

MAY 2005

Volume 40 No. 2



THE MICHIGAN **RIPARIAN**



www.mi-riparian.org

DEVOTED TO THE MANAGEMENT AND WISE USE OF MICHIGAN'S LAKES AND STREAMS

Published Quarterly – February, May, August and November



MULLETT LAKE, CHEBOYGAN COUNTY
THIRD LARGEST MICHIGAN LAKE

"THE MICHIGAN RIPARIAN (ISSN 0279-2524) is published quarterly for \$2.00 per issue by the Michigan Riparian Inc., P.O. Box 249, Three Rivers, Michigan 49093. Periodicals postage paid at Three Rivers, Michigan and additional mailing offices."

POSTMASTER:

Send address changes to:
The Michigan Riparian
P.O. Box 249
Three Rivers, MI 49093

The Michigan RIPARIAN is the only magazine devoted exclusively to protection, preservation and improvement of Michigan waters and to the rights of riparian owners to enjoy their waterfront property.

The Michigan RIPARIAN is published quarterly and is mailed to subscribers during February, May, August and November.

THE MICHIGAN RIPARIAN magazine is owned and published by the Michigan Riparian Inc., a Michigan non-profit corporation.

EDITORIAL and BUSINESS OFFICE: 124½ N. Main Street, P.O. Box 249, Three Rivers, MI 49093.

TELEPHONE: 269-273-8200

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ADVERTISING DEADLINE: No later than 1st of the month preceding month of publication.

ADVERTISING RATES: Sent upon request.

SUBSCRIPTION RATES:

Individual Subscription \$8.00
Group Rates: 10 to 49 Subscriptions \$7.00
50 or more, or all members of a Lake Association \$6.00

EDITOR and PUBLISHER: Donald E. Winne

Printed by J.B. Printing, Kalamazoo, MI 49007.

*Cover photo
taken by
Aerial Graphics,
Grand Rapids, MI*

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STORMWATER MANAGEMENT FOR NEW DEVELOPMENTS (PART I) IN THE DOWAGIAC RIVER WATERSHED

(Published 2001)

INTRODUCTION TO STORMWATER MANAGEMENT IN THE DOWAGIAC RIVER WATERSHED

The Dowagiac River and many of its tributaries are cold water systems with stable flows. Increases in impervious surfaces (roads, rooftops, etc.) that comes with growth and development will negatively impact these unique systems unless stormwater is managed effectively. This packet is designed to give an overview of stormwater management techniques that can be implemented in new residential, commercial and industrial developments to protect our precious water resources.

Lightning strikes as thunder rumbles at a distance. The rain begins at first lightly, slowly beating out staccato rhythms on the pavement, then accelerating into rapid, constant beats. The street in the newly built housing complex turns to darker colors as the water cools the pavement and seeks more permeable ground. The rain continues, moving its way through nearby cornfields and between houses and yards. As it runs, it picks up pollutants along the way and carries them in its stream - litter, pet waste, grease, oil, gasoline, fertilizers and pesticides from lawns and cropland, leaves, soil (sediment) and heat from the pavement. The streams of rain holding these various pollutants race off in many directions following the topography of the land or watershed. The water is heading for the closest water body (stream, lake, river or wetland) and some may end up first in storm drains before entering into a nearby water body.

A small stream lies directly outside the newly built subdivision. At one time, the stream was rich with diversity, home to stone flies, caddis flies, trout and many other organisms. The trout in the stream flourished and the water flowed cold and pure. Children would come and play in its banks. Fishermen fished its banks, catching trout and other fish. Biologists praised the stream for its particularly clean water, cold and stable flow from the constant groundwater inputs.

However, things were slowly changing as the storm water drain pipe, located over 100 yards from the new housing complex began emptying its contents into the stream. At first, the changes were small and subtle. More and faster water flowed in from the storm drain, raising the water level and displacing plants, animals and loosening sediment in the stream bed causing the stream to widen and deepen. The water temperature also increased as more water came from surface runoff and not from the cool groundwater supplies. This forced out the cold water species such as trout. Then, the changes became more obvious as pollutants built up in the stream. Toxins like metals and oil killed off the non-tolerant fish and insects. Sediment clouded the water and was deposited downstream where it killed the bottom dwellers (insects at the bottom of the aquatic food chain) and covered once productive fish spawning areas. Grease and oil formed a layer across the top of the stream, preventing oxygen from reaching the organisms below. The nitrates and phosphates from lawn and agricultural fertilizers promoted algae blooms that used up oxygen in a nearby pond. With greater development and increased runoff, the pollution increased, changing the stream beyond inexpensive repair.

Children still came to the stream, but this time the dangers were more serious. The water now contained bacteria - fecal coliform. The play in the stream quickly stopped when parents blamed the stream as the source of a child's sickness. The parent's caution was not outrageous. Emptying storm drainage into the stream while it was supposed to rid the people living nearby of flood problems, brought on other problems that were close to home. All are the result of poor storm water management.

Written by: Julie Snorek – an intern at the Cass County Conservation District

BASICS OF WATER QUALITY AND STORMWATER MANAGEMENT

Understanding the Water Cycle – What is Stormwater?

Rain falls, runs off land, infiltrates into the soil until it reaches the groundwater, groundwater replenishes streams, lakes, and other bodies of water, water evaporates, vapor builds in atmosphere, falls to the ground, and the cycle continues.

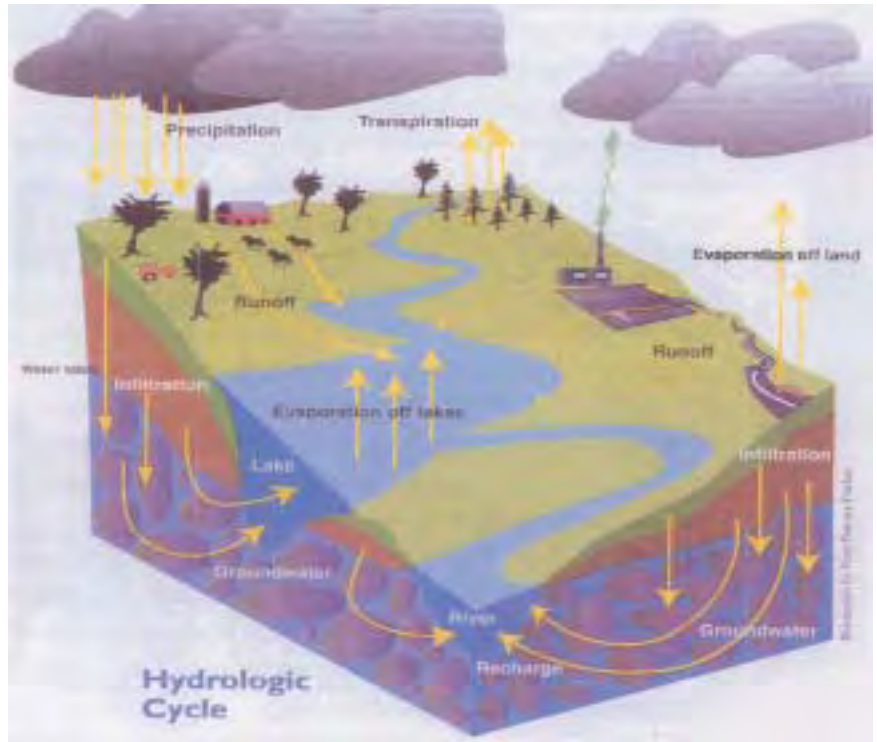
Stormwater, a major part of the water cycle, is surface runoff from rain or snow melt. Stormwater is an important issue at industrial and commercial sites, as well as in your own neighborhood. Stormwater flows across the ground, pavement, or other exposed surfaces where it can pick up various pollutants. Unlike the sanitary sewer system where water flows to a waste water treatment plant, stormwater runoff flows into collection and conveyance systems (pipes or ditches) that discharge into creeks, rivers and lakes. Stormwater runoff carrying pollutants can harm our surface waters affecting industrial, agricultural, and recreational activities and aquatic plants and animals.

What is a watershed?

A watershed is a region in which all land drains to a particular body of water or common point. It could be as small as a backyard or as large as any major river basin. Everyone lives in a watershed. Do you know where water flows from your yard and driveway? The streams, rivers and lakes to which our watersheds drain are the jewels that make this a popular place to live and visit. How we treat our watersheds directly affects the beauty, value and health of our water systems. If one person pollutes a watershed or manages stormwater improperly, the flooding and degradation of the stream affects everyone, for we all share limited water resources.

Water Quality

According to the U.S. Environmental Protection Agency, nearly 40% of surveyed U.S. water bodies that do not meet water quality standards, polluted stormwater runoff is the leading cause of pollution. The worse damage done by storm water is what is called first flush.



On an undeveloped landscape in the Dowagiac River Watershed, most of the water infiltrates into the ground because of the sand and gravel soils. However, on a developed landscape with impervious surfaces (parking lots, roads and rooftops) there is less land available to allow for this infiltration. Increases in impervious surfaces can lead to more water reaching water bodies as stormwater runoff instead of through groundwater recharge.

Roads are often most slippery during this first flush as water brings grease and oil to the surface. A similar danger exists for streams, as the highest concentrations of pollutants are flushed into the stream at the start of a storm. Pollutants that run off roads, yards, farmland, etc. gather in storm drains or ditches after this first flush and later empty into nearby water bodies. Storm sewers can aggravate the problem since they collect storm water from a large area and deliver it to a single discharge point, often at a rate faster than a stream would receive naturally.



The Michigan Clean Water Corps (MiCorps) is taking shape. Created by Executive Order #2003-15, MiCorps is fulfilling Governor Granholm's vision for a statewide network of volunteer monitoring programs to assist the Department of Environmental Quality (DEQ) in collecting and sharing water quality data for use in water resources management and protection programs. The Great Lakes Commission in partnership with the Huron River Watershed Council has been retained to assist the DEQ in developing and implementing MiCorps programs. A steering committee meets two to three times per year to advise the DEQ in MiCorps development and a Web site has been established (www.micorps.net) to facilitate communication, education, and information sharing about the MiCorps initiative. A data exchange platform is being developed for data collected under MiCorps.

Built on the foundation of the DEQ's volunteer lake and stream monitoring programs, MiCorps has produced significant results. The Cooperative Lakes Monitoring Program (CLMP), in partnership with the Michigan Lake and Stream Associations, Inc., enrolled 212 lakes throughout the state in 2004. Over 300 volunteers participated in the CLMP and reported over 3400 Secchi disk transparency measurements, 374 total phosphorus sampling results, 536 chlorophyll *a* sampling results, and over 4600 dissolved oxygen and temperature measurements. For the Volunteer Stream Monitoring Grant Program, 10 organizations participated in 2004 and 16 grant applications were received for \$50,000 in grant funds that will be awarded in 2005.

For 2005, MiCorps will be expanding to include other high quality volunteer water monitoring programs around the state. A survey was conducted in 2004 which identified 27 additional programs that provide volunteer water monitoring opportunities in Michigan. A process with selection criteria is being developed to include these programs into MiCorps. A K-12 school-based water monitoring education network is also being discussed as part of the MiCorps umbrella. And finally, a MiCorps newsletter will be published in March and the first annual MiCorps conference will be held in October.

MiCorps Mission

Network and expand volunteer water quality monitoring organizations statewide for the purpose of collecting, sharing, and using reliable data; educate and inform the public about water quality issues; and foster water resources stewardship to facilitate the preservation and protection of Michigan's water resources.





Attorney Writes

By Clifford H. Bloom

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A Blueprint to Protect Your Lake

Frequently, I am asked by riparians around the state how they can lobby their local municipality to protect their lake. This issue's column will answer that question by means of a blueprint or road map for municipal protection of inland lakes.

The following are my suggestions for the most important ordinance provisions which a municipality can adopt in order to protect lakes:

1. Anti-Funneling Regulations.

Typically, anti-funneling regulations are adopted as an amendment to the municipality's zoning ordinance. Such regulations usually require a minimum amount of lake frontage (for example, 100 feet) for each new lot or dwelling which will have access to or use of a lake. Such items and uses as docks, shorestations, and boat mooring are also frequently regulated by these regulations. The creation or expansion of canals or channels can also be banned. If contained in the local zoning ordinance, these regulations are subject to the lawful nonconforming use defense and all structures and uses which lawfully exist when the regulations are adopted are "grandparented," but cannot be expanded once the regulations become effective.

Be aware of the "Trojan Horse" effect which is sometimes utilized by a few municipalities. Such municipalities actually set the anti-funneling minimum lakefront requirements so low (for example, 15, 20, or 25 feet) for each new lot or dwelling which will have access to or use of a lake, that it actually promotes or prompts funnel developments! Such regulations can be worse than having no anti-funneling regulations at all. Generally, if the minimum frontage requirement for each new lot or dwelling is set at the minimum lot width requirement for the zoning district involved or approximates the actual average lot width/frontage which exists on a given lake, it is highly likely that the courts will uphold such regulations as being reasonable.

2. So-Called "Dock and Boat Launching Ordinances."

Such ordinances are similar to anti-funneling zoning regulations but are adopted by a municipality outside of a zoning ordinance and as a "police power" ordinance. These are often complementary to and supportive of anti-funneling regulations. These ordinances often regulate dockage, swim rafts, boat mooring, and boat ramps. They can also be utilized to regulate dockage and boat moorage on existing lake access devices such as easements, private parks, walkways, alleys, and private road ends. Some ordinances prohibit permanent docks. Since a police power ordinance is involved, the normal lawful nonconforming use defense is not applicable. Unless a "grandparent" provision is expressly put into the ordinance by the municipality, existing uses and structures can be prohibited or severely regulated by the police power ordinance.

3. Public Road End Ordinances.

In municipalities with lakes where there are public road rights-of-way which end at one or more of the lakes, it is prudent for the municipality to adopt a public road end ordinance to regulate the

lakefront use of these roads. Pursuant to such an ordinance, a municipality, if it so chooses, can ban docks and shorestations at public road ends, as well as prohibit uses and activities such as permanent boat mooring, picnicking, lounging, disturbing the peace, and boat launching. Limits on the hours of usage can also be imposed.

4. Other Useful Zoning Regulations.

There are a variety of zoning regulations which can be utilized to control development around lakes and to minimize the adverse impacts of over-development. For instance, each new lot or parcel on a lake should be required to have lake frontage equal to or greater than the minimum lot width requirement for lots within the zoning district involved. "Flag lots" or lots which have a lot width-to-depth ratio greater than a certain formula (for example, a lot which is more than three times as deep as it is wide) should be prohibited. Zoning setbacks for buildings and structures from a lake should be sufficiently large to minimize adverse impacts upon the lake. Private road regulations should be carefully drafted to prevent over-development along the lakeshore. Planned unit development regulations should not only be subject to strict anti-funneling requirements, but should also be carefully drafted to allow a municipality to attach conditions to a PUD approval to minimize adverse impacts upon a lake. There are also a variety of other zoning regulations which can be utilized to protect lakes.

5. Local Wetlands Ordinances.

Although the Michigan Legislature severely limited the ability of municipalities a decade ago to regulate wetlands, there still remains some limited local authority in this area. Protecting wetlands near and adjacent to lakes obviously can also protect the lakes themselves.

6. Local Stormwater and Water Runoff Ordinances.

Quite often, where local municipalities leave the enforcement of stormwater and water runoff regulations to state or county officials, the oversight function is not always performed well. Many municipalities have taken over this responsibility, and in many cases, it has given added protection to lakes.

7. Miscellaneous Ordinances.

Some municipalities have ordinances prohibiting "bubblers" which keep ice from forming in the winter around permanent docks. Other municipalities prohibit or restrict the landing of seaplanes on crowded or urban lakes.

* * *

Although not a panacea, if a riparian can prompt a local municipality to adopt the above regulations (particularly anti-funneling zoning regulations, a dock and boat launching ordinance, and effective zoning regulations), it can give a good deal of protection to local lakes. Furthermore, the time to act is now—if riparians wait to prompt local municipalities to adopt such regulations only after a funnel development has been proposed, there will be little that can be done with regard to that development. Try to get the regulations in effect before a severe problem arises.





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MICHIGAN LAKES AND STREAMS FOUNDATION

“Working to Safeguard Michigan’s Water Resources
for future generations.”

GIVING THROUGH YOUR WILL

Have you ever thought about giving through your will or estate plan to help endow the efforts of Michigan Lakes and Streams Foundation? This is one good way to ensure that your gift keeps on giving to support the on-going protection of Michigan’s lakes and streams.

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There are four ways you can make a significant difference in the future of Michigan’s lakes and streams.

1. You can leave a percentage of your estate through your will to the Foundation’s Endowment Fund. No matter what kind of assets are in your estate, and regardless of the value of the estate, the percentage you specify will be given to the Foundation by your personal representative.
2. You may also wish to name a fixed dollar amount or other specific property as your gift. This ensures a definite gift regardless of other bequests.
3. After bequests are made to other heirs, you can leave whatever is left over from your estate to the Foundation. This assures that others are taken care of first, but that something goes to the Foundation after their needs are met.
4. You can make a cash contribution at any time.

SUGGESTED WORDING OF A CONTRIBUTION

“I hereby give to the Michigan Lakes and Streams Foundation’s Endowment Fund _____% of my estate for use in support of the Foundation’s efforts to protect Michigan’s lakes and streams.”

“I hereby give to the Michigan Lakes and Streams Foundation an amount of \$_____ (or a percentage of the estate) to be used for the Foundation’s general and charitable purposes.” or

“I hereby give the rest and residue of my estate to Michigan Lakes and Streams Foundation to be used for the Foundation’s general and charitable purposes.” (See next page for an application form.)

For more information about the Foundation, contact Franz Mogdis, President of the Board of Directors of the Foundation, or Pearl Bonnell, Secretary/Treasurer of the Foundation.

A DECISION IN THE LANDMARK CASE REGARDING WHERE THE PUBLIC CAN WALK ON THE BEACHES OF THE GREAT LAKES IS DUE BY JULY

By Clifford H. Bloom, Esq., Grand Rapids, MI

In the November 2004 issue of *The Riparian*, Don Winne reported on the Michigan Court of Appeals decision in *Glass v Goeckel*, 262 Mich App 29 (2004). Glass involved the issue of where members of the public can walk on the beaches of the Great Lakes adjacent to private lakefront property. All courts seem to agree that a lakefront property owner on the Great Lakes can control the land above or upland from the ordinary high water mark. Longstanding Michigan case law also seems to indicate that all beach or exposed bottomlands from the ordinary high water mark back to the actual waters of any of the Great

Lakes are government-owned. However, the Court of Appeals in *Glass* held that the adjoining riparian property owner does have some measure of control over the beach and exposed bottomlands even beyond the ordinary high water mark and effectively to the water or wet sand adjacent to the lake.

Proponents of broad public lake access and beach rights for the Great Lakes have appealed the decision of the Court of Appeals in *Glass* to the Michigan Supreme Court. While they generally acknowledge that the adjoining lakefront property owners can exclusively control all land from the ordinary high water mark upland

(and thus, prohibit trespassers), they assert that the decision by the Court of Appeals was erroneous and they claim that members of the public should be able to walk freely on beach sand and not be confined to the area within or immediately adjacent to the water. The Michigan Supreme Court heard oral argument in this matter during mid-March and is expected to render its decision by mid-July. We will report on the decision of the Michigan Supreme Court in the August, 2005 issue of *The Riparian* if the decision is rendered in time for this magazine's printing deadline for August. *

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The Michigan Lakes and Streams Foundation is a non-profit 501 (c) (3) corporation. All gifts to the Foundation, regardless of the amount, are deductible on your federal income tax return.

I want tomorrow's children to enjoy the same water resources I enjoy. Enclosed is my gift today to make sure Michigan Lakes and Streams Foundation stays strong for the future.

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Checks should be made out to: Michigan Lakes & Streams Foundation,
and mailed to P.O. Box 303, Long Lake, MI 48743

YOUR GIFT LIVES FOREVER

Lake Huron fishing shows signs of an earlier era

Kalamazoo Gazette – March 19, 2005

By Bob Gwizdz, Gazette News Service

After nearly 40 years of salmon stocking, Lake Huron's sport fish community is beginning to again resemble what it was like before the salmon program began.

Perch and walleye populations are showing improvement, lake trout fishing is good and lake herring – a fish that provides both recreational opportunity as well as a forage base for other fishes higher up the food chain – is doing extremely well.

But state fisheries biologists warn that the Great Lake has changed in other ways.

"Some of the elements that used to be there are coming back," said Tammy Newcomb, the Lake Huron fisheries coordinator for the Department of Natural Resources. "But it's not going to look like it used to because of zebras and quaggas (mussels), gobies, water fleas and the other invasives that are there now."

Salmon fishing has been in decline in recent years despite a continuous stocking program.

"Right now, we have evidence that 80 percent of the chinook we've sampled have been wild-produced fish," Newcomb said. "It challenges our assumptions. We used to assume that something like 15 percent of the fish out there were wild and the rest were planted. Now we're seeing just the opposite."

Newcomb has no explanation for the increased catch-rate of wild fish, which are thought to be produced mostly in the rivers on the Canadian side of the big lake. And the only explanation for the

poor salmon fishery seems to be a poor forage base. Alewives, the primary food of Great Lakes salmon, are in short supply in Lake Huron.

"There are still some in the lake, contrary to popular belief, but they are few and far between," Newcomb said. "Right now, they are suppressed at levels that we've not ever seen."

Although alewives are capable of producing big year-classes – even when their populations are suppressed – environmental conditions have been poor recently, Newcomb said. The lake produced a huge year-class in 2003, but a cool growing season followed by a harsh winter took them out.

"It's sort of like farming – you never know what the weather's going to hold," Newcomb said.

But the fishing news isn't entirely bleak, according to Newcomb.

"We have very, very good reproduction of yellow perch from 2003 and 2004," she said. "We were hoping to see that 2003 year-class carry over – it was something like 37 times greater than was previously ever recorded – but we didn't see the carryover. This year also threw off a big crop of yellow perch, but they were small, too. So we're seeing good natural reproduction, which we haven't seen since the late 80s, but we haven't seen the big year-classes carry over. But this has been a mild winter, so we may see that 2004 year-class carry over. We're hoping.

"Walleyes are doing very well and they appear to be carrying

over. Most of the data is from Saginaw Bay, but we've been hearing very good reports of walleye fishing up and down the coast."

What holds the most promise for the salmon fishery is the herring population.

"Lake herring, a native species which were pretty much ousted by alewives, are increasing and expanding in the places where they are found," Newcomb said. "Our hope is those populations will continue to grow and will fill that niche where alewives used to.

"Herring could provide a good forage base for salmon and they grow beyond the size that predators can use them, so that preserves the brood stock. They're good forage for lake trout, too."

Lake trout? Ever since officials have been treating the St. Marys River for lampreys, lakers have been on the comeback.

"That lake trout fishery has been tremendous," Newcomb said.

As for salmon, there's evidence, by the number of fish returning to the weirs, that there are more fish out there than anglers are catching, Newcomb said, though she's at a loss to explain why. Chinook salmon are known to travel up to 50 miles a day in the ocean and it could be the big fish are just roaming out of traditional fishing territories.

In 2003, 28 percent of the fish that were planted in Lake Huron and were caught had strayed into Lake Michigan, where the alewife population is in better shape.

"They're seeking out better forage," Newcomb said. ♣

Season of 62 million fish

By Katie Marshall – kmarshall@kalamazoogazette.com
388-8590

Emily and McKayla Smith learned about different kinds of fish species and how fish eggs are kept one recent day during a tour at the Wolf Lake State Fish Hatchery.

“The smell of the fish are not very pleasant,” said 9 year-old McKayla.

Emily and McKayla were visiting the hatchery on vacation with their parents from Illinois. They have a cottage on Scott Lake.

The Wolf Lake State Fish Hatchery opened on March 1 and is one of six fish hatcheries in Michigan. Combined, the hatcheries raise about 62 million fish per year.

Shana McMillan, park interpreter, said the Wolf Lake hatchery raises six species of fish: Steelhead trout, lake sturgeon, Chinook salmon, muskellunge, northern pike and walleye.

She said the best time to come to the hatchery is in April and May because that’s when the eggs arrive.

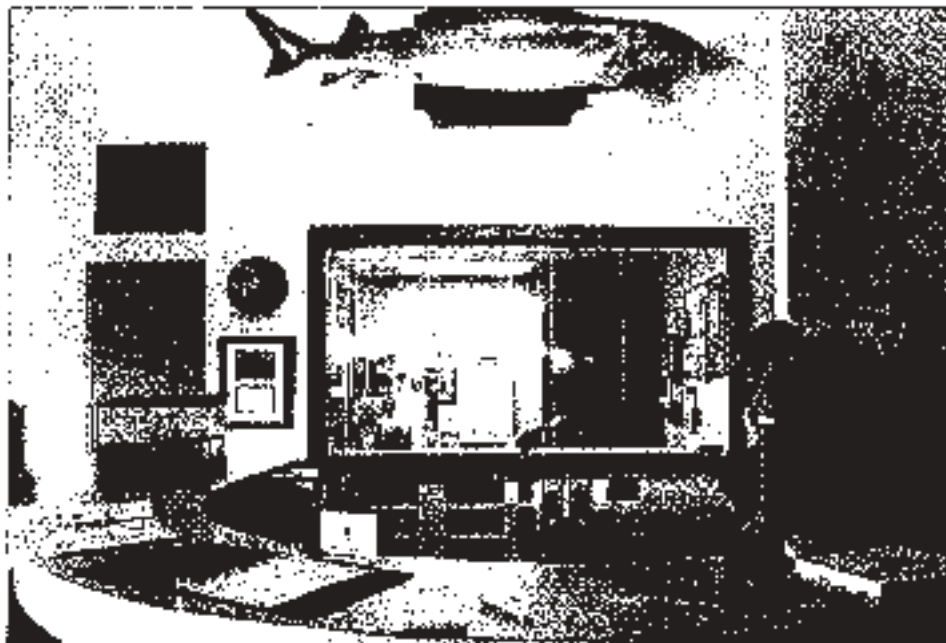
“It’s a neat time for anyone to come,” she said. “If you come at the right time, you can even watch the eggs hatch.”

McMillan said hatching times vary between species. Northern pike take about 10 days, while Chinook salmon can take up to 45 days to hatch.

Depending on the species, the fish are released into different bodies of water when they are old enough. The Wolf Lake hatchery distributes fish statewide.

The center offers a lot of programs throughout the summer.

Tours are given daily except on Mondays when the center is closed. The tours tell people how



Nicole Schroeder, an Interpretive assistant at the Wolf Lake State Hatchery, takes a phone call underneath the display of a 193-pound, 87-inch sturgeon that was the largest ever caught in Michigan.

the fish are raised, where the eggs come from and how they are released into the wild. The tours are free and last about 30 to 45 minutes. Families are encouraged to call ahead to make reservations, especially on the weekends.

Wolf Lake will again offer the popular catch-and-release fishing program for ages 5 to 16. The hour-long program teaches children about fishing safety and casting. All equipment is provided.

The annual Fish Festival is also planned for July 16-17 from 11 a.m. to 4 p.m.

The visitor center is also currently undergoing renovations with a new museum exhibit that is expected to be finished by the end of the month.

“We had to put it on hold due to budget constraints,” McMillan said. ♡

Wolf Lake State Fish Hatchery and Visitor Center

Location: Fish Hatchery Road and M-43, six miles west of the junction of M-43 and US-131, Mattawan.

Tours: Tuesday to Saturday, 10 a.m., 11 a.m., 1 p.m., 2 p.m. and 3 p.m.; Sunday, 1 p.m., 2 p.m. and 3 p.m.

Fish and Release: Every Saturday from June to August.

Fish Festival: July 16-17.

Admission: Free.

Telephone: (269) 668-2876.

Web site: www.michigan.gov/dnr

**Mattawan’s
Wolf Lake facility
one of six
fish hatcheries
statewide**

Mason Tract drilling approved

Anglers of the AuSable, Sierra Club plan to appeal Forest Service

By Mary Jergenson, Staff Writer, *Gaylord Herald Times*
February 12, 2005

CRAWFORD COUNTY – Savoy Energy of Traverse City has gained approval for a “surface occupancy permit” to begin the construction of a well in the Huron Manistee National Forest. Savoy had petitioned the U.S. Forest Service for permission to conduct a directional drilling operation under the 5,300-acre Mason Tract portion of state-owned forest bordering the AuSable River.

Michigan Sen. Tony Stamas, R-Midland, referred to Tuesday’s decision as “disappointing.”

“This parcel was donated by the Mason family specifically for public enjoyment. We need to look for a long-term solution for this and other projects statewide, and watch the progress very closely to protect the natural resources that are there.”

The permit is the final hurdle for Savoy, which in 2003 received permission from the Michigan Dept. of Environmental Quality for an exploratory well to search for gas deposits by directional drilling under the Mason Tract. The wellhead itself will be located two miles from the property, according to Ken Arbogast, Public Affairs officer for the Huron Manistee National Forest.

This week, National Forest Supervisor Leanne Marten granted the permit on the basis of an 18-month environmental analysis which she believes concludes Savoy

Energy can safely build and operate a well. “Our investigation far exceeds what is typical for exploratory wells,” stated Arbogast adding the environmental concerns from area residents were “carefully addressed.”

“I think the Forest Service does not have a full understanding of what the environment means to northern Michigan,” said state Rep. Matt Gillard, R-Alpena, who has proposed four House Environment Protection bills. Calling it the “economic engine that drives this part of the state” Gillard believes the process of preparing a drill site will have wide-reaching economic and environmental impact.

TWO GROUPS working closely with Gillard intend to appeal the permit. Anglers of the AuSable and the Sierra Club do not oppose the drilling for minerals, but they do oppose the location of the wellhead.

“We will unquestionably be appealing the decision,” said Marvin Roberson, forest policy specialist for the Michigan Chapter of the Sierra Club. “We intend to build a bullet-proof appeal and fully expect to win easily.”


Roberson intends to appeal the decision based on the belief the current forest plan in place does not include building a drilling platform next to the semi-primitive nonmotorized Mason Tract. According to Roberson, the second reason for appeal is that “the Forest Service did not look at all the possible alternatives for the wellhead.”

More information is available by calling the Sierra Club, 517-484-2372; Rep. Gillard, at 1-866-MATT-106; or by checking the National Forest Service Web site for the Huron Manistee National Forest, www.fs.fed.us/r9/hmnf.


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Certified Lake Manager
01-2151 Date 4/1/05



DUCK LAKE GETS SANITARY SEWER SYSTEM

Duck Lake is a 306 acre lake in Crystal Township, Montcalm County, Michigan. The maximum depth is nine feet with an average depth of 2.5 feet.

The lake was being polluted from years of failing household septic systems along its shores. The area's extremely high water table was also highly susceptible to pollution from failing septic systems. After several years of seeking funding assistance, the Montcalm Drain Commissioner (MCDC) received USDA Rural Development funds to address the problems. With special assessment district financing in place, the MCDC proceeded with a \$2.4 million project to develop a new sanitary sewer collection system for 181 Duck Lake residents that ties into Crystal Township's Wastewater Treatment Plant.

To accommodate the new system, the plant was improved to allow the existing slow rate land application treatment system to double its hydraulic operating capacity to 47 million gallons per year while maintaining treatment efficiency through soil and crop nutrient uptake. The Crystal Township Wastewater Treatment Plant is the first facility in Michigan to use a combined discharge of groundwater infiltration and subsurface drainage tile that was designed in full compliance with both groundwater and surface water discharge standards.

The Duck Lake Sanitary Sewer System and Crystal Township Wastewater Treatment Plant improvements are providing many long-term benefits to area residents. Duck Lake's natural groundwater conditions are being protected and performance of the slow rate, land application treatment system is exceeding required permit levels for nutrient removal. The MCDC received a low-cost treatment system that will be easy to operate and maintain for many years to come.

PUBLIC INVOLVEMENT AND EDUCATION

Since the project was built to primarily serve a small area, Duck Lake's 181 residents were personally vested in its success. Most residents took an active interest in the project and could easily see how the new system would improve their daily lives. Two public meetings were held during the grant application preparation and the design phase to educate residents about the project and keep them informed about progress.

During design, residents provided input about their individual septic system locations that helped finalize the configuration of the collection system. A special



assessment hearing was also held to inform property owners about their individual assessments for the project. 114 residents were connected to the system within a month of being operational. After one resident got connected, she commented that she was thrilled that she could finally do her wash in her home instead of going to the laundromat.

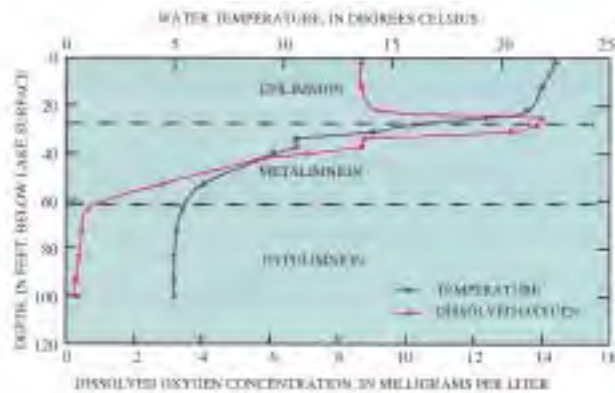
ENVIRONMENTAL AND WATER QUALITY BENEFITS

Duck Lake residents were faced with significantly elevated nutrient and phosphorus levels in the lake, as well as groundwater pollution concerns. The groundwater table is so high that water was discharging directly from septic systems to a low area or outletting directly to the lake. Without this project, lake water quality could have easily degraded to a point where it could no longer be used for recreational purposes. The new system preserves Duck Lake's water quality by providing proper disposal and treatment of wastewater. Isolating the sanitary waste from the groundwater protects the drinking water source. Without this project, the aquifer from which residents draw their drinking water would have eventually become contaminated. Further degradation of the drinking water supply would have led to costly methods of transporting and storing drinking water for residents.

(For more information on this project, contact Wendy Ratkowski, Wade-Trim, Taylor, Michigan / (734) 947-9726; or the Montcalm County Drain Commissioner.)

LAKE STRATIFICATION—SHUPAC LAKE (Lovells Township, Crawford County)

The thermal stratification observed in Shupac Lake is typical of many deep-basin lakes found in Michigan. The water temperature in Shupac Lake gradually decreases with depth until about 28 feet, where a thermal barrier (thermocline) is formed that separates the upper stratum (epilimnion) from the much cooler water in the lower stratum (hypolimnion). Strata conditions can occur because water is densest at 4.0° C. This thermal barrier will remain until fall when surface-water temperature begins to cool and, aided by wind action, the lake water will mix (fall overturn). In the spring, this process occurs again (spring overturn) when the ice first leaves the lake and the cold surface water begins to warm. When the water at 4.0° C sinks, aided again by wind, the lake water again will mix. Thermal strata will develop through the summer and the cycle will begin again. The metalimnion layer is defined by rapidly



Temperature and Dissolved Oxygen profiles for Shupac Lake near Lovells, Michigan, August 28, 2002.



changing temperatures. This layer allows unique physical and chemical processes to occur within each stratum that will affect the cycling of nutrients and other elements within the lake.

The highest dissolved-oxygen concentration usually is found at the top of the metalimnion. It is in this zone that high concentrations of free-floating algae termed “phytoplankton” can occur. With sunlight penetrating to these depths, oxygen produced through photosynthesis is at its maximum. The oxygen supply below the metalimnion stratum is gradually used by bacteria in the decomposition of organic matter. The consumption of oxygen continues as additional dead plant and animal matter sinks to the lower stratum to be decomposed. Oxygen in the lower stratum will continue to be depleted until replenished by mixing with oxygen from the upper stratum during spring and fall overturns or a strong wind storm.

*SOURCE: United States Geological Survey,
Prepared in Cooperation with Michigan
Department of Environmental Quality*

TWIN LAKES – MONTMORENCY COUNTY

Aeration Year One Results

By Al Ternoff

The first year operation of the East Twin aeration program ended in early December, 2004. The compressors were shut off. All lines and units remained in place under the water.

The first year was an abbreviated year. Our units were installed in early July, whereas in 2005 we will begin in late April.

The results for our shortened year were good. Essentially, we are watching two factors: Dissolved Oxygen in the water (DO) and Biological Oxygen Demand (BOD). The initial measures were DO at 4 mg/l or 40% saturation. The BOD initially measured 58 mg/l which was very high due to the heavy sediment level.

After three months operation the measured levels showed a noticeable change. The DO measured 10 mg/l or 100% saturation and the BOD measured .18mg/l.

What do these results mean? Our goal is to use the aeration units to increase the amount of dissolved oxygen (DO) in the water. When the DO is raised, the BOD is reduced. When BOD is reduced aerobic activity is encouraged. When aerobic activity is encouraged, lots of tiny micro-organisms begin to chow down on the sediment in the lake.

While it is far too early to see improvement in water quality, it is beginning. Some anecdotal reports of less muck and increased wildlife were received already. If aeration is responsible, it is another sign of a wonderful beginning.

Mullett Lake & Its Watershed



MULLETT LAKE (DEQ Data—1992)
Lake Area = 17,360 acres
Lake Perimeter = 41.37 miles
Maximum Depth = 120 feet
Average Depth = 33.5 feet

Watershed Area = 60,255 acres
Watershed Perimeter = 76 miles

Water Trophic Status = 34
(Carlson Formula—Oligotrophic)

Sturgeon for Tomorrow

Lake Sturgeon are an amazing fish. It is the oldest surviving native fish to the region. It possesses no bones and can live more than one hundred years. It can grow to be nine feet in length and weigh up to three hundred pounds. Females first spawn between 17 and 20 years of age. Once mature they spawn every 4 to 7 years. Male sturgeon do not spawn until they are between 12 and 20 years of age, then they spawn every 2 to 4 years.

A real effort is being made to reintroduce this fish into Black, Burt and Mullett Lakes. Black Lake has been involved in this work for several years as I am sure you have all read about.

In the spring of 2003 sturgeon larvae were collected from the Black River and transported to Wolf Lake Fish Hatchery for rearing. On October 23, 2003, 5,605 five to seven inch fall fingerlings were reintroduced to three Cheboygan County Rivers; 1,300 went into the Sturgeon River (Burt Lake), 1,300 went into the Pigeon River (Mullett Lake) and 3,005 returned home to the Upper Black River (Black Lake) at Red Bridge. This exclusive, one of a kind venture is the outcome of the cooperative efforts of Sturgeon For Tomorrow, The Michigan Department of Natural Resources and Michigan State University. The "Head Start Program" is the first in the world to collect larval lake sturgeon, transfer them to a Hatchery for nurturing and reintroduce them to area streams. The last time sturgeon were planted in Mullett Lake was in the 1980's.

A Sturgeon Advisory Council (SAC) has been assembled to address Lake Sturgeon management issues throughout northeast Michigan. Members of the SAC were asked to identify and discuss Lake Sturgeon management issues and make recommendations to the Department of Natural Resources based upon community and user input. The SAC consists of representatives from the Sturgeon Public, Fishing, Hunting, and Conservation Clubs, Watershed Councils, Anglers, Lake Associations (MAPS), DNR Fisheries and Law Enforcement Division, Businesses and Local Government. Will Cwikiel from the Tip of the Mitt Watershed Council is the facilitator. We are very hopeful that these efforts will again bring sturgeon into Mullett Lake, however this is indeed a slow process.



M.A.P.S.

MULLETT LAKE AREA PRESERVATION SOCIETY

P.O. Box 18 • Mullett Lake, Michigan 49761

NEWSLETTER • MARCH 2004

CORMORANT CONTROL UPDATE—JANUARY 2004

(Article copied from Mullett Lake Preservation Society Newsletter—March 2004)

The USF&WS has completed their cormorant impact study and have changed their regulations giving authority to Tribal groups, state agencies and the USDA Wildlife Services Division to control the population. Also, the U.S. Congress has appropriated funding for a pilot project to be conducted in the Great Lakes area. Michigan was selected because of the large cormorant population. The USDA Animal & Plant Health Inspection Services (APHIS) Wildlife Services group will manage this project, under the direction of their State Director, Peter Butchko. Pete spends a lot of time in Mississippi and is quite familiar with the cormorant problems encountered in that state with the catfish farms.

The planned pilot project for 2004 will be conducted in the Les Cheneaux Island area. The pilot will be focused on St. Martin Shoal, Goose Island and also Crow Island. This area was selected for several reasons: 1). The Michigan DNR has developed a database of information from their fish surveys. 2). The area has an acute decline in the yellow perch population. 3). There has been a spike in cormorant nesting with 5,500 nesting pairs counted. 4). The nesting areas selected have all ground nesting, ground and tree nesting and all tree nesting. This pilot will give the USDA and the DNR valuable information to determine if the cormorant population can be controlled in the Great Lakes area. Measuring and research will be required to determine the most efficient method of controlling the birds without any impact on other species. For example, scorching earth approaches has already been determined will not be used. Initially, eggs will be oiled and ground-nesting birds will be leg trapped and appropriately destroyed. Leg trapping has proven to be quite successful in catching nesting cormorants. The traps will be set when the birds leave their nests. When the birds return, they are usually trapped within 10 to 15 minutes. This pilot will be conducted during the nesting period between May 1 and mid June. Cormorants don't nest all at the same time, thus giving the group some additional time for this pilot.

The Wildlife Services intends to learn as much as possible during this pilot project. Their objective is to learn the what, when and the where's of cormorant control. By reducing the cormorant population in the Les Cheneaux Island area, the DNR can measure the direct impact it has on the yellow perch population. There is no quick fix for this problem so we have to realize that it will take a long time to bring the cormorant population under control. This problem didn't happen overnight and it can't be resolved overnight.

As with any animal, fish or bird control projects, there will always be outside groups attempting to hinder or prevent any population reductions. Currently the Fun For Animals has submitted their freedom of information paperwork requesting all the information on cormorant control developed by the USDA. Before this pilot gets off the ground, there will probably be other groups right in line to get an injunction against the USDA from proceeding with their pilot. Hopefully that won't happen and the pilot will be completed successfully.

Editor's Note: At a MUCC regional meeting this past Sunday, it was announced that the several animal rights organizations have filed suite against the USF&W to prevent any control measures from going forward.



The double crested Cormorant is a fish eating bird with a goose-sized body. Its wing span is about 6 feet. Its habitat stretches from Alaska to Newfoundland and south to Mexico and the Bahamas.

Controlling Cormorants in Brevort Lake, Mackinac County, U.P.

by Dan Fenton

Email: Dtroutman97@aol.com

Cormorant population control program — the township just donated \$1,000 toward this effort.

The Staats Area Sportsmens Club, Brevort Lake Association and the MI DNR are working together to control the population and the damage to spawning fish this spring on Brevort Lake. From ice-out until May 12 designated volunteers will harass and kill Cormorants in an effort to save mainly spawning perch that have come under increasing predation from these fish eating birds.

Anyone interested in helping with a donation please email me at Dtroutman97@aol.com and I will be glad to give you the contact information. I have volunteered and must say I will enjoy the freedom to finally protect at least one lake from these invaders.

All sportsmen in Michigan need to get involved and convince the USDA to increase these programs to all waters of Michigan at least during the peak spawning times. The future of Michigan fishing is on the line. Contact both Senator Stabenow (202) 224-4822 and Senator Levin (202) 224-6221 and let them know you support this effort and want it greatly expanded! Speak up and be heard or soon you might as well have a garage sale and sell all your fishing gear. *

Road End Bills Introduced in House

HOUSE BILL No. 4576

John Stakoe, together with 12 other members of the House, introduced HB 4576 on March 24, 2005. The Bill was referred to the House Committee on LOCAL GOVERNMENT AND URBAN POLICY. Mr. Stakoe is Chairman of this committee.

Members of this Committee are:

John Stakoe	Wm. Van Regenmorter
Kevin Elsenheimer	Steve Tobocman
Rick Baster	Frank Accavitti
Neal Nitz	Marie Donigan
David Robertson	Aldo Vagnozzi
Tonya Schuitmaker	

The new Bill is very similar to HB 4141 that was introduced in the 92nd Legislature. The Bill is as follows:

A bill to amend 1994 PA 451, entitled "Natural resources and environmental protection act." (MCL 324.101 to 324.90106) by adding section 30111a.

The people of the State of Michigan enact: SEC. 30111A (1) Beginning September 15, 2006 a public road under the jurisdiction of a local unit of government that terminates at and provides access to an inland lake or stream shall not be used for any of the following, unless a recorded deed, recorded easement, or other recorded dedication provides otherwise:

(A) Construction, installation, or maintenance of boat hoists on the road or in the adjacent waters.

(B) Construction, installation, or maintenance of a seasonal dock larger than 4 feet wide or 25 feet long unless the purpose of the dock is to aid in the public access and the construction, installation, or maintenance of the seasonal dock is authorized by this part and the local unit of government. A dock that is smaller than 4 feet wide and 25 feet long for the purpose of aiding in public access may be constructed, installed, or maintained unless otherwise prohibited by this part or the local unit of government.

(C) Obstructing ingress or egress to the water in any manner.

(D) Mooring or docking an unoccupied vessel at any time between midnight and sunrise on bottom; and directly offshore from the public road.

(Continued in right column)

(2) A person who violates subsection (1) is guilty of a misdemeanor punishable by a fine of not more than \$500 for each day of violation. A peace officer may issue an appearance ticket as described and authorized by Sections 9C to 9G of Chapter IV of the code of criminal procedure, 1927 PA 175, MCL 764.9C, to 764.9G to a person who is in violation of this section.

(3) This section does not prohibit a local unit of government, or other person, from applying for a permit under section 30104.

(4) This section does not alter the rights of the public to use lawfully accessible inland lakes and streams in a manner authorized by law.

HOUSE BILL No. 4578

Introduced by Representatives Shelltrown, Hopgood, Spade, Gillard, and Farrah on March 24, 2005. This Bill would amend Act No. 451, P.A. of 1994, NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION ACT.

Paragraph (3) of Section 30111a is as follows:

"If, as described under Subsection (2) (C) the public road is located within a recorded plat that borders the inland lake or stream, each owner of property within the recorded plat shall have free and open access to the inland lake or stream by all public roads that are parallel to or terminate at the edge of the inland lake or stream, this free and open access includes the right to engage in shoreline activities, including, but not limited to all of the following: (A) Sunbathing, (B) Lounging, (C) Picnicking, (D) Installing a temporary or seasonal dock, (E) Installing a temporary or seasonal boat hoist for registered watercraft to aid in access to the water by an owner of property in the recorded plat who resides either full-time or part-time in a dwelling on his or her property."

* * * * *

This provision of the Bill would run counter to common law on riparian rights as determined by decisions of the Michigan Supreme Court in *Michigan Central Park v Roscommon County Road Commission* (1966), and other Supreme Court cases.