

# CARBONDALE URBANIZED AREA: WATER RESOURCES SURVEY

*A water quality study for the planning area including the Cities and Villages of:  
Cambria, Carbondale, Carterville, Colp, Crainville, Energy, Herrin, and Marion*



**Illinois Environmental  
Protection Agency**

Written and prepared by:

Kelsey Bowe, Environmental Planner

Tyler Carpenter, GIS & Environmental Planning Director

Ruth Ann Fowler, Environmental Planner

Ciara Nixon, Environmental Planner

Gabrielle Reed, Environmental Planner

Greater Egypt Regional Planning and Development Commission

3117 Civic Circle Blvd, Suite A

Marion, IL 62959

[greateregypt.org](http://greateregypt.org)

(618) 997-9351

GERPDC-2022-1172

## Acknowledgements

Funding for this project provided, in part, by the Illinois Environmental Protection Agency through Section 604(b) of the Clean Water Act.

Greater Egypt would like to thank the cities and villages of the Carbondale Urbanized Area who provided support in the planning phase, and to members of those communities for taking the time to respond to the survey.

## Table of Contents

Introduction.....	1
Background .....	2
Research Methods .....	5
Survey Components.....	7
Findings .....	9
Evaluation and Conclusions.....	15
Appendix 1: Survey Outreach .....	17
Appendix 2: Survey Results .....	23

## Introduction

In May 2021, Greater Egypt Regional Planning and Development Commission conducted a water resources survey in the Carbondale Urbanized Area with funds received from the Illinois Environmental Protection Agency (IEPA). Greater Egypt is one of two areawide water quality management planning agencies in Illinois that strive to provide the public with information regarding water o.

Waterbodies in the area such as lakes and rivers serve the public by providing drinking water and recreational opportunities. With the expanding population within the area, non-point source pollution has become an increasing problem. Non-point source pollution is an indirect cause agricultural runoff, stormwater runoff, and other urban sources.

Survey outcomes will lead to decisions about educational programming, planning for non-point sources, and future funding priorities. The survey assists in this goal by evaluating the general knowledge and concerns of: general water quality in the urbanized area, stormwater runoff and stormwater management, best management practices (BMP), watershed planning, and education and outreach.

## Background

Being delegated the Areawide Water Quality Management Planning Agency for Southern Illinois, Greater Egypt has planned and administered water quality programs for more than 60 years. These programs have included: watershed-based planning, Volunteer Lake Monitoring Program coordination, Stormwater Education, and NPDES Permit Reviews. With Greater Egypt's history of non-point source pollution control, a survey directed towards public opinion of local water quality can improve the direction of future education and outreach throughout the urbanized area.

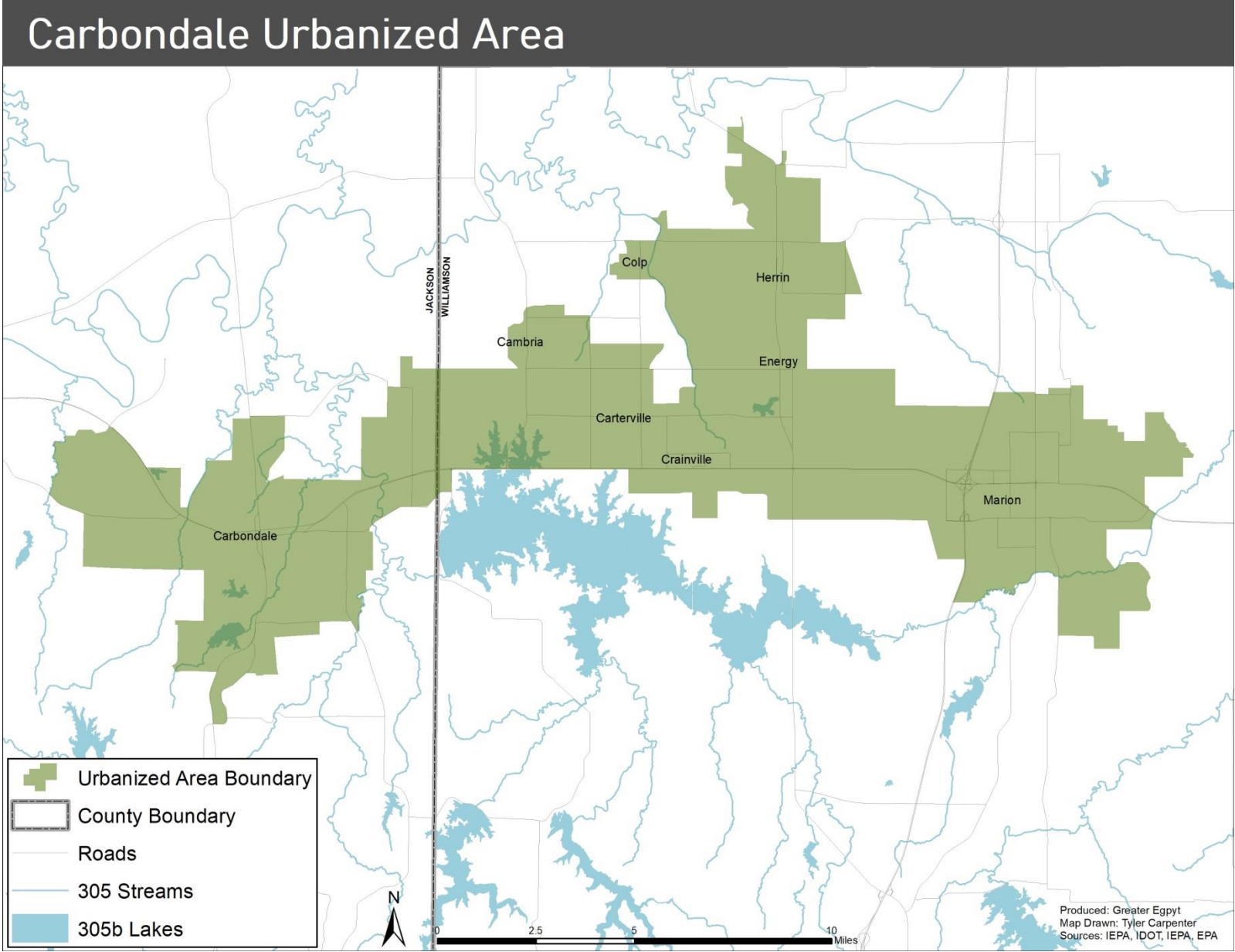
The US Census Bureau designated the Carbondale Urbanized Area in 2010. With an expanding population, large agricultural communities, and increase in impervious surfaces, the urbanized area faces an increased challenge from nonpoint source pollution. With the designation, municipalities in the urbanized area also have a responsibility to address stormwater through EPA Phase II MS<sub>4</sub> regulations. This survey will also address local concerns regarding stormwater runoff and management that can direct future water quality programs.

The purpose of this survey is to gather information about citizens' existing water quality knowledge, and water management and usage habits within the Carbondale Urbanized area (Figure 1). This survey will help Greater Egypt, as well as municipal governments, to plan future water quality projects for the area. The survey was funded with an Illinois Environmental Protection Agency Water Quality Management Planning Grant through section 604(b) of the Clean Water Act. Community members within the boundaries of the Carbondale Urbanized Area were the target population for this survey.

The survey covered questions regarding the participant's self-identification, residency, and income. The survey asked the participants about their stormwater management and education experience, and their water quality education and management habits. Participants of the survey were questioned on their experience with best management practices and their outreach experiences from the community regarding topics on water quality management. There was a count of thirty-two questions within the survey. Participants were able to leave comments after the survey was complete.

The outcomes of the survey will allow Greater Egypt and the municipalities within the urbanized area to direct future education and outreach measures on findings of nonpoint source pollution, general water quality, best management practices, and stormwater management; supplement current efforts of watershed-based planning, and other water quality initiatives with public opinion; and give data and water quality opinions to local municipalities in the urbanized area for their own planning efforts.

Figure 1





## Research Methods

For the conduction of this survey, an online form was used. A portion of the questions in this survey included multiple choice questions, multiple answer questions, and fill-in the blank questions. These questions were asked in order to understand existing knowledge and perceptions of water quality and stormwater management in the Urbanized Area. Responses to the survey are intended to help in the betterment in the communities and restore water quality in the Carbondale Urbanized Area.

The survey subsections and questions are as follows:

---

### **1 )Identification**

What municipality do you represent?

What is your ZIP code?

Which of the following best describes your race/ethnicity?

What is your age?

Please estimate your household income?

What is your gender?

How did you hear about this survey?

Do you own your property?

How long have you been a homeowner/land manager at your current address?

Please rate the importance of the following:

-Aquatic Recreation, Stormwater, Water Quality

---

### **2) Stormwater**

How is surface water (rain, snow, etc.) drained from your property?

After draining from your yard, where does stormwater finally end up?

What source(s) provides you with information regarding stormwater management?

Rate the following statements from “1” (strongly disagree) to “5” (strongly agree)

Stormwater runoff impacts your community.

You have an impact on stormwater runoff in your community.

The way you care for your yard, car, and driveway impacts the water quality of local waterbodies.

If your community has a stormwater management plan to reduce stormwater impacts, would you be in favor of a nominal fee for residents to pay for and implement the plan?

---

### **3) Watershed Management and Water Quality**

Do you know in which watershed you reside?

Do you know of any watershed planning initiatives in your area?

Are you aware that there are funding opportunities within your watershed for water quality projects?

Do you think your watershed has water quality issues?

To the best of your knowledge, which pollutants or hazards impact water quality in your area?

---

Which of the following do you think contributes the most pollution to waterbodies (lakes, streams, rivers) in your community?

Which of these water quality issues have occurred in your area in the last five years?

Do you think water quality of waterbodies (lakes, streams, rivers) in your community is?

Who should be responsible for maintaining or improving water quality in your area?

What is the source of your drinking water?

Are you familiar with any of the following water quality management planning components in the area?

How often do you participate in the following recreational activities?

---

#### **4) Best Management Practices**

These best management practices (BMPs) are actions you can take to help reduce the impacts of stormwater runoff. Check the boxes that best describe your familiarity with each BMP.

Would you be willing to change your landscape practices to include BMPs?

Do any of the following limitations contribute to your inability to incorporate BMPs in your land management routine?

---

#### **5) Education and Outreach**

How would you prefer to receive information about water quality issues in your community?

Would you be interested in attending an educational activity/workshop on any of the following topics?

If you would like to attend an educational activity/workshop with a different topic, please let us know in the space below

---

## Survey Components

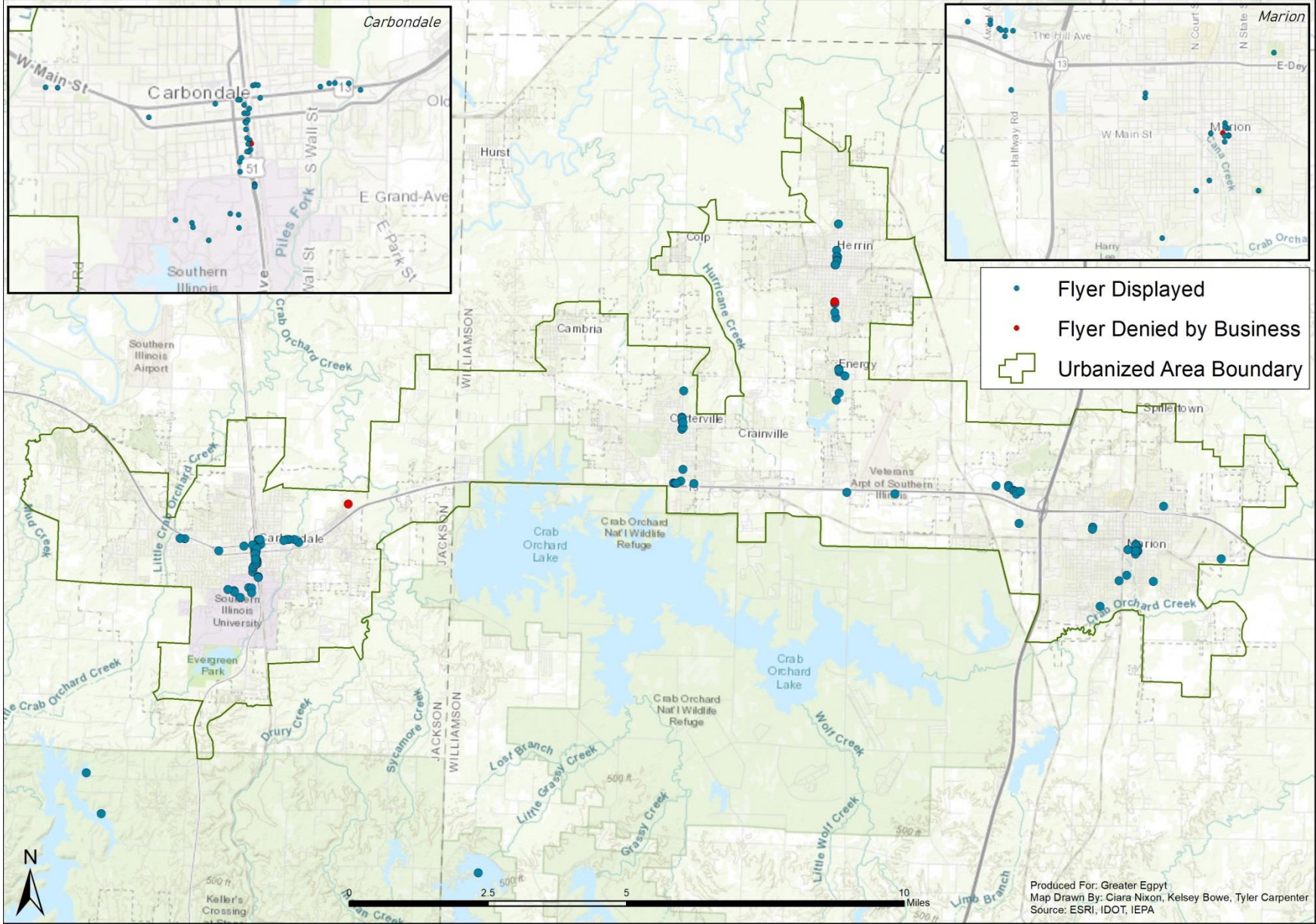
The survey was advertised and broadcast through the use of social media pages, local print newspapers such as the Southern Illinoian and Carbondale Times, and interviews with talk radio hosts in the area. The power of word-of-mouth advertising helped greatly in getting people to participate in completing the survey. Flyers that represent the water resources survey were also advertised and represented across the Carbondale Urbanized Area. Flyers were posted at 106 businesses and parks within the Urbanized Area, as well as buildings across the campus of Southern Illinois University - Carbondale. Flyers included a QR code that could be easily scanned and take them to the survey. Figure 2 shows examples of the flyer designs. Figure 3 displays flyer locations. See *Appendix 1* for full list of media advertisements and promotions.

Figure 2



Figure 3

# Water Resources Survey - Flyer Dropoff Locations

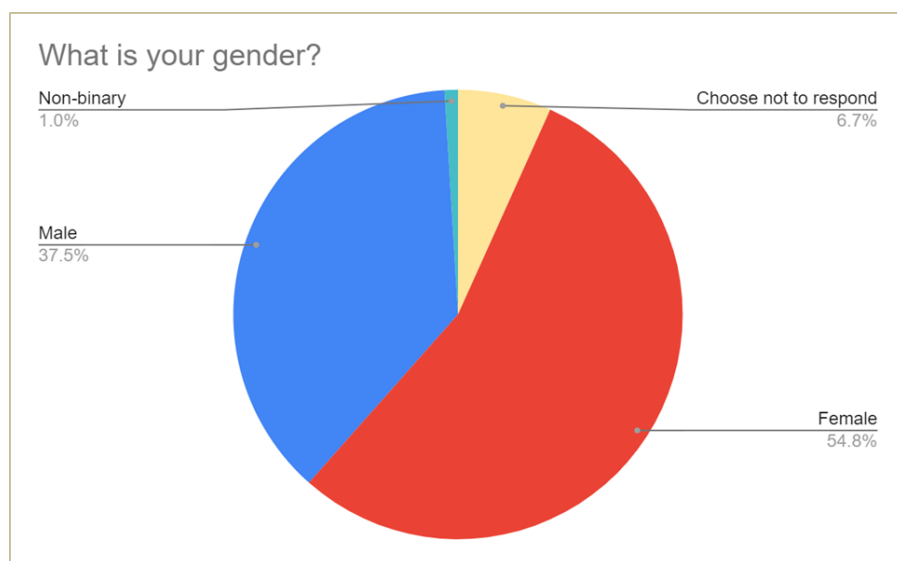


## Findings

### ***Identification, Location, etc. (background information)***

There were 104 submissions to the survey, which ended in the last week of September, 2021. Out of the 104 submissions, 75% of the residents live in Carbondale, while the other 25% lived in the neighboring municipalities. The majority of the participants were white (75%) while the remaining 25% were Black, Hispanic, Asian, or Middle Eastern. The age variations for participants showed that 20% were under 25 years old, 20% were between the ages 26-34, 20% were between the ages 35-44, 20% of participants were 45-55, and lastly the percentage of people between 55 and up were 20%. The results of the household income question showed that out of the 104 participants 35% were making under \$35,000 annually. The survey response also showed that there are 20% of participants making between \$35K and \$59K annually. Participants making between \$60K and \$99K were calculated as 18% of participants for the survey. There was a count of 10% of participants making more than \$99K, and a count of 15% of participants that chose not to answer the question.

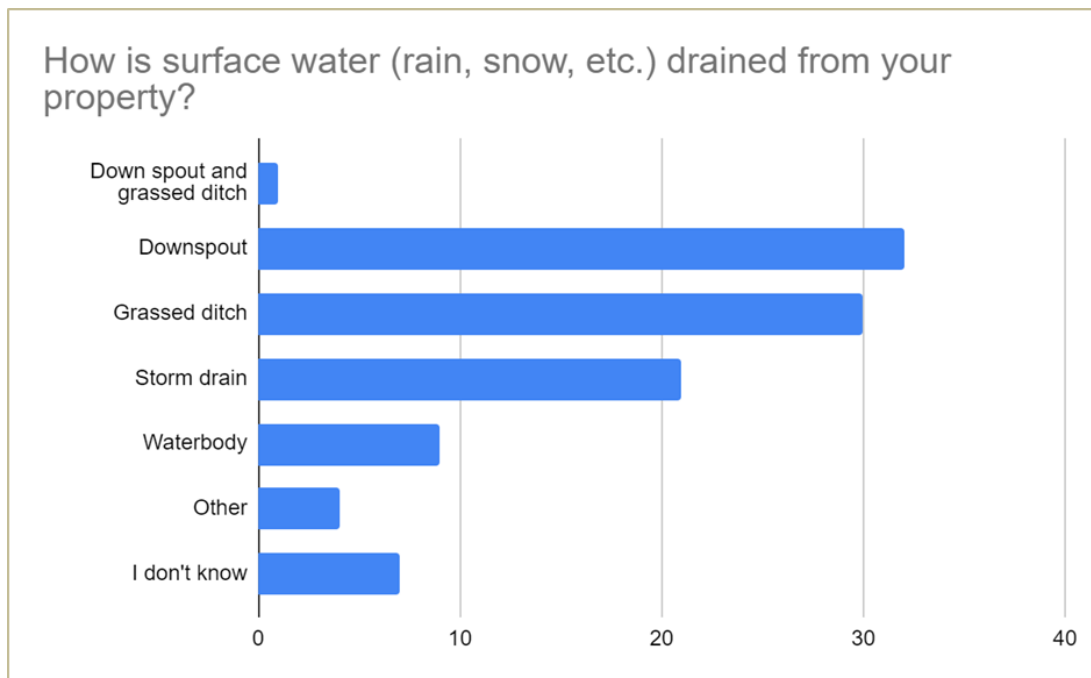
55% of respondents identified as female and 35% identified as males. The remaining 10% of participants chose not to disclose their gender identity. Nearly half of the participants learned about the survey from a social media post, and the other portion of the participants learned about the survey through a friend or the local newspapers. Participants of the survey were asked to disclose whether they were a homeowner or not, and the responses show that 55% of the participants were homeowners and the remaining 45% were not homeowners.



### **Stormwater Management**

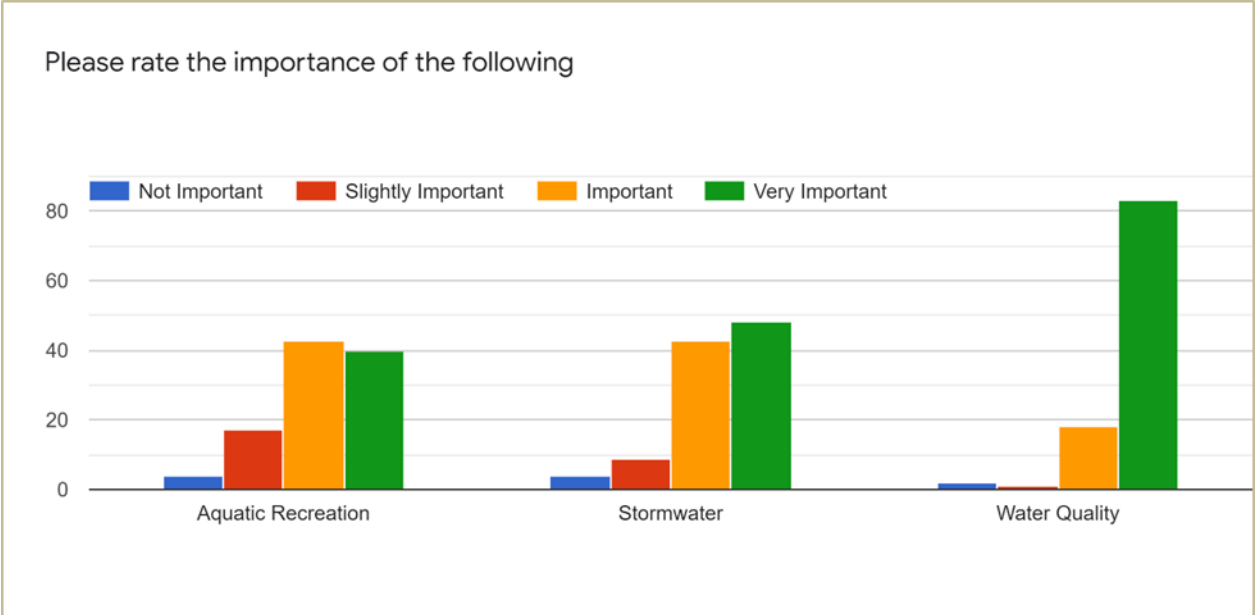
When questioned about the importance of stormwater management, 87% of the responses determined that the subject is perceived as very important or important. When participants were asked about the importance of water quality, 97% of the responses determined that water quality is very important or important.

In response to how surface water from rain or snow was drained from their property, 30% of participants said that they have a downspout attached to their gutter system. Another 30% of participants stated that they rely on a grassed ditch for water drainage, and another 30% responded with a storm drain being their primary means of water drainage. The remaining 10% responded with unknown as their answers. When asked the question of where the water goes once it has been drained from their residence, 40% responded that they did not know where the water went after, 15% stated that the water ends up in a local waterbody, and another 15% stated that the water travels to a sewer and water treatment plant. From the responses there were 15% of participants that said the water ends up as infiltrated groundwater. The remaining 15% of responses from participants indicated that they are unsure of where the water goes once it has moved from their property.

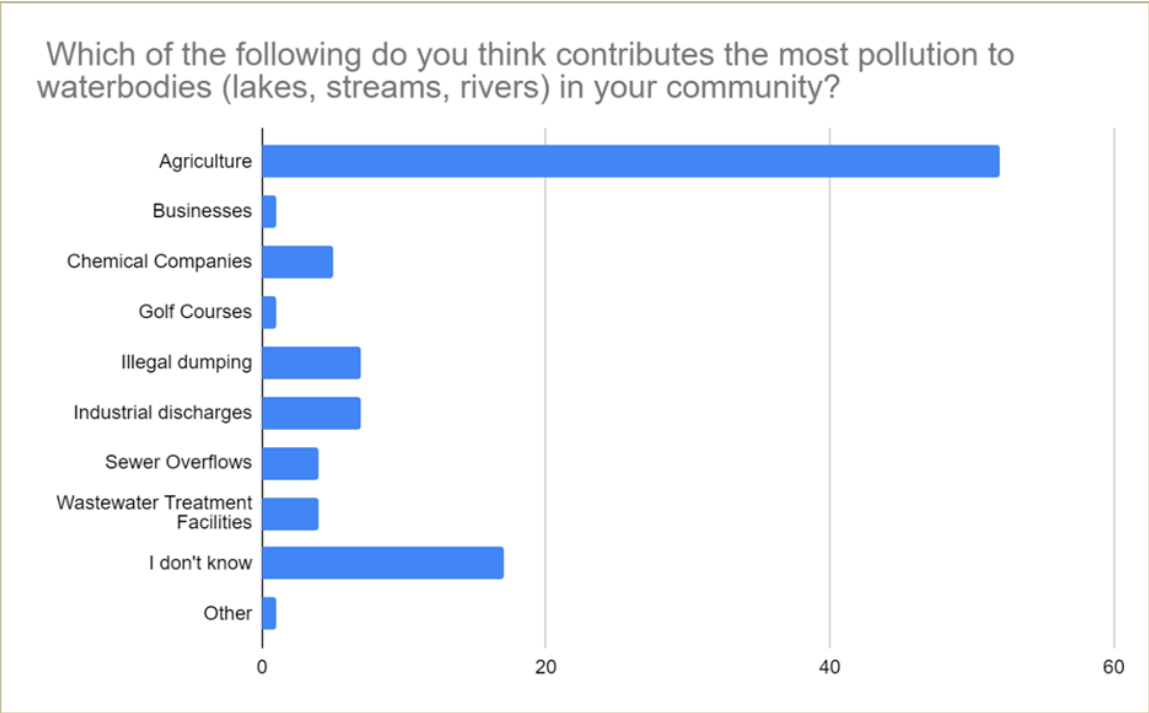
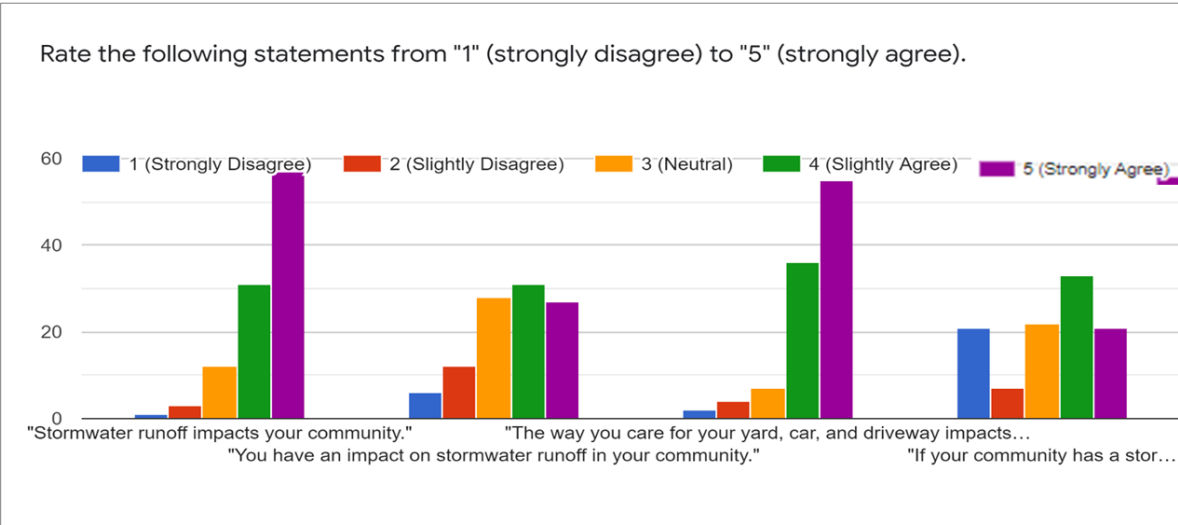


**Watershed Management and Water Quality**

During this portion of the survey participants were asked a series of questions based on their knowledge of watershed management and water quality. Participants were first asked about their knowledge of which watershed they lived in. Out of the 104 responses, 58% said No, that they did not know their watershed area name. There were 3% that replied with just Yes, and the other portion of responses included their watershed name that they assumed they lived in. Through this question, 13% of participants said they lived in the Big Muddy watershed, 7% said they lived in the Crab Orchard watershed, 13% stated their answers as an assumed watershed (no proper names or incorrect names).



The participants were asked if they knew of any watershed planning initiatives in their area and 85% said No, 12% said Yes, and 3% said they did not know of any initiatives. Participants of the survey were asked about their knowledge of available funding opportunities for water quality projects and 84% said No, and 16% said Yes. When participants were asked about their thoughts on whether or not their watershed had any water quality issues there was 47% of participants that said Yes, 45% said No, and the remaining 8% said they did not know. When participants were asked about their thoughts on the progression of water quality, 37% said that they felt it was getting worse, 23% said that it has stayed the same, 19% did not have a response, 11% said it was getting better, and 10% said it was getting much worse.

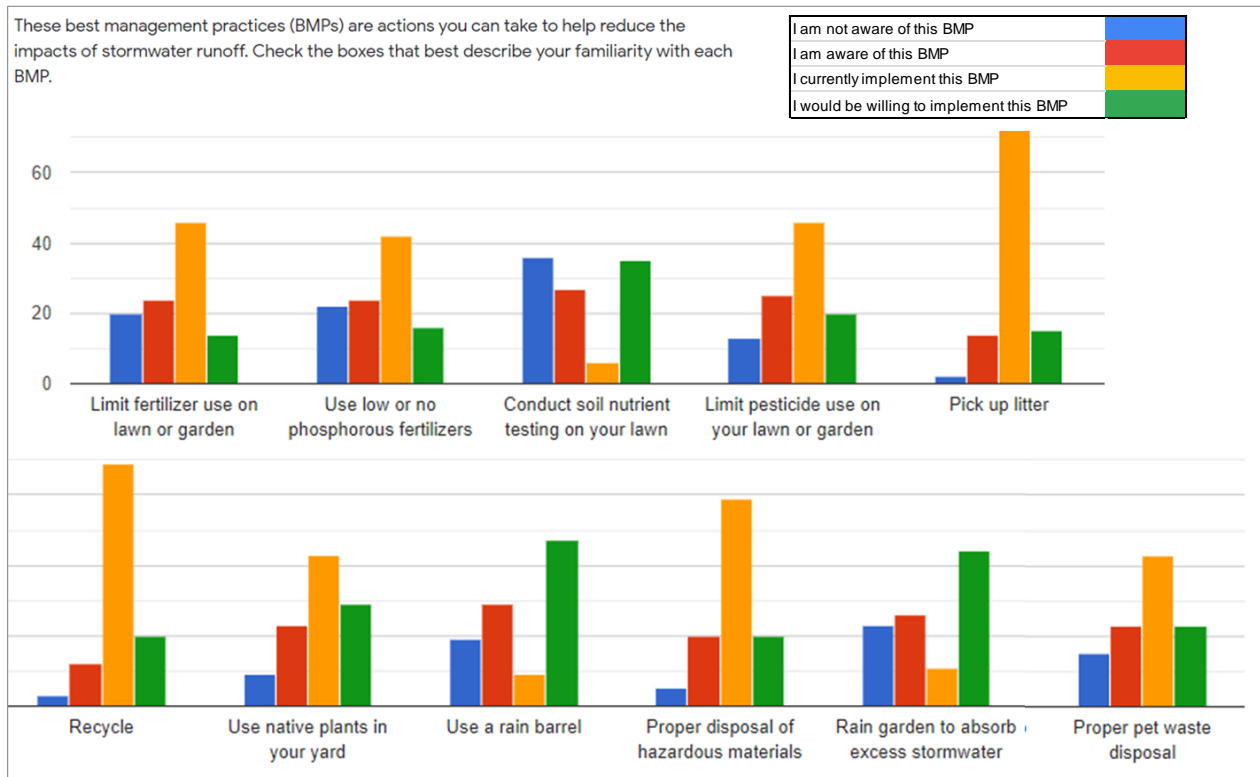




### Best Management Practices

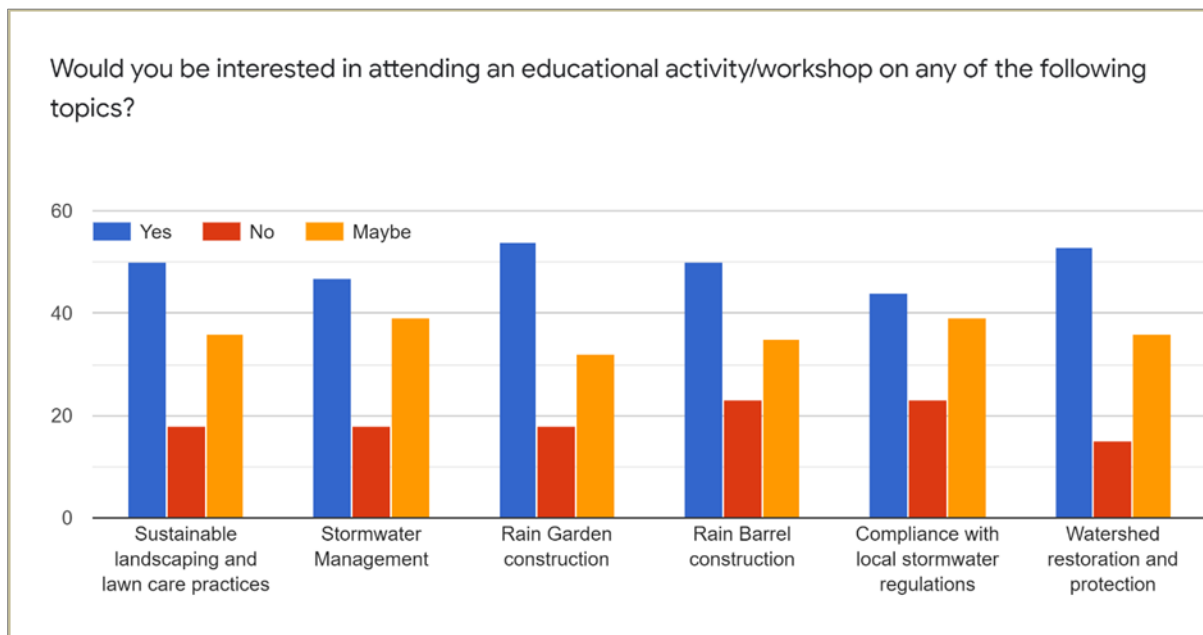
This portion of the survey will reflect on the Best Management Practices questions, and based on the responses from participants, survey results have determined that 57% of participants are unaware of water quality management practices. There was a count of 18% who were aware of the Volunteer Lake Monitoring Program, and 16% who were aware of watershed-based planning. 13% of participants were aware of the stormwater management practices. When asking respondents if they were willing to incorporate BMPs in the landscape of their home or property, 72% of participants said they would be willing to make a change, 26% said they would possibly make a change, and 2% said they would not be willing to make any changes to the landscape of their home or property.

When asked about the limitations of best management practices, a majority of survey participants have a lack of knowledge on possible BMPs. The expense of the BMP caused participants to feel as though they were limited. The lack of time and the issue of physical constraints were also factors in implementing these BMPs into their home, or routine. Participants also expressed legal concerns in order to implement BMPs in their home or on their property.



### Education and Outreach

During the survey, participants were asked about their preference on how to receive information on water quality issues, and the majority stated they would prefer social media outlets as a means to gather information. The second most chosen option was by receiving information through email. The third most chosen option was by being informed through the local newspapers or news broadcasting. Participants responded positively when asked whether or not they would be interested in attending an educational workshop based on best management practices on water quality.



## Evaluation and Conclusions

The overall results from this water resources survey determined that the residents of the Carbondale Urbanized Area are mostly aware of stormwater and water quality management as processes within their community. The survey results showed that the majority of people who participated were from Carbondale, and white. One fourth of participants were under the age of twenty-five, and a little over a quarter of participants said they made under \$35K annually. A little over half of the survey participants said they were female, and heard of the survey through social media. The demographic results of this survey were similar to those from the 2020 Census.

When concerning the water quality content of the survey, the majority of people responded that water quality was very important to them. Stormwater management and aquatic recreation were similarly important to respondents. Participants were asked where their stormwater flows, and a little over a quarter said they did not know where the water ended up. Most participants also stated that they have not been exposed to educational materials of stormwater management.

In response to knowledge of funding in the area for water quality projects, a little over three quarters said they were not aware of possible funding opportunities. When questioned whether participants think that there are existing water quality issues, almost half said they did not know, and the other half said yes, that there were issues. Participants of the survey recognized possible pollutants in the watershed area as sediment, nitrogen, and litter. Half of all participants agreed that agricultural runoff was a concerning issue for water quality, and half recognized harmful algal blooms (HABs) as an issue within the past five years.

Over a quarter of participants thought that water quality in their local waterbodies is getting somewhat worse, and a little over a half of participants say that it is the responsibility of local governments to control the water quality issues within the area. When asked about their familiarity with water quality management, most were unaware or knew basics of the types of management; including stormwater management, volunteer lake monitoring programs, and watershed-based planning. Almost three quarters of participants stated that they would be willing to incorporate management measures into their landscaping to create a better outcome for water quality management. The majority of participants said that they would be open to attending educational events with a focus on water quality and stormwater management, including sustainable landscaping, rain garden, or rain barrel workshops.

The survey illustrates the continuing issues of water quality and stormwater management within the Carbondale Urbanized area. Survey results will assist local governments, including Greater Egypt, in better understanding public knowledge, opinions, and concerns of water quality. Results will be used to guide future water quality and stormwater management planning programs. Graphs and tables from the results can be found in *Appendix 2*.

## Appendix 1: Survey Outreach

### ***List of Radio and TV Interviews:***

- June 29, 2021: *The Morning Newswatch (radio) with Tom Miller*
- July 16, 2021: *WSIL News 3 (TV) interview*
- Aug 2, 2021: *WDBX (radio) interview with Roni LeForge*

### ***Newspaper Advertisements:***

- The Southern Illinoisan
- Carbondale Times



The Greater Egypt Regional Planning & Development Commission has received funding from the Illinois Environmental Protection Agency (IEPA) to conduct a local water resources survey for the Carbondale Urbanized Area. Greater Egypt is one of two Area-wide Water Quality Management Planning Agencies in Illinois and strives to provide the public with information regarding water quality.



Waterbodies in our area, such as lakes and rivers, serve the public by providing drinking water and recreational opportunities. With the expanding population within the urbanized area, nonpoint source pollution has become an increasing problem.

Nonpoint sources include pesticides, fertilizers, stormwater runoff and other urban sources. Providing educational and planning opportunities for nonpoint sources is our main goal. This survey will assist us in our planning goals by evaluating your knowledge and concerns of:

- General water quality in the urbanized area
- Stormwater runoff and stormwater management
- Best management practices (BMP)
- Watershed planning



Households within the boundaries of the Carbondale Urbanized Area are the target population for this survey.

Please use the map and search feature to find out if your property or community is within the boundary. Areas outlined in green represent the Carbondale Urbanized Area.

If you are interested in participating, please have someone in your household at least 18 years of age or older fill out the survey. The survey should take no more than ten minutes to complete. Your answers to this survey will be confidential.

Click the Survey button below to get started!

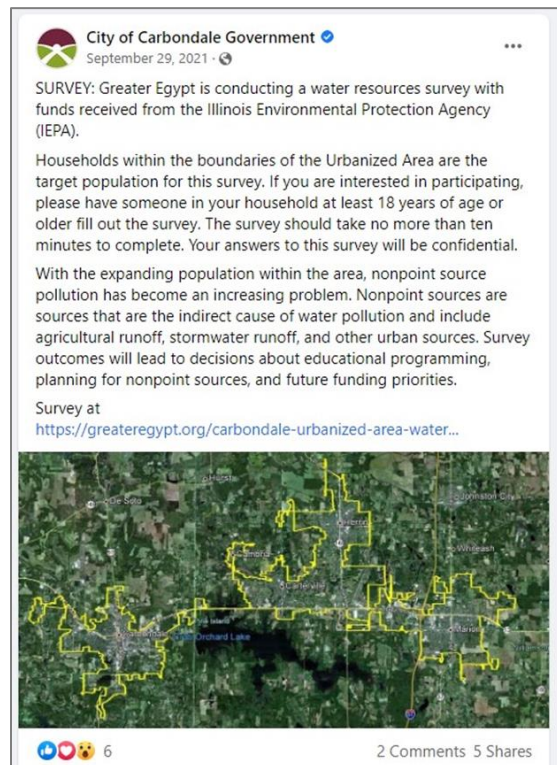
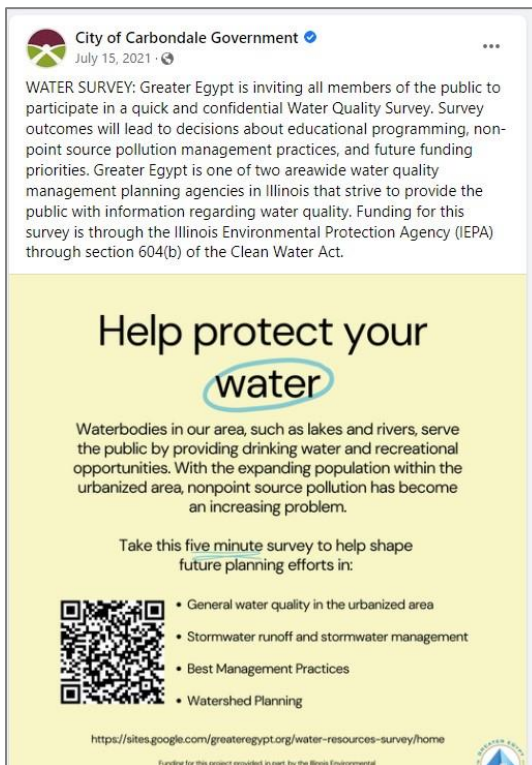
[Take Survey!](#)

## Social Media Posts

- Greater Egypt- 15 posts from May-September



- City of Carbondale- 2 posts, July and September




- Crab Orchard National Wildlife Refuge- 2 posts, July and August

**Crab Orchard National Wildlife Refuge** ✓  
5 mins · 🌐


Check out the survey our friends at Greater Egypt Regional Planning and Development Commission are conducting. Crab Orchard Lake was originally built as reservoirs for Marion, Carbondale and other surrounding communities. As the population continued to grow, Little Grassy Lake and Devil's Kitchen lake were also added. Now the three lakes are also used for recreation and wildlife habitat.

**Help protect your drinking water**



<https://sites.google.com/greateregypt.org/water-resources-survey/home>

- News Radio WJPF- 1 post in June



**Newsradio WJPF**  
@NewsradioWJPF

- Home
- Posts**
- Events
- Reviews
- Videos
- Photos


👍 Like ➦ Share ✎ Suggest Edits ⋮

**Three arrested, two suspects sought after shots fired in Carbondale**

👍 Like
💬 Comment
➦ Share

**Newsradio WJPF**  
39 mins · 🌐

Take the survey !



GREATEREGYPT.ORG

**Carbondale Urbanized Area: Water Resources Survey – Greater Egypt**

Carbondale Urbanized Area: Water Resources Survey News Greater Egypt is conducting a water resources survey in the greater Carbondale area...


👍 Like
💬 Comment
➦ Share



## Other Survey Promotions

Survey Link advertised in the Carterville Chamber of Commerce newsletter

July 12, 2021

  
CARTERVILLE  
CHAMBER OF COMMERCE

THE CONNECTION BETWEEN  
COMMUNITY AND BUSINESSES

www.cartervillechamber.com  
(618) 985-6942

### Help protect your water

Waterbodies in our area, such as lakes and rivers, serve the public by providing drinking water and recreational opportunities. With the expanding population within the urbanized area, nonpoint source pollution has become an increasing problem.


Take this five minute survey to help shape future planning efforts in:

- General water quality in the urbanized area
- Stormwater runoff and stormwater management
- Best Management Practices
- Watershed Planning



<https://sites.google.com/greateregypt.org/water-resources-survey/home>

Funding for this project provided in part by the Illinois Environmental Protection Agency through Section 604(b) of the Clean Water Act.



“Greater Egypt is inviting all members of the public to participate in a quick and confidential Water Quality Survey. Survey outcomes will lead to decisions about educational programming, non-point source pollution management practices, and future funding priorities. Greater Egypt is one of two areawide water quality management planning agencies in Illinois that strive to provide the public with information regarding water quality. Funding for this survey is through the Illinois Environmental Protection Agency (IEPA) through section 604(b) of the Clean Water Act.”

Link to survey:



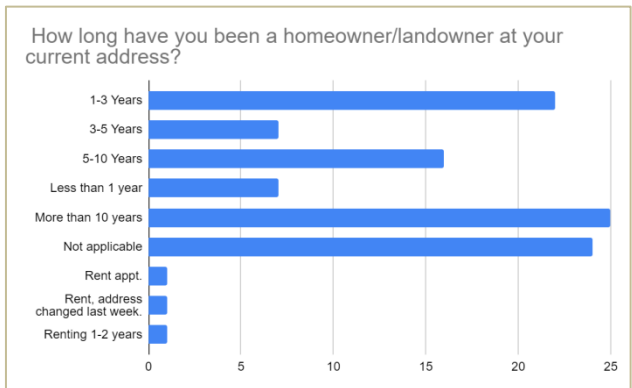
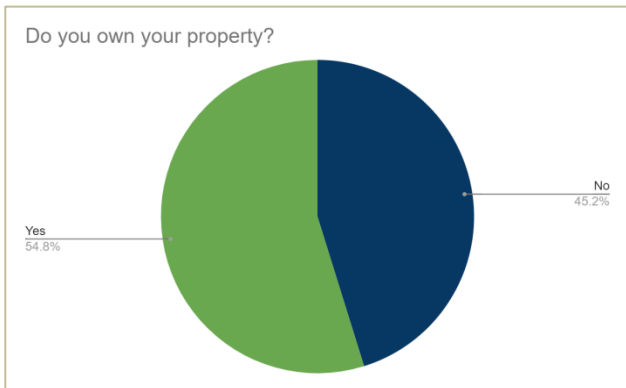
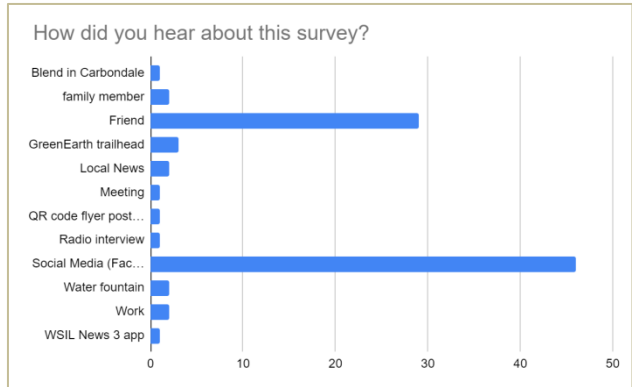
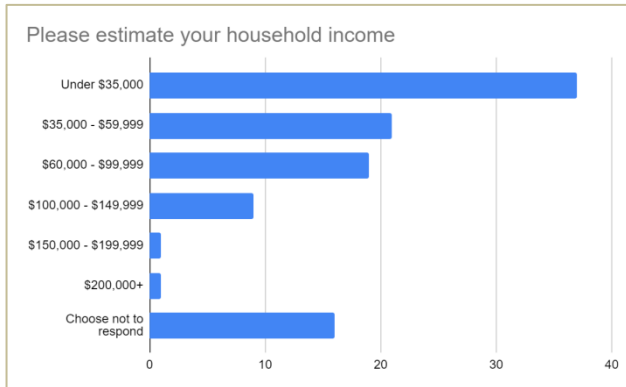
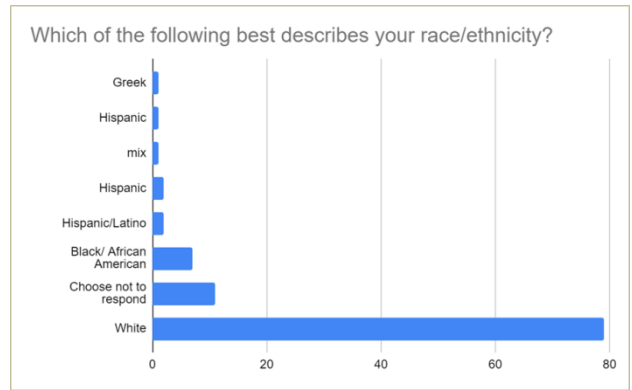
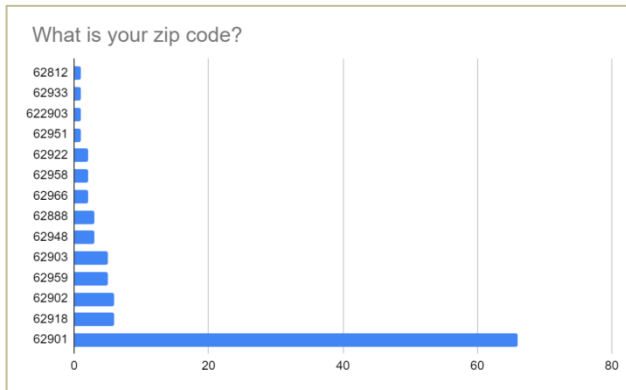
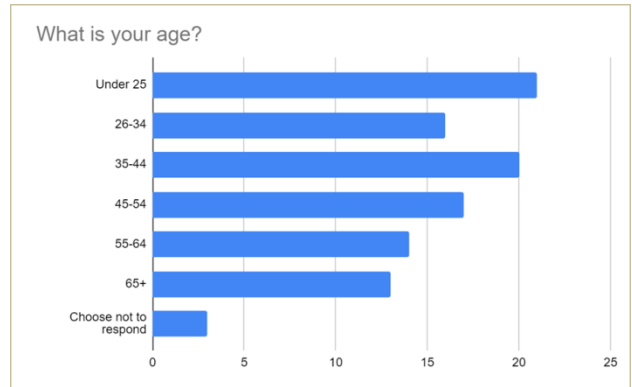
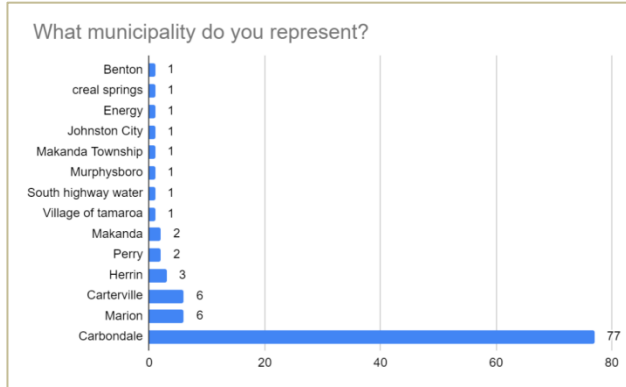
(Left) Raye Fields of Greater Egypt assists with flyer posting after receiving approval from the Marion parks district

(Right) A flyer posted at the Cedar Lake boat ramp, owned by the City of Carbondale and posted with permission.

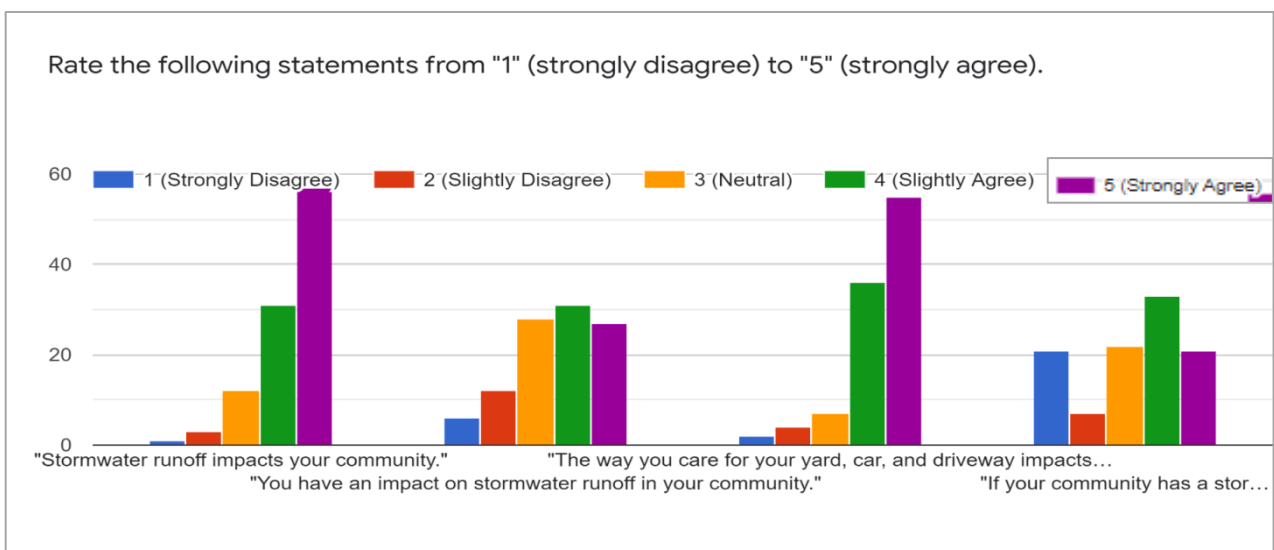
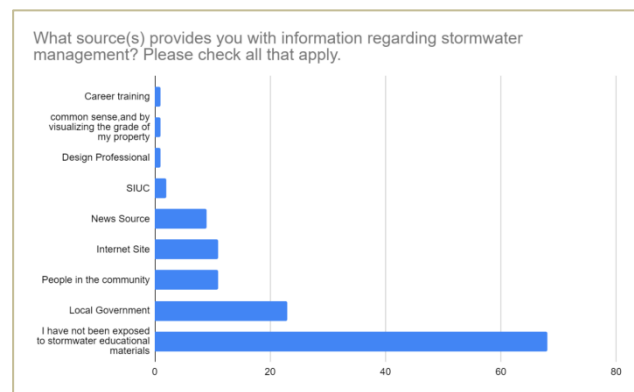
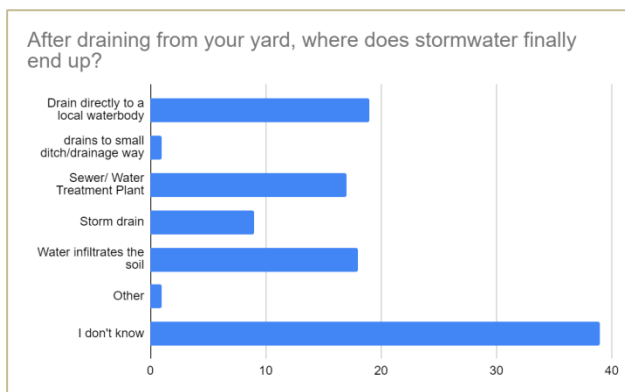
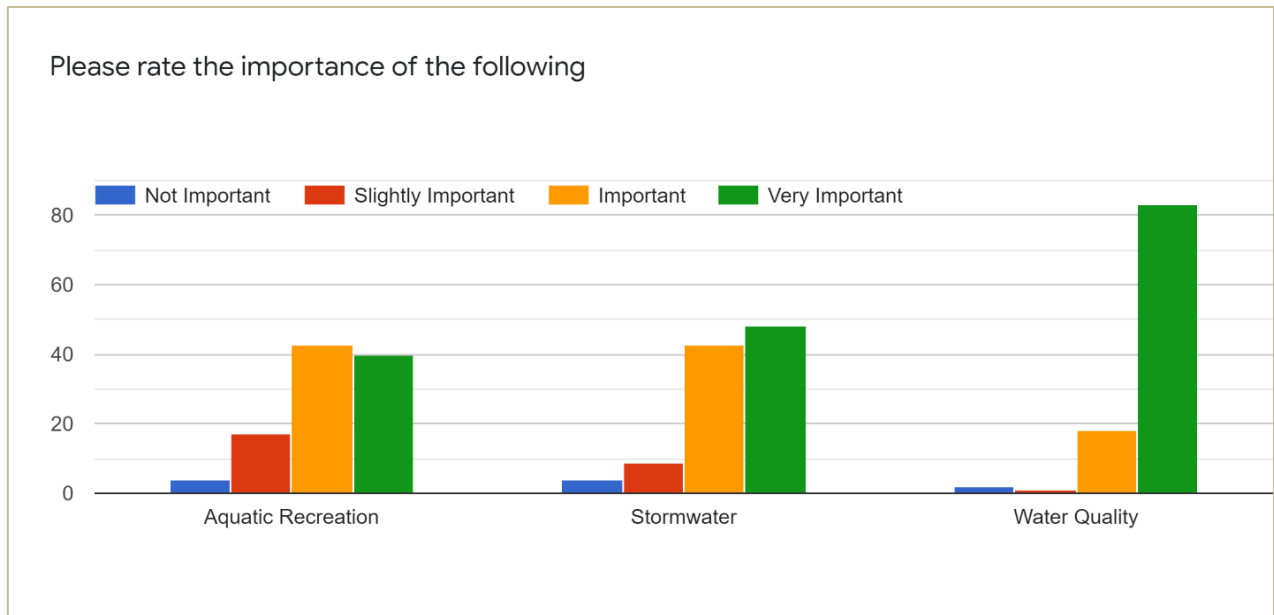


# Appendix 2: Survey Results

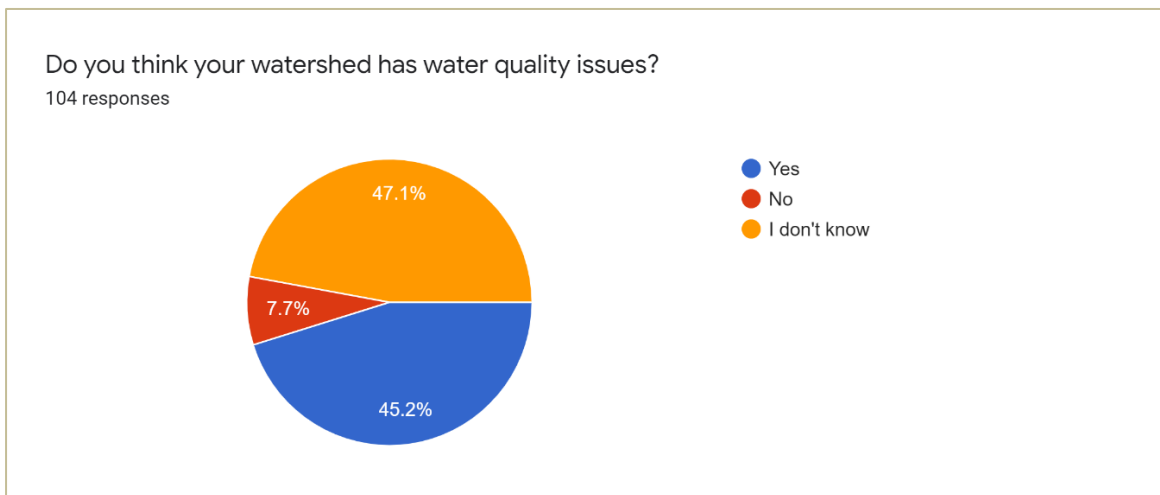
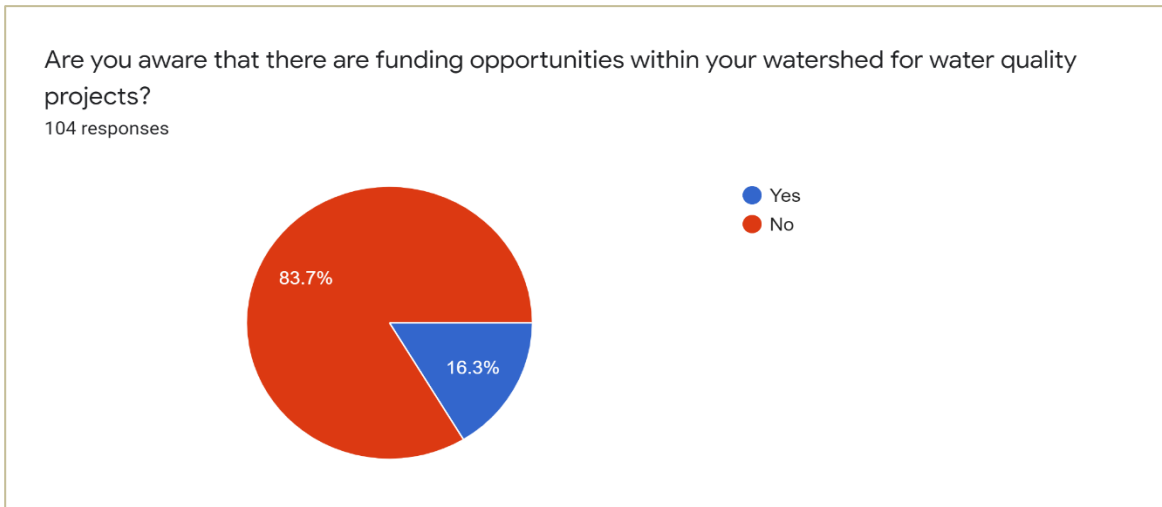
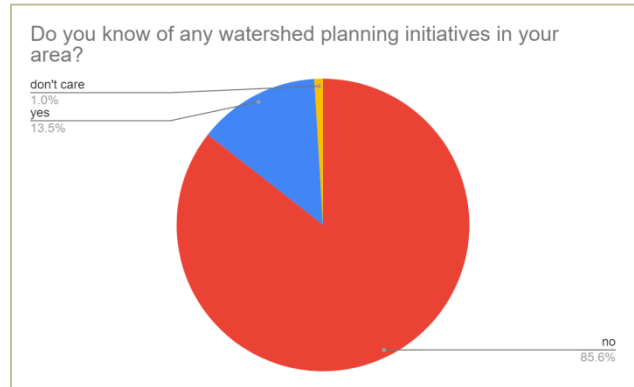
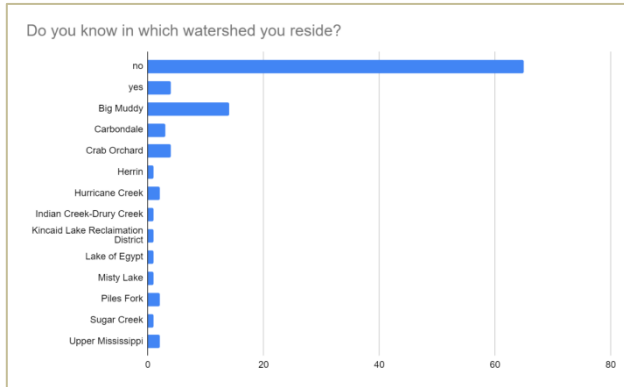
## Survey Results: Identification

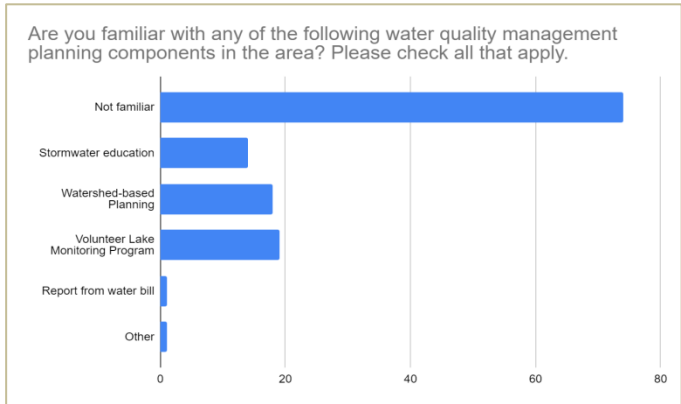
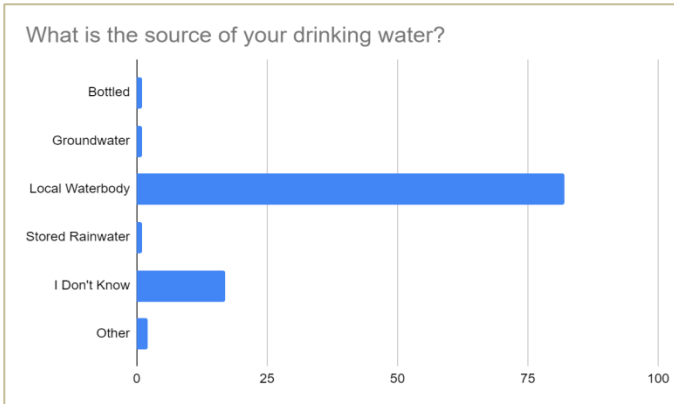
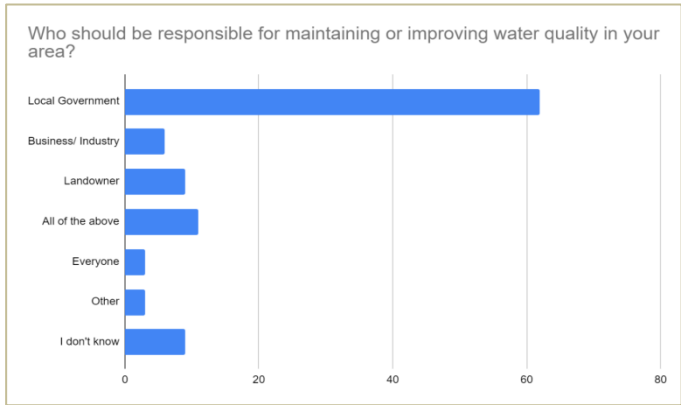
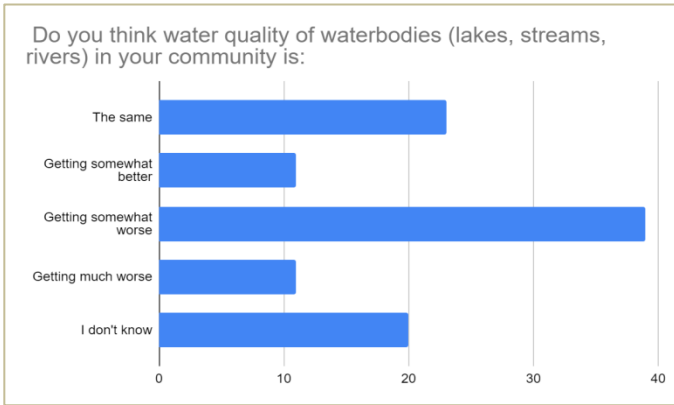
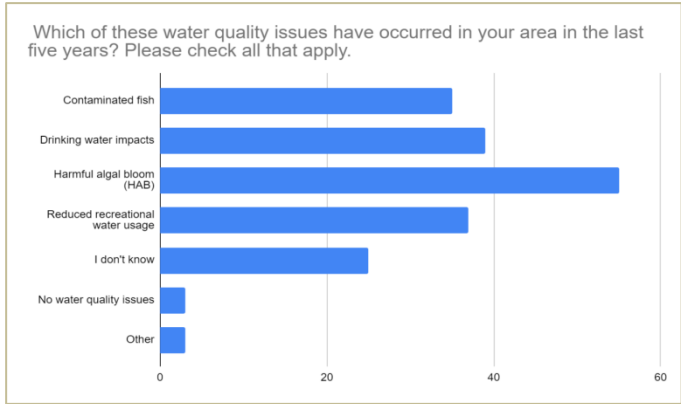
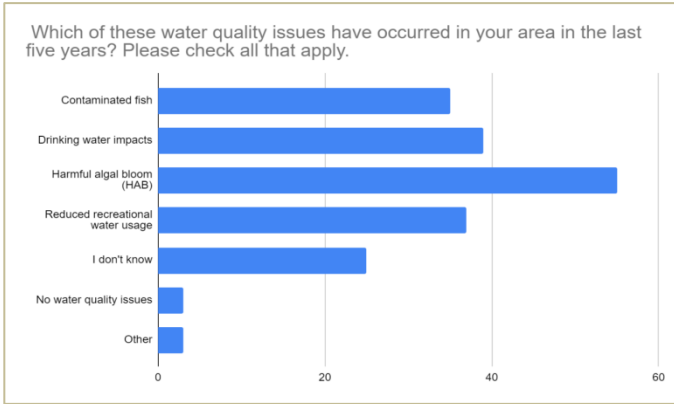
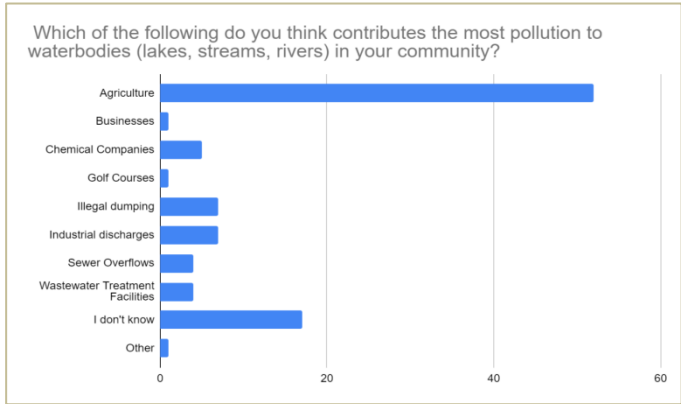
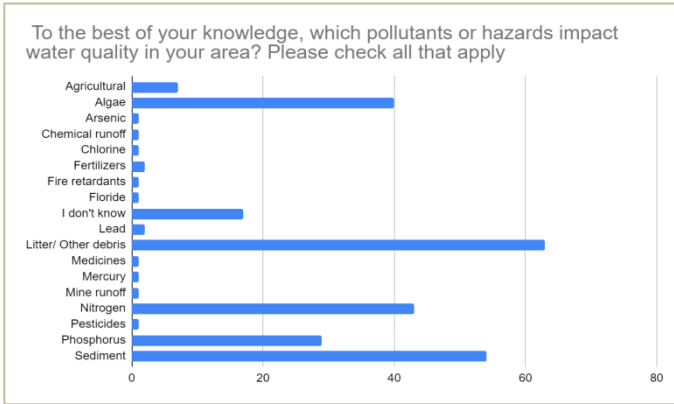


## Survey Results: Stormwater



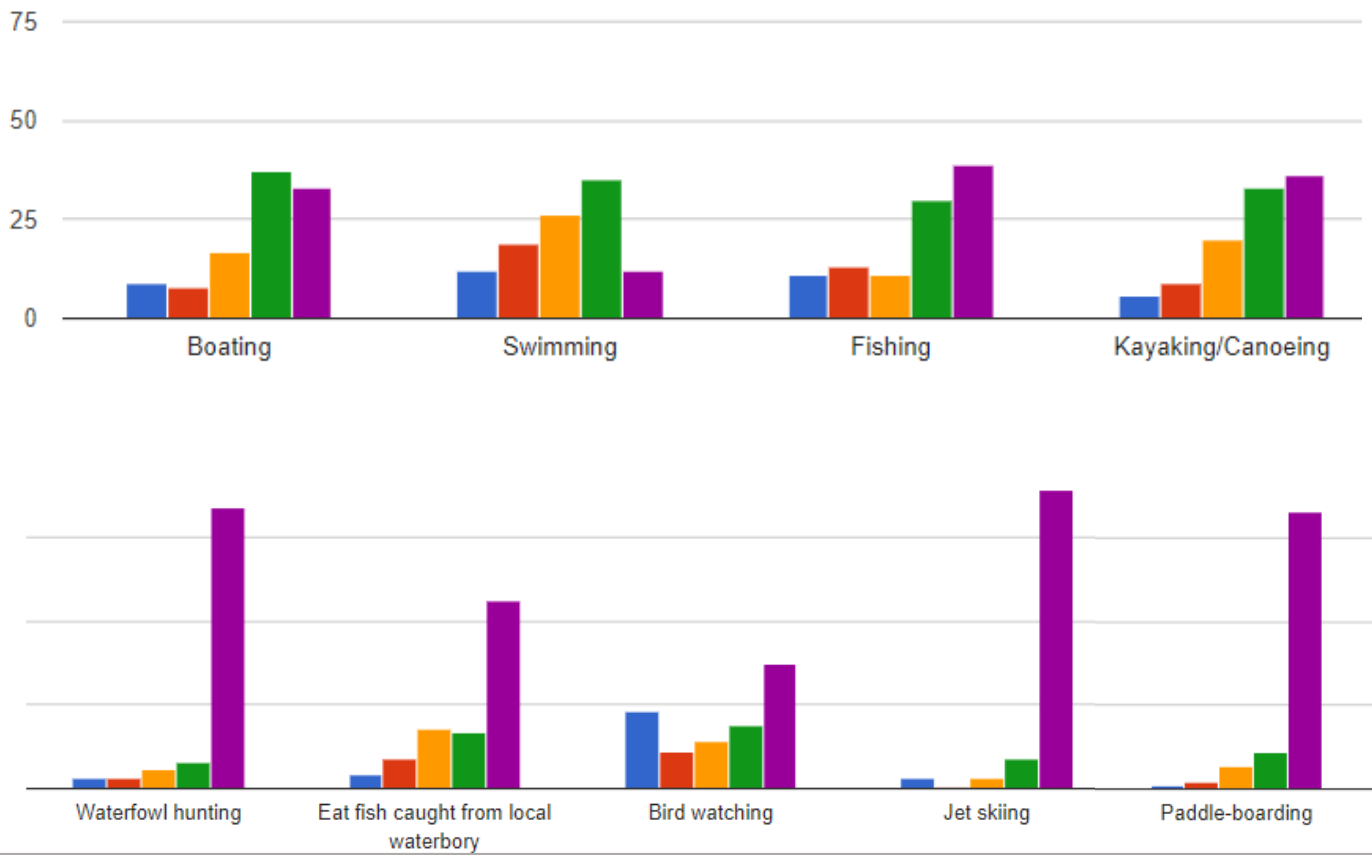
## Survey Results: Watershed Management and Water Quality





### How often do you participate in the following recreational activities?

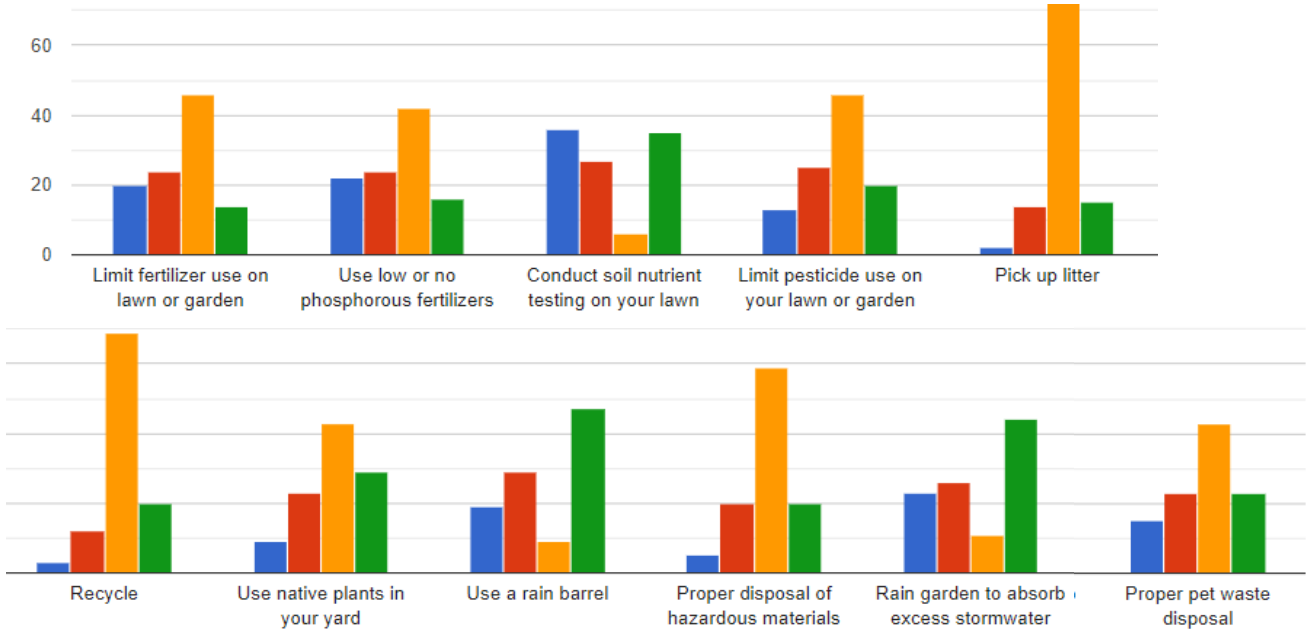
■ At least once a week   
 ■ At least once a month   
 ■ Less than once a month   
 ■ Rarely   
 ■ Never



## Survey Results: Best Management Practices

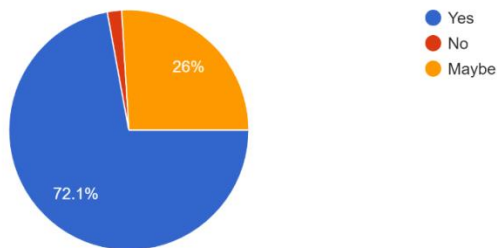
These best management practices (BMPs) are actions you can take to help reduce the impacts of stormwater runoff. Check the boxes that best describe your familiarity with each BMP.

I am not aware of this BMP	Blue
I am aware of this BMP	Red
I currently implement this BMP	Yellow
I would be willing to implement this BMP	Green

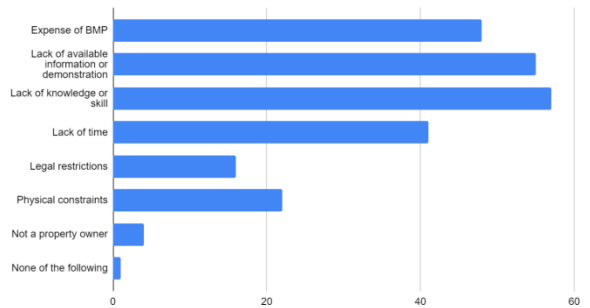


Would you be willing to change your landscape practices to include BMPs?

104 responses

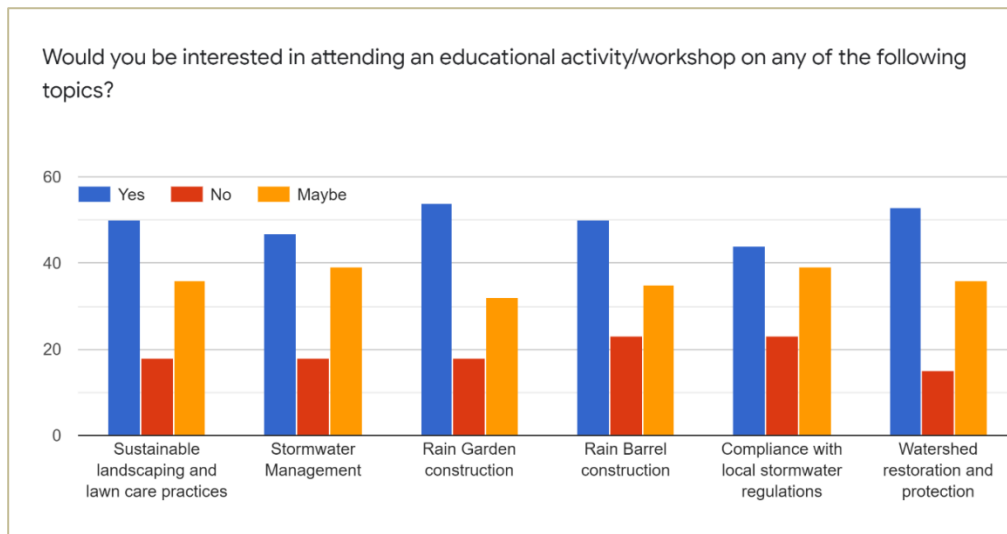
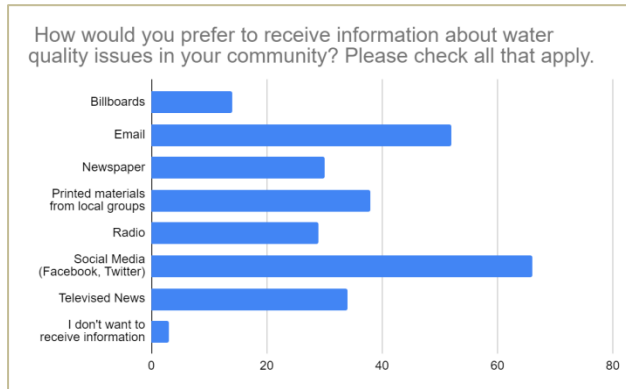


Do any of the following limitations contribute to your inability to incorporate BMPs in your land management routine?





## Survey Results: Education and Outreach



**If you would like to attend an educational activity/workshop with a different topic, please let us know in the space below.**

How students can get involved

How to assess my ponds fish population source, help from local government body with pond aquatic health, ridding my pond of nonnative river fish inhabiting my small pond.

Lead pipe replacement in IL

Permaculture for water conservation, filtration, and absorption

Pest & weed control without chemicals

Tree and wildlife impact

Water filtration/purification

