SHELBY COUNTY HAZARD MITIGATION PLAN

| November 2022

PREPARED BY:
Burton Planning Services
252 Electric Avenue
Westerville, Ohio 43081
www.burtonplanning.com

Burton Planning Services

PREPARED FOR:
Shelby County Emergency Management Agency
800 Fair Road
Sidney, OH 45365

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

List of Figures Page

TABLE OF CONTENTS

List of Tables Page

TABLE OF CONTENTS

1 | Introduction

1.1 Overview

With the 2017 Shelby County Hazard Mitigation Plan set to expire in October of 2022, Shelby County and its constituents are aiming to adopt a new, updated hazard mitigation plan. As outlined in the Disaster Mitigation Act of 2000 (DMA2K), any local jurisdiction seeking funding from the Federal Emergency Management Agency (FEMA) must maintain an up-to-date disaster mitigation plan. This Plan meets the criteria as set forth by FEMA in the DMA2K and provides the County and its participating jurisdictions with a comprehensive guide for future mitigation efforts to combat the hazards that affect their communities.

Natural, geological, and human-caused hazards pose a variety of risks to the lives, businesses, and properties within Shelby County. As such, a Core Planning Committee within Shelby County has been established with the goal of developing and implementing the 2022 Shelby County Hazard Mitigation Plan. Through cooperative efforts between local, county, state, and federal government agencies, this Plan is designed to minimize the adverse effects of hazardous events on the lives and properties of residents of Shelby County.

The 2022 Shelby County Hazard Mitigation Plan is a multi-jurisdictional plan which considers the impacts of hazards on incorporated areas (villages) and unincorporated areas (townships). Shelby County's incorporated and unincorporated areas are listed below in **Tables 1.1.1 and 1.2.2**. These jurisdictions are also displayed in **Figure 1.1.1** on the following page. The Plan is designed for a five-year implementation period and describes the methods and procedures utilized in its development, provides the results of community involvement activities such as survey collection, identifies the mitigation activities determined to the be most important to the County, and establishes a timeline for the implementation of the actions.

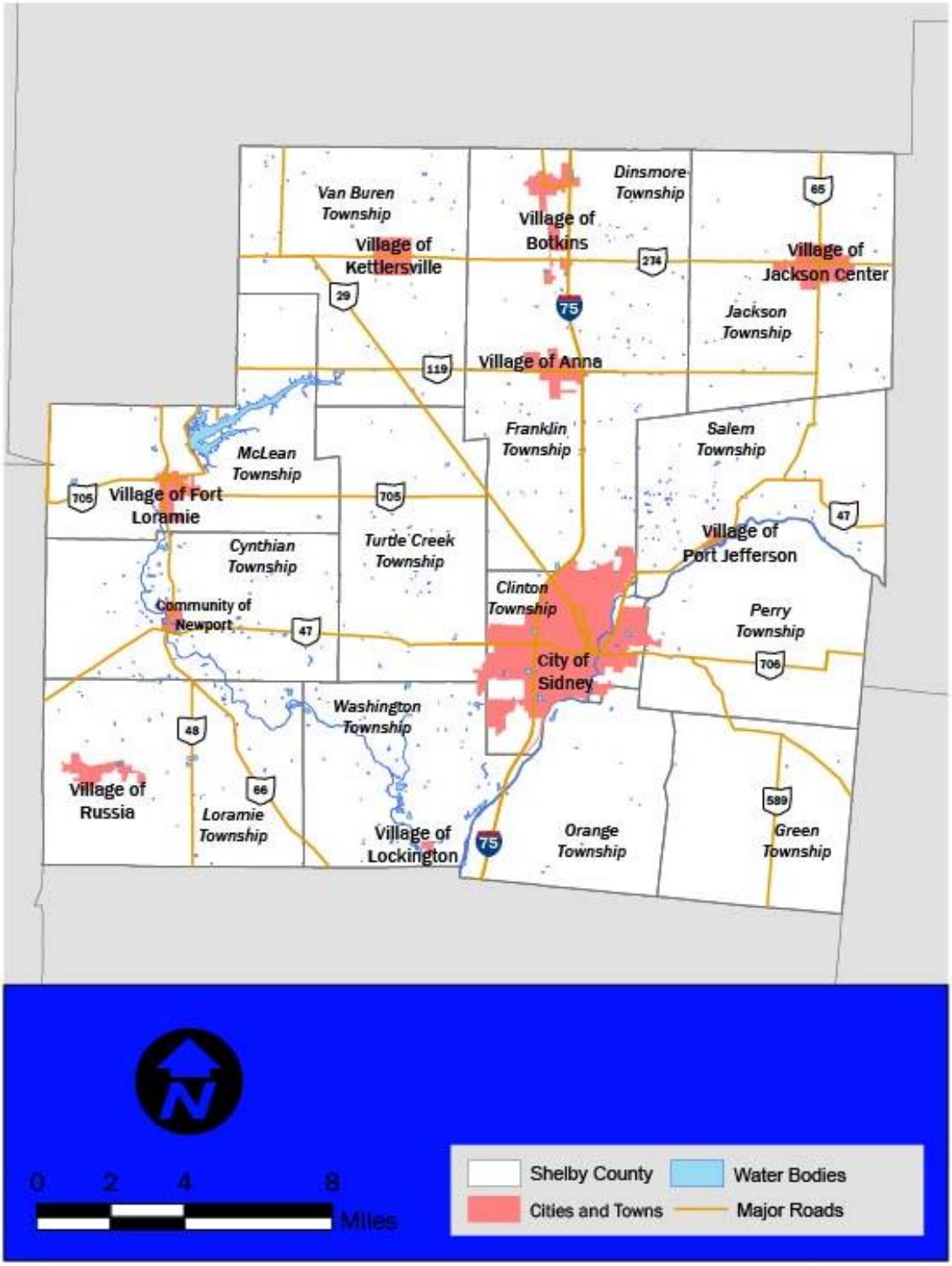
Table 1.1.1: Shelby County Jurisdictions

Jurisdictions
City of Sidney
Village of Anna
Village of Botkins
Village of Fort Loramie
Village of Jackson Center
Village of Kettlersville
Village of Lockington
Village of Minster (part)
Village of Port Jefferson
Village of Russia

Table 1.1.2: Shelby County Townships

Townships	
Clinton Township	McLean Township
Cynthian Township	Orange Township
Dinsmore Township	Perry Township
Franklin Township	Salem Township
Green Township	Turtle Creek Township
Jackson Township	Van Buren Township
Loramie Township	Washington Township

Figure 1.1.1: Shelby County Jurisdictions Map



1 | INTRODUCTION

This Plan is comprised of six sections, which detail the methods, analysis, and discussion surrounding the various hazards that threaten Shelby County and its jurisdictions. These sections are as follows:

1. This **Introduction** (Section 1) provides a discussion about the general purpose and goals that Shelby County wishes to achieve throughout the development and implementation of this Plan. This section also includes a summary of the Plan's contents.
2. Section 2, **History and Demographics**, includes a description of Shelby County and each participating jurisdiction, including their history, population, and other general information.
3. The process for the development of this Plan is detailed in Section 3, **Planning Process**. This section includes details about the process used to develop this Plan, including a description of who participated, how the community was involved, which hazards were included in the Plan and why, as well as how the Plan was developed through public meetings, reviews, and evaluations. This section also details the review and incorporation of existing plans, studies, reports, and technical information.
4. Section 4 contains the **Hazard Identification and Risk Assessment (HIRA)**. This section provides detailed descriptions and a corresponding analysis for each hazard that could potentially affect Shelby County. The nature, location, extent, historical impact, vulnerability, and likelihood of occurrence for each hazard are provided for each hazard. These analyses include the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas; an estimate of the potential dollar losses to vulnerable structures; and a general description of land uses and development trends within the community.
5. The goals, strategies, and actions for the County are then outlined in Section 5, **Hazard Mitigation**. The proposed actions are presented in tables, categorized by the associated hazard and community, and then ranked from highest to lowest priority based on feedback received from County officials and participating jurisdictions and stakeholders. Excluded hazards are also documented in this section, along with the rationale for exclusion from the Plan.
6. The final section of this Plan, **Schedule and Maintenance**, provides a summary of the proposed Plan adoption, integration, and maintenance schedule. This section describes how the County will review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval within five years to continue to be eligible for mitigation project grant funding.

The resulting Shelby County Hazard Mitigation Plan will be submitted to the Ohio Emergency Management Agency (Ohio EMA) and subsequently FEMA for their review. Following the agency review, the jurisdictions will then review the Plan for adoption. This hazard mitigation plan serves as a helpful tool for citizens, policymakers, local businesses, and other local stakeholders who all share a public interest in keeping Shelby County as safe and resilient as possible. As such, this Plan aims to:

- Minimize property damage, economic loss, injury, and loss of human life – to achieve the Plan's main goal of reducing the impact of natural and manmade hazards on the County's economy and the well-being of its citizens.
- Enhance public awareness and education – to widen the public's understanding of natural and manmade hazards and how they might affect public health and safety, the environment, the local economy, and basic day-to-day operations.
- Coordinate inter-jurisdictional preparedness measures – to encourage and ensure multi-jurisdictional cooperation in County-wide mitigation actions and programs so that they may be implemented efficiently and effectively.
- Provide decision-making tools for interested stakeholders – to formulate a comprehensive, updated analysis of Shelby County's vulnerability to hazards so that decision-makers can better prepare for natural and manmade disasters.

- Achieve regulatory compliance – to ensure that the County and its political subdivisions meet state and federal mitigation planning requirements so that they may be eligible to participate in and receive funding from grant programs, policies, and regulations.

1.2 Setting

Shelby County is in the western region of Ohio and has a total area of approximately 411 square miles. The County contains eight villages, one city, one census designated place, one partial village, and 14 townships (**Table 1.1.2**). The City of Sidney serves as the County seat. Shelby County is bounded by six counties: Auglaize County to the north, Champaign County to the southeast, Darke County to the west, Logan County to the east, Mercer County to the northwest, and Miami County to the south.

Land use patterns in Shelby County are consistent with similar rural counties in Ohio. There are nine land uses in Shelby County, including agriculture and timber, residential, high occupancy residential, commercial, industrial, medical, public property, rail, and unknown (**Figure 1.3.1**). The most common land use is agriculture and timber. Land cover in Shelby County is shown in **Figure 1.3.2**. Land cover types include barren land, cultivated crops, forested, developed, wetlands, hay and pasture, herbaceous, open water, and shrub and scrub. Cultivated crops are the most common land cover type.

1.3 Region Features

1.3.1 Transportation

Shelby County contains several major roadways, including one Interstate (I) and several State Routes (SR). Major roadways in Shelby County include SR-29, SR-47, SR-48, SR-85, SR-86, SR-119. SR-589, SR-705, SR-706, and I-75.

Two CSX Transportation railroad lines intersect in Sidney and the Indiana & Ohio Railway cuts through the northeastern corner of the county, going through the Village of Jackson Center. Sidney City Airport, a general aviation airport with no commercial passenger operations is located three miles south of its namesake city. There are no navigable waterways within Shelby County.

1.3.2 Natural Features

Table 1.3.1, below, principal streams and water bodies in the County (Source: ODNR). Shelby County also has several parks and nature areas which are listed in **Table 1.3.2** below.

Table 1.3.1: Shelby County Streams and Water Bodies

Water Body	
Great Miami River	Lockington Reserve
Mill Branch	Miami & Erie Canal
Lake Loramie/Loramie Creek	Turtle Creek
Little Muchinippi Creek	Painter Creek
Plum Creek	Ninemile Creek
Leatherwood Creek	Little Indian Creek
Turkeyfoot Creek	

Table 1.3.2: Parks & Nature Areas in Shelby County, Ohio

Name	
Lake Loramie State Park	Tawana Park
Lockington Reserve	Gross (Samuel) Memorial Woods State Nature Preserve

Figure 1.3.1: Shelby County Land Use Map

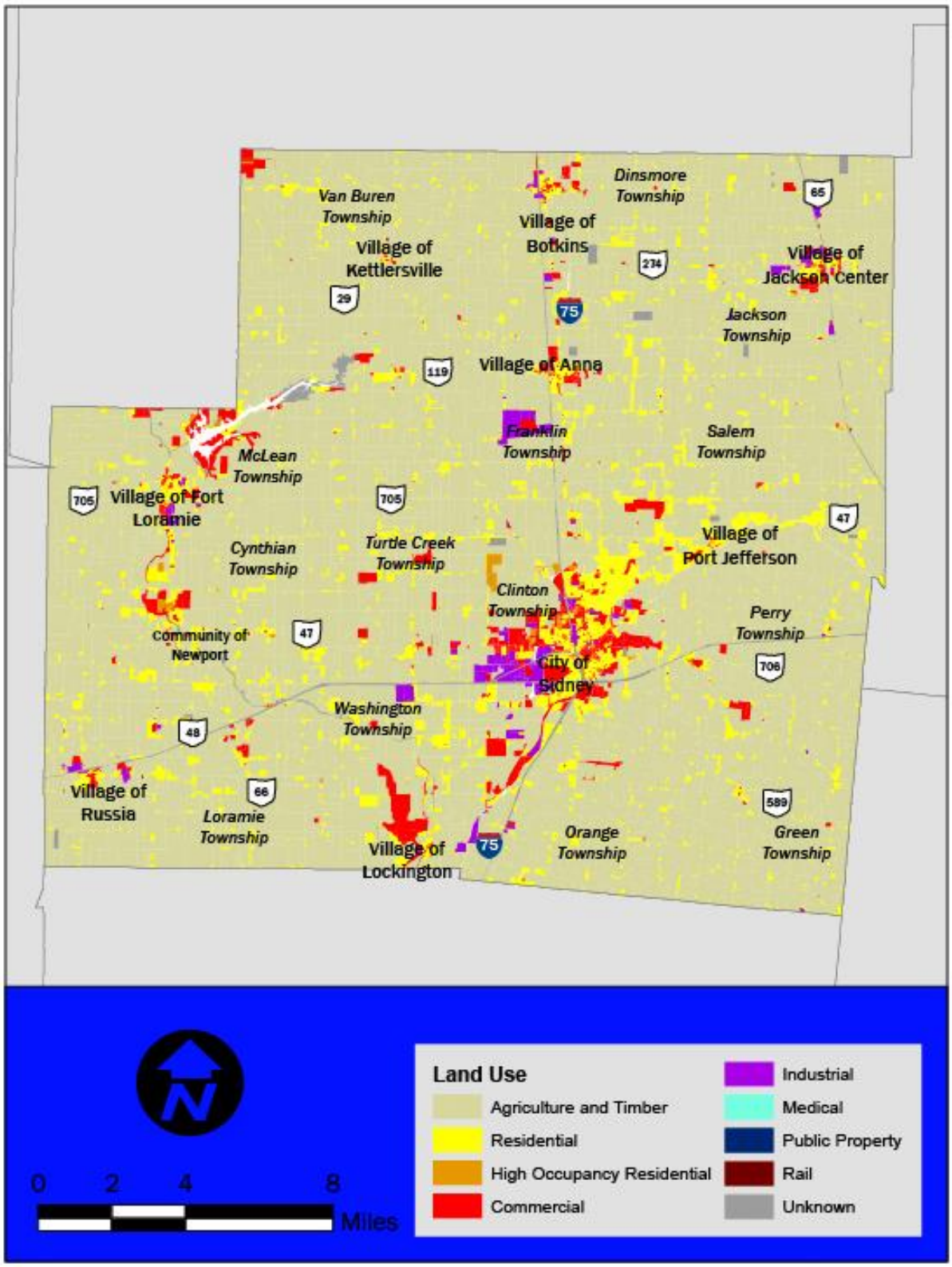
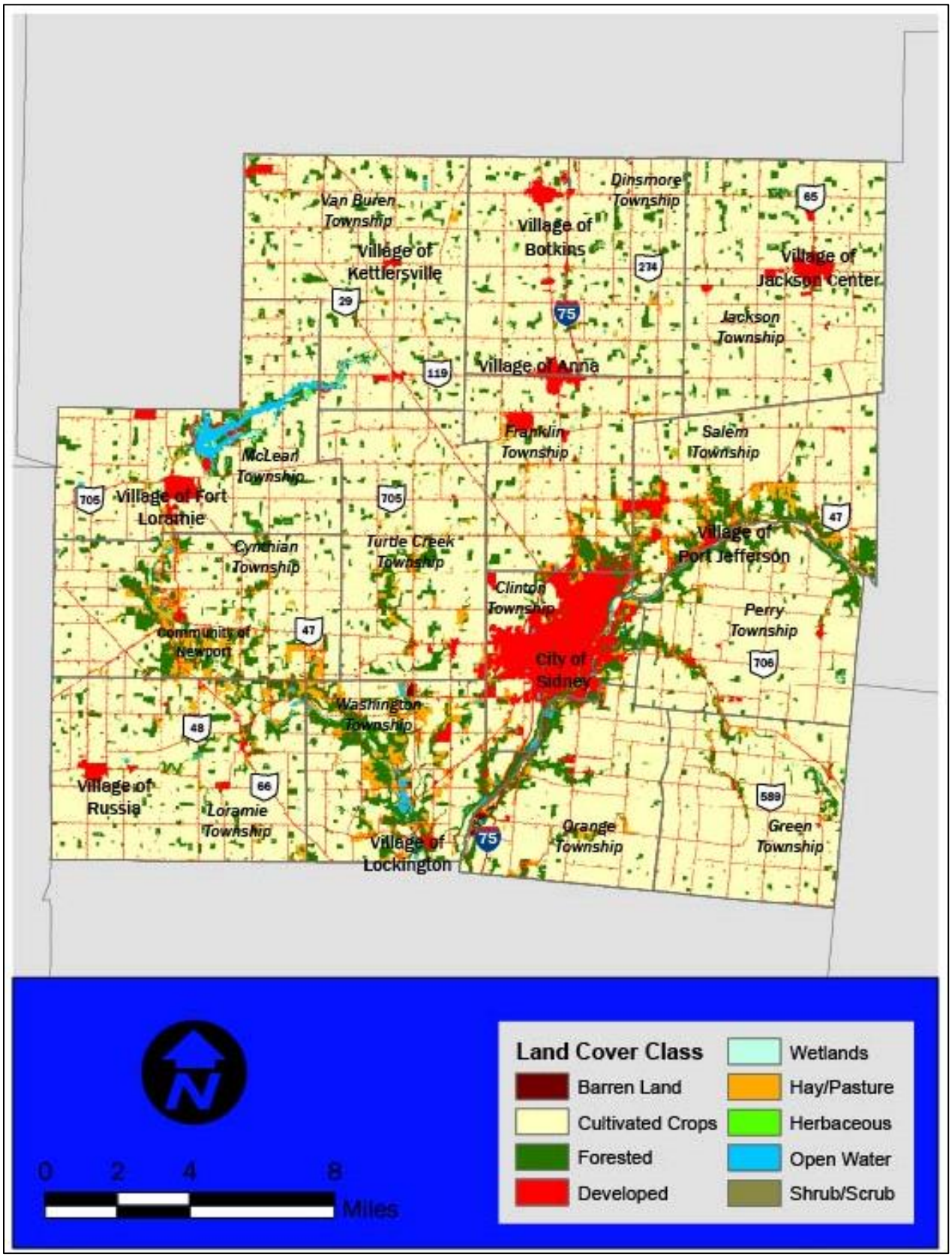


Figure 1.3.2: Shelby County Land Cover Map



2 | History and Demographics

2.1 History

Shelby County was established in 1819, splitting from nearby Miami County. Auglaize County was later created from Shelby and Allen counties. Several jurisdictions in the County were founded by German Immigrants. The Miami & Erie Canal reached Shelby County in 1841, providing an economic boost to the County as well as provided a major route of travel into the County.

The National Register of Historic Places lists 19 properties and places in Shelby County. **Figure 2.1.1** illustrates four historic places in the County, clockwise from upper left: Anna Town Hall, Whitby Manion, Lockington Covered Bridge, and the Sidney Walnut Avenue Historic District.

Figure 2.1.1: Historic Places

2.2 Communication Outlets

Shelby County's primary communication outlets including websites, television, and social media are listed in **Table 2.2.1**, below:

Table 2.2.1: Communication outlets and social media

Communication Type	Source
Website	Shelby County: co.shelby.oh.us Shelby County EMA: co.shelby.oh.us/emergency-management-agency Sidney-Shelby County Health Department: www.shelbycountyhealthdept.org/ Miami Valley Chapter of the American Red Cross: https://www.redcross.org/local/ohio/central-and-southern-ohio/about-us/locations/miami-valley-chapter.html
Social Media	Shelby County: https://www.facebook.com/shelbyco.ohio Shelby County EMA: https://www.facebook.com/profile.php?id=100077390930212 Sidney-Shelby County Health Department: https://www.facebook.com/sidneyshelbycountyhealthdept City of Sidney: https://www.facebook.com/cityofsidneyoh Village of Fort Loramie: https://www.facebook.com/people/VillageofFortLoramie Village of Jackson Center: https://www.facebook.com/villageofJC/ Village of Russia: https://www.facebook.com/russiaohio/
News/Newspaper	Sidney Daily News: https://www.sidneydailynews.com/ NPR Station: WGLE 90.7 FM Local Radio Station: http://www.1055tamfm.com/

2.3 Demographics Overview

Table 2.3.1, below, provides a summary of the total population changes that have occurred in Shelby County between the 2010 U.S. Census and the 2020 U.S. Census. According to the U.S. Census, Shelby County's population decreased by 1,193 people (-2.41% percent) between 2010 and 2020. Six townships, Cynthian, Franklin, Loramie, McLean, Turtle Creek, and Van Buren townships, experienced population growth. Of the townships experiencing population decline, Orange Township experienced the greatest population decline, with a decrease of 158 people (-12.69 percent).

A more detailed description of population, housing, and income demographics for Shelby County and each jurisdiction is discussed on the following pages.

Table 2.3.1: County and Township population growth estimates between 2010 and 2020

County/Township	Total Population 2010 Census	Total Population 2020 Census	2010-2020	
			Population Change	Percent Change
Shelby County	**49,423**	**48,230**	**-1,193**	**-2.41%**
Clinton Township	21,221	20,317	-904	-4.26%
Cynthian Township	1,991	2,000	9	0.45%
Dinsmore Township	3,477	3,379	-98	-2.82%
Franklin Township	3,371	3,457	86	2.55%
Green Township	919	903	-16	-1.74%
Jackson Township	2,443	2,414	-29	-1.19%
Loramie Township	2,551	2,650	99	3.88%
McLean Township	3,245	3,378	133	4.10%
Orange Township	1,245	1,087	-158	-12.69%
Perry Township	1,088	982	-106	-9.74%
Salem Township	2,224	2,076	-148	-6.65%
Turtle Creek Township	1,561	1,605	44	2.82%
Van Buren Township	2,077	2,083	6	0.29%
Washington Township	2,010	1,899	-111	-5.52%

2.4 Community Profiles

2.4.1 Shelby County

Tables 2.4.1 to 2.4.3 summarize Shelby County's population, housing statistics, and income statistics. The tables show that the County's population decreased by 749 people (-1.52 percent) from 2012 to 2020. For housing units, the County had a vacancy rate of 8.9 percent. Related to income, the largest percentage of households (20.0 percent) had an income between $50,000 and $74,999; approximately 26.3 percent of households had an annual income of greater than $100,000.

Table 2.4.1: Shelby County Population Totals 2012-2020

Year & Source	Population Total
2012 ACS Estimate	49,359
2013 ACS Estimate	49,317
2014 ACS Estimate	49,165
2015 ACS Estimate	49,067
2016 ACS Estimate	48,949
2017 ACS Estimate	48,902
2018 ACS Estimate	48,797
2019 ACS Estimate	48,749
2020 ACS Estimate	48,610

Table 2.4.2: Shelby County Housing Statistics 2020

Housing Statistics	Number
Total Housing Units	20,497
Occupied Housing Units	91.1%
Vacant Housing Units	8.9%

Table 2.4.3: Shelby County Income Statistics 2020 Estimate

Household Income Statistics	Number of Households
Less than $10,000	3.3%
$10,000 to $14,999	2.6%
$15,000 to $24,999	9.6%
$25,000 to $34,999	9.3%
$35,000 to $49,999	13.1%
$50,000 to $74,999	20.0%
$75,000 to $99,999	15.6%
$100,000 to $149,999	17.7%
$150,000 to $199,999	5.3%
$200,000 or more	3.3%
Median Household Income	$64,522
Mean Household Income	$77,516

2.4.2 City of Sidney

Tables 2.4.4 to 2.4.6 summarize the City of Sidney's population, housing statistics, and income statistics. The tables show that the City's population decreased by 212 people (-1.0 percent) from 2012 to 2020. For housing units, the city had a vacancy rate of 9.6 percent. The largest percentage of households (20.7 percent) had an income between $50,000 and $74,999; approximately 7.8 percent of households had an annual income of less than $15,000. Please note that 2019 data was used where 2020 data is unavailable.

Table 2.4.4: City of Sidney Population Totals 2012-2020

Year & Source	Population Total
2012 ACS Estimate	21,180
2013 ACS Estimate	21,095
2014 ACS Estimate	21,126
2015 ACS Estimate	20,981
2016 ACS Estimate	20,761
2017 ACS Estimate	20,777
2018 ACS Estimate	20,639
2019 ACS Estimate	20,590
2020 ACS Estimate	20,698

Table 2.4.5: City of Sidney Housing Statistics 2020 Estimate

Housing Statistics	Number
Total Housing Units	9,390
Occupied Housing Units	90.4%
Vacant Housing Units	9.6%

Table 2.4.6: City of Sidney Income Statistics 2019 Estimate

Household Income Statistics	Number of Households
Less than $10,000	4.80%
$10,000 to $14,999	3.00%
$15,000 to $24,999	13.70%
$25,000 to $34,999	11.40%
$35,000 to $49,999	14.30%
$50,000 to $74,999	20.70%
$75,000 to $99,999	14.20%
$100,000 to $149,999	12.20%
$150,000 to $199,999	3.90%
$200,000 or more	1.90%
Median Household Income	$53,505
Mean Household Income	$65,144

2.4.3 Village of Anna

Tables 2.4.7 to 2.4.9 summarize the Village of Anna's population, housing statistics, and income statistics. The tables show that the Village's population increased by 121 people (8.1 percent) from 2012 to 2020. For housing units, the Village vacancy rate of 9.9 percent. The largest percentage of households (21.5 percent) had an income between $50,000 and $74,999; approximately 2.6 percent of households had an annual income of less than $15,000.

Table 2.4.7: Village of Anna Population Totals 2012-2020

Year & Source	Population Total
2012 ACS Estimate	1,487
2013 ACS Estimate	1,481
2014 ACS Estimate	1,444
2015 ACS Estimate	1,557
2016 ACS Estimate	1,633
2017 ACS Estimate	1,547
2018 ACS Estimate	1,487
2019 ACS Estimate	1,511
2020 ACS Estimate	1,608

Table 2.4.8: Village of Anna Housing Statistics 2020 Estimate

Housing Statistics	Number
Total Housing Units	608
Occupied Housing Units (Owned & Rented)	90.1%
Vacant Housing Units (Owned & Rented)	9.9%

Table 2.4.9: Village of Anna Income Statistics 2020 Estimate

Household Income Statistics	Number of Households
Less than $10,000	0.20%
$10,000 to $14,999	2.40%
$15,000 to $24,999	6.00%
$25,000 to $34,999	6.90%
$35,000 to $49,999	12.00%
$50,000 to $74,999	21.50%
$75,000 to $99,999	20.10%
$100,000 to $149,999	19.20%
$150,000 to $199,999	6.40%
$200,000 or more	5.30%
Median Household Income	$75,431
Mean Household Income	$87,256

2.4.4 Village of Botkins

Tables 2.4.10 to 2.4.12 summarize the Village of Botkins population, housing statistics, and income statistics. The tables show that the Village's population decreased by 276 people (-19.3 percent) from 2012 to 2020. For housing units, the Village had a vacancy rate of 9.3 percent. The largest percentage of households (24.1 percent) had an income between $50,000 and $74,999; approximately 4.6 percent of households had an annual income of less than $15,000.

Table 2.4.10: Village of Botkins Population Totals 2012-2020

Year & Source	Population Total
2012 ACS Estimate	1,427
2013 ACS Estimate	1,473
2014 ACS Estimate	1,494
2015 ACS Estimate	1,320
2016 ACS Estimate	1,323
2017 ACS Estimate	1,358
2018 ACS Estimate	1,171
2019 ACS Estimate	1,124
2020 ACS Estimate	1,151

Table 2.4.11: Village of Botkins Housing Statistics 2020 Estimate

Housing Statistics	Number
Total Housing Units	503
Occupied Housing Units (Owned & Rented)	90.7%
Vacant Housing Units (Owned & Rented)	9.3%

Table 2.4.12: Village of Botkins Income Statistics 2020 Estimate

Household Income Statistics	Number of Households
Less than $10,000	1.30%
$10,000 to $14,999	3.30%
$15,000 to $24,999	8.10%
$25,000 to $34,999	8.60%
$35,000 to $49,999	21.30%
$50,000 to $74,999	24.10%
$75,000 to $99,999	17.50%
$100,000 to $149,999	12.50%
$150,000 to $199,999	2.40%
$200,000 or more	0.90%
Median Household Income	$56,875
Mean Household Income	$66,331

2.4.5 Village of Fort Loramie

Tables 2.4.13 to 2.4.15 summarize the Village of Fort Loramie's population, housing statistics, and income statistics. The tables show that the Village's population increased by 31 people (2.2 percent) from 2012 to 2020. For housing units, the Village had vacancy rate of 8.3 percent. The largest percentage of households (23.6 percent) had an income between $50,000 and $74,999; approximately 1.6 percent of households had an annual income of less than $15,000.

Table 2.4.13: Village of Fort Loramie Population Totals 2012-2020

Year & Source	Population Total
2012 ACS Estimate	1,399
2013 ACS Estimate	1,264
2014 ACS Estimate	1,334
2015 ACS Estimate	1,317
2016 ACS Estimate	1,375
2017 ACS Estimate	1,459
2018 ACS Estimate	1,521
2019 ACS Estimate	1,524
2020 ACS Estimate	1,430

Table 2.4.14: Village of Fort Loramie Housing Statistics 2020 Estimate

Housing Statistics	Number
Total Housing Units	623
Occupied Housing Units (Owned & Rented)	91.7%
Vacant Housing Units (Owned & Rented)	8.3%

Table 2.4.15: Village of Fort Loramie Income Statistics 2020 Estimate

Household Income Statistics	Number of Households
Less than $10,000	0.50%
$10,000 to $14,999	1.10%
$15,000 to $24,999	10.50%
$25,000 to $34,999	9.10%
$35,000 to $49,999	8.10%
$50,000 to $74,999	23.60%
$75,000 to $99,999	10.50%
$100,000 to $149,999	22.60%
$150,000 to $199,999	9.10%
$200,000 or more	4.90%
Median Household Income	$70,375
Mean Household Income	$88,696

2.4.6 Village of Jackson Center

Tables 2.4.16 to 2.4.18 summarize the Village of Jackson Center's population, housing statistics, and income statistics. The tables show that the Village's population decreased by 109 people (-6.5 percent) from 2012 to 2020. For housing units, the Village had a vacancy rate of 6.0 percent. The largest percentage of households (21.5 percent) had an income between $50,000 and $74,999; approximately 11.1 percent of households had an annual income of less than $15,000.

Table 2.4.16: Village of Jackson Center Population Totals 2012-2020

Year & Source	Population Total
2012 ACS Estimate	1,684
2013 ACS Estimate	1,707
2014 ACS Estimate	1,770
2015 ACS Estimate	1,675
2016 ACS Estimate	1,631
2017 ACS Estimate	1,671
2018 ACS Estimate	1,604
2019 ACS Estimate	1,484
2020 ACS Estimate	1,575

Table 2.4.17: Village of Jackson Center Housing Statistics 2020 Estimate

Housing Statistics	Number
Total Housing Units	669
Occupied Housing Units (Owned & Rented)	94.0%
Vacant Housing Units (Owned & Rented)	6.0%

Table 2.4.18: Village of Jackson Center Income Statistics 2020 Estimate

Household Income Statistics	Number of Households
Less than $10,000	2.70%
$10,000 to $14,999	8.40%
$15,000 to $24,999	8.60%
$25,000 to $34,999	10.70%
$35,000 to $49,999	9.70%
$50,000 to $74,999	21.50%
$75,000 to $99,999	17.80%
$100,000 to $149,999	13.40%
$150,000 to $199,999	4.00%
$200,000 or more	3.30%
Median Household Income	$58,897
Mean Household Income	$70,348

2.4.7 Village of Kettlersville

Tables 2.4.19 to 2.4.21 summarize the Village of Kettersville's population, housing statistics, and income statistics. The tables show that the Village's population decreased by 61 people (-31.6 percent) from 2012 to 2020. For housing units, the Village had a vacancy rate of 19.1 percent. The largest percentage of households (27.3 percent) had an income between $50,000 and $74,999; approximately 5.5 percent of households had an annual income of less than $15,000.

Table 2.4.19: Village of Kettlersville Population Totals 2012-2020

Year & Source	Population Total
2012 ACS Estimate	193
2013 ACS Estimate	173
2014 ACS Estimate	188
2015 ACS Estimate	184
2016 ACS Estimate	160
2017 ACS Estimate	160
2018 ACS Estimate	164
2019 ACS Estimate	158
2020 ACS Estimate	132

Table 2.4.20: Village of Kettlersville Housing Statistics 2020 Estimate

Housing Statistics	Number
Total Housing Units	68
Occupied Housing Units (Owned & Rented)	80.9%
Vacant Housing Units (Owned & Rented)	19.1%

Table 2.4.21: Village of Kettlersville Income Statistics 2020 Estimate

Household Income Statistics	Number of Households
Less than $10,000	5.50%
$10,000 to $14,999	0.00%
$15,000 to $24,999	1.80%
$25,000 to $34,999	14.50%
$35,000 to $49,999	10.90%
$50,000 to $74,999	27.30%
$75,000 to $99,999	5.50%
$100,000 to $149,999	21.80%
$150,000 to $199,999	9.10%
$200,000 or more	3.60%
Median Household Income	$58,750
Mean Household Income	$82,811

2.4.8 Village of Lockington

Tables 2.4.22 to 2.4.24 summarize the Village of Lockington's population, housing statistics, and income statistics. The tables show that the Village's population decreased by 31 people (-16.0 percent) from 2012 to 2020. For housing units, the Village had vacancy rate of 13.3 percent. The largest percentage of households (20.8 percent) had an income between $35,000 and $49,999 or between $50,000 and $74,999; approximately 5.6 percent of households had an annual income of less than $15,000.

Table 2.4.22: Village of Lockington Population Totals 2012-2020

Year & Source	Population Total
2012 ACS Estimate	194
2013 ACS Estimate	147
2014 ACS Estimate	141
2015 ACS Estimate	135
2016 ACS Estimate	148
2017 ACS Estimate	152
2018 ACS Estimate	161
2019 ACS Estimate	185
2020 ACS Estimate	163

Table 2.4.23: Village of Lockington Housing Statistics 2020 Estimate

Housing Statistics	Number
Total Housing Units	83
Occupied Housing Units (Owned & Rented)	86.7%
Vacant Housing Units (Owned & Rented)	13.3%

Table 2.4.24: Village of Lockington Income Statistics 2020 Estimate

Household Income Statistics	Number of Households
Less than $10,000	2.80%
$10,000 to $14,999	2.80%
$15,000 to $24,999	8.30%
$25,000 to $34,999	12.50%
$35,000 to $49,999	20.80%
$50,000 to $74,999	18.10%
$75,000 to $99,999	20.80%
$100,000 to $149,999	6.90%
$150,000 to $199,999	6.90%
$200,000 or more	0.00%
Median Household Income	$58,750
Mean Household Income	$65,032

2.4.9 Village of Minster (partial)

Tables 2.4.25 to 2.4.27 summarize the Village of Minster's population, housing statistics, and income statistics. The tables show that the Village's population decreased by 109 people (-3.8 percent) from 2012 to 2020. For housing units, the Village had a vacancy rate of 5.6 percent. The largest percentage of households (25.9 percent) had an income between $100,000 to $149,999; approximately 3.8 percent of households had an annual income of less than $15,000.

Table 2.4.25: Village of Minster Population Totals 2012-2020

Year & Source	Population Total
2012 ACS Estimate	2,893
2013 ACS Estimate	2,878
2014 ACS Estimate	2,933
2015 ACS Estimate	2,905
2016 ACS Estimate	2,898
2017 ACS Estimate	2,976
2018 ACS Estimate	2,727
2019 ACS Estimate	2,695
2020 ACS Estimate	2,784

Table 2.4.26: Village of Minster Housing Statistics 2020 Estimate

Housing Statistics	Number
Total Housing Units	1,071
Occupied Housing Units (Owned & Rented)	94.4%
Vacant Housing Units (Owned & Rented)	5.6%

Table 2.4.27: Village of Minster Income Statistics 2020 Estimate

Household Income Statistics	Number of Households
Less than $10,000	1.30%
$10,000 to $14,999	2.50%
$15,000 to $24,999	3.30%
$25,000 to $34,999	7.40%
$35,000 to $49,999	8.10%
$50,000 to $74,999	16.80%
$75,000 to $99,999	14.10%
$100,000 to $149,999	25.90%
$150,000 to $199,999	16.00%
$200,000 or more	4.50%
Median Household Income	$93,403
Mean Household Income	$100,798

2.4.10 Village of Port Jefferson

Tables 2.4.28 to 2.4.30 summarize the Village of Port Jefferson's population, housing statistics, and income statistics. The tables show that the Village's population decreased by 54 people (-11.1 percent) from 2012 to 2020. For housing units, the Village had a vacancy rate of 18.3 percent. The largest percentage of households (35.3 percent) had an income between $15,000 to $24,999; approximately 6.0 percent of households had an annual income of less than $15,000. Please note that 2019 data was used where 2020 data is unavailable.

Table 2.4.28: Village of Port Jefferson Population Totals 2012-2020

Year & Source	Population Total
2012 ACS Estimate	488
2013 ACS Estimate	504
2014 ACS Estimate	537
2015 ACS Estimate	425
2016 ACS Estimate	429
2017 ACS Estimate	499
2018 ACS Estimate	492
2019 ACS Estimate	419
2020 ACS Estimate	434

Table 2.4.29: Village of Port Jefferson Housing Statistics 2020 Estimate

Housing Statistics	Number
Total Housing Units	235
Occupied Housing Units (Owned & Rented)	81.7%
Vacant Housing Units (Owned & Rented)	18.3%

Table 2.4.30: Village of Port Jefferson Income Statistics 2019 Estimate

Household Income Statistics	Number of Households
Less than $10,000	3.80%
$10,000 to $14,999	2.20%
$15,000 to $24,999	35.30%
$25,000 to $34,999	13.00%
$35,000 to $49,999	9.80%
$50,000 to $74,999	19.60%
$75,000 to $99,999	6.50%
$100,000 to $149,999	5.40%
$150,000 to $199,999	0.50%
$200,000 or more	3.80%
Median Household Income	$32,222
Mean Household Income	$56,310

2.4.11 Village of Russia

Tables 2.4.31 to 2.4.33 summarize the Village of Russia's population, housing statistics, and income statistics. The tables show that the Village's population increased by 160 people (26.8 percent) from 2012 to 2020. For housing units, the Village had a vacancy rate of 4.0 percent. The largest percentage of households (25.2 percent) had an income between $50,000 and $74,999; approximately 0.7 percent of households had an annual income of less than $15,000. Please note that 2019 data was used where 2020 data is unavailable.

Table 2.4.31: Village of Russia Population Totals 2012-2020

Year & Source	Population Total
2012 ACS Estimate	596
2013 ACS Estimate	630
2014 ACS Estimate	648
2015 ACS Estimate	664
2016 ACS Estimate	617
2017 ACS Estimate	647
2018 ACS Estimate	724
2019 ACS Estimate	861
2020 ACS Estimate	756

Table 2.4.32: Village of Russia Housing Statistics 2020 Estimate

Housing Statistics	Number
Total Housing Units	274
Occupied Housing Units (Owned & Rented)	96.0%
Vacant Housing Units (Owned & Rented)	4.0%

Table 2.4.33: Village of Russia Income Statistics 2019 Estimate

Household Income Statistics	Number of Households
Less than $10,000	0.70%
$10,000 to $14,999	0.00%
$15,000 to $24,999	12.60%
$25,000 to $34,999	10.90%
$35,000 to $49,999	10.90%
$50,000 to $74,999	25.20%
$75,000 to $99,999	12.90%
$100,000 to $149,999	17.20%
$150,000 to $199,999	4.60%
$200,000 or more	5.00%
Median Household Income	$64,861
Mean Household Income	$81,559

3 | Planning Process

3.1 Methodology

The Planning Process chapter describes the steps involved in the development of the 2022 Shelby County Hazard Mitigation Plan, including details about who participated, how community involvement was organized and promoted throughout the community, what hazards were included in the Plan and why, as well as how stakeholder involvement played a critical role in the planning process. This chapter also explains how the Core Planning Committee was formed and how member feedback contributed to the updating of the County's Hazard Mitigation Plan.

3.2 Existing Plans & Regulations

Shelby County and the State of Ohio maintain several plans and tools that were pertinent to reference in the development of the 2022 Hazard Mitigation Plan, including:

- 2017 Shelby County Natural Hazards Mitigation Plan
- 2019 State of Ohio Hazard Mitigation Plan (SOHMP)
- Shelby County Subdivision Regulations
- Zoning Regulations for all Townships

3.3 Shelby County Authority to Adopt Plan

The Shelby County Planning Commission was established in 1967, by the Shelby County Board of Commissioners. The formation of the Planning Commission was accomplished in conformance with Section 713.21 of the Ohio Revised Code and was charged with the responsibilities of comprehensive planning and program implementation within Shelby County and its various communities. **Table 3.3.1** lists the existing authorities and regulations in place in Shelby County and its municipalities.

Table 3.3.1: Existing Authorities and Regulations in Shelby County's Municipalities

Community	Planning Commission	Comprehensive Plan	Floodplain Regulation	Building Codes*	Zoning Ordinances	Capital Budget	Public Works Budget
Shelby County	Yes	No	No	Yes	Yes	(none)	Limited in-kind wages only
Village of Anna	Yes	No	No	Yes	Yes	(none)	Limited in-kind wages only
Village of Botkins	Yes	No	Yes	Yes	Yes	(none)	Limited in-kind wages only
Village of Fort Loramie	Yes	No	Yes	Yes	Yes	(none)	Limited in-kind wages only
Village of Jackson Center	Yes	No	No	Yes	Yes	(none)	Limited in-kind wages only

Community	Planning Commission	Comprehensive Plan	Floodplain Regulation	Building Codes*	Zoning Ordinances	Capital Budget	Public Works Budget
Village of Kettlersville	Yes	No	Yes	Yes	Yes	(none)	Limited in-kind wages only
Village of Lockington	Yes	No	No	Yes	Yes	(none)	Limited in-kind wages only
Village of Port Jefferson	Yes	No	No	Yes	Yes	(none)	Limited in-kind wages only
Village of Russia	Yes	No	No	Yes	Yes	(none)	Limited in-kind wages only
City of Sidney	Yes	Yes	Yes	Yes	Yes	(none)	Limited in-kind wages only

* All jurisdictions within the state now follow the State Building Code (Ohio Administrative Code 4101:1)

3.4 Notification Process

Core Planning Committee members were invited to participate at the beginning of the planning process through a Kickoff Meeting announcement on the County website, EMA website and social media. Prior to each additional meeting, members of the Core Planning Committee were invited to participate via an email notification. The public was also invited to participate in two meetings which were advertised via a EMA social media and a press release. Representatives from the following entities were invited to participate in the planning process. Additionally, **Table 3.4.1** lists the participating jurisdictions and representatives and how they participated

Shelby County

- Shelby County Commissioners
- Shelby County Auditor
- Shelby County EMA
- Shelby County Engineer
- Sidney-Shelby County Health Department
- Shelby County Regional Planning Commission
- Shelby County Sheriff's Office

City and Village Members

- City of Sidney
- Village of Anna
- Village of Botkins
- Village of Fort Loramie
- Village of Jackson Center
- Village of Kettlersville
- Village of Lockington
- Village of Port Jefferson
- Village of Russia

Township Members

- Clinton Township
- Cynthian Township
- Dinsmore Township
- Franklin Township
- Green Township
- Jackson Township
- Loramie Township
- McLean Township
- Orange Township
- Perry Township
- Salem Township
- Turtle Creek Township
- Van Buren Township
- Washington Township

Local Schools and Universities

- Ohio State University Extension

Other Organizations

- Sidney Police
- Sidney Fire
- Sidney Alive
- Sidney-Shelby Chamber
- Wilson Memorial Health
- Miami Conservancy District
- Loramie Valley Alliance
- Fort Loramie Fire
- Logan County EMA
- Miami County EMA
- Champaign County EMA
- Darke County EMA
- Auglaize County EMA
- American Trim
- Honda of America, Mfg.
- State Farm Insurance

Table 3.4.1: Participating Jurisdictions

Community/Organization	Representative(s)	Meetings Attended		
		1	2	Other
County				
Shelby County EMA	Kristy Fryman, Director	✓	✓	
Shelby County Commissioners	Julie Ehemann	✓		
Sidney-Shelby County Health Dept.	Roberta Mangen	✓		
Shelby County Reg. Planning	Angela Hamberg	✓		
Jurisdictions				
City of Sidney	Martha Milligan, Mayor Chad Hollinger, Fire Chief William Balling, Police Chief	✓	✓	✓
Village of Anna	Mark Pulfer, Mayor			✓
Village of Botkins	Randy Purdy, Administrator			✓
Village of Fort Loramie	Brad Schulze, Fire Chief	✓		
Village of Jackson Center	Bruce Metz, Administrator			✓
Village of Kettlersville	Eric Kaminsky, Mayor			✓
Village of Lockington	Tracy Johnson, Mayor			✓
Village of Port Jefferson	Stephen Butterfiled, Mayor Loretta Cook, Acting mayor			✓
Village of Russia	Mark Shappie, Administrator			✓
Other				
Miami County EMA	Joel Smith	✓		
Miami Conservancy District	Barry Puskas, P.E.	✓		
OSU Extension	Matt Schmerge	✓		✓
Wilson Health	Julie Freshwater	✓	✓	

If representatives were unable to attend the in-person Core Planning Committee meetings, they participated via "Other" formats, including online surveys, as documented in ***Appendix F.***

3.5 Meetings

The following section details the meetings that took place during the planning process. Documentation of each meeting, including newspaper postings, email announcements and attachments, meeting materials, and completed surveys, can be found in **Appendix F**.

3.5.1 Core Planning Committee Kick-off

A Kickoff Announcement was emailed to stakeholders on March 29, 2022, inviting them to participate in the 2022 Shelby County Hazard Mitigation Plan update process as part of the Core Planning Committee. All kickoff materials were made available on the project's website (https://burtonplanning.com/shelby-hmp/).

The Announcement outlined the following details regarding the planning process:

- Goals of the Hazard Mitigation Plan;
- A summary of who is involved in the planning process;
- Federal requirements of the hazard mitigation planning process;
- An overview of the hazard mitigation planning process;
- The proposed schedule for the Shelby County Plan update;
- The role of the Core Planning Committee in the update process;
- Contact information for both Shelby County EMA and Burton Planning Services; and
- Dates, times, and GoToMeeting links of upcoming Core Planning and Public Meetings.

3.5.2: Core Planning Meeting 1

The meeting began with a brief introduction from Kevin Buettner, Sustainability & Resiliency Director at Burton Planning Services. This introduction included a description of the virtual engagement process, including multiple options for participants to sign into the meeting virtually. Participants were reminded multiple times throughout the course of the meeting to sign in using the SurveyMonkey survey, via the chat function, or by sending an email to the County EMA or BPS. The introduction also informed attendees that they could ask questions using the chat feature, or by unmuting themselves and asking their questions at any time throughout the meeting.

Mr. Buettner then guided the attendees through a presentation which detailed the hazard mitigation planning process, including requirements of the planning process, potential hazards that could be addressed, benefits of hazard mitigation planning, and potential types of projects that could be federally funded because of the hazard mitigation plan. Mr. Buettner also described the role that the Core Planning Committee would serve in the development of the 2022 Shelby County Hazard Mitigation Plan.

Following the completion of the presentation, Brett Morris, Resiliency Planner at BPS, guided the attendees through three surveys, detailed below. Each participant was provided multiple methods of completing the survey, including a physical hard copy of the survey, a fillable PDF that could be completed on their computer, or an online SurveyMonkey version. Links to survey locations were provided throughout the meeting.

Goals Survey

The purpose of this survey was to reflect on the goals included in the 2017 Natural Hazards Mitigation Plan to determine if they were still relevant to the 2022 Plan. Each attendee reviewed the previous goals and determined if they were still applicable, provided comments or edits to the goals that needed changed, and generated new goals to potentially be included in the Plan.
Discussion on the Goals Survey centered around the relevance of the goals. Attendees indicated a preference for adding a goal related to water treatment and water delivery systems. Other attendees mentioned the relevance of invasive species to the Plan.

Hazard Priority Survey

The purpose of this survey was to review all hazards that could be included in the 2022 Hazard Mitigation Plan and prioritize them. As such, attendees were asked to rate each hazard on a scale of zero to five, with five meaning the hazard poses the greatest possible threat to the County or their community and zero meaning the hazard should not be included in the 2022 Plan. Attendees rated hazards that were included in the 2017 Natural Hazards Mitigation Plan, as well as all potential hazards that could be included in the 2022 Plan.

Following the completion of this survey, Mr. Morris guided a discussion on which hazards were deemed most important and which hazards attendees did not think needed to be included. As mentioned above, attendees emphasized invasive species during this part of the meeting.

Previous Mitigation Actions Status Survey
The purpose of the Previous Mitigation Actions Status Survey was to have attendees review the mitigation actions that were included in the 2017 Natural Hazards Mitigation Plan, reflect on the status of each action, and determine if that action should be included in the 2022 Hazard Mitigation Plan.

3.5.3 Public Meeting 1

The first public meeting took place on Wednesday, April 27, 2022, at 6:30 PM. This meeting was held virtually using Microsoft Teams. Members of the public were invited to either attend using the Microsoft Teams app on their phone or desktop or call into the meeting using a phone number. No members of the public attended. A total of three people were present on the call, including two representatives from Burton Planning Services (BPS) and the Director of the Shelby County Emergency Management Agency.

No stakeholders or members of the public attended this meeting, despite an announcement being published on the EMA and County Facebook pages. Two representatives from Burton Planning Services and the Director of the Shelby County EMA remained on the meeting link for the duration of the 1.0-hour meeting in order to ensure anyone who joined would have the opportunity to participate.

Following the meeting, additional public input was requested using social media. Links to the videos of each meeting were provided on the project's website (https://burtonplanning.com/shelby-hmp/) so residents could watch and compete surveys at their own pace.

3.5.4 Core Planning Committee Meeting 2

The second core planning committee meeting took place on Tuesday, June 7, 2022, at 9:30 AM. meeting began with a brief introduction from Kevin Buettner, from Burton Planning Services. This introduction included a description of the virtual engagement process, including multiple options for participants to sign into the meeting virtually. Participants were reminded multiple times throughout the course of the meeting to sign in using the SurveyMonkey survey, via the chat function, or by sending an email to the County EMA or BPS to document their participation.

Mr. Buettner then guided the attendees through a brief presentation which detailed the progress of the hazard mitigation planning process. Following the completion of the presentation, Brett Morris, Resiliency Planner at BPS, guided the attendees through the hazard mitigation action scoring matrix, detailed below. Each participant was provided multiple methods of completing the survey, a fillable PDF that could be completed on their computer, or an online SurveyMonkey version. Links to survey locations were provided throughout the meeting. Hard copies would be provided upon request.

Hazard Mitigation Action Scoring Matrix:
The purpose of this survey was to reflect on the hazard mitigation actions included in the 2017 Natural Hazards Mitigation Plan to determine if they were still relevant to the 2022 Plan. New mitigation actions were developed for the 2022 Plan, and these actions were presented to the Core Planning Committee. Participants were asked to score the actions based on their priority for their jurisdiction. Participants were also told that the wording for the mitigation actions may be altered to better align with the needs of their communities. The remainder of the meeting functioned as a working session, where participants were able to ask questions as they completed their surveys. Once complete, participants were allowed to leave the meeting.

3.5.5 Public Meeting 2

The second public meeting took place on Tuesday, June 7, 2022, at 6:30 PM. This meeting was held virtually using Microsoft Teams. Members of the public were invited to either attend using the Microsoft Teams app on their phone or desktop or call into the meeting using a phone number. No members of the public attended. A total of two people were present on the call, including the two representatives from Burton Planning Services (BPS).

No stakeholders or members of the public attended this meeting, despite an announcement being published on the EMA and County Facebook pages. Two representatives from Burton Planning Services remained on the meeting link for fifteen minutes after the start of the meeting in order to ensure anyone who joined late would have the opportunity to participate.

Following the meeting, additional public input was requested using social media. Links to the videos of each meeting were provided on the project's website (https://burtonplanning.com/shelby-hmp/) so residents could watch and compete surveys at their own pace.

3.5.6 Public Comment Period

The 15-day public comment period began on Thursday, November 17th, 2022 and is expected to end on Friday, December 2nd, 2022. This section will be updated once the public comment period ends.

4 | Hazard Risk Assessment

4.1 Dam Failure

4.1.1 Description

FEMA defines a dam as "any artificial barrier of at least a minimum size, including appurtenant works, that impounds or diverts water or liquid-borne solids on a temporary or long-term basis." Dam failure occurs when that impounded water is suddenly released in an uncontrollable manner. A dam/levee failure can result in the uncontrolled release of floodwaters downstream of a facility, resulting in a flood wave that can cause significant damage to buildings and infrastructure downstream. The unexpected nature of dam collapse also increases the likelihood of loss of life in the impacted area due to reduced warning times.

Dam infrastructure can be affected by natural hazards, such as floods; man-made threats, such as sabotage; and an imbalance between a dams age and amount of resources invested towards dam maintenance, such as dam settlement and cracking, or movement of the dams foundation. Dam failures could be caused by seepage, structural failure, or water overtopping the reservoir.

The National Inventory of Dams classifies dam into one of three categories based on hazard potential.

- Low Hazard Potential – where dam failure results in no expected loss of human life and low economic or environmental losses.
- Significant Hazard Potential – where dam failure results in no expected loss of human life, but economic, environment, or lifeline losses are expected.
- High Hazard Potential – where dam failure or mismanagement results in probable loss of life, in addition to economic, environmental, or lifeline losses.

4.1.2 Location

Dam locations can be seen in **Figure 4.1.1**. Dam properties are listed in **Table 4.1.1.** The status of each dam's Emergency Action Plan (EAP) as of October 1, 2021 is also indicated in the table (Source: ODNR).

Figure 4.1.1: Dam Locations in Shelby County, Ohio

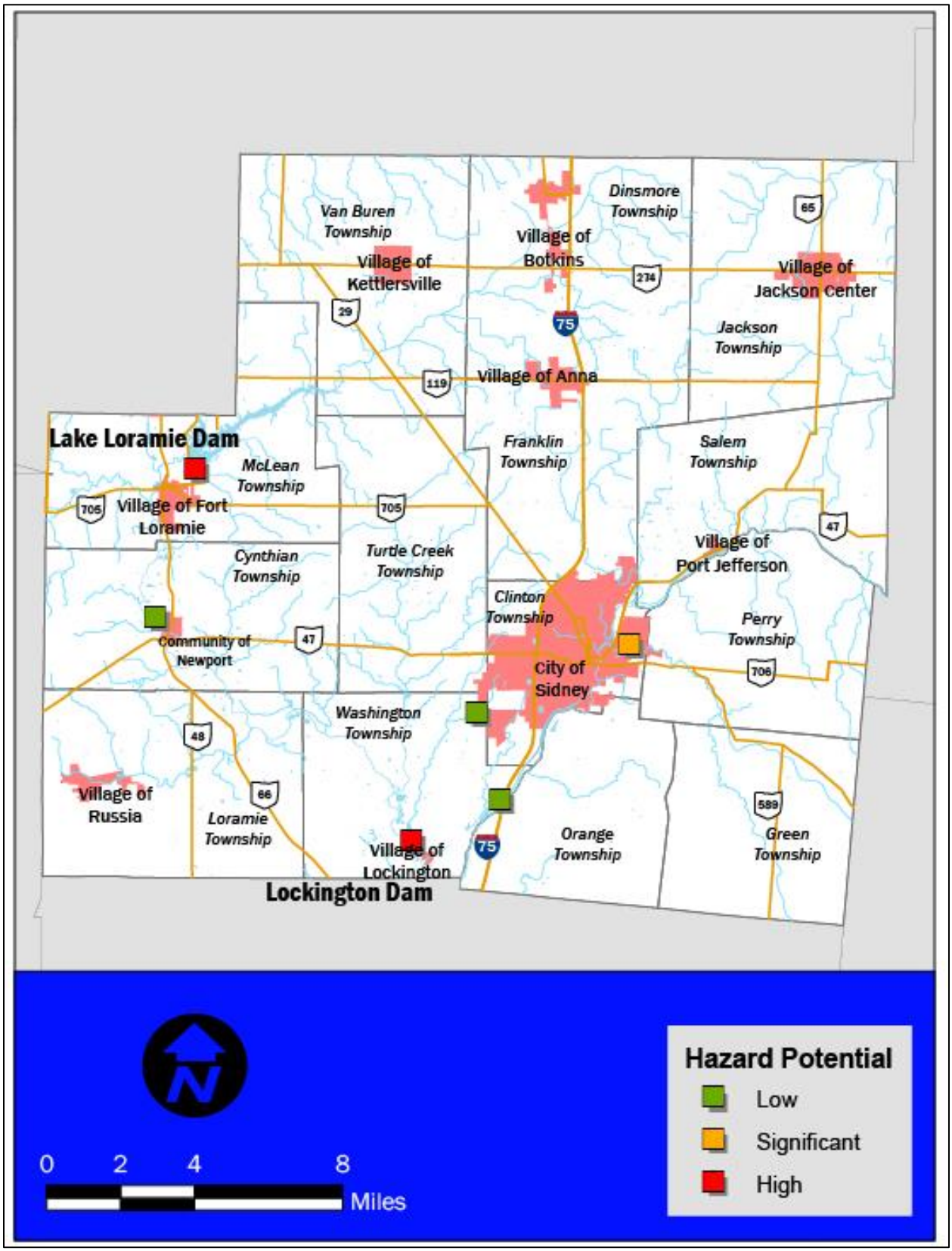


Table 4.1.1: Dam Locations in Shelby County, Ohio

Hazard Potential	Name	Owner Type	City	Height (Ft)	Length (Ft)	Max Storage (Acre-Ft)	Max Discharge (Cubic Ft/Second)	Condition	EAP Status
Low	Barhorst Lake Dam	Private	Newport	32.6	400	172.1	350	Satisfactory	Not Approved
Low	Clear Creek Lake Dam	Private	Piqua	21.3	2500	75.8	130	Poor	Not Approved
Low	Fawn Lake Dam	Private	Lockington	20	675	90.3	333	Fair	Approved
Significant	Sidney Lime Sludge Lagoon	Local Government	Sidney	16	2290	146	7	Fair	Approved
High	Lake Loramie Dam	State	Fort Loramie	23.3	8230	12900	8548	Poor	Approved
High	Lockington Dam	Local Government	Lockington	78	6400	2E+05	25000	Fair	Approved

4.1.3 Extent

Dam hazard classification system considers the effects of dam failure or mismanagement during both normal and flood flow conditions, as well as worst-case-scenario situations. The classifications are justifiable, reasonable, and consistent with the federal guidelines for dam safety. The hazard potential classification may change depending on anticipated consequences of a dam failure, such as new development below a dam or within the dam breach floodplain. Hazard potential classification may decrease with physical modifications to the dam or by eliminating downstream infrastructure.

Sudden failure of high hazard dams could result in one of the following outcomes, depending on environmental conditions:

- Loss of human life.
- All items listed below for failure of significant hazard potential dams.

Sudden failures of significant hazard dams could result in at least one of the following conditions:

- Disruption of a public water supply or wastewater treatment facility, release of health hazardous industrial or commercial waste, or other health hazards.
- Flooding of residential, commercial, industrial, or publicly owned structures.
- Flooding of high-value property.
- Damage or disruption to major roads including, but not limited to, interstate and state highways and the only access to residential or other critical areas such as hospitals, nursing homes, or correction facilities as determined by the chief.
- Damage or disruption to railroads or public utilities.
- Damage to downstream dams or levees. Damage to dams or levees can include, but is not limited to, overtopping of the structure. At the request of the dam owner, the chief may exempt dams from the criterion of this paragraph if the dam owner owns the potential affected property.
- Damage or disruption to local roads including, but not limited to, roads not otherwise listed as major roads.
- Damage to agricultural crops and livestock.

Sudden failures of Low Hazard dams could result in property losses restricted mainly to the dam and rural lands, and the loss of human life is not probable.

Emergency Action Plans (EAPs) for the two High Hazard Potential Dams in Shelby County cannot be published in this Plan. EAPs will be provided in the future if a grant application for a High Hazard Potential Dam is submitted.

4.1.4 History

There have been no reported dam failures in Shelby County. However, dam failures are not new to the state of Ohio and the potential for a disaster grows as dams age.

4.1.5 Probability

Dam failures are unlikely but are never impossible. All dams, especially dams with high hazard potential, should have an EAP in place.

Climate Change

Aging dam infrastructure coupled with climate change could result in more frequent dam failures. According to the 2018 National Climate Assessment, dams and levees can fail after moderate or

extreme rainfall. As precipitation frequency and intensity increase with climate change, the probability of dam failure may increase as well, especially if this infrastructure is not maintained, upgraded, or redesigned as necessary.

4.1.6 Vulnerability Assessment

Infrastructure Impact

Failures of high or significant hazard potential could flood roadways, including major routes and local roads. Utility infrastructure (wastewater, drinking water, and commercial and industrial waste lines) may be disrupted or destroyed.

Population Impact

The local population could be impacted by loss of utilities, including the local water supply. Health hazards may also be released into the flood waters during a dam failure which may cause indirect harm to the local population. The local population could be impacted economically as well.

Property Damage

At least one residential or commercial property is likely to face structural collapse during a high or significant hazard potential dam failure. A high or significant hazard dam failure also has the potential to damage high value properties. Residential, commercial, industrial, and high value properties may be damaged during a high or significant hazard dam failure, as well as publicly owned properties. Properties that are owned by the dam owner may be exempt from the property damage calculation.

Loss of Life

Loss of life is probable during a high hazard dam failure. Loss of life during a significant or low hazard dam failure is not expected.

Economic Losses

Economic losses can include damages from flooding crops, livestock, goods, and vital roadways.

EAPs have been completed for some of the dams; however, the data is subjected to agreements where it cannot be published publicly. The Ohio Department of Natural Resources (ODNR) holds record of these EAPs.

4.1.7 Land Use and Development Trends

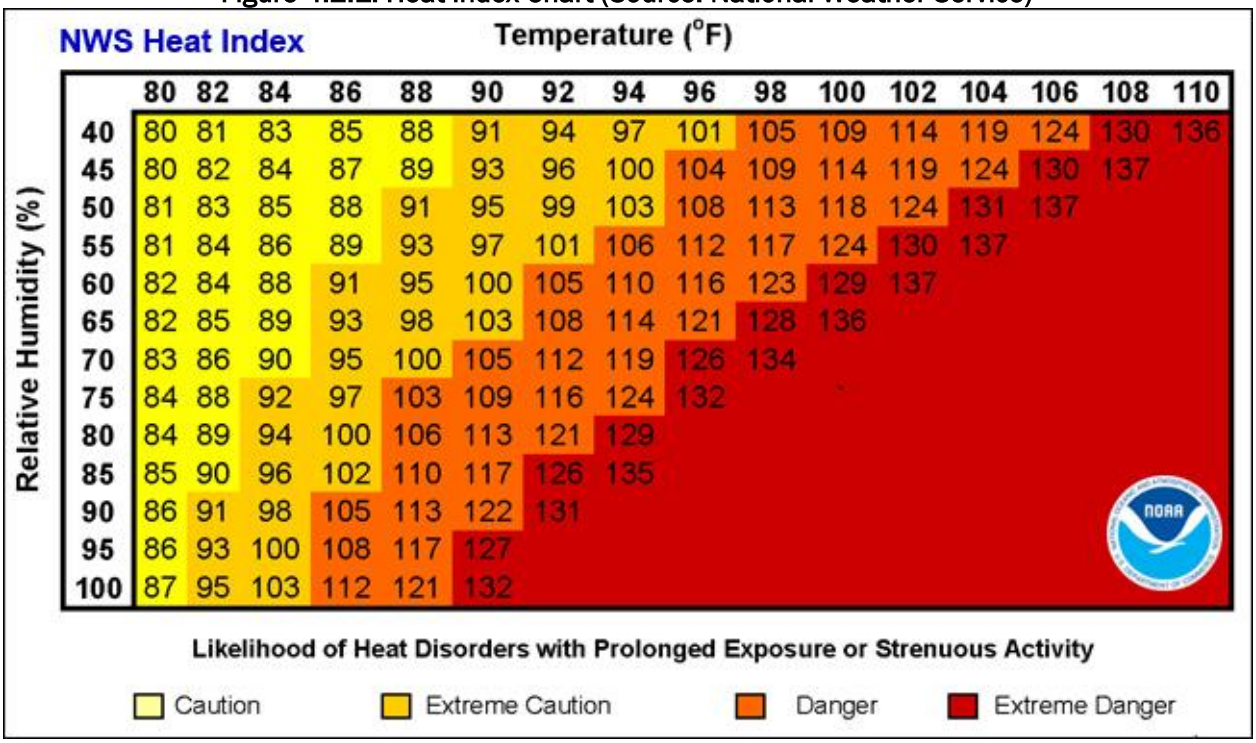
Development that has occurred in areas that will flood after a dam failure should be prepared for rapid flooding. Land use plans can limit development in these areas to prevent the increase of a dam hazard potential. To better understand where development should be limited, dam failure inundation maps should be completed for as many dams as possible.

4.2 Drought and Extreme Heat

4.2.1 Description

According to the Federal Emergency Management Agency (FEMA), extreme heat is a period of high heat and humidity with temperatures above 90 degrees for at least two to three days. In extreme heat the human body works extra hard to maintain a normal temperature, which can lead to death. Extreme heat is responsible for the highest number of annual deaths among all weather-related hazards. Humid conditions, which add to the discomfort of high temperatures, occur when a high-pressure weather system traps hazy, moist air near the ground. Extreme heat may also contribute to the formation of a drought if moisture and precipitation are lacking. The National Weather Service's Heat Index Chart is provided in **Figure 4.2.1**.

Figure 4.2.1: Heat Index Chart (Source: National Weather Service)



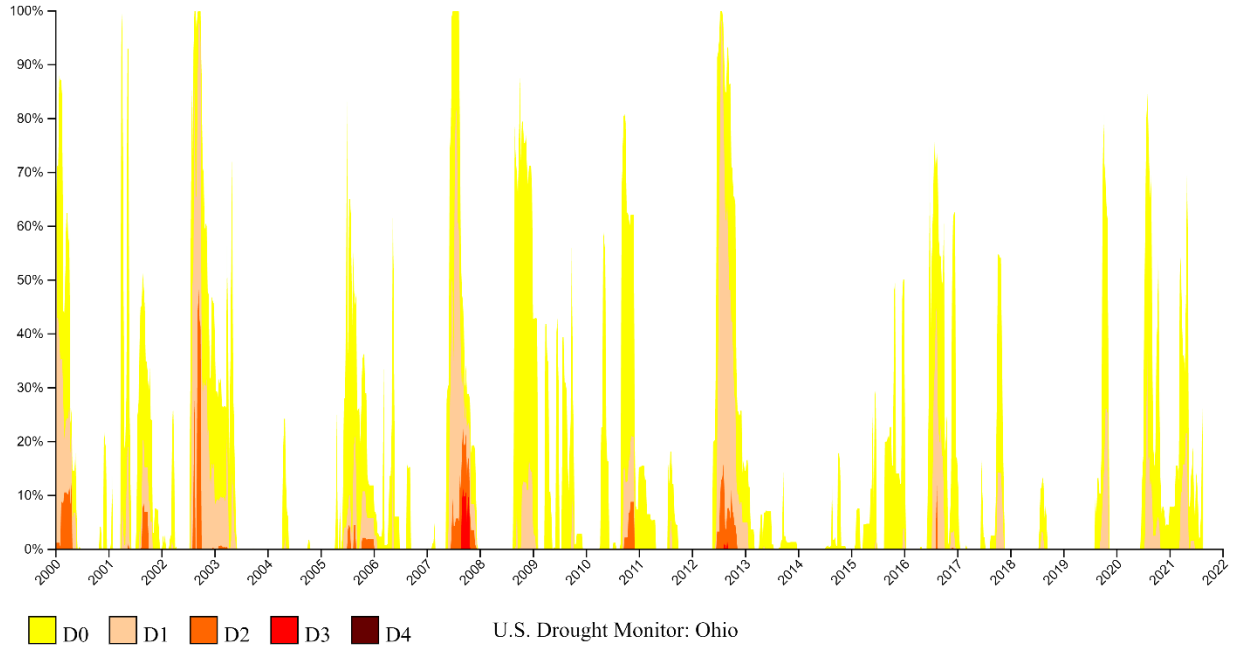
There have been three recorded incidents of extreme heat in Shelby County since the year 2000 and no related deaths.

A drought is a shortage in atmospheric moisture or precipitation over an extended period. Droughts are common throughout all climatic zones and can range in length from a couple weeks to multiple years or decades in some areas. In 2002 Ohio saw its longest drought, lasting 44 weeks and nearly 12% of Ohio's land was affected. The most intense period of drought occurred the week of September 4, 2007, where extreme drought (D3) affected 11.45% of Ohio land. According to the National Oceanic and Atmospheric Administration (NOAA), there are three common types of droughts: Meteorological, Agricultural, and Hydrological. Meteorological drought severity is calculated by the amount of the rainfall deficit (compared to annual averages) and the length of the dry period. Agricultural drought is based on the effects to agriculture by factors such as rainfall and soil water deficits or diminished groundwater/reservoir levels needed for irrigation. Hydrological drought is based on the effects of rainfall shortages on the water supply, such as declines in stream flow, reservoir and lake levels, and the groundwater table.

4.2.2 Location

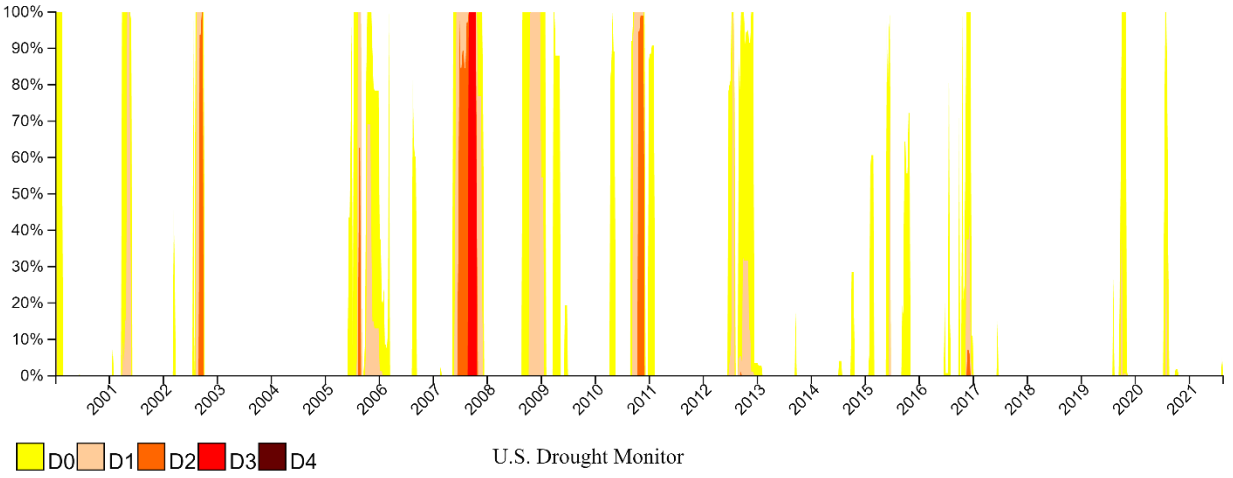
Drought (and extreme heat) is a countywide hazard that can affect all locations and jurisdictions in Shelby County. More specifically, this hazard typically occurs at a regional scale. Droughts most commonly occur in Ohio from spring through autumn; however, they may occur at any time throughout the year. **Figure 4.2.2** depicts the drought monitor history for the State of Ohio from 2000 – 2021, and **Figure 4.2.3** depicts the same period for Shelby County. The drought in the summer and fall of 2007 was one of the worst on record for Shelby County. Currently, however, Shelby County is experiencing a wetter than usual summer season.

Figure 4.2.2: Drought in Ohio from 2000 to 2021



D0 = Abnormally Dry, D1 = Moderate Drought, D2 = Severe Drought, D3 = Extreme Drought, D4= Exceptional Drought

Figure 4.2.3: Drought in Shelby County from 2000 to 2021



4.2.3 Extent

Due to the widespread nature of extreme heat events, all structures, croplands, and infrastructure may experience impacts. All residents of the County may also be impacted, especially at-risk populations that are more susceptible. The elderly and infants are the most vulnerable populations for extreme heat.

The most common symptoms caused by extreme heat, according to the Centers for Disease Control (CDC), include:

- **Heat Cramps** — muscle spasms, often in the abdomen, arms, or calves, caused by a large loss of salt and water in the body. Heat cramps can occur from prolonged exposure to extreme heat combined with dehydration, and they commonly happen while participating in strenuous outdoor activities such as physical labor or sports
- **Heat Exhaustion** — a severe illness requiring emergency medical treatment. It can occur from exposure to extreme heat over an extended period (usually several days), especially when combined with dehydration.
- **Heat Stroke** — the most serious medical condition caused by extreme heat, requiring emergency treatment. Heat stroke (or hyperthermia) occurs when the body can no longer regulate its temperature and its temperature rises rapidly—up to 106°F or higher. It usually occurs as a progression from other heat-related illnesses, such as heat cramps or heat exhaustion; however, it can also strike suddenly without prior symptoms, and it can result in death without immediate medical attention.

Extreme heat is especially dangerous because people might not recognize their symptoms as signs of a more serious condition. For example, symptoms like sweating or fatigue may just appear to be normal reactions to a hot day. People may be in more danger if they experience symptoms that alter their decision-making, limit their ability to care for themselves, or make them more prone to accidents. If untreated, heat-related illnesses can worsen and eventually lead to death. Heat can also contribute to premature death from health impacts other than those listed above. This is because extreme heat can worsen chronic conditions such as cardiovascular disease, respiratory disease, and diabetes.

Due to the regional nature of droughts, effects may be noticed throughout the County in both the urbanized and rural areas. All jurisdictions with the County may be affected in a single drought event. In Shelby County, droughts are often linked to prolonged periods of above average temperatures and little to no precipitation.

Initial effects of drought can be noticed within a short period, as soils may dry out and plants may wither and die. When drought conditions persist over several weeks, months, or years, effects may be more pronounced with reductions in water levels of wells, lakes, reservoirs, streams, and rivers. Water supply issues for agriculture, commercial/industrial activities, and private consumption may arise if drought conditions persist over a long term.

The extent of the drought is determined by the Palmer Drought Severity Index (PDSI). The Index can be utilized as a tool to help define disaster areas and indicate the availability of irrigation water supplies, reservoir levels, range conditions, amount of stock water, and potential for forest fires. The Palmer Drought Severity Index depicts prolonged (in months or years) abnormal dryness or wetness and is slow to respond, changing little from week to week. It also reflects long-term moisture runoff, recharge, and deep percolation, as well as evapotranspiration.

The Palmer Drought Severity Index (**Table 4.2.1**) is a standardized index with values typically falling between -4.00 and +4.00, although extreme conditions can be lesser or greater in value. Negative

values indicate drought conditions while positive values represent wet conditions. Values around zero represent near normal conditions.

Table 4.2.1: Palmer Drought Severity Index Classifications and Drought Categories

Palmer Drought Severity Index (PDSI)	Category	Description
-1.0 to -1.9	D0	Abnormally Dry
-2.0 to -2.9	D1	Moderate Drought
-3.0 to -3.9	D2	Severe Drought
-4.0 to -4.9	D3	Extreme Drought
-5.0 or less	D4	Exceptional Drought

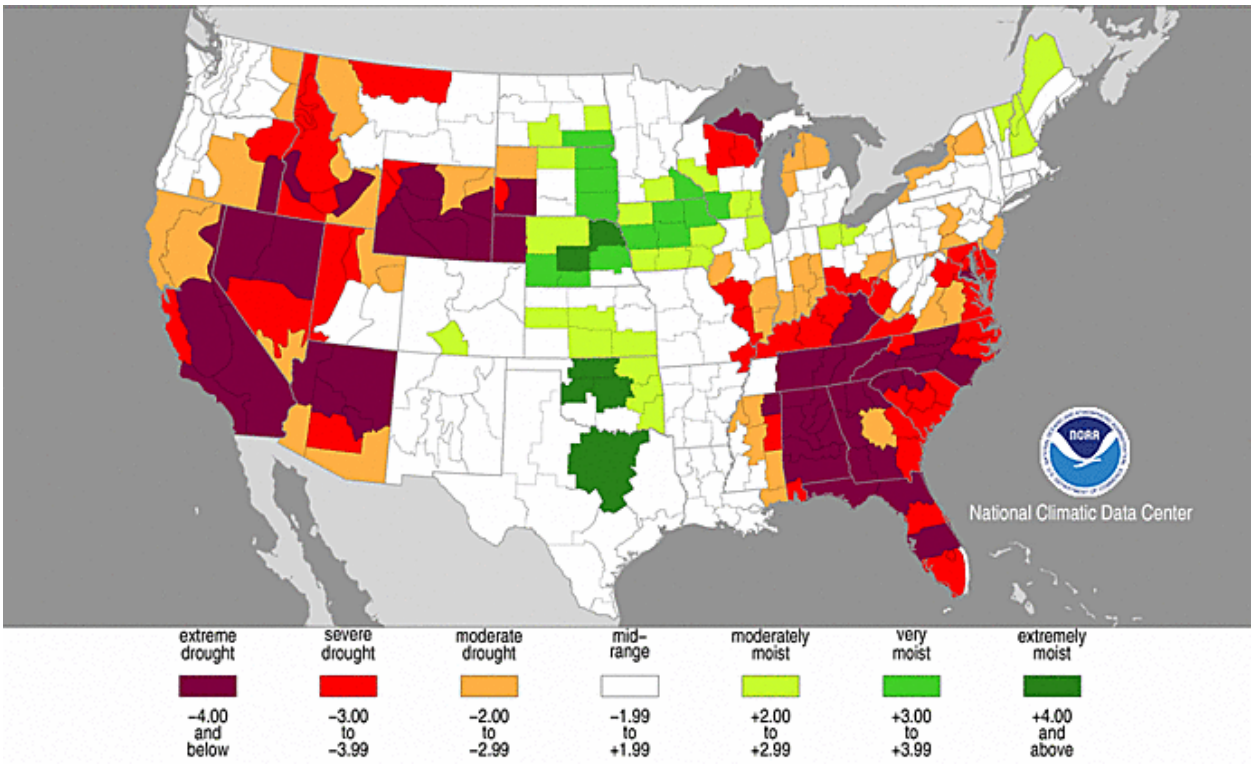
4.2.4 History

U.S. Drought Monitor (USDM) describes severe drought as a time when crops suffer, the numbers of wildfires are high, and the soil is dry, cracked and pulling away from foundations. In an extreme drought, yields are minimal, livestock are stressed, and lawns go dormant. Data shows that Shelby County has experienced severe drought five times and extreme drought twice since 2000. There was an especially tough period of drought from May to December 2007. During that time, 100 percent of the land area in Shelby County experienced extreme drought. Periods of severe or extreme drought specific to Shelby County are provided in **Table 4.2.2** (Source: U.S. Drought Monitor) while **Figure 4.2.4** depicts the Palmer Drought Severity Index (PDSI) for the United States in Fall 2007.

Table 4.2.2: Periods of Drought in Shelby County, Ohio, 2000-2020

Start Date	End Date	Consecutive Weeks
11/22/2016	12/12/2016	2
9/4/2012	9/17/2012	1
10/9/2010	11/29/2010	5
6/19/2007	10/29/2007	18
8/16/2005	8/29/2005	1
9/3/2002	9/30/2002	3

Figure 4.2.4: Palmer Drought Severity Index for the United States in September of 2007



Drought, June-September 1999

June: Little rain occurred from late May through much of June, making it the fifth driest June on record. Scattered rains late in June brought hope for farmers but crop yields were likely reduced even with adequate rain the remainder of the season. Exact losses due to the drought were unknown. Several communities instituted water use restrictions.

July: Drought conditions across northern Ohio eased as thunderstorm rain became more widespread. Nonetheless, very dry soil conditions persisted in a few areas that missed the brunt of the thunderstorm activity. Some communities instituted water use restrictions and crop yields were likely reduced because of the lack of adequate rainfall.

August: Drought conditions persisted across northern Ohio as rainfall totals for the month were below normal at most locations. Water use restrictions were instituted in many areas. The drought also greatly impacted agricultural interests. Crop yields in northern Ohio were reduced by an average of 30 percent during this growing season.

September: Drought conditions continued across most of northern Ohio during September. Widespread heavy rain occurred on the August 29, 1999, but did little to help crop conditions. Losses from reduced crop yields were estimated at $200 million for northern Ohio alone.

Drought, August 1996

Dry weather persisted throughout the month across northern Ohio. Rainfall averaged from a few tenths of an inch in north central and northwest Ohio to one to two inches in extreme northeast Ohio. August rainfall normally averages between three and four inches. Crops that normally mature during August were affected by the dry weather and crop losses were predicted at ten to 30 percent.

4.2.5 Probability

Shelby County has experienced droughts and excessive heat in the past, and the potential exists for the County to experience droughts in the future. Seasons of drought and extreme heat have the potential to occur during any particular year, when conditions are met.

4.2.6 Vulnerability Assessment

Based on current climate reports, drought projections suggest that some regions of the U.S. will become drier and that most will have more extreme variations in precipitation. Even if current drought patterns remained unchanged, warmer temperatures will amplify drought effects. Drought and warmer temperatures may increase risks of large-scale insect outbreaks and wildfires, and accelerate tree and shrub death, changing habitats and ecosystems in favor of drought-tolerant species. Forest-based products and values, such as timber, water, habitat, and recreation opportunities, may be negatively impacted. Forest and rangeland managers can mitigate some of these impacts and build resiliency in forests through appropriate management actions.

Drought does not have a significant impact on infrastructure or structures. The greatest impacts of drought are on agricultural interests, as crops may fail, and livestock may not have sufficient water resources. Economic losses are the greatest threat from droughts to Shelby County. Crop production value in Shelby County is summarized in **Table 4.2.2**.

Table 4.2.3: Crop Production Value

	Planted (Acres)	Harvested (Acres)	Production (1,000 Bushels)	Price per Unit	Production Value
Corn	74,200	68,900	13,539	$5.92	$80,150,880.00
Soybeans	95,000	94,600	5,477	$13.60	$74,487,200.00

4.2.7 Land Use and Development Trends

Drought is most likely to impact agriculture land uses and land uses that house or serve vulnerable populations, such as schools, daycares, hospitals, and nursing homes. Acreage of farmland in the county has decreased over the last five years, while agricultural output has increased.

4.3 Earthquakes

4.3.1 Description

Earthquakes are sudden and rapid movements of the Earth's crust and are caused by the abrupt shifting of rocks deep underneath the earth's surface. These movements vary in length and may last from a few seconds to several minutes.

The seismicity, or seismic activity, of an area refers to the frequency, type, and size of earthquakes experienced over time. Earthquakes are measured using observations from seismometers. The Moment Magnitude Scale (MMS), which was developed in the 1970s, is the most common scale on which earthquakes larger than approximately 5.0 in magnitude are reported for the entire world. Earthquakes smaller than magnitude 5.0, which are more numerous, are reported by national seismological observatories and measured most commonly on the local magnitude scale – also referred to as the Richter Scale. These two scales are numerically similar over their range of validity. Earthquakes of magnitude 3.0 or lower are often almost imperceptible or weak, while earthquakes of magnitude 7.0 or greater can potentially cause serious damage over larger areas.

Damage from an earthquake also depends on the earthquake's depth in the Earth's crust. The shallower an earthquake's epicenter, the more damage to structures it will cause. Alternatively, an earthquake can also be measured by its intensity. The Modified Mercalli Intensity Scale (MMI) ranges in value I to XII, in roman numerals (**Table 4.3.1**).

Earthquakes can happen anywhere without warning; they are low-probability, high-consequence events. Most major earthquakes in the U.S. have occurred in California as well as in Alaska, Hawaii, Oregon, Puerto Rico, Washington, and the entire Mississippi River Valley. There have been recorded earthquakes throughout the U.S., and the Ohio River Valley has experienced earthquakes exceeding the 3.0 magnitude within the last 25 years.

4.3.2 Location

Earthquakes are countywide hazards and can affect all areas and jurisdictions within Shelby County. According to the Ohio Department of Natural Resources (ODNR), Ohio is located on the periphery of the New Madrid Seismic Zone, an area in and around Missouri that was the site of the largest earthquake sequence to occur in the country in the 1800s. Additionally, seismic activity is concentrated in the western Ohio region known as the *western Ohio seismic zone* (also referred to as the *Fort Wayne (Anna) seismogenic zone*), where more than 40 earthquakes have been felt since 1875. **Figure 4.3.1** portrays that Shelby County partially lies over tectonic zones and faults.

4.3.3 Extent

Earthquakes pose a risk to life and property depending on the severity. To monitor earthquakes, the State of Ohio and the ODNR Division of Geological Survey coordinates a 21-station network (**Figure 4.3.2**) of seismograph stations throughout the state in order to continuously record earthquake activity. The Ohio Seismic Network (OhioSeis) stations are distributed across the state but are concentrated in the most seismically active areas or in areas that provide optimal conditions for detecting earthquakes. While the seismic network cannot predict earthquakes or provide an alert prior to an event, it can provide insight into earthquake risks in the state so that intelligent decisions about building and facility design and construction, insurance coverage, and other planning decisions can be made by individuals, business and industry, and governmental agencies.

According to the ODNR, there is one Ohio Seismic Network 21 monitoring station in Shelby County, and one United States Geological Survey 11 monitoring station near the border of Shelby County and Miami County.

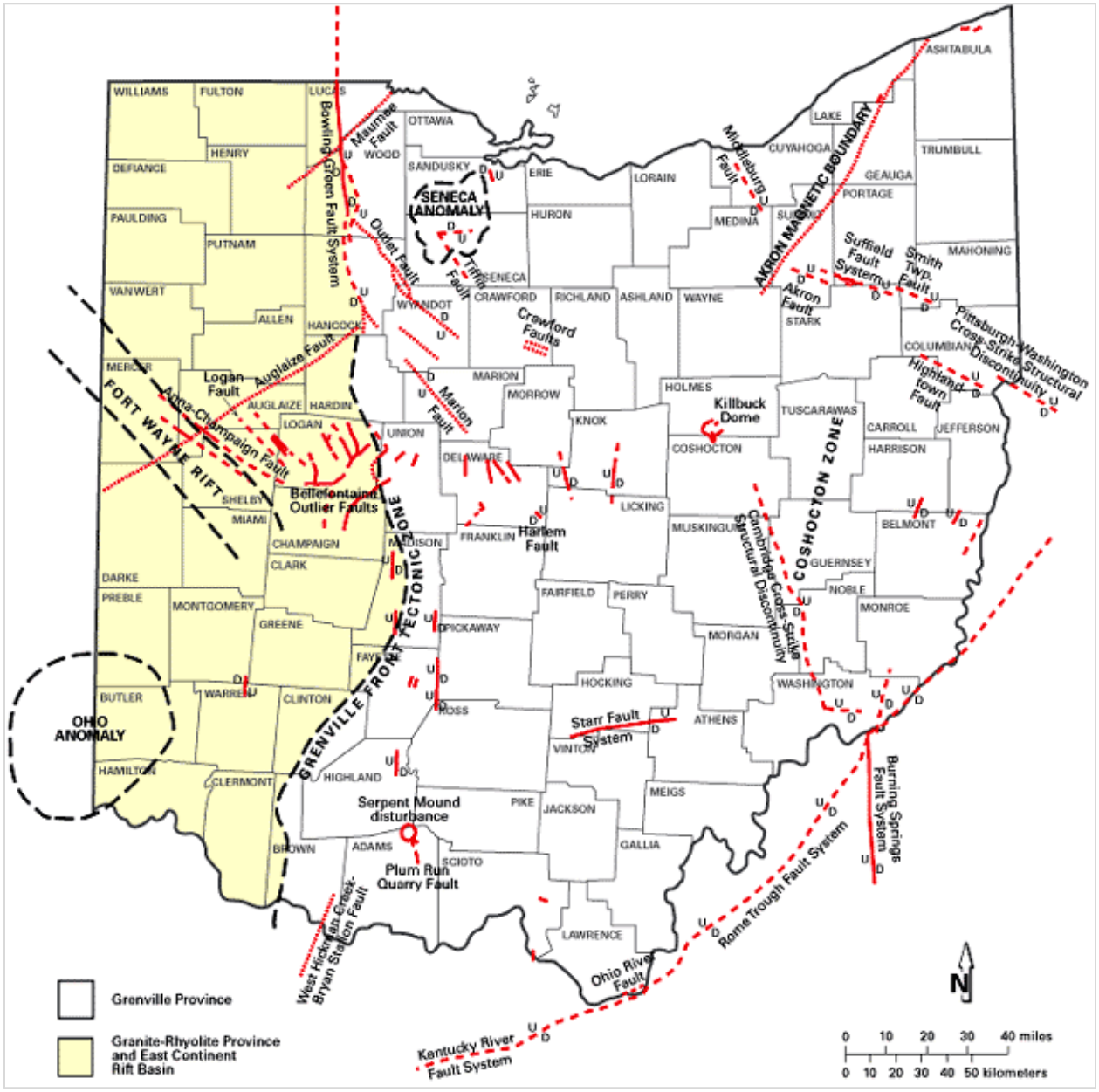
Earthquakes can yield a variety of different outcomes. With the ground shaking associated with earthquake events, buildings have a high potential to be impacted. If soil liquefaction, or the mixing of sand and soil with groundwater occurs, buildings can sink into the ground. Earthquakes also have the potential to rupture dams or levees along a river, resulting in flooding and even tsunamis (see Dam Failure section). Earthquakes can cause landslides or avalanches in high-risk areas and can cause mines to subside. Furthermore, earthquakes that break gas and power lines can result in fires.

Table 4.3.1: Modified Mercalli Intensity Scale

Modified Mercalli Intensity Scale		Magnitude
I	Detected only by sensitive instruments.	1.5
II	Felt by few persons at rest, especially on upper floors; delicately suspended objects may swing.	2
III	Felt noticeably indoors, but not always recognized as earthquake; standing autos rock slightly, vibrations like passing truck.	2.5
IV	Felt indoors by many, outdoors by few, at night some awaken; dishes, windows, doors disturbed; standing autos rock noticeably.	3
V	Felt by most people; some breakage of dishes, windows, and plaster; disturbance of tall objects.	3.5
VI	Felt by all, many frightened and run outdoors; falling plaster and chimneys, damage small.	4
VII	Everybody runs outdoors; damage to buildings varies depending on quality of construction; noticed by drivers of autos.	4.5
VIII	Panel walls thrown out of frames; walls, monuments, chimneys fall; sand and mud ejected; drivers of autos disturbed.	5
IX	Buildings shifted off foundations, cracked, thrown out of plumb; ground cracked; underground pipes broken.	5.5
X	Most masonry and frame structures destroyed; ground cracked, rails bent, landslides.	6
XI	Few structures remain standing; bridges destroyed, fissures in ground, pipes broken, landslides, rails bent.	6.5
XII	Damage total; waves seen on ground surface, lines of sight and level distorted, objects thrown up into air.	7 7.5 8

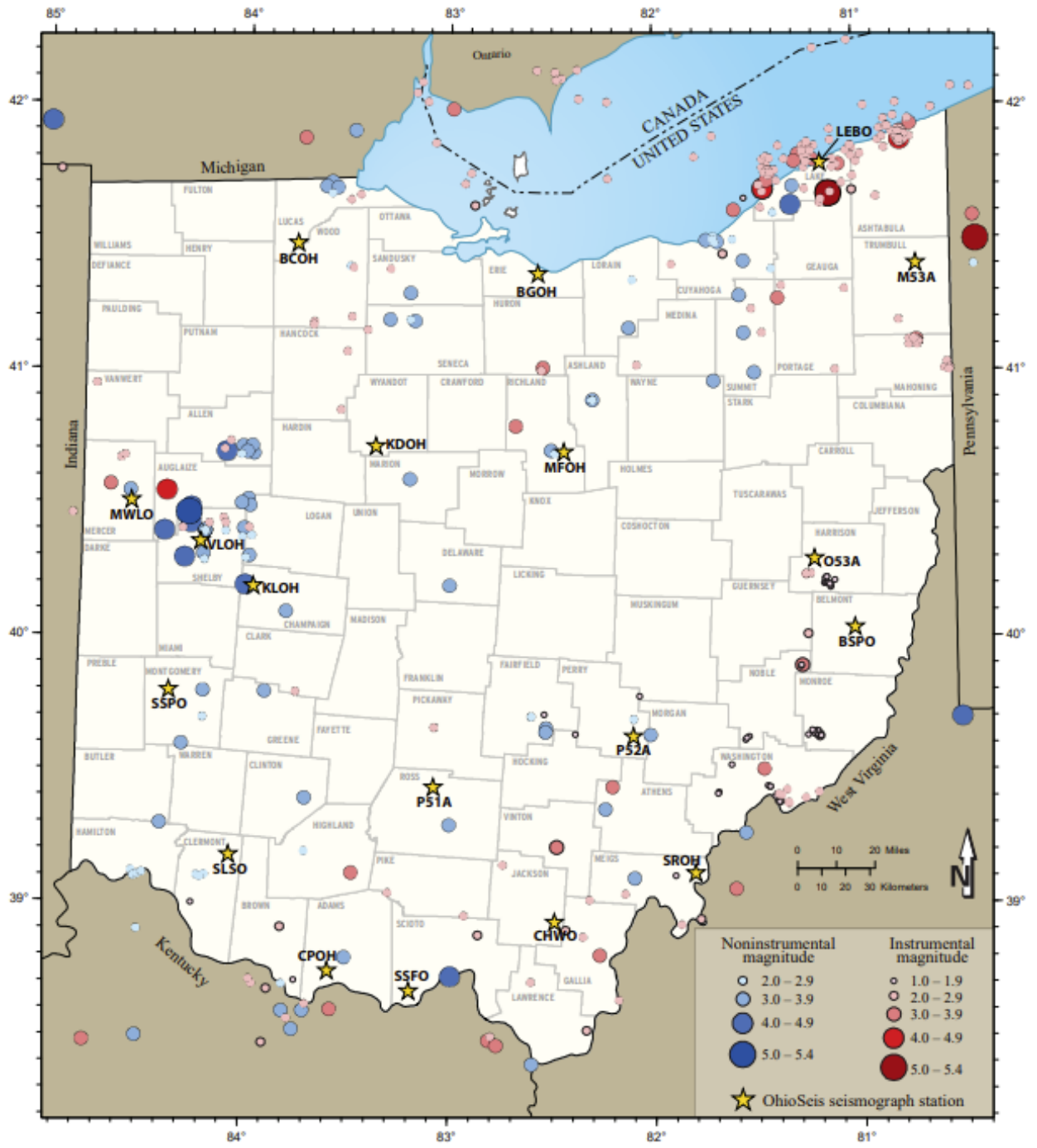
Source: ODNR

Figure 4.3.1 Map of Deep Structures in Ohio



Source: ODNR

Figure 4.3.2: Earthquake Epicenters and Seismic Monitoring Stations in Ohio



Source: ODNR

4.3.4 History

More than 300 earthquakes of 2.0 magnitude or greater with epicenters in Ohio have occurred since 1776. Most of these events have been small, in the 2.0 to 3.0 magnitude range, while 15 earthquakes have caused minor-to-moderate damage and no recorded deaths. The largest historic earthquake in Ohio was centered in Shelby County on March 9, 1937 and was estimated to have had a magnitude of 5.4 on the Richter scale. The earthquake devastated the Village of Anna, leaving their school building beyond repair. Citizens of the village offered their homes for homeschooling until the new earthquake-proofed school building, current Anna Middle School and High School, was finished in September 1938.

Figure 4.3.2, above, displays epicenters of all historical earthquakes with a magnitude greater than 1.0. Locations and magnitudes of non-instrumental earthquakes correspond to felt area or maximum epicentral Modified Mercalli Intensities and may be in error by a considerable distance.

ODNR and the United States Geological Survey (USGS) maintains a record of earthquake events. All earthquakes occurring since 1990 have occurred in Jackson or Dinsmore townships, all of which had a magnitude of less than 3.0. No property damages, injuries, or deaths were recorded.

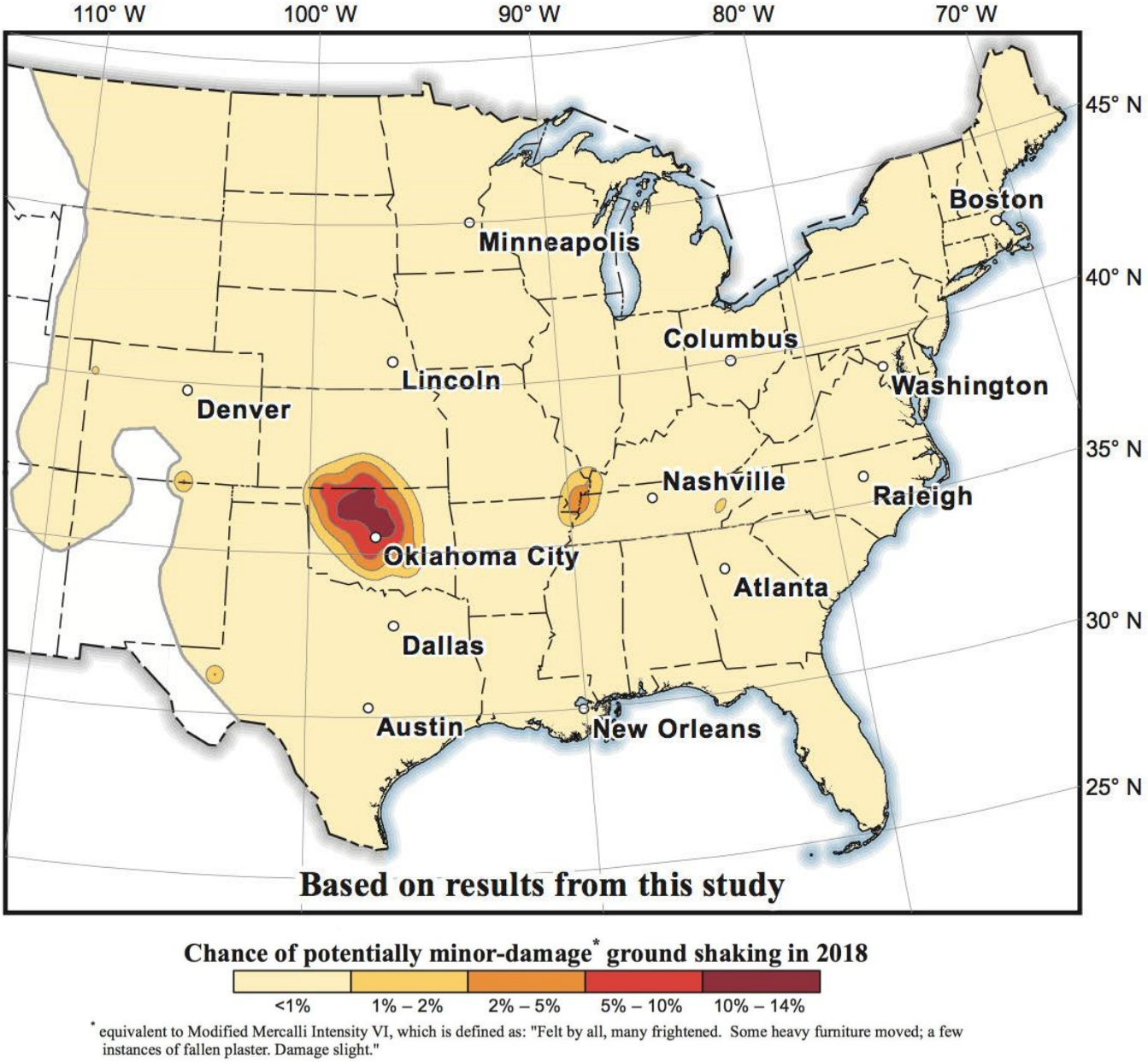
4.3.5 Probability

The USGS has both long-term and short-term probabilistic seismic hazard forecasts. In the 2018 one-year probabilistic seismic hazard forecast, the United States Geological Survey estimated that there is a less than one percent chance of potentially minor-damage ground shaking in 2018 for Shelby County (Figure 4.3.3).

The USGS also prepared national seismic hazard maps (NSHMP) for the United States. These time-independent maps are shown for two percent and ten percent probability of earthquake ground-shaking exceedance levels at specified probabilities over a 50-year time period at several hundred thousand sites across the United States. The map (Figure 4.3.4) identifies that Shelby County has eight percent to ten percent of peak ground acceleration for 2-percent probability of exceedance in 50 years.

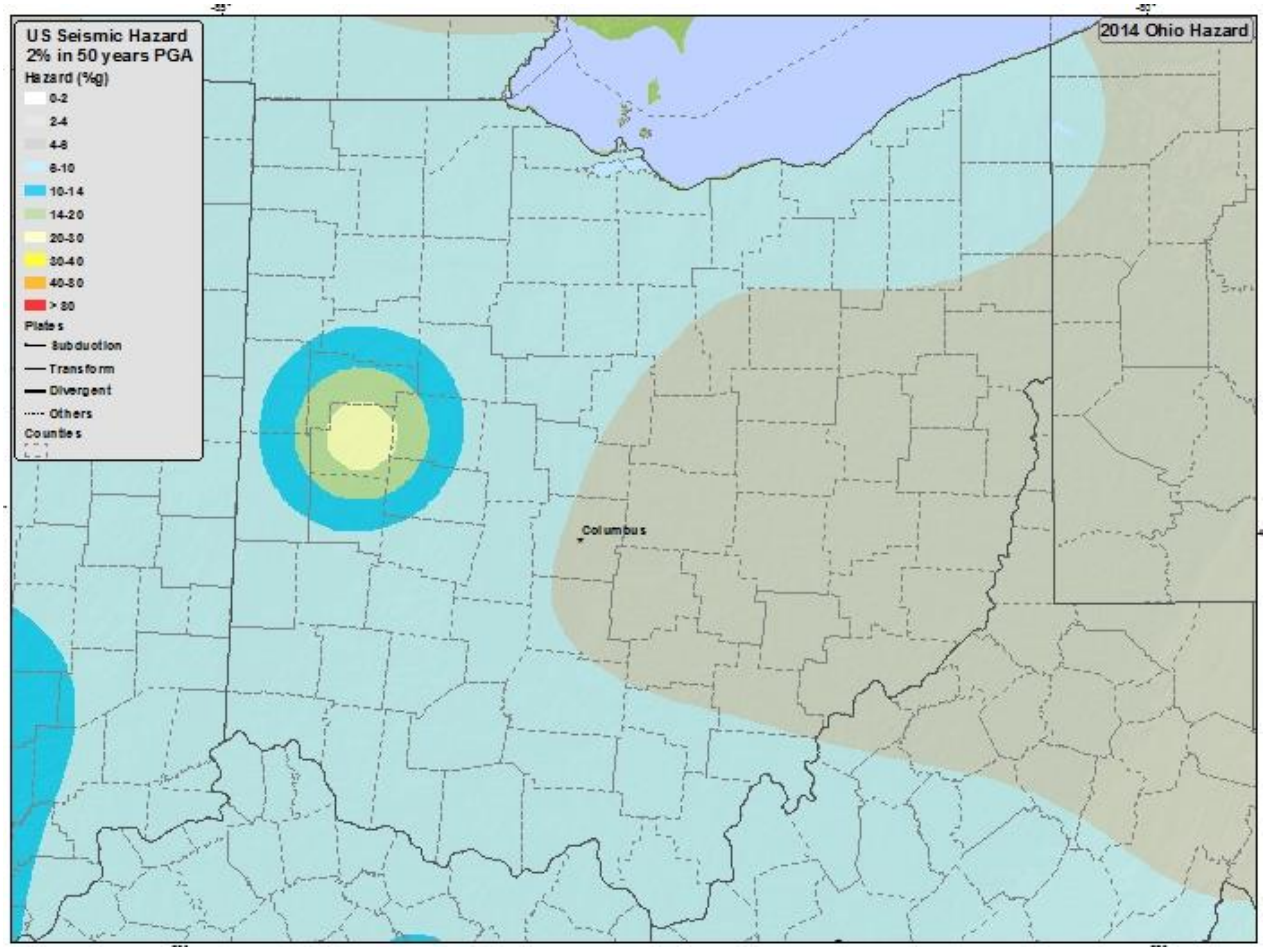
Furthermore, the ODNR indicates that the brief historic record of Ohio earthquakes suggests a risk of moderately damaging earthquakes in the western, northeastern, and southeastern parts of the State.

Figure 4.3.3: Chance of Potentially Minor-Damage Ground Shaking in 2018



Source: USGS

Figure 4.3.4: 2014 Seismic Hazard Map of the State of Ohio



Source: USGS

4.3.6 Vulnerability Assessment

Infrastructure Impact

Since there are no recent earthquake events with recorded damages, exact damages to infrastructure are unknown. Buildings, roadways, and gas and power lines have the potential to be affected. Since the probability of an earthquake occurring in Shelby County is less than one percent, there is a low risk of impact to infrastructure as a result.

A 5.0 magnitude earthquake with an epicenter in the City of Sidney was modeled in Hazus. During such an event, damages to water, natural gas, electric, and communications systems could be as high as $1.5 billion.

Population Impact

There is a low risk of earthquakes occurring in Shelby County. Accordingly, there is low risk of impact to the population. If an earthquake would occur within the County, the population could be impacted by loss of homes, loss of utilities, as well as potential reduction of air quality.

Property Damage

With any earthquake event, there is potential for property damage to occur, as ground shaking can lead to damaged buildings. Due to the non-site-specific nature of this hazard, **Table 4.3.2** lists all

structures within Shelby County as having potential impacts from earthquakes. It also provides values for two worst-case scenarios valued at one percent damage and five percent damage.

Loss of Life

Shelby County has no recorded earthquake events that have resulted in loss of life; however, in the event that an earthquake occurs, there is potential for loss of life. If there are more people and structures in an earthquake prone location, there is likely to be more of an impact. Loss of life can be mitigated by educating the public on proper protection in the event of an earthquake. For example, the USGS resources on preparing for an Earthquake hazard (USGS Resources for Earthquake Preparedness) as well as the Ready Campaign (Ready.gov) are national public service campaigns designed to educate and empower the American people to prepare for, respond to, and mitigate disasters.

Economic Losses

Earthquakes have the potential to damage infrastructure, resulting in economic burden of clean up and repairs. Potential economic losses and damages associated with Shelby County structures and potential worst-case scenarios are recorded in **Table 4.3.2** below. Structural vulnerability is calculated using Hazus. A 5.0 magnitude earthquake with an epicenter in the City of Sidney. This table summarizes the number of properties damaged by land use and by the severity of damage. Compared with other hazards, earthquakes are relatively unlikely to occur in Shelby County, meaning there is low risk of economic loss as a result of an earthquake. Full Hazus reports can be found in **Appendix G**.

Table 4.3.2: Structure Vulnerability from Earthquakes

Land Use	No Damage	Slight Damage	Moderate Damage	Extensive Damage	Complete Damage
Agriculture	2,555	917	954	439	101
Commercial	718	274	304	150	45
Education	15	5	6	2	0
Government	52	17	20	8	2
Industrial	209	84	103	56	16
Other Residential	1139	425	359	149	36
Religion	116	36	30	14	4
Single Family	9779	3462	1711	473	138
Total	14,583	5,220	3,487	1,291	342

4.3.7 Land Use and Development Trends

While incidence and likelihood of earthquakes is low in Shelby County, all communities are at low risk. By planning for and managing land use to accomplish social, ecological, and economic sustainability, communities can reduce the negative impacts caused by earthquakes. This can be accomplished through comprehensive land-use plans and supportive federal and state policies. As such, enforcement of stricter building codes that ensure that all new developments are built up to code can reduce risk. Infrastructure (constructed facilities and lifelines) should be designed and constructed to resist earthquake shaking following the current state-of-the-art engineering and technology practices.

4.4 Flooding

4.4.1 Description

FEMA describes a flood as "a general and temporary condition of partial or complete inundation of normally dry land areas from the overflow of inland or tidal waters [and] the unusual and rapid accumulation or runoff of surface waters from any source." Floods are typically riverine, coastal, or shallow. Flash floods are floods that occur quickly, even occurring without visible signs of precipitation.

Urban flooding is a type of flood that can occur in areas of development that have a high level of impervious surfaces such as concrete. The level of development and the level of stormwater management practices impact the severity of urban flooding.

Common flood-related terms include:

- **100-Year Flood:** A flood that has a one percent chance to occur each year. The 100-year floodplain can be seen in **Figure 4.4.1: Flood Hazard Map**. The elevation of the water from the 100-year flood is called the Base Flood. Mitigation strategies should be based on the base flood elevation.
- **Floodplain:** An area that has the potential to flood from any source.
- **Floodway:** Sometimes referred to as a regulatory floodway. FEMA defines a floodway as "the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the Base Flood without cumulatively increasing the water surface elevation more than a designated height."
- **Flash flood:** Flash floods are typically caused by heavy rainfall over a short period of time. These floods are particularly dangerous because they can occur in minutes and can sometimes occur even without rainfall such as when an ice jam breaks or dissolves. Areas impacted by wildfires are particularly susceptible to flash floods. Flash floods can occur just about anywhere with enough rainfall, and are not restricted to the 100-year floodplain. Development/restriction to drainage or increased impervious surfaces can contribute to flash flood frequency.

4.4.2 Location

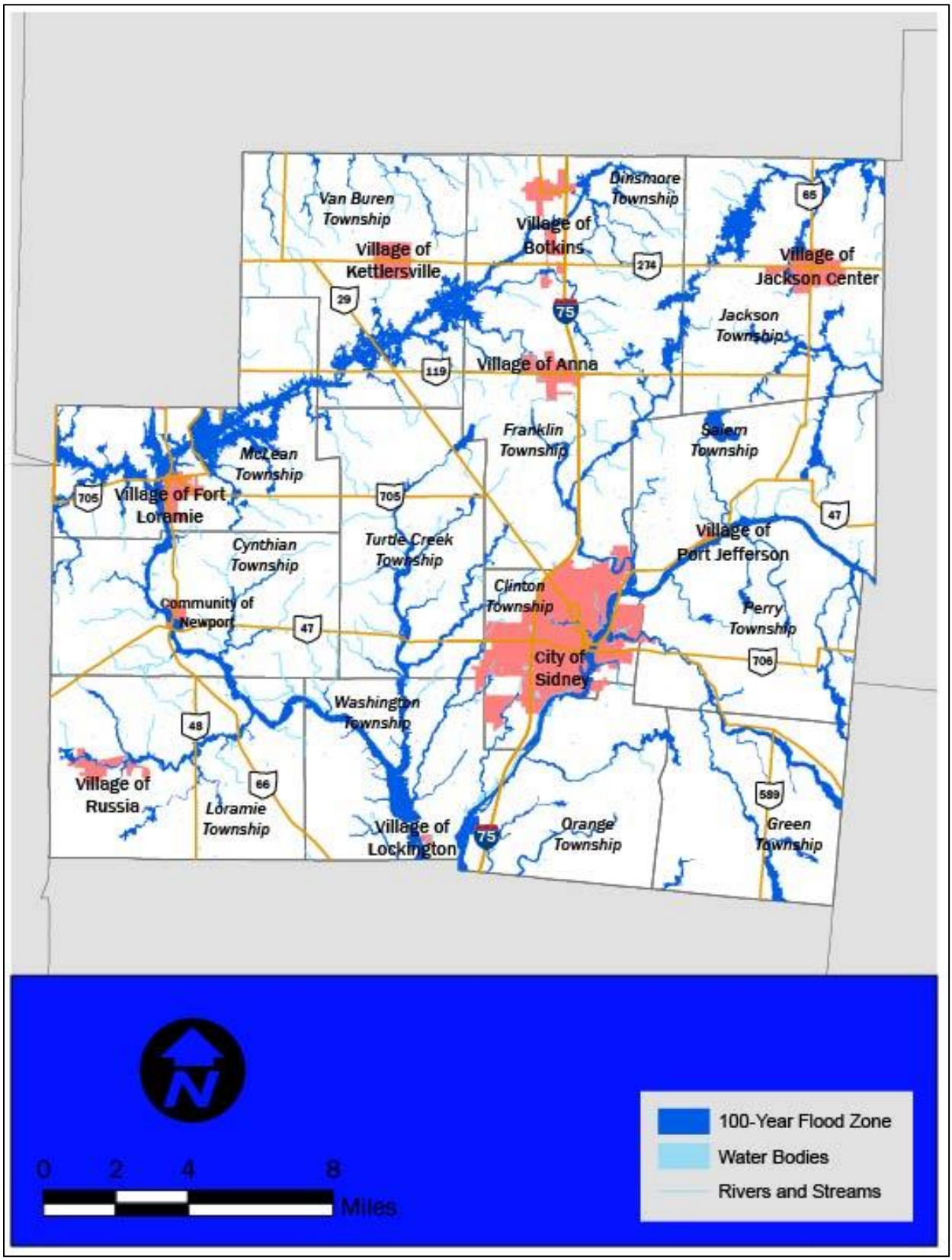
Flooding can occur throughout Shelby County. Flash flooding is more likely to occur in developed areas or along lakes and rivers. **Figure 4.4.1** shows the location of the 100-year floodplain. Floods can and do occur outside the FEMA defined 100-year flood zone. Sometimes very small watersheds are not included in the FEMA analyses, but floods can occur in these smaller watersheds, as well.

4.4.3 Extent

Shelby County currently has 55 flood insurance maps (see **Appendix F**). The most recent update is from April 2015.

Shelby County and eight communities within the County participate in the NFIP. These communities include the Villages of Anna, Botkins, Fort Loramie, Jackson Center, Lockington, and Port Jefferson, and the City of Sidney. The remaining jurisdictions fall outside of the FEMA designated 100-year floodplain.

Figure 4.4.1: 100-Year Flood Zone in Shelby County, Ohio



There are 10 repetitive loss properties in Shelby County, Ohio, detailed in **Table 4.4.1**. FEMA defines a repetitive loss property as an insurable building for which two or more claims of more than $1,000 were paid by the National Flood Insurance Program (NFIP) within any rolling ten-year period since 1978. FEMA defines a severe repetitive loss property as a single family property that is covered under flood insurance by the NFIP and has incurred flood-related damage for which four or more separate claims payments have been paid under flood insurance coverage, with the amount of each claim payment exceeding $5,000 and with cumulative amount of such claims payments exceeding $20,000; or for which at least two separate claims payments have been made with the cumulative amount of such claims exceeding the reported value of the property. The County has no severe repetitive loss properties.

Table 4.4.1: Repetitive Loss Properties in Shelby County, Ohio

Community Name	Occupancy	Flood Zone	Total Losses
Shelby County	Residential	A	4
Shelby County	Residential	AE	2
Shelby County	Residential	A	2
Shelby County	Residential	AE	2
Shelby County	Business	A	2
City of Sidney	Residential	AE	3
City of Sidney	Residential	A	2
City of Sidney	Residential	AE	3
City of Sidney	Residential	AE	2
City of Sidney	Residential	A	2

4.4.4 History

There have been 80 floods or flash floods in Shelby County between January 1998 and December 2021. These events have caused $791,000 in property damages. Described below are the three most damaging events by property damage over the past two decades.

Flooding in the Village of Botkins on May 17, 2019

Several inches of rain fell over Shelby County overnight and into the morning on Friday, May 17 after a slow-moving cold front passed over northern and central Ohio.

Several dozen roads were closed, including six roads in the Village of Botkins and five roads in the Village of Jackson Center. Multiple motorists had to be rescued from their vehicles after becoming stranded in water, according to the Sidney Daily News. Several homes were also flooded. There were no deaths or injuries. This event caused $100,000 in property damage.

Flooding in the Community of Oran on June 17, 2015

Thunderstorms produced heavy rain and flooding near the Community of Oran throughout the day on Wednesday, June 15 after developing along a stalled frontal boundary. There had been several days of rain preceding this event.

Minor localized flooding occurred throughout Shelby County, according to the Sidney Daily News. At lead 20 different roads were closed due to high water, including Ohio 47, Ohio 29, Ohio 274, and Ohio 65. The road along the 5000 block of Cardo Road was washed out and the regional YMCA was closed

due to high-water issues. There were no deaths or injuries. This event caused $30,000 in property damage.

Flooding in the Village of Fort Loramie on July 7, 2003
Several thunderstorms moved across western Ohio and inundated areas of Shelby County, dropping six to 12 inches of rain over the course of seven days, saturating the soil and causing lakes and streams to rise over their banks. Lake Loramie flooded over its banks, prompting the evacuation of Lake Loramie State Park and 100 homes in the villages of Fort Loramie, Jackson Center, and Port Jefferson.

The Great Miami River flooded homes and businesses in the Village of Port Jefferson and the City of Sidney. County Road 25A was underwater in Sidney. Flash flooding occurred through July 9, 2003. There were no deaths or injuries. This event caused $560,000 in property damage.

4.4.6 Probability

Figures 4.4.2 and 4.4.3 show the trend of flood events and property damage costs over time since January 1998, as this is the earliest year with complete data from the NCEI. Between 1998 and 2021, Shelby County has experienced 80 flooding events, including both floods and flash floods. Annually, this amounts to approximately 3 floods or flash floods. The trend of flood occurrences per year does not increase significantly over time, which may suggest that Shelby County can expect a similar frequency of flood events each year. Between 1998 and 2021, floods or flash flood events have resulted in $791,000 in property damage (Source: NCEI). Annually, this amounts to approximately 3 floods or flash floods and $34,000 in property damages. Trends (red) indicate a gradual decline in property damage costs.

Figure 4.4.2 Probability of Flooding

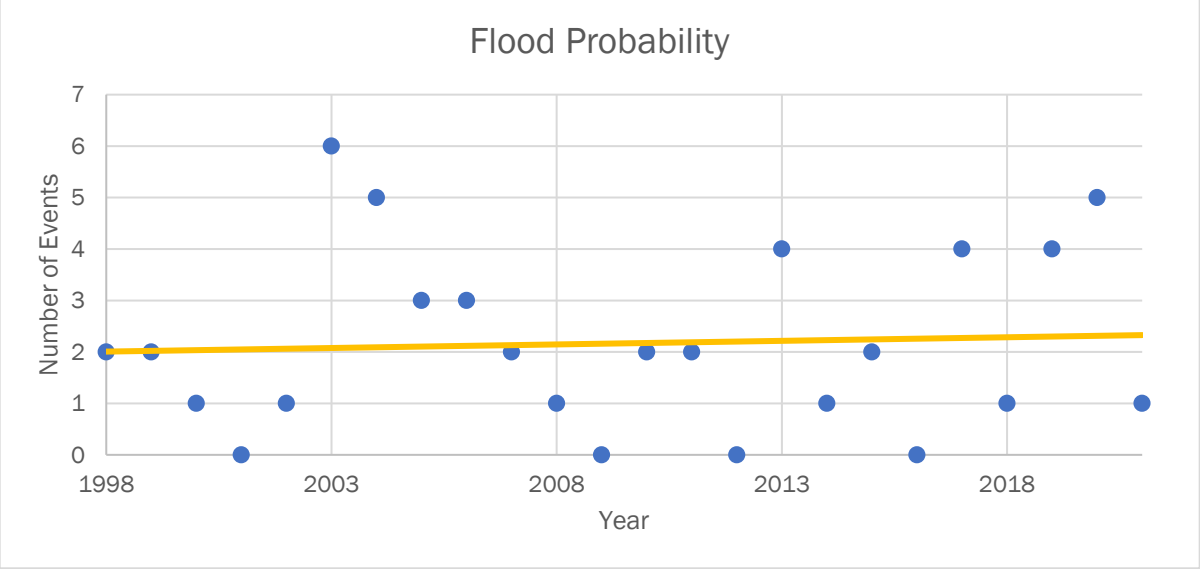
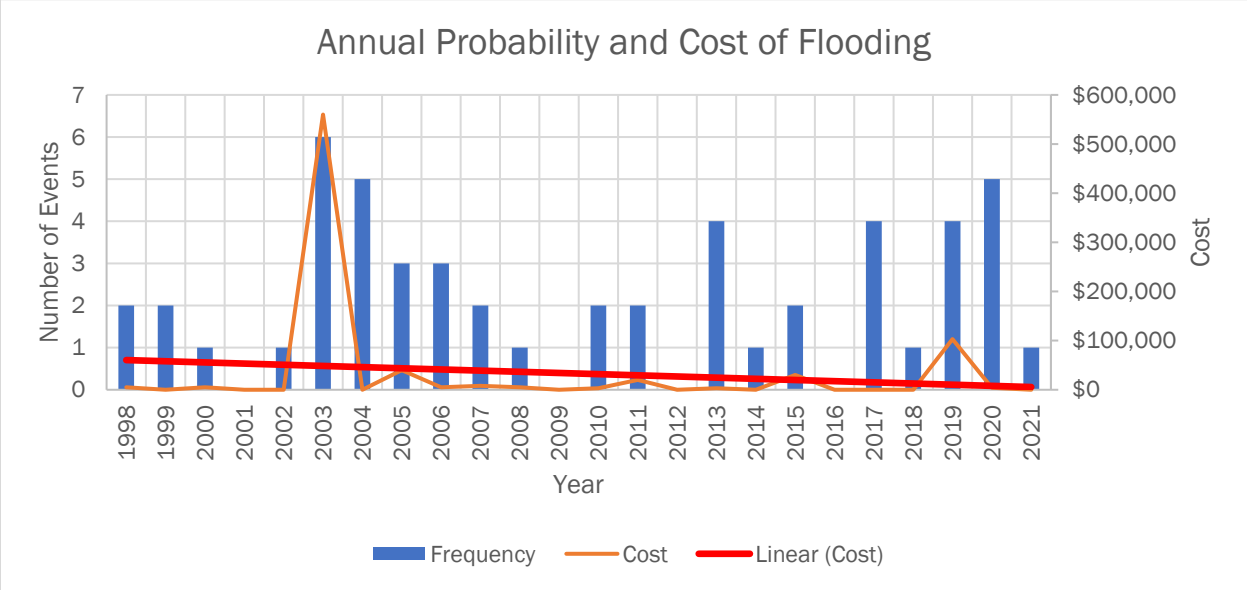


Figure 4.4.3 Probability of Flooding



Climate Change

According to the International Panel on Climate Change, it is unequivocal that climate change has impacted human and natural systems. For example, infrastructure and storm water systems in the Midwest are threatened by increased precipitation frequency and intensity induced by climate change (NCA2018). Heavy precipitation events and precipitation during winter and spring are projected to increase, causing flooding, sewer overflow, inundated roadways, and infrastructure damage. Emergency action plans, green infrastructure, and anticipating extreme events are important steps to prepare for climate change.

4.4.7 Vulnerability Assessment

Infrastructure Impact

Floods can impact roadways, including interstates and state routes, by blocking them due to high water, filling them with debris or washing away the road altogether.

Population Impact

Floods and flash floods have caused damages to occupied homes and businesses in the past. During flood events, shelter may need to be provided to those impacted by flooding.

Property Damage

Property damage is likely during floods to both residential and non-residential properties. **Table 4.4.2** lists the value of all the properties that are exposed to 100-year floods. These values were calculated by simulated a 100-Year flood in Shelby County using Hazus. Full Hazus reports can be found in **Appendix G**.

Table 4.4.2 Structure Vulnerability from Flooding

Structure Type	Exposure ($1,000)	Percent of Total
Residential	$5,621,795	39.9%
Commercial	$2,833,238	20.1%
Industrial	$1,978,347	14.0%
Agriculture	$2,834,713	20.1%
Religious	$285,451	2.0%
Government	$172,407	1.2%
Education	$379,464	2.7%

Loss of Life

There are no reported deaths from flood events in Shelby County. However, loss of life is possible in future floods or flashfloods.

Economic Losses

Floods can halt economic activity, block roadways, and destroy agricultural crops. Businesses may need to shut down their operations due to flood water damage or road closures. Crop losses are also possible during floods or flashfloods.

4.4.8 Land Use and Development Trends

Any development that occurs in flood zones will be at risk. Development in these areas should be limited. Flash flooding is more likely to occur in areas with a high percentage of impervious surfaces. Future land use practices should limit the percentage of impervious surfaces. **Chapter 5** contains mitigation actions that address these issues.

4.5 Hazardous Materials Incident

4.5.1 Description

According to the Ohio Environmental Protection Agency, hazardous materials can be defined in different ways depending on the law or regulation administered by the Environmental Protection Agency (EPA), the Occupational Safety and Health Administration (OSHA), the Department of Transportation (DOT), and the U.S. Nuclear Regulatory Commission (NRC).

- The Institute for Hazardous Materials Management defines hazardous materials as "any item or agent (biological, chemical, radiological, and/or physical), which has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors."
- OSHA's definition includes any substance or chemical which is a health hazard or a physical hazard, including carcinogens, toxic agents, irritants, corrosives, and sensitizers, as well as agents that interact to be harmful to the human body, explosive, or flammable.
- The Environmental Protection Agency's definition includes the Occupational Safety and Health Administration definition. It also adds any item or chemical which can cause harm to people, plants, or animals when released into the environment.
- The Department of Transportation defines hazardous materials as any item or chemical which, when being transported or moved in commerce, is a risk to public safety or the environment.

The Ohio Environmental Protection Agency (Ohio EPA) indicates that there are five categories in which materials can be hazardous including acute, chronic, fire, reactive, or sudden release of pressure.

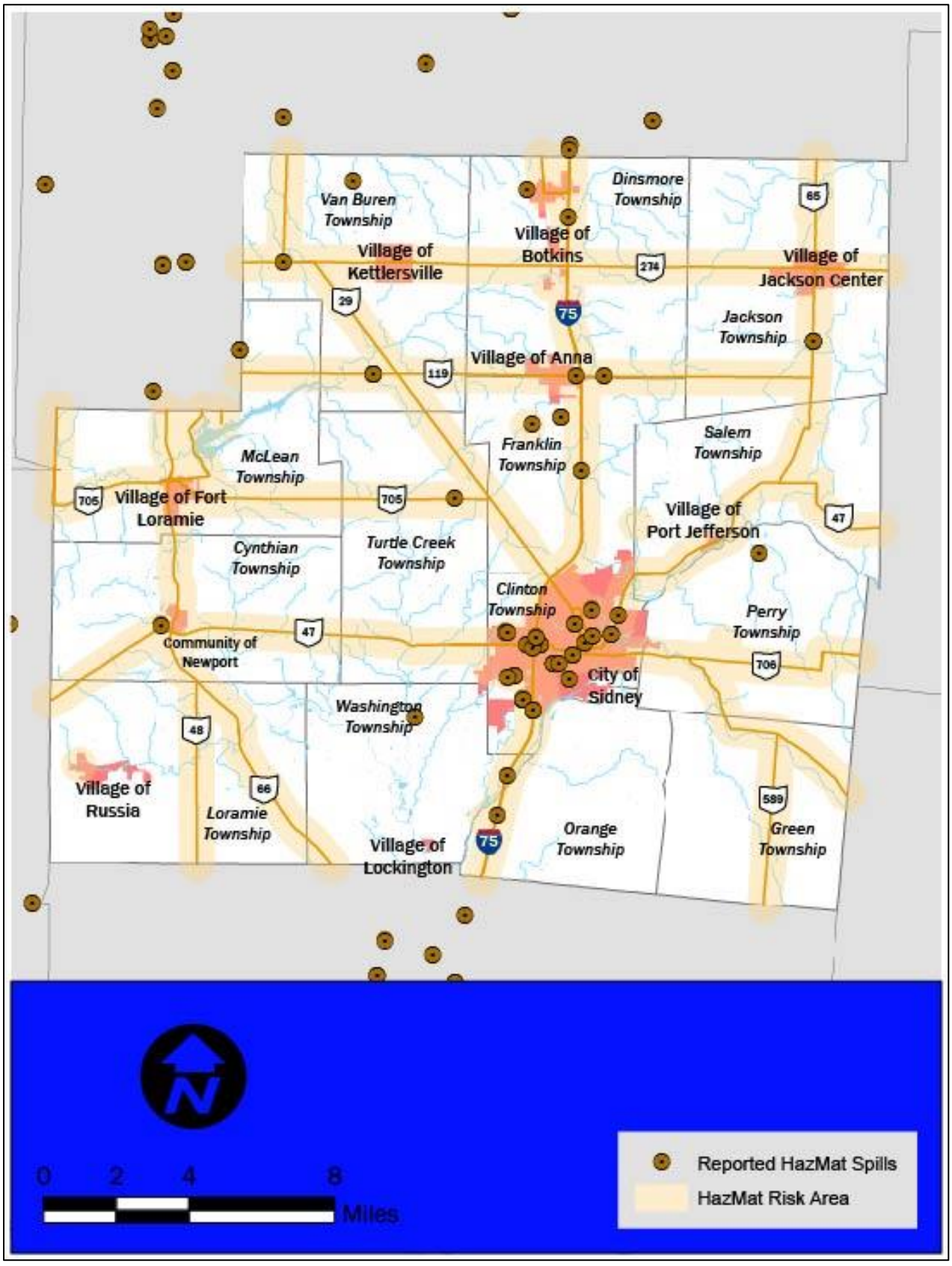
The U.S. Nuclear Regulatory Committee regulates materials that produce ionizing radiation, which includes by-product material and radioactive substances.

The Emergency Planning and Right-to-Know Act, or EPCRA, was passed as Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA), which requires a facility that processes, uses, or stores extremely hazardous substances or hazardous substances as classified by the Occupational Safety and Health Administration Hazard Communication Standard. This is also codified in the Ohio Revised Code (ORC) Chapter 3750 and the Ohio Administrative Code Chapter 3750.

4.5.2 Location

Hazardous material spills can occur wherever hazardous materials are stored and during shipment to these facilities. **Figure 4.5.1** shows the areas which are at the highest risk of being impacted by hazardous materials spills. These areas were calculated by identifying normal shipping routes and hazardous materials facilities and placing a half-mile buffer around these routes. Please note that not all the spills reported to the Ohio EPA occurred within the hazardous materials risk area. There may be alternative shipping routes or hazardous materials facilities that have not been recorded by the County EMA.

Figure 4.5.1: Hazardous Materials Risk Area



4.5.3 Extent

The EPA keeps records for Extremely Hazardous Substance facilities because these facilities have a higher probability of spills due to the higher amounts of hazardous materials at their sites. Each potential hazardous material has varying levels of toxicity. The concentration of these materials should be measured in parts-per-million to determine whether they present a threat. Many chemicals are safe at low amounts and low concentrations but can become dangerous and even toxic at high amounts and concentrations. Additionally, some chemicals can be flammable and can become more volatile when exposed to oxygen. In ground spills, untreated chemical and waste spills can contaminate the soil and drinking water creating toxic environmental conditions. Corrosive, flammable, or explosive chemicals can create infrastructure damage depending on the location, amount spilled, and the circumstances of the incident. In worst-case scenarios, large spills can trigger evacuations of residents and close transportation routes used for hazardous materials transportation, which can also affect residents.

4.5.4 History

There have been 63 recorded hazardous material spills and releases in or near Shelby County from May 2017 through May 2022. Estimated property and crop damages have not been recorded. **Figure 4.5.1** shows the locations of hazardous materials spills within, and nearby Shelby County as recorded by the Ohio Environmental Protection Agency (OEPA). **Table 4.5.1** shows the location, date, and spill type of all spills reported to the Ohio EMA from May 2017 to May 2022.

Table 4.5.1: Spills Reported to the Ohio EMA

Location	Date	Product Type	Reported Amount	Recovered Amount
City of Piqua	March 6, 2022	No Spill/No release/No Evidence	Unknown	Unknown
City of Piqua	March 6, 2022	Unknown	Unknown	Unknown
75/Jackson Township	February 22, 2022	Fuels (Combustible FP100F)	Unknown	Unknown
75/Jackson Township	February 22, 2022	Oils and Grease	Unknown	3000 GAL
75/Jackson Township	February 23, 2022	Fuels (Combustible FP100F)	Unknown	Unknown
75/Franklin Township	January 17, 2022	Fuels (Combustible FP100F)	150 GAL	140 GAL
City of Sidney	July 26, 2021	Corrosives	276 LBS	Unknown
City of Sidney	August 24, 2021	Food Products / Wastes	Unknown	Unknown
City of Sidney	August 24, 2021	Food Products / Wastes	Unknown	50 GAL
City of Sidney	November 27, 2021	Other	Unknown	Unknown
City of Sidney	November 27, 2021	Chemicals - Industrial	Unknown	56 GAL

Location	Date	Product Type	Reported Amount	Recovered Amount
City of Sidney	September 17, 2021	Transformer Oil (Non-PCB)	Unknown	1 GAL
City of Sidney	June 1, 2021	Food Products / Wastes	50 GAL	50 GAL
75/Dinsmore Township	July 5, 2021	Fuels (Combustible FP100F)	15 GAL	Unknown
City of Sidney	July 6, 2020	Fuels (Combustible FP100F)	Unknown	Unknown
City of Sidney	July 6, 2020	Unknown/Undetermined	Unknown	Unknown
City of Sidney	July 6, 2020	Oils and Grease	Unknown	Unknown
City of Sidney	December 4, 2020	No Spill/No release/No Evidence	Unknown	Unknown
City of Sidney	November 1, 2020	Food Products / Wastes	Unknown	100 GAL
City of Sidney	November 1, 2020	Other	Unknown	Unknown
City of Sidney	January 1, 2021	Fuels (Combustible FP100F)	Unknown	Unknown
City of Sidney	January 1, 2021	Sheen (hydrocarbon)	Unknown	0
City of Sidney	December 24, 2020	Fuels (Combustible FP100F)	Unknown	235 GAL
City of Sidney	December 24, 2020	Oils and Grease	Unknown	Unknown
75/Orange Township	December 16, 2020	Fuels (Combustible FP100F)	100 GAL	75 GAL
City of Sidney	March 24, 2020	Fuels (Combustible FP100F)	Unknown	60 GAL
75/Perry Township	March 13, 2020	Unknown	Unknown	Unknown
75/Franklin Township	June 26, 2020	Unknown/Undetermined	Unknown	Unknown
75/Franklin Township	June 26, 2020	Sewage	Unknown	0 GAL
75/Loramie Township	May 20, 2020	Fuels (Combustible FP100F)	35 GAL	30 GAL
75/Loramie Township	May 20, 2020	Oils and Grease	Unknown	5 GAL
75/Orange Township	June 2, 2020	Fuels (Combustible FP100F)	70 GAL	70 GAL

Location	Date	Product Type	Reported Amount	Recovered Amount
City of Sidney	July 31, 2019	Unknown/Undetermined	Unknown	Unknown
City of Sidney	July 31, 2019	No Spill/No release/No Evidence	Unknown	Unknown
75/Dinsmore Township	April 4, 2019	Fuels (Combustible FP100F)	75 GAL	Unknown
Village of Anna	February 27, 2019	Fuels (Combustible FP100F)	100 GAL	Unknown
City of Sidney	June 4, 2019	Fuels (Combustible FP100F)	Unknown	Unknown
City of Sidney	June 4, 2019	Chemicals - Industrial	Unknown	Unknown
City of Sidney	September 19, 2018	Fuels (Combustible FP100F)	25 GAL	Unknown
City of Sidney	July 23, 2018	Fuels (Combustible FP100F)	50 GAL	Unknown
75/Orange Township	September 26, 2018	Fuels (Combustible FP100F)	Unknown	Unknown
75/Van Buren Township	October 8, 2018	Oils and Grease	0 GAL	Unknown
75/Van Buren Township	December 10, 2018	Unknown/Undetermined	Unknown	Unknown
75/Van Buren Township	December 10, 2018	Crude Oil	Unknown	Unknown
75/Van Buren Township	December 10, 2018	Sludges (non-sewage)	Unknown	Unknown
City of Sidney	November 15, 2018	Oils and Grease	80 GAL	Unknown
75/Franklin Township	November 12, 2018	Corrosives	150 LBS	Unknown
75/Van Buren Township	December 18, 2018	Fuels (Combustible FP100F)	99 GAL	Unknown
75/Mclean Township	March 11, 2018	Fuels (Combustible FP100F)	20 GAL	Unknown
75/Turtle Creek Township	May 5, 2018	Manure	Unknown	Unknown
75/Washington Township	March 24, 2018	Unknown	Unknown	Unknown
City of Sidney	May 16, 2018	Food Products / Wastes	500 GAL	Unknown
City of Sidney	October 22, 2017	Corrosives	Unknown	Unknown

Location	Date	Product Type	Reported Amount	Recovered Amount
Village of Anna	October 6, 2017	Unknown/Undetermined	Unknown	Unknown
75/Franklin Township	October 6, 2017	Sewage	Unknown	Unknown
City of Sidney	February 9, 2018	Other	50 GAL	Unknown
75/Cynthian Township	December 24, 2017	Oils and Grease	Unknown	Unknown
City of Sidney	June 17, 2017	Unknown/Undetermined	2 ITM	Unknown
City of Sidney	May 17, 2017	Corrosives	Unknown	Unknown
Village of Anna	August 20, 2017	Other	Unknown	Unknown
75/Washington Township	August 14, 2017	Fuels (Combustible FP100F)	150 GAL	Unknown
City of Sidney	July 11, 2017	Unknown/Undetermined	Unknown	Unknown
City of Sidney	July 11, 2017	Other	Unknown	Unknown

4.5.5 Probability

Due to their unpredictable nature and the influence of human error, the probability of hazardous materials spills is difficult to quantify. Since hazardous material spills can occur at any time, they should be considered likely events.

4.5.6 Vulnerability Assessment

Infrastructure Impact

Roadways, waterways, and groundwater may be impacted by hazardous materials spills. Road closures may occur as a direct or indirect result of hazardous materials spills.

Population Impact

The local population may be directly exposed to hazardous materials. If a large spill occurs, some residents may need to be evacuated and given shelter elsewhere.

Property Damage

Depending on the chemical, property damage is likely. Properties near Extremely Hazardous Substance facilities are likely to be damaged during a spill.

Loss of Life

While some hazardous materials can be toxic, loss of life from hazardous materials spills is unlikely. It is possible, however, and extreme precaution should be taken in the event of a spill.

Economic Losses

Economic losses can occur from the loss of hazardous materials that may be needed in manufacturing or for other processes. Road closures may lead to slowed commerce, and businesses impacted by hazardous materials spills may suffer property damage, damage to goods, or be required to close.

Table 4.5.2: Vulnerability of Land and Structures within Hazardous Materials Risk Area

Structure Type	Number of Properties Exposed	Value of Vulnerable Structures		
		Land	Building	Total
Residential	14,767	$281,866,860	$1,197,537,820	$1,479,404,680
Non-Residential	6,086	$774,742,860	$847,395,170	$1,622,138,030
Critical Facilities	35	$4,781,440	$85,168,310	$89,949,750
Total	20,853	$1,056,609,720	$2,044,932,990	$3,101,542,710

**Note: Critical Facilities are non-residential structures, and their value is incorporated into the non-residential totals as well. Calculated totals are determined by summing the residential and non-residential values.*

4.5.7 Land Use and Development Trends

Development that has occurred since the previous plan and any future development near hazardous materials storage facilities may be impacted by hazardous materials spills. All land uses are equally impacted by potential hazardous materials spills.

4.6 Invasive Species

4.6.1 Description

Harmful species are species that have potential negative impacts on the environment and economy of Shelby County. Harmful species are both native and invasive. The National Oceanic and Atmospheric Administration (NOAA) defines an invasive species as "an organism that causes ecological or economic harm in a new environment and is not native." Harmful species are species that are native to a region, but that also cause significant ecological, public health, or economic harm. Their growth is often encouraged through human activity.

Invasive species can be terrestrial (land dwelling) or aquatic (water dwelling). Terrestrial species include plants, trees, shrubs, animals, birds, and insects, as well as fungi, bacteria, molds, and viruses. Aquatic species include aquatic plants and algae, fish, mollusks, amphibians, and insects, as well as fungi, bacteria, molds, and viruses.

4.6.2 Location

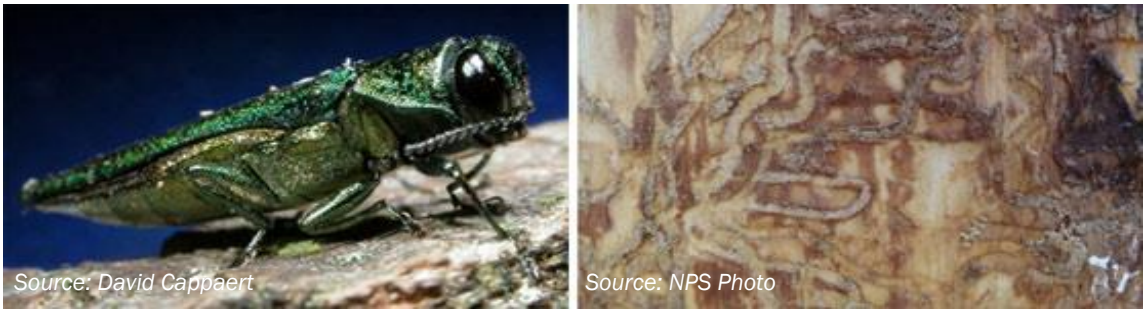
Invasive species have the potential to impact any location within the County. The most invasive of terrestrial species degrade the State's woodlands, wetlands, and prairies. Aquatic Invasive Species use rivers to spread. Ohio has over 66,000 miles of streams, 262 miles of Great Lakes shoreline, nearly 2,000 inland lakes and reservoirs, and shares major watersheds with other states and Canada. Shelby County lies in the Mississippi River basin, which is an ecologically diverse river system, and is susceptible to invasions through the Ohio River and its tributaries.

4.6.3 Extent

Once invasive species become widely established, controlling their spread is both technically difficult and expensive, making eradication nearly impossible. Invasive species can usually overtake native species and alter the natural wildlife habitat.

The most common invasive species in Shelby County is the **Emerald Ash Borer (EAB)** (**Figure 4.6.1**). It is an exotic beetle that feeds on ash trees inhibiting its ability to transport water and nutrients. This insect was first found in Ohio in 2002 and has since been found in every county in the State. The EAB was first discovered in Shelby County in 2002 at Lake Loramie State Park. Since the EAB has been found in every county, there are no quarantines in effect with Ohio's borders. Ohio is still listed in the Federal quarantine boundary.

Figure 4.6.1: Emerald Ash Borer and Feeding Tunnels



Source: David Cappaert *Source: NPS Photo*

Approximately 2,300 plant species occur in the wild in Ohio. Of these, about 78 percent are native, that is, they were found in the region before the times of European settlement. Of the remaining 22 percent, fewer than 100 have been identified to be problems in natural areas. According to the Ohio

Invasive Plants Council, there are 48 banned invasive plant species in Ohio (**Table 4.6.1**) and more under consideration. These plants cannot be sold, distributed, or imported.

Ongoing studies conducted by Ohio Department of Natural Resources, Ohio Sea Grant, and the Ohio State University have identified over 70 invasive aquatic species in Ohio (**Table 4.6.2**). With the exception of White Perch, it is unlawful to possess, import, or sell these species live.

Table 4.6.1: Plant Invasive Species in Ohio

Scientific Name	Common Name
Ailanthus altissima	Tree-of-heaven
Alliaria petiolate	Garlic mustard
Berberis vulgaris	Common barberry
Butomus umbellatus	Flowering rush
Celastrus orbiculatus	Oriental bittersweet
Centaurea stoebe ssp. Micranthos	Spotted knapweed
Dipsacus fullonum	Common teasel
Dipsacus laciniatus	Cutleaf teasel
Egeria densa	Brazilian elodea
Elaegnus angustifolia	Russian olive
Elaegnus umbellate	Autumn olive
Epilobium hirsutum	Hairy willow herb
Frangula alnus	Glossy buckthorn
Heracleum mantegazzianum	Giant hogweed
Hesperis matronlis	Dame's rocket
Hydrilla verticillate	Hydrilla
Hydrocharis morsus-ranae	European frog-bit
Lonicera japonica	Japanese honeysuckle
Lonicera maackii	Amur honeysuckle
Lonicera morrowii	Morrow's honeysuckle
Lonicera tatarica	Tatarian honeysuckle
Lythrum salicaria #	Purple loosestrife
Lythrum virgatum (effective January 7, 2019)	European wand loosestrife
Microstegium vimineum	Japanese stiltgrass
Myriophyllum aquaticum	Parrotfeather
Myriophyllum spicatum #	Eurasian water-milfoil
Nymphoides peltata	Yellow floating heart
Phragmites australis	Common reed

Scientific Name	Common Name
Potamogeton crispus	Curley-leaved pondweed
Pueraria montana var. lobate	Kudzu
Pyrus calleryana (effective January 7, 2023)	Callery pear
Ranunculus ficaria	Fig buttercup, lesser celandine
Rhamnus cathartica	Common Buckthorn
Rosa multiflora	Multiflora rose
Trapa natans	Water chestnut
Typha angustifolia	Narrow-leaved cattail
Typha x glauca	Hybrid cattail
Vincetoxicum nigrum	Black Swallow-Wort

Table 4.6.2: Aquatic Invasive Species in Ohio

Type	Scientific Name	Common Name
Fish	*Alosa pseudoharengus*	Alewife
Fish	*Carassius auratus* #	Goldfish
Fish	*Carassius carassius*	Crucian Carp
Fish	*Carassius gibelio*	Prussian Carp
Fish	*Channa app. and Parachanna app.*	Snakeheads
Fish	*Claris batrachus*	Walking Catfish
Fish	*Ctenopharyngodon idella*	Diploid Grass Carp - White Amur
Fish	*Ctenopharyngodon Idella* #	Grass Carp
Fish	*Cyprinus carpio* #	Common Carp
Fish	*Fundulus catenatus*	Northern Studfish
Fish	*Fundulus diaphanus*	Eastern Banded Killifish
Fish	*Gambusia holbrooki and Gambusia affinis* #	Eastern & Western Mosquitofish
Fish	*Gasterosteus aculeatus*	Three Spine Stickleback
Fish	*Gymnocephalus cernuus*	Ruffe
Fish	*Hypophthalmichthys harmandi*	Large-scale Silver Carp
Fish	*Hypophthalmichthys molitrix* #	Silver Carp
Fish	*Hypophthalmichthys nobilis* #	Bighead Carp
Fish	*Lates niloticus*	Nile Perch
Fish	*Leuciscus idus*	Ide
Fish	*Morone americana*	White Perch
Fish	*Mylopharyngodon piceus*	Black Carp

Type	Scientific Name	Common Name
Fish	*Neogobius melanostomus*	Round Goby
Fish	*Osmerus mordax*	Rainbow Smelt
Fish	*Perca fluviatilis*	European Perch
Fish	*Perccottus glenii*	Amur Sleeper
Fish	*Petromyzon marinus*	Sea Lamprey
Fish	*Phoxinus phoxims*	Eurasian Minnow
Fish	*Proterorhinus marmoratus*	Tubenose Goby
Fish	*Pseudorasbora parva*	Stone Moroko
Fish	*Rhodeus sericeus*	Bitterling
Fish	*Rutilus sericeous*	Roach
Fish	*Sander lucioperca*	Zander
Fish	*Scardinius erythrophthalmus*	European Rudd
Fish	*Scardinius erythrophthalmus*	Rudd
Fish	*Silurus glanis*	Wels Catfish
Fish	*Tinca tinea*	Tench
Mollusks	*Bellamya (Cipangopaludina)*	Mystery Snails
Mollusks	*Bithynia tentaculata*	Faucet Snail
Mollusks	*Corbicula fluminea* #	Asian Clam
Mollusks	*Dreissena bugensis*	Quagga Mussel
Mollusks	*Dreissena polymorpha* #	Zebra Mussel
Mollusks	*Limnoperna fortune*	Golden Mussel
Mollusks	*Potamopyrgus antipodarum*	New Zealand Mudsnail
Crustaceans	*Bythotrephes longimanus*	Spiny Waterflea
Crustaceans	*Cercopagis pengoi*	Fishhook Waterflea
Crustaceans	*Cherax destructor*	Yabby
Crustaceans	*Cherax tenuimanus*	Marron
Crustaceans	*Dikerogammarus villosus*	Killer Shrimp
Crustaceans	*Eriocheir sinensis*	Chinese Mitten Crab
Crustaceans	*Eriocheir sinensis*	Chinese Mitten Crab
Crustaceans	*Faxonius virilis*	Virile Crayfish
Crustaceans	*Hemimysis anomala*	Bloody-red Shrimp
Crustaceans	*Procambarus clarki*	Red Swamp Crayfish
Plant	*Butomus umbellatus*	Flowering-rush
Plant	*Egeria densa*	Brazilian Waterweed

Type	Scientific Name	Common Name
Plant	*Hydrilla verticillata*	Hydrilla
Plant	*Hydrocharis morsus-ranae*	European Frog-bit
Plant	*Iris pseudacorus*	Yellow Iris
Plant	*Ludwigia peploides* #	Creeping Water-primrose
Plant	*Lysimachia nummularia*	Moneywort
Plant	*Lythrum salicaria*	Purple Loosestrife
Plant	*Marsilea quadrifolia*	European Water Clover
Plant	*Myriophyllum aquaticum*	Parrotfeather
Plant	*Myriophyllum spicatum*	Eurasian Watermilfoil
Plant	*Najas minor* #	Brittle Naiad
Plant	*Nelumbo nucifera*	Pink Lotus
Plant	*Nitellopsis obtusa*	Starry Stonewort
Plant	*Nymphoides peltata*	Yellow Floating Heart
Plant	*Phalaris arundinacea* #	Reed Canary Grass
Plant	*Phragmites australis*	Common Reed (Phragmites)
Plant	*Pistia stratiotes*	Water Lettuce
Plant	*Potamogeton crispus* #	Curly-Leaf Pondweed
Plant	*Trapa natans*	Water Chestnut
Plant	*Typha angustifolia, Typha x glauc* #	Narrowleaf and Hybrid Cattails

#Species most likely found in Shelby County

Other invasive species that have the potential to impact to Shelby County and the surrounding counties in Ohio include:

Asian Long-Horned Beetles are wood-boring beetles native to Asia that were unintentionally introduced to North America, likely in wood packing material. Nearby Clermont County experienced an infestation in 2011. They pose a significant threat to forested land. There are no known Asian Long-Horned Beetle infestations in Shelby County.

Feral Swine are a combination of Eurasian wild boar and escaped or un-kept domestic swine. Common names for this species include feral hog, swine (pig), Eurasian boar, Russian wild boar, and razorback. Feral swine cause significant damage each year to agricultural crops and property, as well as natural resources. Currently, known breeding populations of feral swine have been confirmed in Adams, Athens, Champaign, Gallia, Hocking, Jackson, Lawrence, Scioto, and Vinton counties. There are no known feral swine in Shelby County.

Hemlock Wooly Adelgid are small invasive pests that can be found on the underside of hemlock needles. They feed on the sap causing the tree to dry up and die. They are common in northeast Ohio and have been seen in southern Ohio counties. There are no know Hemlock Wooly Adelgid infestations in Shelby County.

Mute Swans are non-native invasive species found on public lakes across Ohio. During the breeding season, March through May, adult mute swans become highly territorial and will fight to push native birds out of their nesting area. Mute swans have attacked humans and pets during this time as well. Mute swans can consume submerged aquatic vegetation and usually uproot the whole plant leaving nothing behind. This takes away natural habitat from fish and leaves little food source for native waterfowl. The removal of aquatic vegetation can also cause water quality issues and erosion problems. There are potentially two sightings of Mute Swans at Lake Loramie in Shelby County.

4.6.4 History

Shelby County has been impacted by the Emerald Ash Borer, and tree damage was reported during the second stakeholder meeting. The extent of this damage is unknown. There have been two reported sightings of Mute Swan in Lake Loramie, but there are no related damages as the Mute Swan is considered a nuisance species. Additionally, it is possible that any of the other species listed above have at one point affected the County and its residents.

4.6.5 Probability

Since there are many invasive species throughout Ohio, it is probable that Shelby County will experience some of the invasive species listed above, especially those noted as most likely to be found in the County (**Tables 4.6.1 and 4.6.2**).

4.6.6 Vulnerability Assessment

Infrastructure Impact

There are no likely impacts to public roadways or utilities. Public trees may be destroyed or impacted by various invasive species. Aquatic invasive species could destroy water quality, make poor habitat for fish, and clog water intake pipes. Some species also increase fire potential and can be problematic to levees, dams, and irrigation systems.

Population Impact

There are no likely impacts on the local population. Aquatic recreational activities, such as boating and fishing, may be mildly impacted.

Property Damage

Property damage, in the form of reduced values from impacts on landscaping, is likely.

Loss of Life

Loss of life because of invasive species is very unlikely. Some of these species consumed as food could lead to diseases and other health impact in humans.

Economic Losses

Economic impacts can vary greatly depending on the target and the invasive species and their impacts on those targets. Agricultural revenue losses may be experienced if crops are affected by an invasive species. Also, there may be indirect economic losses with degradation of forested lands and tree canopies. Examples include reduction in viable lumber for construction, increased heating and cooling costs, and reduced property value.

4.6.7 Land Use and Development Trends

There could be slight impacts on development and land use due to invasive species. Some invasive species can be particularly damaging to crops, agricultural land, and wetlands. Future development may involve site investigation to identify any potential invasive species on the property.

4.7 Landslides, Erosion, and Subsidence

4.7.1 Description

The Ohio Department of Natural Resources (ODNR) defines a landslide as "a variety of downslope movements of earth materials. Some slides are rapid, occurring in seconds, whereas others may take hours, weeks, or even longer to develop." Landslides are commonly triggered by human-induced vibrations, over-steepened slopes, increased weight on a slope, and removal of vegetation on areas with landslide-prone slopes.

Erosion is the geological process in which earthen materials are worn away and transported by natural forces such as wind or water. The movement of earthen materials by wind or water will be considered a landslide for the purposes of this Plan.

Subsidence is the motion of the earth's surface as it shifts downward relative to a benchmark (often sea level) of the surrounding terrain. In Ohio, the two primary causes are abandoned underground mines (AUMs) and karst.

According to the Ohio Administrative Code 3901-1-48, mine subsidence is loss caused by the collapse or lateral or vertical movement of structures resulting from the caving in of underground mines, including coal mines, clay mines, limestone mines, and salt mines. Mine subsidence does not include loss caused by earthquakes, landslide, volcanic eruption, or collapse of strip mines, storm and sewer drains, or rapid transit tunnels. Several factors determine the potential for mines to collapse including depth, mining technique used, types of rock and/or soils, and the development on the ground surface. Additionally, abandoned underground coal mines in Ohio have the potential to discharge acidic water which, if discharged into creeks or streams, can alter the chemical composition of the water habitat and cause considerable harm to sensitive aquatic life. For the purposes of this report, there are no known active or abandoned underground mines in Shelby County. Mine subsidence will not be assessed further.

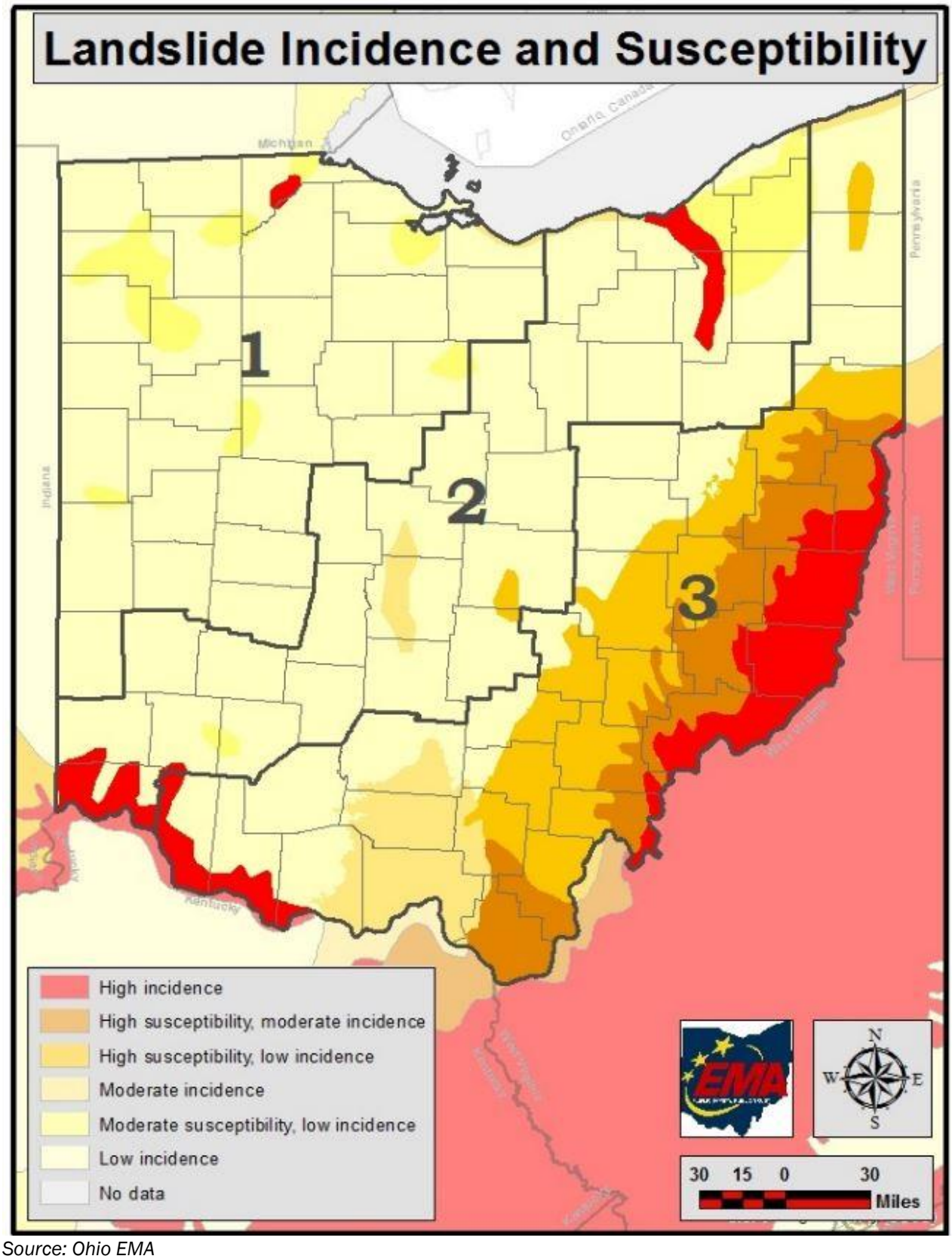
Karst is a topography formed from the dissolution of soluble rocks such as limestone, dolomite, and gypsum. It is characterized by underground drainage systems with sinkholes and caves.

4.7.2 Location

Figure 4.7.1 shows the location of areas under risk for slope failure (landslides). Shelby County is categorized as having either low or moderate incidence of landslides.

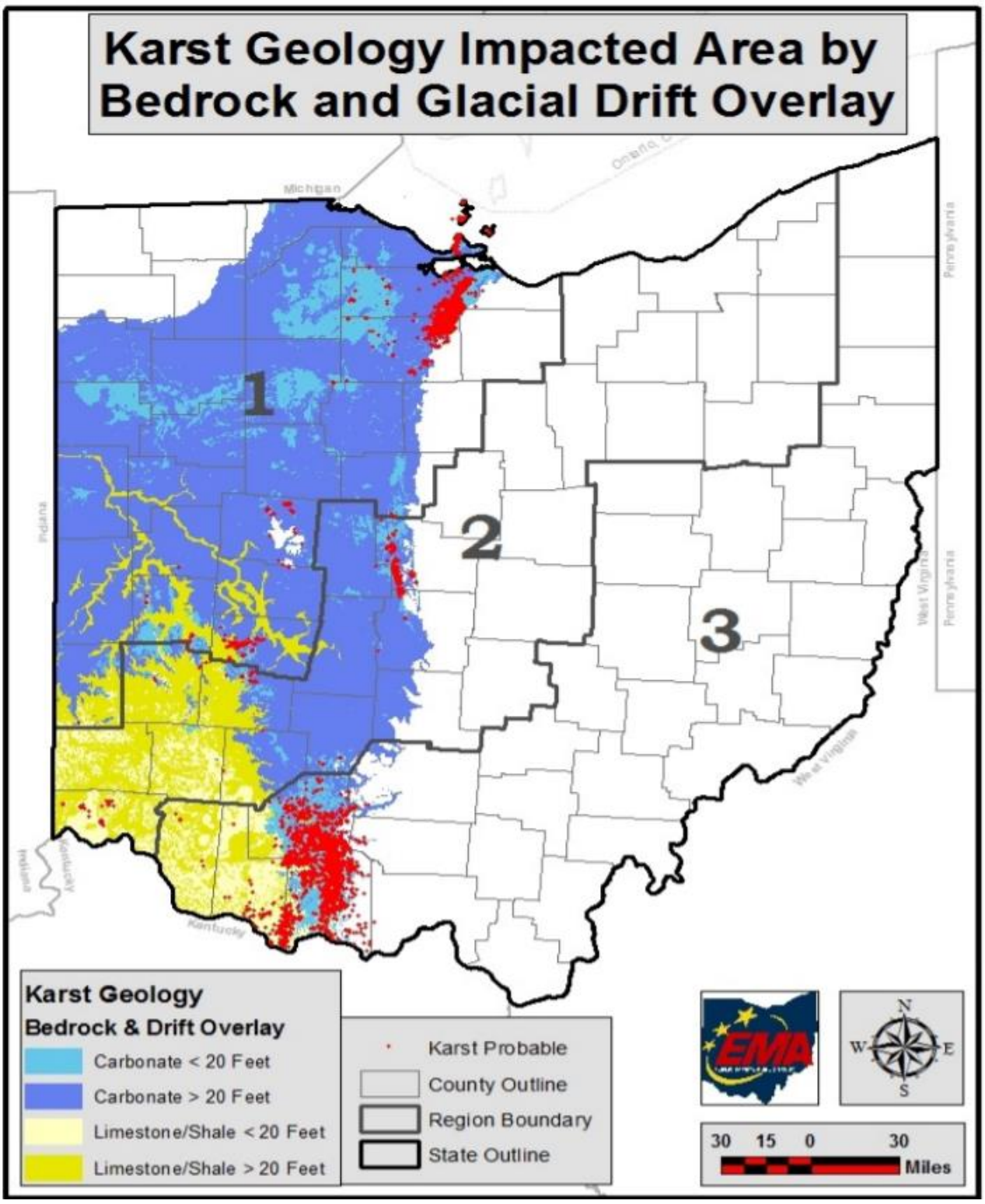
Figure 4.7.2 shows the karst geology for Ohio. According to the *2019 State of Ohio Hazard Mitigation Plan*, karst features are associated with the western third of Ohio, including Shelby County. The limestone, shale, and dolomite layers were deposited between 408 and 505 million years ago as the floor of an ancient sea. Later, the continental plate rose above the existing sea level creating dry land and vast salt deposits. These sedimentary rock layers are naturally porous and dissolve into the water which passes through them.

Figure 4.7.1: Landslide Incidence and Susceptibility Map



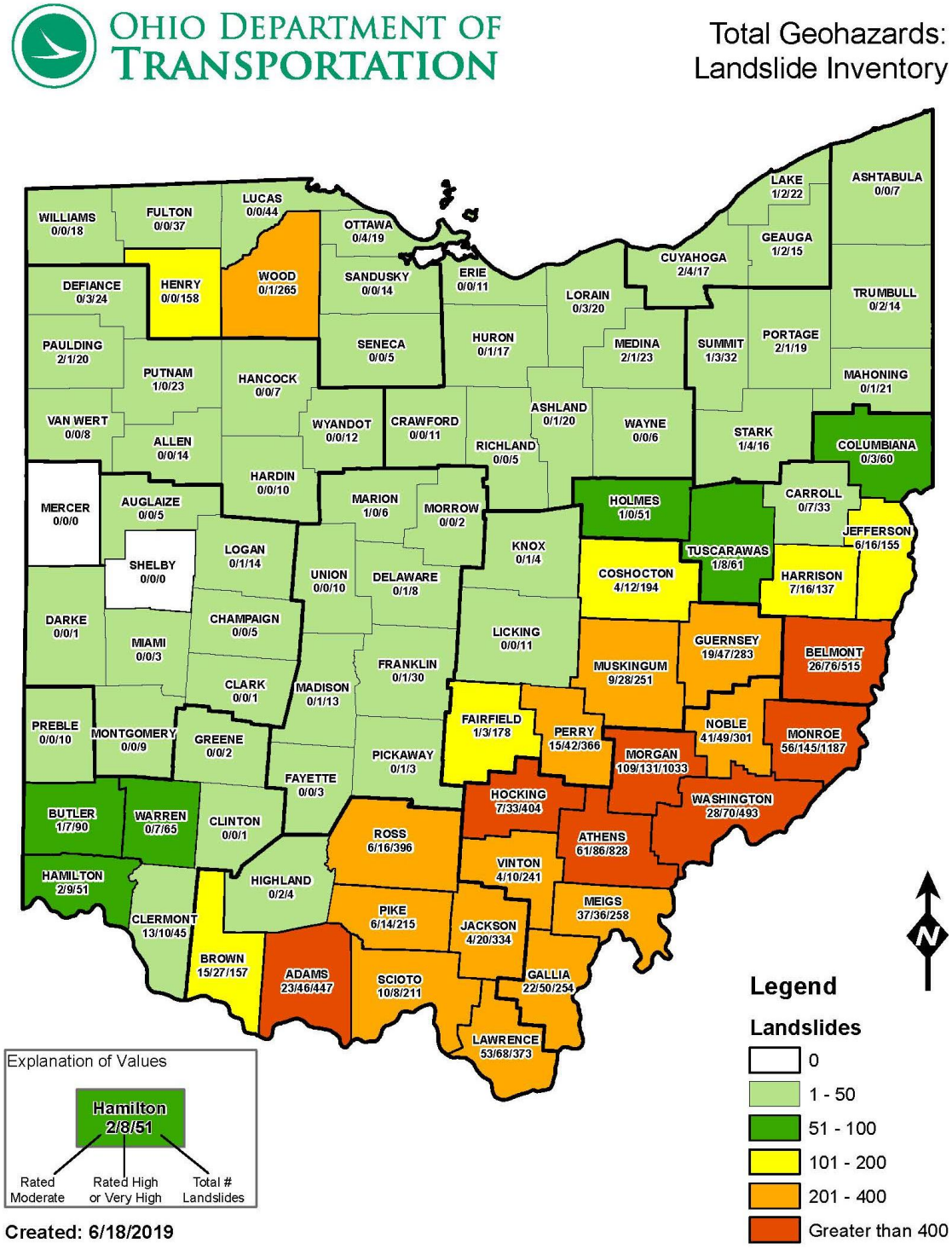
Source: Ohio EMA

Figure 4.7.2: State of Ohio Karst Geology



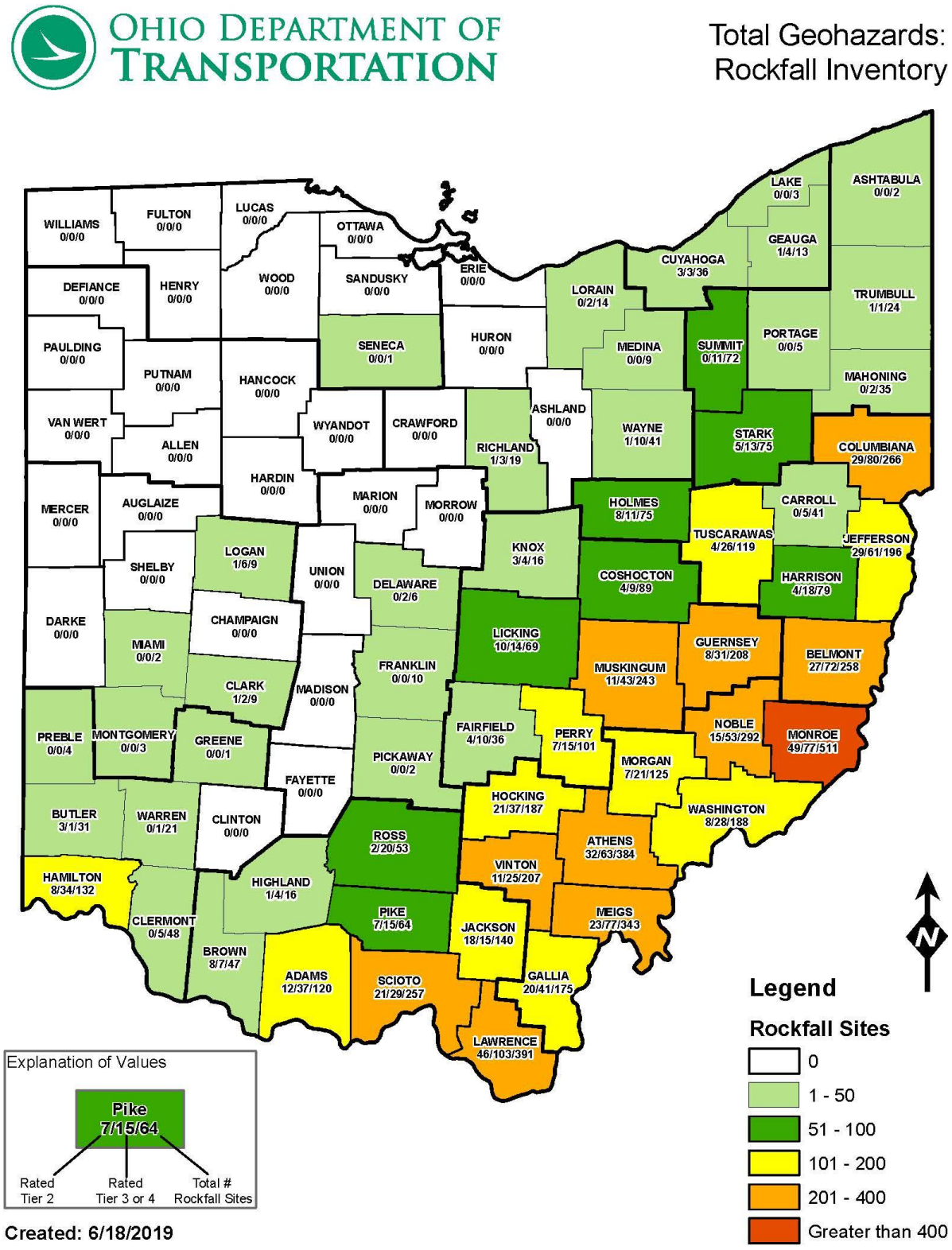
Source: Ohio EMA

Figure 4.7.3: State of Ohio Total Geohazards Landslide Inventory



Source: Ohio EMA

Figure 4.7.4: State of Ohio Total Geohazards Rockfall Inventory



Source: Ohio EMA

4.7.3 Extent

There are three major types of landslides:

1. **Rotational slump**, caused by the movement of a mass of weak rock or sediment as a block unit along a slope. These are the largest types of landslides found in Ohio.
2. **Earthflow**, caused by a mass of rock or sediment-flowing downslope. These are the most common landslides in Ohio.
3. **Rock fall**, a rapid downslope movement of large blocks of bedrock. Most rockfalls in Ohio involve sandstone or limestone that has been weakened by surface water.

Related to karst, Shelby County contains carbonate at less than 20 feet below the surface as well as limestone/shale at both less than and greater than 20 feet below the surface.

4.7.4 History

Figures 4.7.3 and 4.7.4 show that Shelby County has lower occurrences of landslides and rock falls compared to other counties within Ohio, as it has had a total of zero landslides and rock falls as of June 18, 2019.

4.7.5 Probability

According to the ODNR, Shelby County falls within an area of low incidence for slope failure. Landslides should be considered an unlikely but possible event.

4.7.6 Vulnerability Assessment

Infrastructure Impact

Landslides can block or damage roadways and damage existing utility infrastructure. Mine subsidence can occur under existing roadways or utility infrastructure causing anything from minor damage to complete destruction.

Population Impact

Landslides can cause injury or death if a person is struck by or trapped under falling earthen material. Mine subsidence can cause sinkholes under occupied structures which could lead to injuries.

Property Damage

Properties caught in the path of a landslide can be destroyed or severely damaged. Properties, including structures, can be completely destroyed by mine subsidence.

Loss of Life

Loss of life is possible during mine subsidence or landslides. There are no known fatalities in Shelby County due to mine subsidence or landslides.

Economic Losses

Both landslides and mine subsidence can block or destroy sections of roadways vital to shipping. Stores, storage facilities, and other structures that are important to economic activity can also be severely damaged or destroyed.

4.7.7 Land Use and Development Trends

Uses that serve vulnerable populations, such as schools and hospitals, should not be placed in areas that are in high-risk zones for landslides or karst. Development should be limited to areas with minimal slope to reduce potential losses during landslides.

4.8 Severe Summer Weather

4.8.1 Description

Severe summer weather events may include severe thunderstorms and thunderstorm winds, hail, and lightning. High winds, tornadoes, and flooding may also be related to severe summer storms and, due to the potential threat of these events, they are each discussed in separate risk assessments. While tropical storms and hurricanes are also forms of severe storms, Shelby County does not have any record of such events affecting the County; therefore, the County has not deemed tropical storms and hurricanes to be a threat and these specific types of weather will not be addressed further.

According to the National Weather Service (NWS), a severe thunderstorm is a thunderstorm that produces a tornado, winds of at least 58 miles per hour (MPH), and/or hail at least one inch in diameter. A Severe Thunderstorm Watch is issued by the NWS if conditions are favorable for the development of severe thunderstorms. A watch is usually in place for four to eight hours, during which time people should be prepared to move to a safe place if threatening weather approaches.

A Severe Thunderstorm Warning is issued if either the WSR-88D radar indicates a severe thunderstorm or if a spotter reports a storm producing hail or winds meeting the criteria outlined in the description above. The WSR-88D radar is an advanced Weather Surveillance Doppler Radar utilized by the NWS to generate a radar image. The NWS recommends that people in the affected area seek safe shelter immediately, as severe thunderstorms have the potential to produce tornadoes with little-to-no advance warning. Lightning frequency is not a criterion for issuing a severe thunderstorm warning. The warnings are usually issued for one hour and can be issued without a Severe Thunderstorm Watch already in effect. The National Weather Service Forecast Office in Wilmington, Ohio is responsible for issuing Severe Thunderstorm Watches and Warnings for Shelby County.

Lightning is caused by a rapid discharge of electrical energy that has built up in the atmosphere between clouds, the air, or the ground. Lightning strikes can be either direct or indirect. A direct strike is when lightning strikes a building or a specific zone, which can result in fusion points melting holes of varying sizes at the point of impact of materials with high resistivity. An indirect lightning strike is when lightning causes power surges that disrupt electrical equipment.

Severe summer storms can also create strong winds — often called “straight-line” winds — to differentiate thunderstorm winds from tornadic winds. These winds, which have the potential to cause damage, are caused by an outflow generated by a thunderstorm downdraft.

Hail is a type of frozen precipitation that occurs when thunderstorm updrafts carry raindrops upward into extremely cold atmospheric zones where they freeze before falling to the ground. The resulting hailstones can fall at speeds greater than 100 MPH and range in size from smaller than 0.50 inches (the size of a pea) to 4.5 inches (the size of a softball) (Source: National Weather Service).

The NWS can issue various types of wind advisories and warnings. A **wind advisory** is issued when sustained winds of 31 to 39 MPH are reached for an hour or more and/or if there are wind gusts of 46 to 57 MPH for any duration. A **High Wind Watch** indicates that sustained, strong winds are possible and outdoor items should be secured. People should modify plans so they are not caught outside. Additionally, a **High Wind Warning** indicates that sustained, strong winds (40 MPH or greater) with even stronger gusts (greater than 58 MPH) are happening. People should seek shelter, and those driving should keep both hands on the wheel and slow down. An **extreme wind warning** is issued for surface winds of 115 MPH or greater associated with non-convective, downslope, derecho (not associated with a tornado), or sustained hurricane winds that are expected to occur within one hour.

4.8.2 Location

Severe summer storms are a countywide hazard and all of Shelby County is susceptible to severe weather.

4.8.3 Extent

Severe summer storm events have the potential to create large-scale damage, including flooding, downed trees and power lines, in Shelby County. Lightning is responsible for approximately 50 deaths annually across the United States, as well as hundreds of injuries (Source: NOAA). Winds associated with severe summer storms have the potential to cause damage by bringing down tree limbs and generating widespread power outages. Additionally, hail can result in property damage.

Severe summer storms can lead to flooding, downed trees and power lines, and other dangerous conditions.

4.8.4 History

According to the National Centers for Environmental Information (NCEI), there have been 162 high-, strong-, or thunderstorm wind events, two heavy rain events, 60 hail events, and four lightning events recorded in Shelby County from January 1994 to September 2022. These events resulted in about $7.066 million in property damage and $5,000 in crop damage. These events were responsible for six injuries and no deaths. Events from 1994 to 2022 are summarized in **Table 4.8.1**, below:

Table 4.8.1: Thunderstorm-Related Events in Shelby County since 1994

Severe Storm Event Type	Number of Events	Injuries	Deaths	Property Damages	Crop Damages
Strong Wind	162	5	0	$6,865,759	$5,000
Heavy Rain	2	0	0	$1,000	$0
Hail	60	0	0	$30,000	$0
Lightning	4	1	0	$171,000	$0
Total	228	6	0	$7,066,759	$5,000

Shelby County has not been associated with any thunderstorm-related disaster declarations since the previous hazard mitigation plan. The three events that caused injuries are described in more detail below. An event that caused more than five million dollars in property damages is also described in more detail below.

Thunderstorm Winds in the Village of Fort Loramie on June 10, 2020
An unseasonably deep upper-level system ejected east into the Ohio Valley interacting with a very warm and tropically moist air mass that had settled into the region. A large tree fell onto a person that was camping in Lake Loramie State Park. This event caused a reported $2,000 in property damage and one injury.

Thunderstorm Winds throughout Shelby County on September 14, 2008
Strong winds of 40 to 50 miles per hour were sustained for several hours. A gust to 73 mph was recorded in the Village of Anna. Widespread damage occurred across the region, from trees being blown down on powerlines, to significant crop losses and structural damage. This event cause $5.7 million in property damage across multiple counties, including Shelby County.

Lightning in the Village of Anna on July 31, 1999
Lightning struck a barn causing a damaging fire. It also struck a man who received minor injuries. This event caused a reported $20,000 in property damage and one injury.

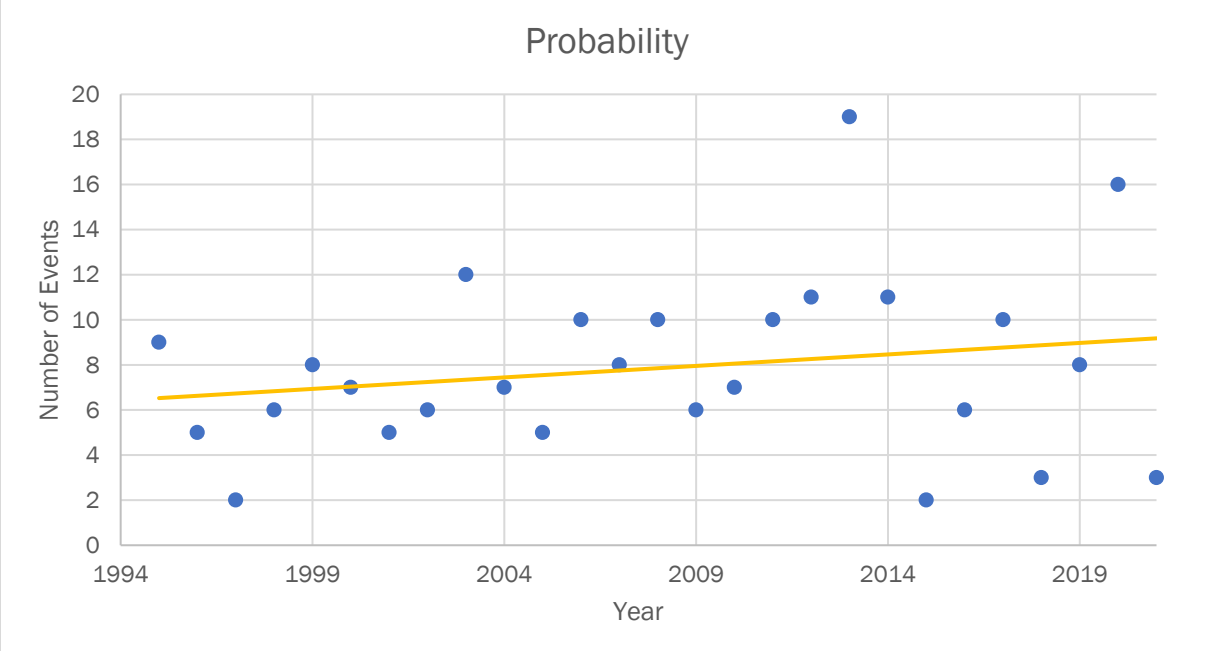
Thunderstorm Winds throughout Shelby County on July 26, 1996
Several trees and power lines were downed in numerous locations. At the county fairgrounds in the City of Sidney, three people were injured as winds knocked tree limbs into tents. In extreme southern Shelby County, thunderstorm winds destroyed a mobile home and injured a 15-year-old girl inside. Winds also destroyed a grain bin. This event caused a reported $60,000 and four injuries.

4.8.5 Probability

According to the NCEI, there have been 228 severe summer storm events reported in Shelby County from January 1994 to September 2022 with total losses reaching at least $7.066 million in property damage and $5,000 in crop damage. This amounts to around eight severe storm events annually with average annual damages of $252,000.

Furthermore, **Figure 4.8.1** below shows the trend in number of thunderstorm events per year since 1994. The trend line has a positive slope, which indicates that the number of severe summer storms has increased over the last 25 years. (Years prior to 1994 are excluded from the probability calculation due to missing and/or unreliable data reporting.)

Figure 4.8.1: Severe Summer Storm Probability



4.8.6 Vulnerability Assessment

Infrastructure Impact
Above-ground infrastructure is at risk for storm damage by wind and falling debris. For infrastructure, high winds and hail are the most damaging part of a severe storm. Thunderstorm winds can strip bark from trees and detach limbs. If large branches fall, they can damage buildings and supporting above-ground infrastructure. In the most severe storms with high winds, large trees can be uprooted and have the potential to fall on buildings including houses, which can cause harm or death.

Utilities are at risk for damage by severe summer storms as well. Electrical lines are spread throughout the County connecting homes, businesses, and other facilities. Severe storms are likely to down tree limbs and generate other debris that can affect above-ground electrical lines causing power outages. Downed power lines that are still live are extremely hazardous and can cause death by electrocution.

Population Impact
Summer storms are random in nature and affect the entire area of the County. Everyone within the County should be prepared during a storm event. Populations residing in mobile home parks are particularly vulnerable and should seek out shelters.

Property Damage
As described above, these events have caused an average of $252,000 in property damages annually. Due to the non-site-specific nature of this hazard, **Table 4.8.2** lists all structures within Shelby County as having potential impacts from severe storms.

Loss of Life
Although no loss of life was reported due to the 201 severe summer storm events on record with the NCEI, there is always potential for injuries and fatalities during severe weather. Three events caused six non-fatal injuries.

Economic Losses
Severe storms usually cause minor damage to structures, such as blowing shingles off roofs and downed branches breaking windows or falling onto buildings and above-ground infrastructure. More severe damage may also result. The costliest storm for property damages in the County's history was the high wind event on September 14, 2008 which caused upwards of $5 million in property damage, approximately 0.17% of the total building value.

Table 4.8.2: Structure Vulnerability from Severe Storms

Structure Type	Number of Properties Exposed	Value of Vulnerable Structures		
		Land	Building	Total
Residential	20,940	$438,566,130	$1,852,033,940	$2,290,600,070
Non-Residential	10,468	$1,669,162,270	$1,116,155,580	$2,785,317,850
Critical Facilities	49	$5,327,020	$102,105,070	$107,432,090
Total	**31,408**	**$2,107,728,400**	**$2,968,189,520**	**$5,075,917,920**

**Note: Critical Facilities are non-residential structures and their value is incorporated into the non-residential totals as well. Calculated totals are determined by summing the residential and non-residential values.*

4.8.7 Land Use and Development Trends

Severe storms can occur anywhere. Any existing or future development has the potential to be impacted by severe storms.

4.9 Severe Winter Weather

4.9.1 Description

Severe winter weather includes winter storms, heavy snow, and extreme cold. Winter storms including blizzards are events that have heavy snow, sleet, ice, freezing rain, or high winds as their primary type of precipitation. While the precipitation itself is typically not dangerous, frozen roads and exposure to cold can cause death and injury.

A winter storm forms under the correct combination of three causes:

1. Below freezing temperatures in the clouds and near the ground, which are necessary to make snow and ice.
2. Lift, which raises the moist air from the clouds and causes precipitation. An example of lift is warm air colliding with cold air and being forced to rise over the cold air.
3. Moisture is needed to form clouds and precipitation. Air blowing across a body of water is a common source of moisture.

Winter storms are categorized by their type: blizzards, ice storms, lake effect storms, and snow squalls.

- **Blizzards** are winter storms that are a combination of blowing snow and wind which lead to very low visibility. Heavy snowfalls and severe cold often accompany blizzards but are not required for a blizzard to occur. Ground blizzards occur when strong winds pick up snow that has already fallen.
- **Ice Storms** occur when at least a quarter inch of ice accumulates on exposed surfaces. Roads and sidewalks can become dangerously slick, and trees and powerlines can easily break under the weight of accumulated ice.
- **Lake Effect Storms** are cold, dry air masses that move over the Great Lakes regions and drop the moisture as snow in the northeastern portion of Ohio near the Great Lakes area.
- **Snow Squalls** are brief, intense snow showers accompanied by strong winds. Impacts may be significant.

4.9.2 Location

Winter storms are typically large events that impact large areas at once. Winter storms will impact the entire County and have the potential to impact multiple counties.

4.9.3 Extent

The State of Ohio Hazard Mitigation Plan 2019 lists winter storms as one of the three highest threat hazards in Ohio. The average annual snowfall in Shelby County is 15 to 20 inches, lower that the state average of about 27 inches. Snowfall typically occurs between November and April. January is the coldest month on average.

4.9.4 History

There have been at least 33 winter storm events and another 79 winter weather events, including heavy snow, extreme cold, wind chill, ice storm, and frost, in Shelby County since January 1996. These events caused $520,000 in property damage, $540,000 worth of crop damage, and did not result in any injuries or deaths according to The National Centers for Environmental Information (NCEI).

There have been three emergency declarations and two major disaster declarations related to severe winter weather covering Shelby County reported by several federal sources and are described below:

Storm Data and Unusual Weather Phenomena on April 6, 2007
Other "Storm Data and Unusual Weather Phenomena" reported by National Weather Service states that Shelby County experienced frost/freeze in April 2007 that resulted in significant crop damages worth $540,000. The report states that "unseasonably warm temperatures for an extended period of time in March allowed much of the Ohio Valley to begin its agricultural growing season early. In early April, a cold snap with low temperatures dropping into the low 20s threatened agricultural interests across the region. The initial estimate of 16.74 million [dollars] in crop damage was split evenly between 31 Ohio counties."

Emergency Declaration on April 24, 2008 (EM-3286-OH)
A record setting snow event impacted 20 counties in the State of Ohio, including Shelby County, on March 7, 2008, and an emergency declaration was made on April 24, 2008. Unofficial observations reported by NOAA's National Weather Service indicates that Shelby County received approximately 9 inches of snowfall. $9,481,809 in public assistance was distributed throughout all impacted counties for snow removal.

Major Disaster Declaration on February 15, 2005 (DR-1580-OH)
Severe Winter Storms and Ice impacted 59 counties in the State of Ohio, including Shelby County, on February 15, 2005. This event was combined with flooding and mudslides. $7,534,746 in Hazard Mitigation Grants and $123,935,836 in public assistance was distributed throughout all impacted counties.

Major Disaster Declaration on January 27, 1996 (DR-1097-OH)
Severe Winter Storms and flooding due to snow runoff impacted several counties in Ohio, including Shelby County, in the months of January and February of 1996. Arctic high pressure brought extreme cold air to the Ohio Valley. A blizzard in January was followed by a severe cold wave in February. Cincinnati received a record breaking 14.4 inches of snowfall. The extreme cold that lasted for several days caused freezing and bursting of numerous water pipes, indirectly related house fires caused by space heaters catching fire, power outages, and vehicular damages. The State of Ohio, including Shelby County, recorded damage of over 2,000 homes and businesses, with approximately $500,000 in uninsured damages. Public facility and infrastructure losses for the State were estimated at approximately $11 million. Individuals and households in Shelby County were eligible to apply for financial and direct services.

Emergency Declaration on January 26, 1978 (EM-3055-OH)
An extremely severe blizzard impacted all counties in the State of Ohio, including Shelby County, on January 26, 1978. $3,546,669 in public assistance was distributed throughout all impacted counties (**Figure 4.9.1**).

Emergency Declaration on February 2, 1977 (EM-3029-OH)
A severe snowstorm impacted 47 counties in the State of Ohio, including Shelby County, on February 2, 1977.

Figure 4.9.1: Blizzard in 1978


Source: NOAA

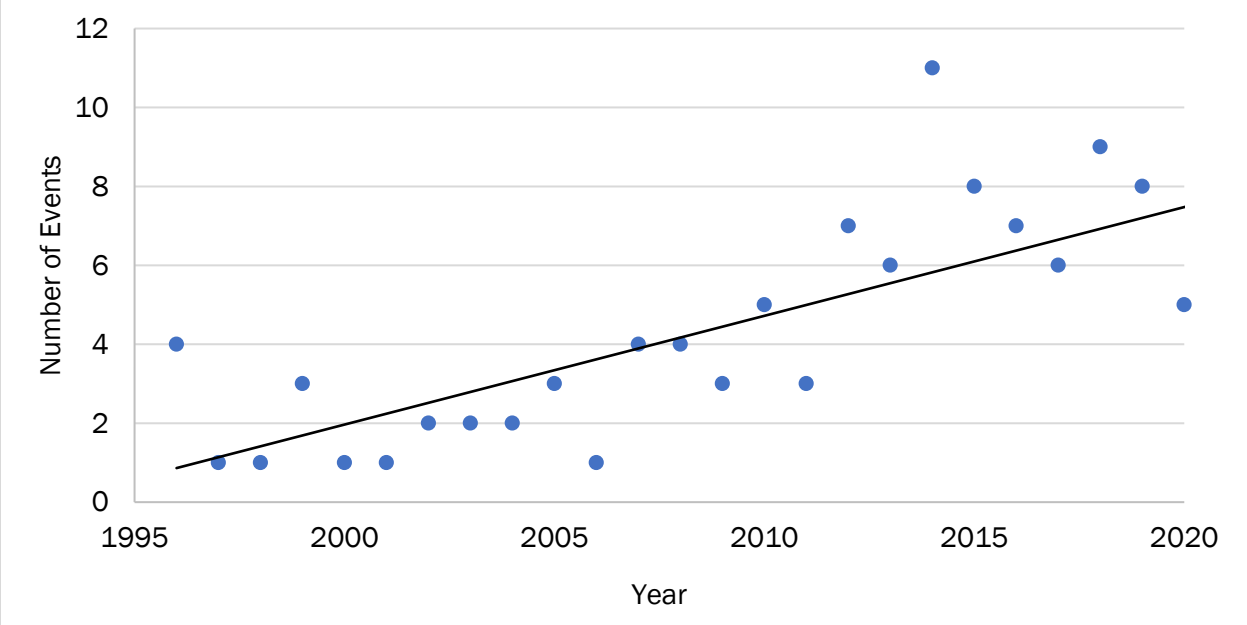
4.9.5 Probability

According to the NCEI, there have been a total of 112 winter storm and winter weather events reported in Shelby County from January of 1996 to April 2021, with total losses amounting to $1.06 million in property damage and crop

damage. This amounts to approximately five winter storm events annually with average annual damages of $42,400.

Figure 4.9.2 shows the trend of severe winter weather events over time between January 1996 and April 2021. The trend line increases over time showing that winter storm events are becoming more common each year. The year 2014 recorded 14 events, the highest in the last 25 years followed by nine events recorded in 2018 and eight events recorded in 2015 as well as 2019. At least one event has been reported each year in the last 25 years.

Figure 4.9.2: Severe Winter Weather Probability



4.9.6 Vulnerability Assessment

Infrastructure Impact

Winter storms can cause damage to overhead utilities. Collapse or damage to utility wires in particular can lead to disruption in communication and power supply for days. Debris from damaged utilities and trees, which can collapse under the weight of accumulated snow and ice, can block roadways or damage property. Water pipes can be frozen under extreme low temperatures that may accompany severe winter storms. Roads and sidewalks can be blocked by the accumulation of snow, as well as being iced over. Bridges and overpasses are particularly dangerous because they freeze before other surfaces.

Population Impact

All residents of Shelby County are expected to be impacted by severe winter storms. Infants, older adults, sick people, and pets are more vulnerable to injuries and health conditions related to exposure to heavy snow and ice. Vulnerable populations should have indoor, easy-to-read thermometers and heating devices in a location where they will see it often.

Property Damage

Property can be damaged by accumulated snow and ice, debris, and falling trees and utility poles. Extreme low temperatures can also freeze the water in pipes which could cause them to explode. All buildings in the County are exposed and vulnerable to winter storms. The State of Ohio Hazard

Mitigation Plan 2019 estimates annual potential losses due to damage caused by winter storms in Shelby County to be $46,258.

Property owners should weatherproof their homes and buildings and conduct regular inspections to eliminate impacts from extreme weather conditions. The Federal Emergency Management Agency (FEMA) suggests that individuals with damaged property should contact their insurance company and take photos of any damage. If individuals are uninsured and underinsured, they should seek assistance by visiting www.DisasterAssistance.gov.

Loss of Life

There are no reported direct or indirect deaths from any severe weather event in Shelby County. However, the events that have impacted Shelby County have caused deaths in other parts of Ohio and Kentucky. Likely causes of death are from iced-over and dangerous roads which lead to vehicular accidents, frostbite or hypothermia from prolonged exposure to cold, heart attacks from heavy snow shoveling, and carbon monoxide poisoning due to toxic fumes from heating sources.

A few ways to prepare and protect from extreme winter weather conditions include, but are not limited to, staying indoors and dressing warmly, staying off roads, avoid driving if already in a vehicle, equipping your vehicle with an emergency supply kit, preparing for power outages and using heating devices intended for indoor use only, staying updated about emergency information and alerts, seeking medical assistance on signs of hypothermia or frostbite, and checking on neighbors.

Economic Losses

Economic losses can occur from businesses shutting down for potentially long periods of time. Economic activity can be completely halted during winter storms including transportation of goods and people. Electricity outages may lead to spoiled goods. Since winter storms occur during the winter season, damages to crops are unlikely but possible. Damaged buildings and pipes, fallen trees and power lines, and costs to repair damages and remove snow further impact the economy of cities and towns.

4.9.7 Land Use and Development Trends

Winter storms can occur anywhere bringing an entire city or region to a standstill, including commuter and emergency transportation and medical services. Any existing or future development has the potential to be impacted by winter storms. All land uses are equally impacted by severe winter weather.

Building design and construction is also impacted by the amount of snowfall. Areas that receive high snowfall should have buildings designed to withstand the weight of the snow in order to avoid sagging, cracking, and collapsing of roofs. On the other hand, snow is a natural insulator and snow accumulated on rooftops helps hold heat in buildings and consequently reduces heating costs.

It is important to maintain consistency between emergency planning, financial plans and budgets, and development planning. Zoning codes should ensure that there is adequate greenspace in existing and new developments to foster drainage and offers space to pile cleared snow. Locating emergency facilities and partnering with emergency organizations during the planning process will help develop improved contingency responses in cases where emergency transportation and services are cut off during an extreme weather event.

4.10 Tornadoes

4.10.1 Description

FEMA defines a tornado as "a violently rotating column of air extending from a thunderstorm to the ground." Tornadoes can generate wind speeds of greater than 250 miles per hour (MPH). Tornado paths can be as large as one-mile-wide and 50 miles long. Nationally, there is an average of 800 tornadoes reported annually across all 50 states.

In general, the midsection of the United States experiences a higher rate of tornadoes than other parts of the country because of the recurrent collision of moist, warm air moving north from the Gulf of Mexico with colder fronts moving east from the Rocky Mountains. Supercells, which form from rotating thunderstorms, are the most destructive variety of tornado.

Tornado Warnings are issued by the Wilmington National Weather Service (NWS) Forecast Office when a tornado is indicated by the WSR-88D radar or sighted in person by spotters. The WSR-88D radar is an advanced Weather Surveillance Doppler Radar utilized by the NWS to generate a radar image. Once a warning has been issued, people in the warning area should seek shelter immediately. Warnings will include the location of the tornado, as well as what communities will be in its path. A tornado warning can be issued without a tornado watch, and they are typically issued for 30 minutes at a time. If the thunderstorm responsible for the formation of the tornado is also producing large volumes of rain, the tornado warning may be combined with a Flash Flood Warning. The NWS Office will follow up any Tornado Warnings with Severe Weather Statements to provide up-to-date information on the tornado and inform the public when the warning is no longer in effect (Source: NWS).

4.10.2 Location

Tornadoes can occur anywhere in Shelby County. All areas and jurisdictions should be considered at risk for a tornado.

4.10.3 Extent

Tornadoes are measured by damage scale for their winds with greater damage equating greater wind speed. The original Fujita Tornado Damage Scale (F-scale) was developed in 1971 without much consideration to a structure's integrity or condition as it relates to the wind speed required to damage it. The Enhanced Fujita-scale (EF-Scale) took effect on February 1, 2007. This scale starts with the original F-scale's F0-F5 ratings and classifies tornado damage across 28 different types of damage indicators. These indicators mostly involve building/structure type and are assessed at eight damage levels from one to eight. Therefore, construction types and their relative strengths and weaknesses are incorporated into the EF classification given to a particular tornado. The most intense damage within the tornado path will generally determine the EF scale given the tornado. Table 4.10.1 lists the classifications under the EF- and F-scale. It should be noted that the wind speeds listed in this table are estimates based on damage rather than measurements.

There are no plans by the National Oceanic Atmospheric Administration (NOAA) or the NWS to re-evaluate the historical tornado data using the enhanced scale. Therefore, this Plan and subsequent plans will reference both scales until a complete switchover is deemed necessary.

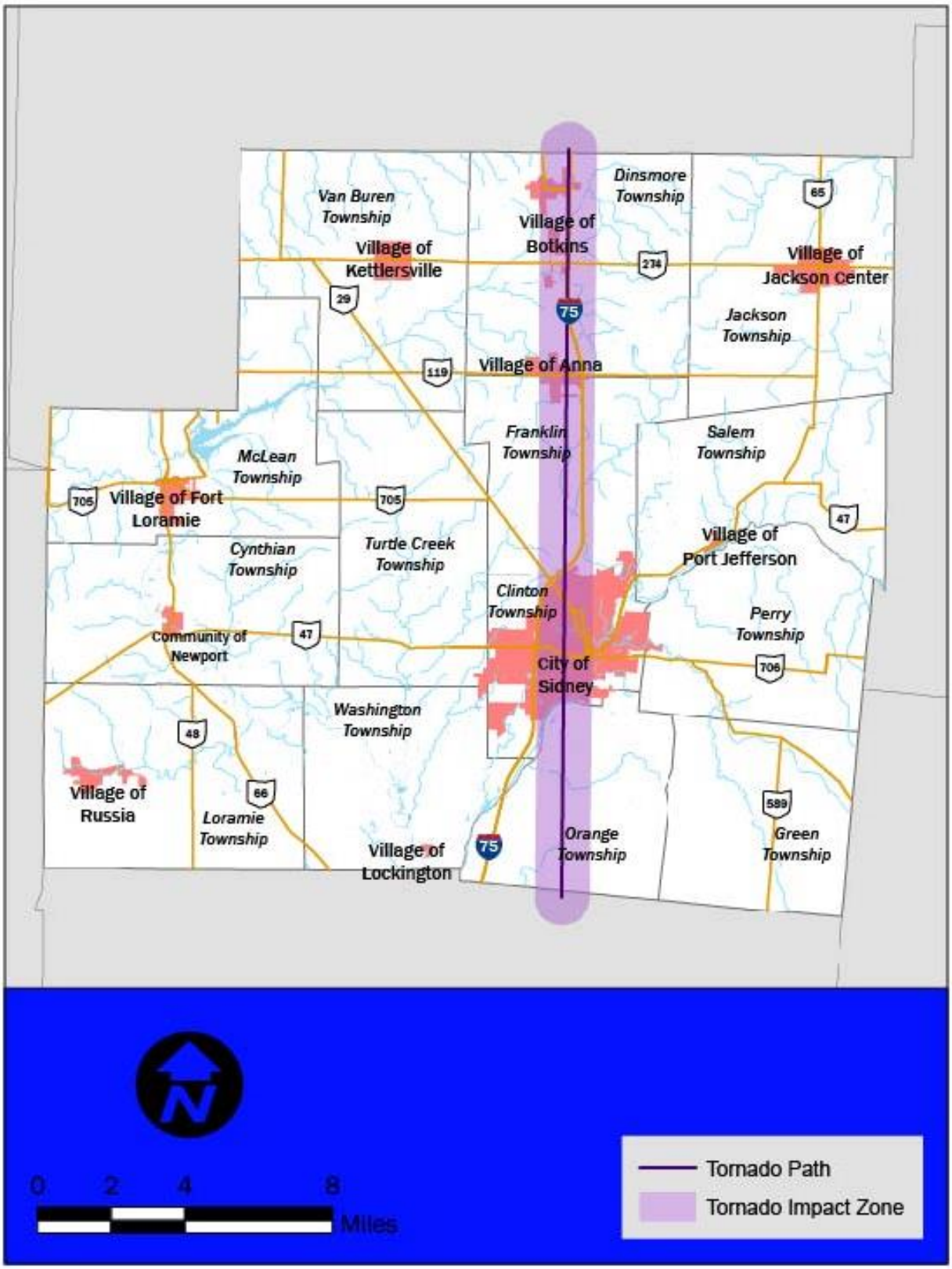
Figure 4.10.1, simulates an extremely destructive, worst-case scenario EF5 tornado and its impacts on Shelby County assets and infrastructure. The worst-case scenario is simulated by running the EF5 tornado on a straight path through the most populated areas of the County. This theoretical scenario is performed to determine maximum potential damage within the County. The damages associated with this theoretical scenario are used to identify the County's potential vulnerability to tornadoes (Table 4.10.2).

Table 4.10.1 Fujita and Enhanced Fujita Scale Classifications

Fujita Scale 3-Second Wind Gust (MPH)		Damage Levels	Enhanced Fujita Scale 3-Second Wind Gust (MPH)	
F0	45-78	**Light Damage**: Tree branches down.	**EF-0**	65-85
F1	79-117	**Moderate damage**: Roof damage.	**EF-1**	86-110
F2	118-161	**Considerable damage**: Houses damaged.	**EF-2**	111-135
F3	162-209	**Severe damage**: Buildings damaged.	**EF-3**	136-165
F4	210-261	**Devastating damage**: Structures leveled.	**EF-4**	166-200
F5	262-317	**Incredible damage**: Whole towns destroyed.	**EF-5**	Over 200

Source: SOHMP

Figure 4.10.1: Worst-Case Tornado Scenario



4.10.4 History

There have been three tornado events in Shelby County between January 1990 and August 2022 resulting in a total of $102,000 in property damage and no reported crop damage. There were no reported deaths or injuries. Annualized damages average approximately $3,200 in property damage. All three events are described below.

Tornado in the Village of Russia on March 6, 2022
An E-F0 tornado in Shelby County caused a reported $100,000 in property damage. Roofs, windows, and gutters were damaged on several properties, and at least two barns were destroyed. There were no reported deaths or injuries.

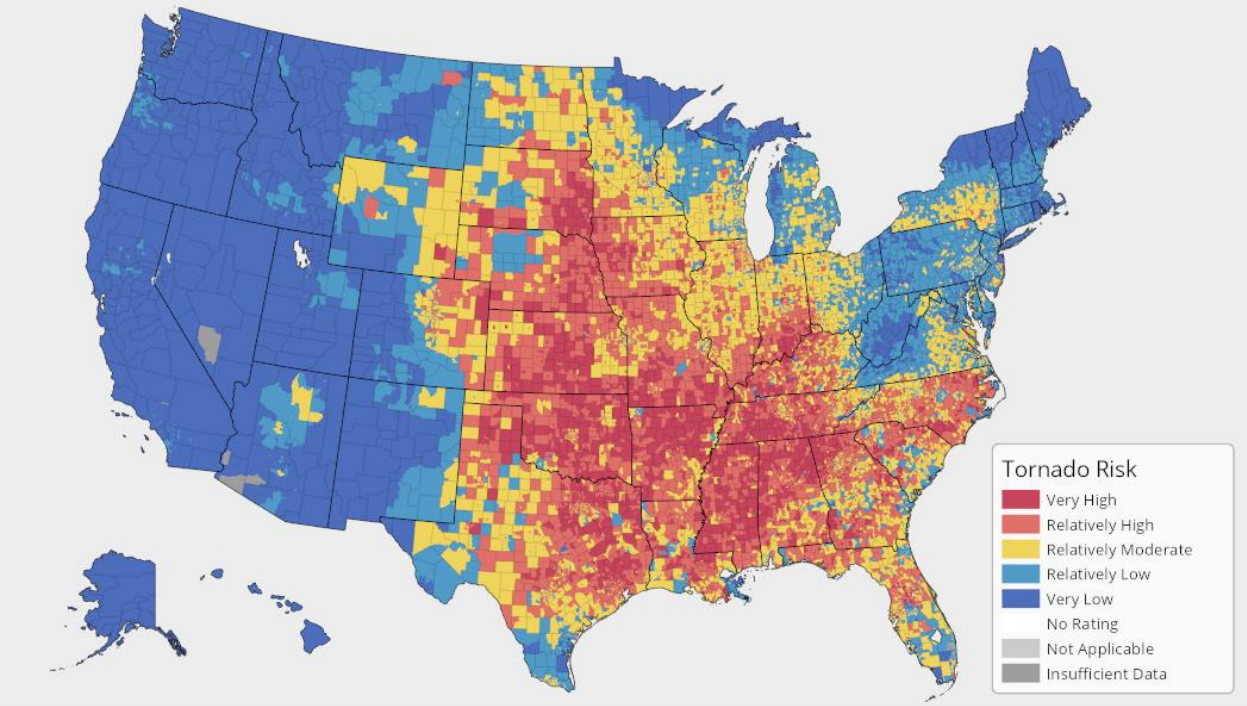
Tornado in the City of Sidney on May 14, 2011
An E-F0 tornado in Shelby County caused a reported zero dollars in property damage.

Tornado in the Village of Port Jefferson on June 20, 2000
An F0 tornado in Shelby County caused a reported $2,000 in property damage. The tornado made a brief touchdown near the intersection of SR-47 and SR-65. A few trees were knocked down.

4.10.5 Probability

The annual rate for tornadoes is about one tornado every ten years. However, when conditions are right, there may be multiple tornadoes in one year. According to FEMA, Shelby County falls within a "relatively moderate" tornado risk zone.

Figure 4.10.2: Probability of Tornado Events in Shelby County



Source: FEMA

4.10.6 Vulnerability Assessment

Infrastructure Impact

Above-ground infrastructure can be damaged by tornadoes. Debris caught in tornadoes as well as fallen trees can also cause damage to buildings and infrastructure and require road closures. Above ground utility infrastructure can be damaged or destroyed, which can cause service outages.

Population Impact

Tornadoes are random in nature and have the potential to occur anywhere in the County. Everyone within the County should be prepared for a tornado. Residents in mobile home parks are particularly vulnerable and should have a plan in place.

Property Damage

Tornadoes can cause significant damage to buildings and properties. There have been three tornadoes in Shelby County which have caused at least $102,000 in property damage. Annually, this amounts to $3,000. **Table 4.10.2** details the structural vulnerability from the worst-case scenario tornado for Shelby County, which is demonstrated in **Figure 4.10.1**. This modeling is completed only to demonstrate potential damages associated with an EF-5 tornado that tracks through the most populated areas of the County.

Table 4.10.2: Structure Vulnerability from Tornadoes

Structure Type	Number of Properties Exposed	Value of Vulnerable Structures		
		Land	Building	Total
Residential	7,382	$125,690,460	$536,446,250	$662,136,710
Non-Residential	2,066	$150,895,230	$381,103,970	$531,999,200
Critical Facilities	24	$3,817,890	$62,072,080	$65,889,970
Total	**9,448**	**$276,585,690**	**$917,550,220**	**$1,194,135,910**

**Note: Critical Facilities are non-residential structures and their value is incorporated into the non-residential totals as well. Calculated totals are determined by summing the residential and non-residential values.*

Loss of Life

While there are no reported deaths or injuries from past tornadoes, there is potential for loss of life during any tornado event.

Economic Losses

Tornadoes can cause major damage to structures and roads. Higher severity tornadoes have the potential to destroy structures. Debris also has the potential to cause damage to structures by breaking windows, damaging walls, or falling directly onto buildings and above-ground infrastructure. Damages to utilities and roadways may cause economic damage due to business closures, destruction of goods that require electricity, and halting economic activity.

4.10.7 Land Use and Development Trends

Tornadoes can occur anywhere. Any existing or future development has the potential to be impacted by tornadoes.

4.11 Wildfire

4.11.1 Description

A wildfire is an uncontrolled fire that burns an area of combustible vegetation and typically occurs in rural areas. The Ohio Department of Natural Resources (ODNR) identifies Ohio's wildfire seasons as occurring primarily in the spring (March, April, and May) before vegetation has "greened-up" and in the fall (October and November) when leaf drop occurs. During these times and especially when weather conditions are warm, windy and with low humidity, cured vegetation is particularly susceptible to burning. Fuel (vegetation, woody debris), weather (wind, temperature, humidity) and topography (hills and valleys) can combine to present an extreme danger to unwary civilians and firefighters in the path of a wildfire. Each year an average of 1,000 wildfires burns 4,000 to 6,000 acres of forest and grassland within Ohio's forest fire protection district, which corresponds mostly to the state's unglaciated hill country.

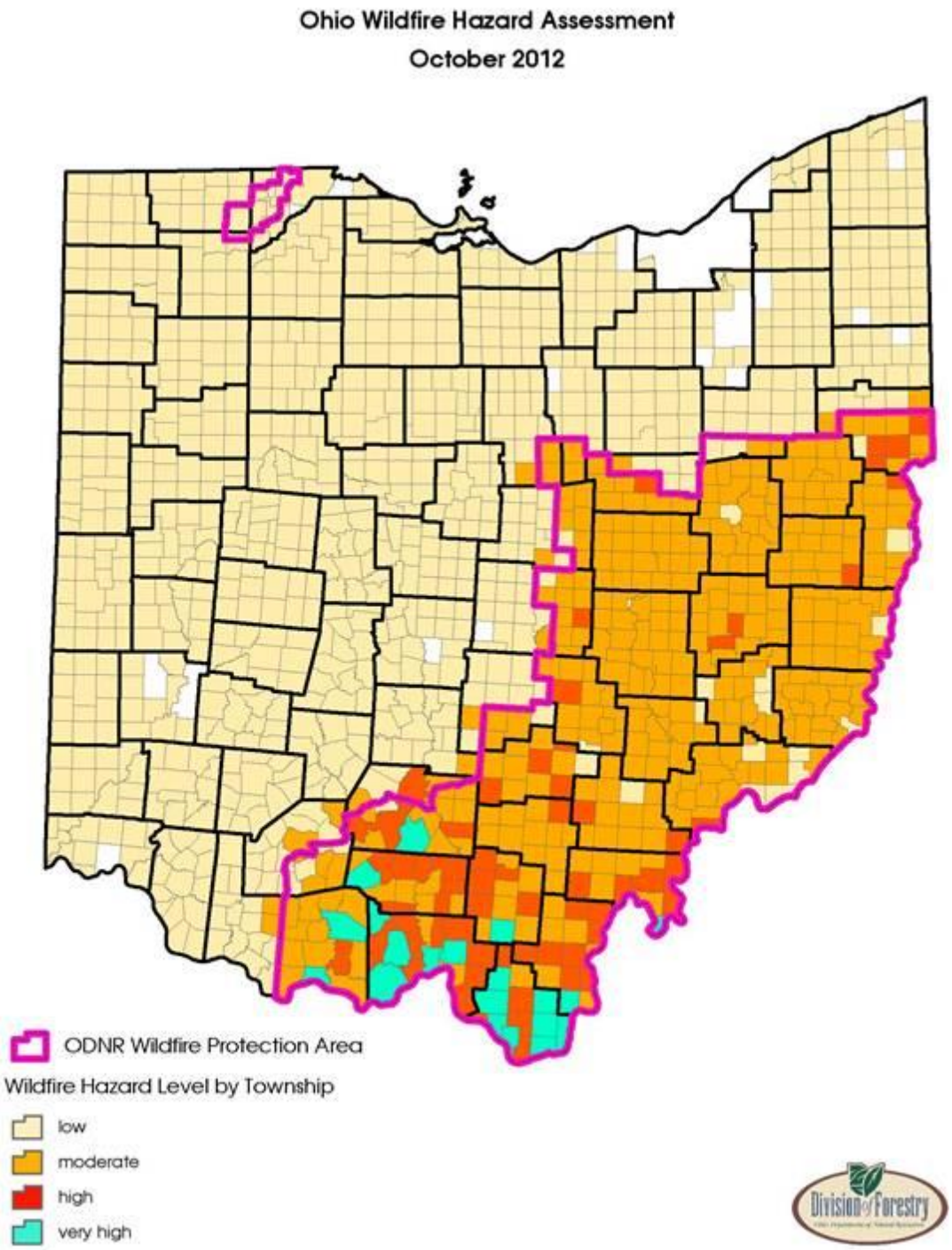
On February 6, 2019, ODNR Division of Forestry expanded the Wildfire Protection Area (**Figure 4.11.1**). According to Greg Guess, wildfire program coordinator and deputy chief for the ODNR Division of Forestry: "The expanded wildfire protection area contains approximately 580 fire departments, a significant increase from approximately 325 fire departments contained in the protection area prior to the expansion. The ODNR Division of Forestry is looking forward to partnering with more rural fire departments to increase wildfire protection efforts in their communities".

Figure 4.11.1: ODNR Division of Forestry's Expanded Forest Fire Protection Area Boundary

4.11.2 Location

According to the State of Ohio Enhanced Hazard Mitigation Plan, Shelby County has not been identified as a county within the Ohio Department of Natural Resources Division of Forestry's Wildfire Protection Area. ODNR Division of Forestry collects wildfire data from Region 1 fire departments in Lucas, Henry, and Fulton counties. No communities within Shelby County have been classified as a community at risk of wildfire according to the Ohio Department of Natural Resources Division of Forestry. Based on the State of Ohio Wildfire Hazard Assessment, all townships and jurisdictions within Shelby County are at a low risk of a wildfire (**Figure 4.11.2**).

Figure 4.11.2: Ohio Wildlife Hazard Assessment



4.11.3 Extent

Several factors can contribute to the escalation of risk of wildfires, including the prevalence of forests and agricultural lands and their proximity to homes, residences, and structures, as well as the distance between fire and emergency management services. In these cases, the presence of fire near structures causes fire departments to shift focus away from fire suppression and towards structure protection. According to the State of Ohio Enhanced Hazard Mitigation Plan, 99.9 percent of wildfires

in Ohio are caused by human action or accident. As such, many wildfires in the State burn into proximity of homes and structures. Most wildfires in Ohio are caused by debris burning, incendiary (arson), equipment, smoking, campfires, children (such as by playing with matches), lightning, and railroad.

4.11.4 History

According to the State of Ohio Enhanced Hazard Mitigation Plan, Shelby County experienced 94 total fire events from January 1, 2007, to December 31, 2017, which average to approximately nine fire events annually. These events burned a total of 770 acres, averaging 8.19 acres per event. Estimating the monetary losses associated with wildfires is difficult due the fact that most of these events occur in open land or fields for which monetary losses are often not recorded. This lack of data may result in inconsistencies if an analysis was done based on reported monetary loss. Acres burned per fire event is a more consistent method of analysis for this hazard. Of the 94 events, 75 fires (80 percent of events) burned less than ten acres, while 18 events (19 percent of events) burned between ten and 99.9 acres. One event (1 percent of events) burned 100 acres or more.

4.11.5 Probability

According to the State of Ohio Enhanced Hazard Mitigation Plan, there is a 100 percent probability that a wildfire will occur within any county in any given year. There are 82 total fire events that occurred in Shelby County from January 1, 2007 to December 31, 2017, an average of five fire events annually in the County.

4.11.6 Vulnerability Assessment

Infrastructure Impact

There is low risk that wildfire in Shelby County will impact infrastructure. Wildfire will most likely impact the County through property and crop damage.

Population Impact

There is low risk of wildfire in Shelby County. Accordingly, there is low risk of impact to the population. If wildfire would occur within the County, the population could be impacted by loss of homes and crops.

Property Damage

As there were no recorded damages from wildfire events in Shelby County's history. Occasionally, in the event of wildfire event, fire engines belonging to local fire departments are damaged while suppressing wildfires. Wildfire suppression has resulted in a great amount of personal property being saved by fire departments.

Loss of Life

Shelby County has no recorded wildfire events resulting in loss of life. It is unlikely that loss of life will result from future wildfires; however, with any wildfire event, there is potential for loss of life. Advanced evacuation warnings can reduce the likelihood of death as a result of wildfire.

Economic Losses

Shelby County has not had any damage to infrastructure as a result of wildfires. However, wildfire has the potential to damage agricultural crops and tree plantations, which can result in economic losses.

4.11.7 Land Use and Development Trends

As there are no current at-risk communities for wildfire, there are no likely impacts on development and land use.

5 | Hazard Mitigation

5.1 Hazard Mitigation Strategy

Each potential hazard, including natural, geological, and human-caused hazards, were rated by members of the Core Planning Committee, which included representatives from each jurisdiction in Shelby County. Each potential hazard was rated on a scale of zero to five, with zero indicating the hazard should not be studied and five indicating the most significant threat to the representative's community. **Table 5.1.1** displays the average of the representatives' ratings as a Priority Score for each hazard. The hazards that scored the highest (Flooding and Winter Storms, 4.00), were both given a Hazard Rank of 1. The mitigation goals follow the ranking of hazards as established by the representatives of the participating jurisdictions.

Table 5.1.1: Hazard Priorities

Hazard	Priority Score	Hazard Rank
Flooding	4.00	1 (tie)
Severe Winter Weather	4.00	1 (tie)
Tornadoes	3.72	3
Severe Summer Weather	3.61	4
Hazardous Materials Incident	3.56	5
High Winds	3.44	Included in Severe Storms*
Drought & Extreme Heat	2.39	6
Dam Failure	2.11	7
Earthquakes	2.00	8
Invasive Species	2.00	9
Landslides, Erosion & Subsidence	1.00	10 (tie)
Wildfire	1.00	10 (tie)

**The high winds hazard was included in the severe summer weather, severe winter weather, and/or and tornadoes assessments as appropriate.*

Coastal erosion and hurricanes/tropical storms are hazards that are not applicable to Shelby County and were not assessed; however, if remnants of hurricanes or tropical storms were experienced as thunderstorms, thunderstorm winds, or high/severe winds, those events were included in the severe summer weather and/or severe wind and tornadoes assessments.

Additionally, two new hazards came out of the initial round of feedback that was collected from the public and stakeholders – landslides/erosion/subsidence and wildfire. Although not ranked as high priorities, jurisdictions were interested in these hazards and developed mitigation actions for them, so these two hazards were both added to the hazard priority list in **Table 5.1.1** above.

Mitigation projects will only be implemented if the benefits outweigh the associated cost of the proposed project. The Core Planning Committee, in coordination with the Shelby County Emergency Management

Agency, performed a general assessment of each action that would require FEMA funding as part of the planning process. A detailed cost-benefit analysis of each mitigation action will be required during the project planning phase in order to determine the economic feasibility of each action. Projects will also be evaluated for social and environmental impact-related feasibility, as well as technical feasibility and any other criteria that evaluate project effectiveness. This evaluation of each project will be performed during the pre-application phase of a grant request. Project implementation will be subject to the availability of FEMA grants and other funding sources, as well as local resources.

Projects that are determined to be infeasible during this review process will be re-evaluated by members of the Core Planning Committee for re-scheduling or deletion.

5.2 Hazard Mitigation Goals and Mitigation Actions

Developing achievable goals forms the foundation for all mitigation actions and activities that will aid Shelby County in attaining the overall mission of the Core Planning Committee. As such, the Core Planning Committee assessed the goals of the 2017 Shelby County Hazard Mitigation Plan and had the opportunity to develop new goals for the 2022 update. Goals were reviewed and established based upon their relationship to the potential adverse impact upon the community.

The goals, as well as the hazards assessed for this Plan, informed the development of actions that the County and participating jurisdictions can take to mitigate the impacts of each of the hazards. The goals of the 2022 Shelby County Hazard Mitigation Plan are as follows:

- **Goal 1:** Increase public information and awareness about hazards that affect Shelby County.
- **Goal 2:** Decrease dam hazard level.
- **Goal 3:** Expand awareness and minimize the effects from drought.
- **Goal 4:** Expand awareness and minimize the effects from flooding.
- **Goal 5:** Minimize the effects from hazardous materials.
- **Goal 6:** Minimize the threat of invasive species.
- **Goal 7:** Expand awareness about tornadoes and severe storms.
- **Goal 8:** Increase protection from possible terrorism events.
- **Goal 9:** Expand awareness about the effects from winter storms.
- **Goal 10:** Generate discussion on drug misuse and addiction within Shelby County.
- **Goal 11**: Increase understanding of epidemics/pandemics on Shelby County.
- **Goal 12**: Minimize possibility of widespread utility failure throughout Shelby County.

5.3 Hazard Mitigation Action Priority

Members of the Core Planning Committee completed a Previous Mitigation Action Status survey, which indicated the status of mitigation actions included in the 2016 Hazard Mitigation Plan. This survey asked representatives to indicate whether the mitigation action from the previous plan was completed, deleted, deferred, unchanged, or ongoing. It also asked the representative if the action should be included in the updated Plan.

Once all mitigation actions from the previous plan were reviewed and their status indicated (**Appendix B**), all mitigation actions for the 2021 Shelby County Hazard Mitigation Plan were reviewed and rated on a scale of one to five by members of the Core Planning Committee based on the several criteria, including whether the action was cost-effective, technically feasible, environmentally sound, needed immediately, and the action's total risk reduction.

All of the surveys collected were tabulated to develop a single raw score for each individual mitigation action. These scores are indicated on the Hazard Mitigation Action Priority Table on the following pages. Overall, the score was determined by two factors:

1. The rankings of the hazard, as determined by the Hazard Priority Survey (**Table 5.1.1**, above).
2. The ratings received from the Core Planning Committee and the public on each of the mitigation actions.

The raw scores were then ranked, and each mitigation action was assigned a number (1-67) to indicate the priority of that specific action, according to the survey responses. The lower the action priority number, the higher the priority. For example, an action assigned a priority score of "1" should be prioritized higher than an action assigned a priority score of "38".

Hazard Mitigation Action priorities are organized by hazard in **Table 5.3.1**. Comments from the jurisdictions responsible for each action can be found in **Appendix F**, along with all completed surveys that were used to make **Table 5.3.1**.

Table 5.3.1: Mitigation Actions Priority Table by Hazard

#	Mitigation Action	Community	Hazard Priority	Action Priority	Lead Agency	Funding Source	Start/End	Status
Multiple Hazards								
1	Upgrade or install new severe weather warning system for Lockington.	Lockington,	1	1	Lockington Mayor	Capital Improvement Budgets	12/1/22-11/30/27	New
2	Add tornado sirens where villages are not covered by one, and educate the public as to the location of them and the testing schedule of the sirens. Educate via the newspaper but also via social media and mass email lists.	Shelby County,	1	2	Shelby County EMA	Capital Improvement Budgets	12/1/22-11/30/27	New

#	Mitigation Action	Community	Hazard Priority	Action Priority	Lead Agency	Funding Source	Start/End	Status
3	Communicate specific road conditions during snow / ice storms, such as notifying the public of which state routes are or are not safe for driving, perhaps based on input from snowplow drivers and law enforcement.	Shelby County,	1	3	Shelby County EMA	Staff Time	12/1/22-11/30/27	New
4	Develop emergency plan for the Sidney Senior Center.	Shelby County, Jackson Center, Port Jefferson, Sidney,	1	4	Shelby County EMA, Mayors/ Administrators of Jurisdictions	Staff Time	12/1/22-11/30/27	Ongoing
5	Seek funding for early warning systems, such as sirens and county-wide emergency notification systems, to warn residents of approaching severe weather.	Shelby County, Anna, Fort Loramie, Jackson Center, Port Jefferson, Russia, Sidney,	1	5	Shelby County EMA	Emergency Management Performance Grant (EMPG) Special Project Grants	12/1/22-11/30/27	Ongoing
6	Provide back-up generators and the necessary hook-ups for critical facilities, which need to maintain continuous power to protect	Shelby County, Anna, Fort Loramie, Jackson Center, Port Jefferson, Russia, Sidney,	1	6	Shelby County EMA, Mayors/ Administrators of Jurisdictions	Emergency Management Performance Grant (EMPG) Special Project Grants	12/1/22-11/30/27	Ongoing

#	Mitigation Action	Community	Hazard Priority	Action Priority	Lead Agency	Funding Source	Start/End	Status
	human health and life.							
7	Develop education programs associated with multiple natural hazards and how to prepare for them prior to their occurrence.	Shelby County, Anna, Fort Loramie, Jackson Center, Port Jefferson, Russia, Sidney,	1	7	Shelby County EMA	Staff Time	12/1/22-11/30/27	New
8	Define and identify populations that may be vulnerable during severe weather events.	Shelby County, Anna, Fort Loramie, Jackson Center, Port Jefferson, Russia, Sidney,	1	8	Sidney-Shelby County Health Department, Mayors/ Administrators of Jurisdictions	General Operating Budget	12/1/22-11/30/27	New
9	Develop educational information for general public concerning alternate methods for keeping basements dry.	Shelby County, Anna, Fort Loramie, Jackson Center, Port Jefferson, Russia, Sidney,	1	9	Shelby County EMA, Mayors/ Administrators of Jurisdictions	Emergency Management Performance Grant (EMPG) Special Project Grants	12/1/22-11/30/27	Ongoing
10	Seek funding for auto sandbag filling equipment.	Shelby County, Anna, Fort Loramie, Jackson Center, Port Jefferson, Russia, Sidney,	1	10	Shelby County EMA, Mayors/ Administrators of Jurisdictions	Staff Time	12/1/22-11/30/27	Ongoing
11	Construct community shelter/safe rooms in the	Shelby County, Fort Loramie,	1	11	Fort Loramie Mayor	State Homeland Security Program (SHSP)	12/1/22-11/30/27	Ongoing

#	Mitigation Action	Community	Hazard Priority	Action Priority	Lead Agency	Funding Source	Start/End	Status
	Village of Fort Loramie.	Port Jefferson,						
12	Develop a public education program for informing residents about the benefits of having NOAA radios and Family Disaster Plans, which will help them better respond to an emergency situation.	Shelby County, Anna, Fort Loramie, Jackson Center, Port Jefferson, Russia, Sidney,	1	12	Shelby County EMA	Staff Time	12/1/22-11/30/27	New
13	Develop a tree maintenance program for trimming and pruning trees to help prevent damage from falling limbs.	Shelby County, Anna, Fort Loramie, Jackson Center, Port Jefferson, Russia, Sidney,	1	13	Shelby County EMA	Staff Time	12/1/22-11/30/27	Ongoing
14	Develop an outreach program for informing citizens of designated shelter locations.	Shelby County, Anna, Fort Loramie, Jackson Center, Port Jefferson, Russia, Sidney,	1	14	Shelby County EMA	Emergency Management Performance Grant (EMPG) Special Project Grants	12/1/22-11/30/27	Ongoing
15	Encourage the use of natural plantings.	Anna, Fort Loramie, Jackson Center, Port Jefferson, Russia, Sidney,	1	15	Shelby County Building & Zoning, Mayors/ Administrators of Jurisdictions	Emergency Management Performance Grant (EMPG) Special Project Grants	12/1/22-11/30/27	New

#	Mitigation Action	Community	Hazard Priority	Action Priority	Lead Agency	Funding Source	Start/End	Status
16	Form a citizen plan implementation steering committee to monitor progress on local mitigation actions. Include a mix of representatives from neighborhoods, local businesses, and local government.	Shelby County, Anna, Fort Loramie, Jackson Center, Port Jefferson, Russia, Sidney,	1	16	Shelby County EMA, Mayors/ Administrators of Jurisdictions	Staff Time	12/1/22-11/30/27	New
17	Adopt the International Building Code (IBC) and International Residential Code (IRC).	Anna, Fort Loramie, Jackson Center, Port Jefferson, Russia, Sidney,	1	17	Shelby County Building & Zoning, Mayors/ Administrators of Jurisdictions	Staff Time	12/1/22-11/30/27	New
Dam Failure								
18	Repair or upgrade the Miami-Erie Canal, first lock.	Lockington,	10	55	Lockington Mayor	Capital Improvement Budgets	12/1/22-11/30/27	New
19	Rehabilitate high hazard potential dams in the County as needed.	Shelby County, Fort Loramie, Port Jefferson, Russia, Sidney,	10	57	Shelby County EMA, Mayors/ Administrators of Jurisdictions	Emergency Management Performance Grant (EMPG) Special Project Grants	12/1/22-11/30/27	New
20	Obtain inundation mapping for at least all high hazard potential dams in the County.	Shelby County, Anna, Fort Loramie, Port Jefferson, Russia, Sidney,	10	58	Shelby County EMA	United States Army Corps of Engineers (USACE) Planning Assistance to States	12/1/22-11/30/27	New

#	Mitigation Action	Community	Hazard Priority	Action Priority	Lead Agency	Funding Source	Start/End	Status
21	Identify and record any high hazard potential dams in the County in need of rehabilitation.	Shelby County, Fort Loramie, Port Jefferson, Russia, Sidney,	10	59	Shelby County Engineer	Staff Time	12/1/22-11/30/27	New
22	Develop a flood study, particularly for Loramie Creek between the Loramie Lake Dam on the north side of Fort Loramie and State Route (SR) 47 south of Newport, Ohio, as well as for other areas of flooding in the county.	Shelby County	10	55	Shelby County EMA	Building Resilient Infrastructure and Communities (BRIC)	12/1/22-11/30/27	New
Drought & Extreme Heat								
23	Develop a public education program for residents for restrictions on open burning and water usage during drought conditions.	Shelby County, Anna, Fort Loramie, Jackson Center, Lockington, Port Jefferson, Russia, Sidney,	9	51	Shelby County Building & Zoning, Mayors/ Administrators of Jurisdictions	Emergency Management Performance Grant (EMPG) Special Project Grants	12/1/22-11/30/27	Ongoing
24	Identify local drought indicators, such as precipitation, temperature, surface water levels, soil moisture, etc.	Shelby County, Anna, Fort Loramie, Jackson Center, Lockington, Port Jefferson, Russia, Sidney,	9	52	Shelby County EMA	Staff Time	12/1/22-11/30/27	New

#	Mitigation Action	Community	Hazard Priority	Action Priority	Lead Agency	Funding Source	Start/End	Status
25	Develop a drought communication plan and early warning system.	Shelby County, Anna, Fort Loramie, Jackson Center, Lockington, Port Jefferson, Russia, Sidney,	9	53	Shelby County EMA, Mayors/ Administrators of Jurisdictions	Staff Time	12/1/22-11/30/27	New
26	Regularly monitor and report on local drought indicators.	Shelby County, Anna, Fort Loramie, Jackson Center, Lockington, Port Jefferson, Russia, Sidney,	9	54	Shelby County EMA	Staff Time	12/1/22-11/30/27	New
Earthquakes (see Multiple Hazards)								
Flooding								
27	Identify which highway exits near Lockington are flooding and identify detour routes.	Lockington,	2	18	Lockington Mayor	Staff Time	12/1/22-11/30/27	New
28	Develop a river and stream maintenance program for removing debris and log jams from drainage ways.	Shelby County, Anna, Fort Loramie, Jackson Center, Kettlersville, Lockington, Port Jefferson, Russia, Sidney,	2	19	Shelby County Engineer	General Operating Budget	12/1/22-11/30/27	Ongoing
29	Ensure that all communities that fall within a FEMA designated floodway participate in the National	Shelby County, Anna, Fort Loramie, Jackson Center, Kettlersville, Lockington,	2	20	Shelby County EMA, Mayors/ Administrators of Jurisdictions	Staff Time	12/1/22-11/30/27	New

#	Mitigation Action	Community	Hazard Priority	Action Priority	Lead Agency	Funding Source	Start/End	Status
	Flood Insurance Program.	Port Jefferson, Russia, Sidney,						
30	Prepare and adopt a stormwater drainage study for known problem areas.	Shelby County, Anna, Fort Loramie, Jackson Center, Kettlersville, Lockington, Port Jefferson, Russia, Sidney,	2	21	Shelby County EMA, Mayors/ Administrators of Jurisdictions	United States Army Corps of Engineers (USACE) Planning Assistance to States	12/1/22-11/30/27	New
31	Raise utilities or other mechanical devices above expected flood levels.	Shelby County, Fort Loramie, Jackson Center, Kettlersville, Port Jefferson, Russia, Sidney,	2	22	Shelby County Engineer, Mayors/ Administrators of Jurisdictions	Capital Improvement Budgets	12/1/22-11/30/27	New
32	Develop depth analysis grids to reduce flooding impacts for locations within the Great Miami Watershed and Loramie Creek Watershed.	Shelby County, Anna, Fort Loramie, Jackson Center, Port Jefferson, Russia, Sidney,	2	23	Shelby County Engineer	Capital Improvement Budgets	12/1/22-11/30/27	Ongoing
33	Require that any County designated lifeline or critical facility is located outside of the 100 year floodplain.	Shelby County, Anna, Fort Loramie, Jackson Center, Kettlersville, Port Jefferson,	2	24	Shelby County Engineer, Mayors/ Administrators of Jurisdictions	Staff Time	12/1/22-11/30/27	New

#	Mitigation Action	Community	Hazard Priority	Action Priority	Lead Agency	Funding Source	Start/End	Status
		Russia, Sidney,						
34	Map or otherwise record flood and flash flood events.	Shelby County, Anna, Fort Loramie, Jackson Center, Kettlersville, Lockington, Port Jefferson, Russia, Sidney,	2	25	Shelby County Engineer, Mayors/ Administrators of Jurisdictions	Staff Time	12/1/22-11/30/27	New
35	Develop a floodplain management plan and update it regularly.	Shelby County, Anna, Fort Loramie, Jackson Center, Kettlersville, Lockington, Port Jefferson, Russia, Sidney,	2	26	Shelby County EMA, Mayors/ Administrators of Jurisdictions	Staff Time	12/1/22-11/30/27	New
36	Complete a stormwater drainage study for known problem areas.	Shelby County, Anna, Fort Loramie, Jackson Center, Kettlersville, Lockington, Port Jefferson, Russia, Sidney,	2	27	Shelby County EMA, Mayors/ Administrators of Jurisdictions	United States Army Corps of Engineers (USACE) Planning Assistance to States	12/1/22-11/30/27	New
37	Require that floodplains be kept as open space.	Shelby County, Anna, Fort Loramie, Jackson Center, Kettlersville, Lockington,	2	28	Shelby County EMA, Mayors/ Administrators of Jurisdictions	Staff Time	12/1/22-11/30/27	New

#	Mitigation Action	Community	Hazard Priority	Action Priority	Lead Agency	Funding Source	Start/End	Status
		Port Jefferson, Russia, Sidney,						
38	Establish a green infrastructure program to link, manage, and expand existing parks, preserves, greenways, etc.	Shelby County, Anna, Fort Loramie, Jackson Center, Lockington, Port Jefferson, Russia, Sidney,	2	29	Shelby County EMA, Mayors/ Administrators of Jurisdictions	Staff Time	12/1/22-11/30/27	New
39	Develop and maintain a floodplain management plan, and update it regularly.	Shelby County, Anna, Fort Loramie, Jackson Center, Kettlersville, Lockington, Port Jefferson, Russia, Sidney,	2	29	Shelby County Engineer, Mayors/ Administrators of Jurisdictions	Staff Time	12/1/22-11/30/27	New
40	Elevate or otherwise address flood prone structures within the base elevation of the 100-year floodplain.	Shelby County, Anna, Fort Loramie, Jackson Center, Port Jefferson, Russia, Sidney,	2	31	Shelby County Engineer, Mayors/ Administrators of Jurisdictions	United States Army Corps of Engineers (USACE) Flood Control Program	12/1/22-11/30/27	Ongoing
41	Seek funding to update Flood Insurance Maps.	Shelby County, Anna, Fort Loramie, Jackson Center, Kettlersville, Port Jefferson, Russia, Sidney,	2	32	Shelby County Engineer, Mayors/ Administrators of Jurisdictions	Staff Time	12/1/22-11/30/27	Ongoing

#	Mitigation Action	Community	Hazard Priority	Action Priority	Lead Agency	Funding Source	Start/End	Status
42	Purchase, retrofit, relocate, or demolish repetitive loss properties in the County.	Shelby County, Jackson Center, Port Jefferson, Russia, Sidney,	2	33	Shelby County Engineer, Mayors/ Administrators of Jurisdictions	General Operating Budget	12/1/22-11/30/27	Ongoing
43	Develop a plan to replace, modify, or expand culverts along OH-705 in the Village of Fort Loramie.	Shelby County, Fort Loramie, Port Jefferson,	2	34	Fort Loramie Mayor	Capital Improvement Budgets	12/1/22-11/30/27	Ongoing
44	Improve storm water drainage in the Village of Fort Loramie.	Shelby County, Fort Loramie, Port Jefferson,	2	35	Fort Loramie Mayor	United States Army Corps of Engineers (USACE) Flood Control Program	12/1/22-11/30/27	Ongoing
45	Seek sources of funding to minimize storm water drainage problems in the Village of Jackson Center.	Shelby County, Jackson Center, Port Jefferson,	2	36	Jackson Center Mayor	United States Army Corps of Engineers (USACE) Flood Control Program	12/1/22-11/30/27	Ongoing
46	Limit the percentage of allowable impervious surface within developed parcels.	Shelby County, Anna, Fort Loramie, Jackson Center, Kettlersville, Lockington, Port Jefferson, Russia, Sidney,	2	37	Shelby County EMA, Mayors/ Administrators of Jurisdictions	Staff Time	12/1/22-11/30/27	New
47	Conduct a verification study of FEMA's repetitive loss inventory and developing an associated	Shelby County, Anna, Fort Loramie, Jackson Center, Kettlersville, Port Jefferson,	2	37	Shelby County EMA, Mayors/ Administrators of Jurisdictions	Staff Time	12/1/22-11/30/27	New

#	Mitigation Action	Community	Hazard Priority	Action Priority	Lead Agency	Funding Source	Start/End	Status
	tracking database.	Russia, Sidney,						
48	Develop plans to replace, modify, or expand culverts along the Hull Creek railroad in the Village of Botkins.	Shelby County, Botkins,	2	39	Botkins Mayor	Capital Improvement Budgets	12/1/22-11/30/27	Ongoing
Hazardous Materials Incident								
49	Complete a commodity flow study.	Anna, Fort Loramie, Jackson Center, Port Jefferson, Russia, Sidney,	6	48	Shelby County EMA	Hazardous Materials Emergency Planning Grant (HMEP)	12/1/22-11/30/27	New
Invasive Species								
50	Identify and log any invasive species event, including plants and animals.	Shelby County, Anna, Fort Loramie, Jackson Center, Kettlersville, Port Jefferson, Russia, Sidney,	12	60	Shelby County EMA, Mayors/ Administrators of Jurisdictions	Staff Time	12/1/22-11/30/27	New
51	Identify ash trees at risk to the Emerald Ash Borer.	Anna, Fort Loramie, Jackson Center, Port Jefferson, Russia, Sidney,	12	61	Shelby County EMA, Mayors/ Administrators of Jurisdictions	Staff Time	12/1/22-11/30/27	New
52	Treat healthy trees and replace highly damaged trees with a non-Ash species.	Shelby County, Anna, Fort Loramie, Jackson Center, Port Jefferson, Russia, Sidney,	12	62	Shelby County EMA, Mayors/ Administrators of Jurisdictions	General Operating Budget	12/1/22-11/30/27	New

#	Mitigation Action	Community	Hazard Priority	Action Priority	Lead Agency	Funding Source	Start/End	Status
53	Identify trees with symptoms of Emerald Ash Borer infestation.	Anna, Fort Loramie, Jackson Center, Port Jefferson, Russia, Sidney,	12	63	Shelby County EMA, Mayors/ Administrators of Jurisdictions	Staff Time	12/1/22-11/30/27	New
54	Identify ash trees within 15 miles of a confirmed Emerald Ash Borer infestation. Identify appropriate preventative treatments for ash trees in this zone.	Anna, Fort Loramie, Jackson Center, Port Jefferson, Russia, Sidney,	12	63	Shelby County EMA, Mayors/ Administrators of Jurisdictions	Staff Time	12/1/22-11/30/27	New
Landslides, Erosion, and Subsidence								
55	Encourage the planting of plants with strong root systems on slopes in at risk areas.	Shelby County, Fort Loramie, Port Jefferson, Russia, Sidney,	13	65	Shelby County Engineer, Mayors/ Administrators of Jurisdictions	Staff Time	12/1/22-11/30/27	New
56	Apply soil stabilization measures, such as planting soil-stabilizing vegetation on steep, publically owned slopes.	Shelby County, Port Jefferson, Russia, Sidney,	13	66	Shelby County Engineer, Mayors/ Administrators of Jurisdictions	General Operating Budget	12/1/22-11/30/27	New
57	Identify and map landslide hazard areas.	Port Jefferson, Sidney,	13	67	Mayors/ Administrators of Jurisdictions	General Operating Budget	12/1/22-11/30/27	New
58	Define steep slope/high risk areas in land use and comprehensive plans and create	Shelby County, Port Jefferson, Sidney,	13	67	Shelby County Engineer, Mayors/ Administrators of	Staff Time	12/1/22-11/30/27	New

#	Mitigation Action	Community	Hazard Priority	Action Priority	Lead Agency	Funding Source	Start/End	Status
	guidelines or restrict new development in those areas.				Jurisdictions			
Severe Summer Weather								
59	Install and maintain surge protection on critical electronic equipment.	Shelby County, Anna, Fort Loramie, Jackson Center, Port Jefferson, Russia, Sidney,	5	42	Shelby County EMA, Mayors/ Administrators of Jurisdictions	Emergency Management Performance Grant (EMPG) Special Project Grants	12/1/22-11/30/27	New
60	Coordinate with utility companies to perform regular tree trimming near utility trees.	Shelby County, Anna, Fort Loramie, Jackson Center, Port Jefferson, Russia, Sidney,	5	43	Shelby County EMA, Mayors/ Administrators of Jurisdictions	General Operating Budget	12/1/22-11/30/27	New
61	Distribute the location of public safe rooms to the general public.	Shelby County, Fort Loramie, Jackson Center, Port Jefferson, Russia, Sidney,	5	44	Shelby County EMA, Mayors/ Administrators of Jurisdictions	Ohio Safe Room Rebate Program	12/1/22-11/30/27	New
62	Post warning signs about hail, wind, and lightning at local parks, county fairs, and other outdoor venues.	Anna, Fort Loramie, Jackson Center, Port Jefferson, Russia, Sidney,	5	45	Shelby County EMA, Mayors/ Administrators of Jurisdictions	General Operating Budget	12/1/22-11/30/27	New
63	Encourage the construction of safe rooms in mobile home communities.	Shelby County, Fort Loramie, Jackson Center, Port Jefferson, Russia, Sidney,	5	46	Shelby County EMA, Mayors/ Administrators of Jurisdictions	Ohio Safe Room Rebate Program	12/1/22-11/30/27	New

#	Mitigation Action	Community	Hazard Priority	Action Priority	Lead Agency	Funding Source	Start/End	Status
64	Encourage the construction of safe rooms in schools, daycares, nursing homes, and other buildings with vulnerable populations.	Shelby County, Anna, Fort Loramie, Jackson Center, Port Jefferson, Russia, Sidney,	5	47	Shelby County EMA, Mayors/ Administrators of Jurisdictions	Ohio Safe Room Rebate Program	12/1/22-11/30/27	New
Severe Winter Weather								
65	Install heating systems in public shelters and lifelines/critical facilities that could be used as public shelters.	Fort Loramie, Jackson Center, Port Jefferson, Russia, Sidney,	3	40	Mayors/ Administrators of Jurisdictions	General Operating Budget	12/1/22-11/30/27	New
66	Use snow fences or living snow fences to limit blowing and drifting of snow over critical roadway segments.	Shelby County, Fort Loramie, Jackson Center, Port Jefferson, Russia, Sidney,	3	41	Shelby County Engineer	General Operating Budget	12/1/22-11/30/27	New
Tornadoes (see Multiple Hazards)								
Wildfire								
67	Identify communities who are potentially vulnerable to wildfires.	Fort Loramie, Port Jefferson, Russia, Sidney,	8	49	Shelby County EMA, Mayors/ Administrators of Jurisdictions	Staff Time	12/1/22-11/30/27	New
68	Identify and map wildfire risk areas.	Shelby County, Fort Loramie, Port Jefferson, Russia, Sidney,	8	50	Shelby County EMA, Mayors/ Administrators of Jurisdictions	Staff Time	12/1/22-11/30/27	New

6 | Schedule and Maintenance

6.1 Participation Overview

The 2022 Shelby County Hazard Mitigation Plan will be adopted by all jurisdictions in Shelby County, including the County, all townships, and the city and villages. After the jurisdictions have adopted the plan, their signed resolutions or ordinances will be added to the plan as an Appendix.

6.2 Continued Public Involvement

The public will continue to be able to provide feedback on the Plan, as the Plan will be available through the Shelby County Emergency Management Agency and Ohio Emergency Management Agency websites. The Shelby County Emergency Management Agency will provide access to the Plan to all County, municipality, and township offices, and will make the Plan available in hardcopy and electronic format to the public as appropriate. The Shelby County Emergency Management Agency Director will post notices of any meetings for updating and evaluating the Plan, using the usual methods for posting meeting announcements in the County to invite the public to participate. All meetings will be open to the general public. The Shelby County Emergency Management Agency will publicly announce the mitigation action items that are slated for development in the current year, as well as any updates to the Plan as part of the annual review process.

6.3 Plan Integration and Annual Review

6.3.1 Previous Integration Efforts

The Shelby County Emergency Management Agency and Local Emergency Planning Committee (LEPC) have worked to integrate the previous Hazard Mitigation Plan into planning processes in the County. Members of the Core Planning Committee indicated that they are pursuing planning efforts associated with previous mitigation actions, such as developing localized policies for order of succession, developing additional training opportunities for first responders and emergency management teams, creating educational materials for the public, coordinating with the Environmental Protection Agency (EPA), and updating zoning codes and floodplain maps.

6.3.2 Future Integration Efforts

Local government plays a major role in the execution and implementation of mitigation strategies. This happens in large part during the daily operations that guide the development of various communities in the County. As such, each community will be responsible for understanding which items they are accountable for implementing. The Core Planning Committee may meet annually in order to monitor and evaluate the Shelby County Hazard Mitigation Plan. During the annual meeting, a status update should be provided for each mitigation action by the responsible agency.

All participating jurisdictions will be encouraged to attend this yearly plan update meeting. The meeting will coincide with the budget process so that future funding sources can be determined and set aside for actions slated for that particular year. This meeting will also be available to the public. Additionally, each jurisdiction and the County will review the Hazard Mitigation Plan during other planning processes, such as development of comprehensive plans or capital improvement plans and incorporate appropriate goals and mitigation actions into such documents.

Furthermore, the County and its participating jurisdictions will make a concerted effort to integrate the hazard mitigation plans and its mitigation actions into existing plans and regulations, such as the comprehensive plans, subdivision regulations, zoning resolutions, zoning maps, parks and open space plans, and emergency operations plans. Specifically, the County will begin updating its Comprehensive Plan in 2021. The Shelby County Regional Planning Commission will coordinate with the selected consultant to integrate mitigation actions identified in this Plan into the Comprehensive Plan.

Additionally, participating jurisdictions may incorporate mitigation strategies into their local comprehensive plans, zoning codes, and subdivision regulations.

6.3.3 Annual Review

The Shelby County EMA will invite stakeholders to participate in an annual meeting where stakeholders will provide updates on their mitigation actions, ongoing or changing hazard priorities, and future needs.

6.4 Updating the Plan

The Plan must be updated within five years and re-adopted by the County and all participating jurisdictions in order to maintain compliance with federal regulations and ensure eligibility for certain federal mitigation grant funds. The Shelby County Emergency Management Agency will identify any necessary modifications to the Plan, including changes in mitigation goals and actions that should be incorporated into the next update. The Shelby County Emergency Management Agency Director and the County Commissioners will initiate the process of updating the plan in accordance with federal guidelines in sufficient time to meet state and federal deadlines.

Appendices

Appendix A: Historical Hazard Events

APPENDIX A: HISTORICAL HAZARD EVENTS

Event Type	Date	Magnitude	Deaths	Injuries	Property Damage	Crops Damage
Blizzard	2/13/2007		0	0	$0	$0
Blizzard	12/26/2012		0	0	$0	$0
Cold/Wind Chill	2/1/1996		0	0	$20,000	$0
Drought	7/1/1999		0	0	$0	$0
Drought	8/1/1999		0	0	$0	$0
Excessive Heat	7/19/2019		0	0	$0	$0
Excessive Heat	7/20/2019		0	0	$0	$0
Extreme Cold/Wind Chill	1/30/2019		0	0	$0	$0
Flash Flood	4/9/1998		0	0	$0	$0
Flash Flood	4/9/1998		0	0	$0	$0
Flash Flood	6/11/1998		0	0	$5,000	$0
Flash Flood	1/22/1999		0	0	$0	$0
Flash Flood	4/28/1999		0	0	$0	$0
Flash Flood	4/7/2000		0	0	$5,000	$0
Flash Flood	7/8/2003		0	0	$100,000	$0
Flash Flood	7/8/2003		0	0	$150,000	$0
Flash Flood	5/21/2004		0	0	$0	$0
Flash Flood	4/15/2006		0	0	$0	$0
Flash Flood	6/14/2010		0	0	$2,000	$0
Flash Flood	4/10/2013		0	0	$1,000	$0
Flash Flood	6/30/2013		0	0	$1,000	$0
Flash Flood	6/17/2015		0	0	$30,000	$0
Flash Flood	7/16/2017		0	0	$0	$0
Flash Flood	5/17/2019		0	0	$0	$0
Flash Flood	5/17/2019		0	0	$100,000	$0
Flash Flood	5/17/2019		0	0	$0	$0
Flash Flood	3/28/2020		0	0	$4,000	$0
Flood	8/11/2002		0	0	$0	$0
Flood	7/6/2003		0	0	$0	$0
Flood	7/7/2003		0	0	$50,000	$0
Flood	7/7/2003		0	0	$60,000	$0
Flood	7/7/2003		0	0	$20,000	$0
Flood	7/9/2003		0	0	$80,000	$0

APPENDIX A: HISTORICAL HAZARD EVENTS

Event Type	Date	Magnitude	Deaths	Injuries	Property Damage	Crops Damage
Flood	7/9/2003		0	0	$100,000	$0
Flood	8/2/2003		0	0	$0	$0
Flood	8/4/2003		0	0	$0	$0
Flood	1/4/2004		0	0	$0	$0
Flood	1/4/2004		0	0	$0	$0
Flood	5/21/2004		0	0	$0	$0
Flood	6/13/2004		0	0	$0	$0
Flood	6/15/2004		0	0	$0	$0
Flood	6/17/2004		0	0	$0	$0
Flood	1/5/2005		0	0	$20,000	$0
Flood	1/12/2005		0	0	$20,000	$0
Flood	11/8/2005		0	0	$0	$0
Flood	6/2/2006		0	0	$0	$0
Flood	6/7/2006		0	0	$0	$0
Flood	7/28/2006		0	0	$5,000	$0
Flood	3/2/2007		0	0	$3,000	$0
Flood	3/14/2007		0	0	$5,000	$0
Flood	2/5/2008		0	0	$5,000	$0
Flood	6/15/2010		0	0	$1,000	$0
Flood	2/28/2011		0	0	$5,000	$0
Flood	2/28/2011		0	0	$5,000	$0
Flood	3/1/2011		0	0	$5,000	$0
Flood	3/1/2011		0	0	$5,000	$0
Flood	12/21/2013		0	0	$0	$0
Flood	12/22/2013		0	0	$1,000	$0
Flood	4/3/2014		0	0	$0	$0
Flood	6/17/2015		0	0	$0	$0
Flood	6/17/2015		0	0	$0	$0
Flood	6/17/2015		0	0	$0	$0
Flood	6/17/2015		0	0	$0	$0
Flood	7/18/2015		0	0	$0	$0
Flood	7/18/2015		0	0	$0	$0
Flood	7/18/2015		0	0	$0	$0
Flood	6/13/2017		0	0	$0	$0
Flood	7/13/2017		0	0	$0	$0
Flood	11/18/2017		0	0	$0	$0
Flood	11/18/2017		0	0	$0	$0

APPENDIX A: HISTORICAL HAZARD EVENTS

Event Type	Date	Magnitude	Deaths	Injuries	Property Damage	Crops Damage
Flood	2/25/2018		0	0	$0	$0
Flood	2/7/2019		0	0	$0	$0
Flood	2/7/2019		0	0	$0	$0
Flood	5/17/2019		0	0	$3,000	$0
Flood	6/18/2019		0	0	$0	$0
Flood	6/18/2019		0	0	$0	$0
Flood	6/18/2019		0	0	$0	$0
Flood	6/18/2019		0	0	$0	$0
Flood	6/19/2019		0	0	$0	$0
Flood	6/19/2019		0	0	$0	$0
Flood	3/28/2020		0	0	$0	$0
Flood	3/29/2020		0	0	$0	$0
Flood	8/3/2020		0	0	$0	$0
Flood	9/7/2020		0	0	$0	$0
Flood	9/8/2020		0	0	$0	$0
Flood	9/8/2020		0	0	$0	$0
Flood	9/8/2020		0	0	$0	$0
Flood	3/18/2021		0	0	$0	$0
Frost/Freeze	4/6/2007		0	0	$0	$540,000
Hail	6/25/2008	1.25	0	0	$12,000	$0
Hail	8/3/2006	1	0	0	$5,000	$0
Hail	6/9/2008	1	0	0	$5,000	$0
Hail	6/25/2008	0.88	0	0	$3,000	$0
Hail	4/26/2007	0.75	0	0	$2,000	$0
Hail	8/16/2007	0.88	0	0	$1,000	$0
Hail	6/21/2008	0.75	0	0	$1,000	$0
Hail	6/22/2008	0.75	0	0	$1,000	$0
Hail	11/22/1992	1	0	0	$0	$0
Hail	4/9/1995	0.75	0	0	$0	$0
Hail	6/21/1995	0.75	0	0	$0	$0
Hail	6/26/1995	0.88	0	0	$0	$0
Hail	6/3/1996	1.75	0	0	$0	$0
Hail	5/31/1998	1.5	0	0	$0	$0
Hail	5/18/2000	1	0	0	$0	$0
Hail	5/25/2001	0.75	0	0	$0	$0
Hail	7/7/2001	2	0	0	$0	$0
Hail	10/24/2001	0.88	0	0	$0	$0

APPENDIX A: HISTORICAL HAZARD EVENTS

Event Type	Date	Magnitude	Deaths	Injuries	Property Damage	Crops Damage
Hail	6/26/2002	0.88	0	0	$0	$0
Hail	4/30/2003	1	0	0	$0	$0
Hail	7/7/2003	0.75	0	0	$0	$0
Hail	5/21/2004	0.88	0	0	$0	$0
Hail	5/21/2004	1	0	0	$0	$0
Hail	6/13/2004	0.75	0	0	$0	$0
Hail	6/24/2004	1	0	0	$0	$0
Hail	6/5/2005	1	0	0	$0	$0
Hail	11/8/2005	0.75	0	0	$0	$0
Hail	5/18/2006	0.75	0	0	$0	$0
Hail	5/25/2006	0.75	0	0	$0	$0
Hail	8/19/2009	2	0	0	$0	$0
Hail	9/28/2009	1	0	0	$0	$0
Hail	9/28/2009	1.25	0	0	$0	$0
Hail	6/27/2010	0.88	0	0	$0	$0
Hail	8/15/2010	0.75	0	0	$0	$0
Hail	5/10/2011	1	0	0	$0	$0
Hail	5/25/2011	0.75	0	0	$0	$0
Hail	11/14/2011	1.25	0	0	$0	$0
Hail	3/15/2012	1.25	0	0	$0	$0
Hail	3/15/2012	1	0	0	$0	$0
Hail	3/15/2012	1	0	0	$0	$0
Hail	4/26/2012	1	0	0	$0	$0
Hail	10/14/2012	1	0	0	$0	$0
Hail	10/14/2012	1	0	0	$0	$0
Hail	4/10/2013	1.5	0	0	$0	$0
Hail	4/10/2013	1.25	0	0	$0	$0
Hail	4/10/2013	0.75	0	0	$0	$0
Hail	6/23/2013	1	0	0	$0	$0
Hail	5/21/2014	1.5	0	0	$0	$0
Hail	5/21/2014	0.88	0	0	$0	$0
Hail	5/21/2014	1.5	0	0	$0	$0
Hail	7/26/2014	1.25	0	0	$0	$0
Hail	7/26/2014	2.5	0	0	$0	$0
Hail	7/26/2014	1.5	0	0	$0	$0
Hail	7/26/2014	0.75	0	0	$0	$0
Hail	7/26/2014	1	0	0	$0	$0

APPENDIX A: HISTORICAL HAZARD EVENTS

Event Type	Date	Magnitude	Deaths	Injuries	Property Damage	Crops Damage
Hail	2/24/2017	0.75	0	0	$0	$0
Hail	3/9/2019	0.75	0	0	$0	$0
Hail	4/14/2019	0.75	0	0	$0	$0
Hail	8/8/2019	0.75	0	0	$0	$0
Hail	6/18/2021	0.75	0	0	$0	$0
Heat	7/20/1999		0	0	$0	$0
Heat	6/28/2012		0	0	$0	$0
Heat	7/1/2012		0	0	$0	$0
Heavy Rain	11/14/2011		0	0	$0	$0
Heavy Rain	7/20/2013		0	0	$0	$0
Heavy Snow	3/9/1999		0	0	$0	$0
Heavy Snow	12/13/2000		0	0	$0	$0
Heavy Snow	12/4/2007		0	0	$0	$0
Heavy Snow	1/14/2009		0	0	$0	$0
Heavy Snow	1/27/2009		0	0	$0	$0
Heavy Snow	2/5/2010		0	0	$0	$0
High Wind	9/14/2008	63	0	0	#######	$0
High Wind	3/9/2002	58	0	0	$15,000	$0
High Wind	12/1/2006	43	0	0	$15,000	$0
High Wind	3/25/2021	50	0	0	$10,000	$0
High Wind	11/12/2003	50	0	0	$5,000	$0
High Wind	11/15/2020	50	0	0	$5,000	$0
High Wind	4/3/2016	50	0	0	$500	$0
High Wind	4/6/1997	60	0	0	$0	$0
High Wind	12/11/2000	58	0	0	$0	$0
High Wind	2/11/2009	56	0	0	$0	$0
High Wind	12/9/2009	50	0	0	$0	$0
High Wind	4/28/2011	54	0	0	$0	$0
High Wind	12/30/2019	50	0	0	$0	$0
Ice Storm	3/6/1996		0	0	$0	$0
Ice Storm	12/19/2008		0	0	$0	$0
Ice Storm	12/23/2008		0	0	$0	$0
Ice Storm	1/10/2009		0	0	$0	$0
Ice Storm	2/1/2011		0	0	$0	$0
Ice Storm	11/14/2018		0	0	$0	$0
Lightning	8/11/2002		0	0	$100,000	$0
Lightning	7/17/1996		0	0	$50,000	$0

APPENDIX A: HISTORICAL HAZARD EVENTS

Event Type	Date	Magnitude	Deaths	Injuries	Property Damage	Crops Damage
Lightning	7/31/1999		0	1	$20,000	$0
Lightning	2/27/1996		0	0	$1,000	$0
Thunderstorm Wind	9/26/2003	90	0	0	$150,000	$0
Thunderstorm Wind	7/26/1995	0	0	4	$60,000	$0
Thunderstorm Wind	8/9/2000	50	0	0	$60,000	$0
Thunderstorm Wind	4/27/1994	0	0	0	$50,000	$0
Thunderstorm Wind	6/20/1994	0	0	0	$50,000	$0
Thunderstorm Wind	7/20/1994	0	0	0	$50,000	$0
Thunderstorm Wind	8/7/2011	50	0	0	$35,000	$0
Thunderstorm Wind	4/11/1995	0	0	0	$30,000	$0
Thunderstorm Wind	7/1/2012	50	0	0	$30,000	$0
Thunderstorm Wind	7/9/1999	60	0	0	$25,000	$0
Thunderstorm Wind	7/26/2005	55	0	0	$25,000	$0
Thunderstorm Wind	8/19/2009	60	0	0	$23,000	$0
Thunderstorm Wind	6/7/1995	0	0	0	$20,000	$0
Thunderstorm Wind	7/2/1997	50	0	0	$20,000	$0
Thunderstorm Wind	11/10/1998	50	0	0	$20,000	$0
Thunderstorm Wind	4/14/2006	50	0	0	$20,000	$0
Thunderstorm Wind	8/1/2000	50	0	0	$15,000	$0
Thunderstorm Wind	7/8/2003	55	0	0	$15,000	$0

APPENDIX A: HISTORICAL HAZARD EVENTS

Event Type	Date	Magnitude	Deaths	Injuries	Property Damage	Crops Damage
Thunderstorm Wind	7/8/2003	50	0	0	$15,000	$0
Thunderstorm Wind	6/22/2006	50	0	0	$15,000	$0
Thunderstorm Wind	4/26/2007	50	0	0	$15,000	$0
Thunderstorm Wind	6/12/2013	50	0	0	$15,000	$0
Thunderstorm Wind	4/15/2018	50	0	0	$15,000	$0
Thunderstorm Wind	11/7/1996	50	0	0	$10,000	$0
Thunderstorm Wind	6/19/1998	58	0	0	$10,000	$0
Thunderstorm Wind	7/19/1998	60	0	0	$10,000	$0
Thunderstorm Wind	7/31/1999	50	0	0	$10,000	$0
Thunderstorm Wind	8/9/2000	50	0	0	$10,000	$0
Thunderstorm Wind	5/23/2011	67	0	0	$10,000	$0
Thunderstorm Wind	12/21/2013	60	0	0	$10,000	$0
Thunderstorm Wind	7/18/2015	50	0	0	$10,000	$0
Thunderstorm Wind	6/10/2020	50	0	0	$10,000	$0
Thunderstorm Wind	6/10/2020	50	0	0	$10,000	$0
Thunderstorm Wind	7/4/2003	50	0	0	$7,000	$0
Thunderstorm Wind	7/29/2002	55	0	0	$6,000	$0
Thunderstorm Wind	7/19/2020	50	0	0	$6,000	$0
Thunderstorm Wind	6/12/1994	0	0	0	$5,000	$0

APPENDIX A: HISTORICAL HAZARD EVENTS

Event Type	Date	Magnitude	Deaths	Injuries	Property Damage	Crops Damage
Thunderstorm Wind	6/16/1994	0	0	0	$5,000	$0
Thunderstorm Wind	6/19/1994	0	0	0	$5,000	$0
Thunderstorm Wind	8/20/1994	0	0	0	$5,000	$0
Thunderstorm Wind	8/28/1994	0	0	0	$5,000	$0
Thunderstorm Wind	8/25/1998	50	0	0	$5,000	$0
Thunderstorm Wind	5/6/1999	55	0	0	$5,000	$0
Thunderstorm Wind	4/20/2000	50	0	0	$5,000	$0
Thunderstorm Wind	6/12/2001	50	0	0	$5,000	$0
Thunderstorm Wind	10/31/2013	50	0	0	$5,000	$0
Thunderstorm Wind	6/13/2017	50	0	0	$5,000	$0
Thunderstorm Wind	5/26/2019	50	0	0	$5,000	$0
Thunderstorm Wind	6/10/2020	50	0	0	$5,000	$0
Thunderstorm Wind	10/13/1999	50	0	0	$4,000	$0
Thunderstorm Wind	11/6/2005	50	0	0	$4,000	$0
Thunderstorm Wind	7/8/2008	50	0	0	$4,000	$0
Thunderstorm Wind	5/28/1995	0	0	0	$3,000	$0
Thunderstorm Wind	6/8/1995	0	0	0	$3,000	$0
Thunderstorm Wind	10/30/1996	50	0	0	$3,000	$0
Thunderstorm Wind	6/12/1998	50	0	0	$3,000	$0

APPENDIX A: HISTORICAL HAZARD EVENTS

Event Type	Date	Magnitude	Deaths	Injuries	Property Damage	Crops Damage
Thunderstorm Wind	2/11/1999	50	0	0	$3,000	$0
Thunderstorm Wind	7/26/1999	50	0	0	$3,000	$0
Thunderstorm Wind	7/26/1999	50	0	0	$3,000	$0
Thunderstorm Wind	8/11/2002	50	0	0	$3,000	$0
Thunderstorm Wind	5/11/2003	50	0	0	$3,000	$0
Thunderstorm Wind	7/5/2003	50	0	0	$3,000	$0
Thunderstorm Wind	7/6/2003	50	0	0	$3,000	$0
Thunderstorm Wind	8/26/2003	50	0	0	$3,000	$0
Thunderstorm Wind	8/20/2005	50	0	0	$3,000	$0
Thunderstorm Wind	5/25/2006	50	0	0	$3,000	$0
Thunderstorm Wind	6/28/2006	50	0	0	$3,000	$0
Thunderstorm Wind	8/9/2007	55	0	0	$3,000	$0
Thunderstorm Wind	7/8/2008	50	0	0	$3,000	$0
Thunderstorm Wind	7/12/2008	50	0	0	$3,000	$0
Thunderstorm Wind	5/25/2011	50	0	0	$3,000	$0
Thunderstorm Wind	6/29/2012	65	0	0	$3,000	$0
Thunderstorm Wind	7/1/2012	50	0	0	$3,000	$0
Thunderstorm Wind	6/12/2013	50	0	0	$3,000	$0
Thunderstorm Wind	7/10/2013	50	0	0	$3,000	$0

APPENDIX A: HISTORICAL HAZARD EVENTS

Event Type	Date	Magnitude	Deaths	Injuries	Property Damage	Crops Damage
Thunderstorm Wind	7/10/2013	55	0	0	$3,000	$0
Thunderstorm Wind	1/22/2018	50	0	0	$3,000	$0
Thunderstorm Wind	8/8/2019	50	0	0	$3,000	$0
Thunderstorm Wind	8/8/2019	50	0	0	$3,000	$0
Thunderstorm Wind	5/14/2020	50	0	0	$3,000	$0
Thunderstorm Wind	6/21/2020	50	0	0	$3,000	$0
Thunderstorm Wind	6/10/2020	50	0	1	$2,000	$0
Thunderstorm Wind	5/25/2002	50	0	0	$2,000	$0
Thunderstorm Wind	6/15/2004	50	0	0	$2,000	$0
Thunderstorm Wind	7/3/2006	50	0	0	$2,000	$0
Thunderstorm Wind	4/11/2007	50	0	0	$2,000	$0
Thunderstorm Wind	4/11/2007	50	0	0	$2,000	$0
Thunderstorm Wind	8/16/2007	50	0	0	$2,000	$0
Thunderstorm Wind	12/23/2007	50	0	0	$2,000	$0
Thunderstorm Wind	10/26/2010	60	0	0	$2,000	$0
Thunderstorm Wind	5/30/2015	50	0	0	$2,000	$0
Thunderstorm Wind	7/13/2016	45	0	0	$2,000	$0
Thunderstorm Wind	6/13/2017	50	0	0	$2,000	$0
Thunderstorm Wind	6/19/2017	40	0	0	$2,000	$0

APPENDIX A: HISTORICAL HAZARD EVENTS

Event Type	Date	Magnitude	Deaths	Injuries	Property Damage	Crops Damage
Thunderstorm Wind	7/16/2017	50	0	0	$2,000	$0
Thunderstorm Wind	4/8/2020	45	0	0	$2,000	$0
Thunderstorm Wind	6/9/2020	50	0	0	$2,000	$0
Thunderstorm Wind	6/10/2020	50	0	0	$2,000	$0
Thunderstorm Wind	8/11/2021	50	0	0	$2,000	$0
Thunderstorm Wind	5/17/2004	50	0	0	$1,000	$0
Thunderstorm Wind	6/25/2008	50	0	0	$1,000	$0
Thunderstorm Wind	8/4/2010	50	0	0	$1,000	$0
Thunderstorm Wind	8/4/2010	50	0	0	$1,000	$0
Thunderstorm Wind	5/23/2011	50	0	0	$1,000	$0
Thunderstorm Wind	6/29/2012	65	0	0	$1,000	$0
Thunderstorm Wind	6/12/2013	50	0	0	$1,000	$0
Thunderstorm Wind	6/12/2013	50	0	0	$1,000	$0
Thunderstorm Wind	7/10/2013	50	0	0	$1,000	$0
Thunderstorm Wind	7/8/2014	50	0	0	$1,000	$0
Thunderstorm Wind	7/27/2014	50	0	0	$1,000	$0
Thunderstorm Wind	7/27/2014	50	0	0	$1,000	$0
Thunderstorm Wind	3/27/2016	50	0	0	$1,000	$0
Thunderstorm Wind	6/5/2016	50	0	0	$1,000	$0

APPENDIX A: HISTORICAL HAZARD EVENTS

Event Type	Date	Magnitude	Deaths	Injuries	Property Damage	Crops Damage
Thunderstorm Wind	8/13/2016	50	0	0	$1,000	$0
Thunderstorm Wind	5/19/2017	50	0	0	$1,000	$0
Thunderstorm Wind	6/19/2017	40	0	0	$1,000	$0
Thunderstorm Wind	7/23/2017	45	0	0	$1,000	$0
Thunderstorm Wind	9/5/2018	50	0	0	$1,000	$0
Thunderstorm Wind	7/18/2019	45	0	0	$1,000	$0
Thunderstorm Wind	6/9/2020	50	0	0	$1,000	$0
Thunderstorm Wind	7/13/2016	45	0	0	$500	$0
Thunderstorm Wind	6/9/2020	50	0	0	$500	$0
Thunderstorm Wind	6/9/2020	50	0	0	$500	$0
Thunderstorm Wind	6/10/2020	50	0	0	$500	$0
Thunderstorm Wind	3/28/2020	45	0	0	$250	$0
Thunderstorm Wind	7/15/1995	0	0	0	$9	$5,000
Thunderstorm Wind	6/3/1990	0	0	0	$0	$0
Thunderstorm Wind	9/14/1990	0	0	0	$0	$0
Thunderstorm Wind	3/27/1991	0	0	0	$0	$0
Thunderstorm Wind	6/18/1992	0	0	0	$0	$0
Thunderstorm Wind	7/2/1992	0	0	0	$0	$0
Thunderstorm Wind	7/14/1992	0	0	0	$0	$0

APPENDIX A: HISTORICAL HAZARD EVENTS

Event Type	Date	Magnitude	Deaths	Injuries	Property Damage	Crops Damage
Thunderstorm Wind	11/22/1992	0	0	0	$0	$0
Thunderstorm Wind	6/14/2000	53	0	0	$0	$0
Thunderstorm Wind	8/18/2001	50	0	0	$0	$0
Thunderstorm Wind	8/26/2003	60	0	0	$0	$0
Thunderstorm Wind	6/13/2004	59	0	0	$0	$0
Thunderstorm Wind	4/7/2006	57	0	0	$0	$0
Thunderstorm Wind	6/23/2010	52	0	0	$0	$0
Thunderstorm Wind	8/15/2010	53	0	0	$0	$0
Thunderstorm Wind	5/25/2011	51	0	0	$0	$0
Thunderstorm Wind	6/29/2012	53	0	0	$0	$0
Thunderstorm Wind	7/10/2013	75	0	0	$0	$0
Thunderstorm Wind	10/31/2013	50	0	0	$0	$0
Thunderstorm Wind	11/17/2013	65	0	0	$0	$0
Thunderstorm Wind	12/21/2013	64	0	0	$0	$0
Thunderstorm Wind	12/21/2013	50	0	0	$0	$0
Thunderstorm Wind	1/10/2017	50	0	0	$0	$0
Thunderstorm Wind	6/13/2017	50	0	0	$0	$0
Tornado	6/20/2000		0	0	$2,000	$0
Tornado	5/14/2011		0	0	$0	$0
Winter Storm	1/2/1996		0	0	$25,000	$0
Winter Storm	3/19/1996		0	0	$0	$0

APPENDIX A: HISTORICAL HAZARD EVENTS

Event Type	Date	Magnitude	Deaths	Injuries	Property Damage	Crops Damage
Winter Storm	1/1/1999		0	0	$0	$0
Winter Storm	1/7/1999		0	0	$0	$0
Winter Storm	1/13/1999		0	0	$0	$0
Winter Storm	3/26/2002		0	0	$0	$0
Winter Storm	11/22/2002		0	0	$0	$0
Winter Storm	12/25/2002		0	0	$0	$0
Winter Storm	1/29/2003		0	0	$0	$0
Winter Storm	2/15/2003		0	0	$0	$0
Winter Storm	12/14/2003		0	0	$0	$0
Winter Storm	1/25/2004		0	0	$0	$0
Winter Storm	3/16/2004		0	0	$0	$0
Winter Storm	12/22/2004		0	0	$15,000	$0
Winter Storm	12/8/2005		0	0	$0	$0
Winter Storm	12/15/2005		0	0	$0	$0
Winter Storm	2/12/2008		0	0	$0	$0
Winter Storm	3/7/2008		0	0	$0	$0
Winter Storm	3/5/2013		0	0	$0	$0
Winter Storm	3/24/2013		0	0	$0	$0
Winter Storm	2/4/2014		0	0	$0	$0
Winter Storm	2/8/2017		0	0	$0	$0
Winter Storm	1/19/2019		0	0	$0	$0
Winter Storm	2/15/2021		0	0	$0	$0
Winter Weather	12/7/2007		0	0	$0	$0
Winter Weather	1/1/2008		0	0	$0	$0
Winter Weather	12/19/2009		0	0	$0	$0
Winter Weather	1/7/2010		0	0	$0	$0
Winter Weather	2/9/2010		0	0	$0	$0
Winter Weather	2/15/2010		0	0	$0	$0
Winter Weather	2/26/2010		0	0	$0	$0
Winter Weather	3/25/2010		0	0	$0	$0

APPENDIX A: HISTORICAL HAZARD EVENTS

Event Type	Date	Magnitude	Deaths	Injuries	Property Damage	Crops Damage
Winter Weather	12/12/2010		0	0	$0	$0
Winter Weather	1/20/2011		0	0	$0	$0
Winter Weather	2/24/2011		0	0	$0	$0
Winter Weather	1/20/2012		0	0	$0	$0
Winter Weather	2/10/2012		0	0	$0	$0
Winter Weather	12/28/2012		0	0	$0	$0
Winter Weather	1/25/2013		0	0	$0	$0
Winter Weather	11/11/2013		0	0	$0	$0
Winter Weather	12/6/2013		0	0	$0	$0
Winter Weather	12/10/2013		0	0	$0	$0
Winter Weather	12/14/2013		0	0	$0	$0
Winter Weather	12/16/2013		0	0	$0	$0
Winter Weather	1/2/2014		0	0	$0	$0
Winter Weather	1/5/2014		0	0	$0	$0
Winter Weather	1/17/2014		0	0	$0	$0
Winter Weather	1/18/2014		0	0	$0	$0
Winter Weather	1/20/2014		0	0	$0	$0
Winter Weather	3/2/2014		0	0	$0	$0
Winter Weather	11/16/2014		0	0	$0	$0

APPENDIX A: HISTORICAL HAZARD EVENTS

Event Type	Date	Magnitude	Deaths	Injuries	Property Damage	Crops Damage
Winter Weather	11/22/2014		0	0	$0	$0
Winter Weather	1/5/2015		0	0	$0	$0
Winter Weather	1/11/2015		0	0	$0	$0
Winter Weather	1/25/2015		0	0	$0	$0
Winter Weather	2/4/2015		0	0	$0	$0
Winter Weather	2/14/2015		0	0	$0	$0
Winter Weather	2/20/2015		0	0	$0	$0
Winter Weather	2/21/2015		0	0	$0	$0
Winter Weather	3/1/2015		0	0	$0	$0
Winter Weather	3/23/2015		0	0	$0	$0
Winter Weather	1/20/2016		0	0	$0	$0
Winter Weather	12/11/2016		0	0	$0	$0
Winter Weather	12/13/2016		0	0	$0	$0
Winter Weather	1/5/2017		0	0	$0	$0
Winter Weather	12/9/2017		0	0	$0	$0
Winter Weather	12/12/2017		0	0	$0	$0
Winter Weather	12/23/2017		0	0	$0	$0
Winter Weather	12/24/2017		0	0	$0	$0
Winter Weather	12/29/2017		0	0	$0	$0

APPENDIX A: HISTORICAL HAZARD EVENTS

Event Type	Date	Magnitude	Deaths	Injuries	Property Damage	Crops Damage
Winter Weather	1/8/2018		0	0	$0	$0
Winter Weather	1/12/2018		0	0	$0	$0
Winter Weather	1/15/2018		0	0	$0	$0
Winter Weather	2/6/2018		0	0	$0	$0
Winter Weather	3/20/2018		0	0	$0	$0
Winter Weather	4/1/2018		0	0	$0	$0
Winter Weather	1/12/2019		0	0	$0	$0
Winter Weather	2/1/2019		0	0	$0	$0
Winter Weather	2/20/2019		0	0	$0	$0
Winter Weather	11/11/2019		0	0	$0	$0
Winter Weather	12/15/2019		0	0	$0	$0
Winter Weather	12/16/2019		0	0	$0	$0
Winter Weather	1/17/2020		0	0	$0	$0
Winter Weather	2/6/2020		0	0	$0	$0
Winter Weather	2/12/2020		0	0	$0	$0
Winter Weather	2/26/2020		0	0	$0	$0
Winter Weather	2/27/2020		0	0	$0	$0
Winter Weather	11/30/2020		0	0	$0	$0
Winter Weather	12/1/2020		0	0	$0	$0

APPENDIX A: HISTORICAL HAZARD EVENTS

Event Type	Date	Magnitude	Deaths	Injuries	Property Damage	Crops Damage
Winter Weather	12/16/2020		0	0	$0	$0
Winter Weather	1/1/2021		0	0	$0	$0
Winter Weather	1/17/2021		0	0	$0	$0
Winter Weather	1/30/2021		0	0	$0	$0
Winter Weather	2/8/2021		0	0	$0	$0
Winter Weather	2/10/2021		0	0	$0	$0

Appendix B: Previous Mitigation Actions Status

APPENDIX B: PREVIOUS MITIGATION ACTIONS STATUS

Mitigation Action (Strategy)	Status	Associated Action in Update
Shelby County		
Collaborate with County Extension Services and private sector interests to purchase or otherwise create and distribute information dealing with disasters and how people can prepare/ recover from them.	Ongoing; annual requirement – as people move, their conditions change	#1
Develop specific instructions for shutting down equipment and production sites outside the facility and a process to account for all employees after an evacuation.	Ongoing; sometimes hard to get commercial facilities to cooperate.	#2
Procedures for employees responsible for shutting down critical operations before evacuating the facility.	Unchanged; same as prior plan.	#2
Develop a public education program for informing residents about the benefits of having NOAA radios and Family Disaster Plans, which will help them better respond to an emergency situation.	Unchanged	#12
Develop a public education program for residents for restrictions on open burning and water usage during drought conditions.	Unchanged	#23
Develop a river and stream maintenance program for removing debris and log jams from drainage ways.	Unchanged	#28
Develop a tree maintenance program for trimming and pruning trees to help prevent damage from falling limbs.	Unchanged	#13
Develop an outreach program for informing citizens of designated shelter locations.	Unchanged	#14
Develop depth analysis grids to reduce flooding impacts for locations within the Great Miami Watershed and Loramie Creek Watershed.	Unchanged	#32
Develop education programs associated with multiple natural hazards and how to prepare for them prior to their occurrence.	Unchanged	#7
Develop educational information for general public concerning alternate methods for keeping basements dry.	Unchanged	#9
Develop emergency plan for the Sidney Senior Center.	Unchanged	#4
Elevate or otherwise address flood prone structures within the base elevation of the 100-year floodplain.	Unchanged	#40
Encourage communities to join the National Flood Insurance Program, which would allow residents to purchase flood insurance.	Unchanged	#29
Encourage the construction or installation of safe rooms in new and existing construction.	Unchanged	#63

APPENDIX B: PREVIOUS MITIGATION ACTIONS STATUS

Mitigation Action (Strategy)	Status	Associated Action in Update
Provide back-up generators and the necessary hook-ups for critical facilities, which need to maintain continuous power to protect human health and life.	Unchanged	#6
Recommend corrective action for repetitive loss structures.	Unchanged	#42/47
Seek funding for auto sandbag filling equipment.	Unchanged	#10
Seek funding for early warning systems, such as sirens and county-wide emergency notification systems, to warn residents of approaching severe weather.	Unchanged	#5
Seek funding to update Flood Insurance Rate Maps.	Unchanged	#41
Village of Botkins		
Develop plans to replace, modify, or expand culverts along the Hull Creek railroad in the Village of Botkins.	Unchanged: Not a location in the village of Botkins	#48
Village of Fort Loramie		
Construct community shelter/safe rooms in the Village of Fort Loramie.	Unchanged	#11
Develop a plan to replace, modify, or expand culverts along OH-705 in the Village of Fort Loramie.	Unchanged	#43
Improve storm water drainage in the Village of Fort Loramie.	Unchanged	#44
City of Sidney		
Develop an outreach program for informing citizens of designated shelter locations.	Deferred	#14
Develop emergency plan for the Sidney Senior Center.	Deferred	#4
Elevate or otherwise address flood prone structures within the base elevation of the 100-year floodplain.	Unchanged: Have plans for the hospital	#40
Provide back-up generators and the necessary hook-ups for critical facilities, which need to maintain continuous power to protect human health and life.	Completed: Completed prior to 2017	#6
All Townships		
Develop a tree maintenance program for trimming and pruning trees to help prevent damage from falling limbs.	Unchanged	#13

Appendix C: Critical Facilities

APPENDIX C: Critical Facilities

Type	Count
Medical	14
EMS	10
Schools	17
High Occupancy	3
Government / Services	5

Appendix D: Sources

APPENDIX D: SOURCES

Introduction:
http://www.dot.state.oh.us/Divisions/Planning/TechServ/TIM/Documents/RI82B/RI82B_IR.pdf
http://www.dot.state.oh.us/Divisions/Planning/TechServ/TIM/Documents/RI34A/RI-34A-CLI.pdf
http://www.dot.state.oh.us/Divisions/Planning/TechServ/TIM/Documents/RI34B/RI-34B-CLI.pdf
http://www.dot.state.oh.us/Divisions/Planning/TechServ/TIM/Documents/RI339/RI-339-CLI.pdf
http://www.dot.state.oh.us/Divisions/Planning/TechServ/TIM/Documents/RI06/RI06CLI.pdf
http://www.dot.state.oh.us/Divisions/Planning/TechServ/TIM/Documents/RI82B/RI82B_SR.pdf
http://www.dot.state.oh.us/Divisions/Operations/Aviation/
https://www.faa.gov/airports/airport_safety/airportdata_5010/
https://naturepreserves.ohiodnr.gov/gollwoods
https://gis3.dot.state.oh.us/OhioRail/
http://forestry.ohiodnr.gov/maumee#tabc1

History and Demographics
https://www.census.gov/quickfacts/
data.census.gov

Dam Failure
https://www.fema.gov/dam-safety-concepts
http://codes.ohio.gov/oac/1501:21-13-01
https://gis2.ohiodnr.gov/MapViewer/?config=ohiodams

Drought
https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?OH
https://droughtmonitor.unl.edu/
https://www.weather.gov/cle/2012NotableEvents
https://www.nass.usda.gov/Publications/AgCensus/2012/Online_Resources/County_Profiles/Ohio/cp39027.pdf
https://quickstats.nass.usda.gov/
https://www.nass.usda.gov/Statistics_by_State/Ohio/
https://www.whio.com/weather/rain-totals-how-much-did-you-get/5xsUW0Y9zzaYMCyCm04NBO/

Earthquakes
https://www.ready.gov/about-us
https://www.ready.gov/earthquakes
http://www.geo.mtu.edu/UPSeis/hazards.html
http://geosurvey.ohiodnr.gov/live-helicorder-charts-pgs/bcoh-station-info
http://www.anna.k12.oh.us/earthquakes.htm

Epidemic
https://www.cdc.gov/csels/dsepd/ss1978/lesson1/section11.html

Extreme Temperatures
https://www.propertycasualty360.com/2016/08/01/extreme-heat-what-insurance-pros-and-their-clients/?slreturn=20200724120820
https://allurausa.com/blog/how-extreme-weather-conditions-effect-home-building
https://newsroom.aaa.com/2011/07/help-your-car-survive-the-heat/

Flooding
https://www.ncdc.noaa.gov/stormevents/

APPENDIX D: SOURCES

Hazardous Materials
https://data-oepa.opendata.arcgis.com/datasets/spills-and-releases-reported-to-ohio-epa-since-may-2017-1

Invasive Species
https://www.wkyc.com/article/news/health/invasive-plant-in-ohio-can-severely-burn-skin/266719485
https://www.oipc.info/invasive-plants-of-ohio.html
https://www.anstaskforce.gov/State%20Plans/Ohio_AIS_SMP_and_RRP_10-1-14.pdf
https://ohiodnr.gov/wps/portal/gov/odnr-core/divisions/wildlife/related-resource/nuisance-wildlife
https://ohioseagrant.osu.edu/products/4j7wz/ohio-field-guide-to-ais
https://www.invasivespeciesinfo.gov/us/ohio
https://www.oipc.info/uploads/5/8/6/5/58652481/invasive_plants_of_ohio.pdf
https://www.independenttree.com/hemlock-woolly-adelgid-facts-northeast-ohio/
https://ohioline.osu.edu/factsheet/W-22
https://www.nps.gov/grsm/learn/news/eab-confirmed.htm
https://ebird.org/region/US-OH-149

Landslides, Erosion, and Land/Mine Subsidence
https://gis.ohiodnr.gov/MapViewer/?config=OhioMines

Severe Summer Storms:
https://sharpp.dps.ohio.gov/ohiosharpp/#
https://www.weather.gov/iln/ThunderstormProject

Severe Winter Storms
https://sharpp.dps.ohio.gov/ohiosharpp/
https://sharpp.dps.ohio.gov/OhioSHARPP/Documents/OhioMitigationPlan/2019/Full%20Copy.pdf
https://www.ncdc.noaa.gov/stormevents/choosedates.jsp?statefips=39%2COHIO
https://www.weather.gov/iln/19780126

Tornadoes
https://www.ncdc.noaa.gov/stormevents/
https://hazards.fema.gov/nri/tornado

Appendix E: FEMA Flood Maps:
https://msc.fema.gov/portal/home

Appendix E:
FEMA Flood Maps

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR* Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X* Future Conditions 1% Annual Chance Flood Hazard *Zone X* Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X* Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer Accredited or Provisionally Accredited Levee, Dike, or Floodwall Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES	18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) Coastal Transect Coastal Transect Baseline Profile Baseline Hydrographic Feature Base Flood Elevation Line (BFE) Limit of Study Jurisdiction Boundary

NOTES TO USERS

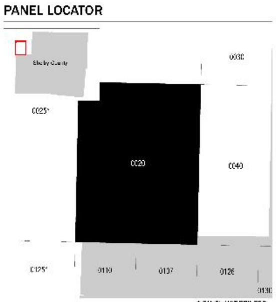
SCALE

1 inch = 1,000 feet 1:12,000

0 1,000 2,000 4,000 Feet

0 250 500 1,000 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO

AND INCORPORATED AREAS

PANEL 20 OF 295

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390503	0020	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0020D

EFFECTIVE DATE
April 02, 2015

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR* Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X* Future Conditions 1% Annual Chance Flood Hazard *Zone X* Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X* Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer Accredited or Provisionally Accredited Levee, Dike, or Floodwall Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES	18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) Coastal Transect Coastal Transect Baseline Profile Baseline Hydrographic Feature Base Flood Elevation Line (BFE) Limit of Study Jurisdiction Boundary

NOTES TO USERS

SCALE

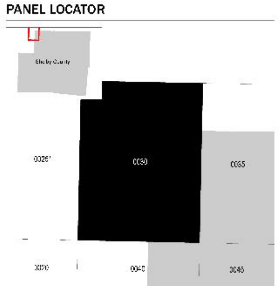
Map Projection:

1 inch = 1,000 feet 1:12,000

0 1,000 2,000 4,000 Feet

0 250 500 1,000 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO

AND INCORPORATED AREAS

PANEL 30 OF 295

FEMA

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390503	0030	D

VERSION NUMBER

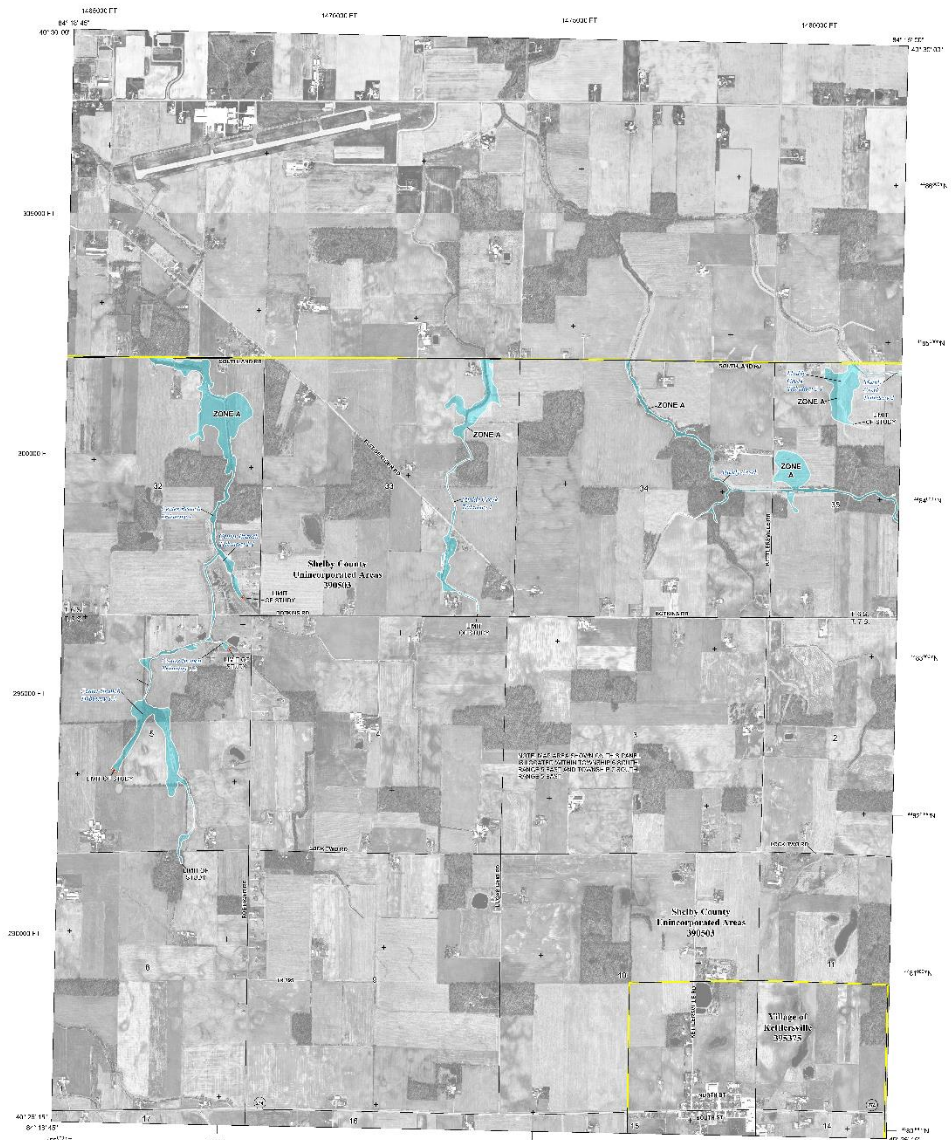
2.2.2.1

MAP NUMBER

39149C0030D

EFFECTIVE DATE

April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) *Zone A, V, A99*
		With BFE or Depth *Zone AE, AO, AH, VE, AR*
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
		Future Conditions 1% Annual Chance Flood Hazard *Zone X*
		Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN	Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X*
		Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Accredited or Provisionally Accredited Levee, Dike, or Floodwall
		Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES	E 18.2 / 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
	8	Coastal Transect
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
	513	Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary

NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). This information was derived from digital orthophotography at a 2 foot resolution from photography dated 2012.

SCALE

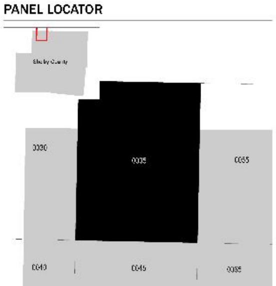
N

1 inch = 1,000 feet	1:12,000

0 1,000 2,000 4,000 Feet

0 250 500 1,000 Meters

PANEL LOCATOR



FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO
AND INCORPORATED AREAS

PANEL **35** OF **295**

FEMA

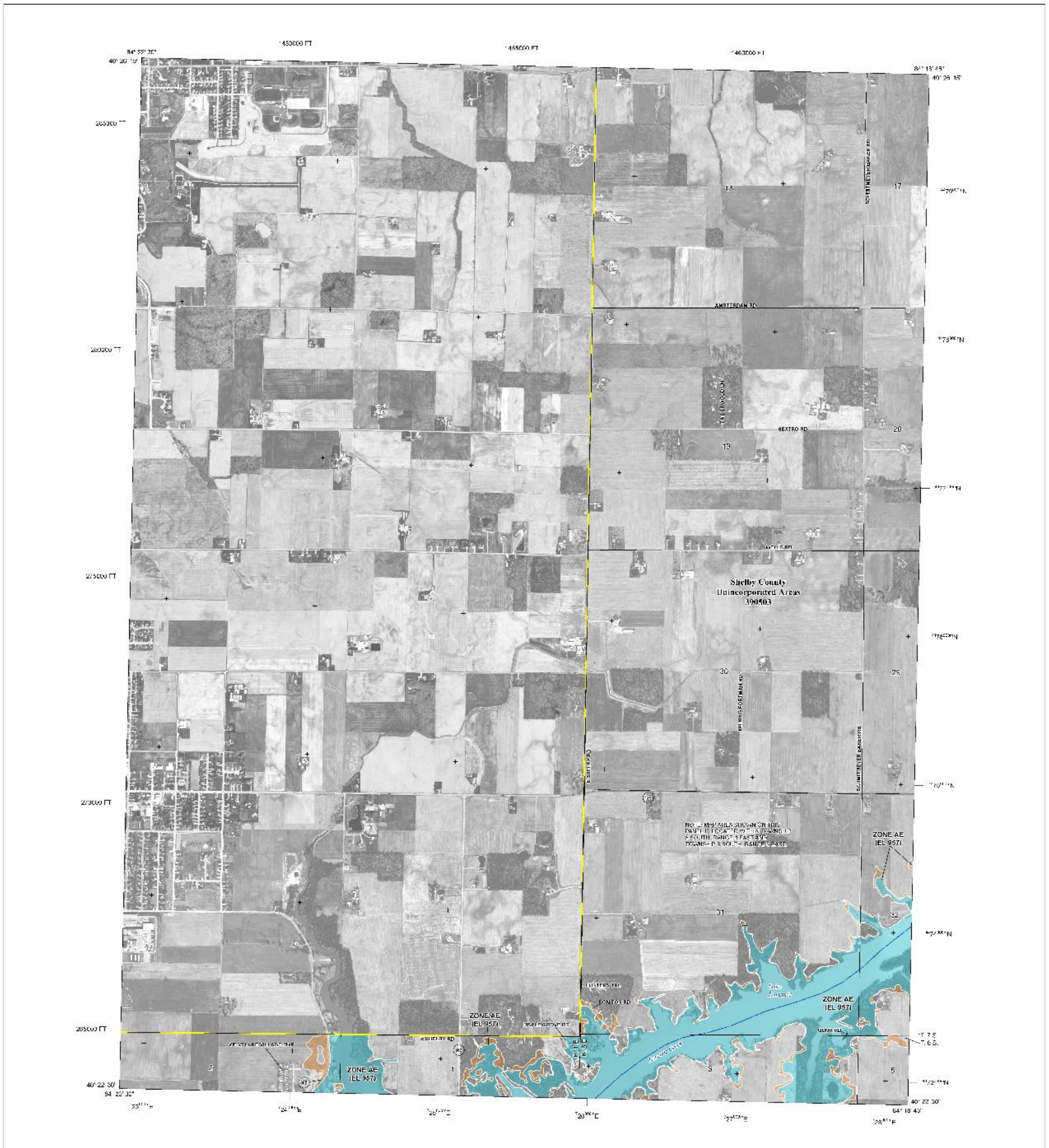
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
KETTLERSVILLE, VILLAGE OF	395375	0035	D
SHELBY COUNTY	390503	0035	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0035D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99*
	With BFE or Depth *Zone AE, AO, AH, VE, AR*
	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X*
	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer
	Accredited or Provisionally Accredited Levee, Dike, or Floodwall
	Non-accredited Levee, Dike, or Floodwall
	(E) 18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
	(B) Coastal Transect
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
	513 Base Flood Elevation Line (BFE)
OTHER FEATURES	Limit of Study
	Jurisdiction Boundary

NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). This information was derived from digital orthophotography at a 2 foot resolution from photography dated 2012.

SCALE

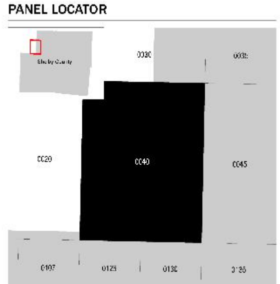
Map Projection:
NAD 1983 State Plane Ohio North FIPS 3401 Feet
Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 1,000 feet — 1:12,000

0 — 1,000 — 2,000 — 4,000 Feet

0 — 250 — 500 — 1,000 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

National Flood Insurance Program

FEMA

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO
AND INCORPORATED AREAS

PANEL **40** OF **295**

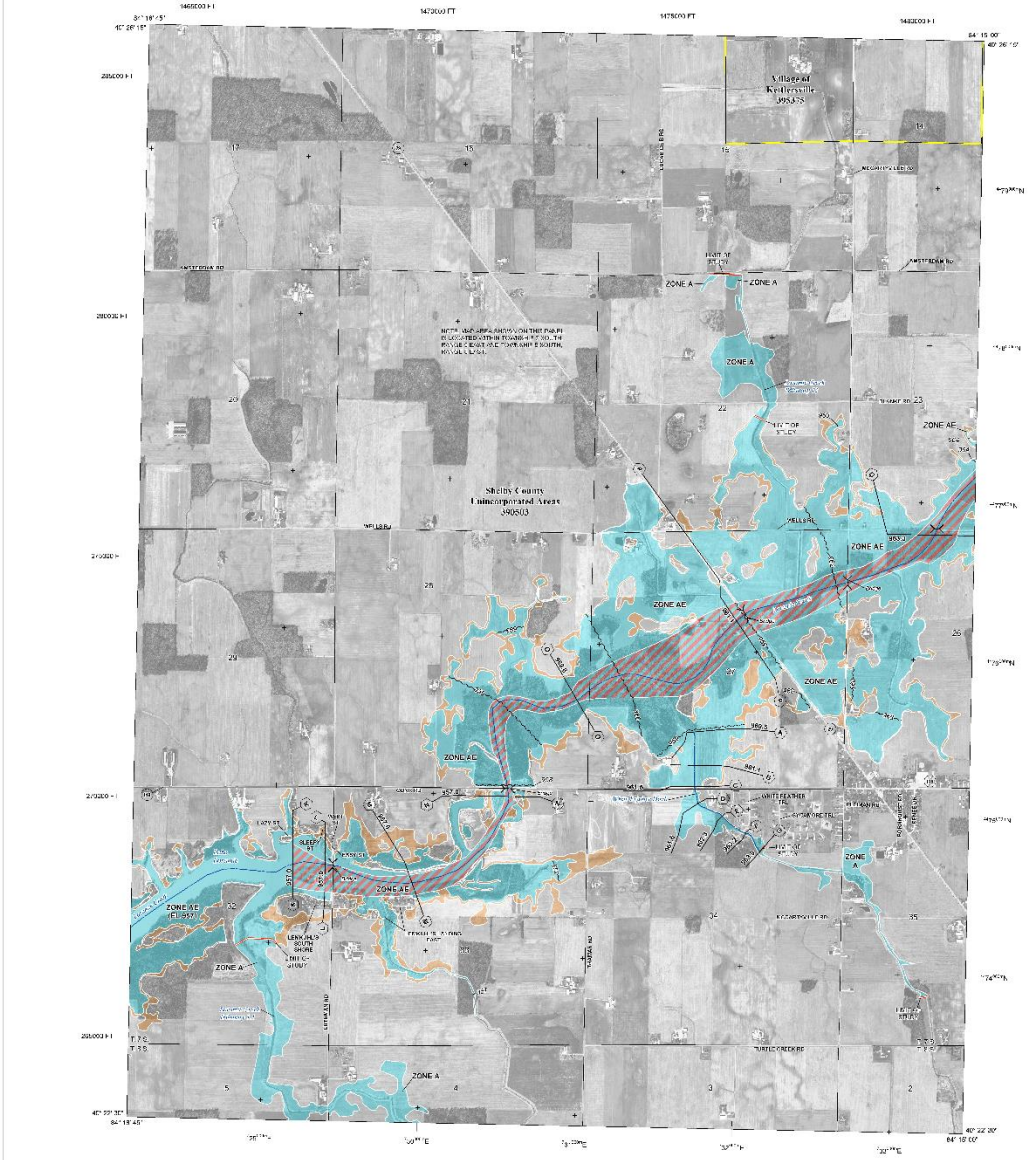
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390503	0040	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0040D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) Zone A, A99
	With BFE or Depth Zone AE, AO, AH, VE, AR
	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
	Future Conditions 1% Annual Chance Flood Hazard Zone X
	Area with Reduced Flood Risk due to Levee See Notes. Zone X
OTHER AREAS	Areas Determined to be Outside the 0.2% Annual Chance Floodplain Zone X
	Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer
	Accredited or Provisionally Accredited Levee, Dike, or Floodwall
	Non-accredited Levee, Dike, or Floodwall
	18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
	Coastal Transect
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
	Base Flood Elevation Line (BFE)
OTHER FEATURES	Limit of Study
	Jurisdiction Boundary

NOTES TO USERS

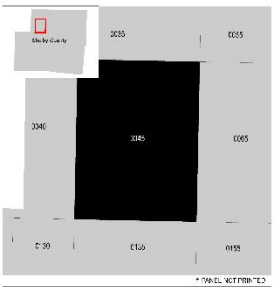
SCALE

1 inch = 1,000 feet 1:12,000

0 1,000 2,000 4,000 Feet

0 250 500 1,000 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO

AND INCORPORATED AREAS

PANEL 45 OF 295

FEMA

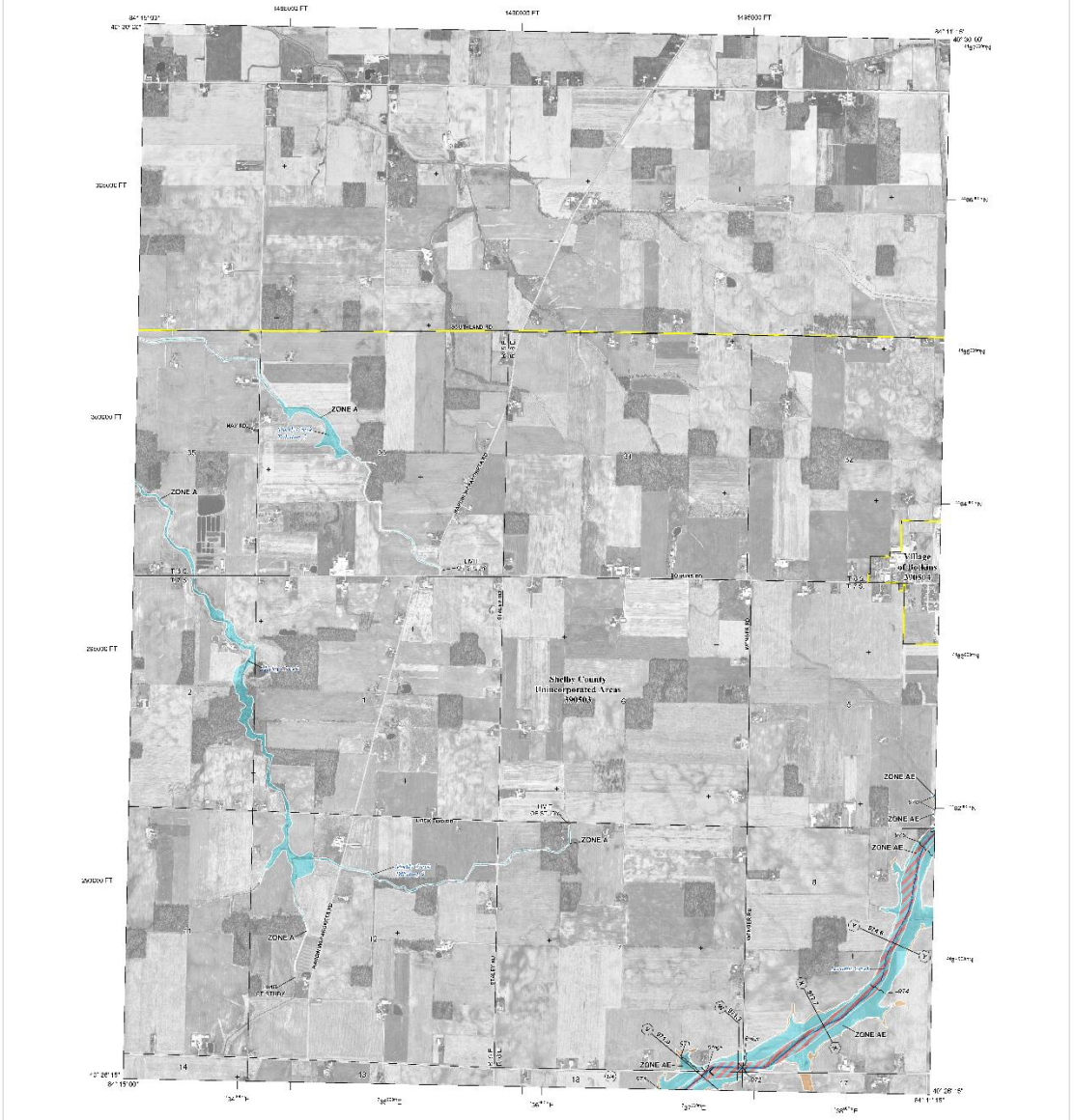
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
FORT LORAMIE, VILLAGE OF	390378	0045	D
SHELBY COUNTY*	390503	0045	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0045D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) Zone A, A99 With BFE or Depth Zone AE, AO, AH, VE, AR Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X Future Conditions 1% Annual Chance Flood Hazard Zone X Area with Reduced Flood Risk due to Levee See Notes. Zone X
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain Zone X Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer Accredited or Provisionally Accredited Levee, Dike, or Floodwall Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES	18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) Coastal Transect Coastal Transect Baseline Profile Baseline Hydrographic Feature Base Flood Elevation Line (BFE) Limit of Study Jurisdiction Boundary

NOTES TO USERS

SCALE

1 inch = 1,000 feet 1:12,000

0 1,000 2,000 4,000 Feet

0 250 500 1,000 Meters

PANEL LOCATOR

PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO

AND INCORPORATED AREAS

PANEL 55 OF 295

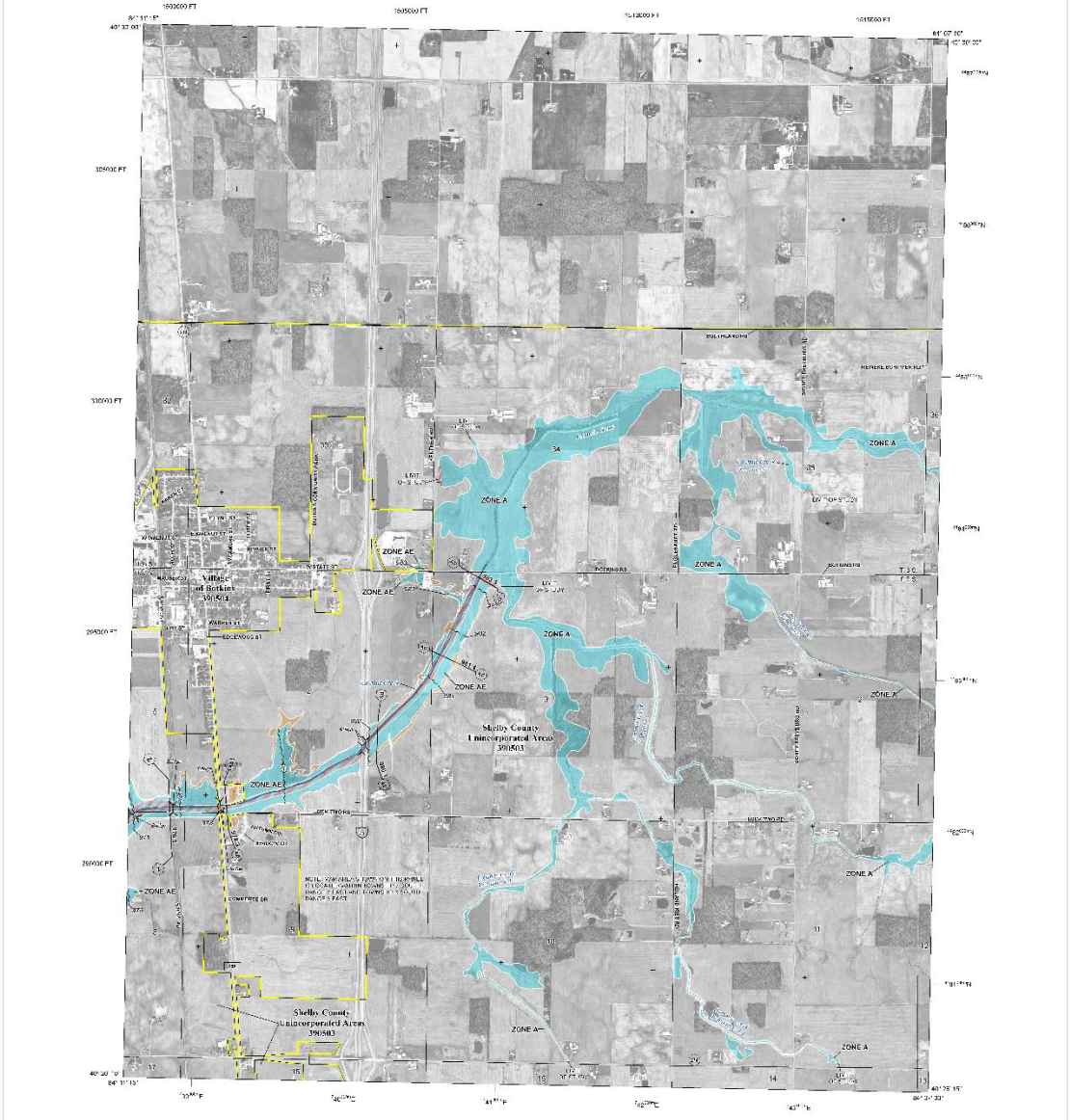
FEMA

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390504	0055	D
VILLAGE OF JACKSON CENTER	390514	0055	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0055D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) Zone A, A99 With BFE or Depth Zone AE, AO, AH, VE, AR Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X Future Conditions 1% Annual Chance Flood Hazard Zone X Area with Reduced Flood Risk due to Levee See Notes. Zone X
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain Zone X Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer Accredited or Provisionally Accredited Levee, Dike, or Floodwall Non-accredited Levee, Dike, or Floodwall Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) Coastal Transect Coastal Transect Baseline Profile Baseline Hydrographic Feature Base Flood Elevation Line (BFE)
OTHER FEATURES	Limit of Study Jurisdiction Boundary

NOTES TO USERS

SCALE

1 inch = 1,000 feet 1:12,000

0 1,000 2,000 4,000 Feet

0 250 500 1,000 Meters

PANEL LOCATOR

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO

PANEL 60 OF 295

FEMA

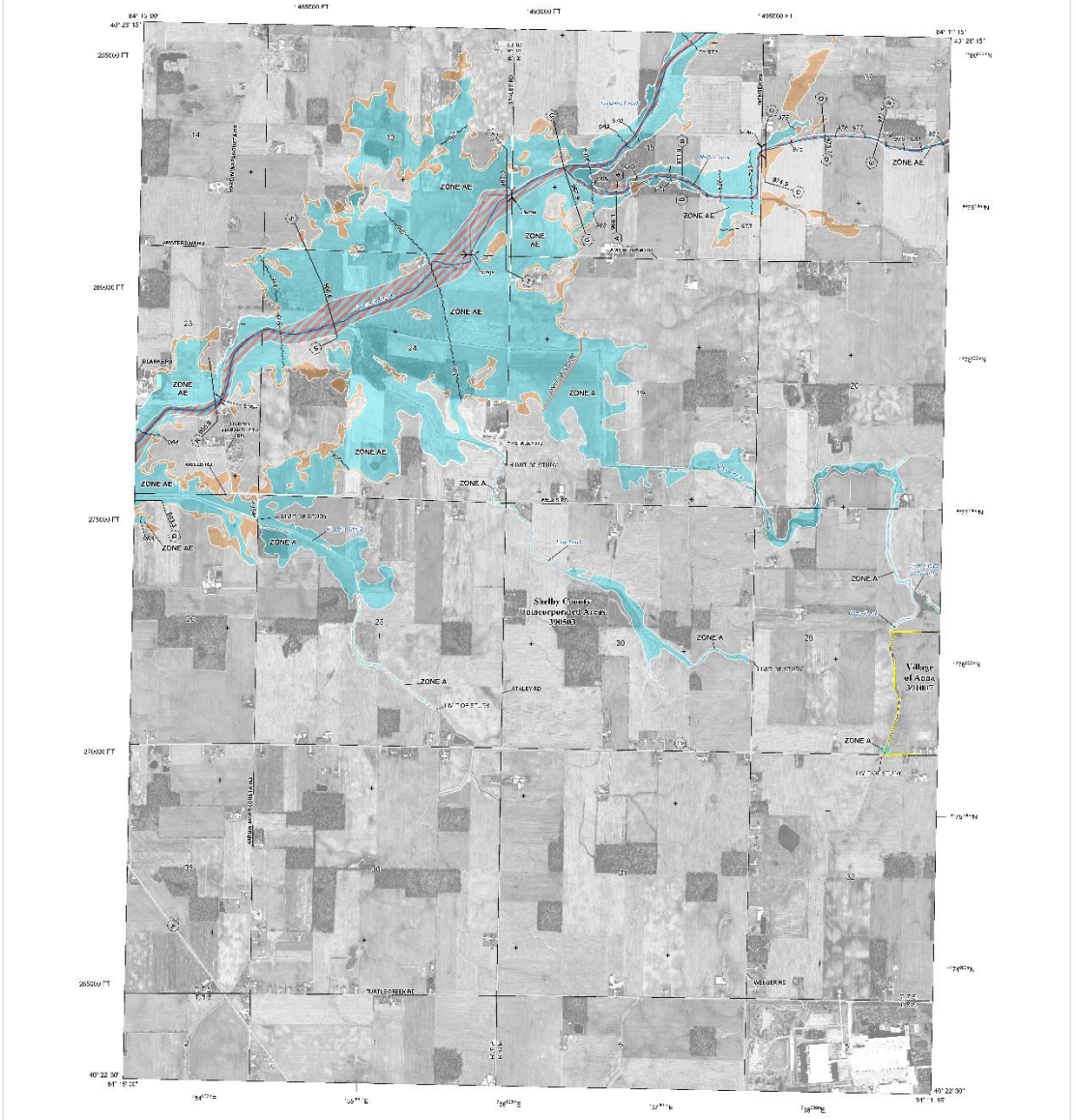
National Flood Insurance Program

COMMUNITY	NUMBER	PANEL	SUFFIX
BOTKINS, VILLAGE OF	390504	0060	D
SHELBY COUNTY	390503	0060	D

VERSION NUMBER 2.2.2.1

MAP NUMBER 39149C0060D

EFFECTIVE DATE April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) Zone A, A99 With BFE or Depth Zone AE, AO, AH, VE, AR Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X Future Conditions 1% Annual Chance Flood Hazard Zone X Area with Reduced Flood Risk due to Levee See Notes. Zone X
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain Zone X Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer Accredited or Provisionally Accredited Levee, Dike, or Floodwall Non-accredited Levee, Dike, or Floodwall (EL 16.2, EL 17.5) Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) Coastal Transect Coastal Transect Baseline Profile Baseline Hydrographic Feature
OTHER FEATURES	Base Flood Elevation Line (BFE) Limit of Study Jurisdiction Boundary

NOTES TO USERS

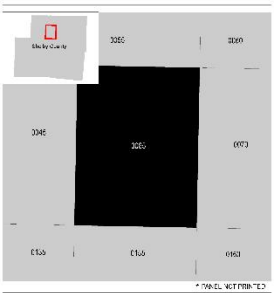
SCALE

1 inch = 1,000 feet 1:12,000

0 1,000 2,000 4,000 Feet

0 250 500 1,000 Meters

PANEL LOCATOR



PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO

AND INCORPORATED AREAS

PANEL 65 OF 295

FEMA

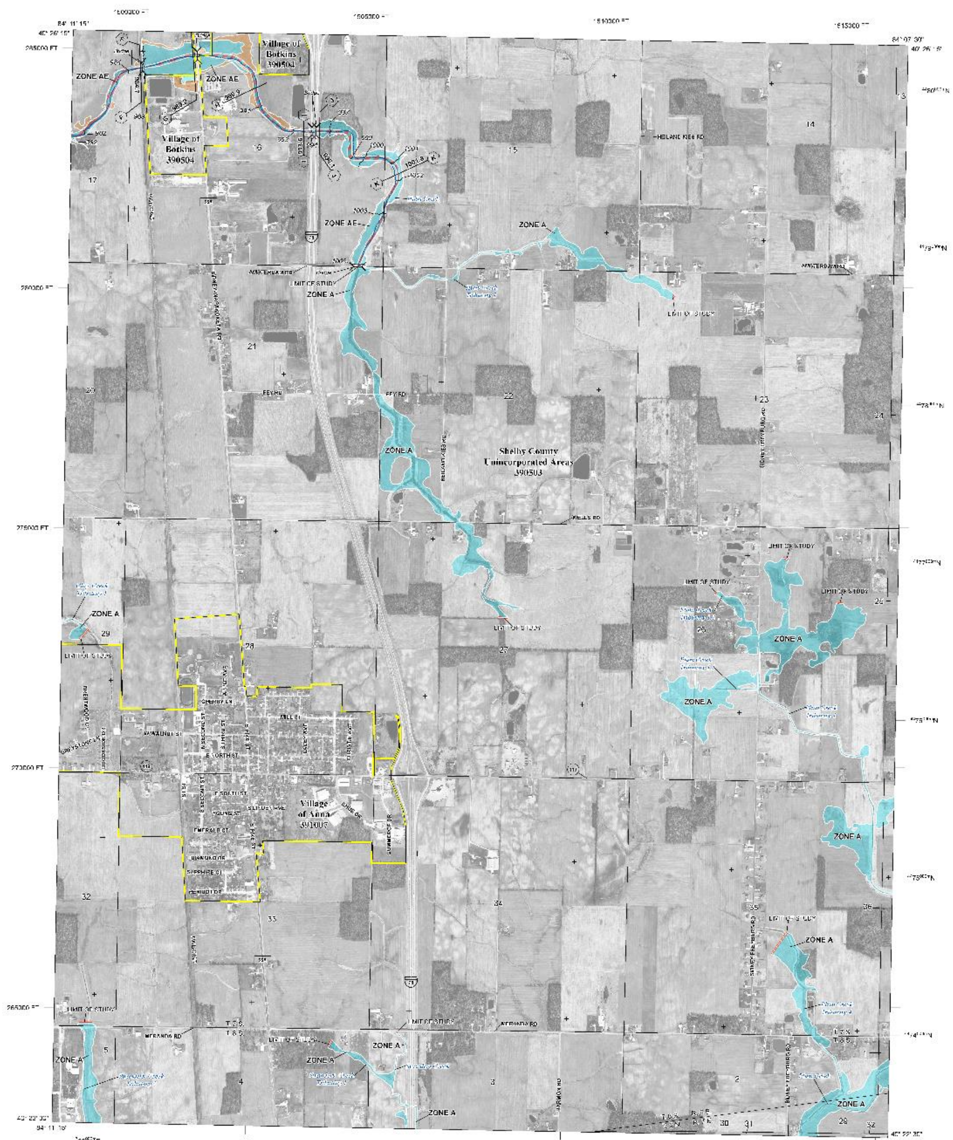
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANNA, VILLAGE OF	390367	0065	D
SHELBY COUNTY	390363	0065	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0065D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR* Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X* Future Conditions 1% Annual Chance Flood Hazard *Zone X* Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X* Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer Accredited or Provisionally Accredited Levee, Dike, or Floodwall Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES	E 18.2 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) B Coastal Transect Coastal Transect Baseline Profile Baseline Hydrographic Feature Base Flood Elevation Line (BFE) Limit of Study Jurisdiction Boundary

NOTES TO USERS

SCALE

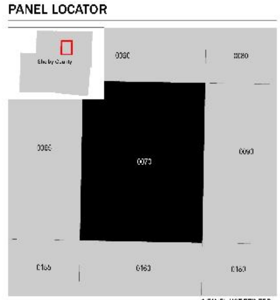
Map Projection:

1 inch = 1,000 feet 1:12,000

0 1,000 2,000 4,000 Feet

0 250 500 1,000 Meters

PANEL LOCATOR



National Flood Insurance Program

FEMA

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO
AND INCORPORATED AREAS

PANEL 70 OF 295

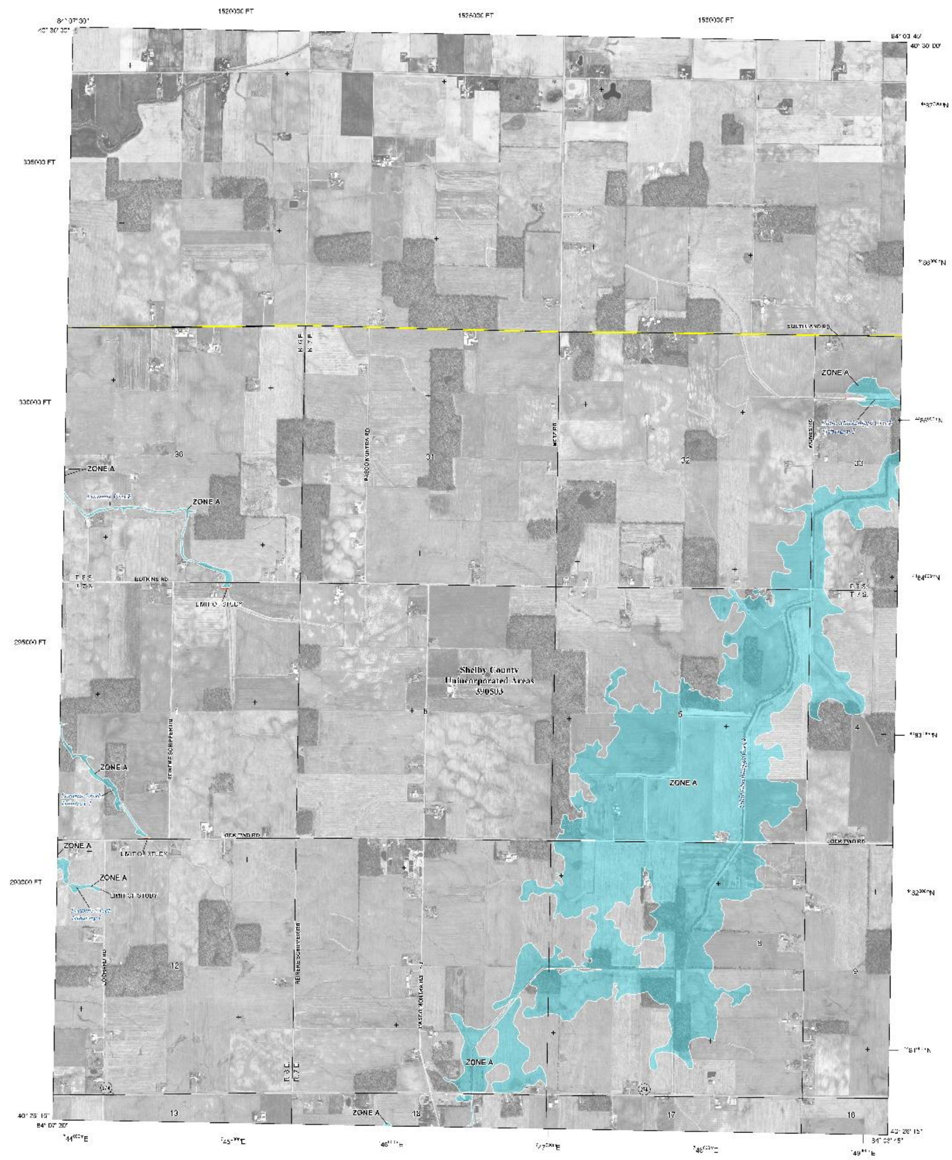
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANNA, VILLAGE OF	391007	0070	D
BOTKINS, VILLAGE OF	390504	0070	D
SHELBY COUNTY	390503	0070	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0070D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99*
	With BFE or Depth *Zone AE, AO, AH, VE, AR*
	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN — Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X*
	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer
	Accredited or Provisionally Accredited Levee, Dike, or Floodwall
	Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES	(E) 18.2 / 17.5 — Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
	(B) Coastal Transect
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
	513 Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary

NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in the community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). This information was derived from digital orthophotography at a 2 foot resolution from photography dated 2012.

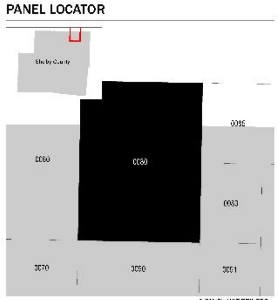
SCALE

1 inch = 1,000 feet 1:12,000

0 1,000 2,000 4,000 Feet

0 250 500 1,000 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO
AND INCORPORATED AREAS

PANEL **80** OF **295**

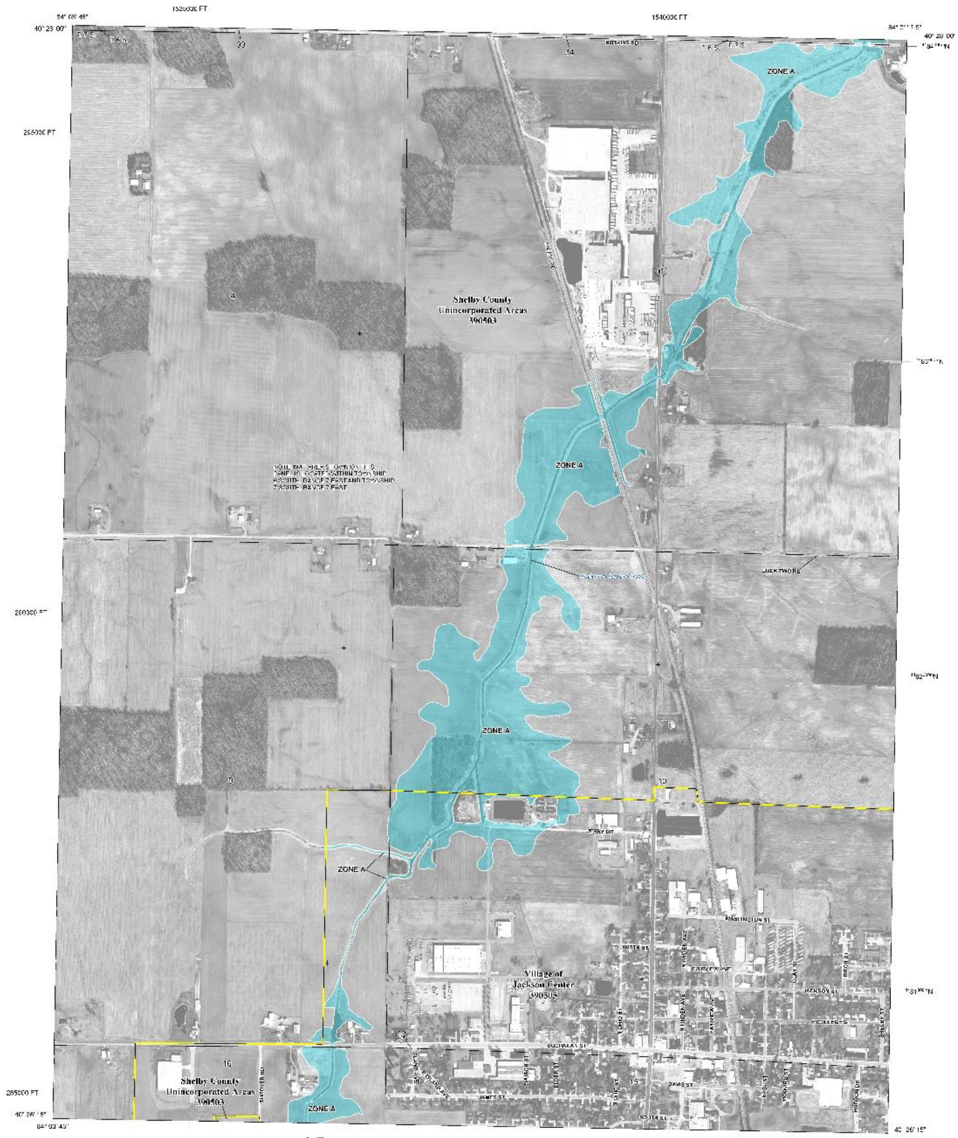
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390503	0080	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0080D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR* Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X* Future Conditions 1% Annual Chance Flood Hazard *Zone X* Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X* Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer Accredited or Provisionally Accredited Levee, Dike, or Floodwall Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES	18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) Coastal Transect Coastal Transect Baseline Profile Baseline Hydrographic Feature Base Flood Elevation Line (BFE) Limit of Study Jurisdiction Boundary

NOTES TO USERS

SCALE

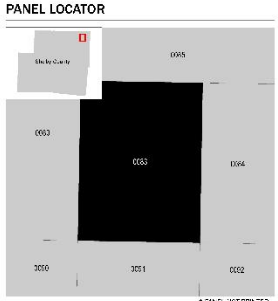
Map Projection:

1 inch = 500 feet 1:6,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO

AND INCORPORATED AREAS

PANEL **83** OF **295**

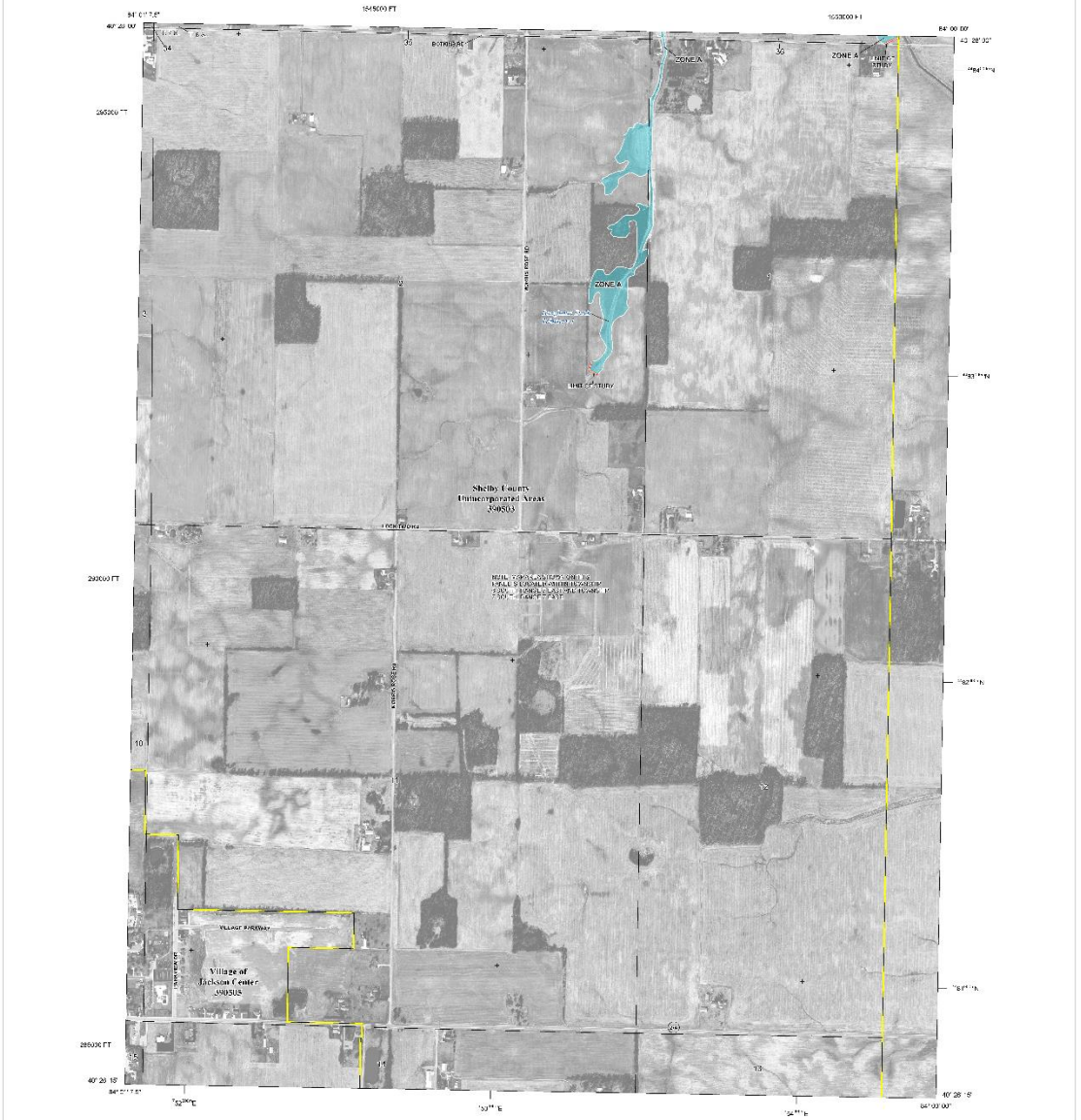
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
[illegible]	[illegible]	[illegible]	D
[illegible]	[illegible]	[illegible]	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0083D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) Zone A, A99 With BFE or Depth Zone AE, AO, AH, VE, AR Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X Future Conditions 1% Annual Chance Flood Hazard Zone X Area with Reduced Flood Risk due to Levee See Notes. Zone X
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain Zone X Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer Accredited or Provisionally Accredited Levee, Dike, or Floodwall Non-accredited Levee, Dike, or Floodwall Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) Coastal Transect Coastal Transect Baseline Profile Baseline Hydrographic Feature Base Flood Elevation Line (BFE)
OTHER FEATURES	Limit of Study Jurisdiction Boundary

NOTES TO USERS

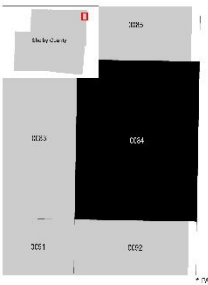
SCALE

1 inch = 500 feet 1:6,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR



PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO

AND INCORPORATED AREAS

PANEL 84 OF 295

FEMA

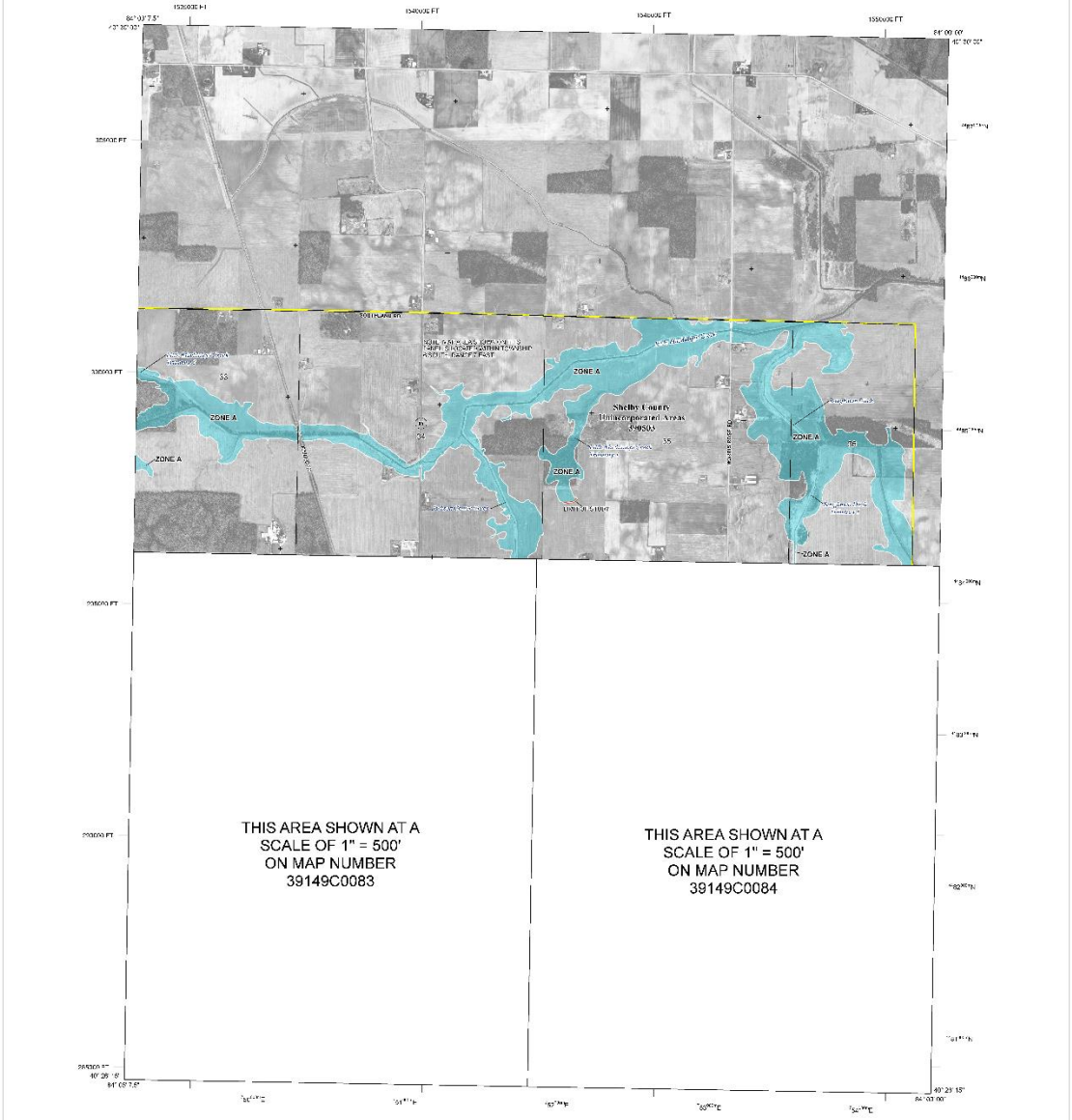
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY, UNINCORPORATED AREAS	390503	0084	D
VILLAGE OF JACKSON CENTER	390505	0084	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0084D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) Zone A, A30 With BFE or Depth Zone AE, AO, AH, VE, AR Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X Future Conditions 1% Annual Chance Flood Hazard Zone X Area with Reduced Flood Risk due to Levee See Notes. Zone X
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain Zone X Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer Accredited or Provisionally Accredited Levee, Dike, or Floodwall Non-accredited Levee, Dike, or Floodwall Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) Coastal Transect Coastal Transect Baseline Profile Baseline Hydrographic Feature Base Flood Elevation Line (BFE)
OTHER FEATURES	Limit of Study Jurisdiction Boundary

NOTES TO USERS

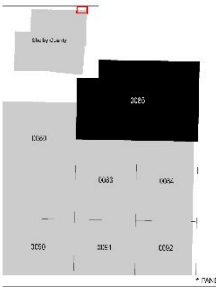
SCALE

1 inch = 1,000 feet 1:12,000

0 1,000 2,000 4,000 Feet

0 250 500 1,000 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO

AND INCORPORATED AREAS

PANEL 85 OF 295

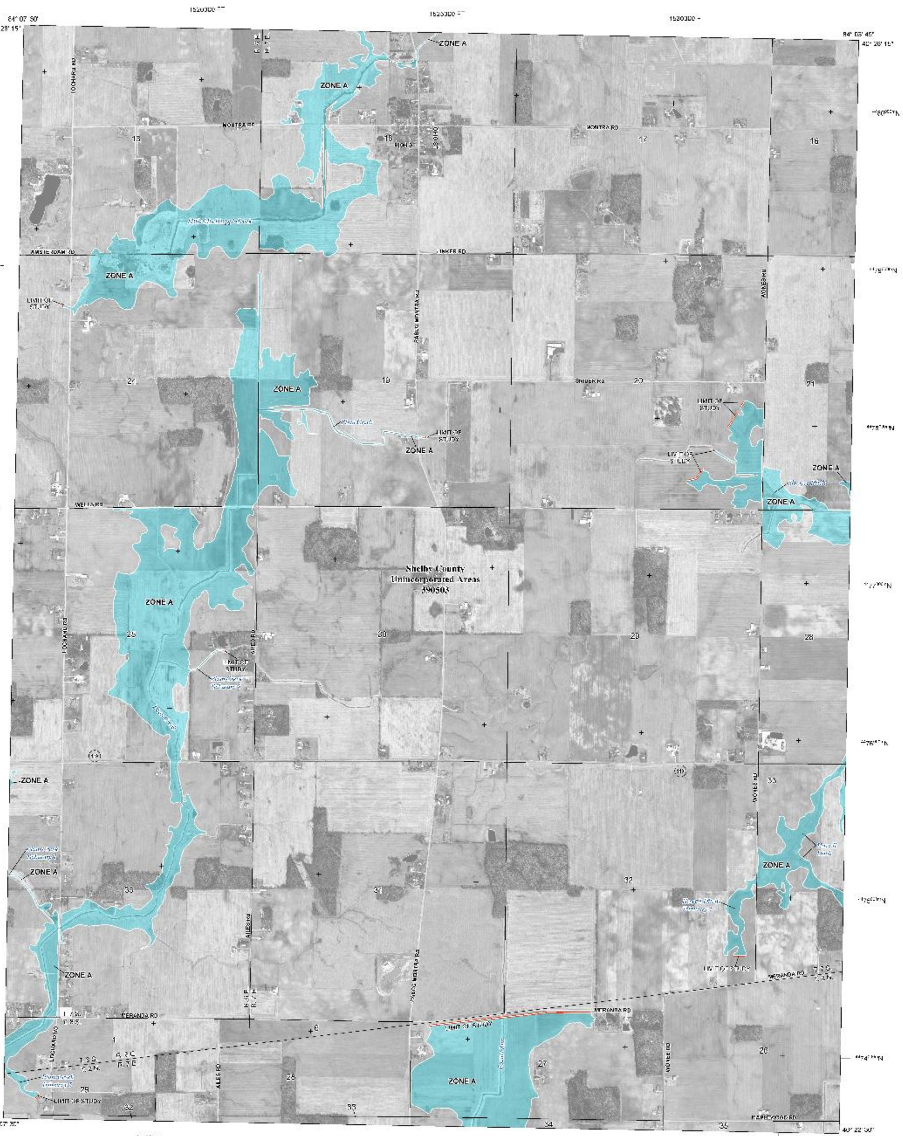
FEMA

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390503	0085	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0085D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99*
	With BFE or Depth *Zone AE, AO, AH, VE, AR*
	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X*
	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer
	Accredited or Provisionally Accredited Levee, Dike, or Floodwall
	Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES	(E) 18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
	(B) Coastal Transect
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
	513 Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary

NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). This information was derived from digital orthophotography at a 2 foot resolution from photography dated 2012.

SCALE

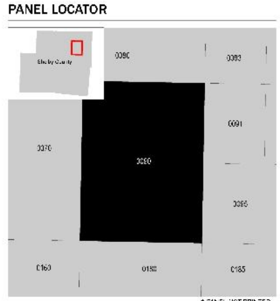
Map Projection:
NAD 1983 State Plane Ohio North FIPS 3401 Feet
Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 1,000 feet 1:12,000

0 1,000 2,000 4,000 Feet

0 250 500 1,000 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA
National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO
AND INCORPORATED AREAS

PANEL 90 OF 295

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390503	0090	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0090D

EFFECTIVE DATE
April 02, 2015

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) Zone A, A99 With BFE or Depth Zone AE, AO, AH, VE, AR Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X Future Conditions 1% Annual Chance Flood Hazard Zone X Area with Reduced Flood Risk due to Levee See Notes. Zone X
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain Zone X Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer Accredited or Provisionally Accredited Levee, Dike, or Floodwall Non-accredited Levee, Dike, or Floodwall Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) Coastal Transect Coastal Transect Baseline Profile Baseline Hydrographic Feature Base Flood Elevation Line (BFE)
OTHER FEATURES	Limit of Study Jurisdiction Boundary

NOTES TO USERS

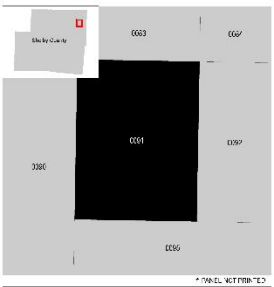
SCALE

1 inch = 500 feet 1:6,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR



PANEL NOT PRINTED

FEMA National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO

AND INCORPORATED AREAS

PANEL **91** OF **295**

FEMA

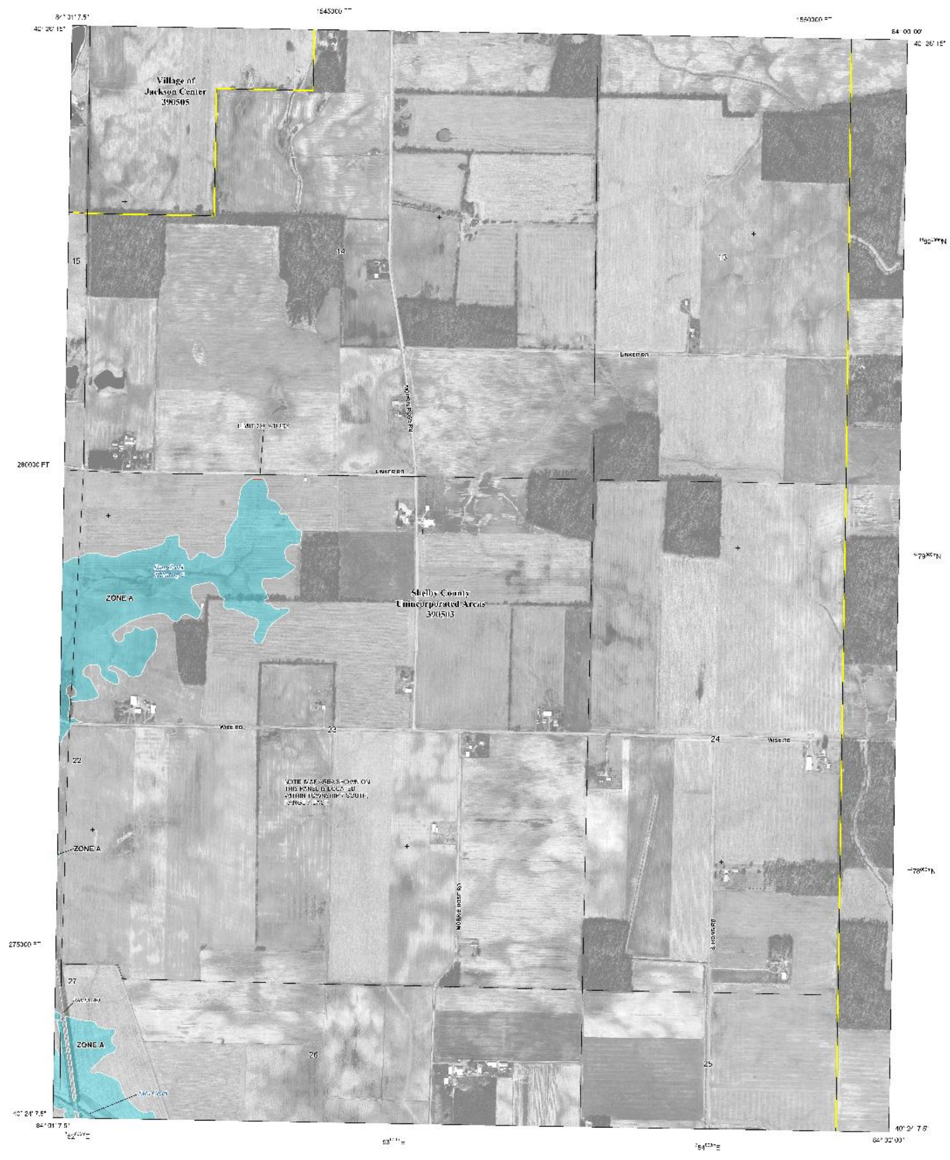
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
[illegible]	[illegible]	[illegible]	[illegible]

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0091D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) *Zone A, V, A99*
		With BFE or Depth *Zone AE, AO, AH, VE, AR*
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
		Future Conditions 1% Annual Chance Flood Hazard *Zone X*
		Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN	Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X*
		Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Accredited or Provisionally Accredited Levee, Dike, or Floodwall
		Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES	E 18.2 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
	B	Coastal Transect
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
	513	Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary

NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). This information was derived from digital orthophotography at a 2 foot resolution from photography dated 2012.

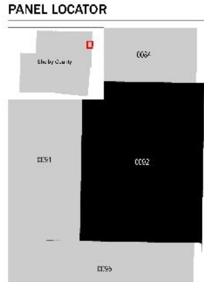
SCALE

Map Projection:
NAD 1983 State Plane Ohio North FIPS 3401 Feet
Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 500 feet 1:6,000

0 500 1,000 2,000 Feet
0 125 250 500 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA
National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO
AND INCORPORATED AREAS

PANEL **92** OF **295**

FEMA

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
JACKSON CENTER, VILLAGE OF	390505	0092	D
SHELBY COUNTY	390513	0092	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0092D

EFFECTIVE DATE
April 02, 2015

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) *Zone A, V, A99*
		With BFE or Depth *Zone AE, AO, AH, VE, AR*
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
		Future Conditions 1% Annual Chance Flood Hazard *Zone X*
		Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN	Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X*
		Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Accredited or Provisionally Accredited Levee, Dike, or Floodwall
		Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES	E 18.2 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
	B	Coastal Transect
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
	513	Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary

NOTES TO USERS

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

SCALE

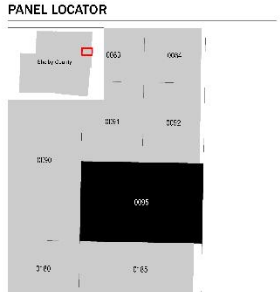
Map Projection:
[illegible] Ohio North [illegible]
[illegible] Vertical Datum: NAVD 88

1 inch = 1,000 feet 1:12,000

0 1,000 2,000 4,000 Feet

0 250 500 1,000 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO
AND INCORPORATED AREAS

PANEL 95 OF 295

FEMA

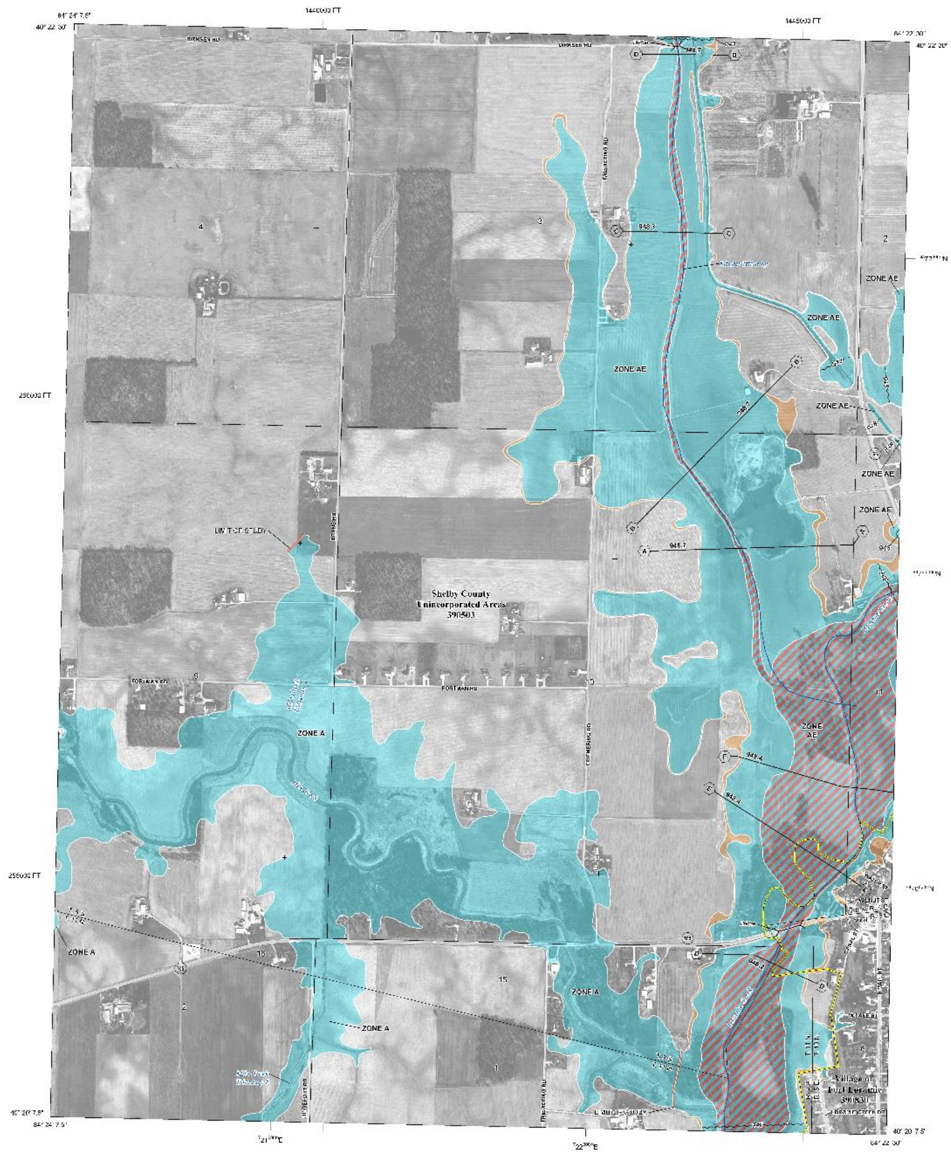
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390503	0095	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0095D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR*
	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN — Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X*
	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer
	Accredited or Provisionally Accredited Levee, Dike, or Floodwall
	Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES	(E) 18.2 / 17.5 — Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
	(B) — Coastal Transect
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
	513 — Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary

NOTES TO USERS

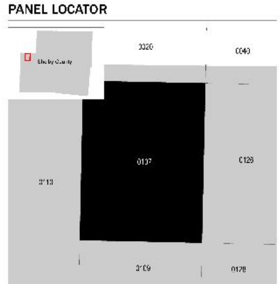
SCALE

1 inch = 500 feet 1:6,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA
National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO
AND INCORPORATED AREAS

PANEL 107 OF 295

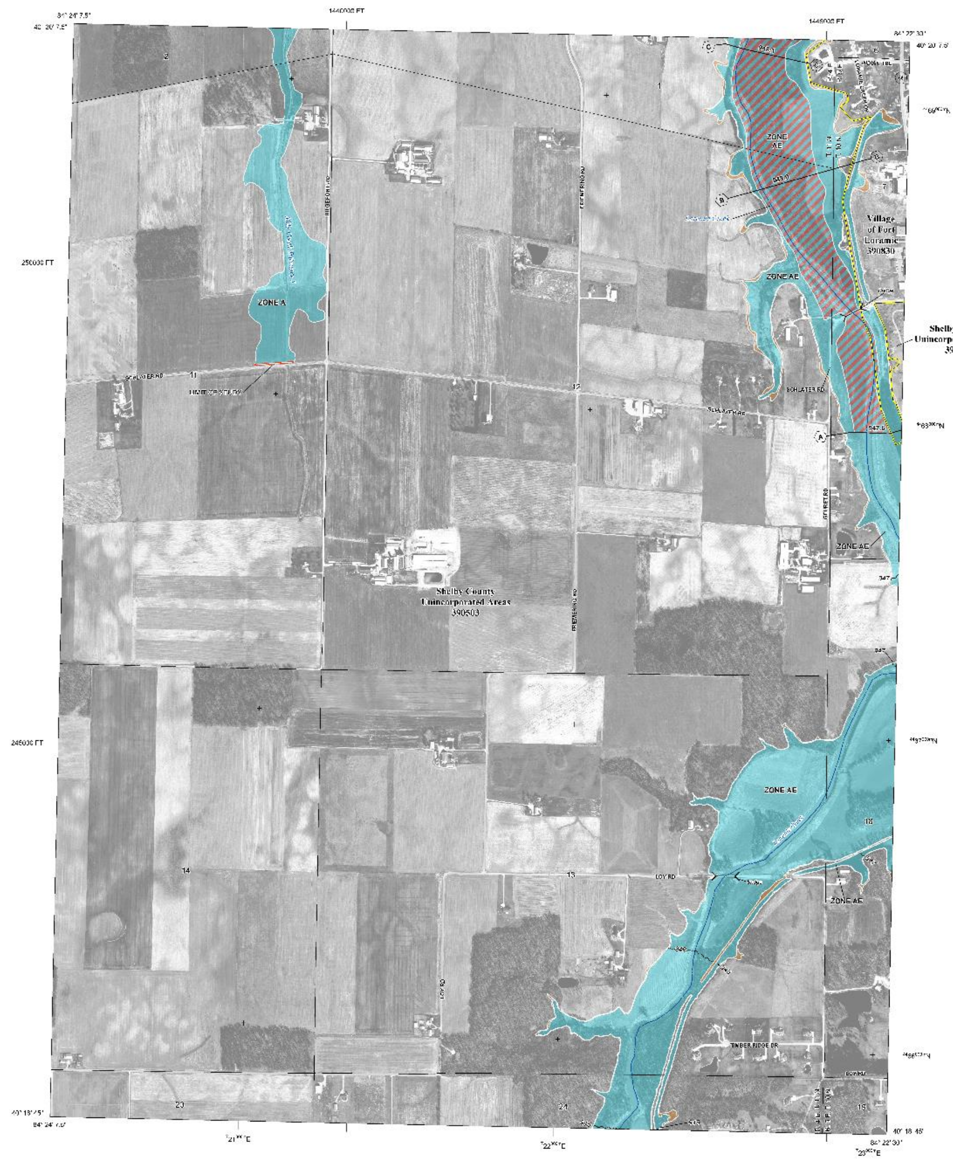
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
FORT LORAMIE, VILLAGE OF	[illegible]	0107	D
SHELBY COUNTY	390503	0107	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0107D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR* Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X* Future Conditions 1% Annual Chance Flood Hazard *Zone X* Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X* Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer Accredited or Provisionally Accredited Levee, Dike, or Floodwall Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES	E 18.2 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) B Coastal Transect Coastal Transect Baseline Profile Baseline Hydrographic Feature 513 Base Flood Elevation Line (BFE) Limit of Study Jurisdiction Boundary

NOTES TO USERS

SCALE

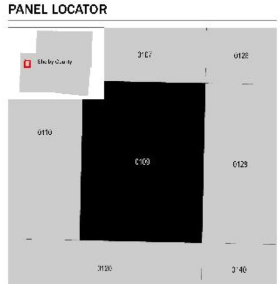
Map Projection:

1 inch = 500 feet 1:6,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO
AND INCORPORATED AREAS

PANEL 109 OF 295

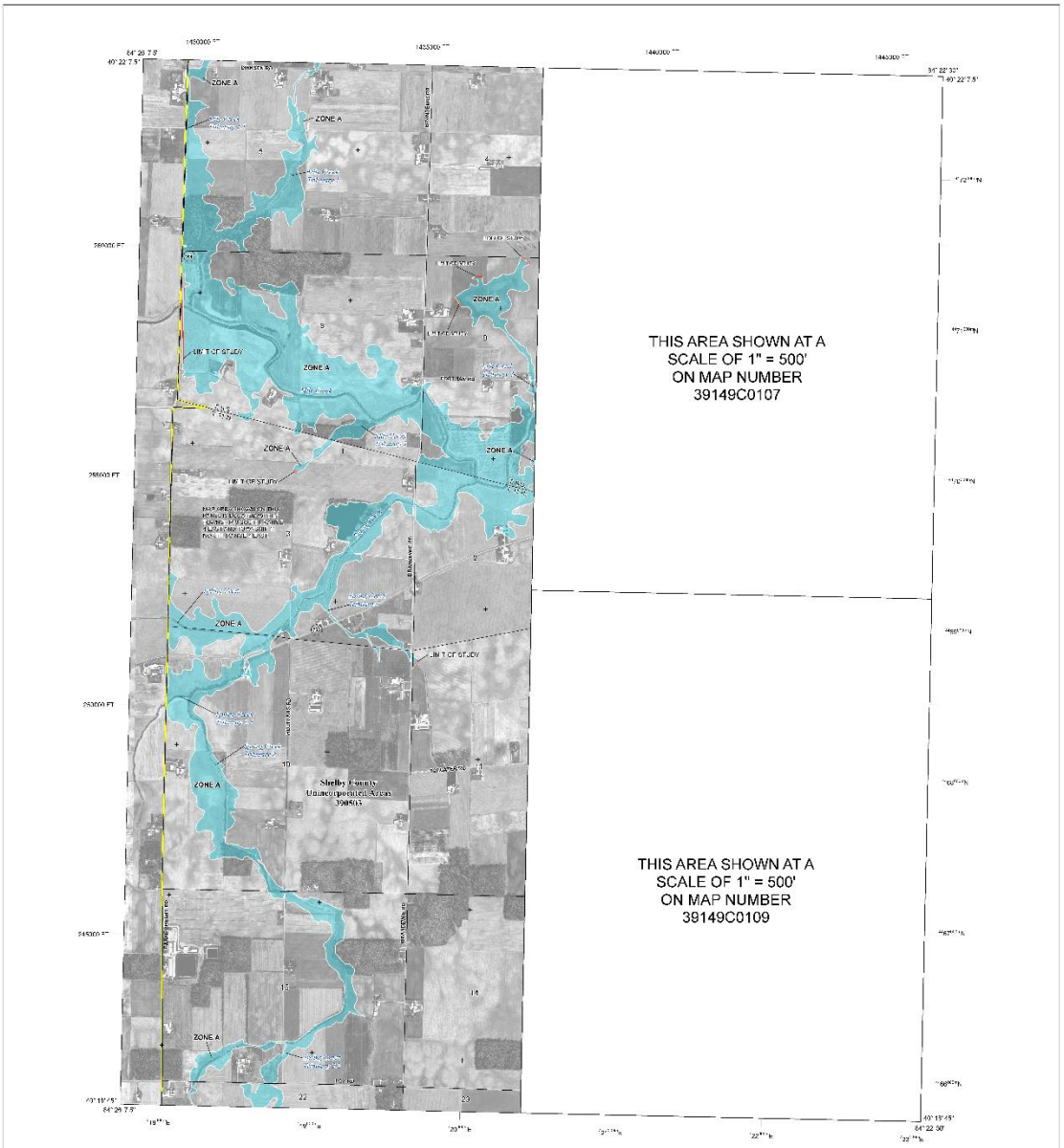
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
FORT LORAMIE, VILLAGE OF	390530	0109	D
SHELBY COUNTY	390503	0109	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0109D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) Zone A, A99 With BFE or Depth Zone AE, AO, AH, VE, AR Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X Future Conditions 1% Annual Chance Flood Hazard Zone X Area with Reduced Flood Risk due to Levee See Notes. Zone X
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain Zone X Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer Accredited or Provisionally Accredited Levee, Dike, or Floodwall Non-accredited Levee, Dike, or Floodwall Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) Coastal Transect Coastal Transect Baseline Profile Baseline Hydrographic Feature Base Flood Elevation Line (BFE)
OTHER FEATURES	Limit of Study Jurisdiction Boundary

NOTES TO USERS

SCALE

1 inch = 1,000 feet 1:12,000

0 1,000 2,000 4,000 Feet

0 250 500 1,000 Meters

PANEL LOCATOR

FEMA National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO
AND INCORPORATED AREAS

PANEL 110 OF 295

FEMA

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390623	0110	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0110D

EFFECTIVE DATE
April 02, 2015

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99*
	With BFE or Depth *Zone AE, AO, AH, VE, AR*
	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X*
	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer
	Accredited or Provisionally Accredited Levee, Dike, or Floodwall
	Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES	Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) (E, 18.2, 17.5)
	Coastal Transect (B)
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
	Base Flood Elevation Line (BFE) (513)
	Limit of Study
	Jurisdiction Boundary

NOTES TO USERS

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

SCALE

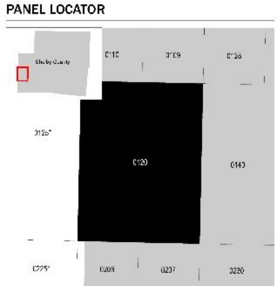
Map Projection: [illegible]

1 inch = 1,000 feet	1:12,000

0 1,000 2,000 4,000 Feet

0 250 500 1,000 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

National Flood Insurance Program

FEMA

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO
AND INCORPORATED AREAS

PANEL **120** OF **295**

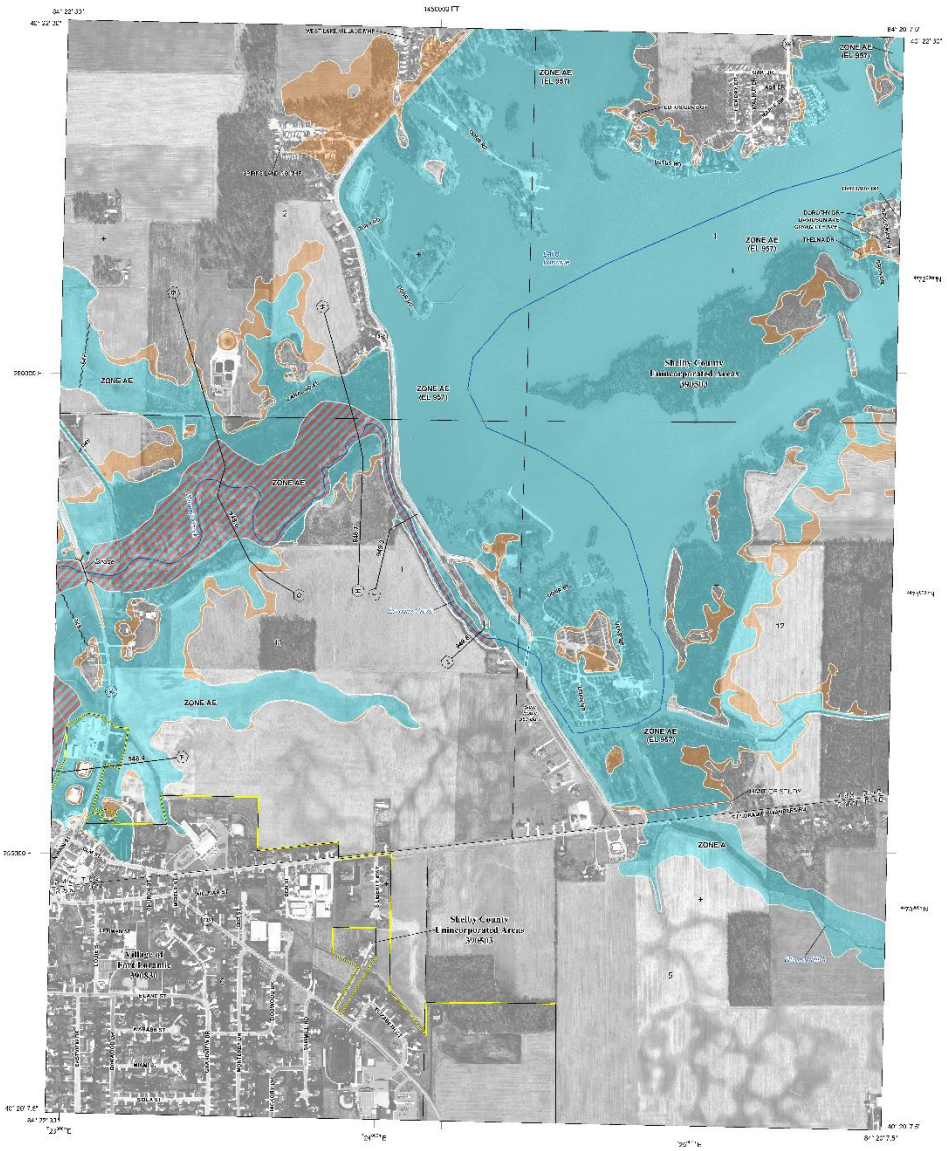
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	[illegible]	0120	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0120D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) Zone A, A99 With BFE or Depth Zone AE, AO, AH, VE, AR Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X Future Conditions 1% Annual Chance Flood Hazard Zone X Area with Reduced Flood Risk due to Levee See Notes. Zone X
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain Zone X Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer Accredited or Provisionally Accredited Levee, Dike, or Floodwall Non-accredited Levee, Dike, or Floodwall Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) Coastal Transect Coastal Transect Baseline Profile Baseline Hydrographic Feature Base Flood Elevation Line (BFE)
OTHER FEATURES	Limit of Study Jurisdiction Boundary

NOTES TO USERS

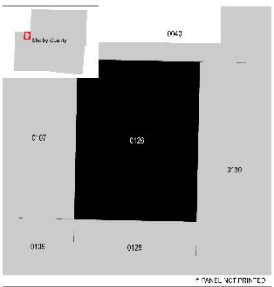
SCALE

1 inch = 500 feet 1:6,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR



PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO

AND INCORPORATED AREAS

PANEL 126 OF 295

FEMA

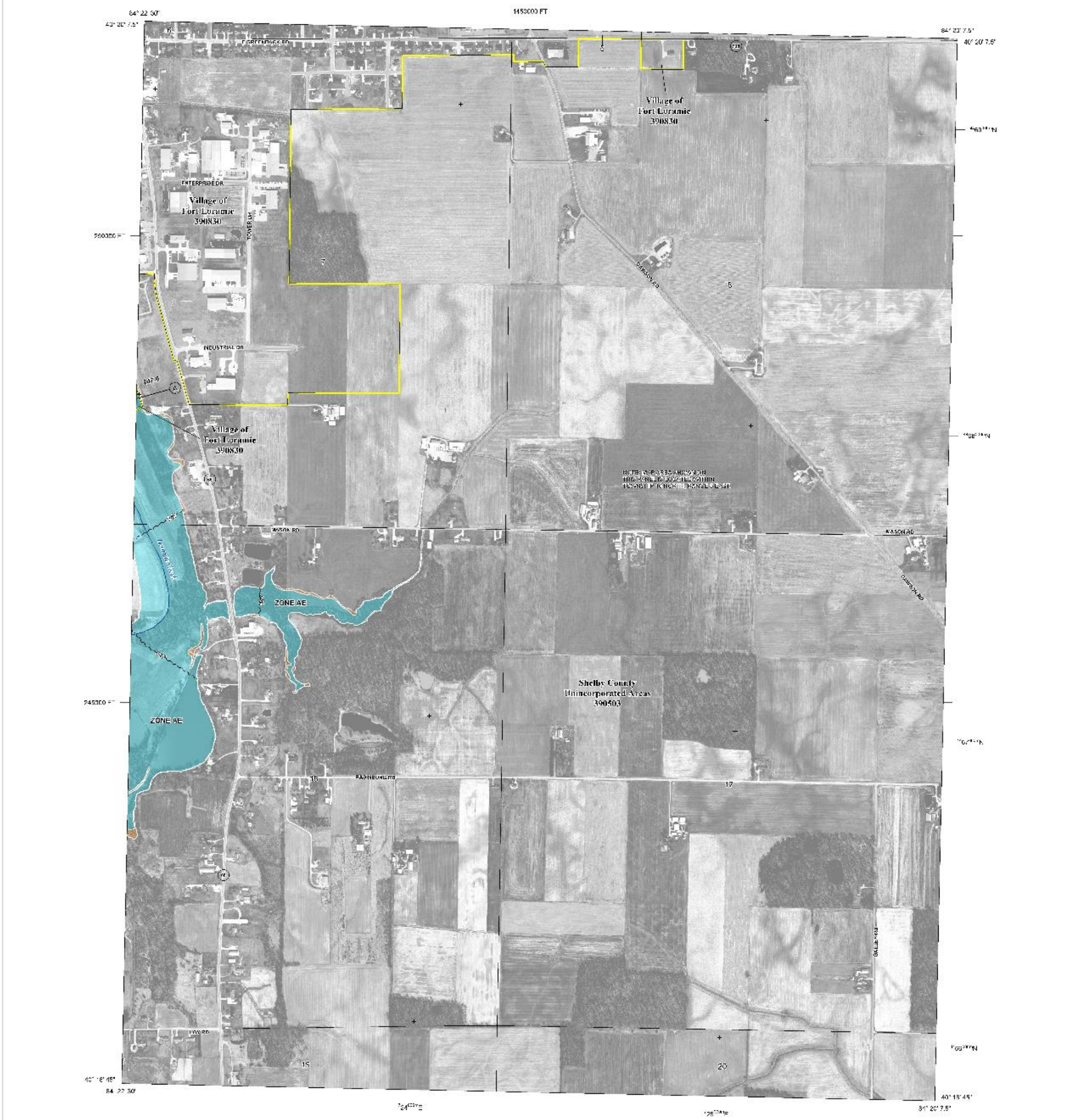
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390620	0126	D
VILLAGE OF FORT LORAMIE	390623	0126	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0126D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR* Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X* Future Conditions 1% Annual Chance Flood Hazard *Zone X* Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X* Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer Accredited or Provisionally Accredited Levee, Dike, or Floodwall Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES	Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) (E, 18.2, 17.5) Coastal Transect (B) Coastal Transect Baseline Profile Baseline Hydrographic Feature Base Flood Elevation Line (BFE) Limit of Study Jurisdiction Boundary

NOTES TO USERS

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

SCALE

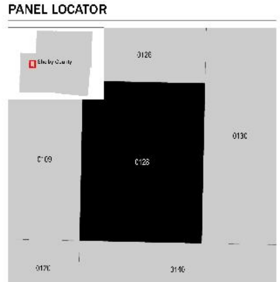
Map Projection: [illegible]

1 inch = 500 feet 1:6,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

National Flood Insurance Program

FEMA

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO
AND INCORPORATED AREAS

PANEL 128 OF 295

FEMA

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
FORT LORAMIE, VILLAGE OF	390830	0128	D
SHELBY COUNTY	390503	0128	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0128D

EFFECTIVE DATE
April 02, 2015

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) *Zone A, V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR*
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
		Future Conditions 1% Annual Chance Flood Hazard *Zone X*
		Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN	Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X*
		Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Accredited or Provisionally Accredited Levee, Dike, or Floodwall
		Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES	(E) 18.2 / 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
	(8)	Coastal Transect
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
	513	Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary

NOTES TO USERS

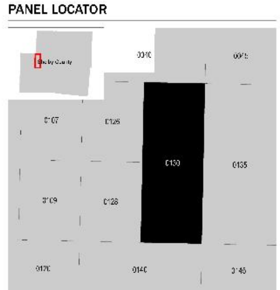
SCALE

1 inch = 1,000 feet — 1:12,000

0 1,000 2,000 4,000 Feet

0 250 500 1,000 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO
AND INCORPORATED AREAS

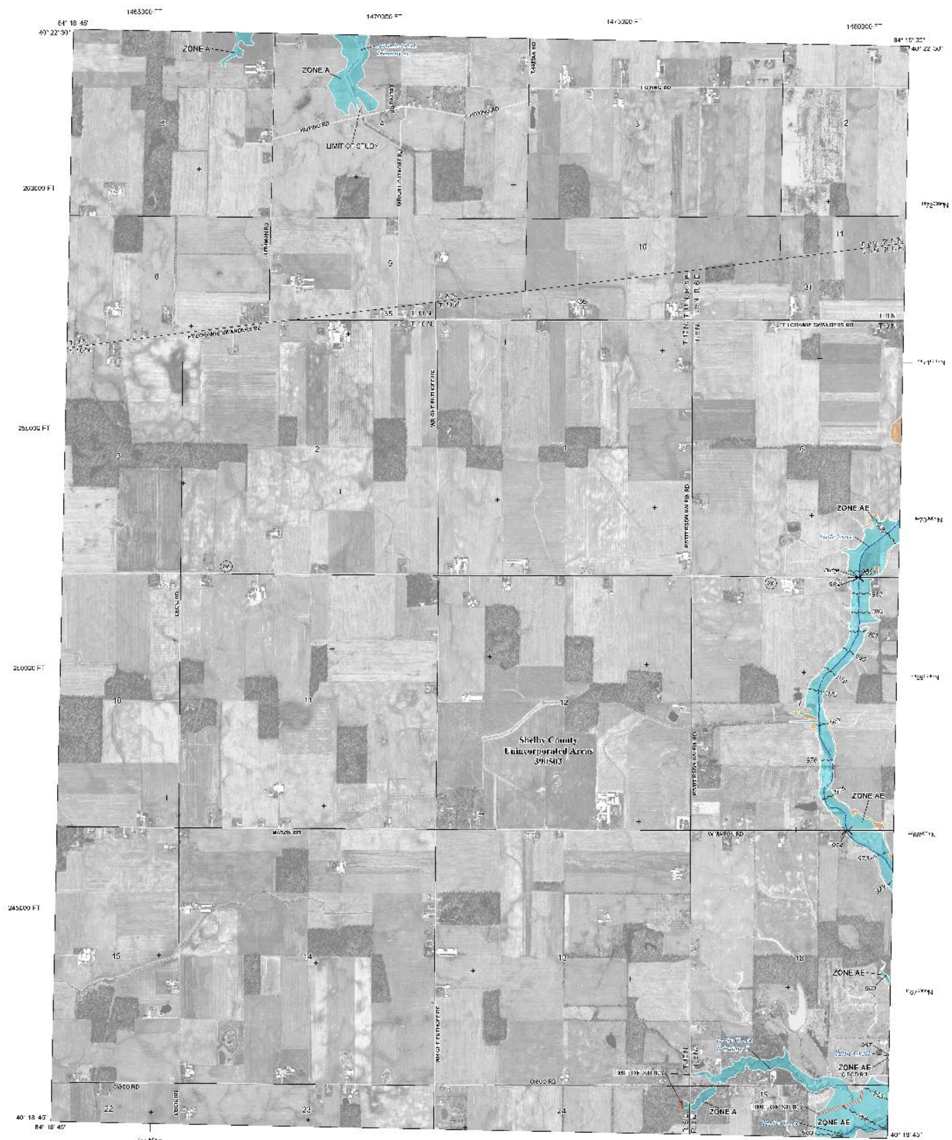
PANEL 130 OF 295

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390803	0130	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0130D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR* Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X* Future Conditions 1% Annual Chance Flood Hazard *Zone X* Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X* Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer Accredited or Provisionally Accredited Levee, Dike, or Floodwall Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES	18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) Coastal Transect Coastal Transect Baseline Profile Baseline Hydrographic Feature 513 Base Flood Elevation Line (BFE) Limit of Study Jurisdiction Boundary

NOTES TO USERS

Base map information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). This information was derived from digital orthophotography at a 2 foot resolution from photography dated 2012.

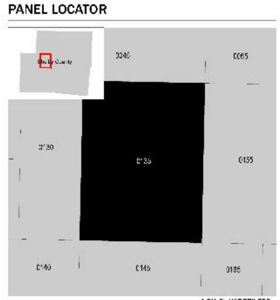
SCALE

Map Projection:
NAD 1983 State Plane Ohio North FIPS 3401 Feet
Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 1,000 feet 1:12,000

0 1,000 2,000 4,000 Feet
0 250 500 1,000 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA
National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO
AND INCORPORATED AREAS

PANEL 135 OF 295

FEMA

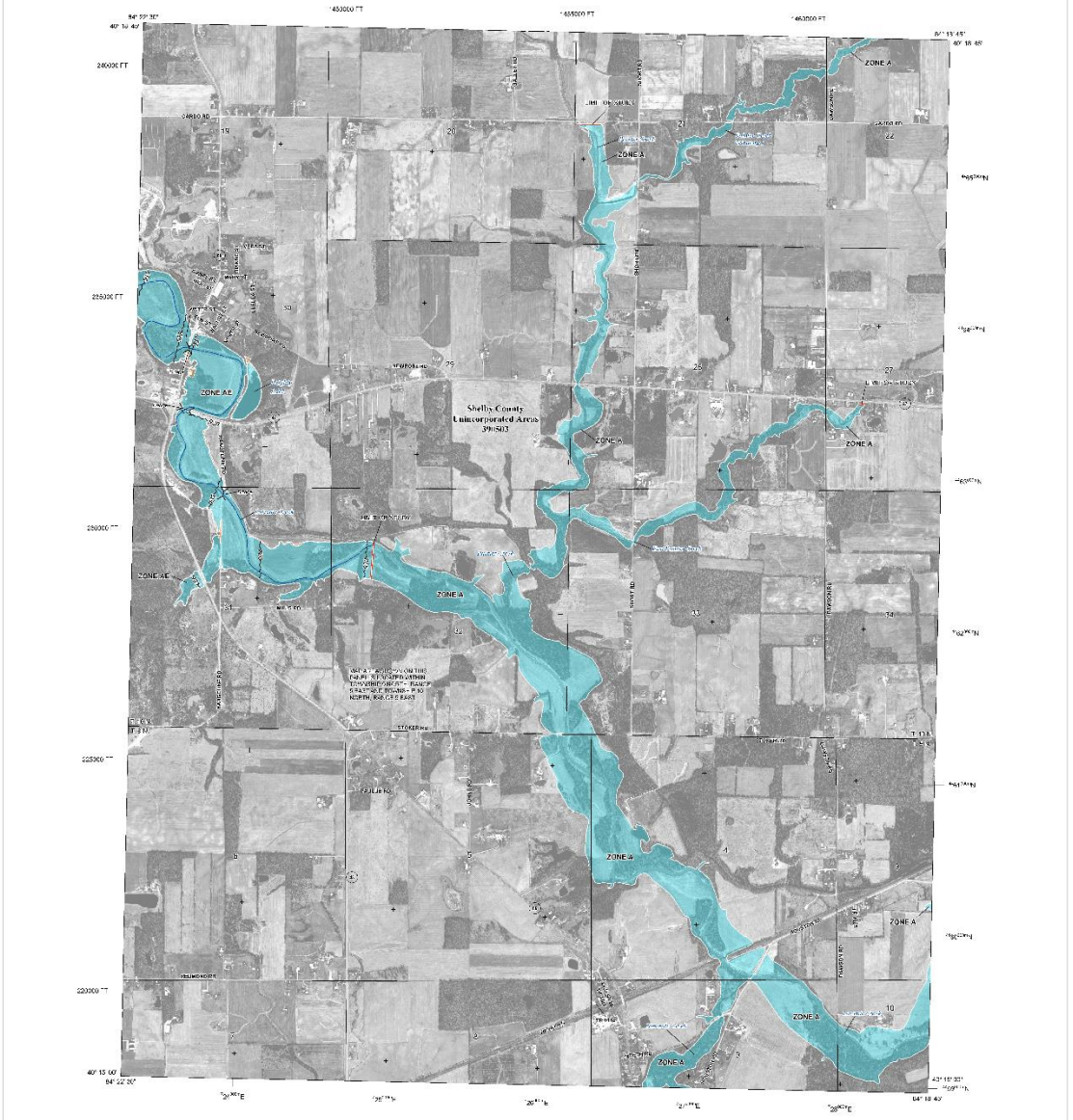
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390503	0135	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0135D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) Zone A, A99
	With BFE or Depth Zone AE, AO, AH, VE, AR
	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
	Future Conditions 1% Annual Chance Flood Hazard Zone X
	Area with Reduced Flood Risk due to Levee See Notes. Zone X
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain Zone X
	Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer
	Accredited or Provisionally Accredited Levee, Dike, or Floodwall
	Non-accredited Levee, Dike, or Floodwall
	18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
	Coastal Transect
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
	Base Flood Elevation Line (BFE)
OTHER FEATURES	Limit of Study
	Jurisdiction Boundary

NOTES TO USERS

SCALE

1 inch = 1,000 feet 1:12,000

0 1,000 2,000 4,000 Feet

0 250 500 1,000 Meters

PANEL LOCATOR

0120 0140 0145

0260 0280 0285

* PANEL NOT PRINTED

FEMA National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO

PANEL 140 OF 295

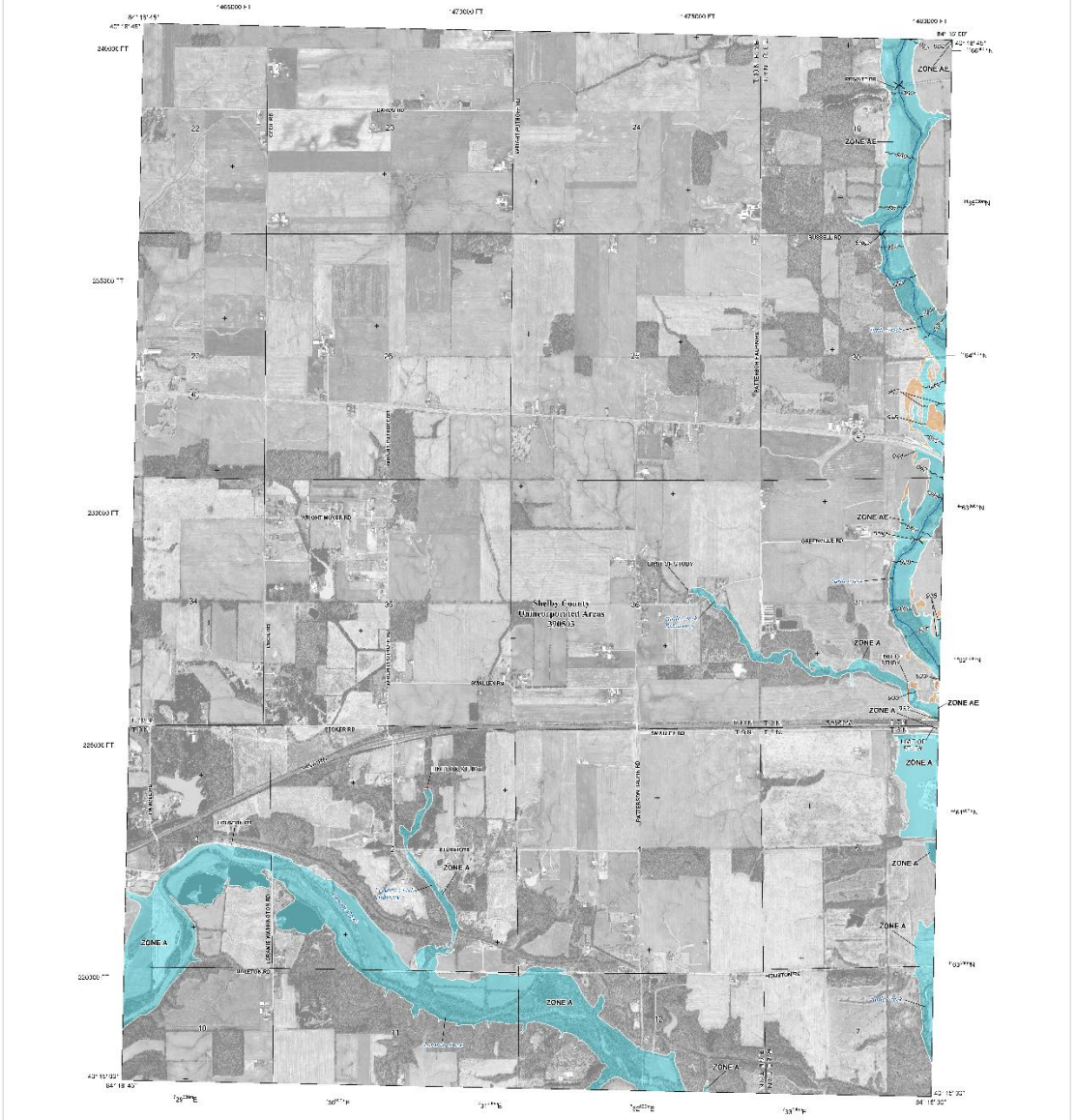
FEMA

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390503	0140	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0140D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) Zone A, A99 With BFE or Depth Zone AE, AO, AH, VE, AR Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X Future Conditions 1% Annual Chance Flood Hazard Zone X Area with Reduced Flood Risk due to Levee See Notes. Zone X
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain Zone X Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer Accredited or Provisionally Accredited Levee, Dike, or Floodwall Non-accredited Levee, Dike, or Floodwall Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) Coastal Transect Coastal Transect Baseline Profile Baseline Hydrographic Feature Base Flood Elevation Line (BFE)
OTHER FEATURES	Limit of Study Jurisdiction Boundary

NOTES TO USERS

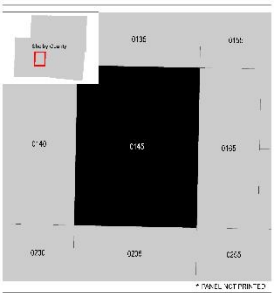
SCALE

1 inch = 1,000 feet 1:12,000

0 1,000 2,000 4,000 Feet

0 250 500 1,000 Meters

PANEL LOCATOR



PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO

AND INCORPORATED AREAS

PANEL 145 OF 295

FEMA

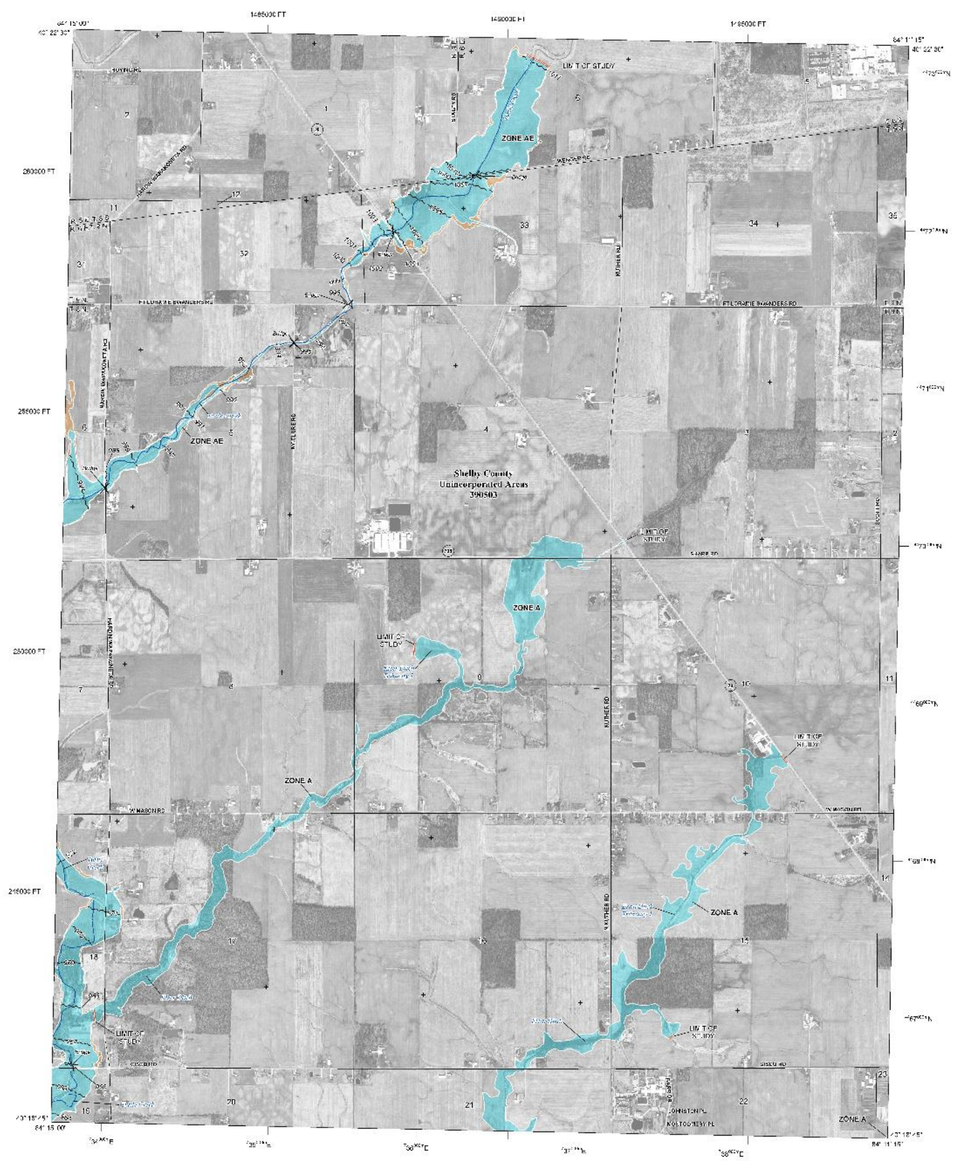
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390813	0145	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0145D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99*
	With BFE or Depth *Zone AE, AO, AH, VE, AR*
	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X*
	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer
	Accredited or Provisionally Accredited Levee, Dike, or Floodwall
	Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES	18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
	Coastal Transect
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
	513 Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary

NOTES TO USERS

[illegible]

SCALE

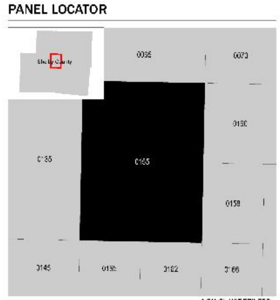
Map Projection: [illegible] Vertical Datum: NAVD 88

1 inch = 1,000 feet 1:12,000

0 1,000 2,000 4,000 Feet

0 250 500 1,000 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO
AND INCORPORATED AREAS

PANEL 155 OF 295

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390503	0155	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0155D

EFFECTIVE DATE
April 02, 2015

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR*
	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X*
	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer
	Accredited or Provisionally Accredited Levee, Dike, or Floodwall
	Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES	(E) 18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
	(B) Coastal Transect
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
	513 Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary

NOTES TO USERS

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

SCALE

N

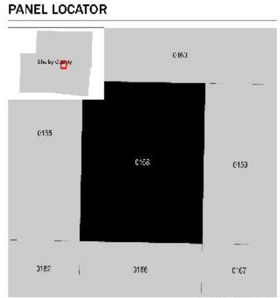
Map Projection:
[illegible]

1 inch = 500 feet	1:6,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA
National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO
AND INCORPORATED AREAS

PANEL 158 OF 295

FEMA

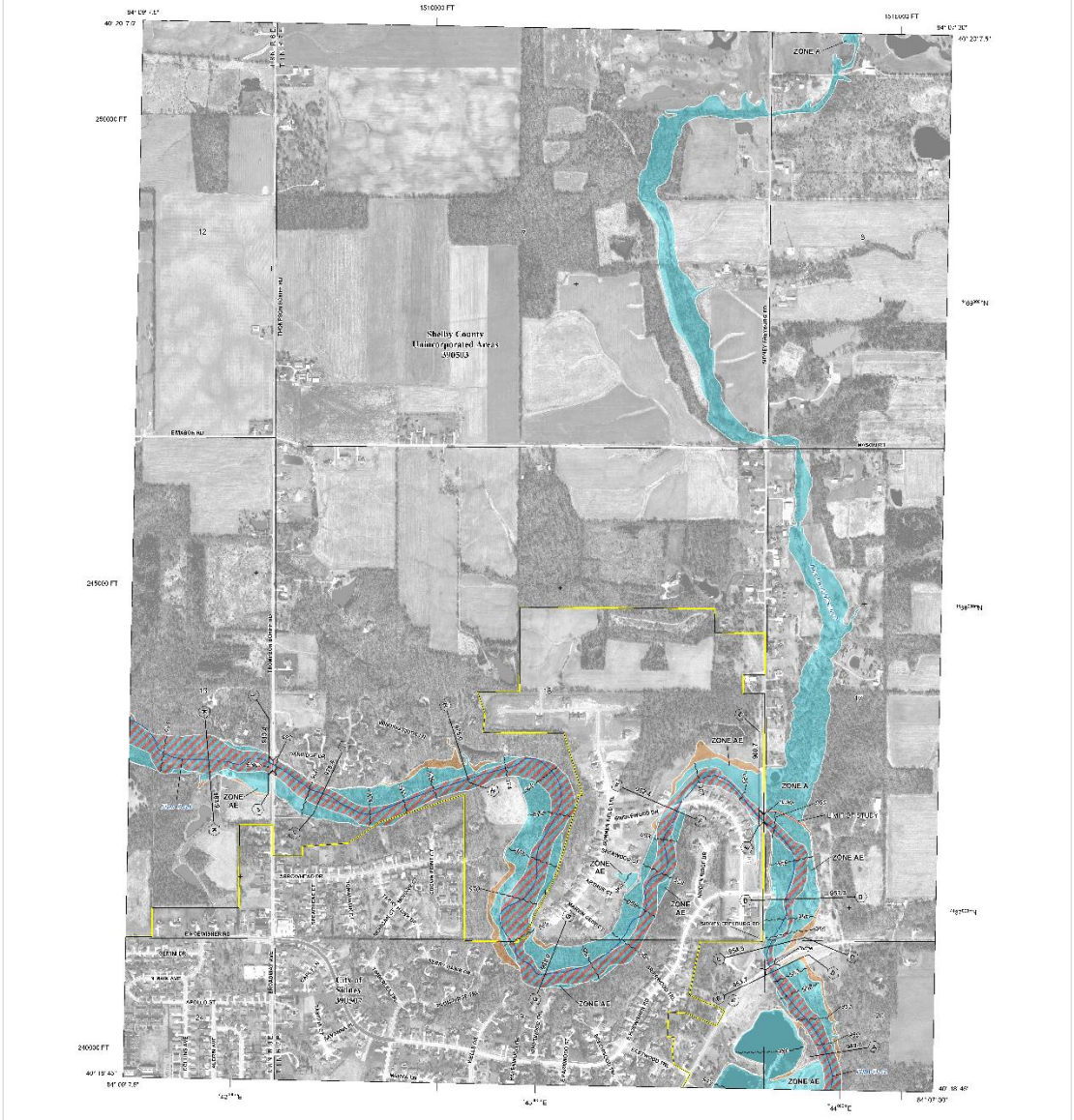
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390503	0158	D
SIDNEY, CITY OF	390507	0158	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0158D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) Zone A, A99 With BFE or Depth Zone AE, AO, AH, VE, AR Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X Future Conditions 1% Annual Chance Flood Hazard Zone X Area with Reduced Flood Risk due to Levee See Notes. Zone X
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain Zone X Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer Accredited or Provisionally Accredited Levee, Dike, or Floodwall Non-accredited Levee, Dike, or Floodwall Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) Coastal Transect Coastal Transect Baseline Profile Baseline Hydrographic Feature Base Flood Elevation Line (BFE)
OTHER FEATURES	Limit of Study Jurisdiction Boundary

NOTES TO USERS

SCALE

1 inch = 500 feet 1:6,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR

* PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO

AND INCORPORATED AREAS

PANEL 159 OF 295

FEMA

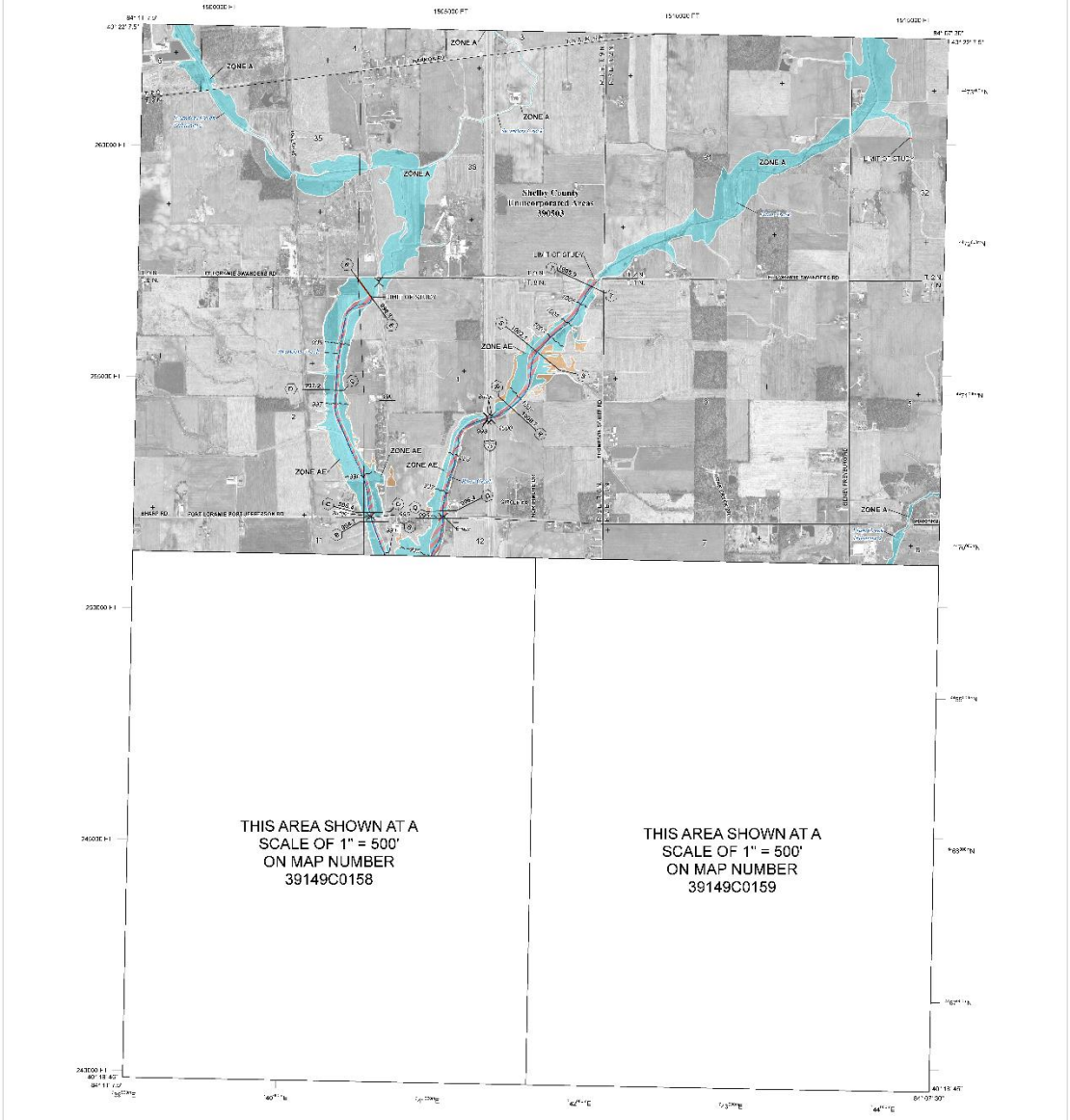
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390503	0159	D
SIDNEY, CITY OF	390503	0159	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0159D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) Zone A, A99 With BFE or Depth Zone AE, AO, AH, VE, AR Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X Future Conditions 1% Annual Chance Flood Hazard Zone X Area with Reduced Flood Risk due to Levee See Notes. Zone X
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain Zone X Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer Accredited or Provisionally Accredited Levee, Dike, or Floodwall Non-accredited Levee, Dike, or Floodwall Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) Coastal Transect Coastal Transect Baseline Profile Baseline Hydrographic Feature Base Flood Elevation Line (BFE)
OTHER FEATURES	Limit of Study Jurisdiction Boundary

NOTES TO USERS

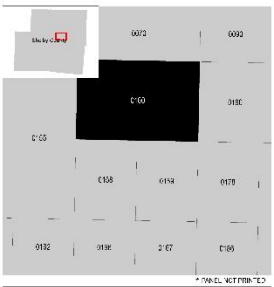
SCALE

1 inch = 1,000 feet 1:12,000

0 1,000 2,000 4,000 Feet

0 250 500 1,000 Meters

PANEL LOCATOR



PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO

AND INCORPORATED AREAS

PANEL 160 OF 295

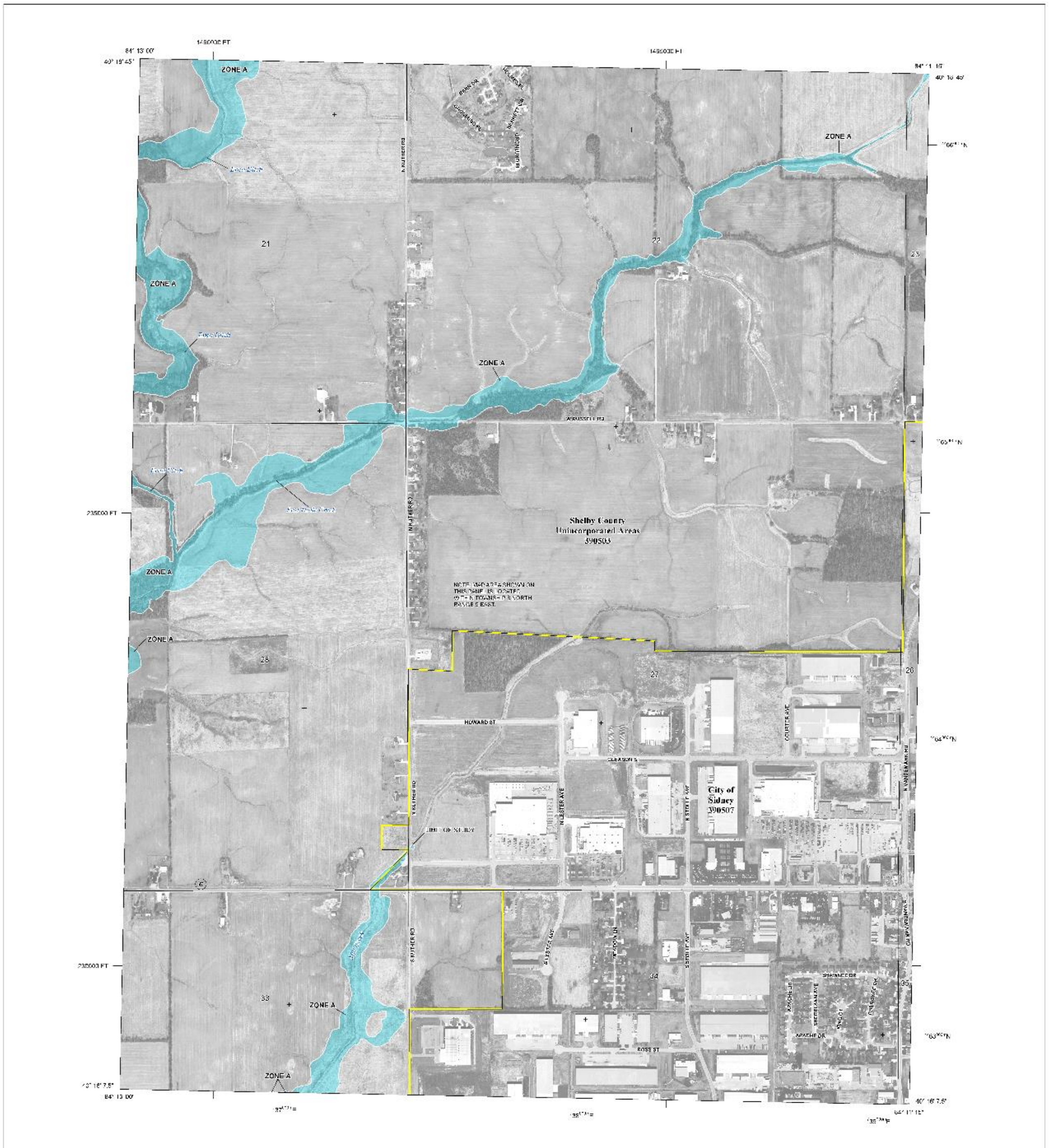
FEMA

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390503	0160	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0160D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) *Zone A, V, A99*
		With BFE or Depth *Zone AE, AO, AH, VE, AR*
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
		Future Conditions 1% Annual Chance Flood Hazard *Zone X*
		Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN	Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X*
		Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Accredited or Provisionally Accredited Levee, Dike, or Floodwall
		Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES	18.2 / 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
		Coastal Transect
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
	513	Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary

NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in the community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). This information was derived from digital orthophotography at a 2 foot resolution from photography dated 2012.

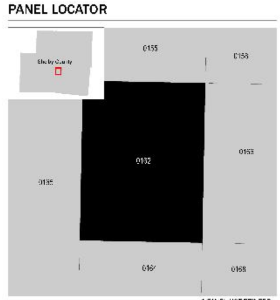
SCALE

1 inch = 500 feet 1:6,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO
AND INCORPORATED AREAS

PANEL 162 OF 295

FEMA

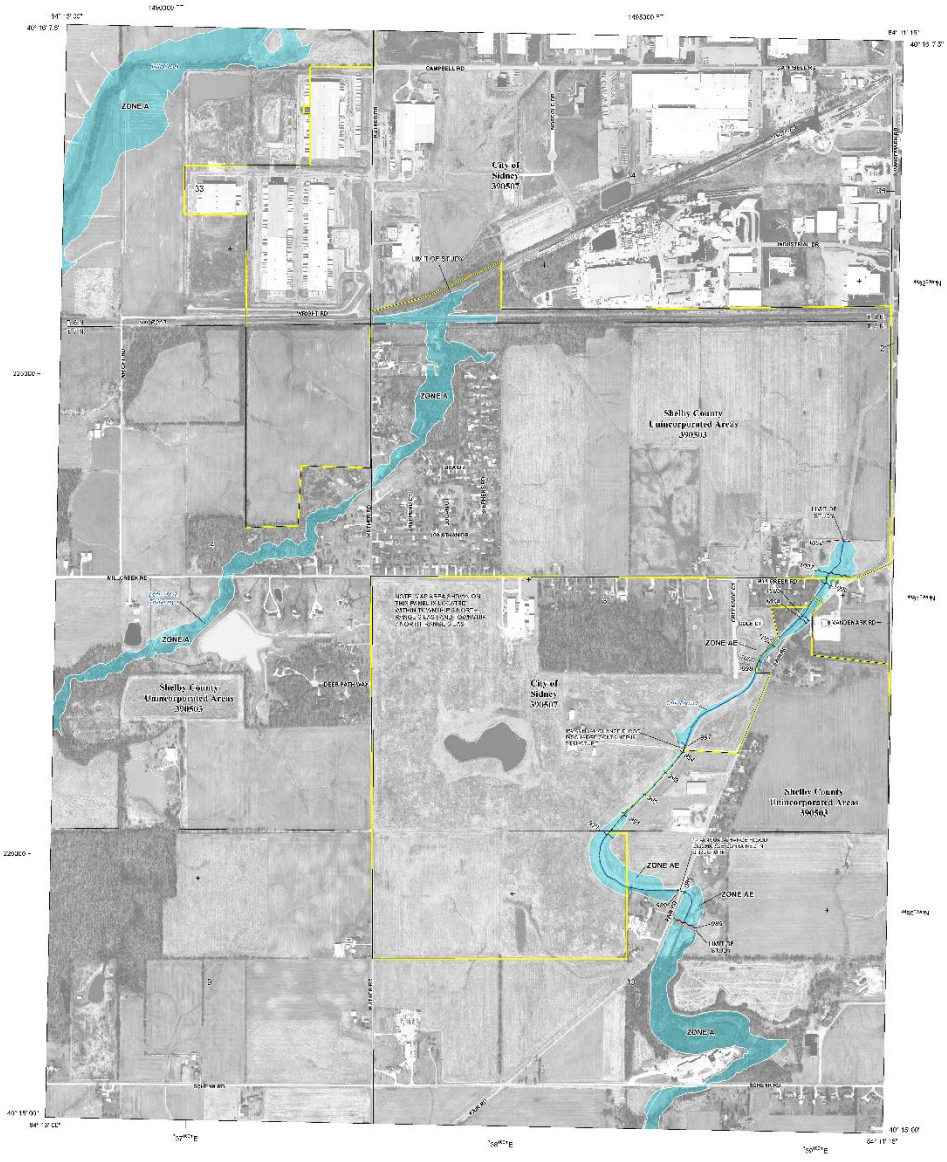
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390503	0162	D
SIDNEY, CITY OF	390507	0162	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0162D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) Zone A, A99 With BFE or Depth Zone AE, AO, AH, VE, AR Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X Future Conditions 1% Annual Chance Flood Hazard Zone X Area with Reduced Flood Risk due to Levee See Notes. Zone X
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain Zone X Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer Accredited or Provisionally Accredited Levee, Dike, or Floodwall Non-accredited Levee, Dike, or Floodwall Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) Coastal Transect Coastal Transect Baseline Profile Baseline Hydrographic Feature Base Flood Elevation Line (BFE)
OTHER FEATURES	Limit of Study Jurisdiction Boundary

NOTES TO USERS

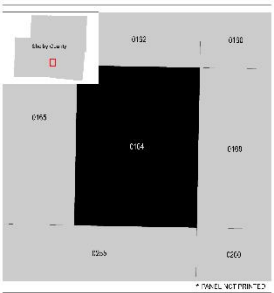
SCALE

1 inch = 500 feet 1:6,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR



PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO

PANEL 164 OF 295

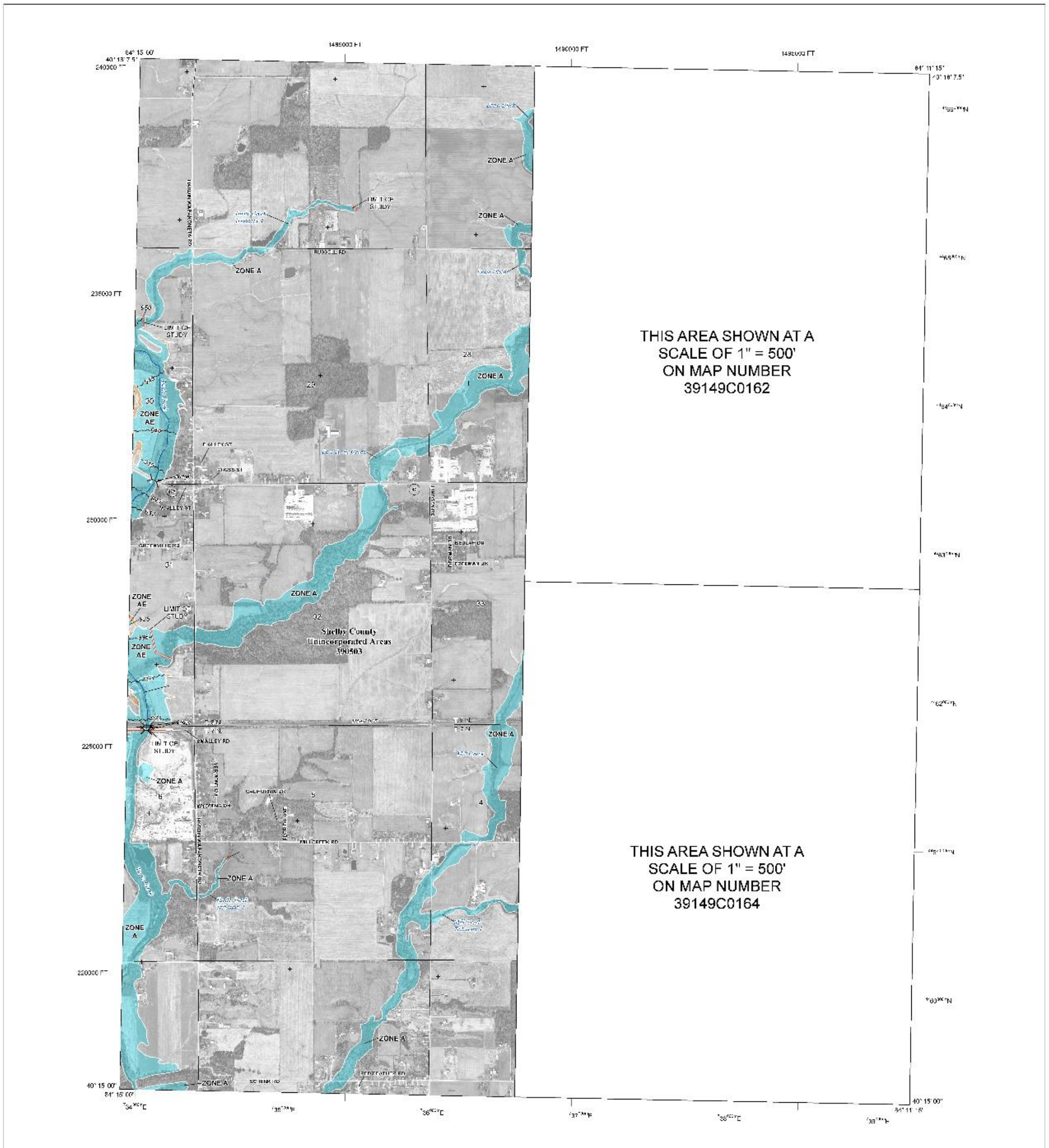
FEMA

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390503	0164	D
SIDNEY, CITY OF	390657	0164	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0164D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99*
	With BFE or Depth *Zone AE, AO, AH, VE, AR*
	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X*
	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer
	Accredited or Provisionally Accredited Levee, Dike, or Floodwall
	Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES	(E) 18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
	(8) Coastal Transect
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
	513 Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary

NOTES TO USERS

SCALE

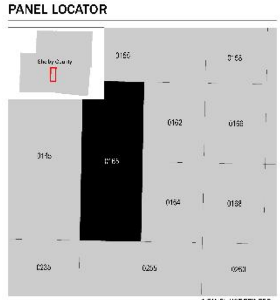
N

1 inch = 1,000 feet	1:12,000

0 1,000 2,000 4,000 Feet

0 250 500 1,000 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO
AND INCORPORATED AREAS

PANEL 165 OF 295

FEMA

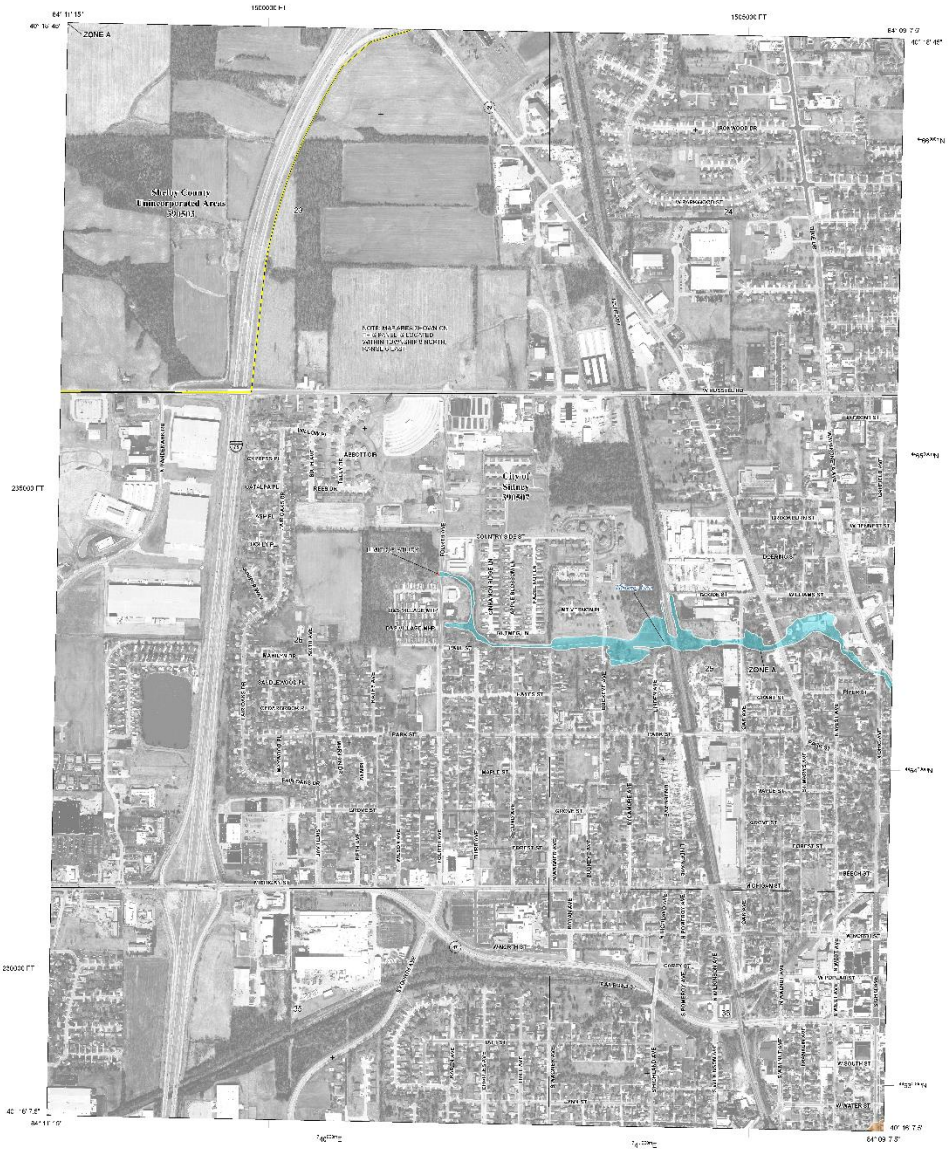
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390503	0165	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0165D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) Zone A, A99 With BFE or Depth Zone AE, AO, AH, VE, AR Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X Future Conditions 1% Annual Chance Flood Hazard Zone X Area with Reduced Flood Risk due to Levee See Notes. Zone X
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain Zone X Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer Accredited or Provisionally Accredited Levee, Dike, or Floodwall Non-accredited Levee, Dike, or Floodwall Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) Coastal Transect Coastal Transect Baseline Profile Baseline Hydrographic Feature Base Flood Elevation Line (BFE)
OTHER FEATURES	Limit of Study Jurisdiction Boundary

NOTES TO USERS

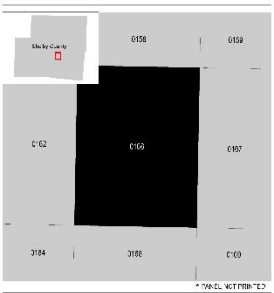
SCALE

1 inch = 500 feet 1:6,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR



PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO

AND INCORPORATED AREAS

PANEL 166 OF 295

FEMA

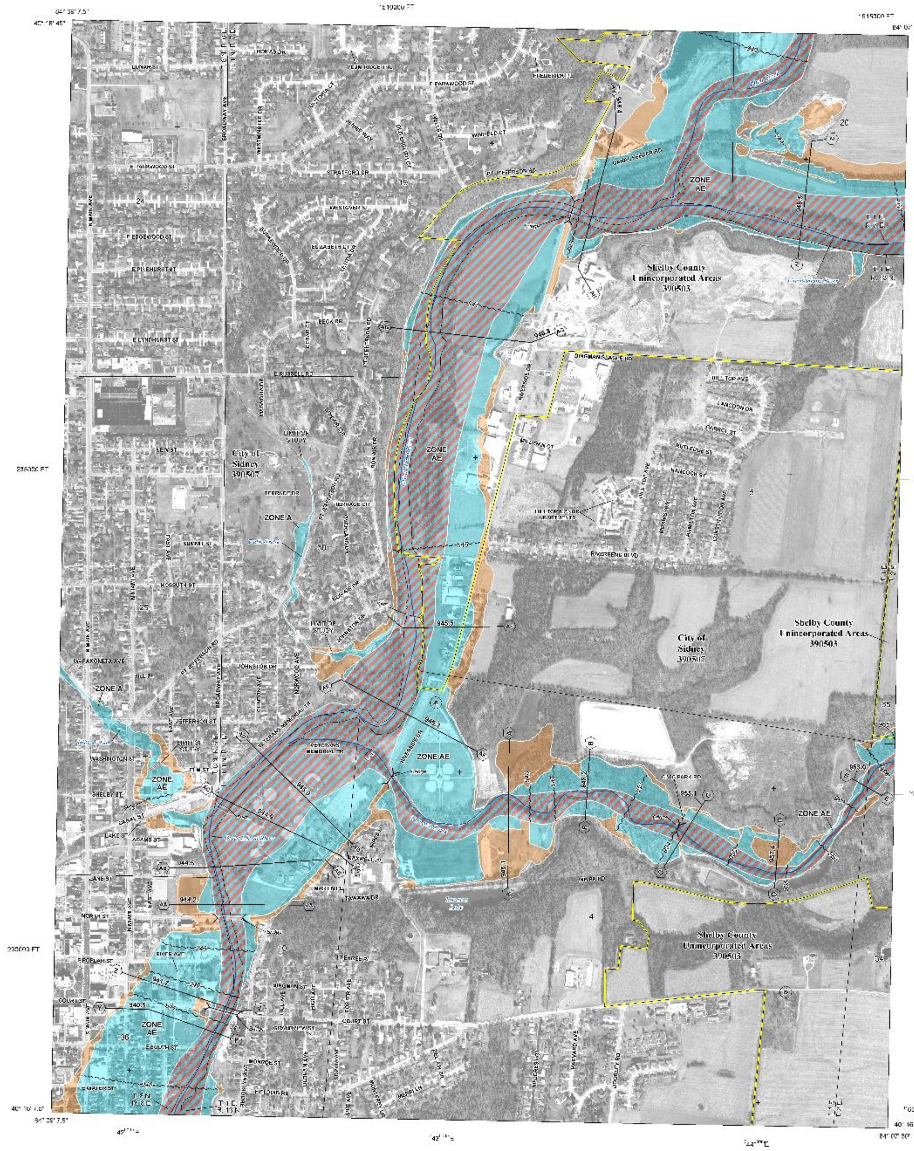
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390502	0166	D
SHELBY, CITY OF	390503	0166	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0166D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99*
	With BFE or Depth *Zone AE, AO, AH, VE, AR*
	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X*
	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer
	Accredited or Provisionally Accredited Levee, Dike, or Floodwall
	Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES	(E) 18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
	(B) Coastal Transect
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
	~~ 513 ~~~ Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary

NOTES TO USERS

For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). This information was derived from digital orthophotography at a 2 foot resolution from photography dated 2012.

SCALE

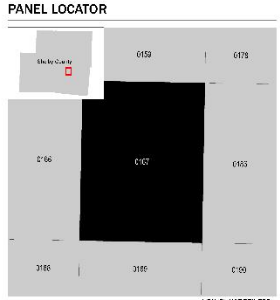
N

1 inch = 500 feet 1:6,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO
AND INCORPORATED AREAS

PANEL 167 OF 295

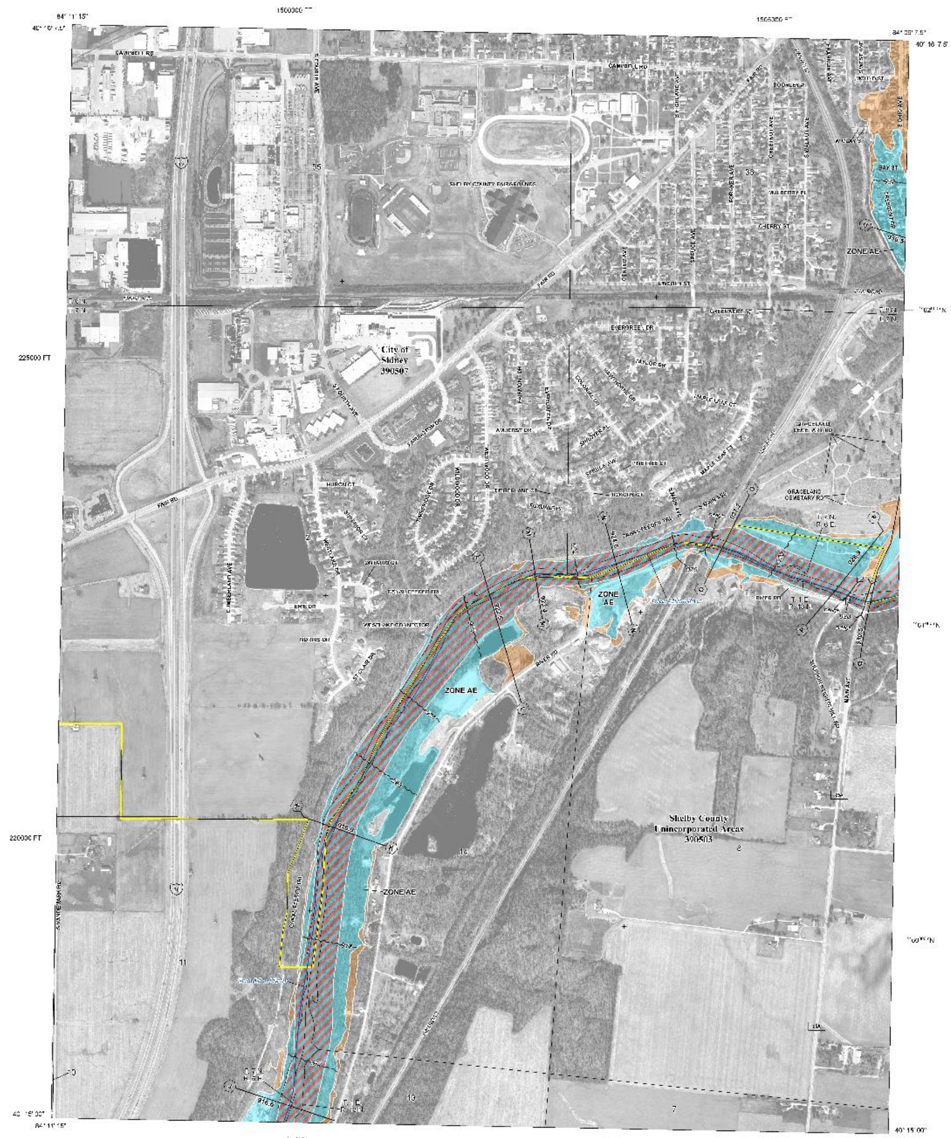
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390503	0167	D
SIDNEY, CITY OF	390507	0167	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0167D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99*
	With BFE or Depth *Zone AE, AO, AH, VE, AR*
	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X*
	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer
	Accredited or Provisionally Accredited Levee, Dike, or Floodwall
	Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES	(E) 18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
	(B) Coastal Transect
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
	513 Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary

NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). This information was derived from digital orthophotography at a 2 foot resolution from photography dated 2012.

SCALE

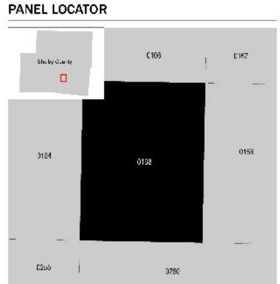
Map Projection:
NAD 1983 State Plane Ohio North FIPS 3401 Feet
Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 500 feet 1:6,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA
National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO
AND INCORPORATED AREAS

PANEL 168 OF 295

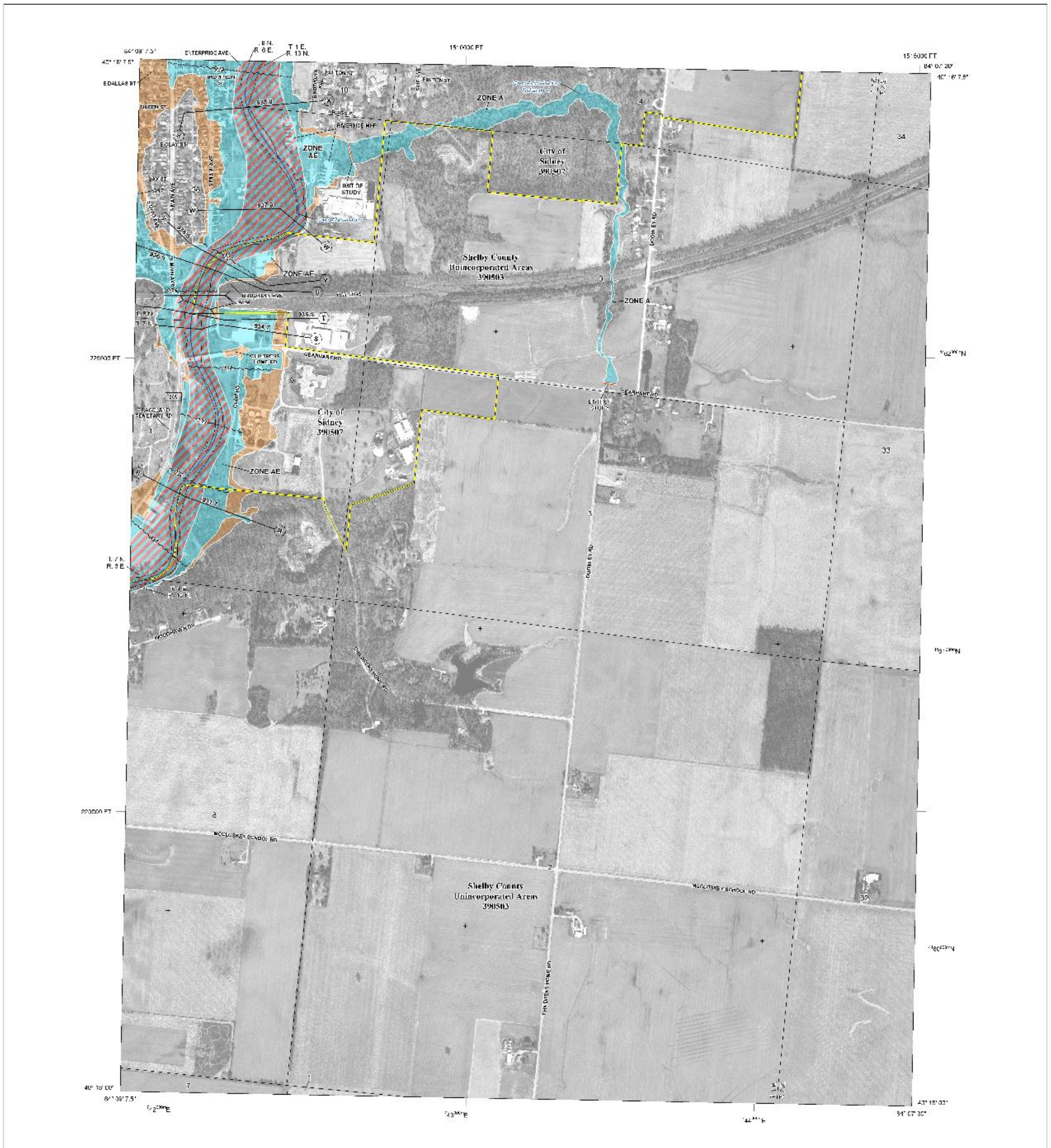
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390503	0168	D
SIDNEY, CITY OF	390507	0168	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0168D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99*
	With BFE or Depth *Zone AE, AO, AH, VE, AR*
	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X*
	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer
	Accredited or Provisionally Accredited Levee, Dike, or Floodwall
	Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES	(E) 18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
	(B) Coastal Transect
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
	513 Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary

NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). This information was derived from digital orthophotography at a 2 foot resolution from photography dated 2012.

SCALE

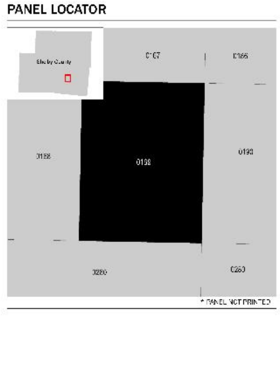
Map Projection: NAD 1983 State Plane Ohio North FIPS 3401 Feet Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 500 feet 1:6,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA
National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO
AND INCORPORATED AREAS

PANEL 169 OF 295

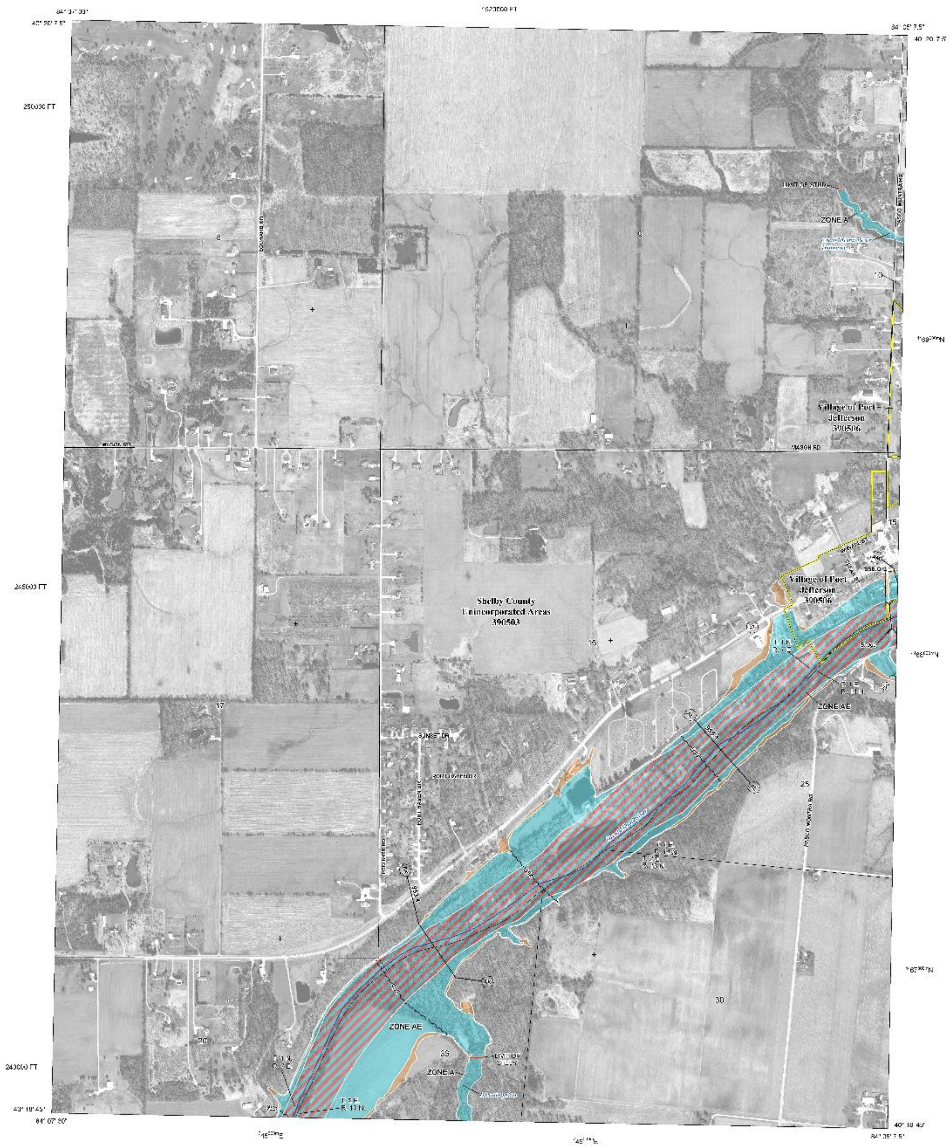
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390503	0169	D
SIDNEY, CITY OF	390507	0169	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0169D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR* Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X* Future Conditions 1% Annual Chance Flood Hazard *Zone X* Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X* Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer Accredited or Provisionally Accredited Levee, Dike, or Floodwall Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES	(E) 18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) (B) Coastal Transect Coastal Transect Baseline Profile Baseline Hydrographic Feature 513 Base Flood Elevation Line (BFE) Limit of Study Jurisdiction Boundary

NOTES TO USERS

SCALE

1 inch = 500 feet **1**:6,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR

* PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO
AND INCORPORATED AREAS

PANEL 178 OF 295

FEMA

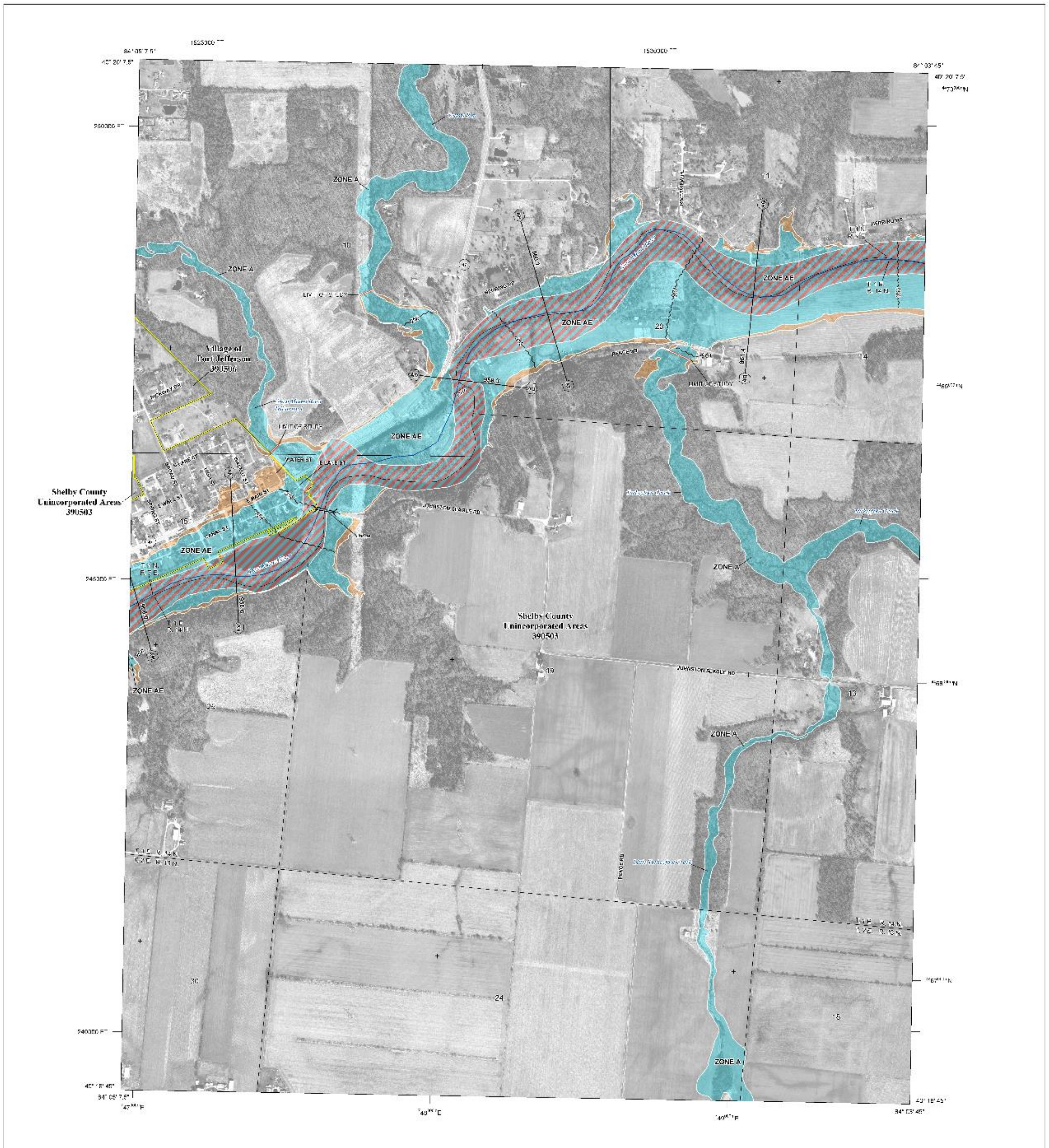
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
PORT JEFFERSON, VILLAGE OF	390506	0178	D
SHELBY COUNTY	390503	0178	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0178D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR* Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X* Future Conditions 1% Annual Chance Flood Hazard *Zone X* Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X* Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer Accredited or Provisionally Accredited Levee, Dike, or Floodwall Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES	(E) 18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) (B) Coastal Transect Coastal Transect Baseline Profile Baseline Hydrographic Feature 513 Base Flood Elevation Line (BFE) Limit of Study Jurisdiction Boundary

NOTES TO USERS

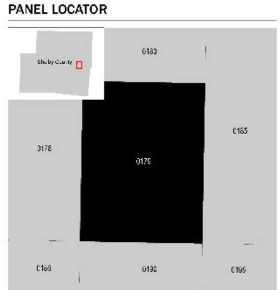
SCALE

1 inch = 500 feet 1:6,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO
AND INCORPORATED AREAS

PANEL 179 OF 295

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
PORT JEFFERSON, VILLAGE OF	390506	0179	D
SHELBY COUNTY	390503	0179	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0179D

EFFECTIVE DATE
April 02, 2015

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) Zone A, A99 With BFE or Depth Zone AE, AO, AH, VE, AR Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X Future Conditions 1% Annual Chance Flood Hazard Zone X Area with Reduced Flood Risk due to Levee See Notes. Zone X
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain Zone X Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer Accredited or Provisionally Accredited Levee, Dike, or Floodwall Non-accredited Levee, Dike, or Floodwall (EL 18.2) (EL 17.5) Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) (A) Coastal Transect Coastal Transect Baseline Profile Baseline Hydrographic Feature 513 Base Flood Elevation Line (BFE)
OTHER FEATURES	Limit of Study Jurisdiction Boundary

NOTES TO USERS

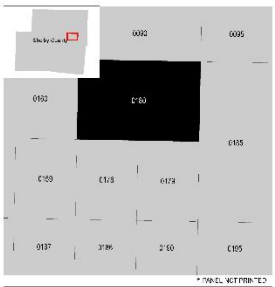
SCALE

1 inch = 1,000 feet 1:12,000

0 1,000 2,000 4,000 Feet

0 250 500 1,000 Meters

PANEL LOCATOR



PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO

AND INCORPORATED AREAS

PANEL 180 OF 295

FEMA

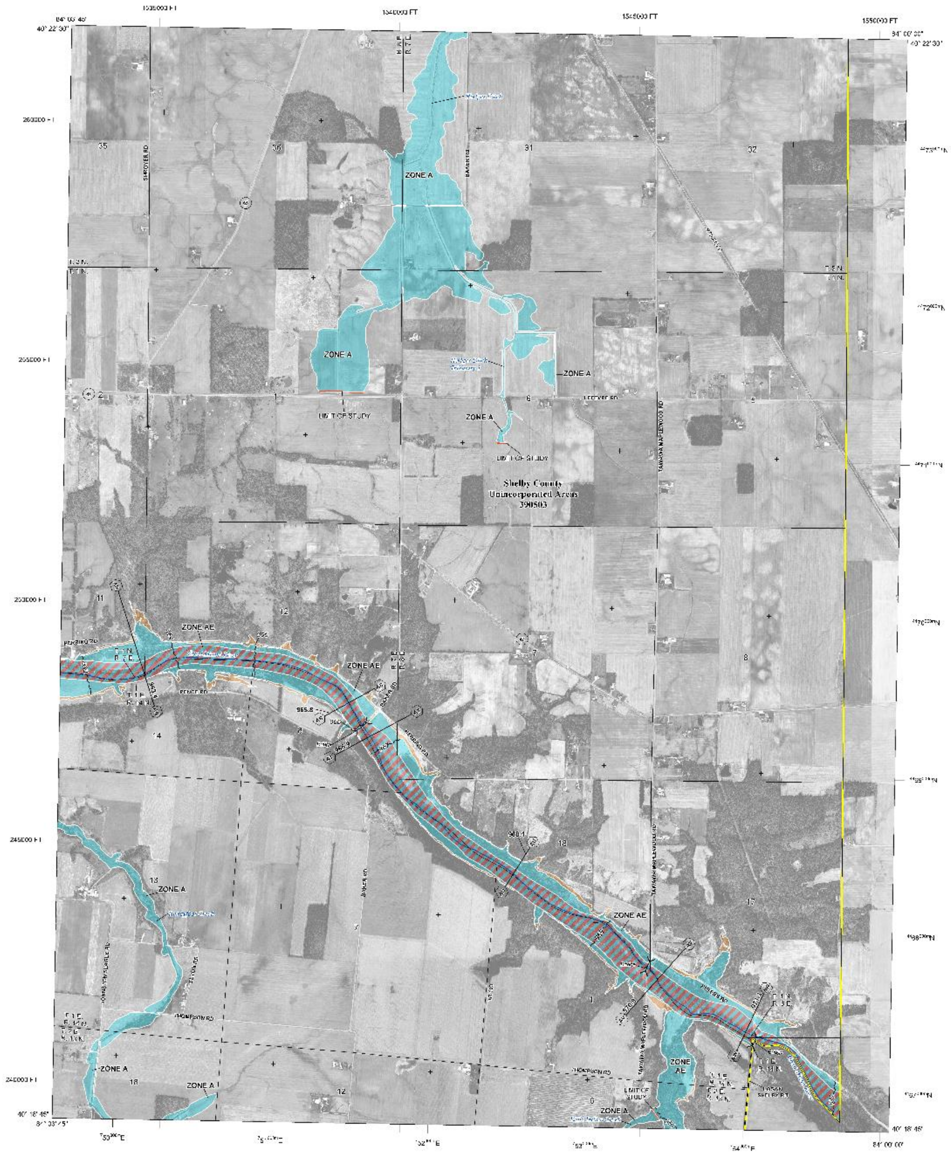
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390503	0180	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0180D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR*
	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X*
	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer
	Accredited or Provisionally Accredited Levee, Dike, or Floodwall
	Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES	(E) 18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
	(8) Coastal Transect
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
	513 Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary

NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in the community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). This information was derived from digital orthophotography at a 2 foot resolution from photography dated 2012.

SCALE

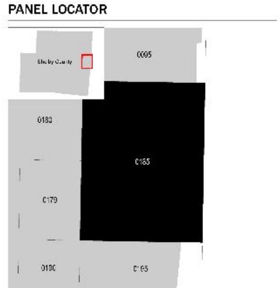
Map Projection:

1 inch = 1,000 feet 1:12,000

0 1,000 2,000 4,000 Feet

0 250 500 1,000 Meters

PANEL LOCATOR



FEMA
National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO
AND INCORPORATED AREAS

PANEL 185 OF 295

FEMA

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390503	0185	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0185D

EFFECTIVE DATE
April 02, 2015

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR* Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X* Future Conditions 1% Annual Chance Flood Hazard *Zone X* Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X* Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer Accredited or Provisionally Accredited Levee, Dike, or Floodwall Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES	18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) Coastal Transect Coastal Transect Baseline Profile Baseline Hydrographic Feature Base Flood Elevation Line (BFE) Limit of Study Jurisdiction Boundary

NOTES TO USERS

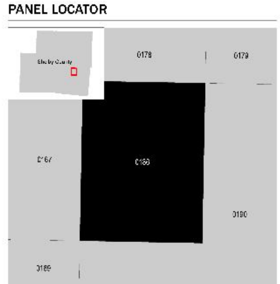
SCALE

1 inch = 500 feet 1:6,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO
AND INCORPORATED AREAS

PANEL 186 OF 295

FEMA

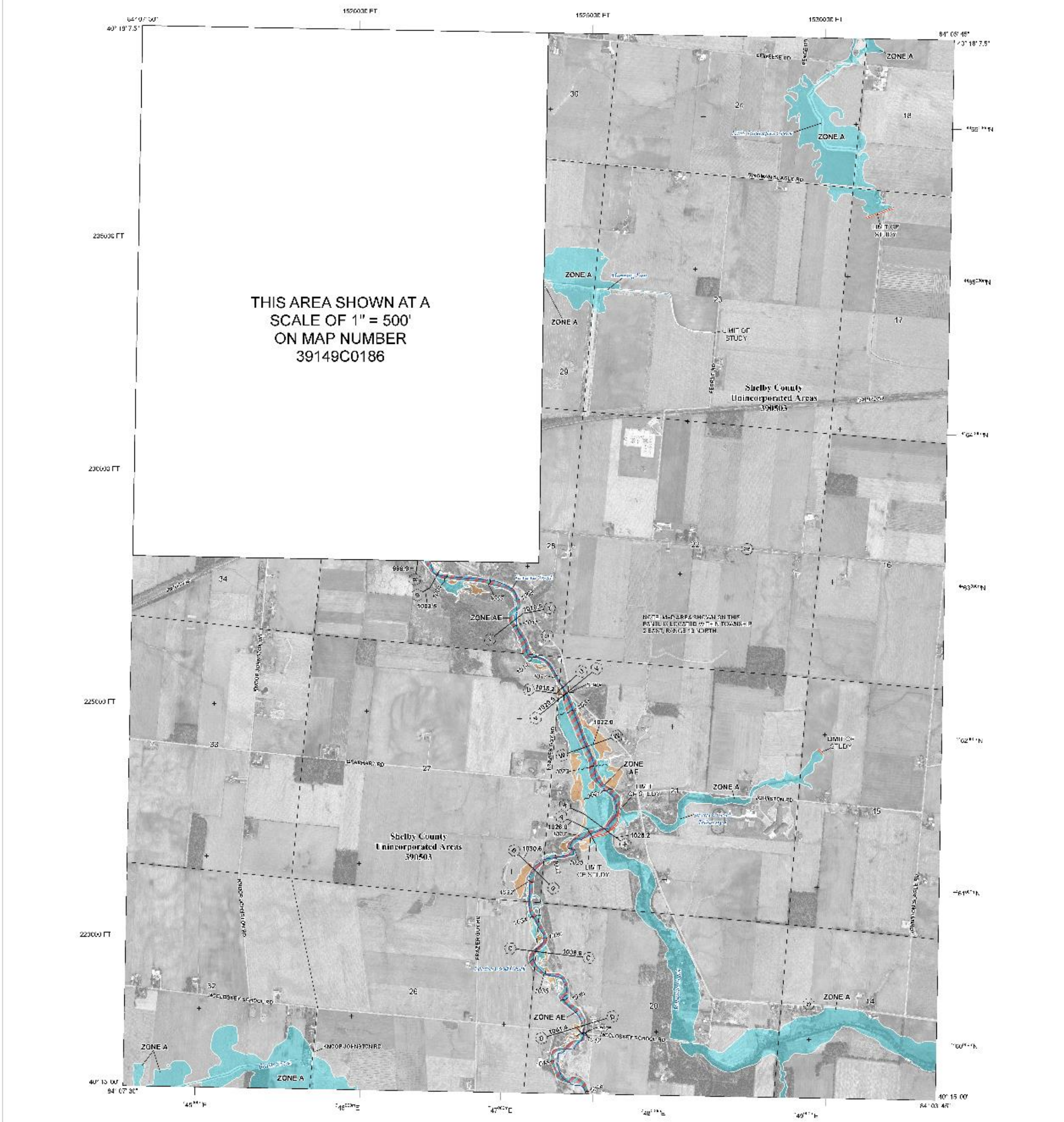
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390503	0186	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0186D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99*
	With BFE or Depth *Zone AE, AO, AH, VE, AR*
	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN — Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X*
	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer
	Accredited or Provisionally Accredited Levee, Dike, or Floodwall
	Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES	(E) 18.2 / 17.5 — Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
	(B) — Coastal Transect
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
	513 — Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary

NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). This information was derived from digital orthophotography at a 2 foot resolution from photography dated 2012.

SCALE

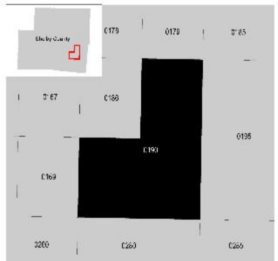
Map Projection:
NAD 1983 State Plane Ohio North FIPS 3401 Feet
Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 1,000 feet — 1:12,000

0 — 1,000 — 2,000 — 4,000 Feet

0 — 250 — 500 — 1,000 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA
National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO
AND INCORPORATED AREAS

PANEL 190 OF 295

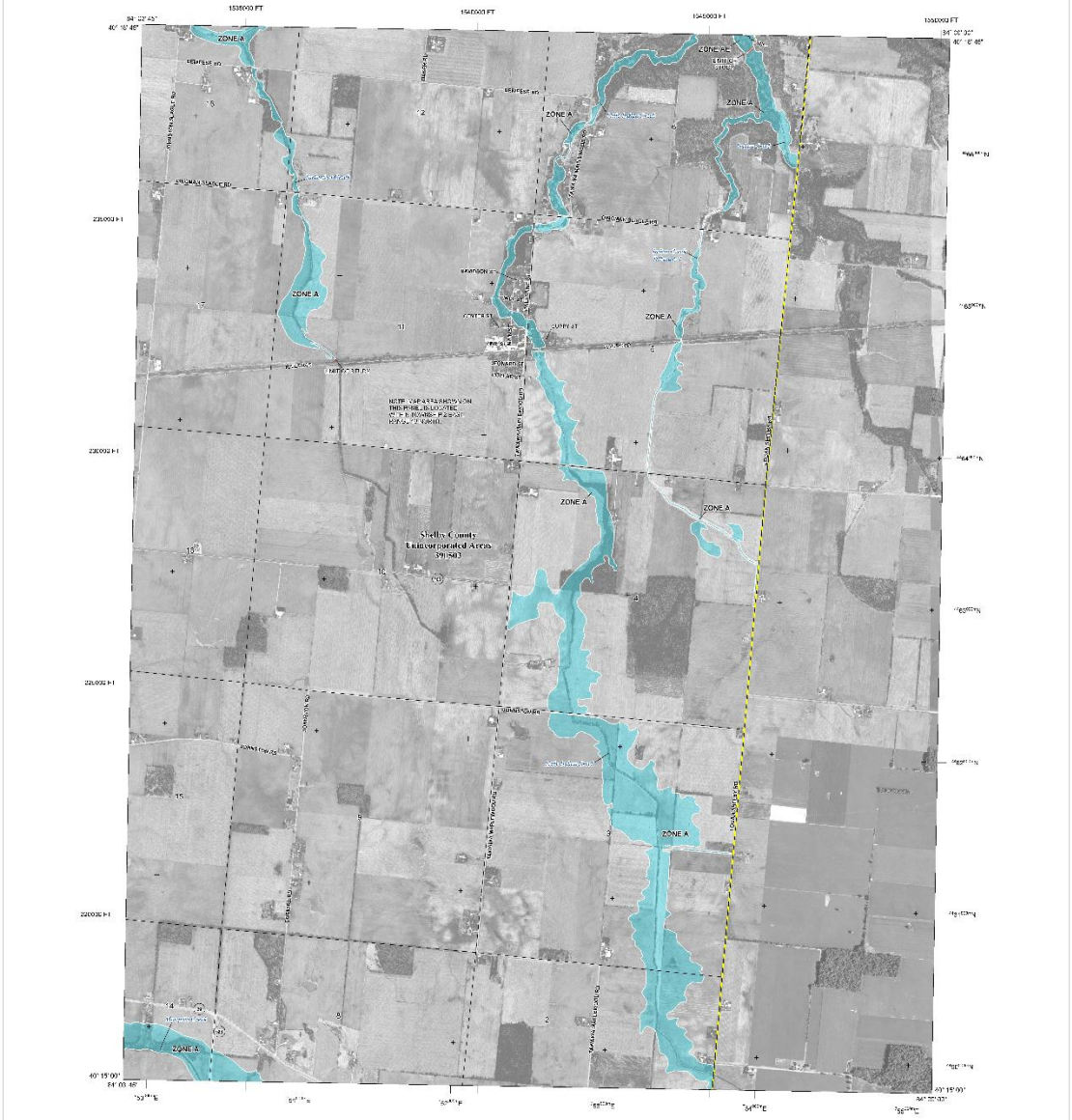
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390503	0190	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0190D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) Zone A, A99 With BFE or Depth Zone AE, AO, AH, VE, AR Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X Future Conditions 1% Annual Chance Flood Hazard Zone X Area with Reduced Flood Risk due to Levee See Notes. Zone X
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain Zone X Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer Accredited or Provisionally Accredited Levee, Dike, or Floodwall Non-accredited Levee, Dike, or Floodwall Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) Coastal Transect Coastal Transect Baseline Profile Baseline Hydrographic Feature Base Flood Elevation Line (BFE)
OTHER FEATURES	Limit of Study Jurisdiction Boundary

NOTES TO USERS

SCALE

1 inch = 1,000 feet 1:12,000

0 1,000 2,000 4,000 Feet

0 250 500 1,000 Meters

PANEL LOCATOR

0185
0190
0195
0280
0285

* PANEL NOT PRINTED

FEMA National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO
AND INCORPORATED AREAS

PANEL 195 OF 295

FEMA

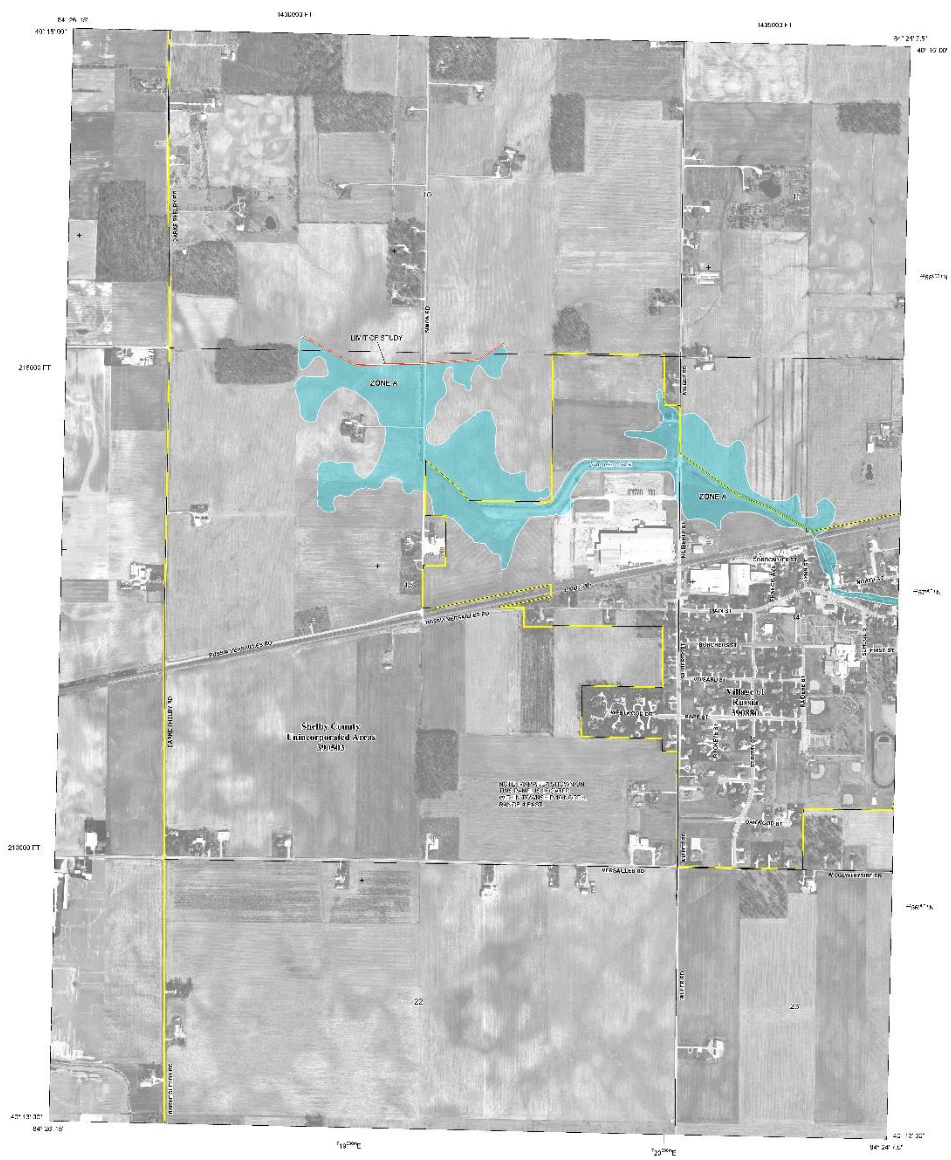
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390503	0195	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0195D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99*
	With BFE or Depth *Zone AE, AO, AH, VE, AR*
	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X*
	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer
	Accredited or Provisionally Accredited Levee, Dike, or Floodwall
	Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES	(E) 18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
	(8) Coastal Transect
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
	513 Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary

NOTES TO USERS

SCALE

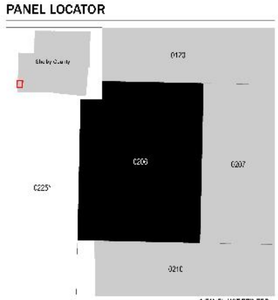
Map Projection:

1 inch = 500 feet 1:6,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR



National Flood Insurance Program

FEMA

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO
AND INCORPORATED AREAS

PANEL **206** OF **295**

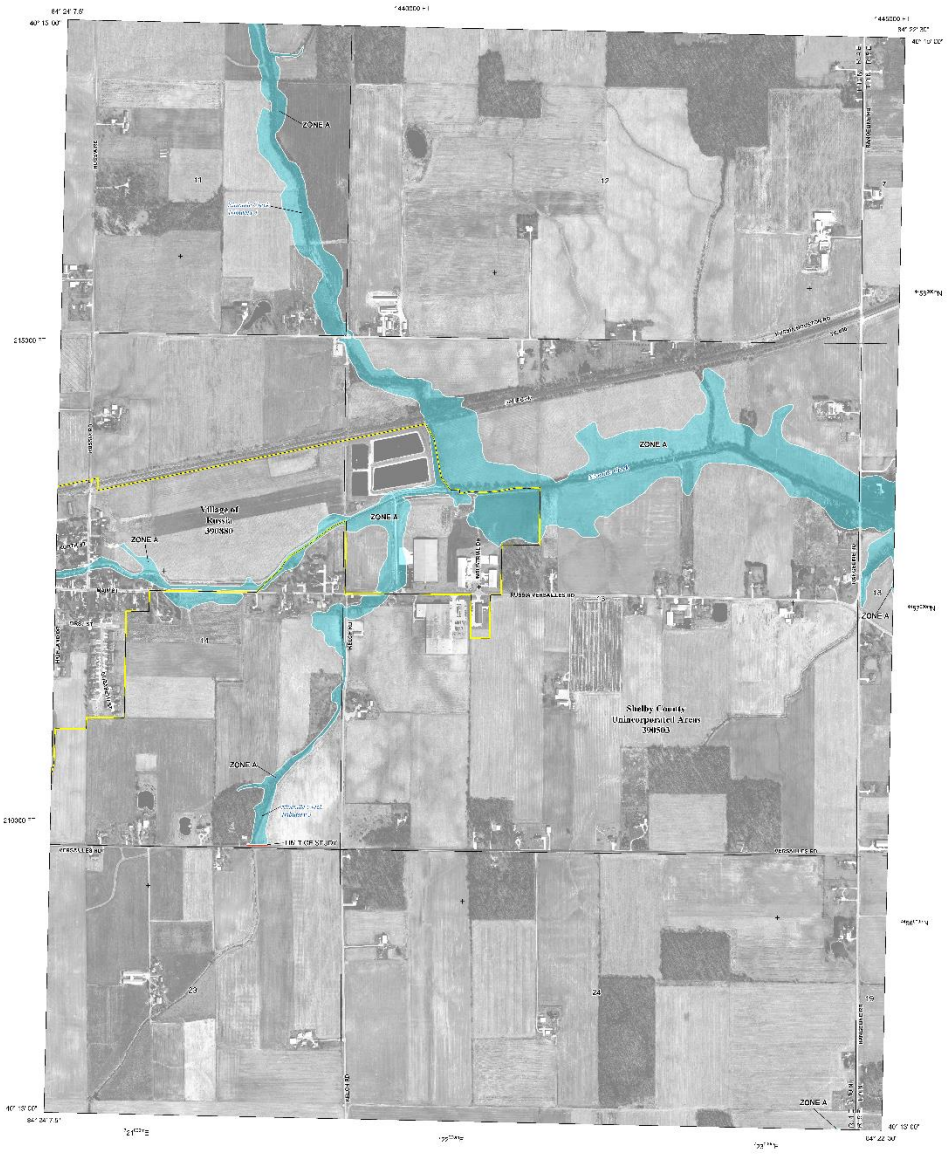
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
RUSSIA, VILLAGE OF	390880	0206	D
SHELBY COUNTY	390503	0206	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0206D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) Zone A, A99
	With BFE or Depth Zone AE, AO, AH, VE, AR
	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
	Future Conditions 1% Annual Chance Flood Hazard Zone X
	Area with Reduced Flood Risk due to Levee See Notes. Zone X
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain Zone X
	Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer
	Accredited or Provisionally Accredited Levee, Dike, or Floodwall
	Non-accredited Levee, Dike, or Floodwall
	18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
	Coastal Transect
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
	Base Flood Elevation Line (BFE)
OTHER FEATURES	Limit of Study
	Jurisdiction Boundary

NOTES TO USERS

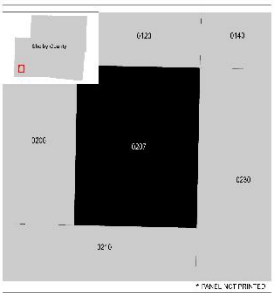
SCALE

1 inch = 500 feet 1:6,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR



PANEL NOT PRINTED

FEMA National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO

AND INCORPORATED AREAS

PANEL **207** OF **295**

FEMA

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390503	0207	D
VILLAGE OF RUSSIA	390830	0207	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0207D

EFFECTIVE DATE
April 02, 2015

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) Zone A, A99 With BFE or Depth Zone AE, AO, AH, VE, AR Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X Future Conditions 1% Annual Chance Flood Hazard Zone X Area with Reduced Flood Risk due to Levee See Notes. Zone X
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain Zone X Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer Accredited or Provisionally Accredited Levee, Dike, or Floodwall Non-accredited Levee, Dike, or Floodwall (EL 16.2) (EL 17.5) Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) (B) Coastal Transect Coastal Transect Baseline Profile Baseline Hydrographic Feature Base Flood Elevation Line (BFE)
OTHER FEATURES	Limit of Study Jurisdiction Boundary

NOTES TO USERS

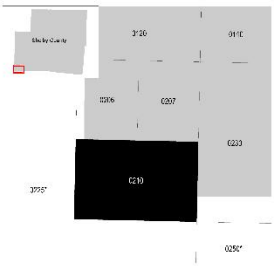
SCALE

1 inch = 1,000 feet 1:12,000

0 1,000 2,000 4,000 Feet

0 250 500 1,000 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO

AND INCORPORATED AREAS

PANEL **210** OF **295**

FEMA

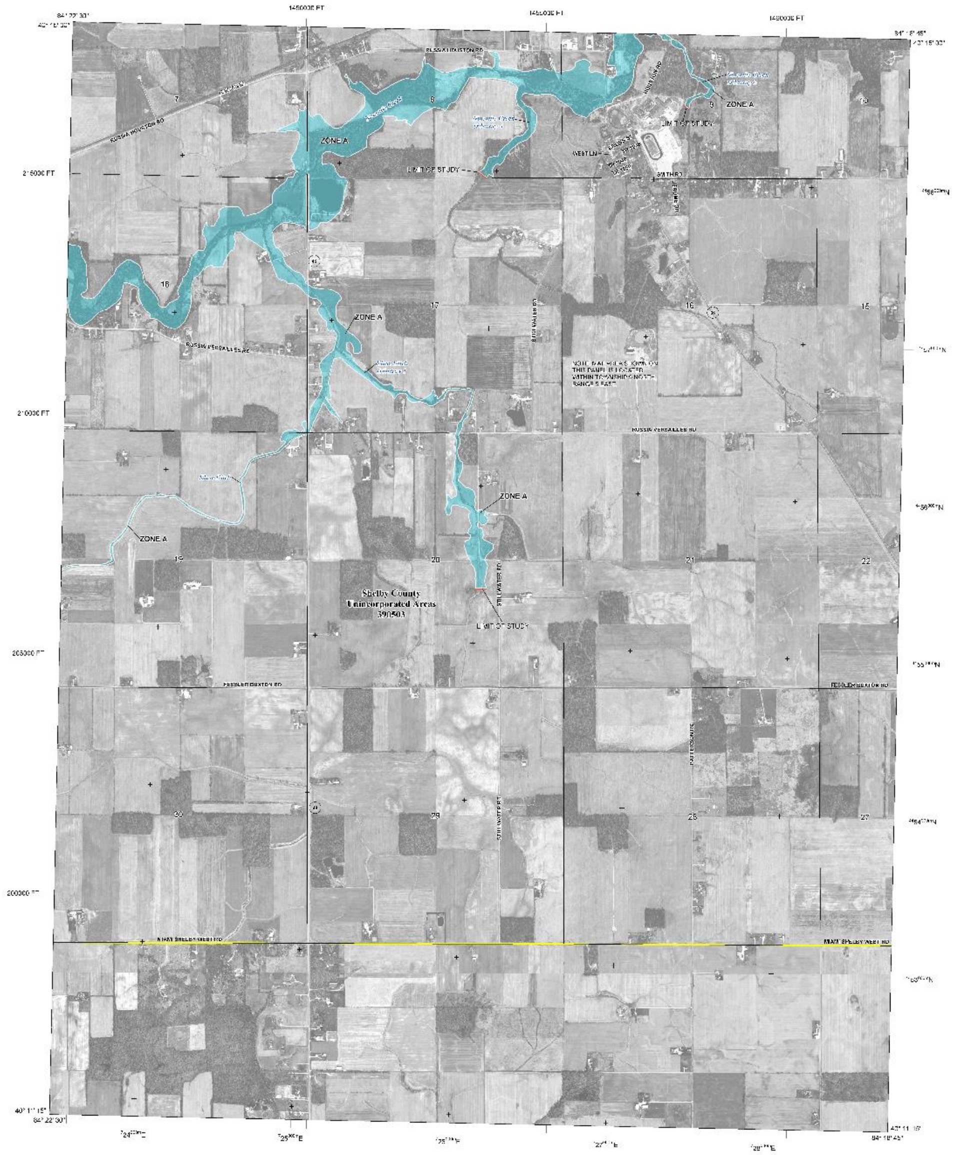
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390833	0210	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0210D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR* Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X* Future Conditions 1% Annual Chance Flood Hazard *Zone X* Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X* Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer Accredited or Provisionally Accredited Levee, Dike, or Floodwall Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES	(E) 18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) (B) Coastal Transect Coastal Transect Baseline Profile Baseline Hydrographic Feature 513 Base Flood Elevation Line (BFE) Limit of Study Jurisdiction Boundary

NOTES TO USERS

[illegible]

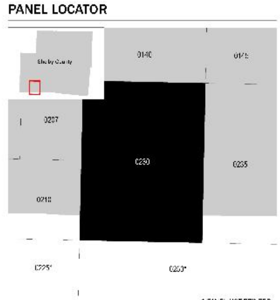
SCALE

1 inch = 1,000 feet 1:12,000

0 1,000 2,000 4,000 Feet

0 250 500 1,000 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO
AND INCORPORATED AREAS

PANEL **230** OF **295**

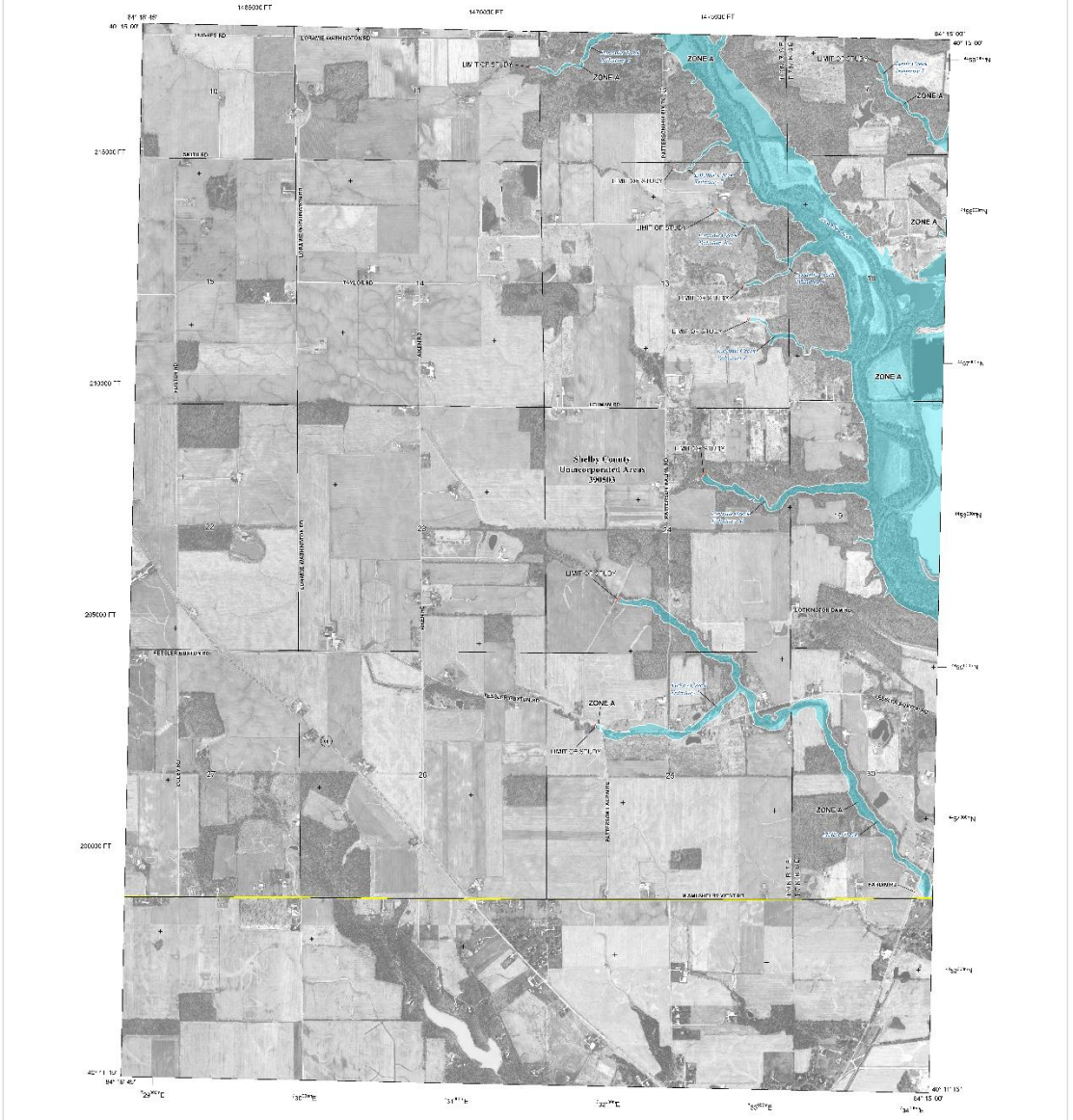
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	[illegible]	0230	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0230D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) Zone A, A99 With BFE or Depth Zone AE, AO, AH, VE, AR Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X Future Conditions 1% Annual Chance Flood Hazard Zone X Area with Reduced Flood Risk due to Levee See Notes. Zone X
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain Zone X Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer Accredited or Provisionally Accredited Levee, Dike, or Floodwall Non-accredited Levee, Dike, or Floodwall (EL 16.2 / EL 17.5) Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) Coastal Transect Coastal Transect Baseline Profile Baseline Hydrographic Feature Base Flood Elevation Line (BFE)
OTHER FEATURES	Limit of Study Jurisdiction Boundary

NOTES TO USERS

SCALE

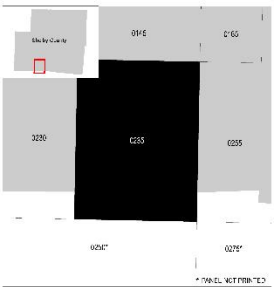
N

1 inch = 1,000 feet 1:12,000

0 1,000 2,000 4,000 Feet

0 250 500 1,000 Meters

PANEL LOCATOR



PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO

AND INCORPORATED AREAS

PANEL 235 OF 295

FEMA

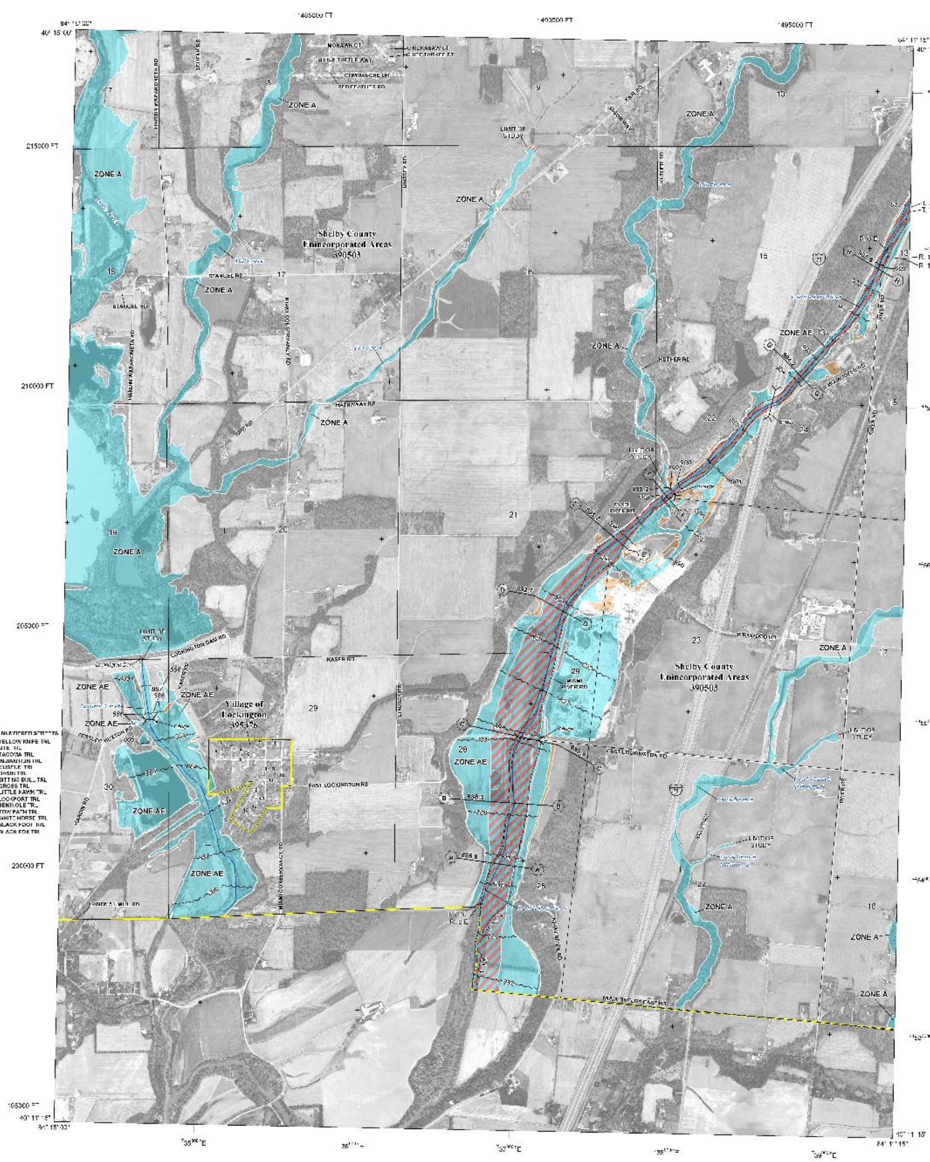
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390503	0235	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0235D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99*
	With BFE or Depth *Zone AE, AO, AH, VE, AR*
	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X*
	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer
	Accredited or Provisionally Accredited Levee, Dike, or Floodwall
	Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES	(E) 18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
	(B) Coastal Transect
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
	513 Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary

NOTES TO USERS

[illegible]

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). This information was derived from digital orthophotography at a 2 foot resolution from photography dated 2012.

SCALE

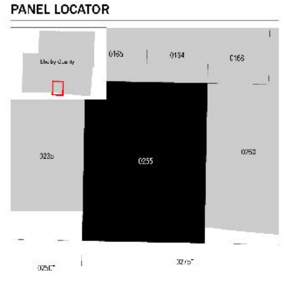
Map Projection:
NAD 1983 State Plane Ohio North FIPS 3401 Feet
Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 1,000 feet	1:12,000

0 1,000 2,000 4,000 Feet

0 250 500 1,000 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA
National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO
AND INCORPORATED AREAS

PANEL **255** OF **295**

FEMA

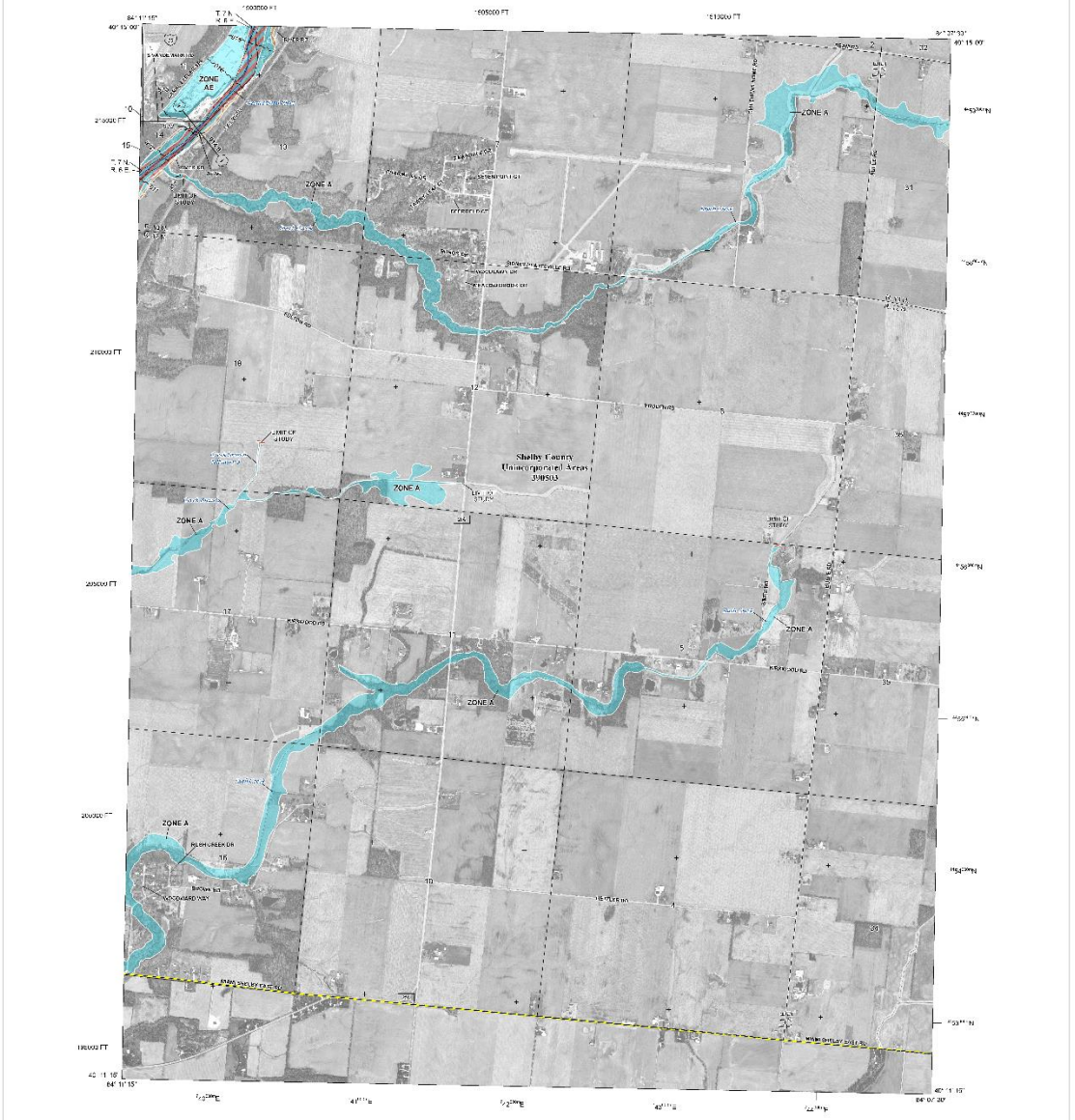
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
LOCKINGTON, VILLAGE OF	395376	0255	D
SHELBY COUNTY	390503	0255	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0255D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) Zone A, A99 With BFE or Depth Zone AE, AO, AH, VE, AR Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X Future Conditions 1% Annual Chance Flood Hazard Zone X Area with Reduced Flood Risk due to Levee See Notes. Zone X
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain Zone X Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer Accredited or Provisionally Accredited Levee, Dike, or Floodwall Non-accredited Levee, Dike, or Floodwall Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) Coastal Transect Coastal Transect Baseline Profile Baseline Hydrographic Feature Base Flood Elevation Line (BFE)
OTHER FEATURES	Limit of Study Jurisdiction Boundary

NOTES TO USERS

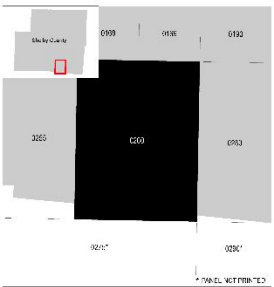
SCALE

1 inch = 1,000 feet 1:12,000

0 1,000 2,000 4,000 Feet

0 250 500 1,000 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO

AND INCORPORATED AREAS

PANEL 260 OF 295

FEMA

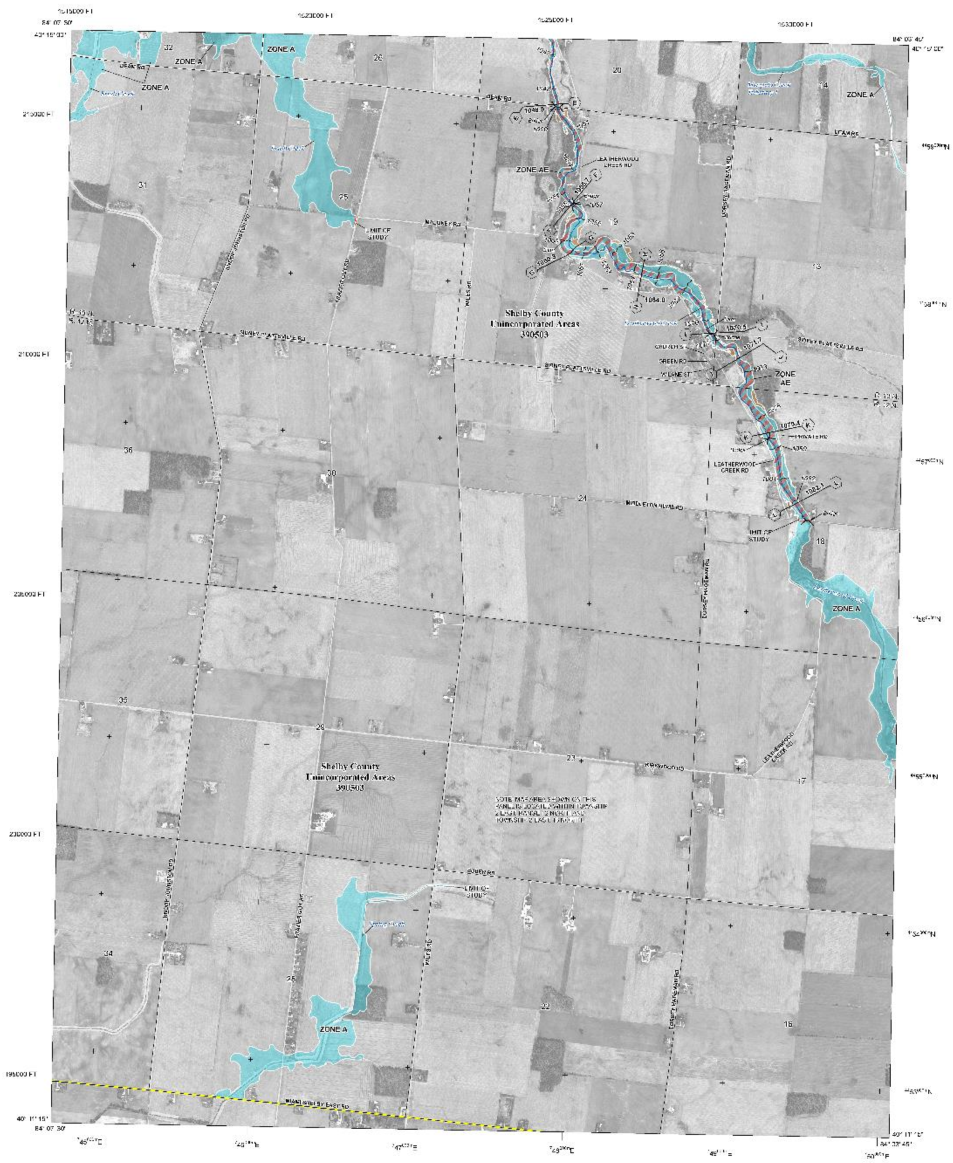
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390503	0260	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0260D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR* Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X* Future Conditions 1% Annual Chance Flood Hazard *Zone X* Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X* Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer Accredited or Provisionally Accredited Levee, Dike, or Floodwall Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES	(E) 18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) (8) Coastal Transect Coastal Transect Baseline Profile Baseline Hydrographic Feature 513 Base Flood Elevation Line (BFE) Limit of Study Jurisdiction Boundary

NOTES TO USERS

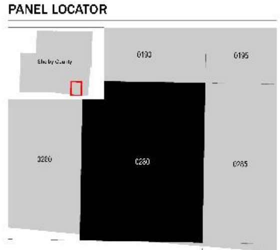
SCALE

1 inch = 1,000 feet 1:12,000

0 1,000 2,000 4,000 Feet

0 250 500 1,000 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO
AND INCORPORATED AREAS

PANEL **280** OF **295**

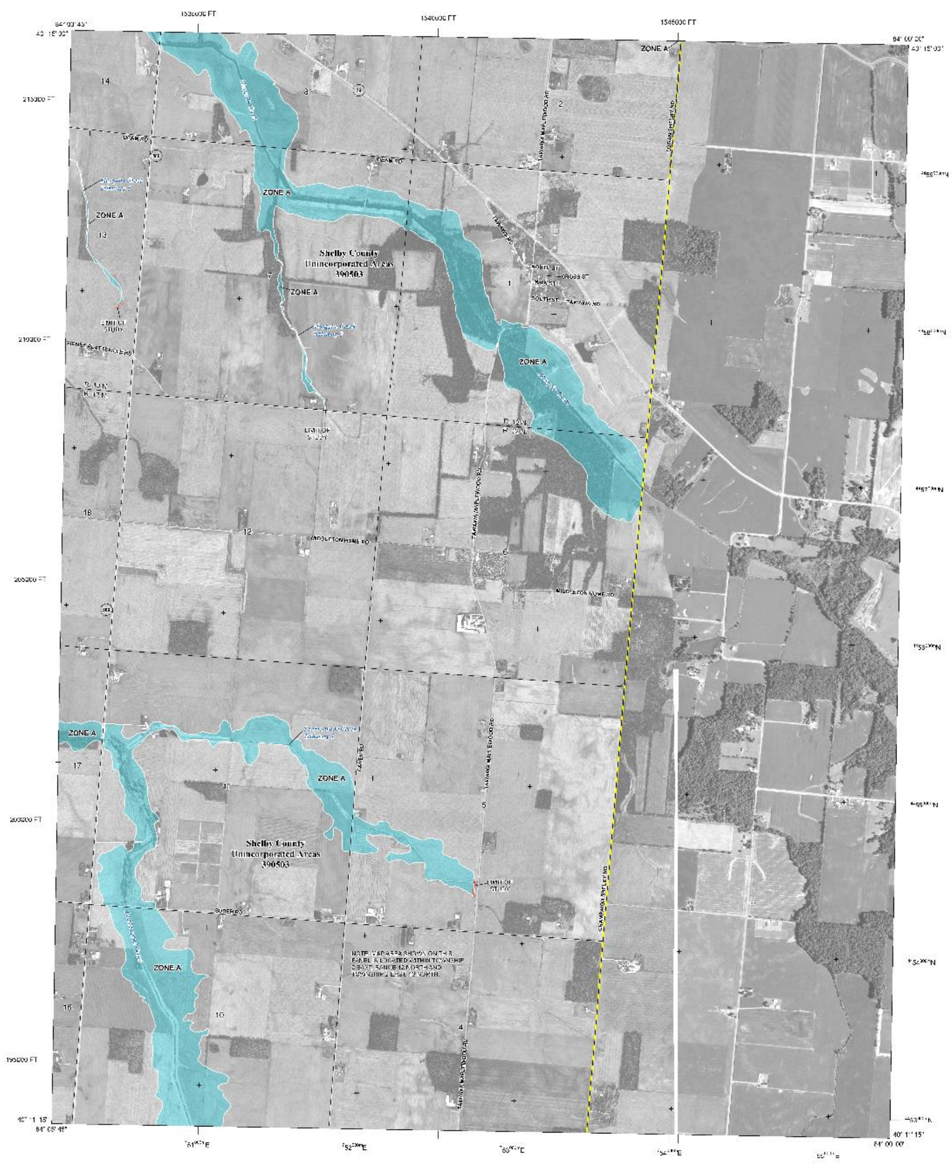
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390503	0280	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0280D

EFFECTIVE DATE
April 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99*
	With BFE or Depth *Zone AE, AO, AH, VE, AR*
	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X*
	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer
	Accredited or Provisionally Accredited Levee, Dike, or Floodwall
	Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES	18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
	Coastal Transect
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
	Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary

NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in the community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). This information was derived from digital orthophotography at a 2 foot resolution from photography dated 2012.

SCALE

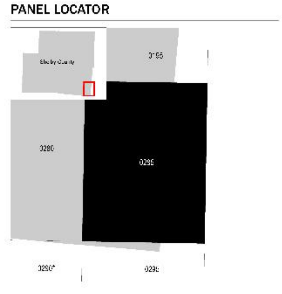
Map Projection: NAD 1983 State Plane Ohio North FIPS 3401 Feet; Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 1,000 feet — 1:12,000

0 — 1,000 — 2,000 — 4,000 Feet

0 — 250 — 500 — 1,000 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO
AND INCORPORATED AREAS

PANEL **285** OF **295**

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390503	0285	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0285D

EFFECTIVE DATE
April 02, 2015

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99*
	With BFE or Depth *Zone AE, AO, AH, VE, AR*
	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X*
	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer
	Accredited or Provisionally Accredited Levee, Dike, or Floodwall
	Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES	E 18.2 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
	B Coastal Transect
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
	513 Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary

NOTES TO USERS

[illegible]

SCALE

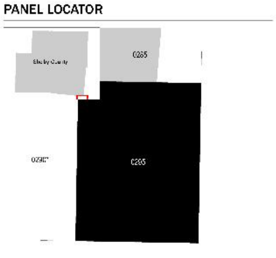
Map Projection:
[illegible]

1 inch = 1,000 feet	1:12,000

0 1,000 2,000 4,000 Feet

0 250 500 1,000 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

SHELBY COUNTY, OHIO
AND INCORPORATED AREAS

PANEL **295** OF **295**

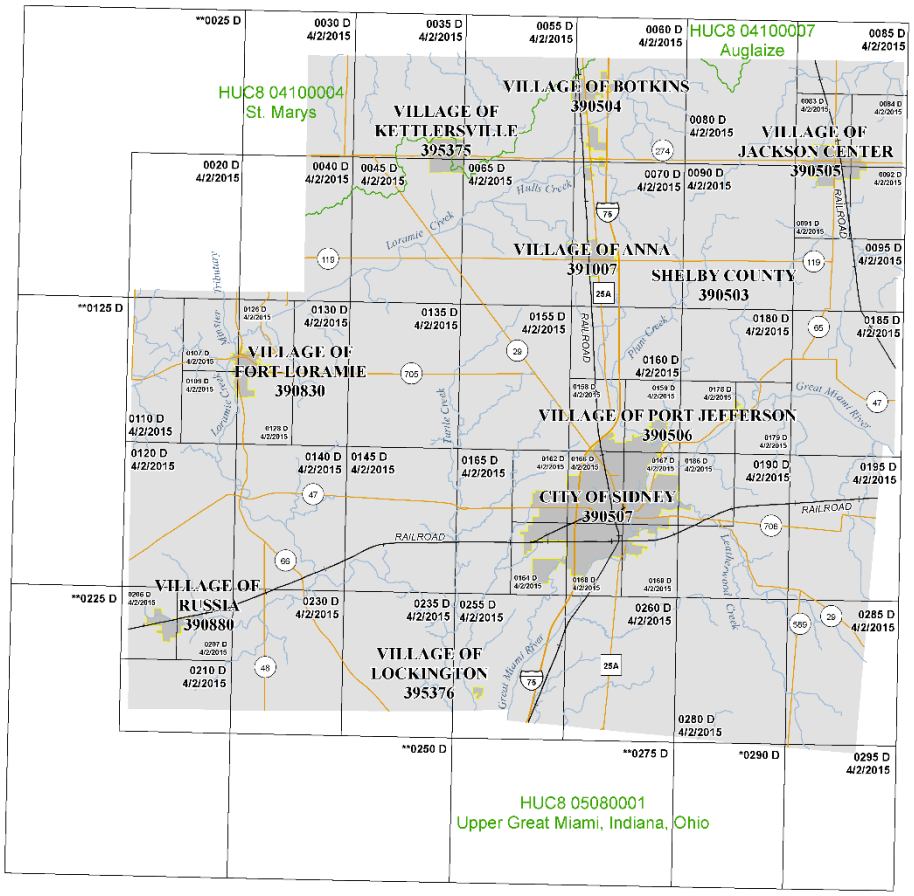
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SHELBY COUNTY	390503	0295	D

VERSION NUMBER
2.2.2.1

MAP NUMBER
39149C0295D

EFFECTIVE DATE
April 02, 2015



1 inch = 16,000 feet 1:192,000

0 4,000 8,000 16,000 24,000 32,000 Feet

Map Projection:
State Plane Ohio North FIPS 3401;
North American 1983

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

*PANEL NOT PRINTED – NO SPECIAL FLOOD HAZARD AREAS
**PANEL NOT PRINTED – AREA OUTSIDE COUNTY BOUNDARY

COUNTY LOCATOR

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX

SHELBY COUNTY, OHIO and Incorporated Areas

PANELS PRINTED:

0020, 0030, 0035, 0040, 0045, 0055, 0060, 0065, 0070, 0080, 0083, 0084,0085, 0090, 0091, 0092, 0095, 0107, 0109, 0110, 0120, 0126, 0128, 0130, 0135, 0140, 0145, 0155, 0158, 0159, 0160, 0162, 0164, 0165, 0166, 0167, 0168, 0169, 0178, 0179, 0180, 0185, 0186, 0190, 0195, 0206, 0207, 0210, 0230, 0235, 0255, 0260, 0280, 0285, 0295

FEMA

MAP NUMBER
39149CIND0A

EFFECTIVE DATE
April 2, 2015

Appendix F: Meeting Documentation