



Lake Charlevoix Watershed
A DECADE OF SOCIAL SURVEYS:
2010 – 2020 Summary Report
and Recommendations

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INTRODUCTION

Tip of the Mitt Watershed Council conducted a series of three mail surveys in the Lake Charlevoix Watershed during 2019-2020 with categories for local officials, shoreline property owners, and watershed residents. These were done as a follow up to a similar series of surveys among the same three categories, done in 2010-2011, in partnership with Michigan State University Extension (MSUE). In the most recent survey series, the questions asked were identical to the questions in the earlier surveys; however, some new questions were also added.

Survey information for the more rural watersheds, like Lake Charlevoix, is not typically available. These surveys were conducted using a US Environmental Protection Agency (USEPA) system in coordination with the Michigan Department of Environment, Great Lakes, and Energy (EGLE), and our 2010 survey series was the first time that system was used for a pristine watershed. Therefore, this insight is very valuable for formulating outreach and education actions aimed at audiences in a more rural setting.

The USEPA social indicators system is designed to provide baseline data and measure change in target audiences. The two Lake Charlevoix Watershed survey series focused on attitudes, awareness, and constraints.

- Attitudes – assesses beliefs regarding issues or practices. Attitudes are related to willingness to adopt or change a practice
- Awareness – measures knowledge or perception of the target audience (in our case local officials, shoreline property owners, and watershed residents) regarding relevant technical issues or recommended practices in the watershed
- Constraints – limitations to adopting or changing practices by an individual or community

RETURN RATES AND WHO RESPONDED

Local Officials Survey

2011 Target=40% 2019 Target=56%

April–June 2011

Sent: 315 Received Responses: 192=60% return (very high)

April–June 2019

Sent: 241 Received Responses: 111=46% return (good)

More male local officials responded in 2019, 73% up from 70%. In both survey series, several respondents served multiple roles in the community, and we asked them to identify all that applied to them. In both survey series, a majority were planning commissioners. The majority in both surveys were township officials, followed by officials from cities, then the county, village, and tribe. This is a highly educated group, with well over half of the officials responding having a 4-year college degree or graduate degree in both surveys.

Shoreline Property Owners Survey

Both series Target=40% August–

October 2011

Sent: 664 Received Responses: 391=59% return (very high)

July–September 2019

Sent: 711 Received Responses: 238=33% return (good)

For shoreline property owners, both survey series respondents were a majority of homeowners; 4 years older, on average, in 2019. 2% more females responded in 2019, who were still a minority in submitting answers. Both surveys represented highly educated respondents. In both series, one-third of respondents lived in a city, village, or township. In 2019, 40% of respondents called their shoreline property their primary residence, a 6 point increase from 2011.

Watershed Residents Survey

Both series Target=40% return

August–October 2010

Sent: 934 Received Responses: 403=43% return (high)

June–September 2020

Sent: 826 Received Responses: 188=22% return (low)

For watershed residents, respondents to both survey series were also a majority of homeowners. In 2020, they were 10 years older at age 69, on average, and 5% more females, who were still a minority in submitting answers. The new survey represented more highly educated respondents, with 62% having college degrees, a 12-point increase. There are slightly fewer year-round residents in 2020 at 53%, and a 6% increase in respondents living in townships, villages, or cities rather than more isolated, rural non-farm or farm residences.

In summary, the respondents from local officials in both survey series were a majority of males, highly educated. Most were planning commissioners, and a majority were township officials. Shoreline property owners and watershed residents were both a majority of homeowners, and more males responded. Both groups were also highly educated and most live in a city, village, or township. There was a slight decrease in year-round residents for watershed residents, but a 6-point increase in shoreline property owners declaring that they live here year-round.

As can be seen above, unfortunately, our return rate for the 2020 watershed resident survey fell to 22% - cut in half when compared to the survey in 2010. We are not sure why, but we believe several factors come into play.

First, we noted that the lists we used in the recent series from the county equalization departments seemed to have more bad addresses than the ones we used in 2010. This is anecdotal but from the same personnel that we used 2010. We kept track of the numbers sent and bad addresses in 2020, but only had access to the deliverable addresses for 2010, so we can't confirm this as a reason for less returns.

Also, we speculate that COVID-19 had some impact, because the local officials and shoreline owner surveys were both conducted in 2019 and return rates were in line with expectations. The 2020 watershed resident survey was conducted during the pandemic, and the return rate was very low, as noted.

RESULTS AND RECOMMENDATIONS

Below are key findings from the comparison of the two survey series, across a decade.

Recommendations for how to use these results for outreach and education purposes are in bold, and these should help inform future watershed plan updates.

ATTITUDES

In both survey series, local officials, shoreline property owners, and watershed residents all believe the quality of our water is "good" and that economic stability depends on good water quality. They also believe that the quality of life in their communities depends on healthy lakes, rivers, and streams. Additionally, there is a strong belief from all three categories, across the decade, that residents and local officials have a responsibility to protect the quality of our local water resources.

✓ Quality of our water is "good"

The first survey series results indicated very positive attitudes about the importance and value of water quality in the Lake Charlevoix watershed. This held true in 2019-2020. Overwhelmingly, local officials, shoreline property owners, and watershed residents all rated the quality of our water as "good." The most important activities to all categories in both survey series were scenic beauty, boating, swimming, and picnicking or other family activities near the water. If you emphasize these activities in outreach efforts,

they should resonate with local officials, shoreline property owners, and watershed residents.

In the Lake Charlevoix Watershed, general outreach and education programs do not need to persuade local leaders or residents about the importance of good water quality. The underlying assumption of these efforts should be that audiences in the Lake Charlevoix Watershed already value good water quality, and you can build upon and emphasize that while presenting information for education about related issues.

✓ [Economic stability depends on good water quality](#)

All three categories – local officials, shoreline property owners, and watershed residents – from both survey series believe that good water quality is good economics. There was, for the most part, no significant difference in the way they responded to the economic development questions. Generally, all three categories saw no conflict between economic development and water quality – meaning they think development can happen while we still protect the water.

Very high percentages of local officials, ranging from 60-80%, who responded in both survey series agree with these statements:

- Local economic stability remains dependent on good water quality.
- Quality of life in the community depends on good water quality in lakes, rivers, and streams.
- It is not okay to reduce water quality to promote economic development, and if development has to go slower to protect water quality, that is appropriate.
- They do not believe that it is generally too expensive to take action to protect water quality.

For shoreline property owners and watershed residents, over 80% of respondents across the decade agreed with the same economic statements.

These beliefs are important to know about and remember when doing outreach and education regarding proposals relevant to water quality threats in the community. The underlying assumption should be that quality of life and economic stability depends on good water quality, and local officials and residents agree with that. Outreach efforts can also remind them of this point.

Who pays for good water quality, though, is another matter.

In 2011, local officials were quite ambivalent about who pays for water quality improvements, with support for an increase in local taxes or fees getting very mixed responses evenly spread across “disagree,” “not sure,” and “agree.” In 2019, we see some change and a bit more support for funding water quality improvements, as

there is a 12-point move in the “disagree” category down to 27%, indicating increased appreciation for supporting public water quality protections among local officials. Similarly, shoreline residents showed slightly less resistance to paying increased taxes or fees to protect water quality in 2019. Watershed residents in 2020 showed most respondents were neutral on this response, rather than leaning against it as they had in the earlier survey, indicating resistance may have also diminished in this category.

Michigan water has been in national news since the first survey series, with Flint and PFAS highlighted, and invasive species like the Asian Carp knocking on the door of Lake Michigan. **Attitudes are changing among local officials, shoreline property owners, and residents toward more support for public funding for water quality, and we see this reflected in responses. Outreach efforts should consider this emerging support for public funding, with the caveat that we are also now dealing with COVID-19 and a damaged economy as a result. The surveys did not take the virus into account in any way, and economic attitudes are surely impacted by it.**

✓ [Personal or community responsibility](#)

Local officials in both survey series strongly disagreed that water quality is only the state’s responsibility, not the responsibility of their local unit of government. However, they agreed that the way residents care for their lawn and garden can influence water quality, and that residents are also personally responsible to protect water quality.

Similarly, over 95% of shoreline property owners across the decade believed that the way they care for their lawn and garden can influence water quality, and it is their personal responsibility to help protect water quality. Watershed residents agreed even more strongly with these statements.

In both survey series across the decade, personal and community responsibility were emphasized in the responses. This is important and would likely be reflected in policy decisions made by local officials. Educational efforts with all three categories should stress actions that will coincide with this belief and willingness to engage in local water quality protection efforts.

✓ [Local master plans and zoning ordinances](#)

Some local officials believe that their master plan and zoning ordinance does an excellent job protecting water quality. However, approximately 43% neither agreed nor disagreed with that statement, reflecting a slight rise in those who were unsure as compared to the earlier survey in the decade. This could simply reflect the turnover expected in the ranks of local officials due to elections.

Local officials across the decade said they would support changes to their master plan and ordinance to improve water quality. Educational efforts for changes should emphasize specifically how those changes will improve

water quality in the community.

- ✓ [Residents and local officials receive information from a wide variety of sources](#)

We see some changes across the decade in where people get information about water quality. In 2019, local officials overwhelmingly listed workshops, demonstrations, and meetings as the main source of information for them. This was a dramatic difference because in 2011, that choice was not among their top four information sources. Local officials now list newsletters, brochures, and fact sheets next, followed by the internet, and then conversations with others. Shoreline property owners and watershed residents list newsletters, brochures, and fact sheets as the top sources of information for them, followed by the internet; conversations with others; and workshops, demonstrations, and meetings.

Workshops, demonstrations, and meetings should be scheduled with local officials, as they are popular and provide opportunities for conversations with others. If possible, the agenda should provide formal peer-to-peer learning opportunities. Shoreline owners and residents also use workshops, demonstrations, and meetings for information about water quality efforts. Additionally, continue to use newsletters, brochures, and fact sheets. Make them also available on the internet, and keep your websites up to date and interesting.

The most trusted sources of information for all three categories were: Lake Charlevoix Watershed Project (Watershed Plan Advisory Committee), MSU Extension, Little Traverse Conservancy, Tip of the Mitt Watershed Council, the Lake Charlevoix Association, and the Charlevoix Conservation District. **Information and education materials and education efforts should continue to be hosted and branded by these organizations who have a long history of water quality education, and are trusted by watershed residents and local officials.**

AWARENESS

Respondents varied widely in their awareness of water impairments (pollutants and conditions), sources of water pollution, and consequences of poor water quality.

- ✓ [Water runoff](#)

In 2010, 30% of watershed residents did not know where their water goes when it runs off their property. In 2020, that improved. Only 19% of those surveyed stated they do not know where the rain water goes, a decrease of 11%. This indicates some increased awareness of water impacts on residential property. Additionally, in 2019, 92% of shoreline property owners know where the water goes when it runs off their property, a 3% increase in awareness.

✓ [Invasive Species problem](#)

In 2010, invasive aquatic plants and animals was viewed as the biggest problem, in terms of water impairments, by all three categories. Similarly, in 2020, the most severe problem is again noted to be invasive aquatic plants and animals. This is encouraging, because invasive species do pose a significant challenge and watershed residents continue to have a general awareness and knowledge of this danger. **The Watershed Plan Advisory Committee members should continue all educational efforts in this regard because they are fostering a measurable increased awareness of the invasive species issue.**

✓ [There are few Lake Charlevoix Watershed impairments](#)

Water pollutants and impairments, such as sediments, phosphorus, bacteria and viruses, trash, toxic materials, algae, invasive plants, and habitat alteration are all potential risks in Michigan waters. These were all presented in both survey series for all three categories to rank in terms of threat. Local officials and shoreline property owners had similar responses across the decade, and watershed residents had some points that stood out.

Generally, in 2011, local officials indicated that most impairments are a slight to moderate problem, the most severe being invasive aquatic plants and animals. The more recent survey in 2019 showed some additional concerns over sedimentation (dirt and soil erosion) in the water, and trash or debris in the water. However, in most categories in 2011, a high percentage of respondents didn't know if a particular pollutant or condition was a problem or not (for instance, 50% for phosphorus or toxics, 41% for bacteria and viruses). The "don't know" responses were in similar ranges in 2019.

In 2019, a significant portion of shoreline property owners responded that they "don't know" whether an option poses a threat to the watershed - a similar range to a decade ago. For example, over 58% again responded that they don't know if phosphorus or toxic materials are a threat. This is slightly higher than in 2011, indicating more education is needed on these topics for shoreline property owners.

In 2010, watershed residents generally believed that there were no severe impairments to the Lake Charlevoix Watershed. However, over the decade, Lake Charlevoix Watershed residents have come to believe the "excessive use of lawn fertilizers and/or pesticides" and "soil erosion from shorelines and/or streambanks" have become "moderate" problems that can cause water pollution. Overall, fewer watershed residents stated they "don't know" if a particular source of pollution was a problem. In the past decade, awareness of potential sources of water pollution has increased among watershed residents, in a range of 5-11% more general knowledge than before.

This is encouraging. Watershed residents show an increase in general knowledge and concerns for water quality. Local officials and shoreline property owners, however, remain unsure about specific pollutants and

potential impairments. Both points support additional outreach and educational efforts regarding the various potential sources of local water pollution.

Education programs should focus on specific pollutant and source risks, especially phosphorus. Although most survey respondents perceived few watershed impairments, a high percentage didn't know if a specific pollutant or condition was a problem or not.

✓ [Consequences of water pollution](#)

Next the surveys addressed the consequences of water pollution. The issues of beach closures, contaminated fish, loss of desirable fish species, algae, reduced beauty, or reduced opportunities for recreation are all possible problems presented in both survey series.

Local officials across the decade viewed the list of consequences of poor water quality as "not a problem" or a "slight problem," the most severe being loss of desirable fish, and excessive aquatic plants and algae. There were generally fewer "don't know" responses across the decade than in the other earlier questions regarding their awareness of water quality issues.

The results from 2010-2011 reflected that shoreline property owners and watershed residents also didn't think that these consequences of pollution were big concerns. By contrast, however, in 2019-2020, most concerns were at least slightly elevated. Both categories now believe the "Loss of desirable fish species" and "Excessive aquatic plants or algae" are becoming "moderate" problems in the area, which mirrors concerns of local officials. They also elevated every listed consequence to being more moderate or severe problems than reflected in 2011, except for "beach closures."

In spite of expressing confidence earlier that water quality remains good, these questions reflect growing concerns about water quality, and education and projects directed at improving habitat and managing aquatic plants, in addition to stormwater runoff, would likely resonate with local officials, shoreline property owners, and watershed residents.

✓ [Use of planning and zoning to improve water quality](#)

In 2011, local officials varied widely in their awareness and use of planning and zoning practices to improve water quality. The survey question was asked in two parts: personal familiarity with a practice, and use of the practice by their community. Greatest familiarity in both survey series, across the decade, was with minimum setbacks along lakes and streams, minimum open space requirements for new developments, septic system restrictions, and lake and stream vegetative buffer requirements.

Least familiarity was with keyhole regulations, municipal wellhead protection, coordinating water quality zoning provisions with neighboring communities, and rain garden requirements. **Importantly, some key elements improved as a direct result of outreach/education efforts.**

After the results of the first survey series, we incorporated new efforts emphasizing peer-to-peer learning with the hope that it would increase success of water quality education efforts, especially with local officials. Six of ten local officials and four of ten watershed residents said they got water quality information through “conversations with others.” Research supports the idea that individuals often learn best from people like them – their peers – more than from technical experts. Therefore, MSUE, Tip of the Mitt Watershed Council, and LIAA organized regular meetings for Zoning Administrators. We also continued and improved our Annual Planner’s Meeting under this grant, which was originally organized as one response to the original surveys.

And – importantly – the recent survey work in this grant revealed a measurable change on this point. In the second survey done in 2019, the point about local officials coordinating water quality zoning provisions with neighboring communities **increased 10 points**, with 33% reporting they know how to use it, up from 23% in 2011. **This is exactly why we started these ZA meetings years ago with MSUE, and the survey showed they have been successful.**

We also have to credit our Annual Planner’s Forum, in addition to several restoration projects and educational events that worked directly with local governments and emphasized coordinating with other shoreline communities. Again – we did these things purposefully, directly in response to feedback received in the original surveys. So this is an example of measurable change from addressing challenges identified in 2011, and supports additional education efforts related to communities coordinating efforts to protect water.

Knowledge of vegetated buffers increased for local officials from 56% to 65%, a 9-point rise. Since the first survey, the MI Natural Shoreline Partnership was created and disseminated quite a lot of educational materials, in addition to holding training sessions and creating incentive programs for shoreline property owners.

And knowledge of rain gardens increased 7 points, from 23% to 30%. This likely reflects the recent stormwater runoff educational and restoration projects in the watershed that reached out to local officials first, to educate them and get support. Measurable change.

For both efforts noted above, the Watershed Plan Advisory Committee members should examine those successful actions and repeat them for these topics.

✓ [Other efforts to improve water quality](#)

In both survey series, shoreline property owners and watershed residents were given a list of practices to protect water quality, ranging from following instructions for pesticides to installing a rain garden. In 2011, shoreline owners were least familiar with the practices of creating a rain garden and using a vegetated buffer. Watershed residents in 2010 were least familiar with creating a rain garden and using porous pavement.

In 2019, the shoreline property owners have increased awareness of or experience with all stated practices to improve water quality, except for "Create a Rain Garden," which is still less known. In 2020, watershed residents identified the following practices as what they do to protect water quality: plant trees and shrubs, use phosphate-free fertilizers, apply fertilizers at or below manufacturer's recommendations, and follow pesticide application instructions.

Education programs targeting homeowners should concentrate on information, skills, and demonstrations of specific practices. The survey indicated that watershed residents and shoreline property owners are very willing to make changes to their lawn and garden practices, and perceive few limitations to doing so. When they did perceive limitations, it was most often related to a need for information, skills, or demonstration of the practice.

Some notable points:

- **Focused attention is needed to increase awareness of newer practices such as rain gardens and porous pavement.** Even though these techniques have been promoted and described in educational materials for some time, understanding and adoption rates of some of these practices is low, both for landowners and local officials.

For example, we were surprised that in 2020, among the activities about which watershed residents were least knowledgeable are "Plant a vegetated riparian buffer" and "Create a rain garden." This was surprising because there have been some recent projects in the watershed that highlight the benefits of riparian buffers and rain gardens. **Timing is important, however, and this survey was in the field during summer 2020. Most of the publicity for those new projects may have happened simultaneously or afterwards. And we saw change in awareness by local officials on both points, reflecting that local officials were approached, first, for these projects – again, timing.**

Either way, survey results support more educational outreach on these two topics.

- Additionally, 56% of watershed residents in 2020 said "Use porous pavement"

is not applicable to them. **This indicates a possible misunderstanding of porous pavement, and since it is becoming more affordable and part of the toolkit when using Green Infrastructure, more education is needed on this topic.**

✓ [Septic systems](#)

The original survey series included a few questions about septic systems. In 2010, 57% of watershed resident respondents who had septic systems already used the practice of regularly pumping septic system tanks. 2020 responses were much improved. 71% regularly pump septic system tanks, **a 14% increase**. In 2011, 70% of shoreline property owner respondents who had septic systems already used the practice of regularly pumping septic system tanks. 2019 responses reflected **a 12-point increase**, with 82% stating that they regularly pump septic system tanks.

Improvements in both categories is a win because the Watershed Council and the Health Department teamed up in the intervening years between survey series to do intensive education and outreach on this topic using the Septic Question Project, which addresses water quality concerns. **Survey results indicate that at least the message to “pump your septic tank regularly” has been getting through to property owners, as demonstrated by this measurable change. These efforts on septic system education should be continued.**

The 2019-2020 survey series added an entire section asking questions about septic systems, including whether the location on the property is known, what year system was installed, if they have a Health Department permit on file, etc. These questions were not asked in the 2010-2011 survey series, and these new septic questions will serve as a baseline for future surveys.

92% of local officials, 96% of shoreline property owners, and 91% of watershed residents reported that they know the location of their septic tank and drainfield. Interestingly, when asked if respondents had a septic system permit on file with the Health Department, 62% local officials said yes and 30% did not know. 65% of shoreline residents said yes and 32% did not know. For watershed residents, 49% said yes and a whopping 41% did not know.

84% of local officials, 85% of all shoreline owners, and 88% of all watershed residents reported no troubles with their septic system. The remaining reported having these issues and some who answered noted more than one problem: slow drains, sewage backup in the house, bad smells near tank or drainfield, sewage on the surface, or a frozen septic. Because there are no laws in the state or locally in this watershed to regularly inspect septic systems, those having issues may go uncorrected for too long to prevent pollution.

Unfortunately, none of the category groups see a need for septic system oversight by either the Health Department or local governments. When asked if they wanted a

reminder from the Health Department to get septic systems pumped or inspected, a range of 64%-72% said no. **Since a majority of septic system owners have not had problems, the prevailing attitude is that things are fine. However, given the research done on this topic by the Watershed Council over the past few years, this is a topic in need of additional outreach and education.**

CONSTRAINTS

On average, local officials in 2011 indicated that issues limited their community's ability to change planning and zoning practices to protect water quality only "a little" or "some." The biggest constraints are resistance to new regulations, concerns about economic impact of new regulations, and approval by community residents. Local officials were not as limited by lack of expertise or information. In 2019, respondents also indicated that their biggest constraints were the exact same as the top issues listed in 2011.

To reduce barriers to adoption or revision of water quality-related plan or zoning ordinance changes, educational efforts could emphasize public participation. When exploring options and crafting new or changed regulations, additional public engagement throughout the process may help reduce the barriers related to approvals needed by community residents, economic concerns, or resistance to new regulations. Holding additional meetings for controversial proposals, or doing events in a workshop type of setting, or a Town Hall, could help improve support for change.

Watershed residents and shoreline property owners perceived few limitations, in the original survey series, regarding their ability to change their household practices. In the original survey series, issues such as physical abilities, information and education, approval of neighbors, and potential environmental damage were presented as possible limiting factors influencing their use of various water protection practices. For both groups in the original survey, most issues were viewed as limiting them "not at all" or "a little." When they did indicate "some" or "a lot" it was most often related to a need for information, skills, or demonstration of the practice. The most limiting issue (4 of 10) was personal out-of-pocket expenses.

The same held true in the second survey series. This is good news in that shoreline owners and watershed residents both feel able to change household practices with few constraints.