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Rock River Stormwater Group:
2013 Stormwater Related Perceptions, Knowledge
and Practices Survey Report

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Table of Contents

Executive Summary..... 3
Survey Purpose and Methods..... 5
Perceptions of Local Water Resources 6
Practices and Efforts 11
Information Sources..... 14
Online vs. Mail Response Differences..... 15
Additional Comments 16
Profile of Respondents..... 16
Conclusions 18
Appendix A – RRSg vs. MAMSWaP Results 19
Appendix B – Non-Response Bias Test 26
Appendix C – RRSg Written Comments, 2013..... 27
Appendix D – Quantitative Summary of Responses by Question 33

Executive Summary

In October and November 2013, the Rock River Stormwater Group (RRSG) conducted a citizen survey to gather public input and knowledge of stormwater issues in nine Rock River Stormwater member community households within South Central Wisconsin.

The sample of 955 was drawn proportionally to the relative number of households in each participating municipality. Out of 955 surveys sent, 159 households returned their surveys by mail or submitted them online. The response rate was 17% (159/955). Given that RRSG municipalities included in the study have approximately 73,452 occupied households, the estimates included in this report should be accurate to within plus or minus 7.8% with 95% confidence.

Perceptions of Local Water Resources

Generally, people felt that the water quality of lakes, rivers and streams in their community is about the same as water quality of lakes, rivers and streams in the larger permit map areas served by RRSG and MAMSWaP as shown on the survey's cover. Fifty-three percent of respondents rated water quality of lakes in their community as good or very good, while 57% of respondents rated lake water quality in the map area as good or very good. Forty-eight percent of respondents rated river and stream water quality in their community as good/very good, while 46% rated river and stream water quality in the map area as good/very good.

Approximately 1 in 2 respondents stated that when stormwater from rain or snow melt leaves their property it goes to a storm drain. Fifty percent of respondents stated that once it leaves their neighborhood, stormwater runoff goes to a creek, stream, river or lake.

Respondents most identified agricultural fertilizers and pesticides as major contributors to water quality problems (57%), followed closely by lawn/urban fertilizers and pesticides (53%).

Relatively large percentages of respondents do not believe that stormwater runoff contributes to increased numbers of zebra mussels (41%), or the quality of local drinking water (29%).

Practices and Efforts

Practices that respondents "already do" most frequently to reduce water pollution are having their car oil changed at an automotive service center (79%), directing downspouts to their lawn rather than their driveway (78%), and washing their car at a car wash (75%).

The practice that respondents are most "willing to do" to reduce water pollution is install a rain barrel or cistern to collect rainwater from downspouts (34%), while the practice that respondents are least willing to do, or "unwilling to do," is stop using salt to melt ice at their residence (26%).

Respondents to some extent are aware of efforts by local governments to improve water quality, with one-half of respondents saying that they think efforts are taking place, but do not know much about them. Identical percentages of respondents said that they were somewhat familiar with efforts to improve water quality in their community (24%) or were not aware of efforts (24%).

The water quality improvement efforts at the local level that respondents believe are the most effective (“very effective” + “effective” percentages) are leaf and yard-waste collection (71%), and the restoration of wetlands (66%).

Scenic appreciation is the most popular use of local water resources.

Information Sources

Approximately one-third of survey respondents would contact their municipal government if they became aware of a stormwater pollution problem. A substantial percentage of respondents did not know who they should contact.

If respondents receive information about water pollution issues and practices, it generally comes from local newspapers, TV, or radio.

Respondents are not actively searching for information about local stormwater issues and practices at the three stormwater websites listed on the survey (*myfairlakes.com*, *cleanwaterbrightfuture.org*, or *RenewTheRock.com*).

Survey Sample

Eighty-five percent of respondents live in single-family homes. Forty-five percent of respondents had household incomes of less than \$50,000. Respondents were generally male, older, and had achieved a higher level of education than the overall three-County (Dodge, Jefferson, and Rock) average.

Survey Purpose and Methods

The goals of the survey were to provide the Rock River Stormwater Group (RRSG) with information to help local efforts to improve area lakes and streams. Input was sought from households in the Rock River Stormwater Group area consisting of 9 municipalities within South Central Wisconsin. Involved municipalities are the cities of Janesville, Beloit, Watertown, Beaver Dam, Whitewater, Ft. Atkinson, Jefferson, Milton, and the town of Beloit.

The 2013 survey instrument was an adaptation of one first created by University of Wisconsin Cooperative Extension – Environmental Resources Center in 2003 for a study commissioned by the Madison Area Municipal Storm Water Partnership (MAMSWaP) with a subsequent follow-up study in 2009. The primary author was Tom Syring, with assistance from Joel Carey and Molly Lepeska.¹ The Survey Research Center (SRC) at the University of Wisconsin-River Falls, RRSG, and MAMSWaP were involved in the design, revision, and review of the 2013 survey questionnaire.

The sample of 955 was drawn proportionally to the relative number of households in each participating municipality. Households were selected from mailing lists acquired from a list broker. Three contacts were involved in the survey process. The initial invitation and survey was mailed to the sample including a pre-addressed postage-paid envelope. The invitation offered the option to complete the survey online and provided the survey's URL. Those not responding to the first mailing were issued a postcard reminder. Households not responding within 10 days of the follow-up postcard were sent another survey.

Out of 955 surveys sent, 159 households returned their surveys by mail or submitted them online. The response rate was 17% (159/955). Given that RRSG municipalities included in the study have approximately 73,452 occupied households, the estimates included in this report should be accurate to within plus or minus 7.8% with 95% confidence.

The following analysis will:

- Summarize the responses to the 2013 survey.
- Compare the responses of different demographic groups within the sample to see if they hold different opinions about a given topic.
- Provide comparisons between the results of online responses vs. completions by mail.
- Provide comparisons between RRSG response patterns and those of a similar study commissioned by MAMSWaP and conducted during the same time data was being collected for RRSG (**Appendix A**).

Response patterns that vary at statistically significant levels ($p < .05$) will be noted in the report.

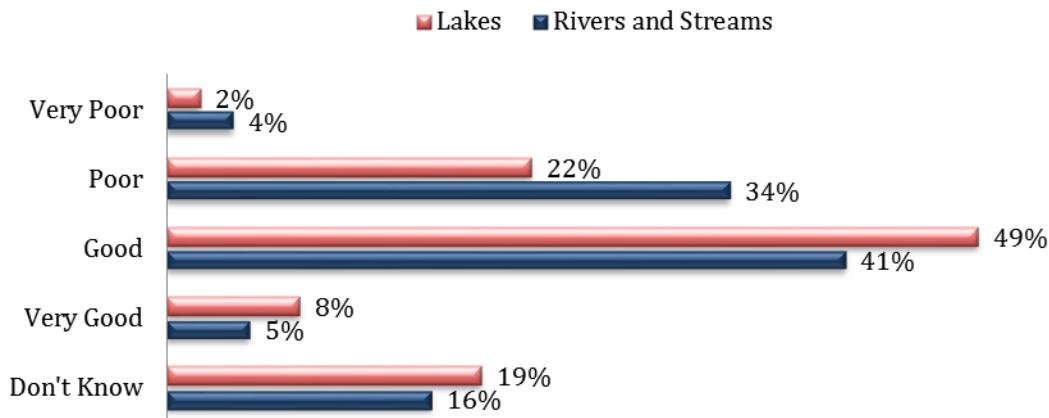
Any survey has to be concerned about non-response bias – the situation where those who don't respond to a survey have systematically different opinions than those who responded. Based on a standard statistical approach, the SRC does not believe that non-response bias is a problem with this dataset. **Appendix B** describes the approach to testing for non-response bias and the results. Respondents also provided written comments, which are included in **Appendix C**. Data summaries for each quantitative survey question can be found in **Appendix D**.

¹ Dane County Community Storm Water Awareness Assessment. November 2003.

Perceptions of Local Water Resources

Overall Water Quality of Lakes, Rivers, and Streams in Map Area. Respondents were asked to rate the overall water quality of the lakes, rivers, and streams located in the map area printed on the front cover of the survey instrument (see Appendix D for map). In Figure 1, overall water quality for lakes in the map area is shown in the top bar in each pair and the water quality of rivers and streams in the bottom bar.

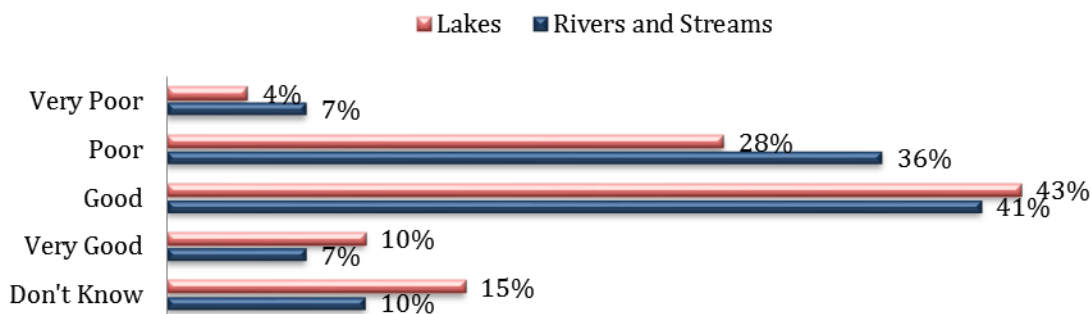
**Figure 1: Overall Water Quality of Lakes, Rivers, and Streams
Map Area**



As shown in Figure 1, a slight majority (57%) rate water quality of the lakes in the map area as very good/good compared to 24% of the combined very poor/poor ratings. Forty-six percent of respondents rated the water quality of the river and streams in the map area as very good/good compared to 38% of the combined very poor/poor ratings.

Overall Water Quality of Lakes, Rivers, and Streams in and around Community/Town. Respondents were then asked to rate the overall water quality of the lakes, rivers, and streams located in and around the community/town in which they live. As shown in Figure 2, a slight majority of respondents rated lakes in their community very good/good (53%). The water quality of river and streams in their community was rated very good/good by 48% of respondents compared to 43% of the combined very poor/poor ratings.

**Figure 2: Overall Water Quality of Lakes, Rivers, and Streams
Community/Town**



There are no statistically significant demographic differences in terms of the ratings given to water quality in lakes, rivers, and streams in and around the community/town in which a respondent lives, and only one significant difference in the rating for water quality in lakes, rivers, and streams in the survey map area: The proportion of females who say they “don’t know” is higher than that of males.

Extent of Contribution to Water Quality Problems in Community. Respondents were asked to rate the degree to which potential sources contributed to water quality problems in lakes, rivers, and streams in their community or town (Table 1). Two sources were perceived as being “major contributors” to water quality problems by a slight majority of survey respondents: agricultural fertilizers and pesticides, and lawn/urban fertilizers and pesticides. Nearly one-third of survey respondents believe that pet waste and grass clippings and leaves do not contribute to water quality problems in their community’s lakes, rivers, and streams

Table 1: Contributes to Water Quality Problems in Lakes, Rivers, and Streams in Community/Town				
	Major Contributor	Minor Contributor	Does Not Contribute	Don't Know/ Not Sure
Agricultural fertilizers and pesticides	57%	27%	3%	13%
Lawn/urban fertilizers and pesticides	53%	35%	5%	8%
Street salt and sand	44%	45%	3%	8%
Manure from farm animals	39%	39%	10%	11%
Stormwater runoff from streets & highways	38%	46%	6%	10%
Soil erosion from farm fields	36%	38%	6%	19%
Discharges from industry	35%	42%	6%	17%
Discharges from sewage treatment plants	30%	34%	12%	24%
Improper disposal of hazardous household wastes	27%	42%	11%	20%
Air pollution from industrial activities	24%	53%	8%	15%
Stormwater runoff from non-residential rooftops & parking lots	23%	52%	10%	15%
Soil erosion from construction sites	19%	48%	16%	18%
Stormwater runoff from residential rooftops and driveways	18%	51%	14%	18%
Improper disposal of used motor oil & antifreeze	17%	40%	16%	27%
Grass clippings and leaves	12%	43%	29%	17%
Pet waste	4%	44%	28%	24%

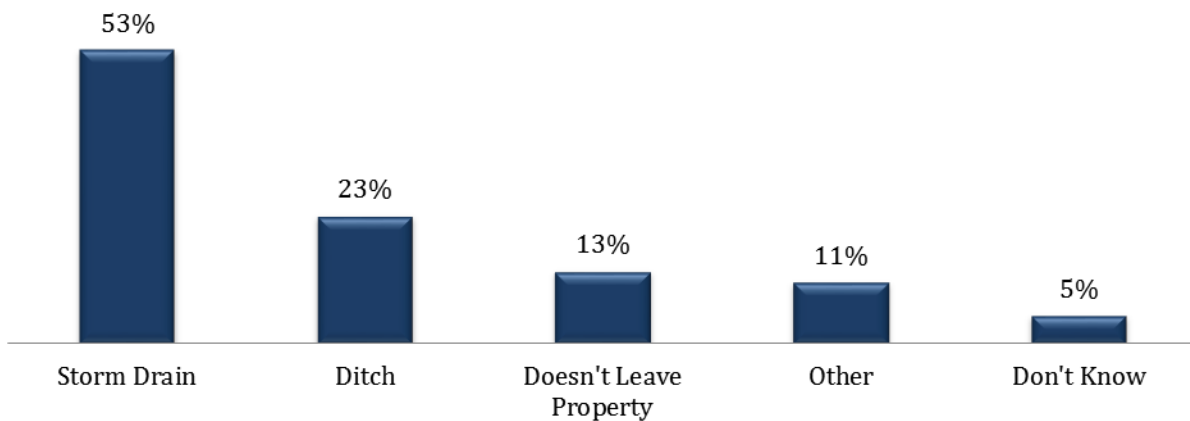
Statistically significant differences among demographic groups:

- Lower-income respondents are more likely to say that the improper disposal of used motor oil and antifreeze, discharges from industry, and improper disposal of hazardous household wastes are major contributors to water quality problems.

- Females are more likely to say that the improper disposal of used motor oil and antifreeze, air pollution from industrial activities, soil erosion from farm fields, or the improper disposal of hazardous household wastes are major contributors to water quality problems in lakes, rivers, and streams in and around their community.

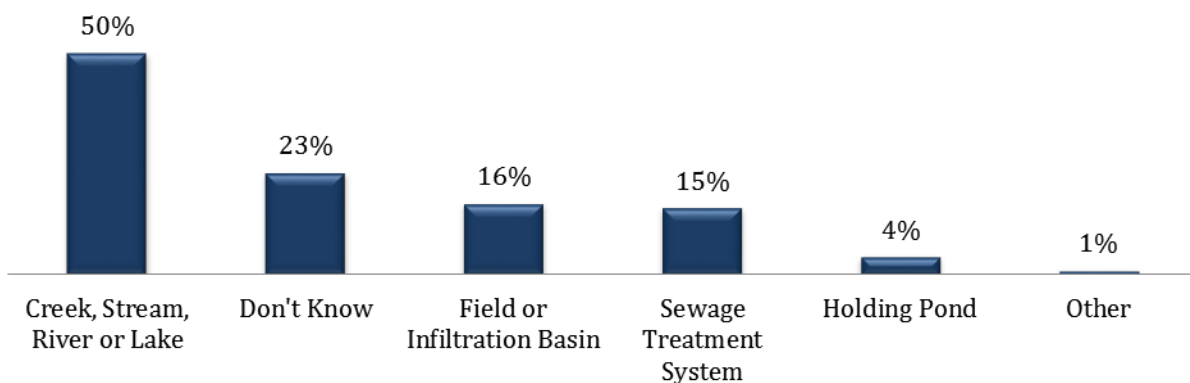
Stormwater Runoff after Leaving Property. Respondents were asked to identify the places where stormwater goes after leaving their property. Respondents were allowed to select multiple destinations. Nearly 1 in 2 respondents said that stormwater runoff goes to a storm drain once it leaves their property and approximately one-fourth said it goes into a ditch (Figure 3). Lower income respondents and females are more likely to say that stormwater runoff goes to a storm drain once it leaves their property.

Figure 3: Resulting Stormwater from Rain or Snow Melt on Property goes to:



Stormwater Runoff after Leaving Neighborhood. Respondents were asked to identify the places where stormwater goes after leaving their neighborhood. One-half of survey respondents said that runoff goes to a creek, stream, river or lake. A substantial percentage of respondents did not know where stormwater runoff goes once it leaves their neighborhood (Figure 4). Females are more likely to say that they don't know where stormwater goes once it leaves their neighborhood.

Figure 4: Resulting Stormwater from Rain or Snow Melt Once it Leaves Neighborhood goes to:



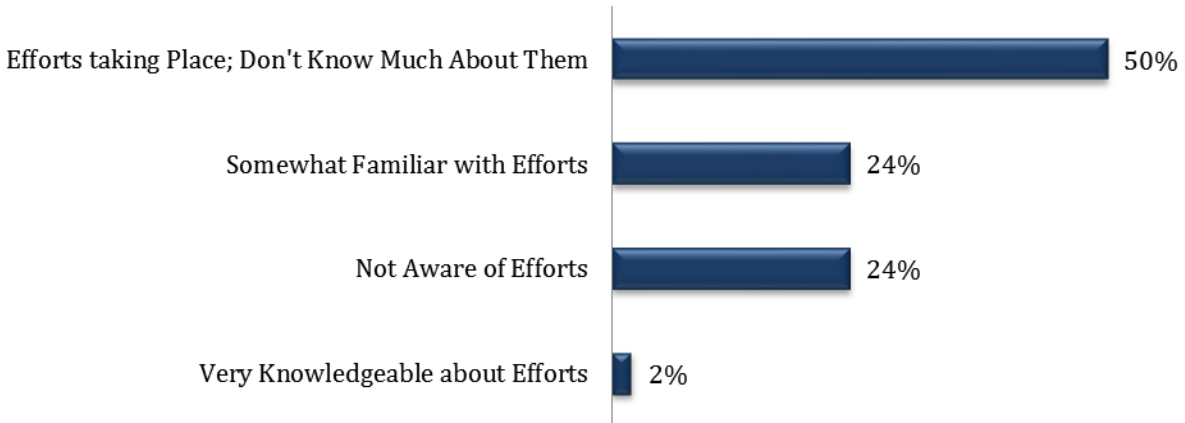
Extent to which Stormwater Runoff Contributes to Problems in the Community. Respondents were asked how after it rain or snows, the resulting stormwater runoff contributes to other water related problems in the respondent’s community. Eleven problems were listed for which respondents were asked to rate how much stormwater contributed to each.

Table 2 indicates that stormwater runoff was considered a “major contributor” to none of the problems listed on the survey by a majority of respondents. Approximately one-third of respondents said that stormwater runoff is a major contributor to flooding, the delivery of sediment to local lakes and streams, and weed and algae growth in lakes. Younger respondents are more likely to say that stormwater runoff is a major contributor to negative impacts on local swimming and beach areas. Females are more likely to say that stormwater runoff contributes to flooding, negative impacts on wildlife or fish habitat, and increased temperatures in lakes and streams.

Table 2: Extent to Which Stormwater Runoff Contributes to Problems in Community/Town				
	Major Contributor	Minor Contributor	Does Not Contribute	Don’t Know/ Not Sure
Flooding	38%	43%	12%	7%
Delivery of sediment to local lakes and streams	35%	38%	5%	21%
Weed & algae growth in lakes	32%	32%	12%	24%
Negative impacts on local swimming and beach areas	21%	38%	18%	24%
Negative impacts on fish habitat	20%	44%	10%	26%
Negative impacts on habitat for wildlife	17%	46%	17%	19%
Reduction in normal or “base” flow of local streams (e.g. flow when it’s not raining)	14%	28%	17%	41%
The quality of local drinking water	12%	33%	29%	27%
Increased temperatures in lakes and streams	12%	32%	18%	38%
Less recharge of local aquifers	9%	18%	15%	58%
Increased numbers of zebra mussels	1%	7%	41%	50%

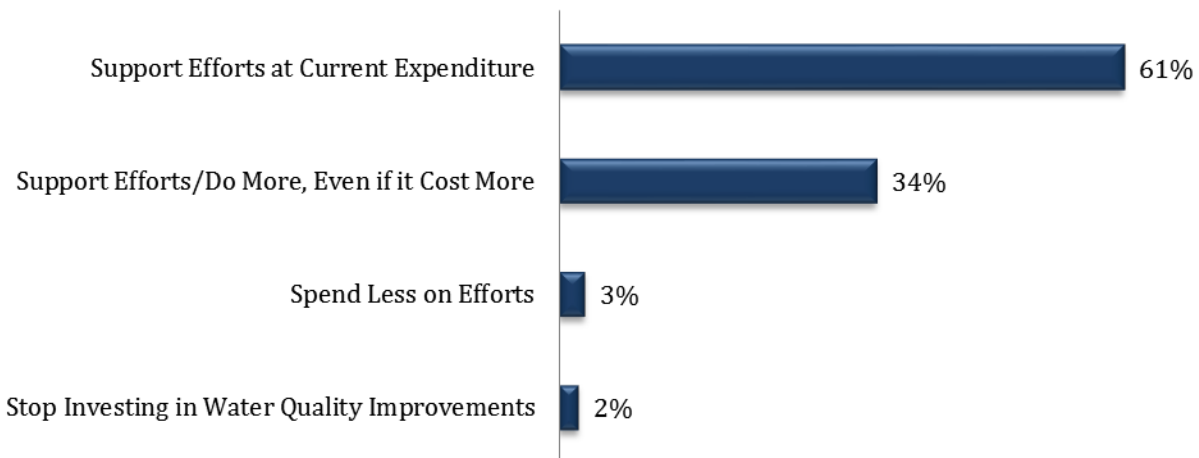
Awareness of Efforts to Improve Water Quality. Respondents were asked to rate their awareness of current efforts by local governments to improve water quality (Figure 5). One-half of respondents said that they think efforts are taking place, but do not know much about them. Identical percentages of respondents said that they were somewhat familiar with efforts to improve water quality in their community (24%) or were not aware of efforts (24%). There were no demographic differences in the level of awareness about current efforts by local governments to improve the water quality of lakes, streams and/or rivers in a respondent’s community.

Figure 5: Awareness of Water Quality Efforts by Local Government



Support for Investment in Water Quality. Figure 6 summarizes the results of a question asking respondents their level of support for their community’s efforts to improve the water quality of local rivers, streams and lakes. A majority of respondents support efforts at current expenditure levels. Approximately one-third would like their community to be doing more, even if it costs more. Very few respondents were in favor of spending less on efforts or stopping investment on water quality improvements altogether. There were no demographic differences in the level of support for water quality efforts.

Figure 6: Support for Water Quality Investment



Practices and Efforts

Current Practices. Table 3 highlights the current behaviors of respondents in their use of practices designed to prevent or reduce water pollution. Three practices are currently being done by a relatively large majority of respondents: having their oil changed at an automotive service center, directing downspouts to their lawn rather than their driveway, and washing their car at a car wash. Approximately two-thirds of survey respondents use a mulching lawnmower, and approximately one-half of survey respondents report that they take used automotive oil to a recycling center, compost leaves and grass clippings in their yard, clean up and dispose of pet waste, and keep street gutters in front of their residence clear of grass clippings and leaves. A substantial percentage of respondents are not willing to stop using chemical fertilizers and weed-killers completely (24%) nor are they willing to stop using salt to melt ice at their residence (26%).

Table 3: Current Practices					
	Already do this	Willing to do	Need more info	Unwilling to do	Not Applicable
Have your oil changed at an automotive service center	79%	2%	1%	9%	10%
Direct rain downspouts to your lawn rather than your driveway	78%	12%	1%	2%	8%
Wash your car at a car wash	75%	12%	0%	5%	8%
Use a mulching lawnmower	63%	14%	5%	3%	14%
Take used automotive oil to a recycling center	58%	10%	1%	0%	31%
Compost leaves/grass clippings in your yard	54%	15%	6%	9%	15%
Clean up and dispose of pet waste	54%	8%	1%	2%	35%
Keep street gutters in front of your residence clear of grass clippings and leaves	50%	15%	3%	0%	31%
Apply weed-killers only once or twice a year	46%	15%	5%	6%	28%
Apply chemical fertilizers only 1-2x/year	43%	11%	3%	7%	37%
Compost leaves and grass clippings through a community program	31%	21%	7%	8%	33%
Stop using salt to melt ice at your residence	25%	20%	19%	26%	10%
Wash your car on your lawn	20%	21%	5%	11%	43%
Use fertilizer w/no or ltd. amts. of phosphorus	19%	28%	16%	7%	31%
Stop using chemical fertilizers and weed-killers completely	13%	23%	18%	24%	22%
Install a rain barrel or cistern to collect rainwater from your downspouts	13%	34%	13%	14%	26%
Conduct soil tests to determine fertilizer application rates for your lawn	8%	22%	20%	7%	42%
Install a "rain garden" to intercept rainwater from your downspouts	6%	21%	30%	14%	29%

Older respondents were more likely to say that they clean up and dispose of pet waste, wash their car at a car wash, direct downspouts to their lawn rather than their driveway, and change their oil at an automotive service center. Males were more likely to say that they apply chemical fertilizers only once or twice per year. Respondents with more formal education were more likely to say that they have stopped using chemical fertilizers and weed-killers completely.

Impediments to Practices. Respondents were given an opportunity, in an open-ended question, to list why they are not doing the practices listed in Table 3 (i.e., what prevents them from doing the practices). The practices getting the most comments were about discontinuing the use of salt to melt ice and the use of chemical fertilizers and weed-killers. Respondents wanted to know what alternatives they could use.

“Handicapped, so need to melt the ice, try to find something that will help environmentally. Very willing.”

“I have tried this, but garden and lawn and windbreaks began to fill in with weeds. I only apply fertilizer to my garden.”

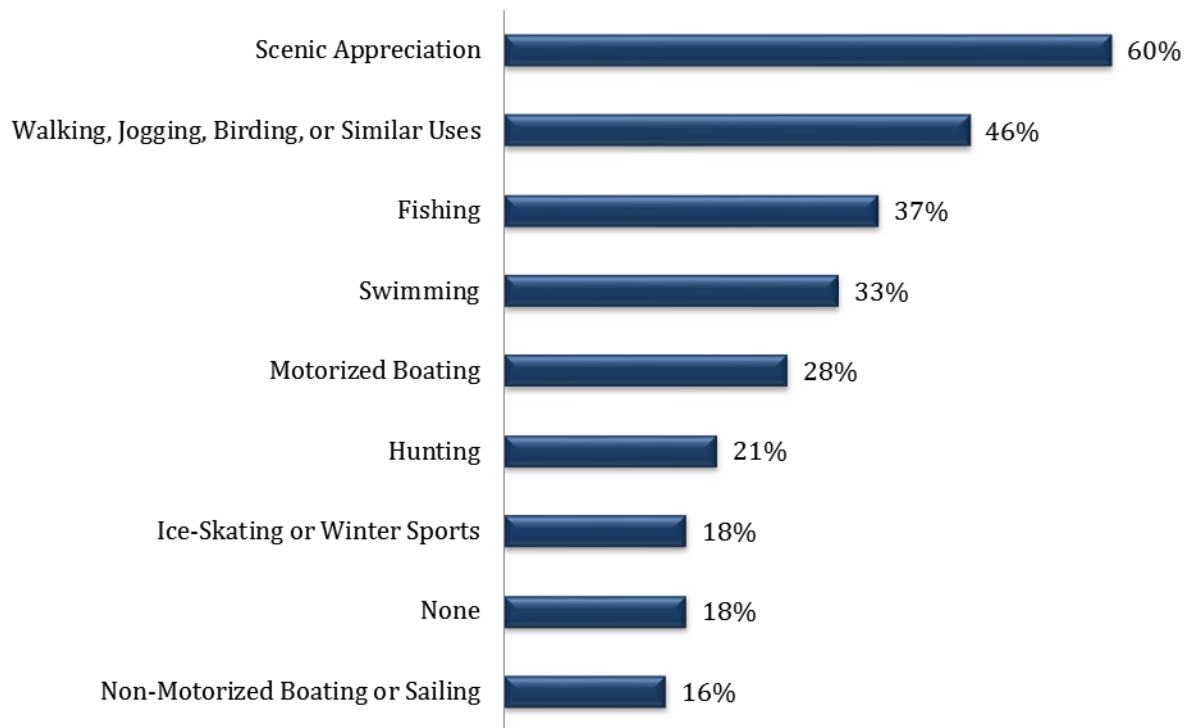
See Appendix C, Question 10 for the complete list of comments about what prevents respondents from doing the practices listed on the survey that prevent or reduce water pollution.

Effectiveness of Efforts to Improve Water Quality in the Community. Table 4 shows the results to a question related to perceptions of the effectiveness of different efforts for addressing stormwater problems at the local community level. Six of the nine efforts described in the survey were considered “very effective” or “effective” by a majority of respondents. Stenciled messages on streets/drains was considered “somewhat effective” or “not effective” by approximately one-half of the survey respondents. There were no demographic differences in the perceptions of effectiveness of efforts to improve water quality.

Table 4: Effectiveness of Efforts to Improve Water Quality in the Community					
	Very Effective	Effective	Somewhat Effective	Not Effective	Don't Know
Restoring wetlands	40%	26%	12%	2%	19%
Leaf & yard-waste collection	33%	38%	11%	5%	13%
Enforcing local erosion & stormwater ordinances	28%	30%	14%	3%	25%
Street sweeping	24%	37%	14%	5%	21%
Developing infiltration facilities where stormwater can seep into the ground	22%	29%	12%	1%	35%
Developing buffers along waterways & shorelands	20%	33%	11%	3%	33%
Reducing salt usage for melting ice	17%	33%	26%	4%	19%
Installing “rain gardens”	14%	22%	17%	6%	41%
Stenciled messages on streets/drains	7%	16%	32%	13%	32%

Water Resources Usage in the Last Year. Respondents were asked about ways they have used the water resources in and around their community in the last calendar year (Figure 7). A majority of respondents reported that they used the water resources for scenic appreciation. Walking, jogging, birding, or similar uses is the next most popular use, at 46%, followed by fishing at 37%, swimming at 33%, motorized boating at 28%, and hunting at 21%.

**Figure 7: Water Resources Use in Community:
During Last Calendar Year**



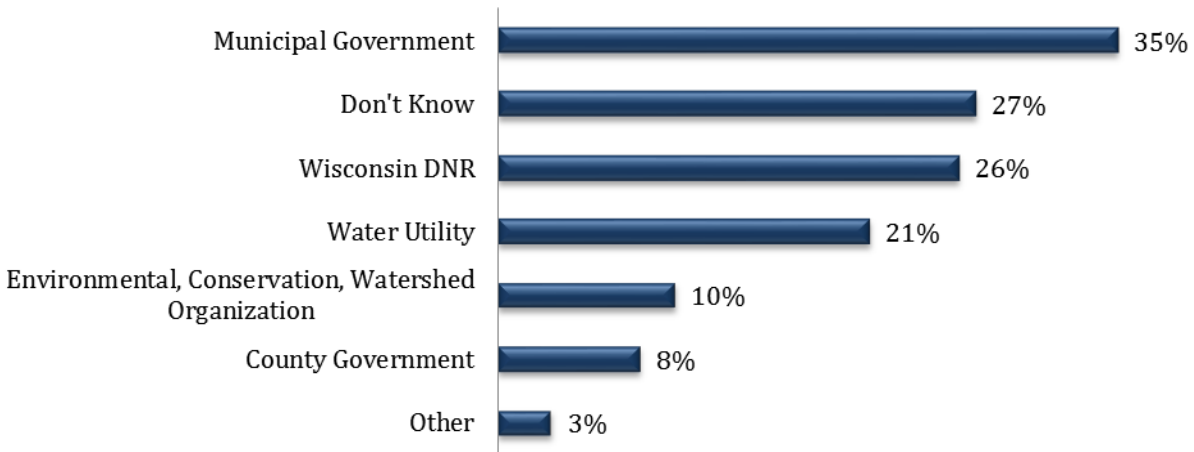
Demographic groups utilized local water resources for different reasons:

- Respondents with higher household incomes were more likely to have used local water resources for motorized boating, skating or winter sports, and scenic appreciation.
- Respondents with more formal education were more likely to have used water resources for swimming and scenic appreciation.
- Males were more likely to have used water resources in and around their community for motorized boating, fishing, and hunting.

Information Sources

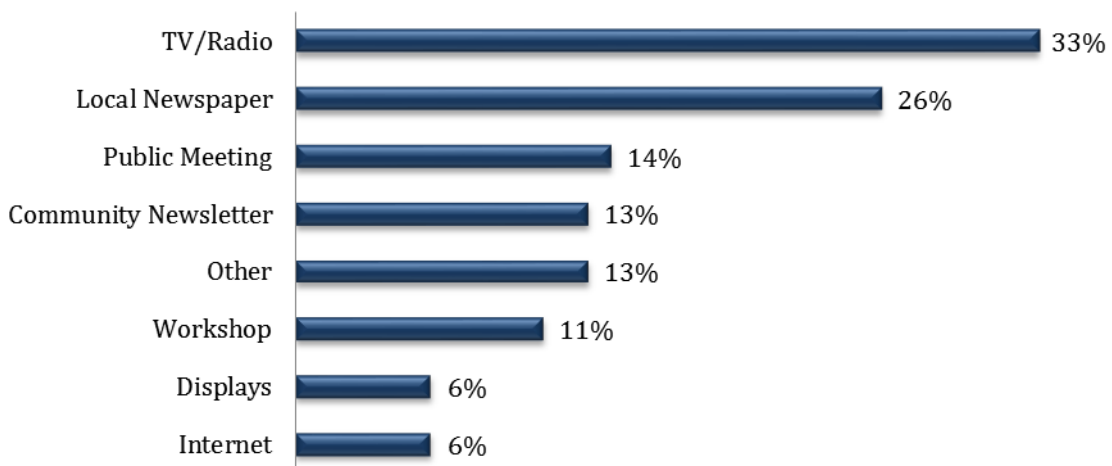
Who to Contact about Stormwater Pollution Problem. Respondents were asked who they would contact if they became aware of a stormwater pollution problem. As shown In Figure 8, municipal government was the most frequent choice among respondents. A considerable percentage of respondents said they would not know who to contact. Males and higher-income respondents were more likely to say they would contact their municipal government.

Figure 8: Contact if Stormwater Pollution Problem



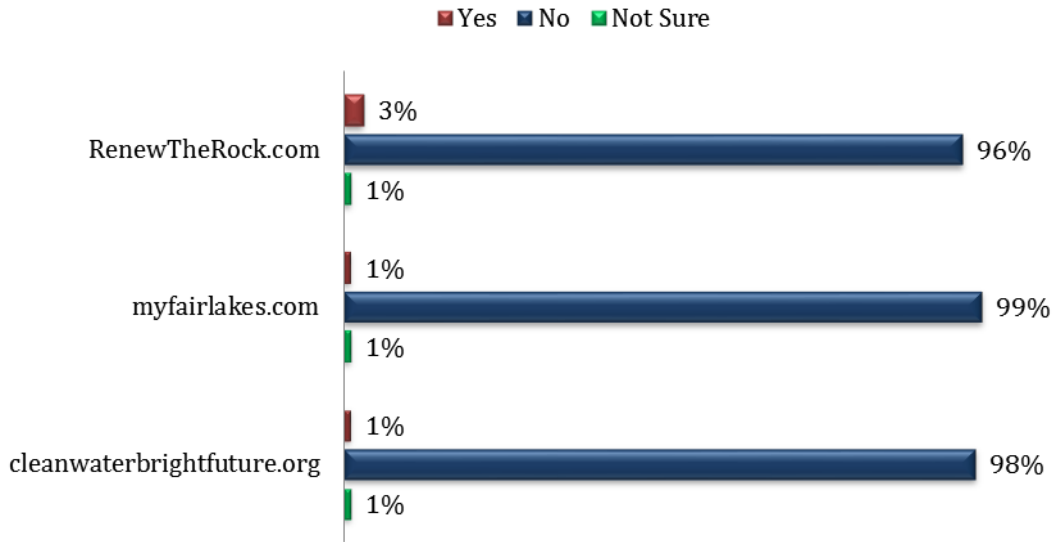
Information Sources. Respondents were asked if they recall receiving information regarding stormwater pollution issues and practices from various sources (Figure 9). Approximately one-fourth to one-third of respondents recalls receiving information from a local newspaper, TV, or radio. There were no demographic differences regarding stormwater pollution information sources.

**Figure 9: Information Sources:
Stormwater Pollution Issues and Practices**
during the last five years



Websites. Respondents were asked if they ever visited three websites listed on the survey. In Figure 10, three options are shown: yes=top bar, no=middle bar and not sure=bottom bar. Most respondents to the survey have not visited the websites. There were no demographic differences regarding website visitation.

Figure 10: Visited Websites



Online vs. Mail Response Differences

Most respondents (93%) completed the survey by mail; 7 percent were completed online – the survey invitation offered the option to complete the survey online and provided a URL. There were 2 statistically significant differences in responses of online respondents and mail response out of 101 variables tested (2%). (Table 5).

Statistical analysis indicates that *online respondents* are more likely to:

- say that they are willing to conduct soil tests to determine fertilizer application rates for their lawns.
- have used a motorized boat in water resources in and around their community in the past year than mail respondents.

The fact that there are so few statistically significant differences indicates that stormwater-related perceptions, knowledge, and practices are generally similar between these two groups.

Table 5 – Statistically Significant Differences Between Online and Mail Responses			
Variable	Mean Online	Mean Mail	Statistical Significance
Q9c Current practices: conduct soil tests	2.36	3.63	.004
Q24 Water Resource Activity: motorized boating	.64	.26	.007

Additional Comments

Respondents were given an opportunity, in an open-ended question, to add anything else they wanted to say about stormwater runoff/water quality issues. The SRC grouped the answers into broad topical categories, resulting in a total of 21 comments. The results are summarized in Table 6. As appropriate, selected quotes are used to illustrate these comments.

The most frequent comments were about the **overall issue of water quality, lakes/ivers, and current practices and efforts:**

“I feel a large portion of our runoff pollution can be contributed to our cities and highways using incredibly high amounts of salts and chemicals to de-ice and melt the roadways, especially applications of liquid calcium chloride to our bridges that are directly over streams and rivers.”

“It is appalling to me that landowners on the lake can dictate water levels without regard to environmental factors.”

“I have heard that some communities are experimenting with alternate ice removal compounds, such as beet juice or cheese whey. If they are as cost-effective as rock salt, I would like to see more communities adopt these practices.”

See Appendix C, Question 15 for the complete list of comments.

Topic	Count	%
Issue of Water Quality	4	19%
Lakes/Rivers	4	19%
Practices and Efforts	4	19%
Information/Education	2	10%
Agriculture	1	5%
Development	1	5%
Flooding	1	5%
Miscellaneous	4	19%
Total	21	100%

Profile of Respondents

Response Rate by Municipality. Table 7 shows response rates by municipality. The sample of 955 was drawn proportionally to the relative number of households in each participating municipality.

Municipality Type	Wisconsin	Invitations Mailed	In Sample	Response Rate	Percentage of Sample
City	Janesville	326	36	11%	23%
	Beloit	181	40	22%	25%
	Watertown	115	26	23%	16%
	Beaver Dam	88	15	17%	9%
	Whitewater	67	12	18%	8%
	Ft. Atkinson	66	12	18%	8%
	Jefferson	41	10	24%	6%
	Milton	31	2	7%	1%
Town	Beloit	39	6	15%	4%
TOTAL		955	159	17%	100%

Survey Respondents. Table 8 summarizes the demographic profile of respondents to the 2013 RRSg survey. Where appropriate, averaged data from the U.S. Census for Dodge, Jefferson, and Rock Counties are included for comparative purposes.¹

The sample generally matches the household income in the overall population of the three counties. Level of education of the sample was higher than the 3-county average. Seventeen percent of the survey sample is under the age of 45 compared to 46% in the overall Dodge, Jefferson, and Rock counties' population. More than one-third of survey respondents are retired. The proportion of males in the sample is substantially higher than the percentage of males in the total population. *Response patterns that vary at statistically significant levels between demographic groups (p < .05) are noted in the report.*

Table 8: Demographic Profile of 2013 RRSg Survey Respondents								
Gender	Count	Male	Female					
2013 Sample	154	68%	32%					
2013 Census (18+)	252,494	50%	50%					
Age	Count	18 – 24	25 – 34	35 – 44	45 – 54	55 – 64	65+	
2013 Sample	154	2%	8%	7%	23%	27%	33%	
2013 Census (18+)	252,494	12%	16%	18%	20%	15%	18%	
Employment Status	Count	Self Empl	Full time	Part time	Home-maker	Unempl	Retired	Other
2013 Sample	149	8%	42%	7%	2%	2%	37%	3%
2013 Census (16+)	261,959	4%	63% ²		---	5%	9%	
Education	Count	< High School	High School	Some College/ Tech	Tech College Grad	Bach Degree	Grad/ Prof Degree	
2013 Sample	147	1%	31%	20%	14%	20%	14%	
2013 Census (25+)	222,688	12%	38%	22%	9%	13%	6%	
Household Income	Count	Under \$25K	\$25K - \$34.9K	\$35K - \$49.9K	\$50K - \$74.9K	\$75K - \$99.9K	\$100K+	
2013 Sample	132	15%	16%	14%	30%	13%	11%	
2013 Census (Total HH)	128,645	20%	11%	15%	23%	15%	16%	
Type of Residence	Count	Single Family	Duplex	Condo/ Townhouse	Apt	Mobile Home	Other	
2013 Sample	151	85%	3%	5%	3%	2%	1%	
Membership: Environmental, Conservation, or Watershed Org.	Count	Yes	No					
2013 Sample	151	10%	90%					

¹ Combined averages for Wisconsin Counties of Dodge, Jefferson, and Rock. *Source:* U.S. Census Bureau, 2007-2011 American Community Survey. ² Census does not differentiate between full-time and part-time employment.

Conclusions

Most respondents appear to behave in ways that are likely to minimize their environmental impact with respect to washing their cars, disposing of waste motor oil, and directing downspouts to their lawns instead of driveways.

Areas in which additional educational efforts may be warranted are with respect to basing lawn fertilizer application on soil tests, and the installation of rain gardens to intercept rainwater from downspouts. These two areas had relatively few respondents currently doing them and the highest “need more information” responses.

A substantial percentage of respondents are not willing to stop using chemical fertilizers and weed-killers completely (24%) nor are they willing to stop using salt to melt ice at their residence (26%).

Respondents are somewhat aware of efforts by local governments to improve water quality. The water quality improvement efforts at the local level that respondents believe are most effective (combined effective + very effective results) are leaf and yard-waste collection, and the restoration of wetlands.

Relatively small percentages of respondents recall receiving information about stormwater pollution issues and practices from any of the seven sources listed on the survey. In addition, few respondents have visited the websites listed on the survey specifically geared towards this type of information.

Appendix A – RRSG vs. MAMSWaP Results

The *Your Views on the Health of Our Lakes, Rivers and Streams* survey was initiated by both the Madison Area Municipal Storm Water Partnership (MAMSWaP) and the Rock River Stormwater Group (RRSG) in October and November 2013. Both groups worked with the Survey Research Center (SRC) at the University of Wisconsin-River Falls to conduct the surveys. Both projects surveyed during the same data collection period, sent the same number of surveys to households in their respective areas (955), used the same survey instrument, followed the same multiple mailing method (3 contacts: first survey, postcard reminder, second survey), and both groups allowed for online submission.

A total of 159/955 (17%) usable surveys were collected for RRSG and 186/955 (19%) for MAMSWaP. A statistical comparison was conducted using responses to survey questions for both groups. The standard p value of .05 was used as the cutoff for statistical significance.

*The SRC used statistical tests to identify questions with statistically significant differences between the groups. In statistics, a result is called **statistically significant** if it is unlikely to have occurred by chance. Statistical significance is expressed as a probability that the difference is not true. A commonly used probability standard is .05 (5%). Statistical significance at the .05 level indicates a 5 in 100 probability that the difference is not true. It does not mean the difference is necessarily large, important, or significant in the common meaning of the word. If there are a sufficiently large number of observations, even small differences of opinion will be statistically significant.*

There were 37 statistically significant differences in the responses of RRSG and MAMSWaP survey participants of 101 variables tested (37%). (**Table A1**). Data summaries for each quantitative survey question are in **Table A2**.

Table A1 indicates that even when statistical differences exist, the magnitude of most differences are small. For instance, questions about the extent stormwater runoff contributes to community problems (Question 6) consisted of a scale ranging from “major contributor” = 1, “minor contributor” = 2, and “does not contribute” = 3. There was also a “don’t know/not sure” option. When asked if stormwater runoff contributes to weed and algae growth in lakes, the RRSG respondents had a mean response = 2.28, while MAMSWaP respondents had a mean response = 1.75, indicating that both groups’ responses were closest to agreeing that stormwater runoff is a “minor contributor” to weed and algae growth in lakes.

Statistical analysis indicates that RRSG respondents are more likely to:

- rate the water quality of lakes in the survey map area (Rock River Watershed) and the community/town in which they live higher than MAMSWaP respondents.
- support water quality efforts in their community at current expenditure levels.
- say the following efforts are “somewhat effective” in their community: installing rain gardens, developing infiltration facilities where stormwater can seep into the ground, reducing salt usage for melting ice, and developing buffers along waterways and shorelands.
- have used the water resources in and around their community in the past year for fishing, hunting, and swimming.

MAMSWaP respondents are more likely to:

- say that both stormwater runoff from residential rooftops and driveways and grass clippings and leaves are minor contributors towards water quality problems in lakes, rivers, and streams in and around the community/town in which they live.
- support water quality efforts in their community even if it costs more.
- say they need more information before they take used auto oil to a recycling center, apply weed-killers only once or twice/year, or clean up/dispose of pet waste.
- contact their municipal government if they become aware of a stormwater pollution problem.
- be a member of an environmental, conservation, or watershed organization.
- have used the water resources in and around their community in the past year for non-motorized boating or sailing, walking, jogging, birding, or similar uses, and for scenic appreciation.
- have higher household incomes and higher levels of education.

Table A1 – Statistically Significant Differences Between RRSg and MAMSWaP Responses			
Variable	Mean RRSG	Mean MAMSWaP	Statistical Significance
Q1a Overall Water Quality of Lakes: Area on Map	3.20	2.80	.001
Q2a Overall Water Quality of Lakes: Community	3.04	2.63	.000
Q3 Contributes to Water Quality Problems: stormwater runoff/residential rooftops/ driveways	2.31	2.07	.019
Q3 Contributes to Water Quality Problems: grass clippings and leaves	2.51	2.03	.000
Q4 Leaving property, stormwater: storm drain	.53	.68	.005
Q4 Leaving property, stormwater: ditch	.23	.14	.046
Q5 Leaving neighborhood, stormwater: holding pond	.04	.11	.015
Q5 Leaving neighborhood, stormwater: field or basin	.16	.05	.001
Q6c Stormwater runoff: weed and algae growth	2.28	1.75	.000
Q6d Stormwater runoff: impacts on fish habitat	2.42	2.18	.045
Q6g Stormwater runoff : impacts on swimming/beach	2.45	1.88	.000
Q6h Stormwater runoff : delivery of sediment	2.13	1.80	.006
Q7 Awareness of Water Quality Efforts	2.04	2.38	.000
Q8 Support investment in water quality	1.73	1.46	.000
Q9a Current practices: take used oil to recycling ctr.	2.36	2.99	.003
Q9b Current practices: oil changed at service center	1.68	1.35	.016
Q9e Current practices: apply weed-killer only 1-2x/yr.	2.54	2.95	.040
Q9p Current practices: wash car on lawn	3.37	3.87	.004
Q9r Current practices: clean-up/dispose of pet waste	2.55	3.00	.039
Q11b Effectiveness: install rain gardens	3.39	2.76	.000
Q11c Effectiveness: leaf and yard-waste collection	2.26	1.97	.031
Q11d Developing infiltration facilities	2.99	2.41	.001
Q11e Enforcing local erosion/stormwater ordinances	2.68	2.23	.005
Q11f Restoring wetlands	2.34	1.92	.007
Q11h Reduce salt usage for melting ice	2.75	2.33	.003

Table A1 (cont.) – Statistically Significant Differences Between RRSg and MAMSWaP Responses			
Variable	Mean RRSG	Mean MAMSWaP	Statistical Significance
Q11i Developing buffers along waterways/shorelands	2.96	2.42	.002
Q12 Contact: municipal government	.35	.47	.021
Q13 Information: newsletter	.13	.28	.001
Q18 Mbr of an Environ, Conserv, or Watershed Org.	1.90	1.76	.001
Q21 Education	3.66	4.64	.000
Q23 Income	3.44	4.06	.001
Q24 Water Resource Activity: non-motorized boating	.16	.25	.034
Q24 Water Resource Activity: fishing	.37	.26	.027
Q24 Water Resource Activity: hunting	.21	.09	.001
Q24 Water Resource Activity: swimming	.33	.22	.030
Q24 Water Resource Activity: walking, jogging, birding	.46	.60	.008
Q24 Water Resource Activity: scenic appreciation	.60	.73	.010

Table A2: Quantitative Summary of Responses by Question – Comparison of RRSg and MAMSWaP Results		
Overall Water Quality of Lakes, Rivers, and Steams Located in the Area on the Map – Rock River Watershed: “Very Good” + “Good” Responses		
	RRSG	MAMSWaP
Lakes	57%	42%
Rivers and Streams	46%	53%
Overall Water Quality of Lakes, Rivers, and Steams Located in and around the Community/Town in Which you Live: “Very Good” + “Good” Responses		
	RRSG	MAMSWaP
Lakes	53%	38%
Rivers and Streams	48%	48%
“Major Contributor” to Water Quality Problems in Lakes, Rivers, and Streams Located in and around the Community/Town in Which you live		
	RRSG	MAMSWaP
Pet waste	4%	4%
Improper disposal of used motor oil & antifreeze	17%	7%
Air pollution from industrial activities	24%	20%
Lawn/urban fertilizers and pesticides	53%	58%
Manure from farm animals	39%	55%
Discharges from sewage treatment plants	30%	26%
Stormwater runoff from streets & highways	38%	54%
Stormwater runoff from residential rooftops and driveways	18%	24%
Stormwater runoff from non-residential rooftops & parking lots	23%	37%
Grass clippings and leaves	12%	30%
Soil erosion from construction sites	19%	22%
Street salt and sand	44%	46%
Discharges from industry	35%	35%
Agricultural fertilizers and pesticides	57%	64%

Soil erosion from farm fields	36%	35%
Improper disposal of hazardous household wastes	27%	20%
Where Stormwater Goes When It Leaves Property		
	RRSG	MAMSWaP
I don't know	5%	5%
Into a storm drain	53%	69%
Into a ditch	23%	15%
Doesn't leave my property	13%	10%
Other	11%	9%
Where Stormwater Goes When It Leaves Neighborhood		
	RRSG	MAMSWaP
I don't know	23%	24%
To a creek, stream, river or lake without treatment	50%	48%
To a sewage treatment system	15%	16%
To a holding pond	4%	11%
To a field or infiltration basin	16%	5%
Other	1%	3%
Extent to Which Stormwater Runoff is a "Major Contributor" to this Problem in Your Community		
	RRSG	MAMSWaP
Flooding	38%	34%
Increased numbers of zebra mussels	1%	5%
Weed & algae growth in lakes	32%	59%
Negative impacts on fish habitat	20%	34%
Negative impacts on habitat for wildlife	17%	23%
The quality of local drinking water	12%	12%
Negative impacts on local swimming and beach areas	21%	47%
Delivery of sediment to local lakes and streams	35%	52%
Increased temperatures in lakes and streams	12%	24%
Reduction in normal or "base" flow of local streams (e.g. flow when it's not raining)	14%	17%
Less recharge of local aquifers	9%	14%
Awareness of Current Efforts by Local Government to Improve Water Quality		
	RRSG	MAMSWaP
I am not aware of any current efforts	24%	14%
I think activities are taking place, but I don't know very much about them	50%	39%
I am somewhat familiar with efforts to improve water quality in my community	24%	41%
I am very knowledgeable about existing efforts to improve water quality in my community	2%	6%

Support for Investment in Water Quality Efforts		
	RRSG	MAMSWaP
I support these efforts and would like us to be doing more, even if that costs more	34%	57%
I support these efforts at the current expenditure level	61%	41%
I would like my community to spend less on these efforts	3%	2%
I would like my community to stop investing in water quality improvements if it could	2%	1%
Current Practices: "Already Do This"		
	RRSG	MAMSWaP
Take used automotive oil to a recycling center	58%	46%
Have your oil changed at an automotive service center	79%	88%
Conduct soil tests to determine fertilizer application rates for your lawn	8%	4%
Apply chemical fertilizers only once or twice per year	43%	42%
Apply weed-killers only once or twice a year	46%	39%
Stop using chemical fertilizers and weed-killers completely	13%	25%
Use a fertilizer with no or limited amounts of phosphorus	19%	33%
Stop using salt to melt ice at your residence	25%	28%
Compost leaves and grass clippings in your yard	54%	51%
Compost leaves/grass clippings through a community program	31%	30%
Use a mulching lawnmower	63%	63%
Direct rain downspouts to your lawn rather than your driveway	78%	76%
Install rain barrel/cistern to collect rainwater from downspouts	13%	10%
Install a "rain garden" to intercept rainwater from downspouts	6%	11%
Keep street gutters in front of your residence clear of grass clippings and leaves	50%	49%
Wash your car on your lawn	20%	9%
Wash your car at a car wash	75%	78%
Clean up and dispose of pet waste	54%	47%
Effectiveness of Water Quality Improvement Efforts in Community: "Very Effective" + "Effective" Responses		
	RRSG	MAMSWaP
Street sweeping	61%	61%
Installing "rain gardens"	36%	59%
Leaf & yard-waste collection	71%	77%
Developing infiltration facilities where stormwater can seep into the ground	51%	67%
Enforcing local erosion & stormwater ordinances	58%	73%
Restoring wetlands	66%	79%
Stenciled messages on streets/drains	23%	29%
Reducing salt usage for melting ice	50%	65%
Developing buffers along waterways & shorelands	53%	68%
Other	37%	50%

Contact if Stormwater Pollution Problem		
	RRSG	MAMSWaP
Don't know who to contact	27%	25%
My water utility	21%	19%
My municipal government	35%	47%
County government	8%	9%
Wisconsin Department of Natural Resources	26%	19%
An environmental, conservation, or watershed organization	10%	9%
Other	3%	2%
Information Sources in the Last Five Years Regarding Stormwater Pollution Issues		
	RRSG	MAMSWaP
Local newspaper	26%	34%
TV or radio	33%	32%
Community, municipality, neighborhood newsletter	13%	28%
Workshop	11%	6%
Displays	6%	9%
Public meeting	14%	11%
Internet	6%	11%
Other	13%	16%
Have Visited Web Sites		
	RRSG	MAMSWaP
myfairlakes.com	1%	8%
cleanwaterbrightfuture.org	1%	1%
RenewTheRock.com	3%	0%
Water Resource Usage and Activities in Last Calendar Year		
	RRSG	MAMSWaP
Motorized boating	28%	24%
Non-motorized boating or sailing	16%	25%
Fishing	37%	26%
Hunting	21%	9%
Swimming	33%	23%
Ice-skating or winter sports	18%	20%
Walking, jogging, birding, or similar uses	46%	61%
Scenic Appreciation	60%	74%
None of the Above	18%	12%
Type of Residence		
	RRSG	MAMSWaP
Single-family house	85%	77%
Duplex	3%	2%
Condominium/Townhouse	5%	7%
Apartment	3%	12%
Mobile home	2%	1%
Other	1%	1%

Member of an Environmental, Conservation, or Watershed Organization		
	RRSG	MAMSWaP
Yes	10%	24%
No	90%	76%
Gender		
	RRSG	MAMSWaP
Male	68%	65%
Female	32%	35%
Age		
	RRSG	MAMSWaP
18-24	2%	2%
25-34	8%	12%
35-44	7%	11%
45-54	23%	18%
55-64	27%	21%
65+	33%	37%
Highest Level of Education		
	RRSG	MAMSWaP
Less than high school	1%	0%
High school diploma	31%	12%
Some college/tech	20%	15%
Tech college graduate	14%	6%
Bachelor's degree	20%	29%
Grad or professional degree	14%	37%
Employment Status		
	RRSG	MAMSWaP
Self-Employed	8%	9%
Employed Full-Time	42%	44%
Employed Part-Time	7%	6%
Homemaker	2%	1%
Unemployed	2%	1%
Retired	37%	36%
Other	3%	3%
Household Income Level		
	RRSG	MAMSWaP
Less than \$25,000	15%	12%
\$25,000-34,999	16%	7%
\$35,000-49,999	14%	17%
\$50,000-74,999	30%	22%
\$75,000-99,999	13%	15%
\$100,000+	11%	28%

Appendix B – Non-Response Bias Test

Any survey has to be concerned with “non-response bias.” Non-response bias refers to a situation in which people who do not return a questionnaire have opinions that are systematically different from the opinions of those who return their surveys. For example, suppose most non-respondents do not agree that the overall water quality of the lakes located in and around their community is good (Question 2a), whereas most of those who returned their questionnaire believe lake water quality is good. In this case, non-response bias would exist, and the raw results would overstate the opinion of residents regarding the quality of lakes in their communities.

A standard way to test for non-response bias is to compare the responses of those who responded to the first invitation to take the questionnaire to those who responded to subsequent invitations. Those who respond to subsequent invitations are, in effect, samples of non-respondents (to the first invitation), and we assume that they are representative of that group. In this survey, 96 people responded to a first invitation and 63 responded to subsequent invitations.

We found eight variables with statistically significant differences between the mean responses of these two groups of respondents (Table B1) out of 101 tested. Table B1 indicates that even when statistical differences exist, the magnitude of this difference is small and did not impact the overall pattern of answers and the interpretation of the results.

Earlier respondents were slightly more likely to believe stormwater runoff from streets and highways and non-residential rooftops and parking lots contributes to water quality problems in lakes, rivers, and streams in and around their communities but this was mainly a level of degree. Earlier respondents to the survey gave slight higher effectiveness ratings to the efforts of street sweeping, leaf and waste-collection, and restoring wetlands as means to improve the water quality of lakes, streams and/or rivers in their communities. A slightly higher percentage of later respondents said that they need more information about taking used oil to a recycling center, and are less willing to conduct soil tests to determine fertilizer application rates for their lawn.

The Survey Research Center (SRC) concludes that there is little evidence that non-response bias is a concern for this sample.

Table B1 – Statistically Significant Differences Between Responses of First Invitation and After Reminder			
Variable	Mean First Invitation	Mean After Reminder	Statistical Significance
Q3g Runoff: streets and highways	1.71	2.13	.004
Q3i Runoff: non-residential rooftops and parking lots	2.01	2.42	.009
Q7 Awareness of efforts	2.16	1.85	.012
Q9a Current practices: take used oil to recycling center	2.11	2.72	.046
Q9c Current practices: conduct soil tests	3.33	3.85	.030
Q11a Effectiveness of efforts: street sweeping	2.41	2.90	.044
Q11c Effectiveness of efforts: leaf and yard-waste collection	2.03	2.58	.013
Q11e Effectiveness of efforts: restore wetlands	2.07	2.75	.007

Appendix C – RRSB Written Comments, 2013

Q4. *When it rains or when snow melts on your property, where do you think the resulting stormwater goes?*

'Other' responses

- Creek (4x)
- River (2x)
- Beaver Dam Lake
- City block runoff. Water drains down hill to bottom of streets
- Field
- I live in the country
- Local river
- One goes drain
- Rain barrels, lawn and nearby infiltration basin
- Right into Lake Koshkonong
- Rock River
- Soaks in fields
- Storm drain to river

Q5. *Where does stormwater runoff go once it leaves your neighborhood? 'Other' responses*

- Beaver Dam Lake
- Ditch/street at end of block
- Rock River
- Soaks in fields

Q10. *Of the practices listed in Question 9 that are applicable to your situation but you are not currently doing, what things prevent you from doing them?*

a. Take used automobile oil to a recycling center

- Waste oil is burned in heater.

b. Have your oil changed at an automotive service center

- I change my own oil and put it at the curb for the garbage man to pickup.
- I change my own oil.
- I don't change my own oil
- I will not pay for an oil change
- I wouldn't pay someone else to change my oil. Do it myself.
- Oil change at service center: cost
- Quality of work and cost

c. Conduct soil tests to determine fertilizer application rates for your lawn

- Don't have soil tester.
- I don't fertilize
- Need a test kit
- Need more info and cost.
- Need more information on procedure
- Never thought of it.
- Soil test=time and cost.

d. Apply chemical fertilizers only once or twice per year

- Do not.

- I would need more info on lawn fertilization programs. I.e. how to achieve the same results using less chemicals

e. Apply weed-killers only once or twice a year

- I am surrounded by farm fields. I have 2 acres of lawn on a hill - weeds are a constant problem.
- Like to use.

f. Stop using chemical fertilizers and weed-killers completely

- Chemicals on pretty much anything.
- Don't fertilize my lawn.
- I don't use any lawn fertilizer.
- I have hay fields that need fertilizer and weed killer
- I have tried this, but garden and lawn and windbreaks began to fill in with weeds. I only apply fertilizer to my garden.
- Need for weed control
- Need to kill weeds on patio, because too many to pick. If environmental friendly alternative is available, I would buy it.
- Trying to maintain appearance of property.
- What else works on weeds?

g. Use a fertilizer with no or limited amounts of phosphorus

- I apply phosphorus determined by soil samples.
- If available and advertised as "environmentally friendly" I will buy/use it.
- Need a list of them
- Price of natural fertilizers. We use organic in our gardens.
- Using a fertilizer with limited or no phosphorus is in and of itself a waste because soils need certain amounts of it. However we are using less amounts but focusing it where it's needed and not applying it in sensitive or highly erodible soils.
- We wash cars at home, but are willing to wash them at the grass instead of the driveway
- Will check fertilizer before purchasing

h. Stop using salt to melt ice at your residence

- Because I am 87 years old. This salt helps me get out my front door to go to the mailbox. I'm sure my answers to your persistent questions will be of little help.
- Can't afford a lawsuit for someone falling on my sidewalk from ice. I do buy salt that is better for sidewalks.
- Drive way is on a hill; need salt to set the car out.
- Driveway on north side of the house never gets sun in the winter.
- Handicapped, so need to melt the ice, try to find something that will help environmentally. Very willing.
- I don't know what else to use.
- I got a fine from the city of Whitewater for not using ice melt, so I will continue to use it. This also prevents a lawsuit against me from someone wanting a payday after falling on the sidewalk in front of my house.
- I only use salt when absolutely necessary on my sidewalk and driveway when we have a rain/freeze cycle that makes it unbearable to be walked on.
- I salt steps in winter can't risk a fall.
- I shovel right away before it gets walked on or driven on in order to minimize the need for salt, but ice is dangerous on walkways and I won't stop using salt if it's needed there.
- Is there an alternative for salting sidewalk and driveway?
- Need for ice removal, knowledge of alternatives, cost.

- Not sure of alternatives.
- Our steps, sidewalks and blacktop drive (400') is so dangerous slippery and due to falls that we do salt only when icy.
- Salt is cheap.
- Sidewalk-required to use salt or fined. What else can we use? Sand doesn't work because of hill.
- Sometimes, we use salt because of thick ice on sidewalk.
- Stop using salt. What could be the alternative?
- Using salt to melt ice, need something safe and effective for sidewalks.
- Walkways get too slippery and unsafe.
- Will eliminate use of salt.

i. Compost leaves and grass clippings in your yard

- Finding best location
- I do my own composting and the amount would be too much to take somewhere.
- Leaves are cut up in last lawn mowing.
- We make our own compost. Rainwater is already being used resourcefully enough to alleviate the need for a rain garden. Effective alternatives to salt are few and far between.

j. Compost leaves and grass clipping through a community program

- Picking up yard waste and transporting it.
- We compost our own leaves and grass clippings.
- Yard waste at home, no room and pets would get into it so we use city recycle waste center.

k. Use a mulching lawnmower

- Cost of a new mower
- Our yard is too large to mulch out and when we collect clippings and leaves, they are put on the garden.
- Type of mower, cost.

l. Direct rain downspouts to your lawn rather than your driveway

- Don't have the financial resources or personal ability to redirect downspouts to grass/lawn. We need help and we need to keep it from going in the basement and/or ruining the foundation of the house.
- I'm pretty sure they're directed already to own yard.
- Only one downspout faces driveway – no other way around it. Could use rain barrel.

m. Install a rain barrel or cistern to collect rainwater from your downspouts

- A rain barrel is too much work and I don't want mosquitos breeding around my home.
- Cost and time to install.
- I don't understand why to do this.
- I have a rain barrel, it fills too quickly, won't go to the lawn anyway
- Rain barrels are expensive.
- Rain barrels systems breed insects and bacteria if not treated.
- Thought about it, just haven't done anything about it
- We extend our down spouts away from basement to prevent basement flood.
- What to do with the water once it's in the barrel (don't want extra mosquitoses!)

n. Install a "rain garden" to intercept rainwater from your downspouts

- Cost, knowledge and time to install.
- I wish Jefferson did more to promote the use of rain gardens. I use milorganite on my lawn but also use a weed killer in spring due to my location in a less residential part of my town.
- Interested in learning about

- Need to learn more about what this is.
- Never heard of a rain garden
- No room on property
- Too late to put it in
- What else works?
- Would like to know more about rain gardens

o. Keep street gutters in front of your residence clear of grass clippings and leaves

- Hadn't thought about keeping gutters clear.
- This residence is in a rural area - no street gutters.

p. Wash your car on your lawn

- Condo no lawn to use.
- Hadn't thought about washing car on lawn. Great idea!
- I don't have enough lawn space to drive my car onto; most of our yard space is taken up by flower and vegetable gardens
- I wash my car at work
- My lawn isn't big enough to get my vehicle on, and I don't want ruts on my lawn.
- No front yard can't get in back yard
- Soap would kill grass

q. Wash your car at a car wash

- Cost, quality better at home.
- Too expensive

r. Clean up and dispose of pet waste

- Didn't think had a bad effect/lazy.
- Have a pet
- Where should we put waste?

Other Comments

- Didn't know there were options. I would if I knew more.
- I am 83 years old and take care of as much as I can and get help when I need it.
- I don't know enough about these in order to do them. I have never thought to do.
- I have a large property in the country. No sewer near me.
- I have complaints because I rent, but it will do no good to complain! Just do my best!
- I rent, have nothing to do with lawn, house, driveway and sidewalks.
- I would need additional information about replacements for the substances used now and/or how to construct the options on my property.
- Time and money is always an issue. However if more information was brought to my attention as to the value in doing the things (educate me) I would be more likely on board as I believe most would. However, I'm not in favor of more laws dictating regulations. Education!
- We are both over 70 and health issues prevent as from doing things we'd like to do. We don't want toxic chemicals on our yard due to our dogs.
- We currently rent and have very little control over most of these things.

Q11. Please indicate how effective the following efforts can be to improve the water quality of lakes, streams and/or rivers in your community.

- Avoiding dumping in the creek behind residences.
- Fines for companies that flow to river.
- Improving proper drainage
- Landscape driveway pavers

- Less people
- Look into pervious surfaces for driveways and parking lots
- Not allowing cities to fill in marshes for industries and subdivisions
- Outlaw wake boarding boats to control shoreline erosion.
- Reduce highway chemical ice melting products
- Remove all yard and pet waste

Q12. Which of these would you contact if you became aware of a stormwater pollution problem (for example, a large amount of mud flowing into a storm drain)? 'Other' responses

- City/City people (2x)
- Almost all not affected or too "heavy handed"
- Police

Q13. During the last five years, do you recall having received information regarding stormwater pollution issues and practices from any of these sources? 'Other' responses

- As past ownership supervisor, I sat in the meetings for highway construction and watershed issues.
- Building codes
- Get a paper
- Newspaper and magazines
- Our water supply is contaminated because we live on a dead end.
- Unknown
- UW-Whitewater
- Yard signs seen while visiting Madison

Q15. If you have other things you'd like to say about stormwater runoff/water quality issues, please do so here. 21 responses

Issue of Water Quality

- I feel a large portion of our runoff pollution can be contributed to our cities and highways using incredibly high amounts of salts and chemicals to de ice and melt the roadways, especially applications of liquid calcium chloride to our bridges that are directly over streams and rivers.
- I live along Johnson creek and am concerned about its water quality.
- Rivers are allowed to fill in with fallen trees and silt that they become unavailable. Cities are filling in marshes and not stopping them. Super dairy farms. Too many cattle and lots and not enough land to properly incorporate manure into the farmland. All government: local, city, county and DNR too corrupt to effectively deal with above problems.
- The water in Beloit is very bad, but what can anyone do? My answer very little!

Lakes/Rivers

- I walk along a path between Janesville and Beloit within sight of the Rock River we have learned that the dogs' skin reacts to the water in the Rock River. I think it is because of the amount of fertilizer in the water.
- It is appalling to me that landowners on the lake can dictate water levels without regard to environmental factors.
- Milwaukee's sewage dumping into lakes
- There are no lakes, rivers or streams within the city limits of Milton. As far as I know, all storm water runoff flows into numerous infiltration basins located around the city.

Practices and Efforts

- Community needs to do a better job of helping redirect downspouts, build rain gardens and water/rain barrels. Also telling people not to put yard waste in the gutter.

- I have heard that some communities are experimenting with alternate ice removal compounds, such as beet juice or cheese whey. If they are as cost-effective as rock salt, I would like to see more communities adopt these practices.
- If you are going to ban the geese and birds from parks by rivers, then you need more wetlands and rural ponds for them to gather at. Charge boaters on every waterway to help pay for damages.
- Would be nice to have an effective alternative to sidewalk salt, but don't want ice to injure walkers on my sidewalk.

Information/Education

- I believe the general knowledge that people have of their activities contributing to the local water quality is little to none.
- Thank you for helping raise awareness

Agriculture

- I think a lot of the pollution comes from the municipalities and farmers get blamed too often. Leave the farmers alone and work together to lessen pollution.

Development

- Remove, over time, through attrition, development both commercial and residential and create a buffer zone to collect the storm water. Do not pipe it directly into the water. Use the buffer zone as a nutrient filter.

Flooding

- I have a field behind me that has no drainage. The water runs in and cant get out. It causes flooding every year in my basement. We also have erosion on Revere Blvd

Miscellaneous

- I do not know very much about this issue.
- I would like the government to eliminate the mandate of 10% ethanol in gasoline. This will drop the corn price, which will make growing corn on every sq. inch of tillable land less attractive, and will reduce erosion. I am a fisherman, and the 10% ethanol is complete garbage. It doesn't burn as efficiently as regular gasoline, is less efficient to produce (I've heard 1 gal. of ethanol requires 100 gals. of water, but I don't know this for fact) and it eats away at fuel lines, plugs carburetors, & causes phase separation in fuel tanks. None of these problems existed prior to ethanol.
- Rural
- This is not a problem where I live

Q16. What is your zip code?

53094 (14x)	53538 (10x)	53563 (3x)
53098 (8x)	53545 (9x)	53590
53190 (8x)	53546 (18x)	53916 (15x)
53511 (41x)	53548 (8x)	
53512	53549 (10x)	

Q17. Which of the following best describes your current residence? 'Other' responses

- Farm (2x)
- 57 acre farm bordering Johnson Creek
- Rural

Q22. Your current employment status. 'Other' responses

- Disabled (3x)
- School
- Volunteer

Appendix D – Quantitative Summary of Responses by Question

159 Responses

Your Views on the Health of Our Lakes, Rivers and Streams

Municipalities in the Rock River Stormwater Group & Madison Area Municipal Stormwater Partnership



This survey is conducted by the University of Wisconsin-River Falls Survey Research Center on behalf of 29 area communities, Dane County, UW-Whitewater and UW-Madison. Results will help programs for protecting and improving water resources in your community.

Thank you for completing this questionnaire. Please answer all questions by filling in the circle that best matches your response and writing any information requested. Don't worry about providing the "right" answer – the study is interested in gathering information about general perceptions of water resources and water quality issues. Thanks for your help!

Your Perceptions of Local Water Resources

1. How would you rate the overall water quality of the lakes, rivers, and streams located in the area on the map printed on the front cover?

	Very Poor	Poor	Good	Very Good	Don't Know
a. Lakes	2%	22%	49%	8%	19%
b. Rivers and streams	4%	34%	41%	5%	16%

2. How would you rate the water quality of the lakes, rivers, and streams located in and around the community/town in which you live?

	Very Poor	Poor	Good	Very Good	Don't Know
a. Lakes	4%	28%	43%	10%	15%
b. Rivers and streams	7%	36%	41%	7%	10%

3. To what extent do you believe each of the following items contributes to water quality problems in lakes, rivers, and streams in and around the community/town in which you live?

	Major Contributor	Minor Contributor	Does Not Contribute	Don't Know/ Not Sure
a. Pet waste	4%	44%	28%	24%
b. Improper disposal of used motor oil & antifreeze	17%	40%	16%	27%
c. Air pollution from industrial activities	24%	53%	8%	15%
d. Lawn/urban fertilizers and pesticides	53%	35%	5%	8%
e. Manure from farm animals	39%	39%	10%	11%
f. Discharges from sewage treatment plants	30%	34%	12%	24%
g. Stormwater runoff from streets & highways	38%	46%	6%	10%
h. Stormwater runoff from residential rooftops and driveways	18%	51%	14%	18%
i. Stormwater runoff from non-residential rooftops & parking lots	23%	52%	10%	15%
j. Grass clippings and leaves	12%	43%	29%	17%
k. Soil erosion from construction sites	19%	48%	16%	18%
l. Street salt and sand	44%	45%	3%	8%
m. Discharges from industry	35%	42%	6%	17%
n. Agricultural fertilizers and pesticides	57%	27%	3%	13%
o. Soil erosion from farm fields	36%	38%	6%	19%
p. Improper disposal of hazardous household wastes	27%	42%	11%	20%

4. When it rains or when snow melts on your property, where do you think the resulting stormwater goes? (Please select all that apply)

I don't know	Into a storm drain	Into a ditch	Doesn't leave my property	Other
5%	53%	23%	13%	<i>See Appendix C</i> 11%

5. Where does stormwater runoff go once it leaves your neighborhood? (Please select all that apply)

I don't know	To a creek, stream, river or lake without treatment	To a sewage treatment system	To a holding pond	To a field or infiltration basin	Other
23%	50%	15%	4%	16%	<i>See Appendix C</i> 1%

6. To the best of your knowledge, after it rains or when snow melts, to what extent does the resulting stormwater runoff contribute to the following problems in your community?

	Major Contributor	Minor Contributor	Does Not Contribute	Don't Know/ Not Sure
a. Flooding	38%	43%	12%	7%
b. Increased numbers of zebra mussels	1%	7%	41%	50%
c. Weed & algae growth in lakes	32%	32%	12%	24%
d. Negative impacts on fish habitat	20%	44%	10%	26%
e. Negative impacts on habitat for wildlife	17%	46%	17%	19%
f. The quality of local drinking water	12%	33%	29%	27%
g. Negative impacts on local swimming and beach areas	21%	38%	18%	24%
h. Delivery of sediment to local lakes and streams	35%	38%	5%	21%
i. Increased temperatures in lakes and streams	12%	32%	18%	38%
j. Reduction in normal or "base" flow of local streams (e.g. flow when it's not raining)	14%	28%	17%	41%
k. Less recharge of local aquifers	9%	18%	15%	58%

7. Which of the following statements best describes your level of awareness about current efforts by your local government to improve the water quality of lakes, streams and/or rivers in your community?

- 24% I am not aware of any current efforts
- 50% I think activities are taking place, but I don't know very much about them
- 24% I am somewhat familiar with efforts to improve water quality in my community
- 2% I am very knowledgeable about existing efforts to improve water quality in my community

8. Your community is actively working to improve the quality of local rivers, streams and lakes by reducing pollutants in stormwater runoff, and would like to know if you support this investment in water quality.

- 34% I support these efforts and would like us to be doing more, even if that costs more
- 61% I support these efforts at the current expenditure level
- 3% I would like my community to spend less on these efforts
- 2% I would like my community to stop investing in water quality improvements if it could

Practices and Efforts

9. Which of the following responses best describes your current practices?

	Already do this	Willing to do	Need more Info	Unwilling to do	Not Applicable
a. Take used automotive oil to a recycling center	58%	10%	1%	0%	31%
b. Have your oil changed at an automotive service center	79%	2%	1%	9%	10%
c. Conduct soil tests to determine fertilizer application rates for your lawn	8%	22%	20%	7%	42%
d. Apply chemical fertilizers only once or twice per year	43%	11%	3%	7%	37%
e. Apply weed-killers only once or twice a year	46%	15%	5%	6%	28%
f. Stop using chemical fertilizers and weed-killers completely	13%	23%	18%	24%	22%
g. Use a fertilizer with no or limited amounts of phosphorus	19%	28%	16%	7%	31%
h. Stop using salt to melt ice at your residence	25%	20%	19%	26%	10%
i. Compost leaves and grass clippings in your yard	54%	15%	6%	9%	15%
j. Compost leaves and grass clippings through a community program	31%	21%	7%	8%	33%
k. Use a mulching lawnmower	63%	14%	5%	3%	14%
l. Direct rain downspouts to your lawn rather than your driveway	78%	12%	1%	2%	8%
m. Install a rain barrel or cistern to collect rainwater from your downspouts	13%	34%	13%	14%	26%
n. Install a "rain garden" to intercept rainwater from your downspouts	6%	21%	30%	14%	29%
o. Keep street gutters in front of your residence clear of grass clippings and leaves	50%	15%	3%	0%	31%
p. Wash your car on your lawn	20%	21%	5%	11%	43%
q. Wash your car at a car wash	75%	12%	0%	5%	8%
r. Clean up and dispose of pet waste	54%	8%	1%	2%	35%

10. Of the practices listed in Question 9 that are applicable to your situation but you are not currently doing, what things prevent you from doing them? Please refer to each action by its letter. See Appendix C

11. Please indicate how effective the following efforts can be to improve the water quality of lakes, streams and/or rivers in your community.

	Very Effective	Effective	Somewhat Effective	Not Effective	Don't Know
a. Street sweeping	24%	37%	14%	5%	21%
b. Installing "rain gardens"	14%	22%	17%	6%	41%
c. Leaf & yard-waste collection	33%	38%	11%	5%	13%
d. Developing infiltration facilities where stormwater can seep into the ground	22%	29%	12%	1%	35%
e. Enforcing local erosion & stormwater ordinances	28%	30%	14%	3%	25%
f. Restoring wetlands	40%	26%	12%	2%	19%
g. Stenciled messages on streets/drains	7%	16%	32%	13%	32%
h. Reducing salt usage for melting ice	17%	33%	26%	4%	19%
i. Developing buffers along waterways & shorelands	20%	33%	11%	3%	33%
j. Other, See Appendix C	33%	4%	4%	4%	54%

Information Sources

12. Which of these would you contact if you became aware of a stormwater pollution problem (for example, a large amount of mud flowing into a storm drain)? Check all you would contact.

27% Don't know who to contact 35% My municipal government 26% Wisconsin Department of Natural Resources 3% Other **See Appendix C**
 21% My water utility 8% County government 10% An environmental, conservation, or watershed organization

13. During the last five years, do you recall having received information regarding stormwater pollution issues and practices from any of these sources? (Check those you recall – leave blank if you haven't received such info).

26% Local newspaper 13% Community, municipality, neighborhood newsletter 6% Displays 6% Internet
 33% TV or radio 11% Workshop 14% Public meeting 13% Other **See Appendix C**

14. Have you ever visited the following web sites?

	Yes	No	Not Sure
a. www.myfairlakes.com	1%	99%	1%
b. www.cleanwaterbrightfuture.org	1%	98%	1%
c. www.RenewTheRock.com	3%	96%	1%

15. If you have other things you'd like to say about stormwater runoff/water quality issues, please do so here. See Appendix C

Information About You and Your Residence

These questions are included to compare the total group participating in this survey with the general populations of the communities involved.

16. What is your zip code? *See Appendix C*

17. Which of the following best describes your current residence?

85% Single-family house 5% Condominium/Townhouse 2% Mobile home
 3% Duplex 3% Apartment 1% Other *See Appendix C*

18. Are you currently a member of an environmental, conservation, or watershed organization?

10% Yes
 90% No

19. Your gender	Gender						
	Male	Female					
	68%	32%					
20. Your age	Age Group						
	18–24	25–34	35–44	45–54	55–64	65+	
	2%	8%	7%	23%	27%	33%	
21. Your highest level of education	Education Level						
	Less than high school	High school diploma	Some college/tech	Tech college graduate	Bachelor's degree	Grad or professional degree	
	1%	31%	20%	14%	20%	14%	
22. Your current employment status	Employment Status						
	Self-Employed	Employed Full-Time	Employed Part-time	Home-maker	Un-employed	Retired	Other <i>See Appendix C</i>
	8%	42%	7%	2%	2%	37%	3%
23. Your household income level	Household Income						
	Less than \$25,000	\$25,000 – 34,999	\$35,000 – 49,999	\$50,000 – 74,999	\$75,000 – \$99,999	\$100,000+	
	15%	16%	14%	30%	13%	11%	

24. During the last calendar year, in which of the following ways have you used the water resources in and around your community? (Please check all that you did)

28% Motorized boating 18% Ice-skating or winter sports
 16% Non-motorized boating or sailing 46% Walking, jogging, birding, or similar uses
 37% Fishing 60% Scenic appreciation
 21% Hunting 18% None of the above
 33% Swimming