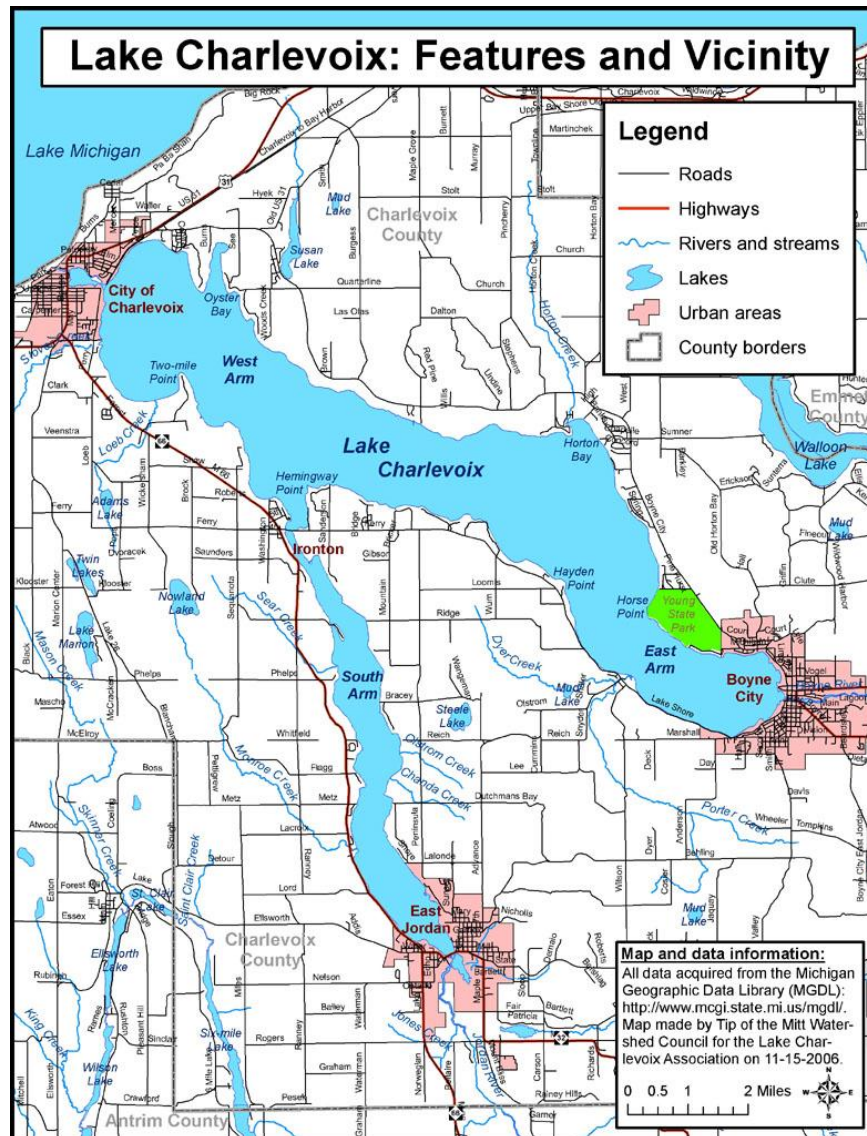


Your Views on Local Water Resources



The Lake Charlevoix Watershed Project is conducting this survey in coordination with local government partners and the Lake Charlevoix Association in order to identify the needs and concerns of Lake Charlevoix property owners regarding water quality in the Lake Charlevoix Watershed.

We ask that this survey be completed by the person in your home that makes most of the lawn and yard care decisions and is at least 18 years old. Your participation in this survey is voluntary. Your answers will be kept confidential and will be released only as summaries where individual answers cannot be identified.

Unless otherwise instructed, **please check the circle that corresponds to the answer category that best describes you and your situation or opinion.** The survey should take approximately 20 minutes to complete. Please read each question carefully. If you have any questions or concerns, please contact Dean Solomon at the Charlevoix County Michigan State University Extension office, at (231) 582-6232 solomon@msu.edu. Thank you for your time.

Lake Charlevoix riparian owners – August – October 2011
Surveys sent – 664
Surveys received – 395 (59.5%)

Rating of Water Quality

Overall, how would you rate the quality of the water in your local rivers, streams, and lakes?

	Poor	Okay	Good	Don't Know
1. Boating (Motor, sailing, canoeing, kayaking)	0.0	5.1	94.4	0.5
2. For eating fish caught in the water	2.6	19.9	57.5	19.9
3. For swimming	1.0	11.7	87.0	0.3
4. For picnicking and family activities near the water	0.0	6.7	92.8	0.5
5. For fish habitat / fishing	7.4	29.0	44.1	19.5
6. For scenic beauty / enjoyment	0.5	4.6	94.9	0.0

Your Water Resources

1. Do you know where the water goes when it runs off of your property?

10.9 No
89.1 Yes

2. If you answered 'Yes' above, where does your rain water drain to?

Lake Charlevoix – 47.5%, Lake - 20.5%, South Arm of Lake Charlevoix – 4.7%, Ground and lake – 4.1%, Ground – 2.1%, Ground then Lake Charlevoix - 1.8%, Lake Charlevoix to Lake Michigan - 1.5%, All other responses - 17.8%

341 Total responses
Lake Charlevoix 162
Lake 70
South Arm 16
Ground and lake 14
Ground 7
Ground then Lake Charlevoix 6
Lake Charlevoix to Lake Michigan 5
Ditch 3
Wetland then Lake Charlevoix 3
Water table then Lake Charlevoix 3
Water Table 2
Stream or creek then lake 2
Ditch then lake 2
Beach 2
Lake Michigan 2
Ditch then Lake Charlevoix 2
Wetland 2
French drains to lake 2

A list of single responses is attached after the comments section at the end of the summary.

Your Opinions

Please indicate your level of agreement or disagreement with the statements below. (descending order by average)

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Average
7. The quality of life in my community depends on good water quality in local streams, rivers and lakes.	0.3	1.0	3.8	48.2	46.7	4.40
2. It is my personal responsibility to help protect water quality.	0.3	0.3	2.8	51.8	44.9	4.41
1. The way that I care for my lawn and yard can influence water quality in local streams and lakes.	0.8	1.0	3.9	51.8	42.5	4.34
4. My actions have an impact on water quality.	0.5	0.5	3.4	56.4	39.2	4.33
3. It is important to protect water quality even if it slows economic development.	0.3	3.6	16.6	47.7	31.9	4.07
6. I would be willing to change the way I care for my lawn and yard to improve water quality.	1.0	3.9	21.7	47.8	25.6	3.93
5. I would be willing to pay more to improve water quality (for example: through local taxes or fees).	9.6	19.0	29.9	30.4	11.2	3.15

Water Impairments

Below is a list of water pollutants and conditions that are generally present in water bodies to some extent. The pollutants and conditions become a problem when present in excessive amounts. In your opinion, how much of a problem are the following water impairments in your area? (descending order by average)

	Not a Problem	Slight Problem	Moderate Problem	Severe Problem	Don't Know	Average
7. Invasive aquatic plants and animals	11.4	25.8	32.8	18.9	11.1	2.67
8. Habitat alteration harming local fish	21.9	15.9	14.9	9.3	38.0	2.19
2. Phosphorus	17.0	12.1	12.9	5.2	52.8	2.13
6. Algae in the water	37.7	30.0	13.7	3.1	15.5	1.79
1. Sedimentation (dirt and soil) in the water	39.8	28.5	15.4	2.6	13.6	1.78
3. Bacteria and viruses in the water (such as E. coli / coliform)	33.9	18.3	8.3	3.9	35.7	1.72
5. Toxic materials in the water	27.6	11.5	5.2	3.6	52.1	1.69
4. Trash or debris in the water	51.9	32.4	9.0	3.1	3.6	1.62

Sources of Water Pollution

The items listed below are sources of water quality pollution across the country. In your opinion, how much of a problem are the following sources in your area? (descending order by average)

	Not a Problem	Slight Problem	Moderate Problem	Severe Problem	Don't Know	Average
2. Excessive use of lawn fertilizers and/or pesticides	14.0	26.2	26.7	10.4	22.8	2.43
3. Improperly maintained septic systems	13.7	19.4	24.8	7.8	34.4	2.41
12. Outputs from marinas and/or recreational boats	17.6	33.4	19.4	5.4	24.1	2.17
5. Storm water runoff from streets and/or highways	22.0	26.1	19.1	4.4	28.4	2.08
9. Stream bank or shoreline modification/destabilization	26.0	19.0	20.6	3.9	30.5	2.03
6. Post-development erosion and sedimentation	22.0	24.4	16.1	3.6	33.9	2.02
4. Storm water runoff from rooftops and/or parking lots	24.0	27.4	17.6	2.8	28.2	1.99
13. Fueling of boats	24.4	33.8	16.6	2.3	22.9	1.96
10. Drainage/filling of wetlands	30.8	13.7	14.2	6.7	34.5	1.95
15. Contaminated sediments	17.3	14.2	9.0	2.8	56.6	1.94
14. Spills	26.0	20.8	10.4	4.2	38.7	1.88
11. Groundwater withdrawal	29.4	12.2	6.8	5.5	46.2	1.78
8. Waste storage/storage tank leaks (underground)	24.3	11.6	7.5	1.0	55.6	1.67
7. Hazardous waste	33.6	10.9	7.5	3.6	44.4	1.66
1. Discharges from sewage treatment plants	39.8	9.8	9.6	2.8	38.0	1.60

Consequences of Poor Water Quality

Poor water quality can lead to a variety of consequences for communities. In your opinion, how much of a problem are the following issues in your area? (descending order by average)

	Not a Problem	Slight Problem	Moderate Problem	Severe Problem	Don't Know	Average
3. Loss of desirable fish	25.9	18.4	15.5	11.7	28.5	2.18
6. Excessive aquatic plants or algae	29.4	36.1	14.2	9.0	11.3	2.03
2. Contaminated fish	42.3	17.3	8.2	5.9	26.3	1.70
4. Reduced beauty of lakes or streams	62.8	21.7	5.9	4.7	4.9	1.50
1. Beach closures	62.5	20.6	8.0	2.6	6.4	1.47
5. Reduced opportunities for water recreation	68.9	17.9	4.4	3.4	5.4	1.39

Practices to Improve Water Quality

Please indicate which statement most accurately describes your level of experience with each practice listed below. (descending order by current use)

	Never Heard Of It	Somewhat familiar with it	Know how to use it; not using it	Currently Use It
5. Properly dispose of household waste (chemicals, batteries, florescent light bulbs, etc.)	0.3	7.3	6.5	86.0
7. Not planting tree and shrubs over septic system	6.4	5.8	12.7	75.1
6. Establish grass cover for septic system	9.4	6.1	11.3	73.2
4. Properly dispose of pet waste	4.8	11.9	16.7	66.6
2. Follow pesticide application instructions for lawn and garden	1.6	14.8	19.4	64.2
3. Use phosphate free fertilizer	7.2	19.4	23.1	50.3
9. Protect stream banks and/or shorelines with vegetation	9.9	25.5	21.2	43.4
8. Plant vegetated riparian buffer	34.2	16.2	15.4	34.2
10. Protect stream banks and/or shorelines with structures	25.3	24.0	27.0	23.7
1. Create a rain garden	57.5	25.1	15.0	2.3

Your Opinions about Specific Practices

Soil Testing: Having your soil tested and applying fertilizer based on the soil test result.

1. How familiar are you with this practice?

- 20.5 Not relevant
- 20.2 Never heard of it
- 29.1 Somewhat familiar with it
- 20.8 Know how to use it; not using it
- 9.4 Currently use it

2. If the practice is not relevant, please explain why.

Total responses – 107, Top response – No fertilizer use – 52 responses = 48.6%
A list of the responses is attached after the comments section.

3. Are you willing to try this practice?

- 41.1 Yes or already do
- 45.6 Maybe
- 13.2 No

How much do the following factors limit your ability to implement this practice?

	Not at all	A little	Some	A lot	Don't Know
4. Don't know how to do it	37.4	13.8	16.8	16.8	15.2
5. Time required	37.7	16.1	20.5	7.5	18.2
6. Cost	36.7	15.3	17.0	10.5	20.4
7. The features of my property make it difficult	59.5	7.3	6.2	9.0	18.0
8. Insufficient proof of water quality benefit	47.6	8.3	12.1	6.6	25.5
9. Desire to keep things the way they are	52.1	11.5	14.3	12.6	9.4
10. Physical or health limitations	74.0	6.6	5.9	5.5	8.0
11. Lack of equipment	45.4	7.9	15.5	12.0	19.2

Proper Septic System Maintenance: Having your septic tank pumped and septic system inspected on a regular basis to ensure that it is working properly.

1. How familiar are you with this practice?

- 13.7 Not relevant
- 1.9 Never heard of it
- 9.4 Somewhat familiar with it
- 5.4 Know how to use it; not using it
- 69.7 Currently use it

2. If the practice is not relevant, please explain why.

Total responses – 54, Top responses –
City sewer/water – 24 – 44.4%
No septic – 17 – 31.5%,
No building on the property – 3- 5.6%
A list of single responses is listed after the comments at the end of the survey.

3. Are you willing to try this practice?

- 86.9 Yes or already do
- 8.6 Maybe
- 4.5 No

How much do the following factors limit your ability to implement this practice?

	Not at all	A little	Some	A lot	Don't Know
4. Don't know how to do it	87.0	4.2	3.4	2.9	2.5
5. Time required	83.0	8.1	4.3	2.1	2.6
6. Cost	71.7	7.9	10.0	7.5	2.9
7. The features of my property make it difficult	89.0	1.7	3.8	1.7	3.8
8. Insufficient proof of water quality benefit	83.9	2.1	3.4	2.1	8.5
9. Desire to keep things the way they are	81.6	6.4	4.3	3.4	4.3
10. Physical or health limitations	89.1	2.5	3.3	1.7	3.3
11. Lack of equipment	83.2	2.9	3.8	2.1	8.0

Riparian Buffer Maintenance: Maintaining existing trees, shrubs, and herbaceous plants that function as buffers located adjacent to water bodies and water courses

1. How familiar are you with this practice?

- 3.2 Not relevant
- 17.8 Never heard of it
- 24.7 Somewhat familiar with it
- 7.2 Know how to use it; not using it
- 47.2 Currently use it

2. If the practice is not relevant, please explain why.

Total responses - 21. A list of the responses is attached after the comments section.

3. Are you willing to try this practice?

- 65.6 Yes or already do
- 30.1 Maybe
- 4.3 No

How much do the following factors limit your ability to implement this practice?

	Not at all	A little	Some	A lot	Don't Know
4. Don't know how to do it	57.8	8.9	11.1	14.1	8.1
5. Time required	55.8	10.4	14.5	7.4	11.9
6. Cost	54.6	9.9	11.7	10.6	13.2
7. The features of my property make it difficult	57.1	9.0	10.4	8.2	15.3
8. Insufficient proof of water quality benefit	63.4	8.6	8.2	3.0	16.8
9. Desire to keep things the way they are	59.1	9.5	12.0	10.6	8.8
10. Physical or health limitations	74.7	5.9	5.2	4.1	10.0
11. Lack of equipment	61.0	6.3	10.0	7.1	15.6

New natural shorelines: Replacing existing lawns that extend to the shore with a new landscape of trees, shrubs, and landscape plants. Prevent erosion with live vegetation instead of seawalls or rock rip-rap.

1. How familiar are you with this practice?

- 17.0 Not relevant
- 15.0 Never heard of it
- 26.7 Somewhat familiar with it
- 14.8 Know how to use it; not using it
- 26.5 Currently use it

2. If the practice is not relevant, please explain why.

Total responses – 69. Top responses: Already have a natural shoreline – 13 – 18.8%,
 No lawn – 10 – 14.5%,
 Have a seawall – 10 – 14.5%,
 Road separates lawn from the lake – 4 – 5.8%,
 Lawn doesn't extend to the shoreline – 2 – 2.9%
 A list of single responses is listed after the comments at the end of the survey.

3. Are you willing to try this practice?

- 37.2 Yes or already do
- 38.0 Maybe
- 24.8 No

How much do the following factors limit your ability to implement this practice?

	Not at all	A little	Some	A lot	Don't Know
4. Don't know how to do it	60.5	10.5	14.1	8.6	6.3
5. Time required	50.2	10.9	16.0	15.6	7.4
6. Cost	46.7	9.3	15.1	22.0	6.9
7. The features of my property make it difficult	48.9	7.6	14.0	20.8	8.7
8. Insufficient proof of water quality benefit	59.8	12.1	10.2	5.5	12.5
9. Desire to keep things the way they are	49.6	12.6	11.5	21.0	5.3
10. Physical or health limitations	74.9	8.1	6.2	5.8	5.0
11. Lack of equipment	60.9	8.2	10.9	11.7	8.2

Making Decisions for my Property

In general, how much does each of these issues limit your ability to change your household and lawn care practices? (descending order by average)

	Not at All	A little	Some	A lot	Don't Know	Average
1. Personal out-of-pocket expenses	32.5	17.6	26.1	21.1	2.7	2.37
4. Lack of available information about a practice	31.8	22.2	24.7	17.8	3.6	2.30
3. Not having access to the equipment I need	39.1	21.2	20.1	13.8	5.8	2.09
7. Don't know where to get information and/or assistance about those practices	42.0	16.6	19.4	13.5	8.5	2.05
11. Not being able to see a demonstration of the practice before I decide	46.0	12.4	20.6	13.6	7.3	2.02
12. The need to learn new skills or techniques	49.6	14.9	18.3	10.4	6.8	1.89
2. My own physical abilities	51.9	17.8	20.3	8.6	1.4	1.86
5. No one else I know is implementing the practice	52.7	8.4	14.8	10.4	13.7	1.80
10. Concerns about resale value	58.6	10.0	14.2	12.2	5.0	1.79
8. Environmental damage caused by the practice	47.1	8.9	13.1	7.7	23.1	1.76
9. Legal restrictions on my property	54.9	4.7	10.6	7.8	22.0	1.63
6. Approval of my neighbors	67.4	9.1	11.0	4.7	7.7	1.49

About You

1. **Do you make the *home and lawn care decisions* in your household?**
 - 96.6 Yes
 - 3.4 No
2. **What is your *gender*?**
 - 71.1 Male
 - 28.9 Female
3. **What is your *age*?** 64.1 (Range: 22 - 101)
4. **What is the *highest grade* in school you have completed?**
 - 0.5 Some formal schooling
 - 4.2 High school diploma / GED
 - 9.8 Some college
 - 3.2 2 year college degree
 - 34.9 4 year college degree
 - 47.4 Graduate degree
5. **What is the *approximate size* of your shoreline property?**
 - 28.3 $\frac{1}{4}$ acre or less
 - 31.3 More than $\frac{1}{4}$ acre but less than 1 acre
 - 30.5 1 acre to less than 5 acres
 - 9.9 5 acres or more
6. **Do you *own or rent* your home?**
 - 99.5 Own
 - 0.5 Rent
7. **How long have you *lived at your current shoreline residence*?**
 - 21.3 years (Range: 0 – 79)
8. **Which of the following *best describes where you live on your shoreline residence*?**
 - 27.9 In town, village, or city
 - 38.6 In an isolated, rural, non-farm residence
 - 33.4 Rural subdivision or development
 - 0 Farm residence
9. **Do you use a *professional lawn/landscape service*?**
 - 15.5 Yes, just for mowing/trimming
 - 8.8 Yes, for mowing/trimming and fertilizing
 - 5.4 Yes, just for fertilizing and pest control
 - 11.1 Yes, for mowing/trimming, fertilizing, and pest control
 - 59.2 No
10. **Where are you likely to *seek information* about water quality issues? (check all that apply)**
 - 70.9 Newsletters / brochures / fact sheet
 - 45.1 Internet
 - 8.4 Radio
 - 42.5 Newspapers / magazines
 - 41.8 Workshops / demonstrations / meetings
 - 17.2 Conversations with others
 - 16.7 Television
 - 5.1 None of the above
11. **What type of *residence* do you own/rent on your shoreline property?**
 - 33.6 Primary residence
 - 66.4 Secondary (seasonal)
12. **What portion of the year do you live on your shoreline property?**
 - 22.8 Year round
 - 17.2 6 – 11 months
 - 22.8 3-5 months
 - 24.5 Less than 3 months
 - 12.6 Occasionally
13. **Do you have a *seawall* on your shoreline?**
 - 29.4 Yes
 - 69.3 No
 - 1.3 Not sure
14. **How long is your *shoreline*?** 164.1 feet (Range: 12 -2000 feet)

Information Sources

People get information about water quality from a number of different sources. To what extent do you trust those listed below as a source of information about soil and water? (descending order by average)

	Not at All	Slightly	Moderately	Very much	Am not familiar	Average
1. Lake Charlevoix Watershed Project	2.8	7.2	21.5	58.8	9.7	3.51
17. Lake Charlevoix Association	3.0	9.2	31.8	51.6	4.3	3.38
4. Michigan State University Extension	7.4	6.6	27.7	47.8	10.4	3.30
14. Little Traverse Conservancy/Grand Traverse Regional Land Conservancy	7.5	14.4	31.0	41.0	6.1	3.12
16. Tip of the Mitt Watershed Council	9.9	12.7	22.9	35.6	18.8	3.04
12. Michigan Department of Natural Resources	15.1	17.0	36.9	26.8	4.2	2.79
19. Charlevoix Conservation District	11.2	14.3	31.1	18.8	24.6	2.76
13. County Health Department	15.8	18.1	35.6	22.6	7.9	2.71
2. Local government	11.2	25.4	41.1	16.5	5.9	2.67
5. Michigan Department of Agriculture and Rural Development	14.9	14.4	27.9	19.2	23.7	2.67
18. Conservation organizations	14.1	22.0	33.5	18.0	12.4	2.63
6. Michigan Department of Environmental Quality	17.9	19.3	29.3	20.7	12.8	2.61
3. U.S. Environmental Protection Agency (USEPA)	18.8	21.3	33.7	19.1	7.0	2.57
11. Neighbors/friends	11.6	35.6	38.4	9.9	4.4	2.49
7. Environmental groups	18.5	28.9	28.9	16.0	7.8	2.46
8. Local garden center	25.3	30.3	29.5	4.2	10.7	2.14
10. Local community leader	30.4	25.9	22.7	3.7	17.3	2.00
9. Lawn care company	36.1	29.6	17.5	4.8	12.1	1.90
15. Tribal Governments	41.9	13.3	9.6	3.4	31.7	1.63

Septic Systems

Below are some additional questions about your septic system.

1. Do you have a septic system?

- 18.6 No
- 0.0 Don't Know
- 81.4 Yes

2. If you answered 'yes' to the previous question, in what year was it installed?

Total responses: 246
Average Age: 20.8years (Range: 0 - 90 years)
Don't know responses: 41 (16.7%)

3. Within the last five years, have you had any of the following problems? (Check all that apply)-

- 3.3 Slow drains
- 1.8 Sewage backup in house
- 3.5 Bad smells near tank or drain field
- 1.3 Sewage on the surface
- 0.8 Sewage flowing to ditch
- 0.8 Frozen septic
- 2.0 Other
- 69.1 None
- 1.0 Don't know

4. Do you have a garbage disposal?

- 21.5 Yes, I use it daily
- 41.7 Yes, I use it occasionally
- 7.7 Yes, but I don't use it
- 29.0 No

5. Does your septic system have an absorption field (drain field or tile field)?

- 90.5 Yes
- 3.8 No
- 5.7 Don't know

6. How would you know if your septic system was NOT working properly? (Check all that apply)

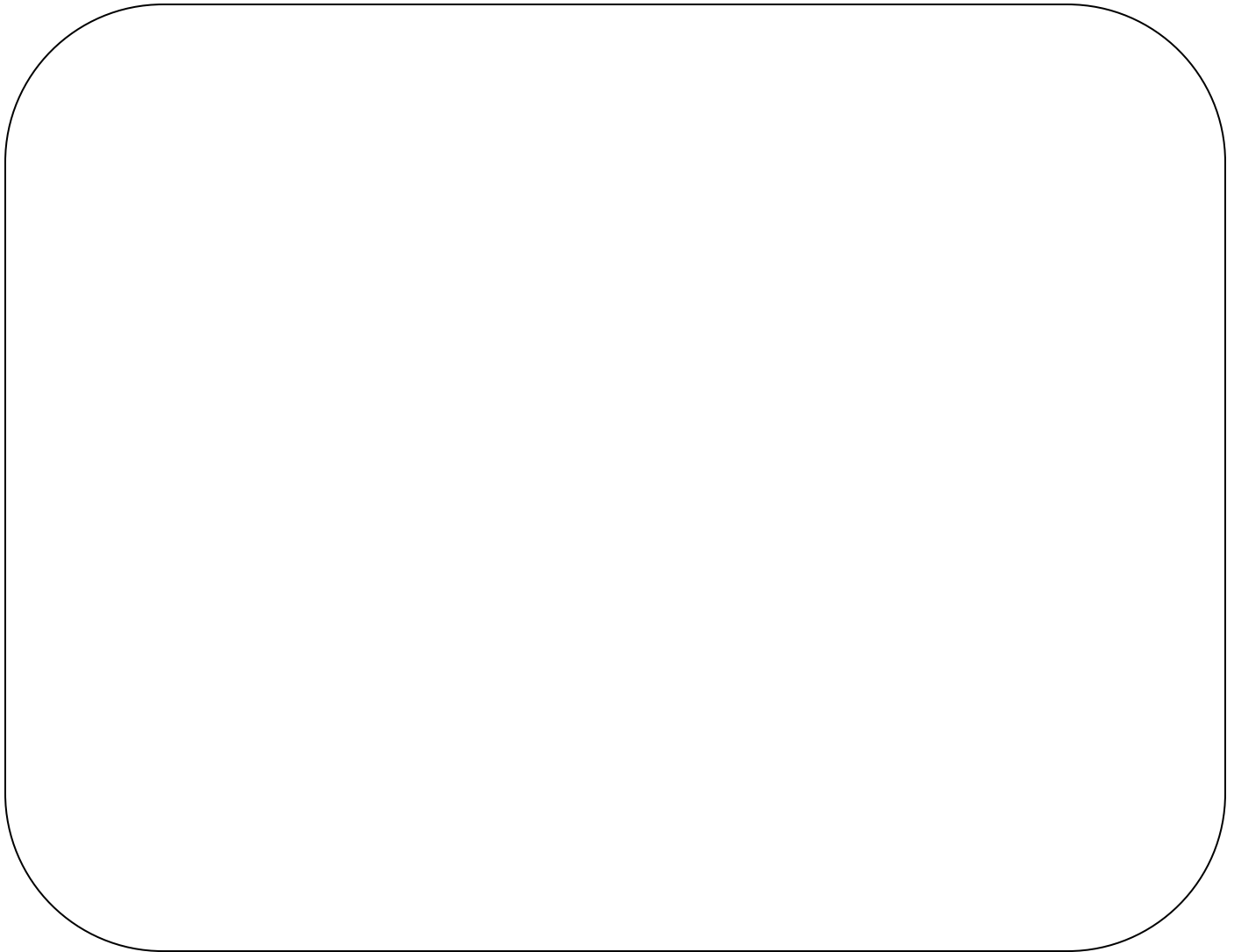
- 39.7 Slow drains
- 42.5 Sewage backup in house
- 45.8 Bad smells
- 42.3 Toilet backs up
- 30.1 Wet spots in lawn
- 18.0 Pumping tank monthly or more
- 5.6 Straight pipe to ditch
- 8.6 Frozen septic
- 7.1 Don't know
- 17.0 Other

7. Is your septic system designed to treat sewage or get rid of waste?

- 17.7 Treat sewage
- 20.8 Get rid of waste
- 27.9 Both
- 4.9 Neither
- 28.6 Don't know

Thank you for your time and assistance!

Please return your completed survey in the postage-paid envelope provided. Please use the space below for any additional comments about this survey or water resource issues in your community.



Local Project Coordinator:

Dean Solomon

MSU Extension – Charlevoix County

Phone: (231) 582-6232

Email: solomon@msu.edu

Single responses to the survey question: **If you answered ‘Yes’ above, where does your rain water drain to?**

- Deer Creek to Lake Charlevoix
- Wetland then the lake
- Ground, lake, stream
- Horton Creek then Lake Charlevoix
- The lake and downstream
- Culvert then the lake
- Loeb Creek to Lake Charlevoix
- The woods
- East Jordan Storm Sewer and Lake Charlevoix
- Lake Charlevoix and stream
- Lake and storm sewer drain
- The lowest point on the land, lake or street drain
- Soil and ditch
- Next door neighbor’s property or ground
- Nowland Lake
- Beach and lake
- Over 1000 feet to the waterfront
- Oyster Bay
- Porter Creek and Lake Charlevoix
- Rain barrel and then the garden
- Season Creek to Lake Charlevoix
- Sewer
- Leroy St., Boyne City
- Underground into wetland and lake
- Water table and lake
- City of Boyne City sewer and Lake Charlevoix
- 50% street sewer, 50% Lake Charlevoix
- Road
- Almost all water is retained on the property
- 90% into rocky soil, 10% into the lake
- Marshlands between house and Lake Charlevoix, backyard only. Most rainwater that does not evaporate (70 percent?) percolates into the ground. Very sandy soil here and heavy groundcover.
- Percolates thru the cedar-maple-white pine populated land directly into the lake. Septic tank pumps back 300 ft. away from the lake.
- The lake, after it is filtered by lawn and vegetation.
- The road (Lakeshore dr.) then dries off eventually
- To the city municipal storm sewer, sedimentation basin, then to Lake Charlevoix, formerly sneaky Boyne City directed polluted runoff and storm water to our lakefront, refused to change it and we had to file a lawsuit.
- We are presently trying to change the grade of the road in front of our residence so water runs away from our septic field and lake. We live on a private road. The neighbors are doing the grading, not a licensed contractor. They are “saving money” by grading the road themselves. Unfortunately we have to hire an attorney to get them to stop what they are doing to our property with water runoff after a storm. There is also a drain they have closed which directs the storm water away from the lake and my property.

Responses to the Soil Testing question: **2. If the practice is not relevant, please explain why.**

- No fertilizer use - 52 – 49.5%
- Area is kept in a natural state – 11 – 10.3%
- No lawn – 9 – 8.4%
- Property is wooded – 5 – 4.7%
- Property is undeveloped – 3 – 2.9%
- No lawn, only fertilizer individual plants – 2- 1.9%

The following are single responses

- We use no chemicals
- Too close to the water to fertilize
- Just sand
- Natural beachfront
- Woods and beach
- Only grass, flowers, shrubs
- We use a service
- Very limited use
- We are rarely in the area
- City water/city sewers
- Do not use fertilizer. Maintain a natural healthy garden with compost, lawn clippings, proper grass height, shredded mulch.
- Don't use fertilizer on lakeside property
- I avoid using chemical fertilizer.
- I don't use fertilizer. Use lake water for water so no need.
- My lawn is separated by the road (Lakeshore dr.) to the lake.
- Need to know more information
- Not currently fertilizing anything.
- Our service never shared the information.
- Use phosphate free and natural fertilizers.
- We do not currently use our property. Have not been there in 10 years.
- We do not use fertilizers and maintain a green area.
- We don't have soil except sand and rock. We don't use fertilizer on the property.
- We have lawn service, they may do it.
- We have small lawn and don't fertilize by the lake.
- We have trees and bushes – no grass, don't use any fertilizer.

Single responses to the Septic Inspection question: **2. If the practice is not relevant, please explain why.**

- On a community septic system
- Again seasonal – are careful about using no bleach and no food down the drains.
- My septic system is fine
- Need to have septic systems cleaned out every few years.
- Only used about 3 weeks per year.
- Pumped every 3 years.
- Septic field is 1500 ft. from lake, a system only used 5 months a year.
- We are on a sewer system pumped .5 miles from the lake. No one on our street has septic.
- We have our septic pumped out and checked every 2 years. Part time resident use.
- We haven't had our home very long.

Responses to the Natural Shoreline question: **2. If the practice is not relevant, please explain why.**

- Area is left wild – no need noted.
- Beach
- Do not know anything about this
- Don't need to use it.
- Have always kept grounds and shore and wetlands natural
- Live on lake with natural trees and shrubs.
- Lot tool small
- No existing trees, shrubs, etc. on our waterfront.
- None there.
- Sand beach lawn to beach
- Sandy beach – natural shoreline
- Seawall makes it unnecessary.
- Separated by the road
- Undeveloped land, but have knowledge.
- Water level goes up and down – washed out plants and trees when high.
- We allow natural vegetation to grow at the water's edge.
- We do not have tree or plants adjacent to our shore.
- We don't have waterfront trees.
- We have a natural buffer of wetlands (approx. 50 ft.) between garden and shore.
- We have all rock.
- We pay so much taxes we feel we should be able to maintain property as we see fit.

Single responses to the new natural shorelines question: **2. If the practice is not relevant, please explain why.**

- Beach sand, natural grass lawn
- Do not have a lawn. It is what it is and has been for 80 years.
- Have plenty of trees, etc.
- I have a rock wall and vegetation.
- Live vegetation will not stop erosion from Lake Charlevoix waves from actual observation over the years.
- Lot too small.
- Never had any “unnatural” seawalls, etc.
- No lawn to shore of creek – maintain buffer.
- No lawn, heavily wooded lot. Myrtle ground cover.
- Old shoreline.
- Only lawn is behind cottage which is up on a hill.
- Our lawn already terminates about 20 feet from the shoreline.
- Our lawns and gardens have never extended to shore.
- Prevents view of the lake.
- Several years ago the water level of Lake Charlevoix raised and we lost many trees in the lake. We built a seawall.
- Shoreline is rocky and can’t sustain plants or trees. Some weeds do grow along the shore.
- Shore is protected by shrubs.
- Small and structured frontage.
- Undeveloped land, but have knowledge.
- Very steep drop off does require seawall as well.
- We currently have a natural wetlands up to a small beach.
- We have a maintained green area.
- We have a seawall and vegetation.
- We live on Lakeshore rd.
- When lake level changes, so does the shoreline. Lake level rising?
- Doesn’t apply.
- No erosion
- Seawall, no erosion
- No lawn near water
- Beach

Comments received:

Invasive species:

- Anything you can do to eliminate the zebra mussels and prevent Asian carp would be appreciated
- Is our government going to stop invasive species or just turn their back and ignore it? Asian carp should be completely harvested by commercial fisherman. Zebra mussels should be somehow destroyed. Foreign ships should not be allowed in the Great Lakes. And do they (border patrol) check each ship thoroughly?
- Need better control of Canada geese population on all waterways. Need plan to protect Lake Charlevoix from Asian carp invasion.
- Please protect the Great Lakes from Asian carp! Please make more information available on phragmites.
- The Lake Charlevoix Association has done a super job attacking the shoreline problem of phragmites. Their effort of 100% survey of lakeshore and the spray program has been a major improvement to the lake. I am now concerned about Eurasian water milfoil. The lack of a possible solution to the problem.
- All my life at the lake (own lakefront property) I have observed deterioration of the water quality. Part of it is due to pollution of the environment. We must quit doing that and make it illegal. The other part is introducing unnatural elements to try to solve problems, but instead always makes it worse. Do not ever do that again! Stop the Asian carp before they get here. Do not say “oops” after the fact, then try to fix something that can never be fixed. Thank you for trying to get our water back to where it used to be.

Undeveloped land

- Have 8 acres no home, 200 feet frontage no septic system boat dock only.
- I have 100 feet of lake property, there is no house on it. We just use it for picnics and sunning. All we do there is mow.
- I just own property (undeveloped) on Lake Charlevoix. I don't plan on building anytime soon. That's why I didn't feel answering this survey was important. Just bought the land as an investment.
- My property is just north of Holy Island on the west shore of the south arm. I have a pole barn on site, but no residence.
- We have an undeveloped lot.
- We hope someday to build on our property. We bought it to be a secluded cabin but now the houses around it could fit in a ritzy subdivision – not what we wanted.

Gas Wells

- The Lake Charlevoix Watershed Project must join forces with other Lake Charlevoix and northern Michigan projects and organizations that are trying to block and stop the horizontal fracking effort to get gas; as this is the biggest danger to the future water quality in Lake Charlevoix and its watershed. Everything else with our lawns and septic systems won't matter if horizontal fracking is allowed to occur.

Septic Systems

- Our septic system has worked well over the years since installed. A recent problem occurred when our grinder pump failed and needed replacing. Good again with a new pump @ \$1500. We have the tank pumped regularly (3 years). Always told drain field is in good shape.
- Our septic system was fully engineered by experts and licensed by local permits. It works well and does not permit pollution. We're pleased to be doing our part for water quality.
- Our septic system is a pump back pressurized system installed by Koteskey Brothers Excavating, Boyne City – It is the 3rd system we have installed at the 3 locations we have lived on Lake Charlevoix. The last 2 had sim-tec filters installed. All have worked well. Annual maintenance is performed on the system by the installer.
- The septic system installed at my cottage has a 2 part holding tank. It is then pumped up hill 1/8 mile to the septic field. This should be on your questionnaire. Ideal system to help protect water quality.
- We have a pumping station that receives water from the septic tank and pumps it to the septic field that is located well away from the lakeshore.
- I believe septic systems should have mandatory filters and inspections. Thank you.
- Charlevoix County Health Department must be more aggressive in granting septic permits and more follow-up with known problem septic systems. Fine residents or close down polluting systems.

Fishing and Fish Habitat

- Lack of fish I used to catch. Smelt, perch, steelhead, cisco, pick, rock bass, whitefish, herring, no minnows.
- The suggestion to create fish habitat with debris in the lake is very bad. Fifty years from now when it has not worked, folks will be trying to figure out ways to get it undone! If it ain't broke, do not fix it!

Natural

- We don't use pesticides or fertilizers on our property because we don't want it going in the lake or creek. We leave everything natural.
- Family property on Lake Charlevoix, owned since 1920. Many brooks drain to lake. Before indoor plumbing, brooks used for drinking and cooking water, no problems. 50 acres of woods and wetlands maintained naturally with very little to no change since acquiring the property in the 20's. No grasses exist unless naturally grown. Shoreline hasn't changed or been changed ever. Much vegetation and rocks, sand. No lawns!
- House built in 1919 – well water, no lawn and all natural shoreline, all shore tree lined except small sand beach (1981); no motor boats.
- Most shoreline controlled by nature, not cultivated!
- We really do care about Lake Charlevoix, Walloon Lake and the rest of our waterways here in Michigan, and we'll do our best to ensure that we minimize our impact. We do not fertilize, we use minimal chemicals and as many biodegradable products as possible. We'll keep our eyes open for future ways to reduce our impact and help restore our ecosystems!

Fertilizer

- We typically fertilize once a year in spring. Use Scott's weed and feed. In the future we will find a more responsible option.

Taxes

- As for tax increase, feel regulations and enforcement should be used first.

About the survey

- You must be working on your PhD with this survey.
- Your questions are like this. If you thought you could get some funds from me yes O no O, not very scientific.
- Good survey – well done and concise.
- Good survey.
- Slanted. Questions do not always fit answers.
- Some of these questions are overkill. I am not an engineer. Answered the best I could. Thank you.
- Sorry it took so long – it was a very busy summer. I am very happy that so many groups in northern Michigan are working on these problems. Thank you.
- Thank you for asking for our opinions!
- Thank you for attentiveness to this vitally important issue for the health of Lake Charlevoix. We all need to work to keep this lake beautiful and healthy!
- Thank you!
- Thanks, look forward to feedback.
- This isn't just a 20 minute survey. We should be able to view conclusions if meaningful to us.
- Would like to see a survey (similar to this) sent out to just the violators.
- Yayyy! Thank you for your time. You're awesome!!
- You are getting this survey returned from a person who is pretty ignorant on these issues. Did the best she could in answering.
- You could have done this through online services and have it compiled as well.
- Dean, You seem to want me to answer this questionnaire strongly. The problem I have doing this is that it is a very poorly designed and executed questionnaire. It asks a lot of questions that are difficult or impossible to know. It asks some questions that are just plain not understandable. A major problem with these questions in relation to Lake Charlevoix is that its water quality is the best in the region! And it looks fine and is used for recreation and all water sports. In "water impairments" what does "opinion" matter? It is also unclear to me how this info will be used?? Other parts also ask for opinion! I don't see how this is useful! If you wish to discuss this with me, I would be glad to discuss it with you.
- I did my best on the vague questions. I also tried to distinguish between the two properties. In town (home) vs. township (seasonal).
- I need more knowledge regarding your survey. We have not experienced any specific problems with water quality, septic field or tank or other areas in your survey. Thank you and good luck.
- I would like to know the results of your survey and how it will be used.
- The cottage we own on Lake Charlevoix is only used in the summer by 4 different families. We do not fertilize the lawn – so cannot relate to many of the questions in this survey.

Education

- Resources – to educate my neighbors about water runoff; prevention of pollution to our lakes.
- Seminars regarding shoreline-water drain off would be useful – in Boyne, Petoskey, or Charlevoix during early summer or the month of August, before Labor Day – we'd be happy to learn more!
- 1. Would like any advice relative to septic systems and its proper maintenance. 2. Do not attempt to create a lawn and fertilizer. 3. Have a riparian, vegetative barrier but do not know its quality, what are standards?
- I would be happy to learn how we can improve our water. We have owned our home 1.5 years. It has needed a lot of work. We have never owned a home with a septic tank so we need to learn how to care for it. Maybe send out a newsletter with tips?
- People using fertilizers on lawns, and runoff into lake. People not upgrading septic systems. People not obeying ordinances of townships, do as they please. I need informational sessions on the various issues, but must be in summer.
- I'm all in favor of doing anything that helps keep the quality of Lake Charlevoix water good. I believe there should be strong effort to get people with big lawns to the shore to stop using fertilizer. Constant education is needed as many (most!) are from downstate and don't seem to get the picture!
- Only a small portion of my property 78 feet on lakeshore has lawn rock embankment, sandy beach and is mowed. There is a 12-15 feet sand shoreline between lawn embankment (4 feet high) and waterline. I would appreciate receiving info re: this subject from MSU and would attend any conferences within 15 miles of our residence. We currently belong to the Wine Making Assoc. out of Traverse City and have attended classes at the MSU Extension on the Mission Peninsula.

Various Other Comments

- 1. The survey is a good idea but you did not allow for the possibility of an entirely organic policy of gardening which my closest neighbor and I have carefully implemented. It might be useful to determine how many property owners are dedicated to completely organic gardening. 2. A serious problem unaddressed here is the pervasive practice of regular pesticide applications to eradicate spiders on houses. These applications are usually sprayed and regularly winds carry a substantial percentage of the sprayed pesticide out over the water. 3. Another emerging problem is the new policy by the Lake Charlevoix Association to encourage shoreline landowners to deposit shipping pallets (!) into the lake to provide bass habitat. There has been no attempt to identify chemicals that may permeate the pallets' wood or the consequences of the thousands of sharp rusty nails being released into the waters as the pallets disintegrate or are battered by storms.
- Always wondered why the individual property owner had to abide by the 90-100 foot green zone (vegetative) in putting up a building, yet condominiums (as the ones on Lake and Division?) were built right on the water's edge a number of years ago. Or, off on Ferry road past Advance going toward the ferry, off to the right I believe is Hemmingway Point? Where a number of buildings were erected a number of years ago which appear to be relatively close to the water with no green zone. Do you concern yourself with the level of the lake? Has any so called development had any impact on the level of the lake? For example, the development on Ferry road near Advance on the site of the power plant. Wouldn't the dug channels have any level impact?
- I am 87 years old. Twice a widower and rarely visit my cottage. I no longer am able to work on my property but rely on my son-in-law to do so. He does so diligently. There is very little lawn as such. The shoreline is adequately protected by rocks and vegetation during this low water period. My cottage is on the eastern shore, in the middle of the south arm.

- I have been long concerned that most lakefront properties in my area have lawns, use fertilizers, and do not have riparian buffer areas between their lawns and the lake. We need to encourage property owners to create and maintain such buffer areas.
- I live in a 27 unit condo building on the shoreline of Lake Charlevoix.
- I am interested in using environmentally friendly lawn products. Lawn Logic fertilizes and cuts my grass. They said they use a product appropriate for lake front property, but if you have something better, let me know.
- Loss of shoreline habitats is a concern in our area (Boyne City). Rising water levels in the 1970s led to many property owners building seawalls, including us. Cost and concerns of property protection would be obstacles to removing seawalls.
- Mr. Solomon, I am sorry. I can't answer these questions because I do not live in the area. My 2 brothers and sister (who jointly own this property) do live in the area but not on this property. It's undeveloped. We (just last December) sold 600 feet to the conservancy and donated 100 feet a total of 700 feet. We now own about 840 feet of undeveloped land. You ask about debris in the water? I personally wouldn't call it debris. We've (my folks and now us) owned this property 75 years. Before that it was a sawmill (Dwight's Landing) and small village (with a post office). There are slabs of lumber and very old docks still there (only posts). The southern end (about 300 feet) has no lumber and is pretty beach. It is located on the east side of the south arm where Olstrum Creek runs into the lake. As you can see, it's been hard for us to part with this historic site. Thanks for protecting this beautiful lake.
- Not enough is being done to help homeowners who are victims of Boyne City's unscrupulous practices of draining polluted runoff and storm water onto private property and at public beaches-road ends, without any warnings (health) that storm water containing e coli above permissible levels can cause gastro-intestinal illness, amongst other adverse health effects to youngsters and the elderly. Fortunately, I am an attorney that was able to educate myself on the adverse effects of polluted storm water. I took the task of filing a lawsuit against Boyne City and other related parties at great expense to my family and my law firm. The average homeowner would not be in the position of seeking legal remedies and the costs associated with doing so. Furthermore, there needs to be laws enacted to prohibit municipalities from claiming bogus prescriptive easements again private property owners without proper recordings in the register of deeds and to prohibit stalking by government officials.
- Road ends are the biggest source of lake contamination. The county needs to take care of its own business before it starts meddling in the private property owners business. We already have way too much government interference and regulation.
- The questions on soil testing left me wondering how to answer. There were too many negatives, i.e. "Don't know how to use it – not at all." There was no question asking if I did use fertilizer. Answer, no I don't. By seawall, do you mean an actual metal wall, or do you mean rocks? No, I do not have the money to have the rocks taken out and a landscaped rock with pockets for plants put in.
- We are still in the process of building our home on Lake Charlevoix, so some of these answers are anticipation, and some we did not answer because we do not yet know. Water quality is important to us and we intend to be responsible homeowners. However, we are also very sensitive to cost and already pay a great deal of property tax. We appreciate any information provided by the extension service or others about how best to responsibly maintain our property. We would be concerned though about additional regulation or mandates which would limit our view of our property.
- We contribute to Lake Charlevoix Association and Tip of the Mitt. We read materials from those sources. We are not at the cottage much since children have grown up, and we live in an area with a beautiful beach on Lake Michigan so not motivated to leave very often for the cottage area although I love that region too.

- We do not have a residence on our property; we are a part of a family “compound” going back 6 generations. All our properties are “off-XXXXX” in that no lawns or other developed landscapes. They are “all natural”. Septic systems are in place but always maintained. We like it like this. Six generations cannot be all bad. I have a PhD in botany from MSU; teach environmental biology; my brother is a retired US Forest Service employee. We are all trying our best to maintain our “properties”.
- We have very nice neighbors adjoining our Lake Charlevoix property. They have removed every tree and planted sod or seed within 20 feet of the beach. Soon I anticipate the grass will be fertilized. They do not see a problem.
- We live within the city limits of East Jordan. My concern is for the effect of the East Jordan Iron Works complex and any toxic waste from that. At times the air quality is negatively affected by it and I have concerns about the water quality and possible effects of the EJIW and industrial waste being passed into the water. Also, recently chemicals were used to get rid of unwanted vegetation by the local group. I was not in favor of this and was concerned as to how it would affect water quality. 3rd year phragmites treatment in Lake Charlevoix shoreline beginning after Labor Day 2011.
- While your efforts are appreciated, your long range goal is being destroyed by Boyne City and Somerset Pointe. The sewer system from Boyne City was supposed to extend to Somerset Pointe. This could have included 80 homes in addition to Somerset. For some reason this was cancelled and Somerset Pointe built a huge treatment facility (septic tank) up on Marshall Road. It is difficult to get excited about cleaning the lake up when local government ignores the opportunity to really make a difference.
- Your survey is too detailed to hold the attention of most. We need more education on kinds of fertilizers to use on the lawn and weed killers and their half-life and effects on the lake. I generally believe they do not affect my well water table-drinking water. Some of your questions assume cottage owners should sacrifice their beaches and views to plant trees and bushes at water’s edge!