



FALL 2020

THE LAKE GUARDIAN

Photo Credit: Gary Osterbeck

An Obvious Problem with No Simple Solution

Joel Van Roekel

Lake Charlevoix the Beautiful is still beautiful, but right now, it is a bit ragged around the edges. Depending what shore you're standing on, you might say it's jagged, craggy, scalloped, or simply... missing. Record levels of water on our high-energy lake has caused loss or damage to beaches, greenbelts, shrubs and trees, and in some cases, docks and structures. It is hard to believe that a mere seven years ago, people were equally concerned that our water was at a record low and disappearing at an alarming rate.

Given the attention, effort, and expense that many property owners have put into their shorelines, it is not surprising to see major protection and restoration projects underway all around the lake. The response to shoreline degradation has been swift and of consequence. Hundreds of permit applications have been submitted to the townships, EGLE, and the Army Corps of Engineers. One popular solution for defending property from erosive wave action appears to be the placement of "riprap" or rock

revetments along the water's edge. These were originally designed to mimic natural shoreline areas where rock and gravel deposits had formed stable, gentle slopes. The goal of riprap is to "armor" a slope or shoreline and protect it from scouring by waves and currents.

Rock revetments (riprap) are an approach that has withstood the test of time. They are durable and can be installed along a variety of shoreline conditions. However, revetments have potentially serious drawbacks if they are not correctly engineered. If they are not appropriately designed and properly installed, revetments can alter the character of a shoreline, intensify erosion, and negatively affect adjoining properties. In order to offer some guidance to our readers, we contacted Jason Brabbs, a certified natural shoreline designer, who is the lead designer for North By Nature, a local landscaping firm.

When asked about his thoughts on rock revetments, he stepped back to talk about a broader view. He emphasized that shorelines are like people, they are complex, they are dynamic, and they change. "Understanding the shoreline is the key to success. Simply hardening a shoreline so that it can't move will not allow it to rebuild itself over time." To better understand a specific shoreline, Brabbs assesses the water conditions along the shore in terms of how much wave energy there is.

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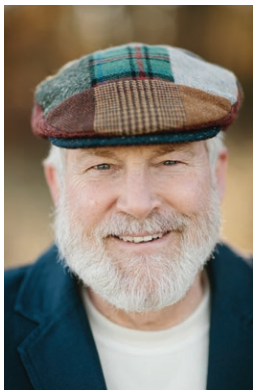
An installation where uniform rock size and lack of attention to the end of the revetment actually accelerated erosion.



A successful revetment design that utilized stones of varying sizes, a slope that began beneath the water's surface, and incorporated appropriate plant material to increase resistance to wave energy.

Photo Credit: Julie Stratton

President's Corner



Even in the midst of a global pandemic, political and social unrest and high water, I am thankful for the opportunity to serve our Association as President. I look forward to having the assistance of a very able board as we carry forward the mission of our Lake Charlevoix Association, which is to protect the natural quality and beauty of Lake Charlevoix, to promote understanding and support for safe, shared use and to advocate sensible and sustainable practices for lake use and development. I have deep love for the lake we share and equal concern

for its future as we know it. My two goals are to work smarter as an organization and to increase the active participation of our members in pursuit of our mission.

Asked to report to the Tip of the Mitt Watershed Council Board in October on our Association's recent activity, my first thought was "Hardly anything, other than learning how to use Zoom to hold meetings." However, reviewing our minutes, I realized we had actually gotten quite a bit done, even while our major activities were postponed.

In early March, your board identified three areas of focus, science, membership and organizational capacity. Our Environmental Committee assisted individual members pursue concerns in their neighborhood and carried on our Boyne City Demonstration Gardens as an experiment in dealing with high water. The Membership Committee has been reorganized. Our Communications Committee has published two excellent newsletters. We have a presence on social media. We renamed and restructured our Finance and Management Committee.

At its core, our organization's ability to protect and preserve Lake Charlevoix depends on you, the members who support and do the work of the organization. If you haven't already done so, please renew your membership or increase your level of support. As important, tell us how you would like to become involved in our work. What would you like to do? Email us at info@lakecharlevoix.org and tell us how you would like to help. We'll get you connected with others so inclined and find a way to get you started with good support from the organization.

Most importantly, take good care of yourself and those around you during the difficult days ahead. We want you to be here with us to carry forward our important work when the sunrise once again happens early in the day.

Tom Darnton, LCA President

Mission:

Protect the natural quality and beauty of Lake Charlevoix.
Promote understanding and support for safe and shared lake use.
Advocate sensible and sustainable practices for lake use and development.

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www.lakecharlevoix.org

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A Special Thank You to Our Members!

Joe Kimmell

The summer of 2020 has proven especially challenging to your Lake Charlevoix Association. A number of our programs were halted due to the Corona virus pandemic. This also crippled our ability to hold planned fundraising events which help support our mission. Nevertheless, the support from our members has remained strong. Your continued commitment will provide LCA with the ability to resume our current and planned programs to protect your Lake Charlevoix as soon as possible.

Membership income represents over 75% of the financial support for LCA's mission, and we want to send a special "Thank You" to all of our members who have renewed or joined this year. If you have not yet renewed, please consider doing so soon. With your ongoing support, LCA will have the resources needed to address the risks that continue to threaten our very special watershed. It truly is, now more than ever, "Yours To Protect".



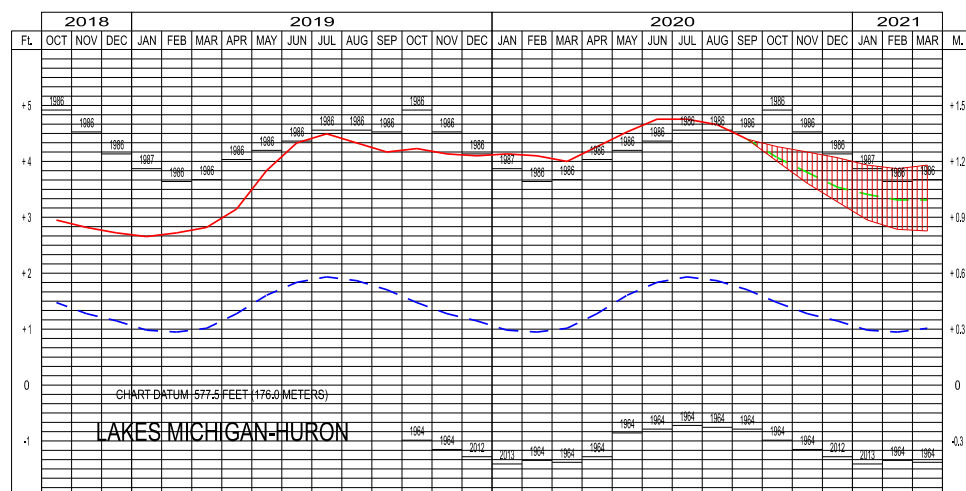
Photo Credit: Julie Stratton

What Goes Up, Must...

Mike Dow

Here we go again. Yes, our water levels do fall in the fall. Just maybe we can wish them lower, faster, further this winter of 2020. But don't count on it.

LAKES MICHIGAN-HURON WATER LEVELS - OCTOBER 2020



Water levels for all the Great Lakes declined from August to September. The October forecast levels for Lake Michigan-Huron is an additional 2-4 inches below what they were last month. Even so, forecasted levels continue to be significantly above long-term averages. Looking forward a month, the November 9th projected level for Lake Michigan-Huron, is predicted to be 3 to 5 inches lower than the October 9th level.

The projections made by the Corps of Engineers for Lakes Michigan and Huron do indicate a bigger winter drop this year than last, and that is good news. The predictions for our 2021 mid-winter water levels range from little change up to a one foot decrease. Considering that a one foot decrease is only a veritable drop in the bucket, our Lake Charlevoix winter water levels will still be high, but perhaps not quite as high as 2020.

Next year's summer water levels are not predicted this far in advance, however it's a good bet that high water levels are here for at least another year.

Graph Credit: Army Corps of Engineers

High Water and Your Septic System

John Hoffman

As we all are aware, the Great Lakes watershed has experienced an extremely high amount of precipitation over the past several years. This has resulted in record high water levels in Lake Michigan and therefore in Lake Charlevoix. Lakefront owners have suffered shoreline erosion, submerged docks, and problems with other shoreline structures. Adding to these problems, high water levels have caused groundwater tables around Lake Charlevoix to rise.

The groundwater table is the level where the soil and gravel layer underneath are completely saturated with water. This is the point where you hit water if you dig a hole on your property. There is a close relationship between the lake

level and the near-shore groundwater table. The higher the lake level, the closer the water table is to the surface of the ground. The illustration below illustrates this relationship.

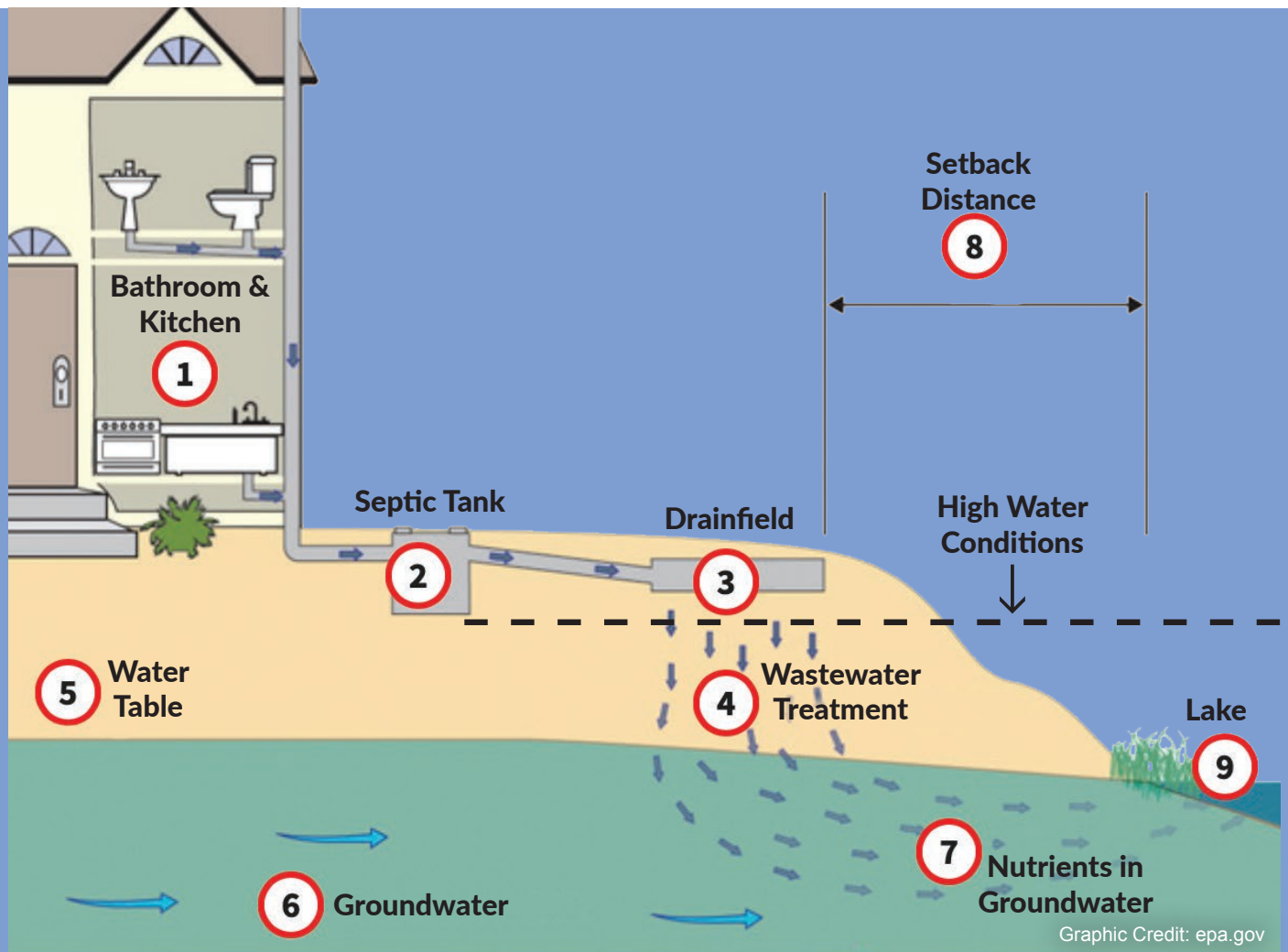
In a residential septic system, wastewater from the house flows into the septic tank where solid material settles out. The wastewater then flows to the drain field where a system of perforated pipes and gravel trenches disperse the wastewater over a large area. As the wastewater flows downward, the soil filters, absorbs, and purifies the wastewater before it reaches the water table and ultimately the lake.

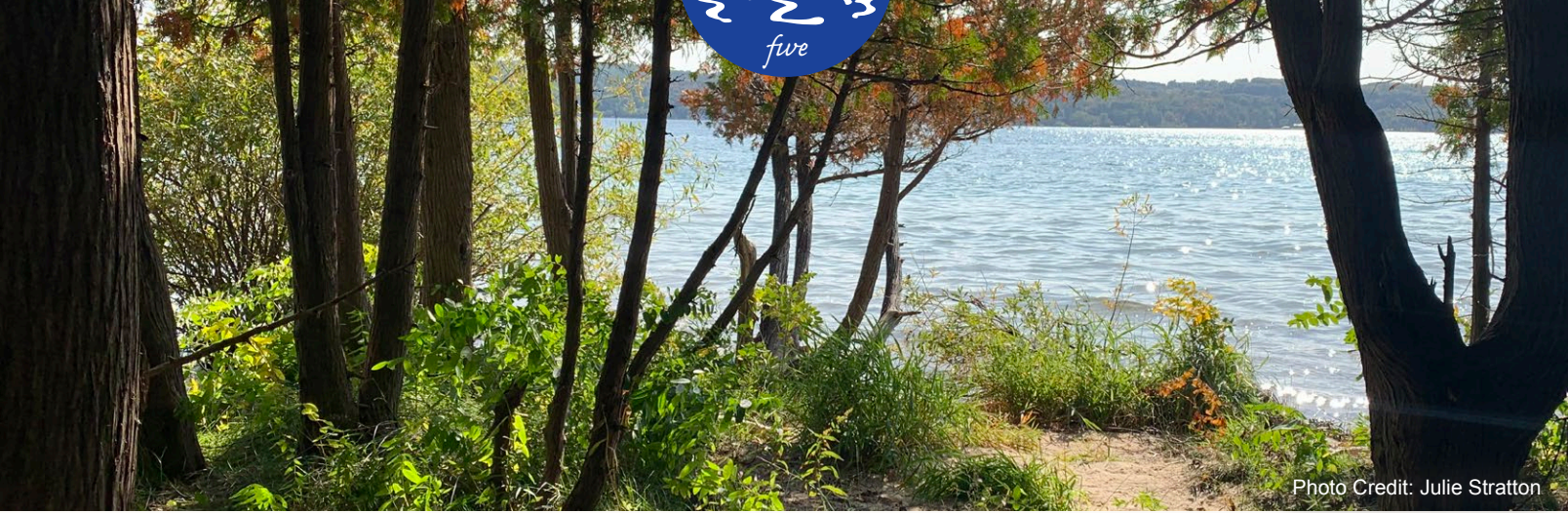
As shown in the illustration, as the lake level rises, so does the groundwater table. This reduces the distance the water flows through the layer of filtering and purifying soil. This saturated layer is not sufficient to remove the pathogens and nutrients from the wastewater.

If the groundwater table rises too much, the entire drain field could be flooded, especially during heavy precipitation events. This results in untreated household sewage flowing into the lake. This situation is particularly likely when the drain field is located in low lying areas and/or located in close proximity to the shoreline.

How do I know that my drain field is failing? Wet areas, foul odors, and lush vegetation around the drain field indicate the presence of untreated or partially treated wastewater. Other warning signs include sinks or toilets backing up and algae such as Cladophora growing along the shoreline.

So what should I do if I suspect my septic system is malfunctioning? Promptly call the Health Department of Northwest Michigan located in Charlevoix (231) 547-6523 for advice and referrals to septic system professionals.





The State of the Lake

Dan Mishler

Here is a table highlighting a few important issues in the ordinances by township.

Township	Fertilizer Prohibited	Native Plants Required	Lawn Prohibited	Depth of Protected Greenbelt from High Water
Bay	No	Yes	No	45
Charlevoix	No	Yes	Yes	50
Evangeline	Yes	Yes	Yes	25-50 (varies)
Eveline	Yes	Yes	Yes	50
Hayes	Yes	Yes	No	50
Marion	No	No	No	50
South Arm	No	No	⅔ must be trees & shrubs	50

What a year 2020 has been. At LCA we started our planning for the year around the phrase Vision 2020. Well, needless to say we didn't envision how it turned out. Among the crazy events of 2020, high water was the major issue on the lake. With the high water came many owner actions designed to reduce erosion. As many of those actions may have altered the greenbelt protective area, it seems a good time to remind people of the township rules for greenbelts, so that perhaps people will consider adding native, lake protecting plants behind these new structures and bringing their greenbelt up to "code". In some townships it may be required.

All of these restrictions are put in place to protect this lake we all love. We ask that everyone do their best to follow the rules to help keep it beautiful.

Of special note is that fertilizer use is prohibited within 50 feet above the high water in several townships. As you surely know this is of

extreme importance for keeping unwanted plant and algae growth out of our lake. Phosphorous is of special concern, as in lakes phosphorous is usually the one ingredient missing for excessive plant growth. All other required nutrients are often naturally present (though sometimes nitrogen is in short supply too). Add just a pinch of phosphorous and a large bloom can occur. **If you must fertilize, please make sure not to use any fertilizer unless the middle number is zero.**

In some townships, when any alteration occurs in the greenbelt, the greenbelt must be reestablished with native plants. Lawn is prohibited within the greenbelt in some townships.

It would be nice if the townships had more consistency, but for now there are varying degrees of commitment to lake protection between the townships. All of these restrictions are put in place to protect this lake we all love. We ask that everyone do their best to follow the rules to help keep it beautiful.

Educating Our Next Generation Of Watershed Guardians

An Interview with Eli Baker,
Water Resources Education Coordinator for Tip of the Mitt Watershed Council

Protecting the natural quality and beauty of Lake Charlevoix has been one of the driving forces behind the work of the Lake Charlevoix Association for more than half a century. In order to reach out to users of all ages, the LCA has supported county-wide youth education programs for more than two decades. Eli Baker, Water Resources Education Coordinator for Tip of the Mitt Watershed Council, (TOMWC), gives us an update on his environmental education programs in a COVID-19 school year.

LCA: What drives the TOMWC programs for school age children in these difficult times?

EB: While COVID-19 has changed many aspects of our lives, one thing that has not changed is our role in protecting the watersheds we live in and the bodies of water that we love.

LCA: What environmental education programs were operating before the shutdown?

EB: The Watershed Academy stream-monitoring program was active in 13 high schools from Bellaire to Mackinaw City. The Water Resources Education Program (WREP) is a middle school program that builds a foundation focusing on local water resources and culminates in a student-led action project. Around 250 students were being served by these programs.



Photo Credit: Joel Van Roekel

Students use a guide to identify and log the different organisms they collected.

LCA: How have your programs been affected by school shutdowns and altered schedules?

EB: Many schools are not able to participate in the normal program due to safety guidelines but five schools are monitoring their streams in the fall of 2020. Watershed Council staff are monitoring the streams where students are unable to do so. Unfortunately, the WREP program has been suspended until the 2021-2022 school year.



Photo Credit: Joel Van Roekel

Students from East Jordan are monitoring the health of a watershed by collecting data on the diversity of organisms that live in a nearby creek.

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LCA: What role is technology and distance learning playing in your current programs?

EB: For the participating teams that are unable to hold on-site meetings, we are connecting with them online and through video conferencing.

LCA: Which school districts are allowing you to hold on-site meetings?

EB: We are working with Bellaire High School in the field, and Alanson, Pellston, Mackinaw City, and Harbor Springs in the classroom as well as in the field.

LCA: How have your lessons changed due to Covid-19 guidelines?

EB: Obviously, we have to wear masks for all of our programs. We have had to limit the amount of hands-on activity in order to minimize multiple students handling the same materials and we sanitize all materials between programs. For the field-only programs, we still require masks and are careful about social distancing and sanitize any equipment that is used.

LCA: What are your hopes and plans for spring activities?

EB: We plan to continue working with the schools in our area to implement water resource programs and are hopeful that we will be able to resume our long standing programs like Watershed Academy, Water Resources Education Program, and Students Experience Lake Charlevoix.

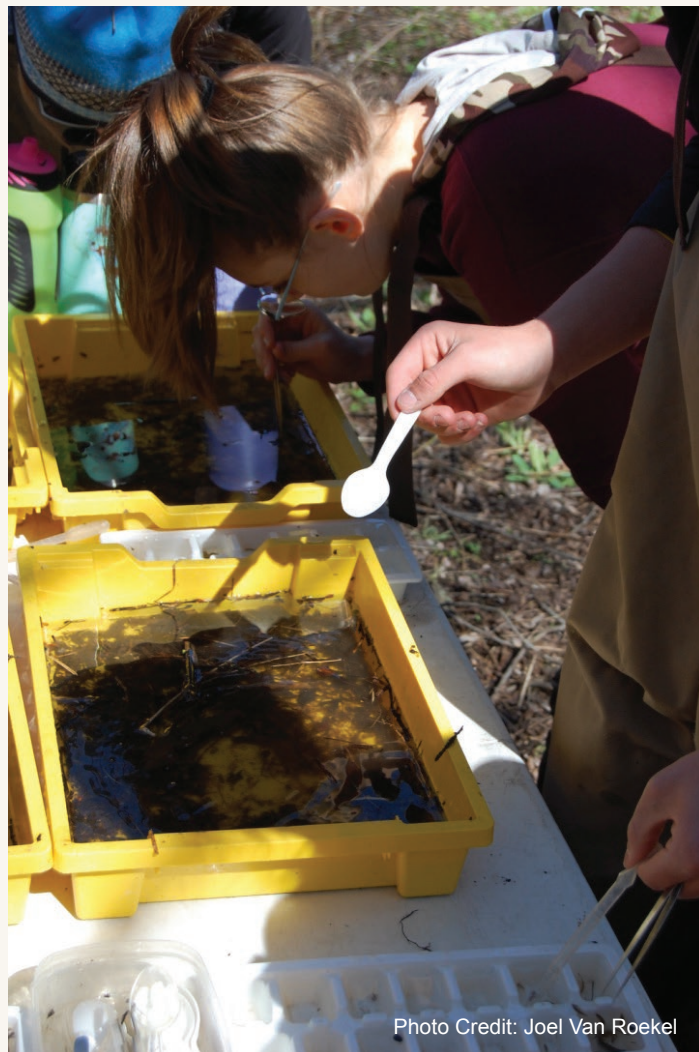


Photo Credit: Joel Van Roekel

Students sorting through their sample for living organisms.

Continuation from page 1

He then conducts a comprehensive site analysis to determine the soil composition and variability, the level of granularity, the geology of the area, the hydrology impacting the property, the slope of the shore and shallows, plant life and near-shore habitat, and how the property is used.

He then advises the property owner as to the appropriate options, which may range from doing nothing to a major restoration project that not only involves rock, but incorporates native plants and shrubs. Over time, these living materials will add a second layer of protection to the shoreline.

His philosophy is that form and function are inseparable. How the various materials are arranged, layered, and combined will affect both appearance and functionality of the natural shoreline.

While there are a number of talented and competent (and certified) shoreline designers in our area, there are several excellent resources available online to shoreline property owners. Tip of the Mitt Watershed Council's publication, *Understanding, Living with, and*

Controlling Shoreline Erosion is a 100 page resource that provides information on understanding, assessing, and preventing shoreline erosion. It is available as a download on their website, www.watershedcouncil.org. The Michigan Natural Shoreline Partnership (www.mishorelinepartnership.org) website contains a bounty of information on the fundamentals of natural shoreline protection, sources for rating your property, options for remediation, types of plants, and a list of approved contractors.

There is no simple solution to our high water problems. The relationship between the lake and the shoreline is complex, dynamic, and unique to each site. The good news is that there are excellent resources and talented professionals who can help property owners make responsible and lake-healthy decisions.

Author's note: While the focus of this article is on rock revetments in Lake Charlevoix, it is important to recognize that where possible, bioengineered shorelines are a far more preferable approach to erosion control in terms of lake health. The websites noted above are excellent sources for information on bioengineered shorelines.



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In Memory of John & Evelyn Auffant
By John & Diane Coolman

In Memory of Brian & Lynne Coughlin
By Michael E Coughlin

In Memory of Keith Sparrow
By Suzanne Smitley

In Memory of Scott T. Smith
By Matt & Susan Kipp

In Memory of Pat Wulff
By Barbara Wulff

KEEPING OUR CITIES BEAUTIFUL

Peggy Smith

It has been a gorgeous, colorful fall in the Lake Charlevoix Watershed. Alongside the benefits that all that natural beauty brings to Boyne City, Charlevoix, and East Jordan is a "cost." It's the price we must pay for clean up after our annual fall color tour party. Once that leafy beauty is past it's prime, it becomes yard waste. This waste can end up in our streets and then float toward the storm drains in each of our lovely cities. Once in the storm drain system, those decomposing leaves clog the system, impede water flow, and affect what eventually enters the lake. Please consider mulching your leaves and



grass clippings back into your yard. Blow any errant leaves out of the street and into your lawn. Each of our cities provide specific information on their pickup schedules and composting sites. Let's work together to keep our storm drains clear.



NEWS BITES...

With Much Appreciation: We applaud retiring LCA Board Members Mike Dow, Sherry Pursel and Larry Levenoood and sincerely appreciate your hard work and efforts year over year. Thank you for your many wonderful years of dedication to our organization!

Thank you: Many thanks to our LCA Members and Volunteers! It is through you that we are able to protect our beautiful Lake Charlevoix.

Membership Year: Please remember the LCA Membership year runs from June 1-May 31. Membership contributions made in December will be applied to the current year in which they are made and cannot be applied to the next membership year.

Year End Donations: The LCA always appreciates being included in your year end giving plans. We are a 501c3 and your additional tax-deductible donation will directly help our lake protection programs.

Think Spring! Please consider joining us this spring as an LCA volunteer on the Beaver Island Boat for the annual 'Students Experience Lake Charlevoix' learning program. If interested, please contact us at info@lakecharlevoix.org

LCA LICENSE PLATES

Would you like an LCA license plate for the front of your vehicle?

If so, please contact us at info@lakecharlevoix.org. The cost is \$10 for local pick up or \$15 to mail. Thank you

