

Madison County Multi-Jurisdictional All Hazards Mitigation Plan 2025 Update

Madison County, Illinois



Participants:

Madison County
Alhambra, Village of
Alton, City of
Alton CUSD #11
America's Central Port
Anderson Hospital
Bethalto CUSD #8
Collinsville, City of
Collinsville CUSD #10
Collinsville Township
East Alton, Village of
Edwardsville, City of
Edwardsville CUSD #7
Edwardsville Township
Glen Carbon, Village of
Glen Carbon FPD

Godfrey, Village of
Granite City, City of
Grantfork, Village of
Hamel, Village of
Highland, City of
Leef Township
Livingston, Village of
Madison, City of
Madison County ROE #41
Marine, Village of
Marquette Catholic High School
Maryville, Village of
Metro East Sanitary District
Nameoki Township
Olive Fire District

OSF Saint Anthony's Health Center
Pontoon Beach, Village of
Roxana, Village of
Roxana CUSD #1
South Roxana FPD
SIUE
St. Jacob, Village of
St. Mary's Catholic School
Troy, City of
Troy FPD
Venice, City of
Wood River, City of
Wood River D&LD
Wood River-Hartford ESD #15
Worden, Village of

July 2025



The five year update of this Plan must be completed on or before (date).

Cover photographs from left to right:

- *September 14, 2008 flash flooding washed out a section of East Lake Drive in Edwardsville – Photograph courtesy of Richard Welle*
 - *Snow plows clear the Clark Bridge at Alton – Photograph by The Telegraph/John Badman*
 - *December 10, 2021 EF-3 tornado destroyed a mobile home southwest of Edwardsville – Photograph from NWS St. Louis, Missouri Forecast Office Significant Weather Event Reviews –December 10th 2021 Tornado Outbreak summary*
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MADISON COUNTY MULTI-JURISDICTIONAL ALL HAZARDS MITIGATION PLAN

MADISON COUNTY, ILLINOIS

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Researched and written for the Madison County Multi-Jurisdictional
All Hazards Mitigation Planning Committee
by AEC, LLC



1.0 INTRODUCTION

Each year natural hazards (i.e., severe thunderstorms, tornadoes, severe winter storms, flooding, etc.) cause damage to property and threaten the lives and health of the residents of Madison County. Since 1969, Madison County has been included in 13 major federally-declared disasters and three emergency declarations. **Figure I-1** identifies each federal declaration including its declaration number, the year the disaster was declared, type of declaration, and the natural hazard that triggered the declaration. Since 2010, the County has been included in 11 state disaster proclamations. **Figure I-2** identifies the year the proclamation was issued and the type of natural hazard that triggered the declaration. The natural hazard(s) recognized as contributing to the declaration for Madison County is identified in bold. [Local Mitigation Planning Policy Guide Element B1-d]

Figure I-1 Federal Emergency & Major Disaster Declarations: Madison County			
Declaration #	Year	Declaration Type	Natural Hazard(s) Covered by Declaration
276	1969	Major	heavy rain; flooding
373	1973	Major	severe storms; flooding
583	1979	Major	severe storms; flooding
674	1982	Major	severe storms; tornadoes; flooding
684	1983	Major	severe storms; tornadoes ; flooding
997	1993	Major	severe storms; flooding
1053	1995	Major	severe storms; flooding
1112	1996	Major	severe storms; flooding
1416	2002	Major	severe storms; tornadoes; flooding
3230	2005	Emergency	Hurricane Katrina Evacuation
1681	2006	Major	severe winter storm
1771	2008	Major	severe storms; flooding
4461	2019	Major	severe storms; flooding
3435	2020	Emergency	COVID-19
4489	2020	Major	COVID-19 pandemic
3577	2021	Emergency	severe storms; straight-line winds; tornadoes

Figure I-2 State Disaster Proclamations: Madison County	
Year	Hazard(s) Covered by Declaration
2011	winter weather
2011	high wind; tornadoes; torrential rain
2014	heavy snowfall; frigid temperatures
2015	severe storms; heavy rainfall; flooding
2019	winter storm (frigid temperatures)
2019	flooding
2020	COVID-19
2021	winter storms
2022	winter storms
2022	Monkeypox
2022	Fire

In the last 10 years alone (2014 – 2023), there have been 100 verified heavy rain events, 83 thunderstorms with damaging winds, 55 excessive heat events, 31 severe storms with hail one inch in diameter or greater, 25 flash flood events, 19 severe winter storms, 18 extreme cold events, 17 riverine flood events, 6 verified landslides, 6 lightning strikes with verified damages, 4 tornadoes, 2 verified mine subsidence events, 2 levee failures, and one earthquake in the County.

While natural hazards cannot be avoided, their impacts can be reduced through effective hazard mitigation planning. This prevention-related concept of emergency management often receives the least amount of attention, yet it is one of the most important steps in creating a hazard-resistant community.

What is hazard mitigation planning?

Hazard mitigation planning is the process of determining how to reduce or eliminate the loss of life and property damage resulting from natural and man-made hazards. This process helps the County and participating jurisdictions reduce their risk from these hazards by identifying vulnerabilities and developing mitigation actions to lessen and sometimes even eliminate the effects of a hazard. The results of this process are documented in an all hazards mitigation plan.

Why update an all hazards mitigation plan?

By updating and adopting an all hazards mitigation plan, participating jurisdictions become or remain eligible to apply for and receive federal hazard mitigation funds to implement mitigation actions identified in the plan. These funds can help provide local government entities with the opportunity to complete mitigation projects and activities that would not otherwise be financially possible.

The federal hazard mitigation funds are made available through the Disaster Mitigation Act of 2000, an amendment to the Robert T. Stafford Disaster Relief and Emergency Assistance Act, which provides federal aid for mitigation projects, but only if the local government entity has a Federal Emergency Management Agency (FEMA) approved hazard mitigation plan.

How is this plan different from other emergency plans?

An all hazards mitigation plan is aimed at identifying projects and activities that can be conducted prior to a natural or man-made disaster, unlike other emergency plans that provide direction on how to respond to a disaster after it occurs. This is the third time that Madison County has updated its hazard mitigation plan, which was last updated in 2020. This update describes in detail the actions that can be taken to help reduce or eliminate damages caused by specific types of natural and man-made hazards.

1.1 PARTICIPATING JURISDICTIONS

[Local Mitigation Planning Policy Guide Element A1-b]

Recognizing the benefits of having an updated all hazards mitigation plan, the Madison County Board authorized the update of the Madison County All Hazards Mitigation Plan (thereto referred to as the Plan). The County then invited all the local government entities within the County to participate. **Figure I-3** identifies the participating jurisdictions represented in the Plan update who sought Plan approval.

Figure I-3
Participating Jurisdictions Represented in the Plan

❖ Alhambra, Village of	❖ Livingston, Village of
❖ Alton, City of	❖ Madison, City of
❖ Alton Community Unit School District #11	❖ Madison County
❖ America's Central Port	❖ Marine, Village of
❖ Anderson Hospital	❖ Marquette Catholic High School
❖ Bethalto Community Unit School District #8	❖ Maryville, Village of
❖ Center for Educational Opportunities – Madison County ROE 41	❖ Metro East Sanitary District
❖ Collinsville, City of	❖ Nameoki Township
❖ Collinsville Community Unit School District #10	❖ Olive Fire Protection District
❖ Collinsville Township	❖ OSF St. Anthony's Health Center
❖ East Alton, Village of	❖ Pontoon Beach, Village of
❖ Edwardsville, City of	❖ Roxana, Village of
❖ Edwardsville Community Unit School District #7	❖ Roxana Community Unit School District #1
❖ Edwardsville Township	❖ St. Jacob, Village of
❖ Glen Carbon, Village of	❖ St. Mary's Catholic School
❖ Glen Carbon Fire Protection District	❖ South Roxana Fire Protection District
❖ Godfrey, Village of	❖ Southern Illinois University Edwardsville
❖ Granite City, City of	❖ Troy, City of
❖ Grantfork, Village of	❖ Troy Fire Protection District
❖ Hamel, Village of	❖ Venice, City of
❖ Highland, City of	❖ Wood River, City of
❖ Leef Township	❖ Wood River Drainage and Levee District
	❖ Wood River-Hartford Elementary School District #15
	❖ Worden, Village of

While all of the municipalities within the County were invited and encouraged to participate in the Plan update, the Villages of Bethalto, Hartford, New Douglas, South Roxana, and Williamson chose not to engage in the process and therefore are not included as participating jurisdictions in the Plan update. Small portions of Fairmont City and Pierron are located in Madison County. Fairmont City participated in the 2024 update of the St. Clair County Hazard Mitigation Plan while Pierron participated in the 2024 update of the Bond County Hazard Mitigation Plan. Therefore, the risk and/or vulnerability of these municipalities are not discussed in this Plan.

1.2 COUNTY PROFILE

Madison County, located in southwestern Illinois, is considered to be part of the St. Louis Metropolitan area and covers approximately 741 square miles. Located at the end of this section, **Figure I-4** provides a location map of the County and the participating municipalities while **Figures I-5, I-6, and I-7** identify the boundaries of the census tracts located in the County. **Figures I-8 to I-14** identify the boundaries of the townships, school districts, fire protection

districts, sanitary and levee and drainage districts, America's Central Port, and participating hospital campuses.

The County is bounded to the north by Jersey, Macoupin and Montgomery Counties, to the south by St. Clair and Clinton Counties, to the east by Bond County and to the west by the Mississippi River. The County seat is located in Edwardsville. The County is served by a strong transportation system that includes multiple interstate and state highways, various rail lines, several river ports and a regional airport.

The County is home to Southern Illinois University Edwardsville and Lewis and Clark Community College as well as the Granite City campus of Southwestern Illinois College. In addition, the County is also home to special-purpose unit of local government, America's Central Port. The Port was created in 1959 by the State of Illinois with the mission of developing multi-modal transportation, creating business expansion opportunities and facilitating and assisting in job creation for the region. The port occupies a 1,200 acres multi-modal business and industrial campus in Granite City and the City of Madison along the Mississippi River. With access to five Class I railroads, two multi-modal harbors, four interstates, warehousing and multiple development-ready sites, America's Central Port is one of the largest freight hubs in the Midwest.

The major features include upland plains, bluffs, and the low-lying Mississippi River floodplain area known as the American Bottoms. The American Bottoms dominate the western portion of the County and consist of three major areas that alternate between narrow ridges and swales, very broad flats and depressions and terraces and foot slopes. As one moves east across the County, the American Bottoms give way to bluffs which form a wall between the floodplain areas and the gently to moderately rolling upland plains that dominate the eastern portion of the County.

The highest feature in the County is an unnamed hilltop that reaches an elevation of about 660 feet northeast of Godfrey on the County Line. The lowest elevation, at the southwest corner of the County along the Mississippi River, is about 400 feet. The County is part of two watersheds: the eastern portion of the County is part of the Kaskaskia River watershed while the western portion is part of the Mississippi River Valley watershed.

According to the Multi-Resolution Land Characteristics (MRLC) Consortium, in 2023 approximately 77% of the County's land cover was vegetation, including developed open spaces, cultivated crop land, pasture/hay, grassland, and deciduous/evergreen/mixed forest while 24.8% of the County's land cover was considered developed with 8.0% impervious surfaces. Between 2019 and 2023 approximately 1.75% of the land cover in the County changed with 3.89 square miles of development and 1.28 square miles of impervious surfaces gained. **Figure I-15** illustrates the changes by land cover type.

Madison County is an economically diverse County. While agriculture plays a vital role in the County's economy, manufacturing, service, retail trade, hospital and health services and education are the driving economic endeavors within the County. These non-agricultural enterprises are primarily located in the western portion of the County, in the American Bottoms and bluffs areas. Agricultural endeavors occur mainly in the eastern portion of the County.

Figure I-15
Madison County Land Cover Data: 2019 to 2023

Land Cover Categories	Area 2019	Area Lost	Area Gained	Area 2023	Net Change	Percent Change
Developed, High Intensity	12.31	-0.15	0.62	12.78	0.47	3.84%
Developed, Medium Intensity	37.10	-0.53	1.25	37.82	0.72	1.94%
Developed, Low Intensity	70.09	-0.72	1.75	71.12	1.03	1.47%
Developed, Open Space	59.96	-0.56	2.22	61.62	1.66	2.77%
Cultivated Crops	359.08	-5.21	1.68	355.55	-3.53	-0.98%
Pasture/Hay	55.94	-2.00	2.17	56.10	0.16	0.29%
Grassland	0.25	-0.05	0.22	0.42	0.17	69.03%
Deciduous Forest	92.99	-0.62	0.57	92.94	-0.05	-0.05%
Evergreen Forest	0.06	0.00	0.00	0.06	0.00	-0.62%
Mixed Forest	3.26	-0.05	0.03	3.24	-0.02	-0.70%
Scrub/Shrub	0.01	-0.01	0.00	0.00	-0.01	-53.33%
Woody Wetland	22.49	-0.11	0.14	22.52	0.03	0.14%
Emergent Herbaceous Wetland	6.78	-0.14	0.65	7.29	0.51	7.52%
Barren Land	0.48	-0.01	1.29	1.76	1.28	264.70%
Open Water	19.65	-2.84	0.41	17.22	-2.43	-12.38%
Perennial Snow/Ice	0.00	0.00	0.00	0.00	0.00	0.00%

*All numbers expressed in square miles

Source: Multi-Resolution Land Characteristics Consortium's National Landcover Database.

Agriculture is an integral part of the County's economy, landscape, and natural resource base and will continue to contribute to a stable and diversified economy. According to the 2022 Census of Agriculture, there were 962 farms in Madison County occupying almost 56% (264,765 acres) of the total land area in the County. In comparison, there were 1,079 farms occupying approximately 67% (318,770 acres) of the total land area in the County in 2017.

The major crops include corn; soybeans; wheat; hay and haylage; and vegetables, melons, potatoes, sweet potatoes. Major livestock includes dairy cattle; horses and ponies; sheep and goats, cattle and calves, and poultry and eggs. According to the 2022 Census of Agriculture, Madison County ranks 47th in crop cash receipts and 67th in livestock cash receipts. In comparison, the County ranked 34th in crop cash receipts and 58th in livestock cash receipts in 2017. As the County continues to grow and develop agricultural land will continue to be converted for residential and commercial/industrial uses.

The largest employment sectors in Madison County are health care and social assistance; manufacturing; retail trade; educational services; and professional, scientific, and technical services according to the Illinois Department of Commerce and Economic Opportunity. According to the Leadership Council Southwestern Illinois, major employers in the County include Amazon, Southern Illinois University Edwardsville, U.S. Steel, Southwestern Illinois Health Facilities, Inc., Wieland Rolled Products, Philips 66 Wood River Refinery, and Alton Memorial Hospital.

Figure I-16, located at the end of this section, provides demographic and socio-economic data for the County and participating townships and municipalities. Alhambra, Marine, and Venice meet

the definition of an Economically Disadvantaged Rural Community (EDRC). FEMA defines an EDRC as a community of 3,000 or fewer individuals whose residents have an average per capita annual income not exceeding 80 percent of the U.S. per capita income based on best available data.

Figure I-17, also located at the end of this section, provides additional demographic information by census tract with the U.S. Council on Environmental Quality (CEQ) Climate and Economic Justice Screening Tool (CEJST) and the CDC/ATSDR Social Vulnerability Index (SVI) and overall level of vulnerability. The SVI and CEJST data used in this document is based on 2020 census tract information. In 2020, there were 63 census tracts in Madison County. In January 2025, President Trump issued an executive order rescinding former President Biden’s executive order requiring CEQ create CEJST. The status of CEJST is currently being litigated; however, it is provided here for informational purposes.

CEJST is a geospatial mapping tool that identifies census tracts across the nation where communities are faced with significant burdens, which are grouped into eight categories: climate change, energy, health, housing, legacy pollution, transportation, water and wastewater, and workforce development. Communities are considered disadvantaged if they are in census tracts that meet the thresholds for at least one of these categories. In Madison County, Alton, East Alton, Granite City, Hartford, the City of Madison, Nameoki Township, and Roxana are considered disadvantaged.

The SVI is a database that uses U.S. Census Bureau American Community Survey data to rank census tracts and counties on 16 social factors within four themes: Socioeconomic Status, Household Characteristics, Racial & Ethnic Minority Status, and Housing Type & Transportation. The goal of the SVI is to help emergency response planners and public health officials identify, map, and plan support for communities that will most likely need support before, during, and after a public health emergency.

The rankings generated by the SVI describe a county’s or census tract’s relative vulnerability among all other U.S. counties and census tracts. The SVI data used in this document is based on 2020 census tract information. Rankings are based on percentiles ranging from 0 to 1, with higher values indicating greater vulnerability. Each ranking is assigned to one of four levels of vulnerability: Low (0 – 0.2499), Low to Medium (0.2500 – 0.4999), Medium to High (0.5000 – 0.7499), and High (0.7500 – 1). A community with an SVI of 0.6000 or greater may be considered an underserved and/or disadvantaged community. In Madison County, the following participating jurisdictions are within census tracts that have an SVI of 0.6000 or greater: Alton, Alton Community Unit School District (CUSD) #11, America’s Central Port, Bethalto CUSD #8, Collinsville, Collinsville Township, Collinsville CUSD #10, East Alton, Granite City, Madison, Metro East Sanitary District, Nameoki Township, Pontoon Beach, Venice, Wood River, Wood River-Hartford Elementary School District (ESD) #15, and Wood River Drainage & Levee District (D&LD).

Figures I-18 to I-21 provide basic demographic information about the size and populations served by the participating school districts, fire protection districts, medical facilities, and drainage & levee districts.

Figure I-18
Demographic Data by Participating School District

Participating District	Number of Schools in District	Estimated Population Served	Area Served (Sq. Miles) (2020)	Communities / Unincorp. Areas Served in the County	Census Tracts Falling with the District
Alton CUSD #1	15	46,789	81.22	Alton, Godfrey, Fosterburg	4012, 4014, 4015, 4017.01, 4020, 4021, 4022, 4023, 4025, 4026, 4027.01, 4027.21, 4027.22, 4028.01, 4028.04
Bethalto CUSD #8	5	16,000	32.7	Bethalto	4017.01, 4017.21, 4017.22, 4018, 4019.01, 4028.03, 4028.04, 4028.05
Center for Educational Opportunities – Madison County ROE #41	1	266,000	715	Madison County	---
Collinsville CUSD #10	12	40,000	37.1	Collinsville, Maryville, Caseyville	4009.03, 4031.01, 4031.21, 4032, 4033, 4034.01, 4034.03, 4034.04, 4035.02, 4035.33, 4035.34
Edwardsville CUSD #7	11	45,000	185	Edwardsville, Glen Carbon, Hamel, Midway, Worden, Moro, Dorsey, Prairietown	4028.03, 4028.04, 4028.05, 4029, 4030.01, 4030.02, 4031.01, 4031.21, 4031.22, 4037.01, 4038.01
Marquette Catholic High School	1	n/a	n/a	Non-boundaried school	---
Roxana CUSD #1	4	11,000	15	Roxana, South Roxana, Wood River, East Alton	4010, 4011.02, 4012, 4018, 4019.01, 4019.05
St. Mary's Catholic School	2	n/a	n/a	Non-boundaried school	---
Wood River-Hartford ESD #15	3	11,000	2.1	Wood River, Hartford	4010, 4011.01, 4011.02, 4012, 4019.05, 4041

Source: Capability Assessment Worksheets – School Districts.

Figure I-19
Demographic Data by Participating Fire Protection District

Participating District	Number of Fire Stations	Estimated Population Served	Area Served (Sq. Miles) (2020)	Communities / Unincorp. Areas Served in the County	Census Tracts Falling with the District
Glen Carbon FPD	2	15,000	13.1	Glen Carbon	4030.01, 4031.21, 4031.22, 4035.34
Olive Fire District	2	3,500	30	Livingston, Williamson, Olive Township	4038.02
South Roxana FPD	1	2,200	2	South Roxana	4019.05, 4041
Troy FPD	1	17,000	64	Troy, Wendell Creek, Kensington Place, Charleston, Fawn Meadows	4031.22, 4035.31, 4035.32, 4035.33, 4037.01

Source: Capability Assessment Worksheets – Fire Protection Districts.

Figure I-20 Demographic Data by Participating Healthcare Facilities			
Participating District	Estimated Population Served	Area Served (Sq. Miles) (2020)	Communities / Unincorp. Areas Served in the County
Anderson Hospital	132,000	---	Madison County
OSF St. Anthony's Health Center	336,479	---	Madison, Macoupin, & Jersey Counties

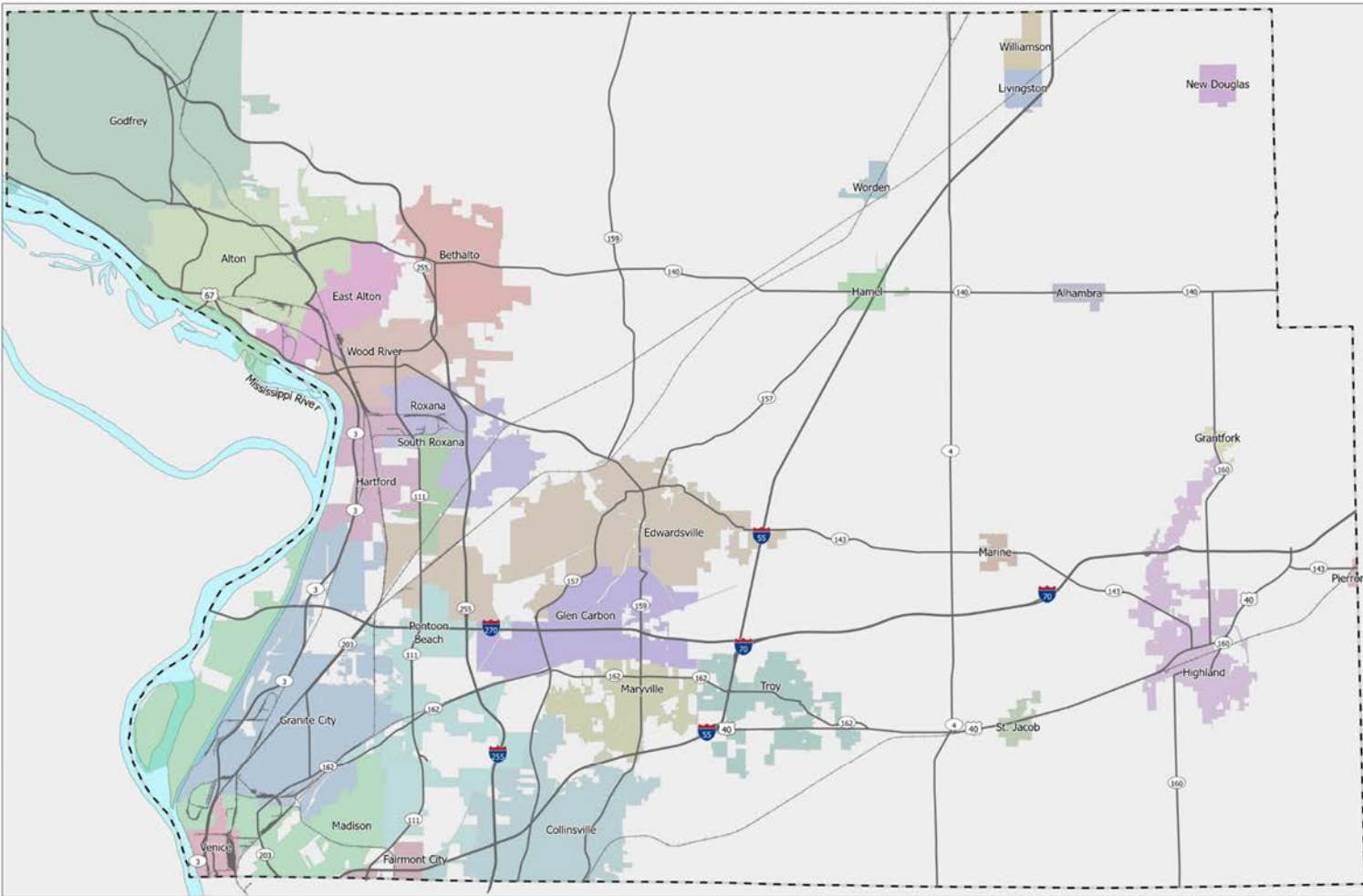
Source: Capability Assessment Worksheets – Healthcare Facilities.

Figure I-21 Demographic Data by Participating Drainage & Levee District				
Participating District	Estimated Population Served	Area Served (Sq. Miles) (2020)	Communities / Unincorp. Areas Served in the County	Census Tracts Falling with the District
Metro East Sanitary District	525,176	134.26	Several municipalities & unincorporated areas of Madison & St. Clair Counties	4001.01, 4001.02, 4002, 4007, 4008.01, 4008.02, 4009.03, 4009.04, 4009.51, 4009.52, 4019.05, 4031.01, 4035.34, 4040, 4041
Wood River Drainage & Levee District	25,000	19.93	Unincorporated Madison County, Alton, Wood River, East Alton, South Roxana, Hartford, Roxana, Edwardsville	4010, 4011.01, 4011.02, 4012, 4013, 4015, 4018, 4019.01, 4019.05, 4024

Source: Capability Assessment Worksheets – Drainage & Levee Districts.

**Figure I-4
Location Map**

Madison County



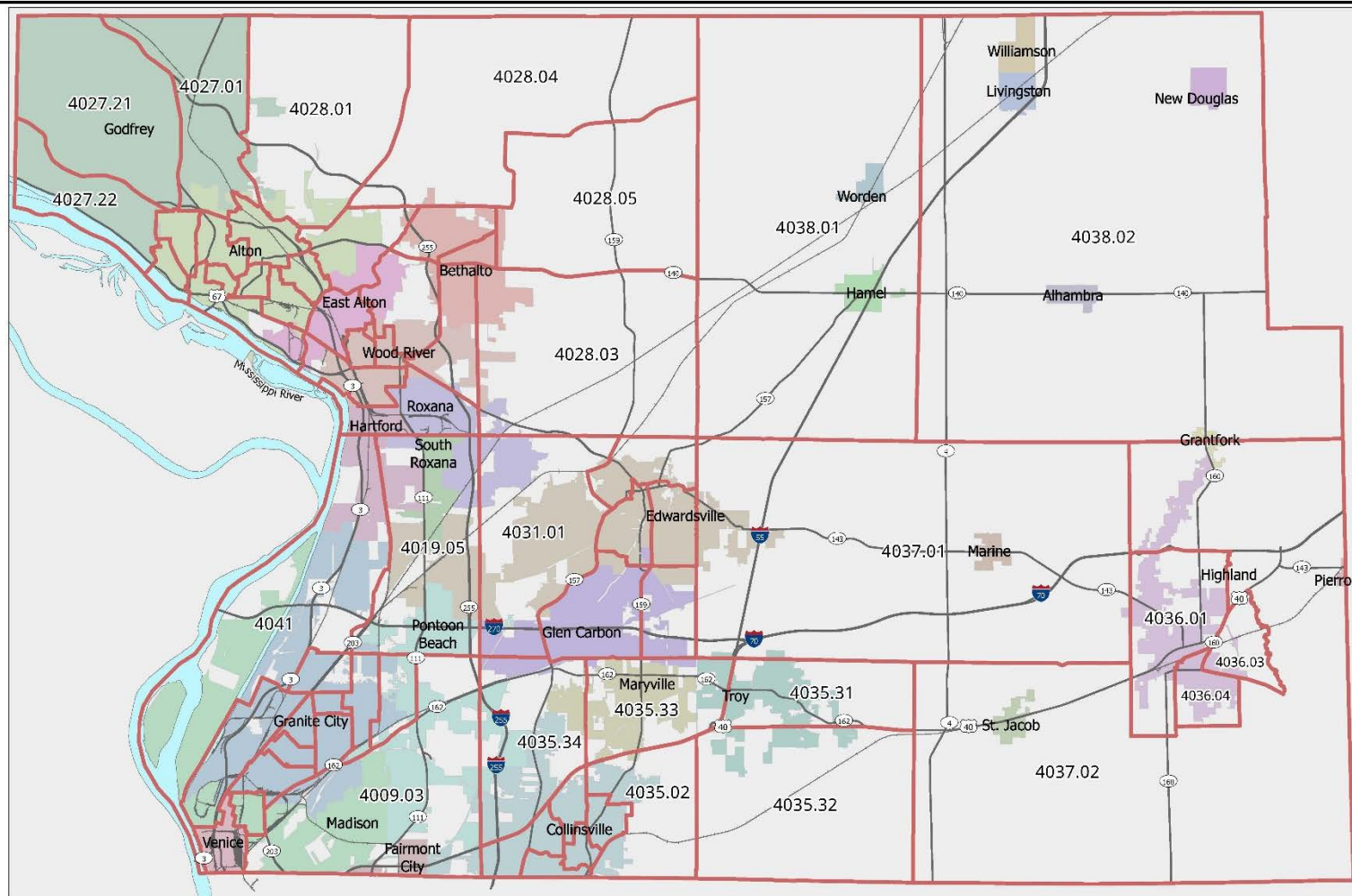
CREDITS: ESRI, MADISON COUNTY GIS

0 1.25 2.5 5 7.5 10 Miles

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INFORMATION TECHNOLOGY - GIS
NOVEMBER 2024



Figure I-5
Madison County 2020 Census Tract Map



CREDITS: ESRI, MADISON COUNTY GIS, US CENSUS BUREAU

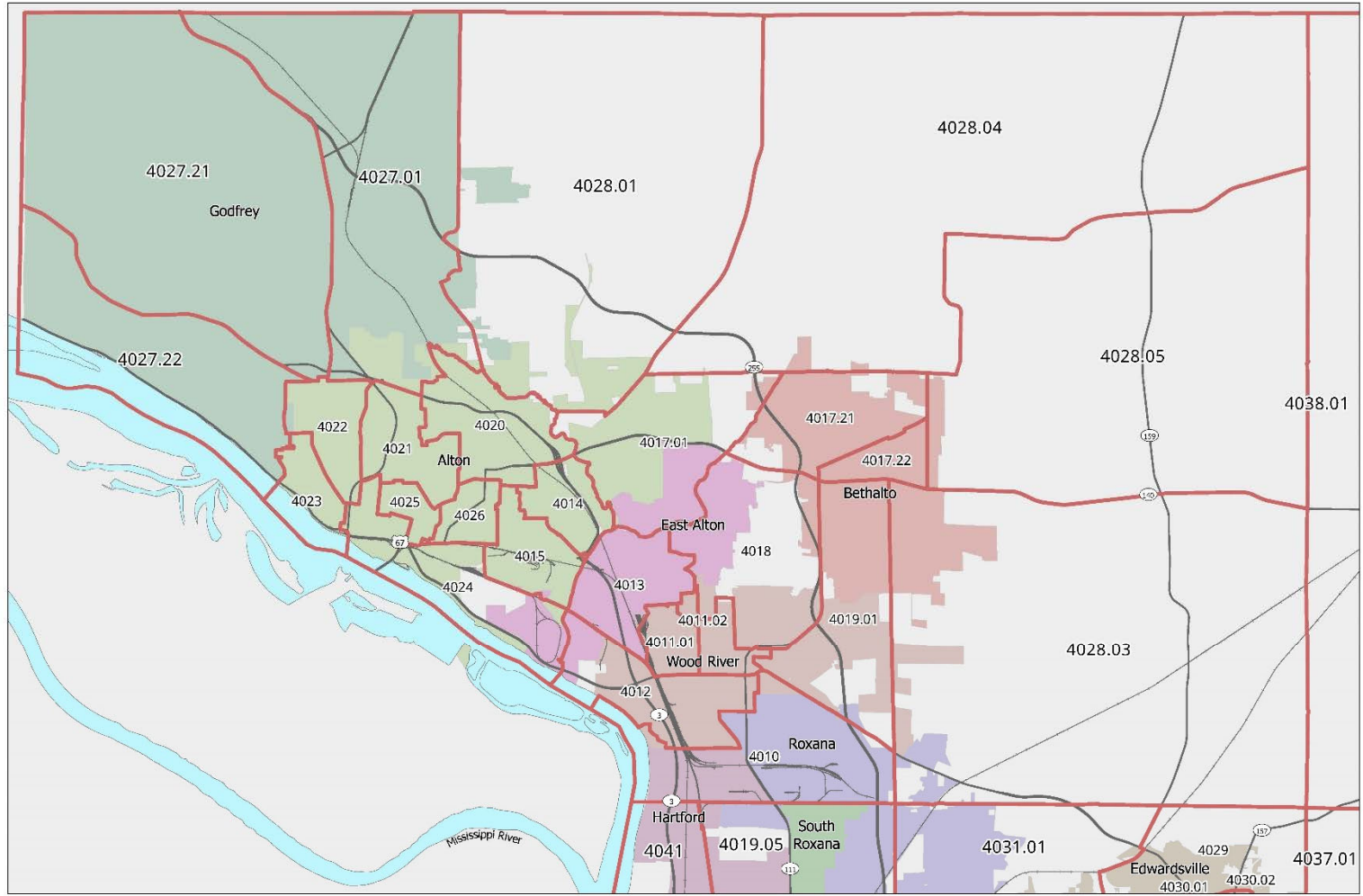
0 1.25 2.5 5 7.5 10 Miles

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INFORMATION TECHNOLOGY - GIS
JANUARY 2025



- Legend**
- Census Tracts
 - Railroads
 - Mississippi River
 - Major Roads
 - Interstate
 - State Route
 - US Highway

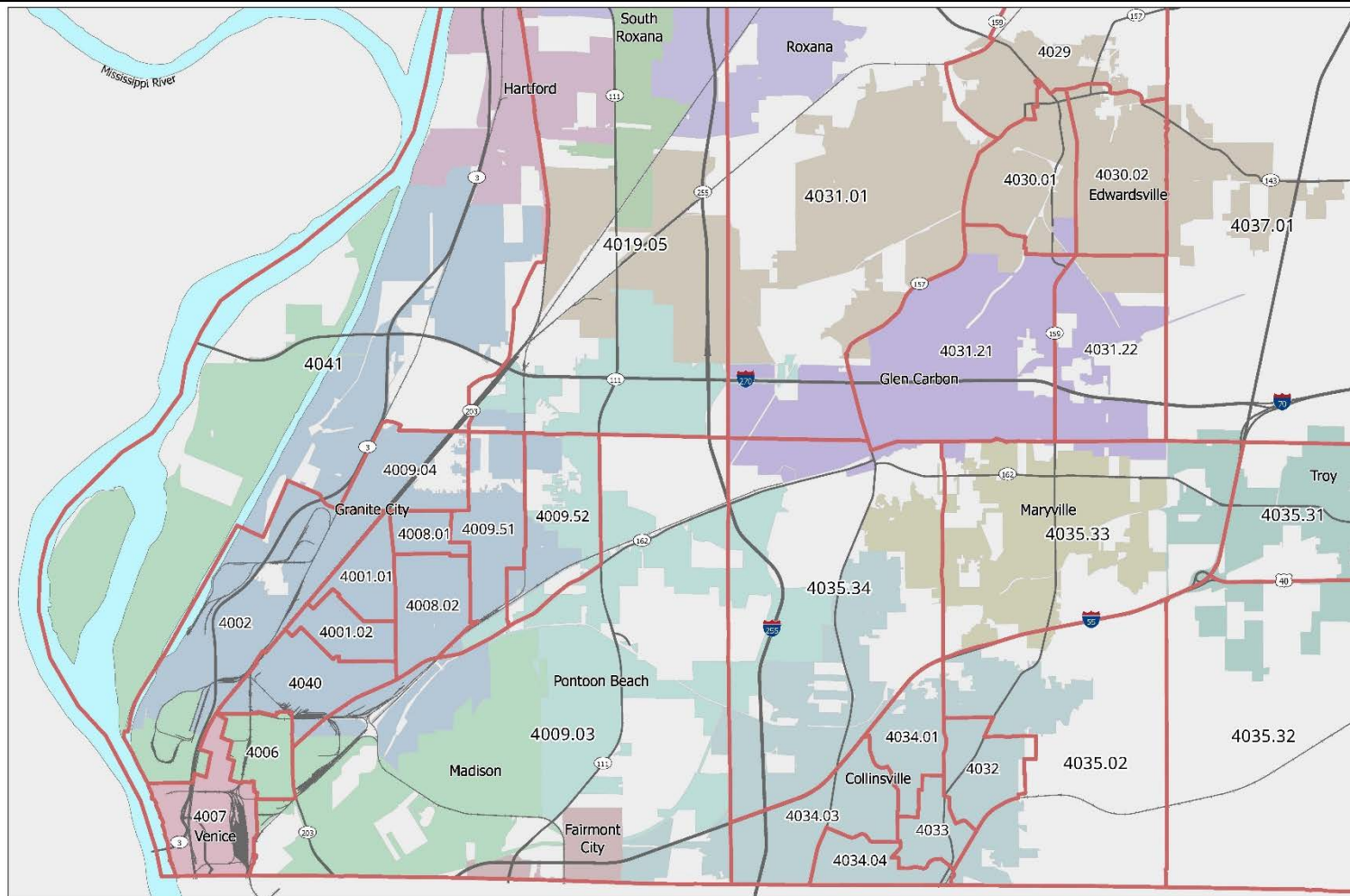
Figure I-6
Northwest Madison County Metropolitan Area 2020 Census Tract Map



CREDITS: ESRI, MADISON COUNTY GIS, US CENSUS BUREAU

PREPARED BY MADISON COUNTY GOVERNMENT
INFORMATION TECHNOLOGY - GIS
JANUARY 2025

Figure I-7
Southwest Madison County Metropolitan Area 2020 Census Tract Map



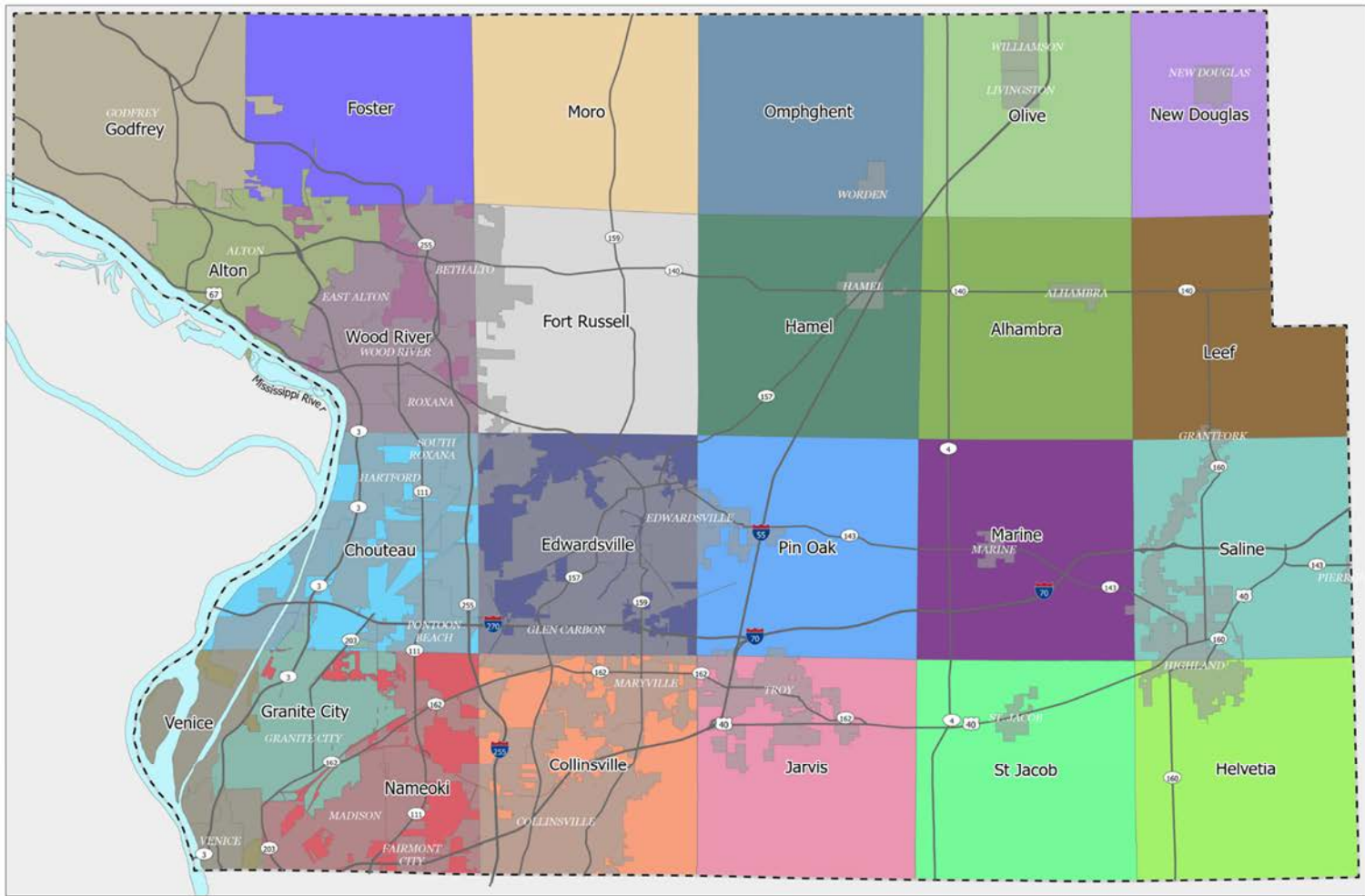
CREDITS: ESRI, MADISON COUNTY GIS, US CENSUS BUREAU

Figure 1 shows the distribution of the number of non-zero elements in the vector x for different values of n . The x-axis is labeled n and ranges from 0 to 4. The y-axis is labeled x and ranges from 0 to 4. The bars are black and white, representing the distribution of the number of non-zero elements in the vector x .

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JANUARY 2025

Figure I-8
Township Boundary Map

Madison County Townships



CREDITS: ESRI, MADISON COUNTY GIS

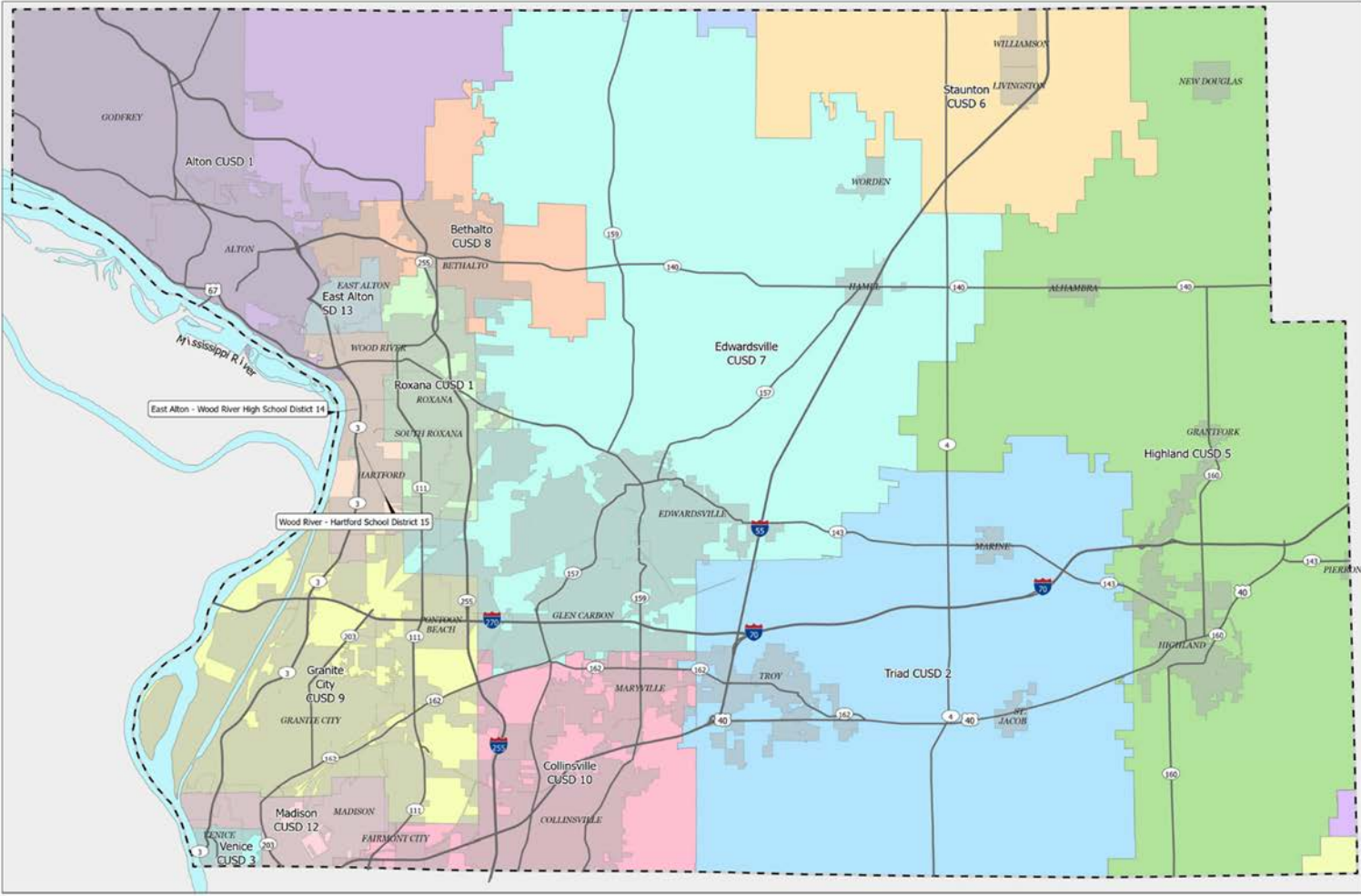


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Figure I-9
School District Boundary Map

Madison County School Districts

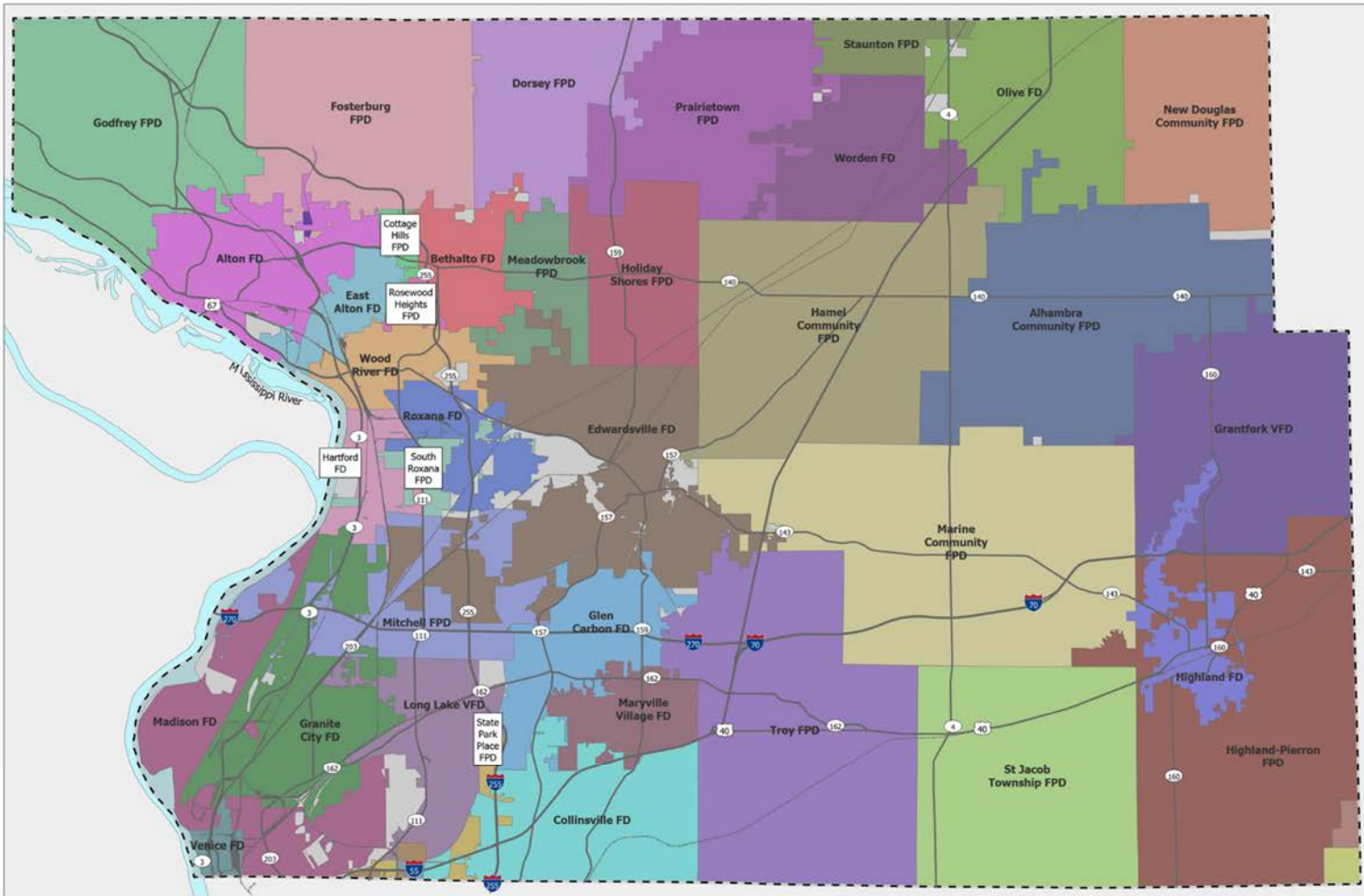


CREDITS: ESRI, MADISON COUNTY GIS

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Figure I-10
Fire Protection District Boundary Map

Madison County Fire Districts



CREDITS: ESRI, MADISON COUNTY GIS

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INFORMATION TECHNOLOGY - GIS
DECEMBER 2024

Figure I-11
Levee District Boundary Map

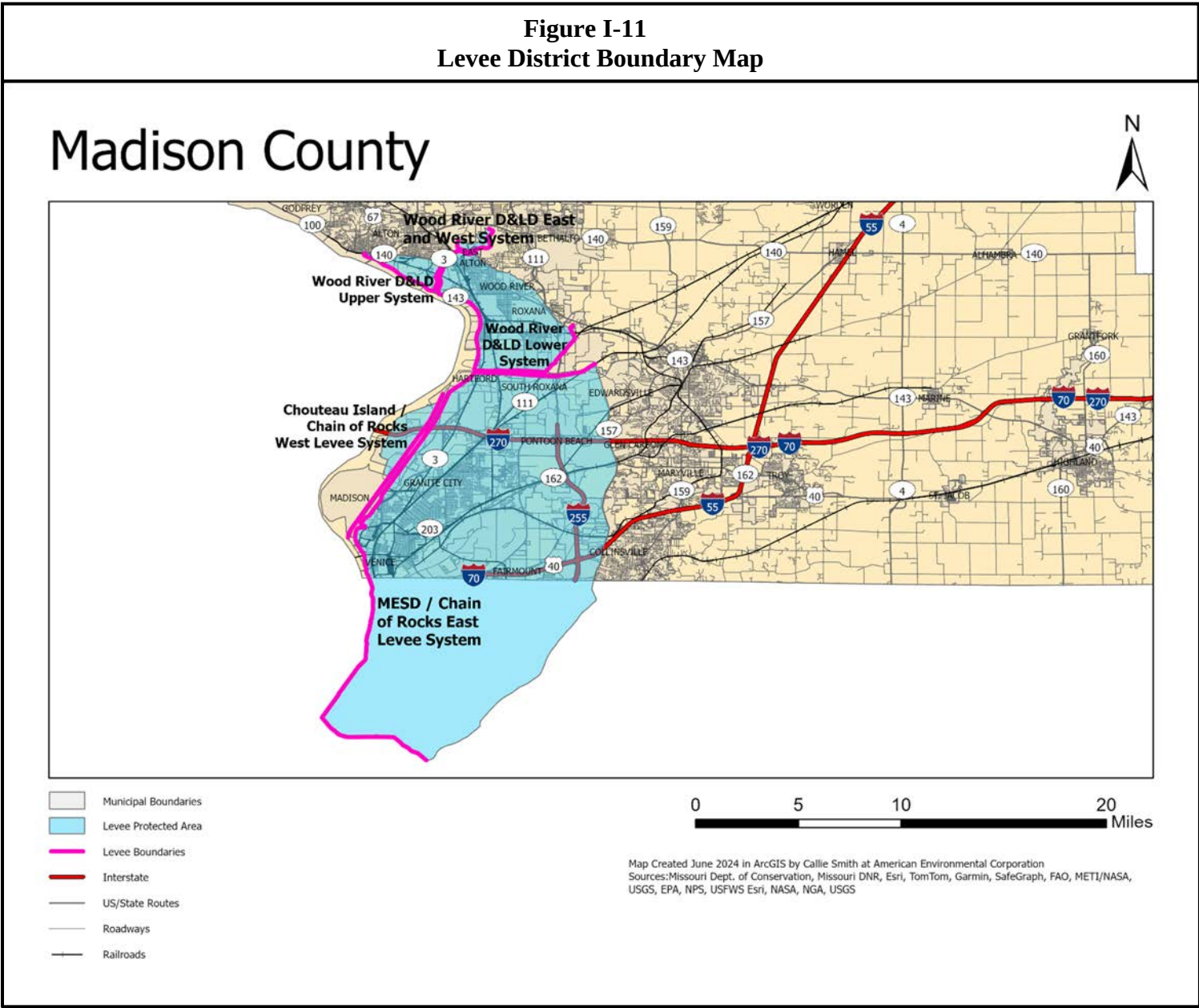
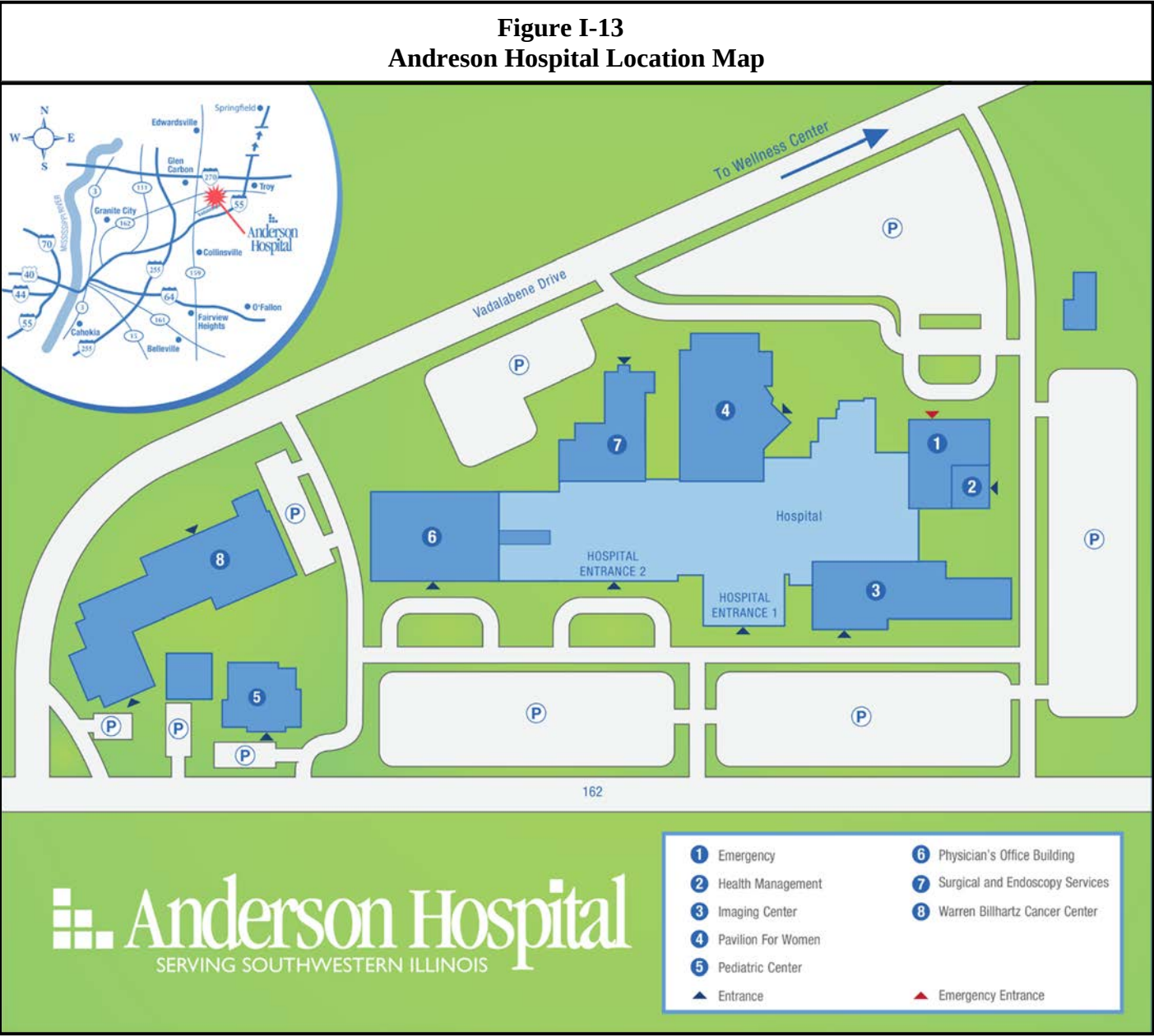


Figure I-12
America's Central Port Location Map





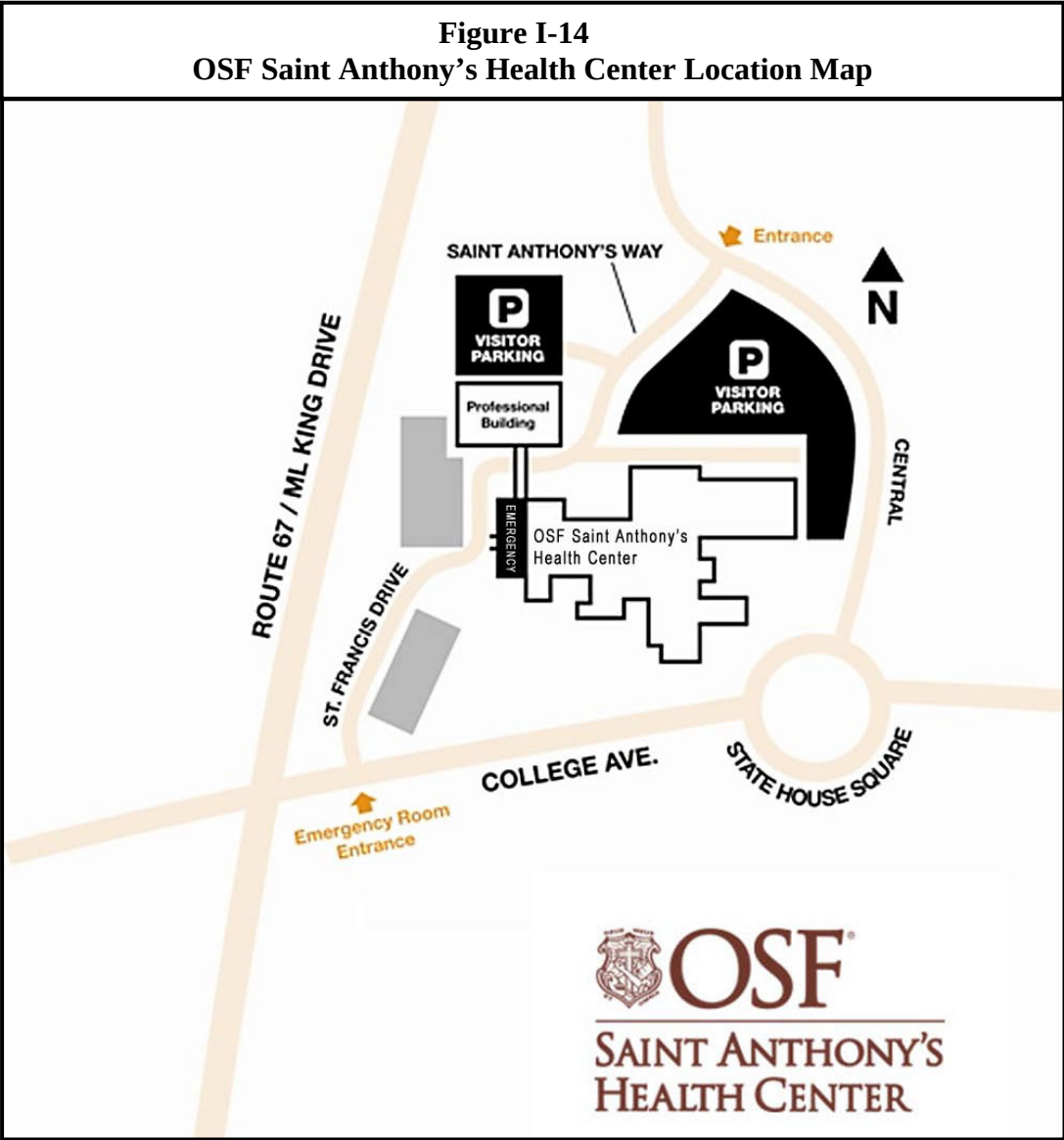


Figure I-16
2020 Demographic Data by Participating Jurisdiction
(Sheet 1 of 2)

Participating Jurisdiction	Population (2020)	Projected Population (2030)	Total Land Area (Sq. Miles) (2020)	Number of Housing Units (2018-2022)	Percent Race								Income			Total Assessed Value of Housing Units (2023)
					White (alone)	Black or African American (alone)	Asian (alone)	Hispanic or Latino (of any race)	American Indian & Alaska Native (alone)	Native Hawaiian & Other Pacific Islander (alone)	Some other Race (alone)	Two or more Races	% of People whose Income is below the Poverty Line	Per Capita Income	EDRC*	
Madison County (Total)	265,859	263,905	715.501	118,715	81.4%	9.4%	1.0%	4.1%	0.3%	0.04%	1.5%	6.3%	12.0%	\$38,828	---	\$5,651,298,650
Madison County (Unincorp.)	69,214	68,705	521.548	29,632	90.1%	2.0%	0.5%	3.6%	0.2%	0.02%	1.5%	5.6%	6.39%	---	---	\$1,455,404,990
Alhambra	622	617	0.756	270	90.0%	1.1%	0.0%	8.7%	0.2%	0.00%	0.2%	10.0%	7.7%	\$28,708	Y	\$10,389,940
Alton	25,676	25,487	15.681	12,557	63.8%	26.8%	0.7%	2.6%	0.5%	0.04%	1.1%	7.1%	24.5%	\$28,120	N	\$291,667,760
Collinsville	24,366	24,187	13.547	10,433	74.1%	14.7%	0.8%	6.0%	0.3%	0.03%	2.6%	7.5%	13.0%	\$39,666	N	\$467,192,447
East Alton	5,786	5,743	5.318	3,191	85.4%	6.4%	0.4%	2.1%	0.4%	0.1%	0.6%	6.7%	15.4%	\$30,770	N	\$67,505,970
Edwardsville	26,808	26,611	19.811	10,096	79.4%	10.2%	3.1%	3.7%	0.2%	0.1%	1.1%	5.8%	14.5%	\$44,305	N	\$744,632,570
Glen Carbon	13,842	13,740	10.250	5,742	80.6%	7.2%	2.3%	5.8%	0.2%	0.1%	1.0%	8.7%	7.4%	\$50,432	N	\$441,790,940
Godfrey	17,825	17,694	34.395	7,998	87.4%	5.9%	0.8%	2.4%	0.2%	0.0%	0.7%	4.9%	6.7%	\$44,278	N	\$452,470,730
Granite City	27,549	27,347	19.024	12,788	77.0%	11.3%	0.7%	7.3%	0.4%	0.004%	3.3%	7.4%	18.6%	\$29,239	N	\$320,434,940
Grantfork	341	338	0.337	191	91.2%	0.3%	0.3%	1.5%	0.9%	0.0%	0.3%	7.0%	1.3%	\$47,497	N	\$7,209,370
Hamel	929	922	1.190	382	92.4%	1.0%	0.6%	1.0%	0.0%	0.0%	0.3%	5.7%	2.7%	\$37,584	N	\$27,465,620
Highland	9,991	9,918	6.751	4,898	93.1%	0.4%	1.0%	1.8%	0.2%	0.0%	0.4%	4.8%	3.4%	\$40,810	N	\$214,843,320
Livingston	763	757	1.040	418	91.3%	0.1%	0.5%	2.8%	0.7%	0.0%	0.3%	7.1%	7.6%	\$38,380	N	\$9,283,560
Madison, City of	3,171	3,148	12.735	1,642	28.1%	63.5%	0.4%	5.7%	0.4%	0.03%	2.8%	4.7%	18.1%	\$24,115	N	\$16,167,800
Marine	912	905	14.392	460	92.2%	0.2%	0.5%	2.9%	0.3%	0.2%	0.8%	5.7%	3.5%	\$30,344	Y	\$19,650,500
Maryville	8,221	8,161	5.676	3,398	85.1%	5.4%	2.2%	3.8%	0.1%	0.04%	0.7%	6.4%	3.5%	\$49,346	N	\$279,277,510
Pontoon Beach	5,876	5,833	9.960	2,502	77.3%	9.2%	1.1%	8.7%	0.5%	0.02%	4.1%	7.7%	12.3%	\$27,722	N	\$68,114,200
Roxana	1,454	1,443	7.101	764	89.7%	2.1%	0.6%	3.4%	0.7%	0.1%	1.0%	5.7%	18.0%	\$36,773	N	\$18,044,170
St. Jacob	1,358	1,348	0.832	562	91.6%	1.2%	0.6%	3.4%	0.0%	0.1%	0.2%	6.3%	3.5%	\$34,512	N	\$31,881,500
Troy	10,960	10,879	5.620	4,453	88.6%	2.5%	0.9%	3.3%	0.3%	0.02%	0.8%	6.9%	4.8%	\$41,038	N	\$322,158,950
Venice	1,498	1,487	1.849	1,021	2.7%	94.9%	0.1%	0.7%	0.1%	0.0%	0.1%	2.1%	38.1%	\$23,380	Y	\$4,544,170
Wood River	10,464	10,387	6.975	4,853	88.3%	4.3%	0.5%	2.1%	0.2%	0.05%	0.7%	5.9%	19.5%	\$31,582	N	\$139,185,330
Worden	1,096	1,088	0.713	464	95.1%	0.1%	0.4%	2.4%	0.0%	0.0%	0.6%	3.8%	12.7%	\$40,555	N	\$21,240,800
Illinois	12,812,508	12,790,000	55,513.180	5,427,357	61.4%	14.1%	5.9%	18.2%	0.8%	0.04%	8.9%	21.1%	11.8%	\$43,198	---	---
US	331,449,281	---	3,533,038.328	140,943,613	61.6%	12.4%	6.0%	18.7%	1.1%	0.2%	8.4%	24.0%	12.5%	\$41,261	---	---

* For the purposes of FEMA's Hazard Mitigation Assistance grant programs administered by the Illinois Emergency Management Agency, an Economically Disadvantaged Rural Community (EDRC) is defined in Illinois as a community of 3,000 or fewer individuals whose residents have an average per capita annual income not exceeding 80 percent of the U.S. per capita income based on best available data.

Figure I-16
2020 Demographic Data by Participating Jurisdiction
(Sheet 2 of 2)

Participating Jurisdiction	Population (2020)	Projected Population (2030)	Total Land Area (Sq. Miles) (2020)	Number of Housing Units (2018-2022)	Percent Race								Income			Total Assessed Value of Housing Units (2023)
					White (alone)	Black or African American (alone)	Asian (alone)	Hispanic or Latino (of any race)	American Indian & Alaska Native (alone)	Native Hawaiian & Other Pacific Islander (alone)	Some other Race (alone)	Two or more Races	% of People whose Income is below the Poverty Line	Per Capita Income	EDRC*	
Madison County (Total)	265,859	263,905	715.501	118,715	81.4%	9.4%	1.0%	4.1%	0.3%	0.04%	1.5%	6.3%	12.0%	\$38,828	---	\$5,651,298,650
Madison County (Unincorp.)	69,214	68,705	521.548	29,632	90.1%	2.0%	0.5%	3.6%	0.2%	0.02%	1.5%	5.6%	6.39%	---	---	\$1,455,404,990
Collinsville Township	35,611	35,349	34.854	16,511	80.0%	0.4%	1.1%	6.3%	0.4%	0.0%	1.2%	5.6%	10.6%	\$42,673	N	\$866,727,020
Edwardsville Township	40,361	40,064	35.272	16,191	86.1%	7.2%	1.9%	3.4%	0.1%	0.0%	0.6%	4.1%	11.8%	\$45,604	N	\$1,138,446,490
Leef Township	718	713	29.239	268	82.7%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	17.0%	0.7%	\$41,791	N	\$10,803,430
Nameoki Township	12,024	11,940	21.420	5,267	83.9%	4.5%	2.5%	12.6%	0.4%	0.0%	3.4%	5.4%	14.9%	\$30,060	N	\$117,400,680
Illinois	12,812,508	12,790,000	55,513.180	5,427,357	61.4%	14.1%	5.9%	18.2%	0.8%	0.04%	8.9%	21.1%	11.8%	\$43,198	---	---
US	331,449,281	---	3,533,038.328	140,943,613	61.6%	12.4%	6.0%	18.7%	1.1%	0.2%	8.4%	24.0%	12.5%	\$41,261	---	---

* For the purposes of FEMA's Hazard Mitigation Assistance grant programs administered by the Illinois Emergency Management Agency, an Economically Disadvantaged Rural Community (EDRC) is defined in Illinois as a community of 3,000 or fewer individuals whose residents have an average per capita annual income not exceeding 80 percent of the U.S. per capita income based on best available data.

Sources: Madison County Chief County Assessment Officer.

Illinois Department Public Health, Population Projections – Illinois, Chicago and Illinois Counties by Age and Sex: July 1, 2015, to July 1, 2030 (2019 Edition).

U. S. Census Bureau, American Community Survey, 5-Year Data Profile.

Figure I-17
2018-2022 Demographic Data by Census Tract
(Sheet 1 of 7)

Census Tract (2020)	Participating Jurisdictions that Fall Within Census Tract	Population (2018-2022)	Total Area (Sq. Miles) (2020)	Number of Housing Units (2018-2022)	Percent Race								Income % of People whose Income is below the Poverty Line	CEJST Identified as Dis-Advantaged	Social Vulnerability Index	
					White (alone)	Black or African American (alone)	Asian (alone)	Hispanic or Latino (of any race)	American Indian & Alaska Native (alone)	Native Hawaiian & Other Pacific Islander (alone)	Some other Race (alone)	Two or more Races			Nation-wide Overall SVI Ranking (2020)	Level of Vulnerability
4001.01	Granite City, Metro East Sanitary District	2,707	0.892	1,235	90.9%	5.1%	0.4%	3.7%	0.0%	0.0%	1.1%	2.4%	18.4%	No	0.4569	Low to Medium
4001.02	Granite City, Metro East Sanitary District	4,661	0.822	2,160	64.7%	23.9%	0.6%	2.0%	0.0%	0.0%	0.1%	10.7%	29.5%	Yes	0.6180	Medium to High
4002	Granite City, Metro East Sanitary District, America's Central Port	3,533	5.172	1,727	69.4%	19.1%	0.2%	12.9%	0.3%	0.0%	6.0%	5.0%	28.8%	Yes	0.9333	High
4006	Madison	2,058	0.932	1,271	41.7%	54.3%	0.0%	0.4%	0.0%	0.0%	0.6%	3.4%	15.6%	Yes	0.8714	High
4007	Venice, Metro East Sanitary District, America's Central Port	1,762	1.851	1,021	2.3%	89.5%	0.0%	2.0%	0.0%	0.0%	0.0%	8.2%	38.1%	Yes	0.8236	High
4008.01	Granite City, Metro East Sanitary District	1,683	0.515	748	89.2%	3.3%	0.0%	9.3%	0.1%	0.0%	1.3%	6.1%	14.0%	No	0.2886	Low to Medium
4008.02	Granite City, Metro East Sanitary District	6,107	1.396	2,730	87.4%	8.5%	0.0%	7.0%	0.1%	0.0%	0.5%	3.5%	12.6%	No	0.3205	Low to Medium
4009.03	Granite City, Madison, Pontoon Beach, Nameoki Township, Collinsville CUSD #10, Metro East Sanitary District	4,388	23.654	2,360	77.3%	11.2%	0.0%	21.5%	0.3%	0.0%	4.2%	7.0%	20.2%	Yes	0.6833	Medium to High
4009.04	Granite City, Nameoki Township, Metro East Sanitary District	3,495	1.645	1,548	92.9%	0.0%	0.1%	8.2%	0.9%	0.0%	3.4%	2.7%	6.8%	No	0.2133	Low
4009.51	Granite City, Nameoki Township, Metro East Sanitary District	5,439	2.056	2,338	90.1%	1.9%	1.9%	2.8%	0.0%	0.0%	0.0%	6.1%	8.3%	No	0.5614	Medium to High
4009.52	Granite City, Pontoon Beach, Nameoki Township, Metro East Sanitary District	3,492	2.341	1,460	74.6%	9.2%	8.3%	7.4%	0.1%	0.0%	2.9%	4.9%	7.9%	No	0.6004	Medium to High
Madison County		265,859	263,905	715,501	118,715	81.4%	9.4%	1.0%	4.1%	0.3%	0.04%	1.5%	6.3%	---	---	---

Figure I-17
2018-2022 Demographic Data by Census Tract
(Sheet 2 of 7)

Census Tract (2020)	Participating Jurisdictions that Fall Within Census Tract	Population (2018-2022)	Total Area (Sq. Miles) (2020)	Number of Housing Units (2018-2022)	Percent Race								Income % of People whose Income is below the Poverty Line	CEJST Identified as Dis-Advantaged	Social Vulnerability Index	
					White (alone)	Black or African American (alone)	Asian (alone)	Hispanic or Latino (of any race)	American Indian & Alaska Native (alone)	Native Hawaiian & Other Pacific Islander (alone)	Some other Race (alone)	Two or more Races			Nation-wide Overall SVI Ranking (2020)	Level of Vulnerability
4010	Roxana, Roxana CUSD #1, Wood River-Hartford ESD #15, Wood River D&LD	2,272	4.650	1,138	94.4%	4.0%	0.6%	0.5%	0.2%	0.0%	0.0%	0.8%	17.9%	Yes	0.4010	Low to Medium
4011.01	Wood River, Wood River-Hartford ESD #15, Wood River D&LD	2,707	0.735	1,404	82.6%	7.4%	0.0%	3.8%	0.4%	0.0%	0.0%	9.6%	30.1%	Yes	0.6328	Medium to High
4011.02	Wood River, Roxana CUSD #1, Wood River-Hartford ESD #15, Wood River D&LD	3,274	0.767	1,499	89.6%	7.7%	0.0%	0.7%	0.2%	0.0%	0.0%	2.6%	17.1%	Yes	0.4993	Low to Medium
4012	East Alton, Wood River, Alton CUSD #11, Roxana CUSD #1, Wood River-Hartford ESD #15, Wood River D&LD	2,028	2.720	932	91.1%	3.5%	0.1%	0.3%	0.0%	0.0%	0.0%	5.3%	10.4%	No	0.1406	Low
4013	East Alton, Wood River D&LD	4,576	2.060	2,584	91.5%	2.7%	0.0%	2.1%	0.0%	0.0%	0.0%	5.8%	18.1%	No	0.4646	Low to Medium
4014	Alton, Alton CUSD #11	2,996	1.172	1,524	83.8%	10.2%	0.2%	1.8%	0.0%	0.0%	1.8%	3.9%	18.2%	No	0.6208	Medium to High
4015	Alton, Alton CUSD #11, Wood River D&LD	2,618	1.422	1,220	77.5%	13.1%	1.6%	3.0%	1.0%	0.0%	1.0%	6.0%	26.0%	Yes	0.5855	Medium to High
4017.01	Alton, Alton CUSD #11, Bethalto CUSD #8	2,540	4.437	918	83.5%	8.4%	0.7%	3.5%	0.0%	0.0%	1.8%	5.6%	33.4%	Yes	0.8918	High
4017.21	Bethalto CUSD #8	5,601	2.986	2,408	96.5%	0.4%	0.2%	0.0%	0.0%	0.0%	0.0%	2.9%	11.6%	No	0.2011	Low
4017.22	Bethalto CUSD #8	2,856	0.868	1,363	97.8%	0.0%	0.0%	1.9%	0.0%	0.0%	0.8%	1.4%	4.3%	No	0.1165	Low
Madison County		265,859	263,905	715,501	118,715	81.4%	9.4%	1.0%	4.1%	0.3%	0.04%	1.5%	6.3%	---	---	---

Figure I-17
2018-2022 Demographic Data by Census Tract
(Sheet 3 of 7)

Census Tract (2020)	Participating Jurisdictions that Fall Within Census Tract	Population (2018-2022)	Total Area (Sq. Miles) (2020)	Number of Housing Units (2018-2022)	Percent Race								Income % of People whose Income is below the Poverty Line	CEJST Identified as Dis-Advantaged	Social Vulnerability Index	
					White (alone)	Black or African American (alone)	Asian (alone)	Hispanic or Latino (of any race)	American Indian & Alaska Native (alone)	Native Hawaiian & Other Pacific Islander (alone)	Some other Race (alone)	Two or more Races			Nation-wide Overall SVI Ranking (2020)	Level of Vulnerability
4018	East Alton, Bethalto CUSD #8, Roxana CUSD #1, Wood River D&LD	6,218	4.452	2,708	93.1%	4.4%	0.0%	3.2%	0.0%	0.0%	0.3%	2.2%	8.5%	No	0.2008	Low
4019.01	Wood River, Bethalto CUSD #8, Roxana CUSD #1, Wood River D&LD	1,703	4.250	796	97.4%	0.0%	0.0%	0.5%	0.0%	0.2%	0.4%	2.1%	7.4%	No	0.0920	Low
4019.05	Edwardsville, Pontoon Beach, Roxana, Roxana CUSD #1, Wood River-Hartford ESD #15, South Roxana FPD, Metro East Sanitary District, Wood River D&LD	4,738	16.741	2,169	91.3%	1.5%	0.1%	4.8%	0.0%	0.0%	0.9%	6.1%	12.6%	Yes	0.5843	Medium to High
4020	Alton, Alton CUSD #11	4,377	2.501	2,138	68.5%	22.4%	3.3%	2.3%	0.1%	0.0%	0.3%	5.3%	20.2%	No	0.8381	High
4021	Alton, Alton CUSD #11	2,318	1.681	1,393	47.9%	49.1%	0.0%	1.2%	0.0%	0.0%	0.0%	2.9%	33.7%	Yes	0.8754	High
4022	Alton, Alton CUSD #11	3,450	1.425	1,464	61.9%	24.8%	0.0%	3.4%	0.0%	0.0%	0.9%	12.5%	19.8%	Yes	0.5461	Medium to High
4023	Alton, Alton CUSD #11	1,709	1.215	839	82.8%	10.1%	0.0%	2.9%	0.0%	0.0%	0.6%	6.4%	13.0%	No	0.4479	Low to Medium
4024	East Alton, Wood River D&LD	1,628	3.393	1,031	84.5%	13.0%	0.2%	1.5%	0.6%	0.0%	0.0%	1.6%	23.6%	Yes	0.7086	Medium to High
4025	Alton, Alton CUSD #11	1,871	0.503	940	46.7%	48.2%	1.0%	0.9%	0.0%	0.0%	0.7%	3.4%	29.0%	Yes	0.7405	Medium to High
4026	Alton, Alton CUSD #11	2,762	0.730	1,239	62.6%	24.1%	0.0%	3.8%	0.2%	0.0%	0.5%	12.6%	21.7%	Yes	0.8561	High
4027.01	Godfrey, Alton CUSD #11	6,761	12.026	3,310	80.7%	13.6%	0.1%	0.6%	0.0%	0.0%	0.0%	5.7%	16.5%	No	0.4804	Low to Medium
4027.21	Godfrey, Alton CUSD #11	7,958	17.174	3,443	90.8%	3.5%	0.1%	2.3%	0.0%	0.1%	0.1%	5.4%	5.5%	No	0.2674	Low to Medium
Madison County		265,859	263,905	715,501	118,715	81.4%	9.4%	1.0%	4.1%	0.3%	0.04%	1.5%	6.3%	---	---	---

Figure I-17
2018-2022 Demographic Data by Census Tract
(Sheet 4 of 7)

Census Tract (2020)	Participating Jurisdictions that Fall Within Census Tract	Population (2018-2022)	Total Area (Sq. Miles) (2020)	Number of Housing Units (2018-2022)	Percent Race								Income	CEJST	Social Vulnerability Index	
					White (alone)	Black or African American (alone)	Asian (alone)	Hispanic or Latino (of any race)	American Indian & Alaska Native (alone)	Native Hawaiian & Other Pacific Islander (alone)	Some other Race (alone)	Two or more Races	% of People whose Income is below the Poverty Line	Identified as Dis-Advantaged	Nation-wide Overall SVI Ranking (2020)	Level of Vulnerability
4027.22	Godfrey, Alton CUSD #11	2,961	7.115	1,215	91.8%	4.5%	0.5%	2.1%	0.0%	0.0%	0.7%	2.5%	5.9%	No	0.1826	Low
4028.01	Alton, Godfrey, Alton CUSD #11	3,541	21.704	1,667	94.1%	1.9%	0.0%	0.9%	0.1%	0.0%	0.0%	3.8%	8.3%	No	0.0951	Low
4028.03	Wood River, Bethalto CUSD #8, Edwardsville CUSD #7	3,464	27.102	1,342	87.0%	6.5%	2.0%	0.0%	0.1%	0.0%	0.0%	4.4%	8.4%	No	0.3625	Low to Medium
4028.04	Alton CUSD #11, Bethalto CUSD #8, Edwardsville CUSD #7	2,343	31.325	966	97.7%	0.0%	1.4%	0.0%	0.0%	0.0%	0.0%	0.9%	4.8%	No	0.1218	Low
4028.05	Bethalto CUSD #8, Edwardsville CUSD #7	5,513	21.835	2,280	95.5%	0.9%	0.0%	5.6%	0.0%	0.0%	0.3%	3.3%	6.0%	No	0.1808	Low
4029	Edwardsville, Edwardsville Township, Edwardsville CUSD #7	5,408	3.828	2,360	86.2%	6.6%	2.2%	1.8%	0.1%	0.0%	0.0%	4.8%	26.3%	No	0.1501	Low
4030.01	Edwardsville, Edwardsville Township, Edwardsville CUSD #7, Glen Carbon FPD	6,334	2.384	2,594	88.1%	5.3%	1.3%	3.8%	0.3%	0.0%	0.4%	4.7%	12.5%	No	0.3740	Low to Medium
4030.02	Edwardsville, Edwardsville Township, Edwardsville CUSD #7	6,814	2.757	2,976	85.8%	8.8%	1.6%	1.4%	0.3%	0.0%	0.3%	3.2%	4.1%	No	0.0479	Low
4031.01	Edwardsville, Glen Carbon, Edwardsville Township, Collinsville CUSD #10, Edwardsville CUSD #7, Metro East Sanitary District	6,140	17.029	1,894	86.4%	7.2%	2.7%	5.1%	0.0%	0.0%	0.6%	3.1%	24.1%	No	0.5385	Medium to High
Madison County		265,859	263,905	715,501	118,715	81.4%	9.4%	1.0%	4.1%	0.3%	0.04%	1.5%	6.3%	---	---	---

Figure I-17
2018-2022 Demographic Data by Census Tract
(Sheet 5 of 7)

Census Tract (2020)	Participating Jurisdictions that Fall Within Census Tract	Population (2018-2022)	Total Area (Sq. Miles) (2020)	Number of Housing Units (2018-2022)	Percent Race								Income % of People whose Income is below the Poverty Line	CEJST Identified as Dis-Advantaged	Social Vulnerability Index	
					White (alone)	Black or African American (alone)	Asian (alone)	Hispanic or Latino (of any race)	American Indian & Alaska Native (alone)	Native Hawaiian & Other Pacific Islander (alone)	Some other Race (alone)	Two or more Races			Nation-wide Overall SVI Ranking (2020)	Level of Vulnerability
4031.21	Collinsville, Edwardsville, Glen Carbon, Collinsville Township, Edwardsville Township, Collinsville CUSD #10, Edwardsville CUSD #7, Glen Carbon FPD	9,557	6.300	3,881	88.0%	3.4%	1.4%	6.0%	0.1%	0.0%	1.2%	6.0%	7.5%	No	0.3783	Low to Medium
4031.22	Edwardsville, Glen Carbon, Edwardsville Township, Edwardsville CUSD #7, Glen Carbon FPD, Troy FPD	6,108	3.732	2,486	80.7%	13.9%	2.9%	1.0%	0.2%	0.0%	0.5%	1.9%	5.9%	No	0.2797	Low to Medium
4032	Collinsville, Collinsville Township, Collinsville CUSD #10	4,968	1.307	2,335	79.9%	14.9%	0.0%	2.1%	0.0%	0.0%	1.2%	4.0%	25.6%	No	0.6875	Medium to High
4033	Collinsville, Collinsville Township, Collinsville CUSD #10	2,495	0.811	1,436	79.0%	10.3%	0.0%	9.3%	0.0%	0.0%	1.8%	8.8%	13.8%	No	0.5384	Medium to High
4034.01	Collinsville, Collinsville Township, Collinsville CUSD #10	4,295	1.335	1,885	60.2%	30.9%	1.8%	7.3%	0.0%	0.0%	2.5%	4.7%	6.8%	No	0.4765	Low to Medium
4034.03	Collinsville, Collinsville Township, Collinsville CUSD #10	2,687	2.295	1,419	71.1%	20.7%	1.9%	10.5%	4.7%	0.0%	0.6%	5.8%	16.0%	No	0.2182	Low
4034.04	Collinsville, Collinsville Township, Collinsville CUSD #10	2,939	0.932	1,538	73.1%	20.1%	1.0%	4.5%	0.9%	0.0%	0.3%	1.3%	8.7%	No	0.4412	Low to Medium
Madison County		265,859	263,905	715,501	118,715	81.4%	9.4%	1.0%	4.1%	0.3%	0.04%	1.5%	6.3%	---	---	---

Figure I-17
2018-2022 Demographic Data by Census Tract
(Sheet 6 of 7)

Census Tract (2020)	Participating Jurisdictions that Fall Within Census Tract	Population (2018-2022)	Total Area (Sq. Miles) (2020)	Number of Housing Units (2018-2022)	Percent Race								Income % of People whose Income is below the Poverty Line	CEJST Identified as Dis-Advantaged	Social Vulnerability Index	
					White (alone)	Black or African American (alone)	Asian (alone)	Hispanic or Latino (of any race)	American Indian & Alaska Native (alone)	Native Hawaiian & Other Pacific Islander (alone)	Some other Race (alone)	Two or more Races			Nation-wide Overall SVI Ranking (2020)	Level of Vulnerability
4035.02	Collinsville, Collinsville Township, Collinsville CUSD #10	5,327	8.945	2,504	87.2%	2.1%	0.0%	9.5%	0.0%	0.0%	0.4%	9.8%	7.2%	No	0.2012	Low
4035.31	Troy, Troy FPD	7,690	9.435	3,380	94.7%	1.1%	0.4%	3.6%	0.0%	0.0%	2.1%	1.7%	4.0%	No	0.2607	Low to Medium
4035.32	Troy, Troy FPD	5,927	24.874	1,986	97.6%	0.6%	0.1%	2.3%	0.0%	0.4%	0.6%	0.7%	2.9%	No	0.0073	Low
4035.33	Glen Carbon, Maryville, Troy, Collinsville Township, Collinsville CUSD #10, Glen Carbon FPD, Troy FPD	10,799	9.333	4,371	85.8%	6.2%	2.0%	2.4%	0.0%	0.0%	0.0%	6.1%	6.0%	No	0.1646	Low
4035.34	Collinsville, Glen Carbon, Maryville, Pontoon Beach, Collinsville Township, Collinsville CUSD #10, Metro East Sanitary District	4,241	12.336	1,822	88.8%	1.1%	1.3%	9.6%	0.0%	0.0%	3.5%	5.3%	6.1%	No	0.1764	Low
4036.01	Highland	3,828	9.998	1,712	95.6%	0.7%	0.9%	1.9%	0.0%	0.0%	0.0%	2.8%	3.6%	No	0.1418	Low
4036.03	Highland	1,859	2.983	824	85.6%	0.0%	4.7%	2.9%	0.0%	0.0%	0.8%	9.0%	4.6%	No	0.0940	Low
4036.04	Highland	6,467	2.884	3,154	94.8%	0.1%	4.0%	0.4%	0.0%	0.0%	0.0%	1.1%	3.0%	No	0.4402	Low to Medium
4037.01	Marine, Troy, Edwardsville CUSD #7, Glen Carbon FPD, Troy FPD	6,862	71.663	2,408	96.1%	0.0%	0.5%	2.6%	0.0%	0.0%	0.7%	2.7%	2.8%	No	0.1305	Low
Madison County		265,859	263,905	715,501	118,715	81.4%	9.4%	1.0%	4.1%	0.3%	0.04%	1.5%	6.3%	---	---	---

Figure I-17
2018-2022 Demographic Data by Census Tract
(Sheet 7 of 7)

Census Tract (2020)	Participating Jurisdictions that Fall Within Census Tract	Population (2018-2022)	Total Area (Sq. Miles) (2020)	Number of Housing Units (2018-2022)	Percent Race								Income % of People whose Income is below the Poverty Line	CEJST Identified as Dis-Advantaged	Social Vulnerability Index	
					White (alone)	Black or African American (alone)	Asian (alone)	Hispanic or Latino (of any race)	American Indian & Alaska Native (alone)	Native Hawaiian & Other Pacific Islander (alone)	Some other Race (alone)	Two or more Races			Nation-wide Overall SVI Ranking (2020)	Level of Vulnerability
4037.02	Grantfork, St. Jacob	5,868	92.013	2,252	94.7%	0.0%	0.7%	1.1%	0.2%	0.0%	0.1%	4.3%	1.7%	No	0.0174	Low
4038.01	Hamel, Worden, Edwardsville CUSD #7	5,225	70.385	2,063	98.0%	0.6%	0.1%	0.1%	0.0%	0.0%	0.0%	1.3%	3.9%	No	0.0628	Low
4038.02	Alhambra, Grantfork, Livingston, Leef Township, Olive Fire District	4,240	116.993	1,969	93.0%	0.0%	0.1%	0.9%	0.4%	0.0%	0.2%	6.4%	6.4%	No	0.2357	Low
4040	Granite City, Metro East Sanitary District	2,356	1.711	1,406	68.3%	26.4%	0.0%	6.4%	0.2%	0.0%	1.7%	3.4%	29.8%	Yes	0.7520	High
4041	Granite City, Madison, Wood River-Hartford ESD #15, South Roxana FPD, Metro East Sanitary District	2,970	25.509	1,532	91.5%	1.7%	0.0%	5.5%	0.0%	0.0%	2.5%	4.2%	13.2%	No	0.4504	Low to Medium
Madison County		265,859	263,905	715,501	118,715	81.4%	9.4%	1.0%	4.1%	0.3%	0.04%	1.5%	6.3%	---	---	---

Sources: CDC/ATSDR Social Vulnerability Index.
 U.S. Census Bureau, American Community Survey, 5-Year Data Profile.

2.0 PLANNING PROCESS

[Local Mitigation Planning Policy Guide Element A]

The Madison Multi-Jurisdictional All Hazards Mitigation Plan (the Plan) was updated through the Madison County Multi-Jurisdictional All Hazards Mitigation Planning Committee (Planning Committee). The Plan was prepared to comply with the Disaster Mitigation Act of 2000 and incorporates the nine recommended tasks for developing or updating a local hazard mitigation plan as outlined in Federal Emergency Management Agency's (FEMA) *Local Mitigation Planning Handbook*. **Figure PP-1** provides a brief description of the process utilized to prepare this Plan.

The Plan update and development was led at the staff level by Gabrielle Riggs, Emergency Preparedness Planner for the Madison County Emergency Management Agency (EMA) and Frederick Patterson, Madison County EMA Director. AEC, LLC (formerly American Environmental Corp.) an environmental consulting firm with experience in hazard mitigation, risk assessment and public involvement, was employed to guide the County and participating jurisdictions through the planning process.

2.1 JURISDICTION PARTICIPATION REQUIREMENTS

[Local Mitigation Planning Policy Guide Element A1-a, A1-b]

Participation in the planning process, especially by the County and local government representatives, was crucial to the update and development of the Plan. To ensure that all participating jurisdictions took part in the planning process, participation requirements were established. Each participating jurisdiction agreed to satisfy the following requirements in order to be included in the Plan update. All of the participating jurisdictions met the participation requirements.

- Attend at least one Planning Committee meeting.
- Complete a capability assessment identifying existing capabilities and resources (i.e., plans, policies, ordinances studies, reports, maps, etc.) available to accomplish hazard mitigation.
- Identify/update a list of critical infrastructure and facilities.
- Review the risk assessment and provide additional information on events and damages when available.
- Participate in the update of the mitigation goals and project prioritization methodology.
- Provide information on any mitigation actions started and/or completed since the adoption of the previous Plan.
- Identify and submit a list of new mitigation actions, as appropriate.
- Review and comment on the draft Plan update.
- Formally adopt the Plan update.
- Where applicable, incorporate the Plan update into existing planning efforts.
- Participate in the Plan maintenance.

Figure PP-1 Description of Planning Process	
Tasks	Description
Task One: Building the Planning Team	The Planning Committee was reformed with broad representation and specific expertise to assist the County and the Consultant in updating the Plan.
Task Two: Outreach Strategy	Early and ongoing public involvement activities were conducted throughout the Plan's development to ensure the stakeholders and public was given every opportunity to participate and provide input.
Task Three: Risk Assessment	The Consultant identified and profiled the natural and man-made hazards that have impacted the County and conducted vulnerability analyses to evaluate the risk to each participating jurisdiction.
Task Four: Capability Assessment	Participating jurisdictions have a unique set of capabilities and resources available to accomplish hazard mitigation. Capabilities that include planning and regulatory, administrative and technical, financial, and education and outreach were identified and cataloged to determine the existing capabilities of each participant related to hazard and loss reduction/prevention.
Task Five: Changes in Conditions	Those jurisdictions who participated in the previous Plan were asked to identify any changes in development and priorities experienced since the previous Plan was adopted. They were also asked to identify progress in local mitigation efforts by identifying mitigation actions that had been started and/or completed since the previous Plan was completed. The Consultant then assisted the previous participants in characterizing how these changes in development and progress altered the vulnerability of the participants.
Task Six: Mitigation Strategy	After reviewing existing plans and local mitigation efforts, and completing the risk assessment, the Consultant assisted the Planning Committee in updating the goals and objectives for the Plan. The participating jurisdictions then were asked to identify any new mitigation actions based on the results of the risk assessment. The compiled lists of new mitigation actions were then reviewed to assure the appropriateness and suitability of each action. Those actions that were not deemed appropriate and/or suitable were either reworded or eliminated. The new and existing mitigation actions retained were then analyzed, categorized, and prioritized.
Task Seven: Plan Maintenance and Update	The method and schedule for monitoring, evaluating, and updating the Plan was reviewed and discussed with the participating jurisdictions. The Plan update will be monitored and evaluated by a Plan Maintenance Subcommittee on an annual basis and updated again in five years.
Task Eight: Review and Adopt the Plan	The draft Plan update summarized the results of Tasks Two through Seven. The Plan was reviewed by the participants and a public forum was held to give the public an additional opportunity to provide input. Comments received were incorporated into the draft Plan update and submitted to the Illinois Emergency Management Agency and Office of Homeland Security (IEMA-OHS) and FEMA for review and approval. Comments received from IEMA-OHS and FEMA were incorporated into the final Plan update. The final Plan update was then submitted to the County and participating jurisdictions for adoption.

2.2 MITIGATION PLANNING COMMITTEE

[Local Mitigation Planning Policy Guide Element A1-a, A1-b, A2-a]

As previously mentioned, at the start of the planning process, the Madison County Multi-Jurisdictional All Hazards Mitigation Planning Committee was reformed to update the hazard mitigation plan. The Committee included representatives from each participating jurisdiction, including local and regional departments involved in mitigation activities [i.e., public works, emergency management, GIS, floodplain administration (if applicable)] and departments and agencies that have authority to regulate development (i.e., zoning, planning, community and economic development, building officials, planning commissions, other elected officials). In addition, the Committee also included representatives from agriculture, business and industry, economic development, education, emergency services, healthcare, regional planning, social services, and utilities.

Figure PP-2 details the entities represented on the Planning Committee and the individuals who attended on their behalf. The Planning Committee was chaired by the Madison County EMA. Additional technical expertise was provided by the staff at the Illinois Emergency Management Agency and the Illinois Department of Natural Resources Office of Water Resources.

Figure PP-2 Madison County Planning Committee Member Attendance Record (Sheet 1 of 3)						
Representing	Name	Title	3/26/2024	7/30/2024	1/14/2025	6/25/2025
Alhambra, Village of	Take, Duane	Superintendent	X	X	X	X
Alhambra Community Fire Protection District	Take, Duane	Trustee	X	X	X	X
Alton, City of	Fischer, Matt	Deputy Fire Chief	X	X	X	X
Alton, City of	Jemison, Jesse, Jr.	Fire Chief	X		X	
Alton, City of	Parsons, Mike	Public Works Director		X		
Alton CUSD #11	McClintock, David	Facility Director	X	X	X	X
Alton Memorial Hospital	Rogers, Aaron	Manager of EHS/EP		X		
American Environmental Corporation / AEC, LLC	Bostwick-Campbell, Andrea	EMS Manager		X		X
American Environmental Corporation / AEC, LLC	Runkle, Ken	Risk Assessor	X		X	
American Environmental Corporation / AEC, LLC	Smith, Callie	Environmental Analyst	X	X	X	
American Red Cross	Davis, Tina	Disaster Program Manager	X			
American Red Cross	Steele, Chamar	Disaster Program Specialist	X			
America's Central Port	Powless, Roger	Contract Administrator			X	
America's Central Port	Sholl, Phil	Senior Project Manager	X	X		X
Anderson Hospital	Brandmeyer, Eric	Director of EMS & Emergency Preparedness	X	X	X	
Bethalto CUSD #8	Blackard, Tricia	Designated Representative			X	X
Collinsville, City of	Bailot, John	Fire Chief / Emergency Management Director	X	X	X	
Collinsville, City of	Reis, Kevin	Deputy Fire Chief				X
Collinsville CUSD #10	Foley, Mark	Security	X		X	
Collinsville Township	Trucano-Hoelscher, Kathy	Highway Commissioner	X	X	X	X
East Alton, Village of	Quigley, Tim	Fire Chief	X	X	X	
Edwardsville, City of	Morgan, Robert	Deputy Fire Chief / Fire Marshal		X	X	X
Edwardsville, City of	Whiteford, James	Fire Chief	X			
Edwardsville CUSD #7	Blackard, Tricia	Designated Representative			X	X
Edwardsville CUSD #7	Ferry, Josh	Director of Building and Grounds			X	X
Edwardsville CUSD #7	Stuart, Steve	Designated Representative			X	

**Figure PP-2
Madison County Planning Committee Member Attendance Record
(Sheet 2 of 3)**

Representing	Name	Title	3/26/2024	7/30/2024	1/14/2025	6/25/2025
Edwardsville Township	Farrell, Carrie	Highway Administrator	X		X	
Edwardsville Township	Picarella, Danny	Highway Commissioner		X	X	X
Fort Russell Township	Shaw, Todd	Highway Commissioner	X			
Fosterburg Fire Protection District	Koeller, Nick	Captain	X			
Glen Carbon, Village of	Blind, Jeff	Police Sergeant			X	
Glen Carbon, Village of	Miller, Ned	Lieutenant		X		X
Glen Carbon, Village of	Schroetter, Jordan	Police Operations Assistant	X			
Glen Carbon, Village of	Slemer, Scott	Public Works Director	X			
Glen Carbon Fire Protection District	Whitaker, Jason	Fire Chief	X	X	X	
Godfrey, Village of	Beran, Rich	Engineer	X	X	X	X
Godfrey, Village of	Uhl, John	Engineer Technician	X	X	X	X
Granite City, City of	Moore, Rich	Fire Chief / EMA Coordinator	X			
Granite City, City of	Richey, Todd	EMA Coordinator			X	
Grantfork, Village of	Brendel, Steven	Mayor	X		X	
Grantfork, Village of	Rottmann, Justin	Police Chief		X		X
Hamel, Village of	Grimm, Don	Public Works Director	X		X	
Hamel Community Fire Protection District	Grimm, Don	Volunteer	X			
Highland, City of	Straub, Chris	Fire Chief	X	X	X	X
Highland CUSD #5	Sutton, Mike	Superintendent	X			
HWRT Oil Company LLC	Lambie, David	Terminal Manager	X			
IEMA - OHS	Runyan, Jared	Disaster Services Planner			X	
Juneau Associates, Inc.	Juneau, Joe	Vice President	X			
Kinder Morgan	Coskey, Blake	Environmental Health & Safety Specialist	X			
Kinder Morgan	Tonsor, Brad	Terminal Manager	X			
Leef Township	Rutz, Kevin	Road Commissioner	X	X		
Lewis & Clark Community College	Raish, Brad	Director, Public Safety		X		
Livingston, Village of	Scarsdale, Austin	Public Safety Committee Member		X		
Madison County - Building & Zoning	Hohlt, Marc	Stormwater Coordinator		X	X	X
Madison County - EMA	Koranyi, George	Logistics Coordinator			X	
Madison County - EMA	Patterson, Fred	Director	X	X	X	X
Madison County - EMA	Riggs, Gabrielle	Emergency Preparedness Planner	X	X	X	X
Madison County - GIS	Loraine, Clayton	Manager	X			
Madison County - Health Department	Boester, Erin	Director, Health Protection Division	X			
Madison County - Health Department	Milton, Michele	Emergency Preparedness Director		X	X	
Madison County - Highway Department	Larson, Nathan	Township Engineer		X		
Madison County - Highway Department	Schuette, Greg	Assistant Engineer	X	X		
Madison County - Highway Department	Walden, Adam	Engineer	X	X	X	
Madison County Farm Bureau	Koeller, Nick	Board Member	X			
Madison County Regional Office of Education 41	Blackard, Tricia	Regional Assistant Superintendent	X		X	X
Madison County Regional Office of Education 41	Willis, Kimberly	Office Manager	X	X	X	
Madison, City of	Juneau, Chad	Engineer		X	X	
Marine, Village of	Alford, Jeff	Public Works Department				X
Marine, Village of	Moore, Jason	Public Works Department		X	X	
Marquette Catholic High School	Harmon, Timothy	Principal	X			
Marquette Catholic High School	Marth, Blake	Dean of Students		X	X	
Maryville, Village of	Dankenbring, Doug	Fire Chief	X	X	X	
Maryville, Village of	Flannery, Tonya	Administrator			X	
Maryville, Village of	Fulton, Shane	Building & Zoning Administrator	X	X	X	X

**Figure PP-2
Madison County Planning Committee Member Attendance Record
(Sheet 3 of 3)**

Representing	Name	Title	3/26/2024	7/30/2024	1/14/2025	6/25/2025
Metro East Sanitary District	Nordstrom, Mike	Executive Director	X			
Metro East Sanitary District	Perjak, Michael	Pollution Operator			X	
Metro East Sanitary District	Roehr, Justin	Superintendent / Director of Operations	X	X		
Nameoki Township	Juneau, Chad	Juneau Associates			X	
New Douglas, Village of	Kraigher, Pam	Trustee		X		
New Douglas Community Fire Protection District	Kraigher, Pam	Representative		X		
Olive Fire District	Hendricks, Dale	Assistant Chief			X	
Olive Fire District	Scarsdale, Austin	Captain		X		
OSF Saint Anthony's Health Center	Stanford, Dennis	EMS Coordinator	X	X	X	
Pontoon Beach, Village of	Juneau, Chad	Engineer		X	X	
Roxana, Village of	Newberry, Bob	Fire Chief	X	X		
Roxana CUSD #1	Dyer, Tim	Director of Building and Grounds	X	X		
Saline Township	Rutz, Bryan	Highway Commissioner	X			
Salvation Army	Grey, Sean	Captain	X		X	
Salvation Army	Thiel, Adam	Youth Director	X		X	
South Roxana Fire Protection District	Dyer, Tim	Deputy Chief / Chief	X	X		
South Roxana Fire Protection District	Sanders, Jacob	Captain		X		
Southern Illinois University Edwardsville	Goodwin, David	Chief of Police	X		X	X
Southern Illinois University Edwardsville	Lega, Paul	Manager of Environmental Health & Safety	X	X	X	X
Southern Illinois University Edwardsville	Liedeman, Justin	Deputy Chief of Police		X		
St. Jacob, Village of	Schiefer, Richard	Mayor	X	X	X	X
St. Jacob, Village of	Timmons, Nick	Public Works Superintendent		X	X	
St. Mary's Catholic School	Rivera, Mary	Principal	X		X	
St. Mary's Catholic School	Root, Ronald	Maintenance Manager		X		
Troy, City of	Evans, Andy	Assistant Police Chief			X	
Troy, City of	Hancock, Rob	Public Works Director	X	X	X	X
Troy, City of	Keeven, Jay	Administrator	X			
Troy, City of	Lipe, Daniel	Police Lieutenant			X	X
Troy, City of	Wasser, Chris	Police Chief			X	
Troy Fire Protection District	Davis, Darren	Chief		X	X	X
Troy Fire Protection District	May, George	Fire Chief	X			
Venice, City of	Juneau, Chad	Engineer		X	X	
Venice, City of	Juneau, Joe	Engineer	X			
William BeDell ARC	Rollins, Chad	Executive Director	X			
Williamson, Village of	Watkins, Donald	Police Chief	X			
Wood River Drainage & Levee District	Williams, Kevin	Executive Director	X	X	X	X
Wood River, City of	Kamp, Nate	Deputy Fire Chief	X	X	X	
Wood River, City of	Stahlhut, Wade	Fire Chief	X	X		X
Wood River Township	Cheatham, Andy	Employee	X			
Wood River Township	Gernigin, Mark	Road Commissioner	X			
Wood River Township	Henkhaus, Matt	Employee	X	X		
Wood River Township	McDonald, Rocky	Foreman	X	X		
Wood River-Hartford ESD #15	Amistadi, Duane	Building & Grounds Supervisor		X		
Worden, Village of	Blotevogel, Walter	Engineer	X			X
Worden, Village of	Grimm, Don	Public Works Director			X	
Worden, Village of	Wheat, Barbara	Police Chief	X	X		
Worden Fire Department	Blotevogel, Walter	Coordinator	X			X

Mission Statement

Over the course of the first two meetings, the Planning Committee reviewed and discussed the mission statement which describes their objectives for the Plan update. The following mission statement was approved by the Committee.

“The mission of the Madison County Multi-Jurisdictional All Hazards Mitigation Planning Committee is to increase community resilience and facilitate the expeditious recovery of the region by updating the County’s mitigation plan that:

- 1) documents the risks associated with the natural and man-made hazards that impact the County and*
- 2) identifies projects and activities that reduce the negative impacts of the identified hazards on people, structures, facilities, and systems that provide support to the County, its residents and economy, as well as community lifelines that enable the continuous operation of critical government and business functions.”*

Planning Committee Meetings

The Planning Committee met five times between March 2024 and June 2025. **Figure PP-2** identifies the representatives by jurisdiction present at each meeting. **Appendices A** and **B** contain copies of the attendance sheets and meeting minutes for each meeting. The purpose of each meeting, including the topics discussed, is provided below.

First Planning Committee Meeting – March 26, 2024

The purpose of this meeting was to explain the planning process to the Committee members and give them a brief overview of the planning process including what mitigation is, what a hazard mitigation plan is and why the Plans need to be updated.

Information needed from each participant was discussed and representatives for each county and the participating jurisdictions were asked to complete the forms entitled “Capability Assessment Worksheet,” “Critical Facilities & Infrastructure,” “Identification of Severe Weather Shelters,” “Drinking Water Supply Worksheet,” and “Roadway Overtopping Survey”. Those that participated in the previous Plan were also asked to complete the form entitled “Changes in Land Use and Development”. All the forms were requested to be returned by the next meeting.

Committee members were then asked to identify any recent or historic natural hazard events that have impacted the counties and participants. A “Hazard Events Questionnaire” was distributed to solicit information on hazard events. Community participation was also discussed. The County and participating jurisdictions were asked to make information available on the planning process at their offices and in their communities. A “Citizen Questionnaire,” was also distributed electronically to Committee members prior to the meeting for distribution to their constituents to gauge the public’s perception about the hazards that impact the County.

The Committee members then discussed vulnerable community assets and completed the form entitled “Assets Vulnerability Survey” which will be used in the vulnerability analyses. Next, mitigation actions were defined. Committee members were asked to identify any mitigation projects and activities their jurisdictions had started and/or completed since the previous Plan was completed in 2020. Representatives for the County and the previous participating jurisdictions were asked to complete the form entitled “Existing Mitigation Project/Activity Status” and return them

at the next meeting. Finally, drafts of the updated mission statement and mitigation goals were presented for review.

Second Planning Committee Meeting – July 30, 2024

At the second Committee meeting portions of the updated natural and man-made hazard risk assessment sections were presented for review. Following the review of the risk assessment, the Committee members participated in an exercise to calculate the Risk Priority Index (RPI) for each participant. The RPI can assist jurisdictions in determining which hazards present the highest risks and therefore which ones to focus on when formulating mitigation projects and activities. The Committee then discussed the updated mission statement and mitigation goals. The updated mission statement and mitigation goals were then reviewed, discussed, and finalized with no changes. Next, an explanation of what a mitigation action prioritization methodology is and how it fits into the Mitigation Strategy was provided. The Committee reviewed the updated mitigation project prioritization methodology and approved it with no changes.

The concept of community lifelines was also discussed. Community Lifelines are the most fundamental services in the community that, when stabilized, enable all aspects of society to function. These fundamental services enable the continuous operation of critical government and business functions essential to human health and safety or economic security. While the concept was developed to support emergency response and planning, FEMA has begun applying it to all phases of emergency management, including mitigation. Community lifelines will be included in most project descriptions to create a clear connection to the concept.

Finally, ideas for new potential mitigation projects and activities were presented. Representatives for the County and the participating jurisdictions were asked to complete the form entitled “New Hazard Mitigation Projects”. Participants were encouraged to provide their mitigation project lists prior to the 3rd meeting.

Third Planning Committee Meeting – January 14, 2025

The purpose of the third Committee meeting was to discuss the vulnerability analysis for select natural hazards and the preliminary results of the RPI exercise. A discussion on how the mitigation projects and activities identified by the participating jurisdictions will be presented in the Plan update was provided.

The public forum and adoption process were then discussed, and a date for the public forum was set. Finally, the plan maintenance and update requirements were discussed. The Plan update will be monitored and evaluated on an annual basis by a Plan Maintenance Subcommittee which will be made up of the participating jurisdictions, and key members of the Committee. The Plan must be reviewed, revised, and resubmitted to IEMA-OHS and FEMA at least once every five years.

Following the third Committee meeting, drafts of the jurisdiction-specific mitigation actions tables which identified and prioritized the new and existing mitigation projects and activities provided by the participants were sent electronically to Committee members for their review and comment. Members were given the opportunity to provide revisions and add additional projects and activities to their tables.

Fourth Planning Committee Meeting – June 25, 2025

At this Planning Committee meeting the public was provided an opportunity to ask questions and provide comments on the draft Plan update.

2.3 PUBLIC OUTREACH STRATEGY

[Local Mitigation Planning Policy Guide Element A3-a]

To engage the public in the planning process, a comprehensive outreach strategy was developed. The strategy was structured to engage the public in a two-way dialogue, encouraging the exchange of information throughout the planning process. A mix of public involvement techniques and practices were utilized to:

- disseminate information;
- identify additional useful information about natural hazard occurrences and impacts;
- assure that interested residents would be involved throughout the Plan update's development; and
- cultivate ownership of the Plan update, thus increasing the likelihood of adoption by the participating jurisdictions.

The dialogue with the public followed proven risk communication principles to help assure clarity and avoid overstating or understating the impacts posed by the natural hazards identified in the Plan update. The following public involvement techniques and practices were applied to give the public an opportunity to access information and participate in the dialogue at their level of interest and availability.

Citizen Questionnaire

A citizen questionnaire was developed to gather facts and gauge public perceptions about natural hazards that affect Madison County. The questionnaire was distributed electronically to the Committee members who were encouraged to make it available to their residents and the general public. A copy of the questionnaire as well as any social media posts related to the questionnaire are contained in **Appendix C**.

A total of 226 questionnaires were completed and returned to the Committee. Questionnaires were completed by residents in each participating jurisdiction, with the exception of Pontoon Beach. These responses provide useful information to decision makers as they determine how best to disseminate information on natural hazards and safeguard the public. Additionally, these responses identify the types of projects and activities the public is most likely to support. The following provides a summary of the results.

- ❖ Respondents felt that severe summer storms were the most frequently encountered natural hazard in Madison County followed by severe winter storms, excessive heat, and extreme cold. While severe summer storms are encountered most frequently in Madison County, compiled weather records indicate that excessive heat followed by floods occur more frequently than severe winter storms and extreme cold.

- ❖ The most effective means of communication identified by respondents to disseminate information about natural hazards were social media and the Internet, followed by mailings and television. Radio and fact sheets/brochures disseminated via fire departments/law enforcement also received some support among respondents.
- ❖ In terms of the most needed mitigation projects and activities, the following categories received the strongest support:
 - maintain power during storms by burying power lines, trimming trees and/or purchasing backup generators (82%);
 - flood or drainage protection (57%).
 - retrofit critical infrastructure to reduce potential damages (53%)
 - maintain roadway passage during snowstorms and heavy rains (52%)
 - install/maintain sirens and other alert systems (51%); and
 - identify residents with special needs in order to provide assistance during a natural hazard event (46%).

FAQ Fact Sheet

A “Frequently Asked Questions” fact sheet was disseminated to help explain what an all hazards mitigation plan is and briefly describe the planning process. The fact sheet was made available to each participating jurisdiction to provide to their constituents. A copy of the fact sheet is contained in **Appendix D**.

News Releases/Articles & Social Media Posts

News releases were prepared and posted to the Madison County EMA’s Facebook page prior to each Committee meeting. The releases announced the purpose of the meetings and how the public could become involved in the Plan update’s development. **Appendix E** contains copies of the releases, Facebook posts, and any news articles published.

Planning Committee Meetings

All of the meetings conducted by the Planning Committee were open to the public and publicized in advance to encourage public participation. At the end of each meeting, time was set aside for public comment. In addition, Committee members were available throughout the planning process to talk with residents and local government officials and were responsible for relaying any concerns and questions voiced by the public to the Committee. Interested individuals from the public who attended the Planning Committee meetings were provided handout materials and encouraged though not required to provide their names and/or sign the attendance sheets. Copies of the attendance sheets are included in **Appendix A**.

Public Forum

The final meeting of the Committee, held on June 25, 2025, was conducted as an open-house public forum. The open-house format was chosen for this forum instead of a hearing to provide greater flexibility for residents who wished to participate. Residents were able to come and go at any time during the forum, reducing conflicts with business, family, and social obligations.

In conjunction with the public forum, the draft Plan update was made available for review and comment on the Madison County website. A two-page handout summarizing the planning process and a link to a comment survey that could be used to provide feedback on the draft Plan update were also posted on the website.

At the forum, residents could review a draft of the Plan update; meet with representatives from the County, the participating jurisdictions, and the Consultant; ask any questions; and provide verbal and/or written comments on the draft Plan update. Individuals attending the public forum were provided with a two-page handout summarizing the planning process and a comment sheet that could be used to provide feedback on the draft Plan update. **Appendices F and G** contain copies of these materials.

Public Comment Period

After the public forum, the updated draft Plan was made available for public review and comment through July 10, 2025 at the Madison County EMA Office and on the County's website. A two-page handout summarizing the planning process and a link to a comment survey that could be used to provide feedback on the draft Plan update were also posted on the website. **Appendix G** contains a copy of the online comment survey. Residents were encouraged to submit their comments electronically, by mail or through representatives of the Committee.

Results of Outreach Strategy

The public involvement strategy implemented during the planning process created a dialogue among participants and interested residents, which resulted in many benefits, a few of which are highlighted below.

- *Acquired additional information about natural hazards.* Verifiable hazard event and damage information was obtained from participants that presents a clearer assessment of the extent and magnitude of natural hazards that have impacted each County. This information included details about thunderstorms with damaging winds, hail, lightning strikes, flooding, extreme cold, tornadoes, landslides, mine subsidence, and severe winter storms not available from state and federal databases.
- *Increased awareness of the impacts associated with natural hazard events within the County.* Understanding how mitigation actions can reduce risk to life and property helped generate **over 190 new mitigation projects and activities** at the local level that had not been previously identified in any other planning process.

2.4 PARTICIPATION OPPORTUNITIES FOR INTERESTED PARTIES

[Local Mitigation Planning Policy Guide Element A2-a]

Businesses, schools, not-for-profit organizations, neighboring counties, and other interested parties were provided multiple opportunities to participate in the planning process. Wide-reaching applications were combined with direct, person-to-person contacts to identify anyone who might have an interest or possess information which could be helpful in updating the Plan.

Agricultural Community

Representatives from the agricultural community were invited to serve on the Committee through the Madison County Farm Bureau. The Farm Bureau served as a technical partner on the

Committee, receiving all electronic communications including surveys, meeting announcements, and meeting handouts to provide its members.

Business / Industry & Economic Development / Regional Planning

Input was sought from the business/industry community and economic development/regional planning agencies. Representatives from Amazon, Chamber of Commerce of Southwestern Madison County, East-West Gateway Council of Government, HWRT Oil Company, Kinder Morgan, Phillips 66 Wood River Refinery, RiverBend Growth Association, Terminal Railroad Association of St. Louis, and Wieland Rolled Products North America were invited to serve on the Committee. They all received electronic communications including surveys, meeting announcements, and meeting handouts and provided input into the planning process.

Education

The school districts and colleges/universities serving the County were invited to serve on the Planning Committee and provide input into the planning process. Alton Community Unit School District (CUSD) #11, Bethalto CUSD #8, Collinsville CUSD #10, Edwardsville CUSD #7, Madison County Regional Office of Education (ROE) #41, Marquette Catholic High School, Roxana CUSD #1, Southern Illinois University Edwardsville (SIUE), St. Mary's Catholic School, and Wood River-Hartford Elementary School District #15 served on the Planning Committee and chose to be included as participating jurisdictions in the Plan update.

Healthcare / Social Service Agencies

Input was sought from the healthcare community and social service agencies. Representatives from Alton Memorial Hospital, American Red Cross, Anderson Hospital, BJC HealthCare, Madison County Community Development, Madison County Health Department, Madison County Urban League, NAACP Edwardsville Branch, OSF St. Anthony's Health Center, Salvation Army, and Willaim DeBell ARC were invited to serve on the Committee. They all received electronic communications including surveys, meeting announcements, and meeting handouts and provided input into the planning process. Anderson Hospital, Madison County Health Department, and OSF St. Anthony's Health Center chose to be included as participating jurisdiction in the Plan update.

Emergency Services

The fire departments/fire protection districts in Madison County were contacted and invited to participate in the Plan update. The Alhambra Community Fire Protection District (FPD), Alton Fire Department (FD), Collinsville FD, East Alton FD, Edwardsville FD, Fosterburg FPD, Glen Carbon FPD, Granite City FD, Hamel Community FPD, Highland FD, Maryville FD, New Douglas FPD, Olive Fire District, Roxana FD, South Roxana FPD, Troy FPD, Wood River FD, and Worden FD served on the Committee and provided input into the planning process.

While the fire departments for Alton, Collinsville, East Alton, Edwardsville, Granite City, Highland, Maryville, Roxana, and Wood River are considered subdivisions of their respective municipalities and are not listed as separate participants, Glen Carbon FPD, Olive Fire District, South Roxana FPD, and Troy FPD chose to be included as a participating jurisdiction in the Plan update.

Utilities

Ameren Illinois and Southwestern Madison Electric Cooperative were invited to serve on the Committee. Both served as a technical partner, receiving all electronic communications including surveys, meeting announcements, and meeting handouts. Ameren provided information on electrical outages experienced in Madison County.

Other Government Entities

The townships within Madison County were invited to participate in the Plan update. The townships of Collinsville, Edwardsville, Fort Russell, Leef, Nameoki, Saline, and Wood River served on the Committee and provided input into the planning process. Collinsville Township, Edwardsville Township, Leef Township, and Nameoki Township chose to be included as participating jurisdictions in the Plan update.

Neighboring Counties

A memo was sent to EMA/ESDA coordinators in the neighboring counties inviting them to participate in the mitigation planning process. The counties contacted included Bond, Clinton, Jersey, Macoupin, Montgomery, and St. Clair in Illinois and St. Charles and St. Louis in Missouri. **Appendix H** contains a copy of the invitation memo.

3.0 RISK ASSESSMENT

[Local Mitigation Planning Policy Guide Element B]

Risk assessment is the process of evaluating the vulnerability of assets in order to estimate the potential loss of life, personal injury, economic loss, and property damage resulting from natural and man-made hazards. Assets are determined by each participant and can include people; structures (i.e., critical facilities, lifelines, and infrastructure); systems (i.e., networks such as electrical and communications, etc.); and natural, historic, and cultural resources). This section summarizes the results of the risk assessment conducted on the natural and man-made hazards in Madison County. The information contained in this section was gathered by evaluating local, state, and federal records from the last 20 to 70 years. In order to identify/solicit information on recent and historic hazard events at a local level, Planning Committee members were asked to complete a “Hazard Events Questionnaire”. The information gathered was incorporated into the risk assessment.

This risk assessment identifies the natural and man-made hazards deemed most important to the Planning Committee and includes a profile of each hazard that identifies past occurrences, the severity or extent of the events, and the likelihood of future occurrences. It also provides a vulnerability analysis that identifies the impacts to public health and property, evaluates the assets of the participating jurisdictions and estimates the potential impacts each natural hazard would have on the evaluated assets. Where applicable, the differences in vulnerability between participating jurisdictions are described.

The subsequent sections provide detailed information on each of the selected natural hazards. The sections are color coded and ordered by the frequency with which the natural hazard has previously occurred within the County. Each natural hazard section contains three subsections:

- **Hazard Identification** profiles each hazard selected for inclusion in the Plan and identifies any alerts that may be issued prior and during an event;
- **Hazard Profile** identifies past occurrences; details the severity or extent of each event (if known); identifies the locations potentially affected; and estimates the likelihood of future occurrences (Local Mitigation Planning Policy Guide Element B1-b through B1-e); and
- **Hazard Vulnerability** identifies impacts on public health and property (if known) and estimates the potential impacts on public health and safety as well as buildings, infrastructure, and critical facilities (Local Mitigation Planning Policy Guide Element B1-f, B2-a through B2-c).

Hazard Selection

[Local Mitigation Planning Policy Guide Element B1-a]

One of the responsibilities of the Committee was to review the hazards detailed in the previous Plan and decide if additional hazards should be included in the Plan update. Over the course of the first two meetings, the Committee members discussed their experiences with natural and man-made hazard events and reviewed information on various hazards. After discussing the information provided, the Committee chose not to add any additional hazards to this Plan update. The following identifies the hazards included in this update:

- ❖ severe storms (thunderstorms, hail, lightning & heavy rain)
- ❖ excessive heat
- ❖ floods (riverine & flash)
- ❖ severe winter storms (snow & ice)
- ❖ extreme cold
- ❖ tornadoes
- ❖ drought
- ❖ earthquakes
- ❖ mine subsidence
- ❖ landslides
- ❖ levee failures
- ❖ dam failures
- ❖ man-made hazards including:
 - hazardous substances (generation, transportation & storage/handling)
 - waste disposal
 - hazardous materials incidents
 - waste remediation
 - terrorism

Risk Priority Index

After reviewing the preliminary results of the risk assessment at the second meeting, Committee members and the participating jurisdictions were asked to complete a Risk Priority Index (RPI) exercise for the hazards that have the potential to impact the County and participating jurisdictions. The RPI provides quantitative guidance for ranking the hazards and offers participants another tool to determine which hazards present the highest risk and therefore which ones to focus on when formulating mitigation actions.

Each hazard was scored on three categories: 1) frequency, 2) impacts on life and health, and 3) impacts on property and infrastructure. A scoring system was developed that assigned specific factors to point values ranging from 1 to 4 for each category. For those hazards that were not applicable to a particular jurisdiction, a value of “NA” was assigned to each category. The higher the point value, the greater the risk associated with that hazard. **Figure R-1**, located at the end of this section, identifies the factors and values/point values associated with each category. Participants were asked to score the selected hazards based on the perspective of the entity they represented on the Committee.

The Consultant took the point values assigned to each category and averaged the remaining results and came up with an overall value for each category. The values for each category were then added together to calculate an RPI score for each hazard. A ranking was then assigned to each hazard based on the RPI score. **Figure R-2**, located at the end of this section, provides the hazard rankings for the participating jurisdictions. RPI scores were not generated for the Center for Educational Opportunities (Madison County ROE #41).

FEMA’s National Risk Index

[Local Mitigation Planning Policy Guide Element B1-e]

The National Risk Index (NRI) is an online mapping and data-based interface that helps illustrate a community’s risk to 18 identified natural hazards. The natural hazards identified by the NRI and included in this Plan are cold wave, drought, earthquake, hail, heat wave, ice storm, lightning, riverine flooding, strong wind, tornado, and winter weather. The NRI leverages available source data for natural hazard and community risk factors, such as social vulnerability and community

resilience, to develop a baseline relative risk measurement for each county and census tract in the U.S. The goal is to help individuals better understand the natural hazard risk of their communities.

In the NRI, risk is defined as the potential for negative impacts as a result of a natural hazard. The risk equation behind the NRI includes three components: a natural hazards risk component (expected annual loss), a consequence enhancing component (social vulnerability), and a consequence reduction component (community resilience). Social vulnerability represents the susceptibility of social groups to the adverse impacts of natural hazards. Community resilience represents the ability of a community to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions.

The scores and ratings generated by the NRI describe a county's or census tract's relative position among all other U.S. counties and census tracts for a given component. Dataset Update Version 1.19.0 released March 2023 was used in this analysis. Scores can range from 0 (the lowest possible value) to 100 (the highest possible value). For every score there is assigned one of five qualitative ratings: "Very Low", "Relatively Low", "Relatively Moderate", "Relatively High", and "Very High." Because all ratings are relative, there are no specific numeric values that determine the rating.

In order to provide the participating jurisdictions and public with additional information on the natural hazards included in the Plan, **Figure R-3** located at the end of this section presents the overall NRI scores and ratings for each census tract as well as for the County. 2020 census tract information was used in this version of the NRI. In 2020, there were 63 census tracts in Madison County and four census tracts in St. Clair County that include the cities of Madison and Collinsville. Seven of these census tracts have a Risk Index rating of "Relatively High", 34 are "Relatively Moderate", 22 are "Relatively Low", and four are "Very Low". Eight census tracts have a Social Vulnerability rating of "Very High", 11 are "Relatively High", 14 are "Relatively Moderate", 16 are "Relatively Low", and 18 are "Very Low".

Figure R-4, located at the end of this section, provides the NRI scores and ratings by hazard type for each census tract as well as the County. Hazard ratings of "Relatively High" and "Very High" are highlighted in yellow by census tract. The hazards with the highest relative ratings include excessive heat, tornadoes, and ice storms.

Critical Facilities & Infrastructure

[Local Mitigation Planning Policy Guide Element B2-b]

Critical facilities and infrastructure include structures, lifelines, systems, networks, and institutions that are critical for life, safety, and economic viability and necessary for a community's response to and recovery from emergencies. The loss of function of any of these assets can intensify the severity of the impacts and speed of recovery associated with a hazard event. Critical facilities and infrastructure may include, but are not limited to, the following:

- ❖ **Essential Facilities:** Facilities essential to the health and welfare of the whole population including hospitals and other medical facilities, police and fire stations, emergency operations centers, evacuation shelters, and schools.

- ❖ **Government Facilities:** Facilities associated with the continued operations of government services such as courthouses, city/village halls, township buildings, and highway/maintenance centers.
- ❖ **Infrastructure Systems:** Infrastructure associated with drinking water, wastewater, transportation (roads, railways, waterways), communication systems, electric power, natural gas and oil.
- ❖ **Housing Facilities:** Facilities that serve populations that have access and function needs such as nursing homes, skilled and memory care facilities, residential group homes, and day care centers.
- ❖ **High Potential Loss Facilities:** Facilities that would have an impact or high loss associated with them if their functionality is compromised such as nuclear power plants, dams, levees, military installations and facilities housing industrial or hazardous materials.
- ❖ **Gathering Places:** Facilities such as parks, libraries, community centers, and churches.

As part of the planning process each participating jurisdiction reviewed and/or completed a “Critical Facilities & Infrastructure” survey to identify the critical facilities and infrastructure located within their jurisdiction, both publicly and privately-owned. **Figure R-5**, located at the end of this section, identifies the number of critical facilities and infrastructure located in each participating jurisdiction for select categories. Identifying these assets makes local leaders more aware of the critical facilities and infrastructure located within their jurisdictions and helps them make informed choices on how to better protect these key resources.

While considered a “local government entity” for planning purposes, America’s Central Port, Southern Illinois University Edwardsville (SIUE), the nine school districts, the four fire protection districts, the two healthcare facilities, and the two drainage and levee districts do not have an extensive inventory of critical facilities/infrastructure assets to consider when conducting the risk assessment.

The critical facilities/infrastructure assets for America’s Central Port, SIUE, Alton CUSD #11, Collinsville CUSD #10, Edwardsville CUSD #7, Center for Educational Opportunities (Madison County ROE #41), Marquette Catholic High School, Roxana CUSD #1, St. Mary’s Catholic School, Glen Carbon FPD, Troy FPD, Andeson Hospital, OSF St. Anthony’s Health Center, and Wood River Drainage & Levee District are all located within or immediately adjacent to a participating municipality and are a subset of these municipalities’ critical facilities. As such their risk is considered to be the same or similar to the risk experienced by the municipalities for those hazards that either impact the entire planning area or can occur at any location within the planning area (i.e., severe storms, severe winter storms, etc.). For those hazards where the risk to these non-municipal participants varies from the risk facing the municipalities, a separate narrative assessment will be provided under the appropriate hazard’s vulnerability subsection.

The critical facilities/infrastructure assets for Wood River-Hartford ESD #15 are located in Wood River and Hartford, Olive Fire District’s critical facilities/infrastructure assets are located in Livingston and Williamson, while Metro East Sanitary District’s critical facilities/infrastructure assets are located in Venice in Madison County and Cahokia Heights and East St. Louis in St. Clair County. The risk to the critical facilities in Hartford, Williamson, Cahokia Heights, and East St. Louis is the same or similar to the risk experienced by Wood River, Livingston, and Venice for

those for those hazards that either impact the entire planning area or can occur at any location within the planning area (i.e., severe storms, severe winter storms, etc.). For those hazards where the risk to the districts' critical facilities varies from the risk facing the planning area (i.e., the County), a separate narrative assessment will be provided under the appropriate hazard's vulnerability subsection.

The critical facilities/infrastructure assets for Bethalto CUSD #8, and South Roxana FPD are located in the municipalities of Bethalto and South Roxana. The risk for these municipalities is considered to be the same or similar to the risk experienced by the participating municipalities and County for those hazards that either impact the entire planning area or can occur at any location within the planning area (i.e., severe storms, severe winter storms, etc.) For those hazards where the risk to the districts' critical facilities varies from the risk facing the planning area (i.e., the County), a separate narrative assessment will be provided under the appropriate hazard's vulnerability subsection.

Assets Vulnerability Survey

[Local Mitigation Planning Policy Guide Element B2-a]

The participating jurisdictions were also asked to complete an "Assets Vulnerability Survey" at the first meeting on March 26, 2024 to assist them in summarizing the consequences and/or effects the studied hazards have on their assets. The Survey allowed participants to choose problem statements that described their jurisdiction's greatest vulnerabilities to natural hazards and which assets they felt have the greatest vulnerabilities and the hazards to which they are most vulnerable. **Appendix I** contains copies of the completed surveys.

**Figure R-1
Risk Priority Index Scoring System**

Category	Factors	Point Value
Hazard Frequency	An event is anticipated to occur within the next year. Based on previous history, at least one event is expected to occur in any given year.	4
	An event is likely to occur in the next 1 to 3 years. Based on previous history, an event has at least a 33% chance of occurring in any given year.	3
	An event is possible in the next 3 to 10 years. Based on previous history, an event has a 10% to 33% chance of occurring in any given year.	2
	An event is unlikely to occur within the next 10 years. These events occur infrequently and based on previous history have a less than 10% chance of occurring in any given year.	1
Impacts on Life & Health	Fatalities are expected to occur during the event.	4
	While fatalities are unlikely, injuries, some requiring hospitalization, may occur during the event.	3
	Minor injuries not requiring hospitalization may occur during the event.	2
	Injuries or fatalities are unlikely to occur during the event.	1
Impacts on Property & Infrastructure	- Substantial property damage is likely to occur, including damage to infrastructure and critical facilities. AND/OR - Loss of access/operations at multiple infrastructure and critical facilities (i.e., road & school closures, loss of power to drinking water/wastewater treatment facilities, municipal buildings, etc.) is anticipated for an extended period of time (i.e., a day or more).	4
	- Property damage is expected to occur, including superficial damage to infrastructure and critical facilities. AND/OR - Loss of access/operations at multiple infrastructure and critical facilities is anticipated for a period of time (i.e., a day or less).	3
	- Some minor property damage is anticipated (i.e., shingles & siding torn off homes, windows broken, etc.) but no damage to infrastructure or critical facilities is anticipated. AND/OR - Loss of access/operations to infrastructure and critical facilities is anticipated but only for a short period of time (i.e., up to a couple hours).	2
	Property damage is likely to be negligible and no loss of access/operations is anticipated at any infrastructure/critical facilities during the event.	1

Figure R-2
Risk Priority Index Hazard Ranking by Participating Jurisdiction
(Sheet 1 of 4)

Hazard	Hazard Ranking by Participating Jurisdiction											
	Madison County	Alhambra	Alton	America's Central Port	Collinsville	East Alton	Edwardsville	Glen Carbon	Godfrey	Granite City	Grantfork	Hamel
Dam Failures	14/15/16	n/a	15/16	n/a	n/a	n/a	16/17/18	n/a	8/9/10/11/12/13/14/15	n/a	n/a	n/a
Drought	18	1/2/3/4	17/18	14/15	13/14	11/12	14/15	14	8/9/10/11/12/13/14/15	5/6/7/8	11/12	10/11
Earthquakes	11/12	13/14	3/4/5/6	6/7/8/9	4/5/6	13	14/15	11/12	1	10/11/12/13/14/15	2/3/4/5	8/9
Excessive Heat	5	1/2/3/4	3/4/5/6	6/7/8/9	7/8/9/10	5	1/2	4/5/6/7/8/9/10	2	3/4	2/3/4/5	2/3
Extreme Cold	7	1/2/3/4	3/4/5/6	10/11/12/13	11/12	2/3/4	1/2	4/5/6/7/8/9/10	8/9/10/11/12/13/14/15	10/11/12/13/14/15	7/8/9/10	2/3
Floods	3/4	12	1	2/3	15	2/3/4	6/7/8/9	4/5/6/7/8/9/10	8/9/10/11/12/13/14/15	2	2/3/4/5	12
Hail	10	6/7/8	15/16	2/3	4/5/6	11/12	11/12/13	11/12	8/9/10/11/12/13/14/15	5/6/7/8	7/8/9/10	8/9
HazMat Incidents - Fixed Facility	14/15/16	9/10/11	12/13/14	10/11/12/13	7/8/9/10	14/15/16	6/7/8/9	15/16	7	10/11/12/13/14/15	14	14
HazMat Incidents - Transportation	6	6/7/8	7/8/9/10/11	4/5	4/5/6	6/7/8/9/10	3/4/5	4/5/6/7/8/9/10	6	10/11/12/13/14/15	13	13
Heavy Rain	8/9	6/7/8	7/8/9/10/11	4/5	11/12	6/7/8/9/10	10	13	8/9/10/11/12/13/14/15	3/4	7/8/9/10	4/5/6/7
Landslides	17	n/a	7/8/9/10/11	n/a	16/17	14/15/16	16/17/18	15/16	16	n/a	n/a	n/a
Levee Failures	13	n/a	17/18	6/7/8/9	16/17	6/7/8/9/10	16/17/18	n/a	n/a	10/11/12/13/14/15	n/a	n/a
Lightning	11/12	9/10/11	12/13/14	10/11/12/13	1/2	2/3/4	6/7/8/9	4/5/6/7/8/9/10	8/9/10/11/12/13/14/15	5/6/7/8	7/8/9/10	4/5/6/7
Mine Subsidence	14/15/16	n/a	12/13/14	n/a	7/8/9/10	n/a	11/12/13	4/5/6/7/8/9/10	17	n/a	n/a	n/a
Terrorism	8/9	13/14	3/4/5/6	14/15	7/8/9/10	14/15/16	6/7/8/9	1/2/3	3/4	10/11/12/13/14/15	2/3/4/5	4/5/6/7
Thunderstorms with Damaging Winds	2	1/2/3/4	7/8/9/10/11	1	1/2	6/7/8/9/10	3/4/5	4/5/6/7/8/9/10	5	1	6	1
Tornadoes	1	9/10/11	2	6/7/8/9	3	1	3/4/5	1/2/3	3/4	5/6/7/8	1	10/11
Winter Storms	3/4	5	7/8/9/10/11	10/11/12/13	13/14	6/7/8/9/10	11/12/13	1/2/3	8/9/10/11/12/13/14/15	9	11/12	4/5/6/7

Figure R-2
Risk Priority Index Hazard Ranking by Participating Jurisdiction
(Sheet 2 of 4)

Hazard	Hazard Ranking by Participating Jurisdiction											
	Highland	Livingston	Madison	Marine	Maryville	Pontoon Beach	Roxana	St. Jacob	Troy	Venice	Wood River	Worden
Dam Failures	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	13/14	n/a
Drought	14	12	12	12/13/14	13/14	12	11/12	10/11	13	12	16/17	12/13/14/15
Earthquakes	8/9	13/14/15	11	2/3/4	3/4/5/6/7	11	7/8/9/10	12/13/14	4/5	11	4/5/6/7/8	12/13/14/15
Excessive Heat	1/2/3/4/5	1/2	7/8/9/10	5/6/7	9/10/11	6/7/8/9/10	2/3	1/2/3	8/9/10/11	7/8/9/10	4/5/6/7/8	5/6
Extreme Cold	6/7	5/6/7/8/9/10/11	5/6	5/6/7	9/10/11	5	4/5/6	1/2/3	8/9/10/11	5/6	9/10/11/12	4
Floods	13	13/14/15	1/2/3	12/13/14	15/16	1/2/3	11/12	4/5	12	1/2/3	15	9/10
Hail	6/7	5/6/7/8/9/10/11	4	11	12	4	4/5/6	6/7/8	8/9/10/11	4	9/10/11/12	5/6
HazMat Incidents - Fixed Facility	1/2/3/4/5	5/6/7/8/9/10/11	13/14/15	5/6/7	1/2	13/14/15	13/14/15	12/13/14	14/15	13/14/15	1/2/3	11
HazMat Incidents - Transportation	1/2/3/4/5	5/6/7/8/9/10/11	13/14/15	8/9/10	1/2	13/14/15	4/5/6	10/11	3	13/14/15	1/2/3	12/13/14/15
Heavy Rain	10/11/12	5/6/7/8/9/10/11	7/8/9/10	8/9/10	8	6/7/8/9/10	13/14/15	4/5	8/9/10/11	7/8/9/10	9/10/11/12	1/2/3
Landslides	15	n/a	n/a	n/a	15/16	16	n/a	n/a	n/a	n/a	16/17	n/a
Levee Failures	n/a	n/a	5/6	n/a	n/a	6/7/8/9/10	7/8/9/10	n/a	n/a	5/6	4/5/6/7/8	n/a
Lightning	8/9	5/6/7/8/9/10/11	7/8/9/10	8/9/10	13/14	6/7/8/9/10	13/14/15	1/2/3	6	7/8/9/10	13/14	1/2/3
Mine Subsidence	n/a	3/4	n/a	n/a	3/4/5/6/7	n/a	n/a	n/a	14/15	n/a	n/a	1/2/3
Terrorism	10/11/12	13/14/15	13/14/15	12/13/14	3/4/5/6/7	13/14/15	7/8/9/10	12/13/14	4/5	13/14/15	1/2/3	12/13/14/15
Thunderstorms with Damaging Winds	1/2/3/4/5	3/4	7/8/9/10	2/3/4	9/10/11	6/7/8/9/10	2/3	6/7/8	1	7/8/9/10	4/5/6/7/8	7/8
Tornadoes	1/2/3/4/5	5/6/7/8/9/10/11	1/2/3	1	3/4/5/6/7	1/2/3	1	6/7/8	2	1/2/3	4/5/6/7/8	7/8
Winter Storms	10/11/12	1/2	1/2/3	2/3/4	3/4/5/6/7	1/2/3	7/8/9/10	9.0	7	1/2/3	9/10/11/12	9/10

Figure R-2
Risk Priority Index Hazard Ranking by Participating Jurisdiction
(Sheet 3 of 4)

Hazard	Hazard Ranking by Participating Jurisdiction											
	Collinsville Township	Edwardsville Township	Leef Township	Nameoki Township	Alton CUSD #11	Bethalto CUSD #8	Collinsville CUSD #10	Edwardsville CUSD #7	Marquette Catholic High School	Roxana CUSD #1	St. Mary's Catholic School	Wood River-Hartford ESD #15
Dam Failures	n/a	11/12/13/14/15/16/17	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Drought	12/13/14	1/2/3/4/5/6/7/8/9/10	6/7	12	6/7	11/12	16/17	13/14/15/16	12/13	12	5/6/7	12/13/14
Earthquakes	12/13/14	11/12/13/14/15/16/17	9/10/11/12/13/14	11	8/9/10/11/12	9/10	2/3/4/5	13/14/15/16	12/13	9/10/11	3/4	4/5/6/7/8/9/10
Excessive Heat	4/5	1/2/3/4/5/6/7/8/9/10	9/10/11/12/13/14	6/7/8/9/10	3/4/5	6/7/8	11/12/13/14	3/4/5/6	1/2/3/4	5/6/7/8	5/6/7	4/5/6/7/8/9/10
Extreme Cold	6	1/2/3/4/5/6/7/8/9/10	9/10/11/12/13/14	5	6/7	1/2	11/12/13/14	3/4/5/6	5/6/7	5/6/7/8	11/12	4/5/6/7/8/9/10
Floods	7/8/9/10/11	11/12/13/14/15/16/17	1/2/3/4/5	1/2/3	2	13/14/15	6/7/8/9/10	13/14/15/16	14/15	9/10/11	1/2	4/5/6/7/8/9/10
Hail	7/8/9/10/11	1/2/3/4/5/6/7/8/9/10	9/10/11/12/13/14	4	8/9/10/11/12	3/4/5	2/3/4/5	7/8/9/10	8/9/10/11	5/6/7/8	8/9/10	1/2/3
HazMat Incidents - Fixed Facility	15	11/12/13/14/15/16/17	8	13/14/15	8/9/10/11/12	13/14/15	15	11/12	5/6/7	13/14/15	13/14	12/13/14
HazMat Incidents - Transportation	12/13/14	11/12/13/14/15/16/17	1/2/3/4/5	13/14/15	13	11/12	11/12/13/14	11/12	5/6/7	13/14/15	13/14	12/13/14
Heavy Rain	4/5	1/2/3/4/5/6/7/8/9/10	1/2/3/4/5	6/7/8/9/10	3/4/5	6/7/8	6/7/8/9/10	7/8/9/10	8/9/10/11	9/10/11	3/4	1/2/3
Landslides	16/17	11/12/13/14/15/16/17	n/a	n/a	14/15	n/a	16/17	13/14/15/16	14/15	n/a	n/a	n/a
Levee Failures	7/8/9/10/11	n/a	n/a	6/7/8/9/10	n/a	n/a	6/7/8/9/10	n/a	n/a	3/4	n/a	15
Lightning	7/8/9/10/11	1/2/3/4/5/6/7/8/9/10	9/10/11/12/13/14	6/7/8/9/10	8/9/10/11/12	3/4/5	2/3/4/5	7/8/9/10	8/9/10/11	1/2	11/12	11
Mine Subsidence	1/2/3	1/2/3/4/5/6/7/8/9/10	n/a	n/a	n/a	9/10	6/7/8/9/10	7/8/9/10	n/a	n/a	n/a	n/a
Terrorism	16/17	11/12/13/14/15/16/17	9/10/11/12/13/14	13/14/15	14/15	13/14/15	1	3/4/5/6	8/9/10/11	13/14/15	8/9/10	4/5/6/7/8/9/10
Thunderstorms with Damaging Winds	1/2/3	1/2/3/4/5/6/7/8/9/10	1/2/3/4/5	6/7/8/9/10	1	3/4/5	6/7/8/9/10	3/4/5/6	1/2/3/4	3/4	1/2	4/5/6/7/8/9/10
Tornadoes	7/8/9/10/11	1/2/3/4/5/6/7/8/9/10	1/2/3/4/5	1/2/3	8/9/10/11/12	6/7/8	11/12/13/14	1	1/2/3/4	1/2	5/6/7	1/2/3
Winter Storms	1/2/3	1/2/3/4/5/6/7/8/9/10	6/7	1/2/3	3/4/5	1/2	2/3/4/5	2	1/2/3/4	5/6/7/8	8/9/10	4/5/6/7/8/9/10

Figure R-2
Risk Priority Index Hazard Ranking by Participating Jurisdiction
(Sheet 4 of 4)

Hazard	Hazard Ranking by Participating Jurisdiction								
	SIUE	Glen Carbon FPD	Olive Fire District	South Roxana FPD	Troy FPD	Anderson Hospital	OSF Saint Anthony's Health Center	Metro East Sanitary District	Wood River D&LD
Dam Failures	n/a	n/a	n/a	n/a	7/8/9/10/11/12/13/14/15	n/a	n/a	n/a	9/10/11/12
Drought	14/15	12/13	12	10	16	14/15	15	14/15	14
Earthquakes	1/2/3	14/15	13/14/15	11/12/13/14/15	7/8/9/10/11/12/13/14/15	1/2/3	2/3	8/9/10/11	9/10/11/12
Excessive Heat	7/8	3/4/5/6/7/8/9	1/2	1/2/3/4/5	3/4/5/6	1/2/3	4/5	8/9/10/11	2/3/4/5
Extreme Cold	7/8	3/4/5/6/7/8/9	5/6/7/8/9/10/11	1/2/3/4/5	7/8/9/10/11/12/13/14/15	9/10/11	4/5	8/9/10/11	2/3/4/5
Floods	11/12/13	3/4/5/6/7/8/9	13/14/15	11/12/13/14/15	7/8/9/10/11/12/13/14/15	1/2/3	2/3	1/2/3	6/7/8
Hail	5/6	3/4/5/6/7/8/9	5/6/7/8/9/10/11	11/12/13/14/15	7/8/9/10/11/12/13/14/15	9/10/11	12/13/14	14/15	13
HazMat Incidents - Fixed Facility	9	14/15	5/6/7/8/9/10/11	1/2/3/4/5	3/4/5/6	4/5/6/7/8	10/11	8/9/10/11	15/16
HazMat Incidents - Transportation	11/12/13	12/13	5/6/7/8/9/10/11	6/7/8/9	1	4/5/6/7/8	7/8/9	12/13	15/16
Heavy Rain	1/2/3	3/4/5/6/7/8/9	5/6/7/8/9/10/11	6/7/8/9	3/4/5/6	4/5/6/7/8	10/11	1/2/3	9/10/11/12
Landslides	16	16/17	n/a	n/a	17	n/a	12/13/14	n/a	n/a
Levee Failures	14/15	16/17	n/a	11/12/13/14/15	n/a	n/a	n/a	1/2/3	2/3/4/5
Lightning	11/12/13	10/11	5/6/7/8/9/10/11	1/2/3/4/5	7/8/9/10/11/12/13/14/15	12/13	12/13/14	5/6/7	6/7/8
Mine Subsidence	n/a	3/4/5/6/7/8/9	3/4	n/a	7/8/9/10/11/12/13/14/15	9/10/11	n/a	n/a	n/a
Terrorism	5/6	10/11	13/14/15	11/12/13/14/15	3/4/5/6	14/15	1	12/13	1
Thunderstorms with Damaging Winds	4	1/2	3/4	6/7/8/9	7/8/9/10/11/12/13/14/15	4/5/6/7/8	7/8/9	4	2/3/4/5
Tornadoes	1/2/3	1/2	5/6/7/8/9/10/11	6/7/8/9	2	4/5/6/7/8	7/8/9	5/6/7	6/7/8
Winter Storms	10	3/4/5/6/7/8/9	1/2	1/2/3/4/5	7/8/9/10/11/12/13/14/15	12/13	6	5/6/7	9/10/11/12

Figure R-3
National Risk Index Overall Scores/Ratings by Census Tract
(Sheet 1 of 3)

Census Tract No.	Participating Jurisdiction Located in Census Tract	Risk Index Score	Risk Index Rating	Social Vulnerability Score	Social Vulnerability Rating	Community Resilience Score	Community Resilience Rating
4001.01	Granite City, Metro East Sanitary District	62.27	Relatively Moderate	40.94	Relatively Moderate	*	*
4001.02	Granite City, Metro East Sanitary District	76.39	Relatively Moderate	66.71	Relatively High	*	*
4002	Granite City, Metro East Sanitary District	89.35	Relatively High	91.41	Very High	*	*
4006	Madison, City of	68.72	Relatively Moderate	85.81	Very High	*	*
4007	Venice, Metro East Sanitary District	66.27	Relatively Moderate	84.33	Very High	*	*
4008.01	Granite City, Metro East Sanitary District	35.61	Relatively Low	31.71	Relatively Low	*	*
4008.02	Granite City, Metro East Sanitary District	78.90	Relatively Moderate	61.69	Relatively High	*	*
4009.03	Granite City, Madison, City of, Pontoon Beach, Nameoki Township, Collinsville CUSD #10, Metro East Sanitary District	89.89	Relatively High	75.70	Relatively High	*	*
4009.04	Granite City, Nameoki Township, Metro East Sanitary District	42.68	Relatively Low	16.66	Very Low	*	*
4009.51	Granite City, Nameoki Township, Metro East Sanitary District	78.54	Relatively Moderate	61.72	Relatively High	*	*
4009.52	Granite City, Pontoon Beach, Nameoki Township, Metro East Sanitary District	67.43	Relatively Moderate	53.33	Relatively Moderate	*	*
4010	Roxana, Roxana CUSD #1, Wood River-Hartford ESD #15, Wood River D&LD	44.70	Relatively Low	36.52	Relatively Low	*	*
4011.01	Wood River, Wood River-Hartford ESD #15, Wood River D&LD	55.90	Relatively Low	51.21	Relatively Moderate	*	*
4011.02	Wood River, Roxana CUSD #1, Wood River-Hartford ESD #15, Wood River D&LD	51.75	Relatively Low	24.17	Relatively Low	*	*
4012	East Alton, Wood River, Alton CUSD #11, Roxana CUSD #1, Wood River-Hartford ESD #15, Wood River D&LD	25.03	Very Low	9.78	Very Low	*	*
4013	East Alton, Wood River D&LD	71.45	Relatively Moderate	48.16	Relatively Moderate	*	*
4014	Alton, Alton CUSD #11	51.16	Relatively Low	59.49	Relatively Moderate	*	*
4015	Alton, Alton CUSD #11, Wood River D&LD	47.12	Relatively Low	54.13	Relatively Moderate	*	*
4017.01	Alton, Alton CUSD #11, Bethalto CUSD #8	59.96	Relatively Low	89.08	Very High	*	*
4017.21	Bethalto CUSD #8	62.55	Relatively Moderate	12.02	Very Low	*	*
4017.22	Bethalto CUSD #8	38.51	Relatively Low	10.12	Very Low	*	*
4018	East Alton, Bethalto CUSD #8, Roxana CUSD #1, Wood River D&LD	70.14	Relatively Moderate	23.46	Relatively Low	*	*
4019.01	Wood River, Bethalto CUSD #8, Roxana CUSD #1, Wood River D&LD	26.44	Very Low	12.89	Very Low	*	*
4019.05	Edwardsville, Pontoon Beach, Roxana, Roxana CUSD #1, Wood River-Hartford ESD #15, South Roxana FPD, Metro East Sanitary District, Wood River D&LD	96.00	Relatively High	67.93	Relatively High	*	*
4020	Alton, Alton CUSD #11	76.12	Relatively Moderate	84.36	Very High	*	*
4021	Alton, Alton CUSD #11	71.72	Relatively Moderate	88.64	Very High	*	*
4022	Alton, Alton CUSD #11	52.37	Relatively Low	75.73	Relatively High	*	*
Madison County		92.49	Relatively Moderate	25.81	Relatively Low	88.64	Very High

* Community Resilience scores are only available at the county level.

Figure R-3
National Risk Index Overall Scores/Ratings by Census Tract
(Sheet 2 of 3)

Census Tract No.	Participating Jurisdiction Located in Census Tract	Risk Index Score	Risk Index Rating	Social Vulnerability Score	Social Vulnerability Rating	Community Resilience Score	Community Resilience Rating
4023	Alton, Alton CUSD #11	29.38	Relatively Low	46.03	Relatively Moderate	*	*
4024	East Alton, Wood River D&LD	61.35	Relatively Low	74.68	Relatively High	*	*
4025	Alton, Alton CUSD #11	34.97	Relatively Low	55.70	Relatively Moderate	*	*
4026	Alton, Alton CUSD #11	53.04	Relatively Low	70.56	Relatively High	*	*
4027.01	Godfrey, Alton CUSD #11	79.54	Relatively Moderate	44.20	Relatively Moderate	*	*
4027.21	Godfrey, Alton CUSD #11	78.85	Relatively Moderate	37.23	Relatively Low	*	*
4027.22	Godfrey, Alton CUSD #11	32.86	Relatively Low	12.12	Very Low	*	*
4028.01	Alton, Godfrey, Alton CUSD #11	38.80	Relatively Low	4.69	Very Low	*	*
4028.03	Wood River, Bethalto CUSD #8, Edwardsville CUSD #7	55.25	Relatively Low	30.17	Relatively Low	*	*
4028.04	Alton CUSD #11, Bethalto CUSD #8, Edwardsville CUSD #7	24.75	Very Low	1.73	Very Low	*	*
4028.05	Bethalto CUSD #8, Edwardsville CUSD #7	62.21	Relatively Moderate	10.75	Very Low	*	*
4029	Edwardsville, Edwardsville Township, Edwardsville CUSD #7	56.18	Relatively Low	5.53	Very Low	*	*
4030.01	Edwardsville, Edwardsville Township, Edwardsville CUSD #7, Glen Carbon FPD	81.51	Relatively Moderate	44.95	Relatively Moderate	*	*
4030.02	Edwardsville, Edwardsville Township, Edwardsville CUSD #7	72.48	Relatively Moderate	11.35	Very Low	*	*
4031.01	Edwardsville, Glen Carbon, Edwardsville Township, Collinsville CUSD #10, Edwardsville CUSD #7, Metro East Sanitary District	88.72	Relatively High	48.10	Relatively Moderate	*	*
4031.21	Collinsville, Edwardsville, Glen Carbon, Collinsville Township, Edwardsville Township, Collinsville CUSD #10, Edwardsville CUSD #7, Glen Carbon FPD	83.23	Relatively Moderate	48.26	Relatively Moderate	*	*
4031.22	Edwardsville, Glen Carbon, Edwardsville Township, Edwardsville CUSD #7, Glen Carbon FPD, Troy FPD	71.74	Relatively Moderate	27.66	Relatively Low	*	*
4032	Collinsville, Collinsville Township, Collinsville CUSD #10	68.88	Relatively Moderate	62.25	Relatively High	*	*
4033	Collinsville, Collinsville Township, Collinsville CUSD #10	54.95	Relatively Low	36.21	Relatively Low	*	*
4034.01	Collinsville, Collinsville Township, Collinsville CUSD #10	51.86	Relatively Low	31.23	Relatively Low	*	*
4034.03	Collinsville, Collinsville Township, Collinsville CUSD #10	59.81	Relatively Low	39.24	Relatively Low	*	*
4034.04	Collinsville, Collinsville Township, Collinsville CUSD #10	53.42	Relatively Low	58.11	Relatively Moderate	*	*
4035.02	Collinsville, Collinsville Township, Collinsville CUSD #10	76.54	Relatively Moderate	29.06	Relatively Low	*	*
4035.31	Troy, Troy FPD	80.93	Relatively Moderate	22.52	Relatively Low	*	*
4035.32	Troy, Troy FPD	64.09	Relatively Moderate	6.54	Very Low	*	*
4035.33	Glen Carbon, Maryville, Troy, Collinsville Township, Collinsville CUSD #10, Glen Carbon FPD, Troy FPD	89.02	Relatively High	36.43	Relatively Low	*	*
Madison County		92.49	Relatively Moderate	25.81	Relatively Low	88.64	Very High

* Community Resilience scores are only available at the county level.

Figure R-3
National Risk Index Overall Scores/Ratings by Census Tract
(Sheet 3 of 3)

Census Tract No.	Participating Jurisdiction Located in Census Tract	Risk Index Score	Risk Index Rating	Social Vulnerability Score	Social Vulnerability Rating	Community Resilience Score	Community Resilience Rating
4035.34	Collinsville, Glen Carbon, Maryville, Pontoon Beach, Collinsville Township, Collinsville CUSD #10, Metro East Sanitary District	62.59	Relatively Moderate	13.56	Very Low	*	*
4036.01	Highland	76.43	Relatively Moderate	15.69	Very Low	*	*
4036.03	Highland	21.68	Very Low	9.58	Very Low	*	*
4036.04	Highland	80.92	Relatively Moderate	51.73	Relatively Moderate	*	*
4037.01	Marine, Troy, Edwardsville CUSD #7, Glen Carbon FPD, Troy FPD	76.15	Relatively Moderate	14.77	Very Low	*	*
4037.02	Grantfork, St. Jacob, Saline Township	66.78	Relatively Moderate	3.81	Very Low	*	*
4038.01	Hamel, Worden, Edwardsville CUSD #7	62.95	Relatively Moderate	9.07	Very Low	*	*
4038.02	Alhambra, Grantfork, Livingston, Leef Township, Olive Fire District	69.17	Relatively Moderate	31.92	Relatively Low	*	*
4040	Granite City, Metro East Sanitary District	87.87	Relatively High	80.01	Very High	*	*
4041	Granite City, Madison, City of, Wood River-Hartford ESD #15, South Roxana FPD, Metro East Sanitary District	69.98	Relatively Moderate	36.64	Relatively Low	*	*
5021 (St. Clair County)	Madison, City of	85.92	Relatively High	74.57	Relatively High	*	*
5024.04 (St. Clair County)	Collinsville	82.36	Relatively Moderate	85.38	Very High	*	*
5034.12 (St. Clair County)	Collinsville	71.35	Relatively Moderate	29.73	Relatively Low	*	*
5045.02 (St. Clair County)	Madison, City of	68.48	Relatively Moderate	69.26	Relatively High	*	*
Madison County		92.49	Relatively Moderate	25.81	Relatively Low	88.64	Very High

* Community Resilience scores are only available at the county level.

Figure R-4
NRI Hazard Scores/Ratings by Hazard by Census Tract
(Sheet 1 of 8)

Census Tract No.	Participating Jurisdiction Located in Census Tract	Severe Storms						Severe Winter Storms				Riverine Floods	
		Hail Score	Hail Rating	Lightning Score	Lightning Rating	Strong Wind Score	Strong Wind Rating	Ice Storm Score	Ice Storm Rating	Winter Weather Score	Winter Weather Rating	Score	Rating
4001.01	Granite City, Metro East Sanitary District	48.15	RL	31.98	RL	34.75	RL	83.60	RM	61.97	RM	54.54	RL
4001.02	Granite City, Metro East Sanitary District	59.61	RL	41.04	RL	41.83	RL	88.37	RH	71.98	RM	75.25	RM
4002	Granite City, Metro East Sanitary District	61.62	RL	60.56	RM	56.05	RM	94.56	RH	82.38	RM	93.70	RH
4006	Madison, City of	52.58	RL	37.29	RL	39.36	RL	86.95	RM	67.64	RM	68.06	RL
4007	Venice, Metro East Sanitary District	48.29	RL	38.17	RL	40.08	RL	87.31	RM	67.22	RM	73.41	RM
4008.01	Granite City, Metro East Sanitary District	41.30	VL	20.26	RL	25.78	RL	74.07	RM	49.22	RL	0.00	NR
4008.02	Granite City, Metro East Sanitary District	60.88	RL	43.64	RL	43.41	RL	89.11	RH	73.62	RM	83.28	RM
4009.03	Granite City, Madison, City of, Pontoon Beach, Nameoki Township, Collinsville CUSD #10, Metro East Sanitary District	62.55	RL	56.35	RM	52.99	RL	93.48	RH	80.72	RM	96.88	RH
4009.04	Granite City, Nameoki Township, Metro East Sanitary District	46.06	RL	21.86	RL	27.06	RL	75.91	RM	52.57	RL	48.73	RL
4009.51	Granite City, Nameoki Township, Metro East Sanitary District	59.20	RL	42.90	RL	43.01	RL	89.06	RH	72.71	RM	92.59	RH
4009.52	Granite City, Pontoon Beach, Nameoki Township, Metro East Sanitary District	51.25	RL	29.81	RL	33.35	RL	82.56	RM	61.51	RM	91.85	RH
4010	Roxana, Roxana CUSD #1, Wood River-Hartford ESD #15, Wood River D&LD	46.06	RL	29.85	RL	34.80	RL	79.27	RM	61.65	RM	36.00	RL
4011.01	Wood River, Wood River-Hartford ESD #15, Wood River D&LD	49.07	RL	29.72	RL	35.08	RL	79.57	RM	62.76	RM	0.00	NR
4011.02	Wood River, Roxana CUSD #1, Wood River-Hartford ESD #15, Wood River D&LD	48.58	RL	25.24	RL	31.38	RL	76.00	RM	58.78	RL	75.97	RM
4012	East Alton, Wood River, Alton CUSD #11, Roxana CUSD #1, Wood River-Hartford ESD #15, Wood River D&LD	38.42	VL	17.28	VL	24.62	VL	66.11	RL	46.65	RL	32.70	VL
4013	East Alton, Wood River D&LD	56.60	RL	39.39	RL	42.68	RL	85.28	RM	71.84	RM	78.32	RM
4014	Alton, Alton CUSD #11	50.64	RL	27.75	RL	34.11	RL	78.73	RM	62.33	RM	51.42	RL
4015	Alton, Alton CUSD #11, Wood River D&LD	47.97	RL	28.32	RL	35.05	RL	79.52	RM	62.42	RM	26.07	VL
4017.01	Alton, Alton CUSD #11, Bethalto CUSD #8	52.58	RL	35.35	RL	38.78	RL	82.59	RM	67.28	RM	80.28	RM
4017.21	Bethalto CUSD #8	53.64	RL	34.49	RL	37.40	RL	81.60	RM	66.43	RM	58.77	RL
4017.22	Bethalto CUSD #8	43.13	VL	22.59	RL	28.07	RL	71.91	RM	52.91	RL	0.00	NR
4018	East Alton, Bethalto CUSD #8, Roxana CUSD #1, Wood River D&LD	57.37	RL	42.06	RL	43.80	RL	85.95	RM	72.93	RM	75.66	RM
Madison County		58.89	RL	75.71	RM	54.30	RL	95.47	RH	84.73	RM	89.18	RM

Rating Abbreviations: NR = NR; VL = VL; RL = RL; RM = RM; RH = RH; VH = VH

Figure R-4
NRI Hazard Scores/Ratings by Hazard by Census Tract
(Sheet 2 of 8)

Census Tract No.	Participating Jurisdiction Located in Census Tract	Severe Storms						Severe Winter Storms				Riverine Floods	
		Hail Score	Hail Rating	Lightning Score	Lightning Rating	Strong Wind Score	Strong Wind Rating	Ice Storm Score	Ice Storm Rating	Winter Weather Score	Winter Weather Rating	Score	Rating
4019.01	Wood River, Bethalto CUSD #8, Roxana CUSD #1, Wood River D&LD	39.55	VL	20.20	RL	26.85	RL	70.02	RM	50.16	RL	47.16	RL
4019.05	Edwardsville, Pontoon Beach, Roxana, Roxana CUSD #1, Wood River-Hartford ESD #15, South Roxana FPD, Metro East Sanitary District, Wood River D&LD	64.84	RL	77.64	RH	70.10	RM	96.39	RH	89.76	RH	98.34	RH
4020	Alton, Alton CUSD #11	59.48	RL	46.79	RL	49.74	RL	89.19	RH	77.89	RM	70.47	RM
4021	Alton, Alton CUSD #11	57.28	RL	48.12	RM	50.05	RL	89.32	RH	77.56	RM	0.00	NR
4022	Alton, Alton CUSD #11	54.09	RL	35.57	RL	39.94	RL	83.45	RM	68.80	RM	0.00	NR
4023	Alton, Alton CUSD #11	42.56	VL	24.66	RL	31.28	RL	75.78	RM	56.67	RL	0.00	NR
4024	East Alton, Wood River D&LD	47.98	RL	38.01	RL	42.82	RL	85.31	RM	69.88	RM	31.86	VL
4025	Alton, Alton CUSD #11	43.47	RL	22.38	RL	29.80	RL	74.10	RM	55.09	RL	0.00	NR
4026	Alton, Alton CUSD #11	50.32	RL	30.11	RL	36.56	RL	80.96	RM	64.61	RM	0.00	NR
4027.01	Godfrey, Alton CUSD #11	62.64	RL	55.04	RM	54.15	RL	91.19	RH	81.66	RM	51.75	RL
4027.21	Godfrey, Alton CUSD #11	62.87	RL	54.75	RM	54.27	RL	91.23	RH	81.79	RM	25.13	VL
4027.22	Godfrey, Alton CUSD #11	44.43	RL	23.61	RL	30.93	RL	75.43	RM	56.85	RL	26.94	VL
4028.01	Alton, Godfrey, Alton CUSD #11	45.30	RL	23.23	RL	30.09	RL	74.41	RM	56.01	RL	60.41	RL
4028.03	Wood River, Bethalto CUSD #8, Edwardsville CUSD #7	51.36	RL	34.85	RL	37.66	RL	81.66	RM	65.74	RM	75.23	RM
4028.04	Alton CUSD #11, Bethalto CUSD #8, Edwardsville CUSD #7	40.16	VL	18.07	VL	25.11	VL	66.97	RL	47.80	RL	59.82	RL
4028.05	Bethalto CUSD #8, Edwardsville CUSD #7	54.32	RL	36.85	RL	39.08	RL	82.80	RM	68.05	RM	81.61	RM
4029	Edwardsville, Edwardsville Township, Edwardsville CUSD #7	51.07	RL	30.94	RL	34.76	RL	79.24	RM	63.07	RM	45.48	RL
4030.01	Edwardsville, Edwardsville Township, Edwardsville CUSD #7, Glen Carbon FPD	59.21	RL	53.24	RM	50.62	RL	89.60	RH	78.43	RM	0.00	NR
4030.02	Edwardsville, Edwardsville Township, Edwardsville CUSD #7	57.80	RL	43.74	RL	44.04	RL	86.11	RM	73.28	RM	68.31	RL
4031.01	Edwardsville, Glen Carbon, Edwardsville Township, Collinsville CUSD #10, Edwardsville CUSD #7, Metro East Sanitary District	63.74	RL	66.05	RM	59.92	RM	93.38	RH	85.02	RM	82.89	RM
Madison County		58.89	RL	75.71	RM	54.30	RL	95.47	RH	84.73	RM	89.18	RM

Rating Abbreviations: NR = NR; VL = VL; RL = RL; RM = RM; RH = RH; VH = VH

Figure R-4
NRI Hazard Scores/Ratings by Hazard by Census Tract
(Sheet 3 of 8)

Census Tract No.	Participating Jurisdiction Located in Census Tract	Severe Storms						Severe Winter Storms				Riverine Floods	
		Hail Score	Hail Rating	Lightning Score	Lightning Rating	Strong Wind Score	Strong Wind Rating	Ice Storm Score	Ice Storm Rating	Winter Weather Score	Winter Weather Rating	Score	Rating
4030.02	Edwardsville, Edwardsville Township, Edwardsville CUSD #7	57.80	RL	43.74	RL	44.04	RL	86.11	RM	73.28	RM	68.31	RL
4031.01	Edwardsville, Glen Carbon, Edwardsville Township, Collinsville CUSD #10, Edwardsville CUSD #7, Metro East Sanitary District	63.74	RL	66.05	RM	59.92	RM	93.38	RH	85.02	RM	82.89	RM
4031.21	Collinsville, Edwardsville, Glen Carbon, Collinsville Township, Edwardsville Township, Collinsville CUSD #10, Edwardsville CUSD #7, Glen Carbon FPD	65.73	RL	60.52	RM	56.34	RM	93.03	RH	83.68	RM	0.00	NR
4031.22	Edwardsville, Glen Carbon, Edwardsville Township, Edwardsville CUSD #7, Glen Carbon FPD, Troy FPD	59.11	RL	44.89	RL	45.18	RL	87.58	RM	74.47	RM	0.00	NR
4032	Collinsville, Collinsville Township, Collinsville CUSD #10	57.41	RL	38.39	RL	39.97	RL	87.35	RM	69.71	RM	64.13	RL
4033	Collinsville, Collinsville Township, Collinsville CUSD #10	48.33	RL	28.70	RL	32.55	RL	81.93	RM	59.72	RM	54.99	RL
4034.01	Collinsville, Collinsville Township, Collinsville CUSD #10	51.67	RL	28.92	RL	32.72	RL	82.12	RM	61.05	RM	0.00	NR
4034.03	Collinsville, Collinsville Township, Collinsville CUSD #10	49.28	RL	31.12	RL	34.57	RL	83.61	RM	62.11	RM	73.86	RM
4034.04	Collinsville, Collinsville Township, Collinsville CUSD #10	51.13	RL	27.59	RL	31.82	RL	81.00	RM	59.87	RM	47.17	RL
4035.02	Collinsville, Collinsville Township, Collinsville CUSD #10	59.04	RL	45.86	RL	45.80	RL	90.42	RH	74.73	RM	64.40	RL
4035.31	Troy, Troy FPD	62.25	RL	48.11	RM	48.56	RL	91.74	RH	77.82	RM	53.29	RL
4035.32	Troy, Troy FPD	54.33	RL	36.03	RL	38.62	RL	86.47	RM	67.42	RM	68.89	RL
4035.33	Glen Carbon, Maryville, Troy, Collinsville Township, Collinsville CUSD #10, Glen Carbon FPD, Troy FPD	66.84	RL	64.20	RM	59.66	RM	95.58	RH	85.52	RM	58.39	RL
4035.34	Collinsville, Glen Carbon, Maryville, Pontoon Beach, Collinsville Township, Collinsville CUSD #10, Metro East Sanitary District	52.09	RL	37.47	RL	39.66	RL	87.11	RM	67.71	RM	79.69	RM
Madison County		58.89	RL	75.71	RM	54.30	RL	95.47	RH	84.73	RM	89.18	RM

Rating Abbreviations: NR = NR; VL = VL; RL = RL; RM = RM; RH = RH; VH = VH

Figure R-4
NRI Hazard Scores/Ratings by Hazard by Census Tract
(Sheet 4 of 8)

Census Tract No.	Participating Jurisdiction Located in Census Tract	Severe Storms						Severe Winter Storms				Riverine Floods	
		Hail Score	Hail Rating	Lightning Score	Lightning Rating	Strong Wind Score	Strong Wind Rating	Ice Storm Score	Ice Storm Rating	Winter Weather Score	Winter Weather Rating	Score	Rating
4036.01	Highland, Saline Township	50.89	RL	43.51	RL	43.54	RL	85.36	RM	72.43	RM	51.32	RL
4036.03	Highland, Saline Township	36.75	VL	15.21	VL	21.75	VL	57.75	RL	42.56	RL	48.62	RL
4036.04	Highland, Saline Township	60.15	RL	50.65	RM	47.07	RL	84.68	RM	77.78	RM	60.15	RL
4037.01	Marine, Troy, Edwardsville CUSD #7, Glen Carbon FPD, Troy FPD	59.82	RL	48.58	RM	48.56	RL	88.98	RH	76.99	RM	76.70	RM
4037.02	Grantfork, St. Jacob, Saline Township	55.42	RL	38.13	RL	40.32	RL	84.40	RM	69.93	RM	65.61	RL
4038.01	Hamel, Worden, Edwardsville CUSD #7	54.49	RL	38.02	RL	40.59	RL	83.71	RM	69.11	RM	73.37	RM
4038.02	Alhambra, Grantfork, Livingston, Leef Township, Olive Fire District	57.37	RL	40.44	RL	42.55	RL	85.03	RM	71.67	RM	68.64	RL
4040	Granite City, Metro East Sanitary District	56.76	RL	58.08	RM	54.38	RL	93.97	RH	80.45	RM	93.16	RH
4041	Granite City, Madison, City of, Wood River-Hartford ESD #15, South Roxana FPD, Metro East Sanitary District	51.90	RL	42.12	RL	43.10	RL	87.92	RM	70.80	RM	56.54	RL
5021 (St. Clair County)	Madison, City of	97.30	VH	53.17	RM	36.29	RL	92.13	RH	92.87	RH	85.67	RM
5024.04 (St. Clair County)	Collinsville	94.91	RH	68.80	RM	33.15	RL	89.17	RH	88.78	RH	96.93	RH
5034.12 (St. Clair County)	Collinsville	94.83	RH	72.06	RM	33.45	RL	89.23	RH	88.74	RH	69.01	RL
5045.02 (St. Clair County)	Madison, City of	93.73	RH	37.28	RL	26.97	RL	85.41	RM	85.37	RM	85.00	RM
Madison County		58.89	RL	75.71	RM	54.30	RL	95.47	RH	84.73	RM	89.18	RM

Rating Abbreviations: NR = NR; VL = VL; RL = RL; RM = RM; RH = RH; VH = VH

Figure R-4
NRI Hazard Scores/Ratings by Hazard by Census Tract
(Sheet 5 of 8)

Census Tract No.	Participating Jurisdiction Located in Census Tract	Extreme Cold		Excessive Heat		Tornadoes		Drought		Landslides		Earthquakes	
		Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating
4001.01	Granite City, Metro East Sanitary District	70.22	RL	91.32	RH	78.55	RH	0.00	NR	0.00	NR	85.38	RM
4001.02	Granite City, Metro East Sanitary District	81.80	RM	97.58	VH	93.70	VH	0.00	NR	0.00	NR	86.04	RM
4002	Granite City, Metro East Sanitary District	80.61	RM	97.14	VH	96.95	VH	75.69	VL	93.72	RH	91.81	RH
4006	Madison, City of	73.84	RM	93.90	RH	85.55	RH	0.00	NR	53.42	RL	85.97	RM
4007	Venice, Metro East Sanitary District	67.74	RL	89.11	RH	80.70	RH	74.59	VL	88.79	RM	86.09	RM
4008.01	Granite City, Metro East Sanitary District	64.66	RL	86.16	RH	65.65	RM	0.00	NR	0.00	NR	80.07	RL
4008.02	Granite City, Metro East Sanitary District	83.11	RM	97.99	VH	95.05	VH	0.00	NR	0.00	NR	86.24	RM
4009.03	Granite City, Madison, City of, Pontoon Beach, Nameoki Township, Collinsville CUSD #10, Metro East Sanitary District	83.42	RM	97.95	VH	97.06	VH	86.47	RL	61.02	RL	89.91	RH
4009.04	Granite City, Nameoki Township, Metro East Sanitary District	70.57	RL	91.58	RH	73.10	RM	76.71	VL	0.00	NR	79.38	RL
4009.51	Granite City, Nameoki Township, Metro East Sanitary District	81.06	RM	97.32	VH	93.52	RH	75.68	VL	0.00	NR	85.20	RM
4009.52	Granite City, Pontoon Beach, Nameoki Township, Metro East Sanitary District	74.21	RM	94.13	RH	82.00	RH	76.49	VL	67.77	RL	83.20	RM
4010	Roxana, Roxana CUSD #1, Wood River-Hartford ESD #15, Wood River D&LD	68.75	RL	90.08	RH	73.78	RM	73.61	VL	63.45	RL	80.54	RM
4011.01	Wood River, Wood River-Hartford ESD #15, Wood River D&LD	72.25	RM	92.84	RH	77.74	RH	0.00	NR	44.71	RL	83.37	RM
4011.02	Wood River, Roxana CUSD #1, Wood River-Hartford ESD #15, Wood River D&LD	72.90	RM	93.30	RH	76.07	RH	68.97	VL	55.70	RL	80.73	RM
4012	East Alton, Wood River, Alton CUSD #11, Roxana CUSD #1, Wood River-Hartford ESD #15, Wood River D&LD	62.04	RL	82.95	RH	59.74	RM	72.66	VL	43.96	RL	77.62	RL
4013	East Alton, Wood River D&LD	78.99	RM	96.48	VH	89.33	RH	74.20	VL	83.19	RM	85.12	RM
4014	Alton, Alton CUSD #11	74.34	RM	94.22	RH	79.58	RH	0.00	NR	82.45	RM	80.01	RL
4015	Alton, Alton CUSD #11, Wood River D&LD	71.08	RM	91.99	RH	76.30	RH	0.00	NR	87.43	RM	80.24	RM
Madison County		87.81	RH	98.70	RH	97.49	RH	59.56	RL	89.14	RM	96.82	RM

Rating Abbreviations: NR = NR; VL = VL; RL = RL; RM = RM; RH = RH; VH = VH

Figure R-4
NRI Hazard Scores/Ratings by Hazard by Census Tract
(Sheet 6 of 8)

Census Tract No.	Participating Jurisdiction Located in Census Tract	Extreme Cold		Excessive Heat		Tornadoes		Drought		Landslides		Earthquakes	
		Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating
4017.01	Alton, Alton CUSD #11, Bethalto CUSD #8	75.26	RM	94.67	RH	83.29	RH	77.70	VL	63.66	RL	81.61	RM
4017.21	Bethalto CUSD #8	76.88	RM	95.54	VH	84.52	RH	74.21	VL	0.00	NR	83.43	RM
4017.22	Bethalto CUSD #8	67.58	RL	89.07	RH	67.41	RM	69.53	VL	0.00	NR	80.20	RM
4018	East Alton, Bethalto CUSD #8, Roxana CUSD #1, Wood River D&LD	79.67	RM	96.76	VH	90.49	RH	74.36	VL	85.58	RM	84.14	RM
4019.01	Wood River, Bethalto CUSD #8, Roxana CUSD #1, Wood River D&LD	62.71	RL	83.60	RH	61.91	RM	78.37	VL	62.24	RL	76.90	RL
4019.05	Edwardsville, Pontoon Beach, Roxana, Roxana CUSD #1, Wood River-Hartford ESD #15, South Roxana FPD, Metro East Sanitary District, Wood River D&LD	81.44	RM	97.33	VH	98.63	VH	85.57	RL	87.27	RM	95.62	RH
4020	Alton, Alton CUSD #11	80.70	RM	97.19	VH	93.55	RH	0.00	NR	92.91	RM	86.15	RM
4021	Alton, Alton CUSD #11	77.39	RM	95.81	VH	91.55	RH	0.00	NR	80.48	RM	85.57	RM
4022	Alton, Alton CUSD #11	76.68	RM	95.46	VH	85.73	RH	0.00	NR	87.92	RM	74.85	RL
4023	Alton, Alton CUSD #11	65.07	RL	86.56	RH	67.56	RM	0.00	NR	98.93	RH	68.90	RL
4024	East Alton, Wood River D&LD	66.97	RL	88.40	RH	78.83	RH	71.68	VL	96.00	RH	85.23	RM
4025	Alton, Alton CUSD #11	67.32	RL	88.82	RH	68.42	RM	0.00	NR	74.77	RM	78.08	RL
4026	Alton, Alton CUSD #11	73.18	RM	93.50	RH	79.75	RH	0.00	NR	94.57	RH	81.33	RM
4027.01	Godfrey, Alton CUSD #11	84.25	RM	98.25	VH	96.58	VH	81.86	RL	80.17	RM	86.20	RM
4027.21	Godfrey, Alton CUSD #11	84.62	RM	98.33	VH	96.72	VH	83.83	RL	84.60	RM	85.61	RM
4027.22	Godfrey, Alton CUSD #11	68.20	RL	89.59	RH	70.27	RM	73.86	VL	89.37	RM	74.15	RL
4028.01	Alton, Godfrey, Alton CUSD #11	69.96	RL	90.74	RH	70.90	RM	81.73	RL	69.33	RL	77.57	RL
4028.03	Wood River, Bethalto CUSD #8, Edwardsville CUSD #7	74.66	RM	93.64	RH	80.26	RH	88.10	RL	66.33	RL	80.90	RM
4028.04	Alton CUSD #11, Bethalto CUSD #8, Edwardsville CUSD #7	65.15	RL	85.01	RH	61.20	RM	85.70	RL	61.89	RL	74.20	RL
4028.05	Bethalto CUSD #8, Edwardsville CUSD #7	77.45	RM	95.56	VH	85.28	RH	86.03	RL	72.08	RM	81.47	RM
Madison County		87.81	RH	98.70	RH	97.49	RH	59.56	RL	89.14	RM	96.82	RM

Rating Abbreviations: NR = NR; VL = VL; RL = RL; RM = RM; RH = RH; VH = VH

Figure R-4
NRI Hazard Scores/Ratings by Hazard by Census Tract
(Sheet 7 of 8)

Census Tract No.	Participating Jurisdiction Located in Census Tract	Extreme Cold		Excessive Heat		Tornadoes		Drought		Landslides		Earthquakes	
		Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating
4029	Edwardsville, Edwardsville Township, Edwardsville CUSD #7	74.65	RM	94.40	RH	80.30	RH	74.88	VL	73.67	RM	82.28	RM
4030.01	Edwardsville, Edwardsville Township, Edwardsville CUSD #7, Glen Carbon FPD	80.03	RM	96.90	VH	93.43	RH	69.38	VL	0.00	NR	89.73	RH
4030.02	Edwardsville, Edwardsville Township, Edwardsville CUSD #7	80.19	RM	96.99	VH	91.06	RH	0.00	NR	0.00	NR	85.38	RM
4031.01	Edwardsville, Glen Carbon, Edwardsville Township, Collinsville CUSD #10, Edwardsville CUSD #7, Metro East Sanitary District	84.34	RM	98.23	VH	97.62	VH	84.90	RL	97.98	RH	91.71	RH
4031.21	Collinsville, Edwardsville, Glen Carbon, Collinsville Township, Edwardsville Township, Collinsville CUSD #10, Edwardsville CUSD #7, Glen Carbon FPD	87.85	RM	99.06	VH	98.42	VH	74.27	VL	90.44	RM	85.67	RM
4031.22	Edwardsville, Glen Carbon, Edwardsville Township, Edwardsville CUSD #7, Glen Carbon FPD, Troy FPD	81.23	RM	97.37	VH	92.78	RH	78.02	VL	50.05	RL	84.48	RM
4032	Collinsville, Collinsville Township, Collinsville CUSD #10	79.61	RM	96.75	VH	91.30	RH	0.00	NR	67.51	RL	83.64	RM
4033	Collinsville, Collinsville Township, Collinsville CUSD #10	71.20	RM	92.08	RH	78.02	RH	0.00	NR	51.46	RL	82.91	RM
4034.01	Collinsville, Collinsville Township, Collinsville CUSD #10	74.79	RM	94.48	RH	82.43	RH	0.00	NR	54.73	RL	79.49	RL
4034.03	Collinsville, Collinsville Township, Collinsville CUSD #10	71.55	RM	92.30	RH	79.83	RH	75.67	VL	81.12	RM	83.71	RM
4034.04	Collinsville, Collinsville Township,	74.46	RM	94.30	RH	81.42	RH	0.00	NR	88.89	RM	80.61	RM
4035.02	Collinsville, Collinsville Township, Collinsville CUSD #10	80.17	RM	96.94	VH	93.78	VH	79.31	VL	70.33	RL	86.63	RM
Madison County		87.81	RH	98.70	RH	97.49	RH	59.56	RL	89.14	RM	96.82	RM

Rating Abbreviations: NR = NR; VL = VL; RL = RL; RM = RM; RH = RH; VH = VH

Figure R-4
NRI Hazard Scores/Ratings by Hazard by Census Tract
(Sheet 8 of 8)

Census Tract No.	Participating Jurisdiction Located in Census Tract	Extreme Cold		Excessive Heat		Tornadoes		Drought		Landslides		Earthquakes	
		Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating
4035.31	Troy, Troy FPD	83.98	RM	98.18	VH	96.60	VH	82.65	RL	0.00	NR	87.35	RM
4035.32	Troy, Troy FPD	76.52	RM	95.08	VH	86.97	RH	86.07	RL	0.00	NR	83.29	RM
4035.33	Glen Carbon, Maryville, Troy, Collinsville Township, Collinsville CUSD #10, Glen Carbon FPD, Troy FPD	88.10	RM	99.12	VH	99.06	VH	80.36	VL	75.00	RM	89.89	RH
4035.34	Collinsville, Glen Carbon, Maryville, Pontoon Beach, Collinsville Township, Collinsville CUSD #10, Metro East Sanitary District	73.20	RM	93.30	RH	84.76	RH	83.00	RL	84.59	RM	83.01	RM
4036.01	Highland, Saline Township	72.64	RM	92.85	RH	88.17	RH	83.26	RL	40.09	VL	89.04	RM
4036.03	Highland, Saline Township	62.29	RL	83.10	RH	60.63	RM	77.92	VL	0.00	NR	74.25	RL
4036.04	Highland, Saline Township	83.03	RM	97.94	VH	96.55	VH	78.28	VL	66.33	RL	87.68	RM
4037.01	Marine, Troy, Edwardsville CUSD #7, Glen Carbon FPD, Troy FPD	82.20	RM	97.14	VH	93.08	RH	90.98	RL	54.72	RL	86.09	RM
4037.02	Grantfork, St. Jacob, Saline Township	79.52	RM	95.63	VH	88.99	RH	91.57	RL	55.88	RL	83.76	RM
4038.01	Hamel, Worden, Edwardsville CUSD #7	77.79	RM	95.11	VH	84.58	RH	90.12	RL	70.68	RL	83.04	RM
4038.02	Alhambra, Grantfork, Livingston, Leef Township, Olive Fire District	82.23	RM	96.17	VH	88.27	RH	93.62	RM	53.71	RL	84.58	RM
4040	Granite City, Metro East Sanitary District	72.73	RM	93.14	RH	93.69	VH	0.00	NR	57.95	RL	92.42	RH
4041	Granite City, Madison, City of, Wood River-Hartford ESD #15, South Roxana FPD, Metro East Sanitary District	72.26	RM	92.37	RH	84.65	RH	85.17	RL	77.63	RM	86.93	RM
5021 (St. Clair County)	Madison, City of	73.90	RM	91.84	RH	79.88	RH	73.23	VL	85.92	RH	92.09	RH
5024.04 (St. Clair County)	Collinsville	81.63	RM	96.28	VH	77.38	RH	81.35	RL	82.36	RM	85.30	RM
5034.12 (St. Clair County)	Collinsville	82.44	RM	96.67	VH	78.06	RH	76.78	VL	71.35	RM	84.91	RM
5045.02 (St. Clair County)	Madison, City of	66.06	RL	83.99	RH	63.91	RM	73.28	VL	68.48	RM	86.58	RM
Madison County		87.81	RH	98.70	RH	97.49	RH	59.56	RL	89.14	RM	96.82	RM

Rating Abbreviations: NR = NR; VL = VL; RL = RL; RM = RM; RH = RH; VH = VH

Figure R-5
Critical Facilities & Infrastructure by Jurisdiction
(Sheet 1 of 2)

Participating Jurisdiction	Critical Facilities				Critical Infrastructure						
	Government ¹	Emergency Protection ²	Medical & Healthcare ³	Schools	Drinking Water ⁴	Wastewater Treatment ⁵	Rail Lines	Bridges	Interstates US/State Routes & Key Roads	Power Plants	Comm. Systems
Madison County	8	60	47	---	---	---	6	18	18	---	---
Alhambra	3	2	3	1	1	4	---	2	8	---	---
Alton	8	5	12	12	1	1	4	1	12	---	---
America's Central Port	2	1	---	1	---	---	3	---	---	---	---
Collinsville	8	4	6	9	7	14	1	5	10	---	---
East Alton	6	4	---	3	2	1	2	2	7	---	---
Edwardsville	11	9	14	14	8	38	1	16	8	---	---
Glen Carbon	5	3	6	3	4	26	---	6	8	---	---
Godfrey	1	2	12	8	6	17	2	10	25	---	---
Granite City	5	4	13	13	---	28	2	2	12	---	---
Grantfork	2	2	---	1	1	6	---	1	8	---	---
Hamel	1	2	1	1	2	3	---	---	3	---	---
Highland	4	4	10	6	3	5	1	3	15	---	---
Livingston	1	2	---	---	1	2	1	1	1	---	---
Madison, City of	3	2	1	2	---	9	3	2	4	---	---
Marine	5	2	---	2	2	4	---	---	8	---	---
Maryville	3	2	8	4	2	---	---	---	7	---	---
Pontoon Beach	2	2	---	---	---	---	1	---	2	---	---
Roxana	3	2	---	2	2	1	---	---	4	---	---
St. Jacob	2	1	---	1	2	3	1	---	5	---	---
Troy	2	1	9	5	3	15	1	1	11	---	---
Venice	3	1	---	3	---	---	3	1	5	---	---
Wood River	2	2	2	2	4	14	3	1	9	---	---
Worden	2	2	2	2	1	8	3	---	6	---	---

¹ Government includes: courthouses, city/village halls, township buildings, highway/road maintenance centers, libraries, etc.

² Emergency Protection includes: sheriff's department, police, fire, ambulance, emergency operations centers, jail/correctional facilities and evacuation shelters.

³ Medical & Healthcare includes: public health departments, hospitals, urgent/prompt care and medical clinics, nursing homes, skilled nursing facilities, memory care facilities, residential group homes, etc.

⁴ Drinking Water includes: drinking water treatment plants, drinking water wells, and water storage towers/tanks.

⁵ Wastewater Treatment includes: wastewater treatment plants and lift stations.

--- Indicates the jurisdiction does not own/maintain any critical facilities within that category.

Figure R-5
Critical Facilities & Infrastructure by Jurisdiction
(Sheet 2 of 2)

Participating Jurisdiction	Critical Facilities				Critical Infrastructure						
	Government ¹	Emergency Protection ²	Medical & Healthcare ³	Schools	Drinking Water ⁴	Wastewater Treatment ⁵	Rail Lines	Bridges	Interstates US/State Routes & Key Roads	Power Plants	Comm. Systems
Collinsville Township	4	---	---	---	---	---	---	---	---	---	---
Edwardsville Township	3	---	---	---	---	---	---	---	---	---	---
Leef Township	1	1	---	1	---	---	---	---	---	---	---
Nameoki Township	1	3	---	2	---	---	2	5	5	---	---
Alton CUSD #1	---	---	---	11	---	---	---	---	---	---	---
Bethalto CUSD #8	---	---	---	5	---	---	---	---	---	---	---
Collinsville CUSD #10	---	---	1	14	---	---	---	---	---	---	---
Edwardsville CUSD #7	---	---	---	18	---	---	---	---	---	---	---
Madison County ROE #41	---	---	---	1	---	---	---	---	---	---	---
Marquette Catholic High School	---	---	---	1	---	---	---	---	---	---	---
Roxana CUSD #1	---	---	---	4	---	---	---	---	---	---	---
St. Mary's Catholic School	---	---	---	2	---	---	---	---	---	---	---
SIUE	2	2	2	16	2	2	---	1	5	---	---
Wood River-Hartford ESD #15	---	---	---	3	---	---	---	---	---	---	---
Glen Carbon FPD	1	3	1	1	2	---	---	---	4	---	---
Olive Fire District	2	3	---	---	2	---	2	---	1	---	---
South Roxana FPD	1	2	---	1	---	1	---	---	2	---	---
Troy FPD	6	5	5	6	2	15	1	3	11	---	---
Anderson Hospital	---	---	5	---	---	---	---	---	---	---	---
OSF St. Anthony's Health Center	---	---	5	---	---	---	---	---	---	---	---
Metro East Sanitary District	4	---	---	---	---	---	3	2	9	---	---
Wood River D&LD	6	---	---	---	---	---	---	---	---	---	---

¹ Government includes: courthouses, city/village halls, township buildings, highway/road maintenance centers, libraries, etc.

² Emergency Protection includes: sheriff's department, police, fire, ambulance, emergency operations centers, jail/correctional facilities and evacuation shelters.

³ Medical & Healthcare includes: public health departments, hospitals, urgent/prompt care and medical clinics, nursing homes, skilled nursing facilities, memory care facilities, residential group homes, etc.

⁴ Drinking Water includes: drinking water treatment plants, drinking water wells, and water storage towers/tanks.

⁵ Wastewater Treatment includes: wastewater treatment plants and lift stations.

--- Indicates the jurisdiction does not own/maintain any critical facilities within that category.

3.1 SEVERE STORMS (THUNDERSTORMS, HAIL, LIGHTNING & HEAVY RAIN)

HAZARD IDENTIFICATION

What is the definition of a severe storm?

The National Oceanic and Atmospheric Administration's (NOAA) National Weather Service (NWS) defines a "severe storm" as any thunderstorm that produces one or more of the following:

- winds with gust of 50 knots (58 mph) or greater;
- hail that is at least one inch in diameter (quarter size) or larger; and/or
- a tornado.

While severe storms are capable of producing deadly lightning and heavy rain that may lead to flash flooding, the NWS does not use lightning/either to define a severe storm. However, a discussion of both lightning and heavy rain is included in this section because both are capable of causing extensive damage. For the purposes of this report, tornadoes and flooding are categorized as separate hazards and are not discussed under severe storms.

What is a thunderstorm?

A thunderstorm is a rain shower accompanied by lightning and thunder. An average thunderstorm is approximately 15 miles in diameter, affecting a relatively small area when compared to winter storms or hurricanes, and lasts an average of 30 minutes. Thunderstorms can bring heavy rain, damaging winds, hail, lightning and tornadoes.

There are four basic types of thunderstorms: single-cell, multi-cell, squall line, and supercell. The following provides a brief description of each.

Single-cell Thunderstorm

Single cell storms are small, weak storms that only last about ½ hour to an hour and are not usually considered severe. They are typically driven by heating on a summer afternoon. Occasionally a single cell storm will become severe, but only briefly. When this happens, it is called a pulse severe storm.

Multi-cell Thunderstorm

Multi-cell storms are the most common type of thunderstorms. A multi-cell storm is organized in clusters of at least two to four short-lived cells. Each cell usually lasts 30 to 60 minutes while the system as a whole may persist for many hours. Multi-cell storms may produce hail, strong winds, brief tornadoes, and/or flooding.

Squall Line

A Squall line is a group of storms arranged in a line, often accompanied by "squalls" of high wind and heavy rain. The line of storms can be continuous or there can be gaps and breaks in the line. Squall lines tend to pass quickly and can be hundreds of miles long but are typically only 10 to 20 miles wide. A "bow echo" is a radar signature of a squall line that "bows out" as winds fall behind the line and circulation develops on either end.

Supercell Thunderstorm

Supercell storms are long-lived (greater than one hour) and highly organized storms that feed off a rising current of air (an updraft). The main characteristic that sets a supercell storm apart from other thunderstorm types is the presence of rotation in the updraft. The rotating updraft of a supercell (called a mesocyclone when visible on radar) helps a supercell storm produce extreme weather events. Supercell storms are potentially the most dangerous storm type and have been observed to generate the vast majority of large and violent tornadoes, as well as downburst winds and large hail.

Despite their size, all thunderstorms are dangerous and capable of threatening life and property. Of the estimated 100,000 thunderstorms that occur each year in the U.S., roughly 10% are classified as severe.

What kinds of damaging winds are produced by a thunderstorm?

Aside from tornadoes, thunderstorms can produce straight-line winds. A straight-line wind is defined as any wind produced by a thunderstorm that is not associated with rotation. There are several types of straight-line winds including downdrafts, downbursts, microbursts, gust fronts and derechos.

Damage from straight-line winds is more common than damage from tornadoes and accounts for most thunderstorm wind damage. Straight-line wind speeds can exceed 87 knots (100 mph), produce a damage pathway extending for hundreds of miles and can cause damage equivalent to a strong tornado.

The NWS measures a storm's wind speed in knots or nautical miles. A wind speed of one knot is equal to approximately 1.15 miles per hour. **Figure SS-1** shows conversions from knots to miles per hour for various wind speeds.

Figure SS-1 Wind Speed Conversions			
Knots (kts)	Miles Per Hour (mph)	Knots (kts)	Miles Per Hour (mph)
50 kts	58 mph	60 kts	69 mph
52 kts	60 mph	65 kts	75 mph
55 kts	63 mph	70 kts	81 mph
58 kts	67 mph	80 kts	92 mph

What is hail?

Hail is precipitation in the form of spherical or irregular-shaped pellets of ice that occur within a thunderstorm when strong rising currents of air (updrafts) carry raindrops upward into extremely cold areas of the atmosphere where they freeze into ice.

Hailstones grow by colliding with supercooled water drops. The supercooled water drops freeze on contact with ice crystals, frozen rain drops, dust, etc. Thunderstorms with strong updrafts continue lifting the hailstones to the top of the cloud where they encounter more supercooled water and continue to grow. Eventually the updraft can no longer support the weight of the hail, or the updraft weakens, and the hail falls to the ground.

In the U.S., hail causes more than \$1 billion in damages to property and crops annually. Hail has been known to cause injuries, although it rarely causes fatalities or serious injury.

How is the severity of a hail event measured?

The severity or magnitude of a hail event is measured in terms of the size (diameter) of the hailstones. The hail size is estimated by comparing it to known objects. **Figure SS-2** provides descriptions for various hail sizes.

Figure SS-2 Hail Size Descriptions			
Hail Diameter (inches)	Description	Hail Diameter (inches)	Description
0.25 in.	pea	1.75 in.	golf ball
0.50 in.	marble/mothball	2.50 in.	tennis ball
0.75 in.	penny	2.75 in.	baseball
0.88 in.	nickel	3.00 in.	teacup
1.00 in.	quarter	4.00 in.	grapefruit
1.50 in.	ping pong ball	4.50 in.	softball

Source: NOAA, National Severe Storm Laboratory.

Hail size can vary widely. Hailstones may be as small as 0.25 inches in diameter (pea-sized) or, under extreme circumstances, as large as 4.50 inches in diameter (softball-sized). Typically hail that is one (1) inch in diameter (quarter-sized) or larger is considered severe.

The severity of a hail event can also be measured or rated using the TORRO Hailstorm Intensity Scale. This scale was developed in 1986 by the Tornado and Storm Research Organisation of the United Kingdom. It measures the intensity or damage potential of a hail event based on several factors including: maximum hailstone size, distribution, shape and texture, numbers, fall speed and strength of the accompanying winds.

The Hailstorm Intensity Scale identifies ten different categories of hail intensity, H0 through H10. **Figure SS-3** gives a brief description of each category. This scale is unique because it recognizes that, while the maximum hailstone size is the most important parameter relating to structural damage, size alone is insufficient to accurately categorize the intensity and damage potential of a hail event.

It should be noted that the typical damage impacts associated with each intensity category reflect the building materials predominately used in the United Kingdom. These descriptions may need to be modified for use in other countries to take into account the differences in building materials typically used (i.e., whether roofing materials are predominately shingle, slate or concrete, etc.).

What is lightning?

Lightning, a component of all thunderstorms, is a visible electrical discharge that results from the buildup of charged particles within storm clouds. It can occur from cloud-to-ground, cloud-to-cloud, within a cloud or cloud-to-air. The air near a lightning strike is heated to approximately

50,000°F (hotter than the surface of the sun). The rapid heating and cooling of the air near the lightning strike causes a shock wave that produces thunder.

Figure SS-3 TORRO Hailstorm Intensity Scale					
Intensity Category		Typical Hail Diameter		Description	Typical Damage Impacts
		millimeters (approx.)*	inches (approx.)*		
H0	Hard Hail	5 mm	0.2"	pea	no damage
H1	Potentially Damaging	5-15 mm	0.2" – 0.6"	pea / mothball	slight general damage to plants, crops
H2	Significant	10-20 mm	0.4" – 0.8"	dime / penny	significant damage to fruit, crops, vegetation
H3	Severe	20-30 mm	0.8" – 1.2"	nickel / quarter	severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
H4	Severe	25-40 mm	1.0" – 1.6"	half dollar / ping pong ball	widespread glass damage, vehicle bodywork damage
H5	Destructive	30-50 mm	1.2" – 2.0"	golf ball	wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
H6	Destructive	40-60 mm	1.6" – 2.4"	golf ball / egg	bodywork of grounded aircraft dented; brick walls pitted
H7	Destructive	50-75 mm	2.0" – 3.0"	egg / tennis ball	severe roof damage, risk of serious injuries
H8	Destructive	60-90 mm	2.4" – 3.5"	tennis ball / teacup	severe damage to aircraft bodywork
H9	Super Hailstorms	75-100 mm	3.0" – 4.0"	teacup / grapefruit	extensive structural damage, risk of severe or even fatal injuries to persons caught in the open
H10	Super Hailstorms	> 100 mm	> 4.0"	softball	extensive structural damage, risk of severe or even fatal injuries to persons caught in the open

* Approximate range since other factors (i.e., number and density of hailstones, hail fall speed and surface wind speed) affect severity.

Source: Tornado and Storm Research Organisation, TORRO Hailstorm Intensity Scale Table.

Lightning on average causes 60 fatalities and 400 injuries annually in the U.S. Most fatalities and injuries occur when people are caught outdoors in the summer months during the afternoons and evenings. In addition, lightning can cause structure and forest fires. Many of the wildfires in the western U.S. and Alaska are started by lightning. According to the NWS lightning strikes cost more than \$1 billion in insured losses each year.

Are alerts issued for severe storms?

Yes. The NWS Weather Forecast Office in St. Louis, Missouri is responsible for issuing severe thunderstorm watches and warnings for Madison County depending on the weather conditions. The following provides a brief description of each type of alert.

- **Severe Thunderstorm Watch.** A severe thunderstorm watch is issued when severe thunderstorms are possible in or near the watch area. Individuals should stay alert for the latest weather information and be prepared to take shelter.
- **Severe Thunderstorm Warning.** A severe thunderstorm warning is issued when severe weather has been reported by spotters or indicated by radar. Warnings indicate imminent danger to life and property for those who are in the path of the storm and individuals should seek safe shelter.

HAZARD PROFILE

The following identifies past occurrences of severe storms; details the severity or extent of each event (if known); identifies the locations potentially affected; and estimates the likelihood of future occurrences (Local Mitigation Planning Policy Guide Element B1-b through B1-f).

When have severe storms occurred previously? What is the extent of these previous severe storms?

Tables 1, 2, 3, and 4, located in **Appendix J**, summarize the previous occurrences as well as the extent or magnitude of severe storm events recorded in Madison County. Severe storm events are separated into four categories: thunderstorms with damaging winds, hail, lightning, and heavy rain.

Thunderstorms with Damaging Winds

NOAA's Storm Events Database was used to document 312 reported occurrences of thunderstorms with damaging winds in Madison County between 1966 and 2023. Of the 312 occurrences, 252 had reported wind speeds of 50 knots or greater. There were 60 occurrences, however, where the wind speed was not recorded. Included in the 312 thunderstorms with damaging wind events are 20 events that contributed to four major federal disaster declarations. Three of the 312 events contributed to two state disaster proclamations in Madison County.

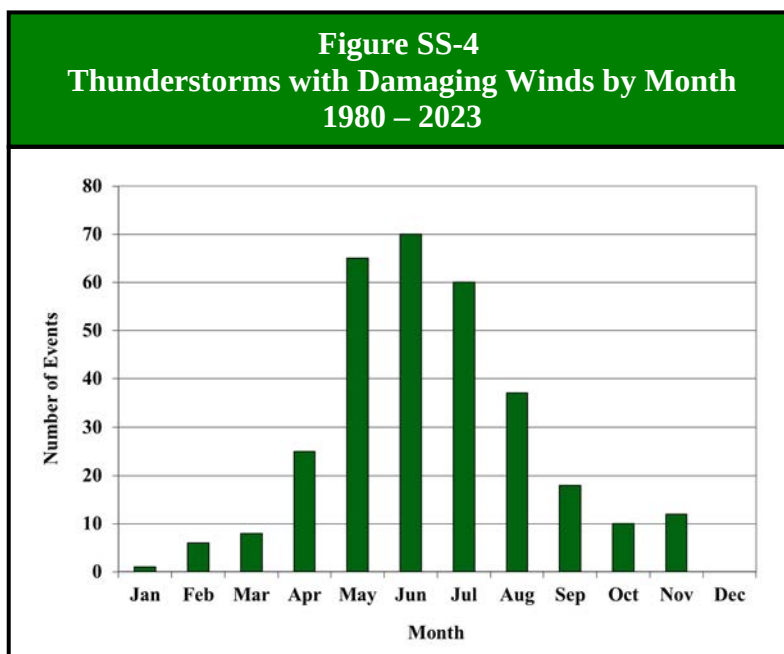
Severe Storms Fast Facts – Occurrences

Number of recorded Thunderstorms with Damaging Winds (1966 – 2023): **312**
 Number of recorded Severe Hail Events (1977 – 2023): **144**
 Number recorded of Lightning Strike Events (1990 – 2023): **21**
 Number of Heavy Rain Events (1993 – 2023): **292**
 Highest Recorded Wind Speed: **81 knots (March 27, 2021)**
 Largest Hail Recorded: **3.00 inches (November 5, 2017)**
 Most Likely Month for Thunderstorms with Damaging Winds to Occur: **June**
 Most Likely Month for Severe Hail to Occur: **April**
 Most Likely Month for Heavy Rain to Occur: **July**
 Number of Major Disaster Declarations Related to Severe Storms: **4 (1995, 2002, 2008, 2019)**
 Number of State Disaster Proclamation Related to Severe Storms: **2 (2011, 2015)**

The highest wind speed recorded in Madison County occurred in Highland on March 27, 2021 when winds reached 81 knots (93 mph) during a thunderstorm event. Thunderstorms with damaging winds have been *recorded* in every participating municipality within the County on at least one occasion.

Figure SS-4 charts the reported occurrences of thunderstorms with damaging winds by month. Of the 312 events, 195 (63%) took place in May, June, and July making this the peak period for thunderstorms with damaging winds in Madison County. Of those 195 events, 70 (36%) occurred

during June, making this the peak month for thunderstorms with damaging winds. Of the 312 occurrences, 82% of all thunderstorms with damaging winds occurred during the p.m. hours.



Hail

NOAA's Storm Events Database was used to document 144 reported occurrences of severe storms with hail one (1) inch in diameter or greater in Madison County between 1977 and 2023. Of the 144 occurrences, 52 produced hailstones 1.50 inches or larger in diameter.

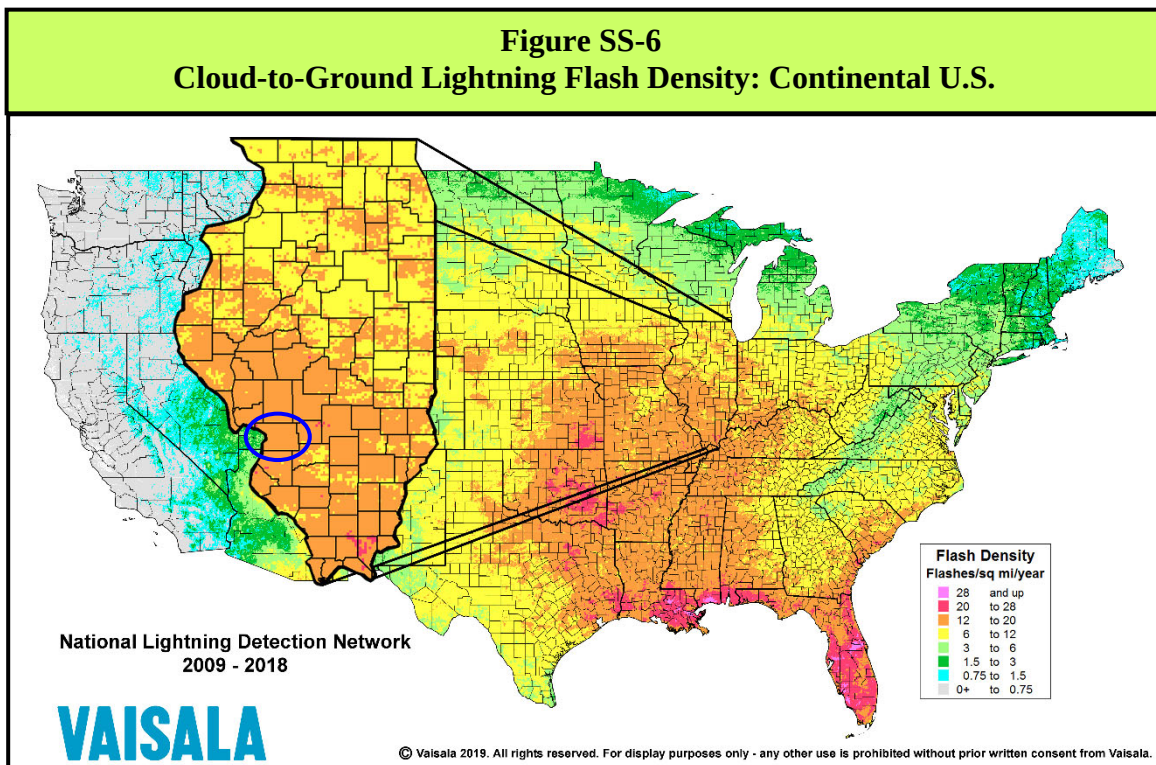
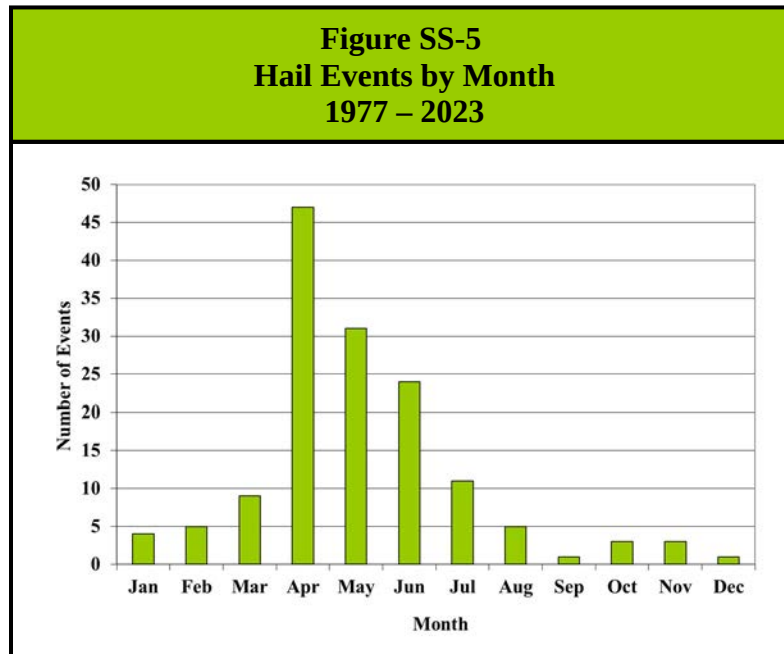
The largest hail documented in Madison County measured 3.00 inches in diameter (size of a teacup) and fell on June 28, 1965 in Collinsville and again on November 5, 2017 in Venice and Collinsville. Hail one inch in diameter or greater has been *recorded* in every participating municipality on at least one occasion.

Figure SS-5 charts the reported occurrences of hail by month. Of the 144 occurrences, 102 (71%) took place in April, May, and June, making this the peak period for hail in Madison County. Of these 102 events, 47 (46%) occurred during April making this the peak month for hail events. Of the 144 occurrences, 76% of all severe storms with hail occurred during the p.m. hours.

Lightning

While lightning strike events occur regularly across southwestern Illinois, NOAA's Storm Events Database and Committee member records were only able to identify 21 recorded occurrences of lightning strikes with verified damages in Madison County between 1990 and 2023. This is almost certainly due to the rural nature of a majority of the County. Eleven of the events took place during July and August while the remaining 10 events took place in different months between March and October. For the nine lightning strike events with recorded times, four occurred in the a.m. and five occurred in the p.m.

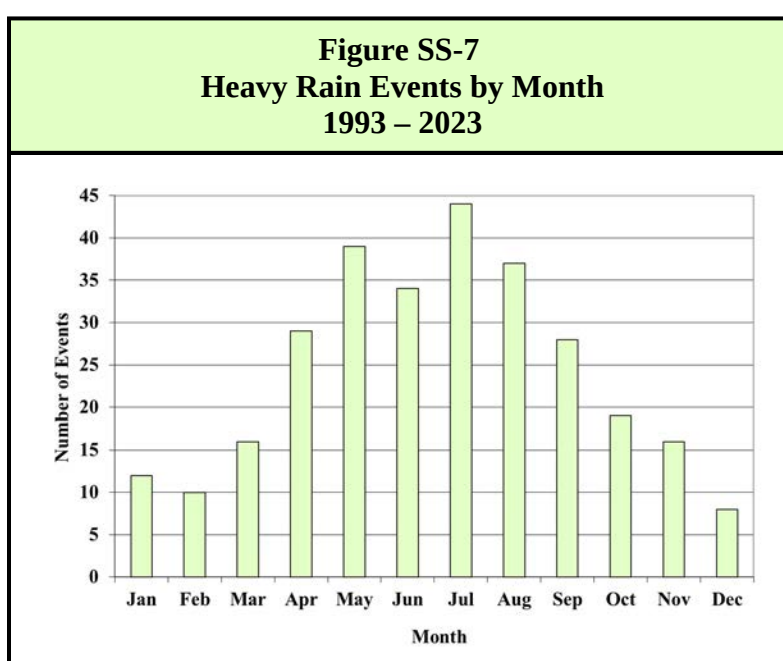
According to data from Vaisala's National Lightning Detection Network, Madison County averaged close to 12 to 20 cloud-to-ground lightning flashes per square mile annually between 2009 and 2018. **Figure SS-6** illustrates the cloud-to-ground lightning flash density (number of cloud-to-ground flashes per square mile per year) by county for the continental United States. In comparison, Illinois averaged 12.7 cloud-to-ground lightning flashes per square mile from 2009 to 2018, ranking it eighth in the Country for lightning flash density.



Heavy Rain

NOAA’s Storm Events Database, Midwestern Regional Climate Center’s cli-MATE database, and National Weather Service’s COOP data records were used to document 292 occurrences of heavy rain in Madison County between 1993 and 2023. Of the 292 occurrences, 75 events (26%) produced three inches or more of rain. Four of the 292 heavy rain events contributed to two federally-declared disaster declarations and two additional events contributed to two state disaster proclamations for Madison County.

Figure SS-7 charts the reported occurrences of heavy rain events by month. Of the 292 events, 154 (53%) took place in May, June, July, and August making this the peak period for heavy rain events in Madison County. Of those 154 events, 44 (29%) occurred during July making this the peak month for heavy rain. Of the 120 occurrences with a recorded start time, 52% of all heavy rain events occurred during the p.m. hours.



What locations are affected by severe storms?

Severe storms affect the entire County. A single severe storm event will generally extend across the entire County and affect multiple locations. Severe storms have been recorded in every participating jurisdiction within the County on multiple occasions.

What is the probability of future severe storm events occurring based on historical data?

Thunderstorms with Damaging Winds

Madison County has had 312 verified occurrences of thunderstorms with damaging winds between 1966 and 2023. With 312 occurrences over the past 58 years, Madison County would expect to experience more than five thunderstorms with damaging winds in any given year. There were 28 years over the last 58 years where five or more thunderstorms with damaging winds occurred. This indicates that the probability that five or more thunderstorms with damaging winds may occur during any given year within the County is 48%.

Hail

There have been 144 verified occurrences of hail one (1) inch in diameter or greater between 1977 and 2023. With 144 occurrences over the past 47 years, Madison County would expect to experience three severe storms with hail one (1) inch in diameter or greater in any given year. There were 24 years over the last 47 years where two or more hail events occurred. This indicates that the probability that more than one severe storm with hail may occur during any given year within the County is 51%.

Heavy Rain

There have been 292 verified occurrences of heavy rain between 1993 and 2023. With 292 occurrences over the past 31 years, Madison County would expect to experience at least nine heavy rain events in any given year. There were 19 years over the last 31 years where nine or more heavy rain events occurred. This indicates that the probability that nine or more heavy rain events may occur during any given year within the County is 61%.

HAZARD VULNERABILITY

The following describes the vulnerability to participating jurisdictions; specifies the unique and varied risk differences across the planning area and between participating jurisdictions; identifies the impacts on public health and property (if known); and estimates the potential impacts on public health and safety as well as buildings, infrastructure, and critical facilities from severe storms (Local Mitigation Planning Policy Guide Element B1-f, B2-a, and B2-b).

Are the participating jurisdictions vulnerable to severe storms?

Yes. All of Madison County is vulnerable to the dangers presented by severe storms due to the topography of the region and its location in relation to the movement of weather fronts across central Illinois. Since 2014, Madison County has recorded 100 verified heavy rain events, 83 thunderstorms with damaging winds, 31 severe storms with hail one (1) inch in diameter or greater, and six lightning strikes with verified damages.

Figure SS-8 details the number of thunderstorms with damaging winds and hail events that were recorded in or near each participating municipality while **Figure SS-9** details the number of thunderstorms with damaging winds and hail events that were recorded in or near unincorporated areas of Madison County.

Of the participating municipalities, Edwardsville has had more recorded occurrences of thunderstorms with damaging winds and severe storms with hail events. The differences in the number of recorded events between participating municipalities is likely due to the relative size of the municipalities as well as the fact that there has been a long-term NWS COOP Observation Station located in Edwardsville.

The *2023 Illinois Natural Hazard Mitigation Plan* prepared by the Illinois Emergency Management Agency and Office of Homeland Security (IEMA-OHS) classifies Madison County's hazard rating for wind (thunderstorms) and hail as "high" and lightning as "low". IEMA-OHS's overall hazard rating system has five levels: very low, low, medium, high, and very high.

**Figure SS-8
Verified Severe Storm Events by
Participating Municipality**

Participating Municipality	Number of Events	
	Thunderstorm & High Wind	Severe Hail
Alhambra	9	5
Alton	48	11
Collinsville	30	22
East Alton	25	7
Edwardsville	60	25
Glen Carbon	15	13
Godfrey	34	13
Granite City ¹	33	17
Grantfork	1	0
Hamel	12	2
Highland	33	4
Livingston	6	3
Madison, City of ¹	14	4
Marine	12	4
Maryville	18	6
Pontoon Beach	12	8
Roxanna	23	5
St. Jacob	17	4
Troy	23	11
Venice	2	2
Wood River	29	12
Worden	12	2

¹America's Central Port

**Figure SS-9
Verified Severe Storm Events in
Unincorporated Madison County**

Unincorporated Area	Number of Events	
	Thunderstorm & High Wind	Severe Hail
Carpenter	1	1
Cottage Hills	1	2
Dorsey	2	0
Fosterburg	8	1
Holiday Shores	1	0
Horseshoe Lake	1	0
Midway	1	0
Mitchell	5	1
Poag	0	2
Prairietown	2	0
Rosewood Heights	7	1

FEMA's National Risk Index (NRI) rates the County as a whole as "Relatively Low" for strong wind (thunderstorms) and hail and "Relatively Moderate" for lightning. For strong wind, five census tracts are rated "Relatively Moderate", 59 are rated "Relatively Low", and three are rated "Very Low". For hail, one census tract is rated "Very High", three are rated "Relatively High", 56 are rated "Relatively Low", and seven are rated "Very Low". For lightning, one census tract is rated "Relatively High", 16 are rated "Relatively Moderate", 47 are rated "Relatively Low", and three are rated "Very Low". **Figure R-4** presents the overall NRI scores and ratings for each census tract as well as for the County as a whole.

Have any of the participating jurisdictions identified specific assets vulnerable to the impacts of severe storms?

Yes. Based on responses to an Assets Vulnerability Survey distributed to the participating jurisdictions, all of participants, with the exception of Wood River-Hartford CUSD #15 and Metro East Sanitary District, considered specific assets within their jurisdiction vulnerable to severe storms. **Appendix I** contains copies of the completed surveys that outline problem statements summarizing their vulnerabilities to severe storms.

What impacts resulted from the recorded severe storms?

Severe storms as a whole have caused an estimated \$7.35 million in recorded property damages. The following provides a breakdown of impacts by category.

Thunderstorms with Damaging Winds

Data obtained from NOAA's Storm Events Database and Committee member records indicates that between 1966 and 2023, 45 of the 312 thunderstorms with damaging winds caused \$5,528,484 in property damages. Property damage information was either unavailable or none was recorded for the remaining 267 reported occurrences.

Included in the property damage figures provided above is \$2,190,984 in verified infrastructure and critical facilities damage sustained to East Alton and SIUE. Damaging winds associated with a July 19, 2006 thunderstorm caused property damage to multiple critical facilities within East Alton while a June 17, 2022 thunderstorm with damaging winds caused \$2 million in damages to the campus of SIUE.

NOAA's Storm Events Database documented four injuries as the result of three separate thunderstorm with damaging wind events. Detailed information was only available for two of the events. On February 20, 2014, one person sustained minor injuries when a utility pole was blown down and fell onto an occupied car. A March 27, 2021 a thunderstorm with damaging winds caused a delivery truck to be blown into an oncoming car. The delivery driver was taken to the hospital for minor injuries.

Hail

Data obtained from NOAA's Storm Events Database and Planning Committee member records indicates that between 1977 and 2023, four of the 144 hail events caused \$1,368,084 in property damages. Damage information was either unavailable or none was recorded for the remaining 140 reported occurrences. No injuries or fatalities were reported as a result of any of the recorded hail events.

Lightning

Data obtained from NOAA's Storm Events Database and Planning Committee member records indicate that between 1990 and 2023, 14 of the 21 lightning strike events caused \$421,103 in property damage. The property damage figure provided above is composed entirely of

Severe Storms Fast Facts – Impacts/Risk

Thunderstorms with Damaging Winds Impacts:

- ❖ Total Property Damage (45 events): **\$5,528,484**
- ❖ Total Crop Damage: **n/a**
- ❖ Injuries (3 events): **4**
- ❖ Fatalities: **n/a**

Severe Hail Impacts:

- ❖ Total Property Damage: (4 events): **\$1,368,084**
- ❖ Total Crop Damage: **n/a**
- ❖ Injuries: **n/a**
- ❖ Fatalities: **n/a**

Lightning Strike Impacts:

- ❖ Total Property Damage (14 events): **\$421,103**
- ❖ Total Crop Damage: **n/a**
- ❖ Injuries: (2 events): **2**
- ❖ Fatalities: **n/a**

Heavy Rain Impacts:

- ❖ Total Property Damage: (1 event): **\$35,000**
- ❖ Total Crop Damage: **n/a**
- ❖ Injuries: **n/a**
- ❖ Fatalities: **n/a**

Severe Storms Risk/Vulnerability:

- ❖ Public Health & Safety: **Low**
- ❖ Buildings/Infrastructure/Critical Facilities: **Medium**

infrastructure and critical facilities damages. Damage information was either unavailable or none was recorded for the remaining seven reported occurrences.

NOAA's Storm Events Database documented two injuries as a result of lightning strikes. Detailed information was only available for one of the events. On August 23, 1996, lightning struck a garage in Collinsville just as a 13-year-old boy touched a metal door. The resulting charge knocked him backwards across the garage and caused minor injuries.

Heavy Rain

Information obtained from Planning Committee member records indicates that between 1993 and 2023, one of the 292 events caused \$35,000 in property damage. The property damage total is composed entirely of infrastructure and critical facilities damage sustained by Hamel during a July 4, 2009 heavy rain event. Heavy rains fell on already saturated soils causing a berm at the wastewater treatment facility to give way. Damage information was either unavailable or none was recorded for any of the remaining 291 reported occurrences. In addition, no injuries or deaths were reported as a result of these events.

What other impacts can result from severe storms?

In Madison County, the greatest risk to health and safety from severe storms is vehicle accidents. Hazardous driving conditions resulting from severe storms (i.e., wet pavement, poor visibility, high winds, etc.) can contribute to accidents that result in injuries and fatalities. Traffic accident data assembled by the Illinois Department of Transportation from 2018 through 2022 indicates that wet road surface conditions were present for 13.0% to 18.8% of all crashes recorded annually in the County.

While other circumstances cause wet road surface conditions (i.e., melting snow, condensation, light showers, etc.), law enforcement officials agree that hazardous driving conditions caused by severe storms add to the number of crashes. **Figure SS-10** provides a breakdown by year of the number of crashes and corresponding injuries and fatalities that occurred when wet road surface conditions were present.

What is the level of risk/vulnerability to public health and safety from severe storms?

For Madison County the level of risk or vulnerability posed by severe storms to public health and safety is considered to be **low**. This assessment is based on the fact that despite their relative frequency, the number of injuries and fatalities is low. In addition to Alton Memorial Hospital, Anderson Hospital (Maryville), Gateway Regional Medical Center (Granite City), HSHS St. Joseph's Hospital (Highland), and OSF St. Anthony Health Center (Alton), as well as hospitals in the greater St. Louis metropolitan area are equipped to provide care to persons injured during a severe storm.

Are existing buildings, infrastructure, and critical facilities vulnerable to severe storms?

Yes. All existing buildings, infrastructure and critical facilities located in Madison County and the participating jurisdictions are vulnerable to damage from severe storms. Structural damage to buildings is a relatively common occurrence with severe storms. Damage to roofs, siding, awnings, and windows can occur from hail, flying and falling debris and high winds. Lightning strikes can damage electrical components and equipment (i.e., appliances, computers etc.) and can

cause fires that consume buildings. If the roof is compromised or windows are broken, rain can cause additional damage to the structure and contents of a building.

Figure SS-10 Severe Weather Crash Data for Madison County				
Year	Total # of Crashes	Presence of Wet Road Surface Conditions		
		# of Crashes	# of Injuries	# of Fatalities
2018	5,682	1,066	352	8
2019	5,850	866	301	2
2020	4,799	779	282	5
2021	5,642	828	254	7
2022	5,225	680	203	4
Total:	27,198	4,219	1,392	26

Source: Illinois Department of Transportation.

Infrastructure and critical facilities tend to be just as vulnerable to severe storm damage as buildings. The infrastructure and critical facilities that are the most vulnerable to severe storms are related to power distribution and communications. High winds, lightning and flying and falling debris have the potential to cause damage to communication and power lines; power substations; transformers and poles; and communication antennas and towers.

The damage inflicted by severe storms often leads to disruptions in communication and creates power outages. Depending on the damage, it can take anywhere from several hours to several days to restore service. Tony O'Neal, Ameren Illinois Senior Emergency Response Specialist – Illinois Crisis Management, served as a technical partner on the Planning Committee and was able to provide information on the impacts and damages sustained by Ameren as the result of severe storms from 2006 through 2023. This information, while regional in nature, helps quantify the damages sustained by critical infrastructure in Madison County and is summarized in **Figure SS-11**.

Power outages and disruptions in communications can impair vital services, particularly when backup power generators are not available. **Figure SS-12**, located at the end of this section, identifies by participating jurisdiction critical facilities and infrastructure for select categories that are supported by backup power generators. Of the 46 participating jurisdictions, 25 acknowledged the need for emergency backup generators to allow continued operation of critical facilities and infrastructure such as administrative and maintenance buildings, schools, fire stations, hospitals, warming and cooling centers, drinking water facilities, water tower, wastewater treatment facilities, lift stations and levee pump stations.

In addition to affecting power distribution and communications, debris and flooding from severe storms can block state and local roads hampering travel. When transportation is disrupted, emergency and medical services are delayed, rescue efforts are hindered, and government services can be affected. Based on responses to a Roadway Overtopping Survey distributed to the County and participating townships, heavy rains and/or flooding can cause overtopping of roadways that exceeds six inches in some parts of the County. **Figure SS-13**, located at the end of this section, identifies the roadway, overtopping location, waterbody (if applicable), and jurisdiction

responsible for the roadway. According to the Assistant County Highway Engineer, Pocahontas Road surface was washed away in a flood.

Figure SS-11 Ameren Illinois – Regional Power Outages Experienced in Madison County as a Result of Severe Storm Events: 2006 – 2023							
Event Date		Customers without Power	Maximum Duration of Outage (days)	Wires Downed	Poles Replaced	Tree Orders*	Responding Personnel
7/19/2006	Thunderstorm	302,000	12	---	1,014	---	---
8/5/2008	Thunderstorm	33,000	5	---	112	---	734
4/19/2011	Thunderstorm	82,092	5	1,463	626	459	1,901
4/28/2012	Thunderstorm	46,790	2	170	24	135	208
4/10/2013	Thunderstorm	7,969	1.5	156	47	56	157
5/20/2013	Thunderstorm	35,117	2	403	66	211	629
6/20/2014	Thunderstorm	24,250	2.5	132	57	119	---
6/25/2015	Thunderstorm	25,000	2	75	28	93	494
7/13/2016	Thunderstorm	100,853	3	742	425	756	2,208
7/23/2017	Thunderstorm	40,021	2	410	160	454	1,391
6/28/2018	Thunderstorm	83	2.5	---	501	---	---
6/26/2019	Thunderstorm	14,102	1	155	41	88	354
7/15/2020	Thunderstorm	17,040	1	---	---	---	---
8/10/2020	Thunderstorm	60,240	3.5	---	---	---	1,434
6/17/2022	Thunderstorm	53,905	2.5	220	115	42	1,344
3/31/2023	Thunderstorm	34,601	3	64	66	93	482
6/29/2023	Derecho	181,668	6	---	---	---	3,129
7/29/2023	Thunderstorm	50,708	2	---	---	---	566

* Tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed.

Based on the frequency with which severe storms occur in Madison County, the amount of property damage previously reported and the potential for disruptions to power distribution and communication; the risk or vulnerability to buildings, infrastructure and critical facilities from severe storms is **medium**.

Are future buildings, infrastructure, and critical facilities vulnerable to severe storms?

Yes and No. The County and all of the participating municipalities, with the exception of Worden, have building codes in place that will likely help lessen the vulnerability of new buildings and critical facilities to damage from severe storms. However, infrastructure such as new communication and power lines will continue to be vulnerable to severe storms as long as they are located above ground. High winds, lightning and flying and falling debris can disrupt power and communication. Steps to bury all new lines would eliminate the vulnerability, but this action would be cost prohibitive in most areas.

What are the potential dollar losses to vulnerable structures from severe storms?

Unlike other natural hazards, such as tornadoes, there are no standard loss estimation models or methodologies for severe storms. With only 70 of the 769 recorded events listing property damage numbers for all categories of severe storms, there is no way to accurately estimate future potential

dollar losses. However, according to the Madison County Chief County Assessment Officer the total equalized assessed values of all residential, commercial, and industrial buildings in the planning area is \$8.1 billion. Since all of the structures in the planning area are vulnerable to damage, this total represents the countywide property exposure to severe storm events.

Figure SS-12
Critical Facilities & Infrastructure Supported by Backup Generators by Jurisdiction
(Sheet 1 of 2)

Participating Jurisdiction	Government/ Administrative ¹	Emergency Protection ²	Medical & Healthcare ³	Schools	Warming/ Cooling Centers	Drinking Water ⁴	Wastewater Treatment ⁵
Madison County	4	32	4	---	---	---	---
Alhambra	2	2	---	---	---	1	2
Alton	---	3	---	---	---	---	---
America's Central Port	---	---	---	---	---	---	---
Collinsville	2	4	---	---	---	4	2
East Alton	---	---	---	---	---	---	---
Edwardsville	---	---	---	---	---	---	---
Glen Carbon	2	---	---	---	---	2	---
Godfrey	1	2	---	---	---	---	---
Granite City	---	1	---	---	---	---	---
Grantfork	1	1	---	---	---	---	---
Hamel	1	1	---	---	---	---	2
Highland	---	---	---	---	---	1	1
Livingston	---	1	---	---	---	---	---
Madison, City of	---	1	---	---	---	---	---
Marine	3	2	---	2	---	---	2
Maryville	---	---	---	---	---	---	---
Pontoon Beach	1	1	---	---	---	---	---
Roxana	---	2	---	---	---	1	1
St. Jacob	1	1	---	---	---	---	2
Troy	---	---	---	---	---	---	---
Venice	---	1	---	---	---	---	---
Wood River	1	2	---	---	---	4	5
Worden	---	---	---	---	---	---	---

¹ Government includes: courthouses, city/village halls, township buildings, highway/road maintenance centers, libraries, etc.

² Emergency Protection includes: sheriff's department, police, fire, ambulance, emergency operations centers, jail/correctional facilities and evacuation shelters.

³ Medical & Healthcare includes: public health departments, hospitals, urgent/prompt care and medical clinics, nursing homes, skilled nursing facilities, memory care facilities, residential group homes, etc.

⁴ Drinking Water includes: drinking water treatment plants, drinking water wells, and water storage towers/tanks.

⁵ Wastewater Treatment includes: wastewater treatment plants and lift stations.

--- Indicates the jurisdiction does not own/maintain any critical facilities within that category.

Figure SS-12
Critical Facilities & Infrastructure Supported by Backup Generators by Jurisdiction
(Sheet 2 of 2)

Participating Jurisdiction	Government/ Administrative ¹	Emergency Protection ²	Medical & Healthcare ³	Schools	Warming/ Cooling Centers	Drinking Water ⁴	Wastewater Treatment ⁵
Collinsville Township	1	---	---	---	---	---	---
Edwardsville Township	---	---	---	---	---	---	---
Leef Township	---	---	---	---	---	---	---
Nameoki Township	1	3	---	---	---	---	---
Alton CUSD #1	---	---	---	1	---	---	---
Bethalto CUSD #8	---	---	---	---	---	---	---
Collinsville CUSD #10	---	---	---	---	---	---	---
Edwardsville CUSD #7	---	---	---	6	---	---	---
Madison County ROE #41	---	---	---	---	---	---	---
Marquette Catholic High School	---	---	---	---	---	---	---
Roxana CUSD #1	---	---	---	---	---	---	---
St. Mary's Catholic School	---	---	---	---	---	---	---
SIUE	3	4	1	9	---	1	2
Wood River-Hartford ESD #15	---	---	---	---	---	---	---
Glen Carbon FPD	---	3	---	---	---	---	---
Olive Fire District	---	2	---	---	---	---	---
South Roxana FPD	---	2	---	---	---	---	---
Troy FPD	---	3	---	---	---	---	---
Anderson Hospital	---	---	---	---	---	---	---
OSF Saint Anthony's Health Center	---	---	---	---	---	---	---
Metro East Sanitary District	---	---	---	---	---	---	---
Wood River D&LD	---	---	---	---	---	---	---

¹ Government includes: courthouses, city/village halls, township buildings, highway/road maintenance centers, libraries, etc.

² Emergency Protection includes: sheriff's department, police, fire, ambulance, emergency operations centers, jail/correctional facilities and evacuation shelters.

³ Medical & Healthcare includes: public health departments, hospitals, urgent/prompt care and medical clinics, nursing homes, skilled nursing facilities, memory care facilities, residential group homes, etc.

⁴ Drinking Water includes: drinking water treatment plants, drinking water wells, and water storage towers/tanks.

⁵ Wastewater Treatment includes: wastewater treatment plants and lift stations.

--- Indicates the jurisdiction does not own/maintain any critical facilities within that category.

Figure SS-13
Roadway Overtopping Locations Reported in Madison County

Road Name/ Number	Overtopping Location	Waterbody Name (if applicable)	Responsible Jurisdiction
CH-32, Lebanon Road	SN 060-3192, Roadway Approaches	Silver Creek	Madison County
CH-44, Fruit Road	Culvert 1/2 mile west of IL RTE 4	Tributary to Silver Creek	Madison County
CH-61, Airport Road	Between SN 060-3010 & 060-3011, Bridges	Piasa and Little Piasa Creek	Madison County
CH-52, Seiler Road	SN 060-3225, 0.6 mi. E of Blueridge Rd.	Honeycut Branch	Madison County
CH-6, Pocahontas Road	SN 060-3253, 0.5 mi. E of IL RTE 160	E. Fork of Silver Creek	Madison County
CH-23, Quercus Grove Road	0.4 mi. N of Green Hedge Road	Tributary to Cahokia Creek	Madison County
Lebanon Road	Bridge at Lebanon and Clay School Rd.	Canteen Creek	Collinsville Township
Lebanon Road	Lochmann Train Trestle	Canteen Creek	Collinsville Township
Lebanon Road	Arnotti Lane	Canteen Creek	Collinsville Township
Lebanon Road	Barberis Lane	Canteen Creek	Collinsville Township
North Frontage Road	Glenridge Drive	Canteen Creek	Collinsville Township
Ludwig Road	Bottoms, south of bridge, north of Pocahontas Road	Grantfork Creek	Leef Township
Breckenridge Lane	Pontoon Road	Long Lake	Nameoki Township
Division Street	Pontoon Road	Long Lake	Nameoki Township
Garden Lane	along Long Lake	Long Lake	Nameoki Township
Central Lane	along Long Lake	Long Lake	Nameoki Township
Lake Drive	along Long Lake	Long Lake	Nameoki Township
Lake Street	along Long Lake	Long Lake	Nameoki Township
South Street	along Long Lake	Long Lake	Nameoki Township
Dwight Drive	along Long Lake	Long Lake	Nameoki Township
Angela Drive	along Long Lake	Long Lake	Nameoki Township
Hemlock Avenue	along Long Lake	Long Lake	Nameoki Township
Arnold Drive	along Long Lake	Long Lake	Nameoki Township

3.2 EXCESSIVE HEAT

HAZARD IDENTIFICATION

What is the definition of excessive heat?

Excessive heat is generally characterized by a prolonged period of summertime weather that is substantially hotter and more humid than the average for a location at that time of year. Excessive heat criteria typically shift by location and time of year. As a result, reliable fixed absolute criteria are not generally specified (i.e., a summer day with a maximum temperature of at least 90°F).

Excessive heat events are usually a result of both high temperatures and high relative humidity. (Relative humidity refers to the amount of moisture in the air.) The higher the relative humidity or the more moisture in the air, the less likely that evaporation will take place. This becomes significant when high relative humidity is coupled with soaring temperatures.

On hot days the human body relies on the evaporation of perspiration or sweat to cool and regulate the body's internal temperature. Sweating does nothing to cool the body unless the water is removed by evaporation. When the relative humidity is high, then the evaporation process is hindered, robbing the body of its ability to cool itself.

Excessive heat is a leading cause of weather-related fatalities in the U.S. According to the Centers for Disease Control and Prevention, a total of 15,707 people died from heat-related illnesses between 1999 and 2020, an average of 714 fatalities a year.

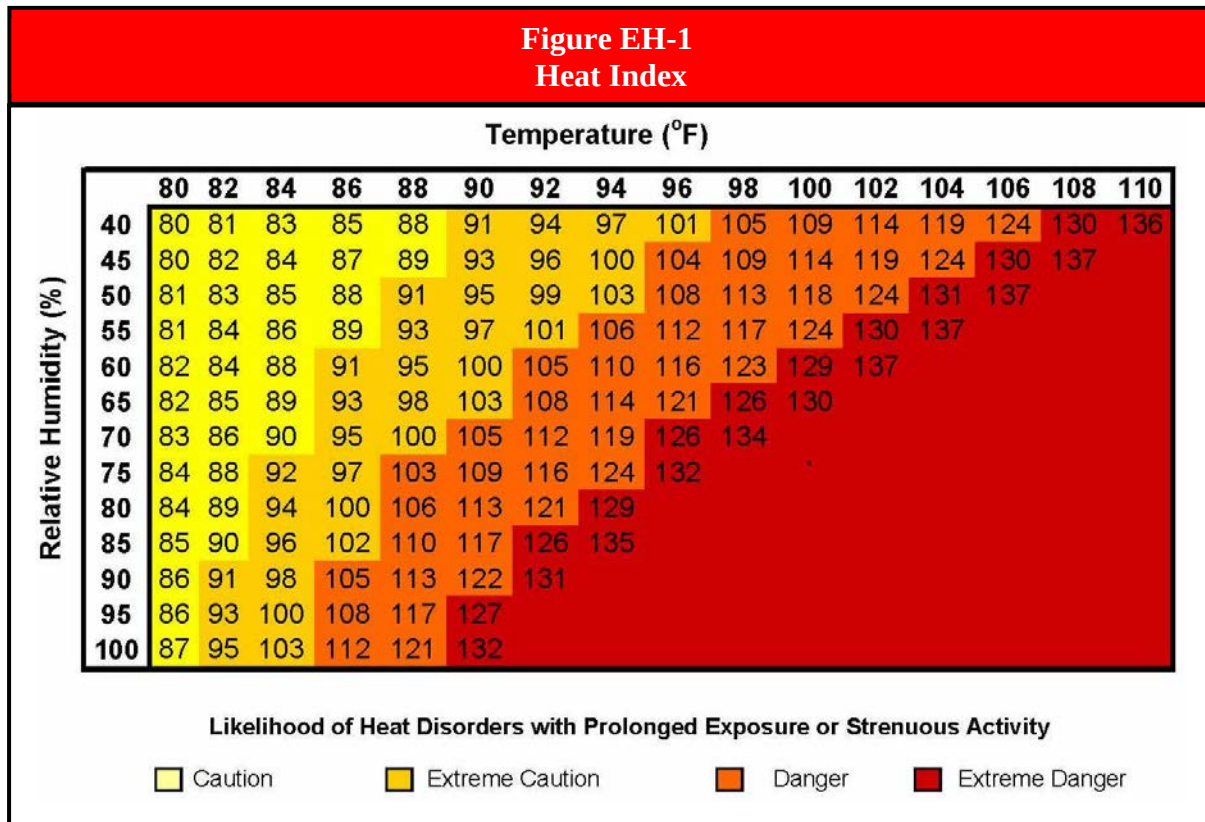
What is the Heat Index?

In an effort to raise the public's awareness of the hazards of excessive heat, the National Weather Service (NWS) devised the "Heat Index". The Heat Index, sometimes referred to as the "apparent temperature", is a measure of how hot it feels when relative humidity is added to the actual air temperature. **Figure EH-1** shows the Heat Index as it corresponds to various air temperatures and relative humidity.

As an example, if the air temperature is 96°F and the relative humidity is 65%, then the Heat Index would be 121°F. It should be noted that the Heat Index values were devised for shady, light wind conditions. Exposure to full sunshine can increase Heat Index values by up to 15°F. Also, strong winds, particularly with very hot, very dry air, can be extremely hazardous. When the Heat Index reaches 105°F or greater, there is an increased likelihood that continued exposure and/or physical activity will lead to individuals developing severe heat disorders.

What are heat disorders?

Heat disorders are a group of illnesses caused by prolonged exposure to hot temperatures and are characterized by the body's inability to shed excess heat. These disorders develop when the heat gain exceeds the level the body can remove or if the body cannot compensate for fluids and salt lost through perspiration. In either case the body loses its ability to regulate its internal temperature. All heat disorders share one common feature: the individual has been overexposed to heat or over exercised for their age and physical condition on a hot day. The following describes the symptoms associated with the different heat disorders.



Source: NOAA, National Weather Service.

- **Heat Rash.** Heat rash is a skin irritation caused by excessive sweating during hot, humid weather and is characterized by red clusters of small blisters on the skin. It usually occurs on the neck, chest, groin or in elbow creases.
- **Sunburn.** Sunburn is characterized by redness and pain of skin exposed too long to the sun without proper protection. In severe cases it can cause swelling, blisters, fever and headaches and can significantly retard the skin's ability to shed excess heat.
- **Heat Cramps.** Heat cramps are characterized by heavy sweating and muscle pains or spasms, usually in the abdomen, arms or legs that during intense exercise. The loss of fluid through perspiration leaves the body dehydrated resulting in muscle cramps. This is usually the first sign that the body is experiencing trouble dealing with heat.
- **Heat Exhaustion.** Heat exhaustion is characterized by heavy sweating, muscle cramps, tiredness, weakness, dizziness, headache, nausea or vomiting and faintness. Breathing may become rapid and shallow and the pulse thready (weak). The skin may appear cool, moist and pale. If not treated, heat exhaustion may progress to heat stroke.
- **Heat Stroke (Sunstroke).** Heat stroke is a life-threatening condition characterized by a high body temperature (106°F or higher). The skin appears to be red, hot and dry with very little perspiration present. Other symptoms include a rapid and strong pulse, throbbing headache, dizziness, nausea and confusion. There is a possibility that the individual will become unconscious. If the body is not cooled quickly, then brain damage and death may result.

Studies indicate that, all things being equal, the severity of heat disorders tends to increase with age. Heat cramps in a 17-year-old may be heat exhaustion in someone 40 and heat stroke in a person over 60. Elderly persons, small children, chronic invalids, those on certain medications and persons with weight or alcohol problems are particularly susceptible to heat reactions.

Figure EH-2 below indicates the heat index at which individuals, particularly those in higher risk groups, might experience heat-related disorders. Generally, when the heat index is expected to exceed 105°F, the NWS will initiate excessive heat alert procedures.

Figure EH-2 Relationship between Heat Index and Heat Disorders	
Heat Index (°F)	Heat Disorders
80°F – 90°F	Fatigue is possible with prolonged exposure and/or physical activity
90°F – 105°F	Heat cramps, heat exhaustion and heat stroke possible with prolonged exposure and/or physical activity
105°F – 130°F	Heat cramps, heat exhaustion and heat stroke likely; heat stroke possible with prolonged exposure and/or physical activity
130°F or Higher	Heat stroke highly likely with continued exposure

Source: NOAA, Heat Wave: A Major Summer Killer.

Yes. A heat or excessive heat alert is an advisory or warning issued by the NWS when the Heat Index is expected to have a significant impact on public safety. The expected severity of the heat determines the type of alert issued. The NWS Weather Forecast Office in St. Louis, Missouri is responsible for issuing heat or excessive heat alerts for Madison County. The following provides a brief description of each type of alert.

- **Excessive Heat Watch.** An excessive heat watch is issued when conditions are favorable for an excessive heat event to occur within the next 24 to 72 hours.
- **Heat Advisory.** An excessive heat advisory is issued when the heat index is expected to be around 105°F, or when the heat index will range from 100°F to 104°F for at least four (4) consecutive days.
- **Excessive Heat Warning.** An excessive heat warning is issued when the heat index is expected to be around 110°F for two (2) days, or when the heat index is expected to reach 105°F for four (4) consecutive days.

HAZARD PROFILE

The following identifies past occurrences of excessive heat, details the severity or extent of each event (if known); identifies the locations potentially affected and estimates the likelihood of future occurrences (Local Mitigation Planning Policy Guide Element B1-b through B1-f).

When have excessive heat events occurred previously? What is the extent of these events?

Table 5, located in **Appendix J**, summarizes the previous occurrences as well as the extent or magnitude of excessive heat events in Madison County. NOAA's Storm Events Database, Iowa State University's National Weather Service Watch, Warning, and Advisories database,

Midwestern Regional Climate Center's cli-MATE database, and NWS's COOP Data records were used to document 155 occurrences of excessive heat in Madison County between 1994 and 2023.

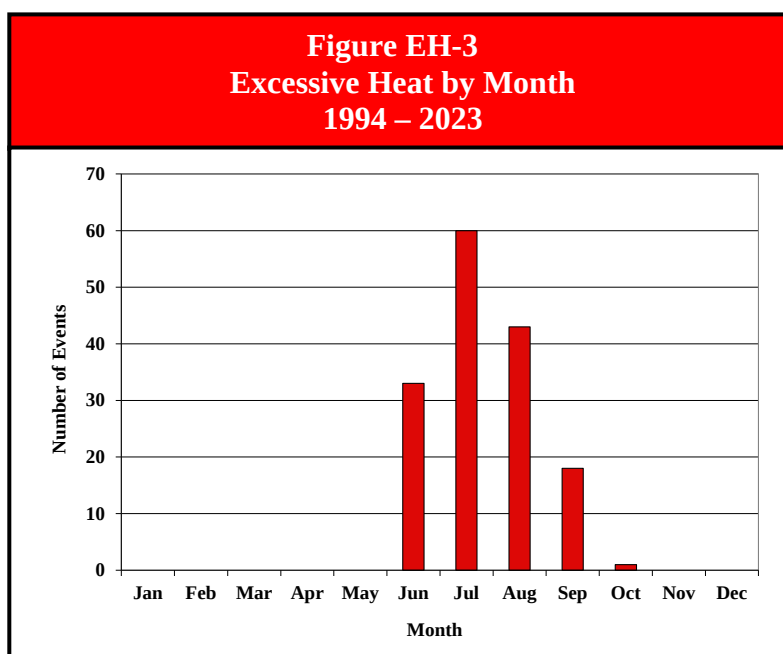
Excessive Heat Fast Facts – Occurrences

Number of Excessive Heat Events Reported (1994 – 2023): **155**

Hottest Temperature Recorded in the County: **116°F**
(**July 10, 1946**)

Most Likely Month for Excessive Heat Events to Occur: **July**

Figure EH-3 charts the reported occurrences of excessive heat by month. Of the 155 events, 60 (39%) began in July making this the peak month for excessive heat events in Madison County. There were 14 events that spanned two months; however, for illustration purposes only the month the event started is graphed.



According to the Midwestern Regional Climate Center, continuous temperature records for Madison County have been kept from 1943 to present by the NWS COOP Observer Station at the Melvin Price Lock & Dam COOP Observation Station in Alton. **Figure EH-4** lists the hottest days recorded at this Station. Based on the available records, the hottest temperature recorded in Madison County was 116°F at the Melvin Price Observation Station on July 10, 1946.

Figure EH-4 Hottest Days Recorded at the Melvin Price Lock & Dam NWS COOP Observation Station					
	Date	Temperature		Date	Temperature
1	07/10/1946	116°F	6	7/20/1946	112°F
2	07/19/1946	116°F	7	7/14/1946	111°F
3	07/21/1946	116°F	8	7/14/1954	111°F
4	07/09/1946	115°F	9	7/29/1953	108°F
5	07/08/1946	113°F			

Source: Midwest Regional Climate Center cli-MATE

What locations are affected by excessive heat?

Excessive heat affects the entire County. Excessive heat events, like drought and severe winter storms, generally extend across an entire region and affect multiple counties.

Do any of the participating jurisdictions have designated cooling centers?

Yes, 24 of the 43 participating municipalities/special units of government, townships, school districts, universities, fire protection districts, and healthcare facilities have designated cooling centers based on the responses received from participants to the “Identification of Severe Weather Shelters” survey. A “designated” cooling center is identified as any facility that has been *formally* identified by the municipality (through emergency planning, resolution, Memorandum of Agreement, etc.) as a location available for use by residents of the jurisdiction during excessive heat events.

Figure EH-5 identifies the location of each cooling center by jurisdiction. In addition to those designated cooling centers identified by the participating municipalities, State of Illinois, Division of Rehabilitation Services in East Alton also serves as a cooling center. At this time America’s Central Pot, Anderson Hospital, Bethalto CUSD #8, Collinsville CUSD #10, Edwardsville CUSD #7, Edwardsville Township, Glen Carbon FPD, Hamel, Madison County ROE #41, Marquette Catholic High School, Maryville, OSF St. Anthony’s Health Care, Roxana CUSD #1, South Roxana FPD, SIUE, St. Jacob, St. Mary’s Catholic School, Wood River-Hartford ESD #15, and Worden do not have any cooling centers designated.

What is the probability of future excessive heat events occurring based on historical data?

Madison County has experienced 155 verified occurrences of excessive heat between 1994 and 2023. With 155 occurrences over the past 30 years, Madison County should expect to experience at least five excessive heat events per year. There were 19 years over the last 30 years where five or more excessive heat events occurred. This indicates that the probability that five or more excessive heat events may occur during any given year within the County is 63%.

HAZARD VULNERABILITY

The following describes the vulnerability to participating jurisdictions; specifies the unique and varied risk differences across the planning area and between participating jurisdictions; identifies the impacts on public health and property (if known); and estimates the potential impacts on public health and safety as well as buildings, infrastructure, and critical facilities from excessive heat (Local Mitigation Planning Policy Guide Element B1-f, B2-a, and B2-b).

Are the participating jurisdictions vulnerable to excessive heat?

Yes. All of Madison County, including the participating jurisdictions, is vulnerable to the dangers presented by excessive heat. Since 2014 Madison County has experienced 55 excessive heat events.

The 2023 *Illinois Natural Hazard Mitigation Plan* prepared by IEMA-OHS classifies Madison County’s hazard rating for heat wave as “high.” IEMA-OHS’s overall hazard rating system has five levels: very low, low, medium, high, and very high.

Figure EH-5
Designated Cooling Centers by Participating Jurisdictions

Name/Address	Name/Address
<i>Alhambra</i>	<i>Highland</i>
Alhambra Township Park Hall – 610 W. Main Street	Weinheimer Community Center, 100 Main Street
<i>Alton</i>	Korte Recreation Center, 1 Nagal Drive
Hayner Public Library, 132 Alton Square	<i>Leef Township</i>
Salvation Army, 525 Alby Street	Leef Township Building, 12905 Niggli Rd., Highland
Deliverance Temple, 1125 E. 6 th St.	<i>Livingston</i>
<i>Alton CUSD #11</i>	Livingston Fire Station, 422 Nichols
Alton High School, 4200 Humbert Rd.	<i>Madison, City of</i>
Alton Middle School, 2200 College Ave.	City Hall, 615 Madison Avenue
<i>Collinsville</i>	Fire Station, 1800 3rd Street
Collinsville VFW, 1234 Vandalia St	Rec Center, 7th St. & Lee St.
Collinsville Library, 408 West Main	<i>Marine</i>
Collinsville Senior Center, 420 East Main	Marine Senior Center, 101 W. Silver Street
<i>Collinsville Township</i>	Marine United Church of Christ, 111 N. Center Street
Senior Center, 420 E. Main St., Collinsville	St. Elizabeth's Catholic Church, 120 N. Windmill St.
<i>East Alton</i>	Marine Fire Department, 215 S. Center Street
American Legion Hall Post 74, 120 E. Alton Avenue	<i>Nameoki Township</i>
East Alton Public Library, 250 Washington Avenue	Nameoki Township Offices, 4250 Highway 162
IL Dept. of Human Services, 608 W. St. Louis Avenue	<i>Olive Fire District</i>
IL Dept. of Rehab. Services, 606 W. St. Louis Avenue	Livingston Fire Station, 422 Nichols, Livingston
<i>Edwardsville</i>	<i>Pontoon Beach</i>
YMCA, 1200 Esic Drive	Pontoon Beach Village Hall, #1 Regency Parkway
YMCA, 7348 Goshen Drive	Long Lake Volunteer Fire Dept., 4113 Pontoon Rd.
Main Street Community Center, 1003 N. Main Street	Pontoon Beach Police Dept., #1 Regency Parkway
Public Safety Building, 333 S. Main St.	<i>Roxana</i>
<i>Glen Carbon</i>	Roxana Village Hall, 310 North Central Ave.
Glen Carbon Senior Center, 157 N. Main Street	Rox-Arena, #2 Park Dr.
Glen Carbon Centennial Library, 198 S. Main Street	<i>Troy</i>
Glen Carbon Police Dept. lobby, 149 N. Main St.	Tri Township Park District Office, 410 Wickliffe St.
<i>Godfrey</i>	<i>Troy Fire Protection District</i>
Godfrey Municipal Building, 6810 Godfrey Road	Tri Township Community Center, 410 Wickliffe St.
<i>Granite City</i>	Truck Centers Inc, 2280 Formosa Rd.
Granite City Township Building, 2060 Delmar Ave.	Bethel Baptist Church, 7775 Collinsville Rd.
Brown Recreation Center, 2165 Amos Avenue	St. Paul's Lutheran Church, 106 N. Border
Park Dist. Community Center, 822 Niedringhaus Ave.	United Methodist Church, 407 Edwardsville Rd.
Salvation Army, 3007 E. 23rd Street	<i>Venice</i>
IL Dept. of Human Services, 1925 Madison Avenue	City Hall, 329 Broadway
<i>Grantfork</i>	Fire Station, 329 Broadway
Grantfork Village Hall, 205 Rock Street	<i>Wood River</i>
	Wood River Rec Center, 633 N. Wood River Ave.

For excessive heat, the FEMA's National Risk Index (NRI) rates the County as a whole as "Relatively High". Of the 67 county census tracts studies, 32 are rated "Very High" and 35 are rated "Relatively High" for excessive heat. **Figure R-4** presents the overall NRI scores and ratings for each census tract as well as for the County as a whole.

Have any of the participating jurisdictions identified specific assets vulnerable to the impacts of excessive heat?

Yes. Based on responses to an Assets Vulnerability Survey distributed to the participating jurisdictions, 26 of the participants considered specific assets within their jurisdiction vulnerable to excessive heat. **Appendix I** contains copies of the completed surveys that outline problem statements summarizing their vulnerabilities to excessive heat.

What impacts resulted from the recorded excessive heat events?

Damage information was either unavailable or none was recorded for any of the excessive heat events. NOAA's Storm Events Database documented a total of 12 fatalities and 88 heat-related injuries as a result of nine excessive heat events. Detailed information was only available for six of the events. The following provides a brief description.

- ❖ There were 71 heat-related injuries recorded at an NHRA drag racing event at the Gateway International Raceway in Madison County between June 25 and 28, 1998.
- ❖ A 70-year-old woman passed away in Alton as a result of the June 2005 extreme heat event.
- ❖ An 80-year-old man died in his Edwardsville home as a result of the July 2006 extreme heat event.
- ❖ Two individuals passed away in Alton as a result of the August 2007 excessive heat event. Both individuals were found in homes that did not have air conditioning or the air conditioning was not working.
- ❖ During the June 2009 excessive heat event a 61-year-old Glen Carbon woman passed away in her mobile home as a result of the heat. The air conditioning in the home was not working.
- ❖ Two individuals passed away as a result of the June/July 2012 excessive heat event. An 88-year-old Troy woman was found in her home. Her air conditioner had been switched to "heat" instead of "cool". The other death occurred in Collinsville, but no details were available.

Excessive Heat Fast Facts – Impacts/Risk

Excessive Heat Impacts:

- ❖ Total Property Damage: *n/a*
- ❖ Total Crop Damage: *n/a*
- ❖ Fatalities (8 events): **12**
- ❖ Injuries (9 events): **88**

Excessive Heat Risk/Vulnerability:

- ❖ Public Health & Safety – General Population: **Low to Medium**
- ❖ Public Health & Safety – Socially Vulnerable Populations: **Medium to High**
- ❖ Buildings/Infrastructure/Critical Facilities: **Low**

In comparison, Illinois averages 74 heat-related fatalities annually according to the Illinois State Water Survey's Climate Atlas of Illinois.

What other impacts can result from excessive heat events?

Other impacts of excessive heat include road buckling, power outages, stress on livestock, early school dismissals and school closings. In addition, excessive heat events can also lead to an increase in water usage and may result in municipalities imposing water use restrictions. In Madison County, 14 of the 22 participating municipalities rely exclusively on surface water sources for their drinking water supplies. Excessive heat may also impact residents in unincorporated Madison County who rely on shallow private wells for their drinking water.

What is the level of vulnerability to public health and safety from excessive heat?

Even if injuries and fatalities due to excessive heat were under reported in Madison County, the level of risk or vulnerability posed by excessive heat to the public health and safety of the *general population* is considered to be **low** to **medium**. This assessment is based on the frequency with which excessive heat occurs within the County; the impacts associated with these events; the types of living conditions (such as older, poorly-ventilated, high rise buildings and low-income neighborhoods) that tend to contribute to heat-related injuries and fatalities; as well as the fact that injuries and fatalities due to excessive heat may be under reported. For the purposes of this analysis, *the general population* includes healthy, able-bodied individuals who should have the ability to physiologically acclimatize to hot conditions over a period of days to weeks. Should that prove difficult, cooling centers are available in all but four of the participating municipalities to provide relief during peak heat hours.

The level of risk or vulnerability posed by excessive heat to the public health and safety of *socially vulnerable populations* is considered to be **medium** to **high**. Sensitive populations such as older adults (those 75 years of age and older) and small children (those younger than 5 years of age) are more susceptible to heat-related reactions and therefore their risk is elevated. **Figure EH-6** identifies the percent of socially vulnerable populations by participating municipality, township, and the County based on the U.S. Census Bureau's 2020 decennial census data. In addition, individuals with chronic conditions, those on certain medications, and persons with weight or alcohol problems are also considered sensitive populations. However, demographic information is not available for these segments of the population.

Are existing buildings, infrastructure, and critical facilities vulnerable to excessive heat?

No. In general, existing buildings, infrastructure and critical facilities located in the County and the participating jurisdictions are not vulnerable to excessive heat. The primary concern is for the health and safety of those living in the County (including all of the municipalities).

While buildings do not typically sustain damage from excessive heat, in rare cases infrastructure and critical facilities may be directly or indirectly damaged. While uncommon, excessive heat has been known to contribute to damage caused to roadways within Madison County. The combination of excessive heat and vehicle loads has caused pavement cracking and buckling.

Excessive heat has also been known to indirectly contribute to disruptions in the electrical grid. When the temperatures rise, the demand for energy also rises in order to operate air conditioners, fans, and other devices. This increase in demand places stress on the electrical grid components, increasing the likelihood of power outages. While not common in Madison County, there is the potential for this to occur. The potential may increase over the next two decades if new power sources are not built to replace the state's aging nuclear power facilities that are expected to be decommissioned.

In general, the risk or vulnerability to buildings, infrastructure and critical facilities from excessive heat is considered **low**, even taking into consideration the potential for damage to roadways and disruptions to the electrical grid.

Figure EH-6 Sensitive Populations by Participating Jurisdictions			
Participating Jurisdiction	% of Population 75 years of age & Older	% of Population Younger than 5 years of age	Total % of Sensitive Population
Alhambra	15.1%	4.5%	19.6%
Alton	7.0%	5.9%	12.9%
Collinsville	6.3%	5.6%	11.9%
East Alton	7.1%	5.7%	12.8%
Edwardsville	5.3%	4.3%	9.6%
Glen Carbon	9.7%	6.0%	15.7%
Godfrey	11.5%	4.7%	16.2%
Granite City ¹	7.4%	6.0%	13.4%
Grant Fork	4.4%	5.3%	9.7%
Hamel	6.7%	6.0%	12.7%
Highland	9.4%	5.7%	16.1%
Livingston	10.0%	4.3%	14.3%
Madison, City of ¹	5.8%	5.9%	11.7%
Marine	7.7%	4.7%	12.4%
Maryville	10.6%	4.5%	15.1%
Pontoon Beach	5.3%	6.1%	11.4%
Roxana	8.0%	5.6%	13.6%
St. Jacob	4.5%	5.8%	10.3%
Troy	5.1%	6.5%	11.3%
Venice	6.8%	10.2%	17.0%
Wood River	6.8%	5.2%	12.0%
Worden	5.4%	6.9%	12.3%
Collinsville Township	7.6%	4.7%	12.3%
Edwardsville Township	6.3%	5.2%	11.5%
Leef Township	2.2%	9.9%	12.1%
Nameoki Township	5.9%	7.8%	13.7%
Unincorp. Madison County	7.9%	4.9%	12.8%
Madison County	7.6%	5.3%	12.9%
State of Illinois	6.7%	5.5%	12.2%

¹America's Central Port
Source: U. S. Census Bureau.

Are future buildings, infrastructure, and critical facilities vulnerable to excessive heat?

No. Future buildings, infrastructure and critical facilities within the County and participating jurisdictions are no more vulnerable to excessive heat events than the existing building, infrastructure, and critical facilities. As discussed above, buildings do not typically sustain damage from excessive heat. Infrastructure and critical facilities may, in rare cases, be damaged by excessive heat, but very little can be done to prevent this.

What are the potential dollar losses to vulnerable structures from excessive heat?

Unlike other natural hazards there are no standard loss estimation models or methodologies for excessive heat. With none of the recorded events listing property damage figures, there is no way to accurately estimate future potential dollar losses from excessive heat. Since excessive heat

typically does not cause structure damage, it is unlikely that future dollar losses will be extreme. The primary concern associated with excessive heat is the health and safety of those living in the County and municipalities, especially socially vulnerable populations such as the elderly, infants, young children, and those with medical conditions.

3.3 FLOODS

HAZARD IDENTIFICATION

What is the definition of a flood?

The Federal Emergency Management Agency (FEMA) defines a “flood” as a general or temporary condition where two or more acres of normally dry land or two or more properties are inundated by:

- overflow of inland or tidal waters;
- unusual and rapid accumulation or runoff of surface waters from any source;
- mudflows; or
- a sudden collapse or subsidence of shoreline land.

The severity of a flooding event is determined by a combination of topography and physiography, ground cover, precipitation and weather patterns and recent soil moisture conditions. On average, flooding causes more than \$5 billion in damages each year in the U.S. Floods cause utility damage and outages, infrastructure damage (both to transportation and communication systems), structural damage to buildings, crop loss, decreased land values and impede travel.

What types of flooding occur in the County?

There are two main types of flooding that affect Madison County: general flooding and flash flooding. General flooding can be broken down into two categories: riverine flooding and shallow flooding. The following provides a brief description of each type.

General Flooding – Riverine Flooding

Riverine flooding occurs when the water in a river or stream gradually rises and overflows its banks. This type of flooding affects low lying areas near rivers, streams, lakes, and reservoirs and generally occurs when:

- persistent storm systems enter the area and remain for extended periods of time,
- winter and spring rains combine with melting snow to fill river basins with more water than the river or stream can handle,
- ice jams create natural dams which block normal water flow, and
- torrential rains from tropical systems make landfall.

General Flooding – Shallow Flooding

Shallow flooding occurs in flat areas where there are no clearly defined channels (i.e., rivers and streams) and water cannot easily drain away. There are two main types of shallow flooding: sheet flow and ponding. If the surface runoff cannot find a channel, it may flow out over a large area at a somewhat uniform depth in what’s called sheet flow. In other cases, the runoff may collect in depressions and low-lying areas where it cannot drain out, creating a ponding effect. Ponding floodwaters do not move or flow away, they remain in the temporary ponds until the water can infiltrate the soil, evaporate, or are pumped out.

Flash Floods

Flash flooding occurs when there is a rapid rise of water along a stream or low-lying area. This type of flooding generally occurs within six hours of a significant rain event and is usually produced when heavy localized precipitation falls over an area in a short amount of time. Considered the most dangerous type of flood event, flash floods happen quickly with little or no warning. Typically, there is no time for the excess water to soak into the ground nor are the storm sewers able to handle the sheer volume of water. As a result, streams overflow their banks and low-lying (such as underpasses, basements etc.) areas can rapidly fill with water.

Flash floods are very strong and can tear out trees, destroy buildings and bridges and roll boulders the size of cars. Flash flood-producing rains can also weaken soil and trigger debris flows that damage homes, roads, and property. A vehicle caught in swiftly moving water can be swept away in a matter of seconds. Twelve inches of water can float a car or small SUV and 18 inches of water can carry away large vehicles.

What is a base flood?

A base flood refers to any flood having a 1% chance of occurring in any given year. It is also known as the 100-year flood or the one percent annual chance flood. The base flood is the national standard used by the National Flood Insurance Program (NFIP) and the State of Illinois for the purposes of requiring the purchase of flood insurance and regulating new development.

Many individuals misinterpret the term “100-year flood”. This term is used to describe the risk of future flooding; it does not mean that it will occur once every 100 years. Statistically speaking, a 100-year flood has a 1/100 (1%) chance of occurring in any given year. In reality, a 100-year flood could occur two times in the same year or two years in a row, especially if there are other contributing factors such as unusual changes in weather conditions, stream channelization or changes in land use (i.e., open space land developed for housing or paved parking lots). It is also possible not to have a 100-year flood event over the course of 100 years.

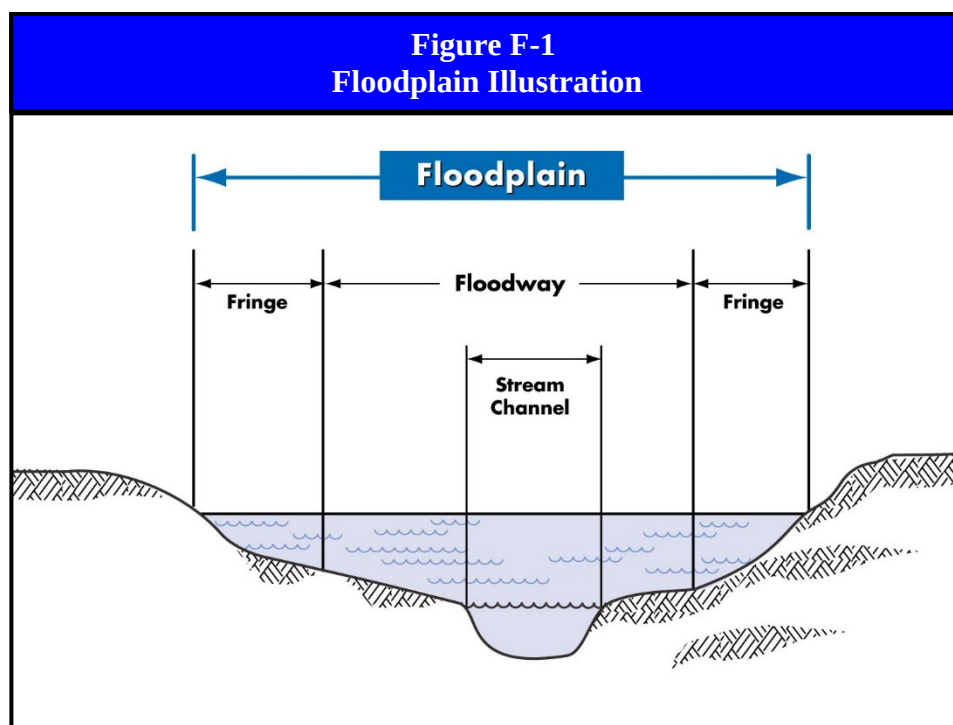
While the base flood is the standard most commonly used for floodplain management and regulatory purposes in the U.S., the 500-year flood is the national standard for protecting critical facilities, such as hospitals and power plants. A 500-year flood has a 1/500 (0.2%) chance of occurring in any given year.

What is a floodplain?

The general definition of a floodplain is any land area susceptible to being inundated or flooded by water from any source (i.e., river, stream, lake, estuary, etc.). This general definition differs slightly from the regulatory definition of a floodplain.

A regulatory or base floodplain is defined as the land area that is covered by the floodwaters of the base flood. This land area is subject to a 1% chance of flooding in any given year. The base floodplain is also known as the 100-year floodplain or a Special Flood Hazard Area (SFHA). It is this second definition that is generally the most familiar to people and the one that is used by the NFIP and the State of Illinois.

A base floodplain is divided into two parts: the floodway and the flood fringe. **Figure F-1** illustrates the various components of a base floodplain.



Source: Illinois Department of Natural Resources, Quick Guide to Floodplain Management.

The floodway is the channel of a river or stream and the adjacent floodplain that is required to store and convey the base flood without increasing the water surface elevation. Typically, the floodway is the most hazardous portion of the floodplain because it carries the bulk of the base flood downstream and is usually the area where water is deepest and is moving the fastest. Floodplain regulations prohibit construction within the floodway that results in an increase in the floodwater's depth and velocity.

The flood fringe is the remaining area of the base floodplain, outside of the floodway, which is subject to shallow inundation and low velocity flows. In general, the flood fringe plays a relatively insignificant role in storing and discharging floodwaters. The flood fringe can be quite wide on large streams and quite small or nonexistent on small streams. Development within the flood fringe is typically allowed via permit if it will not significantly increase the floodwater's depth or velocity and the development is elevated above or otherwise protected to the base flood elevation.

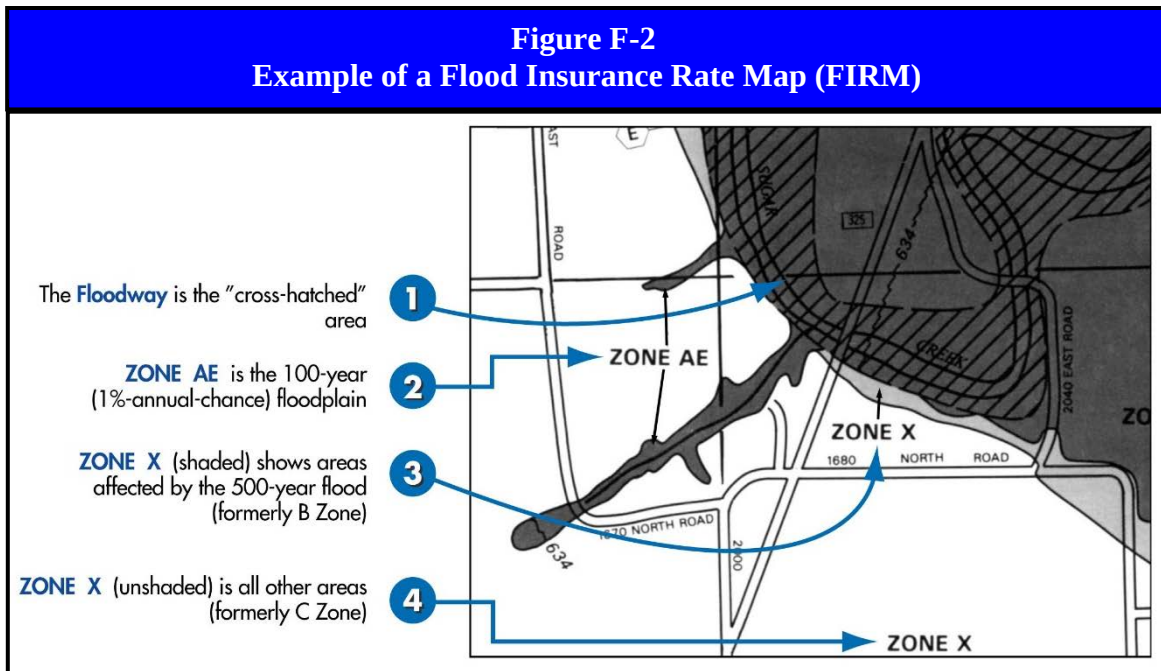
What is a Special Flood Hazard Area?

A Special Flood Hazard Area (SFHA) is the base floodplain. As discussed previously, this is the land area that is covered by the floodwaters of the base flood and has a 1% chance of flooding in any given year. The term SFHA is most commonly used when referring to the based floodplain on the Flood Insurance Rate Maps (FIRM) produced by FEMA. The SFHA is the area where floodplain regulations must be enforced by a community as a condition of participation in the NFIP and the area where mandatory flood insurance purchase requirements apply. SFHA are delineated

on the FIRMs and may be designated as Zones A, AE, A1-30, AO, AH, AR, and A99 depending on the amount of flood data available, the severity of the flood hazard or the age of the flood map.

What are Flood Insurance Rate Maps?

Flood Insurance Rate Maps (FIRMs) are maps that identify both the SFHA and the risk premium zones applicable to a community. These maps are produced by FEMA in association with the NFIP for floodplain management and insurance purposes. Digital versions of these maps are referred to as DFIRMs. **Figure F-2** shows an example of a FIRM.



Source: Illinois Department of Natural Resources, Quick Guide to Floodplain Management.

A FIRM will generally show a community's base flood elevations, flood zones and floodplain boundaries. The information presented on a FIRM is based on historic, meteorological, hydrologic, and hydraulic data as well as open-space conditions, flood-control projects, and development. ***These maps only define flooding that occurs when a creek or river becomes overwhelmed. They do not define overland flooding that occurs when an area receives extraordinarily intense rainfall and storm sewers, and roadside ditches are unable to handle the surface runoff.***

What are flood zones?

Flood zones are geographic areas that FEMA has defined according to varying levels of flood risk and type of flooding. These zones are depicted on a community's FIRM. The following provides a brief description of each flood zone.

- **Zone A.** Zone A, also known as the Special Flood Hazard Area (SFHA) or base floodplain, is defined as the floodplain area that has a 1% chance of flooding in any given year. There are multiple Zone A designations, including Zones A, AO, AH, A1-30, AE, AR or A99. Land areas located within Zone A are considered high-risk flood areas.

During a 30-year period, the length of many mortgages, there is at least a 1 in 4 chance that flooding will occur in a SFHA. The purchase of flood insurance is mandatory for all buildings in SFHAs receiving federal or federally-related financial assistance.

- **Zone X (shaded).** Zone X (shaded), formerly known as Zone B, is defined as the floodplain area between the limits of the base flood (Zone A) and the 0.2% chance or 500-year flood. Land areas located within Zone X (shaded) are affected by the 500-year flood and are considered at a moderate risk for flooding.

Zone X (shaded) is also used to designate base floodplains of lesser hazards, such as areas protected by levees from 100-year flood, shallow flooding areas with average depths of less than one foot or drainage areas less than one square mile. While flood insurance is not federally required in Zone X (shaded), it is recommended for all property owners and renters.

- **Zone X (unshaded).** Zone X (unshaded), formerly known as Zone C, is defined as all other land areas outside of Zone A and Zone X (shaded). Land areas located in Zone X (unshaded) are considered to have a low or minimal risk of flooding. While flood insurance is not federally required in Zone X (unshaded), it is recommended for all property owners and renters.

What is a Repetitive Loss Property?

FEMA defines a “repetitive loss structure” as a National Flood Insurance Program-insured structure that has received two or more flood insurance claim payments of more than \$1,000 each within any 10-year period since 1978. These structures/properties account for approximately one-fourth of all National Flood Insurance Program (NFIP) insurance claim payments since 1978.

Currently, repetitive loss properties make up about 2% of all NFIP policies, and account for approximately \$9 billion in claims or approximately 16% of the total claims paid over the history of the Program. These structures not only increase the NFIP’s annual losses, but they also drain funds needed to prepare for catastrophic events. As a result, FEMA and the NFIP are working with states and local governments to mitigate these properties.

What is a Severe Repetitive Loss Property?

FEMA defines a “severe repetitive loss” property as a National Flood Insurance Program-insured residential property that has four or more separate flood insurance claim payments of more than \$5,000 each (including building and contents) or two or more separate flood insurance claim payments (building only) where the total of the payments is greater than the property’s current value within any 10-year period since 1978. Severe repetitive loss properties are a subset of repetitive loss properties.

What is floodplain management?

Floodplain management is the administration of an overall community program of corrective and preventative measures to reduce flood damage. These measures take a variety of forms and generally include zoning, subdivision or building requirements, special-purpose floodplain ordinances, flood control projects, education, and planning. Where floodplain development is permitted, floodplain management provides a framework that minimizes the risk to life and

property from floods by maintaining a floodplain's natural function. Floodplain management is a key component of the National Flood Insurance Program.

What is the National Flood Insurance Program?

The National Flood Insurance Program (NFIP) is a federal program, administered by FEMA, that:

- mitigates future flood losses nationwide through community-enforced building and zoning ordinances; and
- provides access to affordable, federally-backed insurance protection against losses from flooding to property owners in participating communities.

It is designed to provide an insurance alternative to disaster assistance to meet escalating costs of repairing damage to buildings and their contents due to flooding. The U.S. Congress established the NFIP on August 1, 1968 with the passage of the National Flood Insurance Act of 1968. This Program has been broadened and modified several times over the years, most recently with the passage of the Flood Insurance Reform Act of 2004.

Prior to the creation of the NFIP, the national response to flood disasters was generally limited to constructing flood-control projects such as dams, levees, sea-walls, etc. and providing disaster relief to flood victims. While flood-control projects were able to initially reduce losses, their gains were offset by unwise and uncontrolled development practices within floodplains. In light of the continued increase in flood losses and the escalating costs of disaster relief to taxpayers, the U.S. Congress created the NFIP. The intent was to reduce future flood damage through community floodplain management ordinances and provide protection for property owners against potential losses through an insurance mechanism that requires a premium to be paid for protection.

Participation in the NFIP is voluntary and based on an agreement between local communities and the federal government. If a community agrees to adopt and enforce a floodplain management ordinance to reduce future flood risks to new construction in a SFHA (base floodplain), then the government will make flood insurance available within the community as a financial protection against flood losses.

If a community chooses not to participate in the NFIP or a participating community decides not to adopt new floodplain management regulations or amend its existing regulations to reference new flood hazard data provided by FEMA, then the following sanctions will apply.

- Property owners will not be able to purchase NFIP flood insurance policies and existing policies will not be renewed.
- Federal disaster assistance will not be provided to repair or reconstruct insurable buildings located in identified flood hazard areas for presidentially-declared disasters that occur as a result of flooding.
- Federal mortgage insurance and loan guarantees, such as those written by the Federal Housing Administration and the Department of Veteran Affairs, will not be provided for acquisition or construction purposes within an identified flood hazard area. Federally-insured or regulated lending institutions, such as banks and credit unions, are allowed to make conventional loans for insurable buildings in identified flood hazard areas

of non-participating communities. However, the lender must notify applicants that the property is in an identified flood hazard area and that it is not eligible for federal disaster assistance.

- Federal grants or loans for development will not be available in identified flood hazard areas under programs administered by federal agencies such as the Environmental Protection Agency, Small Business Administration and the Department of Housing and Urban Development.

What is the NFIP's Community Rating System?

The NFIP's Community Rating System (CRS) is a voluntary program developed by FEMA to provide incentives (in the form of flood insurance premium discounts) for NFIP participating communities that have gone beyond the minimum NFIP floodplain management requirements to develop extra measures to provide protection from flooding. CRS discounts on flood insurance premiums range from 5% up to 45%. The discounts provide an incentive for communities to implement new flood protection activities that can help save lives and property when a flood occurs.

Are alerts issued for flooding?

Yes. The National Weather Service Weather Forecast Office in St. Louis, Missouri is responsible for issuing flood watches and warnings for Madison County depending on the weather conditions. The following provides a brief description of each type of alert.

- **Flood Watches.** A flood watch is issued when flooding or flash flooding is possible. It does not mean that flooding will occur, just that conditions are favorable. Individuals need to be prepared.
- **Flood Advisories.** A flood advisory is issued when flooding may cause significant inconvenience but is not expected to pose an immediate threat to life and/or property. Individuals need to be aware.
- **Warnings.** Warnings indicate a serious threat to life and/or property.
 - ❖ **Flood Warning.** A flood warning is issued when flooding is occurring or will occur soon and is expected to last for several days or weeks.
 - ❖ **Flash Flood Warning.** A flash flood warning is issued when flash flooding is occurring or is imminent. Flash flooding occurs very quickly so individuals are advised to take action immediately.

HAZARD PROFILE

The following identifies past occurrences of floods; details the severity or extent of each event (if known); identifies the locations potentially affected; and estimates the likelihood of future occurrences (Local Mitigation Planning Policy Guide Element B1-b through B1-f).

When has flooding occurred previously? What is the extent of these previous floods?

Tables 6 and 7, located in **Appendix J**, summarize the previous occurrences as well as the extent or magnitude of flood events recorded in Madison County. The flood events are separated into two categories: general floods (riverine and shallow/overland) and flash floods.

General Floods

NOAA's Storm Events Database and National Water Prediction Service and the U.S. Army Corps of Engineers' river gage data were used to document 70 occurrences of general flooding in Madison County between 1973 and 2023. Included in the 70 general flood events are twelve events that contributed to nine major federal disaster declarations in Madison County. Two of the general flood events contributed to state disaster proclamations in Madison County. The proclamation from 2019 also coincided with a major federal disaster declaration.

Based on historical gage data, the record setting Mississippi River flood occurred on August 1, 1993 when the Mississippi River crested at 42.72 feet at the Melvin Price Lock and Dam in Alton. The second and third highest crests at this location occurred in 2019 and 1994 respectively.

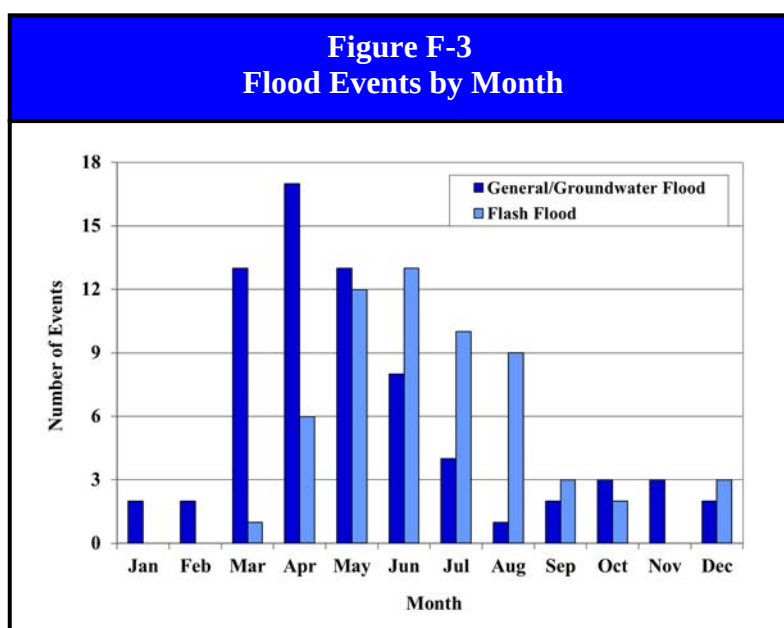
Flood Fast Facts – Occurrences

Number of General Floods Reported (1973 – 2023): **70**
 Number of Flash Floods Reported (1993 – 2023): **59**
 Most Likely Month for General Floods to Occur: **April**
 Most Likely Month for Flash Floods to Occur: **June**
 Number of Federal Emergency & Major Disaster Declarations Related to General and Flash Flooding: **10**
(1969, 1973, 1979, 1982, 1993, 1995, 1996, 2002, 2008, 2019)
 Number of State Disaster Proclamations Related to General and Flash Flooding: **2 (2015, 2019)**

Flash Floods

NOAA's Storm Events Database and Iowa State University's National Weather Service Watch, Warning, and Advisories database were used to document 59 reported occurrences of flash flooding in Madison County between 1993 and 2023.

Figure F-3 charts the reported occurrences of flooding by month. Of the 70 general flood events, 43 (61%) began in March, April, and May making this the peak period for general flooding. Of those 43 events, 17 (40%) began during April making this the peak month for general flooding. There were 38 events that spanned two or more months; however, for illustration purposes only the month the event started in is graphed.



In comparison, 35 of the 59 flash flood events (59%) took place May, June, and July making this the peak period for flash floods. Of these 35 events, 13 (37%) occurred in June making this the peak month for flash flooding. Of the flash flood events with recorded times, 50% began during the a.m. hours and 50% began during the p.m. hours.

What locations are affected by floods?

While specific locations are affected by general flooding, most areas of the County can be impacted by overland and flash flooding because of the topography and seasonally high water table of the area. In Madison County, approximately 13.8% of the area in the County is designated as being within the base floodplain and susceptible to riverine floods.

Current effective FIRMs have only been developed for Madison County, Alton, Collinsville, East Alton, Edwardsville, Granite City, Highland, Livingston, the City of Madison, Pontoon Beach, Roxana, Venice, and Wood River. These maps became effective between January 5, 1978 and November 5, 1986. **Appendix K** contains the current effective FIRMs for each of the participating municipalities. No other FIRMs have been developed for any of the other participating municipalities in the County.

According to the Illinois State Water Survey's (ISWS) Coordinated Hazard Assessment and Mapping Program (CHAMP), the County is currently in the mapping phase of FEMA's Risk MAP project to create FIRMs for the entire County. Preliminary FIRMs were issued on August 10, 2022 and the public was invited to comment in July 2023. At time this Plan was updated, the maps had not been finalized.

While a large portion of the area prone to riverine flooding is in the unincorporated portions of the County, Alton, Bethalto, Collinsville, East Alton, Edwardsville, Granite City, Hartford, Highland, Livingston, the City of Madison, Pontoon Beach, Roxana, South Roxana, Venice, and Wood River are also susceptible to riverine flooding due to their proximity to floodplains.



Heavy rains in April 2011 flooded the East Alton Viaduct.

Photograph courtesy of The Telegraph/John Badman

Figure F-4 identifies the bodies of water within or immediately adjacent to participating jurisdictions that are known to cause flooding or have the potential to flood. Water bodies with Special Flood Hazard Areas located within a participating jurisdiction (as identified on the DFIRMs) are identified in bold.

Municipal, Township, and County officials have reported overland flood issues outside of the base floodplain in most of the participating municipalities and many unincorporated portions of the County. This overland flooding is known to impair travel.

Based on responses to a Roadway Overtopping Survey distributed to the County and participating townships, heavy rains and/or flooding can cause overtopping of roadways that exceeds six inches

in some parts of the County. **Figure F-5** identifies the roadway, overtopping location, waterbody (if applicable), and jurisdiction responsible for the roadway. According to the Assistant County Highway Engineer, Pocahontas Road surface was washed away in a flood.

Figure F-4 Bodies of Water Subject to Flooding	
Participating Jurisdiction	Water Bodies
Alhambra	---
Alton	Belt Line Creek, Black Creek, Coal Branch Creek, Mississippi River, West Fork Wood River
America's Central Port	Mississippi River
Collinsville	Canteen Creek, Schoolhouse Branch
East Alton	East Fork Wood River, Mississippi River, Wood River
Edwardsville	Cahokia Creek, Dunlap Lake, Mooney Creek, Mooney Creek Tributary A, Mooney Creek Tributary B, Mooney Creek Tributary C, Old Mooney Creek
Glen Carbon	Judy's Branch
Godfrey	---
Granite City	Mississippi River
Grantfork	Tributary of East Fork Silver River
Hamel	---
Highland	Laurel Branch, Lindenthal Creek
Livingston	Silver Creek Tributary #2, Unnamed Tributary
Madison, City of	Mississippi River
Marine	---
Maryville	---
Pontoon Beach	Long Lake
Roxana	Mississippi River
St. Jacob	---
Troy	Wendell Branch
Venice	Mississippi River
Wood River	Mississippi River, Tributary #1, Tributary E, Tributary F
Worden	---
Unincorporated Madison County	Black Creek, Buckeye Branch, Burdick Branch, Burroughs Branch, Cahokia Canal, Cahokia Creek, Cahokia Diversion Channel, Canteen Creek, Canteen Lake, Chain of Rocks Canal, Coal Branch Creek, Corelock Branch, Dry Fork, East Fork Sherry Creek, East Fork Silver Creek, East Fork Wood River, Highland Silver Lake, Holiday Lake, Honeycut Branch, Horseshoe Lake, Indian Creek, Joulter Creek, Judys Branch, Lake Fork Creek, Laurel Branch, Lick Branch, Lindenthal Creek, Little Dry Fork, Little Mooney Creek, Little Piasa Creek, Little Silver Creek, McDonough Lake, Miller Creek, Mississippi River, Mooney Creek, Paddock Creek, Piasa Creek, Rock Creek, Rocky Branch, Rocky Fork, Sand Creek, Sherry Creek, Silver Creek, Silver Creek Tributary #1, Silver Creek Tributary #2, South Branch Piasa Creek, Spanker Branch, Stanley Creek, Sugar Creek, Sugar Fork, Tributary X, Tributary Z, Unnamed Tributary Silver Creek, Wendell Branch, West Fork Cahokia Creek, West Fork Sherry Creek, West Fork Wood River, Wood River,

Source: FEMA's FIRMs.

Figure F-5
Roadway Overtopping Locations Reported in Madison County

Road Name/ Number	Overtopping Location	Waterbody Name (if applicable)	Responsible Jurisdiction
CH-32, Lebanon Road	SN 060-3192, Roadway Approaches	Silver Creek	Madison County
CH-44, Fruit Road	Culvert 1/2 mile west of IL RTE 4	Tributary to Silver Creek	Madison County
CH-61, Airport Road	Between SN 060-3010 & 060-3011, Bridges	Piasa and Little Piasa Creek	Madison County
CH-52, Seiler Road	SN 060-3225, 0.6 mi. E of Blueridge Rd.	Honeycut Branch	Madison County
CH-6, Pocahontas Road	SN 060-3253, 0.5 mi. E of IL RTE 160	E. Fork of Silver Creek	Madison County
CH-23, Quercus Grove Road	0.4 mi. N of Green Hedge Road	Tributary to Cahokia Creek	Madison County
Lebanon Road	Bridge at Lebanon and Clay School Rd.	Canteen Creek	Collinsville Township
Lebanon Road	Lochmann Train Trestle	Canteen Creek	Collinsville Township
Lebanon Road	Arnotti Lane	Canteen Creek	Collinsville Township
Lebanon Road	Barberis Lane	Canteen Creek	Collinsville Township
North Frontage Road	Glenridge Drive	Canteen Creek	Collinsville Township
Ludwig Road	Bottoms, south of bridge, north of Pocahontas Road	Grantfork Creek	Leef Township
Breckenridge Lane	Pontoon Road	Long Lake	Nameoki Township
Division Street	Pontoon Road	Long Lake	Nameoki Township
Garden Lane	along Long Lake	Long Lake	Nameoki Township
Central Lane	along Long Lake	Long Lake	Nameoki Township
Lake Drive	along Long Lake	Long Lake	Nameoki Township
Lake Street	along Long Lake	Long Lake	Nameoki Township
South Street	along Long Lake	Long Lake	Nameoki Township
Dwight Drive	along Long Lake	Long Lake	Nameoki Township
Angela Drive	along Long Lake	Long Lake	Nameoki Township
Hemlock Avenue	along Long Lake	Long Lake	Nameoki Township
Arnold Drive	along Long Lake	Long Lake	Nameoki Township

What jurisdictions within the County take part in the NFIP?

[Local Mitigation Planning Policy Guide Element C2-a]

Participating Jurisdictions

Eighteen of the participating jurisdictions take part in the NFIP. **Figure F-6 provides information on each NFIP-participating jurisdiction**, including the date each participant joined, the date of their current effective FIRM and the year of their most recently adopted floodplain zoning ordinance. Alhambra, Hamel, Marine, St. Jacob, and Troy have no identified flood hazard boundaries within their corporate limits and are not required to participate in the NFIP.

Discussions with the individuals responsible for implementation of the NFIP commitments and requirements within their jurisdiction and a review of the participating jurisdictions floodplain ordinances indicates that each monitor flood events and, when applicable, conduct substantial damage determinations for structures within the floodplain. For structures that meet the definition of substantial damage, the owners are notified, and the structure must be brought back into compliance with local floodplain management regulations.

Figure F-6
NFIP Participating Jurisdictions

Participating Jurisdictions	Participation (Date)	Current Effective FIRM (Date)	Floodplain Zoning/FIRM Adoption Ordinance (Year)	Adoption of Minimum NFIP Criteria (Yes/No)	Local Floodplain Management Regulations Implemented & Enforced (Yes/No)	Position Responsible for Implementation of NFIP Commitments/ Requirements	CRS Participation (Entry Date & Class if applicable)
Madison County	4/15/1982	4/15/1982	2022	Yes	Yes	Zoning Administrator	No
Alton	7/2/1980	5/1/1984	2002	Yes	Yes	Supervisor of Housing & Building	No
Collinsville	2/18/1981	2/18/1981	2019	Yes	Yes	Floodplain Manager	No
East Alton	3/18/1980	3/18/1980	1989	Yes	Yes	Building & Zoning Administrator	No
Edwardsville	1/18/1984	1/18/1984	1996	Yes	Yes	Zoning Administrator	No
Glen Carbon	7/18/1983	(NSFHA)	2015	Yes	Yes	Building & Zoning Administrator	No
Godfrey	6/18/1993	4/15/1982	2002	Yes	Yes	Building Code Enforcement Official	No
Granite City*	6/1/1978	6/1/1978	1991	Yes	Yes	City Engineer	No
Grantfork	10/24/2016	4/15/1982	2016	Yes	Yes	Village President	No
Highland	11/5/1986	11/5/1986	1992	Yes	Yes	Code Enforcement Department	No
Livingston	2/27/1984	2/27/1984	1984	Yes	Yes	Building Official	No
Madison, City of*	7/16/1980	7/16/1980	1997	Yes	Yes	Building Inspector	No
Maryville	5/12/2009	---	2009	Yes	Yes	Building & Zoning Administrator	No
Pontoon Beach	7/16/1980	2/5/1982	1993	Yes	Yes	Building Inspector	No
Roxana	5/1/1979	5/1/1979	2000	Yes	Yes	Floodplain Administrator	Yes 10/01/2011 Class 9
Venice	1/5/1978	1/5/1978	1977	Yes	Yes	Zoning Administrator	No
Wood River	5/1/1979	5/1/1979	1989	Yes	Yes	Building Official	No
Worden	6/8/1984	(NSFHA)	1984	Yes	Yes	Zoning Administrator	No

* America's Central Port located within municipal limits.

Participating jurisdictions will continue to comply with the NFIP by implementing mitigation projects and activities that enforce this ordinance to reduce future flood risks to new construction within the SFHA. At this time no new construction is planned within the base floodplain. Continued compliance with NFIP requirements is addressed in the Mitigation Action Tables of the participating jurisdictions found in Section 6.6.

Non-Participating Jurisdictions

Figure F-7 provides information on those incorporated municipalities within the County that chose not to participate in the planning process but take part in the NFIP. New Douglas and Williamson have no identified flood hazard boundaries within their corporate limits and have chosen not to participate in the Program.

Figure F-7 Non-Participating Jurisdiction NFIP Status				
Non-Participating Jurisdictions	Participation Date	Current Effective FIRM Date	CRS Participation	Most Recently Adopted Floodplain Zoning Ordinance
Bethalto	07/02/1980	07/02/1980	No	2010
Hartford	05/01/1979	05/01/1979	No	1991
South Roxana	5/15/1980	11/26/1982	No	1994

Sources: FEMA, Community Status Book Report: Illinois.

What is the probability of future flood events occurring based on historical data?

General Floods

Madison County has had 70 verified occurrences of general flooding between 1973 and 2023. With 70 occurrences over the past 51 years, the County should expect least one general flood event in any given year. There were 18 years over the past 51 years where two or more general flood events occurred. This indicates that the probability or likelihood that more than one general flood event may occur during any given year within the County is 35%.

Flash Floods

There have been 59 verified flash flood events between 1993 and 2023. With 59 occurrences over the past 31 years, the County should expect at least one flash flood event in any given year. There were 14 years over the past 31 years where two or more flash flood events occurred. This indicates that the probability that more than one flash flood event may occur during any given year within the County is approximately 45%.

HAZARD VULNERABILITY

The following describes the vulnerability to participating jurisdictions; specifies the unique and varied risk differences across the planning area and between participating jurisdictions; identifies the impacts on public health and property (if known); and estimates the potential impacts on public health and safety as well as buildings, infrastructure, and critical facilities from floods (Local Mitigation Planning Policy Guide Element B1-f; B2-a through B2-c).

Several factors including topography, precipitation, and an abundance of rivers and streams make Illinois especially vulnerable to flooding. According to the Illinois State Water Survey's Climate Atlas of Illinois, since the 1940s Illinois climate records have shown an increase in heavy precipitation, which has led to increased flood peaks on Illinois rivers.

Are the participating jurisdictions vulnerable to flooding?

Yes. Madison County and the participating jurisdictions are vulnerable to the dangers presented by flooding. Precipitation levels and topography are factors that cumulatively make virtually the entire County susceptible to some form of flooding. Flooding occurs along the floodplains of all the rivers, streams, and creeks within the County as well as outside of the floodplains in low-lying areas where drainage problems occur. Since 2014, Madison County has experienced 17 general flood events and 25 flash flood events.

All but two of the general flood events and all but five of the flash flood events impacted either a large portion of the County or the entire County and were not location specific. Of the two location-specific general flood events, one occurred in Godfrey and the other occurred the area of Alton, East Alton, and Wood River. Of the five location-specific flash flood events, one occurred each in Collinsville, Livingston, and Alton, while one occurred in the area of Wood River, Roxana, East Alton, Hartford, and South Roxana and the other event occurred in the Alton, East Alton, and Wood River area.

The 2023 *Illinois Natural Hazard Mitigation Plan* prepared by IEMA-OHS classifies Madison County's hazard rating for riverine flooding and flash flooding as "high". IEMA-OHS's overall hazard rating system has five levels: very low, low, medium, high, and very high.

For riverine floods, the FEMA's National Risk Index (NRI) rates the County as a whole as "Relatively Moderate". Of the 67 census tracts studied, seven are rated "Relatively High", 17 are rated "Relatively Moderate", 26 are rated "Relatively Low", five are rated "Very Low", and 12 have no rating for riverine floods. **Figure R-4** presents the overall NRI scores and ratings for each census tract as well as for the County as a whole.



Flash flooding on May 25, 2009 damaged almost 100 homes and flooded many streets in Edwardsville.

Photograph courtesy of Stan Krushas

Vulnerability to flooding can change depending on several factors, including land use. As land used primarily for agricultural and open space purposes is converted for residential and commercial/industrial uses, the number of buildings and impervious surfaces (i.e., parking lots, roads, sidewalks, etc.) increases. As the number of buildings and impervious surfaces increases, so too does the potential for flash flooding. Rather than infiltrating the ground slowly, rain and snowmelt that falls on impervious surfaces runs off and fills ditches and storm drains quickly creating drainage problems and flooding.

According to the Multi-Resolution Land Characteristics (MRLC) Consortium, in 2023 approximately 24.8% of the County's land cover was considered developed with 8.0% impervious surfaces. Areas with impervious surface rates approaching or exceeding 12 to 15 percent will likely experience negative impacts to water quality. Between 2019 and 2023 approximately 1.75% of the land cover in the County changed with 3.89 square miles of development and 1.28 square miles of impervious surfaces gained.

Section 5.1 Land Use and Development Trends describes the planned changes in land use (from forested, open, and agricultural land to residential, commercial, and industrial) for the participating jurisdictions. Significant changes are not anticipated within the unincorporated County or participating municipalities in the immediate future.

Have any of the participating jurisdictions identified specific assets vulnerable to the impacts of flooding?

Yes. Based on responses to an Assets Vulnerability Survey distributed to the participating jurisdictions, 35 of the participants considered specific assets within their jurisdiction vulnerable to flooding. **Appendix I** contains copies of the completed surveys that outline problem statements summarizing their vulnerabilities to flooding.

What impacts resulted from the recorded floods?

Floods as a whole have caused a minimum of \$50.4 million in property damages and \$95,000 in crop damages. The following provides a breakdown by category. In comparison, the State of Illinois has averaged an estimated \$257 million annually in property damage losses, making flooding the single most financially damaging natural hazard in Illinois.

General Floods

Data obtained from NOAA's Storm Events Database, FEMA Public Assistance figures, and Committee member records indicates that between 1973 and 2023, eight of the 70 general flood events caused \$42,964,971 in property damages. Damage information was either unavailable or none was recorded for the remaining 62 reported occurrences. No injuries or fatalities were reported as a result of any of the recorded events.

Flash Floods

Data obtained from NOAA's Storm Events Database and Committee member records indicates that between 1993 and 2023, seven of the 59 flash flood events caused \$7,479,150 in property damages and \$95,000 in crop damages. Damage information was either unavailable or none was recorded for the remaining 52 reported occurrences.

Flood Fast Facts – Impacts/Risk

General Flood Impacts:

- ❖ Total Property Damage (8 events): **\$42,964,971**
- ❖ Total Crop Damage: **n/a**
- ❖ Injuries: **n/a**
- ❖ Fatalities: **n/a**

Flash Flood Impacts:

- ❖ Total Property Damage (7 events): **\$7,479,150**
- ❖ Total Crop Damage (2 events): **\$95,000**
- ❖ Injuries: **n/a**
- ❖ Fatalities: **n/a**

Flood Risk/Vulnerability to:

- ❖ Public Health & Safety – General Flooding: **Low**
- ❖ Public Health & Safety – Flash Flooding: **Medium**
- ❖ Buildings/Infrastructure/Critical Facilities: **Medium to High**

Included in the property damage figure provided above is \$1,656,500 in verified infrastructure and critical facilities damage sustained by Edwardsville and the County as a result of three separate flash flood events. The following provides a brief description of the damages.

Edwardsville

- ❖ Flash flooding associated with heavy rains from the remnants for Hurricane Ike occurred on September 14, 2008 causing \$1 million in damages as East Lake Drive was washed away.
- ❖ SIUE sustained \$400,000 in damages to multiple buildings on campus (including the library) when flash flooding occurred on May 25, 2009.
- ❖ Flash flooding associated with heavy rains in the area caused \$200,000 in damages to local roads that were washed out and storm sewers that exceed capacity on December 28, 2015.

Holiday Shores (Unincorporated Madison County)

- ❖ Flash flooding on May 25, 2009 caused \$56,500 in damages to various infrastructure in Holiday Shores. Infrastructure damage included a culvert wash out; destruction of a retaining wall; bank and road failure and sea wall and road damage.

No injuries or fatalities were reported as a result of any of the recorded events.

What other impacts can result from flooding?

One of the primary threats from flooding is drowning. Nearly half of all flash flood fatalities occur in vehicles as they are swept downstream. Most of these fatalities take place when people drive into flooded roadway dips and low drainage areas. It only takes two feet of water to carry away most vehicles.

Floodwaters also pose biological and chemical risks to public health. Flooding can force untreated sewage to mix with floodwaters. The polluted floodwaters then transport the biological contaminants into buildings and basements and onto streets and public areas. If left untreated, the floodwaters can serve as breeding grounds for bacteria and other disease-causing agents. Even if floodwaters are not contaminated with biological material, basements and buildings that are not properly cleaned can grow mold and mildew, which can pose a health hazard, especially for small children, the elderly, and those with specific allergies.



Flash flooding on May 25, 2009 damaged over 100 homes in Holiday Shores.

Photograph courtesy of Stan Krushas

Flooding can also cause chemical contaminants such as gasoline and oil to enter the floodwaters if underground storage tanks or pipelines crack and begin leaking during a flood event. Depending on the time of year, floodwaters also may carry away agricultural chemicals that have been applied to farm fields.

Structural damage, such as cracks forming in a foundation, can also result from flooding. In most cases, however, the structural damage sustained during a flood occurs to the flooring, drywall, and wood framing. In addition to structural damage, a flood can also cause serious damage to a building's content.

Infrastructure and critical facilities are also vulnerable to flooding. Roadways, culverts, and bridges can be weakened by floodwaters and have been known to collapse under the weight of a vehicle. Buried power and communication lines are also vulnerable to flooding. Water can infiltrate lines and cause disruptions in power and communication.

What is the level of vulnerability to public health and safety from floods?

While both general and flash floods occur on a regular basis within the County, the number of injuries and fatalities is low. In terms of the risk or vulnerability to public health and safety from

general floods, the risk is seen as **low**. However, 46% of the recorded flood events were the result of flash flooding. Since there is very little warning associated with flash flooding the risk to public health and safety from flash floods is elevated to **medium**.

Are there any repetitive loss/severe repetitive loss properties within Madison County?

[Local Mitigation Planning Policy Guide Element B2-c]

Yes. According to information obtained from FEMA, there are 25 repetitive loss properties and five severe repetitive loss properties located in the County. There were two repetitive loss records returned, one for Venice and one for Unincorporated Madison County, which listed coordinates and/or addresses outside of Madison County and therefore were not reported.

Of the repetitive loss properties, seven are located in Alton, three are located in Granite City, one is located in Livingston, two are located in the City of Madison, one is located in Pontoon Beach, one is located in Wood River, and 10 are located in Unincorporated Madison County. As described previously, FEMA defines a “repetitive loss property” as an NFIP-insured structure that has received two or more flood insurance claim payments of more than \$1,000 each within any 10-year period since 1978.



Heavy rains on April 19, 2011 caused flash flooding along South 14th Street in Wood River.

Photograph courtesy of The Telegraph/Margie M. Barnes

Of the severe repetitive loss properties, two are located in Alton and three are located in Unincorporated Madison County. As described previously, FEMA defines a “severe repetitive loss” property as an NFIP-insured residential property that has four or more separate flood insurance claim payments of more than \$5,000 each or two or more separate flood insurance claim payments (building only) where the total of the payments is greater than the property’s current value within any 10-year period since 1978.

Figure F-8 and **F-9** identify the repetitive flood loss and severe repetitive loss structures by participating jurisdiction and provides the total flood insurance claim payments. The exact location and/or address of the insured structures are not included in this Plan to protect the owners’ privacy. According to FEMA, there have been 75 flood insurance claim payments totaling \$877,048.95 for the 25 repetitive flood loss structures and 21 flood insurance claim payments totaling \$461,945.34 for the five severe repetitive flood loss structures.

Are existing buildings, infrastructure and critical facilities vulnerable to flooding?

Yes. **Figure F-10** identifies the estimated number of existing structures by participating jurisdiction located within a base floodplain. These counts were prepared by Madison County Planning and Development Department in consultation with the Consultant and are based on the current FIRMs which became effective between 1978 and 1986. Discussions with the Planning and Development Department indicate that there have been no new structures were built in the floodplain since the previous Plan update.

Figure F-8
Repetitive Flood Loss Structures

Participating Jurisdiction	Structure Type	Number of Structures	Number of Claim Payments	Flood Insurance Claim Payments		Total Flood Insurance Claim Payments
				Structure	Content	
Alton	business non-residential	6	21	\$174,552.22	\$0.00	\$174,552.22
Alton	other non-residential	1	2	\$12,497.04	\$0.00	\$12,497.04
Granite City	single family	3	6	\$30,108.60	\$93.70	\$30,202.30
Livingston	single family	1	3	\$48,531.73	\$261.71	\$48,793.44
Madison	single family	2	4	\$81,060.13	\$992.50	\$82,052.63
Pontoon Beach	single family	1	3	\$47,127.09	\$0.00	\$47,127.09
Wood River	other non-residential	1	2	\$51,480.58	\$18,304.02	\$69,784.60
Unincorp. Madison County	single family	10	24	\$338,146.75	\$73,892.88	\$412,039.63
Total:		25	65	\$783,504.14	\$93,544.81	\$877,048.95

Source: Federal Emergency Management Agency

Figure F-9
Severe Repetitive Flood Loss Structures

Participating Jurisdiction	Structure Type	Number of Structures	Number of Claim Payments	Flood Insurance Claim Payments		Total Flood Insurance Claim Payments
				Structure	Content	
Alton	business non-residential	2	11	\$146,271.71	\$0.00	\$146,271.71
Unincorp. Madison County	business non-residential	1	2	\$36,091.17	\$65,895.04	\$101,986.21
Unincorp. Madison County	other non-residential	1	4	\$145,794.28	\$24,951.58	\$170,745.86
Unincorp. Madison County	single family	1	4	\$35,206.77	\$7,734.79	\$42,941.56
Total:		5	21	\$363,363.93	\$98,581.41	\$461,945.34

Source: Federal Emergency Management Agency

Aside from key roads and bridges and buried power and communication lines, Alton, Collinsville, East Alton, Granite City, Highland, Wood River, Wood River D&LD, and America's Central Port all have specific infrastructure/critical facilities located within or adjacent to a floodplain. The Granite City wastewater treatment facility is located within the base floodplain of the Mississippi River while the Wood River wastewater treatment facility is located adjacent to it. Wood River D&LD has two pump stations located in base floodplain of the Mississippi River. It should be noted that while the Alton wastewater treatment facility is located in the base floodplain of the Mississippi River, it is now owned by Illinois American Water Company.

In Collinsville, the wastewater treatment facility is located in the base floodplain of Canteen Creek. The wastewater treatment facility for Highland is located adjacent to the base floodplain of Lindenthal Creek. In East Alton the drinking and wastewater water treatment facilities, while protected by a levee system, are located adjacent to the base floodplain of the Wood River.

America's Central Port's administrative office building is located in the base floodplain of the Mississippi River.

Figure F-10
Existing Residential Structures Located within a Base Floodplain by Participating Jurisdiction

Participating Jurisdiction	Number of Residential Structures	Participating Jurisdiction	Number of Residential Structures
Alhambra	0	Madison, City of	61
Alton	11	Marine	0
Collinsville	17	Maryville	0
East Alton	13	Pontoon Beach	56
Edwardsville	4	Roxana	5
Glen Carbon	0	St. Jacob	0
Godfrey	0	Troy	5
Granite City	164	Venice	12
Grantfork	0	Wood River	58
Hamel	0	Worden	0
Highland	6	Unincorp. Madison County	57
Livingston	2		

Sources: FEMA FIRMs/Madison County Planning and Development Department

The original Illinois American Water Company drinking water treatment facility that served Alton and nearby villages, townships, and water districts was located within the base floodplain of the Mississippi River at Alton. The drinking water treatment facility was inundated by flood waters during the 1993 flood due to a levee failure. The flooding caused a three-week interruption in the supply of potable drinking water to more than 70,000 individuals. After this event Illinois American began looking at alternatives and finally decided to continue pumping Mississippi River water but from a facility located on the bluffs along the Great River Road in Alton. The new drinking water treatment facility was put into service in 2001.

While 13.8% of the land area in Madison County lies within the base floodplain and is susceptible to riverine flooding, ***almost the entire County is vulnerable to flash flooding.*** As a result, ***a majority of the buildings, infrastructure and critical facilities that may be impacted by flooding are located outside of the base floodplain and are not easily identifiable.***

The risk or vulnerability of existing buildings, infrastructure and critical facilities to all forms of flooding is considered to be ***medium to high*** based on: (a) the frequency and severity of recorded flood events within the County; (b) the County's proximity to the Mississippi River and its tributaries; (c) the fact that most of the County is vulnerable to flash flooding; and (d) a majority of the buildings, infrastructure and critical facilities that may be impacted are located outside of the base floodplain.

Are future buildings, infrastructure and critical facilities vulnerable to flooding?

The answer to this question depends on the type of flooding being discussed.

Riverine Flooding

In terms of riverine flooding, the vulnerability of future buildings, infrastructure and critical facilities located within NFIP-participating jurisdictions is low as long as the existing floodplain ordinances are enforced. Enforcement of the floodplain ordinance is the mechanism that ensures that new structures either are not built in flood-prone areas or are elevated or protected to the base flood elevation.

Flash Flooding

In terms of flash flooding, all future buildings, infrastructure and critical facilities are still vulnerable depending on the amount of precipitation that is received, the topography and any land use changes undertaken within the participating jurisdictions.

What are the potential dollar losses to vulnerable structures from flooding?

An estimate of the potential dollar losses to vulnerable residential structures located within the participating municipalities can be calculated if several assumptions are made. These assumptions represent a probable scenario based on the reported occurrences of flooding in Madison County.

The purpose of providing an estimate is to help residents and local officials make informed decisions about how they can better protect themselves and their communities. These estimates are meant to provide a **general idea** of the magnitude of the potential damage that could occur from a flood event in each of the participating municipalities and townships.

Assumptions

To calculate the overall potential dollar losses to vulnerable residential structures from a flood, a set of decisions/assumptions must be made regarding:

- type of flood event;
- scope of the flood event;
- number of potentially-damaged housing units;
- value of the potentially-damaged housing units; and
- percent damage sustained by the potentially-damaged housing units (i.e., damage scenario.)

The following provides a detailed discussion of each decision/assumption.

Type of Flood Event. The first step towards calculating the potential dollar losses to vulnerable residential structures is to determine the type of flood event that will be used for this scenario. Riverine floods have with greater regularity and caused the greatest amount of recorded damages in the County. In addition, identifying residential structures vulnerable to flash flooding is problematic because most are located outside of the base floodplain and the number of structures impacted can change with each event depending on the amount of precipitation received, the topography and the land use of the area.

Assumption #1

A riverine flood event will impact vulnerable residential structures.

Therefore, a riverine flood event will be used since it is (a) relatively easy to identify vulnerable residential structures within each municipality (i.e., those structures located within the base

floodplain or Special Flood Hazard Areas of any river, stream or creek); and (b) the number of structures impacted is generally the same from event to event.

Scope of the Flood Event. To establish the number of vulnerable residential structures (potentially-damaged housing units), the scope of the riverine flood event must first be determined. In this scenario, the scope refers to the number of rivers, streams and creeks that overflow their banks and the degree of flooding experienced along base floodplains for each river, stream and creek.

Assumption #2

All base floodplains will flood and experience the same degree of flooding.

Generally speaking, a riverine flood event only affects one or two rivers or streams at a time depending on the cause of the event (i.e., precipitation, snow melt, ice jam, etc.) and usually does not produce the same degree of flooding along the entire length of the river, stream or creek. However, for this scenario, it was decided that:

- ❖ all rivers, streams and creeks with base floodplains would overflow their banks, and
- ❖ the base floodplains of each river, stream and/or creek located within the corporate limits of each municipality would experience the same degree of flooding.

This assumption results in the following conditions for each jurisdiction:

- Alhambra, Glen Carbon, Godfrey, Grantfork, Hamel, Marine, Maryville, Pontoon Beach, Troy and Worden would not experience any flooding since there are no rivers, streams or creeks with base floodplains located within their municipal limits;
- Alton: Mississippi River, West Fork Wood River, Coal Branch Creek and Belt Line Creek would overflow their banks and flood the city;
- America's Central Port: Mississippi River would overflow its banks and flood a portion of the community;
- Collinsville: Canteen Creek and Schoolhouse Branch would overflow their banks and flood portions of the City;
- East Alton: Mississippi River, Wood River and East Fork Wood River would overflow their banks and flood the Village;
- Edwardsville: Mooney Creek, Mooney Creek Tributaries A, B and C, Old Mooney Creek and Cahokia Creek would overflow their banks and flood the City;
- Granite City: Mississippi River would overflow its banks and flood the City;
- Highland: Lindenthal Creek and Laurel Branch overflow their banks and flood portions of the City;
- Livingston: Silver Creek Tributary #2 and an Unnamed Tributary would overflow their banks and flood portions of the Village;
- City of Madison: Mississippi River would overflow its banks and flood a portion of the City;
- Roxana: Mississippi River would overflow its banks and flood a portion of the Village;
- Venice: Mississippi River would overflow its banks and flood a portion of the City; and

- Wood River: Mississippi River, Tributary #1, Tributary E and Tributary F overflow their banks and flood the City.

Number of Potentially-Damaged Housing Units.

Since this scenario assumes that all the base floodplains will experience the same degree of flooding, the number of existing residential structures located within the base floodplain(s) can be used to determine the number of potentially-damaged housing units. **Figure F-10** identifies the total number of existing residential structures located within the base floodplains(s) of each participating jurisdiction. These counts were prepared by the Madison County Planning and Development Department in consultation with the consultant. While base floodplains are present in America's Central Port, there are no residential structures located within their limits.

Assumption #3

The number of existing residential structures located within the base floodplain(s) will be used to determine the number of potentially-damaged housing units.

Value of Potentially-Damaged Housing Units.

Now that the number of potentially-damaged housing units has been determined, the monetary value of the units must be calculated. Typically, when damage estimates are prepared after a natural disaster such as a flood, they are based on the market value of the structure. Since it would be impractical to determine the individual market value of each potentially-damaged housing unit, the average market value for a residential structure will be used.

Assumption #4

The average market value for a residential structure will be used to determine the value of potentially-damaged housing units.

To determine the average market value, the average assessed value must first be calculated. The average assessed value is determined by taking the total assessed value of residential buildings within a jurisdiction and dividing that number by the total number of housing units within the jurisdiction. The average market value is then determined by taking the average assessed value and multiplying that number by three (the assessed value of a structure in Madison County is approximately one-third of the market value.) **Figure F-11** provides a sample calculation. The total assessed value is based on 2023 tax assessment information provided by the Madison County Chief County Assessment Officer. **Figure F-12** provides the average assessed value and average market value for each participating municipality.

Figure F-11

Sample Calculation of Average Assessed Value & Average Market Value – Highland

Average Assessed Value

Total Assessed Value of Residential Buildings in the Jurisdiction ÷ Total Housing Units in the Jurisdiction = Average Assessed Value

Highland: \$214,843,320 ÷ 4,898 housing units = \$43,863

Average Market Value

Average Assessed Value x 3 = Average Market Value (Rounded to the Nearest Dollar)

Highland: \$43,863 x 3 = \$131,589

(\$131,589)

Figure F-12 Average Market Value of Housing Units by Municipality				
Participating Jurisdiction	Total Assessed Value of Residential Buildings (2023)	Total Housing Units (2018-2022)	Average Assessed Values	Average Market Value (2023)
Alhambra	\$10,389,940	270	\$38,481	\$115,443
Alton	\$291,667,760	12,557	\$23,228	\$69,684
Collinsville	\$467,192,447	11,822	\$39,519	\$118,557
East Alton	\$67,505,970	3,191	\$21,155	\$63,465
Edwardsville	\$744,632,570	10,096	\$73,755	\$221,265
Glen Carbon	\$441,790,940	5,742	\$76,940	\$230,820
Godfrey	\$452,470,730	7,998	\$56,573	\$169,719
Granite City	\$320,434,940	12,788	\$25,057	\$75,171
Grantfork	\$7,209,370	191	\$37,745	\$113,235
Hamel	\$27,465,620	382	\$71,900	\$215,700
Highland	\$214,843,320	4,898	\$43,863	\$131,589
Livingston	\$9,283,560	418	\$22,209	\$66,627
Madison, City of	\$16,167,800	1,642	\$9,846	\$29,538
Marine	\$19,650,500	460	\$42,718	\$128,154
Maryville	\$279,277,510	3,398	\$82,189	\$246,567
Pontoon Beach	\$68,114,200	2,502	\$27,224	\$81,672
Roxana	\$18,044,170	764	\$23,618	\$70,854
St. Jacob	\$31,881,500	562	\$56,729	\$170,187
Troy	\$322,158,950	4,453	\$72,346	\$217,038
Venice	\$4,544,170	1,021	\$4,451	\$13,353
Wood River	\$139,185,330	4,853	\$28,680	\$86,040
Worden	\$21,240,800	464	\$45,778	\$137,334

Source: Madison County Chief County Assessment Office.

Damage Scenario. The final decision that must be made to calculate potential dollar losses is to determine the percent damage sustained by the structure and the structure's contents during the flood event. In order to determine the percent damage using FEMA's flood loss estimation tables, assumptions must be made regarding (a) the type of residential structure flooded (i.e., manufactured home, one story home without a basement, one- or two-story home with a basement, etc.) and (b) the flood depth. **Figure F-13.** calculates the percent loss to a structure and its contents for different scenarios based on flood depth and structure type.

Assumption #5

The potentially-damaged housing units are one-story homes with basements and the flood depth is two feet.
 Structural Damage = 20%
 Content Damage = 30%

For this scenario it is assumed that the potentially-damaged housing units are one-story homes without basements and the flood depth is two feet. With these assumptions the expected percent damage sustained by the **structure** is estimated to be 20% and the expected percent damage sustained by the structure's **contents** is estimated to be 30%.

Figure F-13
FEMA Flood Loss Estimation Tables

Flood Building Loss Estimation Table					Flood Content Loss Estimation Table				
Flood Depth (feet)	One Story No Basement (% Building Damage)	Two Story No Basement (% Building damage)	One or Two Story With Basement (% Building damage)	Manufactured Home (% Building damage)	Flood Depth (feet)	One Story No Basement (% Contents Damage)	Two Story No Basement (% Contents damage)	One or Two Story With Basement (% Contents damage)	Manufactured Home (% Contents damage)
-2	0	0	4	0	-2	0	0	6	0
-1	0	0	8	0	-1	0	0	12	0
0	9	5	11	8	0	13.5	7.5	16.5	12
1	14	9	15	44	1	21	13.5	22.5	66
2	22	13	20	63	2	33	19.5	30	90
3	27	18	23	73	3	40.5	27	34.5	90
4	29	20	28	78	4	43.5	30	42	90
5	30	22	33	80	5	45	33	49.5	90
6	40	24	38	81	6	60	36	57	90
7	43	26	44	82	7	64.5	39	66	90
8	44	29	49	82	8	66	43.5	73.5	90
>8	45	33	51	82	>8	67.5	49.5	76.5	90

Source: FEMA, Understanding Your Risks: Identifying Hazards and Estimating Losses

Potential Dollar Losses

Now that all of the decisions/assumptions have been made, the potential dollar losses can be calculated. First the potential dollar losses to the **structure** of the potentially-damaged housing units must be determined. This is done by taking the average market value for a residential structure and multiplying that by the percent damage 20% to get the average structural damage per unit. Next the average structural damage per unit is multiplied by the number of potentially-damaged housing units. **Figure F-14** provides a sample calculation.

Figure F-14
Structure: Potential Dollar Loss Sample Calculation – Highland

Average Market Value of a Housing Unit with the Jurisdiction x Percent Damage =
Average Structural Damage per Housing Unit
Highland: \$131,589 x 20% = \$26,317.80 per housing unit
Average Structural Damage x Number of Potentially-Damaged Housing
Units within the Jurisdiction = *Structure* Potential Dollar Losses
(Rounded to the Nearest Dollar)
Highland: \$26,317.80 per housing unit x 6 housing units = \$157,607
(\$157,607)

Next the potential dollar losses to the **content** of the potentially-damaged housing units must be determined. Based on FEMA guidance, the value of a residential housing unit's content is approximately 50% of its market value. Therefore, start by taking one-half the average market value for a residential structure and multiply that by the percent damage 30% to get the average content damage per unit. Then take the average content damage per unit and multiply that by the number of potentially-damaged housing units. **Figure F-15** provides a sample calculation.

Figure F-15

Content: Potential Dollar Loss Sample Calculation – Highland

$\frac{1}{2}$ (Average Market Value of a Housing Unit with the Jurisdiction) x Percent Damage =
Average Content Damage per Housing Unit

Highland: $\frac{1}{2}$ (\$131,589) x 30% = \$19,738.35 per housing unit

Average Content Damage per Housing Unit x Number of Potentially-Damaged Housing
Units within the Jurisdiction = *Content* Potential Dollar Losses
(Rounded to the Nearest Dollar)

Highland: \$19,738.35 per housing unit x 6 housing units = \$118,430
(\$118,430)

Finally, the **total potential dollar losses** may be calculated by adding together the potential dollar losses to the structure and the content. **Figure F-16** provides a breakdown of the total potential dollar losses by participating municipality and township.

Figure F-16

**Estimated Potential Dollar Losses to Potentially-Damaged Housing Units from a
Riverine Flood Event by Participating Jurisdiction**

Participating Jurisdiction	Average Market Value (2023)	Potentially- Damaged Housing Units	Potential Dollar Losses		Total Potential Dollar Losses
			Structure	Content	
Alhambra	\$115,443	0	\$ 0	\$ 0	\$0
Alton	\$69,684	11	\$153,305	\$114,979	\$268,284
Collinsville	\$118,557	17	\$403,094	\$302,320	\$705,414
East Alton	\$63,465	13	\$165,009	\$123,757	\$288,766
Edwardsville	\$221,265	4	\$177,012	\$132,759	\$309,771
Glen Carbon	\$230,820	0	\$ 0	\$ 0	\$ 0
Godfrey	\$169,719	0	\$ 0	\$ 0	\$ 0
Granite City	\$75,171	164	\$2,465,609	\$1,849,207	\$4,314,816
Grantfork	\$113,235	0	\$0	\$ 0	\$ 0
Hamel	\$215,700	0	\$0	\$ 0	\$ 0
Highland	\$131,589	6	\$157,907	\$118,430	\$276,337
Livingston	\$66,627	2	\$26,651	\$19,988	\$46,639
Madison (city)	\$29,538	61	\$360,364	\$270,273	\$630,637
Marine	\$128,154	0	\$ 0	\$ 0	\$ 0
Maryville	\$246,567	0	\$ 0	\$ 0	\$ 0
Pontoon Beach	\$81,672	0	\$ 0	\$ 0	\$ 0
Roxana	\$70,854	5	\$70,854	\$53,141	\$123,995
St. Jacob	\$170,187	0	\$ 0	\$ 0	\$ 0
Troy	\$217,038	0	\$ 0	\$53,141	\$ 0
Venice	\$13,353	12	\$32,047	\$24,035	\$56,082
Wood River	\$86,040	58	\$998,064	\$748,548	\$1,746,612
Worden	\$137,334	0	\$ 0	\$ 0	\$ 0

This assessment illustrates the potential dollar losses that should be considered when participating jurisdictions are deciding which mitigation projects to pursue. Potential dollar losses caused by

riverine flooding to vulnerable structures within the participating municipalities would be expected to **range from \$46,639 in Livingston to \$4.3 million in Granite City**. There are 11 participating municipalities in this scenario who do not have any residences considered vulnerable to riverine flooding.

Vulnerability of Infrastructure/Critical Facilities

The calculations presented above are meant to provide the reader with a sense of the scope or magnitude of a large riverine flood event in dollars. These calculations do not include the physical damages sustained by businesses or other infrastructure and critical facilities.

In terms of businesses, the impacts from a flood event can be physical and/or monetary. Monetary impacts can include loss of sales revenue either through temporary closure or loss of critical services (i.e., power, drinking water and sewer). Depending on the magnitude of the flood event, the damage sustained by infrastructure and critical facilities can be extensive in nature and expensive to repair. As a result, **the cumulative monetary impacts to businesses and infrastructure can exceed the cumulative monetary impacts to residences**. While average dollar amounts cannot be supplied for these items at this time, they should be taken into account when discussing the overall impacts that a large-scale riverine flood event could have on the participating jurisdictions.

Alton, Collinsville, and Granite City all have wastewater treatment facilities located within a base floodplain. The potential dollar loss to relocate any of these facilities would be millions of dollars. Two of the pump stations for the Wood River D&LD are located in base floodplain of the Mississippi River. Finally, East Alton, Highland, Roxana and Wood River have drinking water and/or wastewater treatment facilities located adjacent to a base floodplain and are potentially vulnerable to flooding.

Considerations

While the potential dollar loss scenario was only for a riverine flood event, the participating jurisdictions have been made aware through the planning process of the impacts that can result from flash flood events. Madison County has experienced multiple events over the last 20 to 30 years as have adjoining and nearby counties. These events illustrate the need for officials to consider the overall monetary impacts of all forms of flooding on their communities. All participants should carefully consider the types of activities and projects that can be taken to minimize their vulnerability.

3.4 SEVERE WINTER STORMS

HAZARD IDENTIFICATION

What is the definition of a severe winter storm?

A severe winter storm can range from moderate snow over a few hours to significant accumulations of sleet and/or ice to blizzard conditions with blinding, wind-driven snow that lasts several days. The amount of snow or ice, air temperature, wind speed and event duration all influence the severity and type of severe winter storm that results. In general, there are three types of severe winter storms: blizzards, heavy snowstorms and ice storms. The following provides a brief description of each type as defined by the National Weather Service (NWS).

- **Blizzards.** Blizzards are characterized by strong winds of at least 35 miles per hour and are accompanied by considerable falling and/or blowing snow that reduces visibility to ¼ mile or less. Blizzards are the most dangerous of all winter storms.
- **Heavy Snowstorms.** Heavy snowstorms are generally defined as producing snowfall accumulations of four inches or more in 12 hours or less or six inches or more in 24 hours or less.
- **Ice Storms.** An ice storm occurs when substantial accumulations of ice, generally ¼ inch or more, build up on the ground, trees and utility lines as a result of freezing rain.

What is snow?

Snow is precipitation in the form of ice crystals. These ice crystals are formed directly from the freezing of water vapor in wintertime clouds. As the ice crystals fall toward the ground, they cling to each other creating snowflakes. Snow will only fall if the temperature remains at or below 32°F from the cloud base to the ground.

What is sleet?

Sleet is precipitation in the form of ice pellets. These ice pellets are composed of frozen or partially frozen rain drops or refrozen partially melted snowflakes. Sleet typically forms in winter storms when snowflakes partially melt while falling through a thin layer of warm air. The partially melted snowflakes then refreeze and form ice pellets as they fall through the colder air mass closer to the ground. Sleet usually bounces after hitting the ground or other hard surfaces and does not stick to objects.

What is freezing rain?

Freezing rain is precipitation that falls in the form of a liquid (i.e., rain drops) but freezes into a glaze of ice upon contact with the ground or other hard surfaces. This occurs when snowflakes descend into a warmer layer of air and melt completely. When the rain drops that result from this melting fall through another thin layer of freezing air just above the surface they become “supercooled”, but they do not have time to refreeze before reaching the ground. However, because the raindrops are “supercooled”, they instantly refreeze upon contact with anything that is at or below 32°F (i.e., the ground, trees, utility lines, etc.).

Are alerts issued for severe winter storms?

Yes. The NWS Weather Forecast Office in St. Louis, Missouri is responsible for issuing **winter** storm watches and warnings for Madison County depending on the weather conditions. The following provides a brief description of each type of alert.

- **Winter Storm Watch.** A winter storm watch is issued when the risk of hazardous winter weather has increased significantly and there is a strong possibility that conditions will reach warning criteria for the area within the next 12 to 48 hours.
- **Advisories.** Winter advisories are issued for lesser winter weather events that while presenting an inconvenience, do not pose an immediate threat of injury, death or significant property damage. The following advisories will be issued when an event is occurring, is imminent or has a high probability of occurring.
 - ❖ **Winter Weather Advisory.** Depending on the time of occurrence and the temperature, a winter weather advisory is issued for:
 - ☐ snowfall of 1 to 5 inches;
 - ☐ sleet accumulations of less than ½ inch; or
 - ☐ a combination of winter precipitation, including freezing rain, which will produce hazardous conditions.
- **Warnings.** Winter weather warnings are issued for events that can be life threatening. The following warnings will be issued when an event is occurring, is imminent, or has a high probability of occurring.
 - ❖ **Blizzard Warning.** A blizzard warning is issued when sustained winds or frequent gusts greater than or equal to 35 mph are accompanied by falling and/or blowing snow that frequently reduces visibility to less than ¼ mile for three hours or more.
 - ❖ **Ice Storm Warning.** An ice storm warning is issued when freezing rain is expected to produce ice accumulations of ¼ inch or more.
 - ❖ **Winter Storm Warning.** A winter storm warning is issued when:
 - ☐ 5 inches or more of snow is expected;
 - ☐ ½ inch or more of sleet accumulations are expected; or
 - ☐ a combination of winter precipitation will produce life threatening conditions.

HAZARD PROFILE

The following identifies past occurrences of severe winter storms; details the severity or extent of each event (if known); identifies the locations potentially affected; and estimates the likelihood of future occurrences (Local Mitigation Planning Policy Guide Element B1-b through B1-f).

When have severe winter storms occurred previously? What is the extent of these previous severe winter storms?

Table 8, located in **Appendix J**, summarizes the previous occurrences as well as the extent or magnitude of severe winter storms (snow & ice) recorded in Madison County.

NOAA's Storm Events Database, Midwestern Regional Climate Center's cli-MATE database, and NWS's COOP data records were used to document 96 reported occurrences of severe winter storms (snow, ice and/or a combination of both) in Madison County between 1950 and 2023. Of the 96 recorded occurrences there were 54 heavy snowstorms

or blizzards; 35 combination events (freezing rain, sleet, ice and/or snow); and seven ice or sleet storms. Included in the 96 severe winter storms was one event that contributed to a federally-declared disaster in Madison County. Four of the 96 events contributed to four separate state disaster proclamations in Madison County.

Severe Winter Storm Fast Facts – Occurrences

Number of Severe Winter Storm Events Reported (1950 -2023): **96**

Maximum 24-Hour Snow Accumulation: **15.0 inches**

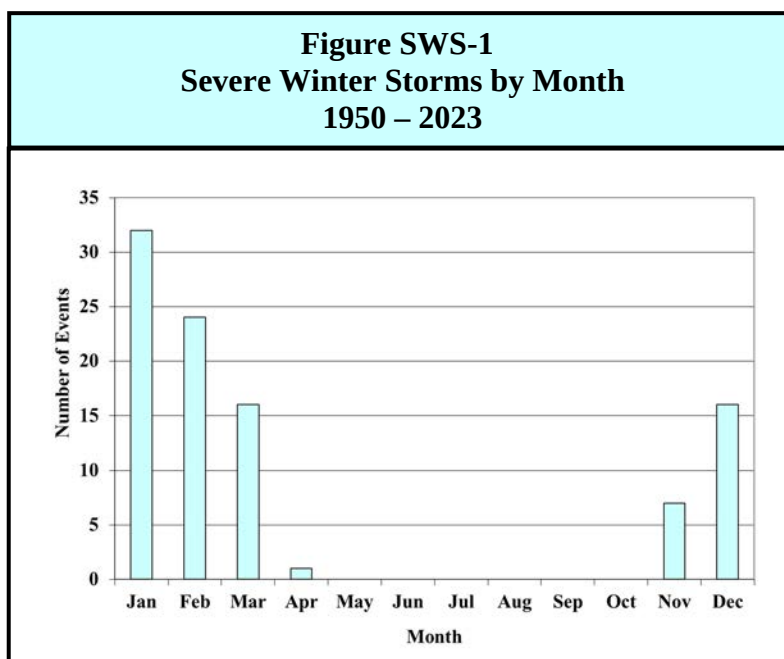
(**January 31, 1982**)

Most Likely Month for Severe Winter Storms to Occur: **January**

Number of Major Disaster Declarations Related to Severe Winter Storms: **1 (2006)**

Number of State Disaster Proclamations Related to Severe Winter Storms: **4 (2011, 2014, 2021, 2022)**

Figure SWS-1 charts the reported occurrences of severe winter storms by month. Of the 96 events, 56 (58%) took place in January and February making this the peak period for severe winter storms. Of these 56 events, 32 (57%) occurred during January, making this the peak month for severe winter storms. There were five events that spanned two months; however, for illustration purposes only the month when the event started is graphed. Of the winter storm events with recorded times, 50% began during the a.m. hours and 50% began during the p.m. hours.



According to the NWS's COOP data records, the maximum 24-hour snow accumulation in Madison County is 15.0 inches, which occurred on January 31, 1982 at the Edwardsville NWS COOP Observation Station.

What locations are affected by severe winter storms?

Severe winter storms affect the entire County. All communities in Madison County have been affected by severe winter storms. Severe winter storms generally extend across the entire County and affect multiple locations.

What is the probability of future severe winter storms occurring based on historical data?

Madison County has had 96 verified occurrences of severe winter storms between 1950 and 2023. With 96 occurrences over the past 74 years, Madison County should expect at least one severe winter storm in any given year. There were 26 years over the past 74 years where two or more severe winter storms occurred. This indicates the probability that two or more severe winter storms may occur during any given year within the County is 35%.

HAZARD VULNERABILITY

The following describes the vulnerability to participating jurisdictions; specifies the unique and varied risk differences across the planning area and between participating jurisdictions; identifies the impacts on public health and property (if known); and estimates the potential impacts on public health and safety as well as buildings, infrastructure, and critical facilities from severe winter storms (Local Mitigation Planning Policy Guide Element B1-f, B2-a, and B2-b).

Are the participating jurisdictions vulnerable to severe winter storms?

Yes. All of Madison County, including the participating jurisdictions, is vulnerable to the dangers presented by severe winter storms. Severe winter storms are among the more frequently occurring natural hazards in Illinois. Since 2014, Madison County has experienced 19 severe winter storms.

Severe winter storms have immobilized portions of the County, blocking roads; downing power lines, trees, and branches; causing power outages and property damage; and contributing to vehicle accidents. In addition, the County, township, and municipalities must budget for snow removal and de-icing of roads and bridges as well as for roadway repairs.

The *2023 Illinois Natural Hazard Mitigation Plan* prepared by IEMA-OHS classifies Madison County's hazard rating for winter storms as "high" and ice storms as "low". IEMA-OHS's overall hazard rating system has five levels: very low, low, medium, high, and very high.



Mississippi River on Alton Lake following the January 26, 2009 winter storm.

Photograph courtesy The Telegraph/John Badman

For winter weather, FEMA's National Risk Index (NRI) rates the County as a whole as "Relatively Moderate". Of the 67 census tracts studied, 21 are rated "Relatively High", 43 are rated "Relatively Moderate", and 3 are rated "Relatively Low" for winter weather. For ice storm, FEMA's National Risk Index (NRI) rates the County as a whole as "Relatively High". Of the 67 census tracts studied, four are rated "Relatively High", 51 are rated "Relatively Moderate", and 12 are rated "Relatively Low" for ice storm. **Figure R-4**

presents the overall NRI scores and ratings for each census tract as well as for the County as a whole.

Have any of the participating jurisdictions identified specific assets vulnerable to the impacts of severe winter storms?

Yes. Based on responses to an Assets Vulnerability Survey distributed to the participating jurisdictions, all of the participants, with the exception of Metro East Sanitary District, considered specific assets within their jurisdiction vulnerable to severe winter storms. **Appendix I** contains copies of the completed surveys that outline problem statements summarizing their vulnerabilities to extreme cold.

What impacts resulted from the recorded severe winter storms?

Data obtained from NOAA's Storm Events Database and Committee member records indicates that between 1950 and 2023, four of the 96 severe winter storms caused \$5,115,157 in property damages. Included in the property damage figures provided above is \$130,665 in verified infrastructure and critical facilities damage sustained in East Alton and Granite City as a result of two separate severe winter storms. Damage information was either unavailable or none was recorded for any of the remaining 92 reported occurrences.

NOAA's Storm Events Database documented four fatalities and two injuries as a result of two severe winter storm events. The following provides a brief description.

- ❖ The November 30, 2006 ice storm led to hazardous driving conditions that resulted in one fatality and one injury. During the same event, a power outage led to the one fatality and one injury as the result of carbon monoxide poisoning when fumes from a generator running in a garage enter the home.
- ❖ During the March 3, 2008 severe winter storm a 68-year-old woman and a 71-year-old man died in a traffic accident.

Severe Winter Storms & Extreme Cold Events

Fast Facts – Impacts/Risk

Severe Winter Storm (Snow & Ice) Impacts:

- ❖ Total Property Damage (4 events): **\$5,115,157**
- ❖ Injuries (1 event): **2**
- ❖ Fatalities (2 events): **4**

Severe Winter Storm Risk/Vulnerability:

- ❖ Public Health & Safety: **Low to Medium**
- ❖ Buildings/Infrastructure/Critical Facilities: **Medium**

In comparison, the State of Illinois has averaged \$102 million annually in winter storm losses according to the Illinois State Water Survey's Climate Atlas of Illinois, ranking winter storms second only to flooding in terms of economic loss in the State. While behind floods in terms of the amount of property damage caused, severe winter storms have a greater ability to immobilize larger areas, with rural areas being particularly vulnerable.

What other impacts can result from severe winter storms?

In Madison County, vehicle accidents are the largest risk to health and safety from severe winter storms. Hazardous driving conditions (i.e., reduced visibility, icy road conditions, strong winds, etc.) contribute to the increase in accidents that result in injuries and fatalities. A majority of all severe winter storm injuries result from vehicle accidents.

Traffic accident data assembled by the Illinois Department of Transportation from 2018 through 2022 indicates that treacherous road conditions caused by snow/slush and ice were present for 2.0% to 8.0% of all crashes recorded annually in the County. **Figure SWS-2** provides a breakdown by year of the number of crashes and corresponding injuries and fatalities that occurred when treacherous road conditions caused by snow and ice were present.

Figure SWS-2 Severe Winter Weather Crash Data for Madison County				
Year	Total # of Crashes	Presence of Treacherous Road Conditions caused by Snow/slush and Ice		
		# of Crashes	# of Injuries	# of Fatalities
2018	5,682	224	50	1
2019	5,850	466	87	1
2020	4,799	94	23	0
2021	5,642	248	45	0
2022	5,225	251	42	1
Total:	27,198	1,283	247	3

Source: Illinois Department of Transportation.

Persons who are outdoors during and immediately following severe winter storms can experience other health and safety problems. Frostbite to hands, feet, ears and nose and hypothermia are common injuries. Treacherous walking conditions also lead to falls which can result in serious injuries, including fractures and broken bones, especially in the elderly. Overexertion from shoveling driveways and walks can lead to life-threatening conditions such as heart attacks in middle-aged and older adults who are susceptible.

What is the level of risk/vulnerability to public health and safety from severe winter storms?

While severe winter storms occur regularly in Madison County, the number of injuries and fatalities is relatively low. Taking into consideration the potential for hazardous driving conditions, snow-removal related injuries, and power outages that could leave individuals vulnerable to hypothermia, the risk to public health and safety of the *general population* from severe winter storms safety is seen as **low to medium**.

The level of risk or vulnerability posed by severe winter storms to the public health and safety of *socially vulnerable populations* is considered to be **medium**. Socially vulnerable populations such as older adults (those 75 years of age and older) are more susceptible to slips and falls caused by treacherous walking conditions and therefore their risk is elevated. **Figure SWS-3** identifies the percent of sensitive populations by participating municipality, township, and the County based on the U.S. Census Bureau's 2020 decennial census data.



A car accident on W. Seventh Street in Alton resulted from slick roadway conditions during the February 2011 blizzard.

Photograph courtesy of The Telegraph/John Badman

Figure SWS-3 Socially Vulnerable Populations by Participating Jurisdictions	
Participating Jurisdiction	% of Population 75 years of age & Older
Alhambra	15.1%
Alton	7.0%
Collinsville	6.3%
East Alton	7.1%
Edwardsville	5.3%
Glen Carbon	9.7%
Godfrey	11.5%
Granite City ¹	7.4%
Grant Fork	4.4%
Hamel	6.7%
Highland	9.4%
Livingston	10.0%
Madison, City of ¹	5.8%
Marine	7.7%
Maryville	10.6%
Pontoon Beach	5.3%
Roxana	8.0%
St. Jacob	4.5%
Troy	5.1%
Venice	6.8%
Wood River	6.8%
Worden	5.4%
Collinsville Township	7.6%
Edwardsville Township	6.3%
Leef Township	2.2%
Nameoki Township	5.9%
Unincorp. Madison County	7.9%
Madison County	7.6%
State of Illinois	6.7%

¹America's Central Port

Source: U.S. Census Bureau.

Are existing buildings, infrastructure, and critical facilities vulnerable to severe winter storms?

Yes. All existing buildings, infrastructure, and critical facilities located in Madison County and the participating jurisdictions are vulnerable to damage from severe winter storms.

Structural damage to buildings caused by severe winter storms (snow and ice) is very rare but can occur particularly to flat rooftops. Information gathered from Madison County residents indicates that snow and ice accumulations on communication and power lines as well as key roads presents the greatest vulnerability to infrastructure and critical facilities within the County. Snow and ice accumulations on lines often lead to disruptions in communications and create power outages. Depending on the damage, it can take anywhere from several hours to several days to restore service.

Tony O’Neal, Ameren Illinois Senior Emergency Response Specialist – Illinois Crisis Management, served as a technical partner to the Planning Committee and was able to provide information on the impacts and damages sustained by Ameren as the result of severe winter storms from 2006 through 2023. This information, while regional in nature, helps quantify the damages sustained by critical infrastructure in Madison County and is summarized in **SWS-4**.

Figure SWS-4 Ameren Illinois – Regional Power Outages Experienced in Madison County as a Result of Severe Winter Storm Events: 2006 – 2023							
Event Date	Event Type	Customers without Power	Maximum Duration of Outage (days)	Wires Downed	Poles Replaced	Tree Orders*	Responding Personnel
11/30/2006	Ice Storm	234,202	10	6,290	1,880	n/a	3,190
01/31/2011	Blizzard	n/a	3	1,494	104	718	1,144
02/24/2016	Heavy Snow	51,958	2	179	125	37	1,328

* Tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed.

In addition to affecting communication and power lines, snow and ice accumulations on state and local roads hampers travel and can cause dangerous driving conditions. Blowing and drifting snow can lead to road closures and increases the risk of automobile accidents. Even small accumulations of ice can be extremely dangerous to motorists since bridges and overpasses freeze before other surfaces.

When transportation is disrupted, schools close, emergency, and medical services are delayed, some businesses close and government services can be affected. When a severe winter storm hits there is also an increase in cost to the County, township, and municipalities for snow removal and de-icing. Road resurfacing and pothole repairs are additional costs incurred each year as a result of severe winter storms.

Based on the frequency with which severe winter storms have occurred in Madison County; the damages described; the amount of property damage previously reported; and the potential for disruptions to power distribution and communication; the risk or vulnerability to buildings, infrastructure and critical facilities from severe winter storms is **medium**.



Residents shovel snow at E. Ninth and Henry Streets in Alton following the January 20-21, 2011 winter storm.

Photograph courtesy of The Telegraph/John Badman

Are future buildings, infrastructure, and critical facilities vulnerable to severe winter storms?

Yes and No. The County and all of the participating municipalities, with the exception of Worden, have building codes in place that will likely help lessen the vulnerability of new buildings and critical facilities to damage from severe winter storms. However, infrastructure such as new

communication and power lines will continue to be vulnerable to severe winter storms, especially to ice accumulations, as long as they are located above ground. Rural areas of the County have experienced extended periods without power due to severe winter storms. Steps to bury all new lines would eliminate the vulnerability, but this action would be cost prohibitive in most areas. In terms of new roads and bridges, there is very little that can be done to reduce or eliminate their vulnerability to severe winter storms.

What are the potential dollar losses to vulnerable structures from severe winter storms?

Unlike other natural hazards, such as tornadoes, there are no standard loss estimation models or methodologies for severe winter storms. Since only four of the 96 recorded events listed property damage numbers for severe winter storms, it is difficult to accurately estimate future potential dollar losses. However, according to the Madison County Chief County Assessment Officer the total equalized assessed values of all residential, commercial, and industrial buildings in the planning area is \$8.1 billion. Since all of the structures in the planning area are vulnerable to damage, this total represents the countywide property exposure to severe winter storms.

3.5 EXTREME COLD

HAZARD IDENTIFICATION

What is the definition of extreme cold?

Extreme cold is generally characterized by temperatures well below what is considered normal for an area during the winter months and is often accompanied or is left in the wake of a severe winter storm. Extreme cold criteria vary from region to region. As a result, reliable fixed absolute criteria are not generally specified (i.e., a winter day with a maximum temperature of 0°F).

Whenever the temperature drops below normal and the wind speeds increase, heat can leave the body more rapidly. This can lead to dangerous situations for susceptible individuals, such as those without shelter or who are stranded, or those who live in a home that is poorly insulated or without heat.

Extreme cold is a leading cause of weather-related fatalities in Illinois. According to a 2020 study published by the University of Illinois Chicago, 1,935 individuals died from cold-related illnesses between 2011 and 2018. This is 94% of all temperature-related fatalities recorded in the State during that time period.

Extreme cold can also cause infrastructure damage, especially to residential water pipes and water distribution lines and mains. According to State Farm, in 2020 Illinois was once again the national leader in losses related to frozen pipes.

What is wind chill?

Wind chill, or wind chill factor, is a measure of the rate of heat loss from exposed skin resulting from the combined effects of wind and temperature. As the wind increases, heat is carried away from the body at a faster rate, driving down both the skin temperature and eventually the internal body temperature.

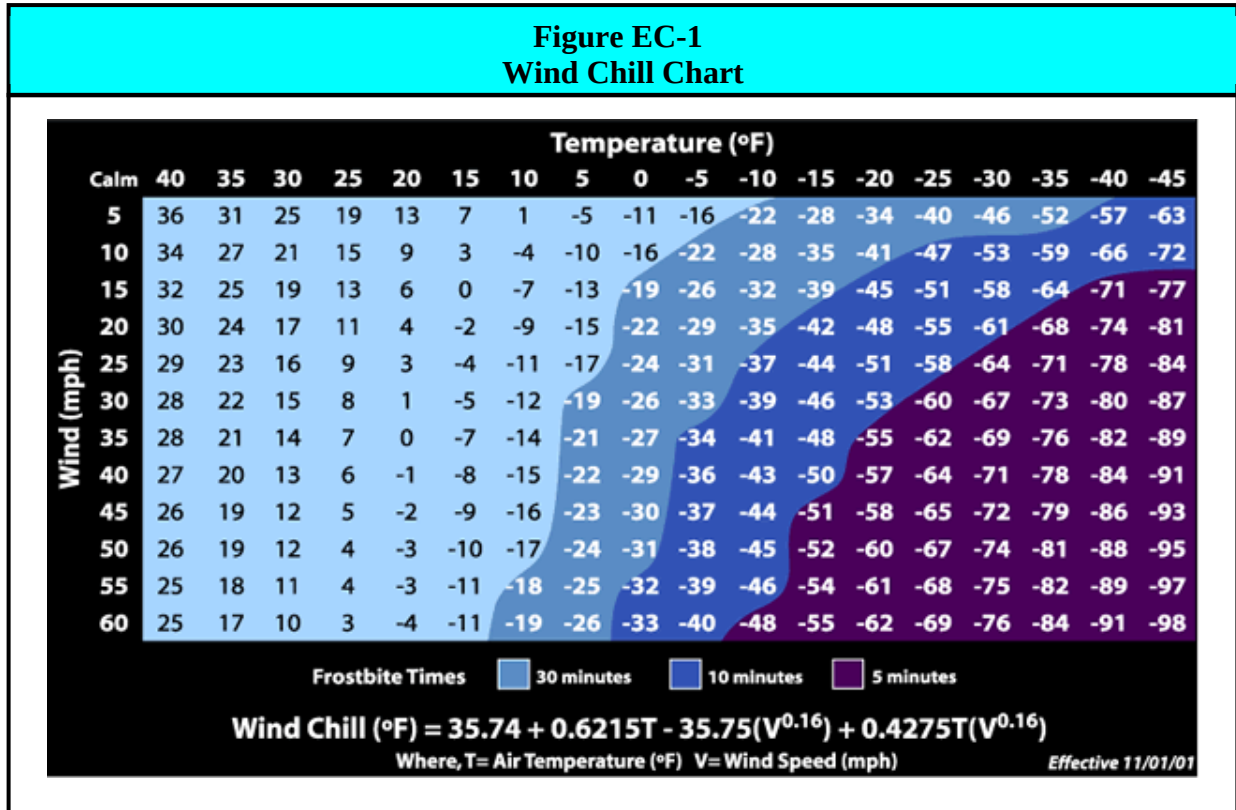
The unit of measurement used to describe the wind chill factor is known as the wind chill temperature. The wind chill temperature is calculated using a formula. **Figure EC-1** identifies the formula and calculates the wind chill temperatures for certain air temperatures and wind speeds.

As an example, if the air temperature is 5°F and the wind speed is 20 miles per hour, then the wind chill temperature would be -15°F. The wind chill temperature is only defined for air temperatures at or below 50°F and wind speeds above three miles per hour. In addition, the wind chill temperature does not take into consideration the effects of bright sunlight which may increase the wind chill temperature by 10°F to 18°F.

Use of the current Wind Chill Temperature (WCT) index was implemented by the NWS on November 1, 2001. The new WCT index was designed to more accurately calculate how cold air feels on human skin. The new index uses advances in science, technology and computer modeling to provide an accurate, understandable and useful formula for calculating the dangers from winter

winds and freezing temperatures. The former index was based on research done in 1945 by Antarctic researchers Siple and Passel.

Exposure to extreme wind chills can be life threatening. As wind chills edge toward -19°F and below, there is an increased likelihood that exposure will lead to individuals developing cold-related illnesses.



Source: NOAA, National Weather Service.

What cold-related illnesses are associated with extreme cold?

Frostbite and hypothermia are both cold-related illnesses that can result when individuals are exposed to dangerously low temperatures and wind chills. The following provides a brief description of the symptoms associated with each.

- **Frostbite.** During exposure to extremely cold weather the body reduces circulation to the extremities (i.e., feet, hands, nose, cheeks, ears, etc.) in order to maintain its core temperature. If the extremities are exposed, then this reduction in circulation coupled with the cold temperatures can cause the tissue to freeze.

Frostbite is characterized by a loss of feeling and a Madison or pale appearance. At a wind chill of -19°F, exposed skin can freeze in as little as 30 minutes. Seek medical attention immediately if frostbite is suspected. It can permanently damage tissue and in severe cases can lead to amputation.

- **Hypothermia.** Hypothermia occurs when the body’s temperature begins to fall because it is losing heat faster than it can produce it. If an individual’s body temperature falls below 95°F, then hypothermia has set in, and immediate medical attention should be sought.

Hypothermia is characterized by uncontrollable shivering, memory loss, disorientation, incoherence, slurred speech, drowsiness and exhaustion. Left untreated, hypothermia will lead to death. Hypothermia occurs most commonly at very cold temperatures but can occur at cool temperatures (above 40°F) if an individual isn’t properly clothed or becomes chilled.

Are alerts issued for extreme cold events?

Yes. A cold weather or extreme cold alert is an advisory or warning issued by the NWS when the ambient or wind chill temperature is expected to have a significant impact on public safety. The expected severity of cold temperatures and wind speed determines the type of alert issued. The NWS Weather Forecast Office in St. Louis, Missouri is responsible for issuing cold weather or extreme cold alerts for Macoupin County depending on the weather conditions. The following provides a brief description of each type of alert.

- ❖ **Extreme Cold Watch.** An extreme cold watch is issued when widespread ambient or wind chill temperatures of -20°F or colder are possible.
- ❖ **Cold Weather Advisory.** A cold weather advisory is issued when ambient or wind chill temperatures of -10°F and -20°F are expected.
- ❖ **Extreme Cold Warning.** An extreme cold warning is issued when ambient or wind chill temperatures are expected to be -20°F or below.

HAZARD PROFILE

The following identifies past occurrences of extreme cold events; details the severity or extent of each event (if known); identifies the locations potentially affected; and estimates the likelihood of future occurrences (Local Mitigation Planning Policy Guide Element B1-b through B1-f).

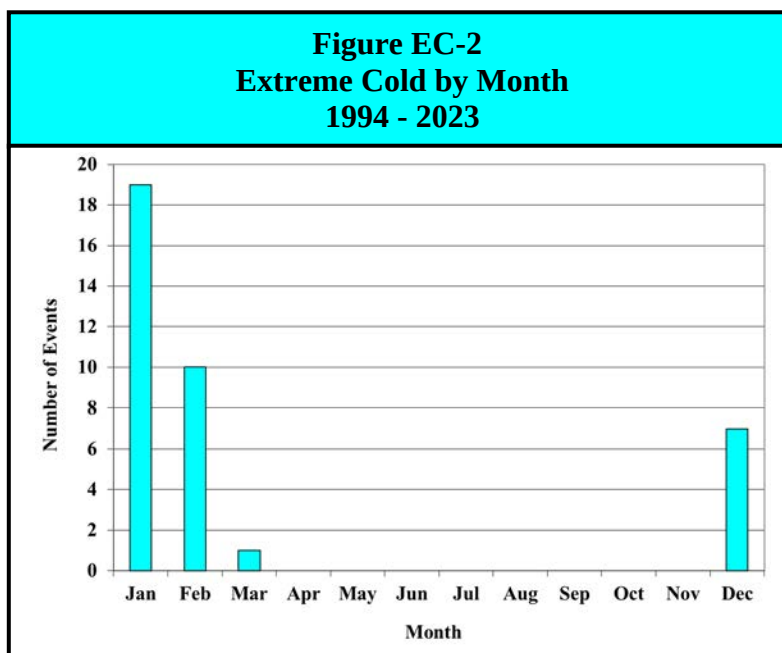
When have extreme cold events occurred previously? What is the extent of these events?

Table 9, located in **Appendix J**, summarizes the previous occurrences as well as the extent or magnitude of regional extreme cold events in Madison County. NOAA’s Storm Events Database, Iowa State University’s National Weather Service Watch, Warning, and Advisories database, Midwestern Regional Climate Center’s cli-MATE database, and NWS’s COOP Data records were used to document 37 occurrences of extreme cold in Madison County between 1994 and 2023. Two events contributed to two state disaster proclamations in Madison County.

Extreme Cold Fast Facts – Occurrences

Number of Extreme Cold Events Reported (1994 - 2023): **37**
 Coldest Temperature Recorded in the County: **-16°F**
(6 separate dates in 1982, 1983, and 1989)
 Most Likely Months for Extreme Cold Events to Occur: **January**
 Number of State Disaster Proclamations Related to Extreme Cold:
2 (2014, 2019)

Figure EC-2 charts the reported occurrences of extreme cold by month. Of the 37 events, 19 (51%) took place in January, making this the peak month for extreme cold events. There were two events that spanned two months; however, for illustration purposes only the month the event started in is graphed.



According to the Midwestern Regional Climate Center, almost continuous temperature records for Madison County have been kept from 1943 to present by the NWS COOP Observer Station at the Melvin Price Lock & Dam COOP Observation Station in Alton. **Figure EC-3** lists the coldest days recorded at this Station. Based on the available records, the coldest temperature recorded in Madison County was -16°F at the Melvin Price Observation Station on January 10 & 11, 1982, December 25 & 26, 1983, and December 22 & 23, 1989.

Figure EC-3 Coldest Days Recorded Melvin Price Lock & Dam NWS COOP Observation Station					
	Date	Temperature		Date	Temperature
1	01/10/1982	-16°F	7	01/17/1977	-15°F
2	01/11/1982	-16°F	8	01/20/1985	-15°F
3	12/25/1983	-16°F	9	01/21/1985	-15°F
4	12/26/1983	-16°F	10	12/24/1989	-15°F
5	12/22/1989	-16°F	11	02/04/1996	-15°F
6	12/23/1989	-16°F			

Source: Midwest Regional Climate Center cli-MATE

What locations are affected by extreme cold?

Extreme cold affects the entire County. Extreme cold, like excessive heat and severe winter storms, generally extends across the entire County and affects multiple locations.

Do any of the participating jurisdictions have designated warming centers?

Yes. 25 of the 43 participating municipalities/special units of government, townships, school districts, universities, fire protection districts, and healthcare facilities have designated warming centers based on the responses received from participants to the “Identification of Severe Weather Shelters” survey. A “designated” warming center is identified as any facility that has been *formally* identified by the jurisdiction (through emergency planning, resolution, Memorandum of Agreement, etc.) as a location available for use by residents during severe winter storms and extreme cold events.

Figure EC-4 identifies the location of each warming center by jurisdiction. In addition to those designated warming centers identified by the participating municipalities, the State of Illinois Division of Rehabilitation Services Office and Department of Human Services Family Community Center in East Alton also serve as warming centers. At this time America’s Central Pot, Anderson Hospital, Bethalto CUSD #8, Collinsville CUSD #10, Edwardsville CUSD #7, Edwardsville Township, Glen Carbon FPD, Hamel, Madison County ROE #41, Marquette Catholic High School, Maryville, Roxana CUSD #1, South Roxana FPD, SIUE, St. Jacob, St. Mary’s Catholic School, Wood River-Hartford ESD #15, and Worden do not have any warming centers designated.

What is the probability of future extreme cold events occurring based on historical data?

Madison County has experienced 37 verified occurrences of extreme cold between 1994 and 2023. With 37 occurrences over the past 30 years, Madison County should expect to experience at least one extreme cold event in any given year. It is important to keep in mind that there are almost certainly gaps in the early extreme cold data. More events have almost certainly occurred than are documented in this section, which means that the probability is almost certainly higher than reported.

There were nine years over the last 30 years where multiple (two or more) extreme cold events occurred. This indicates that the probability that multiple extreme cold events may occur during any given year within the County is 30%.

HAZARD VULNERABILITY

The following describes the vulnerability to participating jurisdictions; specifies the unique and varied risk differences across the planning area and between participating jurisdictions; identifies the impacts on public health and property (if known); and estimates the potential impacts on public health and safety as well as buildings, infrastructure, and critical facilities from extreme cold (Local Mitigation Planning Policy Guide Element B1-f, B2-a, and B2-b).

Are the participating jurisdictions vulnerable to extreme cold?

Yes. All of Madison County, including the participating jurisdictions, is vulnerable to the dangers presented by extreme cold. Since 2014, Madison County has experienced 18 extreme cold events.

The 2023 *Illinois Natural Hazard Mitigation Plan* prepared by IEMA-OHS classifies Madison County’s hazard rating for cold wave as “medium”. IEMA-OHS’s overall hazard rating system has five levels: very low, low, medium, high, and very high.

**Figure EC-4
Designated Warming Centers by Participating Jurisdiction**

<i>Alhambra</i>	<i>Leef Township</i>
Alhambra Township Park Hall – 610 W. Main Street	Leef Township Building, 12905 Niggli Rd., Highland
<i>Alton</i>	<i>Livingston</i>
Hayer Public Library, 132 Alton Square Mall Drive	Livingston Fire Station, 422 Nichols
Salvation Army, 525 Alby Street	<i>Madison, City of</i>
Deliverance Temple, 1125 E. 6 th St.	City Hall, 615 Madison Avenue
<i>Alton CUSD #11</i>	Fire Station, 1800 3rd Street
Alton High School, 4200 Humbert Rd.	Rec Center, 7th St. & Lee St.
Alton Middle School, 2200 College Ave.	<i>Marine</i>
<i>Collinsville</i>	Marine Senior Center, 101 W. Silver Street
Collinsville Library, 408 West Main	Marine United Church of Christ, 111 N. Center Street
Collinsville Senior Center, 420 East Main	St. Elizabeth’s Catholic Church, 120 N. Windmill Street
<i>Collinsville Township</i>	Marine Fire Department, 215 S. Center Street
Senior Center, 420 E. Main St., Collinsville	<i>Nameoki Township</i>
<i>East Alton</i>	Nameoki Township Offices, 4250 Highway 162
American Legion Hall Post 74, 120 E. Alton Avenue	<i>Olive Fire District</i>
East Alton Public Library, 250 Washington Avenue	Livingston Fire Station, 422 Nichols, Livingston
IL Dept. of Human Services, 608 W. St. Louis Avenue	<i>OSF St. Anthony’s Health Center</i>
IL Dept. of Rehab. Services, 606 W. St. Louis Avenue	Overnight Warming, 1125 E. 6 th St., Alton
<i>Edwardsville</i>	Overnight Warming, 534 St. Louis St., Edwardsville
YMCA, 1200 Esic Drive	<i>Pontoon Beach</i>
YMCA, 7348 Goshen Drive	Pontoon Beach Village Hall, #1 Regency Parkway
Main Street Community Center, 1003 N. Main Street	Long Lake Volunteer Fire Dept., 4113 Pontoon Rd.
Public Safety Building, 333 S. Main St.	<i>Roxana</i>
<i>Glen Carbon</i>	Roxana Village Hall, 310 North Central Ave.
Glen Carbon Senior Center, 157 N. Main Street	Rox-Arena, #2 Park Dr.
Glen Carbon Centennial Library, 198 S. Main Street	<i>Troy</i>
Glen Carbon Police Dept. lobby, 149 N. Main St.	Troy Municipal Building, 116 E. Market St.
<i>Godfrey</i>	<i>Troy Fire Protection District</i>
Godfrey Municipal Building, 6810 Godfrey Road	Tri Township Community Center, 410 Wickliffe St.
<i>Granite City</i>	Truck Centers Inc, 2280 Formosa Rd.
Granite City Township Building, 2060 Delmar Ave.	Bethel Baptist Church, 7775 Collinsville Rd.
Brown Recreation Center, 2165 Amos Avenue	St. Paul’s Lutheran Church, 106 N. Border
Park Dist. Community Center, 822 Niedringhaus Ave.	United Methodist Church, 407 Edwardsville Rd.
Salvation Army, 3007 E. 23rd Street	<i>Venice</i>
IL Dept. of Human Services, 1925 Madison Avenue	City Hall, 329 Broadway
<i>Grantfork</i>	Fire Station, 329 Broadway
Grantfork Village Hall, 205 Rock Street	<i>Wood River</i>
<i>Highland</i>	Wood River Rec Center, 633 N. Wood River Ave.
Weinheimer Community Center, 100 Main Street	
Korte Recreation Center, 1 Nagal Drive	

For extreme cold, FEMA’s National Risk Index (NRI) rates the County as a whole as “Relatively High”. Of the 67 census tracts studied, 51 are rated “Relatively Moderate” and 16 are rated “Relatively Low” for extreme cold. **Figure R-4** presents the overall NRI scores and ratings for each census tract as well as for the County as a whole.

Have any of the participating jurisdictions identified specific assets vulnerable to the impacts of extreme cold?

Yes. Based on responses to an Assets Vulnerability Survey distributed to the participating jurisdictions, 37 of the participants considered specific assets within their jurisdiction vulnerable to extreme cold. **Appendix I** contains copies of the completed surveys that outline problem statements summarizing their vulnerabilities to extreme cold.

What impacts resulted from the recorded extreme cold events?

Damage information was either unavailable or none was recorded as a result of any of the extreme cold events. NOAA's Storm Events Database documented one fatality as a result of the December 22, 2000 extreme cold event. A Godfrey man was found dead at his home from suspected hypothermia. In comparison, the State of Illinois averages 18 cold-related fatalities annually according to the Illinois State Water Survey's Climate Atlas of Illinois.

Extreme Cold Fast Facts – Impacts/Risk

Extreme Cold Impacts:

- ❖ Total Property Damage: *n/a*
- ❖ Injuries: *n/a*
- ❖ Fatalities (1 event): *1*

Extreme Cold Risk/Vulnerability:

- ❖ Public Health & Safety – General Population: ***Low to Medium***
- ❖ Public Health & Safety – Socially Vulnerable Populations: ***Medium***
- ❖ Buildings/Infrastructure/Critical Facilities: ***Low***

What other impacts can result from extreme cold events?

Other impacts of extreme cold include early school dismissals and school closing, power outages and frozen and ruptured water pipes and water mains. Individuals who are outdoors during and immediately following extreme cold events can experience health and safety problems. Frostbite to hands, feet, ears and nose and hypothermia are common injuries.

What is the level of risk/vulnerability to public health and safety from severe winter storms and extreme cold?

For Madison County the level of risk or vulnerability posed by extreme cold to public health and safety of the *general population* is considered to be ***low to medium***. This assessment is based on the fact that while extreme cold events occur regularly, the number of injuries and fatalities reported is low and all but four of the participating municipalities have designated warming centers.

The level of risk or vulnerability posed by extreme cold to the public health and safety of *sensitive populations* is considered to be ***medium***. Sensitive populations, such as individuals with dementia and access and functional needs populations, may be more susceptible to cold-related exposures if they become disoriented outdoors during an event and therefore their risk is elevated. However, demographic information is not available for these segments of the population.

Are existing buildings, infrastructure, and critical facilities vulnerable to extreme cold?

Yes. All existing buildings, infrastructure and critical facilities located in Madison County and the participating jurisdictions are vulnerable to damage from extreme cold. Individual water pipes and distribution lines and mains are especially susceptible to freezing during extreme cold events. This freezing can lead to cracks or ruptures in the pipes in buildings as well as in buried service

lines and mains. As a result, flooding can occur as well as disruptions in service. Since most buried service lines and water mains are located under local streets and roads, fixing a break requires portions of the street or road to be blocked off, excavated, and eventually repaired. These activities can be costly and must be carried out under less than ideal working conditions.

Tony O’Neal, Ameren Illinois Senior Emergency Response Specialist – Illinois Crisis Management, served as a technical partner on the Planning Committee and was able to provide information on the impacts and damages sustained by Ameren as the result of extreme cold from 2006 through 2023. During the January 6, 2014 extreme cold event, 52,337 customers were without power for up to 2.5 days with 44 Ameren personnel responding to the event. A total of 140 wires were downed, 30 poles were replaced, and 46 tree orders were received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed. This information, while regional in nature, helps quantify the damages sustained by critical infrastructure in Madison County.

Based on the frequency with which extreme cold events have occurred in Madison County; the damages described; the amount of property damage previously reported; and the potential for disruptions to power distribution and communication; the risk or vulnerability to buildings, infrastructure and critical facilities from extreme cold events is **low**.

Are future buildings, infrastructure, and critical facilities vulnerable to extreme cold?

Yes and No. The County and all of the participating municipalities, with the exception of Worden, have building codes in place that will likely help lessen the vulnerability of new buildings and critical facilities to damage from extreme cold. However, infrastructure such as residential water pipes will continue to be vulnerable as long as they are located in areas such as outside walls, attics and crawl spaces that do not contain proper insulation.

What are the potential dollar losses to vulnerable structures from extreme cold?

Unlike other natural hazards, such as tornadoes, there are no standard loss estimation models or methodologies for extreme cold events. With none of the recorded events listing property damage figures, there is no way to accurately estimate future potential dollar losses from extreme cold. However, according to the Madison County Chief County Assessment Officer the total equalized assessed values of all residential, commercial, and industrial buildings in the planning area is \$8.1 billion. Since all of the structures in the planning area are vulnerable to damage, this total represents the countywide property exposure to extreme cold.

3.6 TORNADOES

HAZARD IDENTIFICATION

What is the definition of a tornado?

A tornado is a narrow violently rotating column of air, often visible as a funnel-shaped cloud that extends from the base of a thunderstorm cloud formation to the ground. The most violent tornadoes can have wind speeds of more than 300 miles per hour and can create damage paths in excess of one mile wide and 50 miles long.

Not all tornadoes have a visible funnel cloud. Some may appear nearly transparent until dust and debris are picked up or a cloud forms within the funnel. Generally, tornadoes move from southwest to northeast, but they have been known to travel in any direction, even backtracking. A typical tornado travels at around 10 to 20 miles per hour, but this may vary from almost stationary to 60 miles per hour. Tornadoes can occur at any time of the year and happen at any time of the day or night, although most occur between 4 p.m. and 9 p.m.

About 1,200 tornadoes hit the U.S. yearly, with an average 52 tornadoes occurring annually in Illinois. The destruction caused by a tornado may range from light to catastrophic depending on the intensity, size and duration of the storm. Tornadoes cause crop and property damage, power outages, environmental degradation, injuries and fatalities. Tornadoes are known to blow roofs off buildings, flip vehicles and demolish homes. Typically, tornadoes cause the greatest damage to structures of light construction, such as residential homes. On average, tornadoes cause 60 to 65 fatalities and 1,500 injuries in the U.S. annually.

How are tornadoes rated?

Originally tornadoes were rated using the Fujita Scale (F-Scale), which related the degree of damage caused by a tornado to the intensity of the tornado's wind speed. The Scale identified six categories of damage, F0 through F5. **Figure T-1** gives a brief description of each category.

Use of the original Fujita Scale was discontinued on February 1, 2007 in favor of the Enhanced Fujita Scale. The original scale had several flaws including basing a tornado's intensity and damages on wind speeds that were never scientifically tested and proven. It also did not take into consideration that a multitude of factors (i.e., structure construction, wind direction and duration, flying debris, etc.) affect the damage caused by a tornado. In addition, the process of rating the damage itself was based on the judgment of the damage assessor. In many cases, meteorologists and engineers, highly experienced in damage survey techniques, often came up with different F-scale ratings for the same damage.

The Enhanced Fujita Scale (EF-Scale) was created to remedy the flaws in the original scale. It continues to use the F0 through F5 categories, but it incorporates 28 different damage indicators (mainly various building types, towers/poles and trees) as calibrated by engineers and meteorologists. For each damage indicator there are eight degrees of damage ranging from barely visible damage to complete destruction of the damage indicator. The wind speeds assigned to each category are estimates, not measurements, based on the damage assessment. **Figure T-1** identifies the Enhanced Fujita Scale.

Figure T-1 Fujita & Enhanced Fujita Tornado Measurement Scales				
F-Scale		EF-Scale		Description
Category	Wind Speed (mph)	Category	Wind Speed (mph)	
F0	40 – 72	EF0	65 – 85	Light damage – some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; damage to sign boards
F1	73 – 112	EF1	86 – 110	Moderate damage – peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads
F2	113 – 157	EF2	111 – 135	Considerable damage – roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground
F3	158 – 207	EF3	136 – 165	Severe damage – roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off ground and thrown
F4	208 – 260	EF4	166 – 200	Devastating damage – well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown, and large missiles generated
F5	261 – 318	EF5	Over 200	Incredible damage – strong frame houses lifted off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 yards; trees debarked; incredible phenomena will occur

Source: NOAA, Storm Prediction Center.

The idea behind the EF-Scale is that a tornado scale needs to take into account the typical strengths and weaknesses of different types of construction, instead of applying a “one size fits all” approach. This is due to the fact that the same wind speed can cause different degrees of damage to different kinds of structures. In a real-life application, the degree of damage to each of the 28 indicators can be mapped together to create a comprehensive damage analysis. As with the original scale, the EF-Scale rates the tornado as a whole based on the most intense damage within the tornado’s path.

While the EF-Scale is currently in use, **the historical data presented in this report is based on the original F-Scale.** None of the tornadoes rated before February 1, 2007 will be re-evaluated using the EF-Scale.

Are alerts issued for tornadoes?

Yes. The National Weather Service Weather Forecast Office in St. Louis, Missouri is responsible for issuing tornado watches and warnings for Madison County depending on the weather conditions. The following provides a brief description of each type of alert.

- **Tornado Watch.** A tornado watch is issued when tornadoes are possible in the area. Individuals need to be alert and prepared. Watches are typically large, covering numerous counties or even states.

- **Tornado Warning.** A tornado warning is issued when a tornado has been sighted or indicated by weather radar. Warnings indicate imminent danger to life and property for those who are in the path of the tornado. Individuals should see shelter immediately. Typically, warnings encompass a much smaller area, such as a city or small county.

HAZARD PROFILE

The following identifies past occurrences of tornadoes; details the severity or extent of each event (if known); identifies the locations potentially affected; and estimates the likelihood of future occurrences (Local Mitigation Planning Policy Guide Element B1-b through B1-f).

When have tornadoes occurred previously? What is the extent of these previous tornadoes?

Table 10, located in **Appendix J**, summarizes the previous occurrences as well as the extent or magnitude of tornado events recorded in Madison County. NOAA’s Storm Events Database, Storm Data Publication and Storm Prediction Center have documented 58 occurrences of tornadoes in Madison County between 1950 and 2023. Included in the 58 tornado events are two tornadoes that contributed to one major federal disaster declaration and one emergency federal disaster declaration. There was also an additional tornado that contributed to a state disaster proclamation in Madison County. In comparison, there have been 2,904 tornadoes statewide between 1950 and 2023 according to NOAA’s Storm Prediction Center. **Figure T-2** charts the reported occurrences of tornadoes by magnitude. Of the 58 reported occurrences there were: 2 – F4s, 5 – F3s, 7 – F2s, 12 – F1s, 18 – F0s, 1 – FU (Unknown), 2 – EF3s, 3 – EF2s, 4 – EF1s, 2 – EF0s, and 2 – EFUs.

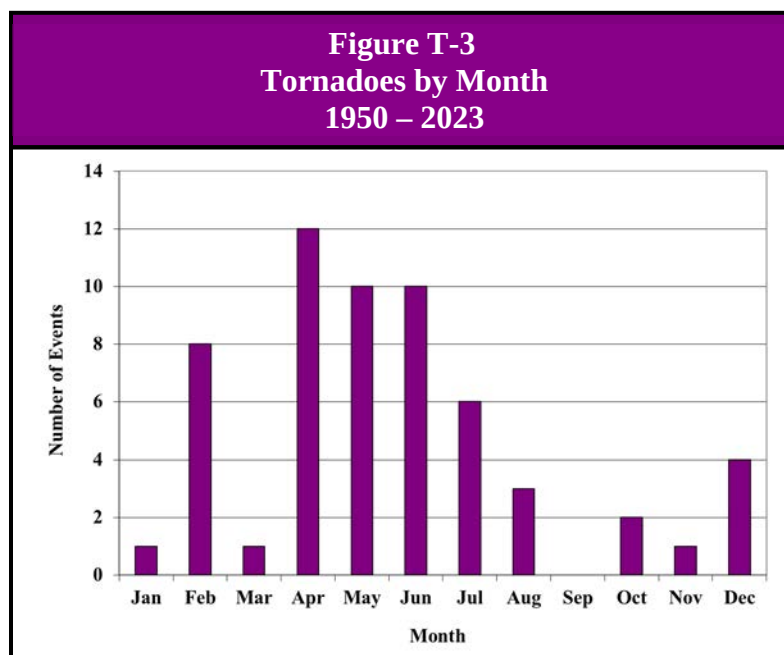
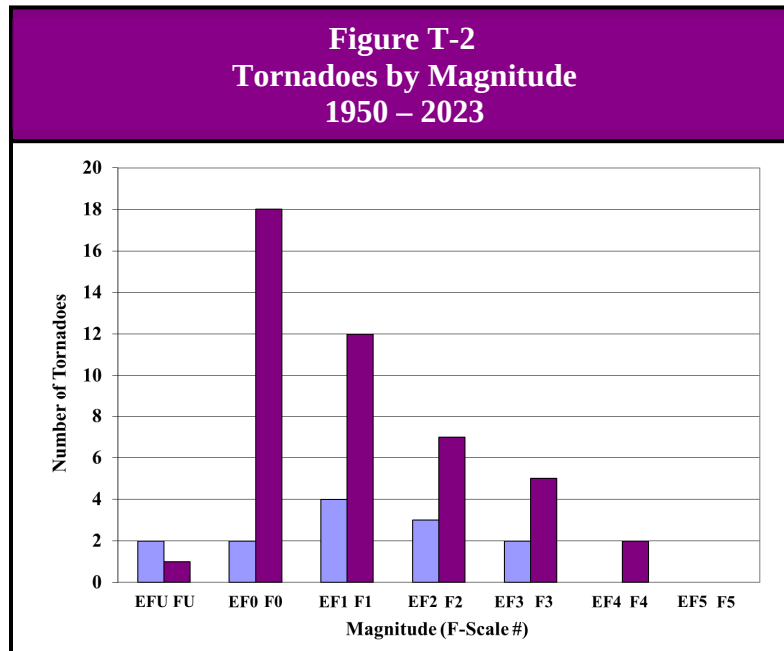
Tornado Fast Facts – Occurrences

Number of Tornadoes Reported (1950 – 2023): **58**
 Highest F-Scale Rating Recorded: **F4**
(February 10, 1959 and April 3, 1981)
 Most Likely Months for Tornadoes to Occur: **April**
 Average Length of a Tornado: **3.15 miles**
 Average Width of a Tornado: **115 yards**
 Average Damage Pathway of a Tornado: **0.21 sq. mi.**
 Longest Tornado Path in the County: **16.9 miles**
(June 30, 1960)
 Widest Tornado Path in the County: **1,000 yards**
(May 1, 1983)
 Number of Federal Emergency & Major Disaster
 Declarations Related to Tornadoes: **2 (1983 & 2021)**
 Number of State Disaster Proclamations Related to
 Tornadoes: **1 (2011)**

Figure T-3 charts the reported tornadoes by month. Of the 58 events, 32 (55%) took place in April, May, and June making this the peak period for tornadoes in Madison County. Of the 32 events, 12 (21%) occurred during April making this the peak month for tornadoes. In comparison, 1,773 of the 2,904 tornadoes (61%) recorded in Illinois from 1950 through 2023 took place in April, May, and June.

Approximately 88% of all tornadoes occurred during the p.m. hours, with 34 of the events (59%) taking place between 2 p.m. and 8 p.m. In comparison, more than half of all Illinois tornadoes occur between 2 p.m. and 8 p.m.

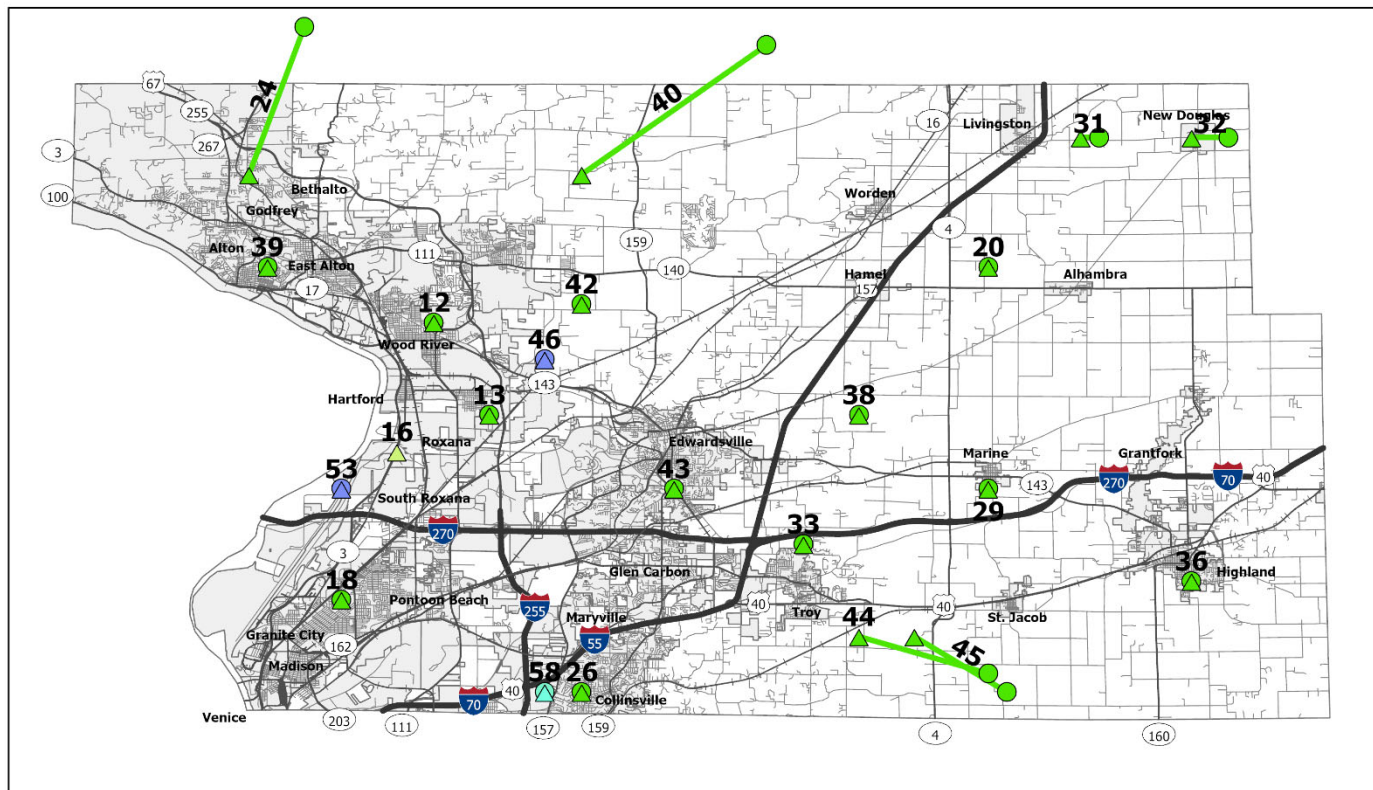
The tornadoes that have impacted Madison County have varied from 0.1 miles to 16.9 miles in length and from 10 yards to 1,000 yards in width. The average length of a tornado in Madison County is 3.15 miles and the average width is 115 yards (0.065 miles).



Figures T-4 to T-7 show the pathway of each reported tornado. The numbers next to each tornado correspond with the tornado description in **Table 10** located in **Appendix J**. Unlike other natural hazards (i.e., severe winter storms, drought, and excessive heat), tornadoes impact a relatively small area. Typically, the area impacted by a tornado is less than four square miles. In Madison County, the average damage pathway or area impacted by a tornado is 0.21 square miles. The average area impacted by a tornado increased by 0.03 square miles since the previous Plan was completed.

Figure T-4
F0 & EF0 Tornado Pathways in Madison County

Madison County



- Municipal Boundaries
- Interstate
- US/State Routes
- Roadways
- Railroads

Touchdown	Liftoff
FU	FU
F0	F0
EFU	EFU
EF0	EF0

0 5 10 20 Miles

Map Created June 2024 in ArcGIS by Callie Smith at American Environmental Corporation and modified by Cavit Schempp July 2025.
Sources: Missouri Dept. of Conservation, Missouri DNR, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, USFWS Esri, NASA, NGA, USGS

Figure T-5
F1 & EF1 Tornado Pathways in Madison County

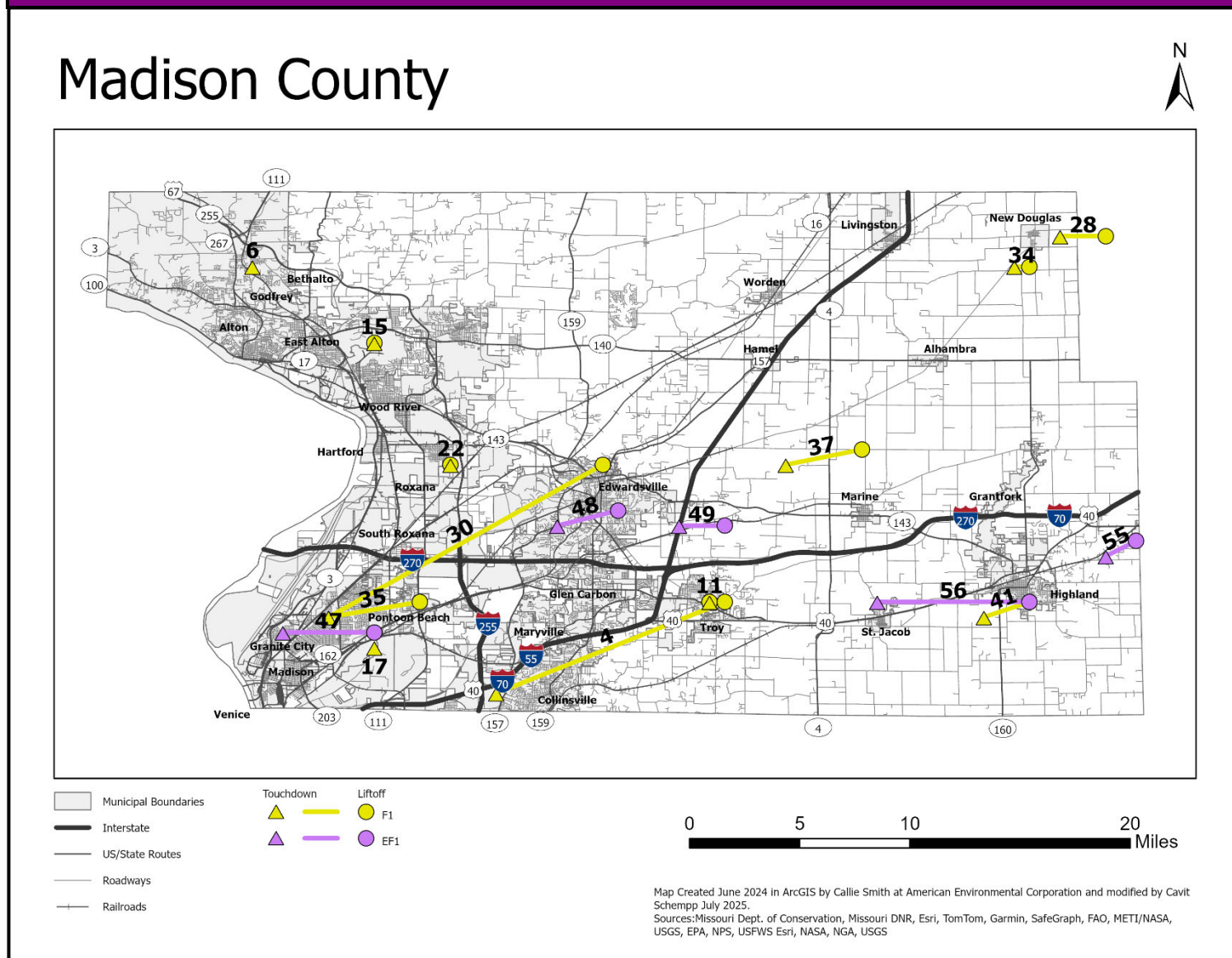


Figure T-6
F2 & EF2 Tornado Pathways in Madison County

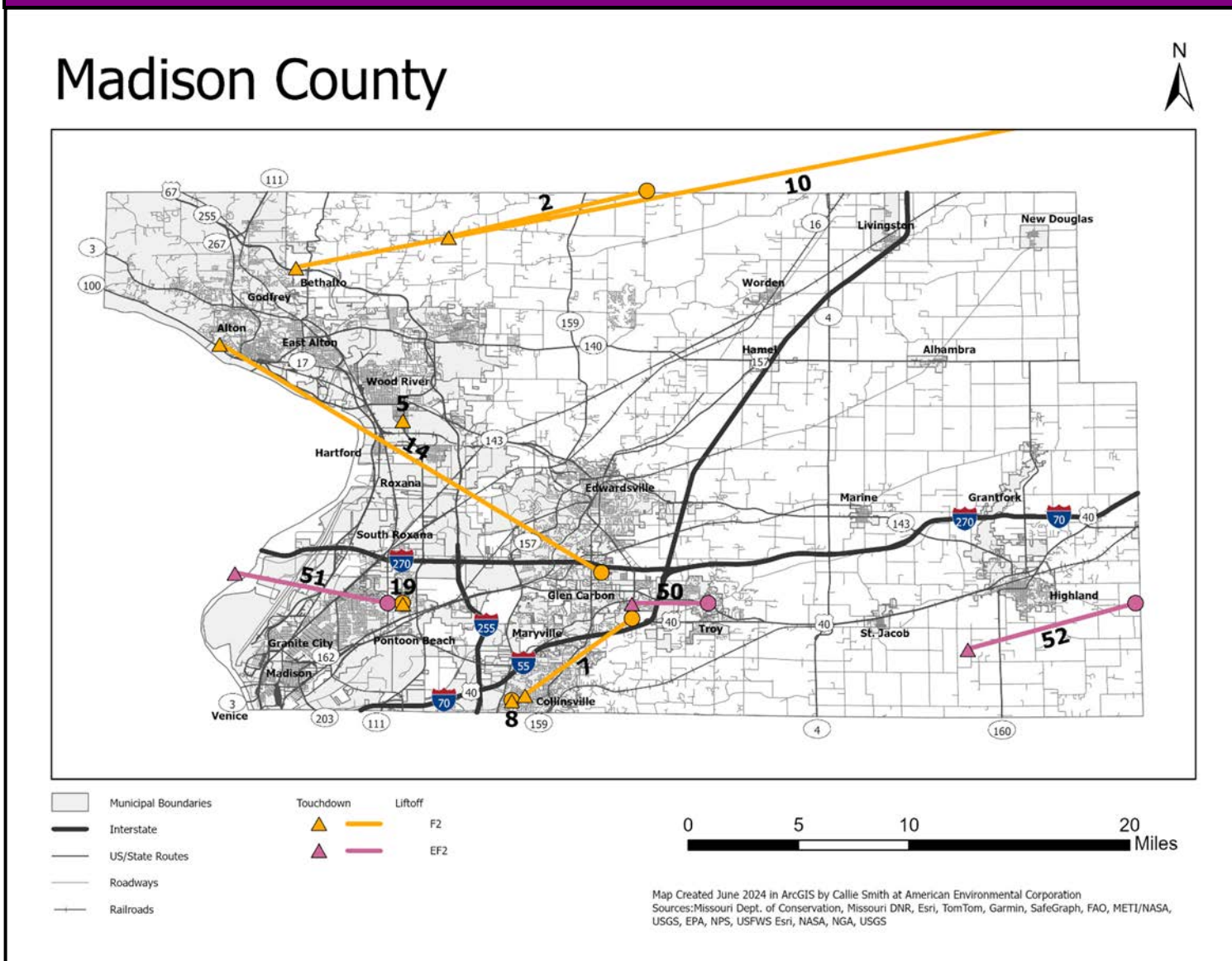
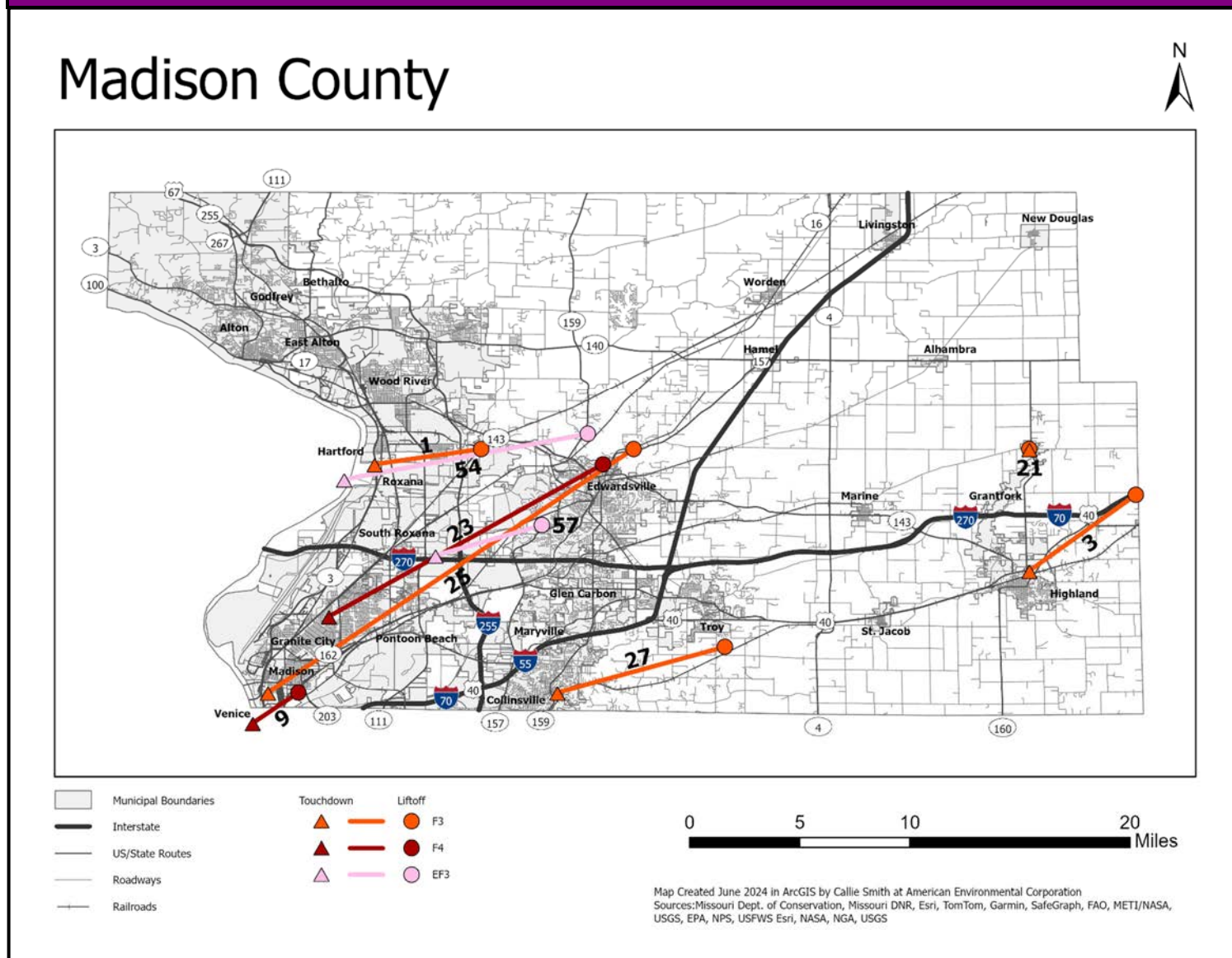


Figure T-7
F3/F4 & EF3/EF4 Tornado Pathways in Madison County



The longest tornado recorded in Madison County occurred on June 30, 1960. This F2 tornado measured 16.9 miles in length and touched down in Alton and traveled southeast before lifting off in Glen Carbon. The damage pathway of this tornado covered an estimated 0.32 square miles.

The widest tornado recorded in Madison County occurred on May 1, 1983. This F3 tornado, measuring 1,000 yards wide, touched down in St. Louis County, Missouri and traveled northeast across the Mississippi into Madison County before lifting off northeast of Edwardsville. The damage pathway of this tornado covered an estimated 8.5 square miles.

What locations are affected by tornadoes?

Tornadoes have the potential to affect the entire County. Seventeen of the 22 participating municipalities within the County have had reported occurrences of tornadoes within their corporate limits.



Structure damage sustained along Maryville Road in Granite City during the April 22, 2011 EF2 tornado.

Photograph courtesy of The Telegraph/Jim Bowling

What is the probability of future tornadoes occurring based on historical data?

Madison County has had 58 verified occurrences of tornadoes between 1950 and 2023. With 58 tornadoes over the past 74 years, the probability or likelihood that a tornado will touch down somewhere in the County in any given year is 78%. There were 14 years over the last 74 years where more than one tornado occurred. This indicates that the probability that more than one tornado may occur during any given year within the County is 19%.

HAZARD VULNERABILITY

The following describes the vulnerability to participating jurisdictions; specifies the unique and varied risk differences across the planning area and between participating jurisdictions; identifies the impacts on public health and property (if known); and estimates the potential impacts on public health and safety as well as buildings, infrastructure, and critical facilities from tornadoes (Local Mitigation Planning Policy Guide Element B1-f, B2-a, and B2-b).

Are the participating jurisdictions vulnerable to tornadoes?

Yes. All of Madison County, including the participating jurisdictions, is vulnerable to the dangers presented by tornadoes. Since 2014, four tornadoes have been recorded in Madison County.

Seventeen of the 22 participating municipalities have had a tornado touch down or pass through their municipal boundaries. **Figure T-8** lists the verified tornadoes that have touched down in or near or passed through each participating municipality. **Figure T-9** lists the verified tornadoes that have touched down in or passed through each of the non-municipal participating jurisdictions (i.e., townships, school districts, fire protection districts, etc.).

Figure T-8
Verified Tornadoes in or Near Participating Municipalities

Participating Municipality	Number of Verified Tornadoes	Year	
		Touched Down/Passed Through Municipality / Township	Touched Down/Passed Near Municipality
Alhambra	1	---	1974
Alton ¹	2	1960, 2004	---
America's Central Port	1	1983	---
Collinsville	6	1955, 1958 1958, 1984, 1988, 2023	---
East Alton	1	1967	---
Edwardsville	9	1981, 1983, 1998, 2011, 2021	2004, 2006, 2011, 2013
Glen Carbon	2	1960, 2011	---
Godfrey	4	1958, 1960, 1981	1959
Granite City	9	1959, 1973, 1973, 1981, 1983, 1998, 2001, 2011, 2011	2012
Grantfork	1	1976	---
Hamel	0	---	---
Highland	5	2001, 2021	1950, 2006, 2011, 2014
Livingston	1	---	1998
Madison, City	2	1959, 1983	---
Marine	2	1993	2004
Maryville ²	1	1958	---
Pontoon Beach	6	2021	1973, 1981, 1983, 1988, 2001
Roxana	5	1950, 1957, 1978	1960, 2013
St. Jacob	3	---	2006, 2006, 2021
Troy	8	1955, 1957, 1960, 1988, 2011	1999, 2006, 2006
Venice	2	1959, 1983	---
Wood River	2	1960	2007
Worden	0	---	---

¹OSF St. Anthony's Health Center

²Anderson Hospital

In terms of unincorporated areas vulnerable to tornadoes, Dorsey had three tornadoes touch down in or near their vicinity while Fosterburg had two. **Figure T-10** details the verified tornadoes that have touched down in or near unincorporated areas of Madison County.

The 2023 *Illinois Natural Hazard Mitigation Plan* prepared by IEMA-OHS classifies Madison County's hazard rating for tornadoes as "very high." IEMA-OHS's overall hazard rating system has five levels: very low, low, medium, high, and very high.

For tornadoes FEMA's National Risk Index (NRI) rates the County as a whole as "Relatively High". Of the 67 census tracts studied, 14 are rated "Very High", 40 are rated "Relatively High" and 13 are rated "Relatively Moderate" for tornadoes. **Figure R-4** presents the overall NRI scores and ratings for each census tract as well as for the County as a whole.

Have any of the participating jurisdictions identified specific assets vulnerable to the impacts of tornadoes?

Yes. Based on responses to an Assets Vulnerability Survey distributed to the participating jurisdictions, all of the participants, with the exception of Metro East Sanitary District, considered

specific assets within their jurisdiction vulnerable to tornadoes. **Appendix I** contains copies of the completed surveys that outline problem statements summarizing their vulnerabilities to tornadoes.

Figure T-9 Verified Tornadoes that have Touched Down/Passed Through Non-Municipal Participants		
Non-Municipal Participant	Number of Verified Tornadoes	Year Tornado Touched Down/Passed Through Non-Municipal Participant's Jurisdiction
Collinsville Township	8	1955, 1958, 1958, 1960, 1984, 1988, 2011, 2023
Edwardsville Township	9	1950, 1960, 1981, 1983, 1998, 2006, 2011, 2013, 2021
Leef Township	1	1976
Nameoki Township	9	1959, 1970, 1973, 1981, 1983, 1998, 2001, 2011, 2011
Alton CUSD #11	5	1950, 1958, 1960, 1981, 2004
Bethalto CUSD #8	3	1958, 1967, 2006
Collinsville CUSD #10	7	1955, 1958, 1958, 1984, 1988, 2011, 2023
Edwardsville CUSD #7	14	1950, 1958, 1959, 1960, 1981, 1983, 1998, 2004, 2006, 2006, 2011, 2013, 2021
Madison County ROE #41	---	
Marquette Catholic High School	---	
Roxana CUSD #1	3	1960, 1960, 1978
St. Mary's Catholic School	---	
Wood River-Hartford CUSD #15	3	1950, 1957, 1960
SIUE	4	1960, 1976, 1981, 1998
Glen Carbon FPD	4	1960, 2006, 2007, 2021
Olive FD	1	1998
South Roxana FPD	3	1950, 1960, 2013
Troy FPD	9	1955, 1958, 1960, 1988, 1999, 2006, 2006, 2011, 2011
Metro East Sanitary District	15	1955, 1959, 1957, 1970, 1973, 1973, 1981, 1983, 1998, 2001, 2011, 2011, 2012, 2021, 2023
Wood River D & LD	7	1950, 1957, 1959, 1960, 1960, 1978, 2013

Figure T-10 Verified Tornadoes in or near Unincorporated Areas of Madison County			
Unincorporated Area	Number of Verified Tornadoes	Year	
		Touched Down/Passed <u>Through</u> Unincorporated Area	Touched Down/Passed <u>Near</u> Unincorporated Area
Dorsey	3	1950, 1959, 2006	---
Fosterburg	2	1959	1950
Gard	1	---	2013
Mitchell	1	1973	---
Poag	1	1960	---
Prairietown	1	---	2006

What impacts resulted from the recorded tornadoes?

Data obtained from NOAA's Storm Events Database, Storm Data Publications, and Committee member records indicates that between 1950 and 2023, 33 of the 58 tornadoes caused \$71,940,000

in property damages. Included in the property damage total is \$250,000 for the May 12, 1990 tornado which represents losses sustained in two counties (including Madison County). A breakdown by county was unavailable. Property damage information was either unavailable or none was recorded for the remaining 25 reported occurrences.

NOAA's Storm Events Database documented six fatalities and 61 injuries as a result of 12 tornado events. Detailed information on the injuries sustained was only available for seven of the events. The following provides a brief description.

- ❖ An F1 tornado on February 9, 1960 touched down in Troy and wrecked eight mobile homes, causing minor injuries to two individuals in the only occupied home.
- ❖ On June 30, 1960, an F2 tornado touched down near the western edge of Alton injuring a mother and her four children in Godfrey when their home was blown off its foundation.
- ❖ An F1 tornado touched down in Mitchell on June 14, 1973 and blew over a pickup truck/camper on I-270, causing minor injuries to the seven occupants.
- ❖ A man suffered cuts and bruises after being hit with flying debris from an F1 tornado that touched down near New Douglas on April 8, 1999.
- ❖ On April 10, 2001, flying glass from an F1 tornado injured an individual in Granite City.
- ❖ An occupant of a home whose roof was completely removed by an EF2 tornado that touched down in Troy on February 27, 2011 suffered a serious head laceration and was treated at a local hospital.
- ❖ On December 10, 2021, an EF3 tornado injured one person and killed six when it struck an Amazon warehouse in Edwardsville.

In comparison, Illinois averages roughly four tornado fatalities annually; however, this number varies widely from year to year.

What other impacts can result from tornadoes?

In addition to causing damage to buildings and properties, tornadoes can damage infrastructure and critical facilities such as roads, bridges, railroad tracks, drinking water treatment facilities, water towers, communication towers, antennae, power substations, transformers, and poles. Depending on the damage done to the infrastructure and critical facilities, indirect impacts on individuals could range from inconvenient (i.e., adverse travel) to life-altering (i.e., loss of utilities for extended periods of time).

Tornado Fast Facts – Impacts/Risk

Tornado Impacts:

- ❖ Total Property Damage (33 events): **\$72,940,000**
- ❖ Total Crop Damage: **n/a**
- ❖ Injuries (12 events): **61**
- ❖ Fatalities (1 event): **6**

Tornado Risk/Vulnerability:

- ❖ Public Health & Safety – Rural/Agricultural Corridor: **Low**
- ❖ Public Health & Safety – American Bottoms & Bluffs Corridors: **High**
- ❖ Public Health & Safety – Municipalities: **High**
- ❖ Buildings/Infrastructure/Critical Facilities – Rural/Agricultural Corridor: **Low**
- ❖ Buildings/Infrastructure/Critical Facilities – American Bottoms & Bluffs Corridors: **High**
- ❖ Buildings/Infrastructure/Critical Facilities – Municipalities/Populated Unincorp. Areas: **High**

What is the level of risk/vulnerability to public health and safety from tornadoes?

For Madison County, the level of risk or vulnerability posed by tornadoes to public health and safety depends on not only frequency, but other factors as well including population distribution and density, the ratings and pathways of previously recorded tornadoes, the presence of high-risk living accommodations (such as high-rise buildings, mobile homes, etc.), and adequate access to health care for those injured following a tornado. All these must be examined when assessing vulnerability.

In terms of adequate access to health care, the County is served by hospitals located in Alton, Granite City, Highland, and Maryville which are equipped to provide continuous care to those injured by a tornado assuming that they are not directly impacted. In addition, there are numerous hospitals in the greater St. Louis metropolitan area that are also equipped to provide care. As a result, adequate access to care is less of a factor when determining the risk to public health and safety in Madison County than it would be for other rural counties that either do not have a hospital or do not have one that is equipped to handle a large influx of trauma patients.

Madison County

Unlike other counties in the area, Madison County has very distinct differences in its population distribution and density. This coupled with the ratings and pathways of previously reported tornadoes and the presence of high risk living accommodations within certain areas of the County make it difficult to assign the County, as a whole, a single rating level of risk or vulnerability. Instead the public health and safety risk in Madison County is discussed in terms of areas within the County.

For the ***American Bottoms and Bluffs Corridors*** in the western portion of the County the level of risk or vulnerability posed by tornadoes to public health and safety is considered to be **high**. This assessment is based on the population and housing unit distribution of the areas where very little if any open space exists between and within the municipalities, the number of higher rated tornadoes (F2 and above) that have tracked through the areas and presence of high-risk living accommodations. These factors suggest that a tornado that touches down in these areas will have a greater likelihood of causing injuries or even fatalities.

For the ***Rural/Agricultural Corridor*** in the eastern portion of the County the level of risk or vulnerability to public health and safety is considered to be **low**. In this corridor the municipalities are small in size and separated by miles of open space. Very few high-risk living accommodations exist and a majority of the tornadoes that have tracked through the area have largely occurred in open areas such as farm fields. In addition, most of the tornadoes that have occurred in this portion of the County have had a lower F rating. As a result, there is less likelihood that a tornado that touches down in this area will cause injuries or fatalities.

Participating Municipalities (including school districts, universities, and healthcare facilities)

In general, if a tornado were to touch down or pass through any of the participating municipalities or local units of government (which include participating school district, university, and healthcare facilities), the risk to the public health and safety would be considered **high**. This is based on the fact that many of the participating jurisdictions have relatively dense and evenly distributed populations within their municipal boundaries. As a result, if a tornado were to touch down

anywhere within the corporate limits of these municipalities it will have a greater likelihood of causing injuries or even fatalities. There are, however, several municipalities that have annexed large areas of open, undeveloped land including Edwardsville, Godfrey, Highland, Pontoon Beach and Roxana. If a tornado were to touchdown or pass through any of these open, undeveloped land areas, then the risk would be reduced **low** to **medium**.

Do any participating jurisdictions have community safe rooms?

Yes. Based on the responses received from participants to the “Identification of Severe Weather Shelters” survey, SIUE indicated that campus buildings have community safe rooms. None of the other participating jurisdictions have community safe rooms. As a result, if a tornado were to touch down or pass through any of the population centers in the County, then there would be a greater likelihood of injuries and fatalities due to the lack of structures specifically designed and constructed to provide life-safety protection.

As discussed previously, the level of risk or vulnerability posed by tornadoes to public health and safety is considered to be high for the **American Bottoms and Bluffs Corridors** in the western portion of the County. As a result, jurisdictions in this portion of the County should strongly consider the construction of community safe rooms as a mitigation strategy. Tornadoes pose a lower risk to public health and safety for those located in the **Rural/Agricultural Corridor** in the eastern portion of the County. In this part of the County each jurisdiction should consider whether the potential impacts to public health and safety from a tornado are considered great enough to warrant the consideration of community safe rooms as a mitigation action.

Are future buildings, infrastructure, and critical facilities vulnerable to tornadoes?

Yes and No. The County and all of the participating municipalities, with the exception of Worden, have building codes in place that will likely help lessen the vulnerability of new buildings and critical facilities to damage from tornadoes. However, even new buildings and critical facilities built to code are vulnerable to the risks posed by a higher rated tornado.

Infrastructure such as new communication and power lines will continue to be vulnerable to tornadoes as long as they are located above ground. Flying debris can disrupt power and communication lines even if they are not directly in the path of the tornado. Steps to bury all new lines would eliminate the vulnerability, but this action would be cost prohibitive in most areas.

Are existing buildings, infrastructure, and critical facilities vulnerable to tornadoes?

Yes. All existing buildings, infrastructure, and critical facilities located within the County and participating jurisdictions are vulnerable to tornado damage. Buildings, infrastructure, and critical facilities located in the path of a tornado usually suffer extensive damage, if not complete destruction.

While some buildings adjacent to a tornado’s path may remain standing with little or no damage, all are vulnerable to damage from flying debris. It is common for flying debris to cause damage to roofs, siding, and windows. In addition, mobile homes, homes on crawlspaces, and buildings with large spans (i.e., schools, barns, airport hangers, factories, etc.) are more likely to suffer damage. Most workplaces and many residential units do not provide sufficient protection from tornadoes.

The damages sustained by infrastructure and critical facilities during a tornado are similar to those experienced during a severe storm. There is a high probability that power, communication, and transportation will be disrupted in and around the affected area.

Assessing the Vulnerability of Existing Residential Structures

One way to assess the vulnerability of existing residential structures is to estimate the number of housing units that may be potentially damaged if a tornado were to touch down or pass through any of the participating municipalities, townships, or the County. In order to accomplish this, a set of decisions/assumptions must be made regarding:

- the size (area impacted) of the tornado;
- the method used to estimate the area impacted by the tornado within each jurisdiction; and
- the method used to estimate the number of potentially-damaged housing units.

The following provides a brief discussion of each decision/assumption.

Assumption #1: Size of Tornado. To calculate the number of existing residential structures vulnerable to a tornado, the size (area impacted) of the tornado must first be determined. There are several scenarios that can be used to calculate the size, including the worst case and the average. For this analysis, the area impacted by an average-sized tornado in Madison County will be used since it has a higher probability of recurring. This average is based on more than 70 years of data. In Madison County, the area impacted by an average-sized tornado is 0.21 square miles. This average has increased 0.03 square miles since the 2020 Plan was completed.

Assumption #1

Size of Tornado = 0.21 sq. miles

Assumption #2: Method for Estimating the Area Impacted. Next, a method for determining the area within each jurisdiction impacted by the average-sized tornado needs to be chosen. There are several methods that can be used including creating an outline of the area impacted by the average-sized tornado and overlaying it on a map of each jurisdiction (most notably the municipalities) to see if any portion of the area falls outside of the corporate limits (which would require additional calculations) or just assume that the entire area of the average-sized tornado falls within the limits of each jurisdiction. For this discussion, it is assumed that the entire area of the average-sized tornado will fall within the limits of the participating jurisdictions.

Assumption #2

The entire area impacted by the average-sized tornado falls within the limits of each participating jurisdiction.

This method is quicker, easier, and more likely to produce consistent results when the Plan is updated. There is, however, a greater likelihood that the number of potentially-damaged housing units will be overestimated for those municipalities that have irregular shaped boundaries or occupy less than one square mile.

Assumption #3: Method for Estimating Potentially-Damaged Housing Units.

With the size of the tornado selected and a method for estimating the area impacted chosen, a decision must be made on an approach for estimating the number of potentially-damaged housing units. There are several methods that can be used including overlaying the average-sized tornado on a map of each jurisdiction and counting the impacted housing units or calculating the average housing unit density to estimate the number of potentially-damaged housing units.

Assumption #3

The average housing unit density for each jurisdiction will be used to determine the number of potentially-damaged housing units.

For this analysis, the average housing unit density will be used since it provides a realistic perspective on potential residential damages without conducting extensive counts. Using the average housing unit density also allows future updates to the Plan to be easily recalculated and provides an exact comparison to previous estimates.

Calculating Average Housing Unit Density

The average housing unit density can be calculated by taking the number of housing units in a jurisdiction and dividing that by the land area within the jurisdiction. **Figure T-11** provides a sample calculation.

Figure T-11 Calculation of Average Housing Unit Density – Madison County
$\text{Total Housing Units in the Jurisdiction} \div \text{Land Area within the Jurisdiction} =$ $\text{Average Housing Unit Density}$ (Rounded Up to the Nearest Whole Number) Madison County: 118,715 housing units ÷ 715.501 sq. miles = 165.919 housing units/sq. mile (166 housing units)

Figure T-12 provides a breakdown of housing unit densities by participating municipality as well as for the unincorporated areas of the County and the County as a whole.

While the average housing unit density provides an adequate assessment of the number of housing units in areas where the housing density is fairly constant, such as municipalities, it does not provide a realistic assessment for those counties with large, sparsely populated rural areas such as Madison County.

In Madison County, as well as many other west-central Illinois counties, there are pronounced differences in housing unit densities. A majority of all housing units (76%) are located in eight of the County's 24 townships (Alton, Collinsville, Edwardsville, Godfrey, Granite City, Jarvis, Nameoki, and Wood River), while approximately 87% of all mobile homes are located in eight of the townships (Alton, Chouteau, Collinsville, Edwardsville, Godfrey, Nameoki, Venice, and Wood River). **Figure I-8**, located in Section 1.2, identifies the township boundaries. Tornado damage to buildings (especially mobile homes), infrastructure and critical facilities in the more densely populated townships is likely to be greater than in the rest of the County. While the County and 20 of the participating municipalities have ordinances that require anchoring systems for

mobile home that would help limit the damage from lower rated tornadoes, Edwardsville and Maryville do not.

Figure T-12
Average Housing Unit Density by Participating Jurisdiction

Participating Jurisdiction	Township Location	Total Housing Units (2018-2022)*	Mobile Homes (2018-2022)*	Land Area (Sq. Miles) (2020)	Average Housing Unit Density (Units/Sq. Mi.) (Raw)
Alhambra	Alhambra	270	4	0.756	---
Alton	Alton	12,557	239	15.681	800.778
Collinsville	Collinsville	11,822	315	15.077	784.108
East Alton	Wood River	3,191	39	5.318	600.038
Edwardsville	Edwardsville, Pin Oak	10,096	0	19.811	509.616
Glen Carbon	Collinsville, Edwardsville	5,742	175	10.250	560.195
Godfrey	Godfrey	7,998	178	34.395	232.534
Granite City ¹	Granite City	12,788	81	19.024	672.204
Grantfork	Leef, Saline	191	5	0.337	---
Hamel	Hamel	382	5	1.190	321.008
Highland	Helvetia, Saline	4,898	26	6.751	725.522
Livingston	Olive	418	37	1.040	401.923
Madison, City of ¹	Venice	1,642	36	13.955	117.664
Marine	Marine	460	23	0.746	---
Maryville	Collinsville	3,398	0	5.676	598.661
Pontoon Beach	Nameoki	2,502	565	9.960	251.205
Roxana	Wood River	764	0	7.101	107.590
St. Jacob	St. Jacob	562	0	0.832	---
Troy	Jarvis	4,453	89	5.620	792.349
Venice	Venice	1,021	46	1.849	552.190
Wood River	Wood River	4,853	68	6.975	695.771
Worden	Omphghent	464	16	0.713	--
Unincorp. County		23,127	551	508.371	45.492
County		118,715	2,825	715.501	165.919

¹ America's Central Port

Source: U.S. Census Bureau, American Community Survey, 5-Year Data Profile.

The substantial difference in density skews the average county housing unit density in Madison County and is readily apparent when compared to the average housing unit densities for each of the townships within the County. **Figure T-13** provides a breakdown of housing unit densities by township and illustrates the differences between the various townships and the County as a whole.

Estimating the Number of Potentially-Damaged Housing Units

Before an estimate of the number of potentially-damaged housing units can be calculated for the participating municipalities, an additional factor needs to be taken into consideration: the presence of commercial/industrial developments and/or large tracts of undeveloped land. Occasionally villages and cities will annex large tracts of undeveloped land or have commercial/industrial

parks/developments located within their corporate limits. In many cases these large tracts of land include very few residential structures. Consequently, including these tracts of land in the calculations to determine the number of potentially-damaged housing units skews the results, especially for very small municipalities. Therefore, to provide a more realistic assessment of the number of potentially-damaged housing units, these areas were subtracted from the land area figures obtained from the U.S. Census Bureau for the analysis for this update.

Figure T-13
Average Housing Unit Density by Township

Township	Incorporated Municipalities Located in Township	Total Housing Units (2018-2022)	Mobile Homes (2018-2022)	Land Area (Sq. Miles) (2020)	Average Housing Unit Density (Units/Sq. Mi.) (Raw)
Alhambra	Alhambra	696	15	34.814	19.992
Alton	Alton	12,557	239	15.681	800.778
Chouteau	Hartford, South Roxana	3,604	366	29.649	121.556
Collinsville	Collinsville, Glen Carbon, Maryville	16,511	426	34.854	473.719
Edwardsville	Edwardsville, Glen Carbon	16,191	305	35.272	459.033
Fort Russell	Bethalto	3,967	32	36.695	108.107
Foster		1,748	0	30.372	57.553
Godfrey	Godfrey	7,998	178	34.395	232.534
Granite City ¹	Granite City	12,015	70	11.055	1,086.839
Hamel	Hamel	1,025	5	36.304	28.234
Helvetia	Highland	4,036	40	35.891	112.452
Jarvis	Troy	6,165	89	35.445	173.931
Leef	Grantfork	268	0	29.239	9.166
Marine	Marine	880	34	35.311	24.921
Moro		1,340	0	31.989	41.889
Nameoki	Fairmont City, Pontoon Beach	5,267	681	21.420	245.892
New Douglas	New Douglas	222	9	20.878	10.633
Olive	Livingston, Williamson	783	46	31.384	24.949
Omphghent	Worden	1,038	16	33.279	31.191
Pin Oak	Edwardsville	1,528	0	35.667	42.841
Saline	Grant Fork, Highland, Pierron	1,123	0	34.416	32.630
St. Jacob	St. Jacob	2,783	10	35.806	77.724
Venice ¹	Madison, City of, Venice	2,819	97	10.780	261.503
Wood River	Bethalto, East Alton, Hartford, Roxana, Wood River	14,151	167	24.906	568.176
Townships - 8 most populated		90,855	2,459	213.028	426.493
Townships - 16 least populated		27,860	366	502.474	55.446

¹ America's Central Port

Source: U.S. Census Bureau, American Community Survey, 5-Year Data Profile.

In Madison County, all of the participating municipalities have large undeveloped land and/or commercial/industrial areas within their municipal boundaries. These areas account for approximately 25% to 95% of the land area in these municipalities. If these areas are subtracted

from the U.S. Census Bureau land area figures, then the remaining land areas have fairly consistent housing unit densities and contain a majority of the housing units. **Figure T-14** provides a breakdown of the refined land area figures for the municipalities. These refined land area figures will be used to update the average housing unit density calculations for these municipalities.

Figure T-14 Refined Land Area Figures for Participating Municipalities with Large Tracts of Commercial/Industrial and Undeveloped Land Areas			
Participating Jurisdiction	Land Area (Sq. Miles) (2020)	Estimated Open Land Area & Commercial/Industrial Tracts (Sq. Miles)	Refined Land Area (Sq. Miles)
Alhambra	0.756	0.580	0.176
Alton	15.681	4.230	11.451
Collinsville	15.077	4.310	10.767
East Alton	5.318	3.970	1.348
Edwardsville	19.811	10.550	9.261
Glen Carbon	10.250	3.730	6.520
Godfrey	34.395	29.890	4.505
Granite City ¹	19.024	3.650	15.374
Grantfork	0.337	0.110	0.227
Hamel	1.190	0.850	0.340
Highland	6.751	2.340	4.411
Livingston	1.040	0.480	0.560
Madison, City of ¹	13.955	13.200	0.755
Marine	0.746	0.410	0.336
Maryville	5.676	1.750	3.926
Pontoon Beach	9.960	8.920	1.040
Roxana	7.101	6.890	0.211
St. Jacob	0.832	0.340	0.492
Troy	5.620	2.100	3.520
Venice	1.849	1.480	0.369
Wood River	6.975	3.970	3.005
Worden	0.713	0.340	0.373

¹ America's Central Port

With updated average housing unit densities calculated it is relatively simple to provide an estimate of the number of existing potentially-damaged housing units. This can be done by multiplying the average housing unit density by the area impacted by the average-sized Madison County tornado. **Figure T-15** provides a sample calculation.

For municipalities that cover less than one square mile, the average housing unit density cannot be used to calculate the number of potentially-damaged housing units. The average housing unit density assumes that the land area within the municipality is at least one square mile and as a result distorts the number of potentially-damaged housing units for very small municipalities.

Figure T-15 Sample Calculation of Potentially-Damaged Housing Units – Madison County
Average Housing Unit Density x Area Impacted by the Average-Sized Madison County Tornado = Potentially-Damaged Housing Units (Rounded Up to the Nearest Whole Number) Madison County: 165.919 housing units/sq. mile x 0.21 sq. miles = 34.84 housing units (35 housing units)

To calculate the number of potentially-damaged housing units for these municipalities, the area impacted by the averaged-sized Madison County tornado is divided by the land area within the municipality to get the impacted land area. The impacted land area is then multiplied by the total number of housing units within the municipality to get the number of potentially-damaged housing units. **Figure T-16** provides a sample calculation.

Figure T-16 Sample Calculation of Potentially-Damaged Housing Units for Municipalities Covering Less Than One Square Mile – St. Jacob
Area Impacted by the Average-Sized Madison County Tornado ÷ Land Area within the Jurisdiction x Total Housing Units in the Jurisdiction = Potentially-Damaged Housing Units (Rounded Up to the Nearest Whole Number) St. Jacob: 0.21 sq. mile ÷ 0.0492 sq. miles x 562 housing units = 239.88 (240 housing units)

Since the refined land area of Alhambra is less than the average area impacted, it is assumed that all of the housing units within this municipality will be potentially damaged.

Figures T-17 and T-18 provide a breakdown of the number of potentially-damaged housing units by participating municipality, as well as by township and for the unincorporated areas of the County and the County as a whole. It is important to note that for the most densely populated townships, the estimated number of potentially-damaged housing units would only be reached if a tornado's pathway included the major municipality within the township. If the tornado remained in the rural portion of the township, then the number of potentially-damaged housing units would be considerably lower.

What is the level of risk/vulnerability to existing buildings, infrastructure, and critical facilities vulnerable from tornadoes?

There are several factors that must be examined when assessing the vulnerability of existing buildings, infrastructure, and critical facilities to tornadoes. These factors include tornado frequency, population distribution and density, the ratings and pathways of previously recorded tornadoes, and the presence of high-risk living accommodations (such as high-rise buildings, mobile homes, etc.).

Figure T-17
Estimated Number of Housing Units by Participating Jurisdiction
Potentially Damaged by a Tornado

Participating Jurisdiction	Total Housing Units (2018-2022)	Land Area/Refined Land Area (Sq. Miles) (2020)	Average Housing Unit Density (Units/Sq. Mi.) (Raw)	Potentially-Damaged Housing Units (Units/0.21 Sq. Mi.) (Raw)	Potentially-Damaged Housing Units (Units/0.21 Sq. Mi.) (Rounded Up)
Alhambra	270	0.176	---	270.00	270
Alton	12,557	11.451	1,096.585	230.28	231
Collinsville	11,822	10.767	1,097.985	230.58	231
East Alton	3,191	1.348	2,367.211	497.11	498
Edwardsville	10,096	9.261	1,090.163	228.93	229
Glen Carbon	5,742	6.520	880.675	184.94	185
Godfrey	7,998	4.505	1,775.361	372.83	373
Granite City ¹	12,788	15.374	831.794	174.68	175
Grantfork	191	0.227	---	176.70	177
Hamel	382	0.340	---	235.94	236
Highland	4,898	4.411	1,110.406	233.19	234
Livingston	418	0.560	---	156.75	157
Madison, City of ¹	1,642	0.755	---	456.72	457
Marine	460	0.336	---	287.50	288
Maryville	3,398	3.926	865.512	181.76	182
Pontoon Beach	2,502	1.040	2,405.769	505.21	506
Roxana	764	0.211	---	760.38	761
St. Jacob	562	0.492	---	239.88	240
Troy	4,453	3.520	1,265.057	265.66	266
Venice	1,021	0.369	---	581.06	582
Wood River	4,853	3.005	1,614.975	339.14	340
Worden	464	0.373	---	261.23	262
Unincorp. County	23,127	508.371	45.492	9.55	10
County	118,715	715.501	165.919	34.84	35

¹ America's Central Port

Madison County

According to the *2023 State of Illinois Hazard Mitigation Plan*, Madison County has a “Very High” risk ranking for tornadoes. However, the County has very distinct differences in its population distribution and density that coupled with the ratings and pathways of previously reported tornadoes and the presence of high risk living accommodations within certain areas of the County make it difficult to assign the County, as a whole, a single rating level of risk or vulnerability. Instead the risk to existing buildings, infrastructure, and critical facilities is considered by Corridor.

Figure T-18
Estimated Number of Housing Units by Township Potentially Damaged by a Tornado

Township	Total Housing Units (2018-2022)	Land Area (Sq. Mi.) (2020)	Average Housing Unit Density (Units/Sq. Mi.) (Raw)	Potentially-Damaged Housing Units (Units/0.21 Sq. Mi.) (Raw)	Potentially-Damaged Housing Units (Units/0.21 Sq. Mi.) (Rounded Up)
Alhambra	696	34.814	19.992	4.20	5
Alton	12,557	15.681	800.778	168.16	169
Chouteau	3,604	29.649	121.556	25.53	26
Collinsville	16,511	34.854	473.719	99.48	100
Edwardsville	16,191	35.272	459.033	96.40	97
Fort Russell	3,967	36.695	108.107	22.70	23
Foster	1,748	30.372	57.553	12.09	13
Godfrey	7,998	34.395	232.534	48.83	49
Granite City ¹	12,015	11.055	1,086.839	228.24	229
Hamel	1,025	36.304	28.234	5.93	6
Helvetia	4,036	35.891	112.452	23.61	24
Jarvis	6,165	35.445	173.931	36.53	37
Leef	268	29.239	9.166	1.92	2
Marine	880	35.311	24.921	5.23	6
Moro	1,340	31.989	41.889	8.80	9
Nameoki	5,267	21.420	245.892	51.64	52
New Douglas	222	20.878	10.633	2.23	3
Olive	783	31.384	24.949	5.24	6
Omphghent	1,038	33.279	31.191	6.55	7
Pin Oak	1,528	35.667	42.841	9.00	9
Saline	1,123	34.416	32.630	6.85	7
St. Jacob	2,783	35.806	77.724	16.32	17
Venice ¹	2,819	10.780	261.503	54.92	55
Alhambra	696	34.814	19.992	4.20	5
Townships - 8 most populated	90,855	213.028	426.493	89.56	90
Townships - 16 least populated	27,860	502.474	55.446	11.64	12

¹ America's Central Port

For the **American Bottoms and Bluffs Corridors** in the western portion of the County the level of risk or vulnerability posed by tornadoes to existing buildings, infrastructure and critical facilities is considered to be **high**. This assessment is based on the population and housing unit distribution of the areas, where very little if any open space exists between and within the municipalities, the number of higher rated tornadoes (F2 and above) that have tracked through the areas and presences of high risk living accommodations. These factors suggest that a tornado that touches down in these areas will have a greater likelihood of causing substantial property damage.

For the **Rural/Agricultural Corridor** in the eastern portion of the County the level of risk or vulnerability to existing buildings, infrastructure and critical facilities is considered to be **low**. In this corridor the municipalities are small in size and separated by miles of open space. Very few high risk living accommodations exist and a majority of the tornadoes that have tracked through the area have largely occurred in open areas such as farm fields. In addition, most of the tornadoes that have occurred in this portion of the County have had a lower F rating. As a result, there is less likelihood that a tornado that touches down in this area will cause extensive property damage.

Participating Municipalities (including school districts, universities, and healthcare facilities)

In general, if a tornado were to touch down or pass through any of the participating municipalities or local units of government (which include participating school district, university, and healthcare facilities), the risk to existing buildings, infrastructure, and critical facilities would be considered **high**. This assessment is based on the population and housing unit distribution within the municipalities where wide expanses of open spaces do not generally exist. As a result, if a tornado were to touch down within any of the municipalities it would have a greater likelihood of causing substantial property damage.

Are future buildings, infrastructure, and critical facilities vulnerable to tornadoes?

Yes and No. The County and all of participating jurisdictions have building codes in place that will likely lessen the vulnerability of new buildings and critical facilities to damage from tornadoes. However, even new buildings and critical facilities built to code are vulnerable to the risks posed by a higher rated tornado.

Infrastructure such as new communication and power lines will continue to be vulnerable to tornadoes as long as they are located above ground. Flying debris can disrupt power and communication lines even if they are not directly in the path of the tornado. Steps to bury all new lines would eliminate the vulnerability, but this action would be cost prohibitive in most areas.

What are the potential dollar losses to vulnerable structures from tornadoes?

Unlike other hazards, such as flooding, there are no standard loss estimation models or methodologies for tornadoes. However, a rough estimate of potential dollar losses to the potentially-damaged housing units determined previously can be calculated if several additional decisions/assumptions are made regarding:

- the value of the potentially-damaged housing units; and
- the percent damage sustained by the potentially-damaged housing units (i.e., damage scenario).

These assumptions represent a **probable scenario** based on the reported historical occurrences of tornadoes in Madison County. The purpose of providing a rough estimate is to help residents and government officials make informed decisions to better protect themselves and their communities. These estimates are meant to provide a **general idea** of the magnitude of the potential damage that could occur. The following provides a brief discussion of each decision/assumption.

Assumption #4: Value of Potentially-Damaged Housing Units.

In order to determine the potential dollar losses to the potentially-damaged housing units, the monetary value of the units must first be calculated. Typically, when damage estimates are prepared after a natural disaster such as a tornado, they are based on the market value of the structure. Since it would be impractical to determine the individual market value of each potentially-damaged housing unit, the average market value of residential structures in each municipality will be used.

Assumption #4

The average market value for residential structures in each participating jurisdiction will be used to determine the value of potentially-damaged housing units.

To determine the average market value, the average assessed value must first be calculated. The average assessed value is calculated by taking the total assessed value of residential buildings within a jurisdiction and dividing that number by the total number of housing units within the jurisdiction. The average market value is then determined by taking the average assessed value and multiplying that number by three (the assessed value of a structure in Madison County is approximately one-third of the market value). **Figure T-19** provides a sample calculation. The total assessed value is based on 2023 tax assessment information obtained from the Madison County Chief County Assessment Officer.

Figure T-19
Sample Calculation of Average Assessed Value & Average Market Value – St. Jacob

Average Assessed Value

Total Assessed Value of Residential Buildings in the Jurisdiction ÷ Total Housing Units in the Jurisdiction = Average Assessed Value (Rounded to the Nearest Dollar)

St. Jacob: \$31,881,500 ÷ 562 housing units = \$56,729

Average Market Value

Average Assessed Value x 3 = Average Market Value

St. Jacob: \$56,729 x 3 = \$170,187
(**\$170,187**)

Figures T-20 and T-21 provide the average assessed value and average market value for each participating municipality as well as by township and for the unincorporated areas of the County and the County as a whole.

Assumption #5: Damage Scenario.

Finally, a decision must be made regarding the percent damage sustained by the potentially-damaged housing units and their contents. For this scenario, the expected percent damage sustained by the structure and its contents is 100%; in other words, all of the potentially-damaged housing units would be completely destroyed. While it is highly unlikely that each and every housing unit would sustain the maximum percent damage, identifying and calculating different degrees of damage within the average area impacted is complex and provides an additional complication when updating the Plan.

Assumption #5

The tornado would completely destroy the potentially-damaged housing units.

Structural Damage = 100%

Content Damage = 100%

Figure T-20 Average Market Value of Housing Units by Participating Jurisdiction				
Participating Jurisdiction	Total Assessed Value of Residential Buildings (2023)	Total Housing Units (2018-2022)	Average Assessed Values	Average Market Value (2023)
Alhambra	\$10,389,940	270	\$38,481	\$115,443
Alton	\$291,667,760	12,557	\$23,228	\$69,684
Collinsville	\$467,192,447	11,822	\$39,519	\$118,557
East Alton	\$67,505,970	3,191	\$21,155	\$63,465
Edwardsville	\$744,632,570	10,096	\$73,755	\$221,265
Glen Carbon	\$441,790,940	5,742	\$76,940	\$230,820
Godfrey	\$452,470,730	7,998	\$56,573	\$169,719
Granite City ¹	\$320,434,940	12,788	\$25,057	\$75,171
Grantfork	\$7,209,370	191	\$37,745	\$113,235
Hamel	\$27,465,620	382	\$71,900	\$215,700
Highland	\$214,843,320	4,898	\$43,863	\$131,589
Livingston	\$9,283,560	418	\$22,209	\$66,627
Madison, City of ¹	\$16,167,800	1,642	\$9,846	\$29,538
Marine	\$19,650,500	460	\$42,718	\$128,154
Maryville	\$279,277,510	3,398	\$82,189	\$246,567
Pontoon Beach	\$68,114,200	2,502	\$27,224	\$81,672
Roxana	\$18,044,170	764	\$23,618	\$70,854
St. Jacob	\$31,881,500	562	\$56,729	\$170,187
Troy	\$322,158,950	4,453	\$72,346	\$217,038
Venice	\$4,544,170	1,021	\$4,451	\$13,353
Wood River	\$139,185,330	4,853	\$28,680	\$86,040
Worden	\$21,240,800	464	\$45,778	\$137,334
Unincorp. County	\$1,455,404,990	23,127	\$62,931	\$188,793
County	\$5,651,298,650	118,715	\$47,604	\$142,812

¹ America's Central Port

Source: Madison County Chief County Assessment Officer.

Calculating Potential Dollar Losses

With all the decisions and assumptions made, the potential dollar losses can now be calculated. First, the potential dollar losses to the **structure** of a potentially-damaged housing unit must be determined. This is done by taking the average market value for a residential structure and multiplying it by the percent damage (100%) to get the average structural damage per unit. Next the average structural damage per unit is multiplied by the number of potentially-damaged housing units. **Figure T-22** provides a sample calculation.

Figure T-21 Average Market Value of Housing Units by Township				
Township	Total Assessed Value of Residential Buildings (2023)	Total Housing Units (2018-2022)	Average Assessed Values	Average Market Value (2023)
Alhambra	\$32,340,840	696	\$46,467	\$139,400
Alton	\$291,667,760	12,557	\$23,228	\$69,683
Chouteau	\$92,014,820	3,604	\$25,531	\$76,594
Collinsville	\$866,727,020	16,511	\$52,494	\$157,482
Edwardsville	\$1,138,446,490	16,191	\$70,314	\$210,941
Fort Russell	\$263,642,030	3,967	\$66,459	\$199,376
Foster	\$113,805,620	1,748	\$65,106	\$195,319
Godfrey	\$452,470,730	7,998	\$56,573	\$169,719
Granite City ¹	\$319,932,310	12,015	\$26,628	\$79,883
Hamel	\$88,071,760	1,025	\$85,924	\$257,771
Helvetia	\$183,685,630	4,036	\$45,512	\$136,535
Jarvis	\$474,607,540	6,165	\$76,984	\$230,953
Leef	\$10,803,430	268	\$40,311	\$120,934
Marine	\$60,181,430	880	\$68,388	\$205,164
Moro	\$114,095,490	1,340	\$85,146	\$255,438
Nameoki	\$117,400,680	5,267	\$22,290	\$66,870
New Douglas	\$6,495,270	222	\$29,258	\$87,774
Olive	\$24,417,340	783	\$31,184	\$93,553
Omphghent	\$52,478,420	1,038	\$50,557	\$151,672
Pin Oak	\$202,009,670	1,528	\$132,205	\$396,616
Saline	\$199,949,260	1,123	\$178,049	\$534,148
St. Jacob	\$79,196,350	2,783	\$28,457	\$85,372
Venice ¹	\$19,753,240	2,819	\$7,007	\$21,022
Wood River	\$447,105,520	14,151	\$31,595	\$94,786
Townships - 8 most populated	\$4,108,358,050	90,855	\$45,219	\$135,657
Townships - 16 least populated	\$1,542,940,600	27,860	\$55,382	\$166,146

¹ America's Central Port

Source: Madison County Chief County Assessment Officer.

Figure T-22 Structure: Potential Dollar Loss Sample Calculation – St. Jacob
Average Market Value of a Housing Unit with the Jurisdiction x Percent Damage = Average Structural Damage per Housing Unit St. Jacob: \$170,187 x 100% = \$170,187 per housing unit Average Structural Damage per Housing Unit x Number of Potentially-Damaged Housing Units within the Jurisdiction = <i>Structure</i> Potential Dollar Losses St. Jacob: \$170,187 per housing unit x 240 housing units = \$40,844,880 (\$40,844,880)

Next, the potential dollar losses to the **content** of a potentially-damaged housing unit must be determined. Based on FEMA guidance, the average value of a residential housing unit's content is approximately 50% of its market value. Therefore, start by taking one-half the average market value for a residential structure and multiply by the percent damage (100%) to get the average content damage per unit. Next the average content damage per unit is multiplied by the number of potentially-damaged housing units. **Figure T-23** provides a sample calculation.

Figure T-23 <i>Content: Potential Dollar Loss Sample Calculation – St. Jacob</i>
$\frac{1}{2}$ (Average Market Value of a Housing Unit) with the Jurisdiction x Percent Damage = Average Content Damage per Housing Unit St. Jacob: $\frac{1}{2}$ (\$170,187) x 100% = \$85,093.50 per housing unit Average Content Damage per Housing Unit x Number of Potentially-Damaged Housing Units within the Jurisdiction = <i>Content Potential Dollar Losses</i> St. Jacob: \$85,093.50 per housing unit x 240 housing units = \$20,422,440 (\$20,422,440)

Finally, the **total potential dollar losses** may be calculated by adding together the potential dollar losses to the structure and content. **Figures T-24 and T-25** give a breakdown of the total potential dollar losses by municipality and township. For comparison, an estimate of potential dollar losses was calculated for the entire County, the unincorporated portions of the County, the eight most populated townships and the 16 least populated townships.

This assessment illustrates why potential residential dollar losses should be considered when jurisdictions are deciding which mitigation projects to pursue. ***Potential dollar losses caused by an average tornado in Madison County would be expected to exceed at least \$11.6 million in any of the participating municipalities.***

Potential dollar losses caused by an average tornado in Madison County townships would be expected to range from \$362,802 in Leef Township to at least \$30.6 million in Edwardsville Township. As discussed previously, the estimate for the entire County is skewed because it does not take into consideration the differences in the housing density.

Vulnerability of Commercial/Industrial Businesses and Infrastructure/Critical Facilities

The calculations presented above are meant to provide the reader with a sense of the scope or magnitude of an average-sized tornado in term of residential dollar losses. These calculations do not include damages sustained by businesses or other infrastructure and critical facilities within the participating jurisdictions.

In terms of businesses, the impacts from an average-sized tornado event can be physical and/or monetary. Monetary impacts can include loss of sales revenue either through temporary closure or loss of critical services (i.e., power, drinking water, and sewer). Depending on the magnitude of the event, the damage sustained by infrastructure and critical facilities can be extensive in nature and expensive to repair. As a result, the cumulative monetary impacts to businesses and infrastructure can exceed the cumulative monetary impacts to residences. ***While average dollar***

amounts cannot be supplied for these items at this time, they should be taken into account when discussing the impacts that an average-sized tornado could have on the participating jurisdictions.

Figure T-24 Estimated Potential Dollar Losses to Potentially-Damaged Housing Units from a Tornado by Participating Jurisdiction					
Participating Jurisdiction	Average Market Value (2023)	Potentially-Damaged Housing Units (Rounded Up)	Potential Dollar Losses		Total Potential Dollar Losses
			Structure	Content	
Alhambra	\$115,443	270	\$31,169,610	\$15,584,805	\$46,754,415
Alton	\$69,684	231	\$16,097,004	\$8,048,502	\$24,145,506
Collinsville	\$118,557	231	\$27,386,667	\$13,693,334	\$41,080,001
East Alton	\$63,465	498	\$31,605,570	\$15,802,785	\$47,408,355
Edwardsville	\$221,265	229	\$50,669,685	\$25,334,843	\$76,004,528
Glen Carbon	\$230,820	185	\$42,701,700	\$21,350,850	\$64,052,550
Godfrey	\$169,719	373	\$63,305,187	\$31,652,594	\$94,957,781
Granite City	\$75,171	175	\$13,154,925	\$6,577,463	\$19,732,388
Grantfork	\$113,235	177	\$20,042,595	\$10,021,298	\$30,063,893
Hamel	\$215,700	236	\$50,905,200	\$25,452,600	\$76,357,800
Highland	\$131,589	234	\$30,791,826	\$15,395,913	\$46,187,739
Livingston	\$66,627	157	\$10,460,439	\$5,230,220	\$15,690,659
Madison, City of ¹	\$29,538	457	\$13,498,866	\$6,749,433	\$20,248,299
Marine	\$128,154	288	\$36,908,352	\$18,454,176	\$55,362,528
Maryville	\$246,567	182	\$44,875,194	\$22,437,597	\$67,312,791
Pontoon Beach	\$81,672	506	\$41,326,032	\$20,663,016	\$61,989,048
Roxana	\$70,854	761	\$53,919,894	\$26,959,947	\$80,879,841
St. Jacob	\$170,187	240	\$40,844,880	\$20,422,440	\$61,267,320
Troy	\$217,038	266	\$57,732,108	\$28,866,054	\$86,598,162
Venice ¹	\$13,353	582	\$7,771,446	\$3,885,723	\$11,657,169
Wood River	\$86,040	340	\$29,253,600	\$14,626,800	\$43,880,400
Worden	\$137,334	262	\$35,981,508	\$17,990,754	\$53,972,262
Unincorp. County	\$188,793	10	\$1,887,930	\$943,965	\$2,831,895
County	\$142,812	35	\$4,998,420	\$2,499,210	\$7,497,630

¹ America's Central Port

Figure T-25
Estimated Potential Dollar Losses to Potentially-Damaged
Housing Units from a Tornado by Township

Township	Average Market Value (2023)	Potentially-Damaged Housing Units (Rounded Up)	Potential Dollar Losses		Total Potential Dollar Losses
			Structure	Content	
Alhambra	\$139,400	5	\$697,000	\$348,500	\$1,045,500
Alton	\$69,683	169	\$11,776,427	\$5,888,214	\$17,664,641
Chouteau	\$76,594	26	\$1,991,444	\$995,722	\$2,987,166
Collinsville	\$157,482	100	\$15,748,200	\$7,874,100	\$23,622,300
Edwardsville	\$210,941	97	\$20,461,277	\$10,230,639	\$30,691,916
Fort Russell	\$199,376	23	\$4,585,648	\$2,292,824	\$6,878,472
Foster	\$195,319	13	\$2,539,147	\$1,269,574	\$3,808,721
Godfrey	\$169,719	49	\$8,316,231	\$4,158,116	\$12,474,347
Granite City ¹	\$79,883	229	\$18,293,207	\$9,146,604	\$27,439,811
Hamel	\$257,771	6	\$1,546,626	\$773,313	\$2,319,939
Helvetia	\$136,535	24	\$3,276,840	\$1,638,420	\$4,915,260
Jarvis	\$230,953	37	\$8,545,261	\$4,272,631	\$12,817,892
Leef	\$120,934	2	\$241,868	\$120,934	\$362,802
Marine	\$205,164	6	\$1,230,984	\$615,492	\$1,846,476
Moro	\$255,438	9	\$2,298,942	\$1,149,471	\$3,448,413
Nameoki	\$66,870	52	\$3,477,240	\$1,738,620	\$5,215,860
New Douglas	\$87,774	3	\$263,322	\$131,661	\$394,983
Olive	\$93,553	6	\$561,318	\$280,659	\$841,977
Omphghent	\$151,672	7	\$1,061,704	\$530,852	\$1,592,556
Pin Oak	\$396,616	9	\$3,569,544	\$1,784,772	\$5,354,316
Saline	\$534,148	7	\$3,739,036	\$1,869,518	\$5,608,554
St. Jacob	\$85,372	17	\$1,451,324	\$725,662	\$2,176,986
Venice ¹	\$21,022	55	\$1,156,210	\$578,105	\$1,734,315
Wood River	\$94,786	120	\$11,374,320	\$5,687,160	\$17,061,480
Townships - 8 most populated	\$135,657	90	\$12,209,130	\$6,104,565	\$18,313,695
Townships - 16 least populated	\$166,146	12	\$1,993,752	\$996,876	\$2,990,628

¹ America's Central Port

3.7 DROUGHTS

HAZARD IDENTIFICATION

What is the definition of a drought?

While difficult to define, the National Drought Mitigation Center (NDMC) considers “drought” in its most general sense to be a deficiency of precipitation over an extended period of time, usually a season or more, resulting in a water shortage.

Drought is a normal and recurrent feature of climate and can occur in all climate zones, though its characteristics and impacts vary significantly from one region to another. Unlike other natural hazards, drought does not have a clearly defined beginning or end. Droughts can be short, lasting just a few months, or they can persist for several years. There have been 28 drought events with losses exceeding \$1 billion each (CPI-Adjusted) across the U.S. between 1980 and 2022. This is due in part to the sheer size of the areas affected.

What types of drought occur?

There are four main types of drought that occur: meteorological, agricultural, hydrological, and socioeconomic. They are differentiated based on the use and need for water. The following provides a brief description of each type.

- **Meteorological Drought.** Meteorological drought is defined by the degree of dryness or rainfall deficit and the duration of the dry period. Due to climate differences, what might be considered a drought in one location of the country may not be in another location.
- **Agricultural Drought.** An agricultural drought refers to a period when rainfall deficits, soil moisture deficits, reduced ground water or reservoir levels needed for irrigation impact crop development and yields.
- **Hydrological Drought.** Hydrological drought refers to a period when precipitation deficits (including snowfall) impact surface (stream flow, reservoir and lake levels) and subsurface (aquifers) water supply levels.
- **Socioeconomic Drought.** Socioeconomic drought refers to a period when the demand for an economic good (fruit, vegetables, grains, etc.) exceeds the supply as a result of weather-related shortfall in the water supply.

How are droughts measured?

There are numerous quantitative measures (indicators and indices) that have been developed to measure drought. How these indicators and indices measure drought depends on the discipline affected (i.e., agriculture, hydrology, meteorology, etc.) and the region being considered. There is no single index or indicator that can account for and be applied to all types of drought.

Although none of the major indices are inherently superior to the rest, some are better suited than others for certain uses. The first comprehensive drought index developed in the U.S. was the Palmer Drought Severity Index (PDSI). The PDSI is calculated based on precipitation and temperature data, as well as the local Available Water Content of the soil. It is the most effective

measuring drought impacts on agriculture. For many years it was the only operational drought index, and it is still very popular around the world.

The Standardized Precipitation Index (SPI), developed in 1993, uses precipitation records for any location to develop a probability of precipitation for any time scale in order to reflect the impact of drought on the availability of different water resources (groundwater, reservoir storage, streamflow, snowpack, etc.) In 2009, the World Meteorological Organization recommended SPI as the main meteorological drought index that countries should use to monitor and follow drought conditions.

The first operational ‘composite’ approach applied in the U.S. was the U.S. Drought Monitor (USDM). The USDM utilizes five key indicators, numerous supplementary indicators, and local reports from expert observers around the country to produce a drought intensity rating that is ideal for monitoring droughts that have many impacts, especially on agriculture and water resources during all seasons over all climate types. NOAA’s Storm Events Database records include USDM ratings and utilized them along with additional weather information to describe the severity of the drought conditions impacting affected counties. Therefore, this Plan will utilize USDM ratings to identify and describe previous drought events recorded within the County. The following provides a more detailed discussion of the USDM to aid the Plan’s developers and the general public in understanding how droughts are identified and categorized.

U.S. Drought Monitor (USDM)

Established in 1999, the USDM is a relatively new index that combines quantitative measures with input from experts in the field. It is designed to provide the general public, media, government officials and others with an easily understandable “big picture” overview of drought conditions across the U.S. It is unique in that it combines a variety of numeric-based drought indices and indicators with local expert input to create a single composite drought indicator, the results of which are illustrated via a weekly map that depicts the current drought conditions across the U.S. The USDM is jointly produced by the National Drought Mitigation Center at the University of Nebraska-Lincoln, the U.S. Department of Agriculture (USDA), and the National Oceanic and Atmospheric Administration (NOAA).

The USDM has a scale of five intensity categories, D0 through D4, that are utilized to identify areas of drought. **Figure DR-1** provides a brief description of each category.

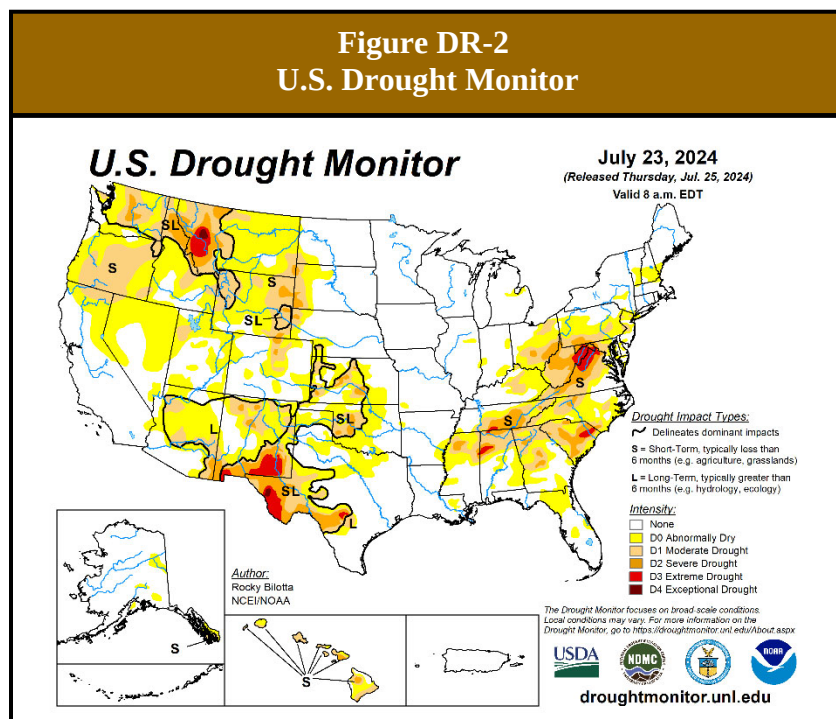
Because the ranges of the various indicators often don’t coincide, the final drought category tends to be based on what a majority of the indicators show and on local observations. The authors also weigh the indices according to how well they perform in various parts of the country and at different times of the year. It is the combination of the best available data, location observations and experts’ best judgment that make the U.S. Drought Monitor more versatile than other drought indices.

In addition to identifying and categorizing general areas of drought, the USDM also identifies whether a drought’s impacts are short-term (typically less than 6 months – agriculture, grasslands) or long-term (typically more than 6 months – hydrology, ecology). **Figure DR-2** shows an

example of the USDM weekly map. The USDM is designed to provide a consistent big-picture look at drought conditions in the U.S. It is not designed to infer specifics about local conditions.

Figure DR-1 U.S. Drought Monitor – Drought Intensity Categories	
Category	Possible Impacts
D0 (Abnormally Dry)	- Going into drought: - short-term dryness slowing planting, growth of crops or pastures. - Coming out of drought: - some lingering water deficits - pastures or crops not fully recovered
D1 (Moderate Drought)	- Some damage to crops, pastures - Streams, reservoirs, or wells low; some water shortages developing or imminent - Voluntary water-use restrictions requested
D2 (Severe Drought)	- Crop or pasture losses likely - Water shortages are common - Water restrictions imposed
D3 (Extreme Drought)	- Major crop/pasture losses - Widespread water shortages or restrictions
D4 (Exceptional Drought)	- Exceptional and widespread crop/pasture losses - Shortages of water in reservoirs, streams, and wells creating water emergencies

Source: U.S. Drought Monitor.



The U.S. Drought Monitor is jointly produced by the National Drought Mitigation Center at the University of Nebraska-Lincoln, the U.S. Department of Agriculture, and the National Oceanic and Atmospheric Administration. Map Courtesy of NDMC.

HAZARD PROFILE

The following identifies past occurrences of drought, details the severity or extent of each event (if known); identifies the locations potentially affected and estimates the likelihood of future occurrences (Local Mitigation Planning Policy Guide Element B1-b through B1-f).

When have droughts occurred previously? What is the extent of these previous droughts?

Table 11, located in **Appendix J**, summarizes the previous occurrences as well as the extent or magnitude of the drought events recorded in Madison County. NOAA's Storm Events Database, the Illinois State Water

Drought Fast Facts – Occurrences

Number of Drought Events Reported (1980 – 2023): 5

Number of Drought Events County was Designated a USDA Primary Natural Disaster Area: 2 (2005 & 2012)

Survey, the Illinois Emergency Management Agency and Office of Homeland Security (IEMA-OHS), the NDMC at the University of Nebraska-Lincoln, and the USDA have documented five official droughts for Madison County between 1980 and 2023. The County was designated a USDA Primary Natural Disaster area for both the 2005 and 2012 droughts.

The recorded drought events ranged in length from 4 to 20 months. Of the four drought events with a recorded starting month, two began in June, one began in May, and one began in August. Three of the drought events were assigned drought intensity category ratings by the USDM, with the 2012 drought reaching D3, extreme drought, the 2011 drought reaching D2, severe drought, and the 2005 drought reaching D1, moderate drought.

The State of Illinois Drought Preparedness and Response Plan identified seven additional outstanding statewide droughts since 1900 based on statewide summer values of the PDSI provided by NOAA's National Center for Environmental Information. Those seven droughts occurred in 1902, 1915, 1931, 1934, 1936, 1954 and 1964; however, the extent to which Madison County was impacted was unavailable.

What locations are affected by drought?

Drought events affect the entire County. Droughts, like excessive heat and severe winter storms, tend to impact large areas, extending across an entire region and affecting multiple counties.

What is the probability of future drought events occurring based on historical data?

Madison County, including the participating jurisdictions, has experienced five droughts between 1980 and 2023. With five occurrences over 44 years, the probability or likelihood that the County may experience a drought in any given year is 11.4%. However, if earlier recorded droughts are factored in, then the probability that Madison County may experience a drought in any given year decreases to 9.8%.

HAZARD VULNERABILITY

The following describes the vulnerability to participating jurisdictions; specifies the unique and varied risk differences across the planning area and between participating jurisdictions; identifies the impacts on public health and property (if known); and estimates the potential impacts on public

health and safety as well as buildings, infrastructure, and critical facilities from drought (Local Mitigation Planning Policy Guide Element B1-f, B2-a, and B2-b).

Are the participating jurisdictions vulnerable to drought?

Yes. All of Madison County, including the participating jurisdictions, is vulnerable to drought. Neither the amount nor the distribution of precipitation; soil types; topography; or water table conditions provide protection for any area within the County.

The 2023 *Illinois Natural Hazard Mitigation Plan* prepared by IEMA-OHS classifies Madison County’s hazard rating for drought as “low”. IEMA-OHS’s overall hazard rating system has five levels: very low, low, medium, high, and very high.

For drought, FEMA’s National Risk Index (NRI) rates the County as a whole as “Relatively Low”. Of the 67 census tracts studied, one is rated “Relatively Moderate”, 18 are rated “Relatively Low”, 28 are rated “Very Low”, and 20 have no rating for drought. **Figure R-4** presents the overall NRI scores and ratings for each census tract as well as for the County as a whole.

Have any of the participating jurisdictions identified specific assets vulnerable to the impacts of drought?

Yes. Based on responses to an Assets Vulnerability Survey distributed to the participating jurisdictions, 10 of the participants considered specific assets within their jurisdiction vulnerable to drought. **Appendix I** contains copies of the completed surveys that outline problem statements summarizing their vulnerabilities to drought.

What impacts resulted from the recorded drought events?

Data obtained from the NOAA’s Storm Events Database and the USDA Risk Management Agency indicates that between 1980 and 2023, three of the five droughts caused an estimated \$46,470,853 in damages to insured crops in Madison County. Damage information was either unavailable or none was recorded for the remaining two reported occurrences.

Of the five drought events, disaster relief payment information was only available for one of the events. In 1988, landowners and farmers in Illinois were paid in excess of \$382 million in relief payments; however, a breakdown by county was unavailable.

Drought Fast Facts – Impacts/Risk

Drought Impacts:

- ❖ Total Property Damage: *n/a*
- ❖ Total Crop Damage (3 events): **\$46.47 million**

Drought Risk/Vulnerability:

- ❖ Public Health & Safety: **Low**
- ❖ Buildings/Infrastructure/Critical Facilities: **Low**

What other impacts can result from drought events?

Based on statewide drought records available from the Illinois State Water Survey, the most common impacts that result from drought events in Illinois include reductions in crop yields and drinking water shortages.

Crop Yield Reductions

Agriculture is an integral part of the County’s economy. Farmland accounts for approximately 56% of all the land in the County. According to the 2022 Census of Agriculture, there were 962

farms in Madison County occupying 264,765 acres. In comparison, there were 1,079 farms occupying 318,770 acres of the total land area in the County in 2017. Of the land in farms in 2022, 90% or approximately 238,664 acres, were in crop production.

According to the 2022 Census of Agriculture, total crop and livestock sales accounted for \$221.7 million in revenue. This is a 27% increase in revenue from the 2017 Census of Agriculture when total crop and livestock sales accounted for \$174.7 million. Madison County ranked 47th in crop cash receipts and 67th in livestock cash receipts in 2022. A severe drought would have a major financial impact on the large agricultural community, particularly if it occurred during the growing season. Dry weather conditions, particularly when accompanied by excessive heat, can result in diminished crop yields and place stress on livestock.

A reduction in crop yields was seen as a result of the 1983, 1988, 2005, 2011, and 2012 droughts. **Figure DR-3** illustrates the reduction yields seen for corn and soybeans during the recorded drought events. The USDA's National Agricultural Statistics Service records show that the yield reductions for corn were most severe for the 2012 drought when there was a 53.8% reduction and soybean yield reductions were most severe for the 1983 drought when there was a 36.6% reduction

Figure DR-3 Crop Yield Reductions Due to Drought – Madison County				
Year	Corn		Soybeans	
	Yield (bushel)	% Reduction Previous Year	Yield (bushel)	% Reduction Previous Year
1982	116	--	35.5	--
1983	55	52.6%	22.5	36.6%
1984	93	--	27	--
1987	122	--	30.5	--
1988	72	41.0%	26	14.8%
1989	119	--	34.5	--
2004	163	--	46	--
2005	136	16.6%	41	10.9%
2006	112	17.6%	33	19.5%
2007	127	--	31	6.1%
2008	155	---	47	--
2010	166.3	--	50.1	--
2011	118.6	28.7%	34.8	30.5%
2012	54.8	53.8%	36.4	--
2013	164.4	---	43.2	---

Source: USDA, National Agricultural Statistics Service.

Drinking Water Shortages

Municipalities that rely on surface water sources for their drinking water supplies are more vulnerable to shortages as a result of drought. In Madison County, **14 of the 22 participating municipalities rely exclusively on surface water sources** for their drinking water supplies.

Alton, America's Central Port, Glen Carbon, Granite City, Livingston, the City of Madison, and Venice all obtain their drinking water from Illinois American Water which obtains its water from the Mississippi River. Hamel, Marine, and Worden purchase their drinking water from Bond Madison Water Company which obtains its drinking water from Illinois American Water. Pontoon Beach purchases its water from the Pontoon Beach Public Water District which obtains its drinking water from Illinois American Water. Godfrey, Grantfork, and St. Jacob purchase their drinking water from multiple entities that all obtain their water from a surface water source while Highland obtains its drinking water from Silver Lake.

According to Illinois State Water Survey's *Drought Risk Analysis Tool for Illinois' Community Surface Water Systems*, Highland's water supply is classified as "Adequate". The ISWS indicates that for a system to be considered adequate, it should with 90% confidence be able to fulfill the community's water demand through a severe drought similar to the historical drought of record. No data was available on Illinois American Water through the *Drought Risk Analysis Tool*.

The remaining participating municipalities obtain their water from community water supplies that draw water from wells drilled into sand and gravel aquifers ranging from 84 feet to 120 feet in depth. These depths should make the wells less vulnerable to the effects of a prolonged drought.

While most of the participating municipalities are less vulnerable to drinking water shortages, a prolonged drought or a series of droughts in close succession do have the potential to impact water levels in aquifers used for individual drinking water wells in rural areas. This is because individual (private) water wells tend to be shallower than municipal (public) water wells.

What is the level of vulnerability to public health and safety from drought?

Unlike other natural hazards that affect the County, drought events do not typically cause injuries or fatalities. The primary concern centers on the financial impacts that result from loss of crop yields and livestock and potential drinking water shortages. Even taking into consideration the potential impacts that a water shortage may have on the general public, the risk or vulnerability to public health and safety from drought is **low**.

Are existing buildings, infrastructure, and critical facilities vulnerable to drought?

No. In general, existing buildings, infrastructure and critical facilities located in Madison County and the participating jurisdictions are not vulnerable to drought. The primary concern centers on the financial impacts that result from loss of crop yields and livestock.

While buildings do not typically sustain damage from drought events, in rare cases infrastructure and critical facilities may be directly or indirectly impacted. While uncommon, droughts can contribute to roadway damage. Severe soil shrinkage can compromise the foundation of a roadway and lead to cracking and buckling.

Prolonged heat associated with drought can also increase the demand for energy to operate air conditioners, fans, and other devices. This increase in demand places stress on the electrical grid, which increases the likelihood of power outages.

Additionally, droughts have impacted drinking water supplies. Reductions in aquifer water levels can cause water shortages and jeopardize the supply of water needed to provide drinking water and fight fires. While water use restrictions can be enacted in an effort to maintain a sufficient supply of water, they are only temporary and do not address long-term viability issues. Drinking water supplies vulnerable to drought, such as those that rely solely on surface water or shallow wells, need to consider mitigation measures that will provide long-term stability before a severe drought, or a series of droughts occur. Effective mitigation measures include drilling additional wells, preferably deep wells, securing agreements with alternative water sources and constructing water lines to provide a backup water supply.

In general, the risk or vulnerability to buildings, infrastructure and critical facilities from drought is **low**, even taking into consideration the potential impact a drought may have on drinking water supplies and the stress that prolonged heat may place on the electrical grid.

Are future buildings, infrastructure, and critical facilities vulnerable to drought?

No. Future buildings, infrastructure, and critical facilities within the County are no more vulnerable to drought than the existing building, infrastructure, and critical facilities. As discussed above, buildings do not typically sustain damage from drought. Infrastructure and critical facilities may, in rare cases, be damaged by drought, but very little can be done to prevent this damage.

What are the potential dollar losses to vulnerable structures from drought?

Unlike other natural hazards there are no standard loss estimation models or methodologies for drought. Since drought typically does not cause structure damage, it is unlikely that future dollar losses will be excessive. The primary concern associated with drought is the financial impacts that result from loss of crop yields and the potential impacts to drinking water supplies. Since a large part of the County is involved in farming activities, it is likely that there will be future dollar losses to drought. In addition, reduced water levels and the water conservation measures that typically accompany a drought will most likely impact consumers as well as businesses and industries that are water-dependent (i.e., car washes, landscapers, etc.).

3.8 EARTHQUAKES

HAZARD IDENTIFICATION

What is the definition of an earthquake?

An earthquake is a sudden shaking of the ground caused when rocks forming the earth's crust slip or move past each other along a fault (a fracture in the rocks). Most earthquakes occur along the boundaries of the earth's tectonic plates. These slow-moving plates are being pulled and dragged in different directions, sliding over, under and past each other. Occasionally, as the plates move past each other, their jagged edges will catch or stick causing a gradual buildup of pressure (energy).

Eventually, the force exerted by the moving plates overcomes the resistance at the edges and the plates snap into a new position. This abrupt shift releases the pent-up energy, producing vibrations or seismic waves that travel outward from the earthquake's point of origin. The location below the earth's surface where the earthquake starts is known as the hypocenter or focus. The point on the earth's surface directly above the focus is the epicenter.

The destruction caused by an earthquake may range from light to catastrophic depending on a number of factors including the magnitude of the earthquake, the distance from the epicenter, the local geologic conditions as well as construction standards and time of day (i.e., rush hour). Earthquake damage may include power outages, general property damage, road, and bridge failure, collapsed buildings and utility damage (ruptured gas lines, broken water mains, etc.).

Most of the damage done by an earthquake is caused by its secondary or indirect effects. These secondary effects result from the seismic waves released by the earthquake and include ground shaking, surface faulting, liquefaction, landslides and, in rare cases, tsunamis.

According to the U.S. Geological Survey, more than 143 million Americans in the contiguous U.S. are exposed to potentially damaging ground shaking from earthquakes. More than 44 million of those Americans, located in 18 states, are exposed to very strong ground shaking from earthquakes. Illinois ranks 10th in terms of the number of individuals exposed to very strong ground shaking. The Federal Emergency Management Agency's Hazus analysis indicates that the annualized earthquake losses to the national building stock is \$6.1 billion per year. A majority of the average annual loss is concentrated in California (\$3.7 billion). The central U.S. (including Illinois) ranks third in annualized earthquake losses at \$480 billion, behind the Pacific Northwest (Washington and Oregon) with annualized earthquake losses at \$710 billion.

What is a fault?

A fault is a fracture or zone of fractures in the earth's crust between two blocks of rock. They may range in length from a few millimeters to thousands of kilometers. Many faults form along tectonic plate boundaries. Faults are classified based on the angle of the fault with respect to the surface (known as the dip) and the direction of slip or movement along the fault. There are three main groups of faults: normal, reverse (thrust) and strike-slip (lateral).

Normal faults occur in response to pulling or tension along the two blocks of rock causing the overlying block to move down the dip of the fault plane. Most of the faults in Illinois are normal faults. Reverse or thrust faults occur in response to squeezing or compression of the two blocks of rock causing the overlying block to move up the dip of the fault plane. Strike-slip or lateral faults can occur in response to either pulling/tension or squeezing/compression causing the blocks to move horizontally past each other.

Geologists have found that earthquakes tend to recur along faults, which reflect zones of weakness in the earth's crust. Even if a fault zone has recently experienced an earthquake, there is no guarantee that all the stress has been relieved. Another earthquake could still occur.

What are tectonic plates?

Tectonic plates are large, irregularly-shaped, relatively rigid sections of the earth's crust that float on the top, fluid layer of the earth's mantle. There are about a dozen tectonic plates that make up the surface of the planet. These plates are approximately 50 to 60 miles thick and the largest are millions of square miles in size.

How are earthquakes measured?

The severity of an earthquake is measured in terms of its magnitude and intensity. A brief description of both terms and the scales used to measure each are provided below.

Magnitude

Magnitude refers to the amount of seismic energy released at the hypocenter of an earthquake. The magnitude of an earthquake is determined from measurements of ground vibrations recorded by seismographs. As a result, magnitude is represented as a single, instrumentally determined value. A loose network of seismographs has been installed all over the world to help record and verify earthquake events.

There are several scales that measure the magnitude of an earthquake. The most well-known is the Richter Scale. This logarithmic scale provides a numeric representation of the magnitude of an earthquake through the use of whole numbers and decimal fractions. Because of the logarithmic basis of the scale, each whole number increase in magnitude represents a tenfold increase in ground vibrations measured. In addition, each whole number increase corresponds to the release of about 31 times more energy than the amount associated with the preceding whole number. It is important to note that the Richter Scale is used only to determine the magnitude of an earthquake, it does not assess the damage that results.

Once an earthquake's magnitude has been confirmed, it can be classified. **Figure EQ-1** categorizes earthquakes by class based on their magnitude (i.e., Richter Scale value). Any earthquake with a magnitude less than 3.0 on the Richter Scale is classified as a micro earthquake while any earthquake with a magnitude of 8.0 or greater on the Richter Scale is considered a "great" earthquake. Earthquakes with a magnitude of 2.0 or less are not commonly felt by individuals. The largest earthquake to occur in the U.S. since 1900 took place off the coast of Alaska in Prince William Sound on March 28, 1964 and registered a 9.2 on the Richter Scale.

Intensity

Intensity refers to the effect an earthquake has on a particular location. The intensity of an earthquake is determined from observations made of the damage inflicted on individuals, structures, and the environment. As a result, intensity does not have a mathematical basis; instead, it is an arbitrary ranking of observed effects. In addition, intensity generally diminishes with distance. There may be multiple intensity recordings for a region depending on a location's distance from the epicenter.

Figure EQ-1 Earthquake Magnitude Classes	
Class	Magnitude (Richter Scale)
micro	smaller than 3.0
minor	3.0 – 3.9
light	4.0 – 4.9
moderate	5.0 – 5.9
strong	6.0 – 6.9
major	7.0 – 7.9
great	8.0 or larger

Source: Michigan Technological University, UPSeis

Although numerous intensity scales have been developed over the years, the one currently used in the U.S. is the Modified Mercalli Intensity Scale. This scale, composed of 12 increasing levels of intensity that range from imperceptible shaking to catastrophic destruction, is designated by Roman numerals. The lower numbers of the intensity scale are based on human observations (i.e., felt only by a few people at rest, felt quite noticeably by persons indoors, etc.).

The higher numbers of the scale are based on observed structural damage (i.e., broken windows, general damage to foundations etc.). Structural engineers usually contribute information when assigning intensity values of VIII or greater. **Figure EQ-2** provides a description of the damages associated with each level of intensity as well as comparing Richter Scales values to Modified Mercalli Intensity Scale values.

Generally, the Modified Mercalli Intensity value assigned to a specific site after an earthquake is a more meaningful measure of severity to the general public than magnitude because intensity refers to the effects actually experienced at that location.

When and where do earthquakes occur?

Earthquakes can strike any location at any time. However, history has shown that most earthquakes occur in the same general areas year after year, principally in three large zones around the globe. The world's greatest earthquake belt, the circum-Pacific seismic belt (nicknamed the "Ring of Fire"), is found along the rim of the Pacific Ocean, where about 81 percent of the world's largest earthquakes occur.

The second prominent belt is the Alpide, which extends from Java to Sumatra and through the Himalayan Mountains, the Mediterranean Sea and out into the Atlantic Ocean. It accounts for about 17 percent of the world's largest earthquakes, including those in Iran, Turkey, and Pakistan. The third belt follows the submerged mid-Atlantic Ridge, the longest mountain range in the world, nearly splitting the entire Atlantic Ocean north to south.

While most earthquakes occur along plate boundaries some are known to occur within the interior of a plate. (As the plates continue to move and plate boundaries change over time, weakened boundary regions become part of the interiors of the plates.) Earthquakes can occur along zones

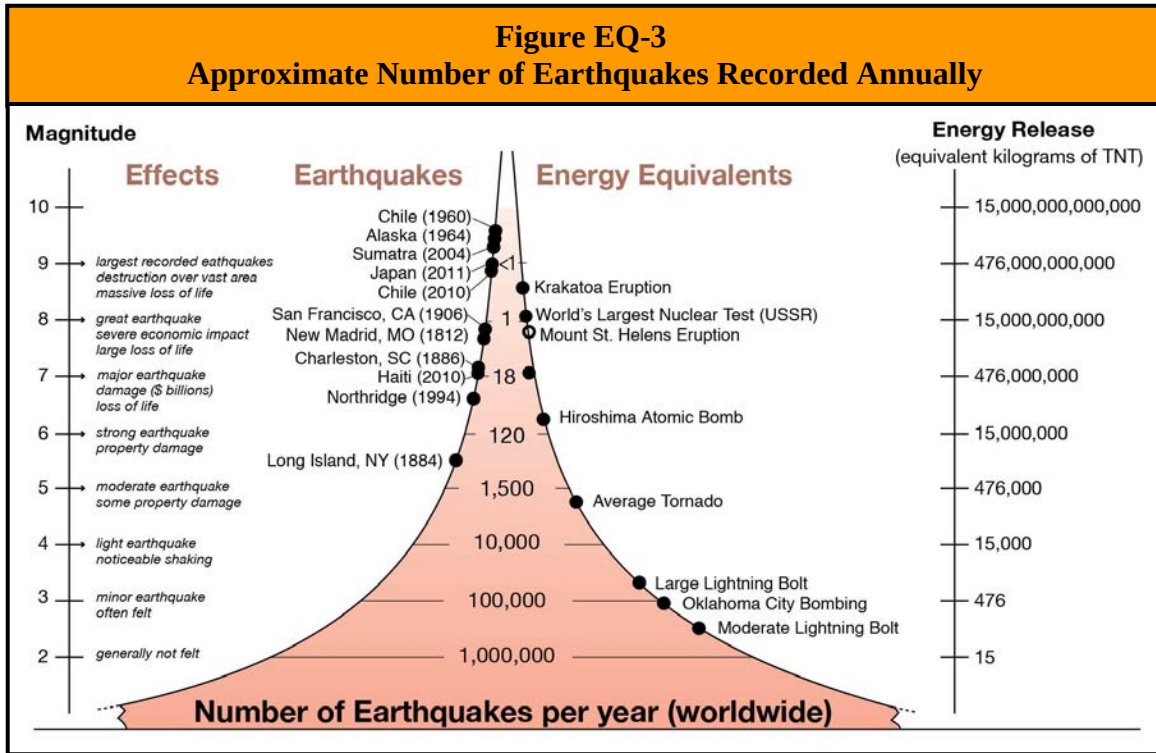
of weakness within a plate in response to stresses that originate at the edges of the plate or from deep within the earth's crust. The New Madrid earthquakes of 1811 and 1812 occurred within the North American plate.

Figure EQ-2 Comparison of Richter Scale and Modified Mercalli Intensity Scale		
Richter Scale	Modified Mercalli Scale	Observations
1.0 – 1.9	I	Felt by very few people; barely noticeable. No damage.
2.0 – 2.9	II	Felt by a few people, especially on the upper floors of buildings. No damage.
3.0 – 3.9	III	Noticeable indoors, especially on the upper floors of buildings, but may not be recognized as an earthquake. Standing cars may rock slightly; vibrations similar to the passing of a truck. No damage.
4.0	IV	Felt by many indoors and a few outdoors. Dishes, windows, and doors disturbed. Standing cars rocked noticeably. No damage.
4.1 – 4.9	V	Felt by nearly everyone. Small, unstable objects displaced or upset; some dishes and glassware broken. Negligible damage.
5.0 – 5.9	VI	Felt by everyone. Difficult to stand. Some heavy furniture moved. Weak plaster may fall and some masonry, such as chimneys, may be slightly damaged. Slight damage.
6.0	VII	Slight to moderate damage to well-built ordinary structures. Considerable damage to poorly-built structures. Some chimneys may break. Some walls may fall.
6.1 – 6.9	VIII	Considerable damage to ordinary buildings. Severe damage to poorly built buildings. Some walls collapse. Chimneys, monuments, factory stacks, columns fall.
7.0	IX	Severe structural damage in substantial buildings, with partial collapses. Buildings shifted off foundations. Ground cracks noticeable.
7.1 – 7.9	X	Most masonry and frame structures and their foundations destroyed. Some well-built wooden structures destroyed. Train tracks bent. Ground badly cracked. Landslides.
8.0	XI	Few, if any structures remain standing. Bridges destroyed. Wide cracks in ground. Train tracks bent greatly. Wholesale destruction.
> 8.0	XII	Total damage. Lines of sight and level are distorted. Waves seen on the ground. Objects thrown up into the air.

Sources: Michigan Technological University, Department of Geological and Mining Engineering and Sciences, UPSeis.
U.S. Geological Survey.

How often do earthquakes occur?

Earthquakes occur every day. Magnitude 2 and smaller earthquakes occur several hundred times a day worldwide. These earthquakes are known as micro earthquakes and are generally not felt by humans. Major earthquakes, greater than magnitude 7, generally occur at least once a month. **Figure EQ-3** illustrates the approximate number of earthquakes that occur worldwide per year based on magnitude. This figure also identifies manmade and natural events that release approximately the same amount of energy for comparison.



Source: Incorporated Research Institutions for Seismology, Education and Outreach Series, "How Often Do Earthquakes Occur?"

HAZARD PROFILE

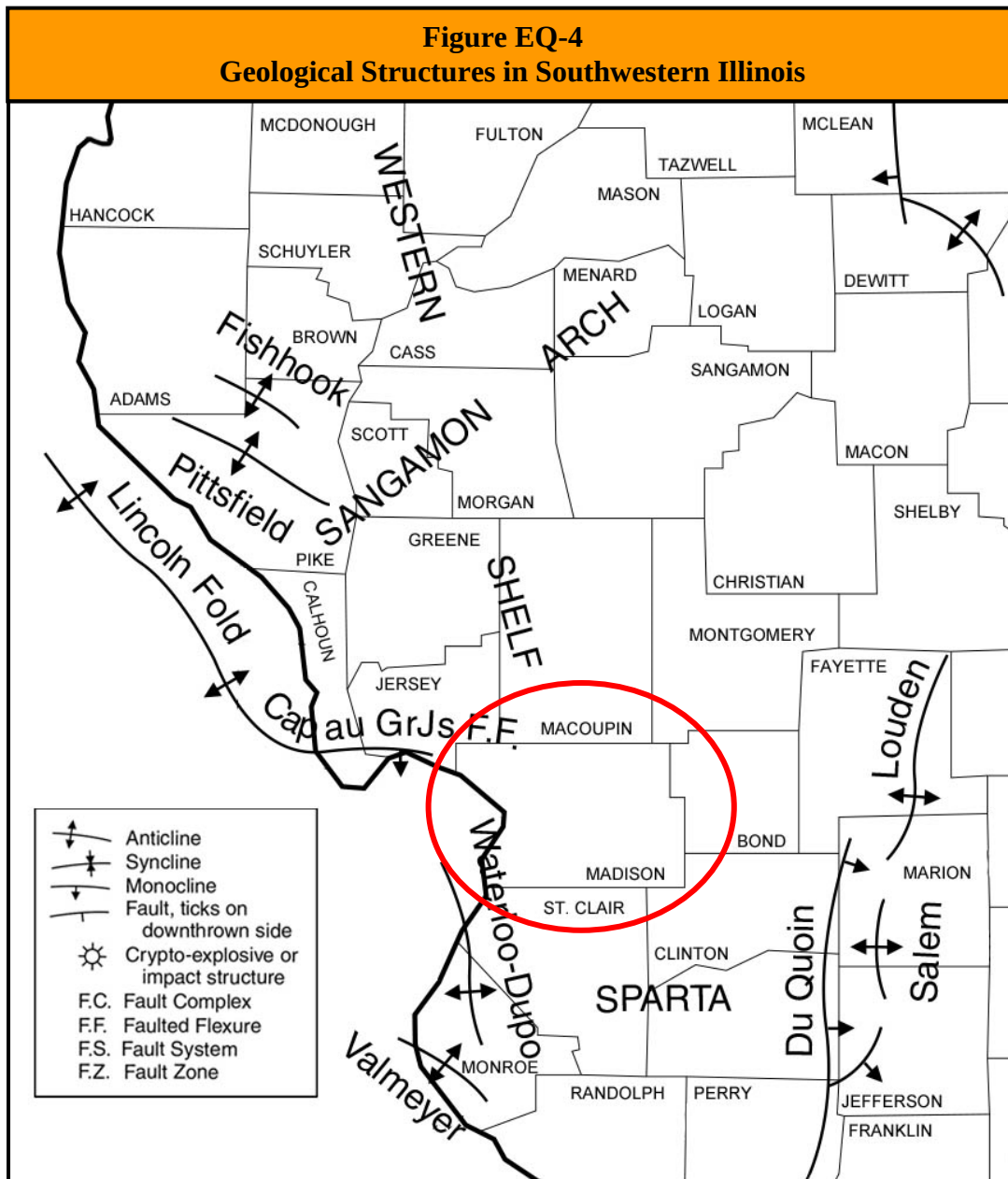
The following details the location of known fault zones and geologic structures, identifies past occurrences of earthquakes, details the severity or extent of each event (if known); identifies the locations potentially affected and estimates the likelihood of future occurrences (Local Mitigation Planning Policy Guide Element B1-b through B1-f).

Are there any faults located within the County?

Yes. According to the Illinois State Geological Survey, there is a series of small faults present in northwest Madison County. These unnamed strike-slip faults are evident in the river bluffs west of Alton. In addition, there are several known geological structures in the immediate region: the Lincoln Anticline, the Cap au Grès Faulted Flexure and the Waterloo-Dupo Anticline. **Figure EQ-4** illustrates the location of these structures. While the relationship between the unnamed smaller faults in Madison County to the larger named faults is unclear, it is certain that Madison County would feel the impact of seismic activity from the larger and smaller faults.

Earthquake Fast Facts – Occurrences

Earthquakes Originating in the County (1795 – 2023): **9**
 Fault Zones Located within the County: **Yes**
 Fault Zones Located in Adjacent Counties: **None**
 Geologic Structures Located in adjacent Counties: **3**



Source: Illinois State Geological Survey.

- ❖ Lincoln Anticline: The Lincoln Anticline is at least 165 miles long and as much as 15 miles wide. It is the most prominent structural feature in northeastern Missouri and trends northwest to southeast before swinging eastward into Illinois and terminating in southernmost Jersey County.
- ❖ Cap au Grès Faulted Flexure: The Cap au Grès Faulted Flexure is about 60 miles long and arises on the southwest flank of the Lincoln Anticline in Lincoln County, Missouri. It follows the anticline into Illinois and also terminates in southernmost Jersey County.

- ❖ **Waterloo-Dupo Anticline:** The Waterloo-Dupo Anticline is a sharply asymmetrical structure that trends south-southeast from St. Louis County, Missouri through the western tip of St. Clair County terminating in Monroe County.

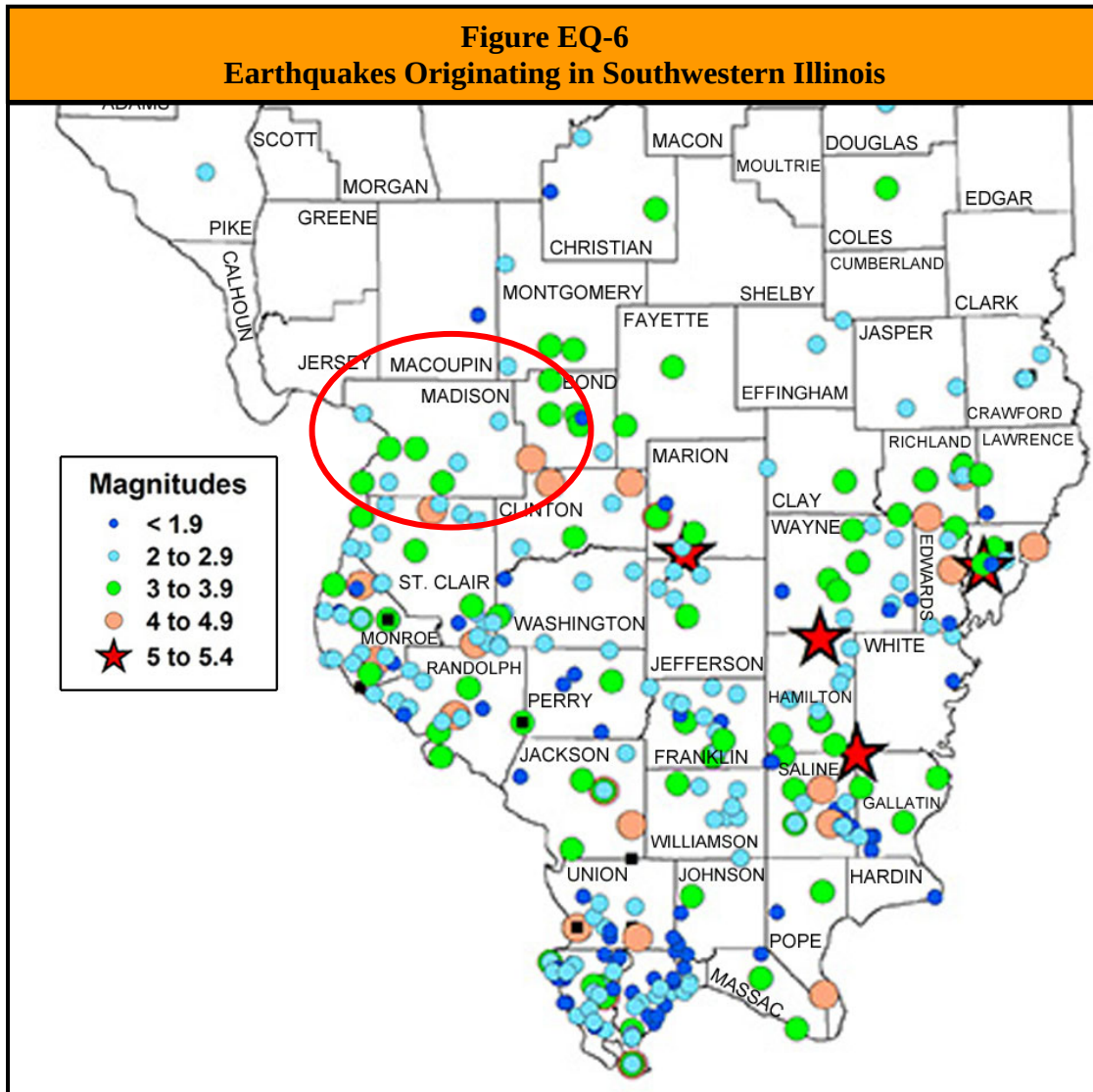
When have earthquakes occurred previously? What is the extent of these previous quakes?

According to the Illinois State Geological Survey (ISGS), the U.S. Geological Survey and Center for Earthquake Research and Information (CERI) at the University of Memphis, nine earthquakes have originated in Madison County during the last 200 years. **Figure EQ-5** provides basic details of each event while **Figure EQ-6** illustrates the epicenters of area earthquakes.

Figure EQ-5 Earthquakes Originating in Madison County			
Date	Magnitude	Intensity	Location
11/18/1883	3.8	n/a	Near Lock & Dam 27 along the Mississippi River west of Madison & Granite City
07/13/1925	3.8	n/a	Edwardsville near the SIUE Campus
08/05/1937	2.0 – 2.9	n/a	Granite City near Horseshoe Lake
05/20/1943	2.0 – 2.9	n/a	Alton near the Mississippi River
09/20/1951	3.6	n/a	Just south of Troy in unincorporated Madison County
09/11/1953	4.1	n/a	Just south of Hartford near the intersection of IL Rte. 3 & New Poag Rd. in unincorporated Madison County
05/18/1993	2.2	n/a	2 miles east of Alhambra in unincorporated Madison County
01/17/2012	2.3	n/	2.5 miles northeast of Troy near Old Staunton Rd. & Interstate 70 in unincorporated Madison County
03/25/2022	2.3	n/a	3 miles southwest of Hamel in unincorporated Madison County

Madison County residents also felt ground shaking caused by several earthquakes that have originated in southern Illinois. The following provides a brief description of a few of the larger events that have occurred.

- ❖ On April 18, 2008, a magnitude 5.2 earthquake was reported in southeastern Illinois near Bellmont in Wabash County. The earthquake was located along the Wabash Valley seismic zone. Minor structural damage was reported in several towns in Illinois and Kentucky. Ground shaking was felt over all or parts of 18 states in the central U.S. and southern Ontario, Canada.
- ❖ A magnitude 5.2 earthquake took place on June 10, 1987, in southeastern Illinois near Olney in Richland County. This earthquake was also located along the Wabash Valley seismic zone. Only minor structural damage was reported in several towns in Illinois and Indiana. Ground shaking was felt over all or parts of 17 states in the central and eastern U.S. and southern Ontario, Canada.
- ❖ The strongest earthquake in the central U.S. during the 20th century occurred along the Wabash Valley seismic zone in southeastern Illinois near Dale in Hamilton County. This magnitude 5.4 earthquake occurred on November 9, 1968, with an intensity estimated at VII for the area surrounding the epicenter. Moderate structural damage was reported in several towns in south-central Illinois, southwest Indiana, and northwest Kentucky. Ground shaking was felt over all or parts of 23 states in the central and eastern U.S. and southern Ontario, Canada.



Source: Illinois State Geological Survey.

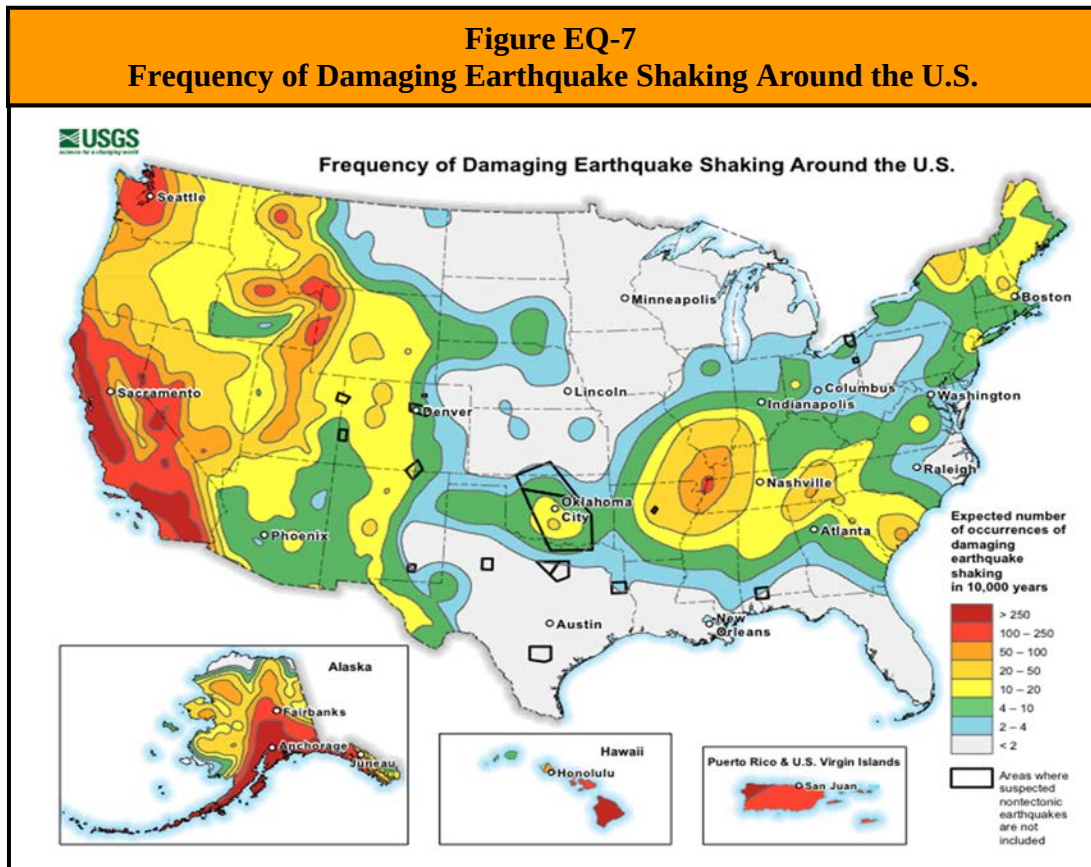
Three of the ten largest earthquakes ever recorded within the continental U.S. took place in 1811 and 1812 along the New Madrid seismic zone. This zone lies within the central Mississippi Valley and extends from northeast Arkansas through southeast Missouri, western Tennessee, western Kentucky, and southern Illinois. These magnitude 7.5 and 7.3 major earthquakes were centered near the town of New Madrid, Missouri and caused widespread devastation to the surrounding region and were felt by people in cities as far away as Pittsburgh, Pennsylvania and Norfolk, Virginia.

The quakes locally changed the course of the Mississippi River creating Reelfoot Lake in northwestern Tennessee. These earthquakes were not an isolated incident. The New Madrid seismic zone is one of the most seismically active areas of the U.S. east of the Rockies. Since 1974 more than 4,000 earthquakes have been recorded within this seismic zone, most of which were too small to be felt.

What locations are affected by earthquakes? What is the extent of future potential earthquakes?

Earthquake events generally affect the entire County. Earthquakes, like drought, impact large areas extending across an entire region and affecting multiple counties. Madison County's proximity to multiple fault zones, both large and small, makes the entire area likely to be affected by an earthquake if these faults become seismically active.

According to the USGS, Madison County can expect 50 to 100 occurrences of damaging earthquake shaking over a 10,000-year period. **Figure EQ-7** illustrates the frequency of damaging earthquake shaking around the U.S.



Source: U.S. Geological Survey.

What is the probability of future earthquake events occurring based on historical data?

As with flooding, calculating the probability of future earthquakes changes depending on the magnitude of the event. According to the ISGS, Illinois is expected to experience a magnitude 3.0 earthquake every year, a magnitude 4.0 earthquake every four years and a magnitude 5.0 earthquake every 20 years. The likelihood of an earthquake with a magnitude of 6.3 or greater occurring somewhere in the central U.S. within the next 50 years is between 86% and 97%.

While the major earthquakes of 1811 and 1812 do not occur often along the New Madrid fault, they are not isolated events. In recent decades, scientists have collected evidence that earthquakes

similar in size and location to those felt in 1811 and 1812 have occurred several times before within the central Mississippi Valley around 1450 A.D., 900 A.D. and 2350 B.C.

The general consensus among scientists is that earthquakes similar to the 1811-1812 earthquakes are expected to recur on average every 500 years. The U.S. Geological Survey and the Center for Earthquake Research and Information (CERI) at the University of Memphis estimates that for a 50-year period the probability of a repeat of the 1811-1812 earthquakes is between 7% and 10% and the probability of an earthquake with a magnitude of 6.0 or larger is between 25% and 40%.

HAZARD VULNERABILITY

The following describes the vulnerability to participating jurisdictions; specifies the unique and varied risk differences across the planning area and between participating jurisdictions; identifies the impacts on public health and property (if known); and estimates the potential impacts on public health and safety as well as buildings, infrastructure, and critical facilities from earthquakes (Local Mitigation Planning Policy Guide Element B1-f, B2-a, and B2-b).

Are the participating jurisdictions vulnerable to earthquakes?

Yes. All of Madison County is vulnerable to earthquakes. Since 2014, one earthquake has originated in Madison County.

The unique geological formations topped with glacial drift soils found in the central U.S. conduct an earthquake's energy farther than in other parts of the Nation. Consequently, earthquakes that originate in the Midwest tend to be felt at greater distances than earthquakes with similar magnitudes that originate on the West Coast.

Earthquake Fast Facts – Risk

Earthquake Risk/Vulnerability:

- ❖ Public Health & Safety – Light/Moderate Quake within the County or immediate region: **Low**
- ❖ Public Health & Safety – Strong Quake in the region: **Low to Medium**
- ❖ Buildings/Infrastructure/Critical Facilities – Light/Moderate Quake within the County or immediate region: **Low**
- ❖ Buildings/Infrastructure/Critical Facilities – Strong Quake in the region: **Medium**

This vulnerability, found throughout most of Illinois and all of Madison County, is compounded by relatively high water tables within the region. When earthquake shaking mixes the groundwater and soil, ground support is further weakened thus adding to the potential structural damages experienced by buildings, roads, bridges, electrical lines, and natural gas pipelines.

The *Projected Earthquake Intensities Map* prepared by the Missouri State Emergency Management Agency predicts that if a magnitude 6.7 earthquake were to take place anywhere along the New Madrid seismic zone, then the highest projected intensity felt in Madison County would be a VII on the Modified Mercalli Intensity Scale. If a magnitude 8.6 earthquake were to occur, then the highest projected intensity felt would be an IX.

The *2023 Illinois Natural Hazard Mitigation Plan* prepared by IEMA-OHS classifies Madison County's hazard rating for earthquake as "low". IEMA-OHS's overall hazard rating system has five levels: very low, low, medium, high, and very high.

For earthquakes, FEMA's National Risk Index (NRI) rates the County as a whole as "Relatively Moderate". Of the 67 census tracts studied, eight are rated "Relatively High", 46 are rated "Relatively Moderate", and 13 are rated "Relatively Low" for earthquakes. **Figure R-4** presents the overall NRI scores and ratings for each census tract as well as for the County as a whole.

Have any of the participating jurisdictions identified specific assets vulnerable to the impacts of earthquakes?

Yes. Based on responses to an Assets Vulnerability Survey distributed to the participating jurisdictions, all of the participants, with the exception of Bethalto CUSD #8, Collinsville CUSD #10, Edwardsville CUSD #7, Metro East Sanitary District, and OSD St. Anthony's Health Center, consider specific assets within their jurisdictions vulnerable to earthquakes. **Appendix I** contains copies of the completed surveys that outline problem statements summarizing their vulnerabilities to earthquakes.

What impacts resulted from the recorded earthquake events?

Property damage figures were either unavailable or none were recorded, and no injuries or fatalities were reported as a result of the nine earthquakes that originated in Madison County. USGS records did indicate that minor structural damage (cracks forming in a concrete block foundation and in plaster) was sustained in Roxana as a result of the September 11, 1953 earthquake. Ground shaking was also felt in eastern Missouri. While Madison County residents felt the earthquakes that have occurred in other parts of Illinois, no damages were reported as a result of these events. Given the magnitude of the great earthquakes of 1811 and 1812, it is almost certain that individuals in what is now Madison County felt those quakes; however, historical records do not indicate the intensity or impacts that these quakes had on the County.

What other impacts can result from earthquakes?

Earthquakes can impact human life, health, and public safety. **Figure EQ-8** details the potential impacts that may be experienced by the County should a magnitude 6.0 or greater earthquake occur in the region.

What is the level of vulnerability to public health and safety from earthquakes?

The risk or vulnerability to public health and safety from an earthquake is dependent on the intensity and location of the event. With unnamed faults located in Madison County, there is the possibility that another earthquake will originate in the County at some point in the future. If a light earthquake originates within the County or from the structures in the immediate region, the risk or vulnerability to public health and safety is considered **low**. This risk is elevated to **low to medium** for a strong earthquake originating in the immediate region.

Are existing buildings, infrastructure, and critical facilities vulnerable to earthquakes?

Yes. While all of the participating jurisdictions have building codes in place, with the exception of Worden, some do not have codes containing seismic provisions that address structural vulnerability for earthquakes. In addition, there are existing buildings, infrastructure and critical facilities that were built prior to the enactment of these standards that are vulnerable to damage from earthquakes. Therefore, almost all existing buildings, infrastructure and critical facilities

located in Madison County and the participating jurisdictions are considered vulnerable to damage from earthquakes.

Figure EQ-8 Potential Earthquake Impacts	
Direct	Indirect
<i>Buildings</i> • Temporary displacement of businesses, households, schools, and other critical services where heat, water and power are disrupted • Long-term displacement of businesses, households, schools, and other critical services due to structural damage or fires <i>Transportation</i> • Damages to bridges (i.e., cracking of abutments, subsidence of piers/supports, etc.) • Cracks in the pavement of critical roadways • Increased traffic on Interstate, U.S., and State Routes (especially if the quake originates along the New Madrid fault zone) as residents move out of the area to seek shelter and medical care and as emergency response, support services and supplies move south to aid in recovery • Misalignment of rail lines due to landslides (most likely near stream crossings), fissures and/or heaving <i>Utilities</i> • Downed power and communication lines • Breaks in drinking water and sanitary sewer lines resulting in the temporary loss of service • Disruptions in the supply of natural gas due to cracking and breaking of pipelines <i>Health</i> • Injuries/deaths due to falling debris and fires <i>Other</i> • Cracks in the earthen dams of the lakes and reservoirs within the County which could lead to dam failures	<i>Health</i> • Use of County health facilities to treat individuals injured closer to the epicenter • Emergency services (ambulance, fire, law enforcement) may be needed to provide aid in areas where damage was greater <i>Other</i> • Disruptions in land line telephone service throughout an entire region (i.e., central and southern Illinois) • Depending on the seasonal conditions present, more displacements may be expected as those who may not have enough water and food supplies seek alternate shelter due to temperature extremes that make their current housing uninhabitable

If a strong earthquake (6.0 – 6.9) were to occur in the region, then unreinforced masonry buildings are most at risk during an earthquake because the walls are prone to collapse outward. Steel and wood buildings have more ability to absorb the energy from an earthquake while wood buildings with proper foundation ties have rarely collapsed in earthquakes. In this scenario building damage in Madison County would range from moderate to considerable for well-built ordinary structures and considerable to severe for poorly-built structures. **Figure EQ-9**, located at the end of this section, identifies the number of unreinforced masonry buildings that serve as critical facilities within the participating jurisdictions.

If the epicenter of a magnitude 7.6 earthquake were to originate anywhere along the New Madrid seismic zone, the highest projected Modified Mercalli intensity felt in Madison County would be a VIII according to the *Projected Earthquake Intensities Map* prepared by the Missouri State Emergency Management Agency.

An earthquake also has the ability to damage infrastructure and critical facilities such as roads and utilities. In the event of a major earthquake, bridges are expected to experience moderate damage such as cracking in the abutments and subsidence of piers and supports. The structural integrity may be compromised to the degree where safe passage is not possible, resulting in adverse travel times as alternate routes are taken. Some rural families may become isolated where alternate paved routes do not exist. In addition, cracks may form in the pavement of key roadways. **Figure R-5** lists the number of each type of critical infrastructure by jurisdiction.

An earthquake may also down overhead power and communication lines causing power outages and disruptions in communications. Cracks or breaks may form in natural gas pipelines and drinking water and sewage lines resulting in temporary loss of service. In addition, an earthquake could cause cracks to form in the earthen dams located within the County, increasing the likelihood of a dam failure.

As with public health and safety, the risk or vulnerability to buildings, infrastructure and critical facilities is dependent on the intensity and location of the event. The risk to buildings, infrastructure and critical facilities is considered to be **low** for a light to moderate earthquake that originates within the County or immediate region. This risk is elevated to **medium** for a strong earthquake originating along seismic zones in the region (i.e., New Madrid).

Are future buildings, infrastructure, and critical facilities vulnerable to earthquakes?

Yes. While all of the participating jurisdictions, with the exception of Worde, have building codes in place, some do not have codes containing seismic provisions that address structural vulnerability for earthquakes. As a result, there is the potential for future buildings, infrastructure and critical facilities to face some of the same vulnerabilities as those of existing buildings, infrastructure and critical facilities described previously.

What are the potential dollar losses to vulnerable structures from earthquakes?

Since property damage information was either unavailable or none was recorded for the documented earthquakes that impacted Madison County, there is no way to accurately estimate future potential dollar losses to vulnerable structures. However, according to Madison County Chief County Assessment Office the total equalized assessed values of all residential, commercial, and industrial buildings in the planning area is \$8.1 billion. Since all of the structures in the planning area are susceptible to earthquake impacts to varying degrees, this total represents the countywide property exposure to earthquake events.

Given Madison County's proximity to geologic structures and fault zones, both large and small, and the fact that all structures within the County are vulnerable to damage, it is likely that there will be future dollar losses from any earthquake ranging from strong to great. As a result, participating jurisdictions were asked to consider mitigation projects that could provide wide ranging benefits for reducing the impacts or damages associated with earthquakes.

Figure EQ-9
Number of Unreinforced Masonry Buildings Serving as Critical Facilities by Jurisdiction
(Sheet 1 of 2)

Participating Jurisdiction	Government ¹	Law Enforcement	Fire Stations	Ambulance Service	Schools	Drinking Water	Wastewater Treatment	Medical ²	Healthcare Facilities ³
Madison County	7	3	5	---	---	---	---	---	---
Alhambra	1	---	1	---	---	1	---	---	3
Alton	---	---	---	---	---	---	---	---	---
America's Central Port	---	---	---	1	---	---	---	---	---
Collinsville	3	---	1	---	---	---	1	---	---
East Alton	4	2	1	---	---	1	---	---	---
Edwardsville	8	3	1	3	---	1	2	5	4
Glen Carbon	---	---	---	---	---	---	---	---	---
Godfrey	1	1	2	---	---	---	5	2	7
Granite City	2	1	3	1	---	---	---	7	4
Grantfork	---	---	1	---	---	---	---	---	---
Hamel	1	1	---	---	---	1	---	---	---
Highland	4	---	---	---	---	1	---	2	1
Livingston	---	---	---	---	---	---	---	---	---
Madison, City of	1	1	1	---	---	---	---	1	---
Marine	---	---	---	---	---	1	---	---	---
Maryville	2	1	1	1	---	---	---	4	4
Pontoon Beach	2	1	1	---	---	---	---	---	---
Roxana	1	---	---	---	---	---	1	---	---
St. Jacob	---	---	---	---	---	---	---	---	---
Troy	1	---	---	---	---	---	1	---	---
Venice	2	1	1	---	---	---	---	---	---
Wood River	---	1	1	---	---	1	1	2	---
Worden	1	1	1	---	---	1	---	---	---

¹ Government includes: courthouses, city/village halls, township buildings, highway/road maintenance centers, etc.

² Medical includes: public health departments, hospitals, urgent/prompt care, and medical clinics.

³ Healthcare Facilities include: nursing homes, skilled care facilities, memory care facilities, residential group homes, etc.

--- Indicates jurisdiction does not own/maintain any critical facilities within that category.

Figure EQ-9
Number of Unreinforced Masonry Buildings Serving as Critical Facilities by Jurisdiction
(Sheet 2 of 2)

Participating Jurisdiction	Government ¹	Law Enforcement	Fire Stations	Ambulance Service	Schools	Drinking Water	Wastewater Treatment	Medical ²	Healthcare Facilities ³
Collinsville Township	2	---	---	---	---	---	---	---	---
Edwardsville Township	2	---	---	---	---	---	---	---	---
Leef Township	---	---	---	---	---	---	---	---	---
Nameoki Township	3	---	---	---	---	---	---	---	---
Alton CUSD #1	---	---	---	---	11	---	---	---	---
Bethalto CUSD #8	---	---	---	---	---	---	---	---	---
Collinsville CUSD #10	---	---	---	---	---	---	---	---	---
Edwardsville CUSD #7	---	---	---	---	12	---	---	---	---
Madison County ROE #41	---	---	---	---	1	---	---	---	---
Marquette Catholic High School	---	---	---	---	1	---	---	---	---
Roxana CUSD #1	---	---	---	---	---	---	---	---	---
St. Mary's Catholic School	---	---	---	---	2	---	---	---	---
SIUE	---	---	---	---	13	---	---	---	---
Wood River-Hartford ESD #15	---	---	---	---	---	---	---	---	---
Glen Carbon FPD	2	---	---	---	---	---	---	---	---
Olive Fire District	---	---	---	---	---	---	---	---	---
South Roxana FPD	---	---	---	---	---	---	---	---	---
Troy FPD	4	---	---	1	---	---	---	---	---
Anderson Hospital	---	---	---	---	---	---	---	---	---
OSF Saint Anthony's Health Center	---	---	---	---	---	---	---	---	---
Metro East Sanitary District	---	---	---	---	---	---	---	---	---
Wood River D&LD	---	---	---	---	---	---	---	---	---

¹ Government includes: courthouses, city/village halls, township buildings, highway/road maintenance centers, etc.

² Medical includes: public health departments, hospitals, urgent/prompt care, and medical clinics.

³ Healthcare Facilities include: nursing homes, skilled care facilities, memory care facilities, residential group homes, etc.

--- Indicates jurisdiction does not own/maintain any critical facilities within that category.

3.9 MINE SUBSIDENCE

HAZARD IDENTIFICATION

What is a mine?

A mine is a pit or excavation made in the earth for the purpose of extracting minerals or ore. Mines were developed in Illinois to extract coal, clay, shale, limestone, dolomite, silica sand, tripoli, peat, ganister, lead, zinc, and fluorite.

What is mining?

Mining is the process of extracting minerals or ore from a mine. There are two common mining methods: surface mining and sub-surface (underground) mining. This section focuses on underground mining practices conducted in Madison County.

Mining has long figured prominently into Illinois' history. According to the National Mining Association, Illinois has the second largest recoverable reserves of coal in the country, behind only Montana. Coal deposits can be found under 86 of the 102 counties in Illinois and underground mining operations have been conducted in at least 72 counties. **Figure MS-1** shows the extent of coal deposits (Pennsylvanian rocks) present in Illinois and the mined-out areas from surface and underground coal mining. In 2018, Illinois ranked fourth in the U.S. in coal production according to the National Mining Association.

The first commercial coal mine in Illinois is thought have started in Jackson County about 1810. Since that time, there have been more than 3,800 underground coal mines and 363 underground metal and industrial mineral mines operated in Illinois. Almost all of these mines have been abandoned over the years. According to ISGS, there were nine active underground coal mines in Illinois in 2021. The U.S. Geological Survey identified nine active metal and industrial mineral underground mines in Illinois in their most recent Mineral Industry Survey.

What methods are used in underground mining?

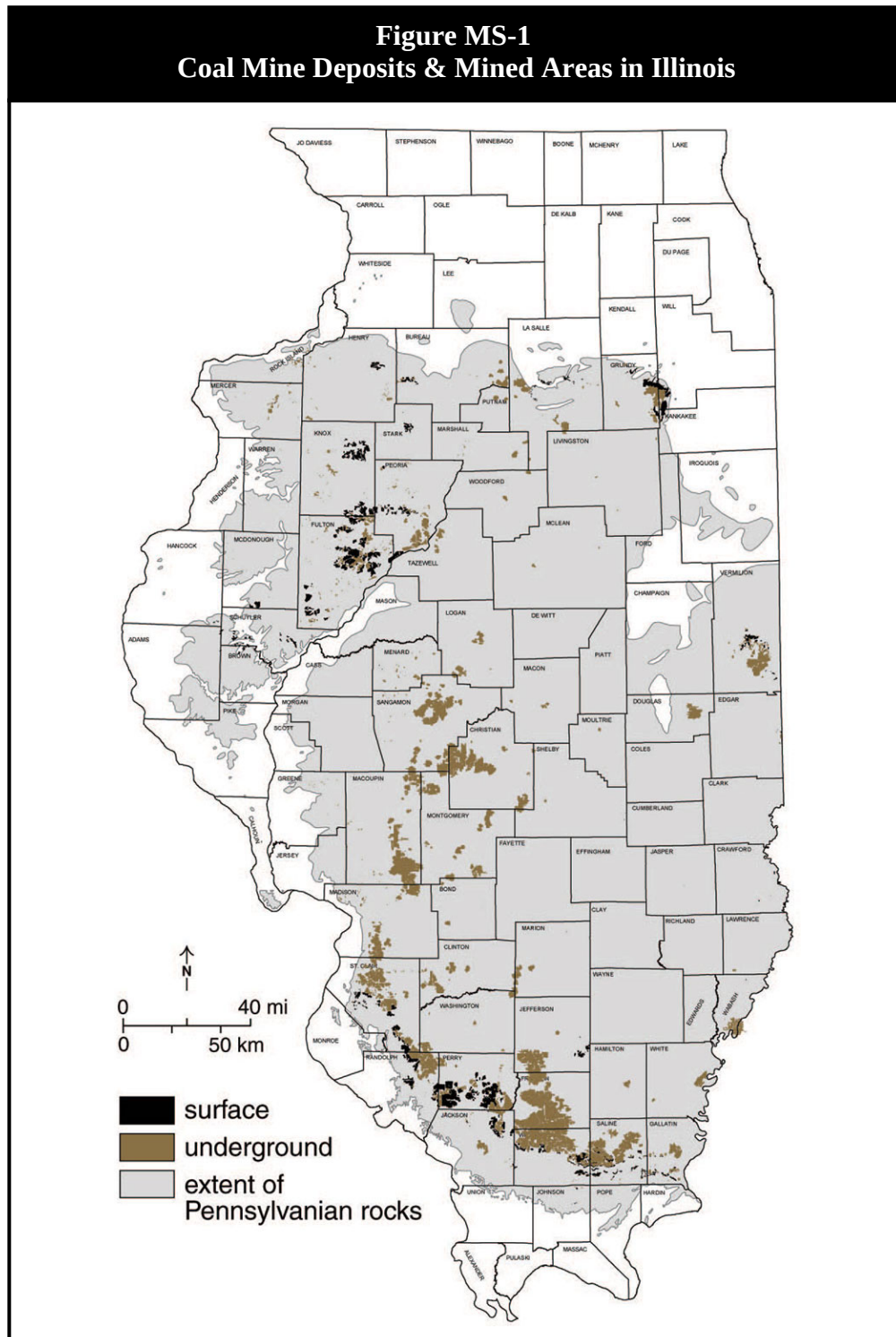
Much of Illinois coal lies too deep for surface mining and requires extraction using underground mining methods. There are three main methods of underground mining that have been used in Illinois over the years: room-and-pillar, high-extraction retreat and longwall. The following provides a brief description of each.

Room-and-Pillar

In the room-and-pillar system, the areas where coal is removed are referred to as "rooms" and the blocks of coal left in place to support the mine's roof and surface are referred to as "pillars". A "panel" refers to a group of rooms isolated from other room groups by surrounding pillars and generally accessed from only one entryway. The room-and-pillar method that was generally used before the early 1900s was characterized by rooms that varied considerably in length, width and sometimes direction, forming irregular mining patterns.

Modern room-and-pillar mines have a regular configuration of production areas (panels) and entryways, and the rooms and entries range from 18 to 24 feet, which is considerably narrower than in older mines. Generally, modern room-and-pillar mining methods recover less than 50% to

60% of the coal in a panel. Most underground mines in Illinois have used a type of room-and-pillar pattern.



Source: Illinois Department of Natural Resources & Illinois State Geological Survey.

High-Extraction Retreat

High-extraction retreat mining operations first develop a room-and-pillar production area (panel). The miners then systematically begin taking additional coal from the pillars that are left behind. The secondary extraction occurs in a retreating fashion, working from the outer edges of the panel to the main entries. Most of the coal pillars which support the roof are removed shortly after a few rows of rooms and pillars have been formed, leaving only small pillars.

The size and number of pillars left to maintain worker safety varies depending on underground geologic conditions. Roof collapses are controlled by the use of temporary roof supports and planned subsidence of the surface is initiated immediately. Since planned subsidence is part of this operation, this method requires the legal rights to the ground surface. High-extraction retreat methods recover up to 80% to 90% of the coal in a panel. No Illinois mines currently use high-extraction retreat mining, but from the 1940s to 2002, this method was used in the State.

Longwall

Modern longwall mining methods remove coal along a straight working face within defined panels (in this case a solid block of coal), up to 1 to 2 miles long and about 1,000 feet wide. Room-and-pillar methods must be used in conjunction with longwall mining. Like high-extraction retreat, longwall mining begins at the outer edges and works toward the main entries. This fully-mechanized method uses a rotating cutting drum or shearer that works back and forth across the coal face. The coal falls onto a conveyor below the cutting machine and is transported out of the mine.

All of this is performed under a canopy of steel supports that sustains the weight of the roof along the mining surface. As the coal is mined the steel supports advance. The mine roof immediately collapses behind the moving supports, causing 4 to 6 feet of maximum settling of the ground surface over the panel. Since planned subsidence is part of this operation, this method requires the legal rights to the ground surface. Longwall mining methods recover 100% of the coal in a panel.

What is mine subsidence?

Mine subsidence is the sinking or shifting of the ground surface resulting from the collapse of an underground mine. Subsidence is possible in any area where minerals or ore have been undermined. Most of the mine subsidence in Illinois is related to coal mining, which represents the largest volume extracted and area undermined of any solid commodity in the State.

Mine subsidence can be planned, as with modern high-extraction retreat and longwall mining techniques, or it can occur as the result of age and instability. For many years, underground mining was not tightly regulated and not much thought was given to the long-term stability of the mines since most of the land over the mine was sparsely populated. Once mining operations were complete, the mine was abandoned. As cities and towns grew up around the mines, many urban and residential areas were built over or near undermined areas.

ISGS estimates that approximately 333,000 housing units are located in close proximity to underground mines and may potentially be exposed to mine subsidence while approximately 201,000 acres of urban and developed land overlie or are immediately adjacent to underground

mines. Most experts agree that room-and-pillar mines will eventually experience some degree of subsidence, but currently there is no way to know when or exactly where it will occur.

What types of mine subsidence can occur in Illinois?

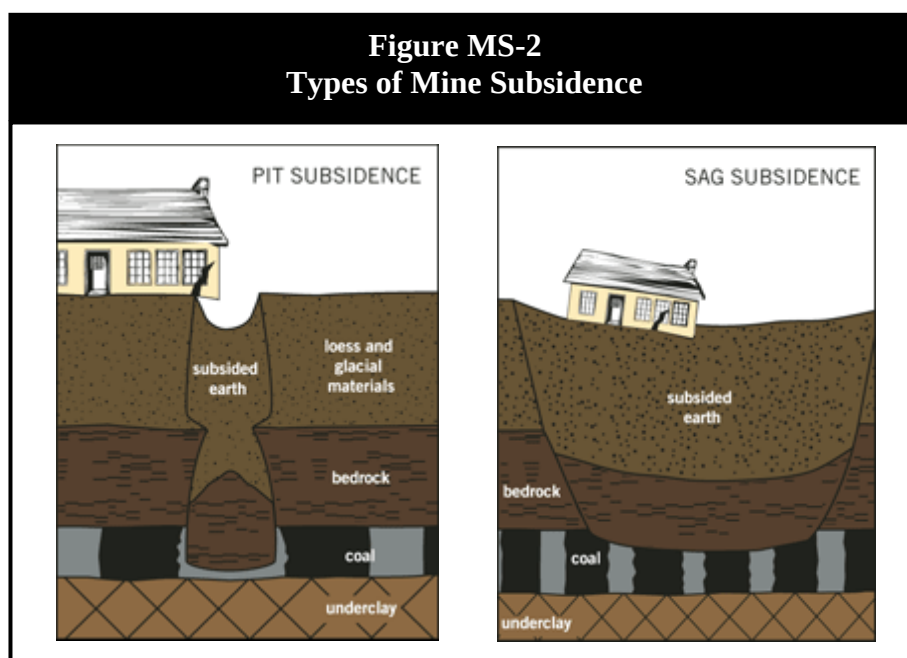
In Illinois mine subsidence typically takes one of two forms: pit subsidence or sag (trough) subsidence. The following provides a brief description of each.

Pit Subsidence

Pit subsidence generally occurs when the roof of a shallow mine (less than 100 feet deep) collapses and forms a bell-shaped hole at the ground's surface, 6 to 8 feet deep and 2 to 40 feet across. **Figure MS-2** provides an illustration of pit subsidence. This type of subsidence forms very quickly causing sudden and swift ground movement. While the probability of a structure being damaged by pit subsidence is generally low since most pits are relatively small, structural damage can occur if pit subsidence develops under the corner of a building, the support posts of a foundation or another critical spot.

Sag (Trough) Subsidence

Sag or trough subsidence generally forms a gentle depression in the ground's surface that can spread over an entire mine panel and affect several acres of land. A major sag can develop suddenly within a few hours or days, or gradually over years. This type of subsidence may originate over places in the mine where pillars have disintegrated and collapsed or where pillars are being pushed into the relatively soft underclay that forms the floor of most mines. **Figure MS-2** illustrates sag subsidence. This is the most common type of mine subsidence and can develop over mines of any depth. Given the relatively large area covered by sag subsidence, buildings, roads, driveways, sidewalks, sewer and water pipes and other utilities may experience damage.



Source: Illinois Mine Subsidence Insurance Fund.

What is the Illinois Mine Subsidence Insurance Fund?

Prior to 1979, traditional property owner's insurance did not cover mine subsidence nor was mine subsidence coverage available for purchase in Illinois. Since many mining companies in Illinois ceased operations long before mine subsidence occurred and insurance did not cover such damage, property owner who experienced subsidence damage had no recourse. Several high-profile incidents in the Metro East St. Louis area ultimately led to the passage of the Mine Subsidence Insurance Act in 1979. The Statute required insurers to make mine subsidence insurance available to Illinois homeowners and established the Illinois Mine Subsidence Insurance Fund (IMSIF). Later amendments to the Act gave the Fund the authority, with approval from the Director of Insurance, to set the maximum limits for mine subsidence coverage.

The IMSIF is a taxable enterprise created by Statute to operate as a private solution to a public problem. The purpose of the Fund is to assure financial resources are available to owners of property damaged by mine subsidence. The Fund fills a gap in the insurance market for the benefit of Illinois property owners at risk of experiencing mine subsidence damage.

All insurance companies authorized to write basic property insurance in Illinois are required to enter into a Reinsurance Agreement with the Fund and offer mine subsidence insurance coverage. Mine subsidence insurance covers damage caused by underground mining of any solid mineral resource. In the 34 counties where underground mining has been most prevalent, the Statute requires mine subsidence coverage be automatically included in both residential and commercial property policies. Coverage may be rejected in writing by the insured. **Figure MS-3** identifies the 34 counties where mine subsidence insurance is automatically included in property insurance policies.

In addition to providing reinsurance to insurers, the Fund also is responsible for conducting geotechnical investigations to determine if mine subsidence caused the damage, establishing rates and rating schedules, providing underwriting guidance to insurers, supporting and sponsoring mine subsidence related research and initiatives consistent with the public interest and educating the public about mine subsidence issues.

HAZARD PROFILE

The following details the location of underground mines, identifies past occurrences of mine subsidence, details the severity or extent of each event (if known); identifies the locations potentially affected and estimates the likelihood of future occurrences.

Are there any underground mines located in the County?

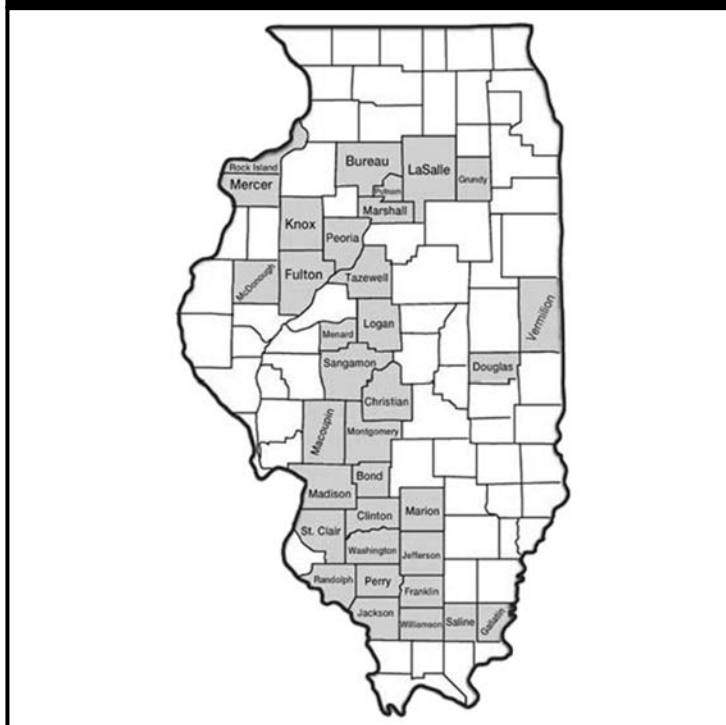
Yes. According to the Illinois State Geological Survey (ISGS) and the U.S. Geological Survey (USGS), there are 334 documented underground mines located in the County. A copy of the ISGS

Directory of Coal Mines for Madison County as well as the USGS Director of Active Metal are included in **Appendix L**. **Figure MS-4** illustrates the locations of these mines. . For detailed quadrangle maps of the undermined areas visit the ISGS ILMINES Viewer.

Mine Subsidence Fast Facts – Occurrences

Number of Underground Mines Located within the County: **334**
 Number of Mine Subsidence Events Reported **4+**
 Probability of Future Mine Subsidence Events: **Medium**

Figure MS-3
Counties Required to include Mine Subsidence
Coverage in Property Insurance



Source: Illinois Mine Subsidence Insurance Fund.

When has mine subsidence occurred previously? What is the extent of these previous occurrences?

No comprehensive, publicly-accessible database detailing mine subsidence occurrences currently exists in Illinois. A review of local news articles and discussions with Planning Committee members identified at least four mine subsidence events reported in Madison County since 2013. The following provides a brief summary of these previous occurrences as well as the extent or severity of each event.

- On June 26, 2024, a large sinkhole opened in a soccer field at Alton's Gordon Moore Park due to mine subsidence. The sinkhole swallowed a light pole and bleachers reaching a width of 100 feet and a depth of 30 feet.
- The Fire Chief from Bethalto indicated during the risk assessment discussion at the October 22, 2019 Planning Committee meeting that a home had been condemned due to mine subsidence in the Village.
- Since 2015, Maryville's Police Department building has moved about 9.5 inches due to mine subsidence. The Village Hall and Streets Department building have also experienced mine subsidence.
- In 2013, Edwardsville was forced to repair sections of Hidden Valley Lane due what the public works director believes was from mine subsidence. The road has had issues in the past and was mud jacked about 12 years before to level it out because whole sections were sinking.

According to the Illinois Mine Subsidence Insurance Fund (IMSIF), there were 453 confirmed mine subsidence claims submitted to the IMSIF for Madison County between 2000 and 2023. However, detailed information about the locations and damages sustained by claim was not made available. **Figure MS-5** provides a breakdown by year of the claims confirmed to have damage caused by mine subsidence.

Figure MS-5 Illinois Mine Subsidence Insurance Fund Claims by Year – Madison County							
Year	No. of Claims	Year	No. of Claims	Year	No. of Claims	Year	No. of Claims
1980	7	1991	4	2002	9	2013	10
1981	4	1992	22	2003	11	2014	11
1982	13	1993	4	2004	2	2015	13
1983	7	1994	8	2005	12	2016	11
1984	14	1995	12	2006	17	2017	7
1985	2	1996	6	2007	9	2018	4
1986	12	1997	9	2008	24	2019	9
1987	22	1998	10	2009	9	2020	2
1988	14	1999	4	2010	16	2021	14
1989	14	2000	9	2011	12	2022	8
1990	14	2001	12	2012	13	2023	7

What locations are affected by mine subsidence?

According to the Illinois State Geological Survey's (ISGS) *Proximity of Underground Mines to Urban and Developed Lands in Illinois* study published in 2009, there are approximately 33,879 acres (7.4% of the land area) and 18,558 housing units (17.1% of the total housing units) in Madison County are located in Zone 1, land over or adjacent to mapped mines and an additional 24,642 acres (5.4% of the land area) and 15,050 housing units (13.9% of the total housing units) in the County are located in Zone 2, land surrounding Zone 1 that could be affected if the mine boundaries are inaccurate or uncertain.

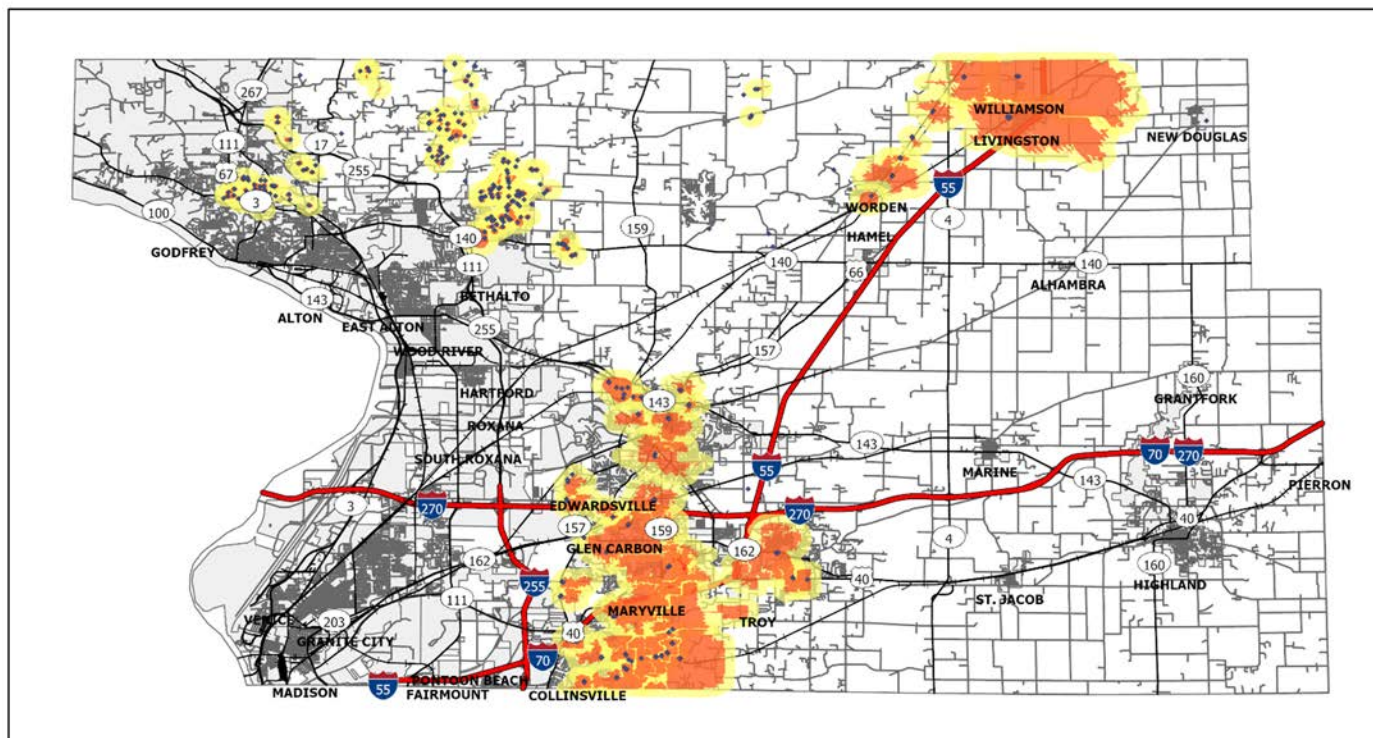
Figure MS-6 identifies the location of the Zone 1 and 2 areas in Madison County. Based on this mapping, mine subsidence has the potential to impact Alton, Bethalto, Collinsville, Edwardsville, Glen Carbon, Godfrey, Livingston, Maryville, Troy, Williamson, and Worden, as well as unincorporated Madison County.

What is the probability of future mine subsidence events occurring?

There are many variables that must be considered when calculating the probability of future mine subsidence events including whether subsidence has occurred previously in an area, the size, depth and age of the mine, the magnitude or extent of the failure as well as soil and weather conditions. The extent of future potential mine subsidence events is also a function of where current development is located relative to areas of past and present underground mining. According to the IMSIF, most experts agree that room and pillar mines will eventually experience some degree of collapse, but currently there is no way to know when or exactly where mine subsidence will occur.

Figure MS-6
Areas Potentially Impacted by Mine Subsidence in Madison County

Madison County



Municipal Boundaries	Interstate
Underground Mine	US/State Routes
Underground Mine Buffer Region	Roadways
Mine Shaft	Railroads

0 4 8 16
Miles

Map Created June 2024 in ArcGIS by Callie Smith at American Environmental Corporation
Sources: Missouri Dept. of Conservation, Missouri DNR, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, USFWS Esri, NASA, NGA, USGS

Given the unpredictability of mine subsidence events, the variables involved and the lack of data available for Madison County, it is difficult to specifically establish the probability of future mine subsidence events without extensive research.

However, given the mining methods used, the age and location of the mines and the number of housing units located over or adjacent to undermined areas in the County, the probability that unincorporated Madison County, Alton, Bethalto, Collinsville, Edwardsville, Glen Carbon, Godfrey, Livingston, Maryville, Troy, Williamson, and Worden will experience future mine subsidence events is estimated to be **low** to **medium** and **unlikely** for the remaining participating jurisdictions and most of unincorporated Madison County. For the purposes of this analysis “unlikely” is defined as having a less than 2% chance of occurring in any given year, “low” is defined as having a less than a 10% chance of occurring in any given year and “medium” is defined as having up to a 50% chance of occurring in any given year.

HAZARD VULNERABILITY

The following describes the vulnerability to participating jurisdictions, identifies the impacts on public health and property (if known) and estimates the potential impacts on public health and safety as well as buildings, infrastructure, and critical facilities from mine subsidence.

Are the participating jurisdictions vulnerable to mine subsidence?

Yes. Alton, Anderson Hospital, Bethalto CUSD #8, Collinsville, Collinsville Township, Collinsville CUSD #10, Collinsville Township, Edwardsville, Edwardsville CUSD #7, Edwardsville Township, Glen Carbon, Glen Carbon FPD, Godfrey, Livingston, Maryville, Olive Fire District, Troy, Troy FPD, and Worden, and parts of unincorporated Madison County are vulnerable to mine subsidence. None of the other participating jurisdictions or the remainder of the County are considered vulnerable. Since 2014, three confirmed mine subsidence events have occurred in Madison County.

According to ISGS, approximately 33,879 acres (7.4% of the land area) of Madison County are over or adjacent to mapped mines and vulnerable to mine subsidence while an additional 24,642 acres (5.4% of the land area) could be affected by mine subsidence if the mine boundaries are inaccurate or uncertain.

The 2023 Illinois Natural Hazard Mitigation Plan prepared by IEMA-OHS classifies Madison County’s hazard rating for mine subsidence as “medium”. IEMA-OHS’s overall hazard rating system has five levels: very low, low, medium, high, and very high. FEMA’s National Risk Index does not currently rate mine subsidence hazard.

Mine Subsidence Fast Facts – Impacts/Risk

Mine Subsidence Impacts:

- ❖ IMSIF Claims Reimbursed (1980 – 2023): **\$34,239,673**
- ❖ Total Property Damage (2 events): **\$558,076**
- ❖ Total Crop Damage: **n/a**
- ❖ Injuries: **n/a**
- ❖ Fatalities: **n/a**

Mine Subsidence Risk/Vulnerability:

- ❖ Public Health & Safety – Zones 1 & 2: **Low**
- ❖ Public Health & Safety – Areas Outside Zones 1 & 2: **Low**
- ❖ Buildings/Infrastructure/Critical Facilities – Zones 1 & 2: **Medium**
- ❖ Buildings/Infrastructure/Critical Facilities – Areas Outside Zones 1 & 2: **Low**

Have any of the participating jurisdictions identified specific assets vulnerable to the impacts of mine subsidence?

Yes. Based on responses to an Assets Vulnerability Survey distributed to the participating jurisdictions, 14 of the 19 participants located over undermined areas consider specific assets within its jurisdiction vulnerable to mine subsidence. **Appendix I** contains copies of the completed surveys that outline problem statements summarizing their vulnerabilities to mine subsidence.

What impacts resulted from the recorded mine subsidence events?

Property damage information was only available for two of the four mine subsidence events experienced between 2013 and 2024. The following provides a brief description of the damages sustained. Property damage information was unavailable for the remaining reported occurrence.

- ❖ According to Planning Committee member records, the ongoing mine subsidence event at Maryville has caused at least \$199,750 to the Police Department, \$5,988 to the Public Works Department and \$57,680 to the Village Hall for a grand total of \$263,418. The Police Department has cracked ceilings, bowed walls and more. The front doors have been replaced after adjustments failed to keep up with the building's movement. At the Village Hall, there are cracks in the floor within and outside the utility Clerk's office near the main entrance and near the wheelchair lift leading to the restrooms. The former Public Works Director's office is no longer occupied due to popped-up floor tiles, more wall cracks and door alignment problems.
- ❖ A newspaper article from the Edwardsville Intelligencer indicated that the Village spent \$31,240 to reconstruct a couple of section of Hidden Valley Lane based on the damage experienced in 2013.

According to the IMSIF, \$34,239,673 in claims for confirmed damages were reimbursed in Madison County between 1980 and 2023. However, detailed breakdowns by claim and location were unavailable. **Figure MS-7** provides a breakdown by year of the reimbursements paid for mine subsidence damage in Madison County.

Figure MS-7 Illinois Mine Subsidence Insurance Fund Claim Reimbursements by Year – Madison County							
Year	Amount	Year	Amount	Year	Amount	Year	Amount
1980	\$0	1991	\$203,495	2002	\$300,584	2013	\$2,838,379
1981	\$100,500	1992	\$272,948	2003	\$375,317	2014	\$1,440,746
1982	\$34,031	1993	\$464,905	2004	\$861,759	2015	\$680,306
1983	\$190,833	1994	\$452,760	2005	\$452,689	2016	\$1,358,961
1984	\$120,015	1995	\$332,913	2006	\$422,252	2017	\$2,089,129
1985	\$245,944	1996	\$244,156	2007	\$1,138,112	2018	\$1,526,201
1986	\$94,080	1997	\$453,992	2008	\$1,686,407	2019	\$756,161
1987	\$129,846	1998	\$678,771	2009	\$1,326,898	2020	\$1,704,362
1988	\$264,229	1999	\$270,325	2010	\$453,727	2021	\$871,858
1989	\$112,475	2000	\$623,506	2011	\$1,828,199	2022	\$2,268,484
1990	\$430,689	2001	\$371,688	2012	\$1,001,737	2023	\$2,765,304

No injuries or fatalities were reported as a result of any of the recorded mined subsidence events.

What other impacts can result from mine subsidence events?

The initial damage to a property from mine subsidence may appear suddenly or occur gradually over many years. Damage to structures can include:

- ❖ cracked, broken or damaged foundations
- ❖ cracks in the basement walls, ceilings, garage floors, driveways, sidewalks, or roadways
- ❖ jammed or broken doors and windows
- ❖ unlevel or tilted walls or floors
- ❖ doors that swing open or closed
- ❖ chimney, porch, or steps that separate from the rest of the structure
- ❖ in extreme cases, ruptured water, sewer, or gas lines

A structure need not lie directly over a mine to be affected by mine subsidence. It is extremely difficult to accurately gauge how far a property must be from a mine to ensure that it will be unaffected by mine subsidence. Each subsidence is unique and influenced by multiple factors.

What is the level of vulnerability to public health and safety from mine subsidence?

In terms of the risk or vulnerability to public health and safety from a mine subsidence event, there are several factors that must be taken into consideration including the age, size, and depth of the mine; the mining method employed; the extent of the development and infrastructure in the vicinity of the mine; and soil and weather conditions. When all of the factors are taken into consideration, the overall risk to public health and safety posed by a mine subsidence event in Madison County is considered to be **low** for both Zones 1 and 2 and all other portions of the County.

Are existing buildings, infrastructure, and critical facilities vulnerable to mine subsidence?

Yes. Buildings, infrastructure, and critical facilities located within Zones 1 and 2 are vulnerable to mine subsidence. According to ISGS, approximately 18,558 housing units (17.1% of the total housing units in the County) are located over or adjacent to mapped mines and vulnerable to mine subsidence while an additional 15,050 housing units (13.9% of the total housing units) could be affected by mine subsidence if the mine boundaries are inaccurate or uncertain. **Figure MS-8** identifies the number of critical facilities located within Zones 1 and 2 for the vulnerable jurisdictions for select categories.

In addition to impacting structures, mine subsidence can damage roads, bridges, and utilities. Roadways, culverts, and bridges can be weakened by mine subsidence and even destroyed if the subsidence occurs directly underneath of them. Water, sewer, power, and communication lines, both above and below ground, are also vulnerable to mine subsidence. Depending on the location of the subsidence, water, sewer, and power lines can experience ruptures causing major disruptions to vital services.

As with public health and safety, the risk or vulnerability to buildings, infrastructure and critical facilities is dependent on several factors including the age, size, and depth of the mine; the mining method employed; the extent of the development and infrastructure in the vicinity of the mine; and soil and weather conditions. When these factors are taken into consideration, the overall risk posed by mine subsidence to vulnerability to buildings, infrastructure and critical facilities in Madison County is considered to be **medium** for Zone 1 and **low** for Zone 2 and all other portions of the County.

Are future buildings, infrastructure, and critical facilities vulnerable to mine subsidence?

Yes. Any future buildings, infrastructure and critical facilities located within Zones 1 and 2 are vulnerable to mine subsidence. As a result, future buildings, infrastructure, and critical facilities face the same vulnerabilities as those of existing buildings, infrastructure and critical facilities described previously.

What are the potential dollar losses to vulnerable structures from mine subsidence?

Unlike other hazards, there are no standard loss estimation models or methodologies for mine subsidence. Given the lack of recorded events and unpredictability of mine subsidence, sufficient information was not available to prepare a reasonable estimate of future potential dollar losses to vulnerable structure from mine subsidence. Still, those housing units that reside in Zone 1 have the potential to experience future dollar losses from mine subsidence.

Figure MS-8
Critical Facilities Located in Zones 1 and 2 by Jurisdiction

Participating Jurisdiction	Government ¹	Law Enforcement	Fire Stations	Ambulance Service	Schools	Drinking Water	Wastewater Treatment	Medical ²	Healthcare Facilities ³
Madison County	1	---	---	---	---	---	---	---	---
Alton	---	---	---	---	---	---	---	---	5
Collinsville	2	1	1	1	6	2	---	1	2
Edwardsville	1	2	3	2	11	3	---	2	5
Glen Carbon	2	1	2	2	1	2	---	1	1
Godfrey	---	---	---	---	2	---	---	---	---
Livingston	1	1	1	1	---	1	1	---	---
Maryville	2	1	1	1	1	2	---	3	4
Troy	2	1	1	1	2	2	---	4	3
Worden	1	1	1	---	2	1	1	---	---
Collinsville Township	2	---	---	---	---	---	---	---	---
Edwardsville Township	2	---	---	---	---	---	---	---	---
Bethalto CUSD #18	---	---	---	---	3	---	---	---	---
Collinsville CUSD #10	---	---	---	---	5	---	---	---	---
Edwardsville CUSD #7	---	---	---	---	8	---	---	---	---
Glen Carbon FPD	---	---	2	---	---	---	---	---	---
Olive Fire District	---	---	1	---	---	---	---	---	---
Troy FPD	---	---	1	---	---	---	---	---	---
Anderson Hospital	---	---	---	---	---	---	---	1	---

¹ Government includes: courthouses, city/village halls, township buildings, highway/road maintenance centers, etc.

² Medical includes: public health departments, hospitals, urgent/prompt care and medical clinics.

³ Healthcare Facilities include: nursing homes, skilled care facilities, memory care facilities, residential group homes, etc.

--- Indicates the jurisdiction does not own/maintain any critical facilities within that category.

3.10 LANDSLIDES

HAZARD IDENTIFICATION

What is the definition of a slope?

A slope generally refers to any natural or artificial incline of the earth's surface.

What is the definition of a landslide?

A landslide or slope failure is the mass downward and outward movement of slope-forming materials such as rock, soil, artificial fill, organic matter, debris or a combination of these that occurs under the force of gravity. Depending on the type of landslide, it can move rapidly damaging roads and homes or develop slowly causing gradual damage that may occur over months and even years.

How are landslides classified?

Landslides are classified by 1) the type of slope movement and 2) the slope material involved and include rock falls, rockslides, debris flows, mudflows, debris avalanches, earth flows and debris slides.

Slope Movement

Slope movements include falls, topples, slides, spreads and flows. A combination of two or more of the main types of slope movement is referred to as a "complex movement". The following provides a brief description of each.

- ❖ **Falls** occur when masses of rock or other material become detached from steep slopes or cliffs and descend by free-falling, bouncing or rolling.
- ❖ **Topples** consist of forward rotation of rocks or other material about a pivot point on a slope. Toppling can be driven by gravity or by fluids (water or ice) in cracks.
- ❖ **Slides** involve the downslope movement of rock or other material along one or more distinct zones of weakness that separate the slide material from more stable underlying material. The two major types of slides are rotational and transitional.
- ❖ **Spreads** usually occur on very gentle slopes or essentially flat terrain where a stronger upper layer of rock or soil moves above an underlying softer, weaker layer. In some cases, the stronger upper layer will subside into the weaker underlying layer. The failure is caused by liquefaction and usually triggered by rapid ground motion, such as that experienced during an earthquake.
- ❖ **Flows** are distinguished from slides by high water content and have a velocity resembles that of a viscous liquid. There are five basic categories of flows: debris flow, debris avalanche, earthflow, mudflow and creep.

Slope Material

The slope material in a landslide is either rock, soil or both. Soil is further classified as "debris" if it is composed of predominantly coarse fragments or "earth" if it is composed of sand-sized or finer particles.

What causes a landslide?

Landslides can have multiple causes, both natural and man-made. In terms of natural factors, topography, geology and precipitation play an important role in the formation of landslides. Frequently landslides occur when soil is saturated from heavy rain or snowmelt. Landslides can also be initiated in slopes already on the verge of movement by changes in water levels, stream erosion, bedrock fracturing, freeze-thaw cycles, tree root growth, changes in ground water, earthquakes and volcanic activity.

Man-made factors that can contribute to landslides include mining operations, excavation of a slope or its toe for building purposes, loading of a slope or its crest related to construction activities, deforestation, artificial vibrations, irrigation and water leakage from utilities. Individuals seeking unique views of rivers, valleys and lakes can also contribute to landslides by building on land that might have been better left to agriculture, open-space or other uses than for dwellings. The construction of homes on slopes that overwhelm the underlying support material have resulted in landslides. This activity is also referred to as overloading the top of the slope. This type of problem involving residential construction has occurred in Lake County along Lake Michigan and in LaSalle County along the Illinois River.

Where do landslides occur?

Landslides typically start on steep hillsides (slopes) and are primarily associated with mountainous regions, although they can also occur in areas of generally low relief. In low-relief areas, landslides occur in cut-and-fill area associated with roadways and building excavations, along river bluffs, and at quarries and open-pit mines.

Landslides occur in all 50 states, including Illinois. In Illinois, landslides primarily occur in areas adjacent to major rivers and lakes where there are bluffs, hills and valleys. Areas most vulnerable to landslides include the upper Mississippi River, the lower Mississippi River, the middle portion of the Illinois River (roughly covering the area from LaSalle County to Mason County), and the bluff areas along Lake Michigan.

HAZARD PROFILE

The following details the location of steep slope areas (slopes 25% and steeper), identifies past occurrences of landslides, details the severity or extent of future potential failures (if known); identifies the locations potentially affected and estimates the likelihood of future occurrences.

Are there any areas in the County susceptible to landslides?

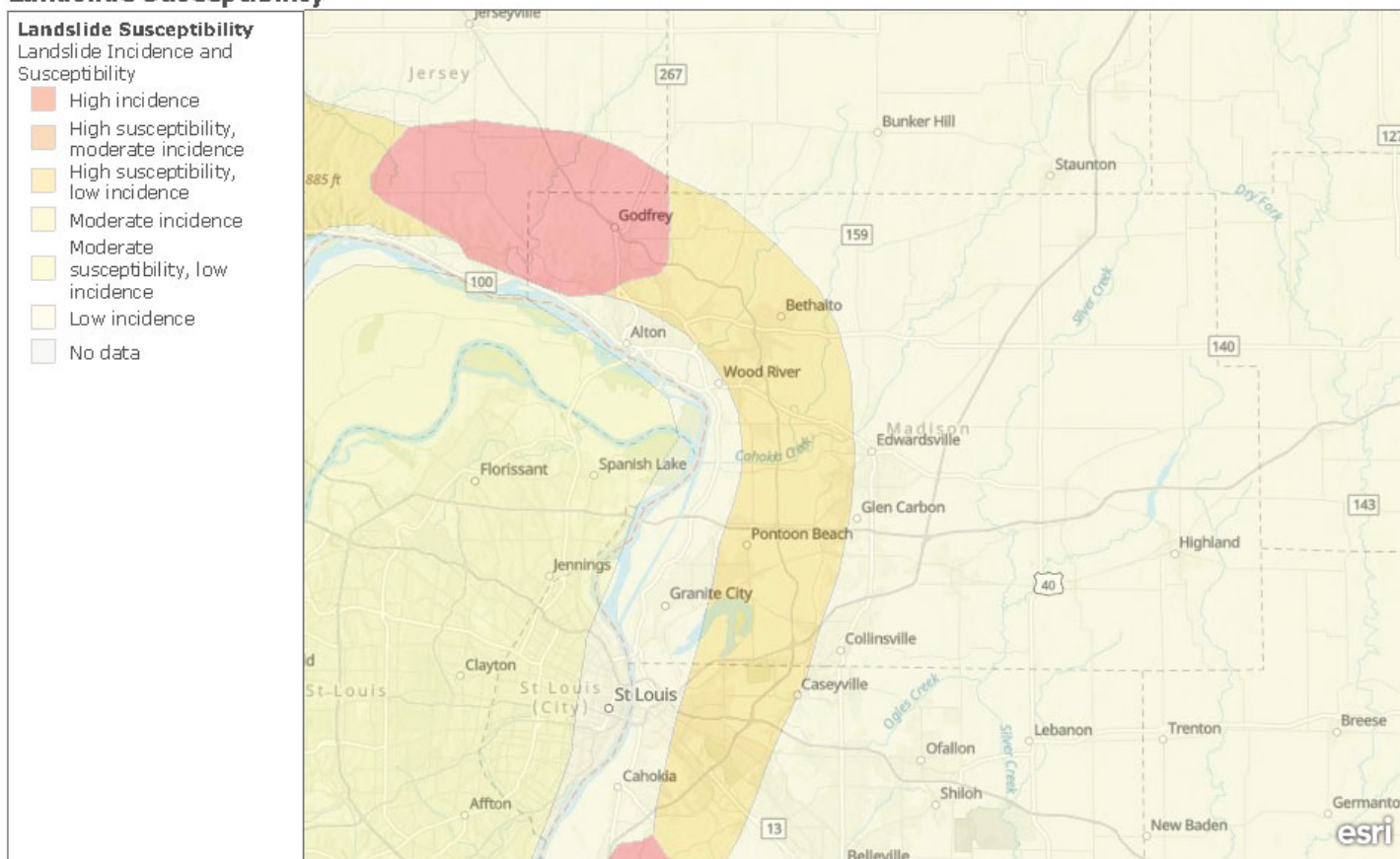
Yes. According to the *Landslide Overview Map of the Conterminous United States* prepared by the U.S. Geological Survey, there are steep slope areas with a high susceptibility and high incidence to landslides located in Madison County. These areas are primarily associated with the Mississippi River and its tributaries. **Figure L-1** illustrates the location of the susceptible areas.

Figure L-1
Areas Susceptible to Landslides in Madison County

Landslide Susceptibility

Landslide Susceptibility
Landslide Incidence and Susceptibility

- High incidence
- High susceptibility, moderate incidence
- High susceptibility, low incidence
- Moderate incidence
- Moderate susceptibility, low incidence
- Low incidence
- No data



This map layer, utilizing data from the U.S. Geological Survey (USGS), delineates areas in the conterminous U.S. where large numbers of landslides have occurred and areas which are susceptible to landsliding

U.S. Geological Survey (USGS) | Esri, CGIAR, USGS | Missouri Dept. of Conservation, Missouri DNR, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA

When have landslides occurred previously? What is the extent of these previous landslides?

No comprehensive, publicly-accessible database detailing landslide occurrences currently exists in Illinois. A review of the Illinois State Geologic Survey's 1985 *Landslide Inventory of Illinois*, NASA's Global Landslide Catalog, local newspaper articles and discussions with Committee members documented nine landslide events in Madison County since 2009. The following provides a brief description of each event. There have almost certainly been additional landslides that were either not reported or were not identified as part of the data review.

Landslide Fast Facts – Occurrences

Number of Landslide Events Reported (2009 – 2023): **9**

Probability of Future Landslide Events: **Low**

- ❖ On November 17, 2009, NASA's Global Landslide Catalog documented a mudslide above Piasa Park in Alton that resulted from heavy rains. A portion of Summit Street had to be closed as a result of the event.
- ❖ According to NASA's Global Landslide Catalog and local newspaper articles, a mudslide occurred on May 28, 2011, when a bluff above the Great River Road in Alton gave way. A chunk of earth, roughly 100 feet and 100 feet deep had fallen away from the hillside, breaking a six-inch water main and temporarily closing the Great River Road.
- ❖ In 2012, a landslide affected the Alton CUSD #11 West Elementary School and Walker Stadium. Two retaining walls and a basement wall by the school kitchen were lost.
- ❖ An embankment failure occurred on October 8, 2017, on Golf Course View in Edwardsville damaging the sanitary sewer according the City Engineer for Edwardsville.
- ❖ On October 10, 2017, a slope failure occurred on Florida Street in Edwardsville causing damage to the sanitary sewer according the City Engineer.
- ❖ According to Edwardsville's City Engineer, an embankment failure occurred at East Lake Drive and Gerber Road in Edwardsville on May 7, 2019, causing damage to the sanitary sewer.
- ❖ Around May 20, 2019, a mudslide caused damage to the Abbott Machine Company's roof in Alton when some trees washed onto it. Heavy rains caused the slope behind their business to fail. A second mudslide fell by their parking lot that comes from Riverview Park the previous week.
- ❖ On January 19, 2020, a portion of Riverview Drive along the Alton bluffs and a retaining wall near Riverview Park were damaged by a landslide.
- ❖ A section of southbound Illinois Route 3 in East Alton, just north of Wood River was reduced to one lane for several weeks in the fall of 2022 due to a landslide that caused the collapse of the shoulder and guardrail.

What locations are affected by landslides? What is the extent of future potential landslides?

The topography and geologic materials within the State greatly limit the locations where landslides can occur. In Madison County, the bluffs of the Mississippi River floodplain located along the western side of the County, especially the northwest corner, are the most likely locations affected by landslides.

Figure L-1 illustrates the moderate to high susceptibility areas in Madison County based on the USGS *Landslide Overview Map of the Conterminous United States*. Only Alton, Bethalto,

Collinsville, Edwardsville, Glen Carbon, Godfrey, Pontoon Beach, Wood River and portions of unincorporated Madison County are considered to have a high susceptibility or incidence to landslides. The remaining participating jurisdictions, including a vast majority of the County, have a low incidence of landslide (less than 1.5% of the area is involved.)

What is the probability of future landslide events occurring?

Given the limited amount of data available, it is difficult to specifically establish the probability of a future landslide. However, Madison County has experienced nine verified landslides between 2009 and 2023. With nine occurrences over the past 15 years, the probability or likelihood that Madison County may experience a landslide event in any given year is 60%. There are almost certainly gaps in the landslide data that distort this probability. If factors such as topography, development within steep slope areas, soil stability, and weather events are taken into consideration then the probability is estimated to be **medium** areas along the western edge of the County, and **low** for the remaining portions of Madison County. For the purposes of this analysis “medium” is defined as have at least a 50% chance of occurring in any given year while “low” is defined as having less than a 10% chance of occurring in any given year.

HAZARD VULNERABILITY

The following describes the vulnerability to participating jurisdictions, identifies the impacts on public health and property (if known) and estimates the potential impacts on public health and safety as well as buildings, infrastructure and critical facilities from landslides.

Are the participating jurisdictions vulnerable to landslides?

Yes. Portions of Alton, Alton CUSD #11, Collinsville, Collinsville CUSD #10, Collinsville Township, East Alton, Edwardsville, Edwardsville CUSD #7, Edwardsville Township, Glen Carbon, Glen Carbon FPD, Godfrey, Highland, Marquette Catholic High School, Maryville, OSF St. Anthony’s Health Center, Pontoon Beach, SIUE, Troy FPD, Wood River, and unincorporated Madison County are vulnerable to the dangers presented by landslides. None of the other participating jurisdictions or the remainder of the County are considered vulnerable. Since 2014, six confirmed landslides have occurred in Madison County.

The 2023 *Illinois Natural Hazard Mitigation Plan* prepared by the Illinois Emergency Management Agency and Office of Homeland Security (IEMA-OHS) classifies Madison County’s hazard rating for landslide as “low.” IEMA-OHS’s overall hazard rating system has five levels: very low, low, medium, high, and very high. FEMA’s National Risk Index (NRI) rates the County as a whole as “Relatively Moderate” for landslides. Six census tracts are rated “Relatively High”, 24 are rated “Relatively Moderate”, 23 are rated “Relatively Low”, one is rated “Very Low”, and 13 have no rating.

Have any of the participating jurisdictions identified specific assets vulnerable to the impacts of landslides?

Yes. Based on responses to an Assets Vulnerability Survey distributed to the participating jurisdictions, seven of the 22 participants susceptible to landslides consider specific assets within their jurisdiction vulnerable. **Appendix I** contains copies of the completed surveys that outline problem statements summarizing their vulnerabilities to landslides.

What impacts resulted from the recorded landslide events?

Damage information was only available for three of the nine events. According to Edwardsville's City Engineer the sanitary sewer system suffered \$84,152 in damages from the October 8, 2017 slope failure and \$52,981 in damages from the May 7, 2019 embankment failure. Alton CUSD #11 personnel reported \$200,000 in damage from the 2012 landslide. Damage information was either unavailable or not recorded for the remaining six events. No injuries or fatalities were reported as a result of any of the events.

Landslides Fast Facts – Impacts/Risk

Landslides Impacts:

- ❖ Total Property Damage (3 events): **\$337,133**
- ❖ Fatalities: **n/a**
- ❖ Injuries: **n/a**

Landslide Risk/Vulnerability:

- ❖ Public Health & Safety –Steep Slope Areas: **Low to Medium**
- ❖ Public Health & Safety – Non-Steep Slope Areas: **Low**
- ❖ Buildings/Infrastructure/Critical Facilities –Steep Slope Areas: **Low to Medium**
- ❖ Buildings/Infrastructure/Critical Facilities – Non-Steep Slope Areas: **Low**

In comparison, the United States averages an estimated \$3.5 billion in property damage losses and between 25 and 50 fatalities annually due to landslides according to the United States Geological Survey.

What other impacts can result from landslides?

Landslides have the potential to impact not only human life and public safety, but they also have the potential to damage or destroy buildings and infrastructure. Depending on the type of landslide, there may be little if any warning an event is about to occur. Individuals caught in a landslide, especially motorists, face potential injury or loss of life.

Property owners seeking views of valleys, rivers and lakes have built in vulnerable locations and experienced damage as the slope they built on slumps, impacting their foundation and potentially carrying away their home. Buildings downslope from a landslide face the threat of structural damage, if not complete destruction. In addition to structural damage, a landslide can also cause serious damage to a building's content.

Infrastructure is also vulnerable to landslides. Electrical, water, gas and sewer lines can be weakened or broken during an event resulting in disruptions to vital services. A major concern associated with landslides is damage sustained to transportation systems, both highway and rail. At the very least, landslides can disrupt the flow of traffic, resulting in delays and adverse travel until the material is removed. These disruptions have the potential to impact emergency services (ambulance, fire and police) along with school bus routes and business traffic. Road and rail beds can be weakened or completely undermined by landslides which can lead to the indefinite closure of those facilities while repairs are made.

In addition to impacting the human environment, landslides can affect the natural environment. The material carried along by landslides can fill drainage ditches, streams and creeks causing drainage and flooding problems. The force of a landslide can cave in stream banks, uproot trees and shrubs and negatively impact wildlife.

What is the level of vulnerability to public health and safety from landslides?

For Madison County, the risk or vulnerability posed by landslides to public health and safety is considered to be **low** to **medium** for high incident/susceptibility (steep slope) areas as described previously. This assessment is based on the fact that most landslides that occur in Illinois are not life-threatening nor are they considered to be severe in comparison to landslides that occur in other parts of the country. In addition, the number of injuries and fatalities recorded is low.

Are existing buildings, infrastructure and critical facilities vulnerable to landslides?

Yes. Buildings, infrastructure and critical facilities located within high susceptibility (steep slope) areas are vulnerable to landslides. Currently Madison County, Glen Carbon, Godfrey, Maryville, and Pontoon Beach have steep slope ordinances in place that will likely lessen the vulnerability of those buildings and critical facilities built since the ordinances were enacted. None or the other participating jurisdictions have specific regulations for building practices within steep slope areas. This means existing buildings as well as buildings in steep slope areas may be more vulnerable to landslides.

In addition to impacting structures, landslides primarily damage roads, bridges and utilities. Roadways, culverts and bridges can be damaged by landslides and even destroyed if the landslide occurs directly next to them. Water, sewer, gas, power and communication lines, both above and below ground, are also vulnerable to landslides. Depending on the location of the landslide, water, sewer, gas and power lines can experience ruptures causing major disruptions to vital services.

As with public health and safety, the risk or vulnerability to buildings, infrastructure and critical facilities is dependent on several factors including the extent of the development and infrastructure in the vicinity of the steep slopes, soil stability and weather conditions. When these factors are taken into consideration, the overall risk posed by landslides to vulnerability to buildings, infrastructure and critical facilities in Madison County is considered to be **low** to **medium** for high incident/susceptibility (steep slope) areas and **low** for all other areas in the County.

Are future buildings, infrastructure and critical facilities vulnerable to landslides?

Yes and No. While Madison County, Glen Carbon, Godfrey, Maryville, and Pontoon Beach have steep slope ordinances in place that will likely lessen the vulnerability of new buildings and critical facilities to damage from landslides, Alton, Collinsville, East Alton, Edwardsville, and Wood River do not. As a result, any future buildings and critical facilities built on steep slope areas in these jurisdictions will face the same vulnerabilities as those of existing buildings, infrastructure and critical facilities described previously. In addition, infrastructure such as roadway and communication, power and sewer lines built in steep slope areas will also continue to be vulnerable as long as specific building regulations are not enacted.

What are the potential dollar losses to vulnerable structures from landslides?

Unlike other hazards, there are no standard loss estimation models or methodologies for landslides. Given the lack of recorded events and unpredictability of landslides, sufficient information was not available to prepare a reasonable estimate of future potential dollar losses to vulnerable structures. However, those buildings, infrastructure and critical facilities located near steep slope areas have the potential to experience future dollar losses from landslides.

3.11 LEVEE FAILURES

HAZARD IDENTIFICATION

What is the definition of a levee?

The U.S. Army Corps of Engineers (USACE or the Corps) defines a “levee” as an earthen embankment, floodwall or structure along a water course whose purpose is flood risk reduction or water conveyance while the National Flood Insurance Program defines a “levee” as a man-made structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control or divert the flow of water so as to provide protection from temporary flooding. Levees are typically not designed to hold back water for extended periods of time, rather they are meant to provide temporary flood protection from seasonal high water, precipitation and other weather events. While levees reduce the risk from a flooding event, they do not eliminate it. There is always the chance a flood will exceed the capacity of a levee, no matter how well it is built.

In Illinois, the Mississippi and Illinois River valleys were largely transformed from permanent, seasonal wetlands to highly productive agricultural lands by the construction of levees and the organization of drainage districts between 1879 and 1916.

What is the definition of a levee breach?

A levee breach is a rupture, break or gap in a levee which causes previously contained water to flood the land behind the levee. If the levee breach is identified as a “failure breach” then the cause of the breach is known and occurred without overtopping. In order for a breach to be termed a failure breach, an investigation is usually required to determine the cause.

What is the definition of overtopping?

Overtopping occurs when the water levels contained by the levee exceed the levee’s crest elevation and flood the land behind the levee. The flooding occurs from overflow/overwash (waves) and other sources. In most cases overtopping may damage the levee but not compromise it. If the levee is compromised because of overtopping, then it is identified as an “overtopping breach.”

What causes a levee breach?

Levee breaches can result from one or more of the following:

- ***erosion of the crown and land-side face of the levee*** caused by overtopping (the higher the velocity of flow over the levee, the more quickly that erosion will occur and cause a failure of the levee);
- ***sand boils and piping*** resulting from the relatively fast passage of flood waters through permeable materials under the base of the levee to the land behind the levee (depending on the amount of sand and soil transported by the waters from the base to the surface, the levee may settle unevenly, crack or even completely fail);
- ***seepage and saturation*** (prolonged exposure to water will cause levee materials to become saturated, leading to seepage and sloughing of the soil on land-side face of the levee and resulting in the loss of slope stability and ultimately failure of the levee);

- ***erosion of the river-side slope of the levee*** as a result of wave action caused by wind and/or commercial or recreational vessels over a long period of time (most Illinois levees are constructed of sand and alluvial materials, both of which are among the easiest materials to erode);
- ***structural failures*** at gates, walls or closure structures;
- ***improper maintenance*** (including failure to maintain gates, walls or closure structures; remove trees; fill in holes created by burrowing animals, etc.); and
- ***earthquakes*** which can cause loss of soil strength and destabilize the levee and foundation materials.

Who is responsible for regulating levees?

This is no single agency with responsibility for levee oversight nationwide. The USACE has specific and limited authorities for approximately 2,000 levees across the country, totaling 14,000 miles. While the Corps serves as one of the nation's largest infrastructure stewards, the misperception exists that the USACE has universal responsibility for the nation's levees. There are three different classifications of levees:

- ***Federally Authorized Levees.*** A levee typically designed and built by the Corps in cooperation with a local sponsor, then turned over to the local sponsor (i.e., drainage district) to operate, maintain, repair and replace the levee.
- ***Non-Federally Authorized Levees.*** A levee designed and built by a non-federal agency, which is responsible for the operation, maintenance, repair and replacement of the levee.
- ***Private or Corporate-Owned Levees.*** A levee designed and built by a private citizen, company or other public entity, which is responsible for the operation, maintenance, repair and replacement of the levee. The Corps has no responsibility for this type of levee.

What is a drainage district?

A drainage district is a local unit of government formed by area landowners to "...construct, maintain or repair drains or levees or to engage in other drainage or levee work for agricultural, sanitary or mining purposes" (70 ILCS 605/3-1). Drainage districts may be organized by petition or referendum and are approved by the circuit court of the county in which the greater part of the district lies.

Each district is usually governed by three drainage commissioners, although there are districts in Illinois that have as many as five drainage commissioners. The drainage commissioners may be any adult who resides in Illinois and owns land within the district's boundaries. Commissioners are either appointed by the county or elected.

Drainage districts are funded through assessments. Each benefited landowner in a district is assessed a fee for the maintenance and upkeep of the district. Under the Illinois Drainage Code, a district which is organized to maintain levees shall include the term "drainage and levee district" in its name.

HAZARD PROFILE

According to the USACE National Levee Database, there are seven levee systems located in Madison County; however, only five of these systems are currently considered levee systems of significance. Levee systems of significance include those levees protecting a sizeable amount of land or a considerable number of structures and/or individuals. Only the levee systems of significance will be analyzed as part of this Plan update due to the limited impacts on the population, land use, and infrastructure associated with the remaining levees.

The following details the levee systems located in the County; identifies the location of these levee systems; details past occurrences of levee failures; describes the severity or extent of future potential failures (if known); identifies the locations potentially affected and estimates the likelihood of future occurrences.

Are there levee systems located in the County?

Yes. According to the USACE National Levee Database there are five levee systems of significance located in Madison County. **Figure LF-1** provides information about each levee system.

When have levee failures occurred previously? What is the extent of these previous failures?

Table 12, located in **Appendix J**, summarizes the previous occurrences as well as the extent or magnitude of levee failures recorded in Madison County. NOAA's Storm Events Database, the National Levee Database, and news media articles were used to document four reported occurrences of levee failures in Madison County between 1993 and 2023. One event each took place in May, June, July, and December.

Levee Breach Fast Facts – Occurrences

Total Number of Levee Systems Located in the County: **7**
 Number of Levee Systems of Significance Studied: **5**
 Number of Levee Breaches associated with Levee Systems of Significance Reported: **4**
 Probability of Future Levee Breach Events: **Low**

What is the extent of future potential levee failures?

Emergency Action Plans (EAPs)/Emergency Preparedness Plans (EPPs) defining the extent or magnitude of future potential levee breaches (water depth, speed of onset and warning times) have not been developed or were not made available to the Madison County Emergency Management Agency for four of the five levee systems. As a result, a data deficiency exists in terms of defining the extent or magnitude of the inundation areas associated future potential levee breaches for these four systems.

A review of the Levee Failure Inundation Map for the Metro East Sanitary District (MESD)/Chain of Rocks East levee system prepared by the U.S. Army Corps of Engineers includes breach analyses based on three different scenarios. **Figure LF-2** details the maximum speed of onset and water depth for the participating jurisdictions vulnerable to a levee breach.

Figure LF-1 Levee Systems Located in Madison County							
Levee System Name	Levee Category	Year Organized	# of Levee Segments	Length of Levee (miles)	Total Land Protected (acres)	Approx. Land Protected in Madison County (acres)	PL 84-99 Status
Chateau Island/Chain of Rocks West	Federal; portion Non-Federal	1948	2	13.13	1,999.23	1,999.23	Active
Metro East Sanitary District (MESD)/ Chain of Rocks East ¹	Federal; portion Non-Federal	1957	2	35.07	85,975.18	49,990.00	Active
Wood River D&LD East & West System	Federal	1910	1	2.57	427.61	427.6	Active
Wood River D&LD Lower System	Federal; portion Non-Federal	1964	2	12.34	10,688.13	10,688.13	Active
Wood River D&LD Upper System	Federal	1964	1	4.95	1,640.93	1,640.93	Active

¹The District extends between Madison and St. Clair Counties

What locations are potentially affected by levee failures?

Levee failures along the studied levee systems have the potential to affect Alton, Collinsville, East Alton, Edwardsville, Glen Carbon, Granite City, Madison (city), Pontoon Beach, Roxana, Venice, Wood River and portions of unincorporated areas of Madison County. **Figure LF-3** identifies the locations potentially impacted by levee failures.

What is the probability of future levee failure occurring based on historical data?

There are several factors that must be considered when calculating the probability of future levee failures including whether a breach has occurred previously, the age and current conditions of the levee, whether proper maintenance is ongoing and the magnitude of the event. Madison County has experienced at least four levee breaches since 1993, all of which occurred along Chouteau Island/Chain of Rocks West levee system. With at least four levee breaches occurring over the past 31 years at this location, the probability or the likelihood the Chouteau Island/Chain or Rocks West levee system will experience another levee breach in any given year is 13%. For the remaining four levee systems it is difficult to specifically establish the probability of future levee failures given none of them have experienced breaches; however, based on the available data, the likelihood that they may experience a failure in any given year is estimated to be less than 5%.

Figure LF-2 Metro East Sanitary District & Chain of Rocks East – Over Top of Levee (OTL) Breach Analysis Summary			
Participating Municipality	OTL Arrival Time	OTL Depth	Critical Facility
Unincorp. Madison County	0-6 hours	15+ feet	- Electrical Substation - Fire Station - Fossil Fuel Electric Power Generation - Potable Water Treatment - Wastewater Treatment Plant - Broadcast Communication - Schools
Collinsville	6-12 hours	15+ feet	- State Police - Potable Water Treatment
Edwardsville	>48 hours	6-15 feet	---
Glen Carbon	> 48 hours	6-15 feet	---
Granite City*	0-6 hours	15+ feet	- Fire/EMS - Law Enforcement - Schools - Hospital - Petroleum Bulk Station - Wastewater Treatment Plant - Pump Stations - Broadcast Communications - Electrical Substation
Madison, City of*	0-6 hours	15+ feet	- Fire/EMS - Law Enforcement - Schools - Electric Substation,
Pontoon Beach	0-6 hours	15+ feet	- Fire/EMS - Law Enforcement - Broadcast Communications,
Venice	0-6 hours	15+ feet	- Schools - Fossil Fuel Electric Power Generation - Pump Stations
Wood River	0-6 hours	15+ feet	- Fire/EMS - Law Enforcement Electrical Substation - Wastewater Treatment Plant

* America's Central Port located within municipal limits
Source: US Army Corps. of Engineers, St. Louis District.

HAZARD VULNERABILITY

The following describes the vulnerability to participating jurisdictions, identifies the impacts on public health and property (if known) and estimates the potential impacts on public health and safety as well as buildings, infrastructure and critical facilities from levee failures.

Are the participating jurisdictions vulnerable to levee failures?

Yes. Alton, America's Central Port, Collinsville, Collinsville CUSD #10, Collinsville Township, East Alton, Edwardsville, Glen Carbon FPD, Granite City, City of Madison, Metro East Sanitary District, Nameoki Township, Pontoon Beach, Roxana, Roxana CUSD #1, South Roxana FPD, SIUE, Venice, Wood River, Wood River D&LD, Wood River-Hartford ESD #15, and unincorporated Madison County are vulnerable to the dangers presented by levee breaches. None of the other participating jurisdictions or the remainder of the County are considered vulnerable. Since 2014, two confirmed levee failures have occurred in Madison County.

Levee Failure Fast Facts – Risk

Levee Failure Impacts:

- ❖ Total Property Damage: *n/a*
- ❖ Total Crop Damage: *n/a*
- ❖ Injuries: *n/a*
- ❖ Fatalities: *n/a*

Levee Failure Risk/Vulnerability:

- ❖ Public Health & Safety – MESD/Chain of Rocks East and Wood River D&LD Lower System: **High**
- ❖ Public Health & Safety – Wood River D&LD East & West System and Wood River D&LP Upper System: **Low to Medium**
- ❖ Public Health & Safety – Chateau Island/Chain of Rocks West: **Low**
- ❖ Buildings/Infrastructure/Critical Facilities – MESD/Chain of Rocks East and Wood River D&LD Lower System: **High**
- ❖ Buildings/Infrastructure/Critical Facilities – Wood River D&LP Upper System: **Medium**
- ❖ Buildings/Infrastructure/Critical Facilities – Chateau Island/Chain of Rocks West and Wood River D&LD East & West System: **Low**

Have any of the participating jurisdictions identified specific assets vulnerable to the impacts of levee failures?

Yes. Based on responses to an Assets Vulnerability Survey distributed to the participating jurisdictions, 18 of the 22 participants located within leveed areas considered specific assets within their jurisdictions vulnerable to levee failures. **Appendix I** contains copies of the completed surveys that outline problem statements summarizing their vulnerabilities to levee failures.

What impacts resulted from the recorded levee failures?

Property and crop damage figures were either unavailable or none were recorded, and no injuries or fatalities were reported as a result of the four reported levee breaches in Madison County.

What other impacts can result from levee failures?

Aside from causing damage to buildings, infrastructure and critical facilities, floodwaters released due to a levee breach also pose biological and chemical risks to public health. Flooding can force untreated sewage to mix with floodwaters. The polluted floodwaters then transport the biological

contaminants into buildings and basements and onto roads and public areas. If left untreated, the floodwaters can serve as breeding grounds for bacteria and other disease-causing agents. Even if floodwaters are not contaminated with biological material, basements and buildings that are not properly cleaned can grow mold and mildew which can pose a health hazard, especially for small children, the elderly and those with specific allergies. Flooding also has the potential to contaminate drinking water sources used for both human and livestock consumption.

Flooding resulting from a levee breach can also cause chemical contaminants such as gasoline and oil to enter the floodwaters if underground storage tanks or pipelines crack and begin leaking during an event. Depending on the time of year, floodwaters also may carry away agricultural chemicals that have been applied to farm fields.

What is the level of vulnerability to public health and safety from levee failures?

In terms of the risk or vulnerability to public health and safety from a levee failure, there are several factors that must be taken into consideration including the magnitude or severity of the precipitating event (whether an earthquake or flooding); the extent and type of development and infrastructure protected by the levee; the amount of time available to enact emergency measures such as evacuations; and USACE's Risk Classification Rating. **Figure LF-4** identifies the number of individuals vulnerable to a levee failure by levee system, the USACE's Levee Safety Action Classification (LSAC) Risk Rating assigned to each levee system and the assessment date, if available. The USACE's Risk Classification Rating has five classes: Very Low, Low, Moderate, High and Very High.

Figure LF-4 Number of Individuals Vulnerable to a Levee Breach				
Levee System Name	Total Number of Individuals Protected by Levee	Estimated Number of Individuals Protected by Levee in Madison County[†]	USACE LSAC Risk Rating	Risk Rating Assessment Date
Chateau Island/Chain of Rocks West	150	150	Low	10/31/2017
MESD/Chain of Rocks East ¹	126,735	55,750 [†]	High	09/29/2017
Wood River D&LD East & West System	648	648	Low	2/28/2018
Wood River D&LD Lower System	14,920	14,920	Moderate	12/6/2018
Wood River D&LD Upper System	575	575	Moderate	5/31/2015

¹ District extends between Madison & St. Clair Counties

[†]A population estimate was made by the Consultant based upon a ratio of the urban populations in Madison and St. Clair Counties in the levee-protected area.

Source: US Army Corps of Engineers, National Levee Database.

When all these factors are taken into consideration, the overall risk to public health and safety posed by a levee failure from the levees in Madison County is considered to be **high** for MESD/Chain of Rocks East and Wood River D&LD Lower System, **low to medium** for Wood River D&LD East & West System and Wood River D&LP Upper System, and **low** for Chateau Island/Chain of Rocks West.

Are existing buildings, infrastructure and critical facilities vulnerable to levee failures?

Yes. Buildings, infrastructure and critical facilities located within the leveed areas are vulnerable to levee failures. **Figure LF-5**, located at the end of this section, identifies infrastructure and critical facilities vulnerable to a levee failure by participating jurisdiction while **Figure LF-6** identifies the number of existing structures vulnerable to a levee failure by levee system, the total estimated property value of the vulnerable structures and the participating jurisdiction the structures are located within. These counts were acquired from the USACE's National Levee Database. The estimated property value is a sum of the structure value, structure contents and vehicles in the leveed area. The value does not include economic productivity loss, transportation infrastructure values (i.e., bridges, runways, roads) or land value.

Figure LF-6
Number of Existing Structures Vulnerable to a Levee Failure

Levee System Name	<u>Total</u> Number of Vulnerable Structures	Estimated Number of Vulnerable Structures in Madison County [†]	<u>Total</u> Estimated Property Value of Vulnerable Structures	Estimated Value of Vulnerable Structures in Madison County	Structure Locations in Madison County
Chateau Island/Chain of Rocks West	4	4	\$8,000,000	\$8,000,000	Madison, City of, Unincorp. Madison County
MESD/Chain of Rocks East	46,922	20,650 [†]	\$8,000,000,000	\$3,500,000,000	Venice, Fairmont City, Granite City, Collinsville, and Unincorp. Madison County
Wood River D&LD East & West System	172	172	\$92,000,000	\$92,000,000	Alton, East Alton
Wood River D&LD Lower System	10,206	10,206	\$2,000,000,000	\$2,000,000,000	Alton, East Alton, Hartford, Roxana, Unincorp. Madison County
Wood River D&LD Upper System	88	88	\$509,600,000	\$509,600,000	Alton, Unincorp. Madison County

[†]District extends between Madison & St. Clair Counties

[†]An estimate of vulnerable structures was made by the Consultant based upon a ratio of the urban populations in Madison and St. Clair Counties in the levee-protected area.

Source: US Army Corps. of Engineers, National Levee Database.

Depending on the magnitude of the breach, all of the vulnerable buildings, infrastructure and critical facilities may be inundated by water and structural and content damage may result. In addition to impacting structures, a levee failure can damage roads and utilities. Roadways and culverts can be weakened by levee failure floodwaters and may collapse under the weight of a vehicle. Power and communication lines, both above and below ground, are also vulnerable to levee failure flooding. Depending on their location and the velocity of the water as it escapes the levee, power poles may be snapped causing disruptions to power and communication. Water may also get into any buried lines causing damage and disruptions.

As with public health and safety, the risk or vulnerability to buildings, infrastructure and critical facilities is dependent on several factors including the magnitude or severity of the precipitating event (whether an earthquake, general flood or flash flood), the extent and type of development and infrastructure protected by the levee, the amount of time available to implement emergency measures such as sandbagging, and the USACE's Risk Classification Rating. The following provides an evaluation of the risk to buildings, infrastructure and critical facilities by system.

Chouteau Island/Chain of Rocks West

In terms of the Chouteau Island/Chain of Rocks West levee system, the risk or vulnerability to existing buildings, infrastructure and critical facilities is considered to be **low** due in part to the number and type of at-risk structures and the USACE's LSAC assessment. The USACE's Levee Safety Senior Oversight Group indicated in its analysis that the levee system has prevented the Madison County properties from flooding during numerous flood events, however the Chouteau Island levee segment has a history of overtopping during moderate Mississippi River flood events resulting in breach. There is a possibility that in any given year floodwaters could overtop or breach the levee system. A levee failure could result in flooding of depths of over 20 feet and economic damage.

MESD/Chain of Rocks East

The risk or vulnerability to existing buildings, infrastructure and critical facilities is considered to be **high** for the MESD/Chain of Rocks East levee system. The USACE's Levee Safety Senior Oversight Group indicated in its analysis that the levee system has prevented the community from flooding during numerous major flood events, however these events have also exposed vulnerabilities in the system, and there is a possibility that in any given year floodwaters could overtop or breach the levee. A levee failure could result in flooding of depths up to 45 feet and extensive economic damage. Due to the heavily industrialized region, the consequences of failure are high. Therefore, partnerships with the local sponsor, local community and USACE to implement flood risk management activities are essential.

Wood River Drainage & Levee District East and West System

In terms of the Wood River D&LD East and West System, the risk or vulnerability to existing buildings, infrastructure and critical facilities is considered to be **low** due in part to the number and type of at-risk structures and the US LSAC assessment. The USACE's Levee Safety Senior Oversight Group indicated in its analysis that the levee system has prevented flooding during numerous major flood events. Though the system has historically performed generally well during flood events, there is a possibility that in any given year floodwaters could overtop or breach the levee system. A levee failure could result in flooding of depths of more than 14 feet and economic damage.

Wood River Drainage & Levee District Lower System

The risk or vulnerability to existing buildings, infrastructure and critical facilities is considered to be **high** for the Wood River D&LD Lower System. The USACE's Levee Safety Senior Oversight Group indicated in its analysis that the levee system has prevented Madison County communities from flooding during numerous major flood events. During the record-setting flood of 1993, significant seepage was observed and under seepage remains a primary concern with the system. Though significant investments have been made in remediation, including over \$25.5 million by

the local sponsor, additional work is needed. There remains a possibility that in any given year floodwaters could overtop or breach the levee system. A levee failure could result in flooding of depths of up to 42 feet and significant economic damage.

Wood River Drainage & Levee District Upper System

In terms of the Wood River D&LD Upper System, the risk or vulnerability to existing buildings, infrastructure and critical facilities is considered to be **medium** due in part to the number and type of at-risk structures and the US LSAC assessment. The USACE's Levee Safety Senior Oversight Group indicated in its analysis that the levee system has prevented Madison County communities from flooding during numerous major flood events. During the record-setting flood of 1993, significant seepage was observed throughout the system and remains a primary concern. Additionally, under seepage was observed adjacent to the Melvin Price Lock and Dam in 2009. It was determined that increased water levels resulting from the locks and dam operations caused increased water pressure within the levee foundation at this location, causing increased under seepage concerns. Though significant investments have been made in remediation, including over \$6.4 million by the local sponsor, additional work is needed. Under seepage could contribute to a levee failure if uncontrolled. There is a possibility that in any given year floodwaters could overtop or breach the levee system. A levee failure could result in flooding of depths of 26 feet and significant economic damages.

Are future buildings, infrastructure and critical facilities vulnerable to levee breaches?

Yes. Any future buildings, infrastructure and critical facilities located within the studied levee systems of significance are vulnerable to damage from a levee breach. As a result, future buildings, infrastructure and critical facilities face the same vulnerabilities as those of existing buildings, infrastructure and critical facilities described previously.

What are the potential dollar losses to vulnerable structures from levee failures?

Unlike other hazards, there are no standard loss estimation models or methodologies for levee failures. With no recorded events listing property damage numbers for levee failures, there is no way to reasonably estimate future potential dollar losses. However, according to the National Levee Database, the total estimated property value of vulnerable structures in the leveed areas in Madison County is \$6.1 billion. Since all of the structures in the leveed areas are susceptible to levee failure impacts to varying degrees, this total represents the maximum property exposure to levee failures.

**Figure LF-5
Critical Facilities/Infrastructure Vulnerable to a Levee Breach by Vulnerable Participating Jurisdiction**

Participating Jurisdiction	Government ¹ Flood Control	Law Enforcement	Fire Stations	Ambulance Service	Schools	Drinking Water	Wastewater Treatment	Medical ²	Healthcare Facilities ³
Madison County	1	---	---	---	---	---	---	---	---
Alton	---	---	---	---	---	---	1	---	---
America's Central Port	1	---	---	---	---	---	---	---	---
Collinsville	---	---	---	---	---	1	1	---	1
East Alton	2	1	1	---	2	1	1	1	---
Edwardsville	---	---	---	---	---	---	---	---	---
Granite City	2	1	3	1	13	---	1	8	4
Madison, City of	1	1	1	---	2	---	---	---	---
Pontoon Beach	2	1	1	---	---	---	---	---	---
Roxana	1	1	1	---	3	1	1	---	---
Venice	2	1	1	---	3	---	---	---	---
Wood River	1	1	1	---	2	1	1	1	6
Collinsville Township	1	---	---	---	---	---	---	---	---
Nameoki Township	1	---	---	---	---	---	---	---	---
Collinsville CUSD #10	---	---	---	---	2	---	---	---	---
Roxana CUSD #1	---	---	---	---	---	---	---	---	---
SIUE	---	---	---	---	3	---	---	---	---
Wood River-Hartford ESD #15	---	---	---	---	2	---	---	---	---
Glen Carbon FPD	---	---	---	---	---	---	---	---	---
South Roxana FPD	---	---	1	---	---	---	---	---	---
Metro East Sanitary District	---	---	---	---	---	---	---	---	---
Wood River D&LD	12	---	---	---	---	---	---	---	---

¹ Government includes: courthouses, city/village halls, township buildings, highway/road maintenance centers, etc.

² Medical includes: public health departments, hospitals, urgent/prompt care and medical clinics.

³ Healthcare Facilities include: nursing homes, skilled care facilities, memory care facilities, residential group homes, etc.

3.12 DAM FAILURES

HAZARD IDENTIFICATION

What is the definition of a dam?

A dam is an artificial barrier constructed across a stream channel or a man-made basin for the purpose of storing, controlling or diverting water. Dams typically are constructed of earth, rock, concrete or mine tailings. The area directly behind the dam where water is impounded or stored is referred to as a reservoir.

According to the U.S. Army Corps of Engineers' National Inventory of Dams (NID), there are approximately 91,785 dams in the U.S. and Puerto Rico, with 1,639 dams located in Illinois. (The NID is maintained by the U.S. Army Corps of Engineers and is updated approximately every two years.) Of the 1,639 dams in Illinois, approximately 93.5% are constructed of earth.

What is the definition of a dam failure?

A dam failure is the partial or total collapse, breach or other failure of a dam that causes flooding downstream. In the event of a dam failure, the people, property and infrastructure downstream could be subject to devastating damages. The potential severity of a full or partial dam failure is influenced by two factors:

- the capacity of the reservoir and
- the density, type and value of development/infrastructure located downstream.

There are two categories of dam failures, “flood” or “rainy day” failures and “sunny day” failures. A “flood” or “rainy day” failure usually results when excess precipitation and runoff cause overtopping or a buildup of pressure behind a dam which leads to a breach. Even normal storm events can lead to “flood” failures if debris plugs the water outlets. Given the conditions that lead to a “flood” failure (i.e., rainfall over a period of hours or days), there is usually a sufficient amount of time to warn and evacuate residents downstream.

Unlike a “flood” failure, there is generally no warning associated with a “sunny day” failure. A “sunny day” failure is usually the result of improper or poor dam maintenance, internal erosion, vandalism or an earthquake. This unexpected failure can be catastrophic because it may not allow enough time to warn and evacuate residents downstream.

No one knows precisely how many dam failures have occurred in the U.S.; however, it's estimated that hundreds have taken place over the last century. Some of the worst failures have caused catastrophic property and environmental damage and have taken hundreds of lives. The worst dam failure in the last 50 years occurred on February 26, 1972 in Buffalo Creek, West Virginia. A tailings dam owned by the Buffalo Mining Company failed, taking 125 lives, injuring 1,100 individuals, destroying approximately 550 homes and causing property damage in excess of \$50 million (approximately \$298.6 million in 2017 based on the Bureau of Labor Statistics Consumer Price Index Inflation Calculator.)

Dam failures have been documented in every state, including Illinois. According to the Dam Incident Database compiled by the National Performance of Dams Program, there have been 10 reported dam failures with uncontrolled releases of the reservoir in Illinois since 1950.

What causes a dam failure?

Dam failures can result from one or more of the following:

- ***prolonged periods of rainfall and flooding*** (the cause of most failures);
- ***inadequate spillway capacity*** resulting in excess flow overtopping the dam;
- ***internal erosion*** caused by embankment or foundation leakage;
- ***improper maintenance*** (including failure to remove trees, repair internal seepage problems, maintain gates, valves and other operational components, etc.);
- ***improper design*** (including use of improper construction materials and practices);
- ***negligent operation*** (including failure to remove or open gates or valves during high flow periods);
- ***failure of an upstream dam on the same waterway***;
- ***landslides into reservoirs*** which cause surges that result in overtopping of the dam;
- ***high winds*** which can cause significant wave action and result in substantial erosion; and
- ***earthquakes*** which can cause longitudinal cracks at the tops of embankments that can weaken entire structures.

How are dams classified?

Each dam listed on the National Inventory of Dams is assigned a hazard potential classification rating per the “Federal Guidelines for Dam Safety: Hazard Potential Classification System for Dams.” The classification system is based on the potential for loss of life and damage to property in the event of a dam failure. There are three classifications: High, Significant and Low. **Figure DF-1** provides a brief description of each hazard potential classification. It is important to note that the hazard potential classification assigned is not an indicator of the adequacy of the dam or its physical integrity and in no way reflects the current condition of the dam.

Figure DF-1 Dam Hazard Classification System	
Hazard Potential Classification	Description
High	Those dams where failure or mis-operation result in probable loss of human life, regardless of the magnitude of other losses. The probable loss of human life is defined to signify one or more lives lost.
Significant	Those dams where failure or mis-operation result in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities or can impact other concerns. Significant hazard potential classification dams are often located in predominately rural or agricultural areas but could be located in areas with population and significant infrastructure.
Low	Those dams where failure or mis-operation results in no probable loss of human life and low economic and/or or environmental losses. Losses are principally limited to the dam owner’s property.

Sources: Federal Emergency Management Agency
U.S. Army Corps of Engineers

HAZARD PROFILE

According to the USACE National Inventory of Dams, there are 65 classified dams located in Madison County. Of those 65 dams, only 12 have a hazard potential classification of “High”. The remaining 53 dams all have a hazard potential classification of “Significant” or “Low”, do not have reservoirs with immense storage capacities and are not located in densely populated areas. Due to the limited impacts on the population, land use and infrastructure associated with a majority of the classified dams, only those dams that have “High” hazard potential classification will be analyzed as part of this Plan update.

While the Pin Oak Drive Pond Dam has a hazard potential classification of “High” according to the National Inventory of Dams, it has a surface area of only 2 acres and a dam height of just 14 feet, which makes it a “Small” size classification dam. Based on the topographic relief of the area, water from a dam failure will flow east, impacting approximately ten to fifteen residential structures on Pin Oak Drive, Black Oak Drive, and Brook Road. Given that these roadways offer a wide unobstructed areas for the water to spread out quickly, the impacts from a potential dam failure are considered to be limited and not likely to cause any loss of life. If the appropriate studies were conducted to determine the accurate hazard potential classification of this dam, it would not likely have a “High” classification. As a result, this dam was not analyzed as part of this Plan.

The following details the location of “High” hazard classified dams, identifies past occurrences of dam failures, details the severity or extent of future potential failures (if known); identifies the locations potentially affected and estimates the likelihood of future occurrences.

Do any of the participating jurisdictions own “High” hazard dams?

Yes. There is one “High” hazard classified dam owned by Wood River. **Figure DF-2** provides a brief description of each dam.

Are there any other publicly or privately-owned “High” hazard dams within the County?

Yes. There are 10 privately-owned “High” hazard classified dams within Madison County. **Figure DF-2** provides a brief description of each dam.

When have dam failures occurred previously?

According to data from Stanford University’s National Performance of Dams Incident Database and discussions with Committee members, there are no known recorded dam failures associated with the “High” hazard dams in Madison County.

Dam Failure Fast Facts – Occurrences

Number of “High” Hazard Classified Dams Located in the County: **12**

Number of “High” Hazard Classified Dams Located in the County: **11**

Number of “High” Hazard Dams owned by Participating Jurisdictions: **1**

Number of Dam Failures Reported: **None**

Probability of Future Dam Failure Events: **Low**

Figure DF-2 “High” Hazard Classified Dams Located in Madison County (Sheet 1 of 2)												
Dam Name	Hazard Classification	Associated Waterway	Owner	Type	Primary Purpose	Completion Year	Height (feet)	Length (feet)	Storage (acre-feet)	Impoundment Surface Area (acres)	Drainage Area (square miles)	Emergency Action Plan
Publicly-Owned												
Glendale Gardens Detention Pond Dam	High	Tributary Smith Lake	City of Wood River	Earth	Flood Control	1998	18	3500	410	n/a	n/a	Yes
Privately-Owned												
Alton-Wood River Sportsmen’s Reservoir Dam	High	Tributary Coal Branch Creek	Alton-Wood River Sportsmen’s Club	Earth	Recreation	1948	33	480	119	11	0.1	Yes
Arrow Wood Lake Dam	High	n/a	n/a	Earth	Recreation	2000	15	500	n/a	2	n/a	No
Castle Ridge Lake Dam	High	Tributary Mill Creek	Castle Ridge Estates HOA	Earth	Recreation	2002	42	875	209	14.	0.17	Yes
Dunlap Lake Dam	High	Mooney Creek	Dunlap Lake Property Owners Association	Earth	Recreation	1941	45	850	5660	205	4.1	Yes
Dynegy/Wood River East Ash Disposal Pond Dam	High	Tributary Wood River	Dynegy Midwest Generation, LLC	Earth	Tailings	2005	33	5315	506	31	0.06	Yes
Gateway Medical Lake Dam	High	Tributary Cahokia Creek	Granite City Hospital Co., LLC	Earth	Recreation	1939	31	230	26.45	n/a	0.04	Yes
Godfrey Pond Dam	High	Rocky Fork	n/a	Earth	Recreation	1900	20	500	194	14	0.3	No

Figure DF-2
“High” Hazard Classified Dams Located in Madison County
 (Sheet 2 of 2)

Dam Name	Hazard Classification	Associated Waterway	Owner	Type	Primary Purpose	Completion Year	Height (feet)	Length (feet)	Storage (acre-feet)	Impoundment Surface Area (acres)	Drainage Area (square miles)	Emergency Action Plan
Privately-Owned												
Hawthorne Hills Dam	High	Tributary East Mooney Cr	Hawthorne Hills Development, LLC	Earth	Recreation	n/a	21	1200	48	4	0.4	No
Oakland Hills Dam	High	Tributary Wendell Br	Cox and Swindell	Earth	Recreation	1940	16	240	51	5	n/a	No
Paradise Lake Dam	High	Tributary East Fork Wood River	Dean Landreth	Earth	Recreation	n/a	20	390	n/a	n/a	n/a	No

Sources: Stanford University, National Performance of Dams Program, NPDP Dams Database.
 U.S. Army Corps of Engineers, National Inventory of Dams Interactive Report.

What is the extent of future potential dam failures?

According to the USACE National Inventory of Dams, Emergency Action Plan (EAP) defining the extent or magnitude of a potential dam failure (water depth, area of impact) were not developed or were not required to be developed for five of the 11 “High” hazard dams. While the EAPs for the Dunlap Lake Dam and the Gateway Medical Lake Dam were made available to the Madison County Emergency Management Agency, the EAPs for Alton-Wood River Sportsmen’s Reservoir Dam, Castle Ridge Lake Dam, Glendale Gardens Detention Pond Dam, and Dynegy/Wood River East Ash Disposal Pond Dam were not. A review of the Gateway Regional Medical Center Lake and Dam EAP found that it did not contain a detailed breach analysis. As a result, a data deficiency exists in terms of defining the extent or magnitude of future potential dam failures.

The EAP for the Dunlap Lake Dam was reviewed and included inundation maps and estimated inundation times and depths based on a Sunny Day dam failure and 0.6 Probably Maximum Flood (PMF) breach. The 0.6 PMF is a rainy-day failure scenario that refers to the flood magnitude that may be expected from the worst combination of meteorological and hydrologic conditions for a watershed. A Sunny Day failure results from a structural breach at a time when the reservoir is at normal pool level with less water entering the reservoir

and therefore a smaller amount of water is being released at a lesser velocity than would occur during a 0.6 PMF. **Figure DF-3** details the estimated inundation time and depth based on distance downstream for a Sunny Day and 0.6 PMF breach event for Dunlap Lake Dam.

Figure DF-3 Dunlap Lake Dam – Water Depth and Speed of Onset Estimates for Sunny Day & Probable Maximum Flood			
Location	Distance Downstream from Dam (miles)	Sunny Day Time of Peak Flow (hr:mm)	0.6 PMF Time of Peak Flow (hr:mm)
Schwartz Road	0.08	0:01	0:01
East Schwartz Road	0.18	0:12	0:12
Nickel Plate Trail	0.25	0:15	0:15
Illinois Route 143 (Vandalia Ave.)	0.53	0:35	0:35
Mooney Creek Lane	1.34	0:42	0:42
Illinois Route 157	1.61	0:45	0:45
Quercus Grove Trail	1.78	n/a	0:47

What locations are affected by dam failure?

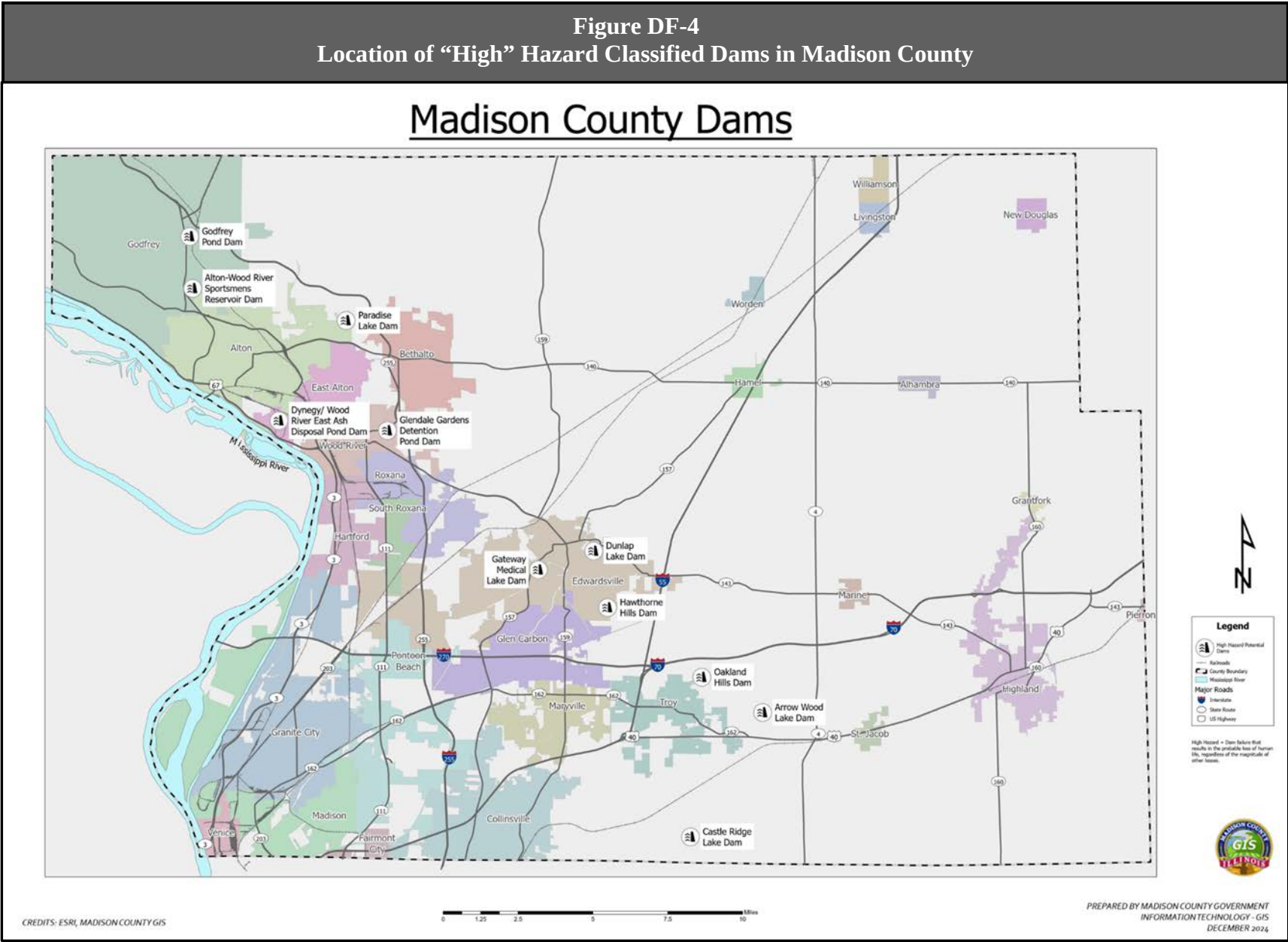
Figure DF-4 shows the locations of “High” hazard classified dams in Madison County. Dam failures have the potential to impact the following municipalities/unincorporated areas:

- ❖ Alton (north of IL Route 143 and east of Chesson Lane)
- ❖ Alton/Cottage Hills (north of Storey Lane and west of Stanley Road)
- ❖ Edwardsville (south of IL Route 143 and east of Schwarz Road)
- ❖ Edwardsville (north of University Drive and east of IL Route 157)
- ❖ Edwardsville (south of Goshen Road and east of Gerber Road)
- ❖ Godfrey (south of Nicolet Drive and east of IL Route 111)
- ❖ Godfrey (south of IL Route 255 and east US Route 67)
- ❖ Wood River (south of IL Route 111 and east of Wesley Dr.)
- ❖ Residential area approximately two and one-half miles south of Troy (north of County Road 32 and west of County Road 50)
- ❖ Residential area one-half mile north of Troy (north of Oakland Drive and east of County Road 21)
- ❖ Residential area one and three-quarter miles east of Troy (south of Schmaltz Road and east of Schaefer Road)

What is the probability of future dam failure events occurring?

Since none of the “High” hazard dams have experienced a dam failure, it is difficult to specifically establish the probability of a future failure. However, based on the capacity of the reservoirs and the scope and type of development and infrastructure located downstream, the probability is estimated to be **low**. For the purposes of this analysis “low” is defined as having a less than 10% chance of occurring in any given year.

Figure DF-4
Location of “High” Hazard Classified Dams in Madison County



HAZARD VULNERABILITY

The following describes the vulnerability to participating jurisdictions, identifies the impacts on public health and property (if known) and estimates the potential impacts on public health and safety as well as buildings, infrastructure, and critical facilities from dam failures.

Are the participating jurisdictions vulnerable to dam failures?

Yes. Alton, Edwardsville, Edwardsville Township, Godfrey, Troy FPD, Wood River, Wood River D&LD and portions of unincorporated Madison County are vulnerable to the dangers presented by dam failures. While these areas are vulnerable to the dangers presented by dam failures are vulnerable, most residents would not be impacted by a dam failure. None of the other participating jurisdictions or the remainder of the County are considered vulnerable.

Have any of the participating jurisdictions identified specific assets vulnerable to the impacts of dam failures?

Yes. Based on responses to an Assets Vulnerability Survey distributed to the participating jurisdiction, five of the eight participants near “High” hazard classified dams consider specific assets within their jurisdictions vulnerable to dam failures. **Appendix I** contains copies of the completed surveys that outline problem statements summarizing their vulnerabilities to dam failures.

What impacts resulted from the recorded dam failures?

Since there have been no *recorded* dam failures associated with the classified dams in Madison County, there are no recorded impacts to report.

What other impacts can result from dam failures?

The impacts from a dam failure are similar to those of a flood. There is the potential for injuries, loss of life, property damage, and crop damage. Depending on the

type of dam failure, there may be little, if any warning that an event is about to occur, similar to flash flooding. As a result, one of the primary threats to individuals is from drowning. Motorists who choose to drive over flooded roadways run the risk of having their vehicles swept off the road and downstream. Flooding of roadways is also a major concern for emergency response personnel who would have to find alternative routes around any section of road that becomes flooded due to a dam failure.

Dam Failure Fast Facts – Risk

Dam Failure Risk/Vulnerability:

- ❖ Public Health & Safety: “High” Hazard Classification Dam – **Low to Medium**
- ❖ Buildings/Infrastructure/Critical Facilities: “High” Hazard Classification Dam – **Low to Medium**

In addition to concerns about injuries and death, the water released by a dam failure poses the same biological and chemical risks to public health as floodwaters. The flooding that results from a dam failure has the potential to force untreated sewage to mix with floodwaters. The polluted floodwaters then transport the biological contaminants into buildings and basements and onto roads and public areas. If left untreated, the floodwaters can serve as breeding grounds for bacteria and other disease-causing agents. Even if floodwaters are not contaminated with biological material, basements and buildings that are not properly cleaned can grow mold and mildew, which

can pose a health hazard, especially for small children, the elderly, and those with specific allergies.

Flooding from dam failures also can cause chemical contaminants such as gasoline and oil to enter floodwaters if underground storage tanks or pipelines crack and begin leaking during a dam failure event. Depending on the time of year, the water released by a dam failure also may carry away agricultural chemicals that have been applied to farm fields and cause damage to or loss of crops.

What is the level of vulnerability to public health and safety from dam failures?

In terms of the risk or vulnerability to public health and safety from a dam failure, there are several factors that must be taken into consideration including the severity of the event, the capacity of the reservoir and the extent and type of development and infrastructure located downstream. When these factors are taken into consideration, the overall risk to public health and safety posed by a dam failure at the “High” hazard dams studied in Madison County is considered to be **low to medium**.

Are existing buildings, infrastructure, and critical facilities vulnerable to dam failures?

Yes. The EAP for Dunlap Lake Dam included inundation maps, figures, and narrative that identified potentially impacted structures, as well as time of onset while the Gateway Regional Medical Center Lake and Dam EAP included an inundation maps and a list of potentially impacted structures. **Figures DF-5 and DF-6** provide a breakdown of the buildings and infrastructure vulnerable to a dam failure based on each scenario.

Figure DF-5 Dunlap Lake Dam – Buildings and Infrastructure Vulnerable to a Dam Failure				
Scenario	Number of Impacted Buildings/Infrastructure			
	Residential Homes	Business/ Commercial	Roadways / Bridges	Trails
Sunny Day	83	2	4	1
0.6 Probable Maximum Flood (PMF)	121	2	10	1

Figure DF-6 Gateway Regional Medical Center Lake & Dam – Buildings and Infrastructure Vulnerable to a Dam Failure						
Scenario	Number of Impacted Buildings/Infrastructure					
	Residential			Commercial	Roadways	Trails
	Apartment Buildings	Condo Buildings	Duplexes			
0.5 Probable Maximum Flood (PMF)	5	1	4	---	3	1

As discussed previously, EAPs detailing the existing buildings, infrastructure and critical facilities vulnerable to a dam failure were not developed or were not required to be developed for five of the 11 dams. In addition, the EAPs for Alton-Wood River Sportsmen’s Reservoir Dam, Castle Ridge Lake Dam, Glendale Gardens Detention Pond Dam, and Dynegy/Wood River East Ash Disposal Pond Dam were not provided to the Madison County Emergency Management Agency. As a result, a data deficiency exists in terms of comprehensively identifying existing buildings,

infrastructure, and critical facilities vulnerable to dam failures for these dams. While detailed information was not available for these nine “High” hazard classified dams, the Consultant conducted a visual inspection of the areas surrounding the dams in order to provide an estimate of the number of potentially-impacted buildings, infrastructure, and critical facilities that are vulnerable to a dam failure. **Figure DF-7**, located at the end of this section, provides a **rough estimate** of the buildings, infrastructure and critical facilities vulnerable to a dam failure from these “High” hazard dam in Madison County.

Depending on whether there is a full or partial dam failure, all of the vulnerable buildings, infrastructure and critical facilities may be inundated by water and structural damage may result. Because none of the reservoirs are immense in size, the damage sustained from dam failure flooding may not be to the structure, but to the contents of the buildings or nearby infrastructure and critical facilities.

In addition to impacting structures, a dam failure can damage roads and utilities. Roadways, culverts and bridges can be weakened by dam failure floodwaters and may collapse under the weight of a vehicle. Power and communication lines, both above and below ground, are also vulnerable to dam failure flooding. Depending on their location and the velocity of the water as it escapes the dam, power poles may be snapped causing disruptions to power and communication. Water may also get into any buried lines causing damage and disruptions.

As with public health and safety, the risk or vulnerability to buildings, infrastructure and critical facilities is dependent on several factors including the severity of the event, the capacity of the reservoir and the extent and type of development and infrastructure located downstream. When these factors are taken into consideration, the overall risk to existing buildings, infrastructure, and critical facilities posed by a dam failure in Madison County is considered to be **low** to **medium** for the “High” hazard dams.

Are future buildings, infrastructure, and critical facilities vulnerable to dam failures?

Yes. Any future buildings, infrastructure, and critical facilities located within the flood path of a “High” hazard dam are vulnerable to damage from a dam failure. As a result, future buildings, infrastructure, and critical facilities face the same vulnerabilities as those of existing buildings, infrastructure, and critical facilities described previously.

What are the potential dollar losses to vulnerable structures from dam failures?

Unlike other hazards, there are no standard loss estimation models or methodologies for dam failures. Given that there have been no recorded dam failures in Madison County, sufficient information was not available to prepare a reasonable estimate of future potential dollar losses to vulnerable structure from a dam failure.

Figure DF-7
Buildings, Infrastructure & Critical Facilities Vulnerable to a Dam Failure
 (Sheet 1 of 2)

Dam Name	Location	Number of Vulnerable Buildings/Infrastructure			
		Residential	Commercial	Infrastructure	Critical Facilities
Alton-Wood River Sportsmen's Reservoir Dam	Godfrey	5-10	1	- Luella Ave. - Mary Ave. - Anna Ave. - Alby St.	---
Arrow Wood Lake Dam	1 ¾ Miles east of Troy	0-1	---	---	---
Castle Ridge Lake Dam	2 ½ miles south of Troy	1-5	---	- IL Rte. 50	---
Dynegy/Wood River East Ash Disposal Pond Dam	Alton	---	---	---	- Wood River Power Station - City of Alton- Waste Water Treatment Plant - BOC Gasses Site (DMG Property) - Unoccupied
Glendale Gardens Detention Pond Dam	Wood River	Single-Family 50-175 Multi-Family 0-2	25-45	- Wesley Dr. - IL Rte. 111 - Memorial Ln. - Harrison St. - Avalon St. - Greenview St. - Bonita St. - Vista St. - Miland St. - Rock Hill Rd. - Shawnee - Tomarora - Old Alton Edwardsville Rd.	- The United Presbyterian Church - Ivy Heights Church of God
Godfrey Pond Dam	Godfrey	1-5	1-4	- US Rte. 67. - Winter Ln. - Pearl St.	- Village of Godfrey Public Works-Roberts Complex

Figure DF-7
Buildings, Infrastructure & Critical Facilities Vulnerable to a Dam Failure
 (Sheet 2 of 2)

Dam Name	Location	Number of Vulnerable Buildings/Infrastructure			
		Residential	Commercial	Infrastructure	Critical Facilities
Hawthorne Hills Dam	Edwardsville	1-5	---	- Goshen Rd - Garvey Ln	---
Oakland Hills Dam	½ mile north of Troy	5-10	---	- Oakland Dr - Jacob Ct - Red Oak Ln	---
Paradise Lake Dam	Alton/Cottage Hills	Single – Family 5-10 Multi-Family 5-15	---	- Storey Ln - Snow White Terrace - Bambi Ct - Sandy Ct - Cinderella Dr - Manor Dr	---

3.13 MAN-MADE HAZARDS

While the focus of this Plan update is on natural hazards, an **overview of selected man-made hazards** has been included. The Planning Committee recognizes that man-made hazards can also pose risks to public health and property. The extent and magnitude of the impacts that result from man-made hazard events can be influenced by natural hazard events. For example, severe winter storms can cause accidents involving trucks transporting hazardous substances. These accidents may lead to the release of these substances, which can result in injury and potential contamination of the natural environment.

Consequently, the Planning Committee decided to summarize the more prominent man-made hazards in Madison County. The man-made hazards profiled in this Plan update include:

❖ Hazardous Substances	❖ Waste Disposal
➤ Generation	❖ Hazardous Material Incidents
➤ Transportation	❖ Hazardous Waste Remediation
➤ Storage/Handling	❖ Terrorism

While the man-made hazards risk assessment does not have the same depth as the natural hazards risk assessment, it does provide useful information that places the various man-made hazards in perspective.

3.13.1 Hazardous Substances

Hazardous substances broadly include any flammable, explosive, biological, chemical, or physical material that has the potential to harm public health or the environment. For the purposes of this Plan, the term hazardous substance includes hazardous product and hazardous waste. A hazardous waste is defined as the byproduct of a manufacturing process that is either listed or has the characteristics of ignitability, corrosivity, reactivity, or toxicity and cannot be reused. A hazardous product is all other hazardous material.

Hazardous substances can pose a public health threat to individuals at their workplace and where they reside. The type and quantity of the substance, the pathway of exposure (inhalation, ingestion, dermal, etc.), and the frequency of exposure are factors that will determine the risk of adverse health effects experienced by individuals. Impacts can range from minor, short-term health issues to chronic, long-term illnesses.

In addition to impacting public health, hazardous substances can also cause damage to buildings, infrastructure, and the environment. Incidents involving hazardous substances can range from minor (scarring on building floors and walls) to catastrophic (i.e., destruction of entire buildings, structural damage to roadways, etc.) and lead to injuries and fatalities. The number of incidents involving hazardous substances in Illinois and across the U.S. every year underscores the need for trained and equipped emergency responders to minimize damages.

Since 1970, significant changes have occurred in regard to how hazardous substances are transported and disposed. Comprehensive regulations and improved safety and industrial hygiene practices have reduced the frequency of incidents involving hazardous substances. Based on the

number of facilities in Madison County that generate and use hazardous substances, the population size, transportation patterns, and land use, the probability of a release occurring in Madison County should remain relatively higher compared to other counties in Illinois. The relative numbers of transportation incidents should not diminish municipal or county commitment to emergency management.

HAZARD PROFILE – HAZARDOUS SUBSTANCES

The following subsections identify the general pathways – generation, transportation, and storage/handling – by which hazardous substances pose a risk to public health and the environment in Madison County.

3.13.1.1 Generation

In 2022, Madison County had 25 facilities that generated reportable quantities of hazardous substances as a result of their operations according to the U.S. Environmental Protection Agency (USEPA) Toxic Release Inventory. **Figure MMH-1**, located at the end of this section, identifies the hazardous substance generators located in Madison County and summarizes the substances generated.

3.13.1.2 Transportation

Roadways

Illinois has the nation’s third largest interstate system and third largest inventory of bridges. According to the Illinois Department of Transportation, there were just over 147,000 miles of highways and streets in Illinois in 2023. Most of the truck traffic in Madison County is carried on Interstate 55, Interstate 70/270, and Interstate 255. Other major roadways that carry truck traffic include Illinois Route 140, Illinois Route 143, Illinois Route 159, and Illinois Route 255. While this modern roadway system provides convenience and efficiency for commuters, it also aids inter-state and intra-state commerce which includes the transportation of hazardous substances. A Commodity Flow Study to gauge chemical transport in Madison County was completed in August 2022.

According to records obtained from the Illinois Emergency Management Agency (IEMA), there were 11 recorded roadway incidents involving the shipment of hazardous substances in Madison County in the sample years of 2019 and 2023. **Figure MMH-2**, located at the end of this section, provides information on these incidents.

Hazardous Substances Fast Facts - Occurrences

Generation

Number of Facilities that Generate Reportable Quantities of Hazardous Substances (2022): **25**

Transportation

Number of Roadway Incidents Involving Hazardous Substance Shipments (2019 & 2023): **11**

Number of Railway Accidents/Incidents Involving Hazardous Substance Shipments (2019 & 2023): **4**

Number of Pipeline Incidents Involving Hazardous Substances (2019 & 2023): **6**

Storage/Handling

Number of Facilities that Store/Handle Hazardous Substances (2022): **239**

Number of Facilities that Store/Handle Extremely Hazardous Substances (2022): **68**

Figure MMH-2
Roadway Incidents* Involving Shipments of Hazardous Substances
2019 and 2023

Date	Area	Location	Hazardous Product Released	Quantity Released
2/6/2019	Edwardsville	100 Enterprise Dr.	Diesel fuel	23 gallons
2/14/2019	Collinsville [^]	I-255 SB	Diesel fuel	250 gallons
6/11/2019	Hamel	Illinois Route 140 & Illinois Route 157	Electric Arc Furnace Dust	1,000 lbs.
7/8/2019	Glen Carbon [^]	I-270 EB at M.P. 8.5	Diesel fuel	150 gallons
8/26/2019	Troy	819 Edwardsville Rd.	Diesel fuel	50 gallons
9/13/2019	Collinsville [^]	I-70/I-55, Center Median, M.P. 11.5	Diesel fuel	71 gallons
12/19/2019	Highland	I-70 WB, M.P. 26.5	Diesel fuel	100 gallons
2/10/2023	Collinsville [^]	I-55/I-70, M.P. 14	Diesel fuel	60 gallons
2/22/2023	Marine [^]	Illinois Route 4 and Webber Road	Diesel Fuel	100 gallons
4/12/2023	Prairietown [^]	Renken Road	Anhydrous ammonia	Unknown
12/15/2023	Roxanna [^]	US-255 SB	Grain	20 yards ³

* For the purposes of this report a roadway incident is generally defined as an accident/incident that occurs while in the process of transporting a hazardous substance(s) on a highway, roadway, access drive, field entrance, rest area or parking lot. Vehicles that experience a release while refueling are not considered roadway incidents but are instead considered fixed facility incidents.

[^] Accident verified in the vicinity of this area.

Railways

Illinois' rail system is the country's second largest, with the East St. Louis and Chicago terminals being two of the busiest in the nation. In Madison County there are five Class I railroads operating in the County: BNSF, Canadian Pacific/Kansas City, CSXT, Norfolk Southern, and Union Pacific Railroad. Additionally, Amtrak and Alton & Southern Railway operate in Madison County. According to the Association of American Railroads, 4,001,700 carloads (132.4 million tons) of freight originated in Illinois in 2022 (the latest year for which data is available). Chemicals accounted for 103,700 carloads (10.1 million tons); 2.7% of the total carloads and 9.9% of the total freight handled.

The Illinois Commerce Commission (ICC) is required to maintain records on railway accidents/incidents that involve hazardous substances. Their records are divided into three categories. These three categories are described in **Figure MMH-3**.

Figure MMH-3
ICC Hazardous Substances Railroad Accident/Incidents Classification Categories

Category	Description
A	railroad derailments resulting in the release of the hazards substance(s) being transported
B	railroad derailments where hazards substance(s) were being transported but no release occurred
C	releases of hazardous substance(s)s from railroad equipment occurred; however, no railroad derailment was involved

Between 2013 and 2022, there have been 36 rail accidents involving hazardous substances in Madison County according to the ICC. In comparison, ICC records indicate that the annual number of railway accidents in Illinois involving hazardous substances has ranged between 45 and 122 between 2013 and 2022. **Figure MMH-4**, located at the end of this section, provides a breakdown by category of the ICC-recorded railway accidents/incidents involving hazardous substances. Included is a comparison of the number of accidents/incidents in Madison County to those in Cook and the Collar Counties as well as the rest of Illinois.

According to IEMA's hazardous materials incident records for the sample years of 2019 and 2023, there were four rail accidents/incidents involving the release of hazardous substances. **Figure MMH-5** provides information on these incidents by rail line. No derailments were associated with any of these accidents/incidents.

Figure MMH-5 IEMA Recorded Railway Accidents/Incidents Involving Hazardous Substances 2019 and 2023				
Date	Area	Location	Hazardous Substance Released	Quantity Released
Norfolk Southern				
3/6/2019	Venice	1201 McKinley Ave.	Diesel fuel	200 gallons
5/1/2019	Granite City	M.P. 11.3	Ammonium nitrate	200 lbs.
1/26/2023	Granite City	3101 Missouri Ave. Railyard	Gluten meal	6.5 cubic feet
3/5/2023	Granite City	Private siding near 19 th St.	Silica beads	20 cubic yards

[^] Accident/incident verified in the vicinity of this area.

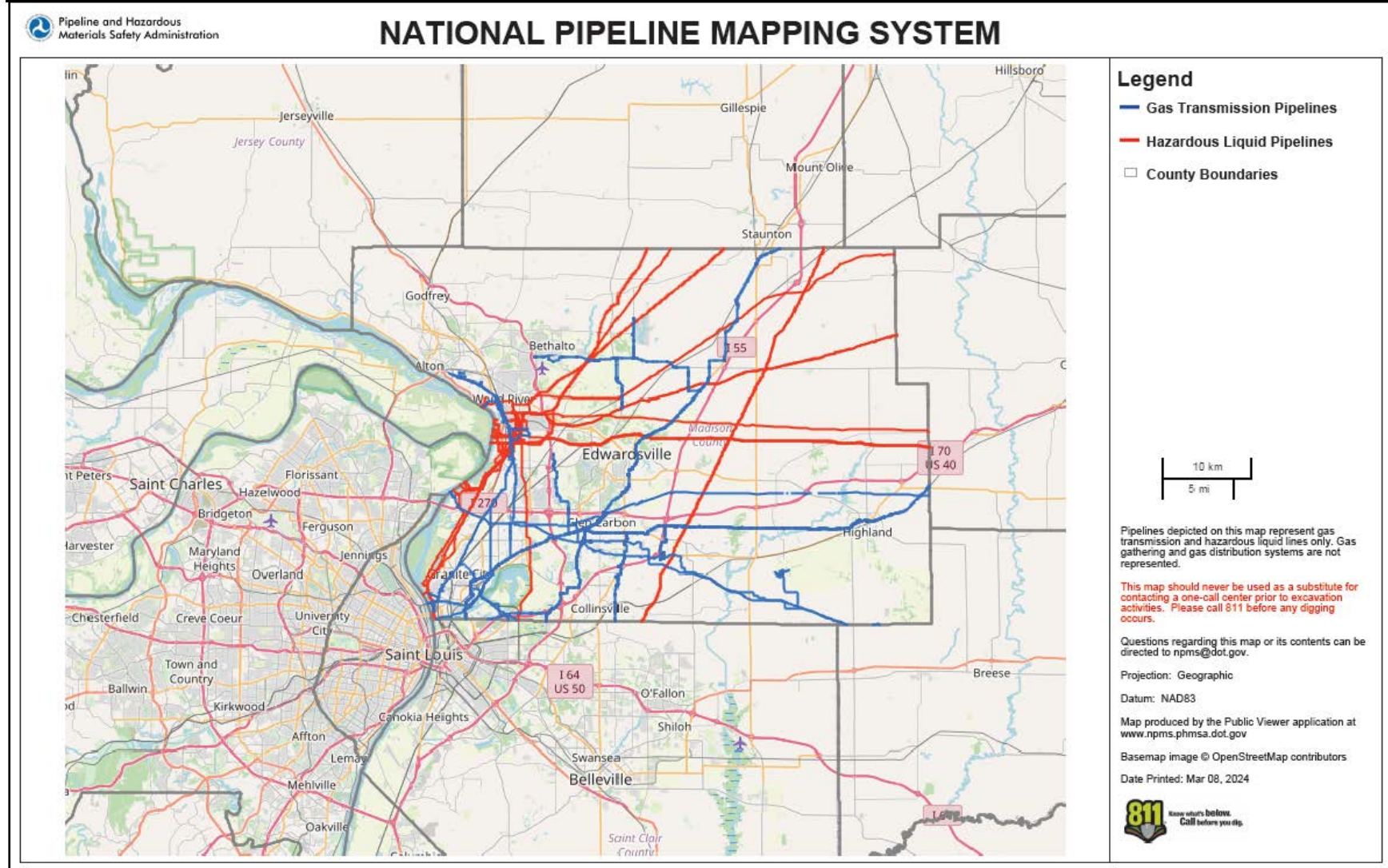
Source: Illinois Emergency Management Agency, Hazardous Materials Incident Reports.

The top 20 hazardous substances moved by rail through Illinois include: sodium hydroxide, petroleum gases (liquefied), sulfuric acid, anhydrous ammonia, chlorine, sulfur, vinyl chloride, propane, fuel oil, denatured alcohol, methanol, gasoline, phosphoric acid, hydrochloric acid, styrene monomer, carbon dioxide (refrigerated liquid), ammonium nitrate, sodium chlorate, and diesel fuel.

Pipelines

Energy gases (natural gas and liquefied petroleum gas), petroleum liquids (crude oil and gasoline), and liquid and gas products used in industrial processes are carried in above-ground and buried pipelines across Illinois. In Madison County, there are three major pipelines that carry natural gas (Ameren; Enable Mississippi River Transmission, LLC; and Natural Gas Pipeline Company of America (KMI). Eleven major pipelines carry crude oil, gasoline or hazardous liquids (owners include Marathon Pipeline LLC, Buckeye Partners L.P., Plains Pipeline L.P., St. Louis Pipeline Operating Co., Explorer Pipeline Co., Phillips 66 Pipeline LLC, Express Holdings (USA) LLC, Flint Hills Resources LC, Spire Missouri East, TC Oil Pipeline Operations Inc., Amoco Oil Co). The majority of the pipelines that carry the hazardous liquids and natural gas are interstate lines. **Figure MMH-6** shows the general locations of the natural gas and hazardous substance pipelines in Madison County.

Figure MMH-6
Madison County Pipeline Location Map



Six pipeline releases occurred in Madison County during the sample period of 2019 and 2023. Figure MMH-7 details the location, commodity released, number/type of evacuations and any injuries or fatalities.

Figure MMH-7 IEMA Recorded Pipeline Releases Involving Hazardous Substances – 2019 & 2023					
Date	Area	Location	Hazardous Substance Released	Evacuations	Injuries/Fatalities
2/7/2019	Hartford [^]	1355 Robbins Rd.	Gasoline	N/A	N/A
4/15/2019	Hartford	480 Robbins Rd.	Crude oil	N/A	N/A
4/16/2019	Granite City	2801 Rock Rd.	Performance Grade 46-34 Asphalt	N/A	N/A
4/28/2019	Roxana	900 S. Central Ave.	Extra heavy flasher distillate	N/A	N/A
8/29/2019	Hartford	1000 BP Ln.	Gasoline	N/A	N/A
10/12/2019	Hartford	1000 BP Ln.	Gasoline	N/A	N/A

[^] Accident verified in the vicinity of this area.

Source: Illinois Emergency Management Agency, Hazardous Materials Incident Reports.

There have been several high-profile incidents across the U.S., including one in Illinois, that have raised public concerns about our aging pipeline infrastructure. The following provides a brief description of each incident.

- On July 26, 2010, a 30-inch liquid product pipeline rupture near Marshall, Michigan and released at least 840,000 gallons of oil into a creek that led to the Kalamazoo River, a tributary of Lake Michigan.
- On September 9, 2010, another pipeline release received national attention. A 34-inch liquid product pipeline in the Chicago suburb of Romeoville, Illinois released more than 360,000 gallons of crude oil that flowed through sewers and into a retention pond narrowly avoiding the Des Plaines River. This release triggered numerous odor complaints from residents in the adjacent municipalities of Lemont and Bolingbrook. The property damage/cleanup costs were estimated at \$46.6 million.
- Also, on September 9, 2010, a 30-inch-high pressure natural gas pipeline ruptured in the San Francisco suburb of San Bruno, California that resulted in an explosion that killed eight people, injured 51, destroyed over 30 homes and damaged an entire neighborhood. The property damage was estimated at around \$55 million.
- On March 12, 2014, a gas main rupture in Manhattan, New York resulted in an explosion that killed eight people and leveled two multi-use, five story buildings.
- On May 19, 2015, a 24-inch liquid product pipeline ruptured near Refugio State Beach in Santa Barbara County, California and released approximately 100,000 gallons of crude oil. The release occurred along a rustic stretch of coastline that forms the northern boundary of the Santa Barbara Channel, home to a rich array of sea life. Oil ran down a ravine and

entered the Pacific Ocean, blackening area beaches, creating a 9-mile oil slick and impacting birds, marine mammals, fish, and coastal and subtidal habitats.

Continual monitoring and maintenance of these pipelines is necessary to prevent malfunctions from corrosion, aging, or other factors that could lead to a release. In addition to normal wear and tear experienced by pipelines, the possibility of sabotage and seismic activity triggering a release must be considered when contemplating emergency response scenarios.

3.13.1.3 Storage/Handling

Beyond knowing where hazardous substances are generated and the methods and routes used to transport them, it is important to identify where hazardous substances are handled and stored. This information will help government officials and emergency management professionals make informed choices on how to better protect human health, property and the environment and what resources are needed should an incident take place.

Records obtained from IEMA-OHS's Tier II database were used to gather information on the facilities that generate, use and store chemicals in excess of reportable threshold quantities within Madison County. The Tier II information was then compared with USEPA's Toxic Release Inventory (TRI) and information from Illinois Environmental Protection Agency (IEPA) databases. This review identified 239 facilities within Madison County in 2022 that store and handle hazardous substances

Of these 239 facilities, 68 reported the presence of Extremely Hazardous Substances (EHSs) at their facilities. An EHS is any USEPA-identified chemical that could cause serious, irreversible health effects from an accidental release. There are approximately 400 chemicals identified as EHSs. Stationary sources that possess one or more of these substances at or above threshold reporting quantities are required to notify IEMA-OHS.

3.13.2 Waste Disposal

Waste disposal has caused surface water and ground water contamination in Illinois and across the U.S. Beginning in the late 1970s substantial regulatory changes strengthened the design, operating and monitoring requirements for landfills where the majority of waste is disposed. These regulatory changes have helped reduce the public health threat posed by landfills.

HAZARD PROFILE – WASTE DISPOSAL

The following subsections identify the general pathways – solid, medical, and hazardous – by which waste disposal poses a risk to public health and the environment in Madison County.

3.13.2.1 Solid Waste

While recycling activities have reduced the amount of solid waste (waste generated in households), the majority continues to be disposed of in landfills. As of 2022, there were 36 landfills operating in Illinois.

According IEPA's Annual Landfill Capacity Report issued in June 2023, there is one commercial landfill, Roxanna Landfill LLC, that operates in Madison County. There are three landfills in

adjacent St. Clair County (North Milam Landfill, Milam Recycling and Disposal Facility, and Cottonwood Hills RDF) and one landfill in adjacent Montgomery County (Litchfield-Hillsboro Landfill).

3.13.2.2 Potentially- Infectious Medical Waste

Potentially-Infectious Medical Waste (PIMW) is generated in connection with medical research; biological testing; and the diagnosis, treatment or immunization of human beings or animals. PIMW is typically generated at hospitals, nursing homes, medical or veterinary clinics, dental offices, clinical or pharmaceutical laboratories, and research facilities. According to IEPA's list of permitted PIMW Facilities, there are no facilities permitted to accept medical waste for disposal in Madison County.

Waste Disposal Fast Facts - Occurrences

Solid Waste

Number of Solid Waste Landfills Operating in Madison County (2022): **1**

Number of Landfills Serving Madison and adjacent counties (2022): **4**

Potentially-Infectious Medical Waste (PIMW)

Number of Facilities within the County Permitted to Handle PIMW: **None**

Hazardous Waste

Number of Commercial Off-Site Hazardous Waste Treatment or Disposal Facilities located in the County: **None**

3.13.2.3 Hazardous Waste

A hazardous waste is defined as the byproduct of a manufacturing process that is either listed or has the characteristics of ignitability, corrosivity, reactivity, or toxicity and cannot be reused. According to IEPA's Storage, Treatment, Recycling, Incinerating, Transfer Stations, and Processing list, there are currently no off-site hazardous waste treatment or disposal facilities located in Madison County.

3.13.3 Hazardous Material Incidents

A hazardous material or hazmat incident refers to any accident involving the release of hazardous substances, which broadly include any flammable, explosive, biological, chemical, or physical material that has the potential to harm public health or the environment. These incidents can take place where the substances are used, generated, or stored or while they are being transported. In addition, hazmat incidents also include the release of hazardous substances, such as fuel, used to operate vehicles. These releases can be the result of an accident or a leak.

HAZARD PROFILE – HAZARDOUS MATERIALS INCIDENTS

In 2019 and 2023, there were 86 hazmat incidents recorded in Madison County. Of these incidents, 15 (17%) involved transportation incidents-accidents while 71 (83%) occurred at fixed facilities. Nine of the 15 transportation incidents-accidents (60%) involved petroleum-based products.

Hazmat Incident Fast Facts - Occurrences

Number of Hazardous Material Incidents in Madison County (2019 and 2023): **86**

Number of Transportation-Related Incidents/Accidents: **15**

Number of Fixed Facility-Related Incidents/Accidents: **71**

Average Number of Hazardous Material Incidents Experienced Annually: **43**

Based on the recorded incidents in sample years of 2019 and 2023, Madison County experienced an average of 43 hazmat incidents annually. The types of existing industries; the major transportation corridors through the County, which include interstate and Illinois highways, rail, and pipeline; and chemical use within and adjacent to the County suggest that hazmat incidents are likely to continue to take place at the rate reflected in the two-year study period. Constant vigilance, proper training and equipment, and prompt response are needed to minimize the potential impacts of each incident.

3.13.4 Waste Remediation

The improper disposal or containment of special and hazardous waste through the years has led to soil, groundwater, and surface water contamination of sites across the U.S. In order to safeguard human health and the environment, these contaminants must be removed or neutralized so they cannot cause harm. This process is known as waste remediation.

HAZARD PROFILE – WASTE REMEDIATION

In Illinois, waste remediation is handled through several programs including the federal Superfund program, the State Response Action Program, the state Site Remediation Program, and the Leaking Underground Storage Tanks Program. The following provides a brief description of each.

Superfund (CERCLA) Program/ National Priorities List

Superfund is a USEPA-led program to clean up sites within the U.S. contaminated by hazardous waste that has been dumped, left out in the open, or otherwise improperly managed and which pose a risk to human health and/or the environment. Sites of national priority among the known or threatened releases of hazardous substances, pollutants or contaminants throughout the U.S. and its territories are identified on the National Priorities List (NPL). Those sites that pose the largest threat to public health and the environment are typically found on the NPL.

Waste Remediation Fast Facts - Occurrences

Superfund

Number of Superfund Sites in the County: **3**

Illinois Site Response Action Program

Number of SRAP Sites in the County: **16**

Illinois Site Remediation Program

Number of SRP Sites in the County: **90**

Number of SRP Sites with NFR/4(y) Letters: **56**

Illinois Leaking Underground Storage Tanks Program

Number of LUST Sites in County: **689**

Number of LUST Sites with NFR/Non-LUST/4(y) Letters: **520**

According to the NPL database, there are 46 Superfund sites in Illinois, three of which are located in Madison County: Chemetco, Hartford; Jennison-Wright Corporation, Granite City; and NL Industries/Taracorp Lead Smelter, Granite City.

State Response Action Program (SRAP)

The main objective of the State Response Action Program (SRAP) is to clean up hazardous substances at sites that present an imminent and substantial threat to human health and the environment, but which may not be addressed by other federal or state cleanup programs. The sites handled by the SRAP include abandoned landfills, old manufacturing plants, former waste oil recycling operations, contaminated agricultural facilities, and other areas where surface water,

groundwater, soil, and air may be contaminated with hazardous substances. Since the mid-1980s, cleanup activities have been conducted at more than 500 sites in Illinois through this Program. Once the threat to human health and the environment has been mitigated, some sites are transferred to other state cleanup programs to complete remediation activities.

There are 16 SRAP sites in Madison County, and eight (50%) have completed the Program.

Illinois Site Remediation Program (SRP)

The Site Remediation Program (SRP) is a voluntary cleanup program that provides applicants the opportunity to receive technical assistance in determining what course of action is needed to remediate sites where hazardous substances, pesticides, or petroleum may be present. The goal of the SRP is to receive a no further remediation determination from IEPA. Most site remediation in Illinois is handled through this Program. Since the mid-1980s, remediation activities have been conducted and monitored at approximately 5,800 sites in Illinois. Properties that satisfy respective IEPA laws and regulations can receive a No Further Remediation (NFR) letter or Section 4(y) letter. They must demonstrate, through proper investigation and, when warranted, remedial action, that environmental conditions at their remediation site do not present a significant risk to human health or the environment. This letter describes what remediation activities have been taken and whether any portion of the property, based on future property use, might need additional remediation.

There are 90 SRP sites in Madison County. Fifty-six of the 90 SRP sites (89%) have received NFR or 4(y) letters. The remaining sites do not pose an immediate threat to public health or the environment.

Leaking Underground Storage Tank Program (LUST)

The Leaking Underground Storage Tanks Program (LUST) oversees remedial activities associated with petroleum product releases from underground storage tanks (UST). This program began in the late 1980s as a result of the threats posed by vapors in homes and businesses, contaminated groundwater, and contaminated soil. In Illinois, more than 14,500 acres of soil contaminated by leaking underground tanks have been remediated between 1988 and 2010 (the most recent year for which data was available).

In Madison County, there are 689 sites involving the remediation of petroleum product releases from underground storage tanks. Of the 689 LUST sites, 520 (76%) have received NFR letters, other clearance letters, or remediation is virtually complete.

3.13.5 Terrorism

Terrorism has different definitions across the globe. For the purpose of this Plan, terrorism will be defined as any event that includes violent acts that threaten or harm lives, health or property conducted by domestic or foreign individuals or groups aimed at civilians, the federal government or symbolic locations intended to cause widespread fear.

HAZARD PROFILE – TERRORISM

The attack on the World Trade Center and the Pentagon on September 11, 2001 by foreign terrorists galvanized national action against terrorism and resulted in the creation of the U.S. Department of Homeland Security. While the number of terrorist activities garnering national attention in the U.S. has been relatively small, approximately 201,183 terrorist events have occurred worldwide between 1970 and 2019, according to the National Consortium for the Study of Terrorism and Responses to Terrorism (the Consortium). During this same time span, the Consortium documented 3,004 terrorist events within the U.S.

Terrorism Fast Facts – Occurrences*

Number of Recorded Terrorism Events Worldwide (1970 – 2019): **201,183**

Number of Recorded Terrorism Events in the U.S. (1970 – 2019): **3,004**

Number of Recorded Terrorism Events in Illinois (1970 – 2019): **117**

* Based on data from the National Consortium for the Study of Terrorism and Responses to Terrorism (START) Global Terrorism Database.

Acts of terrorism have resulted in fatalities and injuries as a result of kidnappings, hijackings, bombings, and the use of chemical and biological weapons. The Global Terrorism Database has documented 3,633 American fatalities in the U.S. between 1995 and 2019 from terrorist attacks. The attacks on September 11, 2001 account for 3,001 of the 3,633 fatalities. A search of the Global Terrorism Database identified 117 incidents of terrorism in Illinois between 1970 and 2019. These incidents resulted in six fatalities and 38 injuries.

The Federal Bureau of Investigation's (FBI) provides supporting documentation on domestic terrorist attacks in a series of reports on terrorism. These reports provide a chronological summary of terrorist incidents in the U.S. with detailed information on attacks between 1980 and 2005. During this time period, 192 incidents were documented within the U.S. Six of these incidents occurred in Illinois; five in the Chicago area and one downstate.

Not included in either the Consortium or FBI data sets are the Vermilion County bombings of 1997 and 1998. On December 30, 1997 a pipe bomb placed by a domestic terrorist outside Oakwood United Methodist Church detonated killing a church volunteer and causing damage to the church property. On May 24, 1998, a second pipe bomb placed by the same individual detonated during worship at the Danville First Assembly of God Church, injuring 34 persons, most of them youth of the church. As the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) closed in on the perpetrator, he blew up himself, his dog, and his Danville garage laboratory.

Other more recent events in Illinois occurred on September 24, 2009 when a single individual from Macon County sought to carry out his anger at the federal government by detonating a van filled with explosive outside of the Federal Courthouse in Springfield. This attempt was thwarted by the FBI.

On May 16, 2018 at around 8:00 a.m., a 19-year-old man, armed with a 9-mm semi-automatic rifle, fired several shots near the Dixon High School Gymnasium where approximately 180 students were practicing for graduation. The school's resource officer confronted the shooter, who fled from the school on foot. The shooter fired several shots at the resource officer, who returned fire, wounding the shooter in the shoulder. The gunman suffered non-life threatening injuries. No

students or staff were injured in the incident. Faculty and staff barricaded doors and took cover as the incident unfolded.

More recently an active shooter incident occurred at the Highland Park Independence Day parade on July 4, 2022. A 22-year-old man, armed with a semi-automatic rifle, gained access to the roof of a building along the parade route and opened fire on spectators and those in the parade killing seven individuals and wounding an additional 48 individuals. The shooter evaded immediate capture and fled the scene but was apprehended later the same day. He confessed to the shooting and was sentenced to seven consecutive life sentences p on April 24, 2025.

It is impossible to predict with any reasonable degree of accuracy how many terrorism events might be expected to occur in Madison County or elsewhere in Illinois. Although targets for terrorist activity are more likely centered in larger urban areas, recruitment, training, and other support activities, such as the ones described above, have occurred in rural areas.

The economic resources available to some terrorist groups coupled with the combination of global tensions, economic uncertainty and frustration towards government appear to have recently raised the frequency of attempts. Enhanced efforts by law enforcement officials and civilian vigilance for unusual activity or behavior will be needed to repel terrorists whether they are domestic or foreign in origin.

Figure MMH-1
Generators of Solid & Liquid Hazardous Substances – 2022
(Sheet 1 of 5)

Name	Hazardous Substances Generated	Amount Generated (Pounds)
Alton		
Alton Steel Inc.	Chromium compounds	139
	Lead compounds	823
	Manganese compounds	14,494
	Mercury compounds	46
	Nickel compounds	22
	Zinc compounds	5,900
	<i>Total:</i>	<i>21,424</i>
Ardent Mills LLC	Chlorine (311 – Food)	---
	<i>Total:</i>	<i>---</i>
East Alton		
Olin Winchester LLC Main Plant	Antimony compounds	1,550
	Arsenic	286
	Barium compounds	2,461
	Copper compounds	32,892
	Dibutyl phthalate	0
	Ethylene glycol	1,085
	Lead compounds	24,649
	<i>Total:</i>	<i>104,641</i>
Wieland Rolled Products N.A., East Alton Casting Main Plant	Copper	24,055
	Lead compounds	3,881
	Manganese	2,508
	Nickel	283
	Zinc compounds	27,110
	<i>Total:</i>	<i>57,837</i>
Wieland Rolled Products N.A., East Alton Main	Copper compounds	178,259
	Lead compounds	3,881
	Manganese compounds	1,153
	Nickel	8,245
	Zinc (fume or dust)	239,699
	Zinc compounds	302,401
	<i>Total:</i>	<i>730,508</i>
Granite City		
AirGas Specialty Products	Ammonia	616
	<i>Total:</i>	<i>616</i>
Amsted Rail Co Inc	Diisocyanates	13
	Lead compounds	1,290
	Manganese compounds	19,041
	Naphthalene	270
	Phenol	169
	Zinc compounds	169
	<i>Total:</i>	<i>41,768</i>

**Figure MMH-1
Generators of Solid & Liquid Hazardous Substances – 2022
(Sheet 2 of 5)**

Name	Hazardous Substances Generated	Amount Generated (Pounds)
Granite City Continued...		
Gateway Energy & Coke	Dioxin & dioxin-like compounds	---
	Hydrochloric acid	85,274
	Hydrogen fluoride	312
	Lead compounds	4,755
	Mercury compounds	220
	Sulfuric acid	8,420
	Total:	98,981
Gateway Packaging	Diisocyanates	0
	Total:	0
Granite City Pickling & Warehousing Inc	Hydrochloric acid	760
	Total:	760
Heidtman Steel Products Inc	Chromium	9
	Copper	8
	Hydrochloric acid	1,445
	Manganese	11
	Nickel	11
	Total:	1,482
Mayco Manufacturing	Antimony	36
	Arsenic	6
	Lead compounds	6,347
	Total:	6,389
Midwest Metal Coatings	Certain glycol ethers	1,020
	n-Butyl alcohol	259
	Total:	1,279
Prairie Farms Dairy	Certain glycol ethers	0
	Nitric acid	0
	Peracetic acid	786
	Total:	786
Precoat Metals	1,2,4-Trimethylbenzene	1,981
	Certain glycol ethers	5,929
	Chromium compounds	11,116
	Cobalt compounds	510
	Cumene	277
	Ethylbenzene	299
	Lead compounds	49
	Naphthalene	579
	Nickel compounds	12,966
	Nitrate compounds	15,896
	Toluene	158
	Total:	53,110

**Figure MMH-1
Generators of Solid & Liquid Hazardous Substances – 2022
(Sheet 3 of 5)**

Name	Hazardous Substances Generated	Amount Generated (Pounds)
Granite City Continued...		
Stein LLC	Lead compounds	0
	Manganese compounds	26
	<i>Total:</i>	26
US Steel Granite City Works	Ammonia	24,680
	Barium compounds	5,583
	Beryllium compounds	44
	Chromium compounds	62,036
	Copper compounds	15,539
	Dioxin & dioxin-like compounds	---
	Hydrochloric acid	17,670
	Lead compounds	65,152
	Manganese compounds	614,709
	Mercury compounds	137
	Nitrate compounds	220,000
	Sodium nitrite	0
	Vanadium compounds	15,957
	Zinc compounds	657,444
	<i>Total:</i>	1,698,952
Hartford		
Phillips 66 Terminal	1,2,4-Trimethylbenzene	723
	Benzene	424
	Benzo[g,h,i]perylene	0
	Cumene	18
	Ethyl benzene	148
	Isoprene	22
	Lead compounds	34
	Naphthalene	23
	Polycyclic aromatic hydrocarbons	0
	Propylene	36
	Toluene	942
	Xylenes	1,207
	Zinc compounds	219
	n-Hexane	640
	<i>Total:</i>	4,437
Premcor Hartford Distribution Center	Benzene	---
	Benzo[g,h,i]perylene	0
	Ethyl benzene	---
	Mercury	0
	Naphthalene	---
	Polycyclic aromatic hydrocarbons	7
	<i>Total:</i>	7

**Figure MMH-1
Generators of Solid & Liquid Hazardous Substances – 2022
(Sheet 4 of 5)**

Name	Hazardous Substances Generated	Amount Generated (Pounds)
Highland		
Eaton Highland	Chromium	20
	Manganese	17
	Nickel	11
	<i>Total:</i>	48
Trouw Nutrition USA LLC	Copper compounds	1,308
	Manganese compounds	1,188
	Zinc compounds	3,281
	<i>Total:</i>	5,777
Madison		
Green Plains Madison LLC	Acetaldehyde	4,343
	Acrolein	637
	Benzene	---
	Ethyl benzene	---
	Ethylene glycol	---
	Formaldehyde	710
	Formic acid	1,400
	Methanol	556
	Toluene	---
	Xylenes	---
	n-Hexane	5,300
	<i>Total:</i>	12,946
Magnesium Elektron NA Inc Madison	Calcium Cyanamide	---
	<i>Total:</i>	---
St. Louis Screw & Bolt	Antimony	0
	Chromium	0
	Cobalt	0
	Lead	0
	Manganese	0
	Nickel	0
	<i>Total:</i>	98,981

Figure MMH-1
Generators of Solid & Liquid Hazardous Substances – 2022
(Sheet 5 of 5)

Name	Hazardous Substances Generated	Amount Generated (Pounds)
Roxanna		
Wood River Refinery	1,2,4-Trimethylbenzene	13,976
	1,3-Butadiene	930
	Ammonia	14,904
	Benzene	36,321
	Benzo[g,h,i]perylene	3
	Biphenyl	462
	Carbon disulfide	8,778
	Carbonyl sulfide	2,127
	Chromium compounds	1,558
	Cobalt compounds	21
	Cresol	45
	Cumene	629
	Cyclohexane	363
	Diethanolamine	129
	Dioxin & dioxin-like compounds	---
	Ethyl benzene	9,927
	Ethylene	22,510
	Ethylene glycol	48
	Hydrochloric acid	894
	Hydrogen cyanide	399
	Hydrogen sulfide	11,905
	Lead compounds	14,923
	Mercury compounds	41
	Methanol	4,270
	Molybdenum trioxide	1,492
	Naphthalene	2,514
	Nickel compounds	12,362
	Nitrate compounds	2,634,292
	Phenol	733
	Polycyclic aromatic hydrocarbons	41
	Propylene	25,540
	Styrene	1,006
	Total:	3,107,109

Source: U.S. Environmental Protection Agency, TRI Explorer, Releases: Facility Report.

Figure MMH-4 ICC Recorded Railway Accidents/Incidents Involving Hazardous Substances 2013 – 2022					
Year	Category	Accident/Incident Location			
		Illinois	Madison County	Cook & Collar Counties	All Other Counties
2013	A	5	0	3	2
	B	23	0	16	7
	C	82	6	51	23
2014	A	2	0	2	0
	B	36	0	22	14
	C	84	3	40	40
2015	A	4	0	3	1
	B	27	2	15	12
	C	69	2	36	29
2016	A	4	1	1	3
	B	14	0	6	8
	C	65	5	33	24
2017	A	2	0	1	1
	B	14	0	9	5
	C	69	6	34	27
2018	A	1	0	0	1
	B	8	0	4	4
	C	55	3	24	28
2019	A	6	0	4	2
	B	6	0	4	2
	C	33	3	12	18
2020	A	4	0	2	2
	B	7	0	5	2
	C	46	0	30	16
2021	A	4	0	2	2
	B	31	0	16	15
	C	29	3	13	13
2022	A	5	0	1	4
	B	29	1	18	11
	C	52	1	29	22

Source: Illinois Commerce Commission

4.0 JURISDICTION CAPABILITIES & INTEGRATION OF PREVIOUS MITIGATION PLAN

Each participating jurisdiction has a unique set of capabilities and resources available to reduce long-term vulnerabilities to the identified hazards and increase their resilience. As part of the plan update process, each participating jurisdiction's existing capabilities and resources (technical information, plans, reports, and studies) are identified, their ability to expand on and improve these capabilities is analyzed, and their incorporation of the original hazard mitigation plan into external planning mechanisms such as comprehensive plans and land use ordinances is discussed.

4.1 IDENTIFICATION OF EXISTING CAPABILITIES

[Local Mitigation Planning Policy Guide Elements C1-a & D3-b]

In order to identify existing capabilities and resources, a Capability Assessment was conducted. The Capability Assessment helps determine the ability of the participating jurisdictions to implement the Mitigation Strategy and to identify potential opportunities for establishing or enhancing specific mitigation policies, program, or projects. It is important to try and establish which goals and actions are feasible based on an understanding of the organizational capacity of those entities tasked with their implementation. This assessment is designed to provide a general overview of the key capabilities in place for each participating jurisdiction along with their potential effect of loss reduction.

The existing capabilities of each participant were cataloged using capability assessment worksheets based on jurisdiction type that were distributed to each of the participating jurisdictions at the first Committee meeting on March 26, 2024. The worksheets requested information on four primary types of capabilities: planning and regulatory; administrative and technical; financial; and education and outreach. The following provides a brief description of each capability type.

Planning & Regulatory Capabilities: Planning and regulatory capabilities are based on the implementation of existing plans, policies, codes, ordinances, resolutions, local laws, and programs that prevent or reduce the impacts of hazards and guide and manage growth and development.

Administrative & Technical Capabilities: Administrative and technical capabilities are based on the available staff and personnel resources as well as their related skills and tools that can be used to develop and implement mitigation actions, policies, and programs.

Financial Capabilities: Financial capabilities include those resources a jurisdiction has access to or is eligible to use to implement mitigation actions, policies, and programs.

Education & Outreach Capabilities: Education and outreach capabilities include programs and methods already in place that could be used to support implementation of mitigation actions and communicate hazard-related information.

Figures JC-1 through JC-16 summarize the results of the Capability Assessment by participating jurisdiction type (i.e., county/municipalities, townships, schools, fire protection districts, etc.) A

capability level of “Limited”, “Moderate” or “High” was assigned by capability type to each participating jurisdiction based on the number of available capabilities and resources as well as the jurisdiction’s size/area served. **Figure JC-17** summarizes the individual capability levels by capability type and provides an overall capability ranking for each participant.

This assessment provides a consolidated inventory of existing plans, ordinances, programs, and resources in place. Whenever applicable, these existing capabilities were reviewed and incorporated into the Plan.

Highlights from the Capability Assessment include:

- ❖ The County and all the municipalities, with the exception of Worden, have building codes in place.
- ❖ The County and all of the municipalities all have zoning ordinances in place.
- ❖ The County and 18 of the participating municipalities have comprehensive plans in place.
- ❖ Madison County and eight of the municipalities have continuity of operations plans in place.

Figure JC-18, located at the end of this section, provides information on comprehensive/land use plans, building codes, and zoning ordinances for the County and participating municipalities such as effective date, next scheduled update (if known), and International Code Council I-Code version.

4.2 ABILITY TO EXPAND & IMPROVE EXISTING CAPABILITIES

[Local Mitigation Planning Policy Guide Element C1-b]

With the exception of America’s Central Port, Livingston, Marine, St. Jacob, Venice, Edwardsville Township, Leef Township, Madison County ROE #41, and St. Mary’s Catholic School, all the participants are fortunate to have the resources and abilities to readily expand on and improve the existing policies and programs identified. The municipalities within the County are diverse in size and capabilities. The large to mid-sized municipalities are more likely to have the capabilities related to staff and organization, technical capability, fiscal situation, and political resolve to implement new programs and policies. The small to very small municipalities have extremely limited fiscal and staffing resources that will make it more difficult to implement new programs and policies.

Madison County and many of the participating municipalities have received technical assistance from the County’s Planning & Development and Community Development offices as well as assistance from the Southwestern Illinois Metropolitan and Regional Planning Commission to develop and maintain a wide array of plans, programs and ordinances. For those with more constrained capabilities, overcoming their limitations will require time and a range of actions including, but not limited to, improved general awareness of natural hazards and the potential benefits that may come from the development of new standards in terms of hazard loss prevention and the identification of resources available to expand and improve existing policies and programs should the opportunity arise.

4.3 REVIEW & INCORPORATION OF EXISTING PLANS

[Local Mitigation Planning Policy Guide Element A4-a]

The existing plans, studies, reports, technical information, and maps that were reviewed and incorporated into the Plan update, where appropriate, can be found in Section 9.0 References and are cited in each appropriate section.

4.4 INTEGRATION OF ORIGINAL MITIGATION PLAN INTO PLANNING MECHANISMS

[Local Mitigation Planning Policy Guide Element E2-c]

Demonstrating progress in local mitigation efforts can also be identified through the integration of the previous Plan into external planning mechanisms such as comprehensive plans, emergency operations plans, and land use ordinances. As part of the Plan update, available planning documents were reviewed and each previous participant was asked if any components of the 2020 Plan (i.e., mitigation projects/activities, vulnerability analyses, hazard data, etc.) were integrated into new or updated planning mechanisms within their jurisdiction. Based on the responses received the Land Use and Development Changes questionnaire, only Godfrey and Grantfork incorporated the 2020 Plan into their planning mechanisms. According to the respondent from Grantfork, components of the previous Plan were integrated into their comprehensive plan while Godfrey indicated that their building and electrical codes and stormwater ordinance were updated, a Village recreation center committee was formed to evaluate the need for a community safe room at the center, and community outreach was conducted to educate residents about stormwater management. It should be noted that aside from Godfrey and Wood River's updates to their comprehensive plans, none of the previous participants have undertaken extensive updates to any of their external planning mechanisms.

Figure JC-1
County / Municipalities / Special-Purpose Unit of Local Governments – Planning & Regulatory Capabilities

Capability Type	County/Municipality/Special-Purpose Unit of Local Government																							
	Madison County	Alhambra	Alton	America's Central Port	Collinsville	East Alton	Edwardsville	Glen Carbon	Godfrey	Granite City	Grantfork	Hamel	Highland	Livingston	Madison, City of	Marine	Maryville	Pontoon Beach	Roxana	St. Jacob	Troy	Venice	Wood River	Worden
Plans, Policies, Codes & Ordinances																								
Comprehensive/Master Land Use Plan	X	X	X		X		X	X	X	X		X	X		X	X	X	X	X		X		X	X
Continuity of Operations Plan	X		X		X		X		X			X			X			X						X
Stormwater Management Plan	X				X	X	X	X	X			X			X		X	X			X		X	
Transportation Plan	X		X				X	X			X							X						
Economic Development Plan			X				X		X	X	X				X		X	X			X	X	X	
Emergency Operations Plan	X	X	X		X	X	X	X	X	X	X	X	X				X	X			X	X	X	
Disaster Recovery Plan	X		X				X		X									X			X			
Threat & Hazard Identification Risk Assessment (THIRA) - County Only	X																							
Infrastructure Maps - Municipalities Only		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Building Codes	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Floodplain Ordinance	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X		X	X		X	X	X	X
Stormwater Ordinance	X	X	X		X	X	X	X	X		X	X	X		X	X		X	X	X	X	X		
Zoning Ordinance	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Subdivision Ordinance	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X
Historic Preservation Ordinance			X		X		X	X							X			X			X			
Private Sewage Disposal System Ordinance - County Only	X																							
Manufactured/Mobile Home Tie Down Ordinance	X	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X			X	X	X	X
Steep Slope Ordinance	X							X	X						X	X	X	X						
Mined Areas/Developed Over Mined Areas Ordinance	X		X					X							X			X		X	X			X
National Incident Management System (NIMS) Adoption	X		X			X	X		X		X	X									X		X	
National Flood Insurance Program (NFIP) Participation	X		X		X	X	X	X	X	X	X		X	X	X		X	X	X			X	X	X
Community Rating System (CRS) Participation																			X					
Level of Capability	H	M	H	L	M	M	H	H	H	M	M	M	M	L	H	L/M	M	H	M	L	M	L/M	M	M

An "X" indicates that the item is currently in place and being implemented.
Level of Capacity: "L" = Limited; "M" = Moderate; "H" = High

Figure JC-2
County / Municipalities / Special-Purpose Unit of Local Governments – Administrative & Technical Capabilities

Capability Type	County/Municipality/Special-Purpose Unit of Local Government																							
	Madison County	Alhambra	Alton	America's Central Port	Collinsville	East Alton	Edwardsville	Glen Carbon	Godfrey	Granite City	Grantfork	Hamel	Highland	Livingston	Madison, City of	Marine	Maryville	Pontoon Beach	Roxana	St. Jacob	Troy	Venice	Wood River	Worden
Administrative & Technical																								
Zoning Board	X	X	X		X	X	X	X	X	X		X	X	X	X	X	X	X		X	X	X	X	X
Public Utility Board																								
Planning Commission	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Mutual Aid Agreements	X	X	X		X	X	X	X	X	X	X	X	X		X	X	X	X		X	X	X	X	
Administrator/Manager	X	X	X	X	X	X	X	X		X		X	X	X	X			X	X	X	X	X	X	
Building Inspector/Officer	X	X	X		X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
Community/Economic Development Planner	X		X	X	X	X	X	X	X	X		X	X	X	X			X		X				
Emergency Manager	X		X		X	X	X		X	X		X		X				X						
Engineer/Construction Project Manager	X	X	X	X	X	X	X		X	X	X	X	X	X	X			X		X	X	X		X
GIS Coordinator	X		X		X	X	X			X		X	X		X		X	X						
Grant Administrator/Writer							X			X	X	X		X	X			X				X		X
Fire Chief - Municipalities Only			X		X	X	X			X					X		X		X			X	X	
Floodplain Administrator	X				X	X	X				X				X			X			X	X		
Police Chief - Municipalities Only			X		X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Public Works/Streets Director - Municipalities Only		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Water Superintendent - Municipalities Only		X			X	X	X	X		X	X	X	X			X	X		X	X			X	X
Zoning Officer/Administrator	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Solid Waste Director - County Only	X																							
Level of Capability	H	M	H	L	H	H	H	M	M	H	M	M/H	M	M	M/H	M	M	H	M	M	M	M/H	M	M

An "X" indicates the presence of staff with specified knowledge or skills.

Level of Capacity: "L" = Limited; "M" = Moderate; "H" = High

Figure JC-3

County / Municipalities / Special-Purpose Unit of Local Governments – Financial / Education & Outreach Capabilities

Capability Type	County/Municipality/Special-Purpose Unit of Local Government																							
	Madison County	Alhambra	Alton	America's Central Port	Collinsville	East Alton	Edwardsville	Glen Carbon	Godfrey	Granite City	Grantfork	Hamel	Highland	Livingston	Madison, City of	Marine	Maryville	Pontoon Beach	Roxana	St. Jacob	Troy	Venice	Wood River	Worden
Financial																								
Roadway/Bridge Improvement Plan - County Only	X																							
Capital Improvements Program	X		X		X		X	X	X	X		X	X	X	X			X			X	X	X	
Tax Levies for Special Purposes		X	X	X	X		X	X		X	X	X	X	X				X	X	X	X		X	X
Motor Fuel Tax	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
General Obligation Bonds and/or Special Tax Bonds					X		X	X		X			X						X		X		X	X
Utility Fees (Stormwater, Sewer, Water, Gas, or Electric Service)	X	X			X	X	X	X			X	X	X			X	X		X	X	X		X	X
Impact Fees - New Development							X	X									X	X					X	
Federal Funding Programs (Non-FEMA)	X				X		X	X	X	X	X		X		X			X	X		X	X	X	X
Level of Capability	M	L	L	L	H	L	H	H	L	M	M	M	H	L	L	L	L	M	M	L	H	L	H	M
Education & Outreach																								
StormReady Certification	X								X															
Natural Disaster/Safety-Related School Programs	X						X			X											X		X	
Ongoing Public Education or Information Programs (Fire Safety, Household Preparedness, Responsible Water Use)	X				X		X		X	X		X	X				X		X				X	
Seasonal Outreach	X				X		X		X	X							X						X	
Local Citizen Groups/Non-Profit Organizations (Emergency Preparedness, Access & Functional Needs)	X						X			X							X						X	
Public-Private Partnership Initiatives Addressing Disaster-Related Issues	X						X		X	X													X	
Level of Capability	H	L	L	L	L	L	H	L	M	H	L	L	L	L	L	L	M	L	L	L	L	L	H	L

An "X" indicates a given resource is locally available for mitigation purposes.
Level of Capacity: "L" = Limited; "M" = Moderate; "H" = High

Figure JC-4 Townships – Planning & Regulatory / Administrative & Technical Capabilities				
Capability Type	Township			
	Collinsville Township	Edwardsville Township	Leef Township	Nameoki Township
Plans, Policies, Codes & Ordinances				
Comprehensive/Master Land Use Plan		X		
Stormwater Management Plan	X	X		X
Open Space/Recreational Area Plan				
Building Codes	X			X
Stormwater Ordinance	X	X		X
Zoning Ordinance	X			X
Subdivision Ordinance	X			X
Private Sewage Disposal System Ordinance	X			X
Manufactured/Mobile Home Tie Down Ordinance				
Steep Slope Ordinance		X		
Mined Areas/Developed Over Mined Areas Ordinance				
Road Weight Restriction Ordinance	X			
Nuisance Weed, Grass & Tree Ordinance	X			
National Incident Management System (NIMS) Adoption				
Level of Capability	M	L	L	M
Administrative & Technical				
Zoning Board				X
Public Utility Board				X
Planning Commission		X		X
Mutual Aid Agreements		X		X
Assessor	X	X	X	X
Clerk	X	X	X	X
Collector				
Highway/Road District Commissioner	X	X	X	X
Supervisor	X	X	X	X
Level of Capability	M	M	M	H

An "X" indicates that the item is currently in place and being implemented or the presence of staff with specified knowledge or skills

Level of Capacity: "L" = Limited; "M" = Moderate; "H" = High

Figure JC-5 Townships – Financial / Education & Outreach Capabilities				
Capability Type	Township			
	Collinsville Township	Edwardsville Township	Leef Township	Nameoki Township
Financial				
Capital Improvements Program		X		X
Roadway/Bridge Improvement Plan			X	X
Tax Levies for Special Purposes	X	X		X
Motor Fuel Tax	X	X	X	X
General Obligation Bonds and/or Special Tax Bonds				
Utility Fees (Stormwater, Sewer, Water, Gas or Electric Service)				
Impact Fees - New Development				
Federal Funding Programs (Non-FEMA)			X	X
Level of Capability	L	L	L	M
Education & Outreach				
StormReady Certification				
Natural Disaster/Safety-Related School Programs	X			
Ongoing Public Education or Information Programs (Fire Safety, Household Preparedness, Responsible Water Use)	X	X		X
Seasonal Outreach	X			X
Local Citizen Groups/Non-Profit Organizations (Emergency Preparedness, Access & Functional Needs)				X
Public-Private Partnership Initiatives Addressing Disaster-Related Issues				X
Level of Capability	M	L	L	M

An "X" indicates a given resource is locally available for mitigation purposes.

Level of Capacity: "L" = Limited; "M" = Moderate; "H" = High

Figure JC-6 Schools – Planning & Regulatory / Administrative & Technical Capabilities									
Capability Type	School District								
	Alton CUSD #11	Bethalto CUSD #8	Collinsville CUSD #10	Edwardsville CUSD #7	Madison County ROE #41	Marquette Catholic High School	Roxana CUSD #1	St. Mary's Catholic School	Wood River-Hartford CUSD #15 I
Plans & Policies									
Comprehensive/Master Facilities Plan		X	X			X			
Continuity of Operations Plan			X						
Strategic Plan		X	X	X		X	X		X
Emergency/Crisis Response Plan	X	X	X	X	X	X	X	X	X
National Incident Management System (NIMS) Adoption				X					
Level of Capability	L	M	M	M	L	M	L	L	L
Administrative & Technical									
Board of Education	X	X	X	X	X	X	X	X	X
Mutual Aid Agreements		X	X	X	X				X
Superintendent	X	X	X	X	X	X	X	X	X
Principal(s)	X	X	X	X	X	X	X	X	X
Chief Financial Officer/Finance Director	X	X	X	X	X	X	X	X	X
Food Services Supervisor	X	X	X	X	X		X	X	X
Grant Writer							X		
Health Care Supervisor	X		X	X			X		X
IT Director/Specialist	X	X	X	X	X	X	X	X	X
Maintenance Manager	X	X	X	X	X	X	X	X	
Communications Director			X	X		X			
Operations Manager	X	X	X	X		X			
Safety & Security Director	X		X	X		X		X	
Transportation Director	X	X	X			X	X	X	X
Level of Capability	H	M	H	H	M	M	M	M	M

An "X" indicates that the item is currently in place and being implemented or the presence of staff with specified knowledge or skills.

Level of Capacity: "L" = Limited; "M" = Moderate; "H" = High

Figure JC-7 Schools – Financial / Education & Outreach Capabilities									
Capability Type	School District								
	Alton CUSD #11	Bethalto CUSD #8	Collinsville CUSD #10	Edwardsville CUSD #7	Madison County ROE #41	Marquette Catholic High School	Roxana CUSD #1	St. Mary's Catholic School	Wood River-Hartford CUSD #15.1
Financial									
Capital Improvements Program	X	X	X	X			X	X	X
Tax Levies for Special Purposes	X	X	X				X		X
General Obligation Bonds and/or Special Tax Bonds	X	X	X	X			X		X
Federal Funding Programs (Non-FEMA)	X	X	X				X		
Level of Capability	H	H	H	M	L	L	H	L	M
Education & Outreach									
StormReady Certification									
Natural Disaster/Safety-Related School Programs		X	X			X	X		
Ongoing Public Education or Information Programs (Fire Safety, Household Preparedness, Responsible Water Use)	X		X			X			X
Seasonal Outreach			X						X
Public-Private Partnership Initiatives Addressing Disaster-Related Issues			X				X		
Level of Capability	L	L	M/H	L	L	L/M	L/M	L	L/M

An "X" indicates a given resource is locally available for mitigation purposes.

Level of Capacity: "L" = Limited; "M" = Moderate; "H" = High

Figure JC-8 Colleges/Universities – Planning & Regulatory / Administrative & Technical Capabilities	
Capability Type	College
	Southern Illinois University Edwardsville
Plans & Policies	
Strategic/Tactical Plan	X
Campus Facilities Master Plan	X
Housing Master Plan	X
Historic Preservation Plan	
Emergency/Crisis Response Plan	X
Continuity of Operations Plan	
National Incident Management System (NIMS) Adoption	X
Level of Capability	M/H
Administrative & Technical	
Governing Board	X
Mutual Aid Agreements	X
President/Chancellor	X
Provost/Dean	X
Chief Financial Officer/Finance Director	X
Emergency Management Coordinator	
Facilities Manager	X
Food Services Supervisor	X
Grant Writer	X
Student Health Supervisor	X
IT Director/Specialist	X
Maintenance Manager	X
Communications Director	X
Operations Manager	X
Safety & Security Director	X
Level of Capability	H

An "X" indicates that the item is currently in place and being implemented or the presence of staff with specified knowledge or skills.

Level of Capacity: "L" = Limited; "M" = Moderate; "H" = High

Figure JC-9 Colleges/Universities – Financial / Education & Outreach Capabilities	
Capability Type	College
	Southern Illinois University Edwardsville
Financial	
Capital Improvements Program	X
State Appropriations	X
Tax Levies for Special Purposes	
General Obligation Bonds and/or Special Tax Bonds	X
Endowments/Bequests	
Non-Operating Grants and Contracts	X
Level of Capacity	M/H
Education & Outreach	
StormReady Certification	X
Natural Disaster/Safety-Related Campus Programs	X
Ongoing Campus Education or Information Programs (Fire Safety, Household Preparedness, Responsible Water Use, Environmental Education, etc.)	X
Seasonal Outreach	X
Public-Private Partnership Initiatives Addressing Disaster-Related Issues	X
Level of Capacity	H

An "X" indicates a given resource is locally available for mitigation purposes.
 Level of Capacity: "L" = Limited; "M" = Moderate; "H" = High

Figure JC-10 Fire Protection Districts – Planning & Regulatory Capabilities				
Capability Type	Fire District			
	Glen Carbon FPD	Olive Fire District	South Roxana FPD	Troy FPD
Plans, Policies, Codes, Ordinances, Resolutions, & Technical Documents				
Standard Operating Procedures/Guidelines for Structural Fire Fighting (NFPA 1700)	X	X	X	X
Standard Operating Procedures for Operations at Technical Search & Rescue Incidents (NFPA 1670)	X			X
Pre-Incident Planning (NFPA 1620)	X	X	X	X
Fire Prevention Codes	X		X	X
Burn Ordinance			X	X
National Incident Management System (NIMS) Adoption	X	X	X	X
Incident Command System (ICS) Adoption	X	X	X	X
Building Inspections	X		X	X
Tier II Reports			X	X
County Emergency Operations Plan			X	X
Safety Data Sheets	X	X	X	X
Pipeline Maps	X	X	X	X
Hazardous Materials Facilities Maps			X	
Water Supply Systems Maps		X		X
Impassable Roads & Bridges Maps		X		
Evacuation Zones Maps				X
Community & Special Residential Areas Maps (i.e., manufactured home parks, subdivisions, recreational communities)	X	X	X	
Level of Capability	M	M	H	H

An "X" indicates that the item is currently in place and being implemented.

Level of Capacity: "L" = Limited; "M" = Moderate; "H" = High

Figure JC-11 Fire Protection Districts – Administrative & Technical Capabilities				
Capability Type	Fire District			
	Glen Carbon FPD	Olive Fire District	South Roxana FPD	Troy FPD
Administrative & Technical				
Board of Trustees	X	X	X	X
Board of Fire Commissioners				
Mutual Aid Box Alarm System (MABAS)	X	X	X	X
Mutual Aid Agreements	X	X	X	X
Hazardous Materials Response Team			X	
Water Rescue/Dive Team			X	
Technical Rescue Team			X	
Fire Chief	X	X	X	X
Deputy Fire Chief	X			X
Administrative Assistant				X
Financial/Business Manager				
Inspector				
Public Education Director/Officer				
Telecom Director				X
Training Coordinator		X	X	X
Level of Capability	L	L	M	M

An "X" indicates the presence of staff with specified knowledge or skills.

Level of Capacity: "L" = Limited; "M" = Moderate; "H" = High

Figure JC-12 Fire Protection Districts – Financial / Education & Outreach Capabilities				
Capability Type	Fire District			
	Glen Carbon FPD	Olive Fire District	South Roxana FPD	Troy FPD
Financial				
Capital Improvements Program	X			X
Tax Levies for Special Purposes	X	X	X	X
General Obligation Bonds and/or Special Tax Bonds	X		X	X
Federal Funding Programs (Non-FEMA)		X	X	X
Level of Capability	M	M	M	H
Education & Outreach				
Natural Disaster/Safety-Related School Programs	X			
Ongoing Public Education or Information Programs (Fire Safety, Household Preparedness)	X		X	X
Seasonal Outreach	X			X
Public-Private Partnership Initiatives Addressing Disaster-Related Issues	X			
Level of Capability	H	L	L	M

An "X" indicates a given resource is locally available for mitigation purposes.

Level of Capacity: "L" = Limited; "M" = Moderate; "H" = High

Figure JC-13 Healthcare Facilities – Planning & Regulatory / Administrative & Technical Capabilities		
Capability Type	Healthcare	
	Anderson Hospital	OSF Saint Anthony's Health Center
Plans, Policies, Codes, Ordinances & Resolutions		
Continuity of Operations Plan	X	X
Strategic Plan	X	X
Facilities Plan		X
Emergency Preparedness Plan	X	X
Medical Disaster Preparedness & Response Plan	X	X
Community Health Needs Assessment (CHNA)	X	X
Severe Weather Plan	X	
National Incident Management System (NIMS) Adoption	X	X
Level of Capability	H	H
Administrative & Technical		
Board of Directors	X	X
Patient Advisory Board		
Mutual Aid Agreements	X	X
Chief Executive Officer	X	X
Chief Medical Officer	X	X
Chief Financial Officer	X	X
Chief Development Officer		
Chief Nursing Officer	X	X
Communications Director	X	X
EMS Director	X	X
ER Director	X	X
Grant Writer		
IT Director/GIS Specialist	X	
Maintenance Manager	X	X
Rehab & Long-Term Care Director		
Safety Officer	X	X
Level of Capability	H	M/H

An "X" indicates that the item is currently in place and being implemented or the presence of staff with specified knowledge or skills.

Level of Capacity: "L" = Limited; "M" = Moderate; "H" = High

Figure JC-14 Healthcare Facilities – Financial / Education & Outreach Capabilities		
Capability Type	Healthcare	
	Anderson Hospital	OSF Saint Anthony's Health Center
Financial		
Capital Improvements Program	X	X
Tax Levies for Special Purposes		
General Obligation Bonds and/or Special Tax Bonds	X	
Federal Funding Programs (Non-FEMA)	X	
Level of Capability	M/H	L
Education & Outreach		
StormReady Certification		
Natural Disaster/Safety-Related School Programs	X	X
Ongoing Public Education or Information Programs (Fire Safety, Household Preparedness, Responsible Water Use)	X	
Seasonal Outreach	X	
Local Citizen Groups/Non-Profit Organizations (Emergency Preparedness, Access & Functional Needs Populations)	X	X
Public-Private Partnership Initiatives Addressing Disaster-Related Issues	X	X
Level of Capability	H	M

An "X" indicates a given resource is locally available for mitigation purposes.
 Level of Capacity: "L" = Limited; "M" = Moderate; "H" = High

Figure JC-15 Drainage & Levee Districts – Planning & Regulatory / Administrative & Technical Capabilities		
Capability Type	D&LD	
	Metro East Sanitary District	Wood River D&LD
Plans & Policies		
Strategic/Tactical Plan	X	X
Maintenance/Improvement Plan	X	X
Emergency/Crisis Response Plan	X	X
Continuity of Operations Plan	X	X
National Incident Management System (NIMS)		
Level of Capability	M/H	M/H
Administrative & Technical		
Governing Board of Commissioners	X	X
Mutual Aid Agreements	X	
Executive Director	X	X
Superintendent	X	X
Secretary/Administrative Assistant	X	X
Treasurer	X	X
Level of Capability	H	H

An "X" indicates that the item is currently in place and being implemented or the presence of staff with specified knowledge or skills.

Level of Capacity: "L" = Limited; "M" = Moderate; "H" = High

Figure JC-16 Drainage & Levee Districts – Financial / Education & Outreach Capabilities		
Capability Type	D&LD	
	Metro East Sanitary District	Wood River D&LD
Financial		
Capital Improvements Program	X	X
Tax Levies for special purposes	X	X
General Obligation Bonds and/or Special Tax Bonds		X
Federal Funding Programs (Non-FEMA)	X	X
Level of Capability	M/H	H
Education & Outreach		
Natural Disaster/Safety-Related Campus Programs		
Ongoing Education or Information Programs (Household Preparedness, Environmental Education, etc.)	X	
Seasonal Outreach	X	X
Public-Private Partnership Initiatives Addressing Disaster-Related Issues	X	X
Level of Capability	M/H	M

An "X" indicates a given resource is locally available for mitigation purposes.

Level of Capacity: "L" = Limited; "M" = Moderate; "H" = High

Figure JC-17
Capability Rankings by Participating Jurisdiction
(Sheet 1 of 2)

Capability Type	County/Municipality/Special-Purpose Unit of Local Government																							
	Madison County	Alhambra	Alton	America's Central Port	Collinsville	East Alton	Edwardsville	Glen Carbon	Godfrey	Granite City	Grantfork	Hamel	Highland	Livingston	Madison, City of	Marine	Maryville	Pontoon Beach	Roxana	St. Jacob	Troy	Venice	Wood River	Worden
Planning & Regulatory	H	M	H	L	M	M	H	H	H	M	M	M	M	L	H	L/M	M	H	M	L	M	L/M	M	M
Administrative & Technical	H	M	H	L	H	H	H	M	M	H	M	M/H	M	M	M/H	M	M	H	M	M	M	M/H	M	M
Financial	M	L	L	L	H	L	H	H	L	M	M	M	H	L	L	L	L	M	M	L	H	L	H	M
Education & Outreach	H	L	L	L	L	L	H	L	M	H	L	L	L	L	L	L	M	L	L	L	L	L	H	L
Overall Capability	H	M/L	H/M	L	M/H	M	H	H/M	H/M	M/H	M	M	M	L	M	M/L	M	H/M	M	L/M	M	L/M	M/H	M

Level of Capacity: "L" = Limited; "M" = Moderate; "H" = High

Figure JC-17
Capability Rankings by Participating Jurisdiction
(Sheet 2 of 2)

Capability Type	Township				School District									College	Fire District				Healthcare		D&LD	
	Collinsville Township	Edwardsville Township	Leef Township	Nameoki Township	Alton CUSD #11	Bethalto CUSD #8	Collinsville CUSD #10	Edwardsville CUSD #7	Madison County ROE #41	Marquette Catholic High School	Roxana CUSD #1	St. Mary's Catholic School	Wood River-Hartford CUSD #15	Southern Illinois University Edwardsville	Glen Carbon FPD	Olive Fire District	South Roxana FPD	Troy FPD	Anderson Hospital	OSF Saint Anthony's Health Center	Metro East Sanitary District	Wood River D&LD
Planning & Regulatory	M	L	L	M	L	M	M	M	L	M	L	L	L	M/H	M	M	H	H	H	H	M/H	M/H
Administrative & Technical	M	M	M	H	H	M	H	H	M	M	M	M	M	H	L	L	M	M	H	M/H	H	H
Financial	L	L	L	M	H	H	H	M	L	L	H	L	M	M/H	M	M	M	H	M/H	L	M/H	H
Education & Outreach	M	L	L	M	L	L	M/H	L	L	L/M	L/M	L	L/M	H	H	L	L	M	H	M	M/H	M
Overall Capability	M	L/M	L/M	M/H	M	M/H	H/M	M/H	L/M	M/L	M	L/M	M	H/M	M	M/L	M/H	M/H	H	M/H	H/M	M/H

Level of Capacity: "L" = Limited; "M" = Moderate; "H" = High

Figure JC-18 Select Planning & Regulatory Capabilities Information by County/Municipality							
Participating Jurisdiction	Comprehensive/Land Use Plan		Building Codes			Zoning Ordinance	
	Effective Date	Scheduled Update (if known)	Effective Date	ICC I-Code Version	Scheduled Update (if known)	Effective Date	Scheduled Update (if known)
Madison County	2018	---	2015	2012	---	2024	---
Alhambra	2008	---	1998	n/a	---	2003	---
Alton	2003	---	2024	2021	---	2003	---
Collinsville	2006	2025	2024	2021	---	2009	---
East Alton	---	---	2021	2015	---	2015	---
Edwardsville	2010	2025	2022	2021	---	2019	---
Glen Carbon	2015	2025	2024	2018	2026	2008	---
Godfrey	2021	---	2021	2018	---	2009	---
Granite City	1990	---	2008	2002	---	1999	---
Grantfork	n/a	---	2018	2012	---	2023	---
Hamel	2020	---	2010	2009	---	2017	---
Highland	2013	---	2022	2012	---	2006	---
Livingston	---	---	2011	n/a	---	1997	---
Madison, City of	2003	---	2009	2006	---	1995	---
Marine	n/a	---	2015	2012	---	2010	---
Maryville	2013	---	2017	2012	2025	1992	---
Pontoon Beach	2016	---	2022	2018	---	2022	---
Roxana	2025	---	2019	2012	---	1981	---
St. Jacob	---	---	2009	2003	---	1999	---
Troy	2019	---	2013	2012	---	2014	---
Venice	---	---	1997	n/a	---	1993	---
Wood River	2023	---	2018	2012	---	1996	---
Worden	2018	---	---	---	---	2006	---

5.0 CHANGES IN CONDITIONS

In order to effectively reduce the long-term risk associated with the identified hazards, it is important to reflect on how the current conditions within the County and participating jurisdictions have changed since the previous Plan was completed. This section summarizes the changes in development and priorities experienced within the County, identifies progress in local mitigation efforts, and characterizes how these changes and progress, or lack thereof, have altered the vulnerability of the participants, be it increasing, decreasing, or having no measurable impact.

5.1 CHANGES IN LAND USE AND DEVELOPMENT

[Local Mitigation Planning Policy Guide Element E1-a]

In order to identify changes in land use and development, an assessment of current development patterns and pressures was conducted. For the purposes of this document, changes in development can mean recent development (construction completed or under consideration since the original Plan was approved); potential development (development planned), or conditions that may affect the risks and vulnerabilities of each jurisdiction, including changes in population. As part of this assessment, the participants of the previous Plan were asked to complete a “Changes in Land Use and Development” survey. The information gathered from these surveys was used to inform the following discussion.

As discussed in Section 1.2, approximately 77% of the County’s land cover in 2023 was vegetation, including developed open spaces, cultivated crop land, pasture/hay, grassland, and deciduous/evergreen/mixed forest. Between 2019 and 2023 approximately 1.75% of the land cover in the County changed with only 3.89 square miles of development and 1.28 square miles of impervious surfaces gained during that 4-year period. The majority of the land use in Madison County is agricultural. Approximately 56% of the land within the County is used for farming practices. This is down from 2017 when approximately 67% of the land area within the County was used for farming.

Population growth is one of the major factors that triggers changes in land use. However, Madison County has seen a slight decrease in its population between 2010 and 2020 by 1.3% from 269,282 to 265,859. This is counter to the larger trend. U.S. Census Bureau records indicates that between 1900 and 2010, the population of Madison County increased by 316% from 64,694 to 269,282. Between 2010 and 2020, 10 of the 22 participating municipalities experienced population increases: Edwardsville by 10.4%, Glen Carbon by 7.0%, Grant Fork by 1.2%, Hamel by 13.8%, Highland by 0.7%, Maryville by 9.8%, Pontoon Beach by 0.7%, St. Jacob by 23.7%, Troy by 10.8%, and Worden by 5.0%. The other 12 participating municipalities experienced population decreases between 2010 and 2020: Alhambra by 8.7%, Alton by 7.9%, Collinsville by 4.7%, East Alton by 8.2%, Godfrey by 0.9%, Granite City by 7.7%, Livingston by 11.1%, City of Madison by 18.5%, Marine by 5.0%, Roxana by 5.7%, Venice by 20.7%, and Wood River by 1.8%.

A decline in population generally indicates a decrease in revenue, which in turn implies that there is less available capital to invest in critical services and make progress in local mitigation efforts. As a result, the overall vulnerability of over half the participants is likely to increase due to the lack of funds available to implement mitigation actions.

Development is another major factor that triggers changes in land use. Based on responses to the “Changes in Land Use and Development” survey, **Figure C-1**, located at the end of this section, summarizes the changes in development experienced by previous participants since the 2020 Plan was adopted. No substantial changes in development have occurred in hazard prone areas in Alhambra, America’s Central Port, East Alton, Granite City, Hamel, Livingston, City of Madison, and Worden that would increase or decrease the vulnerability of these municipalities since 2020. Madison County, Alton, Collinsville, Edwardsville, Glen Carbon, Godfrey, Grantfork, Highland, Marine, Maryville, Pontoon Beach, Troy, Venice and Wood River reported experiencing development since the 2020 Plan was written.

Based on the information provided by Madison County, only the new solar farm developments of Midwest Powers and ESP Solar have an increased vulnerability given they were developed over undermined areas. None of the other new developments have an identifiable impact on the County’s vulnerability, including to flooding. The only new development in Alton that has an increased vulnerability is the Solar array on Industrial Drive which was developed over an undermined area. None of the other new developments have had an identifiable impact on Alton’s vulnerability, including to flooding. In Collinsville, four restaurants, an office building, a medical building, and a grocery store have an increased vulnerability due to their development over undermined areas. None of the other new developments have had an identifiable impact on Collinsville’s vulnerability, including to flooding. None of Edwardsville’s new developments have an identifiable impact on the City’s vulnerability, including to flooding. The Orchard Town Center development in Glen Carbon has an increased vulnerability given they were developed over undermined areas. None of the other new developments have an identifiable impact on the Village’s vulnerability.

None of Godfrey’s new developments have an identifiable impact on the City’s vulnerability, including to flooding. Neither the new subdivision in Grantfork nor the new solar farm in Highland have an identifiable impact on either municipality’s vulnerability, including to flooding. None of the new developments in Marine have an identifiable impact on the Village’s vulnerability. The Retail Center II in Maryville has an increased vulnerability due to it development over an undermined area. None of the other new developments have an identifiable impact on Maryville’s vulnerability. Based on the information provided by Pontoon Beach, none of the new developments have an identifiable impact on the Village’s vulnerability, including to flooding. Unitech and Southern Tires in Troy both have an increased vulnerability given they were developed over undermined areas. However, none of the other new developments have had an identifiable impact on the City’s vulnerability. Neither the new school in Venice nor the residential development in Wood River have an identifiable impact on either municipality’s vulnerability, including flooding.

Based on responses to the “Changes in Land Use and Development” survey, **Figure C-2**, located at the end of this section, summarizes planned development anticipated to occur in the next five years. Alhambra, America’s Central Port, Granite City, Grantfork, Hamel, Highland, Livingston, City of Madison, Marine, Maryville, Wood River, and Worden did not identify any substantial planned development within the next five years while Madison County, Alton, Collinsville, East Alton, Edwardsville, Glen Carbon, Godfrey, Pontoon Beach, Troy, and Venice all indicated that various types of development would occur within their jurisdictions within the next five years.

No other large-scale development initiatives are underway in the County. Substantial changes in land use (from forested and agricultural land to residential, commercial, and industrial), aside from those mentioned above, are not anticipated within the County in the immediate future and no sizeable increases in commercial or industrial developments are expected within the next five years.

5.2 STATUS OF EXISTING MITIGATION ACTIONS

[Local Mitigation Planning Policy Guide Element E2-b]

The Plan update process included a review and evaluation of the **existing hazard mitigation actions**. Each jurisdiction who chose to participate in the previous Plan update was provided a copy of their list of existing mitigation actions at the first meeting held on March 26, 2024. They were asked to identify those actions that were either in progress or that had been completed since the previous Plan was prepared in 2020.

Figure C-3 provides an overview of the status of the existing mitigation actions for the previous participants while **Figures C-4** through **C-25**, located at the end of this section, detail the individual results of the analysis by jurisdiction.

Roxana, St. Jacob, Collinsville Township, Edwardsville Township, Leef Township, Nameoki Township, Alton CUSD #11, Bethalto CUSD #8, Collinsville CUSD #10, Edwardsville CUSD #7, The Center for Educational Opportunities ROE 41, Marquette Catholic High School, Roxana CUSD #1, St. Mary's Catholic School, SIUE, Wood River-Hartford ESD #15, Glen Carbon FPD, Olive Fire District, South Roxana FPD, Troy FPD, Metro East Sanitary District, and Wood River D&LD did not participate in the previous Plan update and therefore are not included in the summary. While Bethalto participated in the previous Plan, they chose not to participate in this Plan update process and are not included in the summary.

5.3 CHANGES IN PRIORITIES

[Local Mitigation Planning Policy Guide Element E2-a]

When discussing changes in priorities, it is imperative to understand that for Madison County and the communities that reside within it, the highest priority is maintaining critical services (i.e., drinking water, sewer, law enforcement, fire, roads/streets, etc.) to their residents while remaining financially solvent. The municipalities in the County have populations that range from 341 individuals up to 27,549 individuals according to the 2020 Decennial Census. Approximately half of these communities have minimal staff and limited financial resources with which to achieve this priority. While mitigation efforts are important and can reduce the long-term risks to people and property, providing basic services essential to human health and safety is and always will remain the highest priority.

Since priorities specifically related to mitigation efforts can change over time, each jurisdiction was given the opportunity to eliminate any action on their existing mitigation action lists that they did not deem currently relevant, viable, and/or practical for implementation. Madison County, Alhambra, Alton, Edwardsville, Glen Carbon, Granite City, Hamel, Livingston, Marine, Pontoon Beach, and Troy eliminated actions their lists due to changes in perceived need, financial

constraints, feasibility, and/or lack of jurisdictional authority. There were no other identified changes in priorities related to the mitigation efforts for any of the previous participants since the previous Plan was approved.

Figure C-3
Summary – Status of Existing Mitigation Actions by Previous Participant

Jurisdiction	Total No. of Actions Identified	Status of Mitigation Actions			Barriers to Completion Identified (staffing, lack of funding, political will, etc.)	No. of Actions Eliminated	No. of Actions Retained
		No Progress	In Progress*	Completed*			
Madison County	24	8	14	2	funding; perceived need	3	21
Alhambra	8	3	1	4	perceived need	1	3
Alton	23	17	5	1	funding; lack of jurisdictional authority	1	21
America's Central Port	5	3	1	1	---	---	4
Collinsville	13	4	9	---	---	---	11
East Alton	26	24	2	---	funding	---	26
Edwardsville	15	6	4	5	perceived need	3	8
Glen Carbon	17	9	7	1	perceived need; lack of jurisdictional authority	7	9
Godfrey	28	14	11	3	---	---	25
Granite City	18	13	3	2	perceived need; lack of jurisdictional authority	2	15
Grantfork	20	14	5	1	---	---	18
Hamel	3	3	---	---	funding; lack of jurisdictional authority	2	1
Highland	17	7	9	1	funding	---	16
Livingston	6	4	2	---	funding; lack of jurisdictional authority	1	5
Madison, City of	13	5	8	---	funding	---	13
Marine	15	12	1	2	funding; perceived need	2	10
Maryville	11	5	6	---	feasibility; perceived need; lack of jurisdictional authority		
Pontoon Beach	19	4	15	---	perceived need	2	13
Troy	15	8	3	4	funding; perceived need	6	5
Venice	13	7	6	---	funding	---	13
Wood River	18	5	11	2	---	---	16
Worden	11	7	3	1	---	---	10

* Actions identified as “In Progress” or “Completed” are not included in the “No. of Mitigation Actions Eliminated” column since these were projects successfully implemented and not eliminated due to changes in perceived need, financial constraints, or political circumstances.

Figure C-1
Changes in Development Identified by Previous Participants Since 2020 Plan
(Sheet 1 of 4)

Jurisdiction	Changes Identified	Type, Size, and Location
Madison County	Yes	- I-55 RV Park & Campground – 6.29 acres, Blackburn Rd. - Dean Croft Self Storage Facility – 10.58 acres, Blackburn Rd. - St Jacob Airport redevelopment – 3.3 acres, Beacon St., St. Jacob - Dollar General – 2 acres, E. Chain of Rocks Rd. - Solar Farm development in unincorporated Madison County included: Midwest Powers – 32 acres, Frontage Rd., Staunton; ESP Solar – 24 acres, Church Rd.; ESP Solar – 32 acres, Frontage Rd., Staunton; BAP Power Corp. – 28 acres, Possum Hill Rd., Worden - Major subdivision development in unincorporated Madison County included: Estates at Heritage Landing, Harvest View Acres, Hills at Paddock Creek, Schmalz Road, Shadow Woods, and Stone Cliff Manor
Alhambra	No	
Alton	Yes	- Holiday Inn Express – 2008 Homer Adams Pkwy - Starbucks – 1723 Homer Adams Pkwy - U-Haul Storage expansion – 2851 Homer Adams Pkwy - Alton Circle Center renovations – 1753 Homer Adams Pkwy - Wedge Elfgem Innovation Center renovations – 600-622 E. Broadway - Solar array on Industrial Dr. – 23 acres with 5 megawatt output - Alton Steel Inc. (5 Cut St.) – new 5 megawatt output solar array - Alton Public Works – 226 kilowatt output solar array with 420 panels - St. Anthony's Health Center Cath Lab renovations - Lenhardt Tool & Die – 575 Piasa St. (demolished)
America's Central Port	No	

Figure C-1
Changes in Development Identified by Previous Participants Since 2020 Plan
(Sheet 2 of 4)

Jurisdiction	Changes Identified	Type, Size, and Location
Collinsville	Yes	- Commercial Building, Restaurant – 675 sq. ft., 1312 Vandalia - Commercial Building, Restaurant – 320 sq. ft., 201 N. Morrison St. - Commercial Building, Warehouse & Office – 75,000 sq. ft., 100 Commerce Center Dr. - Government Addition – 3,620 sq. ft., 1407 North Bluff - Commercial Building, Office – 5,356 sq. ft., 506 Vandalia - Commercial Building, Medical – 5,137 sq. ft., 400 Beltline Rd. - Commercial Building, Restaurant – 320 sq. ft., 201 N. Morrison St. - Commercial Building, Restaurant – 426 sq. ft., 403 N. Main - Expansion/Renovation, Grocery – 6,276 sq. ft., 1716 Vandalia - Commercial Building, Restaurant – 3,828 sq. ft., 344 St. Louis Rd. - Commercial Building, Restaurant – 2,121 sq. ft., 404 Beltline - Warehousing/Office – 36,100 sq. ft., 1609 Eastport Plaza - Warehousing/Office – 49,770 sq. ft., 25 ABC Parkway - Addition, Gas Station – 1,918 sq. ft., 1000 Beltline Rd. - Warehouse/Office – 61,651 sq. ft., 1609 Eastport Plaza Dr. - Commercial Building, Gas Station – 13,516 sq. ft., 1010 Beltline Rd. - Commercial Building, Restaurant – 735 sq. ft., 300 St. Louis Rd. - Commercial Building, Retail – 20,946 sq. ft., 916 Fournie Lane
East Alton	No	
Edwardsville	Yes	- Trace on the Parkway (mixed-use development) build out – IL Rte. 157/Governor's - Park North (dirt moving for road & mixed-use development) – I-55/ IL Rte. 143 - The Pfarm (housing units in downtown) – E. Union - City Walk – 8 housing units on corner at Schwartz/Kansas - The Station on Main (mixed use development) – N. Main St. - SIUE Health & Sciences Building – University Dr. - RPL Center – Ice Rink

Figure C-1
Changes in Development Identified by Previous Participants Since 2020 Plan
(Sheet 3 of 4)

Jurisdiction	Changes Identified	Type, Size, and Location
Glen Carbon	Yes	- Orchard Town Center – 46 acres, Center Grove Road - Ameren Transmission Operation Control Center – 250 acres, 3400 Route 157 - Keystone Place – 1.5 acres, 245 Magnolia Drive
Godfrey	Yes	- Illinois American Water Operation Center – 26 acres, 1151 Airport Rd. - BJC Medical Group Convenient Care – 2.98 acres, 6702 Godfrey Rd. - Glazebrook Park Extension Phase I – 23 Acres, 1401 Stamper Ln. - Ingham Lane Storage Facility – 12, 44 acres, 7300 Timbercrest Dr. - Fire Station House #1 & Administrative HQ – 5.47 acres, Godfrey Rd.
Granite City	No	
Grantfork	Yes	New 50 lot subdivision has been developed, approximately 19 acres located on W. Pocahontas Road (zoned as R-1 single family residential)
Hamel	No	
Highland	Yes	Solar farm – 13.3 acres, Highland Rd.
Livingston	No	
Madison, City of	No	
Marine	Yes	- Grandview Senior Residences – 24 senior apartment units, 835 W. Division St.; - Lucinda Vista addition – 10 homes to added to subdivision
Maryville	Yes	- Cherry Farms Subdivision (New) - Stonebridge Bluffs Subdivision (Addition) - Remington Villas Subdivision (Addition) - Retail Center II (multi-building retail strip mall)
Pontoon Beach	Yes	- Gateway Tradeport - Several developments along Chain of Rocks Road & Pontoon Rd.

Figure C-1
Changes in Development Identified by Previous Participants Since 2020 Plan
(Sheet 4 of 4)

Jurisdiction	Changes Identified	Type, Size, and Location
Troy	Yes	- Stone Briar Phase 2 – 19 lots - Hampton Glen Phases 5 & 6 – 30 lots - Homes of Liberty Phase 3 & 4 – 76 lots - Unitech (industrial) – 20,000 sq. ft. - Southern Tire – 8,500 sq. ft. - 101 N. Main St. (mixed use) – 8,000 sq. ft.
Venice	Yes	New school & grounds being built – 6.5 acres, 700 Broadway
Wood River	Yes	Residential development – Moreland Rd. and IL Rte. 143
Worden	No	

**Figure C-2
Development Planned/Under Consideration
(Sheet 1 of 2)**

Jurisdiction	Changes Identified	Type, Size, and Location
Madison County	Yes	Pfund Industrial Park – 20 Acres, Blackburn Rd. at Pin Oak Rd., Edwardsville
Alhambra	No	
Alton	Yes	- Dollar General – 3195 Fosterburg Road - Alton Memorial Hospital surgery center wing renovations - Alton Mental Health Center renovations (Willow Building) – 4500 College - Sunnybrook Apartment Complex on Washington Ave. – 10 buildings/40 living units - Lucas Row development – 600 block East Broadway - Old Jacoby Furniture Building adding residential above – 627 E. Broadway - Old Bakery Beer Company adding residential above – 400 Landmarks - Flood Wall – W. & E. Broadway (approx. 3 blocks of wall to protect downtown businesses)
America's Central Port	No	
Collinsville	Yes	Warehousing, distribution, & office uses along Horseshoe Lake Rd. & McDonough Lake Rd.
East Alton	Yes	Weiland to add a metal manufacturing structure – 310,000 sq. ft.
Edwardsville	Yes	- Park North (mixed use development) – 95 acres, I-55/IL Rte. 143 - Greenspace/Park growth – sites across Edwardsville & Phase II at Plummer Family Park - Continued development on IL Rte. 157 in the business & mixed-use corridor - Lincoln Middle School renovations
Glen Carbon	Yes	- Spring Way Subdivision – 34 acres, 4800 block Route 159 - Hidden Hills Subdivision – 58 acres, Glen Carbon Road - Route 157 Business Park – 120 acres, W. Main Street - Meridian Plaza, Meridian Route – 44 acres, IL Route 157 - Bluffview Commerce Park, Ameren TOCC – 125 acres, IL Route 157 - IL Route 162/IL Route 157 Reroute - Glen Carbon Water Treatment – 125 acres, Bluffview Commerce Park - MidAmerica Surgery – 5 acres, IL Route 159/Edwards Dr. - Schoolhouse Apartments – 40 acres, Birger Avenue - Savannah Crossing – 50 acres, Old Troy Road

**Figure C-2
Development Planned/Under Consideration
(Sheet 2 of 2)**

Jurisdiction	Changes Identified	Type, Size, and Location
Godfrey	Yes	- Top Shelf Liquor Store – 1 acre, Godfrey Road north of Dollar Tree - F.E. Widman Trail (bike trail) – 2.35 miles, LaVista to Glazebrook Parks - Stamper Lane Extension (2 business locations) – 2.29 Acres, east of Godfrey Rd. - Village of Godfrey Solar Panel development – various locations - Multi-family Housing – 2.55 acres, between Lars Hoffman and Airport Rd. (Willow)
Granite City	No	
Grantfork	Yes	Small business – flowers/plants, coffee/sandwich shop
Hamel	No	
Highland	Yes	Solar farm at Parcel 01-1-24-06-00-000-027-001
Livingston	No	
Madison, City of	Yes	Modifications to property owned by World Wide Technology
Marine	No	
Maryville	No	
Pontoon Beach	Yes	Continued development in Gateway Tradeport and along Gateway Commerce Center
Troy	Yes	- West Wind Villas – 19 lots - Belle Rose Manor – 14 multifamily units - Auburn Trace – 12 lots - Shadow Wood, Phase 3 – 112 lots
Venice	Yes	Grocery store, medical center, and approximately 40 homes - locations & sizes TBD
Wood River	No	
Worden	No	

Figure C-4
Madison County – Status of Existing Mitigation Actions
(Sheet 1 of 5)

Figure C-4 Madison County – Status of Existing Mitigation Actions (Sheet 1 of 5)							
Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Emergency Management Agency							
Relocate the Emergency Operations Center out of the floodplain.		✓			Barrier to completion – lack of funding	✓	
Partner with “high” hazard classified dam owners to develop Emergency Action Plans (EAPs) that identify the extent (water depth, speed of onset, warning times, etc.) and location (inundation areas) of potential dam failures to address data deficiencies.		✓				✓	
Partner with levee owners to develop Emergency Preparedness Plan/Inundation Maps that identify the extent (water depth, speed of onset, warning times, etc.) for the studied levees to address identified data deficiencies.		✓				✓	
Acquire flood-prone properties in Dobrey Slough (located in the vicinity of Granite City and Pontoon Beach) and remove any existing structures.	✓				Barrier to completion – lack of funding	✓	
Conduct full or partial buyouts to relieve homeowners in frequently flooded areas.	✓				Barrier to completion – lack of funding	✓	

The only substantial changes in development that have occurred in hazard prone areas is the development of several solar farms over undermined areas that has the potential to increase the County’s vulnerability since the 2020 Plan was approved. The County did not identify any changes in priorities since the previous Plan was approved aside from the elimination of actions due to changes in perceived need and financial constraints.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Madison County has four infrastructure improvement projects and seven administrative activities in progress or completed that have the potential to decrease the vulnerability of flood prone areas within the County and another three administrative activities that have the potential to decrease the vulnerability of other hazard prone areas within the County. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The County also has two additional administrative activities in progress. However these activities are not expected to significantly change the vulnerability of hazard prone areas within the County.

Figure C-4 Madison County – Status of Existing Mitigation Actions (Sheet 2 of 5)							
Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Emergency Management Agency Continued...							
Elevate structures in frequently flooded areas.	✓				Barrier to completion – lack of funding	✓	
Develop and distribute educational materials to the general public on measures that can be taken to avoid structure damage related to earthquakes.	✓					✓	
Facilities Management							
Retrofit existing County buildings and critical facilities to current earthquake code standards and harden infrastructure to meet earthquake design guidelines to increase resiliency.	✓				In planning stages	✓	
Highway Department							
Replace/upsized select roadway culverts and bridges in Alhambra, Jarvis, Marine and St. Jacob townships as needed to increase carrying capacity and alleviate recurring flooding/drainage problems.	✓				No progress – remove from the list due to current administrations lack of knowledge regarding work to reduce flooding in this area		✓

The only substantial changes in development that have occurred in hazard prone areas is the development of several solar farms over undermined areas that has the potential to increase the County's vulnerability since the 2020 Plan was approved. The County did not identify any changes in priorities since the previous Plan was approved aside from the elimination of actions due to changes in perceived need and financial constraints.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Madison County has four infrastructure improvement projects and seven administrative activities in progress or completed that have the potential to decrease the vulnerability of flood prone areas within the County and another three administrative activities that have the potential to decrease the vulnerability of other hazard prone areas within the County. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The County also has two additional administrative activities in progress. However these activities are not expected to significantly change the vulnerability of hazard prone areas within the County.

Figure C-4
Madison County – Status of Existing Mitigation Actions
(Sheet 3 of 5)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Planning & Development							
Develop and adopt a countywide stormwater plan that specifically identifies the sources of stormwater-related flooding and the issues that need to be addressed to reduce drainage/flooding problems within the County.		✓			Currently writing a new stormwater master plan for the County	✓	
Conduct a study to determine the appropriate remedy(s) to alleviate recurring stormwater-related drainage/flooding problems identified in the County’s stormwater plan.		✓			Included in the work on the new stormwater master plan	✓	
Select, design and construct the appropriate remedy(s) to alleviate recurring stormwater drainage/ flooding problem within the County.		✓			Included in the work on the new stormwater master plan	✓	
Develop and adopt a stand-alone countywide flood damage prevention ordinance.			✓		Ordinance in place, currently working on updates to the stormwater ordinance	✓	
Review the revised Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to reflect the revised FIRMs and present both for adoption.		✓			Preliminary FIRMs are in the appeals process	✓	

The only substantial changes in development that have occurred in hazard prone areas is the development of several solar farms over undermined areas that has the potential to increase the County's vulnerability since the 2020 Plan was approved. The County did not identify any changes in priorities since the previous Plan was approved aside from the elimination of actions due to changes in perceived need and financial constraints.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Madison County has four infrastructure improvement projects and seven administrative activities in progress or completed that have the potential to decrease the vulnerability of flood prone areas within the County and another three administrative activities that have the potential to decrease the vulnerability of other hazard prone areas within the County. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The County also has two additional administrative activities in progress. However these activities are not expected to significantly change the vulnerability of hazard prone areas within the County.

Figure C-4
Madison County – Status of Existing Mitigation Actions
(Sheet 4 of 5)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Planning & Development Continued...							
Continue to make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new structures.			✓		Current FIRMS are available, preliminary FIRMs can be accessed and shared via the Building & Zoning Office	✓	
Make County officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.		✓				✓	
Participate in the National Flood Insurance Program’s Community Rating System to lower flood insurance premiums for County residents.	✓					✓	
Make informational materials available to the public about the National Flood Insurance Program’s Community Rating System.		✓			Information on the CRS program is available upon request		✓
Construct Stormwater Best Management Practices (BMPs) to help minimize the effects of stormwater runoff and flooding as identified in our Watershed Plans.		✓				✓	

The only substantial changes in development that have occurred in hazard prone areas is the development of several solar farms over undermined areas that has the potential to increase the County's vulnerability since the 2020 Plan was approved. The County did not identify any changes in priorities since the previous Plan was approved aside from the elimination of actions due to changes in perceived need and financial constraints.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Madison County has four infrastructure improvement projects and seven administrative activities in progress or completed that have the potential to decrease the vulnerability of flood prone areas within the County and another three administrative activities that have the potential to decrease the vulnerability of other hazard prone areas within the County. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The County also has two additional administrative activities in progress. However these activities are not expected to significantly change the vulnerability of hazard prone areas within the County.

Figure C-4
Madison County – Status of Existing Mitigation Actions
(Sheet 5 of 5)

Figure C-4 Madison County – Status of Existing Mitigation Actions (Sheet 5 of 5)							
Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Planning & Development Continued...							
Continue to collect Flood Elevation Certificates for properties located in Special Flood Hazard Areas.		✓			Included in County stormwater ordinance	✓	
Develop and distribute educational materials to the general public on flood protection and proofing/retrofitting of existing homes.		✓			Available via the Building & Zoning Office and upon request	✓	
Participate in the East St. Louis & Vicinity Ecosystem Restoration and Recreation Project to protect wetlands and floodplains.	✓				Unaware of this project		✓
Implement improvements to Judy’s Creek, Canteen Creek, Schoolhouse Branch, Judy’s Branch, Burdick Brand and/or Long Lake.		✓			Implementing stormwater management for Long Lake. Further improvement opportunities included in County watershed plan and upcoming stormwater master plan.	✓	
Continue to update, adopt and enforce building codes to reduce structure vulnerability to seismic activity.		✓				✓	

The only substantial changes in development that have occurred in hazard prone areas is the development of several solar farms over undermined areas that has the potential to increase the County's vulnerability since the 2020 Plan was approved. The County did not identify any changes in priorities since the previous Plan was approved aside from the elimination of actions due to changes in perceived need and financial constraints.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Madison County has four infrastructure improvement projects and seven administrative activities in progress or completed that have the potential to decrease the vulnerability of flood prone areas within the County and another three administrative activities that have the potential to decrease the vulnerability of other hazard prone areas within the County. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The County also has two additional administrative activities in progress. However these activities are not expected to significantly change the vulnerability of hazard prone areas within the County.

Figure C-5
Alhambra – Status of Existing Mitigation Actions
(Sheet 1 of 2)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Conduct sewer line reconnaissance study to identify locations where storm water infiltrates the lines.			✓				✓
Repair/reline sewer line sections where storm water infiltration is occurring to prevent sewage backups.		✓			Finished Phase 1; starting Phase 2	✓	
Purchase and install emergency backup generator with automatic transfer switch at the Village Maintenance Building to maintain operations during power outages.			✓				✓
<i>Phase 2 Stormwater Extension on S. East St.:</i> Install storm water lines along the west side of S. East St. to better manage stormwater runoff and alleviate recurring drainage/flooding problems.			✓				✓
Install storm water lines along N. East St. north to the unnamed creek to better manage stormwater runoff and alleviate recurring drainage/ flooding problems.	✓					✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village's vulnerability since the 2020 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved aside from the elimination of actions due to changes in perceived need.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Alhambra has completed two infrastructure improvement projects that have the potential to decrease the vulnerability of flood prone areas and one infrastructure project in progress that has the potential to decrease the vulnerability of other hazard prone areas within the Village. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The Village also completed two additional infrastructure improvement projects which have the potential to decrease the vulnerability to Water Systems and Transportation Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the Village.

Figure C-5
Alhambra – Status of Existing Mitigation Actions
(Sheet 2 of 2)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Install additional 5' culvert along Marshall St. to alleviate roadway flooding caused by an unnamed creek.	✓					✓	
Install riprap along high flow areas in ditches to control erosion and maintain carrying capacity.			✓				✓
Expand wastewater treatment lagoon to increase capacity.	✓				Project was re-evaluated and determined that it is not needed at this time		✓

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village's vulnerability since the 2020 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved aside from the elimination of an action due to changes in perceived need.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Alhambra has completed two infrastructure improvement projects that have the potential to decrease the vulnerability of flood prone areas and one infrastructure project in progress that has the potential to decrease the vulnerability of other hazard prone areas within the Village. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The Village also completed two additional infrastructure improvement projects which have the potential to decrease the vulnerability to Water Systems and Transportation Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the Village.

Figure C-6
Alton – Status of Existing Mitigation Actions
(Sheet 1 of 5)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Identify unreinforced masonry buildings that serve as critical infrastructure/facilities within the City.	✓					✓	
Purchase and install electric hookups at the public elementary and middle schools (American Red Cross designated emergency shelters) for use with portable emergency backup generators to provide uninterrupted power during power outages.	✓					✓	
Design and construct community safe rooms at strategic public parks within the City to serve park patrons and area residents.	✓				Barrier to completion – funding	✓	
Conduct discussions with Ameren regarding the threat that the Company’s ash pond poses to the City’s wastewater treatment facility should a natural hazard event trigger a release from the pond.	✓				Barrier to completion – funding	✓	
Repair/reline sanitary and storm sewer line sections where storm water infiltration is occurring to prevent sewage backups.	✓				Barrier to completion – funding	✓	

The only substantial changes in development that have occurred in hazard prone areas is the development of a solar farm over an undermined area that has the potential to increase the City’s vulnerability since the 2020 Plan was approved. The City did not identify any changes in priorities since the previous Plan was approved aside from elimination of an action due to lack of jurisdictional authority.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Alton has two infrastructure improvement projects and three administrative activities in progress that have the potential to decrease the vulnerability of flood prone areas within the City. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The City has completed one additional infrastructure improvement project that has the potential to decrease the vulnerability to Communications Community Lifelines. However this action is not expected to significantly change the vulnerability of hazard prone areas within the City.

Figure C-6
Alton – Status of Existing Mitigation Actions
(Sheet 2 of 5)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Separate the combined sewer system within the City to accommodate stormwater flow, maximize the carrying capacity of the sewer system and reduce the potential for waterborne disease outbreaks from a combined sewer overflow discharge event.		✓			Being completed by Illinois American Water Co. who purchased sewer plant in 2019		✓
Purchase and install LED emergency message board signs at Fire Stations 1 & 2, Police Department, City Hall and River Front Park to alert residents of hazardous conditions associated with natural hazard events.	✓				Barrier to completion – funding	✓	
Purchase a portable, trailer-mounted LED emergency message board sign to alert residents of hazardous conditions associated with natural hazard events.			✓	2021			✓
Install backup power source(s) at critical facilities.	✓					✓	

The only substantial changes in development that have occurred in hazard prone areas is the development of a solar farm over an undermined area that has the potential to increase the City's vulnerability since the 2020 Plan was approved. The City did not identify any changes in priorities since the previous Plan was approved aside from elimination of an action due to lack of jurisdictional authority.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Alton has two infrastructure improvement projects and three administrative activities in progress that have the potential to decrease the vulnerability of flood prone areas within the City. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The City has completed one additional infrastructure improvement project that has the potential to decrease the vulnerability to Communications Community Lifelines. However this action is not expected to significantly change the vulnerability of hazard prone areas within the City.

Figure C-6
Alton – Status of Existing Mitigation Actions
(Sheet 3 of 5)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Add or replace emergency storm warning sirens and/or system.	✓					✓	
Conduct full or partial buyouts to relieve homeowners in frequently flooded areas.	✓					✓	
Construct stormwater detention/ retention basins to store stormwater and alleviate flooding.	✓					✓	
Elevate structures in frequently flooded areas.	✓					✓	
Obtain elevation certificates for structures located in the floodplain.	✓					✓	
Develop and distribute educational materials to the general public on flood protection and proofing/retrofitting of existing homes.	✓					✓	
Participate in the East St. Louis & Vicinity Ecosystem Restoration and Recreation Project to protect wetlands and floodplains.		✓				✓	

The only substantial changes in development that have occurred in hazard prone areas is the development of a solar farm over an undermined area that has the potential to increase the City's vulnerability since the 2020 Plan was approved. The City did not identify any changes in priorities since the previous Plan was approved aside from elimination of an action due to lack of jurisdictional authority.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Alton has two infrastructure improvement projects and three administrative activities in progress that have the potential to decrease the vulnerability of flood prone areas within the City. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The City has completed one additional infrastructure improvement project that has the potential to decrease the vulnerability to Communications Community Lifelines. However this action is not expected to significantly change the vulnerability of hazard prone areas within the City.

Figure C-6
Alton – Status of Existing Mitigation Actions
(Sheet 4 of 5)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Retrofit existing buildings and critical facilities to current earthquake code standards and harden infrastructure to meet earthquake design guidelines to better avoid damage from an earthquake event.	✓				Barrier to completion - funding	✓	
Develop and distribute educational materials to the general public on measures that can be taken to avoid structure damage related to earthquakes.	✓					✓	
Review the revised Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to reflect the revised FIRMs and present both for adoption.		✓			Preliminary maps are available but have not been finalized yet	✓	
Continue to make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.		✓				✓	
Make City officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.		✓				✓	

The only substantial changes in development that have occurred in hazard prone areas is the development of a solar farm over an undermined area that has the potential to increase the City's vulnerability since the 2020 Plan was approved. The City did not identify any changes in priorities since the previous Plan was approved aside from elimination of an action due to lack of jurisdictional authority.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Alton has two infrastructure improvement projects and three administrative activities in progress that have the potential to decrease the vulnerability of flood prone areas within the City. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The City has completed one additional infrastructure improvement project that has the potential to decrease the vulnerability to Communications Community Lifelines. However this action is not expected to significantly change the vulnerability of hazard prone areas within the City.

Figure C-6
Alton – Status of Existing Mitigation Actions
(Sheet 5 of 5)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Participate in the National Flood Insurance Program's Community Rating System to lower flood insurance premiums for County residents.	✓					✓	
Make informational materials available to the public about the National Flood Insurance Program's Community Rating System.	✓					✓	

The only substantial changes in development that have occurred in hazard prone areas is the development of a solar farm over an undermined area that has the potential to increase the City's vulnerability since the 2020 Plan was approved. The City did not identify any changes in priorities since the previous Plan was approved aside from elimination of an action due to lack of jurisdictional authority.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Alton has two infrastructure improvement projects and two administrative activities in progress that have the potential to decrease the vulnerability of flood prone areas within the City. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The City has completed one additional infrastructure improvement project that has the potential to decrease the vulnerability to Communications Community Lifelines and another administrative activity in progress. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the City.

Figure C-7
America's Central Port – Status of Existing Mitigation Actions

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Conduct sewer line reconnaissance study to inspect sanitary, storm and combined sewer pipes and structures and identify locations where storm water infiltration and damage has occurred.			✓	2021	Infrastructure assessment was completed on sewer pipes (IDOT grant)		✓
Repair/reline sewer line sections and/or manhole structures and joints where storm water infiltration is occurring to prevent sewage backups.	✓				Installed CIPP to sewer line on First Street between D & C Street. Would like to continue more CIPP where needed.	✓	
Identify and install hail “hardening” materials at existing APC buildings and any new construction to increase infrastructure resilience and reduce damages from severe storms. APC has experienced significant hail damage in 2012 to its buildings from a severe storm event.	✓					✓	
Inspect and clean out or replace/upgrade grated inlets, storm basins/intakes and pipes to maximize/increase carrying capacity, better manage stormwater runoff in an effort to alleviate drainage problems.		✓			This is an ongoing effort as we rehabilitate and improve existing roads.	✓	
Seismically “harden” all APC buildings, specifically masonry structures, to meet earthquake design guidelines to increase resiliency.	✓					✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Port’s vulnerability since the 2020 Plan was approved. The Port did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, America’s Central Port has one infrastructure improvement project in progress that has the potential to decrease the vulnerability of flood prone areas within the Port. It is still too early to tell the degree of reduction that will be experienced from the implementation of this action. The Port also has completed an additional infrastructure improvement project that has the potential to decrease the vulnerability to Water Systems Community Lifelines. However this action is not expected to significantly change the vulnerability of hazard prone areas within the Port.

Figure C-8
Collinsville – Status of Existing Mitigation Actions
(Sheet 1 of 3)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Identify and implement stormwater best management practices to minimize stormwater runoff impacts (i.e., flooding) and increase system resiliency.		✓			The City has completed its Jefferson Detention basin project; decreasing downstream concerns. Continuous and ongoing project.	✓	
Purchase and install an automatic emergency backup generator at City Hall to provide uninterrupted power and maintain operations during power outages.		✓			Project is currently in progress. Currently awaiting delivery of generator and switch gear (estimated early 2025).		✓
Identify existing buildings within the City that could be utilized as warming/ cooling centers & shelters by City residents.		✓			Working to identify warming/colling centers.	✓	
Designate warming/cooling centers and shelters within the City.		✓			Working to identify warming/colling centers.	✓	
Conduct a feasibility study to determine the appropriateness of retrofitting the existing designated storm/emergency shelters or constructing new structures to serve as community safe rooms for City residents.	✓				The City hopes to conduct a facilities feasibility study in 2025 and this will ideally be included in the study.	✓	

The only substantial changes in development that have occurred in hazard prone areas is the development of four restaurants, an office building, a medical building, and a grocery store over undermined areas that has the potential to increase the City's vulnerability since the 2020 Plan was approved. The City did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Collinsville has one infrastructure improvement project and three administrative activities in progress that have the potential to decrease the vulnerability of flood prone areas in the City. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The City also has two additional infrastructure improvement projects and three administrative activities in progress that have the potential to decrease the vulnerability to Food, Hydration & Shelter and Safety & Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the City.

**Figure C-8
Collinsville – Status of Existing Mitigation Actions
(Sheet 2 of 3)**

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Retrofit designated storm/emergency shelters and/or construct new structures to serve as community safe rooms built to high wind and seismic standards and equipped with emergency backup generators and HVAC units that can also serve as warming/cooling centers for City residents.		✓			Preliminary evaluations have been made in some buildings and work continues with various partners to identify shelters. The City hopes to conduct a facilities feasibility study in 2026 and ideally this will be included in the study.	✓	
Retrofit the Community Fire Department Training Room to serve as an Emergency Operations Center during hazard events.	✓				Building a new fire station in 2024/2025 to include a new training room/alternate EOC.	✓	
Develop public information materials for all natural hazards that inform residents about the risks to life and property associated with each hazard and the proactive measures that they can take to reduce or eliminate their risk.	✓				Some materials and social media posts have been prepared, but this is still a work in progress.	✓	
Improve coordination between the Village, township and County to help implement hazard prevention projects and cleanup activities.		✓			Working relationships are ongoing & continuous		✓

The only substantial changes in development that have occurred in hazard prone areas is the development of four restaurants, an office building, a medical building, and a grocery store over undermined areas that has the potential to increase the City’s vulnerability since the 2020 Plan was approved. The City did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Collinsville has one infrastructure improvement project and three administrative activities in progress that have the potential to decrease the vulnerability of flood prone areas in the City. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The City also has two additional infrastructure improvement projects and three administrative activities in progress that have the potential to decrease the vulnerability to Food, Hydration & Shelter and Safety & Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the City.

Figure C-8
Collinsville – Status of Existing Mitigation Actions
(Sheet 3 of 3)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Review the revised Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to reflect the revised FIRMs and present both for adoption.		✓			The City has reviewed the preliminary maps and submitted a Letter of Map Change that was not incorporated on the proposed maps. FEMA is currently updating.	✓	
Continue to make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.		✓			Continuous and ongoing	✓	
Make Village officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.		✓				✓	
Evaluate the feasibility of participating in the National Flood Insurance Program's voluntary Community Rating System to reduce flood insurance premiums.	✓				Awaiting the extent of the revision in the final amendment to the maps.	✓	

The only substantial changes in development that have occurred in hazard prone areas is the development of four restaurants, an office building, a medical building, and a grocery store over undermined areas that has the potential to increase the City's vulnerability since the 2020 Plan was approved. The City did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Collinsville has one infrastructure improvement project and three administrative activities in progress that have the potential to decrease the vulnerability of flood prone areas in the City. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The City also has two additional infrastructure improvement projects and three administrative activities in progress that have the potential to decrease the vulnerability to Food, Hydration & Shelter and Safety & Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the City.

Figure C-9
East Alton – Status of Existing Mitigation Actions
(Sheet 1 of 4)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Convert all utility mapping to GIS.	✓				Barrier to completion – funding	✓	
Establish larger water main interconnections with Wood River and Bethalto to increase capacity to subdivisions, ensuring a constant supply of water for residents and aid in fire suppression during natural hazard events. Interconnectors currently go from 4-inch to 2-inch.	✓				Barrier to completion – funding	✓	
Replace/upgrade booster pump station on Willoway Ave. to increase capacity, better manage stormwater runoff and alleviate drainage problems and backups.	✓				Barrier to completion – funding	✓	
Purchase and install an automatic emergency backup generator at Willoway Ave. booster pump station to provide uninterrupted power and maintain operations during a power outage.	✓				Barrier to completion – funding	✓	
Purchase and install emergency backup generators with automatic transfer switches at six (6) lift stations within the Village to maintain operations during power outages.	✓				Barrier to completion – funding	✓	
Purchase and install emergency backup generator at Emergency Operations Center to provide uninterrupted power and maintain operations during power outages.	✓				Barrier to completion – funding	✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village’s vulnerability since the 2020 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, East Alton has two administrative activity in progress that have the potential to decrease the vulnerability of flood prone areas in the Village. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions.

Figure C-9
East Alton – Status of Existing Mitigation Actions
(Sheet 2 of 4)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Clean out Lakeside Ave. drainage ditch and stormwater retention area to maintain/increase capacity and better manage stormwater runoff.	✓				Barrier to completion – funding	✓	
Install riprap along the banks of the Lakeside Ave. drainage ditch to stabilize the banks, reduce erosion and maximize carrying capacity.	✓				Barrier to completion – funding	✓	
Repair/reline sanitary and storm sewer line sections where storm water infiltration is occurring to prevent sewage backups.	✓				Barrier to completion – funding	✓	
Designate the Police/Fire Department basement as a warming/cooling center and shelter. The basement is handicap accessible.	✓				Barrier to completion – funding	✓	
Retrofit the bathrooms in the Police/Fire Department basement (a designated warming/cooling center and shelter) to meet ADA standards.	✓				Barrier to completion – funding	✓	
Install backup power source(s) at critical facilities.	✓				Barrier to completion – funding	✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village's vulnerability since the 2020 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, East Alton has two administrative activity in progress that have the potential to decrease the vulnerability of flood prone areas in the Village. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions.

**Figure C-9
East Alton – Status of Existing Mitigation Actions
(Sheet 3 of 4)**

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Add or replace emergency storm warning sirens and/or system.	✓				Barrier to completion – funding	✓	
Conduct full or partial buyouts to relieve homeowners in frequently flooded areas.	✓				Barrier to completion – funding	✓	
Elevate structures in frequently flooded areas.	✓				Barrier to completion – funding	✓	
Obtain elevation certificates for structures located in the floodplain.	✓				Barrier to completion – funding	✓	
Develop and distribute educational materials to the general public on flood protection and proofing/retrofitting of existing homes.	✓				Barrier to completion – funding	✓	
Participate in the East St. Louis & Vicinity Ecosystem Restoration and Recreation Project to protect wetlands and floodplains.	✓				Barrier to completion – funding	✓	
Retrofit existing buildings and critical facilities to current earthquake code standards and harden infrastructure to meet earthquake design guidelines to increase resiliency.	✓				Barrier to completion – funding	✓	
Develop & distribute educational materials to the general public on measures that can be taken to avoid seismic structural damage.	✓					✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village’s vulnerability since the 2020 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, East Alton has two administrative activity in progress that have the potential to decrease the vulnerability of flood prone areas in the Village. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions.

Figure C-9
East Alton – Status of Existing Mitigation Actions
(Sheet 4 of 4)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Adopt, enforce & update building codes as needed to reduce structure vulnerability to seismic activity.	✓					✓	
Review the revised Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to reflect the revised FIRMs and present both for adoption.	✓				Preliminary maps are available but have not been finalized yet	✓	
Continue to make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.		✓				✓	
Make Village officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.		✓				✓	
Participate in the National Flood Insurance Program's Community Rating System to lower flood insurance premiums for County residents.	✓					✓	
Make informational materials available to the public about the National Flood Insurance Program's Community Rating System.	✓					✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village's vulnerability since the 2020 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, East Alton has two administrative activity in progress that have the potential to decrease the vulnerability of flood prone areas in the Village. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions.

Figure C-10
Edwardsville – Status of Existing Mitigation Actions
(Sheet 1 of 3)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Install camera system at drinking water wells & wastewater treatment plants to allow operators to remotely monitor the systems during natural hazard events.	✓					✓	
Upgrade (enlarge) the Old North and North Kansas Interceptor Sewer System to increase capacity and eliminate inflow and infiltration to prevent sewage backups.		✓				✓	
Replace Stonebrooke Drive bridge to address scour damage caused by repeated flooding and increase flow capacity.	✓					✓	
Purchase and install a warning siren along Governor's Parkway on the east side of the City to protect new residential and commercial development.			✓	2023			✓
Design and construct a stormwater retention basin in the area of Governor's Parkway and District Drive, a newly developing residential area, to improve stormwater runoff management and reduce the likelihood of flooding.	✓					✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the City's vulnerability since the 2020 Plan was approved. The City did not identify any changes in priorities since the original Plan was approved aside from the elimination actions due to changes in perceived need.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Edwardsville has four infrastructure improvement projects and three administrative activities completed or in progress that have the potential to decrease the vulnerability of flood prone areas in the City. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The City has also completed two additional infrastructure improvement projects that have the potential to decrease the vulnerability to Food, Hydration & Shelter and Safety & Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the City.

Figure C-10
Edwardsville – Status of Existing Mitigation Actions
(Sheet 2 of 3)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Install backup power source(s) at critical facilities.			✓	2022 2023			✓
Replace/upsized drainage structure over Mooney Creek Tributary #2 on Willow Creek Drive at the entrance to the Willow Creek subdivision to increase carrying capacity, improve flow and prevent roadway overtopping and subsequent washout during heavy rain/flood events. There currently is only one entrance into this subdivision and significant roadway damage has occurred along this tributary just north of this subdivision as a result of flash flooding.		✓			2 nd entrance added, still need to fix structure	✓	
Conduct full or partial buyouts to relieve homeowners in frequently flooded areas.			✓	2024	Hillsboro Project		✓
Construct stormwater detention/ retention basins to store stormwater and alleviate flooding.			✓	2024	Dierbergs Basin		✓

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the City's vulnerability since the 2020 Plan was approved. The City did not identify any changes in priorities since the original Plan was approved aside from the elimination actions due to changes in perceived need.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Edwardsville has four infrastructure improvement projects and three administrative activities completed or in progress that have the potential to decrease the vulnerability of flood prone areas in the City. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The City has also completed two additional infrastructure improvement projects that have the potential to decrease the vulnerability to Food, Hydration & Shelter and Safety & Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the City.

Figure C-10
Edwardsville – Status of Existing Mitigation Actions
(Sheet 3 of 3)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Retrofit existing buildings and critical facilities to current earthquake code standards and harden infrastructure to meet earthquake design guidelines to increase resiliency.	✓				Have replaced public safety buildings with buildings meeting current codes		✓
Review the revised Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to reflect the revised FIRMs and present both for adoption.		✓			Preliminary maps are available but have not been finalized yet	✓	
Continue to make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.			✓		Ongoing	✓	
Make Village officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.		✓			Ongoing	✓	
Participate in the National Flood Insurance Program's Community Rating System to lower flood insurance premiums for County residents.	✓						✓
Make informational materials available to the public about the National Flood Insurance Program's Community Rating System.	✓						✓

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the City's vulnerability since the 2020 Plan was approved. The City did not identify any changes in priorities since the original Plan was approved aside from the elimination actions due to changes in perceived need.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Edwardsville has four infrastructure improvement projects and three administrative activities completed or in progress that have the potential to decrease the vulnerability of flood prone areas in the City. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The City has also completed two additional infrastructure improvement projects that have the potential to decrease the vulnerability to Food, Hydration & Shelter and Safety & Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the City.

Figure C-11
Glen Carbon – Status of Existing Mitigation Actions
(Sheet 1 of 3)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Create digital data set of utilities (including sewer and water distribution lines) and floodplain boundaries within the Village for use with GIS.		✓			Sewer and water being rebuilt in GIS	✓	
Select, design and construct the appropriate remedy(s) to alleviate drainage problems at identified locations within the Village. The drainage/hydraulic study was completed in 2014.		✓			Drainage issues addressed based on funding availability	✓	
Retrofit the Village Board Room to serve as an Emergency Communications Center during hazard events.	✓				Emergency Communications Center is in public safety building		✓
Purchase and install automatic emergency backup generator at the Senior Center (a designated warming/cooling center) to provide uninterrupted power to critical systems during power outages.		✓			Potentially purchasing in 2025	✓	
Conduct a study of the waterways within the Village to identify locations where erosion and scour are occurring and identify the appropriate remedy(s) to stabilize the banks.	✓				Village does not maintain private property		✓

The only substantial changes in development that have occurred in hazard prone areas is the Orchard Town Center development over an undermined area that has the potential to increase the Village's vulnerability since the 2020 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved aside from the elimination of actions due to changes in perceived need and lack of jurisdictional authority.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Glen Carbon has two infrastructure improvement projects and two administrative activities in progress that have the potential to decrease the vulnerability of flood prone areas in the Village. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The Village also has three additional infrastructure improvement projects in progress that have the potential to decrease the vulnerability to Food, Hydration & Shelter and Safety & Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the Village.

**Figure C-11
Glen Carbon – Status of Existing Mitigation Actions
(Sheet 2 of 3)**

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Select, design and construct the appropriate remedy(s) to stabilize the banks of identified waterways to reduce erosion and maximize carrying capacity.	✓				Village does not maintain private property		✓
Install backup power source(s) at critical facilities.		✓			Potentially addressing in 2025	✓	
Add or replace emergency storm warning sirens and/or system.			✓				✓
Construct stormwater detention/ retention basins to store stormwater and alleviate flooding.		✓			Occurs during development	✓	
Participate in the East St. Louis & Vicinity Ecosystem Restoration and Recreation Project to protect wetlands and floodplains.	✓						✓
Implement improvements to Judy's Creek, Canteen Creek, Schoolhouse Branch, Judy's Branch, Burdick Brand and/or Long Lake.	✓				Village does not maintain private property		✓

The only substantial changes in development that have occurred in hazard prone areas is the Orchard Town Center development over an undermined area that has the potential to increase the Village's vulnerability since the 2020 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved aside from the elimination of actions due to changes in perceived need and lack of jurisdictional authority.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Glen Carbon has two infrastructure improvement projects and two administrative activities in progress that have the potential to decrease the vulnerability of flood prone areas in the Village. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The Village also has three additional infrastructure improvement projects in progress that have the potential to decrease the vulnerability to Food, Hydration & Shelter and Safety & Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the Village.

**Figure C-11
Glen Carbon – Status of Existing Mitigation Actions
(Sheet 3 of 3)**

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Retrofit existing buildings and critical facilities to current earthquake code standards and harden infrastructure to meet earthquake design guidelines to increase resiliency.	✓						✓
Develop and distribute educational materials to the general public on measures that can be taken to avoid structure damage related to earthquakes.	✓						✓
Adopt, enforce & update building codes as needed to reduce structure vulnerability to seismic activity.	✓					✓	
Review the revised Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to reflect the revised FIRMs and present both for adoption.	✓				Preliminary maps are available but have not been finalized yet	✓	
Make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.		✓			Ongoing	✓	
Make Village officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.		✓			Ongoing	✓	

The only substantial changes in development that have occurred in hazard prone areas is the Orchard Town Center development over an undermined area that has the potential to increase the Village's vulnerability since the 2020 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved aside from the elimination of actions due to changes in perceived need and lack of jurisdictional authority.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Glen Carbon has two infrastructure improvement projects and two administrative activities in progress that have the potential to decrease the vulnerability of flood prone areas in the Village. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The Village also has three additional infrastructure improvement projects in progress that have the potential to decrease the vulnerability to Food, Hydration & Shelter and Safety & Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the Village.

**Figure C-12
Godfrey – Status of Existing Mitigation Actions
(Sheet 1 of 9)**

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Select, design and construct the appropriate remedy(s) to alleviate roadway overtopping of Stoneledge Drive/Stanka Lane. Stoneledge Drive is the only entrance into or out of the Stone Ledge Subdivision.	✓				Have not received go ahead from Board to start on Project	✓	
Raise the intersection of Illini Trail & Whitford Drive to alleviate recurring flood problems.	✓				Have made overtures to FEMA about grants for this project have not heard anything back	✓	
Select, design and construct the appropriate remedy(s) to alleviate recurring roadway overtopping and flood damage to Rocky Fork Road and Vollmer Lane associated with high water from Rocky Fork.	✓				Have not received go ahead from Board to start on Project	✓	
Conduct drainage study to identify the appropriate remedies to alleviate recurring drainage problems within the River Aire Subdivision.	✓				Have not received go ahead from Board to start on project. Still have other subdivision drainage studies that have been done.	✓	
Conduct drainage study to identify the appropriate remedies to alleviate recurring drainage problems within the Piasa Hills Subdivision.	✓				Have not received go ahead from Board to start on project. Still have other subdivision drainage studies that have been done.	✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village's vulnerability since the 2020 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Godfrey has three infrastructure improvement projects and eight administrative activities in progress or completed that have the potential to decrease the vulnerability of flood prone areas and one administrative activity in progress that has the potential to decrease the vulnerability of other hazard prone areas within the Village. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The Village also has two additional infrastructure improvement projects in progress that have the potential to decrease the vulnerability to Food, Hydration & Shelter and Safety and Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the Village.

Figure C-12
Godfrey – Status of Existing Mitigation Actions
(Sheet 2 of 9)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Replace/upsized Winter Lane culvert over a small creek to increase flow capacity and alleviate drainage issues.	✓				Have not received go ahead from Board to start on project. Have replaced a couple of culverts at other locations in the last five years.	✓	
Design and construct a community safe room built to high wind and seismic standards and equipped with an emergency backup generator as part of the Park Recreation Center. The community safe room will also serve as a warming/cooling center for area residents.		✓			Finance Committee on April 02, 2024 approved soliciting proposals from architectural firms for plans and costs of a recreation center	✓	
Develop and implement a community outreach program that educates residents about stormwater management.		✓			The Village in the fall of 2022 developed a Stormwater Best Management Practices booklet “A Guide for Residents” It was approved by the Village Board and has been placed on the Village’s website. The Village has been part of the Madison County MS4 Co-Permittee Group since 2003. So along with Village’s community outreach program we are part of the Madison County’s outreach programs like Green Schools and Watershed Plans.	✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village’s vulnerability since the 2020 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Godfrey has three infrastructure improvement projects and eight administrative activities in progress or completed that have the potential to decrease the vulnerability of flood prone areas and one administrative activity in progress that has the potential to decrease the vulnerability of other hazard prone areas within the Village. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The Village also has two additional infrastructure improvement projects in progress that have the potential to decrease the vulnerability to Food, Hydration & Shelter and Safety and Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the Village.

**Figure C-12
Godfrey – Status of Existing Mitigation Actions
(Sheet 3 of 9)**

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Select, design and construct the appropriate remedy(s) to alleviate flooding problems in the old Monticello area of the Village, including but not limited to Florida St., Pearl St., Squire St., Gladys St., Boyd St. and Isabel St.		✓			Juneau Associates, Inc., P.C. designed a project called Godfrey Drainage Improvement Phase 1 for the Gladys & Isabel St. area. The project consisted of new storm water pipe system and a detention basin. The project was completed in 2021. The next phase has not been selected or designed as of yet.	✓	
Update existing drainage study. The updated study should contain an inventory of the storm sewer system (including a map that shows inlets, pipe sizes, length, type, condition, etc.)		✓			Still working on Village own storm sewer system map collecting pipe sizes and such. But we have also been adding private site development and other owners (Madison County & IDOT) storm sewer systems on the map and giving labeling of the outfalls. This is part of the MS4 NPDES NOI requirements. The Village has developed a 2024 Storm Sewer Project Priority Ranking list of 34 Projects with a Benefit/Cost ratio that is being used for future projects.	✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village’s vulnerability since the 2020 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Godfrey has three infrastructure improvement projects and eight administrative activities in progress or completed that have the potential to decrease the vulnerability of flood prone areas and one administrative activity in progress that has the potential to decrease the vulnerability of other hazard prone areas within the Village. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The Village also has two additional infrastructure improvement projects in progress that have the potential to decrease the vulnerability to Food, Hydration & Shelter and Safety and Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the Village.

Figure C-12
Godfrey – Status of Existing Mitigation Actions
(Sheet 4 of 9)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Update building codes and implement occupancy permits and inspections based on codes to improve building safety.		✓			Currently under the 2018 Building Code - Ordinance 04-2021. Implemented the Occupancy permits and inspections – Ordinance 02-2014. The Village is under the 2017 NEC Electric Code - Ordinance 35-2023. The Village has also required Electrical Contractor Registration Ordinance 36-2023. See Ordinance 04-2021 for other adoptions.	✓	
Select, design and construct the appropriate remedy(s) to eliminate ongoing erosion of the drainage ditch and storm water pipe in the D’Adrian subdivision.		✓			Have design plans for two areas in the subdivision. One set of plans is for the “Glen Vista” area. Ready to go out for bids but are having trouble getting easements from some residents to do the project. The other set of plans is for the Seine Pond. Project is ready for bid just waiting for the right time to go out for bids. Later phases will be worked on after these projects have been completed.	✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village’s vulnerability since the 2020 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Godfrey has three infrastructure improvement projects and eight administrative activities in progress or completed that have the potential to decrease the vulnerability of flood prone areas and one administrative activity in progress that has the potential to decrease the vulnerability of other hazard prone areas within the Village. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The Village also has two additional infrastructure improvement projects in progress that have the potential to decrease the vulnerability to Food, Hydration & Shelter and Safety and Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the Village.

Figure C-12
Godfrey – Status of Existing Mitigation Actions
(Sheet 5 of 9)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Survey and conduct a drainage/ hydraulic study of the D’Adrian subdivision to determine the cause(s) and identify the appropriate remedy(s) to eliminate ongoing erosion of the drainage ditch and storm water pipe which jeopardizes the existing sanitary sewer line.			✓	2021	Civil Design, Inc. was commissioned to perform a drainage study and infrastructure assessment on the D’Adrian Gardens Subdivision, CDI investigated the background of the drainage issues in the project area. Public outreach was conducted in the form of project mailings, email and phone correspondence, post card responses, and a neighborhood project meeting. Extensive field observations were recorded over four (4) separate days using ESRI Collector Software on a designated iPad with a Trimble R1 GPS. Based on these infrastructure assessments and observations, a set of recommendations were made prioritized into low, medium, and high risk areas. Additionally, seven (7) larger projects were described and summarized.		✓

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village’s vulnerability since the 2020 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Godfrey has three infrastructure improvement projects and eight administrative activities in progress or completed that have the potential to decrease the vulnerability of flood prone areas and one administrative activity in progress that has the potential to decrease the vulnerability of other hazard prone areas within the Village. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The Village also has two additional infrastructure improvement projects in progress that have the potential to decrease the vulnerability to Food, Hydration & Shelter and Safety and Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the Village.

Figure C-12
Godfrey – Status of Existing Mitigation Actions
(Sheet 6 of 9)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Conduct drainage/hydraulic study to determine the appropriate remedy(s) to address recurring stormwater drainage issues in the Ridgefield and Huntington Park subdivisions and alleviate roadway flooding along Pierce Lane.			✓	2020	Civil Design, Inc. (CDI) had completed an analysis of the existing drainage area and existing storm sewer system for the Ridgefield Drive Subdivision in the Village of Godfrey, Illinois. The information and conclusions formed from these analyses were then used to develop alternative drainage improvements for consideration in the Ridgefield Subdivision that would address the existing stormwater and flooding issues. The report summarizes each of the alternate solutions explored as part of this process.		✓
Implement permanent bank stabilization measures along the entire length of the drainage ditch (extending from Biscay Dr. to Paris Dr. in the D'Adrian subdivision) to eliminate erosion which jeopardizes the existing sanitary sewer line and maximize carrying capacity.	✓				Is on a later phase of the D'Adrian subdivision projects and since the sanitary sewer system belong to Illinois American Water the Village would need to work with them on the design of plans and construction.	✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village's vulnerability since the 2020 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Godfrey has three infrastructure improvement projects and eight administrative activities in progress or completed that have the potential to decrease the vulnerability of flood prone areas and one administrative activity in progress that has the potential to decrease the vulnerability of other hazard prone areas within the Village. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The Village also has two additional infrastructure improvement projects in progress that have the potential to decrease the vulnerability to Food, Hydration & Shelter and Safety and Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the Village.

Figure C-12
Godfrey – Status of Existing Mitigation Actions
(Sheet 7 of 9)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Select, design and construct the appropriate remedy(s) to address recurring stormwater drainage issues in the Ridgefield and Huntington Park subdivisions and alleviate roadway flooding along Pierce Lane.			✓	2024	The scope of work for this project includes the construction of dry basins for stormwater detention, the addition and replacement of stormwater pipe networks, the construction of a cul-de-sac at the eastern end of Ridgefield Drive, and other related work.		✓
Purchase and install electric hookups at the public elementary and high schools (American Red Cross designated emergency shelters) for use with portable generators to provide uninterrupted power during power outages.	✓				High School has a Permanent Backup Generator. Nothing at the elementary schools has been done. School district has not notified us to look into this Project at the elementary school properties in the Village of Godfrey	✓	
Install backup power source(s) at critical facilities.		✓			The Village has upgraded the backup generator at the Village Hall. But have not installed any further sources at critical facilities.	✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village's vulnerability since the 2020 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Godfrey has three infrastructure improvement projects and eight administrative activities in progress or completed that have the potential to decrease the vulnerability of flood prone areas and one administrative activity in progress that has the potential to decrease the vulnerability of other hazard prone areas within the Village. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The Village also has two additional infrastructure improvement projects in progress that have the potential to decrease the vulnerability to Food, Hydration & Shelter and Safety and Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the Village.

Figure C-12
Godfrey – Status of Existing Mitigation Actions
(Sheet 8 of 9)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Construct stormwater detention/ retention basins to store stormwater and alleviate flooding.	✓					✓	
Develop and distribute educational materials to the general public on flood protection and proofing/retrofitting of existing homes.	✓					✓	
Retrofit existing buildings and critical facilities to current earthquake code standards and harden infrastructure to meet earthquake design guidelines to increase resiliency.	✓					✓	
Develop and distribute educational materials to the general public on measures that can be taken to avoid structure damage related to earthquakes.	✓					✓	
Adopt, enforce & update building codes as needed to reduce structure vulnerability to seismic activity.	✓					✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village’s vulnerability since the 2020 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Godfrey has three infrastructure improvement projects and eight administrative activities in progress or completed that have the potential to decrease the vulnerability of flood prone areas and one administrative activity in progress that has the potential to decrease the vulnerability of other hazard prone areas within the Village. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The Village also has two additional infrastructure improvement projects in progress that have the potential to decrease the vulnerability to Food, Hydration & Shelter and Safety and Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the Village.

Figure C-12
Godfrey – Status of Existing Mitigation Actions
(Sheet 9 of 9)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Review the revised Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to reflect the revised FIRMs and present both for adoption.		✓			Preliminary maps are available but have not been finalized yet	✓	
Continue to make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.		✓			Ongoing	✓	
Continue to make Village officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.		✓			Ongoing	✓	
Participate in the National Flood Insurance Program's Community Rating System to lower flood insurance premiums for County residents.	✓					✓	
Make informational materials available to the public about the National Flood Insurance Program's Community Rating System.		✓			Have a page on the Village's Website with a link to the FEMA -National Flood Insurance Program – Community Rating System website. Placed on Village Website November 2019.	✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village's vulnerability since the 2020 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Godfrey has three infrastructure improvement projects and eight administrative activities in progress or completed that have the potential to decrease the vulnerability of flood prone areas and one administrative activity in progress that has the potential to decrease the vulnerability of other hazard prone areas within the Village. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The Village also has two additional infrastructure improvement projects in progress that have the potential to decrease the vulnerability to Food, Hydration & Shelter and Safety and Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the Village.

Figure C-13
Granite City – Status of Existing Mitigation Actions
(Sheet 1 of 4)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Design and construct new storm sewer systems in subdivisions that lack a system to reduce flooding/drainage problems.		✓			The infrastructure for our municipality is in the process of a major overhaul with an unknown completion date.	✓	
Purchase new emergency alert system with satellite/cellular based control technology.			✓	2023	The Fire Department and EMA coordinator both have new Starcom radio systems in place As of early 2023.		✓
Increase pump capacity of storm sewer lift station system to maximize the operating reliability of the system, increase capacity and improve flow during heavy rain/flood events.		✓			City sold its water treatment and sewer systems to Illinois American Water which are currently under major city-wide upgrades.		✓
Install backup power source(s) at critical facilities.	✓					✓	
Conduct full or partial buyouts to relieve homeowners in frequently flooded areas.	✓					✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the City's vulnerability since the 2020 Plan was approved. The City did not identify any changes in priorities since the previous Plan was approved aside from the elimination of actions due to changes in perceived need and lack of jurisdictional authority.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Granite City has three infrastructure improvement projects and one administrative activity in progress or completed that have the potential to decrease the vulnerability of flood prone areas in the City. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The City has also completed one additional infrastructure improvement project that has the potential to decrease the vulnerability to Communications Community Lifelines. However this action is not expected to significantly change the vulnerability of hazard prone areas within the City.

Figure C-13
Granite City – Status of Existing Mitigation Actions
(Sheet 2 of 4)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Construct stormwater detention/retention basins to store stormwater and alleviate flooding.		✓			The Council just voted to fund the construction of a retention basin with an unknown project completion date as of now.	✓	
Elevate structures in frequently flooded areas.	✓						✓
Obtain elevation certificates for structures located in the floodplain.	✓					✓	
Develop and distribute educational materials to the general public on flood protection and proofing/retrofitting of existing homes.			✓			✓	
Participate in the East St. Louis & Vicinity Ecosystem Restoration and Recreation Project to protect wetlands and floodplains.	✓					✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the City's vulnerability since the 2020 Plan was approved. The City did not identify any changes in priorities since the previous Plan was approved aside from the elimination of actions due to changes in perceived need and lack of jurisdictional authority.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Granite City has three infrastructure improvement projects and one administrative activity in progress or completed that have the potential to decrease the vulnerability of flood prone areas in the City. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The City has also completed one additional infrastructure improvement project that has the potential to decrease the vulnerability to Communications Community Lifelines. However this action is not expected to significantly change the vulnerability of hazard prone areas within the City.

Figure C-13
Granite City – Status of Existing Mitigation Actions
(Sheet 3 of 4)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Retrofit existing buildings and critical facilities to current earthquake code standards and harden infrastructure to meet earthquake design guidelines to increase resiliency.	✓					✓	
Develop and distribute educational materials to the general public on measures that can be taken to avoid structure damage related to earthquakes.	✓					✓	
Adopt, enforce & update building codes as needed to reduce structure vulnerability to seismic activity.	✓					✓	
Review the revised Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to reflect the revised FIRMs and present both for adoption.	✓				Preliminary maps are available but have not been finalized yet	✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the City's vulnerability since the 2020 Plan was approved. The City did not identify any changes in priorities since the previous Plan was approved aside from the elimination of actions due to changes in perceived need and lack of jurisdictional authority.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Granite City has three infrastructure improvement projects and one administrative activity in progress or completed that have the potential to decrease the vulnerability of flood prone areas in the City. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The City has also completed one additional infrastructure improvement project that has the potential to decrease the vulnerability to Communications Community Lifelines. However this action is not expected to significantly change the vulnerability of hazard prone areas within the City.

Figure C-13
Granite City – Status of Existing Mitigation Actions
(Sheet 4 of 4)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Continue to make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.	✓					✓	
Make Village officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.	✓					✓	
Participate in the National Flood Insurance Program's Community Rating System to lower flood insurance premiums for County residents.	✓					✓	
Make informational materials available to the public about the National Flood Insurance Program's Community Rating System.	✓					✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the City's vulnerability since the 2020 Plan was approved. The City did not identify any changes in priorities since the previous Plan was approved aside from the elimination of actions due to changes in perceived need and lack of jurisdictional authority.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Granite City has three infrastructure improvement projects and one administrative activity in progress or completed that have the potential to decrease the vulnerability of flood prone areas in the City. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The City has also completed one additional infrastructure improvement project that has the potential to decrease the vulnerability to Communications Community Lifelines. However this action is not expected to significantly change the vulnerability of hazard prone areas within the City.

Figure C-14
Grantfork – Status of Existing Mitigation Actions
(Sheet 1 of 4)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Install camera system to monitor critical infrastructure and water distribution system during natural hazard events. Remote monitoring would provide operators the ability to continuously assess whether critical infrastructure and facilities were in danger of being impacted by an event.		✓		2024			✓
Purchase and install a call monitoring system (power loss notification/call system) at the sewer treatment plant to alert operators to power outages and surges. Loss of power has the potential to impact services for the entire Village.	✓					✓	
Review the revised Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to reflect the revised FIRMs and present both for adoption.		✓			Preliminary maps are available but have not been finalized yet	✓	
Make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.		✓			Ongoing	✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village's vulnerability since the 2020 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Grantfork has one infrastructure improvement project and two administrative activities in progress that have the potential to decrease the vulnerability of flood prone areas. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The Village also has one infrastructure improvement project and one administrative activity completed or in progress that have the potential to decrease the vulnerability to Water Systems and Safety & Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the Village.

Figure C-14
Grantfork – Status of Existing Mitigation Actions
(Sheet 2 of 4)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Make Village officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.		✓			Ongoing	✓	
Retrofit existing building(s) to include a community safe room built to seismic and high wind standards and equipped with an emergency backup generator for use by Village staff and residents.	✓					✓	
Conduct sewer line reconnaissance study to identify locations where storm water infiltrates the lines.	✓					✓	
Repair/reline sewer line sections where storm water infiltration is occurring to prevent sewage backups.	✓					✓	
Purchase three (3) portable emergency backup generators to power the lift stations within the Village during power outages.		✓				✓	
Purchase portable pumps for use in removal of excess water during heavy rain/flood events.	✓					✓	
Upgrade/retrofit the Village's storm sewer system to better manage stormwater runoff to alleviate flooding/drainage problems.	✓					✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village's vulnerability since the 2020 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Grantfork has one infrastructure improvement project and two administrative activities in progress that have the potential to decrease the vulnerability of flood prone areas. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The Village also has one infrastructure improvement project and one administrative activity completed or in progress that have the potential to decrease the vulnerability to Water Systems and Safety & Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the Village.

Figure C-14
Grantfork – Status of Existing Mitigation Actions
(Sheet 3 of 4)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Upgrade/retrofit drinking water system (lines, mains, hydrants, pumping system, etc.) to incorporate distribution redundancies and ensure a constant supply of water for residents and to use in fire suppression in case of a natural hazard event.	✓					✓	
Enlarge wastewater treatment lagoon to increase capacity.	✓					✓	
Improve coordination between the Village, township and County to help implement hazard prevention projects and cleanup activities.			✓		Ongoing		✓
Develop a Memorandum of Agreement with the Grantfork Upper Elementary School designating the school as warming/cooling center and shelter for Village residents.	✓					✓	
Develop a Memorandum of Agreement with the United Church of Christ designating the church as a warming/cooling center and shelter for Village residents.	✓					✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village's vulnerability since the 2020 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Grantfork has one infrastructure improvement project and two administrative activities in progress that have the potential to decrease the vulnerability of flood prone areas. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The Village also has one infrastructure improvement project and one administrative activity completed or in progress that have the potential to decrease the vulnerability to Water Systems and Safety & Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the Village.

Figure C-14
Grantfork – Status of Existing Mitigation Actions
(Sheet 4 of 4)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Purchase and install electric hookups at the Grantfork Upper Elementary School (a designated warming/cooling center and shelter) for use with portable emergency backup generators to provide uninterrupted power during power outages.	✓					✓	
Purchase and install electric hookups at the United Church of Christ (a designated warming/cooling center and shelter) for use with portable emergency backup generators to provide uninterrupted power during power outages.	✓					✓	
Purchase and install automatic emergency backup generator at the Grantfork Upper Elementary School (a designated warming/cooling center and shelter) to provide uninterrupted power to critical systems during power outages.	✓					✓	
Purchase and install automatic emergency backup generator at the United Church of Christ (a designated warming/cooling center and shelter) to provide uninterrupted power to critical systems during power outages.	✓					✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village's vulnerability since the 2020 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Grantfork has one infrastructure improvement project and two administrative activities in progress that have the potential to decrease the vulnerability of flood prone areas. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The Village also has one infrastructure improvement project and one administrative activity completed or in progress that have the potential to decrease the vulnerability to Water Systems and Safety & Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the Village.

Figure C-15 Hamel – Status of Existing Mitigation Actions							
Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
<i>Southeast Drainage Improvement:</i> Grade ditches to original grade in the area from Third Street and Cassens Ave. south along Interstate 55 to Rest Area exit to better manage stormwater runoff and alleviate drainage/flooding problems on Wolf & Cook Avenues.	✓				Responsibility for this project rests with the State		✓
Install building tie-down system to secure the Hamel Park Community Building, the Village's designated emergency center.	✓				Barriers to completion - funding	✓	
<i>Southeast Drainage Improvement:</i> Install storm sewer lines and inlets and grade ditches in the area south of IL 140, east of IL 157 and north of 4th St. to better manage stormwater runoff and alleviate drainage/flooding problems.	✓				Barriers to completion - funding		✓

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village's vulnerability since the 2020 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved aside from the elimination of action due to financial constraints and lack of jurisdictional authority.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Hamel did not begin or complete any of the identified mitigation actions due to lack of jurisdictional responsibility and financial constraints experienced by a village of this size. As a result, there has been no change in the vulnerability of hazard prone areas within the Village.

Figure C-16
Highland – Status of Existing Mitigation Actions
(Sheet 1 of 3)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Repair/upgrade the sanitary sewer drainage system in the original part of the City to increase capacity and eliminate unapproved pipes/drains currently utilizing the system in an effort to alleviate recurring flooding/ drainage problems.		✓			Barriers to completion - funding	✓	
Conduct a feasibility study to determine if the current City storm shelters meet the requirements to be designated community safe rooms (tornado shelters) and what if any retrofitting would be required to meet the community safe room specifications.		✓			Barriers to completion - funding	✓	
Retrofit existing storm shelters to meet the requirements to be designated community safe rooms.	✓				Barriers to completion - funding	✓	
Install backup power source(s) at critical facilities.		✓			Barriers to completion - funding	✓	
Purchase and install new storm warning siren system.			✓	2021			✓

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the City's vulnerability since the 2020 Plan was approved. The City did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Highland has one infrastructure improvement project and four administrative activities in progress that have the potential to decrease the vulnerability of flood prone areas and two administrative activities in progress that have the potential to decrease the vulnerability of other hazard prone areas within the City. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The City also has three additional infrastructure improvement projects in progress or completed that have the potential to decrease the vulnerability to Communications, Food, Hydration, & Shelter, and Safety & Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the City.

Figure C-16
Highland – Status of Existing Mitigation Actions
(Sheet 2 of 3)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Construct stormwater detention/ retention basins to store stormwater and alleviate flooding.	✓				Barriers to completion - funding	✓	
Conduct full or partial buyouts to relieve homeowners in frequently flooded areas.	✓				Barriers to completion - funding	✓	
Obtain elevation certificates for structures located in the floodplain.	✓					✓	
Develop and distribute educational materials to the general public on flood protection and proofing/retrofitting of existing homes.		✓			Information shared continuously	✓	
Retrofit existing buildings and critical facilities to current earthquake code standards and harden infrastructure to meet earthquake design guidelines to increase resiliency.	✓				Barriers to completion - funding	✓	
Develop and distribute educational materials to the general public on measures that can be taken to avoid structure damage related to earthquakes.		✓			Ongoing	✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the City's vulnerability since the 2020 Plan was approved. The City did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Highland has one infrastructure improvement project and four administrative activities in progress that have the potential to decrease the vulnerability of flood prone areas and two administrative activities in progress that have the potential to decrease the vulnerability of other hazard prone areas within the City. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The City also has three additional infrastructure improvement projects in progress or completed that have the potential to decrease the vulnerability to Communications, Food, Hydration, & Shelter, and Safety & Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the City.

Figure C-16
Highland – Status of Existing Mitigation Actions
(Sheet 3 of 3)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Adopt, enforce & update building codes as needed to reduce structure vulnerability to seismic activity.		✓				✓	
Review the revised Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to reflect the revised FIRMs and present both for adoption.		✓			Preliminary maps are available but have not been finalized yet	✓	
Continue to make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.		✓			Ongoing	✓	
Make Village officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.		✓			Ongoing	✓	
Participate in the National Flood Insurance Program's Community Rating System to lower flood insurance premiums for County residents.	✓					✓	
Make informational materials available to the public about the National Flood Insurance Program's Community Rating System.	✓					✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the City's vulnerability since the 2020 Plan was approved. The City did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Highland has one infrastructure improvement project and four administrative activities in progress that have the potential to decrease the vulnerability of flood prone areas and two administrative activities in progress that have the potential to decrease the vulnerability of other hazard prone areas within the City. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The City also has three additional infrastructure improvement projects in progress or completed that have the potential to decrease the vulnerability to Communications, Food, Hydration, & Shelter, and Safety & Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the City.

Figure C-17
Livingston – Status of Existing Mitigation Actions

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Purchase and install storm siren system.	✓				Barriers to completion - funding	✓	
Purchase and install automatic emergency backup generators at lift stations/water wells to increase system resilience and maintain operations during extended power outages.	✓				Water system taken over by Illinois American Water.		✓
Replace/upsized select roadway culverts to increase capacity and alleviate drainage/flooding problems experienced during heavy rain events.	✓				Barriers to completion - funding	✓	
Review the revised Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to reflect the revised FIRMs and present both for adoption.	✓				Preliminary maps are available but have not been finalized yet	✓	
Continue to make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.		✓			Ongoing	✓	
Make Village officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.		✓			Ongoing	✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village's vulnerability since the 2020 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved aside from the elimination of an action due to lack of jurisdiction authority.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Livingston has two administrative activity in progress that have the potential to decrease the vulnerability of flood prone areas in the Village. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions.

Figure C-18
City of Madison – Status of Existing Mitigation Actions
(Sheet 1 of 3)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Install backup power source(s) at critical facilities.	✓				Barrier to completion - awaiting funding	✓	
Purchase and install a call monitoring system (power loss notification/call system) at the police and fire stations to alert officials of power outages and surges. Loss of power has the potential to impact services for the entire City.	✓				Barrier to completion - awaiting funding	✓	
Design and construct new storm sewer systems in subdivisions that lack a system to reduce flooding/drainage problems.		✓			Storm sewers have been constructed in conjunction with roadway improvements. This is an ongoing project.	✓	
Purchase new emergency alert system with satellite/cellular based control technology.	✓					✓	
Adopt, enforce & update building codes as needed to reduce structure vulnerability to seismic activity.		✓			In review	✓	
Obtain elevation certificates for structures located in the floodplain.		✓			Identifying structures in the floodplain.	✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the City's vulnerability since the 2020 Plan was approved. The City did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, the City of Madison has one infrastructure improvement project and five administrative activities in progress that have the potential to decrease the vulnerability of flood prone areas and two administrative activities that have the potential to decrease the vulnerability of other hazard prone areas within the City. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions.

Figure C-18
City of Madison – Status of Existing Mitigation Actions
(Sheet 2 of 3)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Develop and distribute educational materials to the general public on flood protection and proofing/retrofitting of existing homes.		✓			In review / barrier to completion - awaiting funding	✓	
Develop and distribute educational materials to the general public on measures that can be taken to avoid structure damage related to earthquakes.		✓			In review / barrier to completion - awaiting funding	✓	
Conduct a drainage study to determine what improvements need to be made in the stormwater collection system to reduce flooding/drainage problems within the City.	✓				Barrier to completion - awaiting funding	✓	
Review the revised Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to reflect the revised FIRMs and present both for adoption.		✓			Flood maps are in review and have been discussed at council meetings	✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the City's vulnerability since the 2020 Plan was approved. The City did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, the City of Madison has one infrastructure improvement project and five administrative activities in progress that have the potential to decrease the vulnerability of flood prone areas and two administrative activities that have the potential to decrease the vulnerability of other hazard prone areas within the City. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions.

Figure C-18
City of Madison – Status of Existing Mitigation Actions
(Sheet 3 of 3)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Continue to make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.	✓					✓	
Make City officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.		✓			Flood maps are in review and have been discussed at council meetings	✓	
Evaluate the feasibility of participating in the National Flood Insurance Program's voluntary Community Rating System to reduce flood insurance premiums.		✓			In review	✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the City's vulnerability since the 2020 Plan was approved. The City did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, the City of Madison has one infrastructure improvement project and five administrative activities in progress that have the potential to decrease the vulnerability of flood prone areas and two administrative activities that have the potential to decrease the vulnerability of other hazard prone areas within the City. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions.

Figure C-19
Marine – Status of Existing Mitigation Actions
(Sheet 1 of 3)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Install new storm sewer line/drain in the 200 and 300 blocks of N. Duncan Street to better manage storm water runoff and alleviate recurring drainage/flooding problems.	✓				Barrier to completion – funding	✓	
Repair/reline sewer line sections & man holes to prevent storm water infiltration of the system.		✓			Almost complete for the entire Village		✓
Replace culverts within the Village to increase capacity and alleviate drainage problems experienced during heavy rain events.	✓					✓	
Repair/reline sewer line sections where storm water infiltration is occurring to prevent sewage backups.			✓	2024			✓
Purchase and install electric hookups at St. Elizabeth's Catholic Church (a designated warming/cooling center and shelter) for use with portable emergency backup generators to provide uninterrupted power during power outages.	✓				Barrier to completion – funding	✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village's vulnerability since the 2020 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved aside from the elimination of actions due to perceived need.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Marine has two infrastructure improvement projects in progress or completed that have the potential to decrease the vulnerability of flood prone areas in the Village. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The Village also has completed one additional infrastructure improvement project that has the potential to decrease the vulnerability to Food, Hydration & Shelter and Safety & Security Community Lifelines. However this action is not expected to significantly change the vulnerability of hazard prone areas within the Village.

Figure C-19
Marine – Status of Existing Mitigation Actions
(Sheet 2 of 3)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Purchase and install automatic emergency backup generator at St. Elizabeth's Catholic Church (a designated heating/cooling center and emergency shelter) to provide uninterrupted power to critical systems during power outages.	✓				Barrier to completion – funding	✓	
Design and construct a community safe room built to seismic standards and equipped with an emergency backup generator and HVAC system that can also serve as a warming/cooling center for Village residents.	✓				Barrier to completion – funding	✓	
Purchase and install an automatic emergency backup generator at the drinking water treatment facility to provide uninterrupted power to maintain operations during power outages.	✓				Barrier to completion – funding	✓	
Purchase and install an automatic emergency backup generator at the wastewater treatment facility to provide uninterrupted power to maintain operations during power outages.	✓				Barrier to completion – funding	✓	
Install backup power source(s) at critical facilities.			✓		Fire station & community center have generators		✓

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village's vulnerability since the 2020 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved aside from the elimination of actions due to perceived need.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Marine has two infrastructure improvement projects in progress or completed that have the potential to decrease the vulnerability of flood prone areas in the Village. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The Village also has completed one additional infrastructure improvement project that has the potential to decrease the vulnerability to Food, Hydration & Shelter and Safety & Security Community Lifelines. However this action is not expected to significantly change the vulnerability of hazard prone areas within the Village.

Figure C-19
Marine – Status of Existing Mitigation Actions
(Sheet 3 of 3)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Add or replace emergency storm warning sirens and/or system.	✓				Existing system works fine		✓
Construct stormwater detention/ retention basins to store stormwater and alleviate flooding.	✓				Barrier to completion – funding	✓	
Retrofit existing buildings and critical facilities to current earthquake code standards and harden infrastructure to meet earthquake design guidelines to increase resiliency.	✓				Barrier to completion – funding	✓	
Develop and distribute educational materials to the general public on measures that can be taken to avoid structure damage related to earthquakes.	✓				Barrier to completion – funding & staff time	✓	
Adopt, enforce & update building codes as needed to reduce structure vulnerability to seismic activity.	✓						✓

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village’s vulnerability since the 2020 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved aside from the elimination of actions due to perceived need.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Marine has two infrastructure improvement projects in progress or completed that have the potential to decrease the vulnerability of flood prone areas in the Village. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The Village also has completed one additional infrastructure improvement project that has the potential to decrease the vulnerability to Food, Hydration & Shelter and Safety & Security Community Lifelines. However this action is not expected to significantly change the vulnerability of hazard prone areas within the Village.

Figure C-20
Maryville – Status of Existing Mitigation Actions
(Sheet 1 of 2)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Retrofit Village Hall to include a community safe room for use by staff and Village residents.	✓				Village Hall is under a mine subsidence claim.		✓
Develop public information materials for all natural hazards that inform residents about the risks to life and property associated with each hazard and the proactive measures that they can take to reduce or eliminate their risk.	✓						✓
Develop information materials for schools that describe the risks associated with natural hazards, the protective measures that students should follow and procedures in place in case of an evacuation. Drills should be conducted at each school to practice the evacuation procedures outlined.	✓				This is currently completed by CUSD #10 and they coordinate with the fire department to do yearly fire drills.		✓
Install backup power source(s) at critical facilities.		✓			Still have a few lift stations that do not have generator on site, but have portable generators for these sites.	✓	
Add or replace emergency storm warning sirens and/or system.		✓			Fixed broken sirens, looking to add one or two more which is in the planning stage right now.	✓	

The only substantial changes in development that have occurred in hazard prone areas is the Retail Center II development over an undermined area that has the potential to increase the Village's vulnerability since the 2020 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved aside from the elimination of actions due to changes in perceived need, feasibility, and lack of jurisdictional authority.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Maryville has three administrative activities in progress that have the potential to decrease the vulnerability of flood prone areas and an additional administrative activity that has the potential to decrease the vulnerability of other hazard prone areas within the Village. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The Village also has two additional infrastructure improvement projects in progress that have the potential to decrease the vulnerability to Water Systems and Communications Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the Village.

Figure C-20
Maryville – Status of Existing Mitigation Actions
(Sheet 2 of 2)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Construct stormwater detention/ retention basins to store stormwater and alleviate flooding.	✓					✓	
Retrofit existing buildings and critical facilities to current earthquake code standards and harden infrastructure to meet earthquake design guidelines to increase resiliency.	✓				Village Hall & other buildings are under a mine subsidence claim.		✓
Adopt, enforce & update building codes as needed to reduce structure vulnerability to seismic activity.		✓				✓	
Review the Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to reflect the FIRMs and present both for adoption.		✓			Preliminary maps are available but have not been finalized yet	✓	
Make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.		✓				✓	
Make Village officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.		✓				✓	

The only substantial changes in development that have occurred in hazard prone areas is the Retail Center II development over an undermined area that has the potential to increase the Village's vulnerability since the 2020 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved aside from the elimination of actions due to changes in perceived need, feasibility, and lack of jurisdictional authority.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Maryville has three administrative activities in progress that have the potential to decrease the vulnerability of flood prone areas and an additional administrative activity that has the potential to decrease the vulnerability of other hazard prone areas within the Village. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The Village also has two additional infrastructure improvement projects in progress that have the potential to decrease the vulnerability to Water Systems and Communications Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the Village.

**Figure C-21
Pontoon Beach – Status of Existing Mitigation Actions
(Sheet 1 of 3)**

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Conduct a drainage study to determine what improvements need to be made in the stormwater collection system to reduce flooding/drainage problems within the Village.	✓				Awaiting funding	✓	
Select, design and construct the appropriate improvements in the stormwater collection system to alleviate flooding/drainage problems within the Village.		✓			This project has been on going and partly completed with the use of ARPA Funds	✓	
Install backup power source(s) at critical facilities.		✓				✓	
Purchase and install storm warning siren system. Currently there are no warning sirens located within the Village.		✓			This project has started and 2 sirens have been installed within the Village limits	✓	
Conduct full or partial buyouts to relieve homeowners in frequently flooded areas.	✓				No longer relevant based on change in administration		✓
Construct stormwater detention/retention basins to store stormwater and alleviate flooding.		✓			This has been looked at and discussions are taking place	✓	
Elevate structures in frequently flooded areas.		✓			Awaiting funding	✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village's vulnerability since the 2020 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved aside from the elimination of actions due to changes in perceived need.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Pontoon Beach has four infrastructure improvement projects and six administrative activities in progress that have the potential to decrease the vulnerability of flood prone areas and an additional infrastructure improvement and two administrative activities that have the potential to decrease the vulnerability of other hazard prone areas within the Village. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The Village also has two additional infrastructure improvement projects in progress that have the potential to decrease the vulnerability to Communications and Safety & Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the Village.

Figure C-21
Pontoon Beach – Status of Existing Mitigation Actions
(Sheet 2 of 3)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Obtain elevation certificates for structures located in the floodplain.	✓				Awaiting funding	✓	
Develop and distribute educational materials to the general public on flood protection and proofing/retrofitting of existing homes.		✓			In review and discussions have taken place at board meetings	✓	
Participate in the East St. Louis & Vicinity Ecosystem Restoration and Recreation Project to protect wetlands and floodplains.	✓				No longer relevant based on change in administration		✓
Implement improvements to Judy's Creek, Canteen Creek, Schoolhouse Branch, Judy's Branch, Burdick Brand and/or Long Lake.		✓			This has started to take place with use of ARPA Funds	✓	
Retrofit existing buildings and critical facilities to current earthquake code standards and harden infrastructure to meet earthquake design guidelines to increase resiliency.		✓			In review	✓	
Develop and distribute educational materials to the general public on measures that can be taken to avoid structure damage related to earthquakes.		✓			In Review	✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village's vulnerability since the 2020 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved aside from the elimination of actions due to changes in perceived need.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Pontoon Beach has four infrastructure improvement projects and six administrative activities in progress that have the potential to decrease the vulnerability of flood prone areas and an additional infrastructure improvement and two administrative activities that have the potential to decrease the vulnerability of other hazard prone areas within the Village. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The Village also has two additional infrastructure improvement projects in progress that have the potential to decrease the vulnerability to Communications and Safety & Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the Village.

Figure C-21
Pontoon Beach – Status of Existing Mitigation Actions
(Sheet 3 of 3)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Adopt, enforce & update building codes as needed to reduce structure vulnerability to seismic activity.		✓			In review	✓	
Review the revised Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to reflect the revised FIRMs and present both for adoption.		✓			In review and discussion have taken place at board meetings	✓	
Continue to make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.		✓			In review and discussion have taken place at board meetings	✓	
Make Village officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.		✓			In review and discussion have taken place at board meetings	✓	
Participate in the National Flood Insurance Program's Community Rating System to lower flood insurance premiums for County residents.		✓			In review and discussion have taken place at board meetings	✓	
Make informational materials available to the public about the National Flood Insurance Program's Community Rating System.		✓			In review and discussion have taken place at board meetings	✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village's vulnerability since the 2020 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved aside from the elimination of actions due to changes in perceived need.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Pontoon Beach has four infrastructure improvement projects and six administrative activities in progress that have the potential to decrease the vulnerability of flood prone areas and an additional infrastructure improvement and two administrative activities that have the potential to decrease the vulnerability of other hazard prone areas within the Village. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The Village also has two additional infrastructure improvement projects in progress that have the potential to decrease the vulnerability to Communications and Safety & Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the Village.

Figure C-22 Troy – Status of Existing Mitigation Actions (Sheet 1 of 3)							
Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Develop a Memorandum of Agreement with Tri Township Park District designating the Community Center as a shelter for City residents.	✓				Barriers to completion – funding		✓
Conduct a feasibility study to determine the appropriateness of retrofitting the Tri Township Park District Community Center or constructing new structure at the Park to serve as a community safe room for City residents.	✓				Barriers to completion – funding		✓
Develop Memorandum of Agreement with Tri Township Park District to retrofit the Community Center and/or design and construct a new structure at the Park to serve as a community safe room for use by City residents.	✓				Barriers to completion – funding		✓
Retrofit Tri Township Park District Community Center at and/or design and construct new structure at the Park to serve as a community safe for use by City residents.	✓				Barriers to completion – funding		✓
Purchase and install emergency backup generators with automatic transfer switches at all lift stations within the City to maintain operations during power outages.		✓			14 of 18 stations have generators. Three that do not are planned removals with construction of a northern interceptor	✓	

The only substantial changes in development that have occurred in hazard prone areas is the development of two businesses over undermined areas that have the potential to increase the City's vulnerability since the 2020 Plan was approved. The City did not identify any changes in priorities since the original Plan was approved aside from the elimination of actions due to changes in perceived need and financial constraints.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Troy has completed three infrastructure improvement projects that have the potential to decrease the vulnerability of flood prone areas in the City. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The City also has three additional infrastructure improvement projects in progress or completed that have the potential to decrease the vulnerability to Transportation, Water Systems, and Safety & Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the City.

Figure C-22
Troy – Status of Existing Mitigation Actions
(Sheet 2 of 3)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Purchase and install an automatic emergency backup generator at the City Maintenance Building to provide uninterrupted power to critical systems during power outages.		✓			Budgeted for FY2025	✓	
Design and construct a new Emergency Operations Center (built to high wind and seismic standards and equipped with an emergency backup generator) and a separate community safe room that would serve as a shelter and warming/cooling center for City employees and residents by connecting the Police Department and Building Department.		✓			Continue to search for best location and funding	✓	
Purchase and distribute NOAA weather radios to all City residents.	✓				Explore alternate notification systems with updated mitigation projects		✓
Replace/upsized storm sewer lines at the intersection of Center St. and Collinsville Rd. (major thoroughfares through the City) to better manage stormwater runoff and alleviate recurring drainage/flooding problems that have impeded travel and created hazardous driving conditions.			✓	2024	New catch basins – pipe upsizing		✓

The only substantial changes in development that have occurred in hazard prone areas is the development of two businesses over undermined areas that have the potential to increase the City's vulnerability since the 2020 Plan was approved. The City did not identify any changes in priorities since the original Plan was approved aside from the elimination of actions due to changes in perceived need and financial constraints.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Troy has completed three infrastructure improvement projects that have the potential to decrease the vulnerability of flood prone areas in the City. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The City also has three additional infrastructure improvement projects in progress or completed that have the potential to decrease the vulnerability to Transportation, Water Systems, and Safety & Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the City.

Figure C-22
Troy – Status of Existing Mitigation Actions
(Sheet 3 of 3)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Replace/upsized storm sewer lines at the intersection of Bargraves Blvd. and Briarwood Dr. to better manage stormwater runoff and alleviate recurring drainage/flooding problems that have impeded travel and created hazardous driving conditions.			✓	2023	New catch basin – upsized storm water pipes		✓
Install backup power source(s) at critical facilities.			✓				✓
Construct stormwater detention/retention basins to store stormwater and alleviate flooding.			✓	2022 2023 2023	2022 Creekside Storm Detention – pipe replacement 2023 Bargraves at Briarwood – pipe upsizing 2023 Bargraves Detention improvements		✓
Retrofit existing buildings and critical facilities to current earthquake code standards and harden infrastructure to meet earthquake design guidelines to increase resiliency.	✓					✓	
Develop and distribute educational materials to the general public on measures that can be taken to avoid structure damage related to earthquakes.	✓					✓	
Adopt, enforce & update building codes as needed to reduce structure vulnerability to seismic activity.	✓						✓

The only substantial changes in development that have occurred in hazard prone areas is the development of two businesses over undermined areas that have the potential to increase the City’s vulnerability since the 2020 Plan was approved. The City did not identify any changes in priorities since the original Plan was approved aside from the elimination of actions due to changes in perceived need and financial constraints.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Troy has completed three infrastructure improvement projects that have the potential to decrease the vulnerability of flood prone areas in the City. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The City also has three additional infrastructure improvement projects in progress or completed that have the potential to decrease the vulnerability to Transportation, Water Systems, and Safety & Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the City.

Figure C-23
Venice – Status of Existing Mitigation Actions
(Sheet 1 of 2)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Install backup power source(s) at critical facilities.	✓				Barrier to completion - awaiting funding	✓	
Purchase and install a call monitoring system (power loss notification/call system) at the police and fire stations to alert officials of power outages and surges. Loss of power has the potential to impact services for the entire City.	✓				Barrier to completion - awaiting funding	✓	
Design and construct new storm sewer systems in subdivisions that lack a system to reduce flooding/drainage problems.		✓				✓	
Purchase new emergency alert system with satellite/cellular based control technology.	✓					✓	
Adopt, enforce & update building codes as needed to reduce structure vulnerability to seismic activity.		✓				✓	
Obtain elevation certificates for structures located in the floodplain.	✓					✓	
Develop and distribute educational materials to the general public on flood protection and proofing/retrofitting of existing homes.		✓			In review / barrier to completion - awaiting funding	✓	
Develop and distribute educational materials to the general public on measures that can be taken to avoid structure damage related to earthquakes.		✓			In review / barrier to completion - awaiting funding	✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the City's vulnerability since the 2020 Plan was approved. The City did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Venice has one infrastructure improvement project and three administrative activities in progress that have the potential to decrease the vulnerability of flood prone areas and two administrative activities that have the potential to decrease the vulnerability of other hazard prone areas within the City. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions.

Figure C-23
Venice – Status of Existing Mitigation Actions
(Sheet 2 of 2)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Conduct a drainage study to determine what improvements need to be made in the stormwater collection system to reduce flooding/drainage problems within the City.	✓					✓	
Review the revised Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to reflect the revised FIRMs and present both for adoption.		✓			Flood maps are in review	✓	
Continue to make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.	✓					✓	
Make City officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.		✓			Flood maps are in review	✓	
Evaluate the feasibility of participating in the National Flood Insurance Program's voluntary Community Rating System to reduce flood insurance premiums.	✓					✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the City's vulnerability since the 2020 Plan was approved. The City did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Venice has one infrastructure improvement project and three administrative activities in progress that have the potential to decrease the vulnerability of flood prone areas and two administrative activities that have the potential to decrease the vulnerability of other hazard prone areas within the City. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions.

Figure C-24
Wood River – Status of Existing Mitigation Actions
(Sheet 1 of 4)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Separate the combined sewer system within the City and where necessary construct bioretention/detention facilities to accommodate stormwater flow to maximize the carrying capacity of the sewer system and reduce the potential for waterborne disease outbreaks from a combined sewer overflow discharge event.		✓				✓	
Purchase and install an automatic emergency backup generator at City Hall/Police Department to provide uninterrupted power and maintain operations during power outages.			✓				✓
Purchase and install an automatic emergency backup generator at the Round House (a designated warming/cooling center & emergency shelter) to provide uninterrupted power & maintain operations during power outages.			✓				✓
Purchase and install an automatic emergency backup generator at the Public Works Building to provide uninterrupted power and maintain operations during power outages.	✓					✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the City's vulnerability since the 2020 Plan was approved. The City did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Wood River has four infrastructure improvement projects and four administrative activities in progress that have the potential to decrease the vulnerability of flood prone areas and an additional administrative activity that has the potential to decrease the vulnerability of other hazard prone areas within the City. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The City also has four additional infrastructure improvement projects in progress or completed that have the potential to decrease the vulnerability to Food, Hydration & Shelter, Water Systems, and Safety & Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the City.

Figure C-24
Wood River – Status of Existing Mitigation Actions
(Sheet 2 of 4)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Purchase and install emergency backup generators with automatic transfer switches at all lift stations within the City to maintain operations during power outages.		✓				✓	
Install backup power source(s) at critical facilities.		✓				✓	
Conduct full or partial buyouts to relieve homeowners in frequently flooded areas.		✓				✓	
Construct stormwater detention/retention basins to store stormwater and alleviate flooding.		✓				✓	
Develop and distribute educational materials to the general public on flood protection and proofing/retrofitting of existing homes.		✓				✓	
Participate in the East St. Louis & Vicinity Ecosystem Restoration and Recreation Project to protect wetlands and floodplains.		✓				✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the City's vulnerability since the 2020 Plan was approved. The City did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Wood River has four infrastructure improvement projects and four administrative activities in progress that have the potential to decrease the vulnerability of flood prone areas and an additional administrative activity that has the potential to decrease the vulnerability of other hazard prone areas within the City. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The City also has four additional infrastructure improvement projects in progress or completed that have the potential to decrease the vulnerability to Food, Hydration & Shelter, Water Systems, and Safety & Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the City.

Figure C-24
Wood River – Status of Existing Mitigation Actions
(Sheet 3 of 4)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Retrofit existing buildings and critical facilities to current earthquake code standards and harden infrastructure to meet earthquake design guidelines to increase resiliency.	✓					✓	
Develop and distribute educational materials to the general public on measures that can be taken to avoid structure damage related to earthquakes.	✓					✓	
Adopt, enforce & update building codes as needed to reduce structure vulnerability to seismic activity.		✓				✓	
Review the revised Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to reflect the revised FIRMs and present both for adoption.		✓			Preliminary maps are available but have not been finalized yet	✓	
Continue to make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.		✓			Ongoing	✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the City's vulnerability since the 2020 Plan was approved. The City did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Wood River has four infrastructure improvement projects and four administrative activities in progress that have the potential to decrease the vulnerability of flood prone areas and an additional administrative activity that has the potential to decrease the vulnerability of other hazard prone areas within the City. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The City also has four additional infrastructure improvement projects in progress or completed that have the potential to decrease the vulnerability to Food, Hydration & Shelter, Water Systems, and Safety & Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the City.

Figure C-24
Wood River – Status of Existing Mitigation Actions
(Sheet 4 of 4)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Make Village officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.		✓			Ongoing	✓	
Evaluate the feasibility of participating in the National Flood Insurance Program's voluntary Community Rating System to reduce flood insurance premiums.	✓					✓	
Make informational materials available to the public about the National Flood Insurance Program's Community Rating System.	✓					✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the City's vulnerability since the 2020 Plan was approved. The City did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Wood River has four infrastructure improvement projects and four administrative activities in progress that have the potential to decrease the vulnerability of flood prone areas and an additional administrative activity that has the potential to decrease the vulnerability of other hazard prone areas within the City. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions. The City also has four additional infrastructure improvement projects in progress or completed that have the potential to decrease the vulnerability to Food, Hydration & Shelter, Water Systems, and Safety & Security Community Lifelines. However these actions are not expected to significantly change the vulnerability of hazard prone areas within the City.

Figure C-25
Worden – Status of Existing Mitigation Actions
(Sheet 1 of 2)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
<i>Northeast Village Drainage Project:</i> Install storm sewer lines and cut drainage ditches in an area north of Franklin St. and east of James St. to better manage stormwater runoff and alleviate recurring drainage/flooding problems experienced in the area.			✓	2024			✓
<i>Southeast Village Drainage Project:</i> Install storm sewer lines & cut drainage ditches in an area south of Wall St. & east of the Quercus Grove Bike Trail to better manage stormwater runoff and alleviate recurring drainage/ flooding problems experienced in the area.	✓					✓	
Install new force main at Pump Station G to accommodate increased flow during heavy rain/flood events & alleviate drainage problems.	✓					✓	
Install new force main & upgrade pumps at Pump Station B to increase capacity & reduce the flow to Pump Station C, accommodate increased flow during heavy rain/flood events & alleviate drainage problems.	✓					✓	
Conduct sewer line reconnaissance study to identify locations where storm water infiltrates the lines.	✓					✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village’s vulnerability since the 2020 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Worden has three administrative activities in progress that have the potential to decrease the vulnerability of flood prone areas in the Village. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions.

Figure C-25
Worden – Status of Existing Mitigation Actions
(Sheet 2 of 2)

Mitigation Action Description	Status of Mitigation Action			Year Completed	Comments:	Status of No Progress/ In Progress Actions	
	No Progress (✓)	In Progress (✓)	Completed (✓)		- Barriers to Completion - Summary/Details of Completed Action (i.e., location, scope, etc.) - Reason Action is No Longer Relevant	Included in Updated Action Plan (✓)	No Longer Relevant (✓)
Repair/reline sewer line sections where storm water infiltration is occurring to prevent sewage backups.	✓					✓	
Designate former gymnasium as a warming/cooling center and emergency shelter.	✓					✓	
Retrofit the former gymnasium to include a community safe room built to seismic standards and equipped with an emergency backup generator and HVAC system to serve as a warming/cooling center for Village residents.	✓					✓	
Review the revised Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to reflect the revised FIRMs and present both for adoption.		✓			Preliminary maps are available but have not been finalized yet	✓	
Make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.		✓			Ongoing	✓	
Make Village officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.		✓			o	✓	

No substantial changes in development have occurred in hazard prone areas that would increase or decrease the Village's vulnerability since the 2020 Plan was approved. The Village did not identify any changes in priorities since the previous Plan was approved.

In terms of changes in vulnerability associated with mitigation actions in progress or completed, Worden has three administrative activities in progress that have the potential to decrease the vulnerability of flood prone areas in the Village. It is still too early to tell the degree of reduction that will be experienced from the implementation of these actions.

6.0 MITIGATION STRATEGY

[Local Mitigation Planning Policy Guide Element C]

The mitigation strategy identifies how participating jurisdictions are going to reduce or eliminate the potential loss of life and property damage that results from the natural hazards identified in the Risk Assessment section of this Plan. The strategy includes:

- Reviewing, re-evaluating, and updating the mitigation goals (Local Mitigation Planning Policy Guide Element C3-a). Mitigation goals describe the objective(s) or desired outcome(s) that the participants would like to accomplish in terms of hazard and loss prevention. These goals are intended to reduce or eliminate long-term vulnerabilities to natural hazards.
- Evaluating and identifying a comprehensive range of jurisdiction-specific mitigation actions including those related to continued compliance with the National Flood Insurance Program (NFIP) (Local Mitigation Planning Policy Guide Elements C4-a & C4-b). Mitigation actions are projects, plans, activities, or programs that achieve at least one of the mitigation goals identified.
- Analyzing the existing and new mitigation actions identified for each jurisdiction. This analysis ensures each action will reduce or eliminate future losses associated with the hazards identified in the Risk Assessment section.
- Reviewing, re-evaluating, and updating the mitigation actions prioritization methodology (Local Mitigation Planning Policy Guide Element C5-a). The prioritization methodology outlines the approach used to prioritize the implementation of each identified mitigation action.
- Identifying the entity(s) responsible for implementation and administration (Local Mitigation Planning Policy Guide Element C5-b). For each mitigation action, the entity(s) responsible for implementing and administering that action is identified as well as the timeframes for completing the actions and potential funding sources.
- Conducting a preliminary cost/benefit analysis of each mitigation action (Local Mitigation Planning Policy Guide Element C5-a). The qualitative cost/benefit analysis provides participants with a general idea of which actions are likely to provide the greatest benefit based on the financial cost and staffing efforts needed.

As part of the Plan update, the mitigation strategy was reviewed and revised. A detailed discussion of each aspect of the mitigation strategy and any updates made is provided below.

6.1 MITIGATION GOALS REVIEW

[Local Mitigation Planning Policy Guide Element C3-a]

As part of the Plan update process, the mitigation goals from the previous Plan were reviewed and re-evaluated. The previous list of mitigation goals was updated and distributed to the Committee members at the first meeting on March 26, 2024. Members were asked to review the list before the second meeting and consider whether any changes needed to be made or if additional goals should be included. At the Committee's July 30, 2024 meeting the group discussed the updated list of goals and approved them with no changes. **Figure MIT-1** lists the approved mitigation goals.

Figure MIT-1 Mitigation Goals	
Goal 1	Educate people about the hazards (natural and man-made) they face and the ways they can protect themselves, their homes, and their businesses from those hazards.
Goal 2	Protect the lives, health, and safety of the people and animals living in the County from the dangers of natural and man-made hazards.
Goal 3	Protect existing infrastructure and design new infrastructure (roads, bridges, utilities, water supplies, sanitary sewer systems, etc.) to be resilient to the impacts of natural and man-made hazards.
Goal 4	Incorporate natural and man-made hazard mitigation into existing as well as new community plans and regulations.
Goal 5	Place a priority on protecting public services (i.e., critical facilities & infrastructure such as utilities and roads), schools, and community lifelines (i.e., safety and security; food, water and shelter; health and medical; energy; communication; and transportation.)
Goal 6	Preserve and protect the rivers, streams, and floodplains in our County.
Goal 7	Ensure future development does not increase the vulnerability of hazard-prone areas within the County or create unintended exposures to natural and man-made hazards.
Goal 8	Protect historic, cultural, and natural resources from the effects of natural and man-made hazards.

6.2 NEW MITIGATION ACTION IDENTIFICATION

Following the review and re-evaluation of the mitigation actions, the Committee members were asked to consult with their respective jurisdictions to identify ***new, jurisdiction-specific mitigation actions***.

Representatives of Madison County, Alton, Collinsville, East Alton, Edwardsville, Glen Carbon, Godfrey, Granite City, Grantfork, Highland, Livingston, City of Madison, Maryville, Pontoon Beach, Roxana, Venice, Wood River, and Worden were also asked to identify mitigation actions that would ensure their continued compliance with the National Flood Insurance Program. The compiled lists of new mitigation actions were then reviewed to assure the appropriateness and suitability of each action. Those actions that were not deemed appropriate and/or suitable were either reworded or eliminated.

6.3 MITIGATION ACTION ANALYSIS

Next, those existing mitigation actions retained, and the new mitigation actions identified were assigned to one of four broad mitigation activity categories that allowed Committee members to compare and consolidate similar actions. **Figure MIT-2** identifies each mitigation activity category and provides a brief description.

Each mitigation action was then analyzed to determine:

- the hazard or hazards being mitigated;
- the general size of the population affected (i.e., small, medium, or large), the participant's Social Vulnerability Index (SVI) ranking, status as a disadvantaged community per the Climate and Economic Justice Screening Tool (CEJST), as well as the participant's status as an Economically Disadvantaged Rural Community (EDRC);

- the goal or goals fulfilled;
- whether the action would reduce the effects on new or existing buildings and infrastructure; and
- whether the action would ensure continued compliance with the National Flood Insurance Program.

Figure MIT-2 Types of Mitigation Activities	
Category	Description
Local Plans & Regulations (LP&R)	Local Plans & Regulations include actions that influence the way land and buildings are being developed and built. Examples include stormwater management plans, floodplain regulations, capital improvement projects, participation in the NFIP Community Rating System, comprehensive plans, and local ordinances (i.e., building codes, etc.)
Structure & Infrastructure Projects (S&IP)	Structure & Infrastructure Projects include actions that protect infrastructure and structures from a hazard or remove them from a hazard area. Examples include acquisition and elevation of structures in flood prone areas, burying utility lines to critical facilities, construction of community safe rooms, install “hardening” materials (i.e., impact resistant window film, hail resistant shingles/doors, etc.) and detention/retention structures.
Natural System Protection (NSP)	Natural System Protection includes actions that minimize damage and losses and also preserve or restore natural systems. Examples include sediment and erosion control, stream restoration and watershed management.
Education & Awareness Programs (E&A)	Education & Awareness Programs include actions to inform and educate citizens, elected officials and property owners about hazards and the potential ways to mitigate them. Examples include outreach/school programs, brochures, and handout materials, becoming a StormReady community, evacuation planning and drills, and volunteer activities (i.e., culvert cleanout days, initiatives to check in on the elderly/disabled during hazard events such as storms and extreme heat events, etc.)

Each mitigation action was also evaluated to determine whether it would mitigate risk to one or more of FEMA’s eight Community Lifelines. Community Lifelines are the most fundamental services in the community that enable all other aspects of society to function. These Lifelines enable the continuous operation of critical government and business functions and are essential to human health and safety or economic security. The Community Lifelines include Safety & Security; Food, Hydration, Shelter; Health & Medical; Water Systems; Energy (Power & Fuel); Communications; Transportation; and Hazardous Materials. **Figure MIT-3** provides a brief description of each Community Lifeline.

6.4 MITIGATION ACTION PRIORITIZATION METHODOLOGY & COST/BENEFIT ANALYSIS REVIEW

[Local Mitigation Planning Policy Guide Element C5-a]

The methodology applied to prioritize mitigation actions in the previous Plan was reviewed by the Committee as part of the Plan update process. This methodology was based on two key factors: 1) the frequency of the hazard and 2) the degree of mitigation attained. It was presented to the Planning Committee members at the second meeting held on July 30, 2024. The group reviewed and discussed the methodology and chose to approve it with no changes.

Figure MIT-3 Community Lifelines	
Category	Components/Subcomponents
Safety & Security	- Law Enforcement/Security (police stations, law enforcement, site security, correctional facilities) - Fire Service (fire stations, firefighting resources) - Search & Rescue (local search & rescue) - Government Service (emergency operation centers, essential government functions, government offices, schools, public records, historic/cultural resources) - Community Safety (flood control, other hazards, protective actions)
Food, Hydration, Shelter	- Food [commercial food distribution, commercial food supply chain, food distribution programs (e.g., food banks)] - Hydration [temporary hydration missions (e.g., bottled water distribution, commercial water supply chain]; - Shelter [housing (e.g., homes, shelters), commercial facilities (e.g., hotels)]; - Agriculture (animals & agriculture)
Health & Medical	- Medical Care (hospitals, dialysis, pharmacies, long-term care facilities, VA health system, veterinary services, home care) - Patient Movement (emergency medical services) - Fatality Management (mortuary and post-mortuary services) - Public Health (health surveillance, human services, behavioral health, vector control, labs) - Medical Supply Chain [blood/blood products, manufacturing (e.g., pharmaceutical, device, medical gases), distribution, critical clinical research, sterilization, raw materials]
Water Systems	- Potable Water Infrastructure (intake, treatment, storage, distribution) - Wastewater Management (collection, storage, treatment, discharge)
Energy	- Power Grid (generation systems, transmission systems, distribution systems) - Fuel [refineries/fuel processing, fuel storage, pipelines, fuel distribution (e.g., gas stations, fuel points), off-shore oil platforms]
Communications	- Infrastructure [wireless, cable systems and wireline, broadcast (e.g., TV and radio), satellite, data centers/internet] - Alerts, Warnings, & Messages [local alert/warning ability, access to IPAWS (WEA, EAS NWR), NAWAS terminals] - 911 & Dispatch (public safety answering points, dispatch) - Responder Communications (Land Mobile Radio networks) - Finance (banking services, electronic payment processing)
Transportation	- Highway/Roadway/Motor Vehicle (roads, bridges) - Mass Transit (bus, rail, ferry) - Railway (freight, passenger) - Aviation [commercial (e.g., cargo/passenger), general, military] - Maritime (waterways, ports and port facilities)
Hazardous Materials	- Facilities [oil/hazmat facilities (e.g., chemical, nuclear), oil/hazmat/toxic incidents from facilities] - Hazmat, Pollutants, Contaminants (oil/hazmat/toxic incidents from non-fixed facilities, radiological or nuclear incidents)

Figure MIT-4 identifies and describes the four-tiered prioritization methodology re-evaluated and approved by the Committee. This methodology provides a means of objectively determining which projects and activities have a greater likelihood of reducing the long-term vulnerabilities associated with the most frequently-occurring natural hazards.

Figure MIT-4			
Mitigation Action Prioritization Methodology			
		Hazard	
		Most Frequent Hazard (M) (i.e., severe storms, excessive heat, floods, severe winter storms, extreme cold)	Less Frequent Hazard (L) (i.e., tornadoes, drought, earthquakes, mine subsidence landslides, levee failures, dam failures)
Mitigation Action	Mitigation Action with the Potential to Virtually Eliminate or Significantly Reduce Impacts (H)	HM mitigation action will virtually eliminate damages and/or significantly reduce the probability of fatalities and injuries from the most frequent hazards	HL mitigation action will virtually eliminate damages and/or significantly reduce the probability of fatalities and injuries from less frequent hazards
	Mitigation Action with the Potential to Reduce Impacts (L)	LM mitigation action has the potential to reduce damages, fatalities and/or injuries from the most frequent hazards	LL mitigation action has the potential to reduce damages, fatalities and/or injuries from less frequent hazards

While prioritizing the actions is useful and provides participants with additional information, it is important to keep in mind that implementing any of the mitigation actions is desirable regardless of which prioritization category an action falls under.

While this methodology does not take cost into consideration, it is a factor that may affect the order in which projects are implemented. As a result, a preliminary qualitative cost/benefit analysis was conducted to demonstrate each action's monetary and non-monetary benefits and provide additional information that can be considered in each participant's decision-making process. The costs and benefits were analyzed in terms of the general overall cost to complete an action as well as the staffing effort needed and the action's likelihood of virtually eliminating or significantly reducing the risk associated with a specific hazard. The general descriptors of high, medium, and low were used. These terms are not meant to translate into a specific dollar amount, but rather to provide a relative comparison between the actions identified by each jurisdiction.

This analysis is only meant to give the participants a starting point to compare which actions are likely to provide the greatest benefit. It was repeatedly communicated to the Planning Committee members that when a grant application is submitted to IEMA-OHS/FEMA for a specific action, a detailed cost/benefit analysis will be required to receive funding.

6.5 MITIGATION ACTION IMPLEMENTATION & ADMINISTRATION

[Local Mitigation Planning Policy Guide Element C5-b]

Finally, each participating jurisdiction was asked to identify how the mitigation actions will be implemented and administered. This included:

- identifying the party or parties responsible for oversight and administration;
- determining what funding source(s) are available or will be pursued; and
- describing the time frame for completion.

Oversight & Administration

It is important to keep in mind that some of the participating jurisdictions have limited capabilities related to organization and staffing for oversight and administration of the identified mitigation actions. Nine of the participating municipalities are very small in size, with populations of less than 1,500 individuals while an additional five participating municipalities have populations of less than 10,000 individuals. In most cases these jurisdictions have minimal staff. Their organizational structure is such that most have very few offices and/or departments, generally limited to public works and water/sewer. Those in charge of the offices/departments often lack the technical expertise needed to individually oversee and administer the identified mitigation actions. As a result, many of the participating jurisdictions identified their governing body (i.e., village board, city council, or board of trustees) as the entity responsible for oversight and administration simply because it is the only practical option given their organizational constraints. Other participants felt that oversight and administration fell under the purview of the entity's governing body (board/council) and not individual departments.

Funding Sources

While the Southwestern Illinois Metropolitan and Regional Planning Commission (SIMAPC) has the ability to provide grant writing services to Madison County, many of the participating jurisdictions do not have staff with grant writing capabilities. Given the specific nature of the identified mitigation actions, assistance was needed in identifying possible funding sources. The consultant provided written information to the participants about FEMA and non-FEMA funding opportunities that have been used previously to finance mitigation actions. In addition, funding information was discussed with participants during Committee meetings and in one-on-one contacts so that an appropriate funding source could be identified for each mitigation action.

A handout was prepared and distributed that provided specific information on the non-FEMA grant sources available including the grant name, the government agency responsible for administering the grant, grant ceiling, contact person and application period among other key points. Specific grants from the following agencies were identified: U.S. Department of Agricultural – Rural Development (USDA – RD), U.S. Department of Transportation's Federal Highway Administration (FHWA), Illinois Department of Agriculture (IDOA), Illinois Department of Commerce and Economic Opportunity (DCEO), Illinois Environmental Protection Agency (IEPA), Illinois Department of Natural Resources (IDNR), and Illinois Department of Transportation (IDOT).

The local funding source identified for each action may include cash contributions and/or in-kind local resources such as personnel, equipment, and supplies. If a non-local funding source is

identified for an action, it is the most likely source to be pursued; however, if funding is unavailable through the most likely or other suggested sources, then implementation of medium and large-scale projects and activities is unlikely due to the budgetary constraints experienced by most, if not all, of the participants due to their size, projected population growth, and limited revenue streams.

It is important to remember that the population for unincorporated Madison County is just over 69,200 individuals. Fourteen of the 22 municipalities have populations of less than 10,000 individuals. Some of the jurisdictions struggle to maintain and provide the most critical of services to their residents. Additional funding is necessary if implementation is to be achieved.

Time Frame for Completion

The time frame for completion identified for each action is the timespan in which participants would like to see the action successfully completed. In most cases, the time frame identified is dependent on obtaining the necessary funding. As a result, a time range has been identified for many of the mitigation actions to allow for unpredictability in securing funds.

6.6 RESULTS OF MITIGATION STRATEGY

[Local Mitigation Planning Policy Guide Element C3-a, C4-a, C4-b, C5-a, & C5-b]

Figures MIT-5 through **MIT-50**, located at the end of this section, summarize the results of the mitigation strategy. The mitigation actions are arranged alphabetically by participating jurisdiction following the County and include both existing and new actions.

Figure MIT-5
Madison County Hazard Mitigation Actions
(Sheet 1 of 11)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Emergency Management Agency													
Purchase P25-compliant interoperable land mobile radios that are tri-band capable to allow County staff to exchange critical communications/provide mutual aid across partner agencies and jurisdictions to maintain continuity of operations and ensure system resilience and functionality of a Community Lifeline.	DF, EQ, F, L, LF, MMH, MS, SS, SWS, T	C	S&IP	Large SVI: 0.0073 – 0.9333 CEJST: Yes/No	---	---	2, 3, 5	LM/LL	Medium/High	EMA Director	2 years	County General Fund / FEMA HMA	New
Retrofit/expand the Madison County EMA/Sheriff's Garage located in Edwardsville for the purpose of relocating the EMA Office and EOC base facility out of the floodplain. The EOC will serve as the central command and control facility for carrying out emergency management and ensuring the continuity of operations/government for the County during hazard events. This facility would mitigate risk to and ensure continued functionality of Community Lifelines essential to human health and safety.	F, SS	S&S	S&IP	Large SVI: 0.0073 – 0.9333 CEJST: Yes/No	---	Yes	2, 3, 5	HM	High/High	EMA Director / Facilities Management Director	2 years	County General Fund / FEMA EOCGP	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the County's size (less than 56,500 individuals in unincorporated areas), projected population growth, and financial constraints. The County works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DF	Dam Failure	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EC	Extreme Cold	MS	Mine Subsidence	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm	C	Communications	H&M	Health & Medical
		EQ	Earthquake	SWS	Severe Winter Storm	E	Energy (Power & Fuel)	S&S	Safety & Security
		F	Flood	T	Tornado	FHS	Food, Hydration, Shelter	T	Transportation
		L	Landslides			HM	Hazardous Material	WS	Water Systems

**Figure MIT-5
Madison County Hazard Mitigation Actions
(Sheet 2 of 11)**

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Emergency Management Agency Continued...													
Partner with “high” hazard classified dam owners to develop Emergency Action Plans (EAPs) that identify the extent (water depth, speed of onset, warning times, etc.) and location (inundation areas) of potential dam failures to address data deficiencies.	DF	S&S	LP&R	Small SVI: 0.0073 – 0.9333 CEJST: Yes/No	---	---	2, 4	LL	Low/Medium	EMA Director / Classified Dam Owners	5 years	County Local Resources / Classified Dam Owners	Existing (2020)
Partner with levee owners to develop Emergency Preparedness Plan/Inundation Maps that identify the extent (water depth, speed of onset, warning times, etc.) for the studied levees to address identified data deficiencies.	LF	S&S	LP&R	Medium SVI: 0.0073 – 0.9333 CEJST: Yes/No	---	---	2, 4	LL	Low/Medium	EMA Director / Levee Owners	5 years	County Local Resources / Levee Owners	Existing (2020)
Acquire flood-prone properties and remove any existing structures.	F, SS	S&S	S&IP NSP	Small SVI: 0.0073 – 0.9333 CEJST: Yes/No	---	Yes	2, 4, 6	HM	Medium/High	EMA Director / Planning & Development Director	5-10 years	County General Fund / FEMA HMA Swift Current	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the County’s size (less than 56,500 individuals in unincorporated areas), projected population growth, and financial constraints. The County works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DF	Dam Failure	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
		EC	Extreme Cold	MS	Mine Subsidence				
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
		EQ	Earthquake	SWS	Severe Winter Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	F	Flood	T	Tornado				
		L	Landslides						
Community Lifelines to be Mitigated:									
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-5
Madison County Hazard Mitigation Actions
(Sheet 3 of 11)

Figure MIT-5 Madison County Hazard Mitigation Actions (Sheet 3 of 11)													
Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Emergency Management Agency Continued...													
Elevate flood-prone structures out of the base floodplain.	F, SS	S&S	S&IP	Small SVI: 0.0073 – 0.9333 CEJST: Yes/No	---	Yes	2, 4, 6	HM	Medium/High	EMA Director / Planning & Development Director	5-10 years	County General Fund/ FEMA HMA	Existing (2020)
Make public information materials available to residents that detail the risks to life and property associated with the natural and man-made hazards that impact the County and the proactive approaches they can take to reduce their risk.	DF, DR, EC, EH, EQ, F, L, LF, MMH, MS, SS, SWS, T	---	E&A	Large SVI: 0.0073 – 0.9333 CEJST: Yes/No	---	---	1, 2	LM/LL	Low/Medium	EMA Director	1-5 years	County Local Resources	New
Facilities Management													
Retrofit existing County-owned buildings and critical facilities to current earthquake code standards and harden infrastructure to meet earthquake design guidelines to increase infrastructure resilience.	EQ	S&S	S&IP	Small SVI: 0.0073 – 0.9333 CEJST: Yes/No	---	Yes	3, 5, 8	HL	High/Medium	Facilities Management Director	1 year	County General Fund/ FEMA HMA	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the County’s size (less than 56,500 individuals in unincorporated areas), projected population growth, and financial constraints. The County works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DF Dam Failure DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood L Landslides	LF Levee Failure MMH Man-Made Hazard MS Mine Subsidence SS Severe Storm SWS Severe Winter Storm T Tornado
LM		E&A Education & Awareness LP&R Local Plans & Regulations
HL		NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LL		
		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

**Figure MIT-5
Madison County Hazard Mitigation Actions
(Sheet 4 of 11)**

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Facilities Management Continued...													
Purchase and install an emergency backup generator at the Madison County Courthouse to establish a resilient and reliable power supply, maintain continuity of government/operations, and mitigate risk to Community Lifelines.	EC, EH, EQ, F, MMH, SS, SWS, T	C S&S	S&IP	Large SVI: 0.0073 – 0.9333 CEJST: Yes/No	---	Yes	3, 5	HM/HL	Medium/High	Facilities Management Director	1 year	County General Fund / FEMA HMA	New
Purchase and install an emergency backup generator at the Madison County Administration Building to establish a resilient and reliable power supply, maintain continuity of government/operations, and mitigate risk to Community Lifelines.	EC, EH, EQ, F, MMH, SS, SWS, T	C S&S	S&IP	Large SVI: 0.0073 – 0.9333 CEJST: Yes/No	---	Yes	3, 5	HM/HL	Medium/High	Facilities Management Director	1 year	County General Fund / FEMA HMA	New
Purchase and install an emergency backup generator at the Madison County EMA/Sheriff’s Garage (Edwardsville location) to establish a resilient and reliable power supply, maintain continuity of government/operations, and mitigate risk to Community Lifelines.	EC, EH, EQ, F, MMH, SS, SWS, T	C S&S	S&IP	Large SVI: 0.0073 – 0.9333 CEJST: Yes/No	---	Yes	3, 5	HM/HL	Medium/High	Facilities Management Director	1 year	County General Fund / FEMA HMA	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the County's size (less than 56,500 individuals in unincorporated areas), projected population growth, and financial constraints. The County works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DF	Dam Failure	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EC	Extreme Cold	MS	Mine Subsidence	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
		EQ	Earthquake	SWS	Severe Winter Storm	C	Communications	H&M	Health & Medical
		F	Flood	T	Tornado	E	Energy (Power & Fuel)	S&S	Safety & Security
		L	Landslides			FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-5
Madison County Hazard Mitigation Actions
(Sheet 5 of 11)

Figure MIT-5 Madison County Hazard Mitigation Actions (Sheet 5 of 11)													
Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Facilities Management Continued...													
Upgrade the emergency backup generator at the Madison County Jail to establish a resilient and reliable power supply, maintain continuity of government/operations, and mitigate risk to Community Lifelines.	EC, EH, EQ, F, MMH, SS, SWS, T	C S&S	S&IP	Large SVI: 0.0073 – 0.9333 CEJST: Yes/No	---	Yes	3, 5	HM/HL	Medium/High	Facilities Management Director	1 year	County General Fund / FEMA HMA	New
Purchase and install an emergency backup generator at the Madison County EMA Garage (Wood River location) to establish a resilient and reliable power supply, maintain continuity of government/operations, and mitigate risk to Community Lifelines.	EC, EH, EQ, F, MMH, SS, SWS, T	C S&S	S&IP	Large SVI: 0.0073 – 0.9333 CEJST: Yes/No	---	Yes	3, 5	HM/HL	Medium/High	Facilities Management Director	1 year	County General Fund / FEMA HMA	New
Health Department													
Distribute public information materials to private well owners on the risks to life and property associated with the natural and man-made hazards that can impact wells and the proactive approaches they can take to reduce their risk.	DF, DR, EC, EQ, F, L, LF, MMH, MS, SS, SWS, T	---	E&A	Medium SVI: 0.0073 – 0.9333 CEJST: Yes/No	---	---	1, 2	LM/LL	Low/Medium	Health Department Administrator	2-5 years	County Local Resources	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the County’s size (less than 56,500 individuals in unincorporated areas), projected population growth, and financial constraints. The County works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DF	Dam Failure	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EC	Extreme Cold	MS	Mine Subsidence				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
		EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado				
		L	Landslides						
						Community Lifelines to be Mitigated:			
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-5
Madison County Hazard Mitigation Actions
(Sheet 6 of 11)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
9-1-1 Administration													
Harden (shatter-proof glass, hail resistant doors, roof anchoring system, lightning suppression system, etc.) the proposed unmanned backup PSAP to improve structure resilience to natural and man-made hazards, maintain continuity of operations, and mitigate risk to a Community Lifeline.	EQ, F, MMH, S, SWS, T	C S&S	S&IP	Small SVI: 0.0073 – 0.9333 CEJST: Yes/No	---	Yes	2, 3, 5	HM/HL	Medium/High	9-1-1 Coordinator	3-5 years	County General Fund / FEMA HMA	New
Establish an unmanned backup Public Safety Answering Point (PSAP) to create a diverse and redundant communications system, ensure continuity of operations, and mitigate risk to a Community Lifeline. In the event one of the primary PSAPs is inoperable, the backup PSAP can take over emergency calls providing a seamless transition without any noticeable interruptions in service.	DF, EQ, F, L, LF, MMH, MS, SS, SWS, T	C	S&IP	Medium SVI: 0.0073 – 0.9333 CEJST: Yes/No	---	Yes	2, 3, 5	HM/HL	Medium/High	9-1-1 Coordinator	3-5 years	County General Fund / FEMA HMA	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the County’s size (less than 56,500 individuals in unincorporated areas), projected population growth, and financial constraints. The County works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DF Dam Failure DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood L Landslides	LF Levee Failure MMH Man-Made Hazard MS Mine Subsidence SS Severe Storm SWS Severe Winter Storm T Tornado
LM		E&A Education & Awareness LP&R Local Plans & Regulations NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
HL		
LL		
		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

**Figure MIT-5
Madison County Hazard Mitigation Actions
(Sheet 7 of 11)**

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Building & Zoning													
Develop and adopt a countywide stormwater plan that specifically identifies the sources of stormwater-related flooding and the issues that need to be addressed to reduce drainage/flooding problems within the County.	F, SS	S&S	LP&R	Large SVI: 0.0073 – 0.9333 CEJST: Yes/No	Yes	Yes	3, 4, 5	LM	Low/High	Stormwater Coordinator	3-5 years	County Local Resources	Existing (2020)
Conduct a study to determine the appropriate remedy(s) to alleviate recurring stormwater-related drainage/flooding problems identified in the County’s stormwater plan.	F, SS	S&S	LP&R	Small SVI: 0.0073 – 0.9333 CEJST: Yes/No	---	---	3, 5	LM	Low/Medium	Stormwater Coordinator	2-5 years	County General Fund / FEMA HMA	Existing (2020)
Select, design, and construct the appropriate remedy(s) to alleviate recurring stormwater drainage/flooding problem within the County.	F, SS	S&S	S&IP	Small SVI: 0.0073 – 0.9333 CEJST: Yes/No	Yes	Yes	2, 3, 5	LM	Medium/High	Stormwater Coordinator	10-15 years	County General Fund / FEMA HMA	Existing (2020)

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[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the County's size (less than 56,500 individuals in unincorporated areas), projected population growth, and financial constraints. The County works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DF	Dam Failure	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EC	Extreme Cold	MS	Mine Subsidence	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
		EQ	Earthquake	SWS	Severe Winter Storm	C	Communications	H&M	Health & Medical
		F	Flood	T	Tornado	E	Energy (Power & Fuel)	S&S	Safety & Security
		L	Landslides			FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-5
Madison County Hazard Mitigation Actions
(Sheet 8 of 11)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Building & Zoning Continued...													
Develop and adopt a stand-alone countywide flood damage prevention ordinance.	F	S&S	LP&R	Medium SVI: 0.0073 – 0.9333 CEJST: Yes/No	Yes	Yes	3, 4, 5, 7	LM	Low/High	Stormwater Coordinator	5 years	County Local Resources	Existing (2020)
Construct Stormwater Best Management Practices (BMPs) to help minimize the effects of stormwater runoff and flooding as identified in our Watershed Plans.	F, SS	S&S	S&IP	Medium SVI: 0.0073 – 0.9333 CEJST: Yes/No	Yes	Yes	3, 5	HM	Medium/High	Stormwater Coordinator	5-10 years	County General Fund / FEMA HMA	Existing (2020)
Continue to collect Flood Elevation Certificates for properties located in Special Flood Hazard Areas.	F	S&S	LP&R	Small SVI: 0.0073 – 0.9333 CEJST: Yes/No	Yes	---	3, 4, 6	LM	Low/High	Stormwater Coordinator	1-5 years	County Local Resources	Existing (2020)

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[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the County’s size (less than 56,500 individuals in unincorporated areas), projected population growth, and financial constraints. The County works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DF	Dam Failure	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EC	Extreme Cold	MS	Mine Subsidence	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
		EQ	Earthquake	SWS	Severe Winter Storm	C	Communications	H&M	Health & Medical
		F	Flood	T	Tornado	E	Energy (Power & Fuel)	S&S	Safety & Security
		L	Landslides			FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-5
Madison County Hazard Mitigation Actions
(Sheet 9 of 11)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Building & Zoning Continued...													
Develop and distribute educational materials to the general public on flood protection and flood proofing/retrofitting of existing homes.	F	S&S	E&A	Medium SVI: 0.0073 – 0.9333 CEJST: Yes/No	---	---	1, 2	LM	Low/Medium	Stormwater Coordinator	2-4 years	County Local Resources	Existing (2020)
Implement improvements to Judy’s Creek, Canteen Creek, Schoolhouse Branch, Judy’s Branch, and/or Burdick Brand.	F, SS	S&S	S&IP	Small SVI: 0.0073 – 0.9333 CEJST: Yes/No	Yes	Yes	3, 6	HM	Medium/High	Stormwater Coordinator	5-10 years	County General Fund / FEMA HMA	Existing (2020)
Continue to update, adopt and enforce building codes to reduce structure vulnerability to seismic activity.	EQ	---	LP&R	Large SVI: 0.0073 – 0.9333 CEJST: Yes/No	Yes	Yes	3, 4, 8	HL	Low/High	Building & Zoning Administrator	1-5 years	County Local Resources / FEMA HMA	Existing (2020)

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Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DF	Dam Failure	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EC	Extreme Cold	MS	Mine Subsidence				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
		EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado				
		L	Landslides						
		Community Lifelines to be Mitigated:							
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-5
Madison County Hazard Mitigation Actions
(Sheet 10 of 11)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Building & Zoning Continued...													
Participate in the National Flood Insurance Program’s Community Rating System to lower flood insurance premiums for County residents.	F	S&S	LP&R	Medium SVI: 0.0073 – 0.9333 CEJST: Yes/No	Yes	Yes	3, 4, 5, 6, 7	LM	Low/High	Stormwater Coordinator	2-5 years	County Local Resources	Existing (2020)
Review new Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to exceed federal standards and reflect the revised FIRMs and present both for adoption. Enforce flood ordinance to ensure new development does not increase flood vulnerability or create unintended exposures to flooding.*	F	S&S	LP&R	Medium SVI: 0.0073 – 0.9333 CEJST: Yes/No	Yes	Yes	2, 4, 6, 7	HM	Low/High	County Board / Zoning Administrator	1-5 years	County Local Resources	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

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* Mitigation action to ensure continued compliance with NFIP.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DF	Dam Failure	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
		EC	Extreme Cold	MS	Mine Subsidence				
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
		EQ	Earthquake	SWS	Severe Winter Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	F	Flood	T	Tornado	C	Communications	H&M	Health & Medical
		L	Landslides			E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
					HM	Hazardous Material	WS	Water Systems	
Community Lifelines to be Mitigated:									

Figure MIT-5
Madison County Hazard Mitigation Actions
(Sheet 11 of 11)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Building & Zoning Continued...													
Continue to make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.*	F	S&S	E&A	Medium SVI: 0.0073 – 0.9333 CEJST: Yes/No	Yes	---	1, 2, 6, 7	LM	Low/Medium	Zoning Administrator	1-5 years	County Local Resources	Existing (2020)
Continue to make County officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.*	F	S&S	E&A	Medium SVI: 0.0073 – 0.9333 CEJST: Yes/No	Yes	---	1	LM	Low/Medium	Zoning Administrator	1-5 years	County Local Resources	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the County’s size (less than 56,500 individuals in unincorporated areas), projected population growth, and financial constraints. The County works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.’

* Mitigation action to ensure continued compliance with NFIP.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DF	Dam Failure	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
		DR	Drought	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MS	Mine Subsidence				
		EH	Excessive Heat	SS	Severe Storm				
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm	Community Lifelines to be Mitigated:			
		F	Flood	T	Tornado	C	Communications	H&M	Health & Medical
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	L	Landslides			E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-6
Alhambra Hazard Mitigation Actions
(Sheet 1 of 4)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Upsize stormwater drainage system, including installing drain boxes/catch basins, along North Marshall Street to alleviate roadway overtopping, better manage stormwater runoff, and ensure system resilience and functionality.	F, SS	T WS	S&IP	Small SVI: 0.2357 CEJST: No EDRC: Yes	Yes	Yes	3, 5	HM	Medium/High	President / Village Board	2 years	Village General Fund / USDA – RD Water & Waste Disposal Program / IEPA SRF – WPCLP / FEMA HMA	New
Upgrade storm warning siren system with system control software and install additional sirens in underserved areas to maximize the system’s effectiveness and ensure continued operations of a Community Lifeline essential to human health and safety.	SS, T	C	S&IP E&A	Large SVI: 0.2357 CEJST: No EDRC: Yes	---	---	2	HM/HL	Medium/High	President / Village Board	5 years	Village General Fund / FEMA HMA	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 600 individuals). The Village works hard to provide even the most critical of services to its residents, but it’s a struggle. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EH	Excessive Heat	SS	Severe Storm	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
		EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado				
						Community Lifelines to be Mitigated:			
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-6
Alhambra Hazard Mitigation Actions
(Sheet 2 of 4)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Upsize stormwater drainage system, including installing drop boxes/drop inlets, along the alley between West Street and Clay Street to alleviate erosion problem, better manage stormwater runoff and ensure system resilience and functionality.	F, SS	T W	S&IP	Small SVI: 0.2357 CEJST: No EDRC: Yes	Yes	Yes	3, 5	HM	Medium/High	President / Village Board	2 years	Village General Fund / USDA – RD Water & Waste Disposal Program / IEPA SRF – WPCLP / FEMA HMA	New

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LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EH	Excessive Heat	SS	Severe Storm	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	F	Flood	T	Tornado	C	Communications	H&M	Health & Medical
						E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-6
Alhambra Hazard Mitigation Actions
(Sheet 3 of 4)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Expand the storm sewer system to include North East Street, north of an unnamed creek, to better manage stormwater runoff and alleviate recurring drainage problems.	F, SS	T	S&IP	Small SVI: 0.2357 CEJST: No EDRC: Yes	Yes	Yes	3, 5	HM	Medium/High	President / Village Board	4 years	Village General Fund / USDA – RD Water & Waste Disposal Program / IEPA SRF – WPCLP / FEMA HMA	Existing (2020)
Upsize the drainage structure at unnamed creek on South Marshall Street to alleviate roadway overtopping, increase carrying capacity and better manage stormwater runoff.	F, SS	T	S&IP	Small SVI: 0.2357 CEJST: No EDRC: Yes	Yes	Yes	3, 5	HM	Medium/High	President / Village Board	4 years	Village General Fund / FHWA PROTECT / FEMA HMA	Existing (2020)

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Acronyms

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LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EH	Excessive Heat	SS	Severe Storm	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	F	Flood	T	Tornado	C	Communications	H&M	Health & Medical
						E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-6
Alhambra Hazard Mitigation Actions
(Sheet 4 of 4)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Line sewer line sections to eliminate stormwater inflow and infiltration and reduce the amount of stormwater entering the wastewater treatment plant to increase system resilience, prevent sewage backups, and mitigate risk to a Community Lifeline.	F, SS	WS	S&IP	Medium SVI: 0.2357 CEJST: No EDRC: Yes	Yes	Yes	3, 5	HM	Medium/High	President / Village Board	3-10 years	Village General Fund / IEPA SRF – WPCLP / DCEO CDBG	Existing (2020)
Make public information materials available to residents that detail the risks to life and property associated with the natural and man-made hazards that impact the Village and the proactive approaches they can take to reduce their risk.	EC, EH, EQ, F, MMH, MS, SS, SWS, T	---	E&A	Large SVI: 0.2357 CEJST: No EDRC: Yes	---	---	1, 2	LM/LL	Low/Medium	President / Village Board	1-5 years	Village Local Resources	New

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LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EH	Excessive Heat	SS	Severe Storm	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	F	Flood	T	Tornado	C	Communications	H&M	Health & Medical
						E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-7
Alton Hazard Mitigation Actions
(Sheet 1 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Identify unreinforced masonry buildings that serve as critical infrastructure/facilities within the City.	EQ	---	LP&R E&A	Small SVI: 0.0920 – 0.8918 CEJST: Yes EDRC: No	---	---	1, 3, 4	LL	Low/Medium	Mayor / City Council	5 years	City Local Resources	Existing (2020)
Secure Memorandums of Agreement with public elementary and middle schools (American Red Cross designated emergency shelters) to install electrical hookups for use with portable emergency backup generators to provide uninterrupted power during power outages.	DF, EC, EH, EQ, F, L, LF, MMH, SS, SWS, T	FHS	LP&R	Medium SVI: 0.0920 – 0.8918 CEJST: Yes EDRC: No	---	---	2, 3, 5	LM/LL	Low/Medium	Mayor / City Council	2-5 years	City Local Resources	New
Purchase and install electric hookups at the public elementary and middle schools (American Red Cross designated emergency shelters) for use with portable emergency backup generators to provide uninterrupted power during power outages.	DF, EC, EH, EQ, F, L, LF, MMH, SS, SWS, T	FHS	S&IP	Medium SVI: 0.0920 – 0.8918 CEJST: Yes EDRC: No	---	Yes	2, 3, 5	HM/HL	Medium/High	Mayor / City Council	2-5 years	City General Fund / FEMA HMA	Existing (2020)

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Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DF	Dam Failure	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EC	Extreme Cold	MS	Mine Subsidence				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
		EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado				
		L	Landslides						
		Community Lifelines to be Mitigated:							
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-7
Alton Hazard Mitigation Actions
(Sheet 2 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Design and construct community safe rooms (built to high wind standards and equipped with emergency backup generators) at strategic public parks within the City for park patrons and area residents use to establish Community Lifelines.	SS, T	---	S&IP	Small SVI: 0.0920 – 0.8918 CEJST: Yes EDRC: No	Yes	---	2	HM/HL	Medium/High	Mayor / City Council	10 years	City General Fund / FEMA HMA	Existing (2020)
Conduct discussions with Ameren regarding the threat posed by the Company's ash pond to the City's wastewater treatment facility should a natural hazard event trigger a release from the pond.	DF	S&S WS	E&A	Large SVI: 0.0920 – 0.8918 CEJST: Yes EDRC: No	---	---	2, 3, 5	LL	Low/Medium	Mayor / City Council	1-3 years	City Local Resources	Existing (2020)
Line sanitary and storm sewer line sections to eliminate stormwater inflow and infiltration and reduce the amount of stormwater entering the wastewater treatment system to increase system resilience, prevent sewage backups, and mitigate risk to a Community Lifeline.	F, SS	WS	S&IP	Medium SVI: 0.0920 – 0.8918 CEJST: Yes EDRC: No	Yes	Yes	3, 5	HM	Medium/High	Mayor / City Council	1-5 years	City General Fund / IEPA SRF – WPCLP / DCEO CDBG	Existing (2020)

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Acronyms

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HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DF	Dam Failure	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EC	Extreme Cold	MS	Mine Subsidence	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
		EQ	Earthquake	SWS	Severe Winter Storm	C	Communications	H&M	Health & Medical
		F	Flood	T	Tornado	E	Energy (Power & Fuel)	S&S	Safety & Security
		L	Landslides			FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-7
Alton Hazard Mitigation Actions
(Sheet 3 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install emergency message board signs at Fire Stations 1 & 2, Police Department, City Hall, and River Front Park to alert the public of hazardous conditions associated with natural and man-made hazard events.	DF, DR, EC, EH, EQ, F, L, LF, MMH, MS, SS, SWS, T	---	E&A	Large SVI: 0.0920 – 0.8918 CEJST: Yes EDRC: No	---	---	2	LM/LL	Medium/Medium	Mayor / City Council	3-5 years	City General Fund	Existing (2020)
Purchase and install backup power source(s) at city-owned critical facilities and infrastructure systems to establish resilient and reliable power supplies, maintain continuity of government/operations, and mitigate risk to Community Lifelines in the event of a prolonged power outage.	DF, EC, EH, EQ, F, L, LF, MMH, SS, SWS, T	C S&S T WS	S&IP	Medium SVI: 0.0920 – 0.8918 CEJST: Yes EDRC: No	---	Yes	3, 5	HM/HL	Medium/High	Mayor / City Council	5-7 years	City General Fund / FEMA HMA	Existing (2020)
Upgrade storm warning siren system, including installing additional sirens in underserved areas, to maximize the system's effectiveness and ensure continued operations of a Community Lifeline essential to human health and safety.	SS, T	C	S&IP E&A	Large SVI: 0.0920 – 0.8918 CEJST: Yes EDRC: No	---	---	2	HM/HL	Medium/High	Mayor / City Council	5 years	City General Fund / FEMA HMA	Existing (2020)

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Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DF Dam Failure DR Drought EC Extreme Cold EH Excessive Heat	E&A Education & Awareness LP&R Local Plans & Regulations
LM	LF Levee Failure MMH Man-Made Hazard MS Mine Subsidence SS Severe Storm	NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
HL	EQ Earthquake F Flood L Landslides	Community Lifelines to be Mitigated: C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
LL		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-7
Alton Hazard Mitigation Actions
(Sheet 4 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Acquire flood-prone properties and remove any existing structures.	F	S&S	S&IP NSP	Small SVI: 0.0920 – 0.8918 CEJST: Yes EDRC: No	---	Yes	2, 4, 6	HM	Medium/High	Mayor / City Council	5-10 years	City General Fund / FEMA HMA Swift Current	Existing (2020)
Construct stormwater detention/retention basins to better manage stormwater runoff and alleviate drainage/flooding problems.	F, SS	S&S	S&IP	Medium SVI: 0.0920 – 0.8918 CEJST: Yes EDRC: No	Yes	Yes	3, 5	HM	Medium/High	Mayor / City Council	5-10 years	City General Fund / FEMA HMA	Existing (2020)
Elevate flood-prone structures out of the base floodplain.	F	S&S	S&IP	Small SVI: 0.0920 – 0.8918 CEJST: Yes EDRC: No	---	Yes	2, 4, 6	HM	Medium/High	Mayor / City Council	5-10 years	City General Fund / FEMA HMA	Existing (2020)

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HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EC	Extreme Cold	MS	Mine Subsidence	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm	C	Communications	H&M	Health & Medical
		EQ	Earthquake	SWS	Severe Winter Storm	E	Energy (Power & Fuel)	S&S	Safety & Security
		F	Flood	T	Tornado	FHS	Food, Hydration, Shelter	T	Transportation
		L	Landslides			HM	Hazardous Material	WS	Water Systems

Figure MIT-7
Alton Hazard Mitigation Actions
(Sheet 5 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Obtain Flood Elevation Certificates for properties located in Special Flood Hazard Areas.	F	S&S	LP&R	Small SVI: 0.0920 – 0.8918 CEJST: Yes EDRC: No	Yes	Yes	3, 4, 6	LM	Low/High	Planning & Development Director	1-5 years	City Local Resources	Existing (2020)
Develop and distribute educational materials to the general public on flood protection and proofing/retrofitting of existing homes.	F	S&S	E&A	Medium SVI: 0.0920 – 0.8918 CEJST: Yes EDRC: No	---	---	1, 2	LM	Low/Medium	Zoning Administrator	3-5 years	City Local Resources	Existing (2020)
Participate in the East St. Louis & Vicinity Ecosystem Restoration and Recreation Project to protect wetlands and floodplains.	F	S&S	NSP	Small SVI: 0.0920 – 0.8918 CEJST: Yes EDRC: No	---	---	4, 6	HM	Medium/High	Mayor / City Council	1-5 years	City Local Resources	Existing (2020)

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Acronyms

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HM	DF Dam Failure	E&A Education & Awareness
	DR Drought	LP&R Local Plans & Regulations
LM	EC Extreme Cold	NSP Natural Systems Protection
	EH Excessive Heat	S&IP Structure & Infrastructure Projects
HL	EQ Earthquake	
	F Flood	Community Lifelines to be Mitigated:
LL	L Landslides	C Communications
		E Energy (Power & Fuel)
		FHS Food, Hydration, Shelter
		HM Hazardous Material
		H&M Health & Medical
		S&S Safety & Security
		T Transportation
		WS Water Systems

Figure MIT-7
Alton Hazard Mitigation Actions
(Sheet 6 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Retrofit existing City-owned buildings and critical facilities to current earthquake code standards and harden infrastructure to meet earthquake design guidelines to mitigate damage from an earthquake event.	EQ	S&S	S&IP	Small SVI: 0.0920 – 0.8918 CEJST: Yes EDRC: No	---	Yes	3, 5, 8	LM	High/Medium	Mayor / City Council	5-15 years	City General Fund / FEMA HMA	Existing (2020)
Develop and distribute educational materials to the general public on measures that can be taken to avoid structural damage related to earthquakes.	EQ	---	E&A	Large SVI: 0.0920 – 0.8918 CEJST: Yes EDRC: No	---	---	1, 2	LM/LL	Low/Medium	Mayor / City Council	2-5 years	City Local Resources	Existing (2020)
Participate in the National Flood Insurance Program's Community Rating System to lower flood insurance premiums for City residents.	F	S&S	LP&R	Small SVI: 0.0920 – 0.8918 CEJST: Yes EDRC: No	Yes	Yes	3, 4, 5, 6, 7	LM	Low/High	Supervisor of Housing & Building Inspectors	3-5 years	City Local Resources	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 25,700 individuals). The City works diligently to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DF Dam Failure	E&A Education & Awareness
	DR Drought	NSP Natural Systems Protection
LM	EC Extreme Cold	LP&R Local Plans & Regulations
	EH Excessive Heat	S&IP Structure & Infrastructure Projects
HL	EQ Earthquake	
	F Flood	Community Lifelines to be Mitigated:
LL	L Landslides	C Communications
		E Energy (Power & Fuel)
		FHS Food, Hydration, Shelter
		HM Hazardous Material
		H&M Health & Medical
		S&S Safety & Security
		T Transportation
		WS Water Systems

Figure MIT-7
Alton Hazard Mitigation Actions
(Sheet 7 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Review new Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to exceed federal standards and reflect the revised FIRMs and present both for adoption. Enforce flood ordinance to ensure new development does not increase flood vulnerability or create unintended exposures to flooding.*	F	S&S	LP&R	Small SVI: 0.0920 – 0.8918 CEJST: Yes EDRC: No	Yes	Yes	2, 4, 6, 7	HM	Low/Medium	Supervisor of Housing & Building Inspectors	1-5 years	City Local Resources	Existing (2020)
Continue to make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.*	F	S&S	E&A	Small SVI: 0.0920 – 0.8918 CEJST: Yes EDRC: No	Yes	---	1, 2, 6, 7	LM	Low/Medium	Supervisor of Housing & Building Inspectors	1-5 years	City Local Resources	Existing (2020)
Make City officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.*	F	S&S	E&A	Small SVI: 0.0920 – 0.8918 CEJST: Yes EDRC: No	Yes	---	1	LM	Low/Medium	Supervisor of Housing & Building Inspectors	1-5 years	City Local Resources	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 25,700 individuals). The City works diligently to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

* Mitigation action to ensure continued compliance with NFIP.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DF	Dam Failure	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EC	Extreme Cold	MS	Mine Subsidence	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
		EQ	Earthquake	SWS	Severe Winter Storm	C	Communications	H&M	Health & Medical
		F	Flood	T	Tornado	E	Energy (Power & Fuel)	S&S	Safety & Security
		L	Landslides			FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-8
Alton Community Unit School District #11 Hazard Mitigation Actions
(Sheet 1 of 4)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install a standby emergency backup generator at Alton Middle School to establish a resilient and reliable power supply in order to maintain continuity of operations, ensure sustained functionality during extended power outages, and mitigate risk to a Community Lifeline.	EC, EH, EQ, F, L, MMH, SS, SWS, T	S&S	S&IP	Medium SVI: 0.1218 – 0.8918 CEJST: Yes	---	Yes	2, 3, 5	HM/HL	Medium/High	Superintendent / Board of Education	5 years	District General Fund / FEMA HMGP	New
Purchase and install a standby emergency backup generator at East Elementary School to establish a resilient and reliable power supply in order to maintain continuity of operations, ensure sustained functionality during extended power outages, and mitigate risk to a Community Lifeline.	EC, EH, EQ, F, L, MMH, SS, SWS, T	S&S	S&IP	Small SVI: 0.1218 – 0.8918 CEJST: Yes	---	Yes	2, 3, 5	HM/HL	Medium/High	Superintendent / Board of Education	5 years	District General Fund / FEMA HMGP	New
Purchase and install a standby emergency backup generator at West Elementary School to establish a resilient and reliable power supply in order to maintain continuity of operations, ensure sustained functionality during extended power outages, and mitigate risk to a Community Lifeline.	EC, EH, EQ, F, L, MMH, SS, SWS, T	S&S	S&IP	Small SVI: 0.1218 – 0.8918 CEJST: Yes	---	Yes	2, 3, 5	HM/HL	Medium/High	Superintendent / Board of Education	5 years	District General Fund / FEMA HMGP	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the budgetary constraints experienced by a school district of this size (serving approx. 43,000 individuals in a 78 square-mile area). Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	L	Landslides	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
		EQ	Earthquake	SWS	Severe Winter Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	F	Flood	T	Tornado				
						Community Lifelines to be Mitigated:			
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-8
Alton Community Unit School District #11 Hazard Mitigation Actions
(Sheet 2 of 4)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install a standby emergency backup generator at North Elementary School to establish a resilient and reliable power supply in order to maintain continuity of operations, ensure sustained functionality during extended power outages, and mitigate risk to a Community Lifeline.	EC, EH, EQ, F, L, MMH, SS, SWS, T	S&S	S&IP	Small SVI: 0.1218 – 0.8918 CEJST: Yes	---	Yes	2, 3, 5	HM/HL	Medium/High	Superintendent / Board of Education	5 years	District General Fund / FEMA HMGP	New
Purchase and install a solar array system and energy storage bank at Lewis & Clark Elementary School to improve infrastructure resilience and limit service disruptions, establish a reliable power supply in order to maintain continuity of operations, and mitigate risk to a Community Lifeline during a prolonged power outage	EC, EH, EQ, F, L, MMH, SS, SWS, T	S&S	S&IP	Small SVI: 0.1218 – 0.8918 CEJST: Yes	---	Yes	3, 5	HM/HL	Medium/High	Superintendent / Board of Education	5 years	District General Fund / FEMA HMA / DOE Energy Efficiency & Conservation Block Grant	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the budgetary constraints experienced by a school district of this size (serving approx. 43,000 individuals in a 78 square-mile area). Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	L	Landslides	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado	C	Communications	H&M	Health & Medical
						E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-8
Alton Community Unit School District #11 Hazard Mitigation Actions
(Sheet 3 of 4)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install a solar array system and energy storage bank at Eunice Smith Elementary School to improve infrastructure resilience and limit service disruptions, establish a reliable power supply in order to maintain continuity of operations, and mitigate risk to a Community Lifeline during a prolonged power outage	EC, EH, EQ, F, L, MMH, SS, SWS, T	S&S	S&IP	Small SVI: 0.1218 – 0.8918 CEJST: Yes	---	Yes	3, 5	HM/HL	Medium/High	Superintendent / Board of Education	5 years	District General Fund / FEMA HMA / DOE Energy Efficiency & Conservation Block Gant	New
Purchase and install a solar array system and energy storage bank at Gilson Brown Elementary School to improve infrastructure resilience and limit service disruptions, establish a reliable power supply in order to maintain continuity of operations, and mitigate risk to a Community Lifeline during a prolonged power outage	EC, EH, EQ, F, L, MMH, SS, SWS, T	S&S	S&IP	Small SVI: 0.1218 – 0.8918 CEJST: Yes	---	Yes	3, 5	HM/HL	Medium/High	Superintendent / Board of Education	5 years	District General Fund / FEMA HMA / DOE Energy Efficiency & Conservation Block Gant	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

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Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	L	Landslides	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado				
		Community Lifelines to be Mitigated:							
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-8
Alton Community Unit School District #11 Hazard Mitigation Actions
(Sheet 4 of 4)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install a solar array system and energy storage bank at Alton High School to improve infrastructure resilience and limit service disruptions, establish a reliable power supply in order to maintain continuity of operations, and mitigate risk to a Community Lifeline during a prolonged power outage.	EC, EH, EQ, F, L, MMH, SS, SWS, T	S&S	S&IP	Small SVI: 0.1218 – 0.8918 CEJST: Yes	---	Yes	3, 5	HM/HL	Medium/High	Superintendent / Board of Education	5 years	District General Fund / FEMA HMA / DOE Energy Efficiency & Conservation Block Grant	New
Educate students and staff about the natural and man-made hazards that have the potential to impact the District and the proactive actions they can take to reduce their risks.	DR, EC, EH, EQ, F, L, MMH, SS, SWS, T	---	E&A	Large SVI: 0.1218 – 0.8918 CEJST: Yes	---	---	2	LM/LL	Low/Medium	Superintendent / Board of Education	1-5 years	School District Local Resources	New

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Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	L	Landslides	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado				
						Community Lifelines to be Mitigated:			
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-9
America's Central Port Hazard Mitigation Actions
(Sheet 1 of 3)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
CIPP line pump station 408 discharge pipe lines to eliminate stormwater inflow and infiltration and reduce the amount of stormwater entering the wastewater system to increase system resilience and mitigate risk to a Community Lifeline.	F, SS	WS	S&IP	Medium SVI: 0.9333 CDRZ: Yes CEJST: Yes	Yes	Yes	3, 5	HM	Medium/High	Engineering Department	2 years	ACP General Fund / IEPA SRF – WPCLP / DCEO CDBG Public Infrastructure	New
Purchase and install lightning suppression/grounding systems and surge protection at pump station 408 to improve system resilience and ensure continuity of operations of Community Lifelines.	SS	WS	S&IP	Medium SVI: 0.9333 CDRZ: Yes CEJST: Yes	--	Yes	3, 5	HM	Medium/High	Engineering Department	2 years	ACP General Fund	New
Upgrade pumps and motors at pump station 408 to increase pump capacity, improve system resilience, and ensure continued functionality of a Community Lifeline.	F, SS	WS	S&IP	Medium SVI: 0.9333 CDRZ: Yes CEJST: Yes	---	Yes	3, 5	HM	Medium/High	Engineering Department	2 years	ACP General Fund	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

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Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado				
		Community Lifelines to be Mitigated:							
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-9
America's Central Port Hazard Mitigation Actions
(Sheet 2 of 3)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install digital message boards at main entrance to the facility to alert residents and commercial tenants of hazardous conditions associated with natural and man-made hazard events.	DR, EC, EH, EQ, F, LF, MMH, SS, SWS, T	---	E&A	Large SVI: 0.9333 CDRZ: Yes CEJST: Yes	---	---	2	LM/LL	Medium/Medium	Engineering Department	4 years	ACP General Fund	New
CIPP line sewer line sections and/or manhole structures and joints to eliminate stormwater inflow and infiltration and reduce the amount of stormwater entering the wastewater system to increase system resilience and mitigate risk to a Community Lifeline.	F, SS	WS	S&IP	Medium SVI: 0.9333 CDRZ: Yes CEJST: Yes	Yes	Yes	3, 5	HM	High/High	Engineering Department	4 years	ACP General Fund / IEPA SRF – WPCLP / DCEO CDBG	Existing (2020)
Install hardening materials (i.e., shatter-resistant/shatter-proof windows, hail resistant doors/shingles, etc.) at existing APC buildings and any new construction to increase infrastructure resilience and maintain continuity of operations, APC experienced significant hail damage in 2012 to its buildings from a severe storm event.	SS	S&S	S&IP	Medium SVI: 0.9333 CDRZ: Yes CEJST: Yes	Yes	Yes	3, 5, 7	HM	High/High	Engineering Department	2-5 years	ACP General Fund / FEMA HMA	Existing (2020)

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Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood	E&A Education & Awareness LP&R Local Plans & Regulations NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LM	LF Levee Failure MMH Man-Made Hazard SS Severe Storm SWS Severe Winter Storm T Tornado	
HL		
LL		
	Community Lifelines to be Mitigated:	
	C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material	H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-9
America's Central Port Hazard Mitigation Actions
(Sheet 3 of 3)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Clean out stormwater inlets, clear and grade open ditch lines, and install rip-rap where needed to maximize carrying/storage capacity, better manage stormwater runoff, alleviate recurring drainage problems, ensure system resilience and functionality, and mitigate risk to a Community Lifeline.	F, SS	T	S&IP	Medium SVI: 0.9333 CDRZ: Yes CEJST: Yes	Yes	Yes	3, 5	HM	Medium/Medium	Engineering Department	2-5 years	ACP General Fund	Existing (2020)
Seismically harden all APC buildings, specifically masonry structures, to meet earthquake design guidelines to increase structure resilience.	EQ	S&S	S&IP	Medium SVI: 0.9333 CDRZ: Yes CEJST: Yes	---	Yes	3, 5	HL	High/High	Engineering Department	3-5 years	ACP General Fund / FEMA HMA	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced this special-purpose unit of local government. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado	C	Communications	H&M	Health & Medical
						E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-10
Anderson Hospital Hazard Mitigation Actions

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Install shatter resistant/shatter-proof windows on the 2 nd and 3 rd floors of the patient wing to increase building resilience to natural hazards, safeguard functionality, and mitigate risk to a Community Lifeline.	EQ, SS, T	H&M	S&IP	Medium SVI: 0.1646 CEJST: No	---	Yes	2, 3, 5	HM/HL	Medium/High	Facilities Management Chief	3-5 years	Hospital General Fund / FEMA HMA HMGP	New
Educate staff and patients about the natural and man-made hazards that have the potential to impact the County and the proactive actions they can take to reduce their risks.	DR, EC, EH, EQ, F, MMH, MS, SS, SWS, T	---	E&A	Large SVI: 0.1646 CEJST: No	---	---	1, 2	LM/LL	Low/Medium	EMS & Emergency Preparedness Director	1-5 years	Hospital Local Resources	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a medium-sized hospital (144-bed inpatient and outpatient acute care facility). Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MS	Mine Subsidence	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado				
						Community Lifelines to be Mitigated:			
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-11
Bethalto Community Unit School District #8 Hazard Mitigation Actions

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install a standby emergency backup generator at the District's Tech Center to establish a resilient and reliable power supply in order to maintain continuity of operations, ensure sustained functionality during extended power outages, and mitigate risk to a Community Lifeline.	EC, EH, EQ, F, MMH, MS, SS, SWS, T	S&S	S&IP	Large SVI: 0.0920 – 0.8918 CEJST: Yes	---	Yes	3, 5	HM/HL	Medium/High	Superintendent / Board of Education	2-3 years	District General Fund / FEMA HMGP	New
Educate students and staff about the natural and man-made hazards that have the potential to impact the District and the proactive actions they can take to reduce their risks.	EC, EH, EQ, F, MMH, MS, SS, SWS, T	---	E&A	Large SVI: 0.0920 – 0.8918 CEJST: Yes	---	---	2	LM/LL	Low/Medium	Superintendent / Board of Education	1-5 years	District Local Resources	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the budgetary constraints experienced by a school district of this size (serving approx. 16,000 individuals in a 33 square-mile area). Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	EC Extreme Cold EH Excessive Heat	E&A Education & Awareness LP&R Local Plans & Regulations
LM	EQ Earthquake F Flood	NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
HL	MMH Man-Made Hazard	
LL		
		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-12
Center for Educational Opportunities – Madison County ROE 41 Hazard Mitigation Actions

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Install hardening materials (i.e., window safety film, shatterproof/ impact resistant glass, hail resistant shingles/doors, etc.) at the School to increase building resilience to natural hazards, maintain continuity of operations, protect staff and students, and mitigate risk to Community Lifelines.	EQ, SS, T	S&S	S&IP	Large SVI: 0.0073 – 0.9333 CEJST: No	---	Yes	2, 3, 5	HM/HL	Medium/High	Regional Superintendent / Board of Trustees	1-3 years	ROE General Fund / FEMA HMA HMGP	New
Educate students and staff about the natural and man-made hazards that have the potential to impact the District and the proactive actions they can take to reduce their risks.	DR, EC, EH, EQ, F, MMH, SS, SWS, T	---	E&A	Large SVI: 0.0073 – 0.9333 CEJST: No	---	---	2	LM/LL	Low/Medium	Regional Superintendent / Board of Trustees	1-5 years	ROE Local Resources	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the budgetary constraints experienced by an alternative school of this size (serving approx. 75 students in the County). Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood	MMH Man-Made Hazard SS Severe Storm SWS Severe Winter Storm T Tornado
LM		E&A Education & Awareness LP&R Local Plans & Regulations
HL		NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LL		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-13
Collinsville Hazard Mitigation Actions
(Sheet 1 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Re-evaluate the hydraulic modeling conducted along Canteen Creek and School House Branch to identify design solutions to address drainage and flooding problems experienced along these creeks.	F, SS	T	LP&R	Small SVI: 0.1764 – 0.6875 CEJST: No EDRC: No	---	---	3, 5	LM	Low/Medium	Public Works Director	2-3 years	City General Fund	New
Continue to collect Flood Elevation Certificates for properties located in Special Flood Hazard Areas.	F	S&S	LP&R	Small SVI: 0.1764 – 0.6875 CEJST: No EDRC: No	Yes	---	3, 4, 6	LM	Low/High	Public Works Director	1-5 years	City Local Resources	New
Line sewer line sections to eliminate stormwater inflow and infiltration and reduce the amount of stormwater entering the wastewater treatment plant to increase system resilience, prevent sewage backups, and mitigate risk to a Community Lifeline.	F, SS	WS	S&IP	Medium SVI: 0.1764 – 0.6875 CEJST: No EDRC: No	Yes	Yes	3, 5	HM	Medium/High	Public Works Director	1-5 years	City General Fund / IEPA SRF – WPCLP / DCEO CDBG	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 21,500 individuals). The City works diligently to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	EC Extreme Cold EH Excessive Heat	E&A Education & Awareness LP&R Local Plans & Regulations
LM	EQ Earthquake F Flood	NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
HL	L Landslides LF Levee Failure	
LL	MMH Man-Made Hazard MS Mine Subsidence SS Severe Storm SWS Severe Winter Storm T Tornado	
		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-13
Collinsville Hazard Mitigation Actions
(Sheet 2 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Install a new elevated water storage tank in the Sugar Loaf area to ensure community resilience and reliability of a Community Lifeline, including sufficient reserve to aid in fire suppression.	EC, EH, EQ, F, MMH, MS, SS, SWS, T	WS	S&IP	Small SVI: 0.1764 – 0.6875 CEJST: No EDRC: No	Yes	---	3, 5	HM/HL	High/High	Public Works Director	1 year	City General Fund / IEPA SRF – PWSLP	New
Purchase and install a standby emergency generator at the Glidden water tank to establish a resilient and reliable power supply, ensure sustained functionality during extended power outages, maintain continuity of operations, and mitigate risk to a Community Lifeline.	EC, EH, EQ, F, MMH, SS, SWS, T	WS	S&IP	Small SVI: 0.1764 – 0.6875 CEJST: No EDRC: No	---	Yes	3, 5	HM/HL	Medium/High	Public Works Director	1 year	City General Fund / FEMA HMA	New
Purchase and install standby emergency generators at all sanitary lift stations within the City to establish resilient and reliable power supplies, ensure sustained functionality during extended power outages, maintain continuity of operations, and mitigate risk to a Community Lifeline.	EC, EH, EQ, F, MMH, SS, SWS, T	WS	S&IP	Large SVI: 0.1764 – 0.6875 CEJST: No EDRC: No	---	Yes	3, 5	HM/HL	Medium/High	Public Works Director	1-5 years	City General Fund / FEMA HMA	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 21,500 individuals). The City works diligently to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	EC Extreme Cold EH Excessive Heat	E&A Education & Awareness LP&R Local Plans & Regulations
LM	EQ Earthquake F Flood	NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
HL	L Landslides LF Levee Failure	
LL		
		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-13
Collinsville Hazard Mitigation Actions
(Sheet 3 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Construct a relief line for the northern interceptor sewer to increase capacity, prevent sewage backups, and mitigate risk to a Community Lifeline.	F, SS	WS	S&IP	Medium SVI: 0.1764 – 0.6875 CEJST: No EDRC: No	---	Yes	3, 5	HM	High/High	Public Works Director	5 years	City General Fund / IEPA SRF – WPCLP / DCEO CDBG	New
Purchase and install digital message boards at the new fire stations to alert citizens of hazardous conditions associated with natural and man-made hazard events.	EC, EH, EQ, F, L, LF, MMH, MS, SS, SWS, T	---	E&A	Large SVI: 0.1764 – 0.6875 CEJST: No EDRC: No	---	---	2	LM/LL	Medium/Medium	Fire Chief / City Manager	3-5 years	City General Fund	New
Retrofit the training room at the new Fire Station #2 to house a multi-use Emergency Operations Center that will serve as a central command and control facility for carrying out emergency management and ensuring the continuity of operations/ government for the City during hazard events.	EC, EH, EQ, F, L, LF, MMH, MS, SS, SWS, T	C S&S	S&IP	Large SVI: 0.1764 – 0.6875 CEJST: No EDRC: No	---	Yes	2, 3, 5	LM/LL	Medium/High	Mayor City Council / City Manager / Fire Chief	3-5 years	City General Fund / FEMA EOCGP	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 21,500 individuals). The City works diligently to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	EC Extreme Cold EH Excessive Heat	E&A Education & Awareness LP&R Local Plans & Regulations
LM	EQ Earthquake F Flood	NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
HL	LF Landslides LF Levee Failure	
LL		
		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-13
Collinsville Hazard Mitigation Actions
(Sheet 4 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Identify and implement stormwater best management practices to minimize future flood damage and increase system resilience.	F, SS	S&S	S&IP NSP	Medium SVI: 0.1764 – 0.6875 CEJST: No EDRC: No	Yes	Yes	3, 5	HM	Medium/High	Mayor / City Council	3 years	City General Fund / FEMA FMA HMA	Existing (2020)
Identify locations within the City that could be utilized as warming/cooling centers & emergency shelters by City residents and secure Memorandums of Agreement with these locations.	EC, EH, EQ, F, L, LF, MMH, SS, SWS, T	FHS	LP&R	Large SVI: 0.1764 – 0.6875 CEJST: No EDRC: No	---	---	2	LM/LL	Low/Medium	Mayor / City Council	2-5 years	City Local Resources	Existing (2020)
Designate additional warming/cooling centers and emergency shelters within the City to increase sheltering capabilities and capacities.	EC, EH, EQ, F, L, LF, MMH, SS, SWS, T	FHS	LP&R	Large SVI: 0.1764 – 0.6875 CEJST: No EDRC: No	---	---	2	LM/LL	Low/High	Mayor / City Council	2-5 years	City Local Resources	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 21,500 individuals). The City works diligently to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EH	Excessive Heat	MS	Mine Subsidence	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EQ	Earthquake	SS	Severe Storm	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	F	Flood	SWS	Severe Winter Storm	C	Communications	H&M	Health & Medical
		L	Landslides	T	Tornado	E	Energy (Power & Fuel)	S&S	Safety & Security
		LF	Levee Failure			FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-13
Collinsville Hazard Mitigation Actions
(Sheet 5 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Conduct a feasibility study to determine the appropriateness of retrofitting the existing designated storm/emergency shelters or constructing new structures to serve as community safe rooms for City residents.	SS, T	---	LP&R	Large SVI: 0.1764 – 0.6875 CEJST: No EDRC: No	---	---	2	LM/LL	Low/Medium	Mayor / City Council	5-7 years	City General Fund	Existing (2020)
Retrofit designated storm/emergency shelters and/or construct new structures to serve as community safe rooms (built to high wind and seismic standards and equipped with emergency backup generators and HVAC units) that can also serve as warming/cooling centers for City residents.	EC, EH, SS, T	FHS	S&IP	Large SVI: 0.1764 – 0.6875 CEJST: No EDRC: No	Yes	Yes	2	HM/HL	High/High	Mayor / City Council	7-10 years	City General Fund / FEMA HMA	Existing (2020)
Retrofit the Community Fire Department Training Room to house a multi-use Emergency Operations Center that will serve as a central command and control facility for carrying out emergency management and ensuring the continuity of operations/ government for the City during hazard events.	EQ, F, L, LF, MMH, SS, SWS, T	C S&S	S&IP	Large SVI: 0.1764 – 0.6875 CEJST: No EDRC: No	---	Yes	2, 3, 5	LM/LL	Medium/High	Mayor / City Council	3-5 years	City General Fund / FEMA EOCGP	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 21,500 individuals). The City works diligently to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EH	Excessive Heat	MS	Mine Subsidence	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EQ	Earthquake	SS	Severe Storm	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	F	Flood	SWS	Severe Winter Storm				
		L	Landslides	T	Tornado	C	Communications	H&M	Health & Medical
		LF	Levee Failure			E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-13
Collinsville Hazard Mitigation Actions
(Sheet 6 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Develop public information materials for all natural hazards that inform residents about the risks to life and property associated with each hazard and the proactive measures that they can take to reduce or eliminate their risk.	EC, EH, EQ, F, L, LF, MS, SS, SWS, T	---	E&A	Large SVI: 0.1764 – 0.6875 CEJST: No EDRC: No	---	---	2	LM/LL	Low/Medium	Mayor / City Council	2-4 years	City Local Resources	Existing (2020)
Evaluate the feasibility of participating in the National Flood Insurance Program's voluntary Community Rating System to reduce flood insurance premiums.	F	S&S	E&A	Medium SVI: 0.1764 – 0.6875 CEJST: No EDRC: No	---	---	3, 4, 5	LM	Low/Medium	Floodplain Manager	3-5 years	City Local Resources	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 21,500 individuals). The City works diligently to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	EC Extreme Cold EH Excessive Heat	E&A Education & Awareness LP&R Local Plans & Regulations
LM	EQ Earthquake F Flood	NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
HL	L Landslides LF Levee Failure	
LL		
		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-13
Collinsville Hazard Mitigation Actions
(Sheet 7 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Review new Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to exceed federal standards and reflect the revised FIRMs and present both for adoption. Enforce flood ordinance to ensure new development does not increase flood vulnerability or create unintended exposures to flooding.*	F	S&S	LP&R	Medium SVI: 0.1764 – 0.6875 CEJST: No EDRC: No	Yes	Yes	2, 4, 6, 7	HM	Low/Medium	Mayor City Council / Floodplain Manager	1-5 years	City Local Resources	Existing (2020)
Continue to make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.*	F	S&S	E&A	Medium SVI: 0.1764 – 0.6875 CEJST: No EDRC: No	Yes	---	1, 2, 6, 7	LM	Low/Medium	Floodplain Manager	1-5 years	City Local Resources	Existing (2020)
Make City officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.*	F	S&S	E&A	Medium SVI: 0.1764 – 0.6875 CEJST: No EDRC: No	Yes	---	1	LM	Low/Medium	Floodplain Manager	1-5 years	City Local Resources	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 21,500 individuals). The City works diligently to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

* Mitigation action to ensure continued compliance with NFIP.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EH	Excessive Heat	MS	Mine Subsidence	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EQ	Earthquake	SS	Severe Storm	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	F	Flood	SWS	Severe Winter Storm				
		L	Landslides	T	Tornado	C	Communications	H&M	Health & Medical
		LF	Levee Failure			E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-14
Collinsville Community Unit School District #10 Hazard Mitigation Actions

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Install hardening materials (i.e., window safety film, shatterproof/impact resistant glass, hail resistant doors/shingles, etc.) at District schools to increase building resilience to natural hazards, maintain continuity of operations, protect staff and students, and mitigate risk to Community Lifelines.	EQ, SS, T	S&S	S&IP	Large SVI: 0.2012 – 0.6875 CEJST: Yes	---	Yes	2, 3, 5	HM/HL	Medium/High	Director of Facilities / SRO	1-2 years	District General Fund / FEMA HMA	New
Perform periodic, district-wide, multi-jurisdiction training on the District's Reunification Plan for police, fire, EMA, and District staff. This Plan outlines how students will be reunified with their parent/guardian in the event of a school crisis or emergency.	EQ, F, L, LF, MMH, MS, SS, T	S&S	LP&R E&A	Large SVI: 0.2012 – 0.6875 CEJST: Yes	---	---	2	LM/LL	Low/Medium	Superintendent	1-5 years	District Local Resources	New
Educate students and staff about the natural and man-made hazards that have the potential to impact the District and the proactive actions they can take to reduce their risks.	EC, EH, EQ, F, L, LF, MMH, MS, SS, SWS, T	---	E&A	Large SVI: 0.2012 – 0.6875 CEJST: Yes	---	---	2	LM/LL	Low/Medium	Superintendent	1-5 years	District Local Resources	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of "Yes", and/or an Economically Disadvantaged Rural Community (EDRC) designation of "Yes" identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the budgetary constraints experienced by a school district of this size (serving approx. 40,000 individuals in a 37 square-mile area). Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EH	Excessive Heat	MS	Mine Subsidence	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EQ	Earthquake	SS	Severe Storm	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	F	Flood	SWS	Severe Winter Storm				
		L	Landslides	T	Tornado	C	Communications	H&M	Health & Medical
		LF	Levee Failure			E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-15
Collinsville Township Hazard Mitigation Actions
(Sheet 1 of 2)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install a standby emergency generator at the Main Garage to establish a resilient and reliable power supply in order to maintain continuity of government/operations and mitigate risk to a Community Lifeline.	EC, EH, EQ, F, L, MMH, MS, SS, SWS, T	T	S&IP	Large SVI: 0.1646 – 0.6875 CEJST: No EDRC: No	---	Yes	3, 5	HM/HL	Medium/High	Highway Commissioner	1 year	Township General Fund / FEMA HMA	New
Distribute public information materials to Township residents that detail the risks to life and property associated with the natural and man-made hazards that impact the Township and the proactive approaches they can take to reduce their risk.	DR, EC, EH, EQ, F, L, LF, MMH, MS, SS, SWS, T	---	E&A	Large SVI: 0.1646 – 0.6875 CEJST: No EDRC: No	---	---	1, 2	LM/LL	Low/Medium	Supervisor / Highway Commissioner	1-5 years	Township Local Resources	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a township of this size (approx. 35,600 individuals in both incorporated and unincorporated areas). The Township works hard to maintain critical services to residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold	LF Levee Failure MMH Man-Made Hazard
LM	EH Excessive Heat EQ Earthquake	MS Mine Subsidence SS Severe Storm
HL	F Flood L Landslides	SWS Severe Winter Storm T Tornado
LL		
	Community Lifelines to be Mitigated:	
	C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material	H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-15
Collinsville Township Hazard Mitigation Actions
(Sheet 2 of 2)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install a standby emergency generator at the Township & Assessor's Building to establish a resilient and reliable power supply in order to maintain continuity of government and mitigate risk to a Community Lifeline.	EC, EH, EQ, F, L, MMH, MS, SS, SWS, T	C S&S	S&IP	Large SVI: 0.1646 – 0.6875 CEJST: No EDRC: No	---	Yes	3, 5	HM/HL	Medium/High	Supervisor	4 years	Township General Fund / FEMA HMA	New
Purchase P25-compliant interoperable land mobile radios to allow Township personnel to exchange critical communications across partner agencies and other jurisdictions to maintain continuity of government/operations and ensure system resilience and functionality of a Community Lifeline.	EQ, F, L, LF, MMH, MS, SS, SWS, T	C	S&IP	Large SVI: 0.1646 – 0.6875 CEJST: No EDRC: No	---	---	2, 3, 5	LM/LL	Medium/High	Highway Commissioner	2 years	Township General Fund / FEMA HMA	New

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[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a township of this size (approx. 35,600 individuals in both incorporated and unincorporated areas). The Township works hard to maintain critical services to residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	MS	Mine Subsidence				
		EQ	Earthquake	SS	Severe Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	F	Flood	SWS	Severe Winter Storm				
		L	Landslides	T	Tornado				
		Community Lifelines to be Mitigated:							
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-16
East Alton Hazard Mitigation Actions
(Sheet 1 of 8)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Establish digital data sets for all utilities (drainage, water, gas, electric, etc.) within the Village for use in GIS mapping applications.	EC, EH, EQ, F, L, LF, SS, SWS, T	C E T WS	LP&R E&A	Large SVI: 0.1406 – 0.7086 CEJST: Yes EDRC: No	---	---	3, 5	LM/LL	Low/High	Superintendent Water & Wastewater Division	5 years	Village General Fund	Existing (2020)
Upsize water main interconnections with Wood River and Bethalto to increase system resilience and capacity to subdivisions, ensure a constant supply of water for residents, and aid in fire suppression during hazard events. Interconnectors currently go from 4-inch to 2-inch.	DR, EC, EH, F, MMH, SS, SWS, T	WS	S&IP	Large SVI: 0.1406 – 0.7086 CEJST: Yes EDRC: No	Yes	Yes	3, 5	HM/HL	High/High	Superintendent Water & Wastewater Division	5 years	Village General Fund / IEPA SRF – PWSLP	Existing (2020)
Upgrade booster pump station on Willoway Ave. to increase capacity, better manage stormwater runoff, and alleviate drainage problems and backups, and ensure system resilience and functionality.	F, SS	WS	S&IP	Small SVI: 0.1406 – 0.7086 CEJST: Yes EDRC: No	Yes	Yes	3, 5	HM	High/High	Superintendent Water & Wastewater Division	10 years	Village General Fund / IEPA SRF – WPCLP / FEMA HMA	Existing (2020)

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Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold	E&A Education & Awareness LP&R Local Plans & Regulations
LM	EH Excessive Heat EQ Earthquake	NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
HL	F Flood L Landslides	
LL		
	Community Lifelines to be Mitigated:	
	C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material	H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-16
East Alton Hazard Mitigation Actions
(Sheet 2 of 8)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install an emergency backup generator at Willoway Ave. booster pump station to establish a resilient and reliable power supply, maintain continuity of operations, and mitigate risk to a Community Lifeline.	EC, EH, EQ, F, MMH, SS, SWS, T	WS	S&IP	Small SVI: 0.1406 – 0.7086 CEJST: Yes EDRC: No	---	Yes	3, 5	HM/HL	Medium/High	Superintendent Water & Wastewater Division	10 years	Village General Fund / FEMA HMA	Existing (2020)
Purchase and install emergency backup generators with automatic transfer switches at six (6) lift stations within the Village to a establish resilient and reliable power supply, maintain continuity of operations, and mitigate risk to Community Lifelines.	EC, EH, EQ, F, MMH, SS, SWS, T	WS	S&IP	Medium SVI: 0.1406 – 0.7086 CEJST: Yes EDRC: No	---	Yes	3, 5	HM/HL	Medium/High	Superintendent Water & Wastewater Division	1 year	Village General Fund / FEMA HMA	Existing (2020)
Purchase and install an emergency backup generator at the Emergency Operations Center to provide uninterrupted power and maintain continuity of government/operations during power outages.	EC, EH, EQ, F, MMH, SS, SWS, T	WS	S&IP	Large SVI: 0.1406 – 0.7086 CEJST: Yes EDRC: No	---	Yes	3, 5	HM/HL	Medium/High	President / Village Board	3-5 years	Village General Fund / FEMA HMA	Existing (2020)

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Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado	C	Communications	H&M	Health & Medical
		L	Landslides			E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-16
East Alton Hazard Mitigation Actions
(Sheet 3 of 8)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install backup power source(s) at village-owned critical facilities and infrastructure systems to establish resilient and reliable power supplies, maintain continuity of government/operations, and mitigate risk to Community Lifelines in the event of a prolonged power outage.	EC, EH, EQ, F, L, LF, MMH, SS, SWS, T	C S&S T WS	S&IP	Large SVI: 0.1406 – 0.7086 CEJST: Yes EDRC: No	---	Yes	3, 5	HM/HL	Medium/High	President / Village Board	5-10 years	Village General Fund / FEMA HMA	Existing (2020)
Clean sediment and debris from Lakeside Ave. drainage ditch and stormwater retention area to maximize flow/carrying capacity, better manage stormwater runoff, and ensure system resilience and functionality.	F, SS	S&S T	S&IP	Small SVI: 0.1406 – 0.7086 CEJST: Yes EDRC: No	Yes	Yes	3, 5	HM	Medium/High	President / Village Board	1 year	Village Local Resources	Existing (2020)
Install riprap along the banks of the Lakeside Ave. drainage ditch to stabilize the banks, reduce erosion, and maximize carrying capacity.	F, SS	S&S	S&IP NSP	Small SVI: 0.1406 – 0.7086 CEJST: Yes EDRC: No	Yes	Yes	3, 5	HM	Medium/High	President / Village Board	1 year	Village General Fund / IDOA Streambank Stabilization & Restoration Program	Existing (2020)

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Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold	E&A Education & Awareness LP&R Local Plans & Regulations
LM	EH Excessive Heat EQ Earthquake	NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
HL	SS Severe Storm SWS Severe Winter Storm	
LL	F Flood L Landslides	
	T Tornado	
	Community Lifelines to be Mitigated:	
	C Communications E Energy (Power & Fuel)	H&M Health & Medical S&S Safety & Security
	FHS Food, Hydration, Shelter HM Hazardous Material	T Transportation WS Water Systems

Figure MIT-16
East Alton Hazard Mitigation Actions
(Sheet 4 of 8)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Line sanitary and storm sewer line sections to eliminate stormwater inflow and infiltration and reduce the amount of stormwater entering the wastewater treatment system to increase system resilience, prevent sewage backups, and mitigate risk to a Community Lifeline.	F, SS	WS	S&IP	Medium SVI: 0.1406 – 0.7086 CEJST: Yes EDRC: No	Yes	Yes	3, 5	HM	Medium/High	President / Village Board	5-10 years	Village General Fund / IEPA SRF – WPCLP / DCEO CDBG	Existing (2020)
Designate the Police/Fire Department as a warming/cooling center and emergency shelter for use by Village residents.	EC, EH, EQ, F, L, LF, MMH, SS, SWS, T	FHS	LP&R	Small SVI: 0.1406 – 0.7086 CEJST: Yes EDRC: No	---	---	2	LM/LL	Low/High	President / Village Board	1-3 years	Village Local Resources	Existing (2020)
Upgrade storm warning siren system, including installing additional sirens in underserved areas, to maximize the system's effectiveness and ensure continued operations of a Community Lifeline essential to human health and safety.	SS, T	C	S&IP E&A	Large SVI: 0.1406 – 0.7086 CEJST: Yes EDRC: No	---	---	2	HM/HL	Medium/High	President / Village Board	5 years	Village General Fund / FEMA HMA	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 5,800 individuals). The Village works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood L Landslides	E&A Education & Awareness LP&R Local Plans & Regulations NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LM	LF Levee Failure MMH Man-Made Hazard SS Severe Storm SWS Severe Winter Storm T Tornado	
HL		Community Lifelines to be Mitigated:
LL		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-16
East Alton Hazard Mitigation Actions
(Sheet 5 of 8)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Acquire flood-prone properties and remove any existing structures.	F	S&S	S&IP NSP	Small SVI: 0.1406 – 0.7086 CEJST: Yes EDRC: No	---	Yes	2, 4, 6	HM	Medium/High	President / Village Board	10-15 years	Village General Fund / FEMA HMA Swift Current	Existing (2020)
Elevate flood-prone structures out of the base floodplain.	F	S&S	S&IP	Small SVI: 0.1406 – 0.7086 CEJST: Yes EDRC: No	---	Yes	2, 4, 6	HM	Medium/High	President / Village Board	10-15 years	Village General Fund / FEMA HMA	Existing (2020)
Obtain Flood Elevation Certificates for properties located in Special Flood Hazard Areas.	F	S&S	LP&R	Small SVI: 0.1406 – 0.7086 CEJST: Yes EDRC: No	Yes	Yes	3, 4, 6	LM	Low/High	Building & Zoning Director	1-5 years	Village Local Resources	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 5,800 individuals). The Village works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood L Landslides	E&A Education & Awareness LP&R Local Plans & Regulations NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LM	LF Levee Failure MMH Man-Made Hazard SS Severe Storm SWS Severe Winter Storm T Tornado	
HL		Community Lifelines to be Mitigated:
LL		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-16
East Alton Hazard Mitigation Actions
(Sheet 6 of 8)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Develop and distribute educational materials to the general public on flood protection and proofing/retrofitting of existing homes.	F	S&S	E&A	Large SVI: 0.1406 – 0.7086 CEJST: Yes EDRC: No	---	---	1, 2	LM	Low/Medium	Building & Zoning Director	3-5 years	Village Local Resources	Existing (2020)
Participate in the East St. Louis & Vicinity Ecosystem Restoration and Recreation Project to protect wetlands and floodplains.	F	S&S	NSP	Small SVI: 0.1406 – 0.7086 CEJST: Yes EDRC: No	---	---	4, 6	HM	Medium/High	President / Village Board	1-5 years	Village Local Resources Village	Existing (2020)
Retrofit existing Village-owned buildings and critical facilities to current earthquake code standards and harden infrastructure to meet earthquake design guidelines to mitigate damage from an earthquake event.	EQ	S&S	S&IP	Small SVI: 0.1406 – 0.7086 CEJST: Yes EDRC: No	---	Yes	3, 5, 8	LM	High/Medium	President / Village Board	15-20 years	Village General Fund / FEMA HMA	Existing (2020)

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[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 5,800 individuals). The Village works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood L Landslides	E&A Education & Awareness LP&R Local Plans & Regulations NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LM	LF Levee Failure MMH Man-Made Hazard SS Severe Storm SWS Severe Winter Storm T Tornado	
HL		
LL		
	Community Lifelines to be Mitigated:	
	C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material	H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-16
East Alton Hazard Mitigation Actions
(Sheet 7 of 8)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Develop and distribute educational materials to the general public on measures that can be taken to avoid structure damage related to earthquakes.	EQ	---	E&A	Large SVI: 0.1406 – 0.7086 CEJST: Yes EDRC: No	---	---	1, 2	LM/LL	Low/Medium	President / Village Board	3-5 years	Village Local Resources	Existing (2020)
Adopt, enforce & update building codes as needed to reduce structure vulnerability to seismic activity.	EQ	---	LP&R	Large SVI: 0.1406 – 0.7086 CEJST: Yes EDRC: No	Yes	Yes	2, 4, 8	HL	Low/High	Building & Zoning Director	1-5 years	Village General Fund / FEMA HMA	Existing (2020)
Evaluate the feasibility of participating in the National Flood Insurance Program's voluntary Community Rating System to reduce flood insurance premiums.	F	S&S	E&A	Small SVI: 0.1406 – 0.7086 CEJST: Yes EDRC: No	---	---	3, 4, 5	LM	Low/Medium	Building & Zoning Director	3-5 years	Village Local Resources	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 5,800 individuals). The Village works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood L Landslides	E&A Education & Awareness LP&R Local Plans & Regulations NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LM	LF Levee Failure MMH Man-Made Hazard SS Severe Storm SWS Severe Winter Storm T Tornado	
HL		Community Lifelines to be Mitigated:
LL		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-16
East Alton Hazard Mitigation Actions
(Sheet 8 of 8)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Review new Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to exceed federal standards and reflect the revised FIRMs and present both for adoption. Enforce flood ordinance to ensure new development does not increase flood vulnerability or create unintended exposures to flooding.*	F	S&S	LP&R	Small SVI: 0.1406 – 0.7086 CEJST: Yes EDRC: No	Yes	Yes	2, 4, 6, 7	HM	Low/Medium	Building & Zoning Director	1-5 years	Village Local Resources	Existing (2020)
Continue to make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.*	F	S&S	E&A	Small SVI: 0.1406 – 0.7086 CEJST: Yes EDRC: No	Yes	---	1, 2, 6, 7	LM	Low/Medium	Building & Zoning Director	1-5 years	Village Local Resources	Existing (2020)
Make Village officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.*	F	S&S	E&A	Small SVI: 0.1406 – 0.7086 CEJST: Yes EDRC: No	Yes	---	1	LM	Low/Medium	Building & Zoning Director	1-5 years	Village Local Resources	Existing (2020)

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[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 5,800 individuals). The Village works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

* Mitigation action to ensure continued compliance with NFIP.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado				
		L	Landslides						
						Community Lifelines to be Mitigated:			
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-17
Edwardsville Hazard Mitigation Actions
(Sheet 1 of 5)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase a bypass pump to serve as a backup to the water distribution system pumps to create redundancy, improve infrastructure resilience, minimize service disruptions, aid in fire suppression during hazard events, and safeguard functionality of a Community Lifeline.	MMH, SS	WS	S&IP	Large SVI: 0.0479 – 0.5843 CEJST: No EDRC: No	---	Yes	3, 5	HM	Medium/High	Public Works Director	1 year	City General Fund / IEPA SRF – PWSLP	New
Purchase and install an emergency backup generator at the Cloverdale water tower/emergency radio (dispatch) tower to establish resilient and reliable power supply, maintain continuity of operations, and mitigate risk to Community Lifelines.	EC, EQ, F, MMH, SS, SWS, T	C WS	S&IP	Medium SVI: 0.0479 – 0.5843 CEJST: No EDRC: No	---	Yes	3, 5	HM/HL	Medium/High	Public Works Director / Tele-communications Supervisor	1 year	City General Fund / FEMA HMA	New
Purchase and install rainstopper manhole inserts to eliminate stormwater inflow into the sanitary sewer system experienced during heavy rain events to increase system resilience, prevent damage to the collection system, and reduce flow rates to wastewater treatment plant, and mitigate risk to a Community Lifeline.	F, SS	WS	S&IP	Large SVI: 0.0479 – 0.5843 CEJST: No EDRC: No	---	Yes	3, 5	HM	Medium/High	Public Works Director	2-3 years	City General Fund / FEMA HMA / IEPA SRF – WPCLP	New

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[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 28,800 individuals). The City works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DF Dam Failure DR Drought	E&A Education & Awareness LP&R Local Plans & Regulations
LM	EC Extreme Cold EH Excessive Heat	NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
HL	EQ Earthquake F Flood	
LL	L Landslides	
	LF Levee Failure MMH Man-Made Hazard MS Mine Subsidence SS Severe Storm SWS Severe Winter Storm T Tornado	
		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-17
Edwardsville Hazard Mitigation Actions
(Sheet 2 of 5)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase a backup dispatch radio system on a separate platform from the primary system to create a diverse and resilient communications system, ensure continuity of operations, and mitigate risk to a Community Lifeline. In the event the primary dispatch radio system is inoperable, the backup system can broadcast warning information before an imminent event occurs and allowing individuals to take action and reduce damages/loss of life.	DF, EQ, F, L, LF, MMH, SS, SWS, T	C	S&IP	Large SVI: 0.0479 – 0.5843 CEJST: No EDRC: No	---	Yes	3, 5	HM/HL	Medium/High	Tele-communications Supervisor	1-2 year	City General Fund / FEMA HMA	New
Make public information materials available to residents that detail the risks to life and property associated with the natural and man-made hazards that impact the City and the proactive approaches they can take to reduce their risk.	DF, DR, EC, EH, EQ, F, L, LF, MMH, MS, SS, SWS, T	---	E&A	Large SVI: 0.0479 – 0.5843 CEJST: No EDRC: No	---	---	1, 2	P2/P4	Low/Medium	Mayor / City Council	1-5 years	City Local Resources	New

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Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DF Dam Failure DR Drought LF Levee Failure MMH Man-Made Hazard	E&A Education & Awareness LP&R Local Plans & Regulations NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LM	EC Extreme Cold EH Excessive Heat SS Severe Storm	
HL	EQ Earthquake F Flood T Tornado	
LL	L Landslides	
	Community Lifelines to be Mitigated:	
	C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material	H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-17
Edwardsville Hazard Mitigation Actions
(Sheet 3 of 5)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Upsize the Old North and North Kansas Interceptor Sewer System to increase capacity and eliminate stormwater inflow and infiltration reducing the amount of stormwater entering the wastewater treatment plant to increase system resilience, prevent sewage backups, and mitigate risk to a Community Lifeline.	F, SS	WS	S&IP	Medium SVI: 0.0479 – 0.5843 CEJST: No EDRC: No	---	Yes	3, 5	HM	High/High	Public Works Director	5 years	City General Fund / IEPA SRF – WPCLP / DCEO CDBG	Existing (2020)
Upsize the Stonebrooke Drive bridge to maximize carrying capacity, address scour damage caused by repeated flooding, ensure system resilience and functionality, and mitigate risk to a Community Lifeline.	F, SS	T	S&IP	Small SVI: 0.0479 – 0.5843 CEJST: No EDRC: No	---	Yes	3, 5	HM	Medium/High	Public Works Director	5 years	City General Fund / FEMA HMGP	Existing (2020)
Design and construct a stormwater retention basin in the area of Governor’s Parkway and District Drive, a newly developing residential area, to create additional storage capacity to better manage stormwater runoff and decrease the likelihood of flooding, thus ensuring community resilience.	F, SS	S&S	S&IP	Small SVI: 0.0479 – 0.5843 CEJST: No EDRC: No	Yes	Yes	3, 5	HM	Medium/High	Public Works Director	5 years	City General Fund / FEMA HMA	Existing (2020)

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Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DF Dam Failure DR Drought	E&A Education & Awareness LP&R Local Plans & Regulations
LM	EC Extreme Cold EH Excessive Heat	NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
HL	EQ Earthquake F Flood	
LL	L Landslides	
	LF Levee Failure MMH Man-Made Hazard MS Mine Subsidence SS Severe Storm SWS Severe Winter Storm T Tornado	
		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-17
Edwardsville Hazard Mitigation Actions
(Sheet 4 of 5)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Upsize drainage structure over Mooney Creek Tributary #2 on Willow Creek Drive at the entrance to the Willow Creek subdivision to alleviate roadway overtopping and subsequent washouts, better manage stormwater runoff, and ensure system resilience and functionality during heavy rain/flood events. There currently is only one entrance into this subdivision and significant roadway damage has occurred along this tributary just north of this subdivision as a result of flash flooding.	F, SS	T WS	S&IP	Small SVI: 0.0479 – 0.5843 CEJST: No EDRC: No	---	Yes	3, 5	HM	Medium/High	Public Works Director	5-10 years	City General Fund / FEMA HMA	Existing (2020)
Install camera system at drinking water wells & wastewater treatment plants to allow operators to remotely monitor the systems during natural hazard events.	EC, EH, EQ, F, MMH, SS, SWS, T	WS	S&IP	Large SVI: 0.0479 – 0.5843 CEJST: No EDRC: No	---	Yes	3, 5	LM/LL	Low/Medium	Public Works Director	5 years	City General Fund	Existing (2020)

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Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DF Dam Failure DR Drought EC Extreme Cold EH Excessive Heat	E&A Education & Awareness LP&R Local Plans & Regulations NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LM	EQ Earthquake F Flood L Landslides	MS Mine Subsidence SS Severe Storm SWS Severe Winter Storm T Tornado
HL		Community Lifelines to be Mitigated:
LL		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-17
Edwardsville Hazard Mitigation Actions
(Sheet 5 of 5)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Review new Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to exceed federal standards and reflect the revised FIRMs and present both for adoption. Enforce flood ordinance to ensure new development does not increase flood vulnerability or create unintended exposures to flooding.*	F	S&S	LP&R	Small SVI: 0.0479 – 0.5843 CEJST: No EDRC: No	Yes	Yes	2, 4, 6, 7	HM	Low/Medium	Mayor City Council / Zoning Administrator	1-5 years	City Local Resources	Existing (2020)
Continue to make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.*	F	S&S	E&A	Small SVI: 0.0479 – 0.5843 CEJST: No EDRC: No	Yes	---	1, 2, 6, 7	LM	Low/Medium	Mayor / City Council	1-5 years	City Local Resources	Existing (2020)
Make City officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.*	F	S&S	E&A	Small SVI: 0.0479 – 0.5843 CEJST: No EDRC: No	Yes	---	1	LM	Low/Medium	Mayor City Council / Zoning Administrator	1-5 years	City Local Resources	Existing (2020)

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[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 28,800 individuals). The City works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

* Mitigation action to ensure continued compliance with NFIP.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DF	Dam Failure	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EC	Extreme Cold	MS	Mine Subsidence	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
		EQ	Earthquake	SWS	Severe Winter Storm	C	Communications	H&M	Health & Medical
		F	Flood	T	Tornado	E	Energy (Power & Fuel)	S&S	Safety & Security
		L	Landslides			FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-18
Edwardsville Community Unit School District #7 Hazard Mitigation Actions
(Sheet 1 of 3)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install standby emergency backup generators at District schools to establish resilient and reliable power supplies in order to maintain continuity of operations, ensure sustained functionality during extended power outages, and mitigate risk to Community Lifelines.	EC, EH, EQ, F, L, MMH, MS, SS, SWS, T	S&S	S&IP	Large SVI: 0.0628 – 0.5385 CEJST: No	---	Yes	2, 3, 5	HM/HL	High/High	Superintendent / Director of Building & Grounds	5 years	District General Fund / FEMA HMA	New
Perform periodic, district-wide, multi-jurisdiction training on the District's Reunification Plan for police, fire, EMA, and District staff. This Plan outlines how students will be reunified with their parent/guardian in the event of a school crisis or emergency.	EQ, F, L, MMH, MS, SS, T	S&S	LP&R E&A	Large SVI: 0.0628 – 0.5385 CEJST: No	---	---	2	LM/LL	Low/Medium	Superintendent / Board of Education	1 year	District Local Resources	New
Design and Construct a community safe room (equipped with an emergency backup generator) at the EHS Sports Complex for use by students, spectators, and area residents to establish a Community Lifeline essential to human health and safety.	SS, T	---	S&IP	Medium SVI: 0.0628 – 0.5385 CEJST: No	---	---	2	HM/HL	High/High	Superintendent / Board of Education / Municipalities	3-5 years	District General Fund / Municipalities / FEMA HMA	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the budgetary constraints experienced by a school district of this size (serving approx. 45,000 individuals in a 185 square-mile area). Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MS	Mine Subsidence	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado	C	Communications	H&M	Health & Medical
		L	Landslides			E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-18
Edwardsville Community Unit School District #7 Hazard Mitigation Actions
(Sheet 2 of 3)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Design and Construct a community safe room addition to Columbus Elementary School (equipped with an emergency backup generator) for use by students, staff, and area residents to establish a Community Lifeline essential to human health and safety.	SS, T	---	S&IP	Medium SVI: 0.0628 – 0.5385 CEJST: No	---	---	2	HM/HL	High/High	Superintendent / Board of Education	5 years	District General Fund / FEMA HMA	New
Design and Construct a community safe room addition to Hamel Elementary School (equipped with an emergency backup generator) for use by students, staff, and area residents to establish a Community Lifeline essential to human health and safety.	SS, T	---	S&IP	Medium SVI: 0.0628 – 0.5385 CEJST: No	---	---	2	HM/HL	High/High	Superintendent / Board of Education	5 years	District General Fund / FEMA HMA	New
Improve drainage system at Nelson Elementary School to better manage stormwater runoff, alleviate drainage/flooding problems, prevent sewer backups, and ensure system resilience and functionality.	F, SS	S&S	S&IP	Small SVI: 0.0628 – 0.5385 CEJST: No	---	Yes	3, 5	HM	Medium/High	Superintendent / Board of Education	5 years	District General Fund / IEPA SRF – WPCLP	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the budgetary constraints experienced by a school district of this size (serving approx. 45,000 individuals in a 185 square-mile area). Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood L Landslides	MMH Man-Made Hazard MS Mine Subsidence SS Severe Storm SWS Severe Winter Storm T Tornado
LM		E&A Education & Awareness LP&R Local Plans & Regulations
HL		NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LL		
		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-18
Edwardsville Community Unit School District #7 Hazard Mitigation Actions
(Sheet 3 of 3)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Educate students and staff about the natural and man-made hazards that have the potential to impact the District and the proactive actions they can take to reduce their risks.	DR, EC, EH, EQ, F, L, MMH, MS, SS, SWS, T	---	E&A	Large SVI: 0.0628 – 0.5385 CEJST: No	---	---	2	LM/LL	Low/Medium	Superintendent / Board of Education	1-5 years	District Local Resources	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the budgetary constraints experienced by a school district of this size (serving approx. 45,000 individuals in a 185 square-mile area). Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
		EC	Extreme Cold	MS	Mine Subsidence	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EH	Excessive Heat	SS	Severe Storm				
		EQ	Earthquake	SWS	Severe Winter Storm				
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	F	Flood	T	Tornado				
		L	Landslides						
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards					Community Lifelines to be Mitigated:			
						C	Communications	H&M	Health & Medical
						E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-19
Edwardsville Township Hazard Mitigation Actions

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase portable radio system to allow Township staff to exchange critical communications and ensure continuity of operations during hazard events.	DF, EC, EH, EQ, F, L, MMH, MS, SS, SWS, T	T	S&IP	Large SVI: 0.0479 – 0.5385 CEJST: No EDRC: No	---	---	2, 5	LM/LL	Medium/Medium	Highway Commissioner	1 year	Township General Fund / FEMA HMA	New
Purchase and install a standby emergency generator at the Maintenance Center to establish a resilient and reliable power supply in order to maintain continuity of government/operations and mitigate risk to a Community Lifeline.	EC, EH, EQ, F, L, MMH, MS, SS, SWS, T	T	S&IP	Medium SVI: 0.0479 – 0.5385 CEJST: No EDRC: No	---	Yes	3, 5	HM/HL	Medium/High	Highway Commissioner	1 year	Township General Fund / FEMA HMGP HMA	New
Distribute public information materials to Township residents that detail the risks to life and property associated with the natural and man-made hazards that impact the Township and the proactive approaches they can take to reduce their risk.	DF, DR, EC, EH, EQ, F, L, MMH, MS, SS, SWS, T	---	E&A	Large SVI: 0.0479 – 0.5385 CEJST: No EDRC: No	---	---	1, 2	LM/LL	Low/Medium	Supervisor / Highway Commissioner	1-5 years	Township Local Resources	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a township of this size (approx. 40,400 individuals in both incorporated and unincorporated areas). The Township works hard to maintain critical services to residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DF	Dam Failure	L	Landslides	E&A	Education & Awareness	NSP	Natural Systems Protection
		DR	Drought	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MS	Mine Subsidence				
		EH	Excessive Heat	SS	Severe Storm				
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards								
		Community Lifelines to be Mitigated:							
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-20
Glen Carbon Hazard Mitigation Actions
(Sheet 1 of 4)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Design and construct a community safe room (built to high wind standards and equipped with an emergency backup generator) at the Police Department for staff and village residents use to establish a Community Lifeline.	SS, T	---	S&IP	Small SVI: 0.1646 – 0.5385 CEJST: No EDRC: No	Yes	---	2	HM/HL	Medium/High	Police Chief	5 years	Village General Fund / FEMA HMA	New
Harden the telecommunications area of the Police Department to improve structure resilience to natural and man-made hazards, ensure continuity of operations, and mitigate risk to a Community Lifeline.	EH, EQ, F, MMH, SS, SWS, T	C	S&IP	Large SVI: 0.1646 – 0.5385 CEJST: No EDRC: No	---	Yes	2, 3, 5	HM/HL	Medium/High	Police Chief	5 years	Village General Fund / FEMA HMA	New
Make public information materials available to residents that detail the risks to life and property associated with the natural and man-made hazards that impact the Village and the proactive approaches they can take to reduce their risk.	DR, EC, EH, EQ, F, L, MMH, MS, SS, SWS, T	---	E&A	Large SVI: 0.1646 – 0.5385 CEJST: No EDRC: No	---	---	1, 2	P2/P4	Low/Medium	President / Village Board	1-5 years	Village Local Resources	New

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[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 13,800 individuals). The Village works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MS	Mine Subsidence	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado	C	Communications	H&M	Health & Medical
		L	Landslides			E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-20
Glen Carbon Hazard Mitigation Actions
(Sheet 2 of 4)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Construct stormwater detention/retention basins to store stormwater runoff and alleviate drainage/flooding problems.	F, SS	S&S	S&IP	Medium SVI: 0.1646 – 0.5385 CEJST: No EDRC: No	Yes	Yes	3, 5	HM	Medium/High	President / Village Board	5 years	Village General Fund / FEMA HMA	New / Existing (2020)
Select, design, and construct the appropriate remedy(s) identified in the Village's 2014 drainage/hydraulic study to alleviate drainage problems, better manage stormwater runoff, and ensure overall system resilience and functionality.	F, SS	S&S	S&IP NSP	Medium SVI: 0.1646 – 0.5385 CEJST: No EDRC: No	Yes	Yes	3, 5	HM	Medium/High	President / Village Board	5-10 years	Village General Fund / FEMA HMA	Existing (2020)
Establish digital data sets for all utilities (including sewer and water distribution lines) and floodplain boundaries within the Village for use with GIS mapping applications.	EC, EH, EQ, F, L, MMH, MS, SS, SWS, T	C E T WS	LP&R E&A	Large SVI: 0.1646 – 0.5385 CEJST: No EDRC: No	---	---	3, 5	LM/LL	Low/High	President / Village Board	5-10 years	Village General Fund	Existing (2020)

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Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood L Landslides	E&A Education & Awareness LP&R Local Plans & Regulations NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LM	MMH Man-Made Hazard MS Mine Subsidence SS Severe Storm SWS Severe Winter Storm	
HL	T Tornado	
LL		
	Community Lifelines to be Mitigated:	
	C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material	H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-20
Glen Carbon Hazard Mitigation Actions
(Sheet 3 of 4)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install an emergency backup generator at the Senior Center, a designated warming/cooling center, to establish a resilient and reliable power supply that will ensure sustained functionality during extended power outages and mitigate risk to a Community Lifeline.	EC, EH	FHS	S&IP	Medium SVI: 0.1646 – 0.5385 CEJST: No EDRC: No	---	Yes	3, 5	HM/HL	Medium/High	President / Village Board	2-4 years	Village General Fund / FEMA HMA	Existing (2020)
Purchase and install backup power source(s) at village-owned critical facilities and infrastructure systems to establish resilient and reliable power supplies, maintain continuity of government/operations, and mitigate risk to Community Lifelines in the event of a prolonged power outage.	EC, EH, EQ, F, L, MMH, SS, SWS, T	C S&S T WS	S&IP	Large SVI: 0.1646 – 0.5385 CEJST: No EDRC: No	---	Yes	3, 5	HM/HL	Medium/High	President / Village Board	5-7 years	Village General Fund / FEMA HMGP HMA	Existing (2020)
Adopt, enforce & update building codes as needed to reduce structure vulnerability to seismic activity.	EQ	---	LP&R	Large SVI: 0.1646 – 0.5385 CEJST: No EDRC: No	Yes	Yes	2, 4, 8	HL	Low/High	President / Village Board	2-4 years	Village Local Resources / FEMA HMA	Existing (2020)

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Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MS	Mine Subsidence	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
		EH	Excessive Heat	SS	Severe Storm				
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	L	Landslides						
						Community Lifelines to be Mitigated:			
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-20
Glen Carbon Hazard Mitigation Actions
(Sheet 4 of 4)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Review new Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to exceed federal standards and reflect the revised FIRMs and present both for adoption. Enforce flood ordinance to ensure new development does not increase flood vulnerability or create unintended exposures to flooding.*	F	S&S	LP&R	Small SVI: 0.1646 – 0.5385 CEJST: No EDRC: No	Yes	Yes	2, 4, 6, 7	HM	Low/Medium	President Village Board / Building & Zoning Administrator	1-5 years	Village Local Resources	Existing (2020)
Continue to make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.*	F	S&S	E&A	Small SVI: 0.1646 – 0.5385 CEJST: No EDRC: No	Yes	---	1, 2, 6, 7	LM	Low/Medium	Building & Zoning Administrator	1-5 years	Village Local Resources	Existing (2020)
Make Village officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.*	F	S&S	E&A	Small SVI: 0.1646 – 0.5385 CEJST: No EDRC: No	Yes	---	1	LM	Low/Medium	Building & Zoning Administrator	1-5 years	Village Local Resources	Existing (2020)

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[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 13,800 individuals). The Village works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

* Mitigation action to ensure continued compliance with NFIP.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MS	Mine Subsidence	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado	C	Communications	H&M	Health & Medical
		L	Landslides			E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

**Figure MIT-21
Glen Carbon Fire Protection District Hazard Mitigation Actions**

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install a standby emergency generator at Fire Station #2 to establish a resilient and reliable power supply, ensure sustained functionality during extended power outages, maintain continuity of operations, and mitigate risk to a Community Lifeline.	EC, EH, EQ, F, MMH, SS, SWS, T	S&S	S&IP	Large SVI: 0.1764 – 0.5385 CEJST: No	---	Yes	2, 3, 5	HM/HL	Medium/High	Fire Chief / Board of Trustees	2-5 years	FPD General Fund / FEMA HMA HMGP	New
Make public information materials available to District residents that detail the risks to life and property associated with the natural and man-made hazards that impact the District and the proactive approaches they can take to reduce their risk.	DR, EC, EH, EQ, F, L, LF, MMH, MS, SS, SWS, T	---	E&A	Large SVI: 0.1764 – 0.5385 CEJST: No	---	---	1, 2	LM/LL	Low/Medium	Fire Chief / Board of Trustees	1-5 years	FPD Local Resources	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a combination (career/volunteer) fire protection district of this size (serving approx. 15,000 individuals in a service area of 13.1 square miles.) Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
		EH	Excessive Heat	MS	Mine Subsidence				
		EQ	Earthquake	SS	Severe Storm				
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	F	Flood	SWS	Severe Winter Storm	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	L	Landslides	T	Tornado	C	Communications	H&M	Health & Medical
						E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-22
Godfrey Hazard Mitigation Actions
(Sheet 1 of 12)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Conduct a hydrologic and hydraulic (H&H) study to determine the cause(s) and identify design solution(s) to alleviate recurring drainage problems experienced within the Belmont Subdivision.	F, SS	T	LP&R	Small SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	---	---	3, 5	LM	Medium/Medium	President / Village Board	5 years	Village General Fund / FEMA HMA	New
Construct the identified design solution(s) to alleviate recurring drainage problems experienced within the Belmont Subdivision.	F, SS	T	S&IP	Small SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	Yes	Yes	3, 5	HM	High/High	Village Engineer	10 years	Village General Fund / FEMA HMA	New
Conduct a hydrologic and hydraulic (H&H) study to determine the cause(s) and identify design solution(s) to alleviate recurring drainage problems experienced within the Greenwood Meadows, Huntington Park, and Oak Hills Subdivisions.	F, SS	T	LP&R	Small SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	---	---	3, 5	LM	Medium/Medium	President / Village Board	5 years	Village General Fund / FEMA HMA	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 17,800 individuals). The Village works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MS	Mine Subsidence	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado	C	Communications	H&M	Health & Medical
		L	Landslides			E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-22
Godfrey Hazard Mitigation Actions
(Sheet 2 of 12)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Construct the identified design solution(s) to alleviate recurring drainage problems experienced within the Greenwood Meadows, Huntington Park, and Oak Hills Subdivisions.	F, SS	T	S&IP	Small SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	Yes	Yes	3, 5	HM	High/High	Village Engineer	10 years	Village General Fund / FEMA HMA	New
Conduct a hydrologic and hydraulic (H&H) study to determine the cause(s) and identify design solution(s) to alleviate recurring drainage problems experienced within the Wick-Mor Place and Storeyland Additions #3, #4, and #5 Subdivisions.	F, SS	T	LP&R	Small SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	---	---	3, 5	LM	Medium/Medium	President / Village Board	7 years	Village General Fund / FEMA HMA	New
Construct the identified design solution(s) to alleviate recurring drainage problems experienced within the Wick-Mor Place and Storeyland Additions #3, #4, and #5 Subdivisions.	F, SS	T	S&IP	Small SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	Yes	Yes	3, 5	HM	High/High	Village Engineer	10 years	Village General Fund / FEMA HMA	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 17,800 individuals). The Village works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MS	Mine Subsidence	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado	C	Communications	H&M	Health & Medical
		L	Landslides			E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-22
Godfrey Hazard Mitigation Actions
(Sheet 3 of 12)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Conduct a hydrologic and hydraulic (H&H) study to determine the cause(s) and identify design solution(s) to alleviate recurring drainage problems experienced within the Colonial Village Subdivision.	F, SS	T	LP&R	Small SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	---	---	3, 5	LM	Medium/Medium	President / Village Board	10 years	Village General Fund / FEMA HMA	New
Construct the identified design solution(s) to alleviate recurring drainage problems experienced within the Colonial Village Subdivision.	F, SS	T	S&IP	Small SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	Yes	Yes	3, 5	HM	High/High	Village Engineer	10 years	Village General Fund / FEMA HMA	New
Conduct a hydrologic and hydraulic (H&H) study to determine the cause(s) and identify design solution(s) to eliminate ongoing bank erosion experienced within the Iroquois Trail Area.	F, SS	T	LP&R	Small SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	---	---	3, 5	LM	Medium/Medium	President / Village Board	5 years	Village General Fund / FEMA HMA	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 17,800 individuals). The Village works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood L Landslides	E&A Education & Awareness LP&R Local Plans & Regulations NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LM	MMH Man-Made Hazard MS Mine Subsidence SS Severe Storm SWS Severe Winter Storm	
HL	T Tornado	
LL		
	Community Lifelines to be Mitigated:	
	C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material	H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-22
Godfrey Hazard Mitigation Actions
(Sheet 4 of 12)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Construct the identified design solution(s) to eliminate ongoing bank erosion experienced within the Iroquois Trail Area.	F, SS	T	S&IP	Small SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	Yes	Yes	3, 5	HM	High/High	Village Engineer	5 years	Village General Fund / FEMA HMA	New
Make public information materials available to residents that detail the risks to life and property associated with the natural and man-made hazards that impact the Village and the proactive approaches they can take to reduce their risk.	DR, EC, EH, EQ, F, L, MMH, MS, SS, SWS, T	---	E&A	Large SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	---	---	1, 2	P2/P4	Low/Medium	President / Village Board	1-5 years	Village Local Resources	New
Construct the appropriate design solution(s) to alleviate roadway overtopping of Stoneledge Drive/Stanka Lane. Stoneledge Drive is the only entrance into or out of the Stone Ledge Subdivision.	F, SS	T	S&IP	Small SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	Yes	Yes	3, 5	HM	High/High	Village Engineer	5 years	Village General Fund / FEMA HMA	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 17,800 individuals). The Village works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood L Landslides	E&A Education & Awareness LP&R Local Plans & Regulations NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LM	MMH Man-Made Hazard MS Mine Subsidence SS Severe Storm SWS Severe Winter Storm	
HL	T Tornado	
LL		
	Community Lifelines to be Mitigated:	
	C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material	H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-22
Godfrey Hazard Mitigation Actions
(Sheet 5 of 12)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Raise the intersection of Illini Trail & Whitford Drive to alleviate recurring flood problems and ensure continued functionality of a Community Lifeline.	F, SS	T S&S	S&IP	Small SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	---	Yes	3, 5	HM	High/High	Village Engineer	5 years	Village General Fund / FEMA HMA	Existing (2020)
Construct the appropriate design solution(s) to alleviate recurring roadway overtopping of Rocky Fork Road and Vollmer Lane from Rocky Fork.	F, SS	T	S&IP	Small SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	Yes	Yes	3, 5	HM	High/High	Village Engineer	10 years	Village General Fund / FEMA HMA	Existing (2020)
Conduct a hydrologic and hydraulic (H&H) study to identify design solution(s) to alleviate recurring drainage problems experienced within the River Aire Subdivision.	F, SS	T	LP&R	Small SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	---	---	3, 5	LM	Medium/Medium	President / Village Board	5 years	Village General Fund / FEMA HMA	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 17,800 individuals). The Village works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood L Landslides	E&A Education & Awareness LP&R Local Plans & Regulations NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LM	MMH Man-Made Hazard MS Mine Subsidence SS Severe Storm SWS Severe Winter Storm	
HL	T Tornado	
LL		
	Community Lifelines to be Mitigated:	
	C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material	H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-22
Godfrey Hazard Mitigation Actions
(Sheet 6 of 12)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Conduct a hydrologic and hydraulic (H&H) study to identify design solution(s) to alleviate recurring drainage problems experienced within the Piasa Hills Subdivision.	F, SS	T	LP&R	Small SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	---	---	3, 5	LM	Medium/Medium	President / Village Board	7 years	Village General Fund / FEMA HMA	Existing (2020)
Upsize Winter Lane culvert over a small creek to increase carrying capacity, better manage stormwater runoff, and alleviate drainage problems.	F, SS	T	S&IP	Small SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	---	Yes	3, 5	HM	Medium/High	Village Engineer	5 years	Village General Fund / FEMA HMA	Existing (2020)
Design and construct a community safe room at the Park Recreation Center, built to high wind and seismic standards and equipped with an emergency backup generator and HVAC system, that can also serve as a warming/cooling center for patrons and area residents.	EC, EH, SS, T	---	S&IP	Small SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	---	---	2	HM/HL	High/High	President / Village Board	15 years	Village General Fund / FEMA HMA	Existing (2020)

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[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 17,800 individuals). The Village works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MS	Mine Subsidence	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado				
		L	Landslides						
Community Lifelines to be Mitigated:									
C	Communications	H&M	Health & Medical						
E	Energy (Power & Fuel)	S&S	Safety & Security						
FHS	Food, Hydration, Shelter	T	Transportation						
HM	Hazardous Material	WS	Water Systems						

Figure MIT-22
Godfrey Hazard Mitigation Actions
(Sheet 7 of 12)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Develop and implement a community outreach program to educate residents about stormwater management and the actions they can take to reduce their risk of flooding.	F, SS	---	E&A	Large SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	---	---	1, 2	LM/LL	Low/Medium	President / Village Board	2 years	Village Local Resources	Existing (2020)
Construct the appropriate design solution(s) to alleviate flooding problems in the old Monticello area of the Village, including but not limited to Florida St., Pearl St., Squire St., Gladys St., Boyd St. and Isabel St.	F, SS	T	S&IP	Small SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	Yes	Yes	3, 5	HM	High/High	Village Engineer	3 years	Village General Fund / FEMA HMA	Existing (2020)
Update existing drainage study. The updated study should contain an inventory of the storm sewer system (including a map that shows inlets, pipe sizes, length, type, condition, etc.)	F, SS	---	LP&R	Large SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	---	---	3, 5	LM	Low/Medium	Director of Maintenance / Village Engineer	3-5 years	Village General Fund	Existing (2020)

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[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 17,800 individuals). The Village works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood L Landslides	MMH Man-Made Hazard MS Mine Subsidence SS Severe Storm SWS Severe Winter Storm T Tornado
LM		E&A Education & Awareness LP&R Local Plans & Regulations
HL		NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LL		
		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-22
Godfrey Hazard Mitigation Actions
(Sheet 8 of 12)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Update building codes and implement occupancy permits and inspections based on codes to improve building safety.	EC, EQ, F, SS, SWS, T	---	LP&R	Large SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	Yes	Yes	3, 4, 5, 7	LM/LL	Low/Medium	Building & Zoning Administrator	2 years	Village General Fund / FEMA HMA	Existing (2020)
Construct the appropriate design solution(s) to eliminate ongoing erosion of the drainage ditch and storm water pipe in the D'Adrian subdivision.	F, SS	WS	S&IP	Small SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	Yes	Yes	3, 5	HM	Medium/High	Village Engineer	5 years	Village General Fund / FEMA HMA	Existing (2020)
Implement permanent bank stabilization measures along the entire length of the drainage ditch (extending from Biscay Dr. to Paris Dr. in the D'Adrian subdivision) to eliminate erosion which jeopardizes the existing sanitary sewer line and maximize carrying capacity.	F, SS	S&S WS	S&IP	Small SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	---	Yes	3, 5	HM	Medium/High	Village Engineer	5 years	Village General Fund / FEMA HMA	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 17,800 individuals). The Village works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MS	Mine Subsidence	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado				
		L	Landslides						
Community Lifelines to be Mitigated:									
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-22
Godfrey Hazard Mitigation Actions
(Sheet 9 of 12)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Secure Memorandums of Agreement with public elementary and high schools (American Red Cross designated emergency shelters) to install electrical hookups for use with portable emergency backup generators to provide uninterrupted power during power outages	EC, EH, EQ, F, L, MMH, SS, SWS, T	FHS	LP&R	Medium SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	---	---	2, 3, 5	LM/LL	Low/Medium	President / Village Board	3-5 years	Village Local Resources	Existing (2020)
Purchase and install electric hookups at the public elementary and high schools (American Red Cross designated emergency shelters) for use with portable emergency backup generators to provide uninterrupted power during power outages.	EC, EH, EQ, F, L, MMH, SS, SWS, T	FHS	LP&R	Medium SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	---	Yes	2, 3, 5	LM/LL	Low/Medium	President / Village Board	3-5 years	Village General Fund	Existing (2020)
Purchase and install backup power source(s) at village-owned critical facilities and infrastructure systems to establish resilient and reliable power supplies, maintain continuity of government/operations, and mitigate risk to Community Lifelines in the event of a prolonged power outage.	EC, EH, EQ, F, L, MMH, SS, SWS, T	C S&S T WS	S&IP	Medium SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	---	Yes	3, 5	HM/HL	Medium/High	President / Village Board	5-8 years	Village General Fund / FEMA HMA	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 17,800 individuals). The Village works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MS	Mine Subsidence	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado	C	Communications	H&M	Health & Medical
		L	Landslides			E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-22
Godfrey Hazard Mitigation Actions
(Sheet 10 of 12)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Construct stormwater detention/retention basins to store stormwater runoff and alleviate drainage/flooding problems.	F, SS	S&S	S&IP	Medium SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	Yes	Yes	3, 5	HM	Medium/High	President / Village Board	5-10 years	Village General Fund / FEMA HMA	Existing (2020)
Develop and distribute educational materials to the general public on flood protection and flood proofing/retrofitting of existing homes.	F	S&S	E&A	SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	---	---	1, 2	P2	Low/Medium	President / Village Board	1-3 years	Village Local Resources	Existing (2020)
Retrofit existing village-owned buildings and critical facilities to current earthquake code standards and harden infrastructure to meet earthquake design guidelines to increase resiliency.	EQ	S&S	S&IP	Large SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	---	Yes	3, 5, 8	LM	High/Medium	President Village Board / Village Engineer	10-20 years	Village General Fund / FEMA HMA	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

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Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood L Landslides	MMH Man-Made Hazard MS Mine Subsidence SS Severe Storm SWS Severe Winter Storm T Tornado
LM		E&A Education & Awareness LP&R Local Plans & Regulations
HL		NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LL		
		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-22
Godfrey Hazard Mitigation Actions
(Sheet 11 of 12)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Develop and distribute educational materials to the general public on measures that can be taken to avoid structure damage related to earthquakes.	EQ	---	E&A	Large SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	---	---	1, 2	LM/LL	Low/Medium	President / Village Board	2-5 years	Village Local Resources	Existing (2020)
Adopt, enforce & update building codes as needed to reduce structure vulnerability to seismic activity.	EQ	---	LP&R	Large SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	Yes	Yes	2, 4, 8	HL	Low/High	Building & Zoning Administrator	2-4 years	Village General Fund / FEMA HMA	Existing (2020)
Evaluate the feasibility of participating in the National Flood Insurance Program's voluntary Community Rating System to reduce flood insurance premiums.	F	S&S	E&A	Small SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	---	---	3, 4, 5	LM	Low/Medium	Building & Zoning Administrator	5 years	Village Local Resources	Existing (2020)

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[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 17,800 individuals). The Village works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood L Landslides	MMH Man-Made Hazard MS Mine Subsidence SS Severe Storm SWS Severe Winter Storm T Tornado
LM		E&A Education & Awareness LP&R Local Plans & Regulations
HL		NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LL		
		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-22
Godfrey Hazard Mitigation Actions
(Sheet 12 of 12)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Review new Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to exceed federal standards and reflect the revised FIRMs and present both for adoption. Enforce flood ordinance to ensure new development does not increase flood vulnerability or create unintended exposures to flooding.*	F	S&S	LP&R	Small SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	Yes	Yes	2, 4, 6, 7	HM	Low/High	President Village Board / Building & Zoning Administrator	1-5 years	Village Local Resources	Existing (2020)
Continue to make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.*	F	S&S	E&A	Small SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	Yes	---	1, 2, 6, 7	LM	Low/Medium	Building & Zoning Administrator	1-5 years	Village Local Resources	Existing (2020)
Make Village officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.*	F	S&S	E&A	Small SVI: 0.0951 – 0.4804 CEJST: No EDRC: No	Yes	---	1	LM	Low/Medium	Building & Zoning Administrator	1-5 years	Village Local Resources	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 17,800 individuals). The Village works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

* Mitigation action to ensure continued compliance with NFIP.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MS	Mine Subsidence	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado	C	Communications	H&M	Health & Medical
		L	Landslides			E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-23
Granite City Hazard Mitigation Actions
(Sheet 1 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Identify and designate additional warming/cooling centers within the City to increase sheltering capabilities and capacities, especially for the elderly, unhoused, and misplaced.	EC, EH	FHS	LP&R	Small SVI: 0.2133 – 0.9333 CDRZ: Yes CEJST: Yes EDRC: No	---	---	2	LM/LL	Low/High	Mayor City Council / EMA Coordinator	3-5 years	City Local Resources	New
Conduct exercises/training on the City's Integrated Action Plan as it applies to future potential hazard events and determine if there are any mitigation actions that could be implemented as a result to mitigate risk to Community Lifelines.	EQ, F, LF, MMH, SS, SWS, T	---	LP&R E&A	Large SVI: 0.2133 – 0.9333 CDRZ: Yes CEJST: Yes EDRC: No	---	---	2, 3, 5	LM/LL	Low/Medium	Mayor City Council / EMA Coordinator	1-2 years	City Local Resources	New
Make public information materials available to residents that detail the risks to life and property associated with the natural and man-made hazards that impact the City and the proactive approaches they can take to reduce their risk.	DR, EC, EH, EQ, F, LF, MMH, SS, SWS, T	---	E&A	Large SVI: 0.2133 – 0.9333 CDRZ: Yes CEJST: Yes EDRC: No	---	---	1, 2	P2/P4	Low/Medium	Mayor City Council / EMA Coordinator	1-5 years	City Local Resources	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 27,500 individuals). The City works diligently to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood	LF Levee Failure MMH Man-Made Hazard SS Severe Storm SWS Severe Winter Storm T Tornado
LM		E&A Education & Awareness LP&R Local Plans & Regulations NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
HL		
LL		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-23
Granite City Hazard Mitigation Actions
(Sheet 2 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Construct new storm sewer systems in subdivisions that lack a system to better manage stormwater runoff and alleviate recurring drainage problems.	F, SS	---	S&IP	Small SVI: 0.2133 – 0.9333 CDRZ: Yes CEJST: Yes EDRC: No	Yes	Yes	3, 5	HM	High/High	Mayor / City Council	5-10 years	City General Fund / IEPA SRF – WPCLP / FEMA HMA	Existing (2020)
Install backup power source(s) at critical facilities. Purchase and install backup power source(s) at city-owned critical facilities and infrastructure systems to establish resilient and reliable power supplies, maintain continuity of government/operations, and mitigate risk to Community Lifelines in the event of a prolonged power outage.	EC, EH, EQ, F, LF, MMH, SS, SWS, T	C S&S T WS	S&IP	Medium SVI: 0.2133 – 0.9333 CDRZ: Yes CEJST: Yes EDRC: No	---	Yes	3, 5	HM/HL	Medium/High	Mayor / City Council	5-8 years	City General Fund / FEMA HMA	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 27,500 individuals). The City works diligently to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado	C	Communications	H&M	Health & Medical
						E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-23
Granite City Hazard Mitigation Actions
(Sheet 3 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Acquire flood-prone properties and remove any existing structures.	F, SS	S&S	S&IP NSP	Small SVI: 0.2133 – 0.9333 CDRZ: Yes CEJST: Yes EDRC: No	---	Yes	2, 4, 6	HM	Medium/High	Mayor / City Council	5-10 years	City General Fund / FEMA HMA Swift Current	Existing (2020)
Construct stormwater detention/retention basins to store stormwater runoff and alleviate drainage/flooding problems.	F, SS	S&S	S&IP	Small SVI: 0.2133 – 0.9333 CDRZ: Yes CEJST: Yes EDRC: No	Yes	Yes	3, 5	HM	Medium/High	Mayor / City Council	10-15 years	City General Fund / FEMA HMA	Existing (2020)
Obtain Flood Elevation Certificates for properties located in Special Flood Hazard Areas.	F	S&S	LP&R	Medium SVI: 0.2133 – 0.9333 CDRZ: Yes CEJST: Yes EDRC: No	Yes	Yes	3, 4, 6	LM	Low/High	Mayor City Council / City Engineer / Building & Zoning Administrator	2-4 years	City Local Resources	Existing (2020)

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Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold	E&A Education & Awareness LP&R Local Plans & Regulations
LM	EH Excessive Heat EQ Earthquake	NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
HL	SS Severe Storm SWS Severe Winter Storm	
LL	F Flood T Tornado	
		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-23
Granite City Hazard Mitigation Actions
(Sheet 4 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Develop and distribute educational materials to the general public on flood protection and proofing/retrofitting of existing homes.	F	S&S	E&A	Medium SVI: 0.2133 – 0.9333 CDRZ: Yes CEJST: Yes EDRC: No	---	---	1, 2	LM	Low/Medium	Mayor City Council / Building & Zoning Administrator	1-3 years	City Local Resources	Existing (2020)
Participate in the East St. Louis & Vicinity Ecosystem Restoration and Recreation Project to protect wetlands and floodplains.	F	S&S	NSP	Small SVI: 0.2133 – 0.9333 CDRZ: Yes CEJST: Yes EDRC: No	---	---	4, 6	HM	Medium/High	Mayor / City Council	1-5 years	City Local Resources	Existing (2020)
Retrofit existing City buildings and critical facilities to current earthquake code standards and harden infrastructure to meet earthquake design guidelines to mitigate damage from an earthquake event.	EQ	S&S	S&IP	Small SVI: 0.2133 – 0.9333 CDRZ: Yes CEJST: Yes EDRC: No	---	Yes	3, 5, 8	LM	High/Medium	Mayor / City Council	10-20 years	City General Fund / FEMA HMA	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 27,500 individuals). The City works diligently to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards

Hazard(s) to be Mitigated:			
DR	Drought	LF	Levee Failure
EC	Extreme Cold	MMH	Man-Made Hazard
EH	Excessive Heat	SS	Severe Storm
EQ	Earthquake	SWS	Severe Winter Storm
F	Flood	T	Tornado

Type of Mitigation Activity:			
E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
Community Lifelines to be Mitigated:			
C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FHS	Food, Hydration, Shelter	T	Transportation
HM	Hazardous Material	WS	Water Systems

Figure MIT-23
Granite City Hazard Mitigation Actions
(Sheet 5 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Develop and distribute educational materials to the general public on measures that can be taken to avoid structure damage related to earthquakes.	EQ	---	E&A	Large SVI: 0.2133 – 0.9333 CDRZ: Yes CEJST: Yes EDRC: No	---	---	1, 2	LM/LL	Low/Medium	Mayor / City Council	2-5 years	City Local Resources	Existing (2020)
Adopt, enforce & update building codes as needed to reduce structure vulnerability to seismic activity.	EQ	---	LP&R	Large SVI: 0.2133 – 0.9333 CDRZ: Yes CEJST: Yes EDRC: No	Yes	Yes	2, 4, 8	HL	Low/High	Mayor City Council / City Engineer / Building & Zoning Administrator	2-4 years	City General Fund / FEMA HMA	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 27,500 individuals). The City works diligently to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado				
						Community Lifelines to be Mitigated:			
						C	Communications	H&M	Health & Medical
						E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-23
Granite City Hazard Mitigation Actions
(Sheet 6 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Review new Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to exceed federal standards and reflect the revised FIRMs and present both for adoption. Enforce flood ordinance to ensure new development does not increase flood vulnerability or create unintended exposures to flooding.*	F	S&S	LP&R	Medium SVI: 0.2133 – 0.9333 CDRZ: Yes CEJST: Yes EDRC: No	Yes	Yes	2, 4, 6, 7	HM	Low/High	Mayor City Council / City Engineer	1-5 years	City Local Resources	Existing (2020)
Continue to make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.*	F	S&S	E&A	Medium SVI: 0.2133 – 0.9333 CDRZ: Yes CEJST: Yes EDRC: No	Yes	---	1, 2, 6, 7	LM	Low/Medium	City Engineer	1-5 years	City Local Resources	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 27,500 individuals). The City works diligently to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

* Mitigation action to ensure continued compliance with NFIP.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood	LF Levee Failure MMH Man-Made Hazard SS Severe Storm SWS Severe Winter Storm T Tornado
LM		E&A Education & Awareness LP&R Local Plans & Regulations
HL		NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LL		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-23
Granite City Hazard Mitigation Actions
(Sheet 7 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Make City officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.*	F	S&S	E&A	Medium SVI: 0.2133 – 0.9333 CDRZ: Yes CEJST: Yes EDRC: No	Yes	---	1	LM	Low/Medium	Mayor City Council / City Engineer	1-5 years	City Local Resources	Existing (2020)
Evaluate the feasibility of participating in the National Flood Insurance Program's voluntary Community Rating System to reduce flood insurance premiums.	F	S&S	E&A	Medium SVI: 0.2133 – 0.9333 CDRZ: Yes CEJST: Yes EDRC: No	---	---	3, 4, 5	LM	Low/Medium	City Engineer	3-5 years	City Local Resources	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 27,500 individuals). The City works diligently to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

* Mitigation action to ensure continued compliance with NFIP.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
		EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EH	Excessive Heat	SS	Severe Storm				
		EQ	Earthquake	SWS	Severe Winter Storm				
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	F	Flood	T	Tornado				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards								
		Community Lifelines to be Mitigated:							
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-24
Grantfork Hazard Mitigation Actions
(Sheet 1 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Acquire flood-prone properties and remove any existing structures.	F	S&S	S&IP NSP	Medium SVI: 0.0174 – 0.2357 CEJST: No EDRC: No	---	Yes	2, 4, 6	HM	Medium/High	President / Village Board	5-10 years	Village General Fund / FEMA HMA Swift Current	New
Construct a new water tower to ensure community resilience and reliability of a Community Lifeline, including sufficient reserve to aid in fire suppression.	DR, EC, EH, EQ, F, MMH, SS, SWS, T	WS	S&IP	Medium SVI: 0.0174 – 0.2357 CEJST: No EDRC: No	Yes	---	3, 5	HM/HL	High/High	Public Works Director	5 years	Village General Fund / IEPA SRF – PWSLP	Existing (2020)
Upgrade storm warning siren system with system control software and install additional sirens in underserved areas to maximize the system's effectiveness and ensure continued operations of a Community Lifeline essential to human health and safety.	SS, T	C	S&IP E&A	Large SVI: 0.0174 – 0.2357 CEJST: No EDRC: No	---	---	2	HM/HL	Medium/High	Police Chief / Fire Chief	5 years	Village General Fund / FEMA HMA	Existing (2020)

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[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (less than 350 individuals). The Village struggles to provide even the most critical of services to residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	SS	Severe Storm	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SWS	Severe Winter Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	T	Tornado				
		F	Flood			Community Lifelines to be Mitigated:			
						C	Communications	H&M	Health & Medical
						E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-24
Grantfork Hazard Mitigation Actions
(Sheet 2 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install a call monitoring system (power loss notification/call system) at the sewer treatment plant to alert operators to power outages and surges and mitigate risk to a Community Lifeline. Loss of power has the potential to impact services for the entire Village.	EQ, SS, MMH, SWS, T	WS	S&IP	Large SVI: 0.0174 – 0.2357 CEJST: No EDRC: No	---	Yes	3, 5	LM/LL	Medium/High	Public Works Director	2 years	Village General Fund	Existing (2020)
Retrofit existing Village-owned buildings to include community safe rooms (built to high wind and seismic standards and equipped with emergency backup generators) for use by Village staff and residents.	SS, T	---	S&IP	Medium SVI: 0.0174 – 0.2357 CEJST: No EDRC: No	---	Yes	2	HM/HL	High/High	President / Village Board	5 years	Village General Fund / FEMA HMA	Existing (2020)
Conduct sewer line reconnaissance study to identify locations where storm water infiltrates the system to improve system resilience.	F, SS	WS	LP&R	Medium SVI: 0.0174 – 0.2357 CEJST: No EDRC: No	---	---	3, 5	LM	Medium/Medium	Public Works Director	1-5 years	Village General Fund	Existing (2020)

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Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	SS	Severe Storm	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SWS	Severe Winter Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	T	Tornado				
		F	Flood						
Community Lifelines to be Mitigated:									
C	Communications	H&M	Health & Medical						
E	Energy (Power & Fuel)	S&S	Safety & Security						
FHS	Food, Hydration, Shelter	T	Transportation						
HM	Hazardous Material	WS	Water Systems						

Figure MIT-24
Grantfork Hazard Mitigation Actions
(Sheet 3 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Line sewer line sections to eliminate stormwater inflow and infiltration and reduce the amount of stormwater entering the wastewater treatment system to increase system resilience, prevent sewage backups, and mitigate risk to a Community Lifeline.	F, SS	WS	S&IP	Medium SVI: 0.0174 – 0.2357 CEJST: No EDRC: No	Yes	Yes	3, 5	HM	Medium/High	Public Works Director	5 years	Village General Fund / IEPA SRF – WPCLP / DCEO CDBG	Existing (2020)
Purchase portable emergency backup generators to power the lift stations within the Village during power outages to establish resilient and reliable power supplies in order to maintain continuity of operations and mitigate risk to a Community Lifeline.	EC, EH, EQ, F, MMH, SS, SWS, T	WS	S&IP	Medium SVI: 0.0174 – 0.2357 CEJST: No EDRC: No	Yes	Yes	3, 5	HM/HL	Medium/High	President / Village Board	3 years	Village General Fund / FEMA HMA	Existing (2020)
Purchase portable pumps for use in removal of excess stormwater from critical facilities/ infrastructure during heavy rain/flood events to maintain continuity of government/ operations and ensure continued functionality of Community Lifelines.	F, SS	S&S T	S&IP	Medium SVI: 0.0174 – 0.2357 CEJST: No EDRC: No	---	Yes	3, 5	LM	Low/Medium	Public Works Director	5 years	Village General Fund	Existing (2020)

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Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	SS	Severe Storm	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SWS	Severe Winter Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	T	Tornado				
		F	Flood						
Community Lifelines to be Mitigated:									
C	Communications	H&M	Health & Medical						
E	Energy (Power & Fuel)	S&S	Safety & Security						
FHS	Food, Hydration, Shelter	T	Transportation						
HM	Hazardous Material	WS	Water Systems						

Figure MIT-24
Grantfork Hazard Mitigation Actions
(Sheet 4 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Upgrade the Village's storm sewer system to better manage stormwater runoff and alleviate flooding/drainage problems.	F, SS	T	S&IP	Large SVI: 0.0174 – 0.2357 CEJST: No EDRC: No	Yes	Yes	3, 5	HM	High/High	Public Works Director	10 years	Village General Fund / IEPA SRF – WPCLP / FEMA HMA	Existing (2020)
Upgrade drinking water system (i.e., lines, mains, fire hydrants, pumping system, etc.) to incorporate distribution redundancies to increase system resilience, ensure a constant supply of water for residents, aid in fire suppression during hazard events, and safeguard the functionality of a Community Lifeline.	EQ, F, MMH, SS, SWS, T	WS	S&IP	Large SVI: 0.0174 – 0.2357 CEJST: No EDRC: No	Yes	Yes	3, 5	HM/HL	High/High	Public Works Director	5-10 years	Village General Fund / IEPA SRF – PWSLP	Existing (2020)
Enlarge wastewater treatment lagoon to increase storage capacity, ensure system resilience and functionality in an effort to address recurring heavy rain events that overwhelm the system.	F, SS	WS	S&IP	Large SVI: 0.0174 – 0.2357 CEJST: No EDRC: No	Yes	Yes	3,5	HM	High/High	Public Works Director	10 years	Village General Fund / IEPA SRF – WPCLP	Existing (2020)

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Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood	MMH Man-Made Hazard SS Severe Storm SWS Severe Winter Storm T Tornado
LM		E&A Education & Awareness LP&R Local Plans & Regulations
HL		NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LL		
		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-24
Grantfork Hazard Mitigation Actions
(Sheet 5 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Secure a Memorandum of Agreement with the Grantfork Upper Elementary School designating the school as warming/cooling center and emergency shelter for use by Village residents.	EC, EH, EQ, F, MMH, SS, SWS, T	---	LP&R	Medium SVI: 0.0174 – 0.2357 CEJST: No EDRC: No	---	---	2	LM/LL	Low/High	President / Village Board	1-3 years	Village Local Resources	Existing (2020)
Purchase and install electric hookups at the Grantfork Upper Elementary School (a designated warming/cooling center and emergency shelter) for use with a portable emergency backup generator to provide uninterrupted power during power outages.	EC, EH, EQ, F, MMH, SS, SWS, T	FHS	LP&R	Medium SVI: 0.0174 – 0.2357 CEJST: No EDRC: No	---	Yes	2, 3, 5	LM/LL	Low/Medium	President / Village Board	2-4 years	Village General Fund	Existing (2020)
Purchase and install an emergency backup generator at the Grantfork Upper Elementary School (a designated warming/cooling center and emergency shelter) to establish a resilient and reliable power supply that will ensure sustained functionality during extended power outages and mitigate risk to a Community Lifeline.	EC, EH, EQ, F, MMH, SS, SWS, T	FHS	S&IP	Medium SVI: 0.0174 – 0.2357 CEJST: No EDRC: No	---	Yes	2, 3, 5	HM/HL	Medium/High	President / Village Board	3-5 years	Village General Fund / FEMA HMGP	Existing (2020)

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Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood	E&A Education & Awareness LP&R Local Plans & Regulations NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LM	MMH Man-Made Hazard SS Severe Storm SWS Severe Winter Storm T Tornado	
HL		Community Lifelines to be Mitigated:
LL		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-24
Grantfork Hazard Mitigation Actions
(Sheet 6 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Secure a Memorandum of Agreement with the United Church of Christ designating the church as warming/cooling center and emergency shelter for use by Village residents.	EC, EH, EQ, F, MMH, SS, SWS, T	---	LP&R	Medium SVI: 0.0174 – 0.2357 CEJST: No EDRC: No	---	---	2	LM/LL	Low/High	President / Village Board	1-3 years	Village Local Resources	Existing (2020)
Purchase and install electric hookups at the United Church of Christ (a designated warming/cooling center and emergency shelter) for use with a portable emergency backup generator to provide uninterrupted power during power outages.	EC, EH, EQ, F, MMH, SS, SWS, T	FHS	LP&R	Medium SVI: 0.0174 – 0.2357 CEJST: No EDRC: No	---	Yes	2, 3, 5	LM/LL	Low/Medium	President / Village Board	2-4 years	Village Local Resources	Existing (2020)
Purchase and install an emergency backup generator at the United Church of Christ (a designated warming/cooling center and emergency shelter) to establish a resilient and reliable power supply that will ensure sustained functionality during extended power outages and mitigate risk to a Community Lifeline.	EC, EH, EQ, F, MMH, SS, SWS, T	FHS	S&IP	Medium SVI: 0.0174 – 0.2357 CEJST: No EDRC: No	---	Yes	2, 3, 5	HM/HL	Medium/High	President / Village Board	3-5 years	Village General Fund / FEMA HMA	Existing (2020)

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Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood	E&A Education & Awareness LP&R Local Plans & Regulations NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LM	MMH Man-Made Hazard SS Severe Storm SWS Severe Winter Storm T Tornado	
HL		Community Lifelines to be Mitigated:
LL		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-24
Grantfork Hazard Mitigation Actions
(Sheet 7 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Review new Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to exceed federal standards and reflect the revised FIRMs and present both for adoption. Enforce flood ordinance to ensure new development does not increase flood vulnerability or create unintended exposures to flooding.*	F	S&S	LP&R	Small SVI: 0.0174 – 0.2357 CEJST: No EDRC: No	Yes	Yes	2, 4, 6, 7	HM	Low/High	President / Village Board	1-5 years	Village Local Resources	Existing (2020)
Continue to make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.*	F	S&S	E&A	Small SVI: 0.0174 – 0.2357 CEJST: No EDRC: No	Yes	---	1, 2, 6, 7	LM	Low/Medium	President / Village Board	1-5 years	Village Local Resources	Existing (2020)
Make Village officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.*	F	S&S	E&A	Small SVI: 0.0174 – 0.2357 CEJST: No EDRC: No	Yes	---	1	LM	Low/Medium	President / Village Board	1-5 years	Village Local Resources	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (less than 350 individuals). The Village struggles to provide even the most critical of services to residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

* Mitigation action to ensure continued compliance with NFIP.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	SS	Severe Storm	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SWS	Severe Winter Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	T	Tornado				
		F	Flood			Community Lifelines to be Mitigated:			
						C	Communications	H&M	Health & Medical
						E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

**Figure MIT-25
Hamel Hazard Mitigation Actions**

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Structurally retrofit and harden the Hamel Park Community Building, the designated emergency shelter, to increase building resilience to hazard events and continued functionality of a Community Lifeline.	SS, T	FHS	S&IP	Large SVI: 0.0628 CEJST: No EDRC: No	---	Yes	2, 3, 5	HM/HL	Medium/High	President / Village Board	4 years	Village General Fund / FEMA HMA	Existing (2020)
Make public information materials available to residents that detail the risks to life and property associated with the natural and man-made hazards that impact the Village and the proactive approaches they can take to reduce their risk.	DR, EC, EH, EQ, F, MMH, SS, SWS, T	---	E&A	Large SVI: 0.0628 CEJST: No EDRC: No	---	---	1, 2	P2/P4	Low/Medium	President / Village Board	1-5 years	Village Local Resources	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 900 individuals). The Village works hard to maintain critical services to its residents, but it's a struggle. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood	MMH Man-Made Hazard SS Severe Storm SWS Severe Winter Storm T Tornado
LM		E&A Education & Awareness LP&R Local Plans & Regulations
HL		NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LL		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-26
Highland Hazard Mitigation Actions
(Sheet 1 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Construct a regional detention basin south of the Highland Fire Department Station #2 to reduce flows of an unnamed tributary of Sugar Creek, better manage stormwater runoff, and improve community resilience.	F, SS	S&S	S&IP	Small SVI: 0.0940 – 0.4402 CEJST: No EDRC: No	Yes	Yes	2, 3, 5	HM	Medium/High	Public Works Director	2-5 years	City General Fund / FEMA HMA	New
Construct a regional detention basin on or near Hoffman Park to reduce flows of an unnamed tributary of Sugar Creek, better manage stormwater runoff, and improve community resilience.	F, SS	S&S	S&IP	Small SVI: 0.0940 – 0.4402 CEJST: No EDRC: No	Yes	Yes	2, 3, 5	HM	Medium/High	Public Works Director	2-5 years	City General Fund / FEMA HMA	New
Make public information materials available to residents that detail the risks to life and property associated with the natural and man-made hazards that impact the Village and the proactive approaches they can take to reduce their risk.	DR, EC, EH, EQ, F, L, MMH, SS, SWS, T	---	E&A	Large SVI: 0.0940 – 0.4402 CEJST: No EDRC: No	---	---	1, 2	LM/LL	Low/Medium	Mayor / City Council	1-5 years	City Local Resources	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 10,000 individuals). The City works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood	L Landslides MMH Man-Made Hazard SS Severe Storm SWS Severe Winter Storm T Tornado
LM		E&A Education & Awareness LP&R Local Plans & Regulations
HL		NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LL		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-26
Highland Hazard Mitigation Actions
(Sheet 2 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Upgrade the sanitary sewer system in the original part of the City to increase capacity, eliminate unapproved pipes/drains currently utilizing the system, reduce stormwater infiltration and the amount of stormwater entering the wastewater treatment plant, increase system resilience, prevent sewage backups, and mitigate risk to a Community Lifeline.	F, SS	WS	S&IP	Medium SVI: 0.0940 – 0.4402 CEJST: No EDRC: No	Yes	Yes	3, 5	HM	High/High	Public Works Director	3 years	City General Fund / IEPA SRF – WPCLP / DCEO CDBG	Existing (2020)
Conduct a feasibility study to determine if the City’s current storm shelters meet the requirements to be designated community safe rooms and what if any retrofitting would be required to meet the community safe room specifications.	SS, T	FHS	LP&R E&A	Medium SVI: 0.0940 – 0.4402 CEJST: No EDRC: No	---	---	2	LM/LL	Low/Medium	Police Chief	1-3 years	City	Existing (2020)
Retrofit existing storm shelters to serve as designated community safe rooms for use by City residents.	SS, T	FHS	S&IP	Small SVI: 0.0940 – 0.4402 CEJST: No EDRC: No	---	Yes	2	HM/HL	Medium/High	Police Chief	4-6 years	City General Fund / FEMA HMA	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 10,000 individuals). The City works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood	L Landslides MMH Man-Made Hazard SS Severe Storm SWS Severe Winter Storm T Tornado
LM		E&A Education & Awareness LP&R Local Plans & Regulations NSP Natural Systems Protection Structure & Infrastructure Projects
HL		
LL		
		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-26
Highland Hazard Mitigation Actions
(Sheet 3 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install backup power source(s) at City-owned critical facilities and infrastructure systems to establish resilient and reliable power supplies, maintain continuity of government/operations, and mitigate risk to Community Lifelines in the event of a prolonged power outage.	EC, EH, EQ, F, L, MMH, SS, SWS, T	C S&S T WS	S&IP	Medium SVI: 0.0940 – 0.4402 CEJST: No EDRC: No	---	Yes	3, 5	HM/HL	Medium/High	Mayor / City Council	5-8 years	City General Fund / FEMA HMA	Existing (2020)
Construct stormwater detention/retention basins to better manage stormwater runoff and alleviate drainage/flooding problems.	F, SS	S&S	S&IP	Medium SVI: 0.0940 – 0.4402 CEJST: No EDRC: No	Yes	Yes	3, 5	HM	Medium/High	Public Works Director	5-10 years	City General Fund / FEMA HMA	Existing (2020)
Acquire flood-prone properties and remove any existing structures.	F, SS	S&S	S&IP NSP	Small SVI: 0.0940 – 0.4402 CEJST: No EDRC: No	---	Yes	2, 4, 6	HM	Medium/High	Mayor / City Council	5-10 years	City General Fund / FEMA HMA Swift Current	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 10,000 individuals). The City works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	L	Landslides	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado				
		Community Lifelines to be Mitigated:							
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-26
Highland Hazard Mitigation Actions
(Sheet 4 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Obtain Flood Elevation Certificates for properties located in Special Flood Hazard Areas.	F	S&S	LP&R	Small SVI: 0.2133 – 0.9333 CDRZ: Yes CEJST: Yes EDRC: No	Yes	Yes	3, 4, 6	LM	Low/High	Code Enforcement Officer	2-5 years	City Local Resources	Existing (2020)
Develop and distribute educational materials to the general public on flood protection and proofing/retrofitting of existing homes.	F	S&S	E&A	Medium SVI: 0.0940 – 0.4402 CEJST: No EDRC: No	---	---	1, 2	LM	Low/Medium	Mayor City Council / Code Enforcement Officer	1-3 years	City Local Resources	Existing (2020)
Retrofit existing City-owned buildings and critical facilities to current earthquake code standards and harden infrastructure to meet earthquake design guidelines to mitigate damage from an earthquake event.	EQ	S&S	S&IP	Small SVI: 0.0940 – 0.4402 CEJST: No EDRC: No	---	Yes	3, 5, 8	LM	High/Medium	Mayor / City Council	10-20 years	City General Fund / FEMA HMA	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 10,000 individuals). The City works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	L	Landslides	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado				
		Community Lifelines to be Mitigated:							
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-26
Highland Hazard Mitigation Actions
(Sheet 5 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Develop and distribute educational materials to the general public on measures that can be taken to avoid structure damage related to earthquakes.	EQ	---	E&A	Large SVI: 0.0940 – 0.4402 CEJST: No EDRC: No	---	---	1, 2	LM/LL	Low/Medium	Mayor / City Council	2-5 years	City Local Resources	Existing (2020)
Adopt, enforce & update building codes as needed to reduce structure vulnerability to seismic activity.	EQ	---	LP&R	Large SVI: 0.0940 – 0.4402 CEJST: No EDRC: No	Yes	Yes	2, 4, 8	HL	Low/High	Mayor City Council / Code Enforcement Officer	2-4 years	City General Fund / FEMA HMA	Existing (2020)
Evaluate the feasibility of participating in the National Flood Insurance Program's voluntary Community Rating System to reduce flood insurance premiums.	F	S&S	E&A	Small SVI: 0.0940 – 0.4402 CEJST: No EDRC: No	---	---	3, 4, 5	LM	Low/Medium	Mayor City Council / Code Enforcement Officer	3-5 years	City Local Resources	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 10,000 individuals). The City works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood	E&A Education & Awareness LP&R Local Plans & Regulations NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LM	L Landslides MMH Man-Made Hazard SS Severe Storm SWS Severe Winter Storm T Tornado	
HL		
LL		
	Community Lifelines to be Mitigated:	
	C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material	H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-26
Highland Hazard Mitigation Actions
(Sheet 6 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Review new Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to exceed federal standards and reflect the revised FIRMs and present both for adoption. Enforce flood ordinance to ensure new development does not increase flood vulnerability or create unintended exposures to flooding.*	F	S&S	LP&R	Small SVI: 0.0940 – 0.4402 CEJST: No EDRC: No	Yes	Yes	2, 4, 6, 7	HM	Low/High	Mayor City Council / Code Enforcement Officer	1-5 years	City Local Resources	Existing (2020)
Continue to make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.*	F	S&S	E&A	Small SVI: 0.0940 – 0.4402 CEJST: No EDRC: No	Yes	---	1, 2, 6, 7	LM	Low/Medium	Code Enforcement Officer	1-5 years	City Local Resources	Existing (2020)
Make City officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.*	F	S&S	E&A	Small SVI: 0.0940 – 0.4402 CEJST: No EDRC: No	Yes	---	1	LM	Low/Medium	Code Enforcement Officer	1-5 years	City Local Resources	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 10,000 individuals). The City works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

* Mitigation action to ensure continued compliance with NFIP.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	L	Landslides	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado				
		Community Lifelines to be Mitigated:							
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-27
Leef Township Hazard Mitigation Actions
(Sheet 1 of 2)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install a standby emergency generator at the Maintenance Center to establish a resilient and reliable power supply in order to maintain continuity of government/operations and mitigate risk to a Community Lifeline.	EC, EH, EQ, F, MMH, SS, SWS, T	C S&S T	S&IP	Large SVI: 0.2357 CEJST: No EDRC: No	---	Yes	3, 5	HM/HL	Medium/High	Road Commissioner	5 years	Township General Fund / FEMA HMA	New
Upsize roadway culverts and bridges at select locations within the Township to increase carrying capacity, better manage stormwater runoff, alleviate recurring drainage/flood problems, prevent roadway overtopping and subsequent washouts/pavement failures, and ensure system resilience and functionality.	F, SS	T	S&IP	Medium SVI: 0.2357 CEJST: No EDRC: No	Yes	Yes	3, 5	HM	Medium/High	Road Commissioner	2-5 years	Township General Fund / FEMA HMA	New
Trim trees to minimize the number and duration of service disruptions, improve community resilience, and mitigate risk to Community Lifelines.	SS, SWS, T	C E T	S&IP	Medium SVI: 0.2357 CEJST: No EDRC: No	Yes	Yes	3, 5	LM/LL	Low/Medium	Road Commissioner	2-5 years	Township General Fund	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a small, rural township of this size (approx. 700 individuals). The Township works hard to maintain critical services to residents but it’s a struggle. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood	E&A Education & Awareness LP&R Local Plans & Regulations NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LM	MMH Man-Made Hazard SS Severe Storm SWS Severe Winter Storm T Tornado	
HL		Community Lifelines to be Mitigated:
LL		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-27
Leef Township Hazard Mitigation Actions
(Sheet 2 of 2)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase portable radio system to allow Township staff to exchange critical communications and ensure continuity of operations during hazard events.	EC, EH, EQ, F, MMH, SS, SWS, T	T	S&IP	Large SVI: 0.2357 CEJST: No EDRC: No	---	---	2, 5	LM/LL	Medium/Medium	Road Commissioner	2-5 years	Township General Fund / FEMA HMA	New
Distribute public information materials to Township residents that detail the risks to life and property associated with the natural and man-made hazards that impact the Township and the proactive approaches they can take to reduce their risk.	DR, EC, EH, EQ, F, MMH, SS, SWS, T	---	E&A	Large SVI: 0.2357 CEJST: No EDRC: No	---	---	1, 2	LM/LL	Low/Medium	Supervisor / Road Commissioner	1-5 years	Township Local Resources	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a small, rural township of this size (approx. 700 individuals). The Township works hard to maintain critical services to residents but it’s a struggle. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	SS	Severe Storm	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SWS	Severe Winter Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	T	Tornado				
		F	Flood						
						Community Lifelines to be Mitigated:			
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-28
Livingston Hazard Mitigation Actions
(Sheet 1 of 3)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Improve drainage characteristics (grade/contour areas, etc.) of Village's drainage ditches to alleviate drainage/flooding problems that occur during/after heavy rain events, better manage stormwater runoff, and mitigate risk to a Community Lifeline.	F, SS	T WS	S&IP	Medium SVI: 0.2357 CEJST: No EDRC: No	Yes	Yes	3, 5	HM	Medium/High	President / Village Board	4 years	Village General Fund / FEMA HMA / IEPA SRF – WPCLP	New
Design and construct a community safe room (built to high wind standards and equipped with emergency standby generator) for use by Village residents.	SS, T	---	S&IP	Medium SVI: 0.2357 CEJST: No EDRC: No	Yes	---	2	HM/HL	High/High	President / Village Board	5 years	Village General Fund / FEMA HMA	New
Make public information materials available to residents that detail the risks to life and property associated with the natural and man-made hazards that impact the Village and the proactive approaches they can take to reduce their risk.	DR, EC, EH, EQ, F, MMH, MS, SS, SWS, T	---	E&A	Large SVI: 0.2357 CEJST: No EDRC: No	---	---	1, 2	LM/LL	Low/Medium	President / Village Board	1-5 years	Village Local Resources	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 750 individuals). The Village works hard to provide even the most critical of services to its residents, but it's a struggle. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MS	Mine Subsidence	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado				
Community Lifelines to be Mitigated:									
C	Communications	H&M	Health & Medical						
E	Energy (Power & Fuel)	S&S	Safety & Security						
FHS	Food, Hydration, Shelter	T	Transportation						
HM	Hazardous Material	WS	Water Systems						

Figure MIT-28
Livingston Hazard Mitigation Actions
(Sheet 2 of 3)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install a storm warning siren system to establish a Communications Community Lifeline essential human health and safety	SS, T	---	S&IP E&A	Large SVI: 0.2357 CEJST: No EDRC: No	---	---	2	HM/HL	Medium/High	President / Village Board	3-5 years	Village General Fund / FEMA HMA	Existing (2020)
Upsize select roadway culverts to increase carrying capacity, better manage stormwater runoff, alleviate recurring drainage/flooding problems, and ensure system resilience and functionality.	F, SS	T	S&IP	Medium SVI: 0.2357 CEJST: No EDRC: No	Yes	Yes	3, 5	HM	Medium/High	President / Village Board	5-10 years	Village General Fund / IDOT Local Roads	Existing (2020)

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Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MS	Mine Subsidence	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado				
		Community Lifelines to be Mitigated:							
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-28
Livingston Hazard Mitigation Actions
(Sheet 3 of 3)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Review new Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to exceed federal standards and reflect the revised FIRMs and present both for adoption. Enforce flood ordinance to ensure new development does not increase flood vulnerability or create unintended exposures to flooding.*	F	S&S	LP&R	Small SVI: 0.2357 CEJST: No EDRC: No	Yes	Yes	2, 4, 6, 7	HM	Low/High	President / Village Board	1-5 years	Village Local Resources	Existing (2020)
Continue to make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.*	F	S&S	E&A	Small SVI: 0.2357 CEJST: No EDRC: No	Yes	---	1, 2, 6, 7	LM	Low/Medium	President / Village Board	1-5 years	Village Local Resources	Existing (2020)
Make Village officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.*	F	S&S	E&A	Small SVI: 0.2357 CEJST: No EDRC: No	Yes	---	1	LM	Low/Medium	President / Village Board	1-5 years	Village Local Resources	Existing (2020)

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* Mitigation action to ensure continued compliance with NFIP.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood	MMH Man-Made Hazard MS Mine Subsidence SS Severe Storm SWS Severe Winter Storm T Tornado
LM		E&A Education & Awareness LP&R Local Plans & Regulations
HL		NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LL		
		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-29
City of Madison Hazard Mitigation Actions
(Sheet 1 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Line sewer line sections to eliminate stormwater inflow and infiltration and reduce the amount of stormwater entering the wastewater treatment plant to increase system resilience, prevent sewage backups, and mitigate risk to a Community Lifeline.	F, SS	WS	S&IP	Medium SVI: 0.4504 – 0.8714 CDRZ: Yes CEJST: Yes EDRC: No	Yes	Yes	3, 5	HM	Medium/High	Mayor / City Council	2-5 years	City General Fund / IEPA SRF – WPCLP / DCEO CDBG	New
Purchase portable water pumps for use in removal of excess water from critical facilities/infrastructure during heavy rain/flood events to maintain continuity of government/operations and ensure functionality of Community Lifelines.	F, SS	S&S T	S&IP	Medium SVI: 0.4504 – 0.8714 CDRZ: Yes CEJST: Yes EDRC: No	---	Yes	3, 5	LM	Low/Medium	Public Works Director	3 years	City General Fund	New

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Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado				
		Community Lifelines to be Mitigated:							
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-29
City of Madison Hazard Mitigation Actions
(Sheet 2 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Upgrade the City's storm sewer system to better manage stormwater runoff and alleviate flooding/drainage problems.	F, SS	T	S&IP	Large SVI: 0.4504 – 0.8714 CDRZ: Yes CEJST: Yes EDRC: No	Yes	Yes	3, 5	HM	High/High	Mayor City Council / Public Works Director	3-5 years	City General Fund / IEPA SRF – WPCLP / FEMA HMA	New
Clean debris/obstructions out of roadway culverts and drainage structures within the City to maximize carrying capacity, reduce/prevent drainage problems, and mitigate risk to Community Lifelines.	F, SS	T	S&IP	Medium SVI: 0.4504 – 0.8714 CDRZ: Yes CEJST: Yes EDRC: No	Yes	Yes	3, 5	LM	Low/Medium	Mayor City Council / Public Works Director	2-4 years	City Local Resources	New
Purchase and install backup power source(s) at city-owned critical facilities and infrastructure systems to establish resilient and reliable power supplies, maintain continuity of government/operations, and mitigate risk to Community Lifelines in the event of a prolonged power outage.	EC, EH, EQ, F, LF, MMH, SS, SWS, T	C S&S T WS	S&IP	Medium SVI: 0.4504 – 0.8714 CDRZ: Yes CEJST: Yes EDRC: No	---	Yes	3, 5	HM/HL	Medium/High	Mayor / City Council	5-10 years	City General Fund / FEMA HMA	Existing (2020)

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Acronyms

Priority	
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards

Hazard(s) to be Mitigated:			
DR	Drought	LF	Levee Failure
EC	Extreme Cold	MMH	Man-Made Hazard
EH	Excessive Heat	SS	Severe Storm
EQ	Earthquake	SWS	Severe Winter Storm
F	Flood	T	Tornado

Type of Mitigation Activity:			
E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
Community Lifelines to be Mitigated:			
C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FHS	Food, Hydration, Shelter	T	Transportation
HM	Hazardous Material	WS	Water Systems

Figure MIT-29
City of Madison Hazard Mitigation Actions
(Sheet 3 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install a call monitoring system (power loss notification/call system) at the police and fire stations to alert officials of power outages and surges and mitigate risk to Community Lifelines. Loss of power has the potential to impact services for the entire City.	EQ, MMH, SS, SWS, T	S&S	S&IP	Large SVI: 0.4504 – 0.8714 CDRZ: Yes CEJST: Yes EDRC: No	---	Yes	3, 5	LM/LL	Low/Medium	Public Works Director	2 years	City General Fund	Existing (2020)
Construct new storm sewer systems in subdivisions that lack a system to better manage stormwater runoff and alleviate recurring drainage problems.	F, SS	---	S&IP	Medium SVI: 0.4504 – 0.8714 CDRZ: Yes CEJST: Yes EDRC: No	Yes	Yes	3, 5	HM	High/High	Mayor / City Council	5-10 years	City General Fund / IEPA SRF – WPCLP / FEMA HMA	Existing (2020)
Purchase new emergency alert system with satellite/cellular based control technology to deliver pertinent, real-time information to residents related to hazard event conditions and improve resiliency of a Community Lifeline.	EC, EH, EQ, F, LF, MMH, SS, SWS, T	C	S&IP E&A	Large SVI: 0.4504 – 0.8714 CDRZ: Yes CEJST: Yes EDRC: No	---	---	2	LM/LL	Medium/High	Mayor / City Council	3-5 years	City General Fund	Existing (2020)

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Acronyms

Priority	
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards

Hazard(s) to be Mitigated:			
DR	Drought	LF	Levee Failure
EC	Extreme Cold	MMH	Man-Made Hazard
EH	Excessive Heat	SS	Severe Storm
EQ	Earthquake	SWS	Severe Winter Storm
F	Flood	T	Tornado

Type of Mitigation Activity:			
E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
Community Lifelines to be Mitigated:			
C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FHS	Food, Hydration, Shelter	T	Transportation
HM	Hazardous Material	WS	Water Systems

Figure MIT-29
City of Madison Hazard Mitigation Actions
(Sheet 4 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Adopt, enforce & update building codes as needed to reduce structure vulnerability to seismic activity.	EQ	---	LP&R	Large SVI: 0.4504 – 0.8714 CDRZ: Yes CEJST: Yes EDRC: No	Yes	Yes	2, 4, 8	HL	Low/High	Mayor City Council / Building Inspector	2-4 years	City General Fund / FEMA HMA	Existing (2020)
Obtain Flood Elevation Certificates for properties located in Special Flood Hazard Areas.	F	S&S	LP&R	Medium SVI: 0.4504 – 0.8714 CDRZ: Yes CEJST: Yes EDRC: No	Yes	Yes	3, 4, 6	LM	Low/High	Mayor City Council / Building Inspector	2-4 years	City Local Resources	Existing (2020)
Develop and distribute educational materials to the general public on flood protection and proofing/retrofitting of existing homes.	F	S&S	E&A	Medium SVI: 0.4504 – 0.8714 CDRZ: Yes CEJST: Yes EDRC: No	---	---	1, 2	LM	Low/Medium	Mayor City Council / Building Inspector	1-3 years	City Local Resources	Existing (2020)

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Acronyms

Priority	
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards

Hazard(s) to be Mitigated:			
DR	Drought	LF	Levee Failure
EC	Extreme Cold	MMH	Man-Made Hazard
EH	Excessive Heat	SS	Severe Storm
EQ	Earthquake	SWS	Severe Winter Storm
F	Flood	T	Tornado

Type of Mitigation Activity:			
E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
Community Lifelines to be Mitigated:			
C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FHS	Food, Hydration, Shelter	T	Transportation
HM	Hazardous Material	WS	Water Systems

Figure MIT-29
City of Madison Hazard Mitigation Actions
(Sheet 5 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Develop and distribute educational materials to the general public on measures that can be taken to avoid structure damage related to earthquakes.	EQ	---	E&A	Large SVI: 0.4504 – 0.8714 CDRZ: Yes CEJST: Yes EDRC: No	---	---	1, 2	LM/LL	Low/Medium	Mayor / City Council	2-5 years	City Local Resources	Existing (2020)
Conduct a drainage study to evaluate the existing stormwater collection system's capacities and identify improvements/upgrades needed to alleviate recurring drainage/flooding problems, better manage stormwater and improve system resilience and functionality.	F, SS	S&S WS	LP&R	Medium SVI: 0.4504 – 0.8714 CDRZ: Yes CEJST: Yes EDRC: No	---	---	3, 4, 5	LM	Low/Medium	Mayor / City Council	2 years	City General Fund	Existing (2020)

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[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 3,200 individuals). The City works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm	C	Communications	H&M	Health & Medical
		F	Flood	T	Tornado	E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-29
City of Madison Hazard Mitigation Actions
(Sheet 6 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Evaluate the feasibility of participating in the National Flood Insurance Program's voluntary Community Rating System to reduce flood insurance premiums.	F	S&S	E&A	Medium SVI: 0.4504 – 0.8714 CDRZ: Yes CEJST: Yes EDRC: No	---	---	3, 4, 5	LM	Low/Medium	Mayor City Council / Building Inspector	3-5 years	City Local Resources	Existing (2020)
Review new Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to exceed federal standards and reflect the revised FIRMs and present both for adoption. Enforce flood ordinance to ensure new development does not increase flood vulnerability or create unintended exposures to flooding.*	F	S&S	LP&R	Medium SVI: 0.4504 – 0.8714 CDRZ: Yes CEJST: Yes EDRC: No	Yes	Yes	2, 4, 6, 7	HM	Low/High	Mayor City Council / Building Inspector	1-5 years	City Local Resources	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 3,200 individuals). The City works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado				
						Community Lifelines to be Mitigated:			
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-29
City of Madison Hazard Mitigation Actions
(Sheet 7 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Continue to make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.*	F	S&S	E&A	Medium SVI: 0.4504 – 0.8714 CDRZ: Yes CEJST: Yes EDRC: No	Yes	---	1, 2, 6, 7	LM	Low/Medium	Mayor City Council / Building Inspector	1-5 years	City Local Resources	Existing (2020)
Make City officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.*	F	S&S	E&A	Medium SVI: 0.4504 – 0.8714 CDRZ: Yes CEJST: Yes EDRC: No	Yes	---	1	LM	Low/Medium	Mayor City Council / Building Inspector	1-5 years	City Local Resources	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 3,200 individuals). The City works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

* Mitigation action to ensure continued compliance with NFIP.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado				
		Community Lifelines to be Mitigated:							
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-30
Marine Hazard Mitigation Actions
(Sheet 1 of 5)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install a new storm warning siren on the south end of the Village to ensure continued operation of a Community Lifeline essential to human health and safety.	SS, T	C	S&IP	Medium SVI: 0.1305 CEJST: No EDRC: Yes	---	---	2	HM/HL	Medium/High	President / Village Board	1 year	Village General Fund / FEMA HMA / USDA – RD Critical Facilities Programs	New
Make public information materials available to residents that detail the risks to life and property associated with the natural and man-made hazards that impact the Village and the proactive approaches they can take to reduce their risk.	DR, EC, EH, EQ, F, MMH, MS, SS, SWS, T	---	E&A	Large SVI: 0.2357 CEJST: No EDRC: No	---	---	1, 2	LM/LL	Low/Medium	President / Village Board	1-5 years	Village Local Resources	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 900 individuals). The Village works hard to provide even the most critical of services to its residents, but it’s a struggle. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	SS	Severe Storm	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SWS	Severe Winter Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	T	Tornado				
		F	Flood			Community Lifelines to be Mitigated:			
						C	Communications	H&M	Health & Medical
						E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-30
Marine Hazard Mitigation Actions
(Sheet 2 of 5)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Upsize storm sewer line/drain in the 200 and 300 blocks of N. Duncan Street to alleviate recurring drainage/flooding problems, better manage storm water runoff, and ensure system resilience and functionality.	F, SS	T WS	S&IP	Small SVI: 0.1305 CEJST: No EDRC: Yes	Yes	Yes	3, 5	HM	Medium/High	President / Village Board	5 years	Village General Fund / USDA – RD Water & Waste Disposal Program / IEPA \SRF – WPCLP / FEMA HMA	Existing (2020)
Upsize select roadway culverts to increase carrying capacity, better manage stormwater runoff, alleviate recurring drainage/flooding problems, and ensure system resilience and functionality.	F, SS	T	S&IP	Medium SVI: 0.1305 CEJST: No EDRC: Yes	Yes	Yes	3, 5	HM	Medium/High	President / Village Board	5-10 years	Village General Fund / IDOT Local Roads	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 900 individuals). The Village works hard to provide even the most critical of services to its residents, but it’s a struggle. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood	MMH Man-Made Hazard SS Severe Storm SWS Severe Winter Storm T Tornado
LM		E&A Education & Awareness LP&R Local Plans & Regulations
HL		NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LL		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-30
Marine Hazard Mitigation Actions
(Sheet 3 of 5)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install electric hookups at St. Elizabeth's Catholic Church (a designated warming/cooling center and emergency shelter) for use with a portable emergency backup generator to provide uninterrupted power during power outages.	EC, EH, EQ, F, MMH, SS, SWS, T	FHS	LP&R	Medium SVI: 0.1305 CEJST: No EDRC: Yes	---	Yes	2, 3, 5	LM/LL	Low/Medium	President / Village Board	3-5 years	Village General Fund / USDA – RD Community Facilities Programs	Existing (2020)
Purchase and install an emergency backup generator at St. Elizabeth's Catholic Church (a designated warming/cooling center and emergency shelter) to establish a resilient and reliable power supply that will ensure sustained functionality during extended power outages and mitigate risk to a Community Lifeline.	EC, EH, EQ, F, MMH, SS, SWS, T	FHS	S&IP	Medium SVI: 0.1305 CEJST: No EDRC: Yes	---	Yes	2, 3, 5	HM/HL	Medium/High	President / Village Board	5 years	Village General Fund / FEMA HMA / USDA – RD Community Facilities Programs	Existing (2020)
Design and construct a community safe room (built to high wind and seismic standards and equipped with emergency standby generator an HVAC system) that can also serve as a warming/cooling center for Village residents.	SS, T	---	S&IP	Medium SVI: 0.1305 CEJST: No EDRC: Yes	Yes	---	2	HM/HL	High/High	President / Village Board	5-10 years	Village General Fund / FEMA HMA	Existing (2020)

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[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 900 individuals). The Village works hard to provide even the most critical of services to its residents, but it's a struggle. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards

Hazard(s) to be Mitigated:			
DR	Drought	MMH	Man-Made Hazard
EC	Extreme Cold	SS	Severe Storm
EH	Excessive Heat	SWS	Severe Winter Storm
EQ	Earthquake	T	Tornado
F	Flood		

Type of Mitigation Activity:			
E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects

Community Lifelines to be Mitigated:			
C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FHS	Food, Hydration, Shelter	T	Transportation
HM	Hazardous Material	WS	Water Systems

Figure MIT-30
Marine Hazard Mitigation Actions
(Sheet 4 of 5)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install an emergency backup generator at the Village's drinking water treatment facility to establish resilient and reliable power supplies, maintain continuity of operations, and mitigate risk to Community Lifelines.	EC, EH, EQ, F, MMH, SS, SWS, T	WS	S&IP	Large SVI: 0.1305 CEJST: No EDRC: Yes	---	Yes	2, 3, 5	HM/HL	Medium/High	President / Village Board	2-5 years	Village General Fund / FEMA HMA	Existing (2020)
Purchase and install an automatic emergency backup generator at the Village's wastewater treatment facility to establish resilient and reliable power supplies, maintain continuity of operations, and mitigate risk to Community Lifelines.	EC, EH, EQ, F, MMH, SS, SWS, T	WS	S&IP	Large SVI: 0.1305 CEJST: No EDRC: Yes	---	Yes	2, 3, 5	HM/HL	Medium/High	President / Village Board	2-5 years	Village General Fund / FEMA HMA	Existing (2020)
Construct stormwater detention/retention basins to store stormwater runoff and alleviate drainage/flooding problems.	F, SS	S&S	S&IP	Medium SVI: 0.1305 CEJST: No EDRC: Yes	Yes	Yes	3, 5	HM	Medium/High	President / Village Board	10 years	Village General Fund / FEMA HMA	Existing (2020)

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[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 900 individuals). The Village works hard to provide even the most critical of services to its residents, but it's a struggle. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood	MMH Man-Made Hazard SS Severe Storm SWS Severe Winter Storm T Tornado
LM		E&A Education & Awareness LP&R Local Plans & Regulations
HL		NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LL		
		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-30
Marine Hazard Mitigation Actions
(Sheet 5 of 5)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Retrofit existing village-owned buildings and critical facilities to current earthquake code standards and harden infrastructure to meet earthquake design guidelines to increase resiliency.	EQ	S&S	S&IP	Large SVI: 0.1305 CEJST: No EDRC: Yes	---	Yes	3, 5, 8	LM	High/Medium	President / Village Board	10 years	Village General Fund / FEMA HMA	Existing (2020)
Develop and distribute educational materials to the general public on measures that can be taken to avoid structure damage related to earthquakes.	EQ	---	E&A	Large SVI: 0.1305 CEJST: No EDRC: Yes	---	---	1, 2	LM/LL	Low/Medium	President / Village Board	2-5 years	Village Local Resources	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 900 individuals). The Village works hard to provide even the most critical of services to its residents, but it’s a struggle. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
		EC	Extreme Cold	SS	Severe Storm	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EH	Excessive Heat	SWS	Severe Winter Storm				
		EQ	Earthquake	T	Tornado				
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	F	Flood			Community Lifelines to be Mitigated:			
						C	Communications	H&M	Health & Medical
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards					E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-31
Marquette Catholic High School Hazard Mitigation Actions

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install a standby emergency backup generator at the High School to establish a resilient and reliable power supply in order to maintain continuity of operations, ensure sustained functionality during extended power outages, and mitigate risk to a Community Lifeline.	EC, EH, EQ, F, L, MMH, SS, SWS, T	S&S	S&IP	Large SVI: 0.7086 CEJST: Yes	---	Yes	2, 3, 5	HM/HL	Medium/High	Principal	1 year	School General Fund	New
Educate students and staff about the natural and man-made hazards that have the potential to impact the area and the proactive actions they can take to reduce their risks.	DR, EC, EH, EQ, F, L, MMH, SS, SWS, T	---	E&A	Large SVI: 0.7086 CEJST: Yes	---	---	2	LM/LL	Low/Medium	Principal	1-5 years	School Local Resources	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the budgetary constraints experienced by a small, private schools. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	L	Landslides	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
		EQ	Earthquake	SWS	Severe Winter Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	F	Flood	T	Tornado				
		Community Lifelines to be Mitigated:							
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-32
Maryville Hazard Mitigation Actions
(Sheet 1 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install additional storm warning sirens in areas without coverage in the Village to maximize the system's effectiveness and ensure continued operations of a Community Lifeline essential to human health and safety. Currently there are no sirens on the far west side of the Village that cover newly developed areas.	SS, T	C	S&IP E&A	Medium SVI: 0.1646 – 0.1764 CEJST: No EDRC: No	---	---	2	HM/HL	Medium/High	Fire Chief	1-3 years	Village General Fund / FEMA HMA	New
Construct a 6 inch water main loop in the industrial area from Schiber Court to Division Street to ensure an adequate water supply and pressure for firefighting and emergency response, improve system resilience by creating redundancy to minimize service disruptions resulting from pipe and water main breaks, and ensure continued functionality of a Community Lifeline.	DR, EC, EH, EQ, F, MMH, SS, SWS, T	WS	S&IP	Medium SVI: 0.1646 – 0.1764 CEJST: No EDRC: No	Yes	Yes	2, 3, 5	HM/HL	High/High	Water Superintendent	1-5 years	Village General Fund / IEPA SRF – PWSLP	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 8,200 individuals). The Village works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood L Landslides	MMH Man-Made Hazard MS Mine Subsidence SS Severe Storm SWS Severe Winter Storm T Tornado
LM		E&A Education & Awareness LP&R Local Plans & Regulations
HL		NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LL		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-32
Maryville Hazard Mitigation Actions
(Sheet 2 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Upsize existing 6 inch water main and all of the infrastructure related to the drinking water distribution system in the Bauer subdivision to improve water flow and pressure, increase system capacity and resilience, ensure a constant supply of water for residents, and aid in fire suppression during hazard events.	EQ, F, MMH, SS, SWS, T	WS	S&IP	Medium SVI: 0.1646 – 0.1764 CEJST: No EDRC: No	Yes	Yes	2, 3, 5	HM/HL	High/High	Water Superintendent	1-5 years	Village General Fund / IEPA SRF – PWSLP	New
Purchase and install an emergency backup generator at the Village's drinking water shed to establish resilient and reliable power supplies, maintain continuity of operations, and mitigate risk to Community Lifelines.	EC, EH, EQ, F, MMH, SS, SWS, T	WS	S&IP	Large SVI: 0.1646 – 0.1764 CEJST: No EDRC: No	---	Yes	2, 3, 5	HM/HL	Medium/High	Water Superintendent	1-3 years	Village General Fund / FEMA HMA	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 8,200 individuals). The Village works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MS	Mine Subsidence	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado	C	Communications	H&M	Health & Medical
		L	Landslides			E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-32
Maryville Hazard Mitigation Actions
(Sheet 3 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install an automatic emergency backup generators at sewer lift stations within the Village to establish resilient and reliable power supplies, maintain continuity of operations, and mitigate risk to Community Lifelines. Locations include, but are not limited to, Autumn Oaks, Keebler Oaks, SB Farms, SB Woods, SB Bluff, SB Villas, Remington, and Fox Mill.	EC, EH, EQ, F, MMH, SS, SWS, T	WS	S&IP	Large SVI: 0.1646 – 0.1764 CEJST: No EDRC: No	---	Yes	2, 3, 5	HM/HL	Medium/High	Water Superintendent	1-5 years	Village General Fund / FEMA HMA	New
Upgrade the Village's storm water infrastructure in Old Town to better manage stormwater runoff, reduce drainage problems, and improve community resilience.	F, SS	T WS	S&IP	Small SVI: 0.1646 – 0.1764 CEJST: No EDRC: No	Yes	Yes	3, 5	HM	High/High	Street Superintendent	3-5 years	Village General Fund / IEPA SRF – WPCLP / FEMA HMA	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 8,200 individuals). The Village works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood L Landslides	MMH Man-Made Hazard MS Mine Subsidence SS Severe Storm SWS Severe Winter Storm T Tornado
LM		E&A Education & Awareness LP&R Local Plans & Regulations
HL		NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LL		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-32
Maryville Hazard Mitigation Actions
(Sheet 4 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase P25-compliant interoperable land mobile radios to allow Village personnel to exchange critical communications across departments, partner agencies, including County dispatch, and other jurisdictions to maintain continuity of government/operations and ensure system resilience and functionality of a Community Lifeline.	EQ, F, L, MMH, MS, SS, SWS, T	C	S&IP	Large SVI: 0.1646 – 0.1764 CEJST: No EDRC: No	---	---	2, 3, 5	LM/LL	Medium/High	Fire Chief	1 year	Village General Fund / FEMA HMA	New
Make public information materials available to residents that detail the risks to life and property associated with the natural and man-made hazards that impact the Village and the proactive approaches they can take to reduce their risk.	DR, EC, EH, EQ, F, L, MMH, MS, SS, SWS, T	---	E&A	Large SVI: 0.1646 – 0.1764 CEJST: No EDRC: No	---	---	1, 2	LM/LL	Low/Medium	Fire Chief	1-3 years	Village Local Resources	Existing (2020)
Purchase and install backup power source(s) at village-owned critical facilities and infrastructure systems to establish resilient and reliable power supplies, maintain continuity of government/operations, and mitigate risk to Community Lifelines in the event of a prolonged power outage.	EC, EH, EQ, F, L, MMH, SS, SWS, T	C S&S T WS	S&IP	Large SVI: 0.1646 – 0.1764 CEJST: No EDRC: No	---	Yes	3, 5	HM/HL	Medium/High	President / Village Board	5-7 years	Village General Fund / FEMA HMA	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 8,200 individuals). The Village works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood L Landslides	E&A Education & Awareness LP&R Local Plans & Regulations NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LM		
HL		
LL		
	Community Lifelines to be Mitigated:	
	C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material	H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-32
Maryville Hazard Mitigation Actions
(Sheet 5 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Upgrade storm warning siren system and/or install additional sirens in underserved areas to maximize the system's effectiveness and ensure continued operations of a Community Lifeline essential to human health and safety.	SS, T	C	S&IP E&A	Large SVI: 0.1646 – 0.1764 CEJST: No EDRC: No	---	---	2	HM/HL	Medium/High	President / Village Board	5 years	Village General Fund / FEMA HMA	Existing (2020)
Construct stormwater detention/retention basins to better manage stormwater runoff and alleviate drainage/flooding problems.	F, SS	S&S	S&IP	Medium SVI: 0.1646 – 0.1764 CEJST: No EDRC: No	Yes	Yes	3, 5	HM	Medium/High	President / Village Board	10-15 years	Village General Fund / FEMA HMA	Existing (2020)
Adopt, enforce & update building codes as needed to reduce structure vulnerability to seismic activity.	EQ	---	LP&R	Large SVI: 0.1646 – 0.1764 CEJST: No EDRC: No	Yes	Yes	2, 4, 8	HL	Low/High	President Village Board / Building & Zoning Administrator	2-4 years	Village General Fund / FEMA HMA	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 8,200 individuals). The Village works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood L Landslides	MMH Man-Made Hazard MS Mine Subsidence SS Severe Storm SWS Severe Winter Storm T Tornado
LM		E&A Education & Awareness LP&R Local Plans & Regulations
HL		NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LL		
		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-32
Maryville Hazard Mitigation Actions
(Sheet 6 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Review new Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to exceed federal standards and reflect the revised FIRMs and present both for adoption. Enforce flood ordinance to ensure new development does not increase flood vulnerability or create unintended exposures to flooding.*	F	S&S	LP&R	Small SVI: 0.1646 – 0.1764 CEJST: No EDRC: No	Yes	Yes	2, 4, 6, 7	HM	Low/Medium	President Village Board / Building & Zoning Administrator	1-5 years	Village Local Resources	Existing (2020)
Continue to make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.*	F	S&S	E&A	Small SVI: 0.1646 – 0.1764 CEJST: No EDRC: No	Yes	---	1, 2, 6, 7	LM	Low/Medium	Building & Zoning Administrator	1-5 years	Village Local Resources	Existing (2020)
Make Village officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.*	F	S&S	E&A	Small SVI: 0.1646 – 0.1764 CEJST: No EDRC: No	Yes	---	1	LM	Low/Medium	President Village Board / Building & Zoning Administrator	1-5 years	Village Local Resources	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 8,200 individuals). The Village works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

* Mitigation action to ensure continued compliance with NFIP.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MS	Mine Subsidence	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado	C	Communications	H&M	Health & Medical
		L	Landslides			E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-33
Metro East Sanitary District Hazard Mitigation Actions

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Upsize the “stem” or main pipeline/conduit carrying stormwater out of the North Pump Station at East St. Louis to increase carrying capacity, better manage stormwater runoff, improve system resilience, and ensure continuity functionality of a Community Lifeline.	F, SS	S&S	S&IP	Small SVI: 0.2133 – 0.9333 CEJST: Yes/No	---	Yes	3, 5	HM	Medium/High	Executive Director / MESD Board	1 year	MESD General Fund / FEMA HMA	New
Make public information materials available to District residents that detail the risks to life and property associated with the natural and man-made hazards that impact the District and the proactive approaches they can take to reduce their risk.	DR, EC, EH, EQ, F, LF, MMH, SS, SWS, T	---	E&A	Large SVI: 0.2133 – 0.9333 CEJST: Yes/No	---	---	1, 2	LM/LL	Low/Medium	Executive Director / MESD Board	1-5 years	MESD Local Resources	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by an urban drainage and levee district of this size (protecting approx. 525,000 individuals). Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado	C	Communications	H&M	Health & Medical
						E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-34
Nameoki Township Hazard Mitigation Actions
(Sheet 1 of 3)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Conduct a drainage study to identify design solutions to better manage stormwater runoff, alleviate recurring drainage deficiencies experienced as a result of heavy rain events, increase storage and drainage capacity, ensure system resilience, and mitigate risk to a Community Lifeline.	F, SS	T	S&IP	Medium SVI: 0.2133 – 0.6833 CEJST: Yes/No EDRC: No	Yes	Yes	3, 5	LM	Medium/High	Township Supervisor / Board of Trustees	2-5 years	Township General Fund	New
Obtain Flood Elevation Certificates for properties located in Special Flood Hazard Areas.	F	S&S	LP&R	Small SVI: 0.2133 – 0.6833 CEJST: Yes/No EDRC: No	Yes	Yes	3, 4, 6	LM	Low/High	Township Supervisor / Board of Trustees	1-5 years	Township Local Resources	New
Develop and distribute educational materials to District residents on flood protection and proofing/retrofitting of existing homes.	F	S&S	E&A	Small SVI: 0.2133 – 0.6833 CEJST: Yes/No EDRC: No	---	---	1, 2	LM	Low/Medium	Township Supervisor / Board of Trustees	1-3 years	Township Local Resources	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a township of this size (approx. 6,800 individuals in both incorporated and unincorporated areas). The Township works hard to maintain critical services to residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold	E&A Education & Awareness LP&R Local Plans & Regulations
LM	EH Excessive Heat EQ Earthquake	NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
HL	F Flood	Community Lifelines to be Mitigated:
LL		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-34
Nameoki Township Hazard Mitigation Actions
(Sheet 2 of 3)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Make the most recent Flood Insurance Rate Maps available to assist residents in considering where to construct new buildings.	F	S&S	E&A	Small SVI: 0.2133 – 0.6833 CEJST: Yes/No EDRC: No	Yes	---	1, 2, 6, 7	LM	Low/Medium	Township Supervisor / Board of Trustees	1-5 years	Township Local Resources	New
Purchase and install emergency standby generators at township-owned critical facilities and infrastructure systems to establish resilient and reliable power supplies, maintain continuity of government/operations, and mitigate risk to Community Lifelines in the event of a prolonged power outage.	EC, EH, EQ, F, MMH, SS, SWS, T	S&S T	S&IP	Medium SVI: 0.2133 – 0.6833 CEJST: Yes/No EDRC: No	---	Yes	3, 5	HM/HL	Medium/High	Township Supervisor / Board of Trustees	2-4 years	Township General Fund / FEMA HMA	New
Clean debris/obstructions out of roadway culverts and drainage structures within the City to maximize carrying capacity, reduce/prevent drainage problems, and mitigate risk to Community Lifelines.	F, SS	T	S&IP	Medium SVI: 0.2133 – 0.6833 CEJST: Yes/No EDRC: No	Yes	Yes	3, 5	LM	Low/Medium	Township Supervisor / Board of Trustees	2-5 years	Township Local Resources	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a township of this size (approx. 6,800 individuals in both incorporated and unincorporated areas). The Township works hard to maintain critical services to residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold	E&A Education & Awareness LP&R Local Plans & Regulations
LM	EH Excessive Heat EQ Earthquake	NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
HL	F Flood T Tornado	
LL		
	Community Lifelines to be Mitigated:	
	C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material	H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-34
Nameoki Township Hazard Mitigation Actions
(Sheet 3 of 3)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Distribute public information materials to Township residents that detail the risks to life and property associated with the natural and man-made hazards that impact the Township and the proactive approaches they can take to reduce their risk.	DR, EC, EH, EQ, F, LF, MMH, SS, SWS, T	---	E&A	Large SVI: 0.2133 – 0.6833 CEJST: Yes/No EDRC: No	---	---	1, 2	LM/LL	Low/Medium	Supervisor / Board of Trustees	1-5 years	Township Local Resources	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a township of this size (approx. 6,800 individuals in both incorporated and unincorporated areas). The Township works hard to maintain critical services to residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado				
						Community Lifelines to be Mitigated:			
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-35
Olive Fire District Hazard Mitigation Actions

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Collaborate with District land owners to install dry hydrants around ponds and lakes at strategic locations that can be used as filling stations to ensure a constant supply of water to aid in fire suppression as necessary during natural hazard events in rural areas.	DR, EC, EH, EQ, SS, SWS, T	S&S	S&IP	Medium SVI: 0.2357 CEJST: No	Yes	Yes	2, 4, 5	LM/LL	Medium/High	Fire Chief / Board of Trustees	2-5 years	FPD Local Resources	New
Purchase and install a storm warning siren in Livingston to establish a Community Lifeline essential to human health and safety.	SS, T	---	S&IP E&A	Medium SVI: 0.2357 CEJST: No	---	---	1, 2	HM/HL	Medium/High	Fire Chief / Board of Trustees	3 years	FPD General Fund / FEMA HMA	New
Make public information materials available to District residents that detail the risks to life and property associated with the natural and man-made hazards that impact the District and the proactive approaches they can take to reduce their risk.	DR, EC, EH, EQ, F, MMH, MS, SS, SWS, T	---	E&A	Large SVI: 0.2357 CEJST: No	---	---	1, 2	LM/LL	Low/Medium	Fire Chief / Board of Trustees	1-5 years	FPD Local Resources	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a small rural, all-volunteer fire protection district of this size (serving approx. 3,500 individuals in a service area of 308 square miles). Additional funding is necessary if implementation is to be achieved.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood	MMH Man-Made Hazard MS Mine Subsidence SS Severe Storm SWS Severe Winter Storm T Tornado
LM		E&A Education & Awareness LP&R Local Plans & Regulations
HL		NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LL		Community Lifelines to be Mitigated: C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-36
OSF Saint Anthony's Health Center Hazard Mitigation Actions

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install an automatic emergency backup generator at the main hospital campus to ensure a resilient and reliable power supply in order to maintain continuity of operations and mitigate risk to a Community Lifeline.	EC, EH, EQ, F, L, MMH, SS, SWS, T	H&M	S&IP	Medium SVI: 0.8754 CEJST: Yes	---	Yes	2, 3, 5	HM/HL	High/High	President / HealthCare Community Council / Emergency Services Director	2-5 years	Hospital General Fund / FEMA HMA	New
Educate staff and patients about the natural and man-made hazards that have the potential to impact the County and the proactive actions they can take to reduce their risks.	DR, EC, EH, EQ, F, L, MMH, SS, SWS, T	---	E&A	Large SVI: 0.8754 CEJST: Yes	---	---	1, 2	LM/LL	Low/Medium	Emergency Services Director	1-5 years	Hospital Local Resources	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a small-sized hospital (49-bed acute care hospital). Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold	E&A Education & Awareness LP&R Local Plans & Regulations
LM	EH Excessive Heat EQ Earthquake	NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
HL	F Flood	
LL		
	L Landslides MMH Man-Made Hazard SS Severe Storm SWS Severe Winter Storm T Tornado	
		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-37
Pontoon Beach Hazard Mitigation Actions
(Sheet 1 of 9)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Line storm sewer lines to eliminate stormwater inflow and infiltration, better manage stormwater runoff, alleviate recurring drainage/flood problems, and ensure system resilience and functionality.	F, SS	WS	S&IP	Medium SVI: 0.4504 – 0.8714 CDRZ: Yes CEJST: Yes EDRC: No	Yes	Yes	3, 5	HM	Medium/High	President / Village Board	1-4 years	Village General Fund / IEPA SRF – WPCLP / DCEO CDBG	New
Upgrade the Village’s storm sewer system to better manage stormwater runoff and alleviate flooding/drainage problems.	F, SS	T	S&IP	Large SVI: 0.4504 – 0.8714 CDRZ: Yes CEJST: Yes EDRC: No	Yes	Yes	3, 5	HM	High/High	President / Village Board	2-5 years	Village General Fund / IEPA SRF – WPCLP / FEMA HMA	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 5,900 individuals). The Village works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado	C	Communications	H&M	Health & Medical
		L	Landslides			E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-37
Pontoon Beach Hazard Mitigation Actions
(Sheet 2 of 9)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Clean debris/obstructions out of roadway culverts and drainage structures within the Village to maximize carrying capacity, reduce/prevent drainage problems, and mitigate risk to Community Lifelines.	F, SS	T	S&IP	Medium SVI: 0.4504 – 0.8714 CDRZ: Yes CEJST: Yes EDRC: No	Yes	Yes	3, 5	LM	Low/Medium	President / Village Board	2-5 years	Village Local Resources	New
Upsize culvert under Pontoon Road to increase carrying capacity, better manage stormwater runoff, alleviate recurring drainage/flooding problems, and ensure system resilience and functionality.	F, SS	T	S&IP	Medium SVI: 0.4504 – 0.8714 CDRZ: Yes CEJST: Yes EDRC: No	Yes	Yes	3, 5	HM	Medium/High	President / Village Board	1-3 years	Village Local Resources / IDOT Local Roads	New
Make public information materials available to residents that detail the risks to life and property associated with the natural and man-made hazards that impact the Village and the proactive approaches they can take to reduce their risk.	DR, EC, EH, EQ, F, L, LF, MMH, SS, SWS, T	---	E&A	Large SVI: 0.4504 – 0.8714 CDRZ: Yes CEJST: Yes EDRC: No	---	---	1, 2	LM/LL	Low/Medium	President / Village Board	1-5 years	Village Local Resources	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 5,900 individuals). The Village works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold	E&A Education & Awareness LP&R Local Plans & Regulations
LM	EH Excessive Heat EQ Earthquake	NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
HL	F Flood L Landslides	Community Lifelines to be Mitigated:
LL		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-37
Pontoon Beach Hazard Mitigation Actions
(Sheet 3 of 9)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Conduct a drainage study to evaluate the existing stormwater collection system's capacities and identify improvements/upgrades needed to alleviate recurring drainage/flooding problems, better manage stormwater and improve system resilience and functionality.	F, SS	S&S WS	LP&R	Medium SVI: 0.1764 – 0.6833 CDRZ: Yes CEJST: Yes EDRC: No	---	---	3, 4, 5	LM	Low/Medium	President / Village Board	2 years	Village General Fund	Existing (2020)
Select, design, and construct the appropriate improvements/upgrades needed to alleviate recurring drainage/flooding problems, better manage stormwater and improve system resilience and functionality.	F, SS	S&S	S&IP NSP	Medium SVI: 0.1764 – 0.6833 CDRZ: Yes CEJST: Yes EDRC: No	Yes	Yes	3, 5	HM	Medium/High	President / Village Board	2 years	Village General Fund / FEMA HMA	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 5,900 individuals). The Village works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado	C	Communications	H&M	Health & Medical
		L	Landslides			E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-37
Pontoon Beach Hazard Mitigation Actions
(Sheet 4 of 9)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install backup power source(s) at village-owned critical facilities and infrastructure systems to establish resilient and reliable power supplies, maintain continuity of government/operations, and mitigate risk to Community Lifelines in the event of a prolonged power outage.	EC, EH, EQ, F, L, LF, MMH, SS, SWS, T	C S&S T WS	S&IP	Large SVI: 0.1764 – 0.6833 CDRZ: Yes CEJST: Yes EDRC: No	---	Yes	3, 5	HM/HL	Medium/High	President / Village Board	5-10 years	Village General Fund / FEMA HMA	Existing (2020)
Purchase and install a storm warning siren system to establish a Communications Community Lifeline essential human health and safety. Currently there are no warning sirens located within the Village.	SS, T	---	S&IP E&A	Large SVI: 0.1764 – 0.6833 CDRZ: Yes CEJST: Yes EDRC: No	---	---	2	HM/HL	Medium/High	President / Village Board	1-3 years	Village General Fund / FEMA HMA	Existing (2020)
Construct stormwater detention/retention basins to store stormwater runoff and alleviate drainage/flooding problems.	F, SS	S&S	S&IP	Medium SVI: 0.1764 – 0.6833 CDRZ: Yes CEJST: Yes EDRC: No	Yes	Yes	3, 5	HM	Medium/High	President / Village Board	10-15 years	Village General Fund / FEMA HMA	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 5,900 individuals). The Village works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards

Hazard(s) to be Mitigated:			
DR	Drought	LF	Levee Failure
EC	Extreme Cold	MMH	Man-Made Hazard
EH	Excessive Heat	SS	Severe Storm
EQ	Earthquake	SWS	Severe Winter Storm
F	Flood	T	Tornado
L	Landslides		

Type of Mitigation Activity:			
E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
Community Lifelines to be Mitigated:			
C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FHS	Food, Hydration, Shelter	T	Transportation
HM	Hazardous Material	WS	Water Systems

Figure MIT-37
Pontoon Beach Hazard Mitigation Actions
(Sheet 5 of 9)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Elevate flood-prone structures out of the base floodplain.	F	S&S	S&IP	Small SVI: 0.1764 – 0.6833 CDRZ: Yes CEJST: Yes EDRC: No	---	Yes	2, 4, 6	HM	Medium/High	President / Village Board	5-10 years	Village General Fund / FEMA HMA	Existing (2020)
Obtain Flood Elevation Certificates for properties located in Special Flood Hazard Areas.	F	S&S	LP&R	Small SVI: 0.1764 – 0.6833 CDRZ: Yes CEJST: Yes EDRC: No	Yes	Yes	3, 4, 6	LM	Low/High	Building Inspector	5-10 years	Village Local Resources	Existing (2020)
Develop and distribute educational materials to the general public on flood protection and proofing/retrofitting of existing homes.	F	S&S	E&A	Medium SVI: 0.1764 – 0.6833 CDRZ: Yes CEJST: Yes EDRC: No	---	---	1, 2	LM	Low/Medium	Building Inspector	1-3 years	Village Local Resources	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

† Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 5,900 individuals). The Village works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
		EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EH	Excessive Heat	SS	Severe Storm				Projects
		EQ	Earthquake	SWS	Severe Winter Storm				
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	F	Flood	T	Tornado	Community Lifelines to be Mitigated:			
		L	Landslides			C	Communications	H&M	Health & Medical
						E	Energy (Power & Fuel)	S&S	Safety & Security
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards					FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-37
Pontoon Beach Hazard Mitigation Actions
(Sheet 6 of 9)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Implement streambank improvements to restore stream channels damaged by high water or flooding and stabilize streambanks affected by erosion. Locations include Judy's Creek, Canteen Creek, Schoolhouse Branch, Judy's Branch, Burdick Brand and/or Long Lake.	F, SS	S&S	NSP S&IP	Medium SVI: 0.1764 – 0.6833 CDRZ: Yes CEJST: Yes EDRC: No	---	Yes	4, 6, 8	HM	Medium/Medium	President / Village Board	5-10 years	Village General Fund / FEMA HMA / IDOA Streambank Stabilization & Restoration Program	Existing (2020)
Retrofit existing Village-owned buildings and critical facilities to current earthquake code standards and harden infrastructure to meet earthquake design guidelines to mitigate damage from an earthquake event.	EQ	S&S	S&IP	Small SVI: 0.1764 – 0.6833 CDRZ: Yes CEJST: Yes EDRC: No	---	Yes	3, 5, 8	LM	High/Medium	President / Village Board	15-20 years	Village General Fund / FEMA HMA	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 5,900 individuals). The Village works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood L Landslides	LF Levee Failure MMH Man-Made Hazard SS Severe Storm SWS Severe Winter Storm T Tornado
LM		E&A Education & Awareness LP&R Local Plans & Regulations NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
HL		
LL		Community Lifelines to be Mitigated: C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-37
Pontoon Beach Hazard Mitigation Actions
(Sheet 7 of 9)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Develop and distribute educational materials to the general public on measures that can be taken to avoid structure damage related to earthquakes.	EQ	---	E&A	Large SVI: 0.1764 – 0.6833 CDRZ: Yes CEJST: Yes EDRC: No	---	---	1, 2	LM/LL	Low/Medium	President / Village Board	2-5 years	Village Local Resources	Existing (2020)
Adopt, enforce & update building codes as needed to reduce structure vulnerability to seismic activity.	EQ	---	LP&R	Large SVI: 0.1764 – 0.6833 CDRZ: Yes CEJST: Yes EDRC: No	Yes	Yes	2, 4, 8	HL	Low/High	President Village Board / Building Inspector	2-4 years	Village General Fund / FEMA HMA	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 5,900 individuals). The Village works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado	C	Communications	H&M	Health & Medical
		L	Landslides			E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-37
Pontoon Beach Hazard Mitigation Actions
(Sheet 8 of 9)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Evaluate the feasibility of participating in the National Flood Insurance Program's voluntary Community Rating System to reduce flood insurance premiums.	F	S&S	E&A	Medium SVI: 0.1764 – 0.6833 CDRZ: Yes CEJST: Yes EDRC: No	---	---	3, 4, 5	LM	Low/Medium	President Village Board / Building Inspector	3-5 years	Village Local Resources	Existing (2020)
Review new Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to exceed federal standards and reflect the revised FIRMs and present both for adoption. Enforce flood ordinance to ensure new development does not increase flood vulnerability or create unintended exposures to flooding.*	F	S&S	LP&R	Medium SVI: 0.1764 – 0.6833 CDRZ: Yes CEJST: Yes EDRC: No	Yes	Yes	2, 4, 6, 7	HM	Low/Medium	President Village Board / Building Inspector	1-5 years	Village Local Resources	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 5,900 individuals). The Village works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
		EH	Excessive Heat	SS	Severe Storm				
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm	Community Lifelines to be Mitigated:			
		F	Flood	T	Tornado	C	Communications	H&M	Health & Medical
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	L	Landslides			E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-37
Pontoon Beach Hazard Mitigation Actions
(Sheet 9 of 9)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Continue to make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.*	F	S&S	E&A	Medium SVI: 0.1764 – 0.6833 CDRZ: Yes CEJST: Yes EDRC: No	Yes	---	1, 2, 6, 7	LM	Low/Medium	Building Inspector	1-5 years	Village Local Resources	Existing (2020)
Make City officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.*	F	S&S	E&A	Medium SVI: 0.1764 – 0.6833 CDRZ: Yes CEJST: Yes EDRC: No	Yes	---	1	LM	Low/Medium	President Village Board / Building Inspector	1-5 years	Village Local Resources	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 5,900 individuals). The Village works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

* Mitigation action to ensure continued compliance with NFIP.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado				
		L	Landslides						
		Community Lifelines to be Mitigated:							
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-38
Roxana Hazard Mitigation Actions
(Sheet 1 of 4)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Line sanitary sewer line section and mains to eliminate stormwater inflow and infiltration reducing the amount of stormwater entering the wastewater treatment system and improving capacity, function and reliability thus increasing system resilience, prevent sewage backups, and mitigate risk to a Community Lifeline.	F, SS	WS	S&IP	Medium SVI: 0.4010 – 0.5843 CEJST: Yes EDRC: No	Yes	Yes	3, 5	HM	Medium/High	President / Board of Trustees	2-5 years	Village General Fund / IEPA SRF – WPCLP / DCEO CDBG	New
Upgrade storm warning siren system, including installing additional sirens in underserved areas, to maximize the system’s effectiveness and ensure continued operations of a Community Lifeline essential to human health and safety.	SS, T	C	S&IP E&A	Large SVI: 0.4010 – 0.5843 CEJST: Yes EDRC: No	---	---	2	HM/HL	Medium/High	President / Board of Trustees	1-3 years	Village General Fund / FEMA HMA	New
Bury power lines to village-owned critical facilities and infrastructure to establish a resilient and reliable power supply, improve resiliency, limit service disruptions, and mitigate risk to Community Lifelines.	SS, SWS, T	C E S&S T WS	S&IP	Large SVI: 0.4010 – 0.5843 CEJST: Yes EDRC: No	Yes	Yes	3, 5	HM/HL	Medium/High	President / Board of Trustees	2-5 years	Village General Fund / FEMA HMA	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 1,500 individuals). The Village works hard to provide even the most critical of services to residents, but it’s a struggle. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood	LF Levee Failure MMH Man-Made Hazard SS Severe Storm SWS Severe Winter Storm T Tornado
LM		E&A Education & Awareness LP&R Local Plans & Regulations
HL		NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LL		
		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-38
Roxana Hazard Mitigation Actions
(Sheet 2 of 4)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Trim and manage trees to minimize the number and duration of service disruptions, improve community resilience, and mitigate risk to Community Lifelines.	SS, SWS, T	C E T	S&IP	Medium SVI: 0.4010 – 0.5843 CEJST: Yes EDRC: No	Yes	Yes	3, 5	LM/LL	Low/Medium	President / Board of Trustees	1-3 years	Village General Fund	New
Clean debris/obstructions out of roadway culverts and drainage structures within the City to maximize carrying capacity, reduce/prevent drainage problems, and mitigate risk to Community Lifelines.	F, SS	T	S&IP	Medium SVI: 0.4010 – 0.5843 CEJST: Yes EDRC: No	Yes	Yes	3, 5	LM	Low/Medium	President / Board of Trustees	1-3 years	Village Local Resources	New
Upsize select roadway culverts to increase carrying capacity, better manage stormwater runoff, alleviate recurring drainage/flooding problems, and ensure system resilience and functionality.	F, SS	T	S&IP	Medium SVI: 0.4010 – 0.5843 CEJST: Yes EDRC: No	Yes	Yes	3, 5	HM	Medium/High	President / Board of Trustees	1-3 years	Village General Fund / IDOT Local Roads	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 1,500 individuals). The Village works hard to provide even the most critical of services to residents, but it’s a struggle. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado	C	Communications	H&M	Health & Medical
						E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-38
Roxana Hazard Mitigation Actions
(Sheet 3 of 4)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Establish digital coordinates for all critical facilities/infrastructure for use in GIS mapping applications. This information can be used to determine which critical facilities/infrastructure have the potential to be threatened by natural and man-made hazard events.	DR, EC, EH, EQ, F, LF, MMH, SS, SWS, T	C E FHS S&S T	LP&R	Large SVI: 0.4010 – 0.5843 CEJST: Yes EDRC: No	---	---	3, 5, 8	LM/LL	Low/Medium	President / Board of Trustees	2-5 years	Village General Fund	New
Upgrade drinking water system (i.e., lines, mains, fire hydrants, valves, etc.) to incorporate distribution redundancies to increase system resilience, ensure a constant supply of water for residents, aid in fire suppression during hazard events, and safeguard the functionality of a Community Lifeline.	EQ, F, MMH, SS, SWS, T	WS	S&IP	Large SVI: 0.4010 – 0.5843 CEJST: Yes EDRC: No	Yes	Yes	3, 5	HM/HL	High/High	President / Board of Trustees	2-5 years	Village General Fund / IEPA SRF – PWSLP	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 1,500 individuals). The Village works hard to provide even the most critical of services to residents, but it’s a struggle. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado				
						Community Lifelines to be Mitigated:			
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-38
Roxana Hazard Mitigation Actions
(Sheet 4 of 4)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Review new Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to exceed federal standards and reflect the revised FIRMs and present both for adoption. Enforce flood ordinance to ensure new development does not increase flood vulnerability or create unintended exposures to flooding.*	F	S&S	LP&R	Small SVI: 0.4010 – 0.5843 CEJST: Yes EDRC: No	Yes	Yes	2, 4, 6, 7	HM	Low/Medium	President Board of Trustees / Floodplain Administrator	1-5 years	Village Local Resources	New
Continue to make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.*	F	S&S	E&A	Small SVI: 0.4010 – 0.5843 CEJST: Yes EDRC: No	Yes	---	1, 2, 6, 7	LM	Low/Medium	President Board of Trustees / Floodplain Administrator	1-5 years	Village Local Resources	New
Make Village officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.*	F	S&S	E&A	Small SVI: 0.4010 – 0.5843 CEJST: Yes EDRC: No	Yes	---	1	LM	Low/Medium	President Board of Trustees / Floodplain Administrator	1-5 years	Village Local Resources	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

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* Mitigation action to ensure continued compliance with NFIP.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood	LF Levee Failure MMH Man-Made Hazard SS Severe Storm SWS Severe Winter Storm T Tornado
LM		E&A Education & Awareness LP&R Local Plans & Regulations
HL		NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LL		
		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-39
Roxana Community Unit School District #1 Hazard Mitigation Actions
(Sheet 1 of 2)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install standby emergency backup generators at District buildings to establish resilient and reliable power supplies in order to maintain continuity of operations, ensure sustained functionality during extended power outages, and mitigate risk to Community Lifelines.	EC, EH, EQ, F, MMH, SS, SWS, T	S&S	S&IP	Large SVI: 0.0920 - 06328 CEJST: Yes/No	---	Yes	2, 3, 5	HM/HL	High/High	Superintendent / Board of Education	2 years	District General Fund / FEMA HMA	New
Install hardening materials (i.e., window safety film, roof anchoring systems, shatterproof/ impact resistant glass, hail resistant doors/shingles, etc.) at District buildings to increase resilience to natural hazards, maintain continuity of operations, protect staff and students, and mitigate risk to Community Lifelines.	EQ, SS, T	S&S	S&IP	Large SVI: 0.0920 - 06328 CEJST: Yes/No	---	Yes	2, 3, 5	HM/HL	Medium/High	Superintendent / Board of Education	1 year	District General Fund / FEMA HMA	New
Trim and/or remove trees on school campuses to minimize the number and duration of service disruptions, improve resilience, and mitigate risk to Community Lifelines.	SS, SWS, T	C E T	S&IP	Small SVI: 0.0920 - 06328 CEJST: Yes/No	Yes	Yes	3, 5	LM/LL	Low/Medium	Superintendent / Board of Education	2 years	District General Fund	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the budgetary constraints experienced by a school district of this size (serving approx. 11,000 individuals in a 15 square-mile area). Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
		EQ	Earthquake	SWS	Severe Winter Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	F	Flood	T	Tornado				
		Community Lifelines to be Mitigated:							
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-39
Roxana Community Unit School District #1 Hazard Mitigation Actions
(Sheet 2 of 2)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Educate students and staff about the natural and man-made hazards that have the potential to impact the District and the proactive actions they can take to reduce their risks.	DR, EC, EH, EQ, F, LF, MMH, SS, SWS, T	---	E&A	Large SVI: 0.0920 - 06328 CEJST: Yes/No	---	---	2	LM/LL	Low/Medium	Superintendent / Board of Education	1-5 years	District Local Resources	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the budgetary constraints experienced by a school district of this size (serving approx. 11,000 individuals in a 15 square-mile area). Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado	C	Communications	H&M	Health & Medical
						E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-40
South Roxana Fire Protection District Hazard Mitigation Actions

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install a standby emergency generator at the fire station to establish a resilient and reliable power supply, ensure sustained functionality during extended power outages, maintain continuity of operations, and mitigate risk to a Community Lifeline.	EC, EH, EQ, F, MMH, SS, SWS, T	S&S	S&IP	Large SVI: 0.4504 – 0.5843 CEJST: No	---	Yes	2, 3, 5	HM/HL	Medium/High	Fire Chief / Board of Trustees	2-5 years	FPD General Fund / FEMA HMA	New
Make public information materials available to District residents that detail the risks to life and property associated with the natural and man-made hazards that impact the District and the proactive approaches they can take to reduce their risk.	DR, EC, EH, EQ, F, LF, MMH, SS, SWS, T	---	E&A	Large SVI: 0.4504 – 0.5843 CEJST: No	---	---	1, 2	LM/LL	Low/Medium	Fire Chief / Board of Trustees	1-5 years	FPD Local Resources	New

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[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a small, all-volunteer fire protection district of this size (serving approx. 2,200 individuals in a service area of 2 square miles). Additional funding is necessary if implementation is to be achieved.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
		EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EH	Excessive Heat	SS	Severe Storm				Projects
		EQ	Earthquake	SWS	Severe Winter Storm				
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	F	Flood	T	Tornado	Community Lifelines to be Mitigated:			
						C	Communications	H&M	Health & Medical
						E	Energy (Power & Fuel)	S&S	Safety & Security
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards					FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-41
Southern Illinois University Edwardsville Hazard Mitigation Actions
(Sheet 1 of 2)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Design and construct a multi-use Emergency Operations Center (EOC) that serves as a central command and control facility responsible for carrying out emergency management and ensuring continuity of operations for the University during hazard events.	EC, EH, EQ, F, L, LF, MMH, SS, SWS, T	C S&S	S&IP	Large SVI: 0.5385 CEJST: No	Yes	Yes	2, 3, 5	HM/HL	High/High	Police Chief / Facilities Management Director / Vice Chancellor of Administration	2-3 years	University General Fund	New
Purchase portable, trailer-mounted message boards to alert the students, staff, and the public of hazardous conditions associated with hazard events.	EC, EH, EQ, F, L, LF, MMH, SS, SWS, T	---	E&A	Large SVI: 0.5385 CEJST: No	---	---	2	LM/LL	Medium/Medium	Police Chief	1 year	University General Fund	New
Purchase portable emergency backup generators for use at critical facilities/ infrastructure on campus to establish resilient and reliable power supplies, maintain continuity of operations, and mitigate risk to Community Lifelines during prolonged power outages.	EC, EH, EQ, F, L, LF, MMH, SS, SWS, T	C S&S T WS	S&IP	Large SVI: 0.5385 CEJST: No	---	Yes	3, 5	HM/HL	Medium/High	Facilities Management Director	1-2 years	University General Fund / FEMA HMA	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the budgetary constraints experienced by a university of this size (approx. 11,900 enrolled individuals). Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado				
		L	Landslides						
						Community Lifelines to be Mitigated:			
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-41
Southern Illinois University Edwardsville Hazard Mitigation Actions
(Sheet 2 of 2)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Upgrade storm warning siren system, including system control software to maximize the system's effectiveness and ensure continued operations of a Community Lifeline essential to human health and safety.	SS, T	C	S&IP E&A	Large SVI: 0.5385 CEJST: No	---	---	2	HM/HL	Medium/High	Police Chief / Facilities Management Director / Vice Chancellor of Administration	5 years	University General Fund / FEMA HMA	New
Purchase and install a radio repeater system to extend the radio system's range of communication, improve signal reliability and system resilience, maintain continuity of operations allowing for the exchange of critical communications across departments, agencies, and jurisdictions, and ensure continued operations of a Communications Community Lifeline.	EQ, F, L, LF, MMH, SS, SWS, T	C	S&IP	Large SVI: 0.5385 CEJST: No	---	Yes	2, 3, 5	HM/HL	Medium/High	Police Chief / Facilities Management Director / Vice Chancellor of Administration	5 years	University General Fund / FEMA HMA	New
Educate students and staff about the natural and man-made hazards that have the potential to impact the Campus and the proactive actions they can take to reduce their risks.	DR, EC, EH, EQ, F, L, LF, MMH, SS, SWS, T	---	E&A	Large SVI: 0.5385 CEJST: No	---	---	2	LM/LL	Low/Medium	Police Chief / Facilities Management Director / Vice Chancellor of Administration	1-5 years	University Local Resources	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of "Yes", and/or an Economically Disadvantaged Rural Community (EDRC) designation of "Yes" identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the budgetary constraints experienced by a university of this size (approx. 11,900 enrolled individuals). Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood L Landslides	LF Levee Failure MMH Man-Made Hazard SS Severe Storm SWS Severe Winter Storm T Tornado
LM		E&A Education & Awareness LP&R Local Plans & Regulations
HL		NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LL		
		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-42
St. Jacob Hazard Mitigation Actions
(Sheet 1 of 3)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Install storm drains along Douglas Street to better manage stormwater runoff, alleviate recurring drainage/flood problems experienced during heavy rain events, and ensure system resilience and functionality.	F, SS	T	S&IP	Small SVI: 0.0174 CEJST: No EDRC: No	Yes	Yes	3, 5	HM	Medium/High	Public Works Superintendent	1-5 years	Village General Fund / IEPA SRF – WPCLP / FEMA HMA	New
Install storm drains on east side of the Village to better manage stormwater runoff, alleviate recurring drainage/flood problems experienced during heavy rain events, and ensure system resilience and functionality.	F, SS	T	S&IP	Small SVI: 0.0174 CEJST: No EDRC: No	Yes	Yes	3, 5	HM	Medium/High	Public Works Superintendent	1-5 years	Village General Fund / IEPA SRF – WPCLP / FEMA HMA	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (less than 1,400 individuals). The Village works hard to provide even the most critical of services to residents, but it’s a struggle. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
		EC	Extreme Cold	SS	Severe Storm	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EH	Excessive Heat	SWS	Severe Winter Storm				
		EQ	Earthquake	T	Tornado				
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	F	Flood			Community Lifelines to be Mitigated:			
						C	Communications	H&M	Health & Medical
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards					E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-42
St. Jacob Hazard Mitigation Actions
(Sheet 2 of 3)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Line sanitary sewer lines to eliminate stormwater inflow and infiltration and reduce the amount of stormwater entering the wastewater treatment system to increase system resilience, prevent sewage backups, and mitigate risk to a Community Lifeline.	F, SS	WS	S&IP	Medium SVI: 0.0174 CEJST: No EDRC: No	Yes	Yes	3, 5	HM	Medium/High	Public Works Superintendent	1-3 years	Village General Fund / IEPA SRF – WPCLP / DCEO CDBG	New
Construct a new water storage tank to ensure community resilience and reliability of a Community Lifeline, including sufficient reserve to aid in fire suppression.	DR, EC, EH, EQ, F, MMH, SS, SWS, T	WS	S&IP	Large SVI: 0.0174 CEJST: No EDRC: No	Yes	---	3, 5	HM/HL	High/High	Public Works Superintendent	1-5 years	Village General Fund / IEPA SRF – PWSLP	New
Purchase and install a solar array at the wastewater treatment plant/public works sheds to provide an alternative power supply that can mitigate disturbances in the power grid caused by hazard events and strengthen system resilience.	EC, EH, EQ, F, MMH, SS, SWS, T	WS	S&IP	Large SVI: 0.0174 CEJST: No EDRC: No	---	Yes	3, 5	HM/HL	Medium/High	Public Works Superintendent	3-10 years	Village General Fund / USDA REAP	New

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[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (less than 1,400 individuals). The Village works hard to provide even the most critical of services to residents, but it’s a struggle. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	SS	Severe Storm	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SWS	Severe Winter Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	T	Tornado				
		F	Flood						
						Community Lifelines to be Mitigated:			
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-42
St. Jacob Hazard Mitigation Actions
(Sheet 3 of 3)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Construct a water main loop from Bond-Madison Master Meter to water main at IL Rte. 4 & IL Rte. 40 to improve system resilience by creating redundancy to minimize service disruptions resulting from pipe and water main breaks, ensure continued functionality of a Community Lifeline, and aid in fire suppression during natural and man-made hazard events.	DR, EC, EH, EQ, F, MMH, SS, SWS, T	WS	S&IP	Large SVI: 0.0174 CEJST: No EDRC: No	Yes	Yes	3, 5	HM/HL	High/High	Public Works Superintendent	3-10 years	Village General Fund / IEPA SRF – PWSLP / DCEO CDBG	New
Make public information materials available to residents that detail the risks to life and property associated with the natural and man-made hazards that impact the Village and the proactive approaches they can take to reduce their risk.	DR, EC, EH, EQ, F, L, MMH, MS, SS, SWS, T	---	E&A	Large SVI: 0.0174 CEJST: No EDRC: No	---	---	1, 2	P2/P4	Low/Medium	President / Village Board	1-5 years	Village Local Resources	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (less than 1,400 individuals). The Village works hard to provide even the most critical of services to residents, but it’s a struggle. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	SS	Severe Storm	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SWS	Severe Winter Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	T	Tornado				
		F	Flood						
		Community Lifelines to be Mitigated:							
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-43
St. Mary's Catholic School Hazard Mitigation Actions

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Improve drainage system (roof/perimeter drains, etc.) and drainage characteristics (grade/contour areas, etc.) around the schools to better manage stormwater runoff, alleviate drainage/flooding problems that occur during/after heavy rain events, and ensure system resilience and functionality.	F, SS	S&S	S&IP	Large SVI: 0.0628 – 0.5385 CEJST: No	---	Yes	3, 5	HM	Medium/High	Principal School Board / Maintenance Director	1-2 years	School General Fund	New
Install hardening materials (i.e., roof anchoring system, shatterproof/impact resistant glass, hail resistant doors/shingles, etc.) at the schools to increase building resilience to natural hazards, maintain continuity of operations, and protect staff and students.	EQ, SS, T	S&S	S&IP	Large SVI: 0.6208 – 0.7086 CEJST: Yes/No	---	Yes	2, 3, 5	HM/HL	Medium/High	Principal School Board / Maintenance Director	2 years	School General Fund	New
Educate students and staff about the natural and man-made hazards that have the potential to impact the area and the proactive actions they can take to reduce their risks.	DR, EC, EH, EQ, F, MMH, SS, SWS, T	---	E&A	Large SVI: 0.6208 – 0.7086 CEJST: Yes/No	---	---	2	LM/LL	Low/Medium	Principal	1-5 years	School Local Resources	New

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[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the budgetary constraints experienced by a small, private schools. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
		EC	Extreme Cold	SS	Severe Storm	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EH	Excessive Heat	SWS	Severe Winter Storm				
		EQ	Earthquake	T	Tornado				
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	F	Flood						
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards					Community Lifelines to be Mitigated:			
						C	Communications	H&M	Health & Medical
						E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-44
Troy Hazard Mitigation Actions
(Sheet 1 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Improve the utilization of the City's CodeRED mass emergency notification system to disseminate time sensitive alerts and warnings regarding natural and man-made hazard events to first responders/residents within the City.	EC, EH, EQ, F, MMH, SS, SWS, T	C	E&A	Large SVI: 0.0073 – 0.2607 CEJST: No EDRC: No	---	---	2	LM/LL	Low/Medium	Mayor / City Administrator / Public Works Director / Police Chief	5 years	City General Fund	New
Conduct sanitary sewer evaluation survey on remaining uninspected sewer infrastructure locations to identify and eliminate infiltration and inflow of storm water.	F, SS	WS	LP&R	Small SVI: 0.0073 – 0.2607 CEJST: No EDRC: No	---	---	3, 5	LM	Low/Medium	Mayor / City Administrator / Public Works Director / City Engineer	5 years	City General Fund	New
Line/upgrade sanitary sewer line sections and mains to eliminate stormwater infiltration, reduce the amount of stormwater entering the wastewater treatment system to improve capacity and increase system resilience, prevent sewage backups, and mitigate risk to a Community Lifeline.	F, SS	WS	S&IP	Medium SVI: 0.0073 – 0.2607 CEJST: No EDRC: No	Yes	Yes	3, 5	HM	Medium/High	Mayor / City Administrator / Public Works Director / City Engineer	5 years	City General Fund / IEPA SRF – WPCLP / DCEO CDBG	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 11,000 individuals). The City works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood	E&A Education & Awareness LP&R Local Plans & Regulations
LM	MMH Man-Made Hazard MS Mine Subsidence SS Severe Storm SWS Severe Winter Storm	NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
HL	T Tornado	
LL		
	Community Lifelines to be Mitigated:	
	C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material	H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-44
Troy Hazard Mitigation Actions
(Sheet 2 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Participate in the National Flood Insurance Program.	F	S&S	LP&R	Large SVI: 0.0073 – 0.2607 CEJST: No EDRC: No	---	---	2, 4, 6, 7	HM	Low/High	Mayor / City Administrator / Building & Zoning Administrator	1-3 years	City Local Resources	New
Review Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to exceed federal standards and reflect the new FIRMs and present both for adoption. Enforce flood ordinance to ensure new development does not increase flood vulnerability or create unintended exposures to flooding.*	F	S&S	LP&R	Small SVI: 0.0073 – 0.2607 CEJST: No EDRC: No	Yes	Yes	2, 4, 6, 7	HM	Low/High	Mayor City Council / City Administrator / Building & Zoning Administrator	1-3 years	City Local Resources	New
Make the new Flood Insurance Rate Maps available at the Building & Zoning Department to assist the public in considering where to construct new buildings.*	F	S&S	E&A	Small SVI: 0.0073 – 0.2607 CEJST: No EDRC: No	Yes	---	1, 2, 6, 7	LM	Low/Medium	City Administrator / Public Works Director / Building & Zoning Administrator	1-5 years	City Local Resources	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 11,000 individuals). The City works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

* Mitigation action to ensure compliance with NFIP.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood	MMH Man-Made Hazard MS Mine Subsidence SS Severe Storm SWS Severe Winter Storm T Tornado
LM		E&A Education & Awareness LP&R Local Plans & Regulations
HL		NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LL		
		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-44
Troy Hazard Mitigation Actions
(Sheet 3 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Make City officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.*	F	S&S	E&A	Small SVI: 0.0073 – 0.2607 CEJST: No EDRC: No	Yes	---	1	LM	Low/Medium	City Administrator / Building & Zoning Administrator	1-5 years	City Local Resources	New
Remove debris, vegetative overgrowth, snags, and drifts from streams and creeks within the City to maintain/increase carrying capacity, better manage stormwater runoff, and reduce/prevent drainage problems.	F, SS	S&S T	S&IP	Small SVI: 0.0073 – 0.2607 CEJST: No EDRC: No	Yes	Yes	3, 5	LM	Low/Medium	Mayor / City Administrator / Public Works Director / City Engineer	2-5 years	City Local Resources	New
Upgrade/upsized lift stations, lift station pumps, and force mains as needed to increase pump capacity, prevent sewer backups, maintain continuity of operations, improve system resilience, and mitigate risk to a Community Lifeline.	F, SS	WS	S&IP	Medium SVI: 0.0073 – 0.2607 CEJST: No EDRC: No	Yes	Yes	3, 5	HM	High/High	Mayor / City Administrator / Public Works Director / City Engineer	5-10 years	City General Fund / IEPA SRF – WPCLP / DCEO CDBG	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 11,000 individuals). The City works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood	MMH Man-Made Hazard MS Mine Subsidence SS Severe Storm SWS Severe Winter Storm T Tornado
LM		E&A Education & Awareness LP&R Local Plans & Regulations
HL		NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LL		
		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-44
Troy Hazard Mitigation Actions
(Sheet 4 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Remove debris and vegetative overgrowth from the Mill Pond regional detention basin to maintain/increase holding capacity, better manage stormwater runoff, and reduce drainage problems.	F, SS	S&S T	S&IP	Medium SVI: 0.0073 – 0.2607 CEJST: No EDRC: No	Yes	Yes	3, 5	LM	Low/Medium	Mayor / City Administrator / Public Works Director / City Engineer	2-5 years	City Local Resources	New
Purchase and install additional storm warning sirens in areas without coverage in the City to maximize the system's effectiveness and ensure continued operations of a Community Lifeline essential to human health and safety.	SS, T	C	S&IP E&A	Small SVI: 0.0073 – 0.2607 CEJST: No EDRC: No	---	---	2	HM/HL	Medium/High	Mayor / City Administrator / Police Chief / Public Works Director	1-2 years	City General Fund / FEMA HMA	New
Make public information materials available to residents that detail the risks to life and property associated with the natural and man-made hazards that impact the City and the proactive approaches they can take to reduce their risk.	DR, EC, EH, EQ, F, MMH, MS, SS, SWS, T	---	E&A	Large SVI: 0.0073 – 0.2607 CEJST: No EDRC: No	---	---	1, 2	LM/LL	Low/Medium	Mayor / City Administrator / Public Works Director / Police Chief	1-5 years	City Local Resources	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 11,000 individuals). The City works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood	MMH Man-Made Hazard MS Mine Subsidence SS Severe Storm SWS Severe Winter Storm T Tornado
LM		E&A Education & Awareness LP&R Local Plans & Regulations
HL		NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LL		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-44
Troy Hazard Mitigation Actions
(Sheet 5 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install emergency backup generators with automatic transfer switches at all lift stations within the City to establish a resilient and reliable power supply, maintain continuity of operations, and mitigate risk to a Community Lifeline.	EC, EH, EQ, F, MMH, SS, SWS, T	WS	S&IP	Large SVI: 0.0073 – 0.2607 CEJST: No EDRC: No	---	Yes	3, 5	HM/HL	Medium/High	Mayor / City Administrator / Public Works Director	1-3 years	City General Fund / FEMA HMA	Existing (2020)
Purchase and install emergency backup generators at the City Maintenance Building to establish a resilient and reliable power supply, maintain continuity of operations, and mitigate risk to a Community Lifeline.	EC, EH, EQ, F, MMH, SS, SWS, T	T	S&IP	Large SVI: 0.0073 – 0.2607 CEJST: No EDRC: No	---	Yes	3, 5	HM/HL	Medium/High	Mayor / City Administrator / Public Works Director	1-2 years	City General Fund / FEMA HMA	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 11,000 individuals). The City works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold	E&A Education & Awareness LP&R Local Plans & Regulations
LM	EH Excessive Heat EQ Earthquake	NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
HL	F Flood	
LL		
	MMH Man-Made Hazard MS Mine Subsidence SS Severe Storm SWS Severe Winter Storm T Tornado	
		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-44
Troy Hazard Mitigation Actions
(Sheet 6 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Design and construct a new multi-use Emergency Operations Center (EOC) with community safe room (built to high wind and seismic standards and equipped with an emergency backup generator) by connecting the Police Department and Building Department. The community safe room would also serve as a warming/cooling center and emergency shelter for City employees and residents.	EC, EH, EQ, F, MMH, MS, SS, SWS, T	C S&S	S&IP	Large SVI: 0.0073 – 0.2607 CEJST: No EDRC: No	Yes	---	2, 3, 5	HM/HL	High/High	Mayor / City Administrator / Police Chief	5-10 years	City General Fund / FEMA EOCGP HMA	Existing (2020)
Retrofit existing city-owned buildings and critical facilities to current earthquake code standards and harden infrastructure to meet earthquake design guidelines to increase resiliency.	EQ	S&S	S&IP	Large SVI: 0.0073 – 0.2607 CEJST: No EDRC: No	---	Yes	3, 5, 8	LM	High/Medium	Mayor / City Administrator / Public Works Director / City Engineer	15-20 years	City General Fund / FEMA HMA	Existing (2020)

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[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 11,000 individuals). The City works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MS	Mine Subsidence	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado	C	Communications	H&M	Health & Medical
						E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-44
Troy Hazard Mitigation Actions
(Sheet 7 of 7)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Develop and distribute educational materials to the general public on measures that can be taken to avoid structure damage related to earthquakes.	EQ	---	E&A	Large SVI: 0.0073 – 0.2607 CEJST: No EDRC: No	---	---	1, 2	LM/LL	Low/Medium	Mayor / City Administrator / Public Works Director	2-5 years	City Local Resources	Existing (2020)

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[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 11,000 individuals). The City works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MS	Mine Subsidence	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
		EH	Excessive Heat	SS	Severe Storm				
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	F	Flood	T	Tornado	Community Lifelines to be Mitigated:			
						C	Communications	H&M	Health & Medical
						E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-45 Troy Fire Protection District Hazard Mitigation Actions (Sheet 1 of 2)													
Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install a standby emergency generator at the fire station to establish a resilient and reliable power supply, ensure sustained functionality during extended power outages, maintain continuity of operations, and mitigate risk to a Community Lifeline.	EC, EH, EQ, F, MMH, SS, SWS, T	S&S	S&IP	Large SVI: 0.0073 – 0.2607 CEJST: No	---	Yes	2, 3, 5	HM/HL	Medium/High	Fire Chief / Board of Trustees	1-3 years	FPD General Fund / FEMA HMA	New
Identify dry hydrants and other water sources within the District that can be used as alternate filling stations to supply an uninterrupted flow of water to aid in fire suppression as necessary during natural hazard events.	DR, EC, EH, EQ, SS, SWS, T	S&S	LP&R E&A	Medium SVI: 0.0073 – 0.2607 CEJST: No	---	---	4, 5	LM/LL	Low/Medium	Fire Chief	2-5 years	FPD Local Resources	New
Make public materials and information materials available to District residents that detail the risks to life and property associated with the natural and man-made hazards that could impact District residents and identify approaches they can take to proactively reduce their risk.	DF, DR, EC, EH, EQ, F, L, MMH, MS, SS, SWS, T	---	E&A	Large SVI: 0.0073 – 0.2607 CEJST: No	---	---	1, 2	LM/LL	Low/Medium	Fire Chief	1-2 years	FPD Local Resources	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by an all-volunteer fire protection district of this size (serving approx. 17,000 individuals in a service area of 64 square miles). Additional funding is necessary if implementation is to be achieved.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DF Dam Failure DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood	E&A Education & Awareness LP&R Local Plans & Regulations NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LM	L Landslides MMH Man-Made Hazard MS Mine Subsidence SS Severe Storm SWS Severe Winter Storm T Tornado	
HL		Community Lifelines to be Mitigated:
LL		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-45
Troy Fire Protection District Hazard Mitigation Actions
(Sheet 2 of 2)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Distribute fire safety public information materials to District residents and assist residents in obtaining smoke/carbon monoxide detectors.	EC, EQ, SS, SWS, T	---	E&A	Large SVI: 0.0073 – 0.2607 CEJST: No	---	---	1, 2	LM/LL	Low/Medium	Fire Chief	1-2 years	FPD Local Resources	New
Raise awareness of the Madison County's Code Red notification system and its ability to disseminate time sensitive alerts and warnings about the natural and man-made hazard events that impact to District residents.	DF, DR, EC, EH, EQ, F, L, MMH, MS, SS, SWS, T	---	E&A	Large SVI: 0.0073 – 0.2607 CEJST: No	---	---	1, 2	LM/LL	Low/Medium	Fire Chief	1-2 years	FPD Local Resources	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by an all-volunteer fire protection district of this size (serving approx. 17,000 individuals in a service area of 64 square miles). Additional funding is necessary if implementation is to be achieved.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DF	Dam Failure	L	Landslides	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EC	Extreme Cold	MS	Mine Subsidence				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
		EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado				
						Community Lifelines to be Mitigated:			
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-46
Venice Hazard Mitigation Actions
(Sheet 1 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Line storm sewer lines to eliminate stormwater inflow and infiltration, better manage stormwater runoff, alleviate recurring drainage/flood problems, and ensure system resilience and functionality.	F, SS	WS	S&IP	Medium SVI: 0.8236 CEJST: Yes EDRC: Yes	Yes	Yes	3, 5	HM	Medium/High	Mayor / City Council	2-5 years	City General Fund / IEPA SRF – WPCLP / DCEO CDBG	New
Upgrade the City’s storm sewer system to better manage stormwater runoff and alleviate flooding/drainage problems.	F, SS	T	S&IP	Large SVI: 0.8236 CEJST: Yes EDRC: Yes	Yes	Yes	3, 5	HM	High/High	Mayor / City Council	3-5 years	City General Fund / IEPA SRF – FEMA HMA	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 1,500 individuals). The City works hard to maintain critical services to its residents, but it’s a struggle. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado	C	Communications	H&M	Health & Medical
						E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-46
Venice Hazard Mitigation Actions
(Sheet 2 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase portable pumps for use in removal of excess stormwater from critical facilities/ infrastructure during heavy rain/flood events to maintain continuity of government/ operations and ensure continued functionality of Community Lifelines.	F, SS	S&S T	S&IP	Medium SVI: 0.8236 CEJST: Yes EDRC: Yes	---	Yes	3, 5	LM	Low/Medium	Public Works Director	3 years	City General Fund	New
Clean debris/obstructions out of roadway culverts and drainage structures within the Village to maximize carrying capacity, reduce/prevent drainage problems, and mitigate risk to Community Lifelines.	F, SS	T	S&IP	Medium SVI: 0.8236 CEJST: Yes EDRC: Yes	Yes	Yes	3, 5	LM	Low/Medium	Mayor / City Council	2-4 years	City Local Resources	New
Make public information materials available to residents that detail the risks to life and property associated with the natural and man-made hazards that impact the City and the proactive approaches they can take to reduce their risk.	DR, EC, EH, EQ, F, LF, MMH, SS, SWS, T	---	E&A	Large SVI: 0.8236 CEJST: Yes EDRC: Yes	---	---	1, 2	LM/LL	Low/Medium	Mayor / City Council	1-5 years	City Local Resources	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

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Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood	LF Levee Failure MMH Man-Made Hazard SS Severe Storm SWS Severe Winter Storm T Tornado
LM		E&A Education & Awareness LP&R Local Plans & Regulations
HL		NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LL		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-46
Venice Hazard Mitigation Actions
(Sheet 3 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install backup power source(s) at city-owned critical facilities and infrastructure systems to establish resilient and reliable power supplies, maintain continuity of government/operations, and mitigate risk to Community Lifelines in the event of a prolonged power outage.	EC, EH, EQ, F, LF, MMH, SS, SWS, T	C S&S T WS	S&IP	Large SVI: 0.8236 CEJST: Yes EDRC: Yes	---	Yes	3, 5	HM/HL	Medium/High	Mayor / City Council	5-10 years	City General Fund / FEMA HMA	Existing (2020)
Purchase and install a call monitoring system (power loss notification/call system) at the police and fire stations to alert officials of power outages and surges and mitigate risk to Community Lifelines. Loss of power has the potential to impact services for the entire City.	EQ, MMH, SS, SWS, T	S&S	S&IP	Large SVI: 0.8236 CEJST: Yes EDRC: Yes	---	Yes	3, 5	LM/LL	Low/Medium	Mayor / City Council	2 years	City General Fund	Existing (2020)
Construct new storm sewer systems in subdivisions that lack a system to better manage stormwater runoff and alleviate recurring drainage problems.	F, SS	---	S&IP	Medium SVI: 0.8236 CEJST: Yes EDRC: Yes	Yes	Yes	3, 5	HM	High/High	Mayor / City Council	5-10 years	City General Fund / IEPA SRF – WPCLP / FEMA HMA	Existing (2020)

^s Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

† Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 1,500 individuals). The City works hard to maintain critical services to its residents, but it's a struggle. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold LF Levee Failure	E&A Education & Awareness LP&R Local Plans & Regulations NSP Natural Systems Protection
LM	EH Excessive Heat SS Severe Storm	S&IP Structure & Infrastructure Projects
HL	EQ Earthquake SWS Severe Winter Storm	
LL	F Flood T Tornado	
		Community Lifelines to be Mitigated:
		C Communications H&M Health & Medical
		E Energy (Power & Fuel) S&S Safety & Security
		FHS Food, Hydration, Shelter T Transportation
		HM Hazardous Material WS Water Systems

Figure MIT-46
Venice Hazard Mitigation Actions
(Sheet 4 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase new emergency alert system with satellite/cellular based control technology to deliver pertinent, real-time information to residents related to hazard event conditions and improve resiliency of a Community Lifeline.	EC, EH, EQ, F, LF, MMH, SS, SWS, T	C	S&IP E&A	Large SVI: 0.8236 CEJST: Yes EDRC: Yes	---	---	2	LM/LL	Medium/High	Mayor / City Council	3-5 years	City General Fund	Existing (2020)
Adopt, enforce & update building codes as needed to reduce structure vulnerability to seismic activity.	EQ	---	LP&R	Large SVI: 0.8236 CEJST: Yes EDRC: Yes	Yes	Yes	2, 4, 8	HL	Low/High	Mayor / City Council	2-4 years	City General Fund / FEMA HMA	Existing (2020)
Obtain Flood Elevation Certificates for properties located in Special Flood Hazard Areas.	F	S&S	LP&R	Medium SVI: 0.8236 CEJST: Yes EDRC: Yes	Yes	Yes	3, 4, 6	LM	Low/High	Mayor / City Council	2-4 years	City Local Resources	Existing (2020)
Develop and distribute educational materials to the general public on flood protection and proofing/retrofitting of existing homes.	F	S&S	E&A	Medium SVI: 0.8236 CEJST: Yes EDRC: Yes	---	---	1, 2	LM	Low/Medium	Mayor / City Council	1-3 years	City Local Resources	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 1,500 individuals). The City works hard to maintain critical services to its residents, but it’s a struggle. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood	LF Levee Failure MMH Man-Made Hazard SS Severe Storm SWS Severe Winter Storm T Tornado
LM		E&A Education & Awareness LP&R Local Plans & Regulations
HL		NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LL		
		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-46
Venice Hazard Mitigation Actions
(Sheet 5 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Develop and distribute educational materials to the general public on measures that can be taken to avoid structure damage related to earthquakes.	EQ	---	E&A	Large SVI: 0.8236 CEJST: Yes EDRC: Yes	---	---	1, 2	LM/LL	Low/Medium	Mayor / City Council	2-5 years	City Local Resources	Existing (2020)
Conduct a drainage study to evaluate the existing stormwater collection system's capacities and identify improvements/upgrades needed to alleviate recurring drainage/flooding problems, better manage stormwater and improve system resilience and functionality.	F, SS	S&S WS	LP&R	Medium SVI: 0.8236 CEJST: Yes EDRC: Yes	---	---	3, 4, 5	LM	Low/Medium	Mayor / City Council	2 years	City General Fund	Existing (2020)
Evaluate the feasibility of participating in the National Flood Insurance Program's voluntary Community Rating System to reduce flood insurance premiums.	F	S&S	E&A	Medium SVI: 0.8236 CEJST: Yes EDRC: Yes	---	---	3, 4, 5	LM	Low/Medium	Mayor City Council / Building & Zoning Administrator	3-5 years	City Local Resources	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of "Yes", and/or an Economically Disadvantaged Rural Community (EDRC) designation of "Yes" identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 1,500 individuals). The City works hard to maintain critical services to its residents, but it's a struggle. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado				
		Community Lifelines to be Mitigated:							
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-46
Venice Hazard Mitigation Actions
(Sheet 6 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Review new Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to exceed federal standards and reflect the revised FIRMs and present both for adoption. Enforce flood ordinance to ensure new development does not increase flood vulnerability or create unintended exposures to flooding.*	F	S&S	LP&R	Medium SVI: 0.8236 CEJST: Yes EDRC: Yes	Yes	Yes	2, 4, 6, 7	HM	Low/Medium	Mayor City Council / Building & Zoning Administrator	1-5 years	City Local Resources	Existing (2020)
Continue to make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.*	F	S&S	E&A	Medium SVI: 0.8236 CEJST: Yes EDRC: Yes	Yes	---	1, 2, 6, 7	LM	Low/Medium	Mayor City Council / Building & Zoning Administrator	1-5 years	City Local Resources	Existing (2020)
Make City officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.*	F	S&S	E&A	Medium SVI: 0.8236 CEJST: Yes EDRC: Yes	Yes	---	1	LM	Low/Medium	Mayor City Council / Building & Zoning Administrator	1-5 years	City Local Resources	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 1,500 individuals). The City works hard to maintain critical services to its residents, but it’s a struggle. Additional funding is necessary if implementation is to be achieved within the time frames specified.

* Mitigation action to ensure continued compliance with NFIP.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood	E&A Education & Awareness LP&R Local Plans & Regulations
LM	LF Levee Failure MMH Man-Made Hazard SS Severe Storm SWS Severe Winter Storm T Tornado	NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
HL		Community Lifelines to be Mitigated:
LL		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-47
Wood River Hazard Mitigation Actions
(Sheet 1 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Make public information materials available to residents that detail the risks to life and property associated with the natural and man-made hazards that impact the City and the proactive approaches they can take to reduce their risk.	DF, DR, EC, EH, EQ, F, L, LF, MMH, SS, SWS, T	---	E&A	Large SVI: 0.0920 – 0.6328 CEJST: No EDRC: No	---	---	1, 2	LM/LL	Low/Medium	Mayor / City Council	1-5 years	City Local Resources	New
Upgrade storm warning siren system, including installing additional sirens in underserved areas to maximize the system's effectiveness and ensure continued operations of a Community Lifeline essential to human health and safety.	SS, T	C	S&IP E&A	Medium SVI: 0.0920 – 0.6328 CEJST: No EDRC: No	---	---	2	HM/HL	Medium/High	Mayor / City Council	5 years	City General Fund / FEMA HMA	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 10,500 individuals). The City works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DF	Dam Failure	L	Landslides	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	DR	Drought	LF	Levee Failure	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
		EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado				
		Community Lifelines to be Mitigated:							
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-47
Wood River Hazard Mitigation Actions
(Sheet 2 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Separate combined sewer system and, where necessary, construct bioretention/detention basins to better manage stormwater runoff, reduce flow rates to wastewater treatment plant, increase system resilience, prevent damage to the collection systems and plant during flood events, and reduce the potential for waterborne disease outbreaks from a combined sewer overflow discharge event.	F, SS	WS	S&IP	Large SVI: 0.0920 – 0.6328 CEJST: No EDRC: No	Yes	Yes	3, 5	HM	High/High	Mayor / City Council	5-10 years	City General Fund / IEPA SRF – WPCLP / DCEO CDBG	Existing (2020)
Purchase and install an emergency backup generator at the Public Works Building to establish a resilient and reliable power supply, maintain continuity of operations, and mitigate risk to a Community Lifeline.	EC, EH, EQ, F, MMH, SS, SWS, T	T	S&IP	Large SVI: 0.0920 – 0.6328 CEJST: No EDRC: No	---	Yes	3, 5	HM/HL	Medium/High	Mayor / City Council	2-4 years	City General Fund / FEMA HMA	Existing (2020)
Purchase and install emergency backup generators with automatic transfer switches at all lift stations within the City to establish a resilient and reliable power supply, maintain continuity of operations, and mitigate risk to a Community Lifeline.	EC, EH, EQ, F, MMH, SS, SWS, T	WS	S&IP	Large SVI: 0.0920 – 0.6328 CEJST: No EDRC: No	---	Yes	3, 5	HM/HL	Medium/High	Mayor / City Council	5-10 years	City General Fund / FEMA HMA	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

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Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DF	Dam Failure	L	Landslides	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	DR	Drought	LF	Levee Failure	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
		EQ	Earthquake	SWS	Severe Winter Storm	C	Communications	H&M	Health & Medical
		F	Flood	T	Tornado	E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-47
Wood River Hazard Mitigation Actions
(Sheet 3 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install backup power source(s) at city-owned critical facilities and infrastructure systems to establish resilient and reliable power supplies, maintain continuity of government/operations, and mitigate risk to Community Lifelines in the event of a prolonged power outage.	DF, EC, EH, EQ, F, L, LF, MMH, SS, SWS, T	C S&S T WS	S&IP	Medium SVI: 0.0920 – 0.6328 CEJST: No EDRC: No	---	Yes	3, 5	HM/HL	Medium/High	Mayor / City Council	5-10 years	City General Fund / FEMA HMA	Existing (2020)
Acquire flood-prone properties and remove any existing structures.	F	S&S	S&IP NSP	Small SVI: 0.0920 – 0.6328 CEJST: No EDRC: No	---	Yes	2, 4, 6	HM	Medium/High	Mayor / City Council	5-10 years	City General Fund / FEMA HMA Swift Current	Existing (2020)
Construct stormwater detention/retention basins to store stormwater runoff and alleviate drainage/flooding problems.	F, SS	S&S	S&IP	Medium SVI: 0.0920 – 0.6328 CEJST: No EDRC: No	Yes	Yes	3, 5	HM	Medium/High	Mayor / City Council	10-15 years	City General Fund / FEMA HMA	Existing (2020)

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Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DF	Dam Failure	L	Landslides	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	DR	Drought	LF	Levee Failure	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
		EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado				
		Community Lifelines to be Mitigated:							
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-47
Wood River Hazard Mitigation Actions
(Sheet 4 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Develop and distribute educational materials to the general public on flood protection and proofing/retrofitting of existing homes.	F	S&S	E&A	Medium SVI: 0.0920 – 0.6328 CEJST: No EDRC: No	---	---	1, 2	LM	Low/Medium	Mayor / City Council	1-3 years	City Local Resources	Existing (2020)
Participate in the East St. Louis & Vicinity Ecosystem Restoration and Recreation Project to protect wetlands and floodplains.	F	S&S	NSP	Small SVI: 0.0920 – 0.6328 CEJST: No EDRC: No	---	---	4, 6	HM	Medium/High	Mayor / City Council	1-5 years	City Local Resources	Existing (2020)
Retrofit existing city-owned buildings and critical facilities to current earthquake code standards and harden infrastructure to meet earthquake design guidelines to mitigate damage from an earthquake event.	EQ	S&S	S&IP	Small SVI: 0.0920 – 0.6328 CEJST: No EDRC: No	---	Yes	3, 5, 8	LM	High/Medium	Mayor / City Council	15-20 years	City General Fund / FEMA HMA	Existing (2020)

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Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DF Dam Failure L Landslides	E&A Education & Awareness NSP Natural Systems Protection
	DR Drought LF Levee Failure	LP&R Local Plans & Regulations S&IP Structure & Infrastructure Projects
LM	EC Extreme Cold MMH Man-Made Hazard	
	EH Excessive Heat SS Severe Storm	
HL	EQ Earthquake SWS Severe Winter Storm	Community Lifelines to be Mitigated:
	F Flood T Tornado	C Communications H&M Health & Medical
LL		E Energy (Power & Fuel) S&S Safety & Security
		FHS Food, Hydration, Shelter T Transportation
		HM Hazardous Material WS Water Systems

Figure MIT-47
Wood River Hazard Mitigation Actions
(Sheet 5 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Develop and distribute educational materials to the general public on measures that can be taken to avoid structure damage related to earthquakes.	EQ	---	E&A	Small SVI: 0.0920 – 0.6328 CEJST: No EDRC: No	---	---	1, 2	LM/LL	Low/Medium	Mayor / City Council	2-5 years	City Local Resources	Existing (2020)
Adopt, enforce & update building codes as needed to reduce structure vulnerability to seismic activity.	EQ	---	LP&R	Large SVI: 0.0920 – 0.6328 CEJST: No EDRC: No	Yes	Yes	2, 4, 8	HL	Low/High	Mayor / City Council	2-4 years	City General Fund / FEMA HMA	Existing (2020)
Evaluate the feasibility of participating in the National Flood Insurance Program's voluntary Community Rating System to reduce flood insurance premiums.	F	S&S	E&A	Small SVI: 0.0920 – 0.6328 CEJST: No EDRC: No	---	---	3, 4, 5	LM	Low/Medium	Mayor City Council / Building Official	3-5 years	City Local Resources	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

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Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DF	Dam Failure	L	Landslides	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	DR	Drought	LF	Levee Failure	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
		EQ	Earthquake	SWS	Severe Winter Storm	C	Communications	H&M	Health & Medical
		F	Flood	T	Tornado	E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-47
Wood River Hazard Mitigation Actions
(Sheet 6 of 6)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Review new Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to exceed federal standards and reflect the revised FIRMs and present both for adoption. Enforce flood ordinance to ensure new development does not increase flood vulnerability or create unintended exposures to flooding.*	F	S&S	LP&R	Small SVI: 0.0920 – 0.6328 CEJST: No EDRC: No	Yes	Yes	2, 4, 6, 7	HM	Low/Medium	Mayor City Council / Building Official	1-5 years	City Local Resources	Existing (2020)
Continue to make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.*	F	S&S	E&A	Small SVI: 0.0920 – 0.6328 CEJST: No EDRC: No	Yes	---	1, 2, 6, 7	LM	Low/Medium	Building Official	1-5 years	City Local Resources	Existing (2020)
Make City officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.*	F	S&S	E&A	Small SVI: 0.0920 – 0.6328 CEJST: No EDRC: No	Yes	---	1	LM	Low/Medium	Building Official	1-5 years	City Local Resources	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a city of this size (approx. 10,500 individuals). The City works hard to maintain critical services to its residents. Additional funding is necessary if implementation is to be achieved within the time frames specified.

* Mitigation action to ensure continued compliance with NFIP.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DF Dam Failure L Landslides	E&A Education & Awareness NSP Natural Systems Protection
	DR Drought LF Levee Failure	LP&R Local Plans & Regulations S&IP Structure & Infrastructure Projects
LM	EC Extreme Cold MMH Man-Made Hazard	
	EH Excessive Heat SS Severe Storm	
HL	EQ Earthquake SWS Severe Winter Storm	Community Lifelines to be Mitigated:
	F Flood T Tornado	C Communications H&M Health & Medical
LL		E Energy (Power & Fuel) S&S Safety & Security
		FHS Food, Hydration, Shelter T Transportation
		HM Hazardous Material WS Water Systems

Figure MIT-48
Wood River Drainage & Levee District Hazard Mitigation Actions
(Sheet 1 of 5)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install standby emergency generators at the District's five largest stormwater pumping stations to establish resilient and reliable power supplies, maintain continuity of operations during extended power outages, and mitigate risk to Community Lifelines. If power is lost at any of these stations during a flood event, then Wood River, East Alton, Hartford, Roxana, and South Roxana would be impacted. Pump Stations include: East Alton No. 1, Wood River, East Alton No. 2, Hawthorne No. 1, and Grassy Lake.	F, SS	S&S	S&IP	Large SVI: 0.0920 – 0.6328 CEJST: Yes/No	Yes	Yes	3, 5	HM	High/High	Executive Director / Commissioners	1-3 years	WRDLD General Fund / FEMA HMA	New
Upgrade Rand Avenue Pump Station to increase pump capacity, improve system resilience, and ensure continued functionality of a Community Lifeline.	F, LF, SS	S&S	S&IP	Small SVI: 0.0920 – 0.6328 CEJST: Yes/No	---	Yes	3, 5	HM/HL	Medium/High	Executive Director / Commissioners	1-3 years	WRDLD General Fund / FEMA HMA	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a drainage and levee district of this size (protecting approx. 25,000 individuals). Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DF	Dam Failure	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EC	Extreme Cold	SS	Severe Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EH	Excessive Heat	SWS	Severe Winter Storm				
		EQ	Earthquake	T	Tornado				
		F	Flood						
		Community Lifelines to be Mitigated:							
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-48
Wood River Drainage & Levee District Hazard Mitigation Actions
(Sheet 2 of 5)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase a portable emergency generator for use at six of the District's smaller stormwater pumping stations to establish a resilient and reliable power supply, maintain continuity of operations during extended power outages, and mitigate risk to Community Lifelines. Pump Stations for potential use include: Lakeside, Virginia, Hawthorne No. 2, Canal Rd. No. 1, Canal Rd. No. 2, and Canal Rd. No. 3.	F, LF, SS	S&S	S&IP	Medium SVI: 0.0920 – 0.6328 CEJST: Yes/No	Yes	Yes	3, 5	HM	High/High	Executive Director / Commissioners	1-3 years	WRDLD General Fund / FEMA HMA	New
Line 84-inch gravity drain pipe at Wood River Pump Station to eliminate inflow and infiltration, increase system resilience, and mitigate risk to a Community Lifeline.	F, SS	S&S	S&IP	Medium SVI: 0.0920 – 0.6328 CEJST: Yes/No	---	Yes	3, 5	HM	Medium/High	Executive Director / Commissioners	2-5 years	WRDLD General Fund / IEPA SRF – WPCLP	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a drainage and levee district of this size (protecting approx. 25,000 individuals). Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DF	Dam Failure	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EC	Extreme Cold	SS	Severe Storm	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EH	Excessive Heat	SWS	Severe Winter Storm	C	Communications	H&M	Health & Medical
		EQ	Earthquake	T	Tornado	E	Energy (Power & Fuel)	S&S	Safety & Security
		F	Flood			FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-48
Wood River Drainage & Levee District Hazard Mitigation Actions
(Sheet 3 of 5)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Obtain a Nationwide Permit for dredging activities from US Army Corps of Engineers for Wood River Creek to remove built-up sediment and debris, increase carrying capacity, and alleviate flood problems.	F, SS	S&S	LP&R	Medium SVI: 0.0920 – 0.6328 CEJST: Yes/No	---	---	3, 5	LM/LL	Low/Medium	Executive Director / Commissioners	1-3 years	WRDLD Local Resources	New
Dredge Wood River Creek from its confluence with the Mississippi River upstream approximately 2.5 miles to where the East Fork and West Fork combine to remove built-up sediment and debris, increase carrying capacity, alleviate flood problems, and mitigate risk to a Community Lifeline.	F, LF, SS	S&S	S&IP	Medium SVI: 0.0920 – 0.6328 CEJST: Yes/No	Yes	Yes	3, 5	HM/HL	High/High	Executive Director / Commissioners	2-5 years	WRDLD General Fund / Legislative Award	New
Obtain a Nationwide Permit for dredging activities from US Army Corps of Engineers for Cahokia Diversion Channel to remove built-up sediment and debris, increase carrying capacity, and alleviate flood problems.	F, SS	S&S	LP&R	Medium SVI: 0.0920 – 0.6328 CEJST: Yes/No	---	---	3, 5	LM/LL	Low/Medium	Executive Director / Commissioners	1-3 years	WRDLD Local Resources	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a drainage and levee district of this size (protecting approx. 25,000 individuals). Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DF	Dam Failure	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EC	Extreme Cold	SS	Severe Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EH	Excessive Heat	SWS	Severe Winter Storm				
		EQ	Earthquake	T	Tornado				
		F	Flood						
		Community Lifelines to be Mitigated:							
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-48
Wood River Drainage & Levee District Hazard Mitigation Actions
(Sheet 4 of 5)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Dredge the Cahokia Diversion Channel from its confluence with the Mississippi River upstream approximately 5 miles to where Indian Creek enters the Channel to remove built-up sediment and debris, increase carrying capacity, alleviate flood problems, and mitigate risk to a Community Lifeline.	F, LF, SS	S&S	S&IP	Medium SVI: 0.0920 – 0.6328 CEJST: Yes/No	Yes	Yes	3, 5	HM/HL	High/High	Executive Director / Commissioners	2-5 years	WRDLD General Fund / Legislative Award	New
Provide the County EMA/Stormwater Coordinator with or partner with the County EMA/Stormwater Coordinator to develop Emergency Preparedness Plans/Inundation Maps for the District that identifies the extent of potential failures (water depth, speed of onset, warning times, etc.) for the levee system to address identified data deficiencies.	LF	S&S	LP&R E&A	Large SVI: 0.0920 – 0.6328 CEJST: Yes/No	---	---	1, 2, 4	LL	Low/Medium	Executive Director / Commissioners	5 years	WRDLD Local Resources / County	New
Make public information materials available to District residents that detail the risks to life and property associated with the natural and man-made hazards that impact the District and the proactive approaches they can take to reduce their risk.	DF, DR, EC, EH, EQ, F, LF, MMH, SS, SWS, T	---	E&A	Large SVI: 0.0920 – 0.6328 CEJST: Yes/No	---	---	1, 2	LM/LL	Low/Medium	Executive Director / Commissioners	1-5 years	WRDLD Local Resources	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a drainage and levee district of this size (protecting approx. 25,000 individuals). Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards

Hazard(s) to be Mitigated:			
DF	Dam Failure	LF	Levee Failure
DR	Drought	MMH	Man-Made Hazard
EC	Extreme Cold	SS	Severe Storm
EH	Excessive Heat	SWS	Severe Winter Storm
EQ	Earthquake	T	Tornado
F	Flood		

Type of Mitigation Activity:			
E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
Community Lifelines to be Mitigated:			
C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FHS	Food, Hydration, Shelter	T	Transportation
HM	Hazardous Material	WS	Water Systems

Figure MIT-48
Wood River Drainage & Levee District Hazard Mitigation Actions
(Sheet 5 of 5)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Conduct a district-wide drainage study to identify design solutions to better manage stormwater runoff, alleviate recurring drainage deficiencies experienced as a result of heavy rain events, increase storage and drainage capacity, ensure system resilience, ensure new municipal/private projects do not inundate existing pump station capacity, and mitigate risk to a Community Lifeline.	F, SS	S&S	LP&R	Large SVI: 0.0920 – 0.6328 CEJST: Yes/No	---	---	3, 5	LM	Medium/Medium	Executive Director / Commissioners	5 years	WRDLD General Fund	New
Wood River Creek Bank Stabilization – Install erosion protection measures/implement streambank stabilization techniques along the left descending bank of Wood River Creek at its confluence with the Mississippi River to mitigate bank erosion and scour and prevent future damage from occurring. Techniques include shaping the bank and installing geotextile and rip rap at least 24 inches thick along the bank.	F, SS	S&S	NSP S&IP	Small SVI: 0.0920 – 0.6328 CEJST: Yes/No	---	Yes	3, 5	HM	Medium/High	Executive Director / Commissioners	1-2 years	WRDLD General Fund / IDOA Streambank Stabilization & Restoration Program / FEMA HMA	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a drainage and levee district of this size (protecting approx. 25,000 individuals). Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DF	Dam Failure	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EC	Extreme Cold	SS	Severe Storm	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EH	Excessive Heat	SWS	Severe Winter Storm				
		EQ	Earthquake	T	Tornado	C	Communications	H&M	Health & Medical
		F	Flood			E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-49
Wood River-Hartford Elementary School District #15 Hazard Mitigation Actions

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Install hardening materials (i.e., window safety film, shatterproof/impact resistant glass, hail resistant doors/shingles, etc.) at the Lewis and Clark Campus to increase building resilience to natural hazards, maintain continuity of operations, protect staff and students, and mitigate risk to Community Lifelines.	EQ, SS, T	S&S	S&IP	Medium SVI: 0.0920 – 0.6328 CEJST: Yes/No	---	Yes	2, 3, 5	HM/HL	Medium/High	Superintendent / Buildings & Grounds Director	2-3 years	District General Fund / FEMA HMA	New
Educate students and staff about the natural and man-made hazards that have the potential to impact the District and the proactive actions they can take to reduce their risks.	DR, EC, EH, EQ, F, LF, MMH, SS, SWS, T	---	E&A	Large SVI: 0.0920 – 0.6328 CEJST: Yes/No	---	---	2	LM/LL	Low/Medium	Superintendent / Board of Education	1-5 years	District Local Resources	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the budgetary constraints experienced by a school district of this size (serving approx. 11,000 individuals in a 15 square-mile area). Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	LF	Levee Failure	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MMH	Man-Made Hazard	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm				
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado				
		Community Lifelines to be Mitigated:							
		C	Communications	H&M	Health & Medical				
		E	Energy (Power & Fuel)	S&S	Safety & Security				
		FHS	Food, Hydration, Shelter	T	Transportation				
		HM	Hazardous Material	WS	Water Systems				

Figure MIT-50
Worden Hazard Mitigation Actions
(Sheet 1 of 5)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Purchase and install a new storm warning siren with system control software to ensure continued operation of a Community Lifeline essential to human health and safety.	SS, T	C	S&IP	Medium SVI: 0.0628 CEJST: No EDRC: No	---	---	2	HM/HL	Medium/High	President / Board of Trustees	1 year	Village General Fund / FEMA HMA	New
Purchase and install an emergency backup generator with automatic transfer switch at Village Hall/Police Department to establish a resilient and reliable power supply, maintain continuity of government/operations, and mitigate risk to Community Lifelines.	EC, EH, EQ, F, MMH, SS, SWS, T	C S&S	S&IP	Large SVI: 0.0628 CEJST: No EDRC: No	---	Yes	3, 5	HM/HL	Medium/High	President / Board of Trustees	1 year	Village General Fund / FEMA HMA	New
Make public information materials available to residents that detail the risks to life and property associated with the natural and man-made hazards that impact the Village and the proactive approaches they can take to reduce their risk.	DR, EC, EH, EQ, F, MMH, MS, SS, SWS, T	---	E&A	SVI: 0.0628 CEJST: No EDRC: No	---	---	1, 2	LM/LL	Low/Medium	President / Board of Trustees	1-5 years	Village Local Resources	New

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 1,100 individuals). The Village works hard to provide even the most critical of services to residents, but it’s a struggle. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood	MMH Man-Made Hazard MS Mine Subsidence SS Severe Storm SWS Severe Winter Storm T Tornado
LM		E&A Education & Awareness LP&R Local Plans & Regulations
HL		NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LL		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-50
Worden Hazard Mitigation Actions
(Sheet 2 of 5)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
<i>Southeast Village Drainage Project:</i> Install storm sewer lines & cut drainage ditches in an area south of Wall St. & east of the Quercus Grove Bike Trail to alleviate recurring drainage/flooding problems, better manage storm water runoff, and improve community resilience.	F, SS	S&S	S&IP	Small SVI: 0.0628 CEJST: No EDRC: No	Yes	Ye	3, 5	HM	High/High	President / Board of Trustees	3 years	Village General Fund / IEPA SRF – WPCLP / DCEO CDBG / FEMA HMA	Existing (2020)
Install new force main at Pump Station G to accommodate increased flow during heavy rain/flood events & alleviate drainage problems.	F, SS	S&S	S&IP	Small SVI: 0.0628 CEJST: No EDRC: No	Yes	Ye	3, 5	HM	High/High	President / Board of Trustees	2 years	Village General Fund / IEPA SRF – WPCLP / DCEO CDBG	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 1,100 individuals). The Village works hard to provide even the most critical of services to residents, but it’s a struggle. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority		Hazard(s) to be Mitigated:				Type of Mitigation Activity:			
HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards	DR	Drought	MMH	Man-Made Hazard	E&A	Education & Awareness	NSP	Natural Systems Protection
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards	EC	Extreme Cold	MS	Mine Subsidence	LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards	EH	Excessive Heat	SS	Severe Storm	Community Lifelines to be Mitigated:			
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards	EQ	Earthquake	SWS	Severe Winter Storm				
		F	Flood	T	Tornado	C	Communications	H&M	Health & Medical
						E	Energy (Power & Fuel)	S&S	Safety & Security
						FHS	Food, Hydration, Shelter	T	Transportation
						HM	Hazardous Material	WS	Water Systems

Figure MIT-50
Worden Hazard Mitigation Actions
(Sheet 3 of 5)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Install new force main & upgrade pumps at Pump Station B to increase capacity & reduce the flow to Pump Station C, accommodate increased flow during heavy rain/flood events & alleviate drainage problems.	F, SS	S&S	S&IP	Small SVI: 0.0628 CEJST: No EDRC: No	Yes	Ye	3, 5	HM	High/High	President / Board of Trustees	2 years	Village General Fund / IEPA SRF – WPCLP / DCEO CDBG	Existing (2020)
Conduct sewer line reconnaissance study to identify locations where storm water infiltrates the system to increase system resilience.	F, SS	WS	LP&R	Medium SVI: 0.0628 CEJST: No EDRC: No	---	---	3, 5	LM	Medium/Medium	President / Board of Trustees	1 years	Village General Fund	Existing (2020)
Line sewer line sections to eliminate stormwater inflow and infiltration and reduce the amount of stormwater entering the wastewater treatment system to increase system resilience, prevent sewage backups, and mitigate risk to a Community Lifeline.	F, SS	WS	S&IP	Medium SVI: 0.0628 CEJST: No EDRC: No	Yes	Yes	3, 5	HM	Medium/High	President / Board of Trustees	3-10 years	Village General Fund / IEPA SRF – WPCLP / DCEO CDBG	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 1,100 individuals). The Village works hard to provide even the most critical of services to residents, but it’s a struggle. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood	MMH Man-Made Hazard MS Mine Subsidence SS Severe Storm SWS Severe Winter Storm T Tornado
LM		E&A Education & Awareness LP&R Local Plans & Regulations
HL		NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LL		
		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-50
Worden Hazard Mitigation Actions
(Sheet 4 of 5)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Designate former gymnasium as a warming/cooling center and emergency shelter.	EC, EH, EQ, F, MMH, MS, SS, SWS, T	---	LP&R	Medium SVI: 0.0628 CEJST: No EDRC: No	---	---	2	LM/LL	Low/Medium	President / Board of Trustees	3 years	Village Local Resources	Existing (2020)
Retrofit the former gymnasium to include a community safe room (built to high wind and seismic standards and equipped with an emergency backup generator and HVAC system) that can also serve as a warming/cooling center and emergency shelter for Village residents.	EC, EH, EQ, F, MMH, MS, SS, SWS, T	---	S&IP	Medium SVI: 0.0628 CEJST: No EDRC: No	---	Yes	2	HM/HL	High/High	President / Board of Trustees	3 years	Village General Fund / FEMA HMA	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 1,100 individuals). The Village works hard to provide even the most critical of services to residents, but it’s a struggle. Additional funding is necessary if implementation is to be achieved within the time frames specified.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold	E&A Education & Awareness LP&R Local Plans & Regulations
LM	EH Excessive Heat EQ Earthquake	NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
HL	F Flood	
LL		
	MMH Man-Made Hazard MS Mine Subsidence SS Severe Storm SWS Severe Winter Storm T Tornado	
		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

Figure MIT-50
Worden Hazard Mitigation Actions
(Sheet 5 of 5)

Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity	Population Affected (Size, SVI, CEJST, and/or EDRC) [§]	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Goal(s) Met	Priority	Cost/Benefit Analysis	Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s) [†]	Status
					New	Existing							
Review new Flood Insurance Rate Maps (FIRMs) when they become available. Update the flood ordinance to exceed federal standards and reflect the revised FIRMs and present both for adoption. Enforce flood ordinance to ensure new development does not increase flood vulnerability or create unintended exposures to flooding.*	F	S&S	LP&R	Small SVI: 0.0628 CEJST: No EDRC: No	Yes	Yes	2, 4, 6, 7	HM	Low/Medium	President / Board of Trustees	1-5 years	Village Local Resources	Existing (2020)
Continue to make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.*	F	S&S	E&A	Small SVI: 0.0628 CEJST: No EDRC: No	Yes	---	1, 2, 6, 7	LM	Low/Medium	President / Board of Trustees	1-5 years	Village Local Resources	Existing (2020)
Make City officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.*	F	S&S	E&A	Small SVI: 0.0628 CEJST: No EDRC: No	Yes	---	1	LM	Low/Medium	President / Board of Trustees	1-5 years	Village Local Resources	Existing (2020)

[§] Size refers to the general size of the population affected (i.e., small, medium, or large, while a Social Vulnerability Index (SVI) ranking of 0.6 or greater, a Climate and Economic Justice Screening Tool (CEJST) designation of “Yes”, and/or an Economically Disadvantaged Rural Community (EDRC) designation of “Yes” identifies potentially underserved communities and/or socially vulnerable populations using the SVI, CEJST, and EDRC as described in Section 1.2.

[†] Identifies the most likely funding source to be pursued for the activity/project described. However, if funding is unavailable through the most likely or other suggested sources, then implementation of medium to large-scale activities/projects is unlikely due to the financial constraints experienced by a village of this size (approx. 1,100 individuals). The Village works hard to provide even the most critical of services to residents, but it’s a struggle. Additional funding is necessary if implementation is to be achieved within the time frames specified.

* Mitigation action to ensure continued compliance with NFIP.

Acronyms

Priority	Hazard(s) to be Mitigated:	Type of Mitigation Activity:
HM	DR Drought EC Extreme Cold EH Excessive Heat EQ Earthquake F Flood	MMH Man-Made Hazard MS Mine Subsidence SS Severe Storm SWS Severe Winter Storm T Tornado
LM		E&A Education & Awareness LP&R Local Plans & Regulations
HL		NSP Natural Systems Protection S&IP Structure & Infrastructure Projects
LL		
		Community Lifelines to be Mitigated:
		C Communications E Energy (Power & Fuel) FHS Food, Hydration, Shelter HM Hazardous Material
		H&M Health & Medical S&S Safety & Security T Transportation WS Water Systems

7.0 PLAN MAINTENANCE

[Local Mitigation Planning Policy Guide Element D]

This section focuses on the Federal Emergency Management Agency (FEMA) requirements for maintaining and updating the Plan once it has been approved by FEMA and adopted by the participating jurisdictions. These requirements include:

- Establishing the method and schedule for monitoring, evaluating and updating the Plan (Local Mitigation Planning Policy Guide Elements D2-a, D2-b, & D2-c).
- Describing how participants will integrate the requirements of the Plan into other planning mechanisms (Local Mitigation Planning Policy Guide Elements D3-a, D3-b, & D3-c).
- Detailing how continued public participation will be obtained during the plan maintenance process (Local Mitigation Planning Policy Guide Elements D1-a).

These requirements ensure that the Plan remains an effective and relevant document. The following provides a detailed discussion of each requirement.

7.1 MONITORING, EVALUATING & UPDATING THE PLAN

[Local Mitigation Planning Policy Guide Element D2-a, D2-b, & D2-c]

Outlined below is a method and schedule for monitoring, evaluating, and updating the Plan. This method allows the participating jurisdictions to make necessary changes and updates to the Plan and track the implementation and results of the mitigation actions that have been undertaken.

7.1.1 Monitoring and Evaluating the Plan

The Plan update will be monitored and evaluated by a Plan Maintenance Subcommittee on an annual basis. The Subcommittee will be composed of the participating jurisdictions who sought Plan approval and other key members of the Committee. The Madison County Emergency Management Agency (EMA) will chair the Plan Maintenance Subcommittee.

The Madison County EMA will assume lead responsibility for monitoring and tracking the implementation status of the mitigation actions identified in the Plan update. It will be the responsibility of each Plan participant to provide the Madison County EMA with an annual progress report on the status of their existing mitigation actions and identify whether any actions need to be modified. New mitigation actions may be added to the Plan during the annual monitoring and evaluation period or at any time during the plan maintenance cycle by contacting the Madison County EMA and providing the appropriate information.

Monitoring & Evaluating

- ❖ A Plan Maintenance Subcommittee will be formed to monitor and evaluate the Plan update.
- ❖ The ***Plan update will be monitored and evaluated*** on an ***annual basis***.
- ❖ Each Plan participant will be responsible for providing an annual progress report on the status of their mitigation actions.
- ❖ Plan participants can add ***new mitigation actions*** to the Plan ***during the annual monitoring phase or by contacting*** the Madison County EMA.

The Madison County EMA together with the Plan Maintenance Subcommittee will also evaluate the Plan update on an annual basis to determine the effectiveness of the Plan at achieving its stated

purpose and goals. In order to evaluate the effectiveness of the Plan update, the Subcommittee will review the mitigation actions that have been successfully implemented and determine whether the action achieved the identified goal(s) and had the intended result (i.e., losses were avoided, or the vulnerability of hazard-prone areas were reduced).

The Subcommittee will also ask each Plan participant to identify any significant changes in development or priorities that have occurred within the previous 12 months; whether any plans, policies, regulations, or reports have been adopted or updated; and if any hazard-related damages to the jurisdiction's assets have been sustained (i.e., people, critical facilities, infrastructure, and systems, and/or natural, historic, and cultural resources).

In order to streamline the plan maintenance process, the Madison County EMA will provide each Plan participant with a Plan Maintenance Checklist along with the necessary forms to complete and return. **Appendix M** contains a copy of the Checklist and associated forms.

The Madison County EMA will then prepare a progress report detailing the results of the annual Plan monitoring and evaluation period and provide copies to the Subcommittee. The annual progress report will include:

- information on any hazard-related damages sustained by assets within the planning area during the previous year.
- implementation status of the mitigation actions identified in the Mitigation Strategy.
- identification of any new mitigation actions proposed by the Plan participants.
- information on changes in development, priorities, and planning and regulatory capabilities for the Plan participants.
- identification of how information will be disseminated to stakeholders and constituents on the Plan and its progress in effort to seek continued public participation.

If any existing mitigation actions are modified or new mitigation actions are identified for the Plan participants, then Section 6.6 of the Mitigation Strategy will be updated, and the Plan update resubmitted to the Illinois Emergency Management Agency and Office of Homeland Security (IEMA-OHS) and FEMA for reference.

On an as needed basis the Madison County EMA, in consultation with the Subcommittee, will evaluate requests from non-participating jurisdictions to “join” the Plan before the five-year update. Consideration will be given if certain conditions are met as outlined in Appendix D of *FEMA's Local Mitigation Planning Policy Guide*.

7.1.2 Updating the Plan

The Plan must be updated within five years of the Plan approval date indicated on the signed FEMA final approval letter (this date can be found in Section 8, Plan Adoption). This ensures that all the participating jurisdictions remain eligible to receive federal grant funds to implement those mitigation actions identified in this Plan.

The Madison County EMA, with assistance from the Plan Maintenance Subcommittee, will be responsible for updating the Plan. The update will incorporate all of the information gathered during the monitoring and evaluation phase and will also include:

- ❖ a review of the Mitigation Strategy, including potential updates to the mitigation goals and prioritization methodology;
- ❖ an evaluation of whether additional natural hazards need to be addressed or included in the Plan;
- ❖ a review of new hazard data that may affect the Risk Assessment Section;
- ❖ identification of any changes in priorities within each participating jurisdiction; and
- ❖ identification of any changes in development that have occurred in hazard prone areas that would increase or decrease the participating jurisdictions' vulnerability.

Updating the Plan

- ❖ The Madison County EMA, with assistance from the Plan Maintenance Subcommittee, will be responsible for updating the Plan.
- ❖ The Plan ***must be updated within 5 years of the date of the final approval letter*** provided by FEMA.
- ❖ Once the Plan update has received FEMA/IEMA-OHS approval, each participating jurisdiction ***must adopt the Plan to remain eligible to receive federal mitigation funds.***

A Planning Committee will be reformed to update the Plan and a public involvement strategy similar to the one employed for this Plan update will be implemented to ensure that the public and stakeholders have ample opportunities to become engaged and provide input during the development of the Plan update. In addition, any jurisdictions that did not take part in the Plan update may do so at this time. It will be the responsibility of these jurisdictions to provide all of the information needed to be integrated into the Plan update.

A public forum will be held to present the Plan update to the public for review and comment. The comments received at the public forum will be reviewed and incorporated into the Plan update. The Plan update will then be submitted to IEMA-OHS and FEMA for review and approval. ***Once the Plan update has received state and federal approval, FEMA requires that each of the participating jurisdictions adopt the Plan to remain eligible to receive federal funds to implement identified mitigation actions.***

7.2 INTEGRATING PLAN COMPONENTS INTO OTHER PLANNING MECHANISMS

[Local Mitigation Planning Policy Guide Element D3-a, D3-b, & D3-c]

As part of the planning process, the Committee identified each participating jurisdiction's existing capabilities (i.e., existing authorities, policies, programs, technical information, etc.) and resources available to support or accomplish mitigation and reduce long-term vulnerability. **Figures JC-1 to JC-16 and JC-18** identify the local planning mechanisms by jurisdiction available where hazard mitigation information/actions may be integrated. ***It will be the responsibility of each participating jurisdiction to integrate, where applicable, the mitigation strategy and other information contained in the Plan update into the planning mechanisms identified for their jurisdiction.***

Adoption of this Plan update will trigger each participating jurisdiction to review and, where appropriate, integrate the Plan into other available planning mechanisms. The Plan Maintenance

Subcommittee's annual review will help maintain awareness of the Plan among the participating jurisdictions and encourage active integration of the Plan into their day-to-day operations and planning mechanisms. Any time a mitigation action is slated for implementation by a participating jurisdiction, it will be integrated into their budget/capital improvement plan.

Several of the participating jurisdictions, including Collinsville, Edwardsville, Glen Carbon, and Maryville identified the need to adopt, review, and/or strengthen current policies or programs in the near future. Several of the participating jurisdictions, including America's Central Port, Livingston, Marine, St. Jacob, Venice, Edwardsville Township, Leef Township, Madison County ROE #41, and St. Mary's Catholic School have more limited capabilities to integrate the mitigation strategy and other information contained in the Plan update into existing planning mechanisms. The large to mid-sized municipalities are more likely to have the capabilities related to staff and organization, technical capability, fiscal situation, and political resolve to implement new programs and policies. The small to very small municipalities have extremely limited fiscal and staffing resources that will make it more difficult to implement new programs and policies.

7.3 CONTINUED PUBLIC INVOLVEMENT

[Local Mitigation Planning Policy Guide Element D1-a]

The County and participating jurisdictions understand the importance of continued public participation and will seek public input on the Plan update throughout the plan maintenance cycle. Any meetings held by the Plan Maintenance Subcommittee will be noticed and open to the public. Stakeholders and the public will be encouraged to participate and provide feedback. Following distribution of the annual progress report, each participating jurisdiction will be encouraged to discuss the findings at their monthly board/council meetings to help maintain awareness of the Plan and encourage integration of the Plan in day-to-day operations.

Participating jurisdictions will also be encouraged to make the annual progress report available via social media and on their websites, as available, and at their offices. As the lead organization responsible for maintaining the Plan update, the Madison County will also periodically post mitigation-related topics to social media including where to access the approved Plan, information on the hazards that have the potential to impact the County, interesting facts about each hazard, and no or low-cost actions that residents can take to reduce their risk from natural hazards.

A copy of the approved Plan will be maintained and available for review at the Madison County EMA Office and on the County's website. Individuals will be encouraged to provide feedback and submit comments for the next Plan update to the Madison County EMA Director. The comments received will be compiled and included in the annual progress report and considered for incorporation into the next Plan update. Separate Committee meetings and a public forum will be held prior to the next Plan update submittal to ensure that the public and stakeholders have ample opportunity to become engaged, provide input during the development of the Plan update, and comment on the proposed revision to the Plan update.

8.0 PLAN ADOPTION

[Local Mitigation Planning Policy Guide Element F2-a]

The final step in the planning process is the adoption of the approved Plan update by each participating jurisdiction. Each jurisdiction must formally adopt the Plan to become or remain eligible for federal grant funds to implement mitigation actions identified in this Plan.

8.1 PLAN ADOPTION PROCESS

Before the Plan update could be adopted by the participating jurisdictions, it was made available for public review and comment through a public forum and comment period. Comments received were incorporated into the Plan update and the Plan was then submitted to the Illinois Emergency Management Agency and Office of Homeland Security (IEMA-OHS) and the Federal Emergency Management Agency (FEMA) for their review and approval.

Upon receipt of the Approval Pending Adoption (APA) letter from FEMA, the Plan update was presented to the County and participating jurisdictions for adoption. ***Each participating jurisdiction was required to formally adopt*** the Plan to become or remain eligible to receive federal grant funds to implement the mitigation actions identified in this Plan. Any jurisdiction that chose not to adopt the Plan update did not affect the eligibility of those who did.

Figure PA-1 identifies the participating jurisdictions and the date each formally adopted the Plan update. Signed copies of the adoption resolutions are located in **Appendix N**. FEMA signed the final approval letter on (Date), which began the five-year approval period and set the expiration date of (Date) for the Plan.

Figure PA-1 Plan Adoption Dates			
Participating Jurisdiction	Plan Adoption Date	Participating Jurisdiction	Plan Adoption Date

9.0 REFERENCES

Provided below is a listing, by section, of the resources utilized to create this document.

1.0 INTRODUCTION

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2. Federal Emergency Management Agency. OpenFEMA Dataset: Disaster Declarations Summaries – V2. Excel Dataset. <<https://www.fema.gov/openfema-dataset-disaster-declarations-summaries-v1>>.
3. Federal Emergency Management Agency. Getting Started: Building Support for Mitigation Planning. FEMA 386-1. September 2002.
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1.2 County Profile

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2. Illinois Department of Public Health. IDPH Population Projections, Illinois, Chicago, and Illinois Counties by Age and Sex: July 1, 2015 to July 1, 2030 (2019 Edition). <<https://dph.illinois.gov/content/dam/soi/en/web/idph/files/publications/population-projections-report-2010-2030.pdf>>.
3. Illinois State Geological Survey. Physiographic Divisions of Illinois. Map. <<https://resources.isgs.illinois.edu/maps/physiographic-divisions-illinois>>.
4. Illinois State Water Survey. Major Watersheds of Illinois. Map. 2011. <https://www.isws.illinois.edu/docs/default-source/maps/major-watersheds-illinois-2000-01.pdf?sfvrsn=b7aba970_2>.
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12. United States Department of Agriculture. National Agricultural Statistics Service. Census of Agriculture. Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin. 2006. Agricultural Handbook 296. <https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051845.pdf>.
13. United States Department of Agriculture. Natural Resources Conservation Service. Soil Surveys by State. <<https://www.nrcs.usda.gov/conservation-basics/natural-resource-concerns/soil/soil-surveys-by-state>>.

2.0 PUBLIC INVOLVEMENT

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3.0 RISK ASSESSMENT

1. Changnon, Stanley A., et al. Climate Atlas of Illinois. Champaign, Illinois: Illinois State Water Survey, 2004.
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7. Illinois Environmental Protection Agency. Drinking Water Branch. Public Water Supply Systems Search. Database. <<http://water.epa.state.il.us/dww/index.jsp>>.
8. Illinois Environmental Protection Agency. Source Water Assessment Program Factsheets. Database. <<http://dataservices.epa.illinois.gov/swap/factsheet.aspx>>.

9. Madison County Multi-Jurisdictional All Hazards Mitigation Planning Committee. Assets Vulnerability Survey. Form.
10. Madison County Multi-Jurisdictional All Hazards Mitigation Planning Committee. Capability Assessment Worksheet. Form.
11. Madison County Multi-Jurisdictional All Hazards Mitigation Planning Committee. Critical Facilities & Infrastructure. Form.
12. Madison County Multi-Jurisdictional All Hazards Mitigation Planning Committee. Drinking Water Supply Worksheet. Form.
13. Madison County Multi-Jurisdictional All Hazards Mitigation Planning Committee. Identification of Severe Weather Shelters. Form.
14. Madison County Multi-Jurisdictional All Hazards Mitigation Planning Committee. Natural Hazard Events Questionnaire. Form.
15. Madison County Multi-Jurisdictional All Hazards Mitigation Planning Committee. Risk Priority Index Exercise. Form.
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