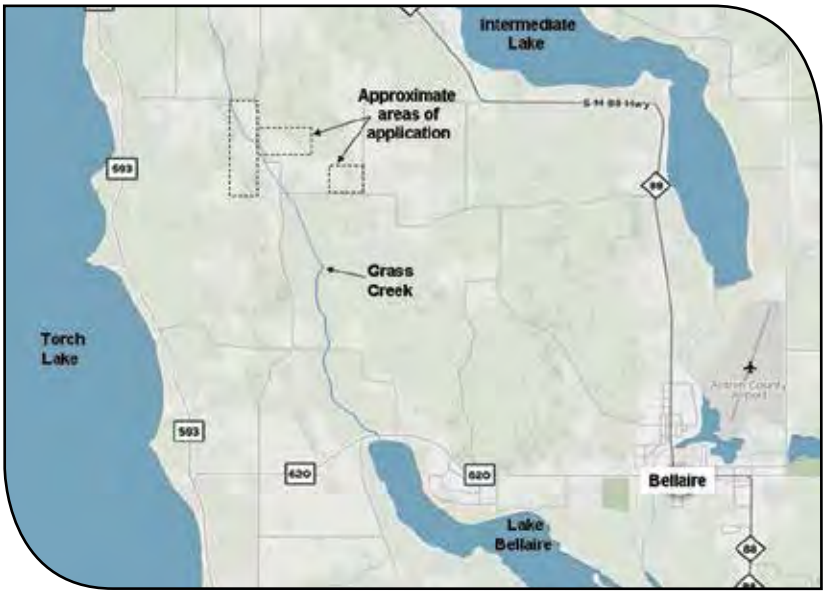
SERVING LAKE BELLAIRE, CLAM LAKE AND TORCH LAKE IN ANTRIM COUNTY, MICHIGAN FEBRUARY 2018

THREE LAKES ASSOCIATION
QUARTERLY

TLA monitors land application of biosolids

By Fred Sittel

Three Lakes Association has long been working to better understand the impact residential septic systems may be having on nutrients which find their way into area lakes, rivers and streams. Phosphorus is of particular concern because excess amounts in aquatic environments degrade water quality by promoting excessive algae growth. Centralized municipal waste water treatment is thought to be superior to distributed residential septic systems because nutrient levels can be reduced before effluent is released to the environment using treatment methods which are not practical with residential systems. When nutrients are removed from municipal wastewater they accumulate as sludge at the bottom of large sewage ponds. After years of build up, this material which contains concentrated levels of nitrogen and phosphorus and certain chemicals, must be disposed of somewhere. Options include incineration, entombment in a lined landfill and land application. Land application is performed in agricultural areas where crops that are not intended for human consumption are grown. These areas would normally be receiving nutrients anyway from manure or commercial fertilizer application. The most recent available nationwide phosphorus loading estimates developed by Gianessi and Peskin, 1984, indicate that combined, manure and fertilizer application represents almost three quarters of the phosphorus entering the environment from human activity.



Sewage ponds need to be de-watered before they can be cleaned out. Then large volumes of sludge remaining at the bottom of the ponds must be removed and transported, sometimes over longer distances. There are additional processing costs at the final destination depending on the disposal method chosen. Sludge which has been tested and meets the requirements for land application is referred to as a biosolid. Along with other constituents, biosolids contain many of the nutrients and minerals beneficial for growing crops. When suitable agricultural fields are located near city areas, land application in close proximity to sewage ponds often becomes the cost effective solution of choice. This was the case recently for the Bellaire Waste Water Treatment Plant which moved over three million gallons of biosolids by tanker truck and distributed them on just under one hundred acres of agricultural property located a few miles north of Lake Bellaire. The land application process is strictly controlled by the State of Michigan and the Environmental

See LAND APPLICATIONS, page 5

Leadership

Greetings,

What image do you see in your mind when you think about leadership?

Some people see a sword-brandishing general atop a galloping steed, ready to do battle with whatever enemy is approaching. Some see a strong inspirational orator speaking ardently against injustice and describing a society where people are judged by their character, and not by any trivial trait such as skin color, or creed, or heritage – or even by biology. Some see a collaborative team leader, who acts as the "primus inter pares" (first among equals), seeking to understand the goals of the team and to remove the barriers that stand in the way of the team members' progress toward that goal. These are not the only models of leadership, of course – but they illustrate the wide range of concepts attached to the term "leadership."

The TLA mission is "to provide leadership to preserve, protect, and improve the environmental quality of the Elk River Chain of Lakes Watershed for all generations with emphasis on Lake Bellaire, Clam Lake, Torch Lake and their tributaries." What kind of leadership do you look for from the TLA in carrying out its mission?

You and I may see things differently, and therefore it is highly useful for us to clarify for each other, what we mean, so that we understand one another's viewpoint. Otherwise, we invite confusion and discord into our communication. When the Three Lakes Association was first formed, it was in response to a growing threat to the waters of the lakes, as recognized by a small group of environmentally aware citizens. If you have not read them yet, you may want to download the documents that relate the history of the Three Lakes Association:

- www./3lakes.com/wp-content/uploads/2008/04/1996-tla-the-first-30-years.pdf
- www.3lakes.com/wp-content/uploads/2011/08/TLA-Highlights-45years.pdf
- www.3lakes.com/wp-content/uploads/2016/11/TLA_Annual_Mtg_Program_web_sm.pdf)

Although TLA's first responses were largely in the form of legal contests, it became quite clear that a scientific foundation was absolutely necessary for the environmental position taken by the Association to be accepted and acted on. Proof of the environmental hazards posed by unregulated development and overuse of the lakes could really only be demonstrated by careful scientific evaluation of changes to the status of the lakes. TLA carries out annual monitoring of the lakes and their tributaries to provide the data that enable us all to make informed decisions in our use of the lakes and the land surrounding them. The overarching leadership style of the TLA has been to keep the goal of healthy lakes foremost in mind and to find ways to remove whatever barriers there may be to pursuing that goal. Rather than with flaming swords or fiery words, we work in the field to find and remedy the threats that endanger our lakes and their watershed, using careful sampling and analytical techniques, so that the data are reliable and useful.

In closing, I invite you, if you value the mission of TLA, to please volunteer your time and energy to help with any of our ongoing projects. Just call us (231-544-7221), or email us (info@3lakes.com); or visit our website (www.3lakes.com). There is room for you, no matter what your skill level is.

Tina

The TLA Quarterly is published by the Three Lakes Association
Please direct comments or questions to:
231-544-7221
P.O. Box 689
Bellaire, MI 49615
info@3lakes.com

Golden Brown Algae Update:

Human Source Substances

In attempting to learn possible sources of the nutrients that are supporting the visually apparent increase in benthic golden brown algae in the lakes in this region, we have included measurements in the groundwater entering the lakes of certain substances that could only have come from human activity sources. These substances would get into the groundwater almost exclusively through effluent from septic systems. Finding evidence of these substances in groundwater entering the lake floor would support the hypothesis that septic effluent is reaching the locations where the GBA is flourishing. Samples collected in 2016 were assayed for caffeine, triclosan (an antimicrobial found in many cleaning agents), DEET (diethyltoluamide, mosquito repellent), and BTH (benzothiazole, which may leach from modern PVC household plumbing). In 2017 samples were assayed for BTH and Ace-K (acesulfame-potassium, an artificial sweetener found extensively in commercial foods). We also sampled for boron, a naturally occurring substance whose concentration in human wastewater would be expected to be increased over that found in nature due to its being added to cleaning agents.

Our laboratory results have just been reported and there is a lot of review needed before final conclusions can be stated. However, preliminary inspection of the data can be discussed. We found low levels of caffeine, triclosan, and BTH and moderate levels of boron and DEET in our 2016 groundwater samples. We found moderate levels of boron and Ace-K in our 2017 groundwater samples. These substances (with the exception of boron) are man-made and used by humans, not deer, ducks, or raccoons. And the boron levels in our groundwater samples are substantially higher than boron levels in groundwater undisturbed by human activity. These findings are consistent with the conclusion that in this region, where waste water is primarily disposed of through individual household septic systems, shallow groundwater layers that reach our lake floors are receiving substances that are delivered into the ground through septic system effluents.

Additional updates will follow as further analyses and interpretations of water and algae samples are completed. So, stay tuned.

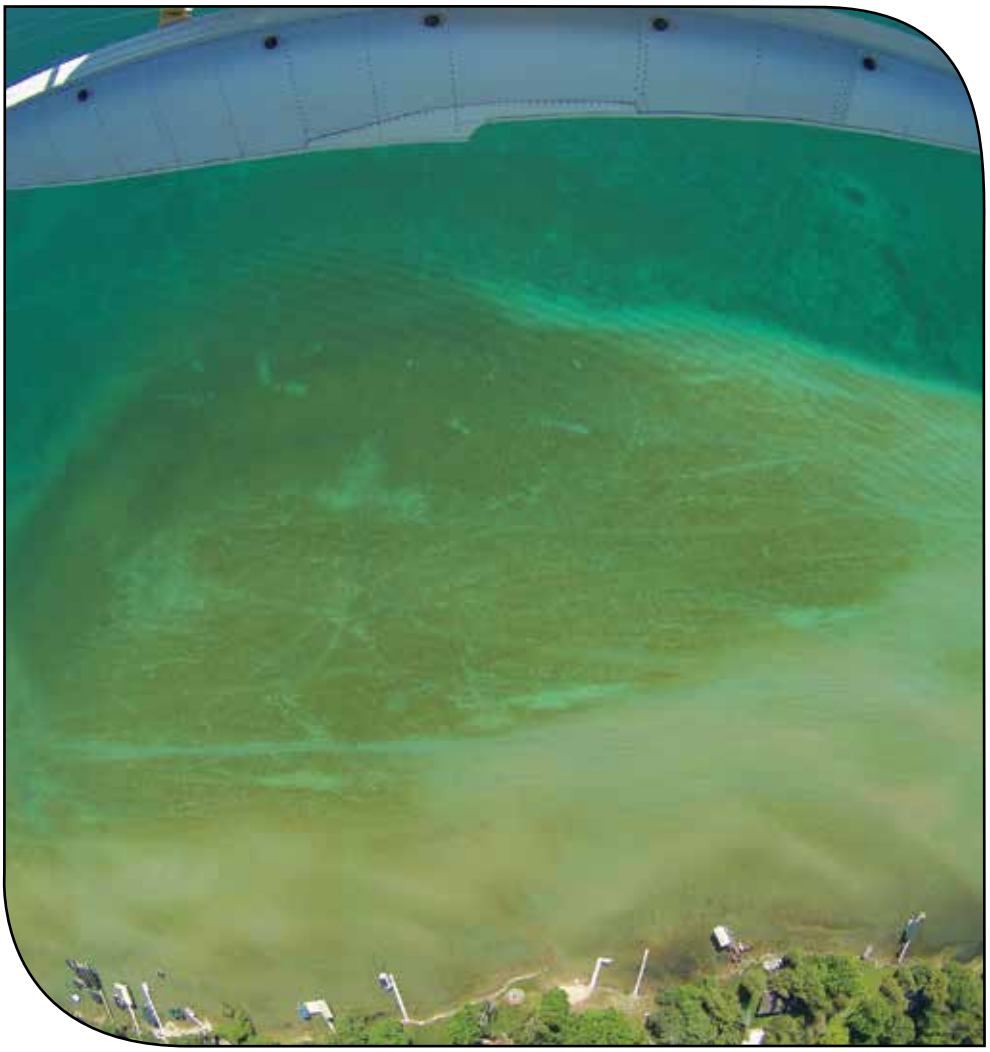
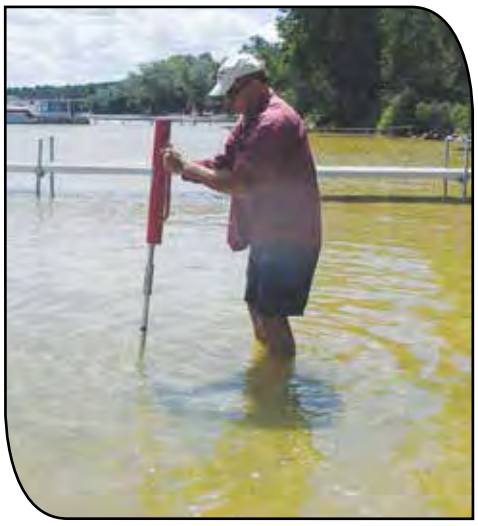


Photo Courtesy of Art Hoadley

Aerial of Torch Lake in 2017 shows a patch of GBA on a sandy shoal.



Andrew Narwold driving in a temporary piezometer to collect groundwater.

Science Education Outreach Program

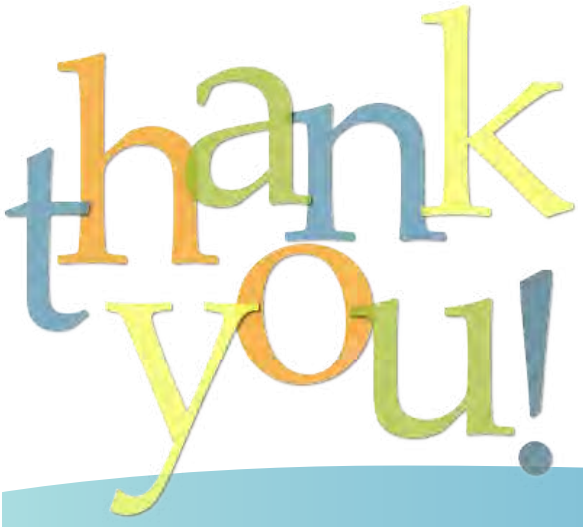
New Grant Application Window Open

The 2018-2019 SEOP Grant application window opened on January 15. Visit the 3lakes.com website to learn about the grant. All science teachers, K-12, in Bellaire, Central Lake, Kalkaska and Mancelona School Districts, are eligible to apply for materials, experiences or equipment that will enhance the science curriculum for your students.

This grant is in its 10th year and has enabled many teachers in the four districts that border Torch Lake, Central Lake and Lake Bellaire, to offer their students opportunities that the district science budget could not stretch to cover. Thousands of students have been touched by a field trip, a speaker, an experience, enabling materials or equipment over the years.

If you are a teacher of science (K-12) in one of these districts, you are invited to apply. Visit the Three Lakes Association website, 3lakes.com, locate Education Programs in the drop down menu and follow the links to background information on the SEOP grant and instructions for applying for the grant. The grant application window is from January 15, 2018 to April 11, 2018. Grant recipients will be announced by April 30, 2018, in time to arrange for implementation of the grant for the 2018-19 school year.

TLA invites you to take advantage of this opportunity to encourage a lifelong interest in science and environmental stewardship in your students.



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Over $250 recognition

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Rob & Linda Lanphier	$1,000
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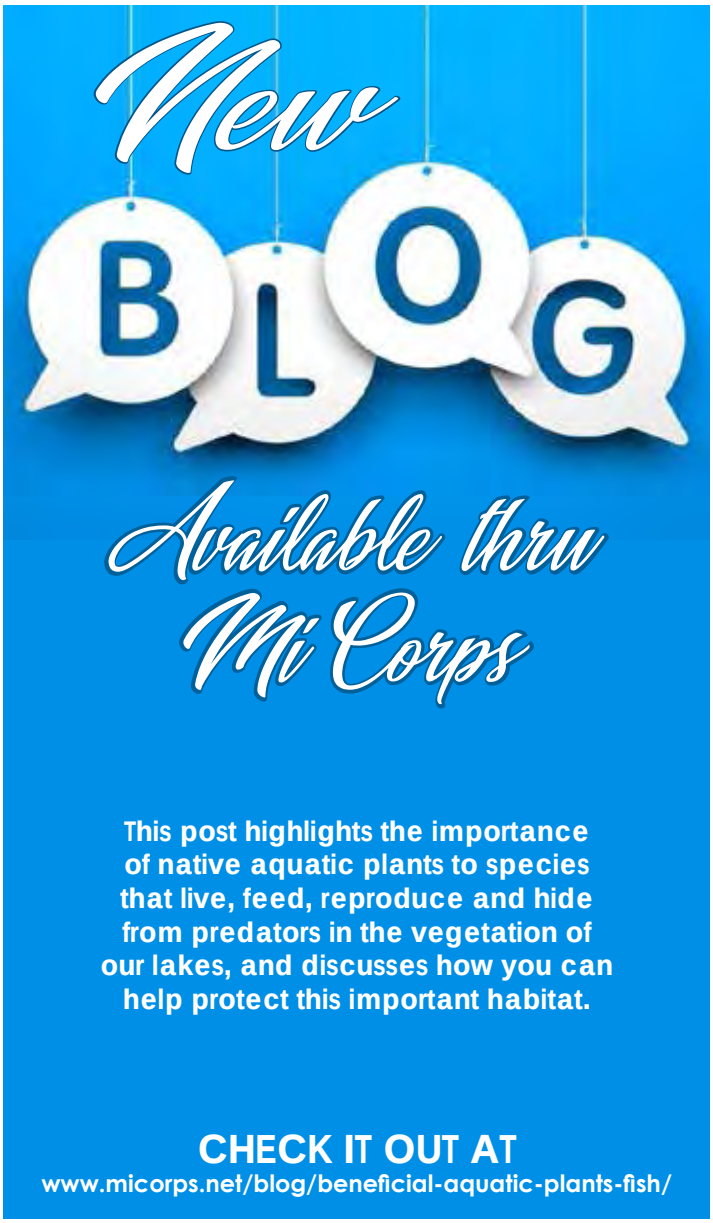
Land Applictions

Continued from page 1

Protection Agency. The biosolids are injected in furrows at least one foot deep to reduce odor, promote interaction with soil and to limit the potential for nutrients joining storm water runoff. The receiving soils are tested and the quantity to be applied is determined based on crop needs.

Land application is common practice in Michigan and elsewhere but that does not address all concerns. Every agricultural property is part of a watershed and every watershed is different. Wetlands rich in organic matter are able to take up large quantities of nutrients while sandy soils with elevated groundwater levels have less capacity. Storm water runoff, road side ditches, small creeks and road culverts may transport nutrients long distances. The agricultural fields selected to receive biosolids from the Bellaire sewage ponds are more than one mile from either Torch Lake, Lake Bellaire or Intermediate Lake, which should prevent excess nutrients from reaching those bodies of water. The Village of Bellaire has been talking with TLA about waste water treatment and other environmental issues since at least 2006 and shared the test results associated with this case of land application. According to Becky Norris, TLA Water Quality Chair, it provides an opportunity to do additional testing that would not normally be performed by the regulating agencies to make certain there is no movement of nutrients away from the areas of application. Baseline samples were collected from Grass Creek, a small tributary to Lake Bellaire, which flows near areas which received the biosolids. Grass Creek is likely to have greater flow during spring thaw and more sampling will be performed at that time. The results from these water quality tests may provide useful information to decision makers. What is learned could also help prioritize future water quality initiatives, including those aimed at residential septic systems.

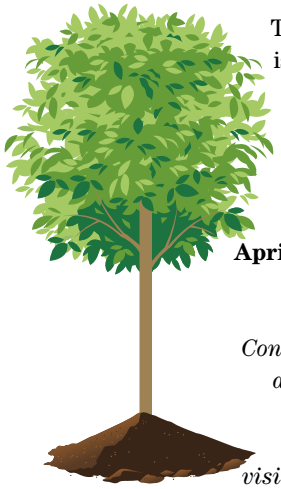


Swimmer's Itch

TLA is seeking to understand how much of a problem swimmer's itch is in our lake waters. We are asking all to participate in a brief survey which can be found either on our Facebook page or our website (www.3lakes.com). If you prefer to receive a paper copy of the survey, please call 231-599-2894 with the name and address to which we should send it. Your responses to the survey will help us determine the extent of resources TLA should plan to use on dealing with swimmer›s itch. Anyone who would like to have a personal contact concerning their experience with swimmer's itch may call 231-599-2894 and someone on the TLA water quality team will be happy to assist.

ANTRIM CONSERVATION DISTRICT

2018 Spring Tree Sale



The Antrim Conservation District is planning their Spring tree sale.

ORDERS DUE BY
Thursday, April 12th

ORDER PICK-UP
April 20th & 21st - Friday 9am- 5pm, Saturday 9 am - Noon

Conifers, Wildlife Trees, Wildlife Shrubs are available. Perfect for riparian shoreline areas. For more information and tree catalog, visit: www.antrimcd.com/tree-sale.html

Village Market Community Cash Program

VILLAGE MARKET FOOD CENTER
FINE MEATS · DELI · FRESH PRODUCE

Three Lakes Association is very excited to be participating in this year's Village Market Community Cash Program.

Village Market proudly serves the local communities of Elk Rapids, Rapid City, Alden, and Central Lake. In an effort to support local community programs, Village Market offers a unique Community Cash program that helps support local non-profits. This program runs from Labor Day until Memorial Day, and each group saves the receipts they collect from Village Market customers. Over 50 groups in the local area participate in the program. Village Market also awards the winner with the highest total dollar amount by giving them an additional cash bonus reward.

The Village Market also has gas stations in Elk Rapids and Rapid City where many customers can collect receipts they can put toward the program. When getting a receipt for gas, please ask the attendant to mark the receipt so that it can go toward the Community Cash program. For every receipt saved and turned back into Village Market, TLA will receive money back which will in turn go toward our overall mission. We are asking members, willing to participate, to save their receipts and send them to PO Box 689, Bellaire, MI 49615. If you have any questions, please contact Executive Director, Marina Friend at 231-342-5070.

MICHIGAN LAKE AND STREAM ASSOCIATIONS, INC.

Michigan Lake and Stream Associations, Inc. is a non-profit, primarily volunteer organization dedicated to preserving, protecting and effectively managing Michigan's vast treasure of inland lakes and streams as well as advocating for the protection of riparian property rights.

57th Annual Conference

Crystal Mountain Resort
Thompsonville, MI

Friday, April 20 & Saturday, April 21

CONFERENCE TOPICS

- Inland Lake Ecology 101
- The Role of Lake Associations in Promoting Lake Stewardship
- The Importance of Natural Shorelines
- The Economic Value of Michigan's Inland Lakes
- Managing Invasive Starry stonewort and phragmites seminar
- Swimmer's Itch Seminar
- Aquatic Plant Identification
- Riparian Rights and Water Law Update with ML&SA Attorney Clifford H. Bloom
- MiCorps Cooperative Lakes Monitoring Program Volunteer Training
- And many more topics of interest…

KEY NOTE SPEAKERS

- MI State Senator Rebekah Warren
- MDNR Parks and Recreation Chief Ron Olson
- Tip of the Mitt Watershed Policy Director Grenetta Thomassey
- Higgins Lake Foundation Chair Vicki Springstead

For information about commercial and non-profit exhibitor opportunities, contact Beth Cook, conference coordinator, at rcook@tricountyschools.com, or by calling 989-831-5100 Ext. 101.

Watershed Stewardship

Not everyone lives next to a river or a lake but we all live in a watershed, so our actions impact water resources. TLA members frequently ask, "What can we do to safeguard water quality and protect it for future generations?" To answer that question, this series in TLA Quarterly identifies best practices. Share these with friends and neighbors. If you have questions, please contact any TLA board member.

SERIES TOPIC #2: SEPTIC SYSTEM BEST PRACTICES

Proper operation & maintenance of septic systems plays an important role in preserving water quality in lakes and rivers. Observe the following to extend system life and maintain peak working condition.

- Know the location of tanks, pumps, control panels, piping and drain fields and become familiar with their function.
- Consider installing tank risers and lids for convenient access and inspect your system regularly.
- Clean any outlet filters annually and have sludge levels checked to determine if pumping is required.
- Be aware of what goes into the system. Grease, lint, garbage disposals and non-biodegradable items clog distribution pipes. Strong chemicals, drain cleaners, bleach and pharmaceuticals interfere with system biology.
- Don't drive over, park on, or plant trees near drain fields.
- Use laundry and dishwashing detergents that do not contain phosphorus.
- Consider offsetting use of a garbage disposal by composting items like egg shells, coffee grounds and potato skins away from the lakeshore for beneficial use in garden soil.

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The mission of the Association is to provide leadership to preserve, protect, and improve the environmental quality of the Elk River Chain of Lakes Watershed for all generations with emphasis on Lake Bellaire, Clam Lake, Torch Lake and their tributaries.

Membership counts

NAME: _____

SUMMER POSTAL ADDRESS: (Street, P.O. Box) _____

_____

TOWNSHIP: _____ TOWN: _____ ZIP: _____

SUMMER PHONE: _____

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CITY: _____ STATE: _____ ZIP: _____

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May we include your name in our newsletter donor list? ❑ Yes ❑ No

❑ **DONOR $100** ❑ **STEWARD $500**

❑ **BENEFACTOR $1,000** ❑ **LIFE $2,000**

❑ **BASIC $60**

❑ **Michigan Riparian Magazine Subscription add $15**

TOTAL AMOUNT ENCLOSED:

$_____

To join Three Lakes Association,
please visit our website 3lakes.com or return this form with your check to:
THREE LAKES ASSOCIATION, P.O. Box 689, Bellaire, MI 49615

Are you interested in volunteering in any of the following areas?

- ❑ *Water Quality*
- ❑ *HS Intern Program*
- ❑ *Water Safety*
- ❑ *Education*
- ❑ *Invasive Species*
- ❑ *Membership*
- ❑ *Finance*
- ❑ *Public Relations*
- ❑ *Service*
- ❑ *Other*

Three Lakes Association is a 501(c) (3) corporation. Your dues and other contributions are tax deductible. Call for further information.