

The Ocqueoc River Watershed: An Introduction



Ocqueoc River located at M-68

Presque County Drain Commissioner

2010

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The Ocqueoc River Watershed Commission

Mission: To improve and protect the water quality of the Ocqueoc River, lakes, and streams that flow into it.

The goals, objectives, and strategies:

As stated in the **Ocqueoc River Watershed Management Plan** developed by Huron Pines Resource and Conservation Development Council and approved by the Michigan DNRE. Actions to complete this mission may be performed by partners through contracts, volunteers, and staff.

Goal 1: Protect the watershed's fishery population and navigation by reducing the amount of erosion, particularly caused by human activities, negatively impacting the river.

Goal 2: Safeguard fisheries, aquatic life, public water supply, and body contact recreation by reducing the amount of nutrient loading to surface water.

Goal 3: Protect the fishery and other aquatic life by restoring a more natural flow regime to the river system.

Goal 4: Conserve important wildlife habitat areas.

Goal 5: Enhance and protect the Ocqueoc River Watershed by promoting stewardship, education, and responsible use of the watershed.

Authority: The Presque Isle County Board of Commissioners established the "**Ocqueoc River Watershed Commission**" by resolution in 2004.

Members: The nine commissioners are appointed by the County Board of Commissioners for a term of three years.

Commissioners: Virginia Pierce- Chair; Jann Hija-Secretary; John Roby-Vice Chair; Doris Parker, Dean Storms, Rick Colonna, Darlene Adas, Byron Delong, Anne Belanger, ex-Officio member is the County Drain Commissioner.

Standing Committees:

- a. Education: chair-John Roby
- b. Habitat Restoration and Protection: chair-Charles Lyon (drain commissioner)

Contacts:

Chairperson: Virginia Pierce, ph: 989-733-8217, email: ecologic@freeway.net

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Ocqueoc River Watershed Commission- An Introduction



The Little Ocqueoc River at silver Creek Road just below the confluence with the underground river.

***Located in the Lower Peninsula's extreme northeast tip, the Ocqueoc River watershed drains roughly 102,000 acres of land, most of which is very rural. The state owns a large portion of the land along the Ocqueoc, so there is wildernesses feel as you travel it.*

The Ocqueoc could be described as a tale of three rivers, in that it has three distinct parts. Its origins begin in the valley approximately 7 miles south of the town of Millersburg, which, with a population of less than 300, is the

watershed's largest population center. A series of dams and a chain of lakes in the upper reaches of the watershed have resulted in what can be best classified as a warm water fishery. These lakes also have a considerable human presence from year round homes to summer retreats.

About half way between the upper and lower stretches of the river's 30-mile journey to Lake Huron, the Ocqueoc is perhaps at its most interesting aspect. As the water begins to race over rock outcroppings and a limestone bedrock bottom its pace picks up considerably. It is in this section that Ocqueoc Falls is located and where the trout begin to appear. That's because the water begins to cool thanks to a number of major cold-water tributaries, particularly the Little Ocqueoc River and Silver Creek, which support good numbers of trout. The river then journeys through Ocqueoc Lake which receives considerable more water, almost double the volume, from several small tributaries that empty in from the north and west. As a result, Ocqueoc lake levels may vary 1-3 feet higher in the spring since there is only one outlet toward Lake Huron.

The last stretch of the river, as it approaches US-23, looks considerably different. It is dominated by tall sandy banks, which are dune-like in character, with sharp bends that further exacerbate the erosion problems that plague the Ocqueoc.

*The Ocqueoc River, because there are many other fabled streams nearby, is often overlooked by fishermen. But those who live and vacation in the area know what a rugged jewel the river is. In many ways, it is quite reminiscent of an Upper Peninsula stream, and it contains the only named waterfall (Ocqueoc Falls) in the Lower Peninsula. It was once considered a class three white water canoe course, and an excellent trout stream for rainbow, brookies, and migrating steelhead, salmon, and brown trout. ** (Excerpt from Huron Pines fact sheet)*

However, the Ocqueoc is similar to other rivers in the northern Lower Peninsula in the sense that it is susceptible to land use changes, largely due to an increase in development, as more and more people build vacation homes “Up North.” It is important that we make sure these changes don’t negatively impact the Ocqueoc watershed but rather protect and preserve it.

Huron Pines Resource Conservation and Development Council, a 501C3 Conservation organization serving an 11 county region of northeast lower Michigan, was awarded a grant in 2004 from Michigan DEQ (now DNRE) to develop the “Ocqueoc River Watershed Management Plan”. The management plan, which was completed in December of 2005, outlines pollution sources and other threats to the river, and offers a number of recommendations to solve the problems. The main goals of the plan are to develop land use policies to protect the river and its wildlife habitat, educate the public – particularly landowners along the river, to restore the Ocqueoc watershed so as to develop a more productive trout fishery, and finally to protect it from any further degradation.

One important component of the Ocqueoc River Management plan was to form a watershed commission made up of riparian stakeholders, local government leaders, and resource professionals. This primary purpose of the commission is to serve as a forum for public input regarding water quality issues, prioritize project selection, seek funding, and implement projects to address the concerns related to the river system. In 2004 the County Board of Commissioners established the **“Ocqueoc River Watershed Commission”** by resolution and appointed its members to serve for three year terms.

The “River Commission” established its bylaws, formed committees, and established a partnership with Huron Pines to facilitate the goals of the management plan. The Commission meets regularly on the even numbered months.

Ocqueoc River Watershed Commission – Remediation Planning and Activities



Upper Ocqueoc River at 638 Highway

In the late summer of 2006 the first major remediation effort occurred. Huron Pines coordinated a road/stream crossing project on the Little Ocqueoc River at Silver Creek Road. With funds provided by a grant from the U.S. Fish and Wildlife Service, MDEQ, and in kind labor and equipment from the County Road Commission a retrofit with a recycled half a tanker railroad car, hardened road surface, and roadside water diversions was completed. This effort would reduce sediment and nutrient loading by an estimated 80%

and allow for increased fish passage necessary for a sustainable trout fishery. The total project cost was \$62,872.

In the spring of 2007, the Ocqueoc River Watershed Commission expanded its role by establishing the **Ocqueoc River Habitat Restoration and Protection Committee** charged with developing a plan of action to implement the strategies recommended by the Watershed Management Plan.

This new “Habitat Restoration and Protection Committee” is composed of individuals from MDNRE Fisheries, Headwaters Trout Unlimited, U.S. Fish and Wildlife Service, Hammond Bay Area Anglers Association, Headwaters Land Conservancy, Ocqueoc River Watershed Commission, Huron Pines Resource Conservation and Development Program, a fishery consultant for Wolverine Power Cooperative, County Conservation District, Hammond Bay Area Anglers Association and the County Drain Commissioner.

Water Quality Monitoring

One immediate result from this new Committee was the establishment of a water quality monitoring program. One purpose of this program is to gather baseline data and to detect any changes in the river system over time. The other primary purpose is to gage the efforts of any remediation projects. A generous grant of \$5000 from the Hammond Bay Area Anglers Association enabled the purchase of necessary equipment. A round of practice testing activities began mid-summer of 2007. The 2008 testing cycle was the first year with all parameters being measured. The project is administered through the County Conservation District and Drain Commissioners office. Obtaining funding to sustain the program is very necessary because improved Water Quality will be one of the gauges of successful restoration efforts. Case Township and Wolverine Power Cooperative provided funding to help sustain the 2008 and 2009 monitoring efforts.

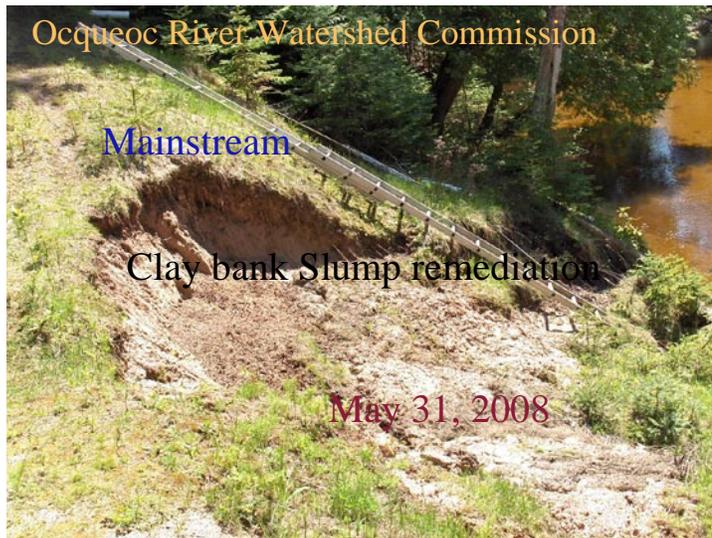
The Habitat Committee has also been in the process of reviewing and assimilating the Management Plan and prioritizing the various recommendations. Selection of road-stream crossing sites and bank stabilization sites for immediate remediation and compromised fish passage has been the point of emphasis. The County Road Commission has indicated a willingness to cooperate within their budget limitations and project schedule.

**Ocqueoc River
Watershed Commission**
Habitat Restoration
and Protection Committee
Road-stream crossing site review
May 08

graciously provided a \$25,000 fund to be used for match funding to obtain grants.

Site Tour and Evaluation

In May of 2008 members of the “Habitat Restoration Committee”, the Superintendent and a foreman of the Road Commission jointly visited eleven sites on the Little Ocqueoc River and the Silver Creek. The “Committee” had selected these sites as highest priority. Information gathered from the site visit was evaluated to determine the type of treatment needed and cost estimate. Once funding is obtained, further remediation work will occur. Wolverine Power had



In the meantime, a main stream bank stabilization project was completed on May 31/08. An area of a bank slump was remediated by volunteers of the Paul Young Chapter of Trout Unlimited, The River Commission, Hammond Bay Area Anglers Association, and the Conservation District with coordination by Huron Pines and the County Drain Commissioner. Funding was by grants from the Paul Young Chapter of TU, USFWS, Ocqueoc River Watershed Commission, Wolverine Power Cooperative, and private landowner’s contributions. Cost of the project was

\$3800.00.

At the October 2, 2008 meeting of the Habitat Restoration and Protection Committee the evaluation of the May site tour was completed. With suggestions from the State Fishery biologists the priority list was finalized. It was decided to request funding for two road crossing projects on the Silver Creek tributary, one on North Curtis Road (severe erosion) and the other on Spens Rd (critical fish passage concern). Estimated combined project cost was \$68,000. Grant funding for structure purchase of \$28,000 was applied for through the U.S. Fish and Wildlife Service and the County Road Commission would provide in-kind construction costs.



Also approved, at that October meeting, was a proposed restoration project in concert with Wolverine Power Cooperative for the Little Ocqueoc River and Peltz Road crossing. Wolverine Power was the primary partner for the October 24, 08 project providing 2/3 of the funding and volunteers while the County Road Commission provided equipment and some labor. The River Commission/Habitat Committee provided some volunteers as well as lunch. Huron Pines RC&D coordinated the project. Wolverine Power Cooperative is to be commended for sponsoring this “community

service” project as their CEO, Community Relations Director, and “Clean Energy Venture” Project Manager put on boots and gloves.

There are several more projects to be completed in the Ocqueoc River Watershed. Thousands of dollars and many hours of volunteers will be needed to accomplish them. Anyone wishing further information or to contribute in some way may contact the Ocqueoc River Watershed Commission Chairperson Virginia Pierce at 989-733-8217 or The “Habitat Restoration and Protection Committee” Chairperson Charlie Lyon at 989-766-3568.

Silver Creek Super Project-Designated by Huron Pines

News Release May 14, 2009

From: Ocqueoc River Watershed Commission, Ocqueoc River Habitat, Restoration and Protection Committee

RE: Ocqueoc River restoration and protection project(s)

Brad Jensen, Director of Huron Pines Resource, Conservation, and Development Council, has announced the Silver Creek as a major area of focus for restoration activities for the next two-three years. The Silver Creek, located in Moltke and Ocqueoc Townships, is one of two primary cold water and nursery streams for trout and salmon in the Ocqueoc River Watershed.

In 2007, the Ocqueoc River Watershed Commission began a push to implement the strategies of the watershed management plan. The Ocqueoc River Habitat Restoration and Protection Committee was formed to develop a plan for that purpose. Charlie Lyon, County Drain Commissioner, was asked to chair the committee. This “Habitat Committee” is made up of resource specialists from the U.S. Fish and Wildlife Service, MDNR Fisheries, Fisheries Consultant for Wolverine Power Cooperative, and representatives from Headwaters Land Conservancy, Trout

Unlimited, Hammond Bay Area Anglers, Huron Pines, Ocqueoc River Watershed Commission, the Presque Isle Conservation District, and the County Road Commission.

September of 2007 the committee met and began to discuss and evaluate the recommendations of the Watershed Management plan focusing on fish habitat. Based upon the inventory in the management plan, they prioritized road stream crossings that were a significant source of erosion and sediment loading of the mainstream and its tributaries such as the Little Ocqueoc River and the Silver Creek. In May of 2008, a site tour was conducted by the committee along with the County Road Commission. The DNR,(DNRE), also conducted a stream and fish survey. The fisheries experts then suggested a slight change in the priority list based upon the sites that would have the most significant impact on the fishery. It was decided that we should focus on the Silver Creek. The result was that there were seven road stream crossing sites, and three fish passage problem sites along about a three mile reach of the Silver Creek. The "Habitat Restoration Committee" had adopted a plan of action and began to seek funding to begin the actual restoration work. In the meantime, a small project on the Little Ocqueoc River was conducted in October of 2008 primarily through the efforts of the Wolverine Power Cooperative.

"The Silver Creek Super Project"

Huron Pines Resource and Conservation Council has been the lead organization regarding conservation efforts for the Ocqueoc River Watershed from developing the management plan, instituting the Ocqueoc River Watershed Commission, and conducting some restoration and education activities. Now their "Resource Advisory Council has reviewed the plan of the Habitat Restoration Committee and has approved the "Silver Creek Super Project" as a means to implement a portion of the Management Plan for the Ocqueoc River watershed.

The scope of the project was formally announced by Huron Pines at the February 2009 meeting of the Ocqueoc River Watershed Commission.

At the 2009 May 14th meeting of the "Habitat Restoration Committee" it was announced that the total cost of the project is estimated in excess of \$500,000. Grant funding is being sought from Federal and State agencies along with private organizations such as Trout Unlimited, and local donations. The County Road Commission will provide some in-kind equipment and labor. Wolverine Power made a \$25000 commitment in 2008 for Ocqueoc River Watershed restoration projects. Presently about \$160,000 has been granted so far. The Ocqueoc River Watershed Commission is also seeking local donations.

"Obviously this is very great news. To have Huron Pines designate the Silver Creek a major focus for their program is a great benefit for the Ocqueoc system. It looks like the Ocqueoc River Watershed Commission and its "Habitat Restoration Committee" is making a difference. I am very excited and pleased about all the great possibilities",

commented committees chair Charlie Lyon. "Now we have to wait and see how much funding comes in for the project- that is the big question now."

For further information about the project or to contribute and/or volunteer please contact one of the following:

- Virginia Pierce, Ocqueoc River Watershed Commission Chair: ecologic39@gmail.com
- Charlie Lyon, Ocqueoc River Habitat Restoration and Protection Committee Chair, 989-766-3568, picountydrain@speednetllc.com or clyon62@charter.net
- Brad Jenson, Executive Director Huron Pines RC&DC: 989-344-0753
- Patrick Ertel, Project Manager, Huron Pines: 989-344-0753, patrick@huronpines.org

Huron Pines- Silver Creek Super Project 2010 Update

This project will address all road stream crossing sites in the upper three miles of Silver Creek. The focus of the project is to protect stream habitat by preventing sediment entry and to reduce fish passage obstacles. By coordinating the restoration of all of these sites, project resources will be better utilized and resource impacts will be realized on a watershed scale.

- The goal is to improve 10 sites where roads cross Silver Creek
- Total Estimated Project Cost = \$600,000
- Estimated Completion Date = December 2011

PROJECT DETAILS

Church Highway (one site): Replace and realign culvert, harden road surface, install diversion outlets. Estimate \$110,000

North Curtis Road (three sites): Replace and realign 3 culverts, harden road surface. Estimate \$115,000

Beach Grove Highway (three sites): Replace one culvert, harden the road surface at 3 crossings, install riprap at one crossing. Estimate \$115,000

Spens Road (one site): Replace culvert, harden the road surface on approaches, lower road slopes. Estimate \$105,000

Private Driveway Crossings (2 sites): Replace culverts, harden driveway surface. Estimate \$55,000

Monitoring Restoration Data

Monitoring data will be collected before, during and after the restoration projects on Silver Creek. Measurements such as water temperature, dissolved oxygen and flow rate will be collected. In addition, other indicators of water quality, such as the presence and abundance of aquatic invertebrates, will be collected. This data will be used to formulate restoration strategies for other small tributaries on coldwater systems throughout Northern Michigan. With high quality coldwater streams being one of the most difficult systems to protect, developing a strategy will set

the stage for effective protection of small tributaries in other watersheds. Protecting these tributaries, which are the lifeblood of our rivers, is imperative to maintaining and improving the condition of all our rivers.

Estimated Project Costs

\$ 335,000 -Site materials

\$ 150,000 -Construction Costs

\$ 15,000 -Monitoring stream conditions

\$ 63,000 -Engineering

\$ 37,000-Planning, Outreach, Reporting

Total Estimated Project Cost = \$600,000

Current Funding Sources (as of June 2010)

\$ 500 -Ocqueoc River Watershed Commission

\$ 3,000- Michigan Fly Fishing Committee

\$ 2,500- Paul H Young Chapter of Trout Unlimited

\$ 1,000- Headwaters Chapter of Trout Unlimited

\$ 12,880- MDNRE-water/stream monitoring

\$ 58,000- US Fish and Wildlife- Fish Passage Program

\$ 10,000 -US Fish and Wildlife – Partners Program

\$ 22,500- Wolverine Power Cooperative

\$ 145,000- Presque Isle County Road Commission – Estimate In-kind Labor and Equipment

\$ 63,000 -National Resource and Conservation Service (USDA),in-kind engineering services

Huron Pines was recently awarded a grant from the National Fish and Wildlife Foundation in the amount of \$133,510 designated for a variety of projects including the Silver Creek Super project.

Ocqueoc River Watershed Management Plan update October 2008

By: Charlie Lyon, Chair-Habitat Restoration and Protection Committee,
County Drain Commissioner, ex-officio member of the Commission.

Re: The effective status of the commission and its role in achieving the established Goals of the Watershed Management Plan

I have taken the liberty to apply my opinions and concerns regarding the status of the River Commission and what it has and has not accomplished. I have taken each Goal of the "Management Plan" and its suggested strategies and attempted to update as well as evaluate each one as "I" see them. I may be off target on some but at least it is a starting point to begin for next year.

Ocqueoc River Watershed Management Plan

Excerpts from Chapter V

A. Watershed Goals and Strategies

The purpose of the Watershed Project is to improve and protect the water quality of the Ocqueoc River and the lakes and streams that flow into it. Project goals were created through the collaborative efforts of a Watershed Partnership and are based on protecting designated uses. Specific objectives, or strategies, are organized under their respective goal and are used to address the source of the problem, typically by affecting the root cause.

Strategies were initially developed and prioritized through the use of a survey taken by members of the Partnership. *Strategies were further prioritized (ranked) by the group through a nominal group voting process April 29, 2003, and are listed below.* Additional strategies were incorporated during the update of the management plan based on discussions with the Ocqueoc River Watershed Commission.

The strategies of the watershed management plan can fall into one of two categories: those focused at mitigating or restoring problem sites, and, those aimed at protecting and enhancing a high-quality water resource. Even though it is much easier to quantify restorative practices, this should not diminish the benefits that protective measures provide to a watershed such as the Ocqueoc where preservation of the resource is fundamental to maintaining high water quality and wildlife habitat.

PROJECT GOALS

Goal 1: Protect the watershed's fishery population and navigation by reducing the amount of erosion, particularly caused by human activities, negatively impacting the river.

Goal 2: Safeguard fisheries, aquatic life, public water supply, and body contact recreation by reducing the amount of nutrient loading to surface water.

Goal 3: Protect the fishery and other aquatic life by restoring a more natural flow regime to the river system.

Goal 4: Conserve important wildlife habitat areas.

Goal 5: Enhance and protect the Ocqueoc River Watershed by promoting stewardship, education, and responsible use of the watershed.

Goal 1: Protect the watershed's fishery population and navigation by reducing the amount of erosion, particularly caused by human activities, negatively impacting the river.

To facilitate implementation of the strategies, the River Commission established a committee of resource professionals to develop an action plan, secure funding sources, and oversee the actual remediation work. The committee is known as: *The Ocqueoc River Habitat Restoration and Protection Committee* : aka ("*Habitat Committee*")

Strategy 1.1 Implement Best Management Practices (BMPs) at road/stream crossings identified as problem sites for erosion, runoff, sediment delivery, fish passage, and restricted flow. (1-10 years)

Status: Site #39- Little Ocqueoc River/North Silver Creek Road-2006. Two perched culverts creating downstream ponding and streambank erosion has been replaced with one bottomless single culvert to restore a more natural flow. Additional BMP's include regrading the approaches to direct runoff to the ditches and 7 diversion outlets. Total project cost was \$62,872 with funding provided by Section 319 and matching funds supplied by the Presque Isle Road Commission and the US Fish & Wildlife Service for structure replacement. The new bottomless culvert is a converted railroad tanker car.

Site # 26- Peltz Rd –Little Ocqueoc- 2008. A culvert extension was placed on one of the four culverts and stone rip-rap was placed between them and along the bank to prevent erosion from the gravel road into the Little Ocqueoc River. This river is one of the primary trout spawning and nursery streams in the Ocqueoc River Watershed. Wolverine Power Cooperative volunteers along with some River Commission members provided the manpower along side the Road Commission crew. Wolverine Power provided the \$2750 for materials and reimbursement to the Road Commission.

Strategy 1.2 Develop a recreational access committee to regularly evaluate the condition of public access sites, ensure proper maintenance, ensure that sites are designed/and or maintained while preventing overuse, and implement BMPs at those sites contributing nonpoint source pollution.

Level of Effort: 2.25 acres of revegetation, 130 linear feet of terrace, and 300 linear feet access management

Water Quality Benefits: Gully stabilization at site 03 and site 04: reduction of 13 tons/year sediment; 11 lbs/year phosphorous; 21lbs/year nitrogen. Annual clean-ups: increased public awareness and removal of debris from sites.

Status: The Ocqueoc River Watershed Commission has formed a committee and will designate certain access sites to local service/conservation groups and each site will be maintained at the Annual Watershed Celebration. Cleanup days have been established.

Strategy 1.3 Conduct intensive educational program to demonstrate lake-friendly methods of erosion control and minimize nutrient input.

Water Quality Benefits: Reduction of 34 lbs/year phosphorous, reduced runoff and sediment input, increased wildlife habitat. **Status:** In 2005, 391 pieces of direct mail were sent to riparian landowners that included *Caring for the Ocqueoc* newsletter and *Landscaping for Water Quality* providing landowners with useful tips to protect water quality and wildlife habitat within the watershed.

Strategy 1.4 Implement BMPs at streambank erosion sites along the river.

Level of Effort: 5.25 acres of re-vegetation, 1275 linear feet of bio-logs, 1275 linear feet of tree revetment, access management at 7 locations.

Water Quality Benefits: Reduction of 961 tons/year sediment; 819 lbs/year phosphorous; 1634 lbs/year nitrogen. Improvement of wildlife habitat, decreased water temperature, improved stream morphology.

Status: No work done until 2008 when a bank slump was remediated at Brege and Pomranke Rd. (Elick site) Volunteers from the Paul Young Chapter of Trout Unlimited from Detroit, the River Commission, and Hammond Bay Anglers along with three paid Huron Pines staff completed the one day project. Funding for the project, of \$3800, was provided by the Paul Young Chapter of TU, U.S.F.W.S., The Ocqueoc River Commission (LaFarge Corp.grant), Wolverine Power Cooperative, and the property owner. Work consisted of installing a log terrace, using biologists to hold top soil, seeding and plantings of the bank slump, and placing trees at the toe from the slump location and 300 feet upstream to divert the current and slow undercutting of the bank and to enhance fish habitat. Coordination of the project was by the County Drain Commission and Conservation District through Huron Pines RC&D. **There are numerous opportunities for other similar projects.**

Strategy 1.5 Increase county zoning setback for new development along the waterfront from the current standard of 30 feet minimum to a minimum of 100 feet.

Water Quality Benefits: Reduced impervious surface near water bodies, reduced polluted runoff, decreased construction infringement to water bodies, increased potential for native vegetative buffer, increase of septic system setback from water bodies.

Status: The updated Presque Isle County Comprehensive Plan was adopted November 4, 2004 that recommends the existing waterfront setback to be increased in new development. A revised county zoning ordinance was adopted in 2007 which increases the **setback to 50 feet for new construction** with some exemptions depending on existing lot size.

Goal 2: *Safeguard fisheries, aquatic life, public water supply, and body contact recreation by reducing the amount of nutrient loading to surface water.*

Strategy 2.1 Adopt zoning regulation to require that aquatic buffers (i.e., shoreline greenbelts) are maintained along the waterfront for all new development.

Water Quality Benefits: Reduced impervious surface near water bodies, reduced polluted runoff, decreased construction infringement to water bodies, wildlife habitat improvement, increased privacy.

Status: The updated Presque Isle County Comprehensive Plan was adopted November 4, 2004 and encourages adopting a greenbelt ordinance to preserve native vegetation along water bodies, but does not specify width of the greenbelt. The 2007 revision of the County Zoning Ordinance provided for some buffers for new developments.

Strategy 2.2 Conduct septic system outreach program to educate property owners regarding maintenance and management of their systems.

2005 Status: The updated Presque Isle County Comprehensive Plan was adopted November 4, 2004 and encourages cooperation with the Health Department to conduct septic system educational programs. An article was published in the Presque Isle Advance and septic information was distributed to riparian landowners in the *Caring for the Ocqueoc* newsletter.

Strategy 2.3 Provide technical staff to assist property owners with re-establishing 5 acres of vegetation along the waterfront and assist with appropriate turf management techniques.

Lead organization(s) for ensuring this project is implemented:

Presque Isle Conservation District and MSU Extension

Water Quality Benefits: Reduction of 1.1 lbs/year phosphorous, reduce polluted runoff and sediment to water bodies, improve habitat.

Status: 2005: Hosted a riparian workshop featuring a hands-on native greenbelt demonstration at the Ocqueoc Outdoor Center. Provided riparian property owners with greenbelt and native planting literature.

Strategy 2.4 Implement ordinance to require inspection of septic systems every several years or at the time of property improvements and sale. Promote requirements of upgrades for substandard systems.

Water Quality Benefits: Reductions based on new system installed, refer to Table 15

Status: No action so far

Strategy 2.5 Install exclusion fencing to prevent unrestricted livestock access to streams. **Lead organization(s) for ensuring this project is implemented:** *Natural Resources Conservation Service*

Level of Effort: 1,800 linear feet of fencing, 2 acres of revegetation, 1 alternate water source. **Water Quality**

Benefits: Reduction of 155 tons/year sediment; 176 lbs/year phosphorous; 347 lbs/year nitrogen.

Status: No action until 2008 when the "Habitat Committee" began to address this issue. NRCS is researching any past activity regarding the Silver Creek site on North Curtis Rd and will report at the April 09 meeting.

Goal 3: *Protect the fishery and other aquatic life by restoring a more natural flow regime to the river system.*

Strategy 3.1 Identify and inventory existing human-made impoundments within the watershed.

Lead organization(s) for ensuring this project is implemented:

State of Michigan -- Department of Natural Resources and Dept. of Environmental Quality, River commission, Presque Isle County Drain Commissioner

Status: Presque Isle County Drain Commissioner researched the four man-made impoundments on the mainstream and presented the findings in **2006**.

2008 The "Habitat Committee" will consider this soon. The Lake Emma Dam is in the beginning stages of planning for repair or replacement of the spillway.

Strategy 3.2 In areas where commercial or residential development and its associated transportation system is directly discharging stormwater runoff to surface water; work with the site owner/developer to implement a retrofit of the drainage system so that it is treated or redirected away from surface water.

Lead organization(s) for ensuring this project is implemented:

Huron Pines RC&D. **Water Quality Benefits:** Reduce runoff, sediment, nutrients, oils & grease, salts, etc. Decrease temperature of surface water, and decrease fluctuating flows associated with stormwater runoff. **Status:** No action

Strategy 3.3 Promote the use of Low Impact Development (LID) and/or Better Site Design techniques to ensure future development does not increase runoff to the river.

Lead organization(s) for ensuring this project is implemented:

Huron Pines RC&D

Water Quality Benefits: Reduce polluted runoff and sediment to water bodies, mimic natural infiltration to groundwater.

Status: Two land use-planning roundtable discussions were held in 2005 where LID concepts were presented to the Ocqueoc River Commission and local officials.

The water runoff from the residential street is directed into bio-retention areas along the road. Low Impact Development techniques, show here in a Seattle neighborhood, can help eliminate stormwater runoff while increasing privacy, calming traffic, beautifying the landscape and increasing property values.

Goal 4: *Conserve important wildlife habitat areas.*

Strategy 4.1 Conduct regular presentations and disseminate materials to community organizations and property owners to link the concept of land use stewardship and high water quality.

Lead organization(s) for ensuring this project is implemented:

Huron Pines RC&D, Presque Isle Conservation District

Water Quality Benefits: Protection of high quality resources through sound planning and stewardship.

2005 Status: Information was disseminated to 391 riparian landowners, information kiosks were displayed at the Rogers City and Onaway District Libraries.

Strategy 4.2 Place voluntary conservation easements on 600 acres of significant ecological properties (see Strategy 4.3) that also have an interested landowner.

Lead organization(s) for ensuring this project is implemented:

Head Waters Land Conservancy

Water Quality Benefits: Reduction of 40.2 tons/year sediment, 162 lbs/year phosphorous, 3,000 lbs/ year nitrogen. Protection of wildlife habitat and unique watershed features.

2005 Status: HeadWaters Land Conservancy conducted a land protection workshop, disseminated information to riparian property owners with 20+ acres, and met with landowners interested in land protection.

Strategy 4.3 Identify key ecological corridors and habitat areas.

Lead organization(s) for ensuring this project is implemented:

HeadWaters Land Conservancy, Huron Pines RC&D

Water Quality Benefits: Prioritize sensitive habitats for the protection of water quality.

2005 Status: No action

Strategy 4.4 Conduct a Natural Features Inventory to catalog unique wildlife, ecosystems, and other natural features within the watershed.

Lead organization(s) for ensuring this project is implemented:

Ocqueoc River Commission, Huron Pines RC&D

Milestones needed to execute this strategy:

4.4.1 Establish an ad-hoc committee to coordinate the program

Water Quality Benefits: A catalogue of natural features will help guide future land use planning and direct development to more suitable areas.

Status: No action

Goal 5: *Enhance and protect the Ocqueoc River Watershed by promoting stewardship, education, and responsible use of the watershed.*

Strategy 5.1 Establish and maintain a permanent Ocqueoc River Commission to address concerns related to the river system.

Status: The Ocqueoc River Commission has formalized their bylaws and established an executive committee. They need to develop an annual strategic plan and budget. They have been involved with numerous educational and clean-up programs since 2004.

Strategy 5.2 Develop a water quality monitoring program to establish a baseline, track water quality changes over the years, and serve as an education tool for residents, school groups and local officials.

Status: Hammond Bay Area Anglers Association donated \$5000 to the River Commission to establish a water monitoring program in **2007**. The County Drain Commissioner and the Conservation District are administering the program. Wolverine Power Cooperative and some watershed townships have contributed funds to help sustain the program. Other sources of funding are being sought.

Strategy 5.3 Host an Annual Ocqueoc River Day or Watershed Appreciation Week to focus on those actions the community can take to help care for the river system.

2005 Status: Hosted the Ocqueoc Watershed Celebration with educational speakers, a stream clean-up, and resource materials were provided. The 2006-08 Watershed Celebration was 2 days and included local school groups. Michigan Sea Grant has become involved and has helped Onaway Community Schools to develop a watershed curriculum for 5th grade students. The students do research and develop projects about the Ocqueoc and make presentations at the Watershed Celebration Day in May of each year.

Strategy 5.4 Establish a Speakers Forum to meet with various target audiences and distribute any necessary literature.

Status: Hosted three speaker's forum in 2005 and nothing since.

Strategy 5.5 Create a resource library of recommended practices for riparian homeowners (lawn care practices), local officials (regulations to protect water quality and habitat), teachers (learning tools for students), and other stakeholders.

Status: No action taken so far.

Strategy 5.6 Promote responsible guidelines to reduce future conflicts from activities such as fishing, canoeing etc.

Status: No action taken so far

Strategy 5.7 Work with regulatory officials to enforce trespassing rules along the banks of the river in order to reduce severe streambank erosion resulting from recreational foot traffic.

Status: Some effort has been made through the Hammond Bay Area Anglers Association working with property owners and the DNR Enforcement Division to resolve this issue.

B. Status Summary Rating of Goal Strategies

A = Active: presently being addressed in planning and/or action

SA = Some action: action in the past but minor and need for improvement

NI = Need for improvement in attention, lacking in adequate response

NA = No action has been taken since management plan has been approved.

C = Completed

1.1- A	4.1- SA,NI
1.2- A (but in moderation)	4.2- SA,NI
1.3- SA, NI	4.3- NA
1.4- A (in moderation)	4.4- NA
1.5- C	
	5.1- A,NI
2.1- C	5.2- A
2.2- SA,NI	5.3- A,NI
2.3 - SA,NI	5.4- SA,NI
2.4- NA	5.5- NA
2.5- A	5.6- NA
	5.7- SA,NI(?)
3.1- A	
3.2- NA	CLyon/October 2008
3.3- SA,NI	

C. Water Quality Monitoring Program

The chemical and biological characteristics of a river system are indicative of the quality of the water. Conversely, the quality of the water dictates the kinds of plants and animals that will live there. Nutrient overloading from agricultural practices and shoreline development can result in a dramatic change in water quality. Pesticides and other chemicals can also be devastating as well as increased fecal coliform bacteria.

The potential for increased development in the Ocqueoc River watershed must be considered. The lakes in the watershed are sure to see more change during the next few decades as the last front lots and more back lots are developed along with more stream front development. Man will have more and more impact on the water resource. More septic systems placed along the river and around the lakes and landscaping practices may have a negative impact on the ecosystem. This can already be seen in some of the lakes in the watershed that are experiencing excessive weed growth partially caused by nutrient enrichment.

A “**water quality monitoring program**” was implemented in 2007, by the Ocqueoc River Watershed Commission, to develop a baseline of data and then monitor the river system for any significant changes. This will enable early recognition of problem areas and then implementing corrective measures. An educational component will be developed to involve students of various schools throughout the county. The Hammond Bay Area Anglers Association provided a startup grant of \$5000 to begin the monitoring program. Other funding to sustain the program has been provided by Case Township, Presque Isle County, and Wolverine Power Cooperative.

The Presque Isle County Conservation District and the County Drain Commissioners Office is responsible for administration of the program on behalf of the Ocqueoc River Watershed Commission. The data will be shared with the MDNRE.

The following parameters are being monitored:

- | | |
|---------------------------------|---------------------------------|
| Dissolved oxygen | pH |
| Temperature | Nitrates |
| Phosphates | Turbidity (particulates) |
| Fecal coli form bacteria | |

(Note: This Water Quality monitoring program is available on a limited basis for county groups and residents for a small fee.)