



# ***LITTLE RIVER NEWS***

FALL/WINTER 2019

## **WISHING A JOYOUS HOLIDAY SEASON TO ALL**

### **Presidents Annual Review 2019**

This past year was a really challenging one as the wet weather and high waters in the river kept us from being able to complete several projects. For a brief period in August it let up enough to make it possible to work the Syers Dam removal project. It took almost a month and a half to de-water the pond and remove the deteriorated earthen berm then replace it with a culvert. Several delays were caused by the continuous wet weather however the contractor pushed through it all and did a wonderful job of helping restore the creek to its natural and consistent flow rate. The annual macro-invertebrate study was delayed and a second one completed later in the year because of the high flow rates limiting access in the river during the first one. Overall the results were very satisfactory indicating once again a healthy “bug” population that helps support a healthy fish population.

Our work on continued erosion remediation projects has been on hold as the high water makes “in-stream” and bank restoration ineffective as the type of structures cannot be properly installed until water levels are normal to low. Don’t ask me, I do not know the engineering aspects of it all; but have been assured that’s the way it has to be in order to get it done right.

We are planning on completing several delayed and now three or four additional sites this coming year. When we complete these sites we will have completed work on all the major and moderate sites we have been able to get permission from the land owners to do. A total of some 32 sites will have been completed just over a four year period.

Also we have contracted for CRA to conduct a second erosion survey in the spring as it has been over six years since the last one and with this past year’s historic massive rainfall and flooding we anticipate there will be several more sites needing attention. The work never stops; but we all do what we can to help keep the river healthy. (cont. page# 2)

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Another area where we have had success is that we now have completed our Watershed Management Plan and are submitting it to the state and federal governments for formal approval. By enacting the WMP we feel we can be more competitive in securing grants that will fund a more diversified array of projects that will support protecting and preserving the river. We are currently pursuing a major FGHP state grant that will allow us to rework a major section on the river that due to several factors has resulted in loss of proper habitat that supports in turn a healthy and flourishing fish population. Finally, we have proceeded with an educational effort to better explain the state Natural Rivers Program and the possibility of the DNR pursuing such a designation for the Little Manistee. We are currently taking a survey of people and organizations who have in the past shown interest in what the LMWCC does. The results will be given to the director of the program indicating what level of agreement there is in support or not of the DNR pursuing the designation. It would then be up to the state to proceed or not as they wish.

Well that is about it in a short form; once again the Board of Trustees of the LMWCC could not accomplish any of the varied things we do without the help of our membership both financially and through volunteer efforts. We are all in the same place in supporting our goals of preserving, protecting and enjoying our precious resource The Little Manistee River. Please feel free to contact any board member or look us up on our web-site — [www.lmwcc.org](http://www.lmwcc.org) —or on Facebook as well. Get involved, you'll like it!!



— Tim Phillips, President LMWCC



## LMWCC PARTNERS WITH THE MICHIGAN GRAYLING INITIATIVE

The Department of Natural Resources, in partnership with the Little River Band of Ottawa Indians, announced a proposed initiative in June 2016 that aims to bring back an extirpated species to the state – Arctic grayling. The Michigan Arctic Grayling Initiative seeks to establish self-sustaining populations of this species throughout its historical range in Michigan. The initiative has more than 45 partners collaborating on the reintroduction. The next steps include identifying interest and abilities of partners, collecting baseline data, initiating the building of brood stock and stocking efforts. The Upper Manistee River watershed, once known as a premier grayling river, will be one of the first locations for reintroduction. The DNR will work closely with partners as the proposed Michigan Arctic Grayling Initiative moves forward. The Little River Band, located in Manistee County, along with Michigan State University have been engaged in extensive research for potential grayling reintroduction for several years.

**PLEASE VISIT [grayling.org](http://grayling.org) TO FIND OUT MORE ABOUT THIS EXCITING INITIATIVE!**

## WATERSHED MANAGEMENT PLAN STATUS UPDATE

The Watershed Management Plan document was submitted for its first review by Michigan EGLE on August 19. Recent conversations indicate the document will not be reviewed until December. We are next in line, but the plan ahead of us is still being reviewed. Michigan's rearrangement of state departments, the summer workload and reduced staffing of state departments has slowed things down. We hope to have our plan approved by the March 6, 2020 meeting. (cont. page# 3)

**WATERSHED MANAGEMENT PLAN****(continued from page #2)**

In the mean time we have been advised by EGLE to proceed as if the plan were approved.

We held a Steering Committee Meeting on August 1 where we reviewed and updated tasks for task list categories:

H	Hydrology, Groundwater and Wetlands
I	Water Quality Monitoring
L	Information and Education

The updated spreadsheet is on the LMWCC web site under Watershed Management Plan. As we were preparing to mail the postcards to membership for the vote on supporting the designation of the Little Manistee as a Natural River we became aware of new laws in Michigan that govern how 501c3's like the LMWCC manage the voting process and count the votes. We have stopped the voting process. We are investigating the law further so we understand clearly how to best determine the wishes of our membership in a legal, fair and honest manner. We will review the matter at our December meeting.

We have been meeting with the NFS, DEQ and Trout Unlimited to implement some monitoring stations on the Little Manistee River. The goal is to document base line conditions for the Little Manistee River so we can detect changing conditions if they occur and have reliable data to support taking corrective action.

We plan to monitor water Temperature, Depth, Conductivity and Turbidity. Temperature lets us monitor a critical parameter on our cold-water stream. Depth of the water lets us calculate flow rate. Conductivity is an indicator of pollutants dissolved in the water. Turbidity measures the clarity of the water and indicates suspended solids.

Standard GIS stations on rivers are installed and managed by federal employees and cost at least \$10,000 to install and \$17,000 a year in maintenance fees. Obviously, these are beyond our reach without some wholly unexpected funding. Trout Unlimited and Stroud have been working to develop and implement inexpensive monitoring stations supported by "citizen scientists". They use inexpensive computer hardware developed for educational and amateur electronic projects connected to high quality

sensors to gather data and upload it in real time via radio or cell signal to the internet.

Volunteers from our group would install, monitor and maintain the units.

We are planning for two units initially. Ultimately, we see needing six to monitor the full river corridor. We also plan to add some ground water monitoring capabilities since that is such an important component with the Little Manistee River being up to 90% ground water fed. Cost for a unit that measures all 4 parameters built and installed by Stroud costs \$4,000 with little maintenance costs. If we eliminate the turbidity sensor and build and install them ourselves they are about \$1,500 a station.

The monitoring stations were developed in Pennsylvania and a few have been implemented on rivers near us and overseas. You can see details of the monitoring stations at:  
<https://www.envirodiy.org/mayfly/> and examples of data collected at:

<http://monitormywatershed.org/browse/>. We are working with Trout Unlimited to apply for a grant from the NFS Research Division to purchase the monitoring stations. If you are interested in volunteering for installing/monitoring/maintaining a monitoring station please email [littlemanwsassy@gmail.com](mailto:littlemanwsassy@gmail.com).

We are also teaming up with the Big Sauble River/Hamlin Lake watershed group to create an educational document for landowners along a cold water stream. We want a simple, concise document we can hand out to real estate agents, landowners and the general public so people understand stewardship issues along a cold-water stream. We have searched extensively for an existing document, but it does not appear to exist. The best example we have found is A Homeowners Guide to Watershed Protection for Little Traverse Bay  
[https://www.watershedcouncil.org/uploads/7/2/5/1/7251350/lid\\_brochure-finalweb.pdf](https://www.watershedcouncil.org/uploads/7/2/5/1/7251350/lid_brochure-finalweb.pdf).

The next meeting of the Little Manistee River Watershed Steering Committee will be held on March 6 from 1 to 4 PM at the Elk Township Hall. We hope to see you there.

## 2019 Water Quality Survey

The following charts depict the results of the survey conducted by Joyce Durdel and her group of volunteers. The results of both programs provide an accurate assessment of the health of the watershed. A healthy and diverse population of macroinvertebrate species is dependent on suitable habitat and clean, oxygen-rich water. Water quality monitoring is an important on-going project of the LMWCC. Regular monitoring helps us to determine the overall health of the Little Manistee River. Trained volunteers collect the samples and transport them to the Great Lakes Water Quality Laboratory at Lake Ann, MI. A brief explanation of the tests performed and what they mean is outlined below.

**E. coli** - is a fecal coliform, and a biological contaminant that can be found in streams and lakes. It is a bacteria that colonizes the intestines of warm-blooded animals and humans. High counts over 300 colonies per 100 ml of water is of concern to people who spend time recreating in lakes or rivers as possible disease-causing organisms that exist in conjunction with *E. coli*, and some strains of *E. coli* can cause illness with full-body immersion in, and possible ingestion of, contaminated water. Slightly higher counts are acceptable in partial-immersion areas such as where people just wade or have body exposure for very brief periods. High *E. coli* counts can also adversely affect dissolved oxygen levels, see BOD below. The following chemicals/compounds, in excess, contribute to eutrophication, the excessive richness of nutrients in a lake or other body of water, frequently due to runoff from the land, which causes a dense growth of plant life and possible death of animal life from the lack of oxygen. High quantities of nutrients (sources such as agricultural run-off, raw sewage, products high in phosphates, i.e. fertilizers and cleaning products) create explosive growth in aquatic plants, exceeding the BOD -- biological oxygen demand -- the amount of oxygen required to decompose organic material. Increasing the abundance of nutrients in the water leads to an increase in the demand for oxygen to decompose the organic material. A BOD that exceeds the available oxygen produces dangerous levels of carbon dioxide.

**Ammonia** - A source of nitrogen that is quickly assimilated in moving water, but can act as a fertilizer. **Nitrate/Nitrites** - Like ammonia, most forms of aquatic nitrogen break down in moving water and nitrogen is released into the atmosphere but can also act as a fertilizer.

**Phosphates** - Indispensable for plant growth - insufficiencies limit biological productivity. In high concentrations can lead to the rupture of blood vessels in aquatic organisms as well as oxygen depletion in the water chemistry - see BOD above. Less than 1.0 mg/L is considered acceptable for treated waters flowing into bodies of water from water treatment facilities.

**pH** - Water with a pH value of 7.0 is considered neutral. Any pH value under 7.0 is acidic while any pH value over 7.0 is considered alkaline/basic. Slightly alkaline waters of around 7.5, support trout reproduction, survival, and growth the best. Values between 6.5 and 8.0 supports life in most aquatic organisms.

**Chloride** - In less populated areas, chloride in streams and lakes may become elevated due to run-off from roads and ditches along roadsides where salt is used as a de-icer in the winter. Agricultural run-off may also contribute to chloride elevation due to salt and salt compounds used for farming practices. In urban areas, water softeners and waste water discharge affect the amount of chloride detected. Levels above 10 mg/L are reason to suspect contamination. Salt is damaging to the environment of fresh water plants and animals and contributes to the effects of pollution and degradation of fresh water systems.

**Dissolved Oxygen** - The solubility of oxygen at sea-level and air-pressure of 760mm or 29.92 in, and equivalent to 29.38 in. at 500' above sea-level. A minimum of 4 ppm of dissolved oxygen is necessary for a viable aquatic ecosystem. Fish thrive best in well oxygenated water at 7.0 - 9.0 ppm. An adult brown trout thrives in water carrying levels of 9 - 12 ppm DO.



If you look closely at the charts on the following pages, it is very evident that our monitoring continues to show a very healthy river.

### Little Manistee Water Quality Report - July 8, 2019

GLWQL Site ID #	LMWCC Site #	Collection Location	Total Coliform Colonies / 100 mL	E. coli Col/100 mL	Nitrate mg/L	Nitrite mg/L	Sodium	Potassium	Chloride mg/L	Ammonia mg/L	Dissolved Oxygen mg/L	pH in pH units	Phosphorus (T) mg/L	Air Temp. ° F	Water Temp. ° F	Time 24 hr.
		Detection Limits >	0	0	<1	0.05			<10	<0.10	1.00	1.00	0.01			
190708009	1	L.M. Below Luther Dam	>2419.6	57.3	NP	NP	4	0.8	<10	<0.10	7.4	7.3	0.05	59.0	60.0	8:25
190708010	2	L.M. Above Fairbanks Creek	>2419.6	155.3	NP	NP	3	0.9	<10	<0.10	7.3	7.4	0.04	59.0	57.0	8:38
NP	6	L.M. @ Hurleys Old M-63	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
190708011	8	L.M. @ Spencer Bridge	>2419.6	135.4	NP	NP	6	0.7	<10	<0.10	7.2	7.4	0.10	60.0	56.0	9:05
190708015	9	L.M. @ Johnson Bridge	1299.7	114.5	NP	NP	5	0.6	<10	<0.10	7.3	7.7	0.04	66.9	60.3	9:42
190708016	10	L.M. @ Dewitts Bridge	1986.3	101.4	NP	NP	5	0.5	<10	<0.10	7.3	7.6	0.03	72.0	60.4	10:16
190708012	11	L.M. @ Poggensee Bridge	>2419.6	65.0	NP	NP	5	0.6	<10	<0.10	7.2	7.4	0.05	69.0	60.0	9:14
190708013	12	L.M. @ above Cool Creek	>2419.6	59.1	NP	NP	5	0.6	<10	<0.10	6.9	7.5	0.05	62.1	60.3	8:53
190708014	13	Cool Creek @ 18 Mi. Bridge	>2419.6	201.4	NP	NP	3	0.4	<10	<0.10	6.9	7.5	0.06	60.8	65.5	8:40
190708022	16	Cool Creek @ Cool Lake	209.8	<1	NP	NP	2	0.5	<10	<0.10	7.3	7.8	0.13	72.0	76.0	9:20
190708017	18	Cool Creek @ Hamilton Rd.	>2419.6	137.4	NP	NP	2	0.4	<10	<0.10	7.2	7.8	0.07	65.7	69.6	10:46
190708018	19	L.M. @ 9 Mile Bridge	2419.6	80.5	NP	NP	4	0.7	<10	<0.10	7.2	7.6	0.06	56.0	60.0	8:25
190708019	20	L.M. @ 6 Mile Bridge	1986.3	40.8	NP	NP	4	0.6	<10	<0.10	7.1	7.6	0.04	60.0	60.0	8:54
190708020	21	L.M. @ DNR Wier	1732.9	66.3	NP	NP	4	0.7	<10	<0.10	7.3	7.6	0.17	60.0	60.0	9:16
190708021	22	L.M. @ Stronach Road	1986.3	79.8	NP	NP	4	0.6	<10	<0.10	7.2	7.6	0.12	64.0	56.0	9:33
190708023	23	Cool Lake @ Ctr. West Lobe	161.6	1.0	NP	NP	2	0.4	<10	<0.10	7.4	7.9	0.05	72.0	75.0	9:10

Please refer to website, [lmwcc.org](http://lmwcc.org), for water quality parameters explanation.

NOTES: 1. WQ Lab Site ID #s are unique to that lab. The LMWCC Site #s are predetermined sites where samples are collected annually.

2. The Dissolved Oxygen data for 2019 are in question. The GLWQ Lab personnel are looking into why the results are unexpectedly low.

NP = Not Performed

**THANK YOU VOLUNTEERS!** T. & S. Phillips, A. Soorus, L. Fitz, J. Durdell, L. Trasciatti, D. McKellar, D. Gendler

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## Macroinvertebrate Study



		Save Our Streams Volunteer Monitoring Program 2007-2016											MiCorps VSMP - 2016-2019							
COLLECTION SITES:	YEAR >	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Avg/site	2016	2017	2017	2018	2018	2019	2019	Avg/site
	Day >	5/6	5/23	5/5	5/13	5/7	5/11	5/16	5/31	5/16	5/21	2007-16	NS	5/13	10/22	5/20	10/9	5/14	10/7	2016-2019
													10/22	5/6	10/14	5/19	10/13	5/18	10/5	2016-2019
Below Queen's Highway		45	35	37	36	27	36	42	36	52	40	39	NS	47	NS	50	45	37	55	47
Old Grade Campground		49	40	35	36	35	56	54	42	46	44	44	NS	42	NS	35	50	41	43	42
Indian Bridge													NS	50	37	23	28	40	54	39
Johnson Bridge		20	31	32	37	NS	33	45	59	51	29	37	34	30	35	26	44	57	45	39
Dewitt's Bridge		24	35	28	30	36	34	43	50	43	36	36								
Poggensee Bridge		NS	33	NS	28	51	23	36	22	39	25	32								
Cool Creek - at Sikkenga's		47	23	32	NS	NS	48	22	35	NS	38	35								
Cool Cr. - W of Hamilton Rd.													37	33	36	41	43	47	49	41
Bear Track Campground		25	18	23	28	27	38	46	43	43	31	32								
9 Mile Bridge - South Access		35	NS	35	39	46	26	43	42	35	45	38								
Bowman's Farm		45	25	31	26	47	32	28	39	NS	NS	34								
6 Mile Bridge - NW Access											47	15	49	66	23	41	51	55	43	47
AVERAGE - All Sites/Collect Date>		36	30	32	33	38	36	40	41	44	34	36	40	45	33	36	44	46	48	42

### Why do we monitor stream sites using macroinvertebrates?

Long term monitoring of parameters provides the data needed to recognize the status and trends of a stream's water quality and habitat quality. Monitoring the benthic macroinvertebrate population of a stream is a quick and easy process, that volunteers can do with only a small amount of training. The data will not necessarily identify specific water quality problems, but it can identify if a problem exists. Monitoring stream habitat, as well as road/stream crossings, will help to identify some of the specific problems that cause the macroinvertebrate populations to decline, such as bank erosion, flashy water flow, and degraded riparian zones.

This information is provided as part of the MiCorps Volunteer Stream Monitoring Program. For more information about the VSMP, contact Dr. Paul Steen at [psteen@hrwc.org](mailto:psteen@hrwc.org) or visit the MiCorps website at [www.micorps.net](http://www.micorps.net).

STREAM QUALITY SCORE: EXCELLENT= >48; GOOD= 34 - 47; FAIR= 19 - 33; POOR= <19

MiCorps VSMP started 2016 - the selected sites will continue to be monitored using MiCorp Criteria

LMWCC/MCD - LMWCC and Manistee Conservation District partner on these sites.

NS = not surveyed

## SYERS LAKE DAM REMOVAL

Syers Lake's sand berm dam has been blocking the movement of aquatic species, elevating water temperatures and increasing sedimentation in Syers Creek for more than 50 years. This August, the dam was finally removed, and restoration of the creek began. The dam was replaced with an appropriately sized structure that accommodates more natural streamflow and provides a safe crossing for vehicles. "The size of the dam and the level of planning and fundraising are not always proportional as illustrated by this project," explains CRA Biologist and Project Manager, Nate Winkler. "In this case, we have a relatively small dam resulting in high costs ecologically, logistically, and financially."



Earlier this summer, Winkler and students from Western Michigan University performed a fish survey in the creek below the dam. The crew observed species such as tadpole madtom, blacknose shiner, Iowa dace, and young-of-the-year coho salmon. This year's severe weather serves as a distinct reminder of the problems that dams and other barriers cause for our lakes and streams, and the wildlife that depends on them. Removing the dam will return a healthy flow to the creek and reveal wetlands hidden below the unnaturally high lake. So, the next time we experience heavy rains, wetlands will serve as critical buffers and protect the creek and its inhabitants from additional runoff.

## AMAZON SMILE

AmazonSmile is a website operated by Amazon with the same products, prices, and shopping features as Amazon.com. When you shop on AmazonSmile, the AmazonSmile Foundation will donate 0.5% of the purchase price of eligible products to the charitable organization of your choice. To shop at AmazonSmile simply go to [smile.amazon.com](https://smile.amazon.com) from the web browser on your computer or mobile device. You will be asked to select a charitable organization to receive donations from eligible purchases. Select the Little Manistee Watershed Conservation Council as your charity. This is a great way to continue your support of the LMWCC and its programs.

## GET INVOLVED

**Membership renewal** forms have been sent out to all current and former members. The trustees have voted for the first time to increase annual dues from \$25 to \$35. Please take a moment to renew your annual membership and consider an additional contribution. Remember monies donated to the **Howard Roberts Memorial Fund** are used solely for in-stream to consider what you can do for the Council in non-monetary ways. We always need volunteers to assist with our on-going work.

## OUR MISSION

Is to bring together persons and organizations who have an interest in the resource conservation and restoration of the Little Manistee River and its watershed. Our goals are to restore, protect, and preserve the natural character of the watershed by communicating resource problems and then offering and implementing problem resolution. We are a state chartered non-profit, tax-exempt organization. All contributions are tax deductible under §501(c)(3) of the IRS code. Our business is conducted by a council of trustees elected by the membership. All positions are voluntary, non-compensated.

## Little Manistee River Private Lands Sites -Before, During, After Flooding

*Written by: Nate Winkler, Biologist*

### Project Overview:

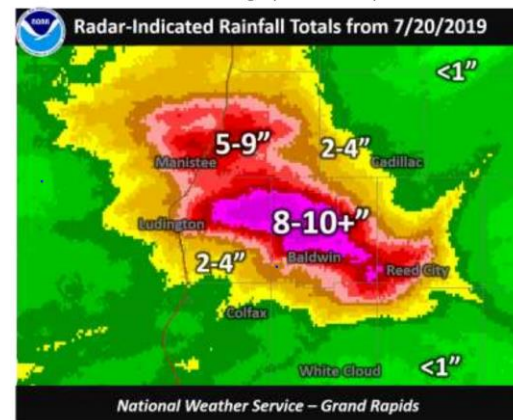
The projects illustrated herein were performed on privately-owned lands along the Little Manistee River. The sites are in Stronach Township, Manistee County and were identified through an inventory of eroding streambanks and bluffs contracted to Conservation Resource Alliance (CRA) by the Little Manistee River Watershed Conservation Council. Also, design and permit application work was completed by CRA with construction being performed by Kanouse Outdoor Restoration during July 2017 using materials from on-site. Sites #56, #57, and #60 (Grooters-Latham) had approximately 300 yds<sup>3</sup> of wood material (whole trees, tops, slash, rootwads) incorporated into protecting 450 linear feet of streambank/bluff edge and providing overhead and lateral fish cover. Site #63 (Reif) was treated in the same manner with 40 yds<sup>3</sup> of wood material incorporated into protecting 60 linear feet of bluff edge and providing overhead and lateral fish cover. You can find the full report including images of the sites by visiting the LMWCC website at <http://www.lmwcc.org/>.

### Heavy Precipitation Event and Flood

In late July 2019, an extremely localized heavy rain event occurred partially in the Little Manistee River watershed and resulted in substantially higher flows than normal. Unfortunately, there no longer is a USGS gage station on the river so total discharge can only be guessed at. At any rate, it was enough to cause the river to access the floodplain and move wood debris and sediment within the channel in observable quantities. Photos taken during and subsequent to the event were taken by CRA staff to record the effect on the work described above.



National Weather Service Imagery from 20 July 2019



### Summary and Recommendation

In general, the work held up very well and performed the services intended. The exceptions are the lower-most downstream site (#60) at Grooters-Latham adjacent to an abandoned gravel pit. The white pines utilized were swept pretty neatly away by the river and may have something to do with the amount of hydraulic force that particular site is exposed to. Another factor may be the highly erodible material making up the bank, which sloughs very easily (as was observed by CRA during the flood). The other issue was the top Grooters-Latham site (#56) in which the actual top of the bluff settled due to the rain and pushed the toe of the bluff and installed wood out further into the river.

The MDEQ (now "EGLE") permit for the Grooters-Latham site is still valid and will remain so until September 2021. If funds are available, CRA recommends going back in and shoring up #56 and replacing the material at #60 with larger diameter wood as well as the finer material originally installed. The level of flow, while not unprecedented, was obviously not expected so soon after installation. If #60 had more time to "season", the structure would, in all likelihood, have held.

Site #60 (during 2019 high flow event)





Site #56, #57, #60, and #63 Location (flow is from right to left)



Site #56 (before)



Site #56 (after 2017 wood placement)



Site #56 (during 2019 high flow event)



Site #56 (after 2019 high flow event)



## 2019 Sleighbell Parade



The LMWCC participated in the 31<sup>st</sup> Annual Sleighbell Parade, held in Manistee, MI on December 7<sup>th</sup>, 2019. The parade included horse drawn entries, bagpipers, reindeer meet and greet, and carolers elegantly dressed in Victorian style attire. The highlights of the parade was the draft horses pulling a 30 foot Christmas tree down River Street followed by a beautiful display of luminaries, caroling, and the lighting of the tree.

## River Volunteer Meeting

The 2020 River Volunteer Meeting will be held at the Carl Johnson Center in Cadillac on April 17. The Little Manistee Watershed Conservation Council will host the event.

## Nitrate Water Testing

Clean drinking water is essential to our health. Unfortunately, water can become contaminated with bacteria found naturally in the environment or with man-made chemicals from industrial waste and fertilizers. In Michigan, private wells that serve less than 25 people are not regulated by the Safe Drinking Water Act. This means that it is up to the private well owner to make sure the drinking water is safe. The DEQ does investigate drinking water well contamination, oversees the water well drilling industry, and oversees remedial activities where groundwater contamination has affected private drinking water wells. District Health Department #10 (DHD#10) administers DEQ programs for private wells. DHD#10 has an in-house drinking water lab located at the Mason County office. They perform drinking water testing and analysis for the bacteria known as coliform, including *E. coli*, as well as for nitrates, which are man-made chemicals often used in fertilizer. Stop in to DHD#10 in your area to pick up a water testing kit. You can have both bacterial analysis and chemical analysis performed, or just one or the other.

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**Bacterial Testing Kit:** Cost = \$20 – All bacterial testing kits come with a sample bottle and a pre-addressed envelope to mail the sample back.\*

**Nitrate Testing Kit:** Cost = \$20 – All nitrate testing kits come with a sample bottle, pre-addressed envelope, gel pack and cooler to send your sample back.\*

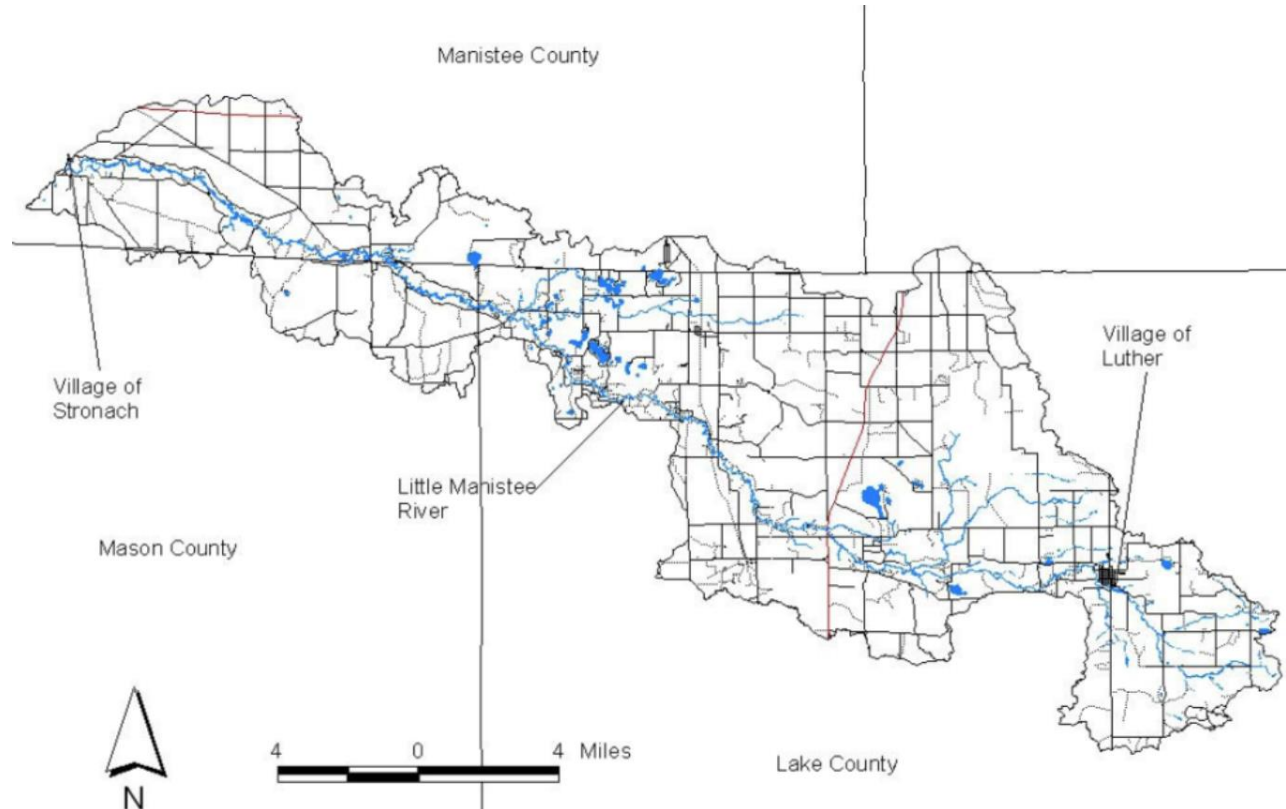
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**Join us for the annual meeting at  
Skinner Park July 11, 2020!**

## 2020 ANNUAL EVENTS

- Bug Survey
- Water Quality Survey
- Private Projects — Continue to monitor and assist owners with the permitting process.
- Membership — Pursue the mass mailings to riparian owners begun last year.
- Annual Meeting — Secure permits, print raffle tickets. Procure raffle prizes and solicit donations for the auction.
- Newsletter — published three times a year; mailed to members and posted on the LMWCC web site. We are excited to offer an e-newsletter as an option beginning in the Spring of 2020.
- SWAT — the team will clear the river periodically or as needed.
- Fundraising — Continue to explore fundraising options. Sell LMWCC logo merchandise. Identify organizations and groups as potential sources of support for on-going projects.
- Web Site — Make sure all significant and current information is available to members on the site. Provide links to other related organizations and partner groups PayPal has now been implemented allowing members to renew on-line and make donations to the council.

## The Little Manistee Watershed





*Little Manistee Watershed Conservation Council*

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