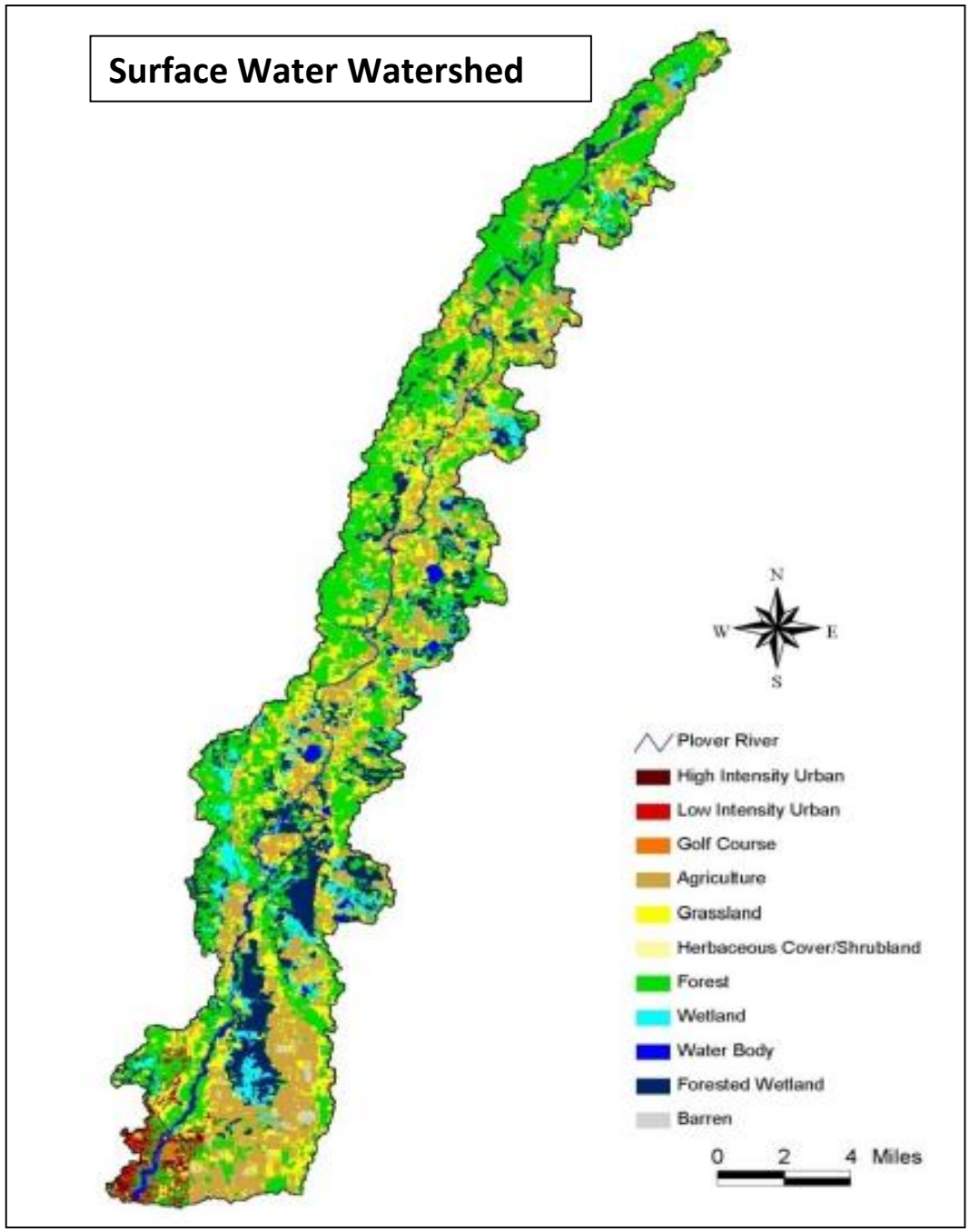


Harvesting Map Coordinates

Point	Longitude	Latitude
1	-89.54463	44.50892
2	-89.54465	44.50871
3	-89.54651	44.50854
4	-89.54768	44.50818
5	-89.54827	44.50765
6	-89.55038	44.50790
7	-89.55159	44.50666
8	-89.55087	44.50597
9	-89.55087	44.50516
10	-89.55051	44.50455
11	-89.55057	44.50281
12	-89.55003	44.50195
13	-89.54958	44.50024
14	-89.54954	44.49956
15	-89.55325	44.49772
16	-89.55372	44.49812
17	-89.55431	44.49780
18	-89.55469	44.49721
19	-89.55362	44.49681
20	-89.55298	44.49661
21	-89.55164	44.49741
22	-89.55007	44.49781
23	-89.54966	44.49798
24	-89.54799	44.49900
25	-89.54832	44.50055
26	-89.54763	44.50108
27	-89.54785	44.50159
28	-89.54697	44.50188

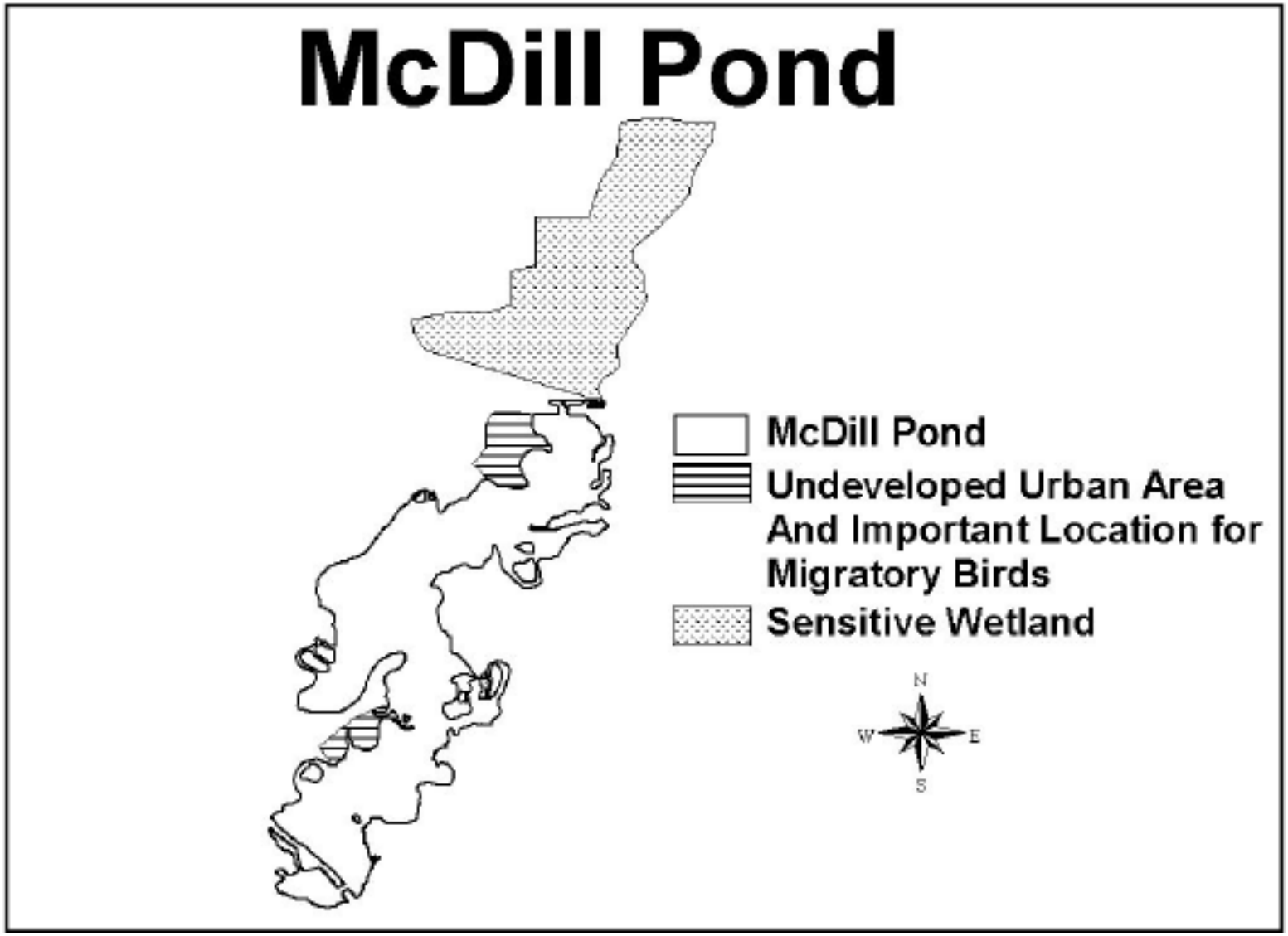
Point	Longitude	Latitude
29	-89.54785	44.50229
30	-89.54785	44.50288
31	-89.54884	44.50367
32	-89.54903	44.50560
33	-89.54691	44.50614
34	-89.54588	44.50619
35	-89.54583	44.50697
36	-89.54472	44.50705
37	-89.54453	44.50720
A	-89.55396	44.50267
B	-89.55392	44.50195
C	-89.55429	44.50163
D	-89.55486	44.50159
E	-89.55099	44.50078
F	-89.55484	44.49598
G	-89.55567	44.49667
H	-89.55709	44.49624
I	-89.55589	44.49539
J	-89.54969	44.49613
K	-89.54784	44.49763
L	-89.54301	44.50524
M	-89.54463	44.50639
N	-89.54330	44.50636
O	-89.54311	44.50675
P	-89.54187	44.50676
Q	-89.54321	44.50710
R	-89.54179	44.50723
S	-89.53946	44.50759

Watershed Land Uses



Sensitive Areas

From: UWSP Portage County Lake Study, 2003.



Reptile and Amphibian Habitat

(highlighted in red)

From: Paloski and Wild, UWSP Portage County Lake Study, 2003.

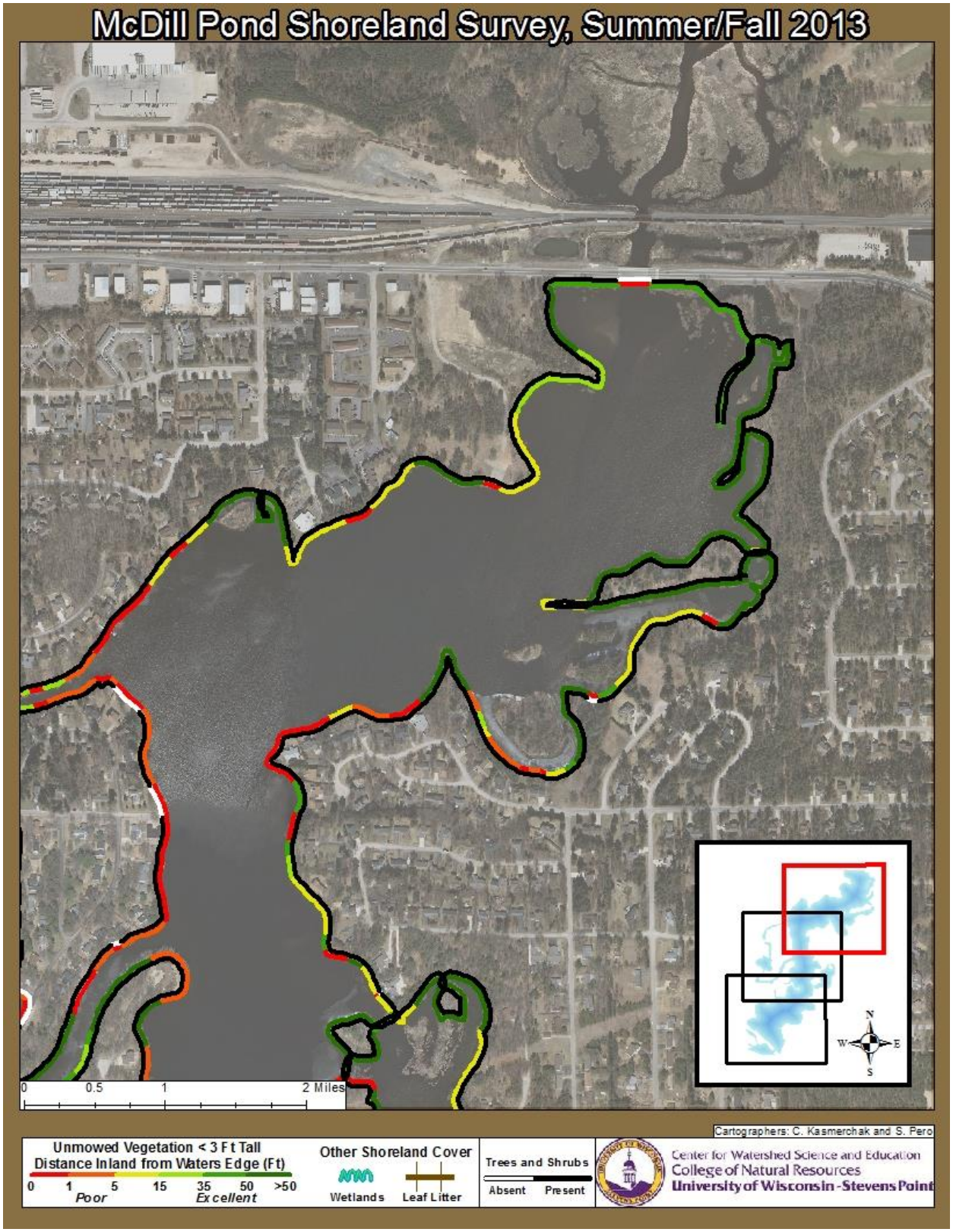
McDill Pond 2013 Shoreland Inventory

Shoreland vegetation is critical to a healthy ecosystem in and around McDill Pond. It provides habitat for many aquatic and terrestrial animals including birds, frogs, turtles, and many 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 tall grasses/flowers, shrubs and trees.

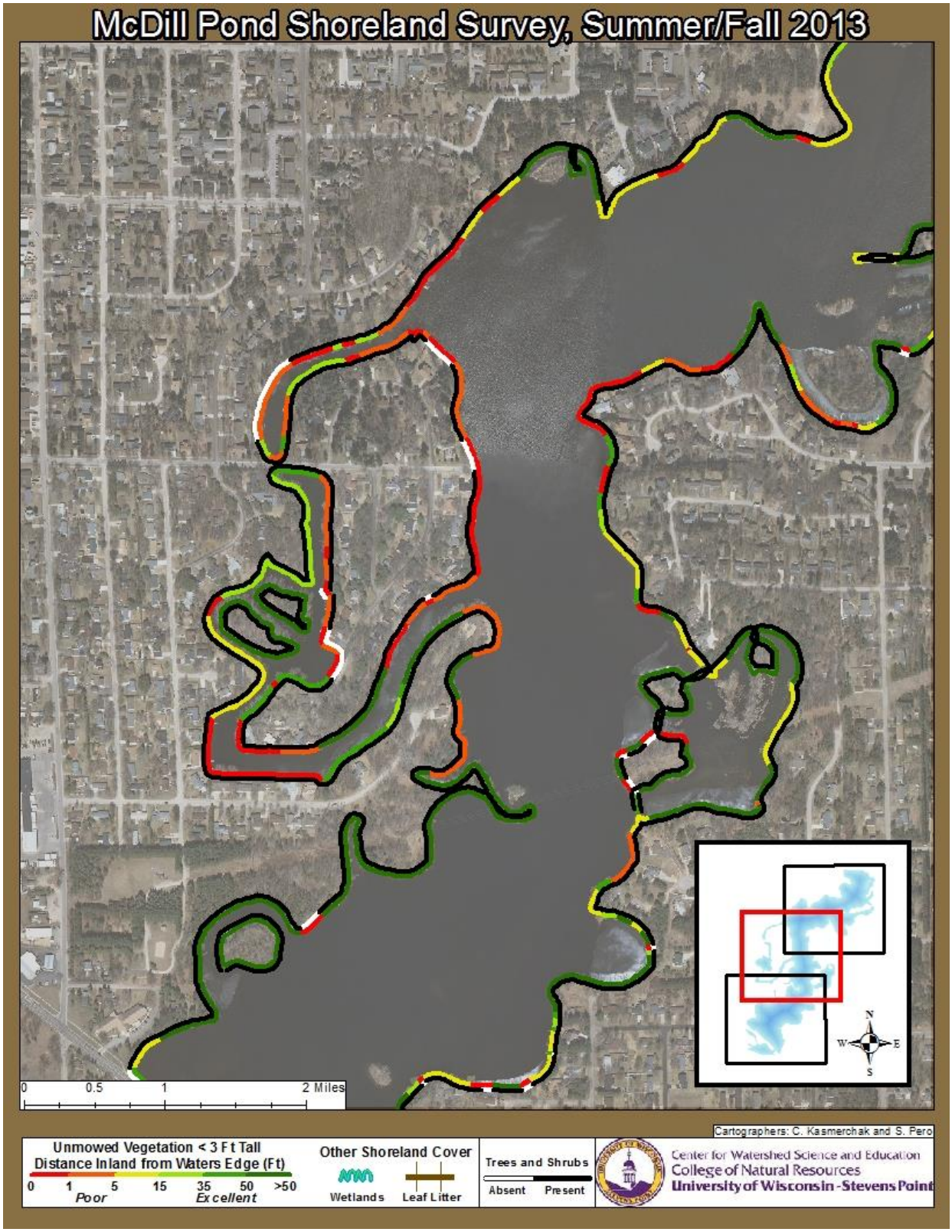
A 2012 survey was not conducted due to low water drawdown levels; therefore, the shoreland survey conducted during summer/fall 2013 had a different design than the rest of the Portage County lakes. The survey analyzed the shoreland vegetation with respect to the depth inland of the forbs layer only. Additionally, the shrubs and trees were collapsed into one layer showing their presence or absence around the shoreline. The ring nearest the lake depicted the shoreland vegetation depth inland from the water's edge for the 0.5 to 3 foot tall vegetation (forbs and grasses) and the outer ring depicted the presence or absence of vegetation greater than 15 feet in height (trees). McDill Pond's results, unlike other Portage County lakes, are displayed via a three-map series rather than one map. This was due to the high variability in McDill Pond's shoreland vegetation buffers, and also to highlight details that might otherwise go unnoticed on a single map.

McDill Pond's 2013 shoreland disturbance survey was conducted simultaneously with its shoreland vegetation survey. As with the shoreland vegetation survey results, the disturbance survey results are displayed via three-map series, showing: boat landings, docks/piers, and dam/spillways; culverts present on the lake; shoreline erosion, stretches of rip-rap, seawalls, and barren portions of the shoreland; and, structures that are in close proximity to the shoreland interface.

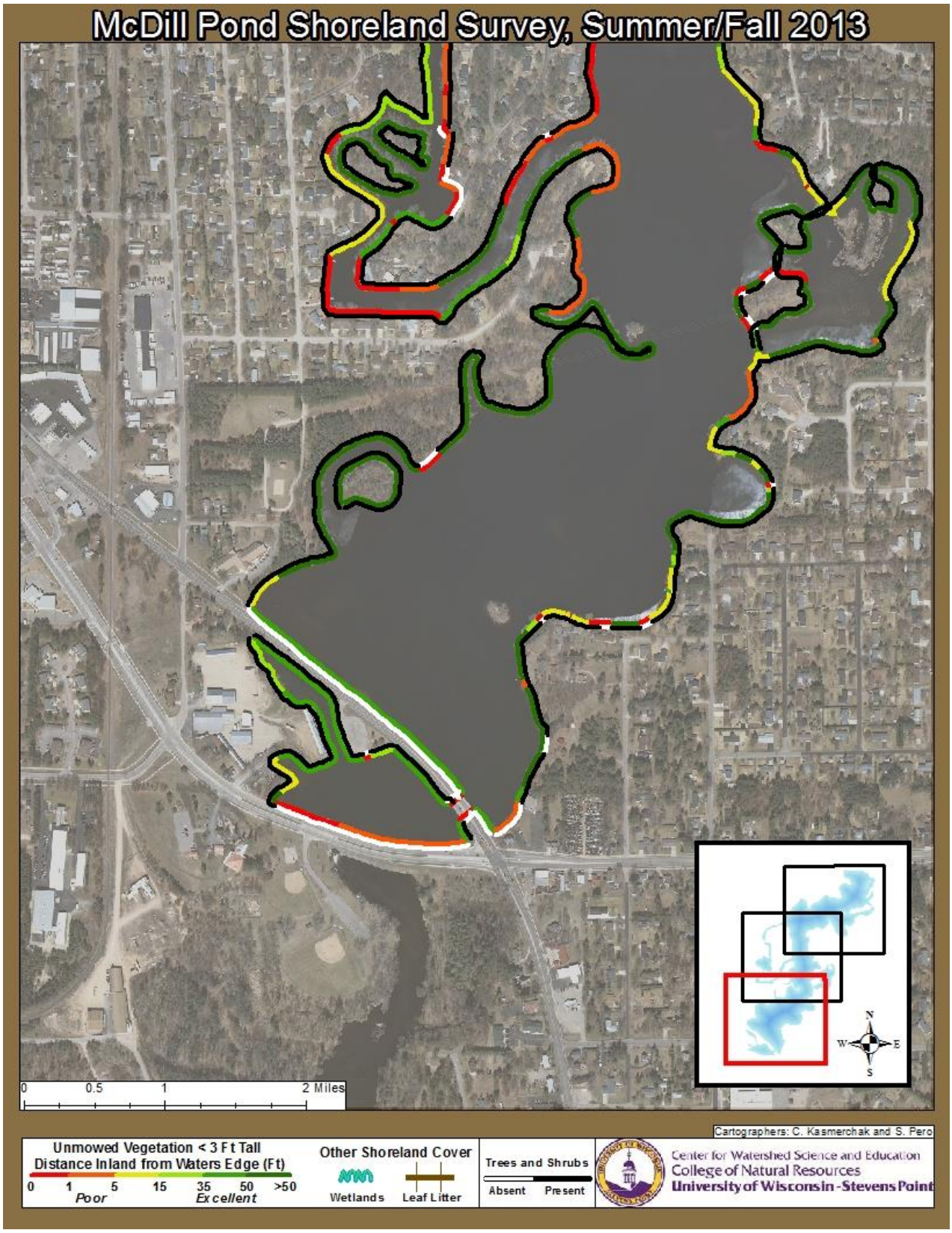
The results of McDill Pond's shoreland inventory are slightly different from other Portage County lakes, as a new shoreland inventory survey was developed after the 2012 surveys and used for McDill Pond; however, it should be noted that assessments on the status of shoreland health were conducted in a similar manner.



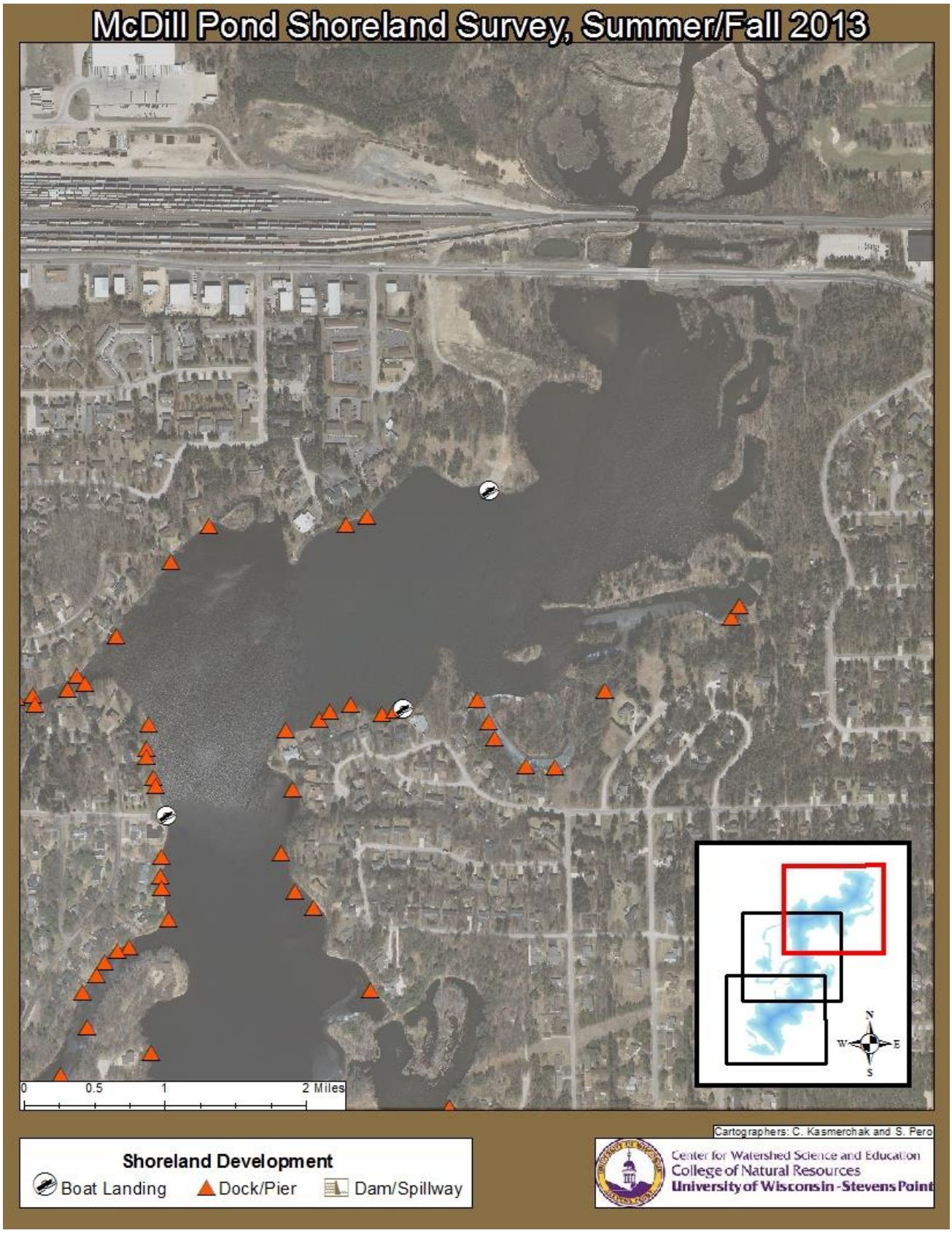
McDill Pond shoreland survey (upper section), early summer/fall 2013.



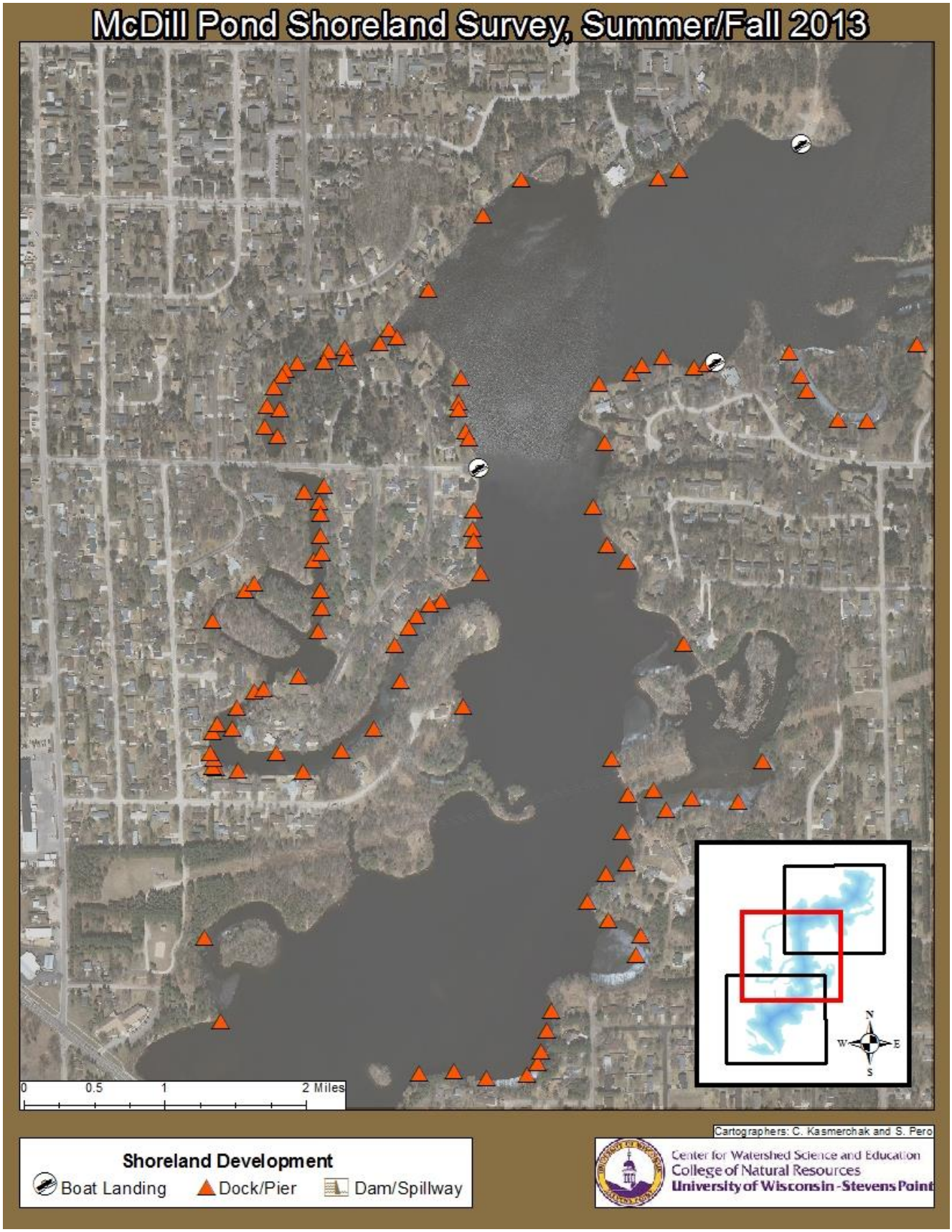
McDill Pond shoreland survey (center section), early summer/fall 2013.



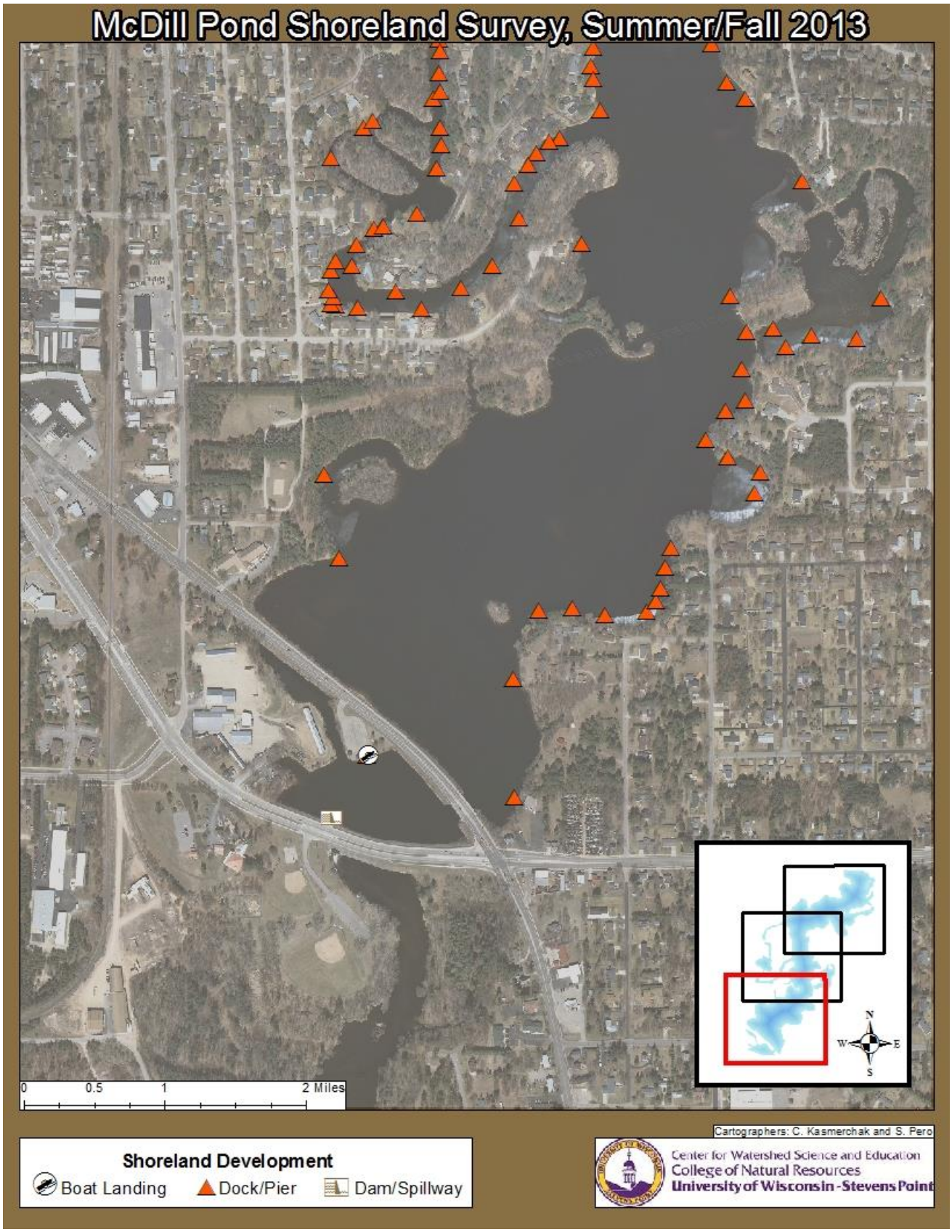
McDill Pond shoreland survey (lower section), early summer/fall 2013.



McDill Pond shoreland disturbance survey showing boat landings, docks/piers and dam/spillways (upper section), early summer/fall 2013.

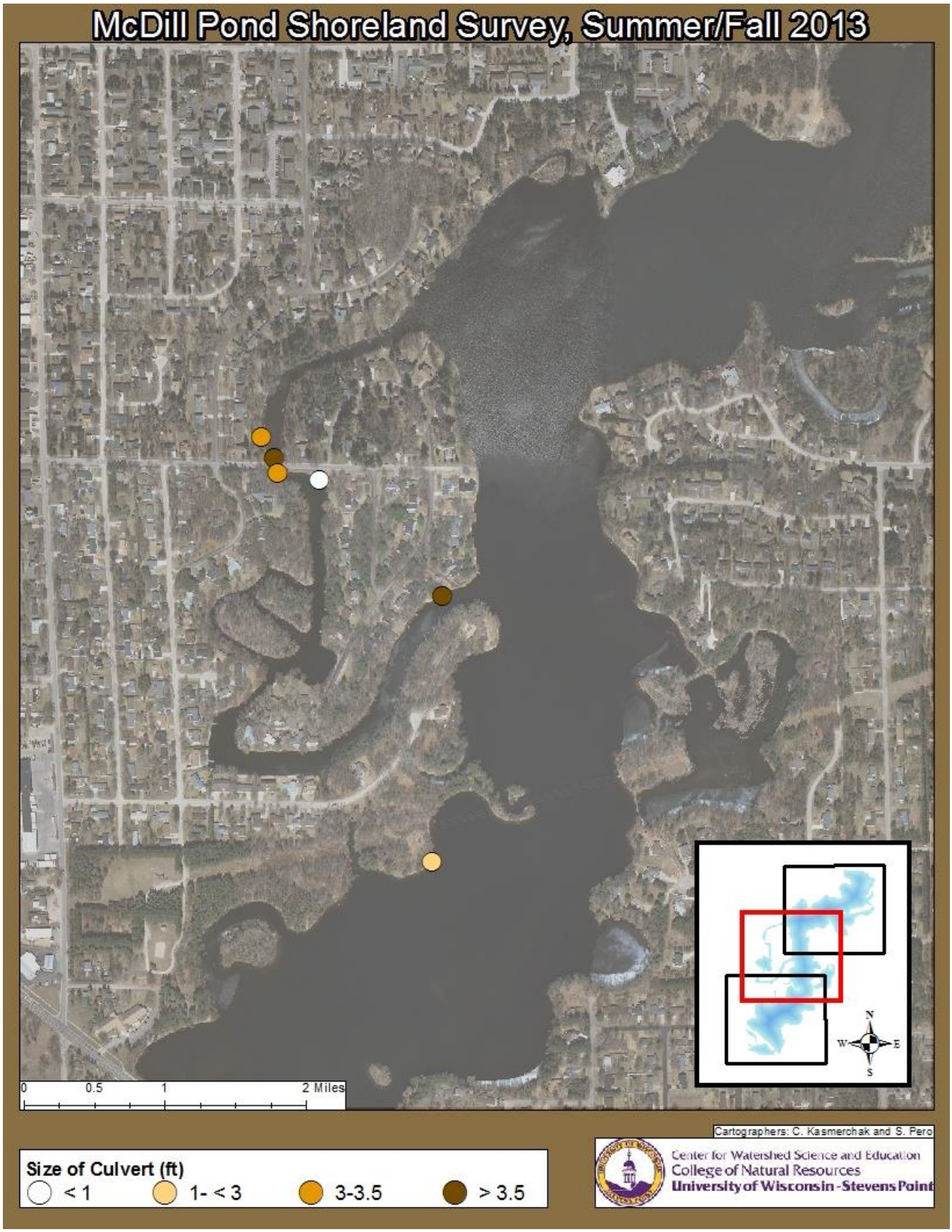


McDill Pond shoreland disturbance survey showing boat landings, docks/piers and dam/spillways (center section), early summer/fall 2013.

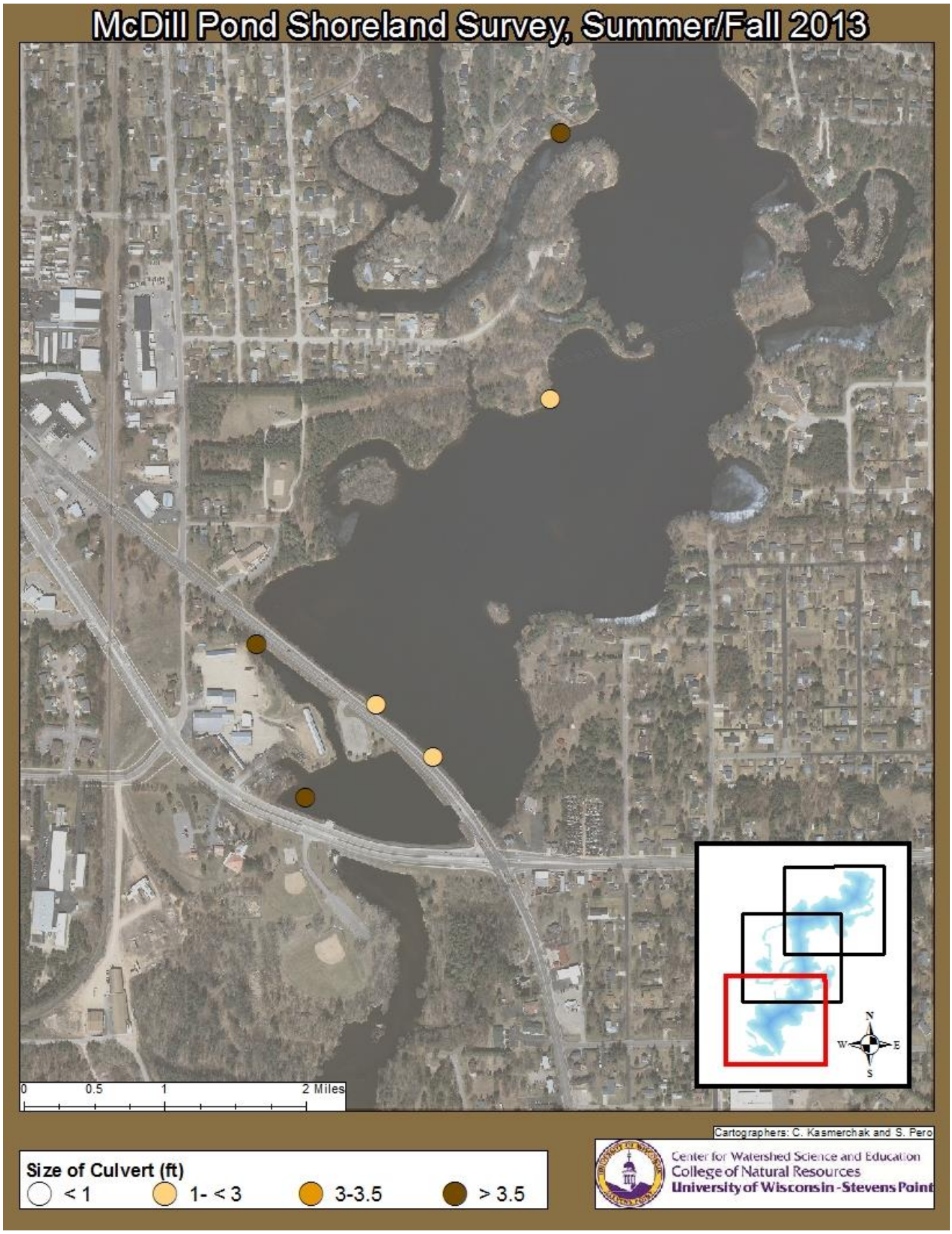


McDill Pond shoreland disturbance survey showing boat landings, docks/piers and dam/spillways (lower section), early summer/fall 2013.

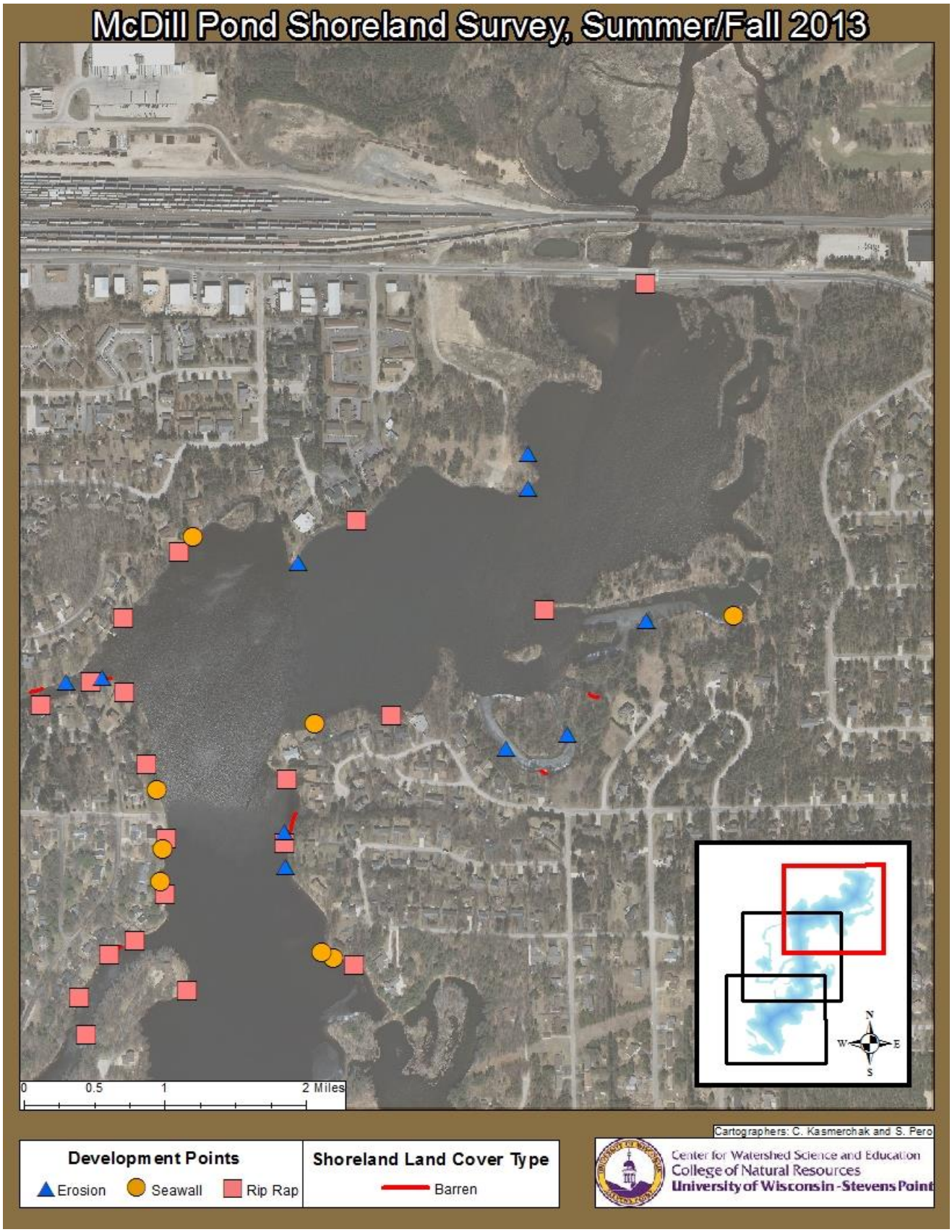
McDill Pond shoreland disturbance survey showing culverts (upper section), early summer/fall 2013.



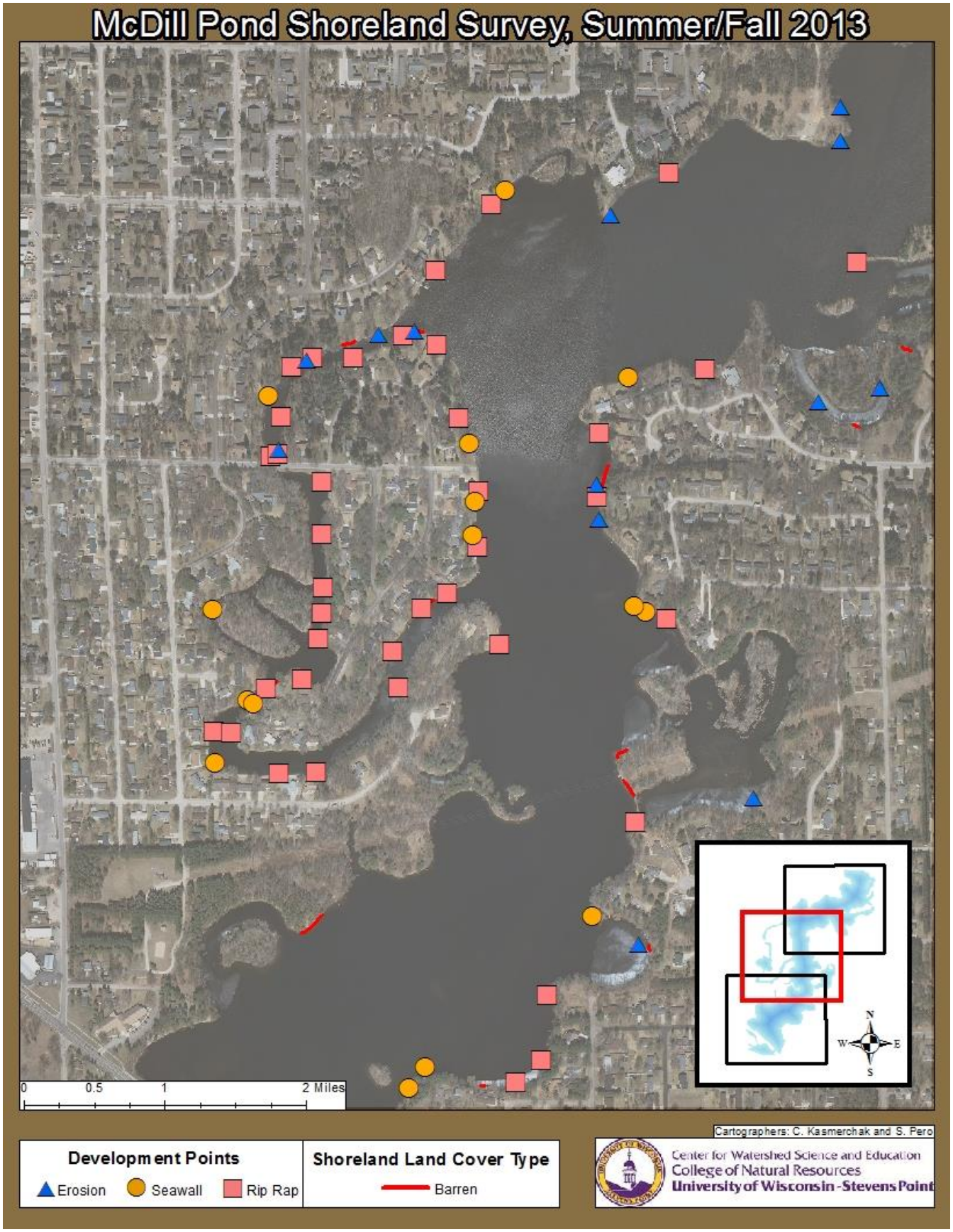
McDill Pond shoreland disturbance survey showing culverts (center section), early summer/fall 2013.



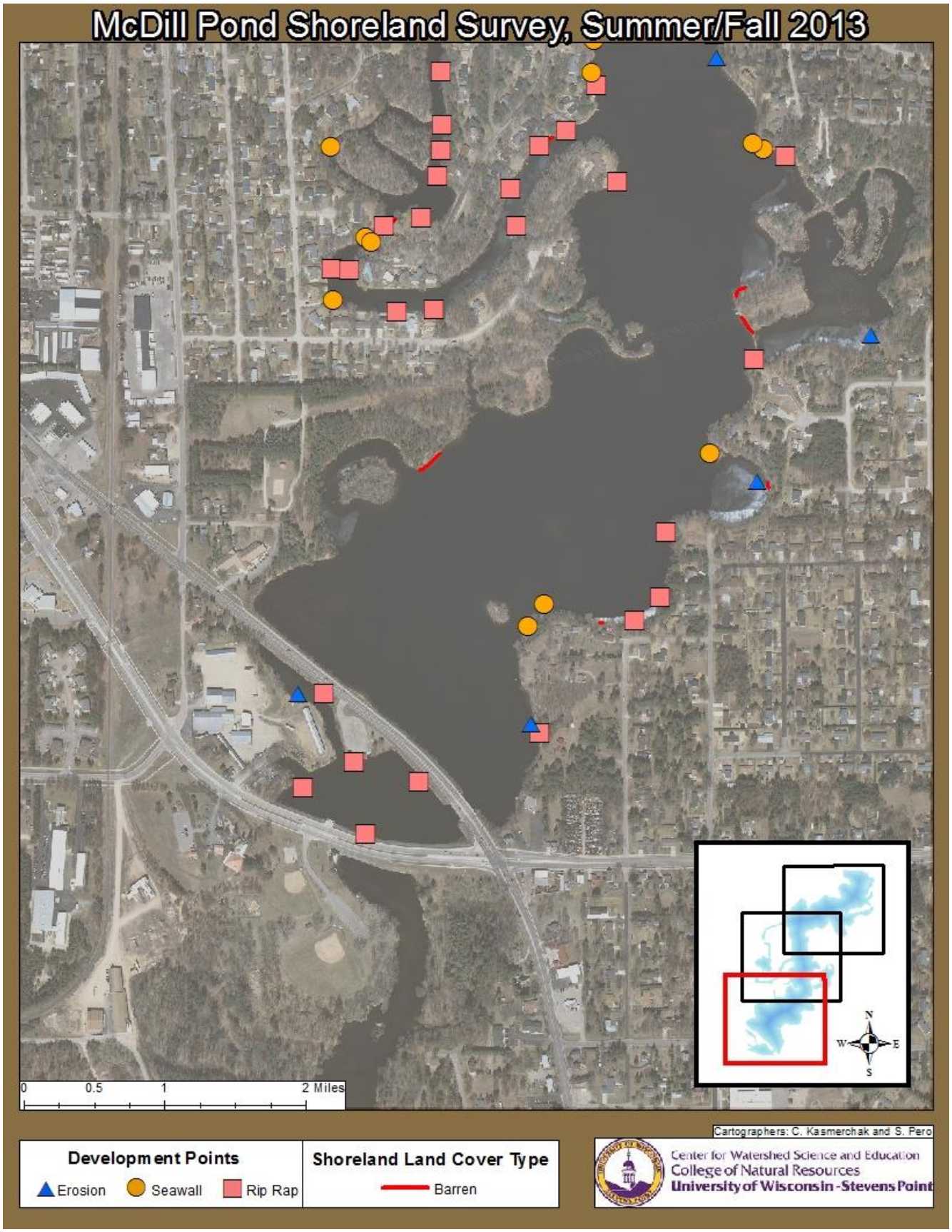
McDill Pond shoreland disturbance survey showing culverts (lower section), early summer/fall 2013.



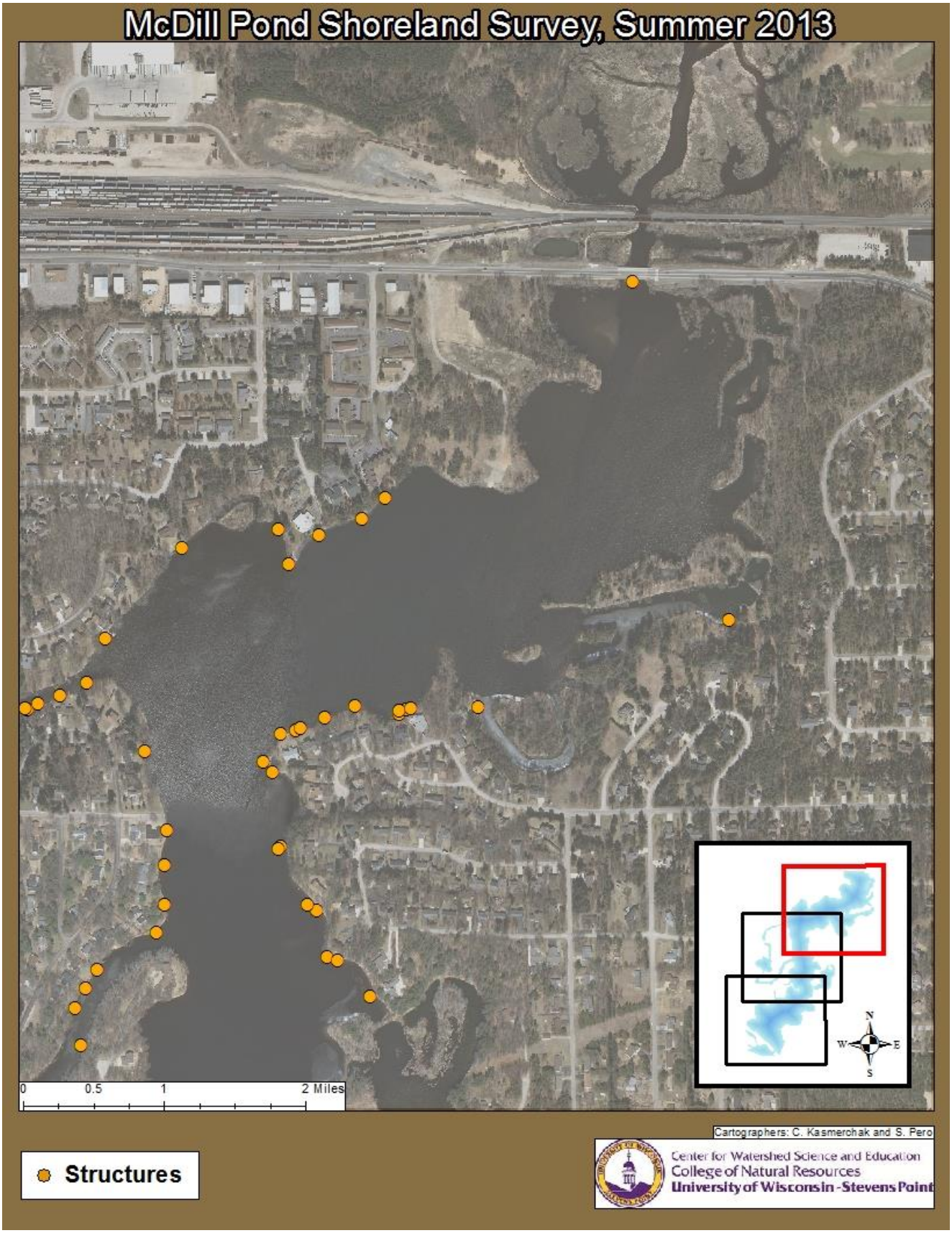
McDill Pond shoreland disturbance survey showing erosion, seawalls, rip-rap and barren areas (upper section), early summer/fall 2013.



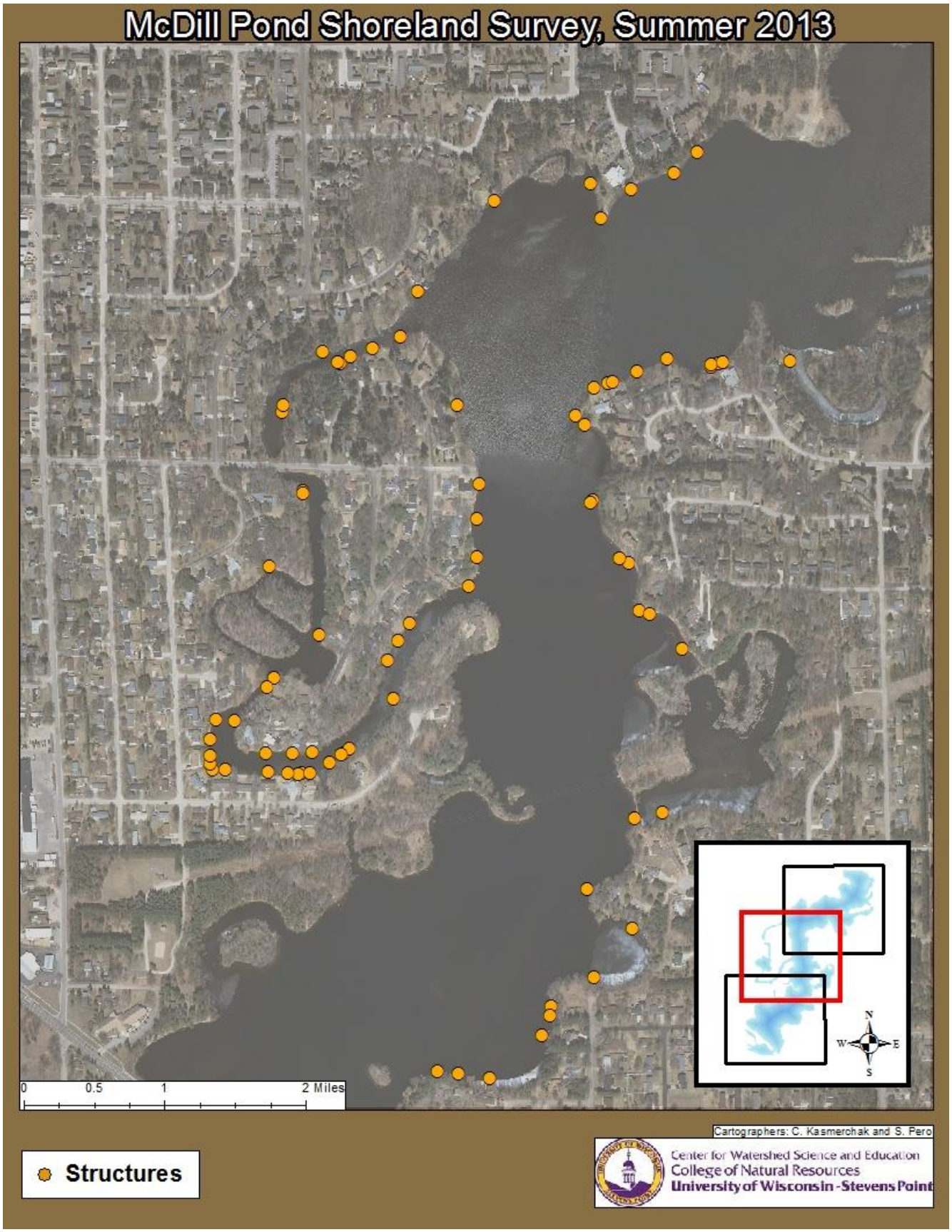
McDill Pond shoreland disturbance survey showing erosion, seawalls, rip-rap and barren areas (center section), early summer/fall 2013.



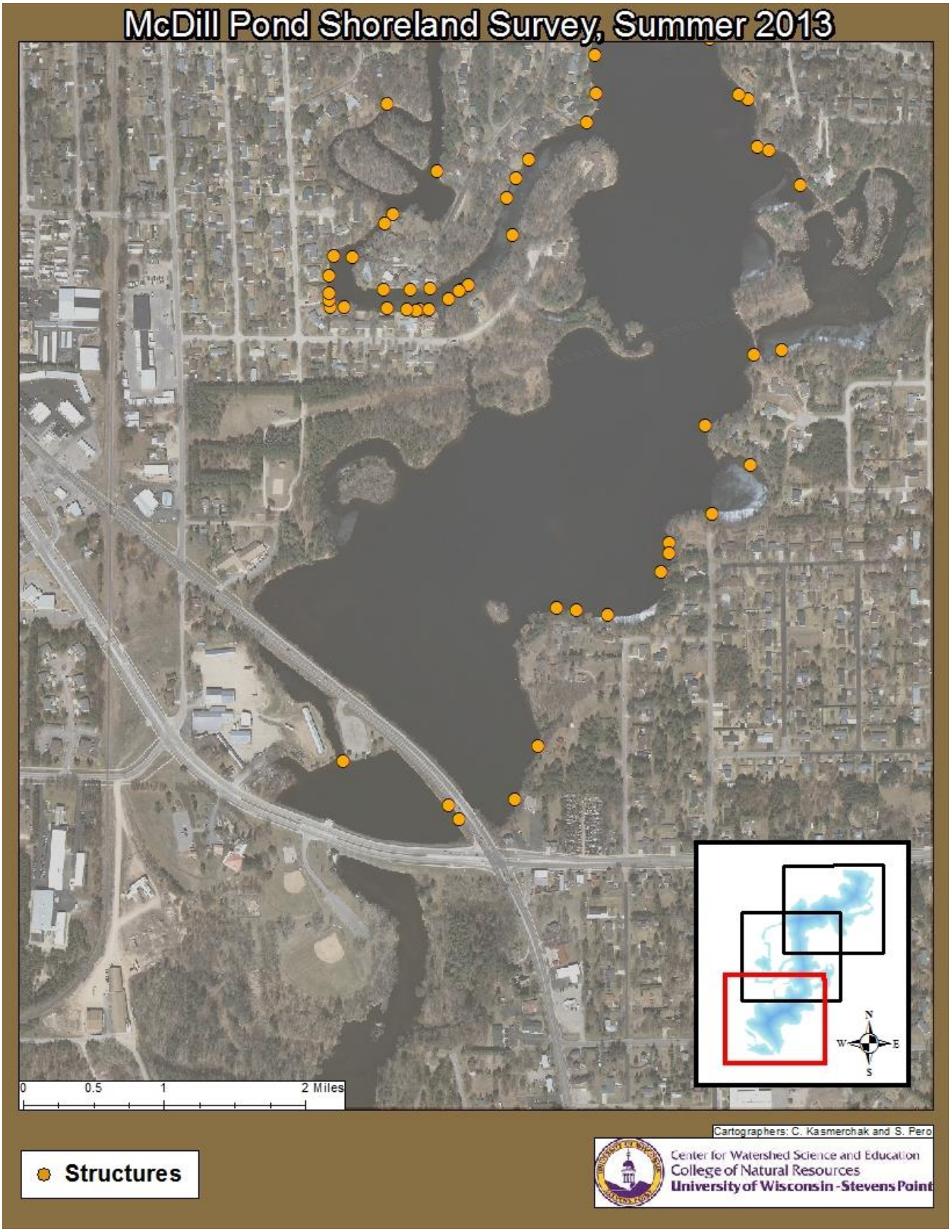
McDill Pond shoreland disturbance survey showing erosion, seawalls, rip-rap and barren areas (lower section), early summer/fall 2013.



McDill Pond shoreland disturbance survey showing structures near the shoreland (upper section), early summer/fall 2013.



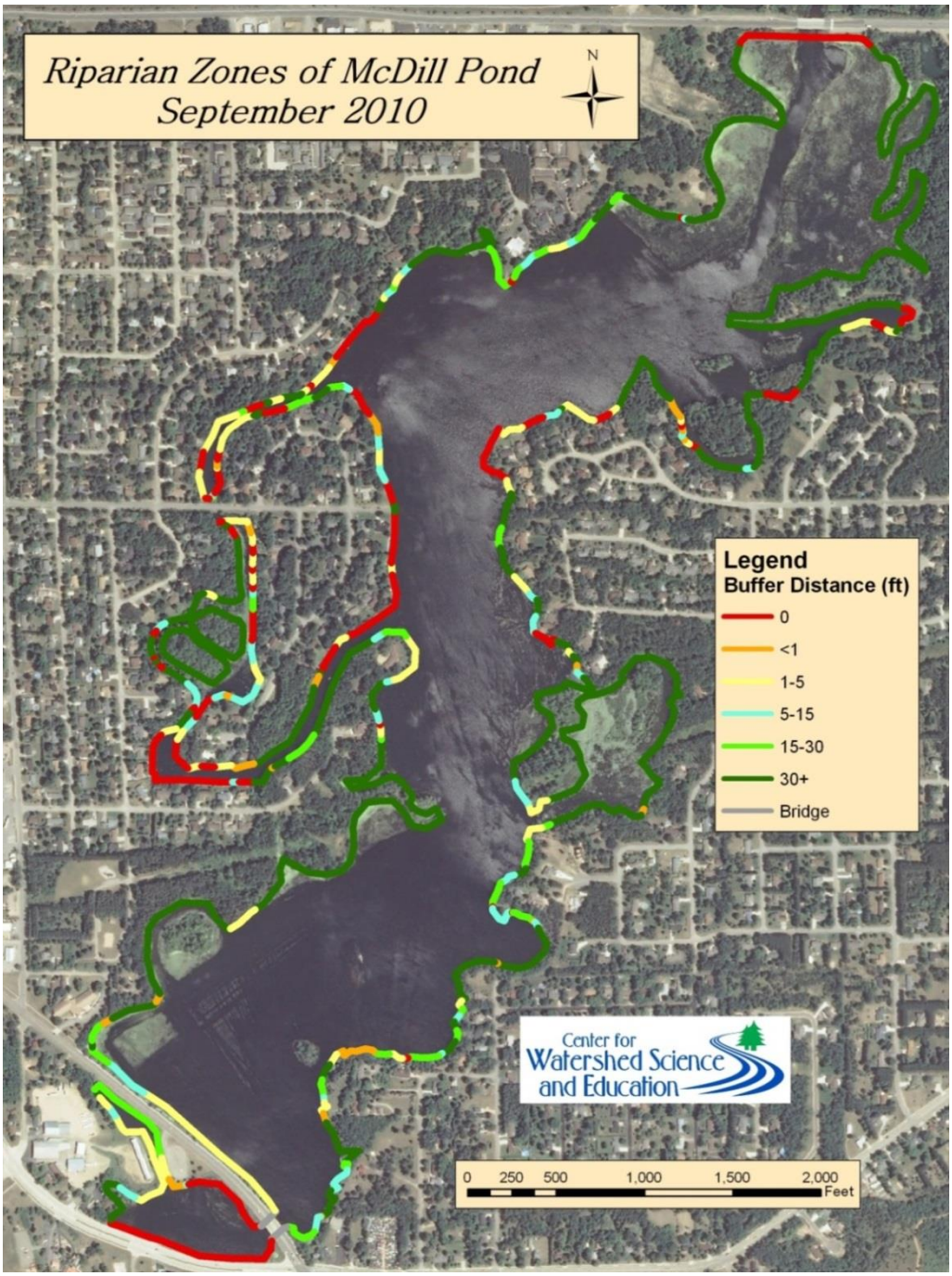
McDill Pond shoreland disturbance survey showing structures near the shoreland (center section), early summer/fall 2013.



McDill Pond shoreland disturbance survey showing structures near the shoreland (lower section), early summer/fall 2013.

McDill Pond 2010 Shoreland Inventory

Shoreland surveys were conducted annually from 2007 to 2010 to measure the extent of changes as residents and the Village of Plover worked to improve the shores. The survey categories were changed over the years to provide a better measure of incremental improvements.



McDill Pond shoreland survey, early fall 2010.

McDill Pond 2010-2013 Shoreland Inventory Comparison

The shoreland surveys on McDill Pond in 2010 and 2013 were conducted slightly differently; however, changes in shoreland buffers can still be quantified. This was done by combining some of the buffer depth categories from the 2010 survey to better mirror the 2013 survey. In the 2010 survey, the "0 ft" buffer category was combined with the "bridge" category, since the 2013 survey marked the bridge as a "0 ft" buffer. Additionally, the "<1 ft" category in the 2010 survey was combined with the "1-5 ft" category for easier comparison with the "1-5 ft" category in the 2013 survey. The largest shoreland vegetative buffer category in the 2010 survey was "30+ ft," whereas the largest buffer category in the 2013 survey was ">50 ft." In order to compare the largest buffer categories between the two surveys, the "35-50 ft" and ">50 ft" categories were combined in the 2013 survey. The tables below show the total feet of shoreland buffers falling into the survey categories for 2010 and 2013.

Length of shoreland buffers around McDill Pond by category, 2010.

McDill Pond 2010	
Buffer Category	**Length (ft)**
0 ft	7790
<1 ft	1378
1-5 ft	6451
5-15 ft	3249
15-30 ft	3735
30+ ft	27031
Bridge	248

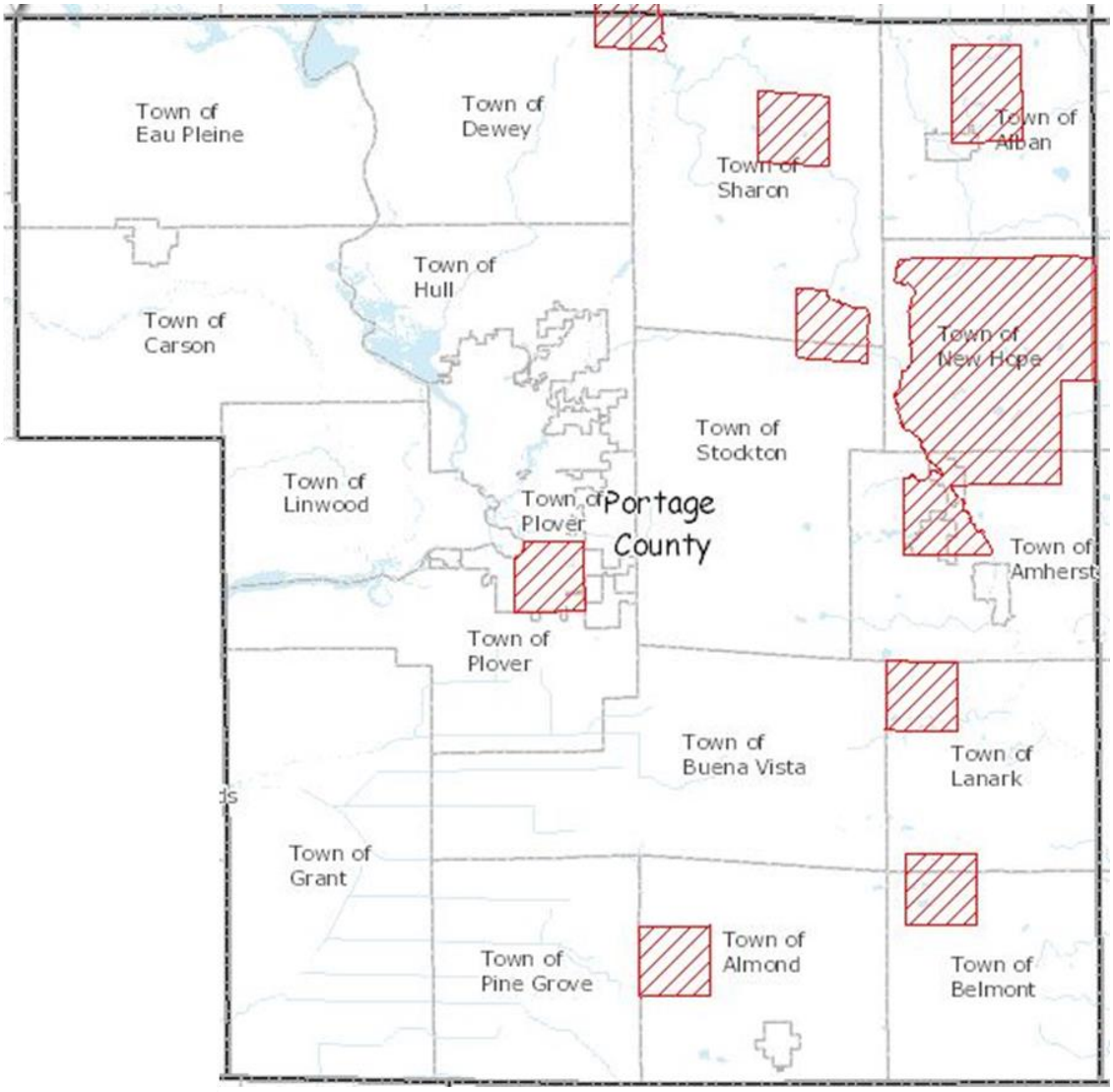
Length of shoreland buffers around McDill Pond by category, 2013.

McDill Pond 2013	
Buffer Category	**Length (ft)**
0 ft	6968
1-5 ft	5812
>5-15 ft	8579
>15-35 ft	6546
>35-50 ft	3642
>50 ft	21758

Based on the comparison between the 2010 and 2013 surveys of McDill Pond, it can be concluded that vegetative buffers falling into the '>5-15 ft' and '>15-35 ft' categories have increased. Additionally, there has been a decrease in buffer depths less than 5 feet. This demonstrates that vegetative buffers along the shoreland of McDill Pond have increased over the past three years. With the increase of buffers in the '>15-35 ft' category, lake property owners are increasing their compliance with county shoreland zoning ordinances. An interesting aspect of this is that the '>35 ft' category has decreased in total length of shoreline since the 2010 survey. This may be a result of increased shoreland development on McDill Pond over the past three years, and thus vegetative buffers greater than 35 feet inland have decreased.

Atrazine Prohibition Areas

https://datcpgis.wi.gov/maps/?viewer=pa



United States Geological Survey:
45,527 acres of land within Portage County are in atrazine prohibition areas.

Atrazine is a popular corn herbicide that is used to control weeds in corn fields and has been used in Wisconsin for over 25 years. Atrazine may have entered Wisconsin's groundwater as a result of its use on farm fields. In some cases it may be the result of a spill or improper disposal of unwanted or unused product. As of 2006, there are 102 atrazine prohibition areas in Wisconsin, covering about 1.2 million acres. An atrazine prohibition area is an area of land where all uses of atrazine are prohibited.

http://wi.water.usgs.gov/gwcomp/find/portage/atrazine.html

Portage County Lake Information Directory – 2015

Algae - Blue-Green
Contact: Portage County Health & Human Services Department
817 Whiting Ave. Stevens Point, WI 54481
Phone: 715-345-5350
E-mail: PCHHSD@co.portage.wi.us

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

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
Website: http://dnr.wi.gov/lakes/bluegreenalgae/

Aquatic Invasive Species/Clean Boats Clean Water
Contact: Amy Thorstenson, Executive Director
Golden Sands Resource Conservation & Development Council, Inc.
1100 Main St., Suite 150, Stevens Point, WI 54481
Phone: 715-343-6215
Email: amy.thorstenson@goldensandsrcd.org
Websites: www.goldensandsrcd.org
http://dnr.wi.gov/topic/Invasives/

Aquatic Plant Identification
Contact: Amy Thorstenson, Executive Director
Golden Sands Resource Conservation & Development Council, Inc.
Phone: 715-343-6215
E-mail: amy.thorstenson@goldensandsrcd.org
1100 Main St., Suite 150, Stevens Point, WI 54481
Website: http://www.goldensandsrcd.org/

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

Aquatic Plant Management (Native and Invasive)
Contact: Scott Provost
Water Resources Management Specialist
Wisconsin Department of Natural Resources
473 Griffith Avenue
Wisconsin Rapids WI 54494
Phone: 715-421-7881
Fax: 920-787-2477
Email: Scott.Provost@wisconsin.gov
Website: http://dnr.wi.gov/lakes/plants/

Boat Landings - County
Contact: Gary Speckmann, Portage County Parks
1903 County Hwy Y Stevens Point, WI 54481
Phone: 715-346-1433
E-mail: parks@co.portage.wi.us
Website: http://www.co.portage.wi.us/parks/

Boat Landings - State
Contact: Tom Meronek, Fisheries Biologist
Wisconsin Department of Natural Resources
5301 Rib Mountain Drive, Wausau, WI 54401
Phone: 715-359-7582
Email: thomas.meronek@wisconsin.gov

Boat Landings - Town
Contact the clerk for the specific town/village in which the boat landing is located.

Citizen Lake Monitoring Network
Contact: Buzz Sorge
Wisconsin Department of Natural Resources
PO Box 4001, Eau Claire, WI 54702
Phone: 715-839-3794
E-mail: Patrick.Sorge@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/

Conservation Easements (cont'd)
Contact: Buzz 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: Natural Resources Conservation Service (NRCS) Stevens Point Service Center
1462 Strongs Ave., Stevens Point, WI 54481
Phone: 715-346-1325

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

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/topic/Dams/

Fertilizers and Soil Testing
Contact: Ken Schroeder, Portage County UW-Extension
817 Whiting Ave. Stevens Point, WI 54481
Phone: 715-346-1316
E-mail: Ken.Schroeder@ces.uwex.edu
Website:
http://portage.uwex.edu/horticulture/soil-testing/

Fisheries Biologist (management, habitat)
Contact: Tom Meronek, Fisheries Biologist
Wisconsin Department of Natural Resources
5103 Rib Mt. Drive, Wausau, WI 54401
Phone: 715-359-7582
E-mail: Thomas.Meronek@wisconsin.gov
Website: http://dnr.wi.gov/fish/

Fish Surveys
Contact: Tom Meronek, Fisheries Biologist
Wisconsin Department of Natural Resources
5103 Rib Mt. Drive, Wausau, WI 54401
Phone: 715-359-7582
E-mail: Thomas.Meronek@wisconsin.gov
Website: http://dnr.wi.gov/topic/fishing/

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

Funding and Grants
Contact: Steve Bradley, County Conservationist
Portage County Land Conservation
1462 Strongs Avenue, Stevens Point, WI 54481
Phone: 715-346-1334
Fax: 715-346-1677
Email: Bradleys@co.portage.wi.us

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

Groundwater – Portage County
Contact: Ray Schmidt, Groundwater Specialist
Portage County Courthouse Annex Building
1462 Strongs Avenue, Stevens Point, WI 54481
Phone: 715-346-1334
E-mail: schmidtr@co.portage.wi.us
Website:
http://www.co.portage.wi.us/groundwater/undrstnd/index.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-ap/watershed/Pages/GWHome.aspx

Informational Lake Brochures
Contact: Kim Becken, UW-Extension Lakes
TNR 212, 800 Reserve St., Stevens Point, WI 54481
Phone: 715-346-3212
Email: kbecken@uwsp.edu

Lake Groups – Friends, Associations, Districts
Contact: Randy Slagg
Portage County Land Conservation
1462 Strongs Avenue, Stevens Point, WI 54481
Phone: 715-346-1334
Email: Slaggr@co.portage.wi.us

Contact: Patrick Goggin, UW-Extension Lakes
Phone: 715-295-8903
203 TNR 800 Reserve St. Stevens Point, WI 54481
E-mail: pgoggin@uwsp.edu
Website: http://www.uwsp.edu/cnr-ap/UWEXLakes/Pages/default.aspx

Contact: Kim Becken, UW-Extension Lakes
TNR 212, 800 Reserve St., Stevens Point, WI 54481
Phone: 715-346-3212
Email: kbecken@uwsp.edu

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 – Volunteer Monitoring
Contact: Ray Schmidt, Groundwater Specialist
Portage County Courthouse Annex Building
1462 Strongs Avenue, Stevens Point, WI 54481
Phone: 715-346-1334
E-mail: schmidtr@co.portage.wi.us
Website:
http://www.co.portage.wi.us/groundwater/undrstnd/index.htm

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

Lake Level Studies
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

Lake-Related Law Enforcement (no-wake, transporting invasives, etc.)
Contact: Jon Scharbarth or Bryan Lockman
State Conservation Wardens
Wisconsin Department of Natural Resources
301 Cedar St. Stevens Point, WI 54481
Phone: 715-344-2752
Website: http://dnr.wi.gov/emergency/

Land Use Plans and Zoning Ordinances
Contact: Jeff Schuler
Portage County Planning and Zoning
Phone: 715-346-1334
1462 Strongs Ave. Stevens Point, WI 54481
E-mail: Planning&Zoning@co.portage.wi.us
Website:
http://www.co.portage.wi.us/planningzoning/

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: Randy Slagg
Portage County Land Conservation Department
1462 Strongs Ave. Stevens Point, WI 54481
Phone: 715-346-1334
E-mail: Planning&Zoning@co.portage.wi.us
Websites:
http://www.co.portage.wi.us/planningzoning/
http://dnr.wi.gov/topic/AgBusiness/CAFO/NutrientManagementPlan.html

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

Parks - County
Contact: Gary Speckmann
Portage County Parks Director
1903 County Hwy Y, Stevens Point WI 54482
Phone: 715-346-1433
Fax: 715-346-1994
Email: parks@co.portage.wi.us

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: Buzz Sorge
Wisconsin Department of Natural Resources
P.O. Box 4001, Eau Claire, WI 54702
Phone: 715-839-3794
E-mail: Patrick.Sorge@wisconsin.gov
Website: http://dnr.wi.gov/topic/Lands/RealEstate/

Rain Barrels – Order
Golden Sands Resource Conservation & Development Council, Inc.
Phone: 715-343-6215
1100 Main St., Suite 150, Stevens Point, WI 54481
Website: http://www.goldensandsrcd.org/store

Rain Gardens and Stormwater Runoff – Assistance for Property Owners
Contact: Randy Slagg
Portage County Land Conservation Department
1462 Strongs Ave. Stevens Point, WI 54481
Phone: 715-346-1334
E-mail: Planning&Zoning@co.portage.wi.us
Website: http://dnr.wi.gov/topic/stormwater/

Contact: Ken Schroeder, Portage County UW-Extension
817 Whiting Ave. Stevens Point, WI 54481
Phone: 715-346-1316
E-mail: Ken.Schroeder@ces.uwex.edu
Website: http://portage.uwex.edu/

Septic Systems/On-site Waste
Contact: Ralph Loeffler
Portage County Planning and Zoning
Phone: 715-346-1334
Address: 1462 Strongs Ave. Stevens Point, WI 54481
E-mail: Planning&Zoning@co.portage.wi.us
Website:
http://www.co.portage.wi.us/planningzoning/

Shoreland Management and Restoration
Contact: Randy Slagg
Portage County Land Conservation
1462 Strongs Avenue, Stevens Point, WI 54481
Phone: 715-346-1334
Email: Slaggr@co.portage.wi.us
Websites:
http://dnr.wi.gov/topic/ShorelandZoning/Programs/programs.html

Shoreland Zoning Ordinances
See: Land Use Plans and Zoning Ordinances

Soil Fertility Testing
See: Fertilizer and Soil Testing

Water Quality Monitoring
Contact: Water & Environmental Analysis Laboratory
University of Wisconsin-Stevens Point
TNR 200. 800 Reserve St., Stevens Point, WI 54481
Phone: 715-346-3209
E-mail: weal@uwsp.edu
Website: http://www.uwsp.edu/cnr-ap/weal/Pages/default.aspx

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

Water Quality Problems
Contact: Buzz Sorge
Wisconsin Department of Natural Resources
P.O. Box 4001, Eau Claire, WI 54702
Phone: 715-839-3794
E-mail: Patrick.Sorge@wisconsin.gov

Water Quality Problems (cont'd)
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: Wisconsin Wetlands Association
214 N. Hamilton Street, #201, Madison, WI 53703
Phone: 608-250-9971
Email: info@wisconsinwetlands.org

Contact: Will Stites
Water Regulations & Zoning Specialist
Wisconsin Rapids Service Center
473 Griffith Avenue, Wisconsin Rapids, WI 54494
Phone: 715-421-7815
Fax: 715-421-7830
Email: will.stites@wisconsin.gov

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/topic/wetlands/

Woody Habitat
Contact: Tom Meronek, Fisheries Biologist
Wisconsin Department of Natural Resources
5301 Rib Mountain Drive, Wausau, WI 54401
Phone: 715-359-7582
Email: thomas.meronek@wisconsin.gov