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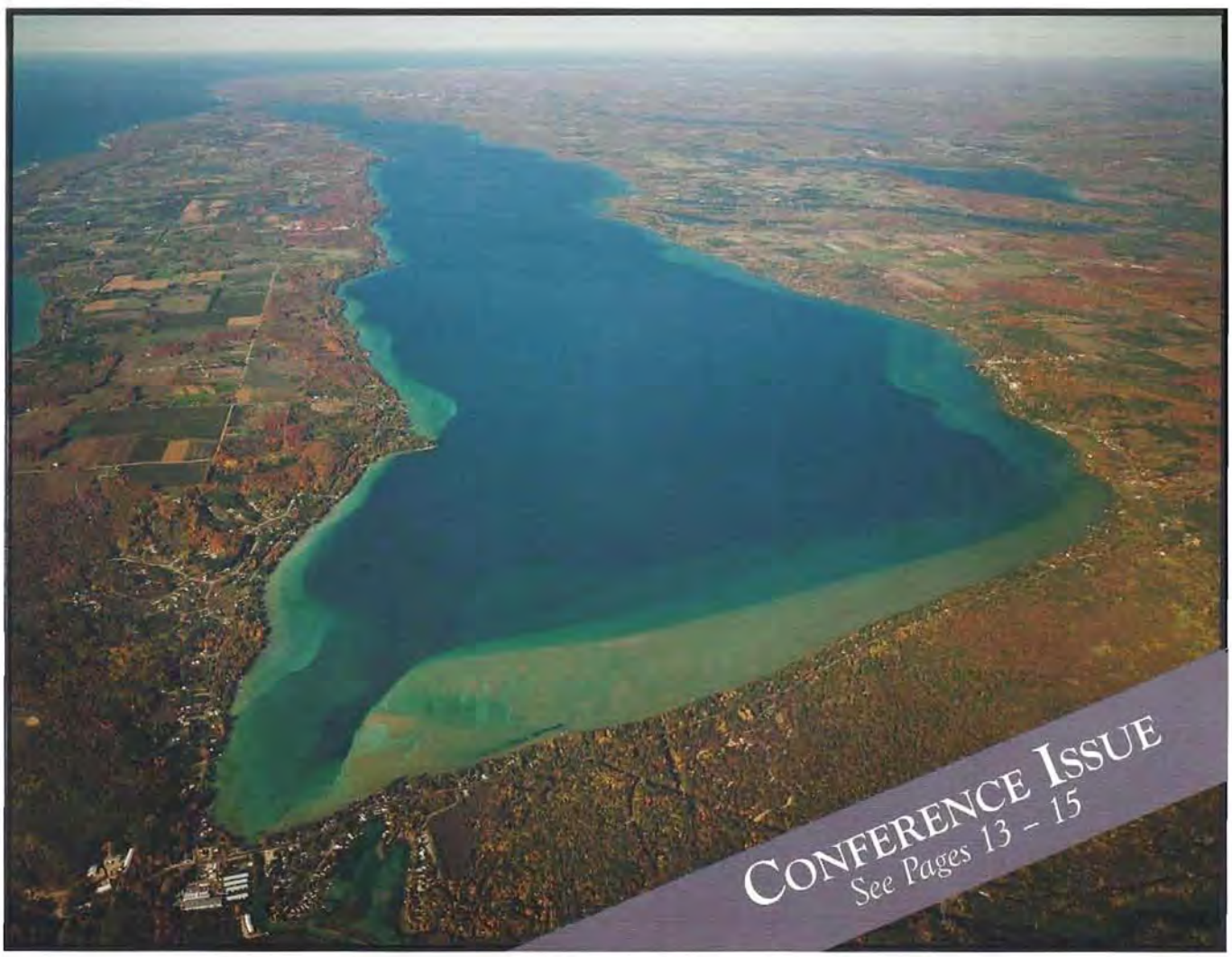
THE MICHIGAN RIPARIAN

www.mi-riparian.org

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

Published Quarterly – February, May, August and November

RIPARIAN (r-'per-EE-n) adj. Relating to or living or located on the bank of a natural watercourse, such as a river, or of a lake or a tidewater.



Torch Lake

Torch Lake is in Antrim County, Michigan. The lake is just under 20 miles long, 1.5 miles wide and about 300 feet at its deepest, with an average depth of 111 feet.

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FROM THE PUBLISHER

Don Winne

Neighbors clash over nuisance dock on Devil's Lake

First, we'll start with some good news: it's time to put the annual ML&SA conference in your day planners. It's going to be a great conference, and everything you need to know about it and to register can be found on pages 13-15 of this issue of *The Michigan Riparian*. But I also need to draw attention to a situation in which neighbors have clashed over a nuisance dock on Devil's Lake in Lenawee County. The Michigan Court of Appeals in Lenawee Circuit Court (No. 255882, January 12, 2006) established conditions to be followed by the defendants in placing a dock on their lakefront property as follows:

- The dock shall not exceed 60 feet in length.
- The dock shall not exceed 3 feet in width.
- The dock shall have no ells.
- The dock shall not be angled toward the plaintiff's dock.
- The dock shall commence at the center of the defendants' shoreline parcel.

This was not a trespass case, but a nuisance which the plaintiffs sought to abate in equity. The trial court concluded that the actions by the defendants "unreasonably restrict plaintiffs' navigation and use and enjoyment of their property. This judgment, the Court declared, "did not deprive defendants of their riparian rights and that it was proper."

(Burt v Munger 314 Mich 659 [1946]. "Where several riparians own the lake, each is entitled to use the entire surface of the lake." This is a Michigan Supreme Court decision.)

PUBLISHER DON WINNE

IN THIS ISSUE

The August 1979 issue of *The Michigan Riparian* is Don Winne's favorite. It features his home, Corey Lake of St. Joseph County, on the cover in a photograph he took.

Mr. Riparian

Don Winne has worked tirelessly as editor and publisher since 1978

story & photos by Jennifer Churchill

He's the embodiment of what the Michigan Lake & Stream Associations, Inc. (ML&SA) stands for: in the simplest terms, the desire to conserve and improve Michigan's lakes, rivers and streams.

Don Winne – a resident of Corey Lake near Three Rivers, Michigan – joined ML&SA in 1974 and was appointed Vice President of the Southwestern Michigan Region that same year.

"I went to a meeting and they took advantage of it," he said with a grin. "I've been associated with the board longer than any other board member – 31 years, I think."

But his involvement didn't stop there. He's served as the executive director since 1980 – watching ML&SA transition from a five-region to a 15-region organization – and he's served as the editor and publisher of the ML&SA's flagship publication, *The Michigan Riparian*, since 1978.

"My main motivation with the magazine is to promote an understanding of what lakes are all about, and to help protect lakes so people will always be able to enjoy the beauty, swim and fish and, of course, eat those fish."

Working on the magazine also allows Don to focus on photography, something he's loved since his days as the Audiovisual Director at Elkhart (Indiana) High School, a job he retired from in 1977.

"When I first started working on the magazine, I was really excited to have the opportunity to put my own photographs on the front cover," he said, noting he uses a Minolta 7000 series camera. "That was such a motivating experience for me, and I've really enjoyed showing off the beautiful lakes and scenery of Michigan over the years."

Don's love of the water is something he's always shared with his family, as well, including his wife, Margaret, who died in 1991.

"Margaret was also involved in ML&SA," said Don, who misses his wife. "She designed the ML&SA logo. She had so much artistic talent, more than I ever thought of having."

It was important to Don that their three children – Jonathan born in 1947, Brian born in 1950, and Laura Jean born in 1953 – grow up on the water, which is why he bought the family property on Corey Lake in St. Joseph County in 1963. They moved to the lake permanently in 1977.

Although retired for many years, Don still works 40-hour work weeks, and then some. Each week-day morning, he makes the half-hour drive from the lake to downtown Three Rivers, where *The Michigan Riparian* office is located. There, he spends an average of four hours working on issues directly related to Michigan Lake & Stream Assocations (ML&SA) and four hours working on the magazine – which includes poring through local association newsletters, reading *Scientific American*, studying precipitation patterns, and perusing

continued on page 9

continued from page 8

through Department of Natural Resources newsletters and other data that helps direct him in his editorial decisions. On a large, sectioned-off table, Don story-boards all 24 (sometimes 28) pages of each issue.

The magazine is published quarterly, and as soon as one issue is mailed to the subscriber list, work begins on the next issue – which means contacting advertisers, organizing articles, writing and editing. Don sends the story-board (carefully noting ad, photo and story placement) to a printer in Kalamazoo, where the graphic design, formatting, printing and mailing take place.

The first issue of *The Michigan Riparian* was published in the winter of 1965-66.

> "No person or corporation has the right to destroy our surface or ground waters in his pursuit of wealth and happiness. All of us depend upon clean water for survival; we all must work together to make sure that our surface and ground waters are not impaired or destroyed."
>
> - EXCERPT FROM DON WINNE'S EDITORIAL COLUMN *THE MICHIGAN RIPARIAN*, NOVEMBER 1999

The first editor and publisher was S.B. Henry, followed by Herschel B. Rochelle (1966-67), Henry Westerville (1967-77), Robert Charles (1977-79), and Don Winne (1979-present).

Don is more than just a publisher; he's a dedicated and enthusiastic representative of riparian rights and concerns.

Don Winne reviews a copy of a recent issue of the magazine he publishes at *The Michigan Riparian* office in downtown Three Rivers, Michigan.

For a 1988 issue, he spent countless hours on a manual typewriter meticulously documenting 108 years of precipitation as recorded at Three Rivers, Michigan, which helped explain that the dropping lake levels in Michigan in 1988 were due (at least in the Three Rivers area) to the fact that January through June precipitation was less than 11 inches and only four of the previous 108 years had less in that first six months.

As stated by outgoing editor Robert Charles in October 1977, Don "helped Corey Lake establish a natural lake level and helped build a dam to maintain that level."

As he looks to the future of *The Michigan Riparian* and the ML&SA organization, for Don Winne, it's still about the fundamental thing that joins all riparians together: the water.

"Watching and listening to the water wave up on the shore at my home on Corey Lake, that soothing, emotional effect it has," he said, "that's what it's all about for me."

Michigan's Clean Boats, Clean Waters volunteer AIS Education Program to "launch" this year

Aquatic invasive species (AIS) such as Eurasian water milfoil and zebra mussels are bad news for boaters and others who enjoy Michigan's many wonderful water recreation opportunities.

Fortunately, most Michigan boaters want to help prevent the spread of AIS. However, many are not familiar with the few simple steps they should take.

Clean Boats, Clean Waters is a new volunteer education program designed to assist Michigan boaters with keeping their boats free of invasive species and to help protect their equipment and our waters from the havoc caused by invaders.

Through the *Clean Boats, Clean Waters* program, volunteers are trained to organize and conduct a boater education program in their community. Adults and youth teams educate boaters on how and where invasive species are most likely to hitch a ride into water bodies. Volunteers perform boat and trailer checks for invasive species, distribute informational brochures and collect and report any new water body infestations. The program is being sponsored by the Michigan Office of the Great Lakes and being conducted by Michigan Sea Grant.

For now, some tips include the following: Before entering and/or leaving any lake, inspect and remove any visible mud, plants, fish or animals before transporting. Drain water from equipment (boat, motor, trailer and live wells) before transporting. Dispose of unwanted live bait in the trash. Spray, rinse and dry boats and recreational equipment to remove or kill species that were not visible when leaving a body of water.

For information on how to become involved with the 2006 pilot program, visit www.miseagrant.umich.edu/cbcw, call the *Clean Boats, Clean Waters* coordinator at 517-353-9723 or e-mail cys@msu.edu.

MILFOIL CONTROL: let nature take its course?

By Craig Roesler
Wisconsin Department of Natural Resources
previously published in *Lake Tides* (Wis.)

The Phillips Chain of Lakes, made up of Duroy, Elk, Long, and Wilson Lakes, is located adjacent to the city of Phillips in central Price County (Wisconsin). The invasive and problematic Eurasian watermilfoil (EWM) was first found in Duroy Lake in the fall of 2000. By 2002, all four lakes contained EWM. Duroy contained extensive beds, Wilson contained smaller, scattered beds, and Elk and Long contained very small, scattered beds.

In 2005, concerned about the amount of EWM in the lakes, the Phillips Chain Lake Association requested an over-winter drawdown to reduce the invasive plant in the chain. In response, Craig Roesler and Dan Kephart of the DNR performed an assessment with assistance from lake association volunteers.

Surprisingly, the assessment revealed the EWM population had declined substantially since 2002. Duroy Lake showed a major decline, with an estimated 90% reduction in visible plants. Large areas of EWM beds were reduced to occasional plants. Most surviving plants were heavily damaged with few remaining leaves. Elk and Long Lakes had hardly any EWM. In Wilson Lake, the declines ranged from almost total destruction of plants in one bed to no obvious impacts in another.

What was happening in the lakes to reduce the EWM populations? Upon examination of the damaged plants, evidence showed that the milfoil weevil, *Euhrychiopsis lecontei*, was hard at work. Numerous adult weevils were found and many of the damaged EWM stems showed the blackened stem segments caused by larval feeding. Milfoil weevils are about 3mm (or 1/8-inch long). They are naturally present in most Wisconsin lakes that contain native milfoils. There had been no introduction of weevils made on the Phillips chain, so the native weevils present simply adapted to feeding on EWM. Up to now, milfoil weevils had shown significant impacts to EWM in a very small percentage of lakes. The reasons they are unsuccessful in most lakes are uncertain, although predation by abundant bluegills has been shown to be one factor. The extent of the weevil impact to EWM in the Phillips chain appears to be greater than that reported in any other lakes where impacts have been observed.

The lakes of the Phillips chain have dark waters, heavily stained from wetland drainage. They also are eutrophic and experience significant summer algae blooms. EWM is only present in water depths ranging from 2.5 to 5 feet. It is unknown whether these conditions may have contributed to the weevils' success.

There is probably not enough EWM left in the chain to justify a drawdown and consequently, the technique has been put on hold. There was also concern that a drawdown could disrupt the booming weevil population and have other negative consequences. What's next in this weevil vs. EWM saga? More observation will take place over the next few summers to see if the weevils' effectiveness continues in the fight against EWM.

Study shows lakes may not recover for a millennium

Phosphorous build-up in lake watershed soils is likely to be the source of serious chronic environmental problems for hundreds of years. "Phosphorous buildup in watersheds is threatening. Sooner or later it is going to hit the lakes and is going to pose problems," says study author UW Limnologist Stephen Carpenter.

According to the study, phosphorous-rich fertilizers, largely from agricultural practices, is the primary source of excess nutrients that are responsible for fouling lakes. The routine application of chemical fertilizers and phosphorous-laden manure has resulted in the gradual accumulation of phosphorous in the soil, which, ultimately, has nowhere to go but into the streams, lakes, and rivers of the watershed where it is applied.

The new study models phosphorous loading into Madison's Lake Mendota. Nearly 80 percent of the surrounding watershed is farmland. Lake Mendota is one of the most studied lakes in the world, and has experienced a steady decline in water quality due to accelerated runoff and the resulting eutrophication in recent decades. Eutrophication occurs when nutrient-rich soil washes into lakes and streams. It stimulates the growth of algae and has transformed many of the world's lakes from clear freshwater reservoirs to soupy, weed-choked pools. It contributes to oxygen depletion, which leads to fish kills and can stimulate the growth of toxic algae.

The amount of phosphorous that runs into the lake in any given year is small, but a little bit of the nutrient is all that is needed to send aquatic ecosystems into overdrive. "We are releasing far more phosphorous to the soil than would be released by weathering," says Carpenter. "This type of eutrophication is not reversible unless there are substantial changes in soil management."

Last year, the City of Madison implemented a ban on chemical phosphorous for lawn products, but farmers still apply phosphorous fertilizers, even when soils have a reservoir of the nutrient. Slowing soil erosion rates would help reduce phosphorous runoff the most. Other steps include developing larger buffers around lakes and streams, restoring wetlands, and encouraging the use of new manure storage and handling processes.

Stephen Carpenter is a University of Wisconsin-Madison professor of zoology and one of the world's leading authorities on freshwater lakes.

Associations: What good are they?

By Clifford H. Bloom, Esq.
Law, Weathers & Richardson, P.C.
333 Bridge Street, N.W., Suite 800
Grand Rapids, Michigan 49504

No, this column does not bash lake associations! What it does is explain the truth about lake associations as entities—are they a panacea for all lake issues or, on the other hand, are they powerless shells? Typically, the truth usually lies somewhere in between.

There are generally two types of lake associations in Michigan—some that I call "strong" lake associations, and others which I have termed "weak" associations. Strong lake associations typically fall into one of two categories. First, there are some lakes (particularly artificially-created lakes) whereby all of the lakefront properties are governed by a comprehensive set of deed restrictions or restrictive covenants. In some of those cases, those deed restrictions create a mandatory lake association and give it extensive powers. The second type of strong lake association involves an association created pursuant to one of Michigan's ancient summer resort statutes. Those statutes accord a properly-constituted summer resort association quasi-municipal powers. Duly-constituted summer resort associations are actually relatively rare. Strong lake associations probably account for less than 5% of the total number of lake associations in Michigan.

Most lake associations in Michigan are "weak" associations. That is, riparian property owners join on a voluntary basis and the only "powers" held by such associations are those which are voluntarily consented to by the members. Voluntary lake associations are of two types—incorporated and unincorporated. Incorporated voluntary lake associations are usually nonprofit corporations set up pursuant to the Michigan Nonprofit Corporation Act, being MCLA 450.2101, et seq. A corporate entity actually exists which, theoretically, has a life span and existence in addition to and apartment from its membership. If a lake association has not been incorporated, it is simply a voluntary non-entity which essentially exists in name only.

Depending upon how they are set up, strong associations often have dues making and enforcement powers, while weak associations can only collect dues on a voluntary basis. I am frequently asked whether there is any way to make dues-paying mandatory in a weak association. The answer is normally "no," unless the voluntary association is able to prompt the creation of a summer resort association or convince all riparian property owners on the lake involved to sign a comprehensive set of new deed restrictions. Either scenario is unlikely. If the bulk of the association's dues goes for aquatic weed treatment purposes, a weak association can help prompt the local municipality to set up a special assessment district for weed treatment purposes. If a special assessment district is created, the municipality collects mandatory assessments which are akin to dues (except that the money is collected and spent by the local municipality).

Although incorporation of a weak association is not mandatory, it is advisable. Incorporation formalizes the existence of a lake association and helps insulate officers and members against potential personal liability (although such a shield is not absolute). Incorporation also has other potential benefits including the ability to obtain liability insurance, making it easier to institute court action should the need arise, and creating "standing" in administrative agency proceedings (like the Michigan DEQ).

For additional information regarding incorporating voluntary lake associations, please see my earlier column entitled "Incorporation" in the February 1997 issue of *The Michigan Riparian* magazine (or online at www.mi-riparian.org).

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As most readers already know, on November 29, 2005, the Michigan Court of Appeals issued its long-awaited opinion in the appeal of the Nestlé/Ice Mountain water extraction case. The decision was not a clear-cut victory for either Nestlé or the riparian property owners who instituted the lawsuit. While the Court of Appeals partially upheld the decision of Judge Lawrence Root from the trial court below (and held that Nestlé could not pump as much water as it desired from the ground), it also held that Judge Root applied the wrong test. The Court of Appeals remanded the case back to the trial court for a redetermination of the issues based on the correct standard. Although the Court of Appeals requested that Judge Root come out of retirement to hear the case on remand, he declined to do so and the case on remand was reassigned to a judge from an adjoining county, Kent County Circuit Court Judge Dennis Kolenda. Everyone is awaiting what Judge Kolenda will do on remand. Nevertheless, it is highly likely that regardless of what Judge Kolenda decides, the matter will almost certainly go back up to the Court of Appeals and will eventually reach the Michigan Supreme Court.

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In addition to being on *The Michigan Riparian* magazine's website, all of the columns and articles I have authored for this magazine over the past decade are also on my website (together with other useful information regarding water law)—just go to www.lwr.com, click on "attorneys," click on my name, and click either "publications" or "Michigan appellate cases."

A short history of Michigan Lake & Stream Associations, Inc.

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Donald E. Winne, Executive Director

Michigan Lake & Stream Associations, Inc. (ML&SA) will celebrate 45 years of working with lake and stream associations to bring about a better understanding of our water resources and to help property owners protect and enjoy their investment in shoreline property.

ML&SA was first organized in 1961. Dr. Clifford Humphrys, Professor of Resource Development, invited riparian property owners and representatives from state and federal agencies of government to meet at Michigan State University to discuss lake problems. Among the 40 problems identified, the following five had the highest agreement:

1. Aquatic plant control
2. Water quality
3. Lake-level control
4. Beach improvement
5. Poor fishing

These concerns still rank high with most waterfront property owners. Additional concerns include the following:

1. Invasion of exotic plants and animals, such as Eurasian water milfoil and zebra mussels.
2. Loss of wetlands
3. Destruction of shoreline habitat
4. Funneling
5. Proliferation of seagulls and Canadian geese

These and other problems require that shoreline property owners form associations to reduce or eliminate these problems. They also need to band together on a state-wide basis to prevent the passage of undesirable water laws and unwise governmental decisions. ML&SA has provided leadership for over 300 inland lakes during the past 45 years and wishes to continue doing so. In order for us to do that, we need your annual membership renewal. If you have not renewed in 2006, we ask that you consider re-joining as soon as possible.

Individuals that have volunteered their services as president of the corporation during the past 45 years are as follows:

Forrest Smith	1961-63	Paul Clark	1975-78	Ray Bier, Jr.	1988-90
Herschel Rochelle	1964-65	Cecile Harbour	1978-80	Paul Clark	1990-92
Henry Westerville	1965-71	Robert McAlpine	1980-83	Richard Brown	1992-2001
Sandra Mriscin	1971-73	Bonnie Van Ness	1983-84	Dennis Zimmerman	2001-
Wayne Clark	1973-74	John Forester	1984-86		
Sandra Mriscin	1974-75	Kevin Walters	1986-88		

The accomplishments of ML&SA over the years could not have happened without the help of hundreds of volunteers that have committed endless hours working as board members, regional vice presidents, regional directors, sample collectors, reporters, and local association officers.

All data collected by lake association volunteers under the Cooperative Lakes Monitoring Program (CLMP) is turned over to the Michigan Department of Environmental Quality (DEQ) for recording in their water-quality data bank. This is a service for which the state is very grateful. **[Read more history in the May issue!]**

Michigan Lake & Stream Associations, Inc.

MLSA's 45th Annual Conference

Holiday Inn Conference Center • Big Rapids, Michigan

"1961–2006: 45 Years Protecting Water Resources for Future Generations"

April 28, 29, 30, 2006

Make plans now to attend the

2006 ML&SA Annual Conference

State-wide conference for members of Michigan Lake & Stream Associations and the general public

Co-sponsored by:

Michigan Lakes & Streams Foundation
Michigan Waterfront Alliance
Michigan Loon Preservation Association
The Michigan Riparian
Great Lakes Commission
Cooperative Lakes Monitoring Program
AoE –Michigan State University
Michigan Invasive Plant Council
Michigan Sea Grant

Program plans are well underway for the 45th Annual Conference. Workshops, Cooperative Lakes Monitoring Program training session, School projects, Scientific information, lakes and streams management, Legal issues, lakes associations programs, exotic creatures and plants invasion, shoreline protection, and much more will be presented during the conference.

Michigan citizens have come a long way during the last decade in understanding more about their water and other natural resources. Yet additional learning is needed to go forward if we are to give future generations a legacy of clean and healthy water.

The MLSA Annual Conference sessions are based on problems and issues of lake and stream associations as well as with the achievements of lake and stream associations across the state of Michigan.

45 years have passed since Dr. Clifford Humphrys, Professor Emeritus, Michigan State University, was able to bring 40 lakes together. Soon after, 12 lake associations formed Michigan Lake & Stream Associations. MLSA has grown over the years, forming sister organizations. The annual conference has gone from a one-day conference to 2-1/2 days with all type of sessions. Fall seminars are held and Regional Lake Representative sessions. There are now 15 regions covering the Upper and Lower peninsulas. MLSA now has 14 Regional First and Second Vice Presidents, and has expanded with two offices, website services, volunteer water quality testing, school projects, lakes and streams leadership training, brochures, newsletters, officers on government committees, watershed development, working with MSU and CMU, and building partnerships. MLSA has worked on lake issues and filed Amicus Briefs along with members and sister organizations. MLSA is controlled by lake association members through the Regional Vice President from their area. MLSA also has individual and corporation members. Board members consist of Vice Presidents from each region, and representatives from private and corporation membership. MLSA is an educational organization, working to continue to protect Michigan's water resources for future generations.

Are you concerned about the following?
• Invasive plants spreading throughout the state that are causing problems in forests, lakes, streams • Exotic invasion in our lakes • Zoning, development • Health and water: E coli • Control noise on our lakes • Working with local government • What is happening to the fish population? • Road-end legal issues • Importance of protecting the loon population • Ground water uses and regulations • What's happening to your lake/stream shoreline • Water safety on your lake • What are other lake and stream associations doing? • Grant writing • and other issues.

Are you interested in helping to protect your lake or stream? Attend the conference and learn how you and your association can take part in protecting your lake and stream. Other educational programs will take place on the following subjects: The CLMP training sessions (come as a volunteer and take part in the statewide Corporative Lakes Monitoring program • The Aquatic Plant ID and Management Session • School/ lake/stream educational partnership program • Developing a website to educate your association's members • Effective landscaping and buffer strips. • Fly tying • and much more.

Do you have questions that you want answered by the "Almost World-Famous ML&SA Open Forum Experts?"
• Attend the Friday-evening forum and meet the experts • Come prepared to ask them a question concerning your lake • and more. Program agenda will be online at www.mlswa.org • See page 15 for Holiday Inn registration.

Other Hotels/motels in Big Rapids, Michigan
• Holiday Inn, 1005 Perry St. • Country Inn & Suites, 15344 Waldron Way • Super 8 Motel, 845 Water Tower Road • Quality Inn & Suites, 1705 S. State Street

Local camp sites in the area (just to list a few)
• Brower Park • Merrill Lake Park • School Section • Paris Park • Tubbs Lake State Forest Campground • River Ridge, Muskegon River (5th-wheels and trailers)

Michigan Lake & Stream Associations, Inc.

MLSA's 45th Annual Conference

April 28, 29, 30, 2006 • Holiday Inn Conference Center • Big Rapids, Michigan

CONFERENCE REGISTRATION FORM (*may be copied for additional attendees*)

Name (s)_____

Day phone #_____

Address_____ City_____ State____ Zip_____

E-Mail_____ County_____

Association, School, or Company Name you may be associated with_____

NOTE: Meals are NOT included in these registration fees.

	PRE-REGISTRATION By April 17, 2006	REGISTRATION AT the CONFERENCE	
❑ FULL CONFERENCE (2 or 3 days) (per person)	$ 65.00	$ 75.00	$_____
❑ ONE DAY ATTENDANCE – ONLY (per person)	$ 35.00	$ 40.00	$_____
For which date:			
❑ Friday, April 28th			
❑ Saturday, April 29th			
❑ Sunday, April 30th			
❑ REGISTERED STUDENT (flat rate per person)	$ 10.00	$ 15.00	$_____
❑ CLMP LAKES MONITORING PROGRAM -- (April 28, 2006 = training session only. No Charge • Does NOT include meals)			

BIG RAPIDS ALSO HAS MANY RESTAURANTS, SUCH AS Applebee's, Bob Evans Farms Restaurant, Big Boy, several Chinese restaurants, McDonald's, Domino's, Burger King, and more.

Cost of Meal Ticket if not staying at the Holiday Inn.

List the number to be purchased and the meal you wish to purchase:

FRIDAY		SATURDAY		SUNDAY	
Buffet Luncheon	_____	Buffet Breakfast	_____	Buffet Breakfast	_____
Buffet Dinner	_____	Buffet Luncheon	_____	Buffet Luncheon	_____
		Banquet Dinner	_____		

❑CHECK/MONEY ORDER ❑MASTERCARD ❑VISA ❑DISCOVER ❑AMERICAN EXPRESS

Check Number_____ Check, Money Order or Credit Card Total $_____

Credit Card # _____/_____/_____/_____ Expiration Date _____

PRINT Name as it appears on Credit Card _____

Phone Number of Credit Card Account Holder (_____) _____

Signature of Credit Card Account Holder X_____

Please note: Holiday Inn registration is on a separate sheet, and should be sent to the Holiday Inn.

Mail MLSA registration form to:

Michigan Lake & Stream Associations, Inc., P.O. Box 303, Long Lake, MI 48743-0303

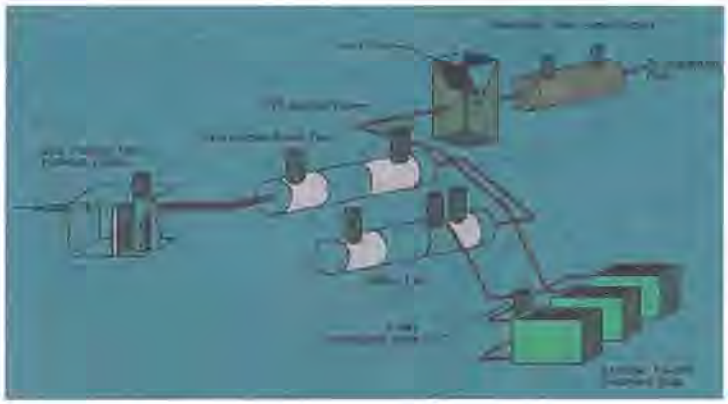
Small-scale wastewater treatment facilities meet Grand Traverse Region development demands

by Richard Raetz, P.E., President, GRT, Inc.

Our affection remains with the natural beauty of the Grand Traverse region – the open spaces, pristine rivers, wooded uplands, lush lowlands, clear waters of the Grand Traverse Bay and the dunes of the Lake Michigan shoreline. This beauty will continue to attract many people seeking a quality place to live, which is why regional growth of the Grand Traverse area is experiencing rapid development. A drive in any direction will bring you past new subdivisions, condominium developments, churches, and commercial centers.

We need to consider the impact that this expansion is having on our natural resources and accept the responsibility of ensuring these resources are protected. Our most valuable natural resource is our drinking water, which is typically extracted from a resource known as a groundwater aquifer. The pristine condition of the aquifer is stressed when conventional septic systems discharge gray water to the septic disposal field. The leachate of the disposal field contains nutrients, bacteria, and, in some cases, unknown quantities of pharmaceutical chemicals that pass into the soil and shallow water table aquifer. Shallow aquifers are particularly vulnerable where homes, businesses, and restaurants are in close proximity to one another; this creates a combined disposal field leachate effect, which can lead to significant impacts on the aquifer system below. The symptoms of the impact often are exhibited by high Escherichia coli (E. coli) counts on beaches, excessive weed growth at lake edges, and an overall decline in water quality due to septic disposal field leachate migration into nearby lakes and streams. The true magnitude of the septic disposal field leachate impact to the aquifer is not often tested. This impact to the aquifer is greatest directly below the septic disposal field where the leachate mixes with groundwater.

Some of the most beautiful areas of our region are also the most populated and, therefore, the most vulnerable to disposal field leachate impacts. Houses clustered around lakes, rivers, streams and the Grand Traverse Bay are established in areas where it is often less than 10 feet from the ground surface to the groundwater aquifer below. Once the disposal field leachate is in the groundwater aquifer, the earth's natural cleansing process continues. However, in cases where we have many shallow water table disposal fields in close proximity to one another which accept conventional septic system gray water, the natural cleansing process can be overpowered by the disposal field leachate. A shallow water table environment, typically found adjacent to lakes, is most vulnerable to these disposal field impacts. Solutions, like small-scale Advanced Treatment Systems (ATS) for wastewater, have been developed to limit the environmental impact created by septic disposal field leachate (*see diagram*). An ATS can be applied as a stand-alone single home unit or designed in modular fashion to treat the wastewater of a small community. A community based ATS can be used with a larger disposal field that is placed in the most favorable upland soils proximal to any given cluster of homes. The use of an ATS combined with an upland disposal field limits the impact on our natural resources. For this reason, many of our region's county health departments have modified, or are in the process of modifying, the sanitary codes to include a process for using the technologies available for small-scale treatment and disposal. There are also cases in which the community is proactive and seeks advanced wastewater treatment solutions.



For example, a small pro-active community of 99 homes nestled in Leelanau County decided to seek a solution to the association's advanced wastewater treatment needs. GRT's design team, with input from national leaders in the industry, designed a small-scale decentralized wastewater treatment facility to meet their environmental protection goals.

The association desired a system that would be cost competitive with conventional wastewater treatment practices and that avoided the use of open lagoons with seasonal spray irrigation as a discharge practice. With this in mind, GRT designed a clean, odorless, system with a small footprint and a community disposal field for continual year-round discharge. The design includes solids removal and advanced treatment, followed by disposal using an absorption field and infiltration system placed at the edge of a wetland.

continued on page 15

continued from page 14

Starting at the home, solids are settled in a conventional septic tank. The septic tank effluent is then transferred to the treatment facility by a septic tank effluent pump and central collection piping system. The treatment facility is capable of treating up to 60,000 gallons per day of wastewater using a combination of re-circulation and dosing tanks and pumps. The wastewater is passed over several textile filter pods where it is treated by resident microorganisms (*see photo*). After multiple re-circulation steps, the wastewater can be further treated by passing through the sand filter to remove phosphorus. The treated wastewater leaves the facility via a pump station to the disposal field.

The disposal (absorption) field is constructed of discharge laterals that evenly distribute the wastewater to individual subfields retrofitted with under-drain laterals to prevent disposal field mounding (excessive height of leachate present in the disposal field). If the under-drain laterals are opened, the collected groundwater passes through ultraviolet disinfection to kill harmful bacteria or viruses, prior to entering a stone infiltration trench installed adjacent to the wetland. This decentralized advanced treatment system has been in operation for over a year, producing high quality treated leachate superior to standard conventional septic system leachate.

The pace at which our region is growing is tremendous. Part of our responsibility as citizens and neighbors is to ensure that the natural beauty of the area is maintained for the enjoyment of future generations. The use of advanced wastewater treatment will soften the impact on our water resources and assist in maintaining the pristine nature of our environment. The combination of regulations and innovation, focused on meeting environmental stewardship goals set for the region, will allow responsible wastewater management to protect the environment in which we live and enjoy.

Richard Raetz, P.E., President, GRT, Inc., Traverse City, MI/ Richard@GRTUSA.com; 800-899-3703. GRT is a full-service science and engineering firm offering environmental engineering, wastewater engineering, applied research and civil engineering. www.GRTUSA.com.

Michigan Lakes & Streams Foundation

Your Gift Lives Forever.

For 45 years, MLSA has provided all of these benefits and resources to its members and the citizens of Michigan on a limited budget – relying almost entirely on volunteers. If we are to continue to be effective as the leader in the state in protecting our water resources for future generations and continue to be your voice in Lansing and continue to defend your riparian rights ...

... We need Your Support!

What is the Michigan Lakes & Streams Foundation?

The Michigan Lakes & Streams Foundation is a 501(c)(3) nonprofit, charitable organization which was established in 2004 by Michigan Lake & Stream Associations, Inc. (MLSA) to provide a vehicle (an endowed fund) for developing a stable and permanent financing source to help support MLSA's many programs and initiatives.

Why an Endowed Fund?

An endowed fund ensures the principal from all gifts will always be there in the future to help provide funding to MLSA. Only the interest earned will be utilized. The principal will remain untouched. Thus, the more we are able to expand the principal, the greater the dollars available each year.

Who Supports MLSA?

MLSA's membership consists of more than 300 Lakes & Streams Associations statewide, representing more than 100,000 members interested in protecting the future of Michigan's water resources. For 45 years, Michigan Lake & Stream Associations, Inc., has labored on your behalf – most likely without you even knowing about it. On a national, regional and state level, MLSA represents its members through involvement in a variety of programs and issues involving state waters. Some of the key issues MLSA is currently dealing with include:

- ***Riparian rights***.
- ***Lake and stream water quality.***
- ***Controlling invasive species***.
- ***Lake and stream watershed management***.
- ***Other MLSA activities*** – MLSA is actively supporting numerous programs; MLSA is also your voice in Lansing, representing you.

How Can I Contribute?

There are 4 ways you can make a 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. No matter what kind of assets are in your estate, and regardless of the value, the percentage you specify will be given 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 from your estate to the Foundation. This assures that others are taken care of first, but that something goes to the Foundation that is important to you.
4. You can make a cash contribution any time.

Consult with your own attorney or accountant for further ideas on the most appropriate way to make your bequest. For more information, contact Franz Mogdis, President of the Board of Directors of the Foundation, at **989-831-5261**; or Pearl Bonnell, Treasurer of the Foundation, at **989-257-3583.**

News From Lakes Around the State

Septic systems and alternative treatment units

Crystal Lake & Watershed Association
Benzie County
Bob W. Appleford, President

In 1989, Benzie County was one of the first counties in the U.S. to adopt a precedent-setting ordinance requiring upgrades to all on-site wastewater treatment systems (septic tanks with drain fields, or holding tanks with periodic pumping) prior to any property sale. Priority was placed on upgrading failed or poorly operating systems near water bodies. Alternative treatment units (ATUs) using "innovative" or "advanced" technologies provide a higher degree of treatment to protect water quality of lakes and groundwater. Holding tanks must be pumped periodically and the contents properly disposed of in approved treatment facilities. Benzie and Leelanau counties adopted new standards for ATUs to be constructed on properties having soils that do not "perc" (partially treated wastewater does not drain properly through soil). The Benzie-Leelanau District Health Department has permitted 35 upgrades of non-conforming septic systems in the Crystal Lake area this past year. As of September 2005, nearly 92% of all septic systems in the area have been upgraded/constructed to meet the current regulation. There have been a total of 704 new or upgraded systems on Crystal Lake since implementation of the ordinance. The Betsie Lake Utility Authority (BLUA) in Frankfort has completed construction of the septic tank/holding tank wastewater treatment addition. State law mandates that all septic tank/holding tank wastes be delivered to a treatment plant within 15 radial miles beginning October 2005, expanding to 25 radial miles by October 2010, meaning virtually all waste in Benzie County will be transported to the BLUA facility. If you have questions, contact the health department at 231-882-4409.

Road end and legal activity

Higgins Lake Property Owners Association
Roscommon County
Pat Springstead, President

This has been an extremely busy year for our attorneys, Bill Carey and Rich Jaskowski. In the past year alone, the HLPOA has spent nearly $35,000 in legal fees, money we would much prefer to spend in other ways. Currently, we have four different cases at the appellate court level. In the minutes of our annual meeting, you can read about our efforts regarding boat ramps, signage at road ends, and the repeal of a Lyon Township ordinance allowing boat hoists at road ends. It is a testament to the HLPOA's effectiveness in the relentless pursuit of road end violations that fewer boats were observed at the road ends this summer in comparison to last year. There are, however, a few serious exceptions: road ends in the Kelly Beach and Sovereign Park areas and at Bismark Rd. In August 2005, Judge Baumgartner made a ruling that will give the HLPOA an enforcement tool to uphold the *Jacobs* ruling in the 13 subdivisions that were previously litigated around Higgins Lake. The judge ruled that, henceforth, when we present evidence of violations, he will apply sanctions. There will be hearings in front of Judge Baumgartner and Judge Thomas in November. It has been an exceptionally active legal period, and we greatly appreciate the generous contributions that members have made to the legal fund. • House Bill 4576-H3, regarding use of road ends, was recently sent back to committee. HLPOA lobbyists are working with the Republican leadership to get the bill out of committee and moved to a vote. If this bill is passed, we will have the enforcement tool we need without having to go to court. We are asking you to contact your Representative and your Senator to support this bill without amendments. Our membership comes from many districts in the state; your call or e-mail representing your district is important. Visit www.HLPOA.org for news.

Project update

Lakes Preservation League
Lenawee County
Arlen Miller, President

In the spring, the League will be posting signs to remind everyone not to feed or harass the wildlife on our lakes. Members voted to purchase five signs and the wording will be worked out on conjunction with the DNR because it must approve the signs. • In October 2005, 1,000 red-eared sunfish were stocked in each lake (Devils and Round) at a cost of $4,000, half donated by the Whipple family from last winter's ice-fishing contest proceeds, and half donated by the Preservation League. Some of the fish should be reproducing by spring. • At a meeting held in October 2005, by Steve May, the Lenawee County Drain Commissioner, many of the residents' questions about the Horton Drain project and its costs were answered, and it was determined that the project would go forward. Areas of the drain that were clogged with sediment have since been cleaned.

Membership information

Fisher Lake Association
St. Joseph County
Eric Shafer, President

The Fisher Lake Association (FLA) was formed to promote the education of riparian owners and other lake users about water quality and water safety. The FLA supports issues that concern the welfare of the lake, including the conservation of the water supply in the lake and the watershed, and the maintenance of the quality of water to be conducive to the renewal of the fish and other wildlife resources. FLA also supports the measurement and evaluation of hydrological lake data so the best decisions will be made for the lake. Annual dues are $15 per year. As a member, you will receive a subscription to *The Michigan Riparian* magazine, a copy of the *Fisher Lake Magazine*, a copy of each newsletter, and a voice in the actions the FLA takes to accomplish its purposes. As a member, you will be directly supporting the cost of annual water sampling and the dues to the Michigan Lake and Stream Associations, Inc., which tracks and collates the data generated by that sampling. Your dues also help pay for periodic water quality studies completed by qualified limnologists.

Lake level project

Barron Lake Association
Cass County
Emery Hirschler, President

The construction of the overflow drain at the access on Lake Shore Drive is near-

ing completion, but it's taking much longer than anyone imagined. All kinds of problems have been encountered during the excavation. At the pump site on Barron Lake Road, I & M Power has yet to install a new transformer so that power can be run to the pump's electrical boxes. The piping and the rip-rap from the pump to the lake still needs to be completed. If all the work gets accomplished in the next couple of weeks, we MAY be able to pump some water before the lake freezes over. We do have some good news; We received a check for $10,102.65 from Cass County reimbursing the BLA for expenditures made by the association relating to the lake level project.

Twin Lakes eagles

TWIN LAKES PROPERTY OWNERS ASSOCIATION
Montmarency County
John Roose, President

Jerry Weinrich is a retired habitat biologist who remains active in the study of eagles and osprey. He shared a Q&A with our members at our annual August meeting regarding eagle activity on East Twin Lake. He says there were definitely two eaglets in a nest high atop a pine tree, and there is also a nest at Garland that has been active for eight or nine years. Virtually every Great Lake island has eagles. "In about 1975, when we began counting the eagles, there were less than 30 pairs," said Weinrich. "In 1992, there were only 40 pairs in the lower peninsula. In 2005, we are blessed with 278 pairs of eagles." He explained that there are so few eagles because eagles eat fish and, in the 1960s and 1970s (and even 1980s), the use of pesticides such as DDT was a common practice. The harmful pesticides leached into the lakes and contaminated the fish. Eagles at the fish and died from the pesticides. Weinrich said we will likely see more eagles next year, as the eagle population is health and expanding in Michigan.

Turkey vultures "clean up"

PENTWATER LAKE ASSOCIATION
Oceana County
Ron Steiner, President

The PLA included some interesting information about turkey vultures in their summer newsletter, contributed by Jean Beal/source: Arizona Game and Fish Department. Interesting information includes: Turkey vultures are found throughout the entire continental United States and southern Canada and are often seen in the Pentwater area. With a 5-6-foot wingspan and 32-inch body length, they are one of the largest raptors and can be seen flying high in the air. Vultures eat mainly carrion. It is illegal to kill, injure or possess turkey vultures. Did you know the Wright brothers designed their first planes after carefully observing turkey vultures glide masterfully through the air? It appears this bald-headed, not-so-pretty bird helped to pave the way for modern aviation!

Water quality report

LAKE SOMERSET ASSOCIATION
Hillsdale County
Tony Harsch, President

Several residents called or e-mailed us concerning the conditions in the water in late July/early August 2005. Blue-green algae blooms appeared along sea walls in the channels and the main lake. Keiser & Associates advised that this was due to a combination of factors including the warmer weather this summer, excess nutrients from lawn fertilizer run-offs, and the calm winds. All of these combined make conditions ripe for algae blooms (which have been lying dormant on the lake bottom) to rise to the surface and become a nuisance. Keiser advised that swimmingand/or allowing pets to swim or drink the water during the presence of this "slime" can cause illness if ingested. With proper lake management, we hope to be able to reduce this problem in the future. We anticipate moving ahead with a long-term plan for the improvement of our lake.

Eurasian milfoil on the run

LAKE MARGRETHE
Crawford County
Joe Porter, President

Professional Lakes Management from Caledonia treated the lake for Eurasian water milfoil in June. The granular chemical 2,4-D was applied at a rate of 100 lbs. per acre. 35 separate sites around the lake were treated for a total of 12 acres. Milfoil growth has been noted in the shallow waters of north bay and west bay. We will continue to monitor and treat the milfoil with support from our membership. Treatments cost $400/acre. Camp Graying and the National Gard continue to contribute one-third of our annual cost of treatment.

Water milfoil found in Duck Lake

MOON LAKE RIPARIANS
Gogebic County

Eurasian water milfoil is an exotic plant in Michigan, meaning it is not a native species and therefore has few natural controls. Its origin has been traced to the Hudson Bay area during the late 1940s. By midsummer, it can form mats so dense it restricts swimming, boating and fishing. It can form thick colonies, which displace native plants, decrease water quality and impaire navigability. Eurasian milfoil can reproduce by seed and fragmentation. A single wisp can multiply into 250 million new plants in one year!! Boaters can help prevent the spread of milfoil and other aquatic weed species by removing all aquatic weeds from the trailer, boat, motor/propeller and anchors before leaving an infested lake. It has been found in Duck Lake and the Cisco Chain. On June 23, Barb Gajewski, the lake surveyor for the ANS Coalition accompanied by Tom Wheeler, completed the Moon Lake survey for Eurasian water milfoil. None was found, so we've dodged the bullet for now. We will continue to be proactive in surveying Moon Lake. Please contact Tom at 906-544-2020 if you have any questions.

Proposed township ordinance

MORTON TOWNSHIP, TRI-LAKES ASSOCIATION
Mecosta County
Kevin Doyle, President

In 2005, Morton Township drafted an ordinance to regulate access to lakes within the township. The township finds "that lakes within Morton Township are subject to overcrowding by watercraft, the value of private property around lakes can be decreased by unregulated access to lakes, and the natural resources of Morton Township are damaged by unregulated access to lakes." A road end ordinance was also drafted by the township in 2005.

FEATURE

A new definition for "living on the water": Crooked Lake condos

By Wayne Blomberg
Pickerel/Crooked Lakes Association

Living on the water has taken on a whole new meaning in Emmet County in northern lower Michigan. These six condominiums (*pictured right*), built on pilings over Crooked Lake, are the first six of a 24-unit development approved by the Michigan Department of Environmental Quality (MDEQ), Littlefield Township, and the Emmet County Commission. This six-unit complex occupies a previously unbuilt section of an aging marina, although there were a few boat slips in this location. The other 18 units, to be built on pilings over the water with parking for boats below, will replace boat houses that were on that site. Even before completion of any portion of the project, the township, the county and the MDEQ approved six more units (30 total) on land adjacent to the original project. These six units are also to be built on pilings over a dredged basin and channel providing access for boats to Crooked Lake. The Pickerel/Crooked Lakes Association attended numerous meetings and voiced many concerns and virtually unanimous opposition by the lake community, but objections fell on deaf ears. Standard zoning regulations, waterfront setbacks, and density were non-applicable when the project achieved P.U.D. status for "unique" properties. The passage of time has generally made humans aware of the need to responsibly care for the finite number of lakes, wetlands and rivers that we have. Average citizens are joining many of the water-quality advocacy groups and voluntarily playing a part in protecting their environment. Pickerel/Crooked Lakes Association is asking MDEQ and government officials to do what is required by their job description when faced with unconventionally unwise and unusual building projects. Or has a Pandora's box been opened for waterfronts in our state?

Memorial to Katie Shirk

submitted by Joan Merriman, President, Bankson Lake Association

Katherine Wilson Shirk, 74, of Mishawaka, Indiana, passed away November 8, 2005. Katie was born in Lexington, Kentucky, and moved to Mishawaka with her parents as a teenager. In September 1952, she married Hurland Shirk. Katie and Hurland spent the summers with their family at Bankson Lake, in the cottage built by Hurland and his father in 1946. Katie loved Bankson Lake and all the pleasure it offered. She was deeply concerned for the well-being of the lake, its natural resources and its wetlands. In the summer of 1970, Katie and another lake resident, Sandra Mriscin, got together to form the Bankson Lake Association. These two women wanted to stop the destruction of the lake by a resident who was beginning to dredge, fill and develop the wetlands. Sandra became the first president of the Bankson Lake Association, and Katie was the first secretary for the new association, a position she held for many years. With the power of their newly formed lake association behind them, Katie and Sandra were able to obtain the intervention of the Department of Natural Resources to stop further development, as well as reopening a channel that had been closed by the developer. Subsequently, the Bankson Lake Association became incorporated as a not-for-profit corporation in 1974. Katie continued as a Bankson Lake Association board member until 1999. Immediately after forming in 1970, the Bankson Lake Association joined Michigan Lake & Stream Associations, Inc. Katie and Sandra began attending most of the ML&SA meetings each fall. Sandra became the second president of the ML&SA in 1976, and Katie followed by becoming secretary from 1985-1988. Subsequently, Katie became the ML&SA District 3 Director from 1990-1994. Katie is survived by her husband of 53 years, Hurland; one son, Wayne (Tammy) Shirk; two daughters, Cindy Osler, Nancy (Craig) Fuller; son-in-law, Steve Osler; five grandchildren, Amanda (Brian) Hiestand, Eric Osler, Lindsay Xaver, Kyle Shirk, Elizabeth Shirk; two step-grandchildren, Tyler and Brittany Fuller; one great-grand-daughter, Katheryn Kayleigh Hiestand; and nephew, Jim (Lisa) Robinson. The Bankson Lake Association, ML&SA, the Department of Natural Resources, friends, neighbors and family have lost a great lady. Let us not forget the legacy she has left for all of us.

Torch Lake predictive water quality model workshop

Three Lakes Association (TLA) held a water quality workshop at Camp Hayo-Went-Ha on November 11, 2005, as part of TLA's 2004/2005 predictive water quality modeling project. Participants learned about the new computer simulation of Torch Lake and how it can help forecast the long-term impact of regional land-use activities on Torch Lake's water quality. County and township officials worked on ideas of how to effectively use this phosphorus-based water quality model. TLA has received funding for the construction of a second water quality model for Lake Bellaire and Clam Lake during 2005/2006.

PREDICTIVE WATER QUALITY MODELS, IN GENERAL:

- Are used nationally by organizations to improve water quality in lakes where water quality has deteriorated due to economic development in the lake's watershed.
- Target phosphorus in lakes as the critical nutrient affecting chlorophyll growth and water clarity.
- Determine amounts of phosphorus in groundwater, rainwater, rivers, lakes and human contributions to these components.
- Forecast changes in water quality information like dissolved oxygen, chlorophyll, and clarity, when phosphorus amounts change.
- Use existing model frameworks certified by national use on other lakes to predict water quality.
- Are customized to specific lakes by measuring water and phosphorus entering and leaving the lake.
- Focus on land use near the lakes as the area where phosphorus can be controlled.
- Represents a decision-making tool that combines water quality protection with managed economic growth.
- Involve local governments in the use of water quality models.
- Require regional collaboration to be effective.

THE PREDICTIVE WATER QUALITY MODEL FOR TORCH LAKE:

- Is uniquely pro-active – Torch Lake is very clean and very clear.
- Was made possible with financial support from MDEQ's "Clean Michigan Initiative," seven townships, Dole Family Foundation, and TLA plus more than 3,000 hours of time from 40 volunteers as part of the in-kind matching funds.
- Involved mentoring 10 high school summer interns from three local high schools, as part of the model-building project.
- Required collecting water samples, measuring tributary flow rates, measuring groundwater flow rates, deploying sedimentation traps, and gauging rainfall.
- Incorporated more than 1,000 pieces of seasonal water quality information about Torch Lake.
- Utilized the analytical and model building services of the Great Lakes Environmental Center of Traverse City.
- Represents a final work product with a total value of more than $180,000 for an investment of $62,000 State Funds and $8,000 from seven townships.
- Was supported by Three Lakes Association's watershed partners. The 18 supporting organizations includes the Watershed Center Grand Traverse Bay, local townships, Northwest Michigan College's Great Lakes Water Studies Institute, several universities, businesses, local schools, and lake associations.
- Required 18 months to complete; June 2004–Dec. 2005.
- Will be in the public domain upon completion.

THREE LAKES ASSOCIATION:

- Is a non-profit (501-c3) organization whose mission is to provide leadership to preserve, protect, and improve the environmental quality of the Chain of Lakes watershed for all generations.
- Has 425 members and is growing.
- Has been actively involved in monitoring water quality in Torch Lake, Clam Lake, and Lake Bellaire since 1966.
- Membership is available to anyone interested in maintaining the high water quality of Antrim County's Chain of Lakes. Basic membership is $50 and tax- deductible donations are welcome.
- Visit www.3lakes.com for more information.

Interesting facts about Torch Lake

Torch Lake, located on the 45-degree latitude line in northwest Lower Michigan, is by far Michigan's largest inland lake by volume (1.1x1011 ft3) and by depth (300 ft); and is its second largest lake by surface area (18,800 acres) after Houghton Lake. • The purity and clarity of Torch Lake's water is very high and its composition is similar to Grand Traverse Bay on Lake Michigan. Its phosphorus content is very low at 2.6 ppb (parts per billion) and as a result its clarity, measured by a Secchi disk, is typically 15-35 feet, depending on the season. • Torch Lake water contains calcium and magnesium carbonates, sulfates, and chlorides, making the pH of the lake between 7.6 and 8.6 (slightly basic). The lake is called a hard water, marl lake because its alkalinity is high (130-140 mg/l, milligrams per liter) and most of its bottom is covered with a sediment of gray marl. • The temperatures of the surface water of Torch rarely exceed 75 degrees, except at the edges where the water sometimes reaches 80. Below 50 ft. the waters stay below about 38 degrees year-round. Since the average depth of the lake is about 140 ft., most of the water in Torch stays at nearly the same temperature all the time and circulates poorly with the warmer surface waters. The dissolved oxygen levels in the lake also stay high (8-13 mg/l) year-round; so fish can live in waters at all depths but there is very little vegetation on lake floor to support them. • Torch supports a good but sparse population of most kinds of trout and Atlantic salmon in the lake center, sculpin and burbot at the bottom, and bass, perch, whitefish, suckers, herring, and panfish around the edges. • The lakeshore is dominated by sand and gravel left over from the retreat of the last glacial advance. • Torch Lake has one major inflowing tributary, Clam River, and one major out-flowing stream, Torch River. • Torch Lake has no major towns or industries. The largest town is Alden (less than 1,000 residents in the summer); the only marinas are on Torch and Clam Rivers. • All of the residents on Torch have septic systems, most of them at least 100 ft. from the lakeshore.

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