Portage River and Little Portage Creek Social Survey Report

In an effort to identify and target needed management and outreach strategies for the Portage River and the Little Portage Creek Watershed Management Plans (WMPs), a social survey was developed to collect information on stakeholders' knowledge, awareness, and behaviors related to water quality and their willingness to implement best management practices. Detailed information gained from each of the three target audiences was necessary to cultivate specific management practices to successfully reduce nonpoint source pollutants and to provide meaningful and productive education and outreach activities on nonpoint source pollution and wetland function. Two surveys were conducted:

Near start of project: A public opinion survey was conducted in late winter/early spring of 2014 to help develop and guide information and education efforts for this project and to serve as a baseline measurement for project information and education activities. Detailed surveys from the targeted audiences (lake communities in the Portage River watershed, agricultural landowners in the Portage River and Little Portage Creek watersheds, and Township planning officials in the Portage River and Little Portage Creek watersheds) were sent to 40% of each audience (see table below) and, from those, completed surveys were received from 44% of lake residents (888 sent, 387 received), 41% of agricultural landowners (805 sent, 332 received), and 81% of Township planning officials (120 sent, 97 received) through mailed responses and the online tool Social Indicators Data Management and Analysis (SIDMA).

Near end of project: The same public opinion survey was conducted in late fall/early winter of 2014 to collect changes in the environmental awareness and attitudes of watershed residents in an effort to develop an information and education strategy for the Watershed Management plans and to serve as a measure of success for project information and education activities. Detailed surveys from the targeted audiences (lake communities in the Portage River watershed, agricultural landowners in the Portage River and Little Portage Creek watersheds, and Township planning officials in the Portage River and Little Portage Creek watersheds) were sent to 40% of each audience (see table below) and, from those, completed surveys were received from 40% of lake residents (888 sent, 356 received), 40% of agricultural landowners (805 sent, 325 received), and 67% of Township planning officials (120 sent, 81 received) through mailed responses and the online tool Social Indicators Data Management and Analysis (SIDMA).

Survey Size by Target Audience

Target Audience	Estimated Population/Households	Sample Size for Households	Minimum # of Responses Needed (40%)
Lake Communities	11,150/4,600	888	355
Agricultural Landowners	5,000/2,000	805	322
Township Planning Officials	120 individuals	120	48
Total	16,265/6,715	1,813	725

It was anticipated that the following general questions would be answered in greater complexity upon implementation of the social indicator surveys:

1. What are landowners' perceptions of water quality, current impairments, sources of water pollution, practices to improve water quality, understanding of wetland function, knowledge of information sources, and the constraints to implementing BMPs, among three target audiences?
2. How do the responses from each target audience differ from each other?
3. What are the most probable education and outreach tactics for each target audience to achieve water quality goals?

In between the "start of project" and "end of project," education activities included:

- Working with three Township's planning officials to review, update Master Plan and Zoning Ordinances
- Creation of website with Ecoli, Nonpoint Source, Water Quality information
- Natural Shoreline Partnership workshop
- Two newsletters sent via email
- Encouraged and promoted Lake Associations to enroll in Michigan Clean Water Corps Cooperative Lakes Monitoring Program
- Canoe/Kayak event to learn about the Portage River Watershed project
- Creation of a Landowner Guide for Reducing Nonpoint Source Pollution
- Landscape Level Wetland Functional Assessment brochure created, distributed
- MSU-E publication "Managing Your Septic System" printed, distributed

The following tables illustrate the "start of project" and "end of project" survey results specific to each group of stakeholders (Agriculture, Lake Communities, Township Officials) with summary information after each group.

AGRICULTURE

Survey question	Most Frequent Response-Start of Project	Most Frequent Response-End of Project
RATING OF WATER QUALITY		
Overall, how would you rate the quality of the water in your area?		
1. For canoeing/kayaking/other boating	Good	Good
2. For eating locally caught fish	Good	Good
3. For swimming	Good	Good
4. For picnicking and family activities	Good	Good
5. For fish habitat	Good	Good
6. For scenic beauty	Good	Good
YOUR WATER RESOURCES		
Of the activities listed above, which is the most important to you?	Scenic Beauty	Scenic Beauty
Do you know where the rain water goes when it runs off of your property?	Yes	Yes
If you answered 'Yes' above, where does your rainwater drain to?	Ditch	Ditch/Stream
YOUR OPINIONS		
Indicate your level of agreement or disagreement with the statements below (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)		
1. Using recommended management practices on farms improves water quality	Agree	Agree
2. It is my personal responsibility to help protect water quality	Agree	Agree
3. It is important to protect water quality even if it slows economic development	Agree	Agree
4. My actions have an impact on water quality	Agree	Agree
5. I would be willing to pay more to improve water quality (for example: through local taxes or fees)	Neither Agree nor Disagree	Disagree
6. I would be willing to change management practices to improve water quality	Agree	Agree
7. The quality of life in my community depends on good water quality in local streams, rivers, and lakes	Agree	Agree

WATER IMPAIRMENTS		
In your opinion, how much of a problem are the following water impairments in your area? (Not a problem, Slight problem, Moderate problem, Severe problem, Don't know)		
1. Sedimentation (dirt and soil) in the water	Slight problem	Slight problem
2. Nitrogen	Don't know	Slight problem
3. Phosphorus	Don't know	Slight problem
4. Bacteria & viruses in the water (such as E.coli/coliform)	Don't know	Slight problem
5. Algae in the water	Slight problem	Not a problem
6. Not enough oxygen in the water	Don't know	Not a problem
7. Invasive aquatic plants and animals	Don't know	Slight problem
8. Flow alteration	Don't know	Not a problem
9. Habitat alteration harming local fish	Don't know	Don't know
SOURCES OF WATER POLLUTION		
In your opinion, how much of a problem are the following sources in your area? (Not a problem, Slight problem, Moderate problem, Sever problem, Don't know)		
1. Soil erosion from construction sites	Slight problem	Slight problem
2. Soil erosion from farm fields	Slight problem	Slight problem
3. Soil erosion from shorelines and/or stream banks	Slight problem	Slight problem
4. Excessive use of lawn fertilizers and/or pesticides	Slight problem	Not a problem
5. Grass clippings and leaves entering storm drains	Slight problem	Not a problem
6. Improperly maintained septic systems	Slight problem	Slight problem
7. Manure from farm animals	Slight problem	Slight problem
8. Droppings from geese, ducks, and other waterfowl	Slight problem	Slight problem
9. Excessive use of fertilizers for crop production	Slight problem	Slight problem
10. Grazing related sources	Not a problem	Slight problem
11. Animal feeding operations	Slight problem	Slight problem
12. Land development or redevelopment	Not a problem	Not a problem
13. Removal of riparian vegetation	Don't know	Don't know
14. Stream bank or shoreline modification/destabilization	Don't know	Don't know
CONSEQUENCES OF POOR WATER QUALITY		
In your opinion, how much of a problem are the following issues in your area? (Not a problem, Slight problem, Moderate problem, Severe problem, Don't know)		
1. Polluted swimming areas	Slight problem	Slight problem

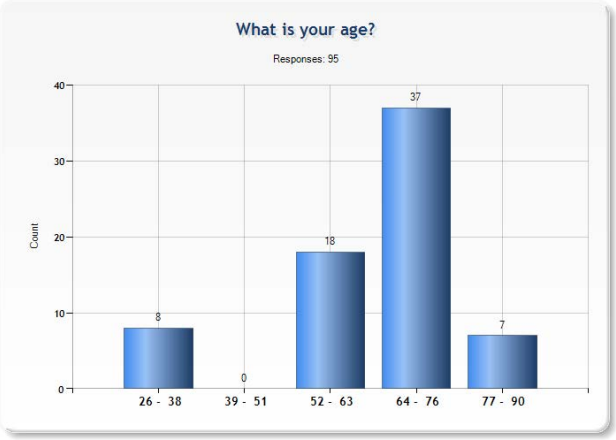
2. Contaminated fish	Slight problem	Not a problem
3. Loss of desirable fish species	Not a problem	Not a problem
4. Reduced beauty of lakes or streams	Not a problem	Not a problem
5. Reduced quality of water recreation activities	Slight problem	Not a problem
6. Excessive aquatic plants or algae	Slight problem	Not a problem
7. Fish kills	Not a problem	Not a problem
8. Odor	Not a problem	Not a problem
9. Lower property values	Not a problem	Not a problem
PRACTICES TO IMPROVE WATER QUALITY		
Indicate which statement most accurately describes your level of experience with each practice listed below (Not relevant for my property, Never heard of it, Somewhat familiar with it, Know how to use it; not using it, Currently use it)		
1. Following the manufacturer's instruction when fertilizing lawn or garden	Currently use it	Currently use it
2. Properly dispose of pet waste	Know how to use it; not using it	Know how to use it; not using it
3. Inspect septic system for size and condition	Know how to use it; not using it	Know how to use it; not using it
4. Conduct regular soil tests for pH, phosphorus, nitrogen, and potassium	Know how to use it; not using it	Currently use it
5. Construct a waste storage facility	Know how to use it; not using it	Know how to use it; not using it
6. Use fences to exclude livestock from riparian areas	Know how to use it; not using it	Know how to use it; not using it
7. Restore/enhance wetland	Know how to use it; not using it	Know how to use it; not using it
8. Plant vegetated riparian buffer	Know how to use it; not using it	Know how to use it; not using it
9. Protect stream banks and/or shorelines with vegetation	Know how to use it; not using it	Know how to use it; not using it
SPECIFIC CONSTRATIONS OF PRACTICES		
Regular Septic System Services: Having septic system thoroughly cleaned every 3-5 years to remove all the sludge, effluent, and scum from the tank.		
1. How familiar are you with this practice? (Not relevant, Never heard of it, Somewhat familiar with it, Know how to use it; not using it, Currently use it)	Currently use it	Currently use it
2. If the practice is not relevant, please explain why	Costly/Can't afford it	Cost

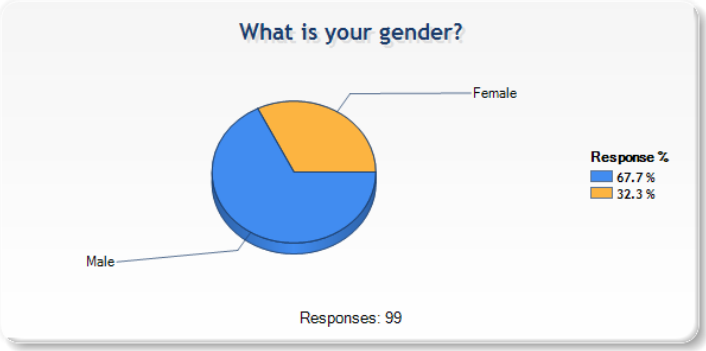
3. Are you willing to try this practice? (Yes or already do, Maybe, No)	Maybe	Maybe
How much do the following factors limit your ability to implement this practice? (Not at all, A little, Some, A lot, Don't know)		
4. Don't know how to do it	Not at all	Not at all
5. Time required	Not at all	Not at all
6. Cost	Not at all	Not at all
7. The features of my property make it difficult	Not at all	Not at all
8. Insufficient proof of water quality benefit	Not at all	Not at all
9. Desire to keep things the way they are	Not at all	Not at all
10. Physical or health limitations	Not at all	Not at all
11. Hard to use with my farming system	Not at all	Not at all
12. Lack of equipment	Not at all	Not at all
Diversion Structures for Feedlot Runoff Diversion: Use of a built structure to prevent surface water from flowing through feedlots		
13. How familiar are you with this practice?	Not relevant	Not relevant
14. If the practice is not relevant, please explain why	No livestock	No livestock
15. Are you willing to try this practice?	Maybe	Maybe
How much do the following factors limit your ability to implement this practice?		
16. Don't know how to do it	Not at all	Not at all
17. Time required	Not at all	Not at all
18. Cost	Not at all	Not at all
19. The features of my property make it difficult	Not at all	Not at all
20. Insufficient proof of water quality benefit	Not at all	Not at all
21. Desire to keep things the way they are	Not at all	Not at all
22. Hard to use with my farming system	Not at all	Not at all
23. Lack of equipment	Not at all	Not at all
Grazing Plan: Following an approved grazing plan including practices such as prescribed rotational grazing, remote watering stations, flash grazing to maintain grass quality and reduce erosion		
24. How familiar are you with this practice? (Not relevant, Never heard of it, Somewhat familiar with it, Know how to use it; not using it, Currently use it)	Not relevant	Not relevant
25. If this practice is not relevant, please explain why	No livestock	No livestock

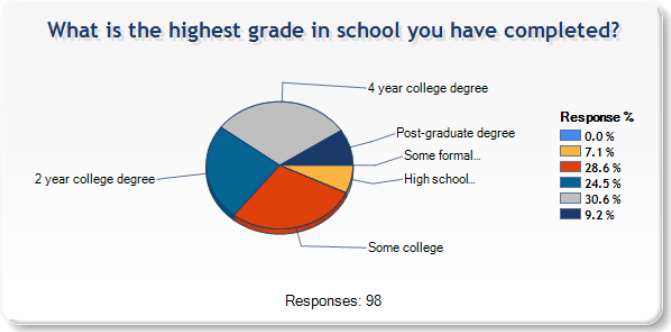
26. Are you willing to try this practice? (Yes or already do, Maybe, No)	Maybe	Maybe
How much do the following factors limit y our ability to implement this practice? (Not at all, A little, Some, A lot, Don't know)		
27. Don't know how to do it	Not at all	Not at all
28. Time required	Not at all	Not at all
29. Cost	Not at all	Not at all
30. The features of my property make it difficult	Not at all	Not at all
31. Insufficient proof of water quality benefit	Not at all	Not at all
32. Desire to keep things the way they are	Not at all	Not at all
33. Hard to use with my farming system	Not at all	Not at all
34. Lack of equipment	Not at all	Not at all
Conservation Tillage: Establishing crops in the previous crop residues, which are purposely left on the soil surface		
35. How familiar are you with this practice? (Not relevant, Never heard of it, Somewhat familiar with it, Know how to use it; not using it, Currently use it)	Know how to use it; not using it	Know how to use it; not using it
36. If this practice is not relevant, please explain why	N/A	Never tried it
37. Are you willing to try this practice? (Yes or already do, Maybe, No)	Maybe	Maybe
How much do the following factors limit your ability to implement this practice? (Not at all, A little, Some, A lot, Don't know)		
38. Don't know how to do it	Not at all	Not at all
39. Time required	Not at all	Not at all
40. Cost	Not at all	Not at all
41. The features of my property make it difficult	Not at all	Not at all
42. Insufficient proof of water quality benefit	Not at all	Not at all
43. Desire to keep things the way they are	Not at all	Not at all
44. Hard to use with my farming system	Not at all	Not at all
45. Lack of equipment	Not at all	Not at all
MAKING DECISIONS FOR MY PROPERTY		
In general, how much does each issue limit your ability to change your management practices? (Not at all, A little, Some, A lot, Don't know)		
1. Personal out-of-pocket expense	Not at all/Some	Some
2. Lack of government funds for cost-share	Not at all	Not at all

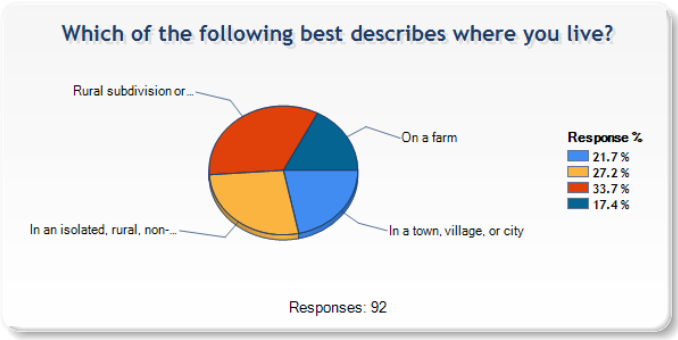
3. Not having access to the equipment that I need	Not at all	Not at all
4. Lack of available information about a practice	Not at all	Not at all
5. No one else I know is implementing the practice	Not at all	Not at all
6. Concerns about reduced yields	A little	Some
7. Approval of my neighbors	Not at all	Not at all
8. Don't want to participate in government programs	Some	Some
9. Requirements or restrictions of government programs	Some	Some
10. Possible interference with my flexibility to change land use practices as conditions warrant	Some	A little
11. Environmental damage caused by practice	Not at all	Not at all
12. I do not own the property	Not at all	Not at all
13. Not being able to see a demonstration of the practice before I decide	Not at all	Not at all

ABOUT THE AGRICULTURAL RESPONDENTS:









The most frequent agriculture responses came from farm operations where the respondent alone or with his/her spouse make management decisions, have been farming for an average of 15.63 years, with no family member owning or operating the farm before them and definitely will not have a family member continue farm operations when they retire or quit farming. The respondents have an average of 212.88 tillable acres, manage 109.48 acres of corn, 50.04 acres of soybeans, and 14.76 acres of small grains. The respondents manage an average of 1.49 acres of pasture, 1.22 acres of conservation set aside/CRP, 12.68 acres of forest/woodlot. Respondents average 0.02 dairy cattle, 1.01 beef cattle, and 16.9 other livestock as part of their farming operation. Their managed property does not touch a stream, river, lake, or wetland, and they do not irrigate their farm land. They have lived at their current residence (a farm) 23.6 years. They have a septic system, installed on average in 1951 and have had no problems with their septic system. They do not want a reminder from their health department regarding inspection or maintenance of their septic system, most do not know if they have an absorption field (finger system) and trust their toilet backing up or sewage backing up in the house as a sign of their septic system not working properly. They do not know if their septic system was designed to treat sewage or get rid of waste and they do not think a local government agency should handle inspection and maintenance of septic systems. These respondents seek information about soil and water conservation issues from conversations with others or the internet and they regularly read a newspaper. When looking for information about water quality, the respondents trust crop consultants and fertilizer representatives the most.

LAKE COMMUNITIES

Survey question	Most Frequent Response- Start of Project	Most Frequent Response-End of Project
RATING OF WATER QUALITY		
Overall, how would you rate the quality of the water in your area? (Poor, Okay, Good, Don't Know)		
7. For canoeing/kayaking/other boating	Good	Good
8. For eating locally caught fish	Okay	Okay
9. For swimming	Okay	Okay
10. For picnicking and family activities	Good	Good
11. For fish habitat	Good	Good
12. For scenic beauty	Good	Good
YOUR WATER RESOURCES		
Of the activities listed above, which is the most important to you?	Scenic Beauty	Scenic Beauty
Do you know where the rain water goes when it runs off of your property?	Yes	Yes
If you answered 'Yes' above, where does your rainwater drain to?	Lake	Lake/Stream
YOUR OPINIONS		
Indicate your level of agreement or disagreement with the statements below (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)		
1. Using recommended management practices on farms improves water quality	Agree	Agree
2. It is my personal responsibility to help protect water quality	Agree	Agree
3. It is important to protect water quality even if it slows economic development	Agree	Agree
4. My actions have an impact on water quality	Agree	Agree
5. I would be willing to pay more to improve water quality (for example: through local taxes or fees)	Neither Agree nor Disagree	Neither Agree nor Disagree
6. I would be willing to change management practices to improve water quality	Neither Agree nor Disagree	Neither Agree nor Disagree
7. The quality of life in my community depends on good water quality in local streams, rivers, and lakes	Agree	Agree
WATER IMPAIRMENTS		
In your opinion, how much of a problem are the following water impairments in your area? (Not a problem, Slight problem, Moderate problem, Severe problem, Don't know)		
1. Sedimentation (dirt and soil) in the water	Slight problem	Moderate problem
2. Nitrogen	Slight problem	Slight problem
3. Phosphorus	Moderate problem	Moderate problem
4. Bacteria & viruses in the water (such as E.coli/coliform)	Slight problem	Slight problem
5. Algae in the water	Slight problem	Slight problem

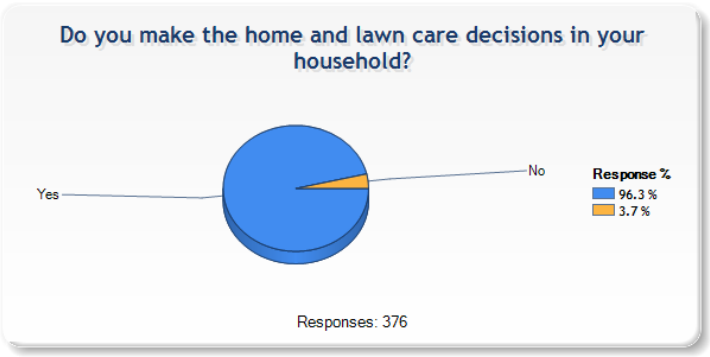
6. Not enough oxygen in the water	Slight problem	Slight problem
7. Invasive aquatic plants and animals	Slight problem	Moderate problem
8. Flow alteration	Not a problem	Not a problem
9. Habitat alteration harming local fish	Slight problem	Slight problem
SOURCES OF WATER POLLUTION		
In your opinion, how much of a problem are the following sources in your area? (Not a problem, Slight problem, Moderate problem, Sever problem, Don't know)		
1. Soil erosion from construction sites	Slight problem	Slight problem
2. Soil erosion from shorelines and/or stream banks	Slight problem	Moderate problem
3. Excessive use of lawn fertilizers and/or pesticides	Slight problem	Slight problem
4. Grass clippings and leaves entering storm drains	Slight problem	Slight problem
5. Improperly maintained septic systems	Slight problem	Moderate problem
6. Droppings from geese, ducks, and other waterfowl	Moderate problem	Moderate problem
7. Waste material from pets	Slight problem	Slight problem
8. Land development or redevelopment	Slight problem	Slight problem
9. Removal of riparian vegetation	Slight problem	Slight problem
10. Stream bank or shoreline modification/destabilization	Slight problem	Slight problem
CONSEQUENCES OF POOR WATER QUALITY		
In your opinion, how much of a problem are the following issues in your area? (Not a problem, Slight problem, Moderate problem, Severe problem, Don't know)		
1. Polluted swimming areas	Not a problem	Slight problem
2. Contaminated fish	Not a problem	Not a problem
3. Loss of desirable fish species	Not a problem	Not a problem
4. Reduced beauty of lakes or streams	Not a problem	Not a problem
5. Reduced quality of water for recreation activities	Not a problem	Not a problem
6. Excessive aquatic plants or algae	Not a problem	Not a problem
7. Fish kills	Not a problem	Not a problem
8. Odor	Not a problem	Not a problem
9. Lower property values	Not a problem	Not a problem
PRACTICES TO IMPROVE WATER QUALITY		
Indicate which statement most accurately describes your level of experience with each practice listed below (Not relevant for my property, Never heard of it, Somewhat familiar with it, Know how to use it; not using it, Currently use it)		
1. Create a rain garden	Somewhat familiar with it	Somewhat familiar with it
2. Use a mulching lawn mower	Know how to use it; not using it	Know how to use it; not using it
3. Keep grass clippings and leaves out of the roads, ditches, and gutters	Know how to use it; not using it	Know how to use it; not using it
4. Follow pesticide application instructions for lawn and garden	Currently use it	Currently use it
5. Use phosphate free fertilizer	Currently use it	Currently use it
6. Regular servicing of septic system	Currently using it	Currently using it

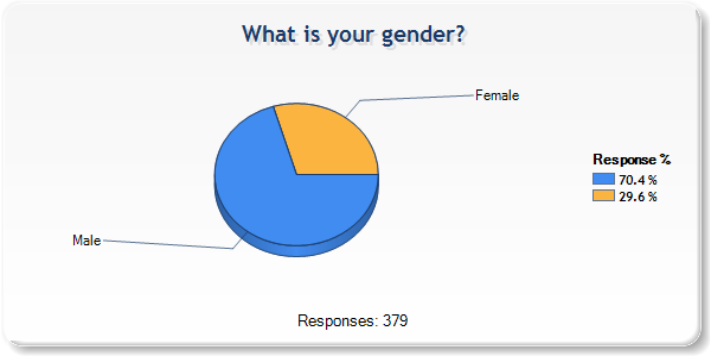
7. Recycle automotive oil	Currently using it	Currently using it
8. Properly dispose of household waste (chemicals, batteries, florescent light bulbs, etc)	Currently using it	Currently using it
9. Use rain barrels	Currently using it	Currently using it
10. Restore native plant communities	Know how to use it; not using it	Know how to use it; not using it
11. Plant vegetated riparian buffer	Somewhat familiar with it	Somewhat familiar with it
12. Maintain riparian buffer	Know how to use it; not using it	Know how to use it; not using it
SPECIFIC CONSTRATIONS OF PRACTICES		
Follow Fertilizer instructions: Following the manufacturer's instructions when fertilizing lawn or garden		
1. How familiar are you with this practice? (Not relevant, Never heard of it, Somewhat familiar with it, Know how to use it; not using it, Currently use it)	Currently use it	Currently use it
2. If the practice is not relevant, please explain why	Don't fertilize	Don't fertilize
3. Are you willing to try this practice? (Yes or already do, Maybe, No)	Yes or already do	Yes or already do
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	Not at all	Not at all
5. Time required	Not at all	Not at all
6. Cost	Not at all	Not at all
7. The features of my property make it difficult	Not at all	Not at all
8. Insufficient proof of water quality benefit	Not at all	Not at all
9. Desire to keep things the way they are	Not at all	Not at all
10. Physical or health limitations	Not at all	Not at all
Proper Pet Waste Disposal (including horses): Disposing of pet waste in a manner that prevents runoff to local waterways		
11. How familiar are you with this practice?	Somewhat familiar with it	Somewhat familiar with it
12. If the practice is not relevant, please explain why	No pet(s)	No pet(s)
13. Are you willing to try this practice?	Maybe	Maybe
How much do the following factors limit your ability to implement this practice?		
14. Don't know how to do it	Not at all	Not at all
15. Time required	A little	A little
16. Cost	Not at all	Not at all
17. The features of my property make it difficult	Not at all	Not at all
18. Insufficient proof of water quality benefit	Not at all	Not at all
19. Desire to keep things the way they are	Not at all	Not at all
20. Physical or health limitations	Not at all	Not at all

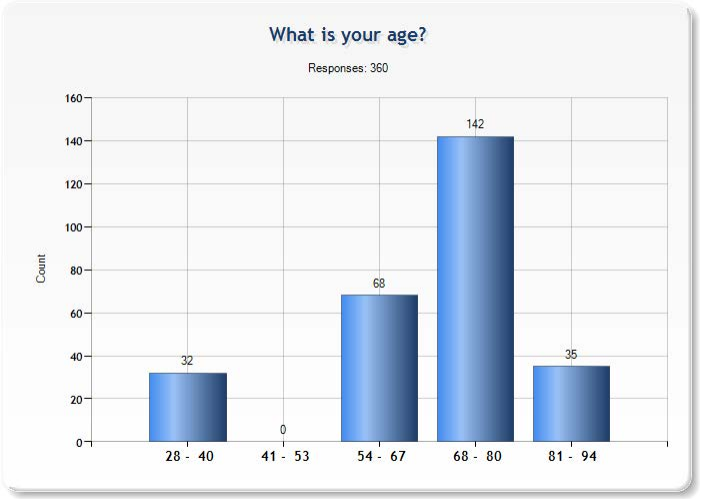
Proper Septic System Sizing and Maintenance: Following guidelines to ensure that septic system is the proper size and type for its use		
21. How familiar are you with this practice? (Not relevant, Never heard of it, Somewhat familiar with it, Know how to use it; not using it, Currently use it)	Currently use it	Currently use it
22. If this practice is not relevant, please explain why	Septic system in place when purchased home	Septic system in place when purchased home
23. Are you willing to try this practice? (Yes or already do, Maybe, No)	Yes or already do	Yes or already do
How much do the following factors limit your ability to implement this practice? (Not at all, A little, Some, A lot, Don't know)		
24. Don't know how to do it	Not at all	Not at all
25. Time required	Not at all	Not at all
26. Cost	Not at all	A little
27. The features of my property make it difficult	Not at all	Not at all
28. Insufficient proof of water quality benefit	Not at all	Not at all
29. Desire to keep things the way they are	Not at all	Not at all
30. Physical or health limitations	Not at all	Not at all
Vegetated Stream bank/Shoreline Protection: Maintaining vegetation that grows along streams, rivers, or lakes acts as a protective buffer between the land and the water to reduce runoff and sediments flowing into the water		
31. How familiar are you with this practice? (Not relevant, Never heard of it, Somewhat familiar with it, Know how to use it; not using it, Currently use it)	Somewhat familiar with it	Somewhat familiar with it
32. If this practice is not relevant, please explain why	Do not live along stream, river, or lake	Do not live along stream, river, or lake
33. Are you willing to try this practice? (Yes or already do, Maybe, No)	Maybe	Maybe
How much do the following factors limit your ability to implement this practice? (Not at all, A little, Some, A lot, Don't know)		
34. Don't know how to do it	Not at all	Not at all
35. Time required	Not at all	Not at all
36. Cost	Not at all	A little
37. The features of my property make it difficult	Not at all	Some
38. Insufficient proof of water quality benefit	Not at all	Not at all
39. Desire to keep things the way they are	Not at all	Not at all
40. Physical or health limitations	Not at all	Not at all

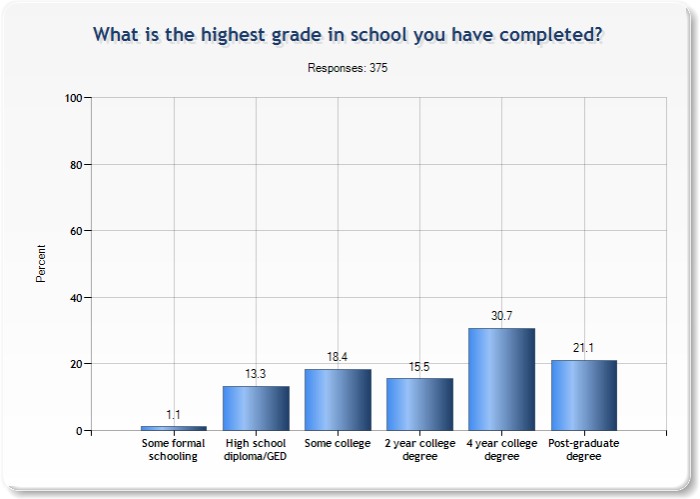
MAKING DECISIONS FOR MY PROPERTY		
In general, how much does each issue limit your ability to change your management practices? (Not at all, A little, Some, A lot, Don't know)		
1. Personal out-of-pocket expense	Some	Some
2. My own physical abilities	Not at all	Not at all
3. Not having access to the equipment that I need	Not at all	Not at all
4. Lack of available information about a practice	Not at all	Not at all
5. No one else I know is implementing the practice	Not at all	Not at all
6. Approval of my neighbors	Not at all	Not at all
7. Don't know where to get information/assistance about those practices	Not at all	Not at all
8. Environmental damage caused by practice	Not at all	Not at all
9. Legal restrictions on my property	Not at all	Not at all
10. Concerns about resale value	Not at all	Not at all
11. Not being able to see a demonstration of the practice before I decide	Not at all	Not at all
12. The need to learn new skills or techniques	Not at all	Not at all

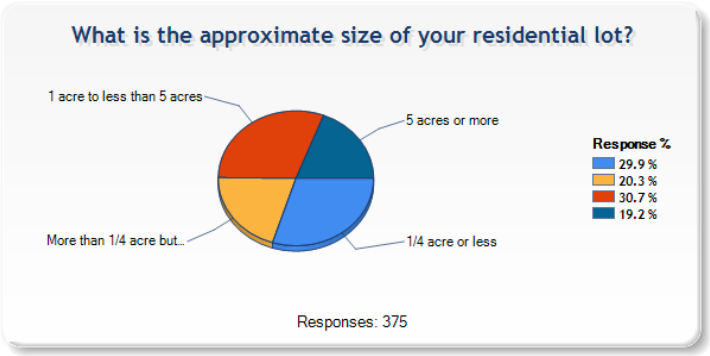
ABOUT THE LAKE COMMUNITY RESPONDENTS:

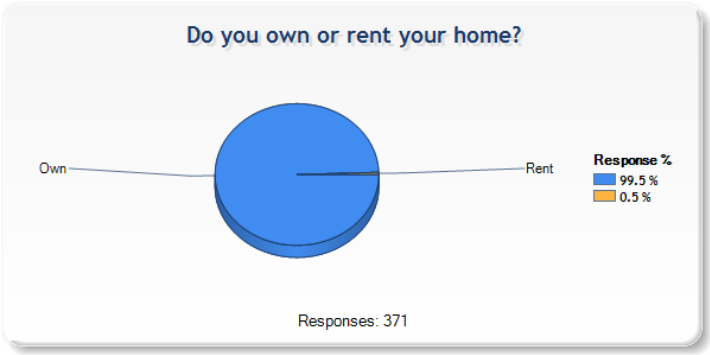


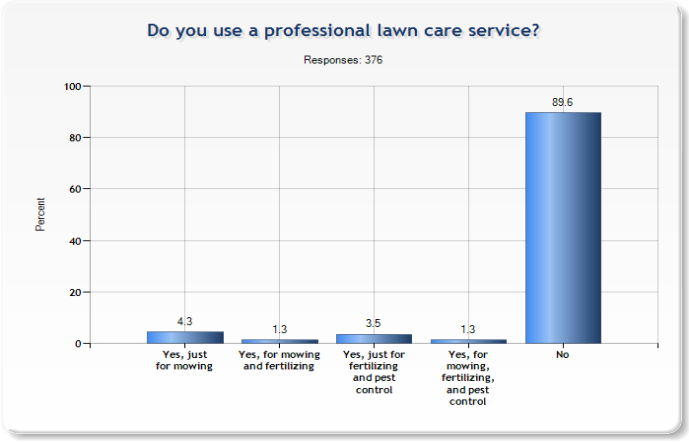


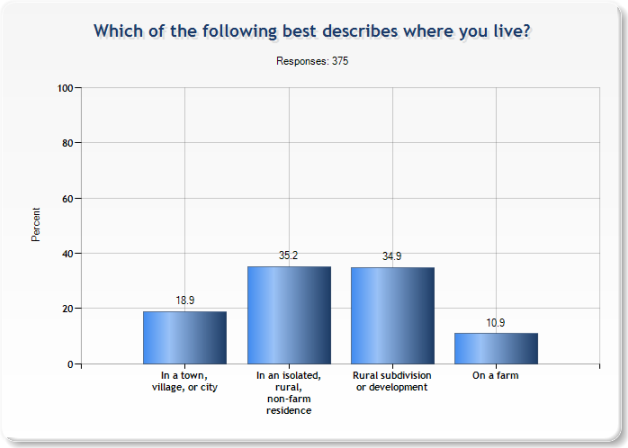












The most frequent Lake Community respondents trust a University Extension very much as a source of information about soil and water, followed by a Local Watershed Project and County Conservation District. 63.1% of the respondents have a septic system installed on average in 1965 with no problems in the last 5 years. 83.1% of them would not like their local health department reminding them to inspect or maintain their septic system. 84.4% do not know if they have an absorption field (finger system) and the most common (73.8%) indicator of an improperly functioning septic system would be slow drain(s). 90.1% of the Lake Community respondents do not know if their septic system is designed to treat sewage or get rid of waste and 88.2% do not think a government agency should handle inspection and maintenance of septic systems.

TOWNSHIP PLANNING OFFICIALS

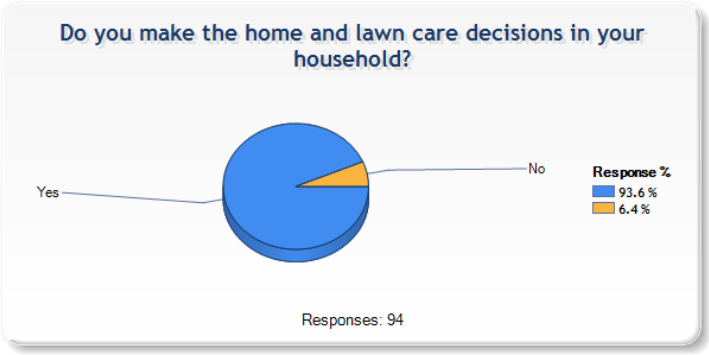
Survey question	Most Frequent Response- Start of Project	Most Frequent Response-End of Project
RATING OF WATER QUALITY		
Overall, how would you rate the quality of the water in your area? (Poor, Okay, Good, Don't Know)		
1. For canoeing/kayaking/other boating	Good	Good
2. For eating locally caught fish	Okay	Okay
3. For swimming	Good	Good
4. For picnicking and family activities	Good	Good
5. For fish habitat	Okay	Okay
6. For scenic beauty	Good	Good
YOUR WATER RESOURCES		
Of the activities listed above, which is the most important to you?	Scenic Beauty	Scenic Beauty
Do you know where the rain water goes when it runs off of your property?	Yes	Yes
If you answered 'Yes' above, where does your rainwater drain to?	Ditch/Drain	Ditch/Drain
YOUR OPINIONS		
Indicate your level of agreement or disagreement with the statements below (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)		
1. The way that I care for my lawn and yard can influence water quality in local streams and lakes	Agree	Agree
2. It is my personal responsibility to help protect water quality	Agree	Agree
3. It is important to protect water quality even if it slows economic development	Agree	Agree
4. My actions have an impact on water quality	Agree	Agree
5. I would be willing to pay more to improve water quality (for example: through local taxes or fees)	Neither Agree nor Disagree	Neither Agree nor Disagree
6. I would be willing to change the way I care for my lawn and yard to improve water quality	Neither Agree nor Disagree	Neither Agree nor Disagree
7. The quality of life in my community depends on good water quality in local streams, rivers, and lakes	Agree	Agree
WATER IMPAIRMENTS		
In your opinion, how much of a problem are the following water impairments in your area? (Not a problem, Slight problem, Moderate problem, Severe problem, Don't know)		
1. Sedimentation (dirt and soil) in the water	Slight problem	Moderate problem
2. Nitrogen	Slight problem	Slight problem
3. Phosphorus	Moderate problem	Moderate problem
4. Bacteria & viruses in the water (such as E.coli/coliform)	Moderate problem	Moderate problem
5. Algae in the water	Slight problem	Slight problem

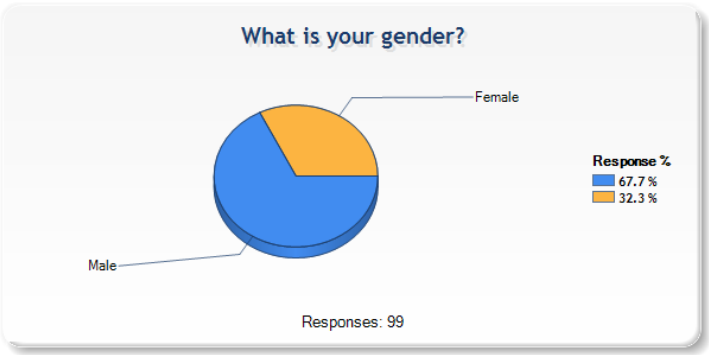
6. Not enough oxygen in the water	Slight problem	Slight problem
7. Invasive aquatic plants and animals	Moderate problem	Moderate problem
8. Flow alteration	Slight problem	Slight problem
9. Habitat alteration harming local fish	Slight problem	Slight problem
SOURCES OF WATER POLLUTION		
In your opinion, how much of a problem are the following sources in your area? (Not a problem, Slight problem, Moderate problem, Severe problem, Don't know)		
1. Soil erosion from construction sites	Slight problem	Slight problem
2. Soil erosion from farm fields	Slight problem	Slight problem
3. Soil erosion from shorelines and/or stream banks	Slight/Moderate problem	Slight/Moderate problem
4. Excessive use of lawn fertilizers and/or pesticides	Moderate problem	Moderate problem
5. Grass clippings and leaves entering storm drains	Moderate problem	Moderate problem
6. Improperly maintained septic systems	Slight/Moderate problem	Moderate problem
7. Manure from farm animals	Moderate problem	Moderate problem
8. Droppings from geese, ducks, and other waterfowl	Moderate problem	Moderate problem
9. Excessive use of fertilizers for crop production	Moderate problem	Moderate problem
10. Grazing-related sources	Slight problem	Slight problem
11. Land development or redevelopment	Slight problem	Slight problem
12. Removal of riparian vegetation	Slight problem	Slight problem
13. Stream bank or shoreline modification/destabilization	Slight problem	Slight problem
CONSEQUENCES OF POOR WATER QUALITY		
In your opinion, how much of a problem are the following issues in your area? (Not a problem, Slight problem, Moderate problem, Severe problem, Don't know)		
1. Polluted swimming areas	Slight problem	Slight problem
2. Contaminated fish	Slight problem	Slight problem
3. Loss of desirable fish species	Slight problem	Slight problem
4. Reduced beauty of lakes or streams	Not a problem	Not a problem
5. Reduced quality of water for recreation activities	Not a problem	Not a problem
6. Excessive aquatic plants or algae	Slight problem	Slight problem
7. Fish kills	Not a problem	Not a problem
8. Odor	Not a problem	Not a problem
9. Lower property values	Not a problem	Not a problem
PRACTICES TO IMPROVE WATER QUALITY		
Indicate which statement most accurately describes your level of experience with each practice listed below (Not relevant for my property, Never heard of it, Somewhat familiar with it, Know how to use it; not using it, Currently use it)		
1. Use grass swales	Never heard of it	Never heard of it
2. Use extended wet detention	Never heard of it	Never heard of it
3. Use wetland detention	Never heard of it	Somewhat familiar with it
4. Use dry detention	Never heard of it	Never heard of it

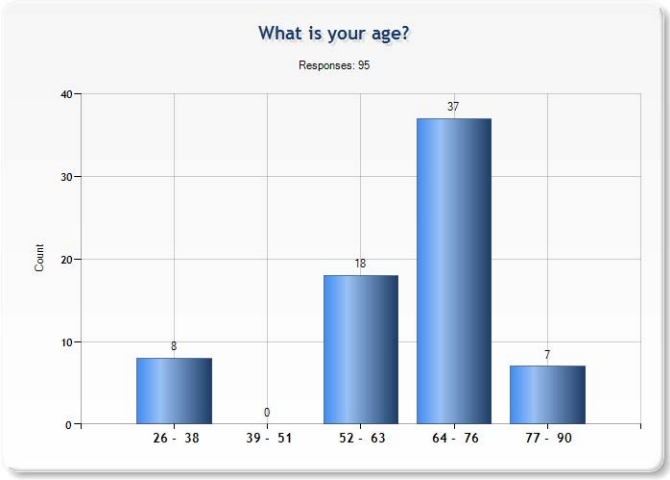
5. Use sand filters	Never heard of it	Never heard of it
6. Use water quality inlets	Never heard of it	Never heard of it
7. Use infiltration basin	Never heard of it	Never heard of it
8. Use infiltration trench	Never heard of it	Never heard of it
9. Use porous pavement	Never heard of it	Somewhat familiar with it
10. Use concrete grid pavement	Never heard of it	Never heard of it
11. Use sand filter/infiltration basin	Never heard of it	Never heard of it
12. Use water quality inlet with sand filter	Never heard of it	Never heard of it
13. Use wet pond	Never heard of it	Never heard of it
SPECIFIC CONSTRATIONS OF PRACTICES		
Filter Strips: Gently sloping, vegetated areas adjacent to impervious surfaces intended to reduce impacts of sheet flow and velocity of storm water and help improve water quality.		
1. How familiar are you with this practice? (Not relevant, Never heard of it, Somewhat familiar with it, Know how to use it; not using it, Currently use it)	Somewhat familiar with it	Somewhat familiar with it
2. If the practice is not relevant, please explain why	N/A	N/A
3. Are you willing to try this practice? (Yes or already do, Maybe, No)	Maybe	Maybe
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	A little	A little
5. Time required	A little	A little
6. Cost	Not at all	Some
7. The features of my property make it difficult	Not at all	A little
8. Insufficient proof of water quality benefit	Not at all	Not at all
9. Desire to keep things the way they are	Not at all	Not at all
10. Physical or health limitations	Not at all	Not at all
Infiltration Device: A design feature intended to hold water so that it can infiltrate thus removing contaminants and pollutants		
11. How familiar are you with this practice?	Somewhat familiar with it	Somewhat familiar with it
12. If the practice is not relevant, please explain why	N/A	N/A
13. Are you willing to try this practice?	Maybe	Maybe
How much do the following factors limit your ability to implement this practice?		
14. Don't know how to do it	Not at all	Not at all
15. Time required	Not at all/A little	A little
16. Cost	A little	Some
17. The features of my property make it difficult	A little	Some
18. Insufficient proof of water quality benefit	Not at all	Not at all
19. Desire to keep things the way they are	Not at all	Not at all
20. Physical or health limitations	Not at all	Not at all

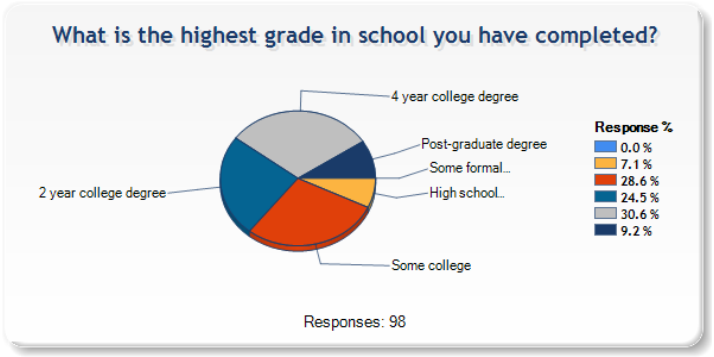
Settling Basins: Basins designed to retain water long enough for coarse suspended solids to settle.		
21. How familiar are you with this practice? (Not relevant, Never heard of it, Somewhat familiar with it, Know how to use it; not using it, Currently use it)	Somewhat familiar with it	Somewhat familiar with it
22. If this practice is not relevant, please explain why	N/A	N/A
23. Are you willing to try this practice? (Yes or already do, Maybe, No)	Maybe	Maybe
How much do the following factors limit your ability to implement this practice? (Not at all, A little, Some, A lot, Don't know)		
24. Don't know how to do it	Not at all	Not at all
25. Time required	A little	A little
26. Cost	Not at all	Not at all
27. The features of my property make it difficult	Not at all	Not at all
28. Insufficient proof of water quality benefit	Not at all	Not at all
29. Desire to keep things the way they are	Not at all	Not at all
30. Physical or health limitations	Not at all	Not at all

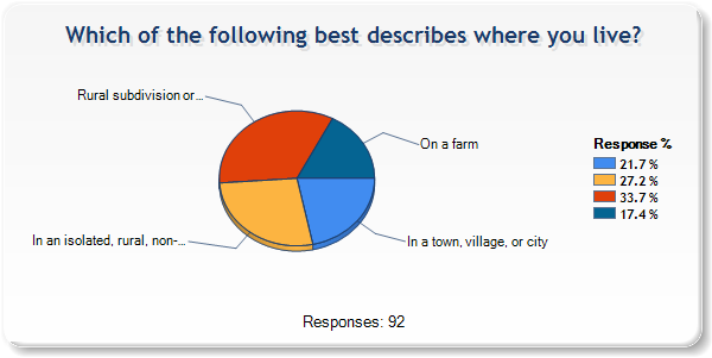
ABOUT THE TOWNSHIP OFFICIALS RESPONDENTS:

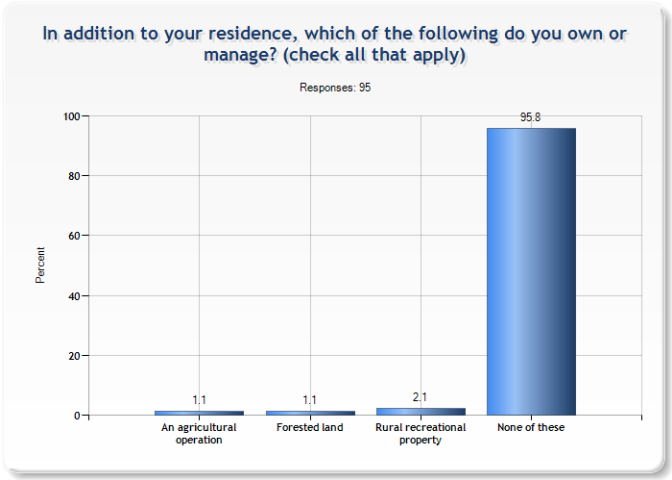










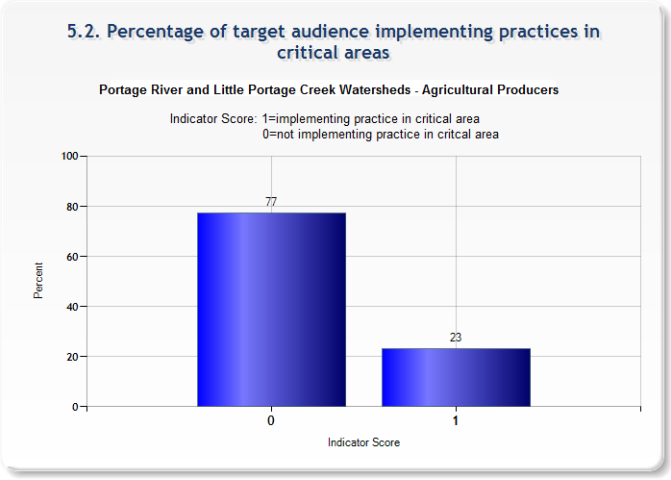


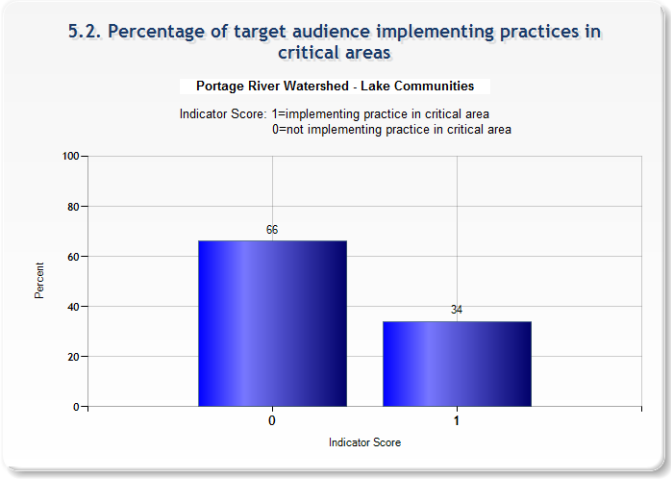
The most frequent Township Planning Officials respondents trust a State environmental agency very much for getting information about soil and water, followed by a University Extension and a State agricultural agency. 62.9% of the Township Planning Officials respondents have a septic system installed on average in 1986 with no problems in the last five years. 62.6% of them would not like their local health department reminding them to inspect or maintain their septic system. 88.2% do not know if they have an absorption field (finger system) and the most common (83.3%) indicator of an improperly functioning septic system would be slow drain(s). 91.3% of the Township Planning Officials respondents do not know if their septic system is designed to treat sewage or get rid of waste and 85.3% do not think a local government agency should handle inspection and maintenance of septic systems.

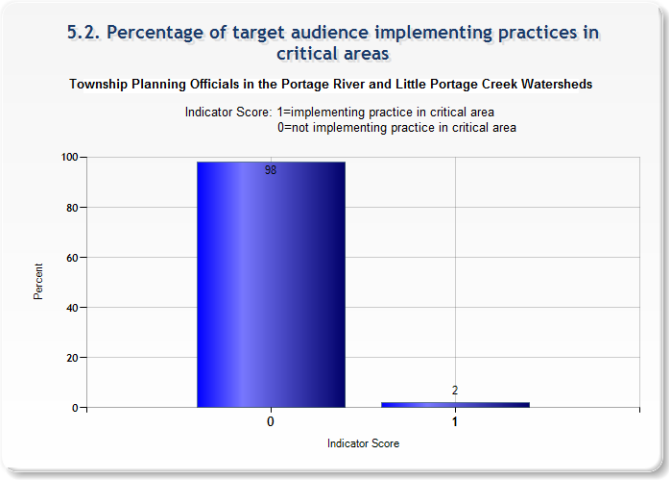
OVERALL SOCIAL SURVEY RESULTS

All respondent groups agree that their actions can have an impact on water quality and that the quality of life in their community depends on good water quality in local streams, river, and lakes. Most are willing to make changes to their practices to improve or protect water quality but they are not willing to pay more to improve water quality.

Indicator scores for awareness of consequences, types, and sources of water quality pollutants were generally high in all groups, as were their awareness of appropriate practices to improve water quality. Water quality related attitudes were positive in all groups, with the willingness to take action to improve water quality falling right at the mid-point indicating that some are more willing than others to take action. None of the groups indicated any high impediments to changing their behavior or adopting best management practices (BMPs), however each group had a low percentage of respondents that implement practices in critical areas.







INFORMATION & EDUCATION STRATEGY

Raising the community consciousness about the importance of water quality and their role in controlling nonpoint source pollution will increase awareness and understanding, which in turn supports overall healthier water quality. The results of these surveys are difficult to quantify since no one specific water quality issue/concern really stood out from the rest. Most respondents knew that water quality protection is their personal responsibility and their quality of life depends on good water quality. However, many did not see E.coli as anything more than a slight to moderate problem. It is assumed, therefore, that education about water quality could be dramatically improved in the watershed. Planning a public information and education program must educate citizens about the problem and make citizen involvement and essential part of the solution.

The following I&E strategy does not follow any particular ranking order.

All: Information and education on water quality, pollutants and their sources/causes, BMPs, and septic system installation & maintenance should be given to all residents on a continual basis. Public education initiatives should teach about the issues and problems of nonpoint source pollution and should involve the audience in the solution. Concrete information about using and disposing of toxic substances in yards, farms, and work places should be stressed in every information/education technique. Demonstration sites illustrating various water quality levels, pollutants and their sources/causes/effects, and innovative BMP techniques are a valuable resource.

Agricultural Producers: Both the Portage River watershed and the Little Portage Creek watershed are predominantly agricultural. In these types of watersheds, it is important to provide resources to the producers related to best management practices directed at soil loss and polluted runoff into agriculturally connected waterways. I&E for this group should be concentrated on the causes of pollutants and BMPs that can reduce and/or eliminate the cause including web-based tools that can illustrate sediment, nutrient, pesticide and bacterial/pathogen pollutant reductions as well as hydrologic flow changes. Knowing that cost is an important factor for implementation, BMP information provided to producers should include any potential resource for financial assistance.

Township Planning Officials: This audience has the ability to provide policies that regulate their specific community. Targeting this audience with watershed awareness and stewardship can provide substantial impacts in sediment, nutrients, pesticides, bacterial/pathogen pollution as well as changes in hydrologic flow and temperature. An I&E plan should include land use planning and how watershed concepts can be integrated into planning efforts as well as the resources needed to include those concepts into their current land use planning. Development of a handbook for municipal boards and commissions describing how to incorporate nonpoint source pollution control strategies into local land use ordinances would be beneficial. Since some social survey respondents from all groups indicated a general mistrust of governmental agencies, Conservation Districts should be used to facilitate communications with other groups.

Lake Communities: Lake communities are an important target audience since their land may be the last barrier before runoff enters a waterway. This audience poses a great risk to water quality degradation as a result of their proximity to surface water. Their desire for clear water views, land clearing, drainage, and construction can often lead to detrimental results since no buffer(s) are available to filter runoff. This group should receive I&E targeted at natural shorelines, proper disposal of yard and pet waste, proper septic system sizing and maintenance, rain gardens and rain barrels, and available financial assistance.

Information and Education Strategy Action Plan for Portage River and Little Portage Creek Watersheds

Information/Education Strategy							
Audience	**Targeted Pollutant(s)**	**I/E Message**	**Task**	**Priority H-High M-Med L-Low**	**Lead**	**Cost**	**Evaluation**
All	All	Watershed Awareness	1. Develop & distribute articles, brochures, newsletters, etc that explain a wide variety of watershed topics including sources of financial assistance 2. Host & maintain webpage and social media sources with watershed related materials	M	CD	1.$3,500/yr 2.$0 (include as part of current CD page, social sources)	1.Circulation number 2. Track webpage visitors, track "shares, likes, etc."
All	All	Water Quality Awareness	1. Develop & distribute articles, brochures, newsletters, handbooks, etc that explain water quality and what it means 2. Develop & distribute articles, brochures, newsletters, etc that explain water quality pollutants, their sources, and their effect on water quality	M	CD	1. $3,500/yr 2. $3,500/yr	1. Circulation number 2. Circulation number

Audience	Targeted Pollutant(s)	I/E Message	Task	Priority H-High M-Med L-Low	Lead	Cost	Evaluation
All	All	Water Quality, Pollutants, BMPs	1. Provide demonstration site(s) that exhibit innovative technology accompanied by interpretive staff/signs	M	CD, partners	1. $500 - $100,000 dependent on site/pollutant/BMP	1. Number of site(s), number of visitors
Agricultural Producers	All	BMP & funding awareness with emphasis on E.coli reducing & other water quality practices	1.Develop & distribute articles, brochures, newsletters, etc that explain and promote Ag water quality related BMPs and provide sources of financial assistance 2. Hold on farm field day promoting BMPs 3. Participate in MAEAP events to promote verifications	H	CD, NRCS, MDARD	1. 1,000/yr 2. $500 (w/MAEAP field day) 3. see #2, above	1. Number of articles, brochures, newsletters circulated 2. Number of attendees 3. see #2, above

Audience	Targeted Pollutant(s)	I/E Message	Task	Priority H-High M-Med L-Low	Lead	Cost	Evaluation
Township Officials	All	Improving zoning & water quality ordinances	1. Provide training on Low Impact Development techniques 2. Present at meetings options for ordinances that relate to water quality 3. Develop & distribute resources that assist with water quality BMPs 4. Develop & distribute handbook describing how to incorporate nonpoint source pollution control strategies into ordinances	H	CD, Land Use Planner	1. $800/yr 2. $300/yr (time) 3. $1,000/yr 4. $500/yr	1. Number of LID implemented 2. Number of water quality ordinances implemented 3. Number of resources distributed 4. Number of handbooks distributed
Lake Communities	All	BMP awareness	1. Provide/distribute brochures, articles, newsletters, workshops, etc discussing BMPs such as rain gardens, natural shorelines, septic system maintenance, proper pesticide application, etc.	H	CD, Lake Assoc.	1. $1,000 - $5,000/yr depending on chosen method of distribution	1. Number of resources distributed, number of participants at workshops