# COMMUNITY FLOOD SURVEY REPORT

2017

## AMERICAN BOTTOM WATERSHED

MADISON COUNTY, ILLINOIS

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*Cover photo:* ***Flooding in Dobrey Slough, January 2016***

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# EXECUTIVE SUMMARY

This report summarizes the findings of the Community Flood Survey for the American Bottom watershed (HUC 0714010104), which was distributed to residents and business owners to gather information about the location, extent, impacts, and causes of flooding in the watershed.

A total of 384 surveys were completed from within the study area out of 2,100 mailed giving a response rate of 18%. Some of these were collected via on-line survey.

A watershed is an area that drains to a defined point. Watersheds are defined at a variety of scales for different purposes. The American Bottom watershed is a 43,352-acre area that drains to the Mississippi River.

Survey responses are grouped according to zip code and 2010 Census Block Groups.

# Key Findings

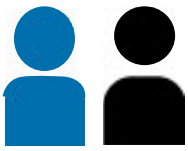
- **PREVALENCE:** 45% of respondents experienced flooding in the last 10 years.
- **FREQUENCY:** 42% of respondents with flooding experienced flooding at least once per year in the last 10 years. On average, respondents with flooding experience 0.86 floods per year.
- **EXTENT OF DAMAGE:** Of those who had been flooded in the last 10 years:
  - 28% said that the flooding had damaged their primary home or business;
  - 13% had damage to fences, auxiliary buildings, and other structures; and
  - 18% had damage to yards and landscaping.

AVERAGE

**0.86**

FLOODS *PER YEAR*

- **NEIGHBORS:** 44% of all survey respondents were aware of flooding on one or more of their neighbors' properties. Of the survey respondents who had been flooded, 43% said that their neighbors had also been flooded.
- **TOP FOUR CAUSES OF FLOODING**:
  1. Heavy rainstorms.
  2. Lack of drainage facilities (swales, ditches, storm sewers, etc.) to drain water from this property.
  3. Flooding from nearby river, stream, lake, ditch, or pond.
  4. Pipe, culvert, or ditch that was blocked or needs maintenance.
- **REPORTING:** 39% of respondents who had flooding did not report it to anyone. Those that did report it were most likely to contact their township (20%) or their city (18%).
- **EFFECTS FROM FLOODING**: Stress was the most commonly reported impact from flooding. Others included monetary loss due to repair of flood damage; time off work to clean up; partial loss of access to property; and monetary loss due to lost valuables or equipment.
- **MONETARY LOSS:** Thirty-three percent (33%) of respondents who experienced flooding said it caused them no monetary loss. Another 33% said their monetary loss over 10 years was less than $5,000. Nineteen percent (19%) said that their loss was between $5,000 and $20,000. Two respondents (1% of those who answered) said their losses were between $100,000 and $500,000.



43% of Neighbors Flooded Too

DIDN'T REPORT FLOODING

- **COST OF FLOODING**: Flooding over the last 10 years has cost survey respondents an estimated $385,000. The estimated average amount lost per respondent is $11,667 over 10 years. It is estimated that flooding resulted in $1,121,700 lost in the entire American Bottom watershed over the last decade.

- **RELATIONSHIP TO FLOODPLAINS:** Floodplains designated by the Federal Emergency Management Agency (FEMA) constitute 38.2% of the total acreage in the American Bottom watershed, and 29% of the survey responses came from parcels wholly or partly within a FEMA-designated floodplain. However, 2% of survey respondents did not know that they lived on or owned property in a FEMA-designated floodplain.

- **FLOODING OUTSIDE OF THE FLOODPLAIN**: Flooding mostly occurs outside of floodplains in the watershed. Respondents reported over 106 events per year occurring outside of FEMA-designated floodplains in the watershed. Within floodplains, 47 flood events per year were reported.

- **FLOOD INSURANCE:** Fourteen percent of respondents (52 responses) have flood insurance.

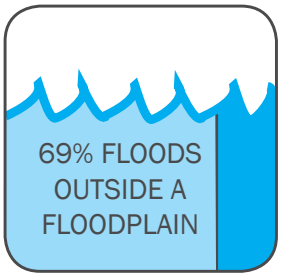
- **FLOOD INSURANCE CLAIMS:** Five percent (5%) of people who have flood insurance (17 respondents) have made one or more claims in the last 10 years. Of those respondents who have flood insurance, 25 (6.5%) have it on structures that are not in a floodplain.

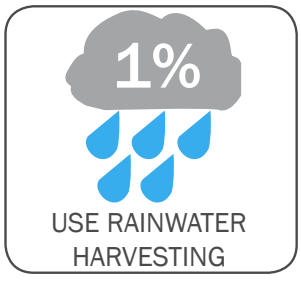
- **DOWNSPOUTS:** Eighty-nine percent (89%) of respondents said their downspouts flow out onto their lawn or other ground surface. Three percent (3%) said their downspouts were connected to storm sewers, and 1% said their downspouts were connected to cisterns, rain barrels, or other rainwater harvesting storage.

- **ACTIONS TAKEN TO PREVENT FLOODING:** 104 respondents made one or more improvements to try to prevent or reduce flooding on their properties.

- **CROPLAND FLOODING:** None of the survey respondents own cropland that has flooded.

- **VALUING WATER MANAGEMENT:** Respondents to the survey place high value on clean drinking water, prevention of flood damage, healthy ecosystems, and water-based recreation (in that order).



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# INTRODUCTION

This section provides a brief overview of the survey and its purpose.

# Overview

Several areas in Madison County regularly experience flooding. Some of this flooding occurs in floodplains designated by the Federal Emergency Management Agency (FEMA), which cover fifteen percent (15%) of the county (approximately 110 square miles) and contain at least 4,128 structures with a total value of more than $213 million.[1] A great deal of flooding also occurs outside of floodplains. During heavy storms, inadequate drainage or stormwater infrastructure, coupled with large expanses of impervious surfaces, can cause flooding almost anywhere. Although structures in designated floodplains have been identified, and their owners made aware of their flood risk through the National Flood Insurance Program (NFIP), there is no data or notification system for structures outside of floodplains in Madison County.

Madison County promotes flood-safe development practices and the protection of existing development from flood risk. To determine how to best allocate resources and address flood problems, the locations, causes, and extents of flooding need to be identified. Map-based data and other data gathered by government agencies and organizations are useful to identify flood problems. However, a survey of homeowners and businesses is the most direct way to reveal the location, cause, and extent of flood problems they face.

The economic, social, and environmental consequences of flooding can be substantial to people and communities. Chronically wet houses and land result in higher insurance rates and deductibles, and industry experts estimate that wet basements decrease property values by 10-25 percent.[2] Almost forty percent (40%) of small businesses never reopen their doors following a flooding disaster.[3] In the streams, rivers, lakes, and ponds that collect floodwater, erosion becomes a significant problem and water quality declines as sediment and other pollutants enter the water supply.

The Illinois Department of Natural Resources (IDNR) conducted a survey on urban flooding in 2015, as directed by the Urban Flooding Awareness Act.[4] Urban flooding is defined in the Act as "the inundation of property in a built environment, particularly in more densely populated areas, caused by rainfall overwhelming the capacity of drainage systems, such as storm sewers. 'Urban flooding' does not include flooding in undeveloped or agricultural areas." Using this definition, the Madison County Community Flood Survey has collected data on urban flooding as well as non-urban flooding.

# Survey Area: American Bottom Watershed

The American Bottom watershed is located directly northeast of St. Louis, Missouri in southwestern Illinois. The watershed is in Madison County. Water flows through the project area to join the Mississippi River through the Cahokia Canal west of Collinsville.

Much of the watershed's population lives in urban or suburban incorporated areas. Granite City, Venice, and Madison lie entirely within the watershed, along with large portions of Edwardsville and Fairmont City. All or portions of eight (8) municipalities are included in the watershed.

Horseshoe Lake, Canteen Creek, and the Chain of Rocks Canal have been identified as impaired waters by the Illinois Environmental Protection Agency (IEPA). The causes of impairment include phosphorus, Total Suspended Soilds (TSS), polychlorinated biphenyls, and barium. In addition, the watershed experiences flooding inside and outside of its 100-year floodplains, causing damage to property and threatening life safety.

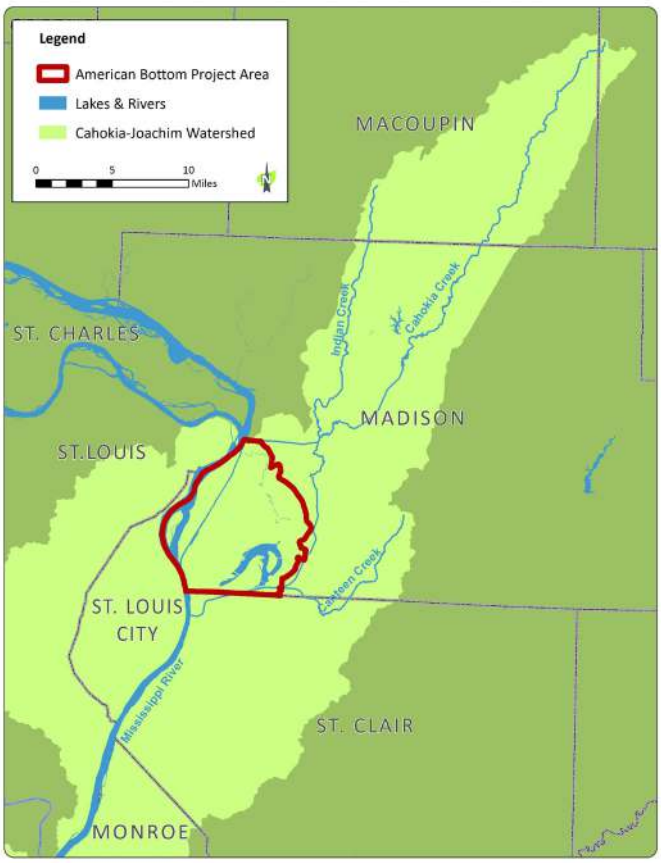


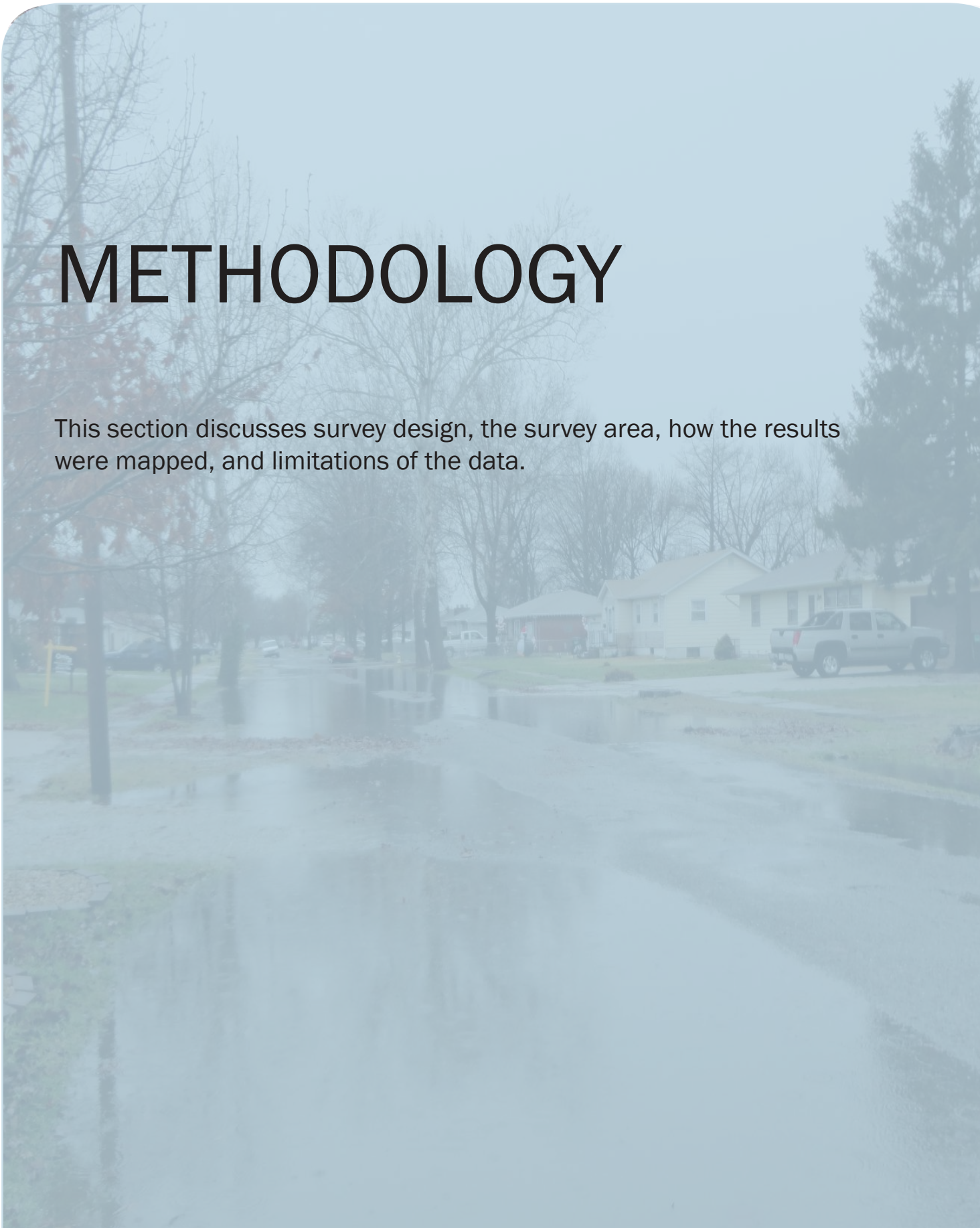

FIGURE 1. LOCATION OF AMERICAN BOTTOM PROJECT AREA

The American Bottom Community Flood Survey ("the Survey") was conducted in 2017 to get a better understanding of flooding issues in the watershed. The findings of the Survey will be incorporated in the American Bottom Watershed Plan. When completed, the Plan will provide recommendations for improving water quality and reducing flood damage.

FIGURE 2. AMERICAN BOTTOM WATERSHED PLAN AND SURVEY AREA

# METHODOLOGY

This section discusses survey design, the survey area, how the results were mapped, and limitations of the data.



## Survey Area

The survey was mailed to recipients in the American Bottom watershed, which encompasses 43,352 acres. This watershed extends from the north end of Granite City, down to the south where Madison and St. Clair County meet, and from the Mississippi River on the west to I-255 on the east. The survey was also available on-line for community members in the watershed. Some survey respondents provided addresses outside the watershed. These responses were not considered in the results of this report.

## Subwatersheds

A watershed is an area that drains to a defined point. Watersheds are defined at a variety of scales for different purposes. As the watershed planning process for the American Bottom watershed progresses, it will be divided into smaller hydrologic units for management and analysis purposes. Each subwatershed will have a unique 14-digit hydrologic unit code (HUC), to be informally known as HUC14 subwatersheds or "HUC14s". The delineation process will follow the procedure employed by the United States Geological Survey (USGS) to define watersheds in the Watershed Boundary Dataset (WBD), a component of the National Hydrography Dataset (NHD), a nationwide database of waterways and waterbodies.

## Zip Codes & Block Groups

Since HUC14 subwatershed boundaries are not yet available, zip codes and 2010 Census Block Groups were used to break down data geographically (see Figure 3). There are 14 zip codes in the watershed. Survey responses were received from 9 of these.

## Survey Design

The American Bottom Community Flood Survey consisted of seventeen (17) questions covering a variety of flooding topics, including frequency of flooding, causes of flooding, the extent and costs of flood damage, flood insurance coverage, and personal values about water quality. A full copy of the survey is available in the Appendix.

Questions were created using best practices to maximize survey response, such as:

- **Powerful purpose:** The survey stated that Madison County is trying to identify and solve flooding problems to make it safer to invest and live in Madison County.
- **Simple to return:** The survey was made as easy to return as possible, with a stamped, self-addressed envelope enclosed. For those wishing to take the survey online, a QR code directed phone users directly to the survey on the website.
- **Privacy assurance:** Survey respondents feel more comfortable providing information when they know how it will be used and that it will be kept private. The first question included a disclaimer that addresses will be kept confidential.

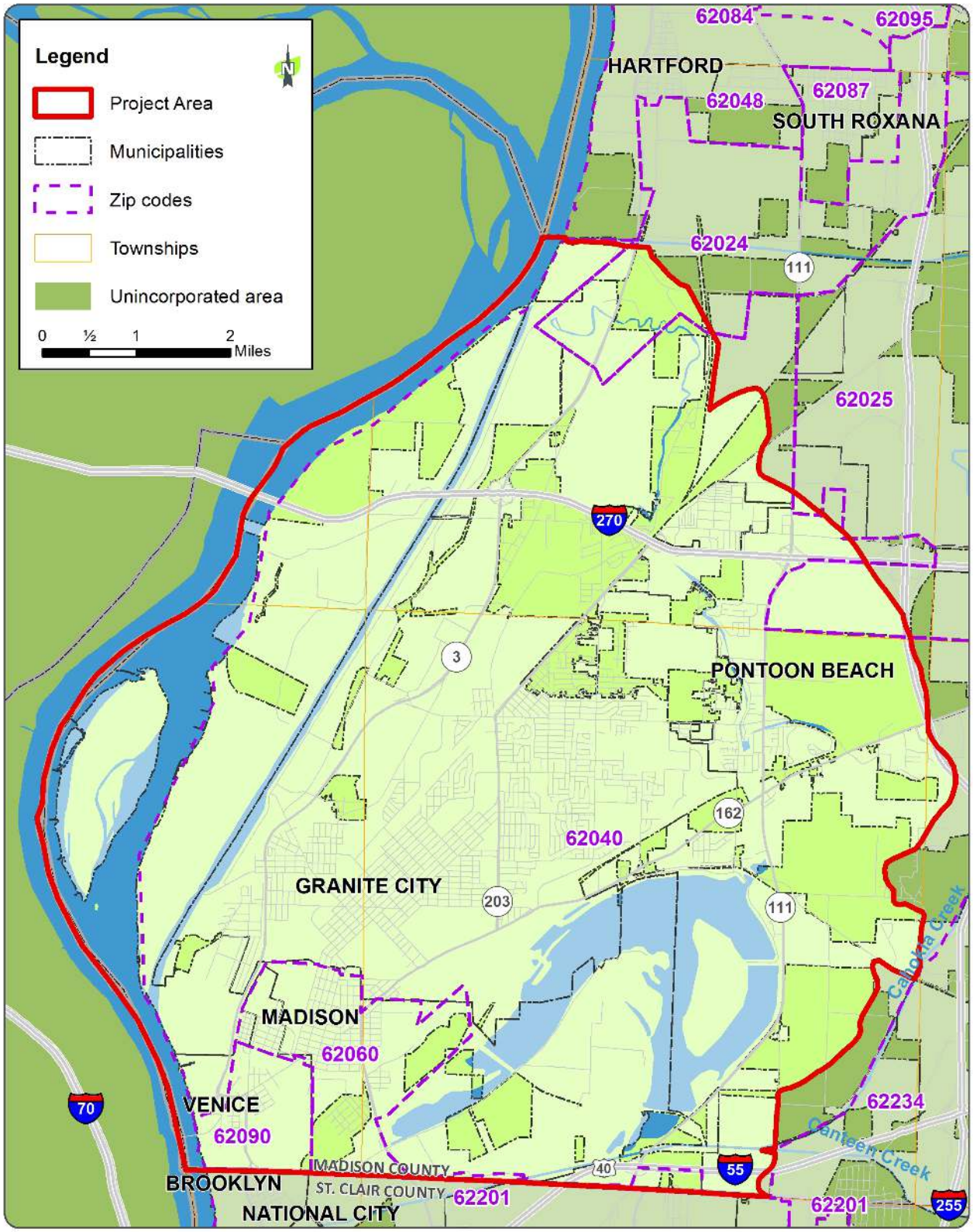



FIGURE 3. LOCAL JURISDICTIONS
American Bottom watershed project area with zip codes and local jurisdictions

## Survey Distribution and Outreach

Twenty-one hundred (2,100) surveys were mailed to randomly selected addresses in Madison County in the American Bottom watershed. The randomized list of addresses was created by assigning a number to each parcel in the watershed, and then generating a set of random addresses within the range to correspond to the parcels. Duplicate addresses and names were omitted, as were P.O. Box addresses and addresses outside the watershed. These filters resulted in a mailing list of residents, businesses, and property owners currently living or working in the watershed. Madison County printed and mailed the surveys, received the returned responses, and entered the response data.

The survey was also available on the web via SurveyMonkey.com. The mailed survey contained a link to the on-line survey so recipients could fill it out on-line instead of by hand. The survey link was also sent to email addresses of interested people and organizations. Some of the recipients of the emailed link may have forwarded it to others.

The survey was publicized at individual and group stakeholder meetings, public open houses, and other meetings for the American Bottom watershed planning process.

## Survey Results Mapping

For those respondents who provided an address, the parcel number associated with that address was identified so that the responses could be mapped. Parcel numbers were found using data files from Madison County and the County Assessor's on-line database.

The response data was grouped and mapped by zip code and Census block group. Further geographic breakdown of the response data, such as by Census block, was not possible while maintaining the privacy of respondents' locations.

# Data Limitations

It is likely that people who have experienced flooding were more likely to reply to the survey than those who have not experienced flooding. Of those who did complete the survey, some may not have owned the property for all of the previous 10 years, meaning their estimates are underestimates of frequency and cost. Unclear handwriting may also have led to data entry errors.

Urban areas were geographically overrepresented in this survey because of the randomized parcel selection process; urban parcels are smaller and more numerous than rural parcels. This effect is compounded because a single property owner in a rural area often owns several parcels, and duplicate names were removed in the address selection process causing fewer rural parcels to be on the list. However, the cost of flood losses from rural areas may have been proportionally higher than the cost reported from urban areas because farmers are used to keeping track of flood damage for crop insurance claims. A geographically representative sample, or one that gave greater weight to answers from rural parcels based on their larger size, would have looked very different.

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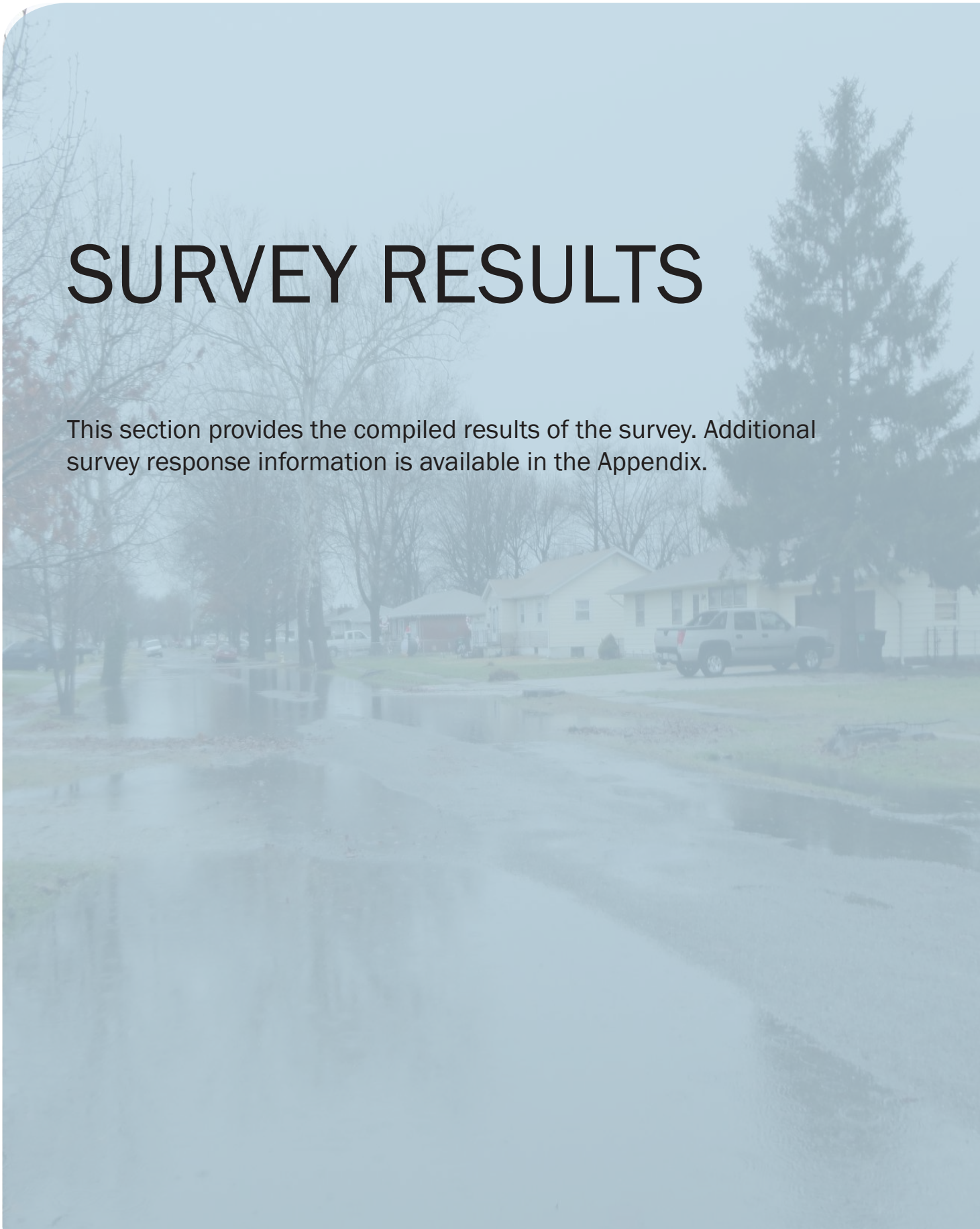
# SURVEY RESULTS

This section provides the compiled results of the survey. Additional survey response information is available in the Appendix.



# Response Rate

Of the 2,100 surveys sent out, a total of 384 unique surveys were completed and returned from within the American Bottom watershed project area.

The number of responses exceeded the initial goal of 350 surveys. With this sample size and a population size of 22,434 households, the survey results are accurate within +/- 5% at the 95% confidence level.

The response rate of surveys within the watershed is 18%. Most surveys were returned in hard copy by mail, and other responses were entered on-line.

Survey responses were received from throughout the watershed. Eighty-three percent (83%) of the survey responses came from the Granite City zip code (62040). The number of respondents in each zip code replying that they had been flooded ranged between one (1) (e.g., Wood River) and 111 (e.g., Granite City 62040).

The total land area of the parcels from which surveys were returned is 463 acres (1.1% of the overall project area). Parcel sizes ranged between 0.07 and 120 acres, with an average of one acre.

TABLE 1. ZIP CODE OF SURVEY RESPONDENTS

| ZIP CODE | RESPONDENTS IN WATERSHED | |
|---|---|---|
| Granite City (62040) | 318 | 83% |
| Pontoon Beach (62040) | 30 | 8% |
| Madison (62060) | 14 | 4% |
| Mitchell (62040) | 6 | 2% |
| Edwardsville (62025) | 5 | 1% |
| Fairmont City (62201) | 2 | 1% |
| Glen Carbon (62034) | 1 | 0% |
| Godfrey (62035) | 1 | 0% |
| Wood River (62095) | 1 | 0% |
| No Answer | 6 | 1% |
| TOTAL | 384 | 100% |

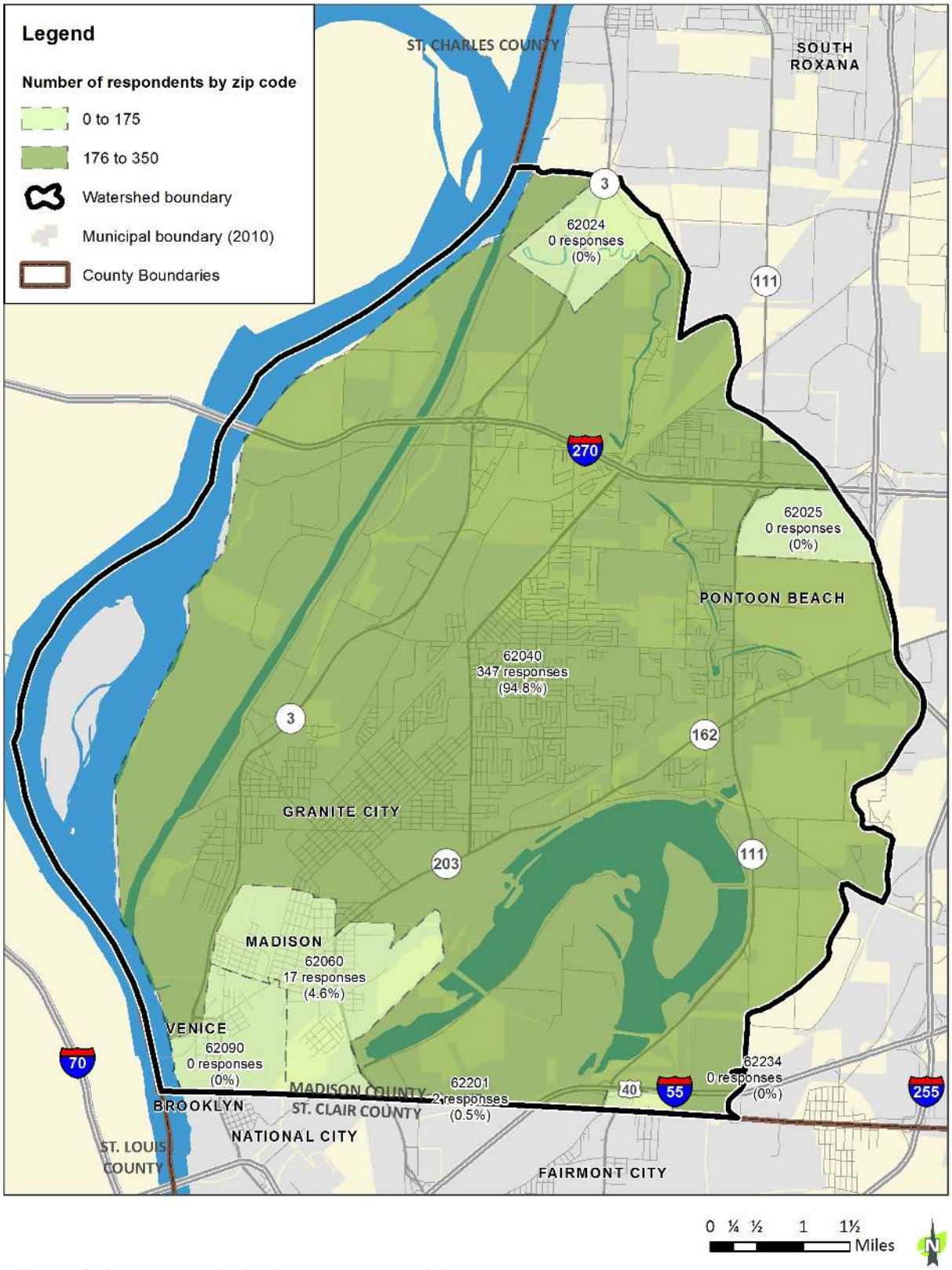


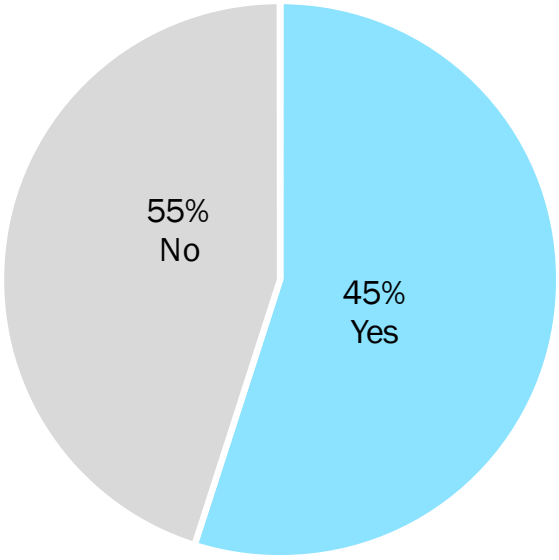

FIGURE 4. SURVEY RESPONSE RATE BY ZIP CODE

*Note: Several respondents' properties were within two or more zip codes and were counted in all of them.*

# Prevalence

Forty-five percent of respondents (45%) replied that they had experienced flooding in the last 10 years.

FIGURE 5. PERCENT OF RESPONDENTS WITH FLOODING IN THE LAST 10 YEARS




The highest proportions of respondents with flooding were found in the Granite City, Pontoon Beach, and Madison zip codes. Granite City had the greatest proportion of respondents flooded (29%).

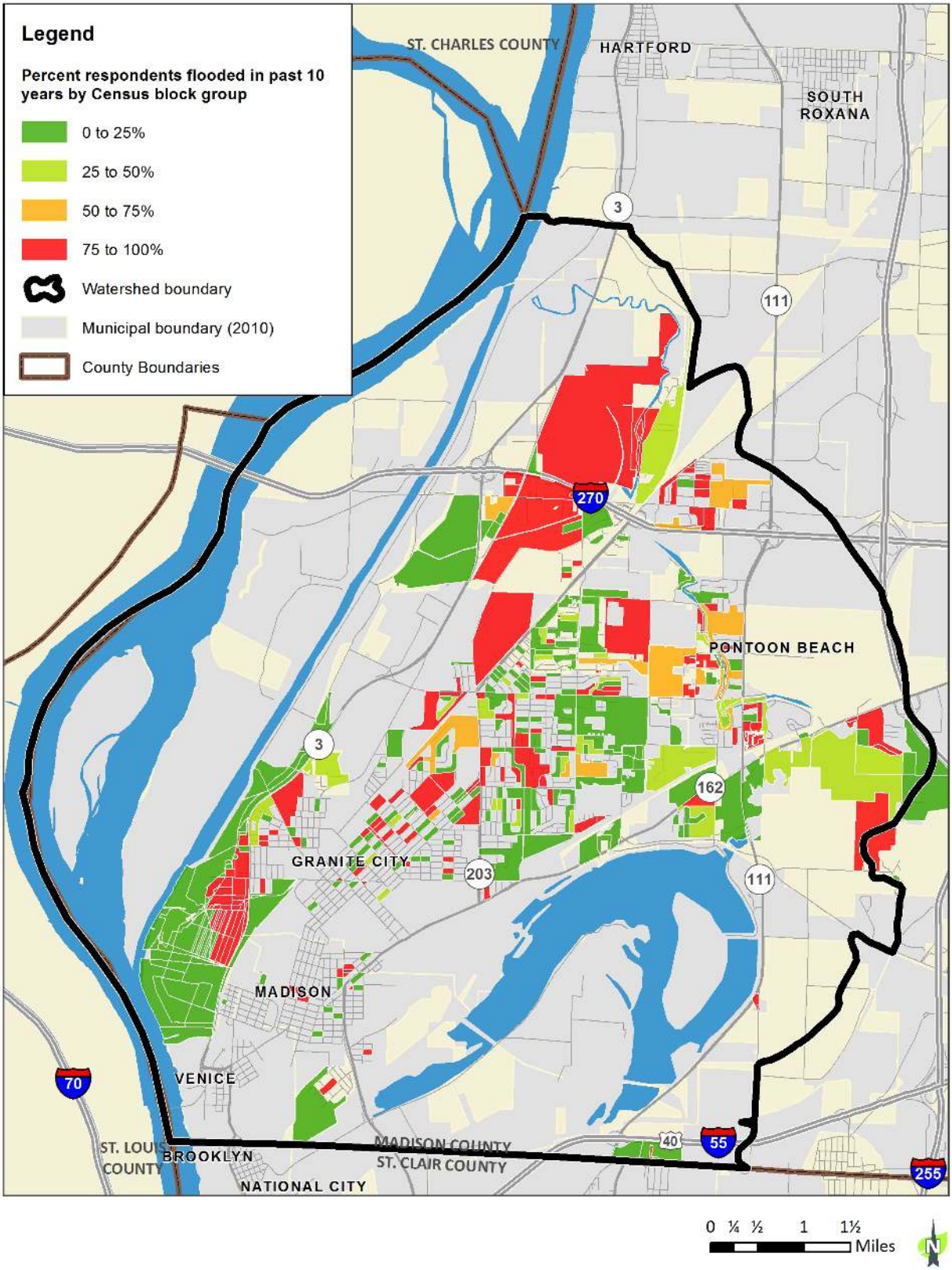


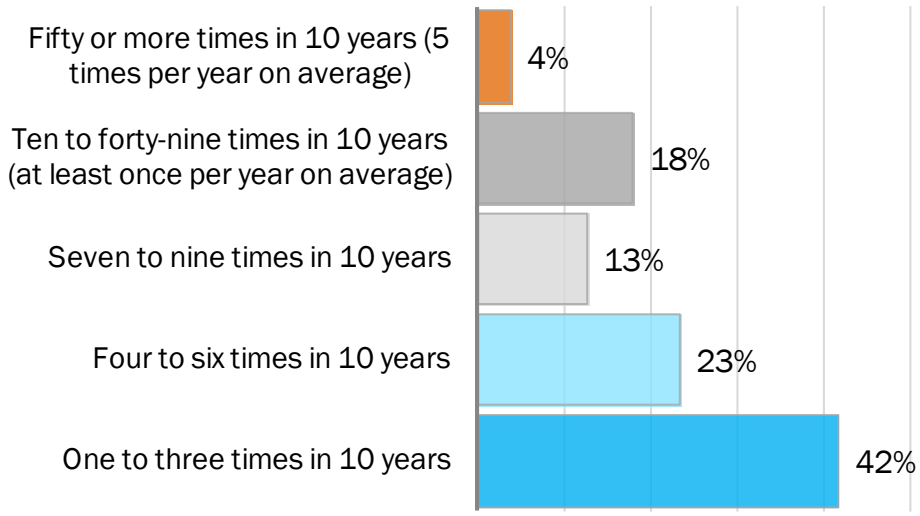

FIGURE 6. PERCENT OF RESPONDENTS FLOODED BY BLOCK GROUP.

*Note: Several respondents' properties were within two or more block groups and were counted in all of them.*

# Frequency

Of the respondents who had experienced flooding in the last 10 years, 42% experienced flooding at least once per year in the last 10 years. The two most popular responses regarding flooding frequency were one to three times in 10 years (42%), and four to six times per year (23%). The greatest frequency of flooding reported by respondents on their property is shown in Figure 6.

FIGURE 7. FLOODING FREQUENCY OVER LAST 10 YEARS




Respondents reported a total of 299 flood events over the last ten years. Multiple respondents may have reported the same flood events, and, therefore, they may appear twice or more in the results.

TABLE 2. FREQUENCY OF FLOODING

| FLOODING FREQUENCY | AVG. TIMES PER YEAR | RESPONSES | | AVG. FREQUENCY x RESPONSES |
|---|---|---|---|---|
| 1-3 Times in 10 Years | 0.2 | 125 | 42% | 25 |
| 4-6 Times in 10 Years | 0.5 | 70 | 23% | 35 |
| 7-9 Times in 10 Years | 0.8 | 38 | 13% | 30.4 |
| 10-49 Times in 10 Years | 1.95 | 54 | 18% | 105.3 |
| 50 or more Times in 10 Years | 5 | 12 | 4% | 60 |
| No Answer | – | 85 | 28% | – |
| TOTAL | | 384 | | 255.7 |

On average, respondents with flooding experience 0.86 floods per year across the watershed (255.7/299).

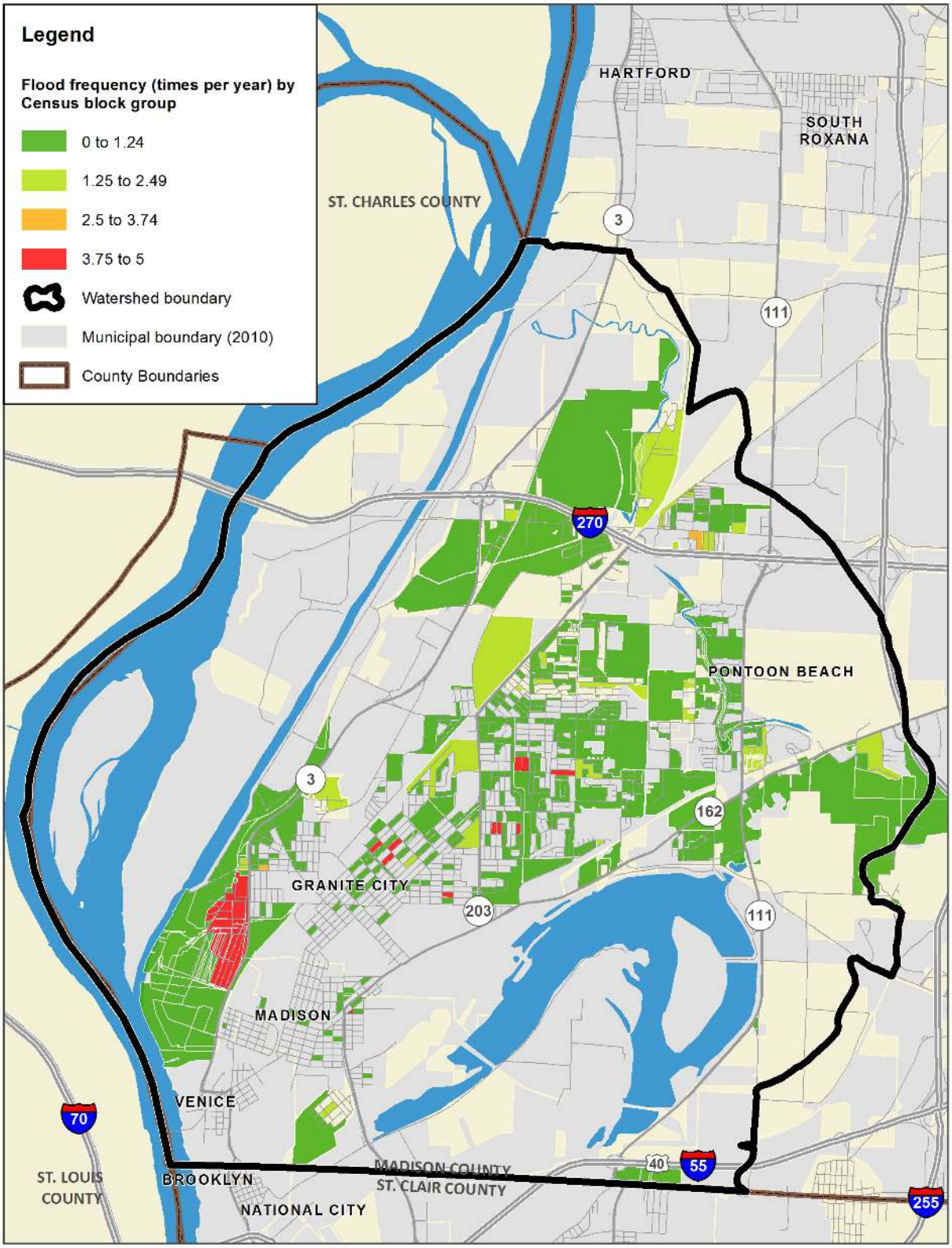



FIGURE 8. FREQUENCY OF FLOODING BY BLOCK GROUP

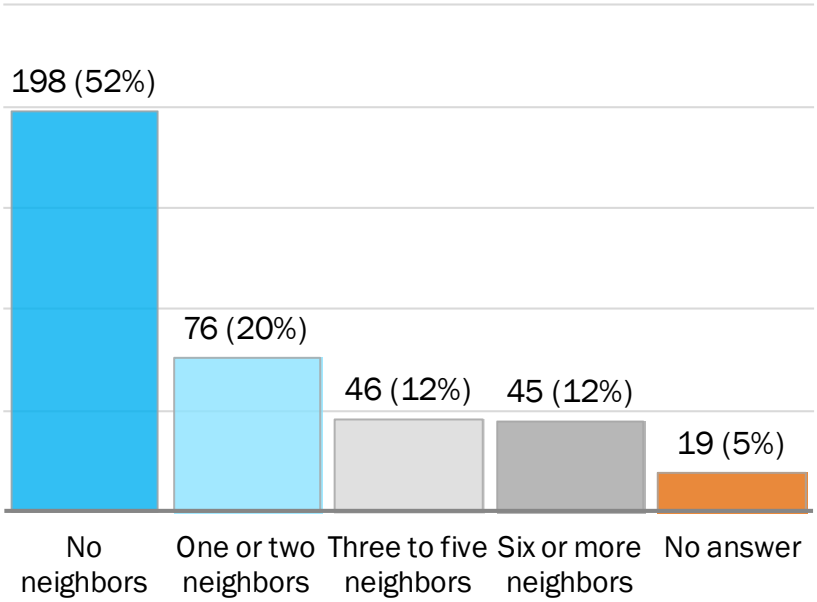
*Note: Several respondents' properties were within two or more block groups and were counted in all of them.*

# Neighbors with Flooding

Forty-three percent (43%) of the respondents who had experienced flooding on their own property said their neighbor(s) had also been flooded in the last ten years.

Forty-four percent (44%) of all survey respondents were aware of flooding on one or more neighboring properties. Twenty percent (20%) of respondents were aware of flooding on one to two neighboring properties.

FIGURE 9. RESPONDENTS' NEIGHBORS THAT ALSO HAD FLOODING IN THE LAST 10 YEARS




*Note: Although only 299 respondents reported flooding on their own properties, 383 people responded to this question about their neighbors, which is 99.5% of all survey respondents.*

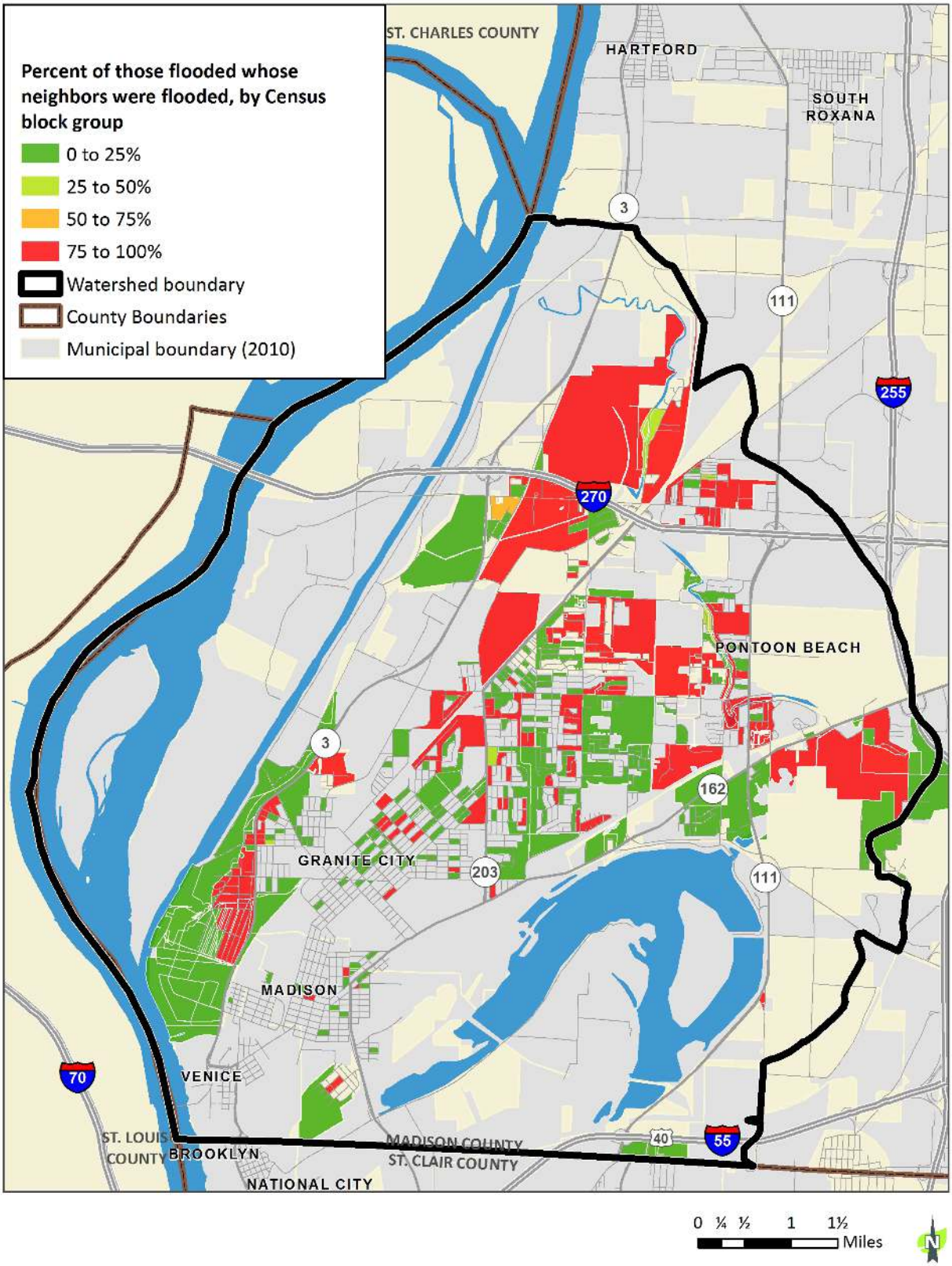



FIGURE 10. RESPONDENTS WITH AT LEAST ONE NEIGHBOR WITH FLOODING BY BLOCK GROUP

*Note: Several respondents' properties were within two or more block groups and were counted in all of them. Map shows the percentage of respondents who had been flooded and who said that at least one of their neighbors had been flooded in the last 10 years, as a weighted average, by block group.*

# Extent of Flood Damage

Of those who had been flooded in the last 10 years, 36% had little to no yard damage; 28% said that the flooding had damaged their primary home or business; 18% had damage to yards and landscaping; and 13% had damage to fences, auxiliary buildings, and other structures.

Out of the respondents who said their primary home or business had been damaged by floods, 83% said the flooding reached the basement, and 17% (20 respondents) said it reached the first floor or habitable space.

FIGURE 11. EXTENT OF FLOOD DAMAGE IN THE LAST 10 YEARS
*Note: Respondents could select more than one answer to this question*

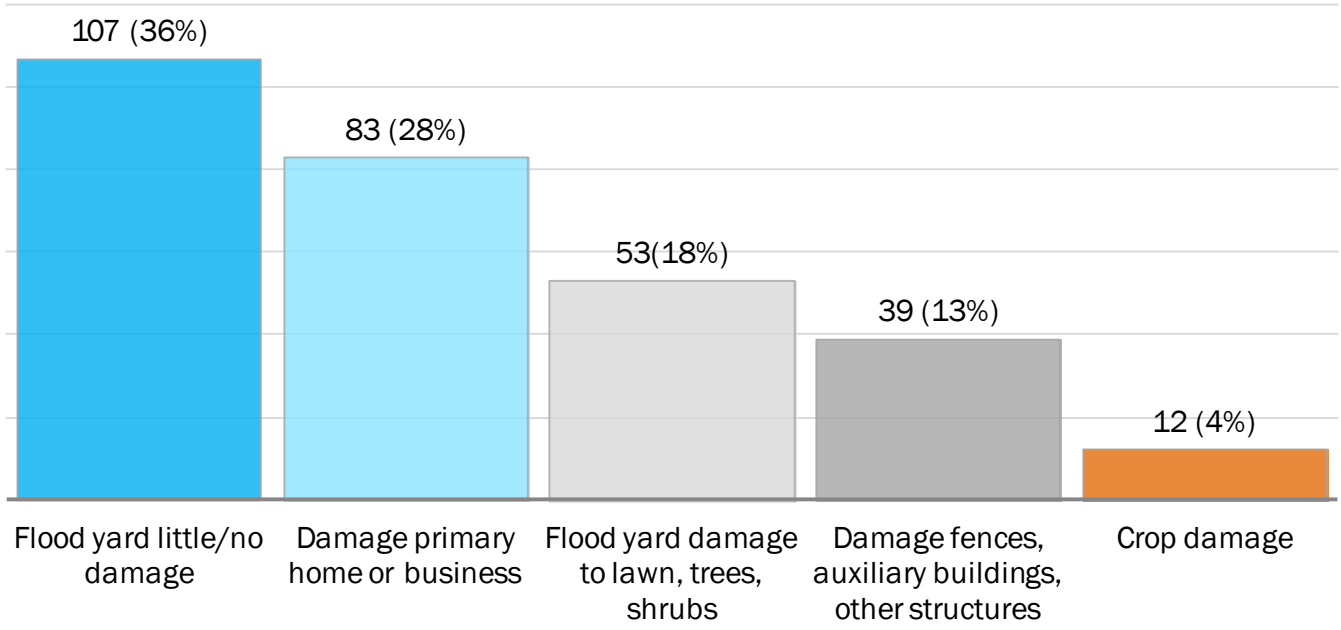
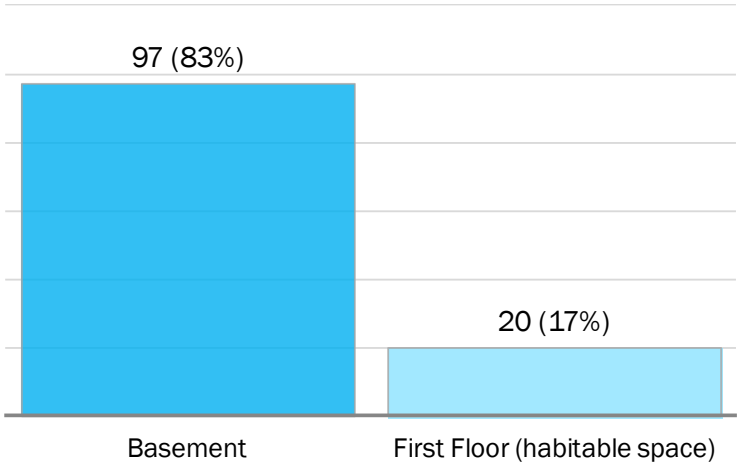


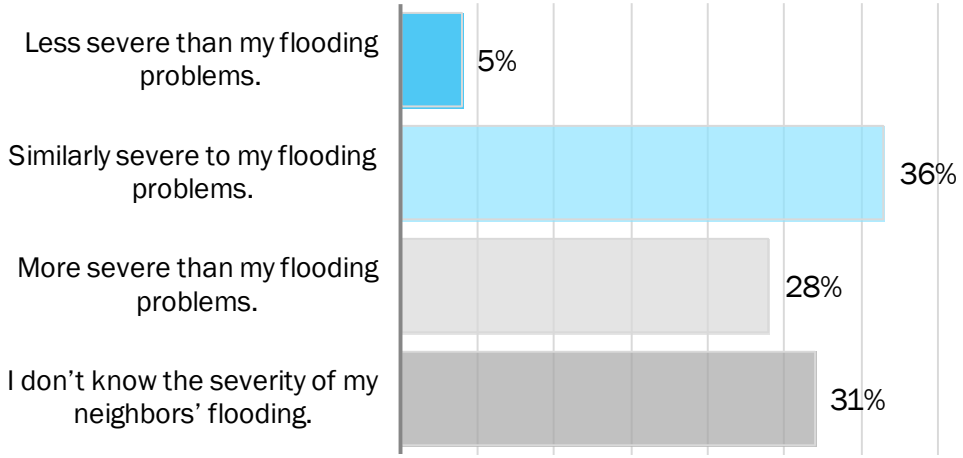

FIGURE 12. LOCATION OF DAMAGE TO PRIMARY HOME OR BUSINESS
*Note: Respondents could select more than one answer to this question*



# Severity of Neighbors' Flood Damage

Sixty-nine precent (69%) of the respondents who had been flooded said that their neighbors had also been flooded in the last 10 years. Of these, 36% said that the extent of their neighbors' flooding was similar to their own. Another 28% said their neighbors' flooding was more severe than their own, while 5% said it was less severe. This indicates that the flood damage reported by respondents about their own property may be representative or an understatement of the wider effects of flooding on their communities.

FIGURE 13. EXTENT OF NEIGHBORS' FLOODING



# Causes of Flooding

Almost 40% of respondents who had been flooded said that heavy rainstorms were a cause of their flooding. Other causes identified were a lack of drainage facilities (swales, ditches, storm sewers, etc.) (17%); flooding from a nearby river, stream, lake, ditch, or pond (12%); and a blocked or unmaintained pipe, culvert, or ditch (10%). For this question, respondents could choose more than one answer, so these responses were not mutually exclusive.

TABLE 3. CAUSES OF RESPONDENTS' FLOODING

| CAUSE | RESPONSES | |
|---|---|---|
| Heavy Rainstorm | 166 | 39% |
| Lack of Drainage Facilities to Drain Water From Property | 73 | 17% |
| Flooding from nearby river, stream, lake, ditch, or pond. | 51 | 12% |
| Pipe, Culvert, or Ditch that was Blocked/Needs Maintenance | 44 | 10% |
| Sewer Backup | 44 | 10% |
| Other (see Appendix) | 32 | 8% |
| Logjam or Other Obstruction in Nearby Watercourse/Water-body | 9 | 2% |
| I Don't Know | 2 | 0% |

Thirty-two (32) respondents listed other causes of flooding such as poor drainage, basement/foundation issues, and lack of maintenance. The full list is provided in the Appendix.

# Reporting

At least 39% of respondents who were flooded did not report their flooding to anyone. Respondents that did report it were most likely to contact their township (20%), their city (18%), or their insurance company (14%).

TABLE 4. HOW RESPONDENTS REPORTED FLOODING

| REPORTED FLOODING TO: | RESPONSES | |
|---|---|---|
| I did not report my flooding to anyone | 99 | 39% |
| My township | 50 | 20% |
| My city | 46 | 18% |
| My insurance company | 36 | 14% |
| The Madison County Stormwater Hotline (618-296-7788) | 9 | 4% |
| Madison County* | 4 | 2% |
| State Representative/Senator* | 2 | 1% |
| Illinois Environmental Protection Agency (ILEPA)* | 2 | 1% |
| Court/Legal action* | 2 | 1% |
| Metro East Sanitary District* | 2 | 1% |
| Illinois Department of Transportation (IDOT)* | 2 | 1% |
| Federal Emergency Management Agency (FEMA)* | 1 | 0% |

** Written in under "Other"*

# Impacts and Effects from Flooding

The most commonly reported impact from flooding was stress, followed by monetary loss, and related costs of having to take time off work. Respondents identified other specific effects under "Other" including the presence of mosquitoes in floodwater and mold/health concerns.

TABLE 5. EFFECTS OF FLOODING ON RESPONDENTS

| EFFECT FROM FLOODING | RESPONSES | |
|---|---|---|
| It caused stress | 143 | 31% |
| Monetary loss due to repair of flood damage | 85 | 19% |
| Time off work to clean up | 67 | 15% |
| Partial loss of access to property | 52 | 11% |
| Monetary loss due to lost valuables or equipment | 46 | 10% |
| No significant effect | 26 | 6% |
| It affected the physical health of someone in your household or business | 18 | 4% |
| Loss of crops | 5 | 1% |
| Mold/Health concerns* | 5 | 1% |
| Mosquitoes/Bugs* | 4 | 1% |
| Lost business income (e.g. business closed, lost productivity) | 3 | 1% |
| Clean-up* | 3 | 1% |
| Zoning/Maintenance issues* | 1 | 0% |

** Written in under "Other"*

# Costs from Flooding

Of those who said they had been flooded in the last 10 years, 33% reported no monetary loss. Thirty-three percent (33%) said that their loss was less than $5,000 over the last 10 years; and another 19% said that the loss was between $5,001 and $20,000. Two respondents (1% of those who answered) said their loss was between $100,000 and $500,000.

FIGURE 14. COSTS ASSOCIATED WITH RESPONDENTS' FLOODING OVER THE LAST 10 YEARS

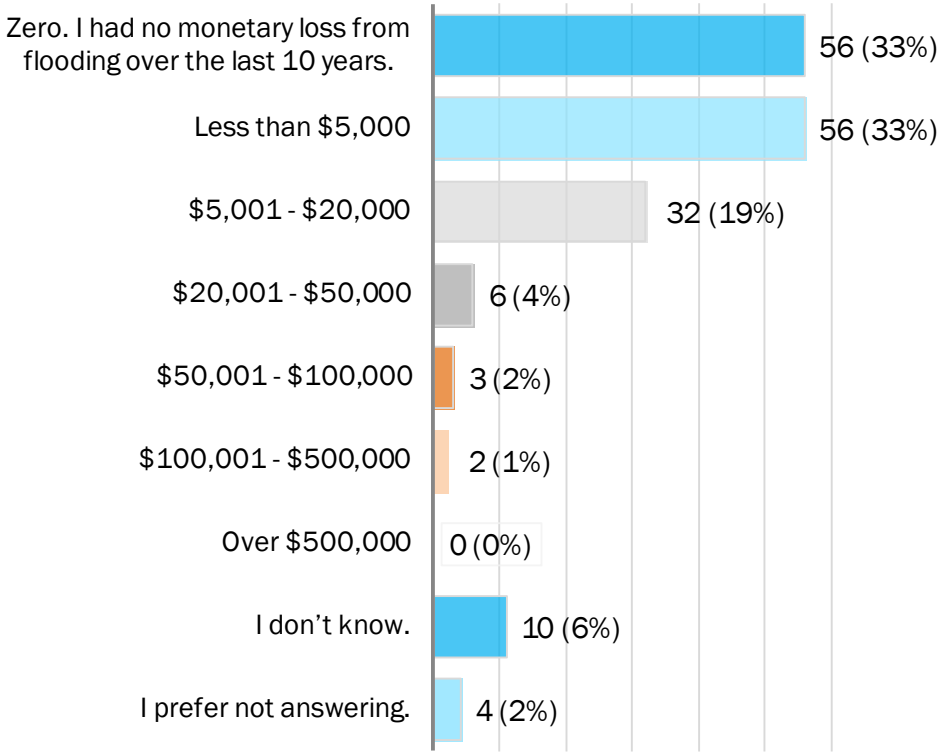


TABLE 6. COSTS ASSOCIATED WITH RESPONDENTS' FLOODING

| COST OVER 10 YEARS | RESPONSES* | | LOWEST COST IN CATEGORY | LOWEST COST x RESPONSES | AVG. COST IN CATEGORY | AVG. COST x RESPONSES |
|---|---|---|---|---|---|---|
| Zero | 19 | 37% | $0 | - | $0 | - |
| Less than $5,000 | 18 | 35% | $1 | $18 | $2,500 | $45,000 |
| $5,001 - $20,000 | 10 | 19% | $5,001 | $50,010 | $12,500 | $125,000 |
| $20,001 - $50,000 | 4 | 8% | $20,001 | $80,004 | $35,000 | $140,000 |
| $50,001 - $100,000 | 1 | 2% | $50,001 | $50,001 | $75,000 | $75,000 |
| Over $500,000 | 0 | 0% | $500,000 | 0 | 0 | 0 |
| I don't know | 4 | – | – | – | – | – |
| I prefer not answering | 1 | – | – | – | – | – |
| No Answer | 396 | – | – | – | – | – |
| TOTAL | 452 | | LOW ESTIMATE: | $180,033 | MID ESTIMATE: | $385,000 |

** Percent = percentage of respondents who selected a cost range*

The lowest estimate of the total costs reported by respondents is $180,033 over the last 10 years. Using this low estimate, divided by the 33 respondents who reported a cost in this question, each respondent lost an average of $5,456 over 10 years.

Using the average cost for each response category, the estimate for total costs reported by respondents is $385,000 over the last 10 years; or an average of $11,667 lost per respondent over 10 years.

Using the lower estimate of costs, and extrapolating to the 22,434 households in the watershed (estimated using 2010 U.S. Census Bureau population map data), an estimated $1,121,700 of monetary loss has occurred due to flooding over the last 10 years in the American Bottom watershed.

*Note on comparison of costs with the Upper Silver Creek flood survey report: the monetary loss estimate for the Upper Silver Creek Flood Survey Report used population rather than number of households, and also did not account for a "zero monetary loss" option in the question – the lowest category for monetary loss was "Less than $5,000". These factors led to a much higher overall monetary loss estimate for the Upper Silver Creek watershed.*

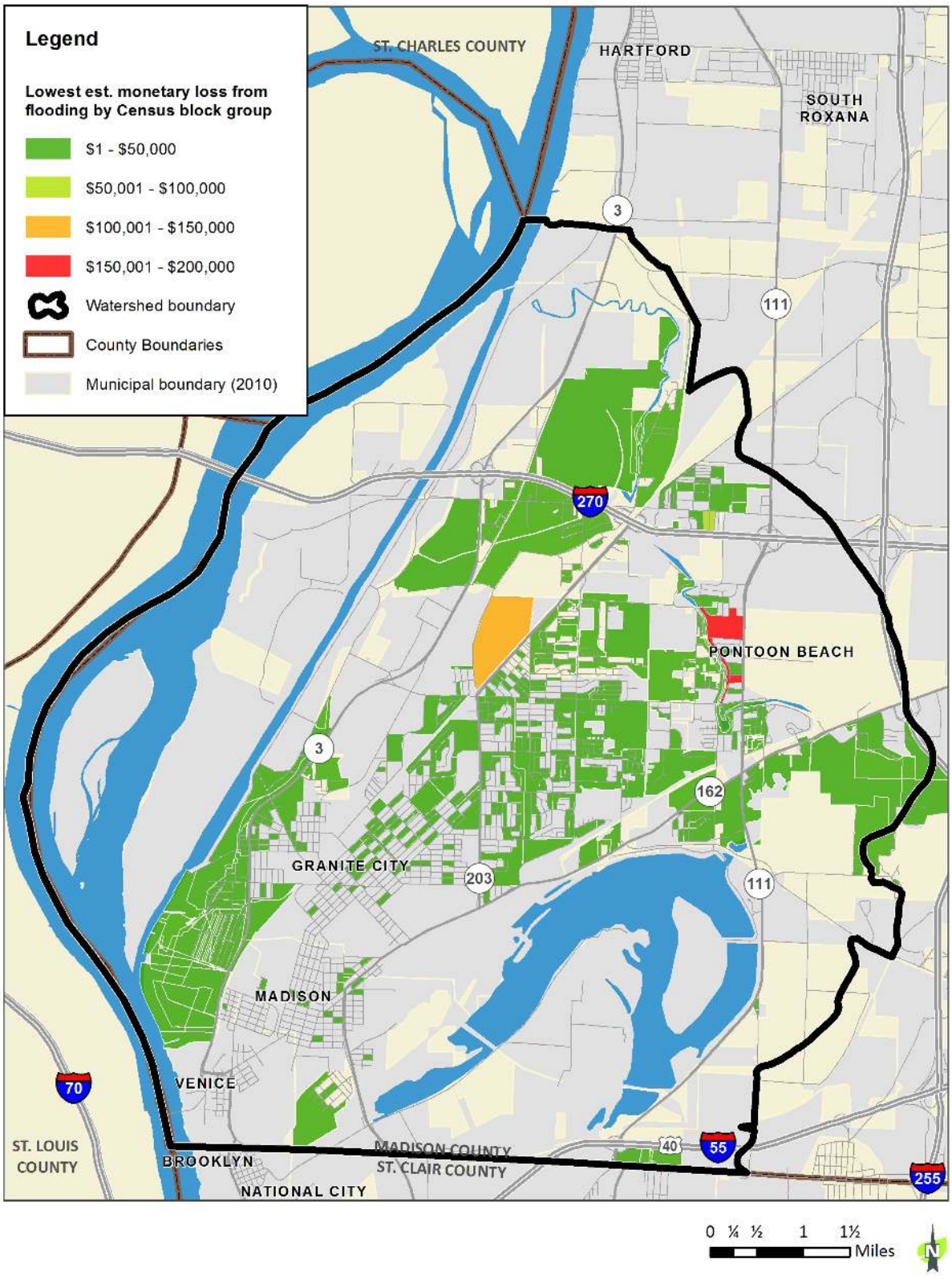



FIGURE 15. MONETARY LOSS FROM FLOODING BY BLOCK GROUP (USING LOW ESTIMATE)

*Note: Several respondents' properties were within two block groups and were counted in both.*

# Correlation with Floodplains

FEMA-designated floodplains cover 38.2% (16,551 acres) of the total acreage in the American Bottom watershed. Twenty-nine percent (29%) of surveys came from parcels wholly or partly within these floodplains. Twenty-three people (8%) correctly responded that they were living in a FEMA-designated floodplain. Nine (9) respondents, or 2% of survey respondents, unknowingly own or live on property that is wholly or partly in a floodplain.

FIGURE 16. RESPONDENTS' LOCATION IN RELATION TO FLOODPLAIN

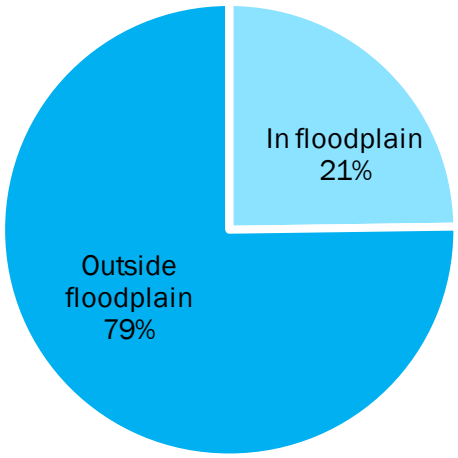
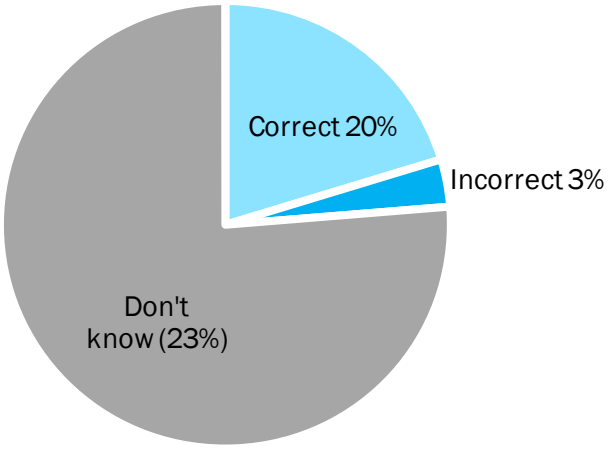



FIGURE 17. RESPONDENTS' KNOWLEDGE ABOUT WHETHER THEIR PROPERTY IS IN A FLOODPLAIN



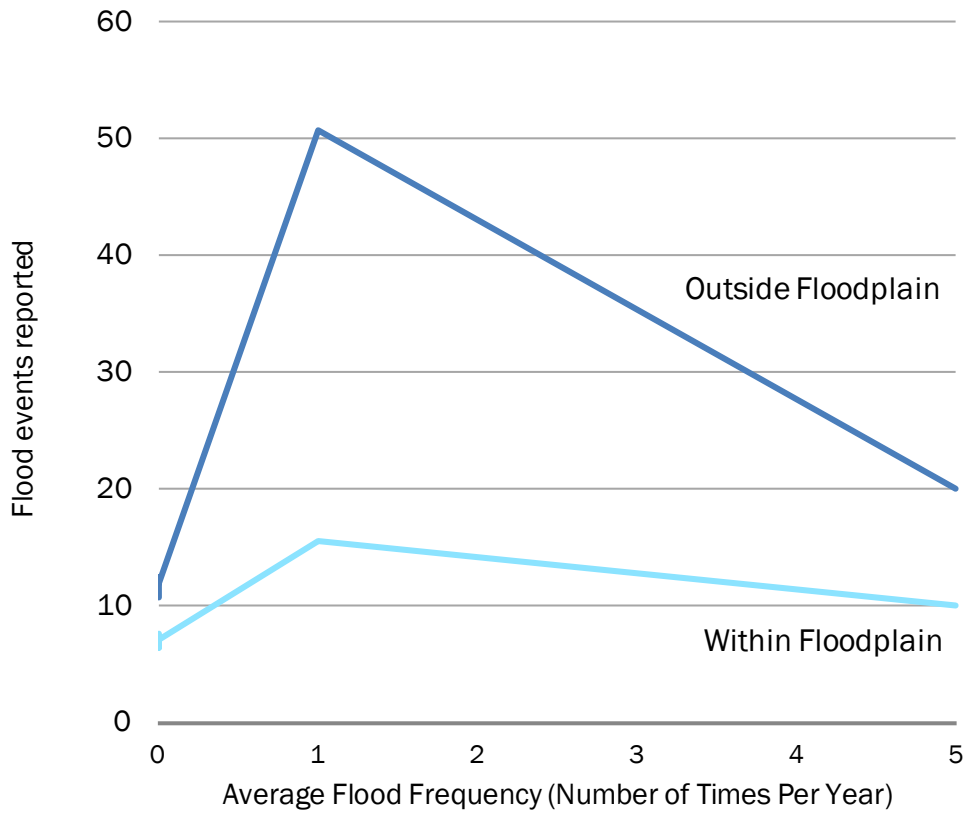

*Note: In the Community Flood Survey for the Upper Silver Creek watershed, the data about whether respondents knew their property was in a floodplain was presented differently, only representing those whose property was in a floodplain.*

TABLE 7. FLOOD FREQUENCY BY PROPERTY LOCATION

| | | PARCELS IN FLOODPLAIN | | PARCELS OUTSIDE FLOODPLAIN | |
|---|---|---|---|---|---|
| FLOOD FREQUENCY | AVG. TIMES PER YEAR* | NUMBER | NUMBER OF TIMES FLOODED PER YEAR | NUMBER | NUMBER OF TIMES FLOODED PER YEAR |
| 1-3 Times in 10 Years | 0.2 | 38 | 7.6 | 54 | 10.8 |
| 4-6 Times in 10 Years | 0.5 | 13 | 6.5 | 25 | 12.5 |
| 7-9 Times in 10 Years | 0.8 | 9 | 7.2 | 15 | 12.0 |
| 10-49 Times in 10 Years | 1.95 | 8 | 15.6 | 26 | 50.7 |
| 50 or more Times in 10 Years | 5 | 2 | 10.0 | 4 | 20.0 |
| TOTAL | | 70 | 46.9 | 124 | 106.0 |

*except for the *50 or more times* category, where the lowest possible frequency is used

FIGURE 18. FLOOD FREQUENCY BY PROPERTY LOCATION WITHIN OR OUTSIDE OF A FLOODPLAIN



# Flood Insurance Coverage

Madison County and seven communities in the watershed are enrolled in the National Flood Insurance Program (NFIP), allowing floodplain residents to purchase flood insurance for their properties. The average flood insurance premium paid by Madison County residents is $732 per year.[5] Nationwide, approximately 20% of NFIP claims are for properties located outside floodplains, some of which are from flooding caused by local drainage problems.[6]

Fourteen percent (14%) of respondents (52 people) said that they have flood insurance. Of these respondents, 17 (5%) made a claim in the last 10 years.

Twenty-five (25), or 6.5%, of the survey respondents have flood insurance on structures that are not in a floodplain.

FIGURE 19. RESPONDENTS' FLOOD INSURANCE COVERAGE

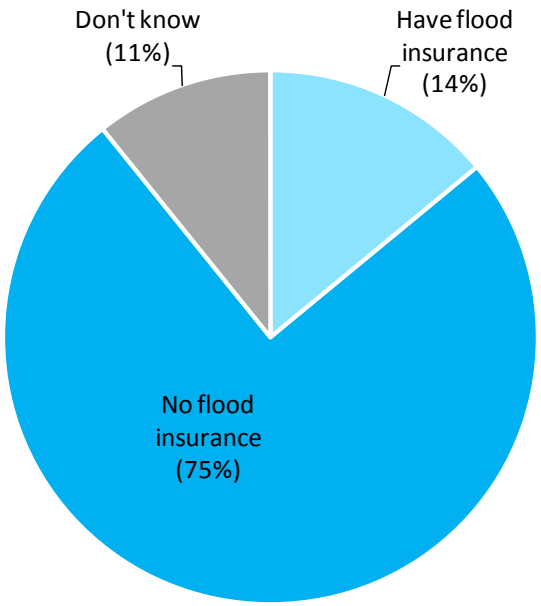
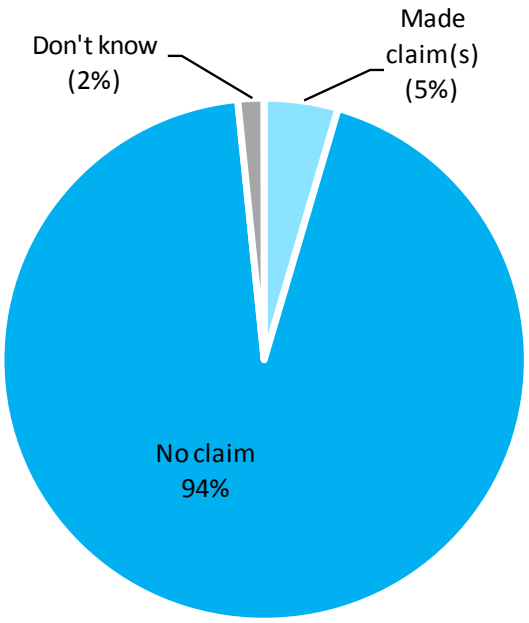



FIGURE 20. RESPONDENTS' FLOOD INSURANCE CLAIMS

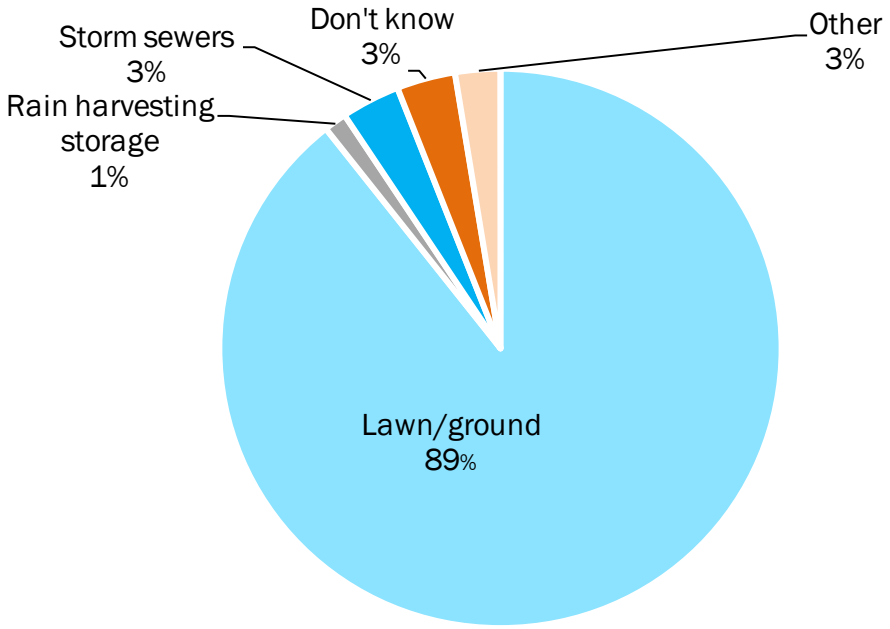


# Downspout Connections

When downspouts are connected directly to a sanitary sewer system or private sewer system, heavy rainfall can lead to sewer backups into the building. When downspouts open out onto a lawn or other ground surface, the imperviousness and slope of the surface determines where and how fast the water flows. If there is inadequate infiltration, floodwaters can accumulate quickly around a building. A direct connection between downspouts and a storm sewer system quickly transports the water away from the building and into a detention pond or local waterway. Rainwater harvesting methods such as rain barrels or cisterns collect runoff from the roof, preventing it from contributing to flooding around the building or downstream. This is the optimal downspout connection scenario, as it does not allow stormwater to accumulate by the structure or downstream. Rainwater harvesting also allows for reuse of the water in gardening, for example.

The majority of respondents said that their downspouts flowed out onto their lawn or other ground surface. Much smaller proportions of respondents said their downspouts were connected to storm sewers (3%) or to cisterns, rain barrels, or other rainwater harvesting storage (1%). Under "Other", respondents wrote in that their downspouts drained to a nearby drainage ditch, buried extension (e.g. French drain), stream, pond, or waterbody.

FIGURE 21. WHERE RESPONDENTS' DOWNSPOUTS CONNECT



# Measures to Prevent Future Flooding

One hundred four (104) respondents, or 27%, said they had made one or more improvements in an attempt to prevent future flooding/flood damage. Nineteen percent (19%) said they planted native vegetation or buffer strips, or another conservation measure. Thirteen percent (13%) of respondents said they extended drain lines from downspouts. Creating or enlarging ponds, detention, or retention basins and raising one or more buildings were the next most popular options, at seven percent (7%) of respondents. Respondents were given the option to write in other improvements they had made. Several noted that they graded landscape, installed sump pumps, sealed/resealed their basements, or installed drainage tiles. See Appendix for full list of "Other" responses to improvements.

TABLE 8. TOP ACTIONS TAKEN BY RESPONDENTS TO PREVENT FUTURE FLOODING

| ACTION TAKEN | RESPONSES | |
|---|---|---|
| Planted native vegetation, buffer strips, or other conservation measures | 20 | 19% |
| Extended drain lines from downspouts* | 13 | 13% |
| Graded Landscape* | 7 | 7% |
| Created or enlarged a pond or retention/detention basin | 7 | 7% |
| Installed sump pump* | 7 | 7% |
| Sealed/resealed basement* | 7 | 7% |
| Raised one or more buildings | 7 | 7% |
| Installed drainage tile* | 5 | 5% |
| Extended drain lines from sump pump* | 5 | 5% |
| Raise/redo paving* | 5 | 5% |
| Installed or enlarged trenches and/or ditches* | 4 | 4% |
| Installed permeable paving | 4 | 4% |
| Removed debris from ditch/creek* | 4 | 4% |
| Installed check valve* | 3 | 3% |
| Added retaining wall* | 2 | 2% |
| Installed a rain garden | 1 | 1% |
| City/Township infrastructure improvement* | 1 | 1% |
| Created levee around property | 1 | 1% |
| Installed seawall* | 1 | 1% |

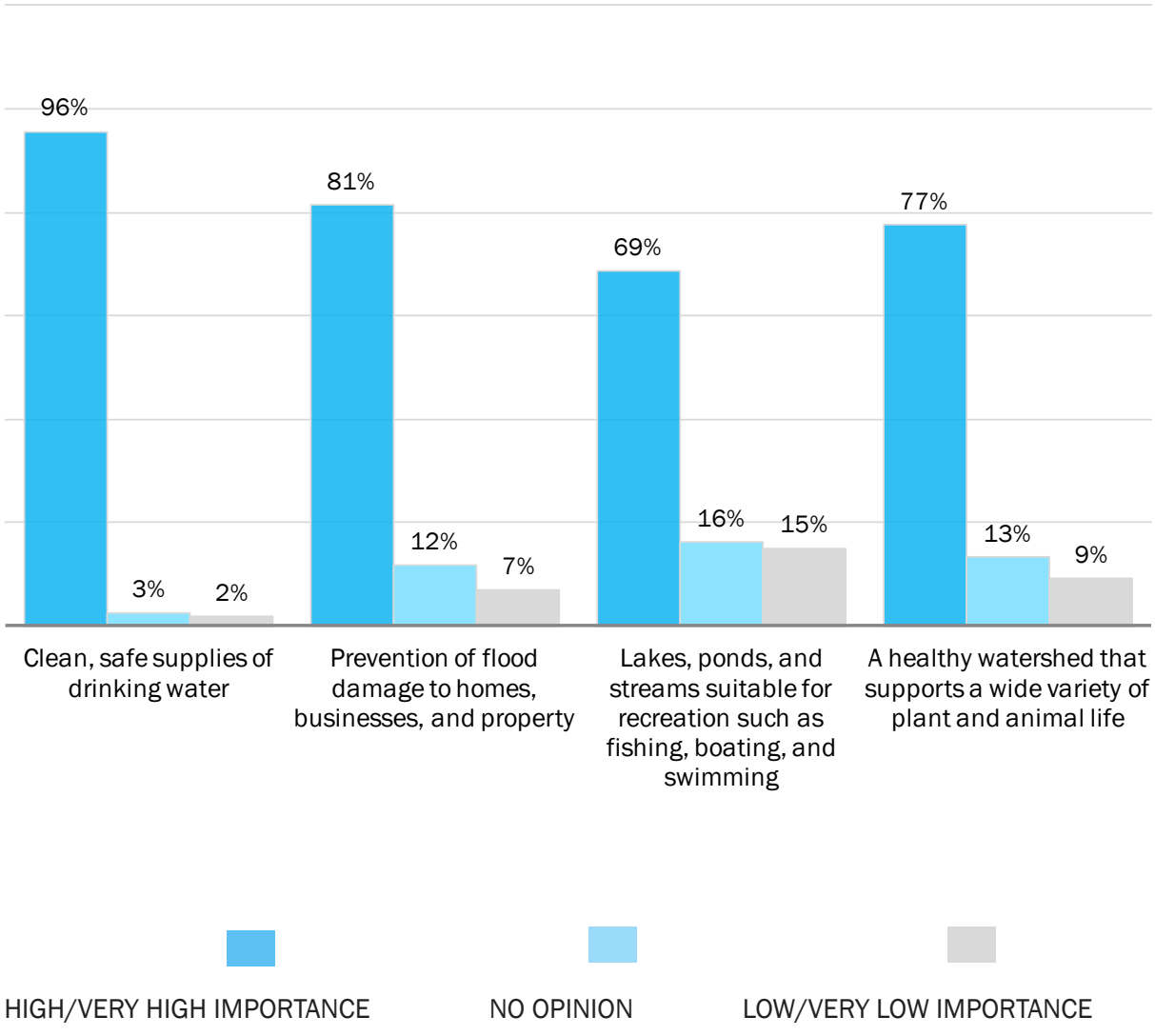
***Written in under "Other"**

# Importance of Water Management

Most respondents replied to the question about their values on water-related issues, whether or not they had experienced flooding. The question asked how important four issues were to respondents on an importance scale with five options, from very low importance to very high importance.

Respondents placed the highest importance on “clean, safe supplies of drinking water”, followed by “prevention of flood damage to homes, businesses, and property”; then “a healthy watershed that supports a variety of plant and animal life”; and finally “lakes, ponds, and streams suitable for recreation such as fishing, boating, and swimming”.

FIGURE 22. IMPORTANCE OF WATER MANAGEMENT OUTCOMES



# NEXT STEPS

# Next Steps

The findings of this survey will be incorporated into the American Bottom watershed plan. Some data about the location and extent of flooding in the watershed has already been gathered from interviews with stakeholders including mayors, township highway road commissioners, property owners, and landowners. The results of this survey will be considered alongside this data as recommendations for mitigating water quality and flooding issues. Additionally, the survey results will be considered alongside those from the Upper Silver Creek Watershed Community Flood Survey and the Indian-Cahokia Creek and Canteen-Cahokia Creek Community Flood Surveys to assess flood impacts across multiple watersheds.

More community flood surveys may be undertaken in other watersheds in Madison County and the region as further watershed planning takes place. Having more extensive knowledge about flooding problems in multiple areas will help county and municipal governments prioritize flood mitigation and protection projects across their entire jurisdictions.

Further research into flooding issues and their solutions may include gathering data from private insurers about flood insurance claims. Insurance data would allow for the calculation of the distribution of flood insurance and the costs of flooding through verified policies and claims, rather than best estimates.

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# REFERENCES

[1] Madison County Planning and Development Department and Madison County Emergency Management Department, Madison County Hazard Mitigation Plan, June 2006, http://www.state.il.us/iema/planning/Documents/Plan_MadisonCounty.pdf

[2] Center for Neighborhood Technology, The Prevalence and Cost of Urban Flooding, May 14, 2013, http://www.cnt.org/resources/the-prevalence-and-cost-of-urban-flooding/

[3] FEMA, as cited in Center for Neighborhood Technology, The Prevalence and Cost of Urban Flooding, May 14, 2013, http://www.cnt.org/resources/the-prevalence-and-cost-of-urbanflooding/

[4] Illinois Department of Natural Resources (IDNR), June 2015, https://www.dnr.illinois.gov/WaterResources/Documents/Final_UFAA_Report.pdf

[5] FEMA, Policy Statistics by state as of 9/30/2013, http://bsa.nfipstat.fema.gov/reports/1011.htm

[6] FEMA, National Flood Insurance Program Community Rating System Coordinator's Manual, FIA-15/2013, OMB No. 1660-0022, expires: September 30, 2013, http://www.fema.gov/medialibrary-data/20130726-1557-20490-9922/crs_manual_508_ok_5_10_13_bookmarked.pdf

Photo Credit: Madison County

# APPENDIX

The Appendix includes:

- Causes of flooding written in by respondents under “Other”
- Improvements made to prevent future flooding, written in by respondents under “Other”
- A copy of the Madison County Community Flooding survey for the American Bottom watershed

# Other Causes of Flooding

Causes written in by respondents under “Other”, by response keyword (corresponds to Table 3 on Page 22):

TABLE 9. OTHER CAUSES OF FLOODING

| OTHER CAUSE | RESPONSES |
|---|---|
| Improperly designed infrastructure | 2 |
| Culvert collapse | 1 |
| Hydrostatic pressure | 1 |
| Low elevation of buildings | 1 |
| Sump pump failure or inadequacy | 1 |

# Other Actions Taken to Prevent Flooding

Improvements written in by respondents under “Other”, by response keyword (corresponds to Table 8 on page 32):

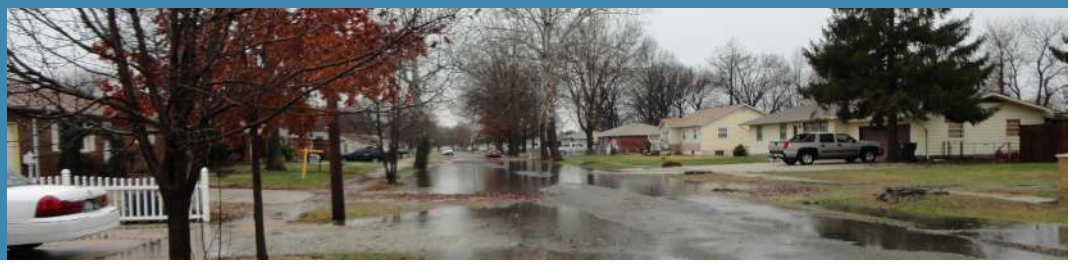
TABLE 10. OTHER ACTIONS TAKEN TO PREVENT FLOODING

| OTHER ACTIONS | RESPONSES | |
|---|---|---|
| Graded landscape | 7 | 2% |
| Installed sump pump | 4 | 1% |
| Installed drainage tile | 3 | 1% |
| Sealed/resealed basement | 3 | 1% |
| Extended drain lines from downspouts | 2 | 1% |
| Extended drain lines from sump pump | 2 | 1% |
| Installed culvert | 2 | 1% |
| Added terraced planters made of permeable stone | 1 | <1% |
| Connected downspout(s) to a rain barrel | 1 | <1% |
| Improved lakeshore seawall | 1 | <1% |
| Increased size of culverts | 1 | <1% |
| Moved auxiliary building (e.g. shed) to higher ground | 1 | <1% |
| Installed larger gutters | 1 | <1% |
| Removed debris from ditch/creek | 1 | <1% |
| Repaired a seawall | 1 | <1% |

AMERICAN BOTTOM WATERSHED PLAN

# Madison County Community Flooding Survey

## for Homeowners, Businesses, and Property Owners



**We Need Your Help!**

Thank you in advance for taking the time to fill out this survey regarding the impact of floods on homes, businesses, and property in Madison County. Your response is greatly appreciated. This survey is part of a larger planning effort for the the American Bottom watershed on the southwest side of the county. Your response will help determine strategies and recommendations for addressing flooding problems in the watershed.

**What is a Watershed Plan?**

A watershed plan identifies strategies to improve water quality and reduce the impacts of flooding. The watershed plan for the American Bottom watershed will:

- Document existing conditions.
- Develop recommended strategies to improve water quality and address flooding, and act as a roadmap for communities, agencies, and landowners to implement future improvements.
- Help reduce costs for homeowners, businesses, and taxpayers.

This watershed planning effort is an important component of Madison County's Stormwater Management Plan, and part of a larger effort to create plans for all of Madison County's major watersheds. Multiple partners are involved in this effort, including Madison County, HeartLands Conservancy, the U.S. Army Corps of Engineers, and the Madison County Soil and Water Conservation District.

Please complete and return this survey by

**July 31, 2017.**

Your time and input is greatly appreciated!

If you have questions about the survey or the American Bottom watershed planning process, visit:
**www.HeartLandsConservancy.org/AmericanBottom.php**

or contact:

*Janet Buchanan at HeartLands Conservancy,*
*(618) 566-4451 ext. 25*
*janet.buchanan@heartlandsconservancy.org*

**You can complete this survey in two ways:**

1. Fill out and return the survey via the enclosed return envelope.
2. Fill out the survey online at: www.surveymonkey.com/r/americanbottomflood

Later in the year, an Open House event will be held to gather more information for the American Bottom Watershed Plan. Be sure to provide your email address if you want to to be notified when future Open House dates & locations are set.

MADISON COUNTY PLANNING & DEVELOPMENT
PLAN | GROW | SUSTAIN

US Army Corps of Engineers® St. Louis District

HEARTLANDS CONSERVANCY

Madison County Soil & Water Conservation District

**Turn Page to Start Survey**

# Start Survey

1. Please provide your address: (Note: Addresses will be kept confidential. Giving your address allows the planning team to identify locations of flooding. Follow-up information will only be sent if requested below.)

Address: _____ City: _____ Zip: _____

☐ Check here if you would like to be put on our mailing list to receive updates and more information. Provide your name, phone, and e-mail below:

Name: _____ Phone: _____

E-mail: _____

2. What type of property is at this address? It will be referred to for the rest of the survey as "this property."

☐ Residential, lot smaller than 5 acres
☐ Residential, lot larger than 5 acres
☐ Business/Commercial
☐ Agricultural
☐ Industrial
☐ Civic / Institutional / Non-profit
☐ Other (please explain): _____

3. Has this property been flooded in the last 10 years? ☐ Yes ☐ No *(If NO, skip to Question #9)*

| Extent/Type of Flood Damage | Number of times flooded over the last 10 years | | | | |
|---|---|---|---|---|---|
| | **1-3** | **4-6** | **7-9** | **10 - 49 (1-4.9/year)** | **50 or more (at least 5/ year)** |
| Yard/Open green space was flooded, with little/no damage | | | | | |
| Yard/Green space was flooded, with damage to lawn, trees, and shrubs | | | | | |
| Crops were damaged | | | | | |
| Fences, auxiliary buildings (sheds, etc.), or other structures were damaged | | | | | |
| Primary home/business was damaged | | | | | |

4. If flooding damaged the primary home or business, how far did the floodwater penetrate into the home or business (furthest extent)?

i. Basement ☐ Yes ☐ No
ii. First floor (habitable space) ☐ Yes ☐ No

5. What was the cause of the flooding that affected this property? *(Select all that apply)*

☐ Heavy rainstorm.
☐ Flooding from nearby river, stream, lake, ditch, or pond.
☐ Logjam or other obstruction in nearby river, stream, lake, ditch, or pond.
☐ Pipe (not sewer), culvert, or ditch that was blocked or needs maintenance.
☐ Lack of drainage facilities (swales, ditches, storm sewers, etc.) to drain water from the property.
☐ Sewer backup.
☐ I don't know.
☐ Other (please explain): _____

6. Did you report your flooding to anyone? *(Select all that apply)*

- ☐ My city/village.
- ☐ My township.
- ☐ The Madison County Stormwater Hotline (618-296-7788).
- ☐ My insurance company.
- ☐ I did not report my flooding to anyone.
- ☐ Other (please explain): _____

_____

_____

7. How have you been affected by flooding on this property? *(Select all that apply)*

- ☐ Monetary loss due to repair of flood damage.
- ☐ Monetary loss due to lost valuables or equipment.
- ☐ It caused stress.
- ☐ Time off work to clean up.
- ☐ Other (please explain):
- ☐ Partial loss of access to property.
- ☐ It affected the physical health of someone in your household or business.
- ☐ Lost business income (e.g., business closed, lost productivity)
- ☐ Loss of crops.
- ☐ No significant effect.

_____

_____

8. If you suffered a monetary loss due to flooding over the last 10 years (such as damage to structures or buildings, lost valuables or equipment, lost wages or income, etc.), please estimate your total, cumulative loss in dollars.

- ☐ Zero. I had no monetary loss from flooding over the last 10 years.
- ☐ Less than $5,000.
- ☐ $5,001 - $20,000.
- ☐ $20,001 - $50,000.
- ☐ $50,001 - $100,000.
- ☐ $100,001 - $500,000.
- ☐ Over $500,000.
- ☐ I don't know.
- ☐ I prefer not answering.

9. Have any of your nearby neighbors experienced flooding at their home, business, or property in the last 10 years? *(Choose one)* NOTE: If you have neighbors who experienced flooding, please let them know about this survey and have them visit www.surveymonkey.com/r/americanbottomflood.

- ☐ YES. One or two neighboring properties.
- ☐ YES. Three to five neighboring properties.
- ☐ YES. Six or more neighboring properties.
- ☐ NO. I don't know of any neighbors who have experienced flooding on their home or property. *(If NO, Skip to question 11)*

10. If you answered YES above, what was the severity of your neighbors' flooding? *(Choose one)*

- ☐ Less severe than my flooding problems.
- ☐ Similarly severe to my flooding problems.
- ☐ More severe than my flooding problems.
- ☐ I don't know the severity of my neighbors' flooding.

11. Is this property located in FEMA's Special Flood Hazard Area (SFHA)?

☐ Yes ☐ No ☐ I don't know.

12. Is the property at this address covered by a flood insurance policy? (Note: Flood insurance is typically not included in a standard home insurance policy).

☐ Yes ☐ No ☐ I don't know.

13. Have you ever made a flood insurance claim?

☐ Yes ☐ No ☐ I don't know.

14. Where do your roof downspouts connect to? *(Select all that apply)*

☐ They connect to the storm sewers.
☐ They flow out onto my lawn or other ground surface.
☐ They are connected to cisterns, rain barrels, or other rain harvesting storage.
☐ I don't know.
☐ Other (please explain): _____

_____

15. Have you made any improvements to your property to help reduce stormwater or flood impacts? *(Select all that apply)* NOTE: If you would like to find out more about these or other improvements, visit www.heartlandsconservancy.org/americanbottom.php.

☐ Installed a rain garden.
☐ Created or enlarged a pond, detention/retention basin, ditch, or swale.
☐ Raised one or more buildings.
☐ Created a levee around the property.
☐ Installed permeable paving.
☐ Planted native vegetation, buffer strips, or other conservation measures.

Other (please explain): _____

_____

_____

16. How important are the following water issues to you?

| | *Very Low Importance* | *Low Importance* | *No Opinion* | *High Importance* | *Very High Importance* |
|---|---|---|---|---|---|
| A. Clean, safe supplies of drinking water: | ☐ | ☐ | ☐ | ☐ | ☐ |
| B. Prevention of flood damage to homes, businesses, and property: | ☐ | ☐ | ☐ | ☐ | ☐ |
| C. Lakes, ponds, and streams suitable for recreation such as fishing, boating, and swimming: | ☐ | ☐ | ☐ | ☐ | ☐ |
| D. A healthy watershed that supports a wide variety of plant and animal life: | ☐ | ☐ | ☐ | ☐ | ☐ |

17. Any other comments or questions? _____

_____

**Thank you for completing this survey! Your time and input is greatly appreciated.**

Survey responses will be used to help shape the recommendations in the American Bottom Watershed Plan.

Please return this survey by **July 31, 2017** via the enclosed envelope or to:

*American Bottom Survey - Madison County Planning and Development*

*157 North Main Street, Suite 254 Edwardsville, IL 62025*

MADISON COUNTY
PLANNING & DEVELOPMENT

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