Franklin County, Illinois Multi-Hazard Mitigation Plan

A 2016 Update of the 2009 Countywide MHMP

FEMA

IEMA
ILLINOIS EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY ILLINOIS 1818 2005 EMERGENCY MANAGEMENT

GREATER EGYPT REGIONAL PLANNING & DEVELOPMENT COMMISSION

SIU Southern Illinois University CARBONDALE

Multi-Hazard Mitigation Plan

Franklin County, Illinois

Adoption Date: -- _____ --

Primary Point of Contact
Ryan Buckingham
Director of Emergency Management
Franklin County Emergency Management Agency
202 W. Main Street
Benton, IL 62812
Phone: (618) 439-4362
Email: ryan.buckingham@franklincountyema.com

Secondary Point of Contact
Gary A. Little
Deputy Director of Emergency Management
Franklin County Emergency Management Agency
202 W. Main Street
Benton, IL 62812
Phone: (618) 439-4362
Email: gary.little@franklincountyema.com

Acknowledgements

The Franklin County Multi-Hazard Mitigation Plan would not have been possible without the incredible feedback, input, and expertise provided by the County leadership, citizens, staff, federal and state agencies, and volunteers. We would like to give special thank you to the citizens not mentioned below who freely gave their time and input in hopes of building a stronger, more progressive County. Franklin County gratefully acknowledges the following people for the time, energy and resources given to create the Franklin County Multi-Hazard Mitigation Plan.

Franklin County Board

Randall Crocker, Chairman
Ken Hungate, Vice-Chairman
Neil Hargis
Tom Vaughn
Alan Price
David Rea
Stephen D. Leek
Jack C. Warren
Danny Melvin

Table of Contents

Section 1. Introduction

Hazard mitigation is any sustained action to reduce or eliminate long-term risk to human life and property from hazards. The Federal Emergency Management Agency (FEMA) makes reducing hazards one of its primary goals; hazard-mitigation planning and the subsequent implementation of mitigation projects, measures, and policies is a primary mechanism in achieving FEMA's goal.

The Multi-Hazard Mitigation Plan (MHMP) is a requirement of the Federal Disaster Mitigation Act of 2000 (DMA 2000). The development of a local government plan is required in order to maintain eligibility for certain federal disaster assistance and hazard mitigation funding programs. In order for the National Flood Insurance Program (NFIP) communities to be eligible for future mitigation funds, they must adopt an MHMP.

In recognition of the importance of planning in mitigation activities, FEMA created Hazus Multi-Hazard (Hazus-MH), a powerful geographic information system (GIS)-based disaster risk assessment tool. This tool enables communities of all sizes to estimate losses from floods, hurricanes, earthquakes, and other natural hazards and to measure the impact of various mitigation practices that might help reduce those losses. The Illinois Emergency Management Agency (IEMA) has determined that Hazus-MH should play a critical role in the risk assessments performed in Illinois.

Franklin County completed their first Multi-Hazard Mitigation Plan in 2009. Throughout the five-year planning cycle, the Franklin County Emergency Management Agency and Mitigation Planning Team reconvened to monitor, evaluate, and update the plan on an annual basis. The Natural Hazards Research and Mitigation Group at Southern Illinois University Carbondale (SIU), Greater Egypt Regional Planning and Development Commission (Greater Egypt) and Franklin County have joined efforts in updating the County's first mitigation plan. The update process addressed changes in the probability and impact of specific hazards to the county, as well as changes in land-use, population, and demographics. The plan incorporates detailed GIS and Hazus-MH Level 2 analyses to improve the risk assessment, and finally revised and updated mitigation strategies. This document hereby serves as Franklin County's Multi-Hazard Mitigation Plan update.

Section 2. Planning Process

2.1 Timeline

The MHMP update process is broken into a series of four meetings. These meetings were organized by SIU, Greater Egypt and hosted by the Franklin County Emergency Management Agency. At these meetings, various tasks were completed by SIU, Greater Egypt, and the Franklin County Mitigation Planning Team.

Meeting 1: Introduction of the MHMP process and organize resources. SIU gathered local resources that contributed to the detailed county risk assessment and presented the county's historical hazards. Based on this information, the Planning Team identified natural hazards to include in the plan, and ranked hazards by potential damages and occurrences.

Meeting 2: SIU presented the draft risk assessment, derived from the Hazus-MH and GIS modeling of the identified disasters, to the Planning Team. The general public was invited to this meeting through a series of newspaper articles and/or radio spots. At the end of the meeting, SIU encouraged the general public to ask questions and provide input to the planning process, fulfilling one of FEMA's requirements for public input.

Meeting 3: This meeting also consisted of a "brainstorming session." The Planning Team lent local knowledge to identify and prioritize mitigation strategies and projects that can address the threats identified in the risk assessment. FEMA requires the plan to contain mitigation strategies specific to each hazard and for each incorporated area within the county. At this meeting, SIU and Greater Egypt presented options for funding implementation of different mitigation strategies, including a written guide to be distributed to all participants.

Meeting 4: The Planning Team reviewed the draft plan and, proposed revisions, and accepted the plan after SIU incorporated the necessary changes. Subsequently, SIU forwarded the county MHMP to the mitigation staff at the Illinois Emergency Management Agency (IEMA) for review prior to submitting it to FEMA.

2.2 Jurisdiction Participation Information

Approximately thirty-one jurisdictions participated in the development of this MHMP with the intent of formally adopting the plan and subsequently fulfill the requirements of the DMA 2000. Various representatives from each jurisdictions were present at the meetings (see Section 2.3 Planning Team Information). Each jurisdiction falls under the one of the following categories: County, City, Village, Town, School, or Non-Profit Organization.

Participating Jurisdictions

Franklin County	Franklin Hosptial
Benton	Rend Lake Conservancy District
Mulkeytown	Rend Lake College
Sesser	

2.3 Planning Team Information

Ryan Buckingham, Franklin County EMA Coordinator, heads the Planning Team. The Planning Team includes representatives from various county departments, municipalities, and public and private utilities. Members of the Planning Team have a common vested interest in the County's long-term strategy to reduce disaster losses and break the cycle of disaster damage, reconstruction, and repeated damage. All members of the Planning Team actively participated in the meetings, reviewed and provided comments on the draft plan, participated in the public input process and the county's formal adoption of the plan.

Franklin County Planning Team Members

Jurisdiction	Name	Title
Franklin County	Ryan Buckingham	Director of Emergency Management
	Gary Little	Deputy Director of Emergency Management
	Rich Good	Emergency Planning Specialist
	Randall Crocker	County Board Chairman
	Ronda Koch	Director of Emergency Preparedness Bi-County Health Dept.
Benton	Gary Kraft	Mayor
	Erin Steinsultz	Library Director
Sesser	Jason Ashmore	Mayor
Franklin Hospital	Lori Hall	Administration Assistant
Rend Lake Conservancy District	Robert Clodi	Project Manager
Rend Lake College	Damon Sims	Deputy Chief of Police

The DMA 2000 planning regulations require that Planning Team members from each jurisdiction actively participate in the MHMP process. The Planning Team was actively involved on the following components:

- Attending the MHMP meetings
- Providing available assessment and parcel data and historical hazard information
- Reviewing and providing comments on the draft plans
- Coordinating and participating in the public input process
- Coordinating the formal adoption of the plan by the county

The first MHMP update meeting was held in Benton, Illinois on September 26th, 2014. Representatives from SIU explained the rationale behind the MHMP update process and answered questions from the participants. SIU representatives also provided an overview of GIS/Hazus-MH, described the timeline and the process of mitigation planning.

The Franklin County Planning Team assembled for four formal meetings. Each meeting was approximately two hours in length. Additional meetings were held outside of the four formal meetings. Appendix A includes the minutes for all meetings. During these meetings, the Planning Team successfully identified critical facilities, reviewed hazard data and maps, identified and assessed the effectiveness of existing mitigation measures, established mitigation projects for the future, and assisted with preparation of the public participation information.

Planning Meetings

MEETING 1	Sept 26th, 2014
MEETING 2	March 26th, 2015
MEETING 3	June 24th, 2015 July 22nd, 2015
MEETING 4	November 17th, 2015 December 11th, 2015

2.4 Public Involvement

The Franklin County EMA solicited public input throughout the planning process and a public meeting was held on March 26th, 2015 to review the County's risk assessment. Appendix A contains the minutes from the public meeting. Appendix B contains press releases and/or articles sent to local newspapers throughout the MHMP development process.

2.5 Neighboring Community Involvement

The Planning Team invited participation from various representatives of county government, local city and town governments, community groups, local businesses, and universities. The Planning Team also invited participation from adjacent counties to obtain their involvement in the planning process.

Neighboring Community Participation

Person Participating	Neighboring Jurisdiction	Title/Organization
Derek Misener	Jackson County	EMA Coordinator
Steve Lueker	Jefferson County	EMA Coordinator
David Searby	Perry County	EMA Coordinator
Kelly Urhahn	Williamson County	EMA Coordinator

2.6 Review of Technical Documents

The Franklin County Planning Team identified technical documents from key agencies to assist in the planning process. These documents include land use plans, comprehensive plans, emergency response plans, municipal ordinances, and building codes. The planning process incorporated the existing natural hazard mitigation elements from previous planning efforts. The following technical data, reports, and studies were utilized:

Federal Emergency Management Agency
- *Developing the Mitigation Plan (April 2003)*
- *Mitigation Ideas (January 2003)*
- *Local Mitigation Planning Handbook*
- *Flood Insurance Study (November 2009)*

United State Census Bureau
- *County Profile Information*
- *2010 Census Data*
- *American Community Survey (2009-2013)*

United States Department of Transportation
- *PHMSA Hazardous Materials Incident Data*

United States Geological Survey
- *Earthquake Data*

United States Army Corps of Engineers
- *National Inventory of Dams*
- *National Levee Database*

Centers for Disease Control and Prevention
- *Preparedness and Response Framework for Influenza Pandemics*
- *Interim Pre-pandemic Planning Guide*
- *Foodborne Outbreak Database*

NOAA / National Water Service Storm Prediction Center
- *Severe Weather Data*

NOAA National Climatic Data Center
- *Climate Data*

Illinois Emergency Management Agency
- *2013 Illinois Natural Hazard Mitigation Plan*
- *Hazardous Materials Incident Reports*

Illinois Environmental Protection Agency
- *2014 303d Listed Waters and Watershed Maps*

Illinois State Water Survey
- *Climate Data*

Illinois Department of Natural Resources
- *Repetitive Loss Data*
- *Geologic and Ground Failure Data*
- *Dam and Levee Data*

Illinois State Geological Survey
- *Geologic and Ground Failure Data*

Greater Egypt Regional Planning and Development Commission
- *Comprehensive Economic Development Strategy 2010-2014*

Franklin County
- *2013 Assessment Records*
- *2013 Countywide GIS Parcel Database*
- *2009 Multi-Hazard Mitigation Plan*

2.7 Adoption by Local Government

Upon IEMA and FEMA approval, the Planning Team presented and recommended the plan to the County Board of Commissioners for formal adoption. The plan was formally adopted by the Franklin County Board on <adoption date>. The Planning Team worked with the County and its jurisdictions to ensure all parties formally adopted the plan. Appendix C contains the Adopting Resolutions for each participating jurisdiction.

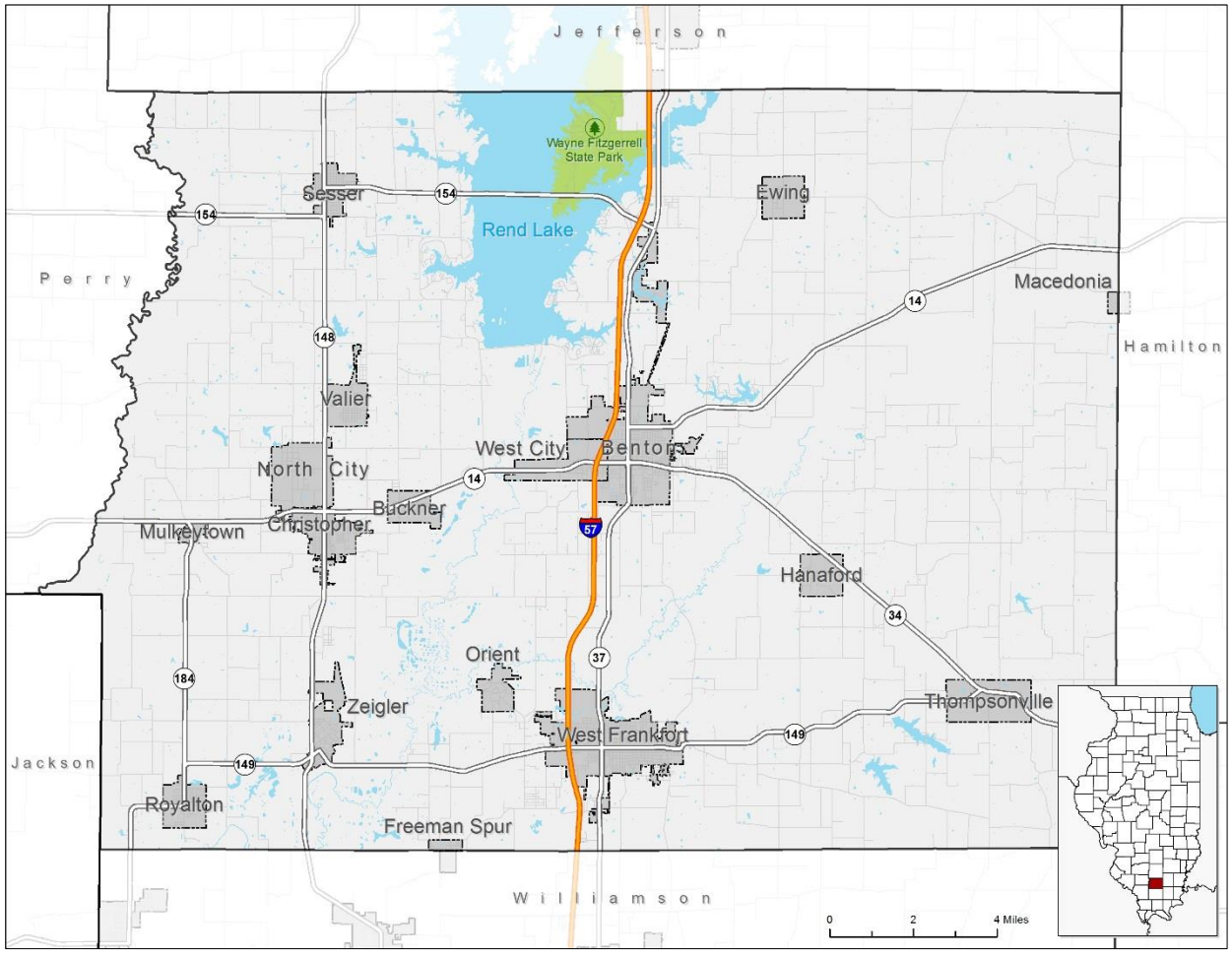
Section 3. County Profile

3.1 County Background

Franklin County organized and claimed its boundaries from Gallatin and White Counties in 1818. In 1839, Williamson County's acquisition of Franklin County's southern territory reformed the county into its current political boundaries. Franklin County was named after a philosopher, statesman, diplomatist, author, printer, member of the Continental Congress, Ambassador to France, and (before the Revolution) Deputy Postmaster General of the British Colonies in America—Benjamin Franklin. The original county seat, from 1818–1826, was located three miles east of West Frankfort at the house of Moses Garret. From 1826–1839, the county seat was moved to West Frankfort. It was finally relocated to Benton in 1839 and remains there as the current county seat.

Franklin County is located in the heart of southern Illinois (Figure 3-1). It is bounded on the north by Jefferson County, on the south by Williamson County, on the east by Hamilton and Saline counties, and on the west by Perry and Jackson Counties. Its relation to major urban areas is as follows: 100 miles east-southeast of St. Louis, Missouri; 169 miles south-southeast of Springfield, Illinois; 301 miles south-southwest of Chicago, Illinois.

Figure 3-1. Franklin County and Surrounding Region



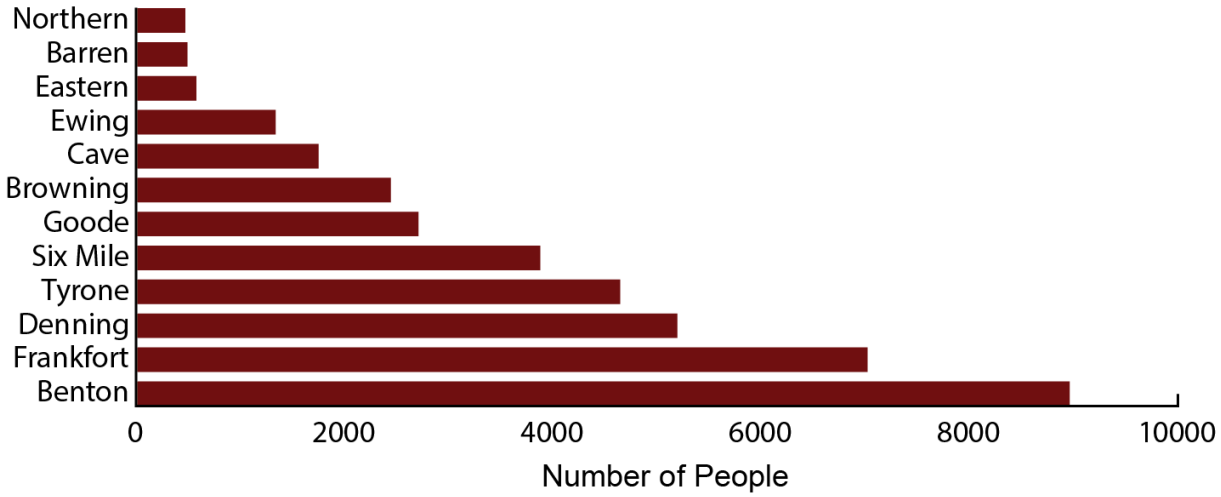
Franklin County's population has remained relatively stable over the past three decades. The major sources of economic activity include manufacturing, public administration, retail trade, arts, entertainment, recreation, accommodation, and food services. New development in Franklin County tends to focus along I-57 around the cities of Benton and West Frankfort.

Centrally located, Franklin County offers a host of amenities such as shopping centers, hotels, restaurants, and entertainment. Franklin County is home to Wayne Fitzgerrell State Park, a 3,330-acre state park bordering Rend Lake near Benton, IL. The northern portion of Rend Lake is shared with Jefferson County. Rend Lake is the largest area of public land in Franklin County, drawing significant numbers of tourists who contribute to the local economy. Rend Lake is managed by the U.S. Army Corps of Engineers, Illinois Department of Natural Resources and the Rend Lake Conservancy District, which provide vital services to lake visitors and the community. The lake offers fishing, hunting, and water recreation facilities and activities. Other communities within the county offer similar amenities, such as restaurants, entertainment, and shopping on a rural scale.

3.2 Demographics

According to the U.S. Census Bureau, Franklin County's 2013 population estimate is 39,202, a decrease of 0.9% from 2010. The population is spread throughout twelve townships: Barren, Benton, Browning, Cave, Denning, Eastern, Ewing, Frankfort, Goode, Northern, Six Mile, and Tyrone. Figure 3-2 displays the breakdown of population by township from the 2010 Census.

Figure 3-2. Franklin County 2010 Population by Township



3.3 Economy and Industry

Franklin County is strategically located along the bustling business corridor of Interstate 57. The diversified Franklin County workforce is spread across agriculture, forestry, construction, manufacturing, retail, healthcare and social assistance, hospitality, education, and transportation. Table 3-1 lists the top employers and the approximate number of employees in Franklin County. Ten employers have employment rolls of over 100. Education services, health care, social assistance, retail trade and manufacturing employ 50% of the workforce (American Community Survey 2013). The 2013 annual per capita income in the county is $20,394, compared to an Illinois average of $29,666.

Table 3-1. Franklin County's Major Employers

Employer	Industry	Approximate Number of Employees
Crownline Boats Inc.	Boat Building And Repairing	600
Centerstone	Counseling Services	300
Benton School District	Elementary And Secondary Schools	215
Franklin Hospital	General Medical And Surgical Hospitals	197
Wal-Mart Supercenter (Benton)	Department Stores	165
Franklin County	Government	150
Three Angels Broadcasting	Television Stations & Broadcasting Co.	150
State of Illinois	Government	116
Zeigler Royalton Community School	Elementary And Secondary Schools	100
West-Frankfort Community Unit 168	Elementary And Secondary Schools	100-249

Source: Franklin County Economic Development Corporation

3.4 Land Use and Development Trends

Pre-European settlement, Franklin County was densely forested with few areas of prairie. Since settlement, agriculture, coal mining, and urbanization have dramatically altered the county's land cover. Figure 3-3 depicts the current land uses in Franklin County. Today, agriculture is the predominant land cover in the county. This fact did not result because of great agricultural capabilities of the land as a major agricultural producer; neither did it occur because of maximum economic development potential resting in agricultural pursuits. Rather it is a result of the existence of large volumes of land which cannot rationally be occupied by major urban uses within the foreseeable future. As a result many agricultural uses have only limited agricultural potential. The eastern portions of the county are the primary areas of agriculture use. Additional scattered areas are located within the urban core in segments which need not be utilized for urban expansion. These agricultural areas become the overflow areas of future growth. Corn is the primary crop, followed by soybeans, winter wheat, hay, and oats.

In recent years, residential developments tend to focus in the West Frankfort and Benton areas. Residential land use has had few significant developments within the county at this time. The largest communities within the county are the cities of West Frankfort (8,110) and Benton (7,054) according to the U.S. Census 2013 population estimates.

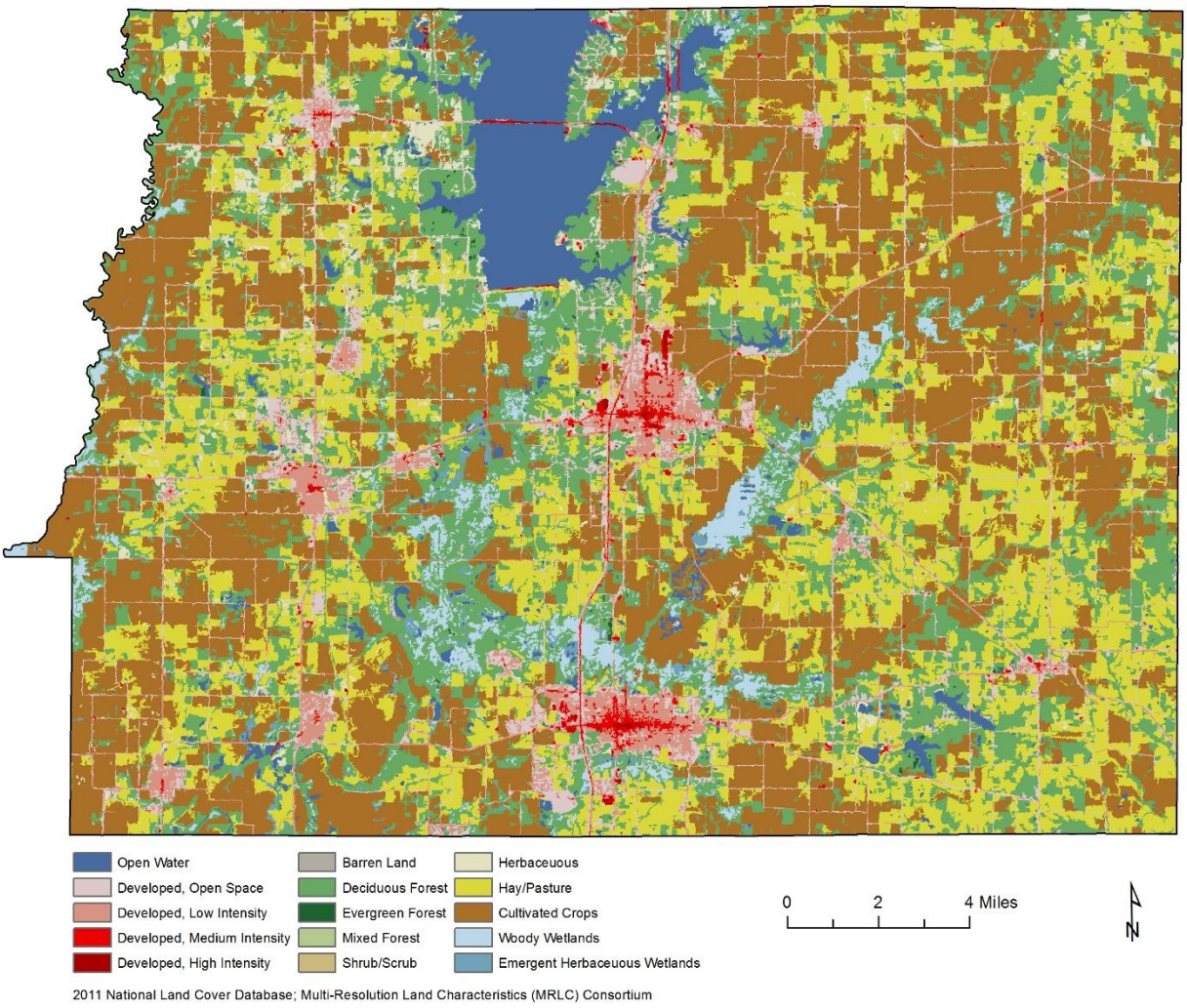
Commercial land use has historically been, and continues to be, concentrated within the business districts of the incorporated municipalities of the county. However, the most recent commercial growth has occurred in and around the city of West Frankfort. Franklin County as a whole is experiencing minor commercial development at this time. Industrial land use has been strategically planned and concentrated within Benton Industrial Park, Benton Airport Industrial Park, and Franklin County Industrial Park. Benton is the predominant location for most of the industries in the county.

Coal mining was an important industry in the Southern Illinois Region between the 1930s and 1980s. From 1990 through today, the importance of coal mining to the region and Franklin County has significantly lessened due to more stringent air quality regulations. Regardless, Southern Illinois's coal mining history, particularly strip mining, has left an indelible mark on Franklin County. In areas that were strip mined, particularly prior to Surface Mine Reclamation Action of 1977, the land has been left unsuitable for agriculture or significant commercial or residential development. These areas often contain large piles of

mine spoil and deep pits filled with water that alter surface water drainage. Fortunately, strip mining in Franklin County is relatively nonexistent.

Public land use in Franklin County includes schools, parks, playgrounds, public utilities, and transportation facilities. Rend Lake Conservancy District is the most significant public land use shared between Franklin and Jefferson Counties. Other major areas include the Benton Municipal Airport, Wayne Fitzgerrell State Park, Franklin Community Park, John A. Logan West Frankfort Extension Center, and Benton Community Park District.

Figure 3-3. Land Use in Franklin County



3.5 Climate

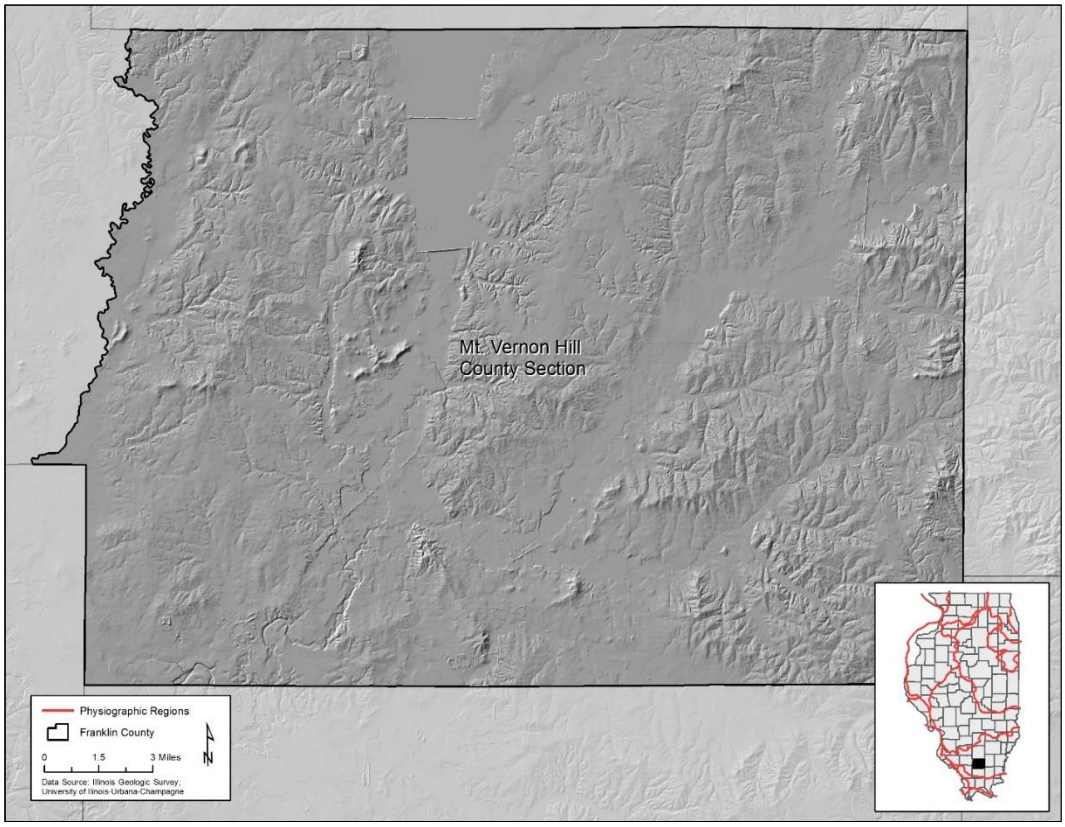
Franklin County climate is typical of Southern Illinois and generally characterized by hot dry summers and cool wet winters. The variables of temperatures, precipitation, and snowfall can vary greatly from one year to the next. In summer, the average low is 65.3° F and average high is 88.5° F; however, daily maximum temperatures often exceed 100° F for the period of time (several weeks) between June and September.

During the fall and into the spring, freezing temperatures can occur any time between September and May. The average low and high temperatures in January are 13.3° F and 40.4° F, respectively. Average annual precipitation is 43.19 inches. While the winters are generally cool, i.e. temperatures are above freezing most days. Extended periods (days to a couple of weeks) of sub-freezing temperatures often occur and are sometimes accompanied by significant amounts of ice and snow.

3.6 Topography

Franklin County is located in the Mount Vernon Hill Country physiographic sub-division of the Till Plains. Figure 3-4 depicts the physiographic divisions within Franklin County. The Mount Vernon Hill Country is characterized by low rolling hills and broad alluvial valleys along the major streams. The relief in this region is not pronounced. Upland prairies are flat to moderately hilly, and the valleys are shallow. The land surface is primarily controlled by bedrock, which has been only slightly modified by glacial drift deposits. While the southern boundary of the Mount Vernon Hill Country lies within a few miles of the limits of glaciations, moraine ridges are essentially absent in the area. The highest elevation(s) (~578 feet above sea level) in Franklin County are found in the central northern part of the county near Ewing. The lowest elevation(s) (~370 feet above sea level) are found in the southwest portion of the county near Zeigler.

Figure 3-4. Physiographic Divisions of Franklin County and Surrounding Terrain



3.7 Major Lakes, Rivers, and Watersheds

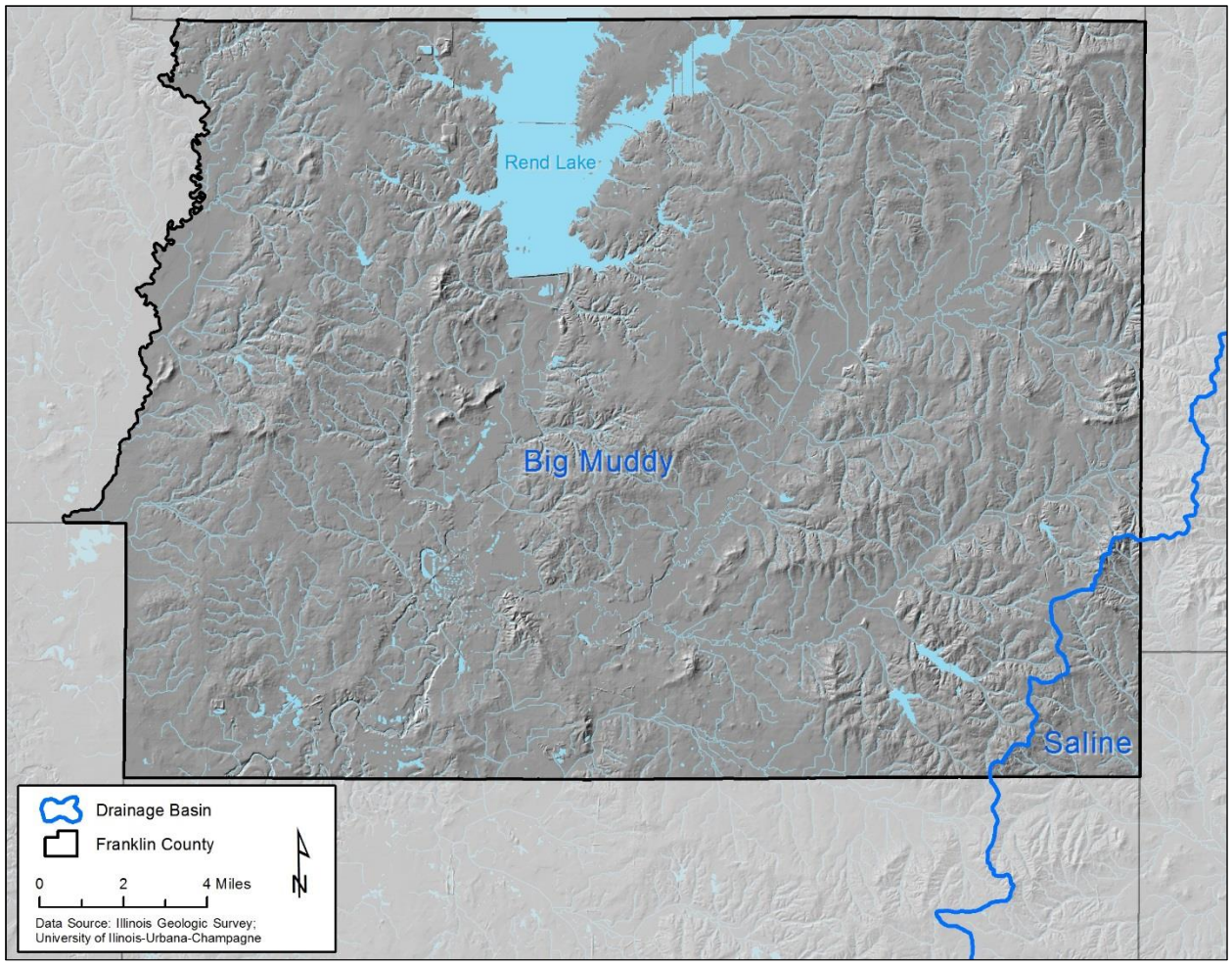
Of the 102 Illinois Counties, Franklin County ranks 8th in portion of county covered by open water, most of which is lakes and rivers. Nearly 14,000 acres are covered by lakes, rivers and streams. Figure 3-5 depicts the major drainage basins in Franklin County. Franklin County lies on the dividing ridge between the Ohio and Mississippi Rivers. The county crosses two eight-digit Hydrologic Unit Code (HUC) Watersheds: Big

Muddy Watershed and Saline Watershed. There are nine significant lakes in Franklin County: Sesser, Hamilton, New Christopher, New West Frankfort, Old West Frankfort, Benton, Moses, Rend and Zeigler.

The Big Muddy Watershed enters into the county from the north and northeast. The majority of the county lies within this watershed, generally sloping toward the southwest, and is drained by the Big Muddy River, the water of which flows into the Mississippi River.

The Saline Watershed covers a small portion on the southeast corner of the county and lies to the east of the Big Muddy Watershed with a general slope toward the southeast; it is drained by the Saline River, which flows into the Ohio River.

Figure 3-5. Major drainage basins in Franklin County



Section 4. Risk Assessment

The goal of mitigation is to reduce future hazard impacts including loss of life, property damage, disruption to local and regional economies, and the expenditure of public and private funds for recovery. Sound mitigation requires a rigorous risk assessment. A risk assessment involves quantifying the potential loss resulting from a disaster by assessing the vulnerability of buildings, infrastructure, and people. This assessment identifies the characteristics and potential consequences of a disaster, how much the disaster could affect the community, and the impact on community assets. This risk assessment consists of three components—hazard identification, vulnerability assessment, and risk analysis.

4.1 Hazard Identification

4.1.1 Existing Plans

The Planning Team identified technical documents from key agencies to assist in the planning process and incorporated the natural hazard mitigation elements from previous 2009 Franklin County Multi-Hazard Mitigation Planning efforts. Several other documents were used to profile historical hazards and guide the Planning Team during the hazard ranking exercise. Section 2-6 contains a complete list of the technical documents utilized to develop this plan.

4.1.2 National Hazard Records

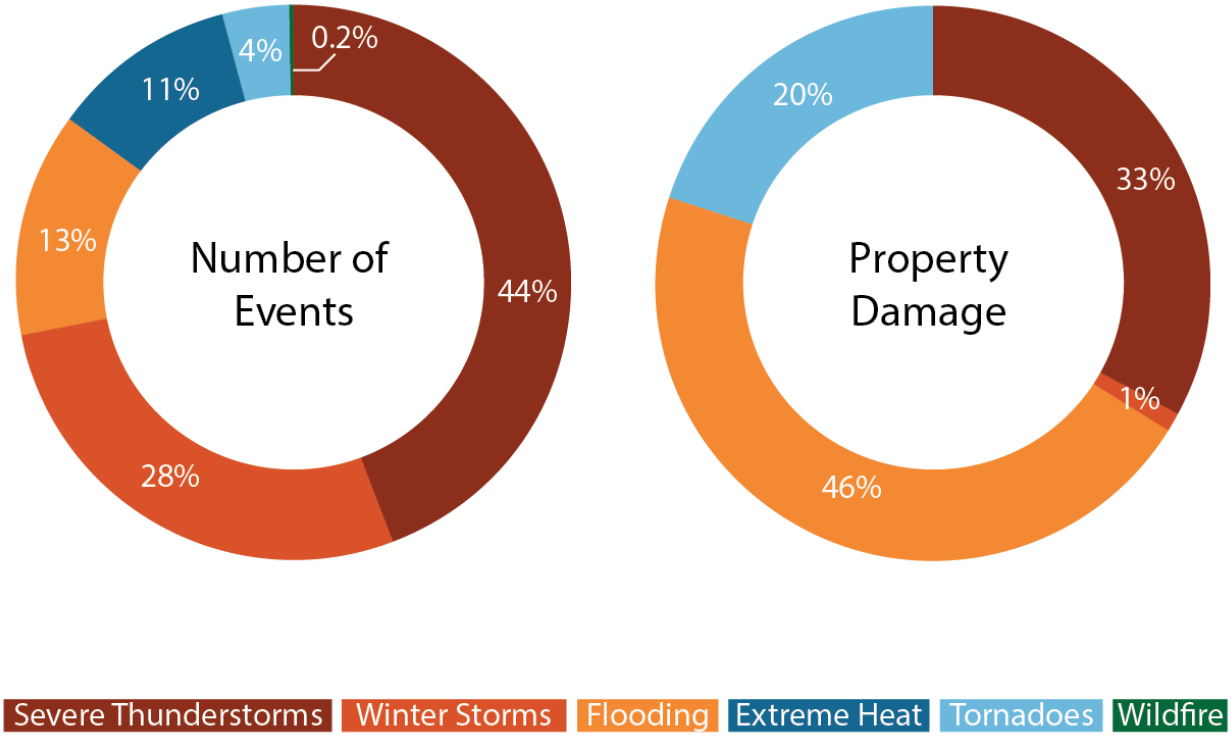
To assist the Planning Team, historical storm event data from the National Climatic Data Center (NCDC) was complied. NCDC records are estimates of damages reported to the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses.

The NCDC database included 568 reported meteorological events in Franklin County from 1950-2014 (the most updated information as of the date of this plan). The following hazard-profile sections each include a summary table of events related to each hazard type. Table 4-1 summarizes the meteorological hazards reported for Franklin County. Figure 4-1 summarize the relative frequency of NCDC reported meteorological hazards and the percent of total damage associated with each hazard for Franklin County. Full details of individual hazard events are on the NCDC website. In addition to NCDC data, Storm Prediction Center (SPC) data associated with tornadoes, strong winds, and hail was mapped using SPC-recorded latitudes and longitudes. Appendix D includes a map of these events.

Table 4-1. Summary of Meteorological Hazards Reported by the NCDC for Franklin County

Hazards	Time Period		Number of Events	Property Damage	Deaths	Injuries
	Start	End				
Flooding	1996	2016	82	$13,342,000	0	1
Severe Thunderstorms	1955	2016	188	$9,574,000	0	6
Tornadoes	1957	2016	25	$6,367,000	1	31
Winter Storms	1996	2016	131	$350,000	0	0
Extreme Heat	1997	2016	70	$0	1	5
Wildfire	2011	2011	1	$0	0	0

Figure 4-1. Distribution of NCDC Meteorological Hazards for Franklin County



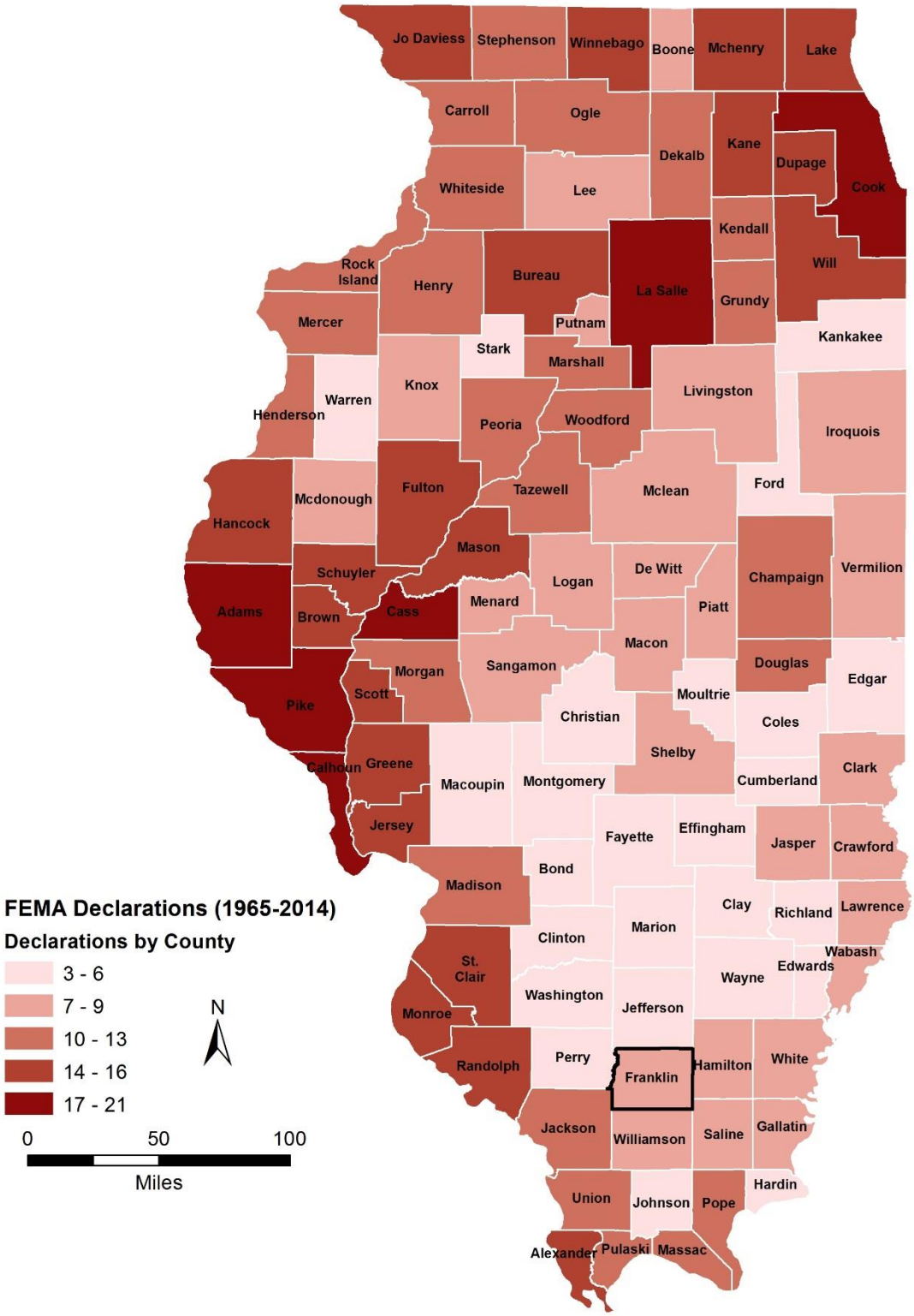
4.1.3 FEMA Disaster Information

Since 1957, FEMA has declared 53 major disasters and 7 emergencies for the State of Illinois. Emergency declarations allow states to access FEMA funds for Public Assistance (PA); disaster declarations allow for even more PA funding, including Individual Assistance (IA) and the Hazard Mitigation Grant Program (HMGP). Franklin County has received federal aid for six declared disasters and two emergencies since 1965. Table 4-2 lists specific information for each disaster declaration in Franklin County. Figure 4-2 depicts the disasters and emergencies that have been declared for the State of Illinois and Franklin County since 1965.

Table 4-2. Details of FEMA-declared Emergencies and Disasters in Franklin County

Declaration Number	Date of Declaration	Description
1991	6/7/2011	Severe Storms and Flooding
1850	7/2/2009	Severe Storms, Flooding, and Tornadoes
3230	9/7/2005	Hurricane Katrina Evacuation
3199	2/1/2005	Record/Near Record Snow
1416	5/21/2002	Severe Storms, Tornadoes and Flooding
1112	5/6/1996	Severe Storms and Flooding
684	6/6/1983	Severe Storms, Tornadoes and Flooding
373	4/26/1973	Severe Storms and Flooding

Figure 4-2. FEMA-declared Emergencies and Disasters in Illinois



4.1.4 Hazard Ranking Methodology

Based on Planning Team input, national datasets, and existing plans, the Franklin County Planning Team re-ranked the list of hazards from the 2009 MHMP. These hazards ranked the highest based on the Risk Priority Index discussed in Section 4.1.5. In addition to the identified hazards, the Franklin County Planning Team identified disease epidemic / pandemic and drought / extreme heat as two public health hazards. This plan includes sections devoted to disease epidemic / pandemic and drought / extreme heat but it should be noted that it is not included in the ranked list of hazards.

Franklin County Hazard List

TORNADOES

EARTHQUAKES

HAZARDOUS MATERIALS RELEASE

SEVERE THUNDERSTORM

FLOODING

GROUND FAILURE

WINTER STORMS

DAM / LEVEE FAILURE

DISEASE EPIDEMICS / PANDEMICS

4.1.5 Risk Priority Index

The Risk Priority Index (RPI) quantifies risk as the product of hazard probability and magnitude so Planning Team members can prioritize mitigation strategies for high-risk-priority hazards. Planning Team members use historical hazard data to determine the probability, combined with knowledge of local conditions to determine the possible severity of a hazard. Tables 4-3 and 4-4 display the criteria the Planning Team used to quantify hazard probability and magnitude.

Table 4-3. Hazard Probability Ranking

Probability	Characteristics
4 – Highly Likely	Event is probable within the next calendar year This event has occurred, on average, once every 1-2 years in the past
3 – Likely	Event is probable within the next 10 years Event has a 10-50% chance of occurring in any given year This event has occurred, on average, once every 3-10 years in the past
2 – Possible	Event is probable within the next 50 years Event has a 2-10% chance of occurring in any given year This event has occurred, on average, once every 10-50 years in the past
1 – Unlikely	Event is probable within the next 200 years Event has a 0.5-2% chance of occurring in any given year This event has occurred, on average, once every 50-200 years in the past

Table 4-4. Hazard Severity Ranking

Magnitude/Severity	Characteristics
8 – Catastrophic	Multiple deaths Complete shutdown of facilities for 30 or more days More than 50% of property is severely damaged
4 – Critical	Injuries and/or illnesses result in permanent disability Complete shutdown of critical facilities for at least 14 days More than 25% of property is severely damaged
2 – Limited	Injuries and/or illnesses do not result in permanent disability Complete shutdown of critical facilities for more than seven days More than 10% of property is severely damaged
1 – Negligible	Injuries and/or illnesses are treatable with first aid Minor quality of life lost Shutdown of critical facilities and services for 24 hours or less Less than 10% of property is severely damaged

The product of hazard probability and magnitude is the RPI. The Planning Team members ranked specified hazards based on the RPI, with larger numbers corresponding to greater risk. After evaluating the calculated RPI, the Planning Team adjusted the ranking to better suit the County. Table 4-5 identifies the RPI and adjusted ranking for each hazard specified by the Planning Team.

Table 4-5. Franklin County Hazard Priority Index and Ranking

Hazard	Probability	Magnitude/Severity	Risk Priority Index	Rank
Tornadoes	3	5	15	1
Earthquakes	2	7	14	2
Hazardous Materials Release	3	3	9	3
Severe Thunderstorms	3	2	6	4
Flooding	3	2	6	5
Ground Failure	3	2	6	6
Winter Storms	4	1	4	7
Dam / Levee Failure	1	4	4	8

4.1.6 Jurisdictional Hazard Ranking

Each jurisdiction created its own RPI because hazard susceptibility may differ by jurisdiction. During the five-year review of the plan, the Planning Team will update this table to ensure these jurisdictional rankings accurately reflect each community's assessment of these hazards. Table 4-6 lists the jurisdictions and their respective hazard rankings (Ranking 1 being the highest concern). The individual jurisdictions made these rankings at Meeting 1.

Table 4-6. Hazard Ranking by Jurisdiction

Jurisdiction	Tornadoes	Earthquakes	HAZMAT	Severe Storms	Flooding	Ground Failure	Winter Storms	Dam / Levee Failure	Extreme Heat	Pandemic / Epidemic
Benton	1	2	3	4	5	6	7	8	-	-
Mulkeytown	1	2	3	4	5	6	7	8	-	-
Sesser	1	2	3	4	5	6	7	8	-	-
Franklin Hospital	1	2	3	5	4	8	6	7	-	-
Rend Lake Conservancy District	2	1	6	3	4	7	3	4	-	-
Rend lake College	2	1	6	3	4	7	4	5	-	-

4.2 Vulnerability Assessment

4.2.1 Asset Inventory

Processes and Sources for Identifying Assets

Before meeting one, the Planning Team used their resources to update the list of critical facilities from the 2009 MHMP. Local GIS data was used to verify the locations of all critical facilities. SIU GIS analysts incorporated these updates and corrections to the Hazus-MH data tables prior to performing the risk assessment. The updated Hazus-MH inventory contributed to a Level 2 analysis, which improved the accuracy of the risk assessment. Franklin County also provided local assessment and parcel data to estimate the actual number of buildings susceptible to damage for the risk assessment.

Essential Facilities List

Table 4-7 identifies the number of essential facilities identified in Franklin County. Essential facilities are a subset of critical facilities. Appendix E include a comprehensive list of the essential facilities in Franklin County and Appendix F displays a large format map of the locations of the critical facilities within the county.

Table 4-7. Franklin County's Essential Facilities

Facility	Number of Facilities
Emergency Operations Centers	2
Fire Stations	14
Police Stations	13
Schools	24
Care Facilities	24

Facility Replacement Costs

Table 4-8 identifies facility replacement costs and total building exposure. Franklin County provided local assessment data for updates to replacement costs. Tax-exempt properties such as government buildings,

schools, religious and non-profit structures were excluded from this study because they do not have an assessed value. Table 4-8 also includes the estimated number of buildings within each occupancy class.

Table 4-8. Franklin County's Building Exposure

General Occupancy	Estimated Total Buildings	Total Building Exposure
Residential	16,693	$989,203,026
Agriculture	311	$5,662,245
Commercial	1,517	$11,193,233,715
Industrial	100	$564,944,130
Total:	**18,621**	**$12,753,043,116**

Future Development

Franklin County is expected to see a modest increase in population due to the expansion of existing distribution centers, light industry, and the creation of new opportunities in the service industry such as retail stores, restaurants, and hotels. Most of this expansion is expected to take place within the city limits of Benton and West Frankfort within close proximity to transportation corridors such as Interstate 57.

4.3 Risk Analysis

4.3.1 GIS and Hazus-MH

The third step in the risk assessment is the risk analysis, which quantifies the risk to the population, infrastructure, and economy of the community. The hazards were quantified using GIS analyses and Hazus-MH where possible. This process reflects a Level 2 Hazus-MH analysis. A level 2 Hazus-MH analysis involves substituting selected Hazus-MH default data with local data and improving the accuracy of model predictions.

Updates to the default Hazus-MH data include:

- Updating the Hazus-MH defaults, critical facilities, and essential facilities based on the most recent available data sources.
- Reviewing, revising, and verifying locations of critical and essential point facilities with local input.
- Applying the essential facility updates (schools, medical care facilities, fire stations, police stations, and EOCs) to the Hazus-MH model data.
- Updating Hazus-MH reports of essential facility losses.

The following assumptions were made during analysis:

- Hazus-MH aggregate data was used to model the building exposure for all earthquake analyses. It is assumed that the aggregate data is an accurate representation of Franklin County.
- The analyses were restricted to the county boundaries. Events that occur near the county boundaries do not contain damage assessments from adjacent counties.
- For each tax-assessment parcel, it is assumed there is only one building that bares all the associated values (both structure and content).
- For each parcel, it is assumed that all structures are wood-framed, one-story, slab-on-grade structures, unless otherwise stated in assessment records. These assumptions are based on sensitivity analyses of Hazus and regional knowledge.

Depending upon the analysis options and the quality of data the user inputs, Hazus-MH generates a combination of site-specific and aggregated loss estimates. Hazus-MH is not intended as a substitute for

detailed engineering studies; it is intended to serve as a planning aid for communities interested in assessing their risk to flood-, earthquake-, and hurricane-related hazards. This plan does not fully document the processes and procedures completed in its development, but this documentation is available upon request. Table 4-9 indicates the analysis type (i.e. GIS, Hazus-MH, or historical records) used for each hazard assessment.

Table 4-9. Risk Assessment Tool Used for Each Hazard

Hazard	Risk Assessment Tool(s)
Tornadoes	GIS-based
Earthquakes	Hazus-MH
Hazmat Release	GIS-based
Severe Thunderstorm	Historical Records
Flooding	Hazus-MH
Ground Failure	GIS-based
Winter Storms	Historical Records
Disease Epidemic / Pandemic	Historical Records
Drought / Extreme Heat	Historical Records

4.3.2 Tornado Hazard

Hazard Definition

Tornadoes are violently rotating columns of air extending from thunderstorms to the ground. Funnel clouds are rotating columns of air not in contact with the ground; however, the violently rotating column of air can reach the ground quickly and become a tornado. If the funnel cloud picks up and blows debris, it has reached the ground and is a tornado.

Tornadoes are a significant risk to Illinois and its citizens. Tornadoes can occur at any time on any day. The unpredictability of tornadoes makes them one of Illinois' most dangerous hazards. Tornado winds are violently destructive in developed and populated areas. Current estimates place maximum wind velocity at about 300 miles per hour, but higher values can occur. A wind velocity of 200 miles per hour results in a pressure of 102.4 pounds per square foot—a load that exceeds the tolerance limits of most buildings. Thus, it is easy to understand why tornadoes can devastate the communities they hit.

Tornadoes are classified according to the Enhanced Fujita tornado intensity scale. The Enhanced Fujita scale ranges from intensity EF0, with effective wind speeds of 40 to 70 miles per hour, to EF5 tornadoes, with effective wind speeds of over 260 miles per hour. Table 4-10 outlines the Enhanced Fujita intensity scale.

Table 4-10. Enhanced Fujita Tornado Rating

Enhanced Fujita Number	Estimated Wind Speed	Path Width	Path Length	Description of Destruction
0 Gale	40-72 mph	6-17 yards	0.3-0.9 miles	Light damage, some damage to chimneys, branches broken, signboards damaged, shallow-rooted trees blown over.
1 Moderate	73-112 mph	18-55 yards	1.0-3.1 miles	Moderate damage, roof surfaces peeled off, mobile homes pushed off foundations, attached garages damaged.

Enhanced Fujita Number	Estimated Wind Speed	Path Width	Path Length	Description of Destruction
2 Significant	113-157 mph	56-175 yards	3.2-9.9 miles	Considerable damage, entire roofs torn from frame houses, mobile homes demolished, boxcars pushed over, large trees snapped or uprooted.
3 Severe	158-206 mph	176-566 yards	10-31 miles	Severe damage, walls torn from well-constructed houses, trains overturned, most trees in forests uprooted, heavy cars thrown about.
4 Devastating	207-260 mph	0.3-0.9 miles	32-99 miles	Complete damage, well-constructed houses leveled, structures with weak foundations blown off for some distance, large missiles generated.
5 Incredible	261-318 mph	1.0-3.1 miles	100-315 miles	Foundations swept clean, automobiles become missiles and thrown for 100 yards or more, steel-reinforced concrete structures badly damaged.

Previous Occurrences of Tornadoes

There have been several occurrences of tornadoes in Franklin County during recent decades. The National Climatic Data Center (NCDC) database reported twenty-two tornadoes/funnel clouds in Franklin County since 1950. Table 4-11 identifies NCDC-recorded tornadoes that caused damage, death, or injury in Franklin County. Additional details of individual hazard events are on the NCDC website.

Although not recorded in the NCDC data, the Tri-State Tornado remains the most memorable tornado in Southern Illinois's history. The tornado tore across Southeast Missouri, Southern Illinois, and Southwest Indiana. The Tri-State Tornado was a rare event – spanning 219 miles long with an average width of ¾ mile; affected 3 states, 13 counties, over 19 communities. The entire town of Gorham was demolished and 34 people lost their lives. 541 people were killed and 1,423 were seriously injured as the tornado tore a path of destruction nearly one mile wide through the towns of Murphysboro, De Soto, Hurst-Bush, and West Frankfort.

The most recent tornado event occurred in May 2016 when multi-cell thunderstorm clusters developed along a warm front that was oriented from west to east along the Interstate 64 corridor. Surface dew points near and south of the front were in the lower 70's, which contributed to strong instability. Thunderstorm clusters moved eastward along the warm front, but they also developed southward into the strongest instability. Moderately strong deep-layer wind shear resulted in organized clusters of multi-cells with large hail and isolated wind damage.

Table 4-11. NCDC-Recorded Tornadoes That Caused Damage, Death, or Injury in Franklin County

Location or County*	Date	Scale	Deaths	Injuries	Property Damage
Franklin County	12/18/1957	F4	0	10	$25,000,000
Franklin County	4/27/1971	F3	1	20	$2,500,000
West Frankfort	4/27/1994	F1	0	1	$500,000
Franklin County	2/9/1960	F2	0	0	$250,000
Royalton	4/19/2011	EF1	0	0	$80,000
Mulkeytown	4/19/1996	F1	0	0	$20,000

Location or County*	Date	Scale	Deaths	Injuries	Property Damage
Benton	4/19/2011	EF1	0	0	$10,000
Mulkeytown	6/8/2009	EF1	0	0	$6,000
Royalton	11/10/2002	F0	0	0	$1,000
Ezra	6/19/2015	F1	0	0	$500,000
		Total:	**1**	**31**	**$28,867,000**

*NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

Geographic Location for Tornado Hazard

The entire county has the same risk of tornado occurrence. Tornadoes can occur at any location within the county.

Hazard Extent for Tornado Hazard

Historical tornadoes generally moved from southwest to northeast across the county, although many other tracks are possible, from more southerly to northerly directions. The extent of the hazard varies in terms of the size of the tornado, its path, and its wind speed.

Risk Identification for Tornado Hazard

Based on historical information, the probability of future tornadoes in Franklin County is likely. The County should expect tornadoes with varying magnitudes to occur in the future. Tornadoes ranked as the number one hazard according to the Franklin County Planning Team's risk assessment.

Risk Priority Index

Probability	x	Magnitude	=	RPI
3	x	5	=	15

Vulnerability Analysis for Tornado Hazard

Tornadoes can occur within any area in the county; therefore, the entire county population and all buildings are vulnerable to tornadoes. To accommodate this risk, this plan considers all buildings located within the county as vulnerable. Tables 4-7 and 4-8 display the existing buildings and critical infrastructure in Franklin County.

Critical Facilities

All critical facilities are vulnerable to tornadoes. Critical facilities are susceptible to many of the same impacts as any other building within the jurisdiction. These impacts vary based on the magnitude of the tornado but can include structural failure, damaging debris (trees or limbs), roofs blown off or windows broken by hail or high winds, and loss of facility functionality (e.g., a damaged police station will no longer be able to serve the community). Table 4-7 lists the types and number of critical facilities for the entire

county and Appendix F displays a large format map of the locations of all critical facilities within the county.

Building Inventory

Table 4-8 lists the building exposure in terms of types and numbers of buildings for the entire county. The buildings within the county can all expect the same impacts, similar to those discussed for critical facilities. These impacts include structural failure, damaging debris (trees or limbs), roofs blown off or windows broken by hail or high winds, and loss of building function (e.g., damaged home will no longer be habitable, causing residents to seek shelter).

Infrastructure

The types of infrastructure that could be impacted during a tornado include roadways, utility lines/pipes, railroads, and bridges. Since the county's entire infrastructure is vulnerable, it is important to emphasize that any number of these structures could become damaged during a tornado. The impacts to these structures include broken, failed, or impassable roadways, broken or failed utility lines (e.g., loss of power or gas to community), and railway failure from broken or impassable rail lines. Bridges could fail or become impassable, causing risk to motorists.

GIS-based Tornado Analysis

One tornado scenario was conducted for Franklin County through the City of Christopher, Village of Buckner, the Village of West City, and the City of Benton. The following analysis quantifies the anticipated impacts of tornadoes in the county in terms of numbers and types of buildings and infrastructure damaged.

GIS-overlay modeling was used to determine the potential impacts of an EF4 tornado. The analysis used a hypothetical path based upon an EF4 tornado event that runs for 21 miles through the Christopher, Buckner, West City, and Benton. Table 4-12 depicts tornado damage curves and path widths utilized for the modeled scenario. The damage curve is based on conceptual wind speeds, path winds, and path lengths from the Enhanced-Fujita Scale guidelines.

Table 4-12. Tornado Path Widths and Damage Curves

Fujita Scale	Path Width (feet)	Maximum Expected Damage
5	2,400	100%
4	1,800	100%
3	1,200	80%
2	600	50%
1	300	10%
0	150	0%

Degrees of damage depend on proximity to the path centerline within a given tornado path. The most intense damage occurs within the center of the damage path, with decreasing amounts of damage away from the center. To model the EF4 tornado, a hypothetical tornado path was used in GIS with buffers added (damage zones) around the tornado path. Table 4-13 and Figure 4-3 illustrate the zone analysis. Figure 4-4 depicts the selected hypothetical tornado path.

Table 4-13. EF4 Tornado Zones and Damage Curves

Zone	Buffer (feet)	Damage Curve
1	0-150	100%
2	150-300	80%
3	300-600	50%
4	600-900	10%

Figure 4-3. Tornado Analysis (Damage Curves) Using GIS Buffers

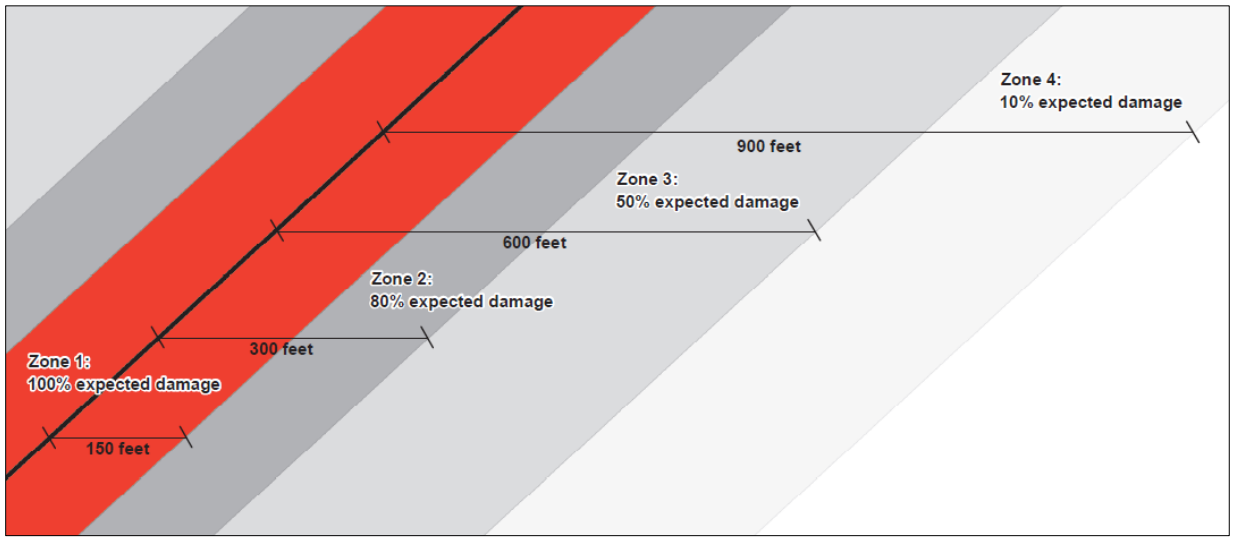
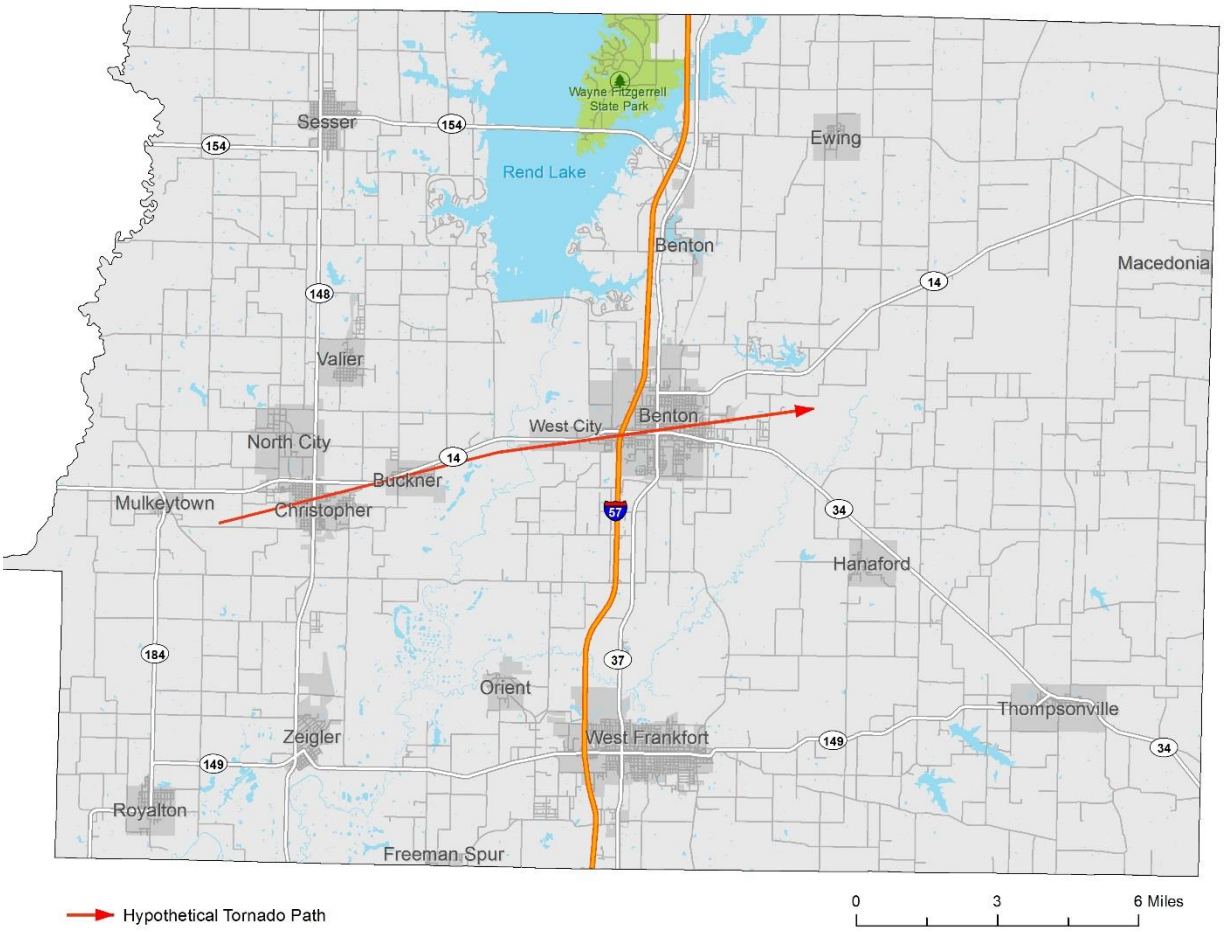


Figure 4-4. Modeled Hypothetical EF4 Tornado Track for Franklin County



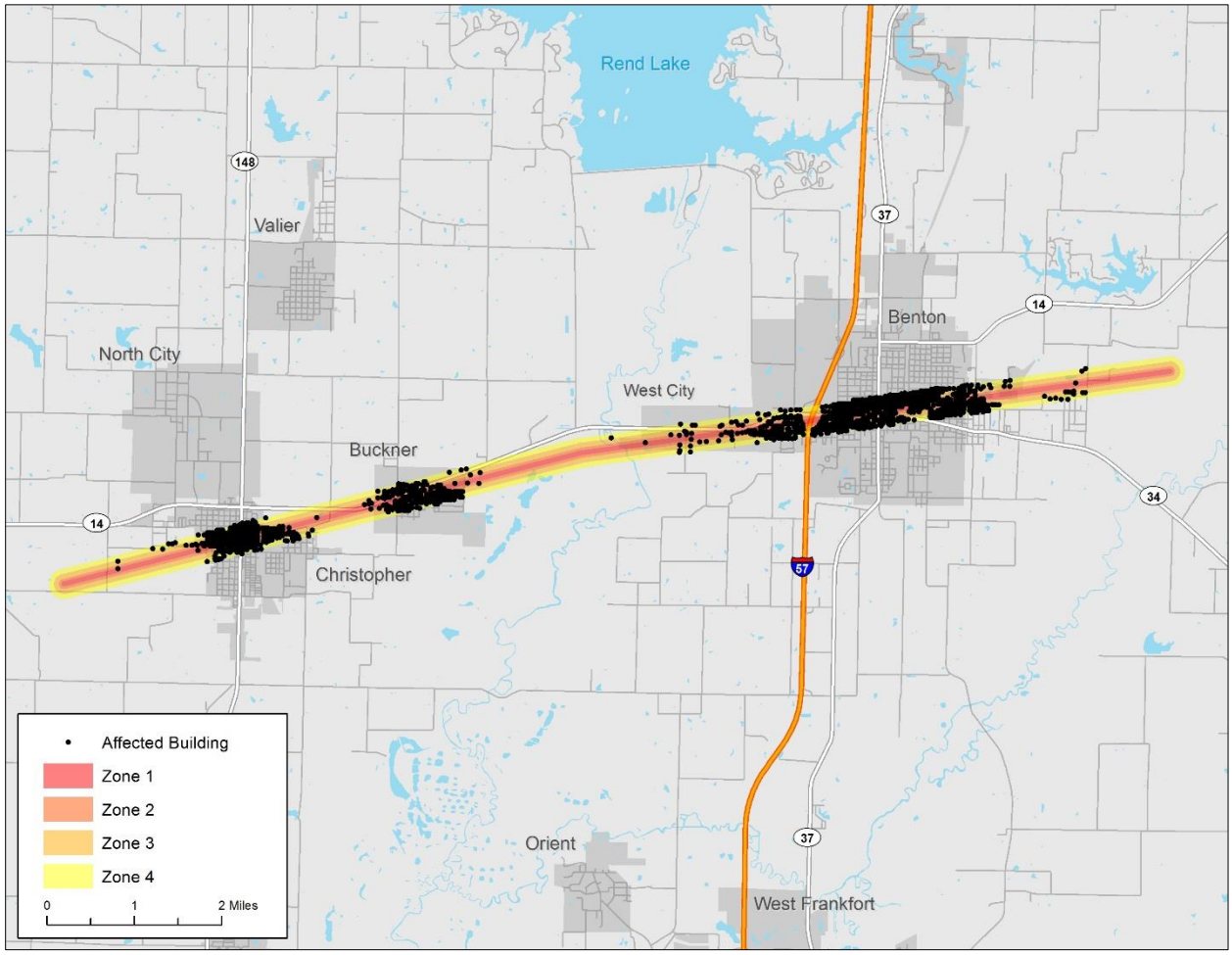
Modeled Impacts of the EF4 Tornado

The GIS analysis estimates that the modeled EF4 tornado would damage 1,695 buildings. The estimated building losses are over $2 billion. The building losses are an estimate of building replacement costs multiplied by the damage percent. Table 4-14 and Figures 4-5 show the results of the EF4 tornado analysis.

Table 4-14. Estimated Building Loss by Occupancy Type

Occupancy	Zone 1	Zone 2	Zone 3	Zone 4
Residential	$14,628,308	$12,399,912	$17,537,625	$2,841,782
Agriculture	$4,560	$960	$0	$0
Commercial	$1,059,302,280	$499,021,752	$814,369,920	$73,513,599
Industrial	$0	$81,330	$0	$0
Total:	**$1,073,935,148**	**$511,503,954**	**$831,907,545**	**$76,355,381**

Figure 4-5. Building Inventory Affected by the EF4 Tornado



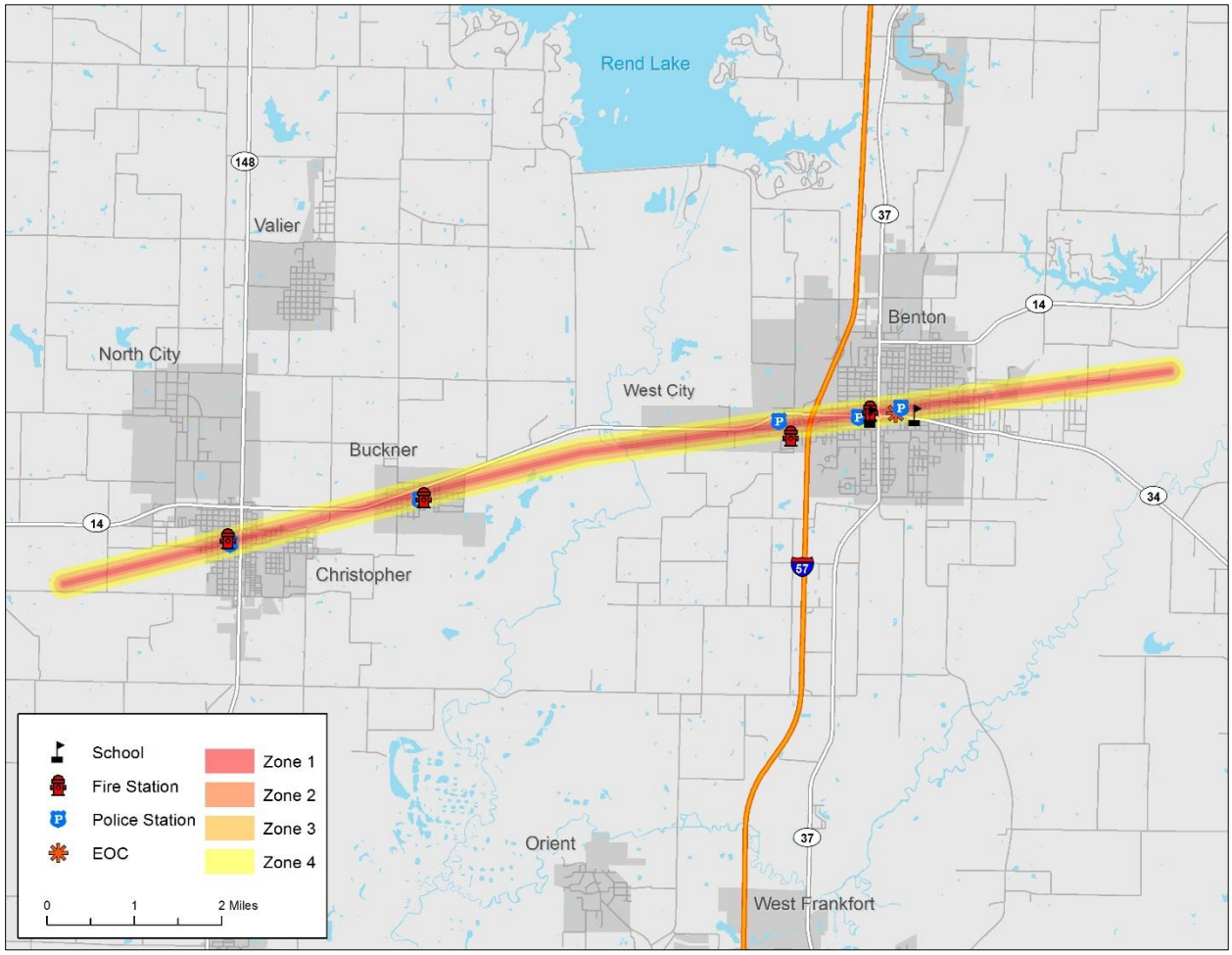
Essential Facilities Damage

There are twelve essential facility located within 900 feet of the EF4 tornado path. The model predicts that one EOC, two schools, four fire stations and five police station would experience damage across Franklin County. The affected facilities are identified in Table 4-15, and their geographic locations are shown in Figure 4-6.

Table 4-15. Essential Facilities Affected by the EF4 Tornado Modeled for Franklin County

Essential Facility	Facility Name
EOC	Franklin County Jail
Schools	Benton Consolidated High School
	Franklin County ROE 21
Fire Departments	Benton Fire Dept.
	Christopher Fire Dept.
	Buckner Fire Dept.
	West City Fire Dept.
Police Departments	Christopher Police Dept.
	West City Police Dept.
	Franklin County Sheriff
	Benton City Police
	Buckner Police Dept.

Figure 4-6. Essential Facilities Affected by the EF4 Tornado



Vulnerability to Future Assets/Infrastructure for Tornado Hazard

The entire population and all buildings are at risk because tornadoes can occur anywhere within the state, at any time. Furthermore, any future development in terms of new construction within the county is at risk. Table 4-8 includes the building exposure for Franklin County. All essential facilities in the county are at risk. Appendix E include a list of the essential facilities in Franklin County and Appendix F displays a large format map of the locations of all critical facilities within the county.

Suggestions for Community Development Trends

Preparing for severe storms will be enhanced if local officials sponsor a wide range of programs and initiative to address severe storm preparedness. It is suggested that the county should build new structures with more sturdy construction, and harden existing structures to lessen the potential impacts of severe weather. This is particularly import where the future economic expansion is expected to take place within the city limits of Benton and West Frankfort. Additional warning sirens can warn the community of approaching storms to ensure the safety of Franklin County residents and minimizing property damage.

4.3.3 Earthquake Hazard

Hazard Definition

An earthquake is the shaking of the earth caused by the energy released when large blocks of rock slip past each other in the earth's crust. Most earthquakes occur at tectonic plate boundaries; however, some earthquakes occur in the middle of plates, for example the New Madrid Seismic Zone or the Wabash Valley Fault System. Both of these seismic areas have a geologic history of strong quakes, and an earthquake from either seismic area could possibly affect Illinois counties. There may be other, currently unidentified faults in the Midwest also capable of producing strong earthquakes.

Strong earthquakes can collapse buildings and infrastructure, disrupt utilities, and trigger landslides, avalanches, flash floods, fires, and tsunamis. When an earthquake occurs in a populated area, it may cause death, injury, and extensive property damage. An earthquake might damage essential facilities, such as fire departments, police departments, and hospitals, disrupting emergency response services in the affected area. Strong earthquakes may also require mass relocation; however, relocation may be impossible in the short-term aftermath of a significant event due to damaged transportation infrastructure and public communication systems.

Earthquakes are usually measured by two criteria: intensity and magnitude (M). Earthquake intensity qualitatively measures the strength of shaking produced by an earthquake at a certain location and is determined from effects on people, structures, and the natural environment. Earthquake magnitude quantitatively measures the energy released at the earthquake's subsurface source in the crust, or epicenter. Table 4-16 provides a comparison of magnitude and intensity, and Table 4-17 provides qualitative descriptions of intensity, for a sense of what a given magnitude might feel like.

Table 4-16. Comparison of Earthquake Magnitude and Intensity

Magnitude (M)	Typical Maximum Modified Mercalli Intensity
1.0 – 3.0	I
3.0 – 3.9	II – III
4.0 – 4.9	IV – V
5.0 – 5.9	VI – VII
6.0 – 6.9	VII – IX
7.0 and higher	VIII or higher

Table 4-17. Abbreviated Modified Mercalli Intensity Scale

Mercalli Intensity	Description
I	Not felt except by a very few under especially favorable conditions.
II	Felt only by a few persons at rest, especially on upper floors of buildings.
III	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motorcars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
IV	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motorcars rocked noticeably.
V	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.

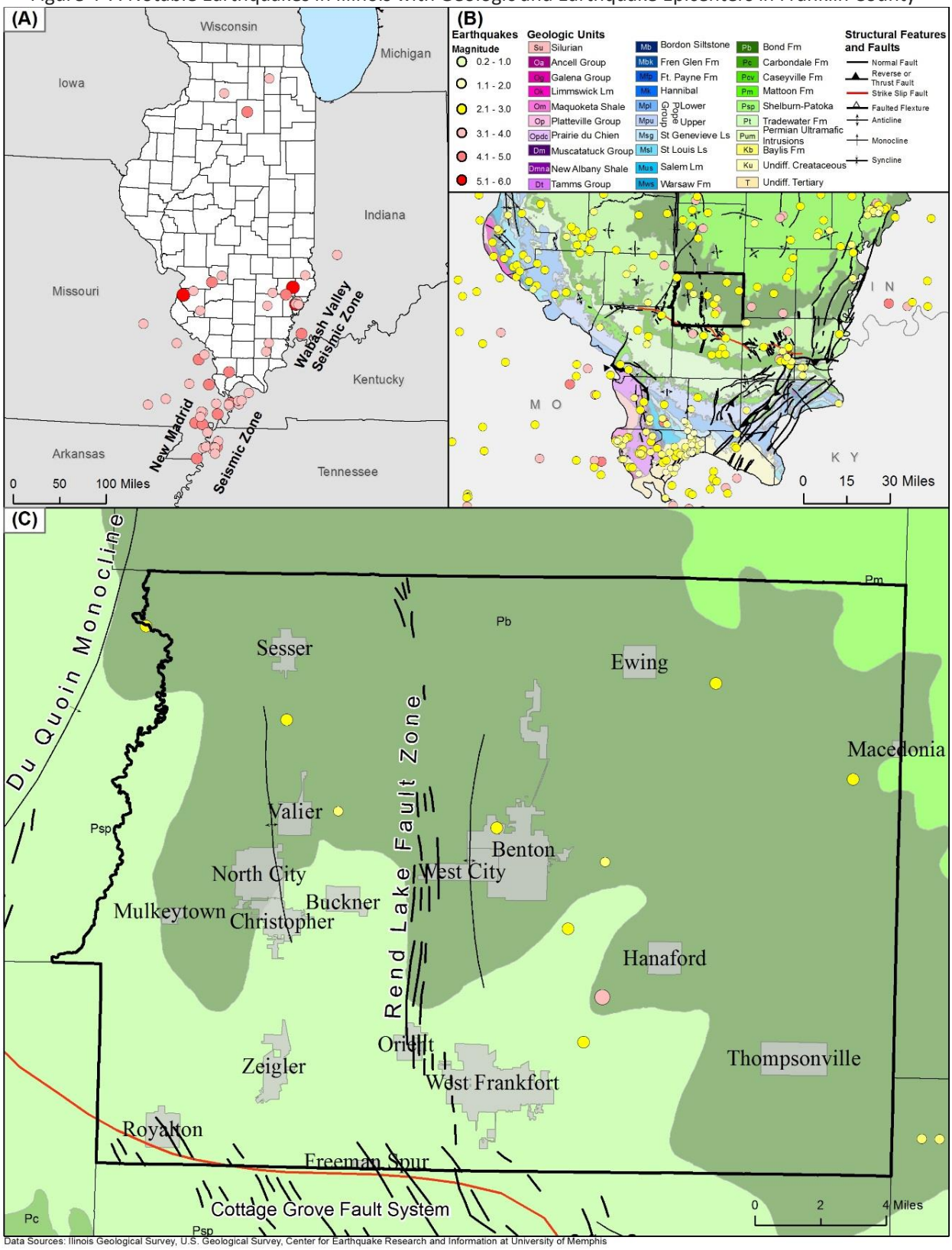
Mercalli Intensity	Description
VII	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, and walls. Heavy furniture overturned.
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.
XI	Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly.
XII	Damage total. Lines of sight and level are distorted. Objects thrown into the air.

Previous Occurrences for Earthquakes

Historically, the most significant seismic activity in Illinois is associated with New Madrid Seismic Zone. The New Madrid Seismic Zone produced three large earthquakes in the central U.S. with magnitudes estimated between 7.0 and 7.7 on December 16, 1811, January 23, 1812, and February 7, 1812. These earthquakes caused violent ground cracking and volcano-like eruptions of sediment (sand blows) over an area >10,500 km^2, and uplifted a 50 km by 23 km zone (the Lake County uplift). The shaking was felt over a total area of over 10 million km^2 (the largest felt area of any historic earthquake). The United States Geological Survey (USGS) and the Center for Earthquake Research and Information (CERI) at the University of Memphis estimate the probability of a repeat of the 1811-1812 type earthquakes (M7.5-8.0) is 7%-10% over the next 50 years (USGS Fact Sheet 2006-3125).

Earthquakes measured in Illinois typically vary in magnitude from very low microseismic events of M=1-3 to larger events up to M=5.4. Figure 4-7 depicts the following: (A) location of notable earthquakes in Illinois region; (B) generalized geologic bedrock map with earthquake epicenters and geologic structures; (C) geologic and earthquake epicenter map of Franklin County. The most recent earthquake in Illinois—as of the date of this report—was a M2.3 event in February 2014, approximately 6 miles NNW of Mound City in Pulaski County. The last earthquake in Illinois to cause minor damage occurred on April 18, 2008 near Mt. Carmel, IL and measured 5.2 in magnitude. Earthquakes resulting in more serious damage have occurred about every 70 to 90 years and are historically concentrated in southern Illinois.

Figure 4-7. Notable Earthquakes in Illinois with Geologic and Earthquake Epicenters in Franklin County

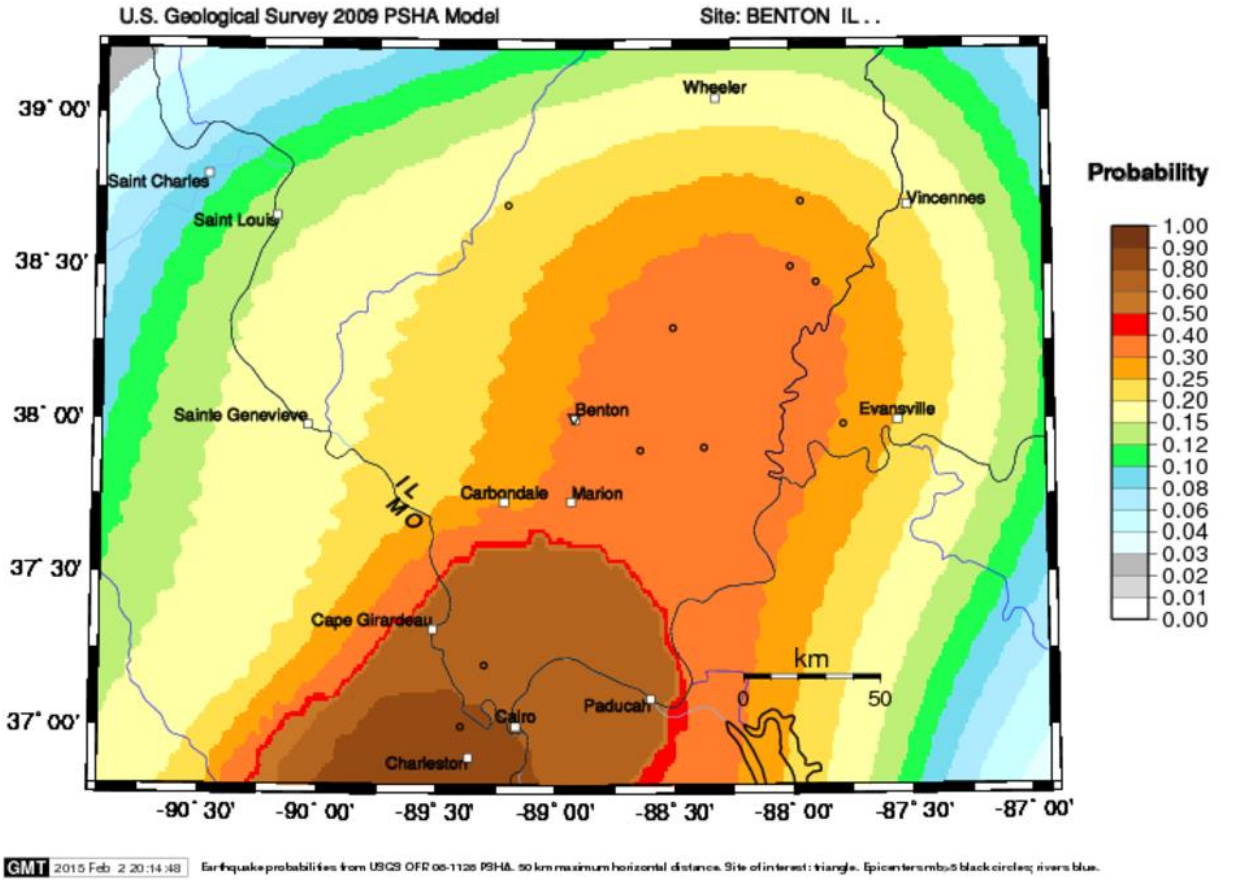


Geographic Location for Earthquake Hazard

Franklin County is situated in a region susceptible to earthquakes. Since 1974, the epicenters of ten small earthquakes (M1.7-M3.1) have been recorded in Franklin County (see Figure 4-7(C)). This local seismic activity has been focused along the Rend Lake Fault System. The Cottage Grove Fault System is a right-lateral, strike-slip fault that extends 113 km across southern Illinois. The seismogenic potential of these structures is unknown, and the geologic mechanism related to the minor earthquakes is poorly understood.

The two most significant zones of seismic activity in Illinois are the New Madrid Seismic Zone and the Wabash Valley Fault System. Return periods for large earthquakes within the New Madrid System are estimated to be ~500–1000 years; moderate quakes between magnitude 5.5 and 6.0 can recur within approximately 150 years or less. The Wabash Valley Fault System extends nearly the entire length of southern Illinois and has the potential to generate an earthquake of sufficient strength to cause damage between St. Louis, MO and Indianapolis, IN. While large earthquakes (>M7.0) experienced during the New Madrid Events of 1811 and 1812 are unlikely in Franklin County, moderate earthquakes (≤ 6.0M) in or in the vicinity of Franklin County are probable. The USGS estimates the probability of a moderate M5.5 earthquake occurring in Franklin County within the next 500-years at approximately 25-40% (see Figure 4-8).

Figure 4-8. Probability of M5.5 Earthquake occurring in Franklin County within the next 500 years



Hazard Extent for Earthquake Hazard

Earthquake effects are possible anywhere in Franklin County. One of the most critical sources of information that is required for accurate assessment of earthquake risk is soils data. The National Earthquake Hazards Reduction Program (NEHRP) compliant soils map was provided by FEMA for the analysis. This map identifies the soils most susceptible to failure.

Risk Identification for Earthquake Hazard

Based on historical information and current USGS and SIU research and studies, future earthquakes in Franklin County are possible, but large (>M7.0) earthquakes that cause catastrophic damage are unlikely. According to the Franklin County Planning Team's assessment, earthquakes are ranked as the number two hazard.

Risk Priority Index

Probability	x	Magnitude	=	RPI
2	x	7	=	14

Vulnerability Analysis for Earthquake Hazard

Earthquakes could impact the entire county equally; therefore, the entire county's population and all buildings are vulnerable to an earthquake. To accommodate this risk, this plan considers all buildings located within the county as vulnerable. Tables 4-7 and 4-8 display the existing buildings and critical infrastructure in Franklin County.

Critical Facilities

All critical facilities are vulnerable to earthquakes. Critical facilities are susceptible to many of the same impacts as any other building within the jurisdiction. These impacts include structural failure and loss of facility functionality (e.g., a damaged police station will no longer be able to serve the community). Table 4-7 lists the types and number of critical facilities for the entire county and Appendix F displays a large format map of the locations of all critical facilities within the county.

Building Inventory

Table 4-8 lists the building exposure in terms of types and numbers of buildings for the entire county. The buildings within the county can expect similar impacts to those discussed for critical facilities. These impacts include structural failure and loss of building function which could result in indirect impacts (e.g., damaged homes will no longer be habitable causing residents to seek shelter).

Infrastructure

During an earthquake, the types of infrastructure that shaking could impact include roadways, utility lines/pipes, railroads, and bridges. Since an extensive inventory of the infrastructure was not available for use in the earthquake models, it is important to emphasize that any number of these items could become damaged in the event of an earthquake. The impacts to these items include broken, failed, or impassable roadways, broken or failed utility lines (e.g., loss of power or gas to community), and railway failure from broken or impassable railways. Bridges could also fail or become impassable, causing risk to motorists.

Hazus-MH Earthquake Analyses

Existing geological information was reviewed prior to the Planning Team selection of earthquake scenarios. A Magnitude 5.5 arbitrary earthquake scenario was performed to provide a reasonable basis for earthquake planning in Franklin County. The other two scenarios included a Magnitude of 7.7 with the epicenter located on the New Madrid Fault Zone and a Magnitude 7.1 with the epicenter located on the Wabash Fault Zone.

The earthquake-loss analysis for the probabilistic scenario was based on ground-shaking parameters derived from U.S. Geological Survey probabilistic seismic hazard curves for the earthquake with the 500-year return period. This scenario evaluates the average impacts of a multitude of possible earthquake epicenters with a magnitude typical of that expected for a 500-year return period. The New Madrid Fault Zone runs along the Mississippi River through Arkansas, Tennessee, Missouri, Kentucky and Southern Illinois. The Wabash Valley Fault Zone runs through Southeastern Illinois, Western Kentucky and Southwest Indiana. This represents a realistic scenario for planning purposes.

The earthquake hazard modeling scenarios performed:

- Magnitude 5.5 arbitrary earthquake epicenter in Franklin County
- Magnitude 7.7 event along the New Madrid Fault Zone
- Magnitude 7.1 event along the Wabash Valley Fault Zone

This report presents two types of building losses: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

Results for M5.5 Earthquake Scenario

The results of the M5.5 arbitrary earthquake scenario are depicted in Tables 4-18, 4-19, and Figure 4-9. Hazus-MH estimates that approximately 2,293 buildings will be at least moderately damaged. This is over 10% of the total number of buildings in the Franklin County. It is estimated that 45 buildings would be damaged beyond repair.

The building related losses are approximately $100 million dollars. It is estimated that 21% of the losses are related to the business interruption of the region. By far, the largest loss is sustained by the residential occupancies which make up over 60% of the total loss.

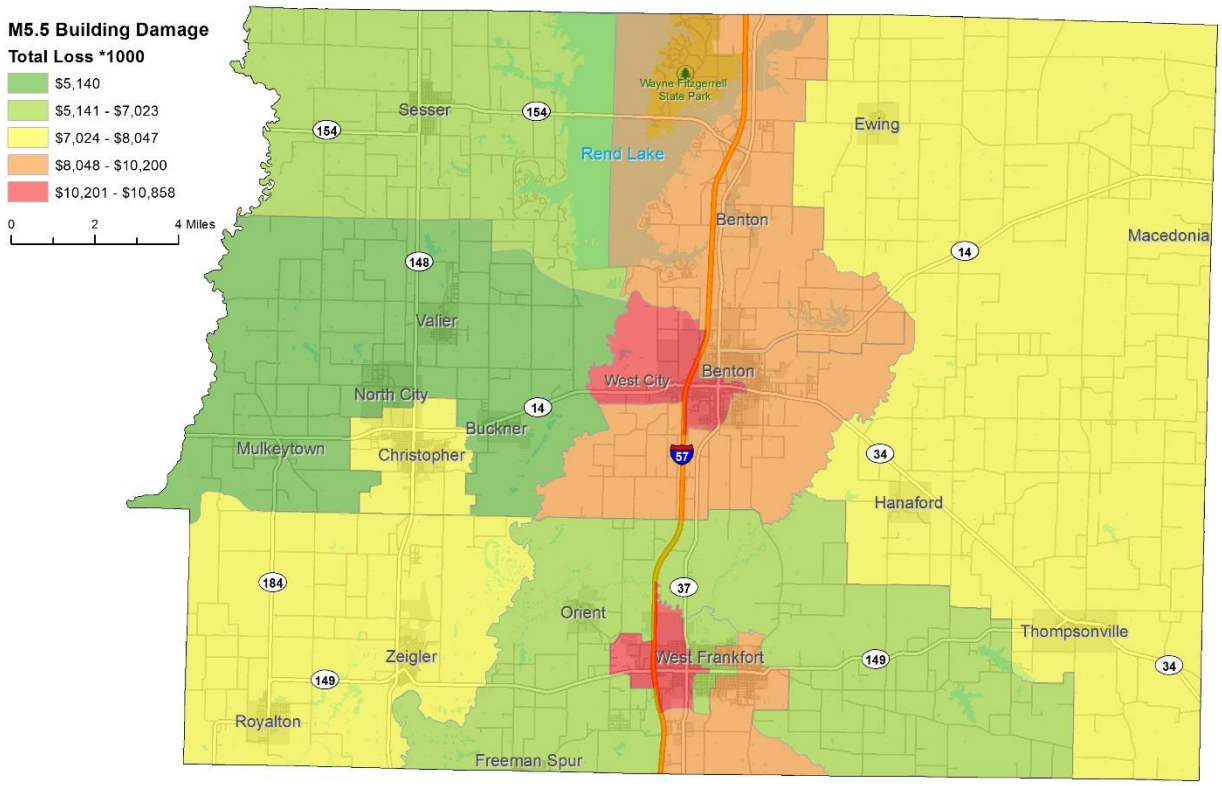
Table 4-18. M5.5 Earthquake Damage Estimates by Building Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	76	0.49	24	0.59	20	1.04	6	1.57	1	1.2
Commercial	547	3.52	188	4.49	125	6.63	32	8.96	3	7.83
Educational	20	0.13	6	0.14	4	0.22	1	0.25	0	0.32
Government	30	0.19	9	0.21	6	0.31	1	0.32	0	0.42
Industrial	135	0.87	45	1.09	34	1.82	9	2.61	1	2.03
Other Residential	3,958	25.47	1,183	28.32	673	35.65	128	35.29	12	26.58
Religion	80	0.52	23	0.56	15	0.8	4	1.11	1	1.13
Single Family	10,695	68.82	2,700	64.61	1,010	53.54	180	49.89	27	60.48
Total:	**15,541**		**4,178**		**1,887**		**361**		**45**	

Table 4-19. M5.5 Earthquake Estimates of Building Economic Losses (in Millions of Dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Other	Total
Income Losses	Wage	$0.00	$0.18	$3.36	$0.22	$0.31	$4.07
	Capital-Related	$0.00	$0.08	$2.69	$0.14	$0.08	$2.99
	Rental	$1.41	$0.69	$1.54	$0.08	$0.14	$3.86
	Relocation	$5.24	$1.02	$2.55	$0.31	$1.22	$10.34
	Subtotal:	**$6.65**	**$1.97**	**$10.14**	**$0.75**	**$1.75**	**$21.26**
Capital Stock Losses	Structural	$6.96	$1.46	$2.64	$0.84	$1.33	$13.23
	Non-Structural	$26.07	$5.92	$7.64	$2.46	$3.52	$45.61
	Content	$9.46	$1.52	$4.27	$1.71	$2.02	$18.98
	Inventory	$0.00	$0.00	$0.13	$0.44	$0.04	$0.61
	Subtotal:	$42.49	$8.90	$14.68	$5.45	$6.91	$78.43
	Total:	**$49.14**	**$10.87**	**$24.82**	**$6.20**	**$8.66**	**$99.69**

Figure 4-9. Franklin County M5.5 Earthquake Building Economic Losses



Results for M7.7 New Madrid Earthquake

The results of the M7.7 New Madrid earthquake scenario are depicted in Tables 4-20, 4-21, and Figure 4-10. Hazus-MH estimates that approximately 638 buildings will be at least moderately damaged. This is over 3% of the total number of buildings in the Franklin County. It is estimated that 0 buildings would be damaged beyond repair.

The building related losses are approximately $55 million dollars. It is estimated that 10% of the losses are related to the business interruption of the region. By far, the largest loss is sustained by the residential occupancies which make up over 58% of the total loss.

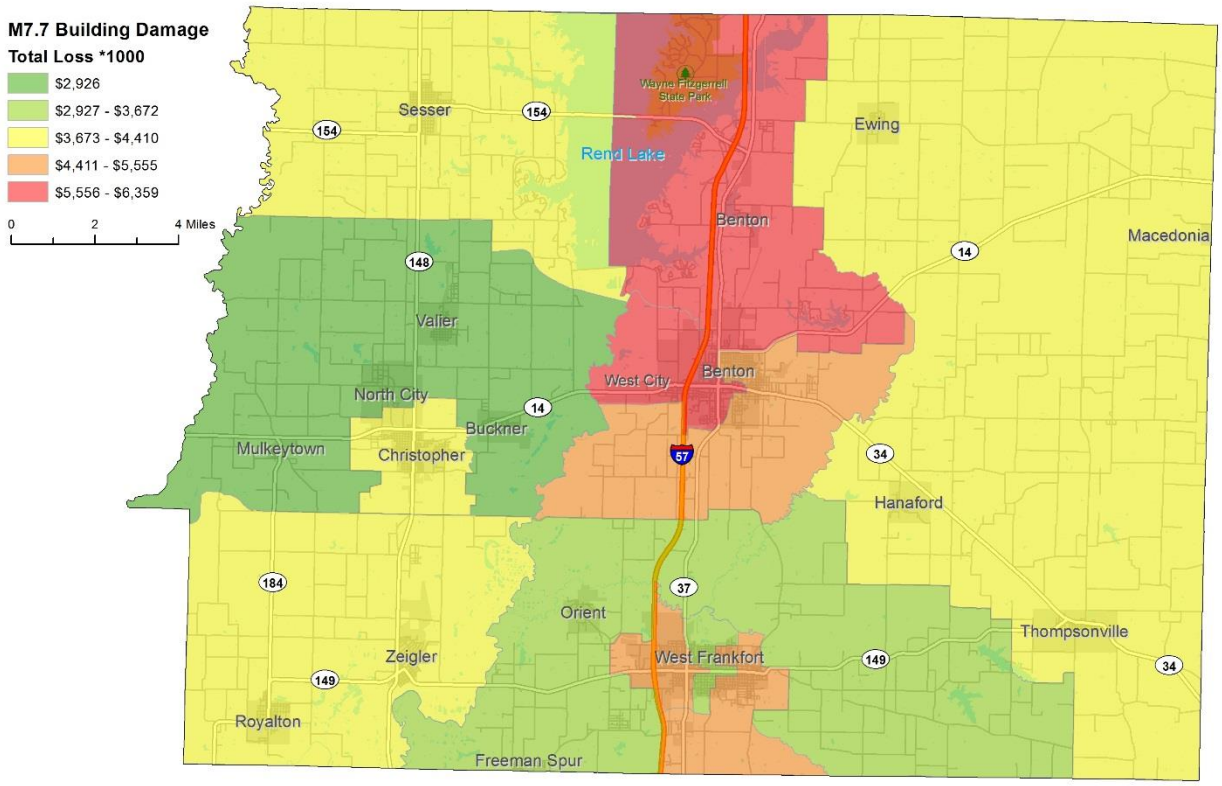
Table 4-20. New Madrid M7.7 Earthquake Damage Estimates by Building Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	89	0.49	27	0.83	10	1.6	1	2.89	0	1.6
Commercial	657	3.61	179	5.61	56	8.98	3	15.94	0	9.96
Educational	24	0.13	6	0.18	1	0.23	0	0.23	0	0.31
Government	36	0.2	8	0.25	2	0.33	0	0.33	0	0.33
Industrial	161	0.89	46	1.45	17	2.71	1	5.07	0	2.69
Other Residential	4,496	24.74	1,130	35.34	319	51.43	7	40.93	0	18.61
Religion	95	0.52	22	0.69	6	0.99	0	1.54	0	1.38
Single Family	12,617	69.42	1,779	55.64	209	33.73	6	33.07	0	65.12
Total:	**18,175**		**3,197**		**620**		**18**		**0**	

Table 4-21. New Madrid M7.7 Earthquake Estimates of Building Economic Losses (in Millions of Dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Other	Total
Income Losses	Wage	$0.00	$0.02	$0.99	$0.08	$0.11	$1.20
	Capital-Related	$0.00	$0.01	$0.81	$0.05	$0.03	$0.90
	Rental	$0.23	$0.16	$0.54	$0.03	$0.03	$0.99
	Relocation	$0.75	$0.37	$0.75	$0.11	$0.27	$2.25
	Subtotal:	**$0.98**	**$0.56**	**$3.09**	**$0.27**	**$0.44**	**$5.34**
Capital Stock Losses	Structural	$1.57	$0.54	$0.78	$0.29	$0.35	$3.53
	Non-Structural	$14.36	$3.86	$5.29	$2.09	$2.34	$27.94
	Content	$9.09	$1.46	$4.05	$1.60	$1.92	$18.12
	Inventory	$0.00	$0.00	$0.12	$0.41	$0.04	$0.57
	Subtotal:	**$25.02**	**$5.86**	**$10.24**	**$4.39**	**$4.65**	**$50.16**
	Total:	**$26.00**	**$6.42**	**$13.33**	**$4.66**	**$5.09**	**$55.50**

Figure 4-10. New Madrid M7.7 Earthquake Building Economic Losses



Results M7.1 Magnitude Wabash Valley Earthquake – General Building Stock

The results of the Wabash Valley M7.1 earthquake scenario are depicted in Tables 4-22, 4-23, and Figure 4-11. Hazus-MH estimates that approximately 4 buildings will be at least moderately damaged. Zero buildings would be damaged beyond repair.

The building related losses are approximately $6 million dollars. It is estimated that 1% of the losses are related to the business interruption of the region. By far, the largest loss is sustained by the residential occupancies which make up over 55% of the total loss.

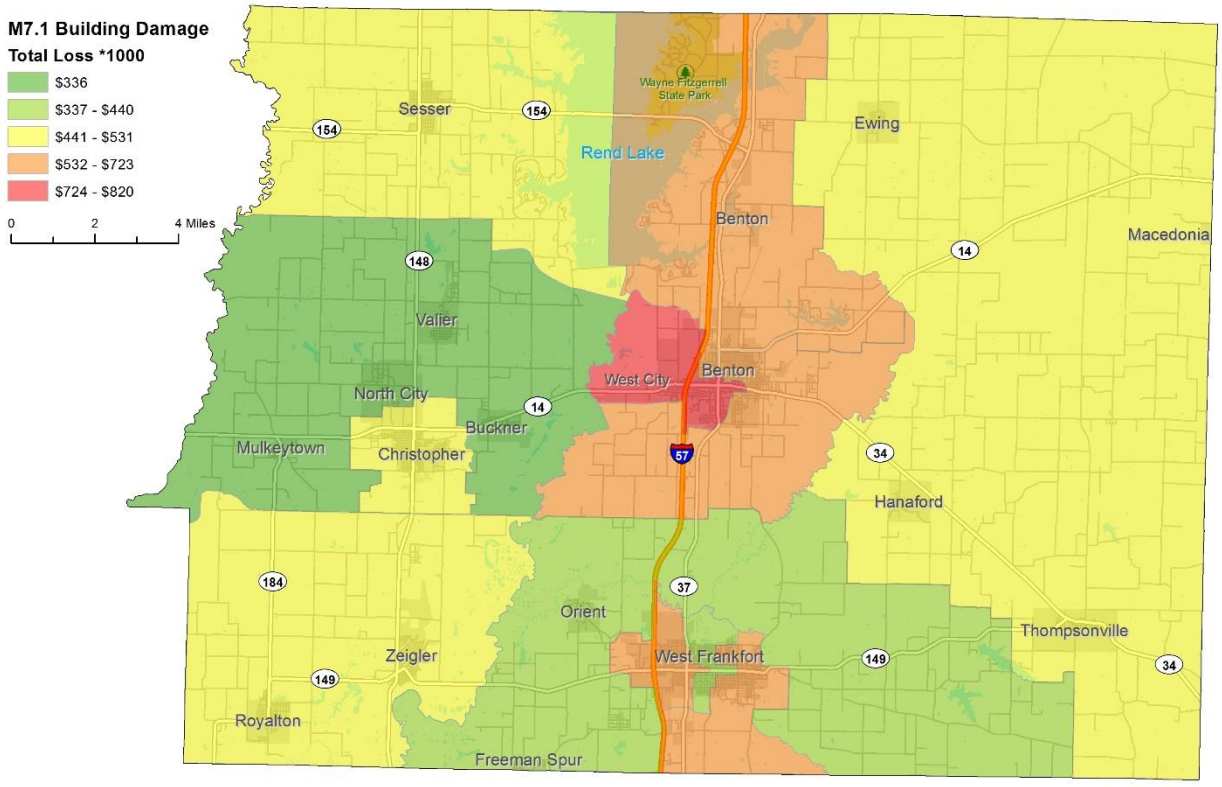
Table 4-22. Wabash Valley 7.1 Magnitude Earthquake Damage Estimates by Building Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	125	0.57	1	0.82	0	1.35	0	0.00	0	0.00
Commercial	890	4.06	5	5.30	0	8.23	0	0.00	0	0.00
Educational	31	0.14	0	0.19	0	0.23	0	0.00	0	0.00
Government	46	0.21	0	0.22	0	0.26	0	0.00	0	0.00
Industrial	224	1.02	1	1.36	0	2.29	0	0.00	0	0.00
Other Residential	5,916	26.99	35	41.18	2	40.53	0	0.00	0	0.00
Religion	122	0.56	1	0.79	0	1.07	0	0.00	0	0.00
Single Family	14,567	66.45	43	50.15	2	46.03	0	0.00	0	0.00
Total:	**21,921**		**86**		**4**		**0**		**0**	

Table 4-23. Wabash 7.1 Magnitude Earthquake Estimates of Building Economic Losses (in Millions of Dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Other	Total
Income Losses	Wage	$0.00	$0.00	$0.01	$0.00	$0.00	$0.01
	Capital-Related	$0.00	$0.00	$0.01	$0.00	$0.00	$0.01
	Rental	$0.00	$0.00	$0.01	$0.00	$0.00	$0.01
	Relocation	$0.01	$0.00	$0.00	$0.00	$0.00	$0.01
	Subtotal:	**$0.01**	**$0.00**	**$0.03**	**$0.00**	**$0.00**	**$0.04**
Capital Stock Losses	Structural	$0.03	$0.01	$0.01	$0.00	$0.00	$0.05
	Non-Structural	$1.74	$0.47	$0.83	$0.04	$0.34	$3.42
	Content	$1.26	$0.22	$0.70	$0.30	$0.31	$2.79
	Inventory	$0.00	$0.00	$0.02	$0.08	$0.01	$0.11
	Subtotal:	**$3.03**	**$0.70**	**$1.56**	**$0.42**	**$0.66**	**$6.37**
	Total:	**$3.04**	**$0.70**	**$1.59**	**$0.42**	**$0.66**	**$6.41**

Figure 4-11. Wabash Valley M7.1 Scenario Building Economic Losses



Vulnerability to Future Assets/Infrastructure for Earthquake Hazard

New construction, especially critical facilities, should accommodate earthquake mitigation design standards.

Suggestions for Community Development Trends

Community development should occur outside of the low-lying areas in floodplains with a water table within five feet of grade that is susceptible to liquefaction. It is important to harden and protect future

and existing structures against the possible termination of public services and systems including power lines, water and sanitary lines, and public communication.

4.3.4 Hazardous Material Storage and Transportation Hazard

Hazard Definition

Illinois has numerous active transportation lines that run through many of its counties. Active railways transport harmful and volatile substances across county and state lines every day. Transporting chemicals and substances along interstate routes is commonplace in Illinois. The rural areas of Illinois have considerable agricultural commerce, meaning transportation of fertilizers, herbicides, and pesticides is common on rural roads. These factors increase the chance of hazardous material releases and spills throughout the state of Illinois.

The release or spill of certain substances can cause an explosion. Explosions result from the ignition of volatile products such as petroleum products, natural and other flammable gases, hazardous materials/chemicals, dust, and bombs. An explosion can potentially cause death, injury, and property damage. In addition, a fire routinely follows an explosion, which may cause further damage and inhibit emergency response. Emergency response may require fire, safety/law enforcement, search and rescue, and hazardous materials units.

Previous Occurrences of Hazardous Materials Storage and Transportation Hazard

Franklin County has not experienced a significantly large-scale hazardous material incident at a fixed site or during transport resulting in multiple deaths or serious injuries.

The Illinois Emergency Management Agency maintains a comprehensive Hazardous Materials Incident Report Database for the State of Illinois. The database contains information on all Hazardous Materials Reports since 1987 but does not include an assessment of economic and property losses in terms of dollars of damage. The database reported 312 incidents in Franklin County as of February 2015. The most recent event occurred in August 2014 following an incident on Interstate 57 between mileposts 75 and 76 near Benton. Road debris struck the tank and released 50 gallons of diesel fuel. Additional details of individual hazard events are on the IEMA website.

Industries regulated by The U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA) are required to report incidents which meet or exceed established reporting criteria. The data for reported incidents are available on the PHMSA website via the U.S. Department of Transportation Hazmat Intelligence Portal. The database reported 29 incidents in Franklin County as of February 2015. Table 4-24 identifies PHMSA reported incidents that caused damage, death, or injury in Franklin County. Additional details of individual hazard events are on the PHMSA website.

The most damaging event occurred in 2010 following a traffic accident on Interstate 57 at milepost 65 near West Frankfort. 40,669 solid pounds of scrap battery parts were released. The total damage including cost of materials lost, carrier damage, property damage, response costs, and remediation cleanup costs totaled $166,000. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses.

Table 4-24. Selected PHMSA-Recorded Hazardous Material Incidents that Caused Damage, Death, or Injury

Location	Date	Mode of Transportation	Hazardous Material Class	Death	Injuries	Damages*
West Frankfort	7/15/2010	Highway	Miscellaneous Hazardous Material (Batteries)	0	0	$166,000
Sesser	11/15/1989	Highway	Combustible Liquid	0	0	$100
West Frankfort	7/2/1998	Highway	Poisonous Materials	0	0	$375
			Totals:	**0**	**0**	**$166,475**

Source: U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration

* Damages includes the cost of the material lost, carrier damage, property damage, response costs, and remediation cleanup costs.

Geographic Location of Hazardous Materials Storage and Transportation Hazard

Hazardous material hazards are countywide and are primarily associated with the transport of materials via highway, railroad, and/or river barge. Major hazardous material facilities in the county include the FS plants in Macedonia and Christopher with 56 Tier II reporting facilities.

Hazard Extent of Hazardous Materials Storage and Transportation Hazard

The extent of the hazardous material hazard varies both in terms of the quantity of material being transported as well as the specific content of the container.

Risk Identification of Hazardous Materials Storage and Transportation Hazard

Based on input from the Planning Team, future occurrence of hazardous materials accident in Franklin County is likely. According to the Risk Priority Index (RPI) and County input, hazardous materials storage and transportation hazard is ranked as the number three hazard.

Risk Priority Index

Probability	x	Magnitude	=	RPI
3	x	3	=	9

Vulnerability Analysis for Hazardous Materials Storage and Transportation Hazard

The entire county is vulnerable to a hazardous material release and can expect impacts within the affected area. The main concern during a release or spill is the affected population. This plan will therefore consider all buildings located within the county as vulnerable. To accommodate this risk, this plan considers all buildings located within the county as vulnerable. Tables 4-7 and 4-8 display the existing buildings and critical infrastructure in Franklin County.

Critical Facilities

All critical facilities and communities within the county are at risk. A critical facility will encounter many of the same impacts as any other building within the jurisdiction. These impacts include structural failure due to fire or explosion and loss of function of the facility (e.g., a damaged police station can no longer serve the community). Table 4-7 lists the types and number of critical facilities for the entire county and Appendix F displays a large format map of the locations of all critical facilities within the county.

Building Inventory

Table 4-8 lists the building exposure in terms of types and numbers of buildings for the entire county. The buildings within the county can expect similar impacts to those discussed for critical facilities. These impacts include structural failure due to fire or explosion or debris, and loss of function of the building (e.g., a person cannot inhabit a damaged home, causing residents to seek shelter).

Infrastructure

During a hazardous material release, the types of potentially impacted infrastructure include roadways, utility lines/pipes, railroads, and bridges. Since an extensive inventory of the infrastructure is not available to this plan, it is important to emphasize that a hazardous materials release could damage any number of these items. The impacts to these items include: broken, failed, or impassable roadways; broken or failed utility lines (e.g., loss of power or gas to community); and railway failure from broken or impassable railways. Bridges could become impassable causing risk to motorists.

ALOHA Hazardous Chemical Release Analysis

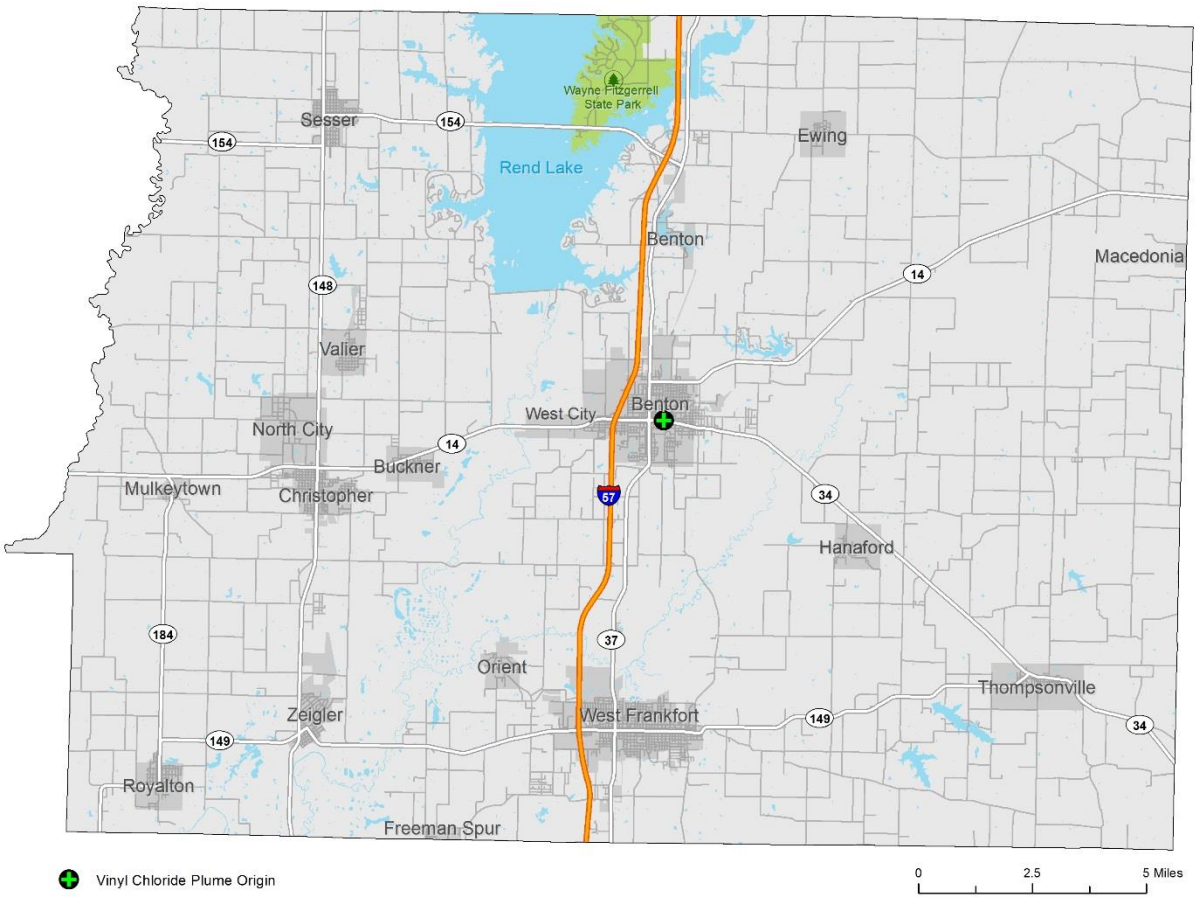
The U.S. Environmental Protection Agency's ALOHA (Areal Locations of Hazardous Atmospheres) model was used to assess the impacted area for vinyl chloride release at intersection of Route 34 and the Missouri Pacific Railroad in Benton. The Franklin County Planning Team selected the vinyl chloride scenario because of significant truck and train traffic along major transportation routes within a relatively densely populated area.

ALOHA is a computer program designed for response to chemical accidents, as well as emergency planning and training. Ammonia, chlorine, vinyl chloride and propane are common chemicals used in industrial operations and are found in either liquid or gas form. Rail and truck tankers haul ammonia, chlorine, vinyl chloride and propane to and from facilities.

Vinyl chloride is a colorless gas with a sweet odor. Easily ignited. Shipped as a liquefied gas under own vapor pressure. Contact with the unconfined liquid may cause frostbite by evaporative cooling. Leaks may be liquid or vapor. Vapors are heavier than air. May asphyxiate by the displacement of air. Under prolonged exposure to fire or intense heat the containers may rupture violently and rocket. Suspected carcinogen. Used to make plastics, adhesives, and other chemicals.

For the vinyl chloride scenario, SIU assumed average atmospheric and climatic conditions for the fall season with a breeze from the east. SIU considered the seasonal conditions upon the request of the Planning Team and obtained average monthly conditions for Paducah, KY from NOAA's Monthly Weather Summary. Figures 4-12 depicts the plume origin of the modeled hazardous chemical release in Franklin County. The ALOHA atmospheric modeling parameters for the vinyl chloride release, depicted in Figure 4-13, were based upon a northeasterly speed of 10 miles per hour. The temperature was 50°F with 75% humidity and a cloud cover of five-tenths skies. SIU used average weather conditions for the month of June reported from NOAA for wind direction, wind speed, and temperature to simulate fall conditions.

Figure 4-12. ALOHA Modeled Hazardous Chemical Plume Origin in Franklin County



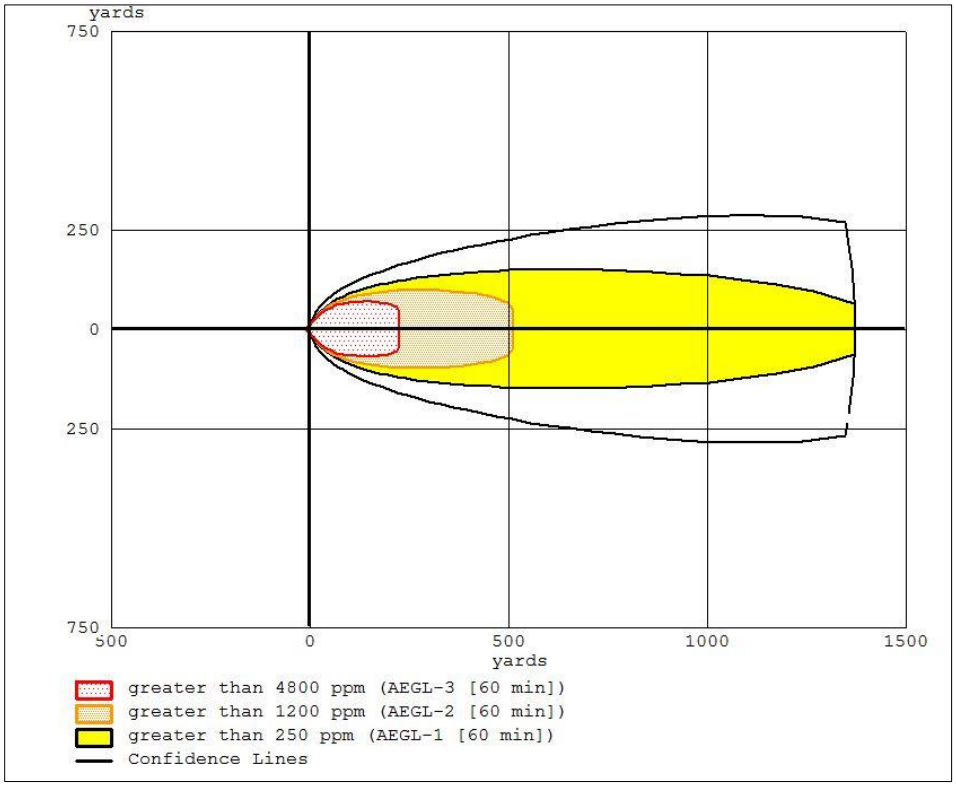
The source of the chemical spill is a horizontal, cylindrical-shaped tank. The diameter of the tank was set to 8 feet and the length set to 33 feet (12,408 gallons). At the time of its release, it was estimated that the tank was 75% full. The vinyl chloride in this tank is in its liquid state. This release was based on a leak from a 2.5-inch-diameter hole, 12 inches above the bottom of the tank. According to these ALOHA parameters, this scenario would release approximately 4,360 pounds of material per minute. Figure 4-13 shows the plume modeling parameters in greater detail.

Figure 4-13. ALOHA Modeling Parameters for Vinyl Chloride Release

```
SITE DATA:
   Location: BENTON, ILLINOIS
   Building Air Exchanges Per Hour: 0.98 (unsheltered single storied)
   Time: December 10, 2014  1331 hours CST (using computer's clock)

CHEMICAL DATA:
   Chemical Name: VINYL CHLORIDE          Molecular Weight: 62.50 g/mol
   AEGL-1 (60 min): 250 ppm   AEGL-2 (60 min): 1200 ppm   AEGL-3 (60 min): 4800 ppm
   LEL: 36000 ppm     UEL: 330000 ppm
   Carcinogenic risk - see CAMEO Chemicals
   Ambient Boiling Point: 5.9° F
   Vapor Pressure at Ambient Temperature: greater than 1 atm
   Ambient Saturation Concentration: 1,000,000 ppm or 100.0%

ATMOSPHERIC DATA: (MANUAL INPUT OF DATA)
   Wind: 10 miles/hour from E at 10 feet
   Ground Roughness: open country         Cloud Cover: 5 tenths
   Air Temperature: 50° F                 Stability Class: D
   No Inversion Height                    Relative Humidity: 75%

SOURCE STRENGTH:
   Leak from hole in horizontal cylindrical tank
   Flammable chemical escaping from tank (not burning)
   Tank Diameter: 8 feet                  Tank Length: 33 feet
   Tank Volume: 12,408 gallons
   Tank contains liquid                   Internal Temperature: 50° F
   Chemical Mass in Tank: 36.1 tons       Tank is 75% full
   Circular Opening Diameter: 2.5 inches
   Opening is 12 inches from tank bottom
   Release Duration: 28 minutes
   Max Average Sustained Release Rate: 4,360 pounds/min
      (averaged over a minute or more)
   Total Amount Released: 71,237 pounds
   Note: The chemical escaped as a mixture of gas and aerosol (two phase flow).
```

Using the parameters in Figure 4-13, approximately 71,237 pounds of material would be realized. The image in Figure 4-14 depicts the plume footprint generated by ALOHA. As the substance moves away from the source, the level of substance concentration decreases. Each color-coded area depicts a level of concentration measured in parts per million.

Figure 4-14. ALOHA Generate Plume Footprint of Vinyl Chloride Scenario



The red buffer (20 ppm) extends no more than 250 yards from the point of release after one hour. The orange buffer (2 ppm) extends no more than 500 yards and the yellow buffer (0.5 ppm) extends no more than 1,400 yards from the point of release. The dashed line depicts the level of confidence within the confines of the entire plume footprint. The ALOHA model is 95% confident that the release will stay within this boundary.

Acute Exposure Guideline Levels (AEGL) are intended to describe the risk to humans resulting from once-in-a-lifetime, or rare exposure to airborne chemical (U.S. EPA AEGL Program). The National Advisory Committee for the Development of Acute Exposure Guideline Levels for Hazardous Substances (AEGL Committee) is involved in developing these guidelines to help both national and local authorities, as well as private companies, deal with emergencies involving spills, or other catastrophic exposures. AEGLs represent threshold exposure limits for the general public and are applicable to emergency exposure periods ranging from 10 minutes to 8 hours. The three AEGLs have been defined as follows:

> AEGL-1: the airborne concentration, expressed as parts per million or milligrams per cubic meter (ppm or mg/m3) of a substance above which it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic nonsensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure.
>
> AEGL-2: the airborne concentration (expressed as ppm or mg/m3) of a substance above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.
>
> AEGL-3: the airborne concentration (expressed as ppm or mg/m3) of a substance above which it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death.

Airborne concentrations below the AEGL-1 represent exposure levels that can produce mild and progressively increasing but transient and non-disabling odor, taste, and sensory irritation or certain asymptomatic, non-sensory effects. With increasing airborne concentrations above each AEGL, there is a progressive increase in the likelihood of occurrence and the severity of effects described for each corresponding AEGL. Although the AEGL values represent threshold levels for the general public, including susceptible subpopulations, such as infants, children, the elderly, persons with asthma, and those with other illnesses, it is recognized that individuals, subject to unique or idiosyncratic responses, could experience the effects described at concentrations below the corresponding AEGL.

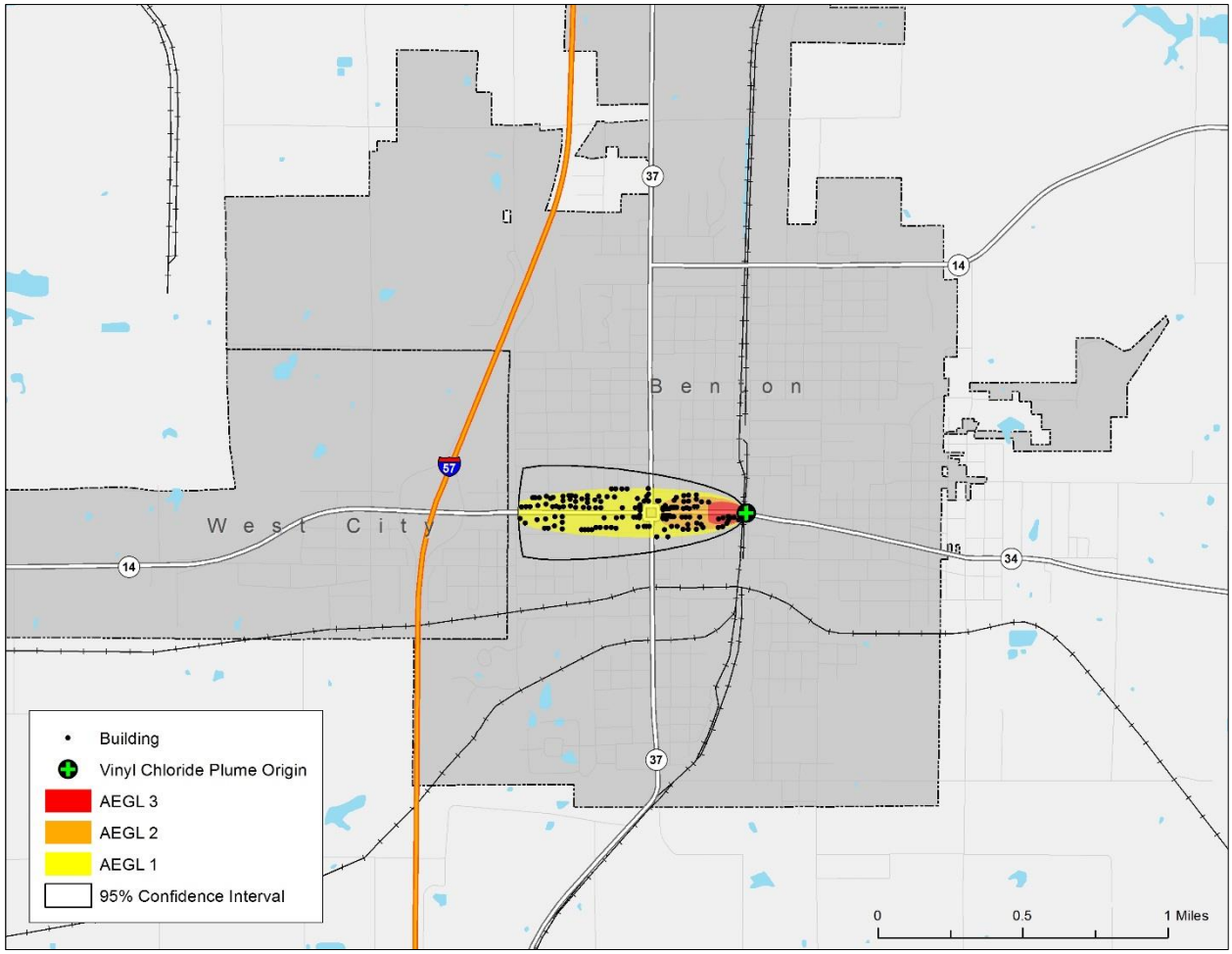
Results for Vinyl Chloride Release

An estimate of property exposed to the vinyl chloride spill was calculated by using the building inventory and intersecting these data with each of the AEGL levels (AEGL 3: ≥ 4800 ppm, AEGL 2: ≥ 1200 ppm and AEGL 1: ≥ 250 ppm). The Franklin County assessment and parcel data was utilized for this analysis. There are 150 building within the vinyl chloride plume. It should be noted that the results should be interpreted as potential degrees of loss rather than exact number of buildings damaged to the vinyl chloride release. Table 4-25 lists the total amount of building exposure to each AEGL zone. Figure 4-15 depicts the vinyl chloride spill footprint and location of the buildings exposed. The GIS overlay analysis estimates that the full replacement cost of the buildings exposed to the vinyl chloride plume is approximately $303 million.

Table 4-25. Estimated Building Exposure as a Result of the Vinyl Chloride Release

Occupancy	Building Exposure			Number of Buildings		
	AEGL 1	AEGL 2	AEGL 3	AEGL 1	AEGL 2	AEGL3
Residential	$2,635,718	$388,845	$34,853	43	5	1
Commercial	$467,000,820	$276,785,520	$164,075,010	57	37	7
Total:	**$469,636,538**	**$277,174,365**	**$164,109,863**	**100**	**42**	**8**

Figure 4-15. ALOHA Plume Footprint and Buildings Exposed to Vinyl Chloride Release



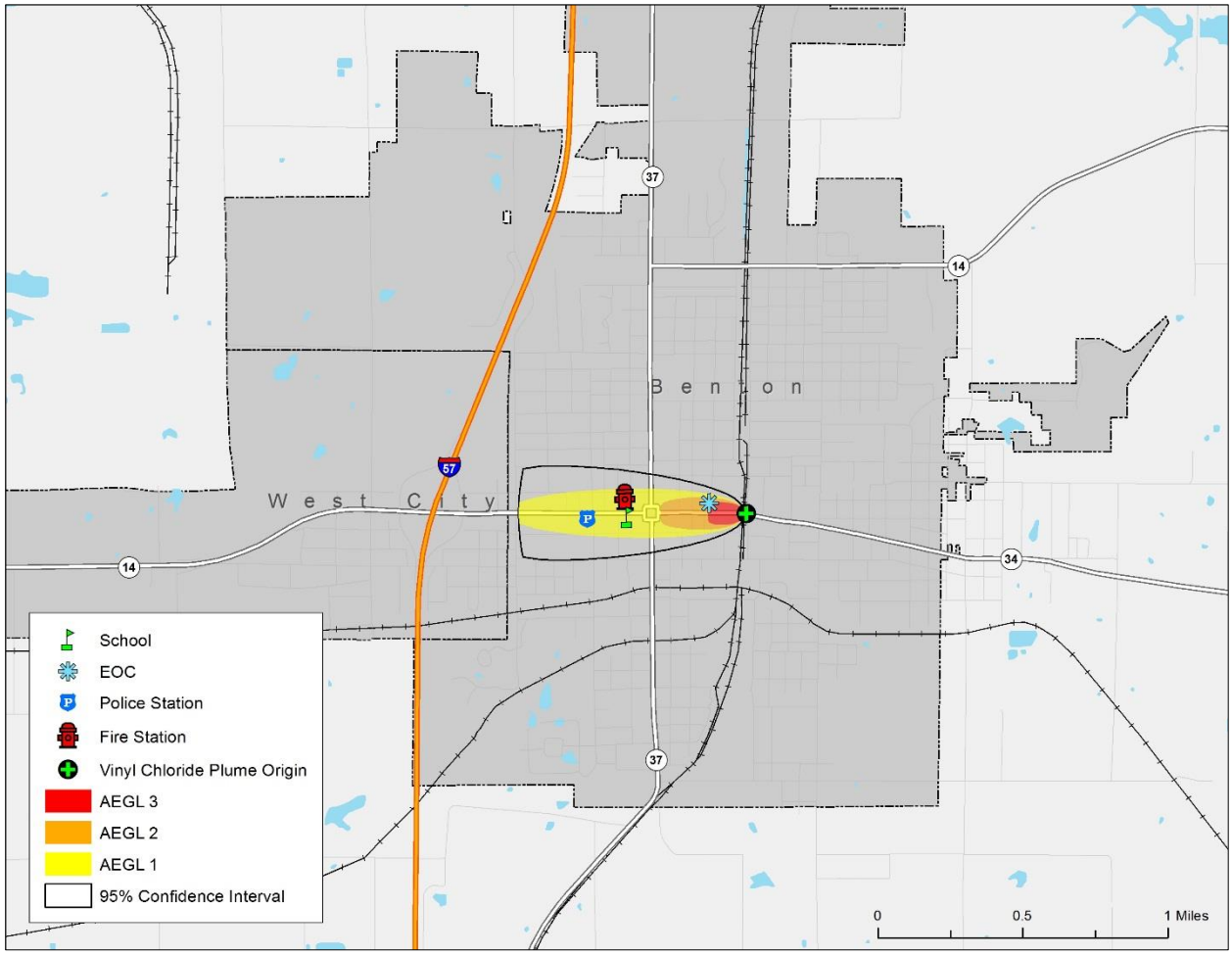
Essential Facilities Damage

There are four essential facilities within the limits of the vinyl chloride scenario. Table 4-26 and Figure 4-16 identifies the affected facilities.

Table 4-26. Essential Facilities within the Vinyl Chloride Plume Footprint

Essential Facility	Facility Name
Fire Department	Benton Fire Dept.
Police Department	Benton Police Dept.
EOC	Franklin County Jail
Schools	Franklin County ROE 21

Figure 4-16. Map of Essential Facilities within the Vinyl Chloride Plume Footprint



Vulnerability to Future Assets/Infrastructure for Hazardous Materials Storage and Transportation Hazard

Franklin County is expect to see future economic expansion within the city limits of Benton and West Frankfort. These areas are particularly vulnerable to chemical releases because of transportation of hazardous materials along railways, U.S. Highway 51 and Interstate 57.

Suggestion for Community Development Trends

Because the hazardous material hazard events may occur anywhere within the county, future development is susceptible to the hazard. The major transportation routes and the industries located in Franklin County pose a threat of dangerous chemicals and hazardous materials release. Regional particularly vulnerable are within the city limits of Benton and West Frankfort within close proximity to transportation corridors such as Interstate 57.

4.3.5 Thunderstorm Hazard

Hazard Definition

Severe thunderstorms are weather events with one or more of the following characteristics: strong winds, large and damaging hail, and frequent lightning. Severe thunderstorms most frequently occur in Illinois during the spring and summer months, but can occur at any time. A severe thunderstorm's impacts can be localized or can be widespread in nature. A thunderstorm is classified as severe when it meets one or more of the following criteria:

Hail 0.75 inches or greater in diameter

Hail is a possible product of a strong thunderstorm. Hail usually falls near the center of a storm, but strong winds occurring at high altitudes in the thunderstorm can blow the hailstones away from the storm center, resulting in damage in other areas near the storm. Hailstones range from pea-sized to baseball-sized, and some reports note hailstones larger than softballs.

Frequent and dangerous lightning

Lightning is a discharge of electricity from a thunderstorm. Lightning is often perceived as a minor hazard, but lightning damages many structures and kills or severely injures numerous people in the United States each year.

Wind speeds greater than or equal to 58 miles per hour

Straight-line winds from thunderstorms are fairly common in Illinois. Straight-line winds can cause damage to homes, businesses, power lines, and agricultural areas, and may require temporary sheltering of individuals who are without power for extended periods of time.

Previous Occurrences of Thunderstorm Hazards

The National Climatic Data Center (NCDC) database reported eighty-three hailstorms in Franklin County since 1950. Hailstorms occur nearly every year in the late spring and early summer months. One recent reported occurrence was in April of 2014, when storms formed near a warm front that was draped across southeast Missouri, Southern Illinois, and Kentucky. The storms occurred within a moist and moderately unstable air mass along and behind the warm front. The strong moisture feed contributed to torrential downpours that produced flash flooding in a number of counties. Hail was reported in Sesser. Table 4-27 lists the significant hail storms (such as those that cause death, damage or injury) in Franklin County.

Table 4-27. Selected NCDC-Recorded Hail that Caused Damage, Death, or Injury in Franklin County

Location or County*	Date	Deaths	Injuries	Property Damage
Franklin County	5/31/1998	0	0	$25,000
Rend Lake	4/21/2002	0	0	$100,000
Whittington	6/27/2002	0	0	$2,000
	Total:	**0**	**0**	**$127,000**

*NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

The NCDC database reported two lightning events in Franklin County. The most recent reported event was in July 2012 in West Frankfort when lightning struck a tree and a house. The house caught fire, resulting in damage to the roof. Table 4-28 identifies NCDC-recorded lightning that caused damage, death, or injury in Franklin County.

Table 4-28. Selected NCDC-Recorded Lightning that Caused Damage, Death, or Injury in Franklin County

Location or County*	Date	Deaths	Injuries	Property Damage
Christopher	10/26/2010	0	0	$10,000
West Frankfort	7/3/2012	0	0	$9,000
	Total:	**0**	**0**	**$19,000**

*NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

The NCDC database reported 188 severe thunder and wind storms in Franklin County. Table 4-29 identifies selected NCDC-recorded wind storms that caused major damage (over $100,000), death, or injury in Franklin County.

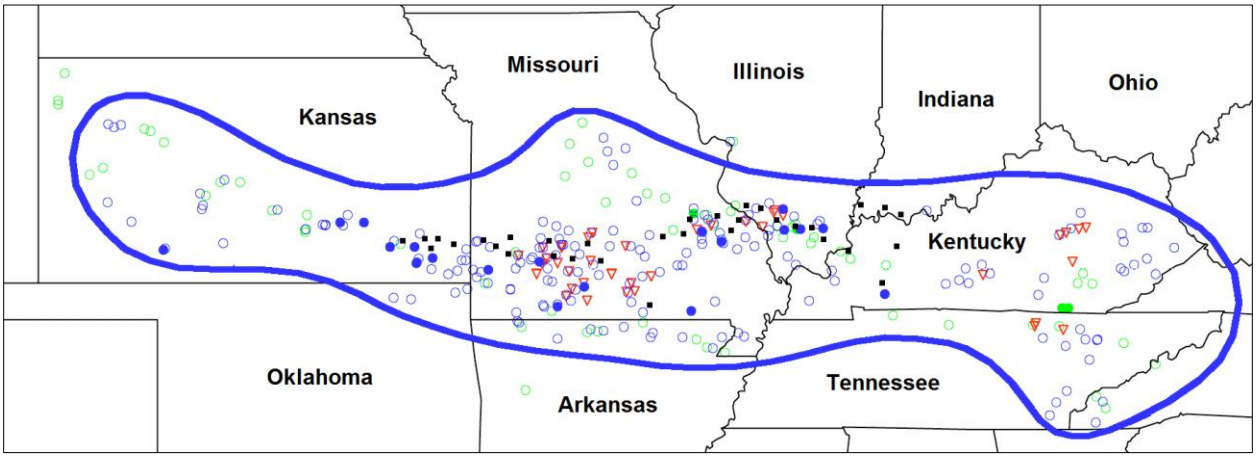
Table 4-29. Selected NCDC-Recorded Thunder and Wind Storms that Caused Major Damage (over $100,000), Death, or Injury in Franklin County

Location or County*	Date	Deaths	Injuries	Property Damage
Franklin County	8/10/2006	0	0	$100,000
Franklin County	4/2/2006	0	0	$150,000
Franklin County	4/19/2011	0	0	$200,000
Franklin County	7/1/2012	0	0	$200,000
Franklin County	9/14/2008	0	0	$200,000
Sesser	4/27/2002	0	0	$250,000
Franklin County	6/21/2011	1	0	$250,000
Franklin County	6/19/2011	0	0	$380,000
Zeigler	4/19/1996	0	0	$500,000
Franklin County	5/8/2009	0	0	$6,000,000
	Total:	**1**	**0**	**$8,230,000**

*NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

The most damaging wind event in southern Illinois was the May 2009 Derecho. According to NOAA, the 2009 “Super Derecho” was one of the most intense and unusual derechos ever observed. The storm produced significant and often continuous damage over a broad swath from the high plans of western Kansas to the foothills of the Appalachians in eastern Kentucky. Figure 4-17 depicts the area affected by the Super Derecho with wind damage or wind gusts ≥ 50 kts (58 mph), open blue circles; estimated or measured wind gusts ≥ 65 kts (74 mph), filled blue circles; hail ≥ 0.75 inches, open green circles; hail ≥ 2.0 inches, filled green circles; tornadoes, red triangles. Flash flooding (by county) denoted by black squares.

Figure 4-17. Area affected by and severe weather reports associated with the May 8, 2009 "Super Derecho" convective system



During the May 2009 Derecho, widespread damaging winds across southern Franklin County caused lots of power outages. At the peak of the outages, 49 percent of the county was without power. Among the hardest hit cities was West Frankfort. Peak winds were estimated around 60 mph at Benton, but from 80 to 90 mph around West Frankfort and near the Williamson County line. Thirteen homes were destroyed beyond repair. Damage assessments indicated 184 dwellings sustained damage countywide. Of that number, 114 sustained minor damage, and 70 needed moderate repairs. Numerous trees were blown down, blocking some of the main roads. Near the Williamson County line, trees were blown across the southbound lanes of Interstate 57. Secondary roads stayed blocked for longer periods of time. The hardest hit areas were in and near Royalton, Zeigler, Orient, West Frankfort, and Thompsonville. In Christopher, sheds and carports were overturned, and trees were down on roads and power lines. An uprooted tree landed on a house. The community park in West Frankfort was closed for a little over a week due to downed trees and fences. Some schools were closed for part of the week following the storm.

Geographic Location of Thunderstorm Hazard

The entire county has the same risk for occurrence of thunderstorms. They can occur at any location within the county.

Hazard Extent for Thunderstorm Hazard

The extent of the hypothetical thunderstorms depends upon the extent of the storm, the wind speed, and the size of hail stones. Thunderstorms can occur at any location within the county.

Risk Identification for Thunderstorm Hazard

Based on historical information, the occurrence of future high winds, hail, and lightning is likely. The County should expect high winds, hail, and lightning of widely varying magnitudes in the future. According to the Franklin County Planning Team's assessment, severe thunderstorms are ranked as the number four hazard.

Risk Priority Index

Probability	x	Magnitude	=	RPI
3	x	2	=	6

Vulnerability Analysis for Thunderstorm Hazard

The entire county's population and all buildings are vulnerable to a severe thunderstorm and can expect the same impacts within the affected area. To accommodate this risk, this plan considers all buildings located within the county as vulnerable. Tables 4-7 and 4-8 display the existing buildings and critical infrastructure in Franklin County.

Critical Facilities

All critical facilities are vulnerable to severe thunderstorms. A critical facility will encounter many of the same impacts as any other building within the jurisdiction. These impacts include structural failure, damaging debris (trees or limbs), roofs blown off or windows broken by hail or high winds, fires caused by lightning, and loss of building functionality (e.g., a damaged police station cannot serve the community). Table 4-7 lists the types and number of critical facilities for the entire county and Appendix F displays a large format map of the locations of all critical facilities within the county.

Building Inventory

Table 4-8 lists the building exposure in terms of types and numbers of buildings for the entire county. The buildings within the county can expect impacts similar to those discussed for critical facilities. These impacts include structural failure, damaging debris (trees or limbs), roofs blown off or windows broken by hail or high winds, fires caused by lightning, and loss of building functionality (e.g., a person cannot inhabit a damaged home, causing residents to seek shelter).

Infrastructure

A severe thunderstorm could impact roadways, utility lines/pipes, railroads, and bridges. Since the county's entire infrastructure is vulnerable, it is important to emphasize that a severe thunderstorm could damage any number of these structures. The impacts to these structures include broken, failed, or impassable roadways; broken or failed utility lines (e.g., loss of power or gas to community); or impassable railways. Bridges could become impassable causing risk to motorists.

Potential Dollar Losses from Thunderstorm Hazard

According to the NDCD, Franklin County has incurred approximately $9 million in damages relating to thunderstorms, including hail, lightning, and high winds since 1950. NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event. As a result, the potential dollar losses for a future event cannot be reliably constrained; however, based on average property damage in the past decade, SIU estimates that Franklin County incurs property damages of approximately $140,000 per year related to severe thunderstorms.

Vulnerability to Future Assets/Infrastructure for Thunderstorm Hazard

All future development within the county and all communities will remain vulnerable to severe thunderstorm events.

Suggestions for Community Development Trends

Local officials should enhance severe storm preparedness if they sponsor a wide range of programs and initiatives to address the overall safety of county residents. It is suggested that the county should build new structures with more sturdy construction, and harden existing structures to lessen the potential

impacts of severe weather. This is particularly import where the future economic expansion is expected to take place within the city limits of Benton and West Frankfort. Additional warning sirens can warn the community of approaching storms to ensure the safety of Franklin County residents and minimizing property damage.

4.3.6 Flooding Hazard

Hazard Definition for Flooding

Flooding is a significant natural hazard throughout the United States. The type, magnitude, and severity of flooding are functions of the magnitude and distribution of precipitation over a given area, the rate at which precipitation infiltrates the ground, the geometry and hydrology of the catchment, and flow dynamics and conditions in and along the river channel. Floods are classified as one of two types in this plan: upstream floods or downstream floods. Both types of floods are common in Illinois.

Upstream floods, also called flash floods, occur in the upper parts of drainage basins and are generally characterized by periods of intense rainfall over a short duration. These floods arise with very little warning and often result in locally intense damage, and sometimes loss of life, due to the high energy of the flowing water. Flood waters can snap trees, topple buildings, and easily move large boulders or other structures. Six inches of rushing water can upend a person; another 18 inches might carry off a car. Generally, upstream floods cause severe damage over relatively localized areas. Urban flooding is a type of upstream flood. Urban flooding involves the overflow of storm drain systems and can result from inadequate drainage combined with heavy rainfall or rapid snowmelt. Upstream or flash floods can occur at any time of the year in Illinois, but they are most common in the spring and summer months.

Downstream floods, sometimes called riverine floods, refer to floods on large rivers at locations with large upstream catchments. Downstream floods are typically associated with precipitation events that are of relatively long duration and occur over large areas. Flooding on small tributary streams may be limited, but the contribution of increased runoff may result in a large flood downstream. The lag time between precipitation and time of the flood peak is much longer for downstream floods than for upstream floods, generally providing ample warning for people to move to safe locations and, to some extent, secure some property against damage. Riverine flooding on the large rivers of Illinois generally occurs during either the spring or summer.

Previous Occurrences of Flooding

The NCDC database reported 82 flooding events in Franklin County. The most recent recorded event was in August 2016 when several rounds of thunderstorms over a five-day period produced heavy rainfall across southern Illinois. Minor to moderate flooding occurred along the small rivers, such as the Big Muddy and Little Wabash Rivers. Table 4-30 identifies NCDC-recorded flooding events that caused damage, death, or injury in Franklin County.

Table 4-30. NCDC-recorded Flooding Events that caused Death, Damage or Injury in Franklin County

Location or County*	Date	Deaths	Injuries	Property Damage
West Frankfort	5/10/1996	0	0	$8,000,000
Franklin County	4/22/1996	0	0	$5,000
West Frankfort	4/28/1996	0	0	$3,000,000
West Frankfort	6/29/1998	0	0	$100,000
Franklin County	4/15/1998	0	0	$10,000

Location or County*	Date	Deaths	Injuries	Property Damage
Franklin County	2/1/1999	0	0	$3,000
Franklin County	1/21/1999	0	0	$100,000
Franklin County	5/1/2002	0	0	$3,000
Franklin County	6/27/2002	0	0	$75,000
Franklin County	3/18/2008	0	0	$1,500,000
Franklin County	5/8/2009	0	0	$10,000
Franklin County	5/1/2011	1	0	$530,000
Franklin County	12/1/2011	0	0	$1,000
West Frankfort	08/14/2016	0	0	$5,000
Total:		**1**	**0**	**$13,342,000**

*NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

There has been several structures in Franklin County that has experienced repetitive losses due to flooding. FEMA defines a repetitive loss structure as a structure covered by a contract of flood insurance issued under the NFIP that has suffered flood loss damage on two or more occasions during a 10-year period that ends on the date of the second loss, in which the cost to repair the flood damage is ≥ 25% of the market value of the structure at the time of each flood loss.

The Illinois Emergency Management Agency and Illinois Department of Natural Resources was contacted to determine the location of repetitive loss structures in Franklin County. Records indicate that there are two repetitive loss structures within the county. The total amount paid for building replacement and building contents for damage to these repetitive loss structures is $23,333. Table 4-31 describes the repetitive loss structures for each jurisdiction.

Table 4-31. Repetitive Loss Structures for each Jurisdiction in Franklin County

Jurisdiction	Number of Losses	Total Paid
West Frankfort	3	$14,484.76
West Frankfort	3	$8,848.52
Total:	**6**	**$23,333.28**

Geographic Location of Flooding

Most riverine flooding in Illinois occurs during either the spring or summer and is the result of excessive rainfall and/or the combination of rainfall and snowmelt. Flash flooding of low-lying areas in Illinois can occur during any time of the year, but tends to be less frequent and more localized between mid-summer and early winter.

The primary sources of river flooding in Franklin are the Big Muddy River and its major tributaries: the Green River, Ewing Creek, and Andy Creek. The Big Muddy River can potentially flood portions West City, Buckner, Orient, and Freeman Spur. Flooding of Ewing Creek and its tributaries can potential impact northern portions West Frankfort and a very small portion in the village of Thompsonville. Andy Creek can potential flood portions of Christopher and Buckner. Flooding along these streams can block important transportation such as State Routes 14, 34, 148, and 149. Flash flooding in Franklin County typically occurs or is best documented in urban/developed areas. For example flash flooding has resulted in the closure of US 51 through Du Quoin and several side streets in the towns of Du Quoin and Pinckneyville.

Flash flooding in Franklin County typically occurs or is best documented in urban/developed areas. For example, on June 27, 2002 a slow-moving complex of thunderstorms with torrential rain caused major problems over much of Franklin County, especially at Benton and West City. Firefighters rescued an elderly woman who needed assistance getting out of rising floodwater in her cellar. The water was about 18 inches deep when she was rescued. In another incident in Franklin County, sheriff deputies aided a woman whose car was swept off Highway 37. The car was swept into a flooded ditch, and ropes were used to get the woman to safety. Flooded streets, yards, and basements were common in Benton and West City. Some of the streets were closed, and several motorists became stranded while trying to drive through flooded areas.

Hazard Extent for Flooding

All floodplains are susceptible to flooding in Franklin County. The floodplain of concern is for the 100-year flood event which is defined as areas that have a 1% chance of flooding in any given year. However, flooding is dependent on various local factors including, but not limited to, impervious surfaces, amount of precipitation, river-training structures, etc. The 100-year flood plain covers approximately 11% of Franklin County

Vulnerability Analysis for Flooding

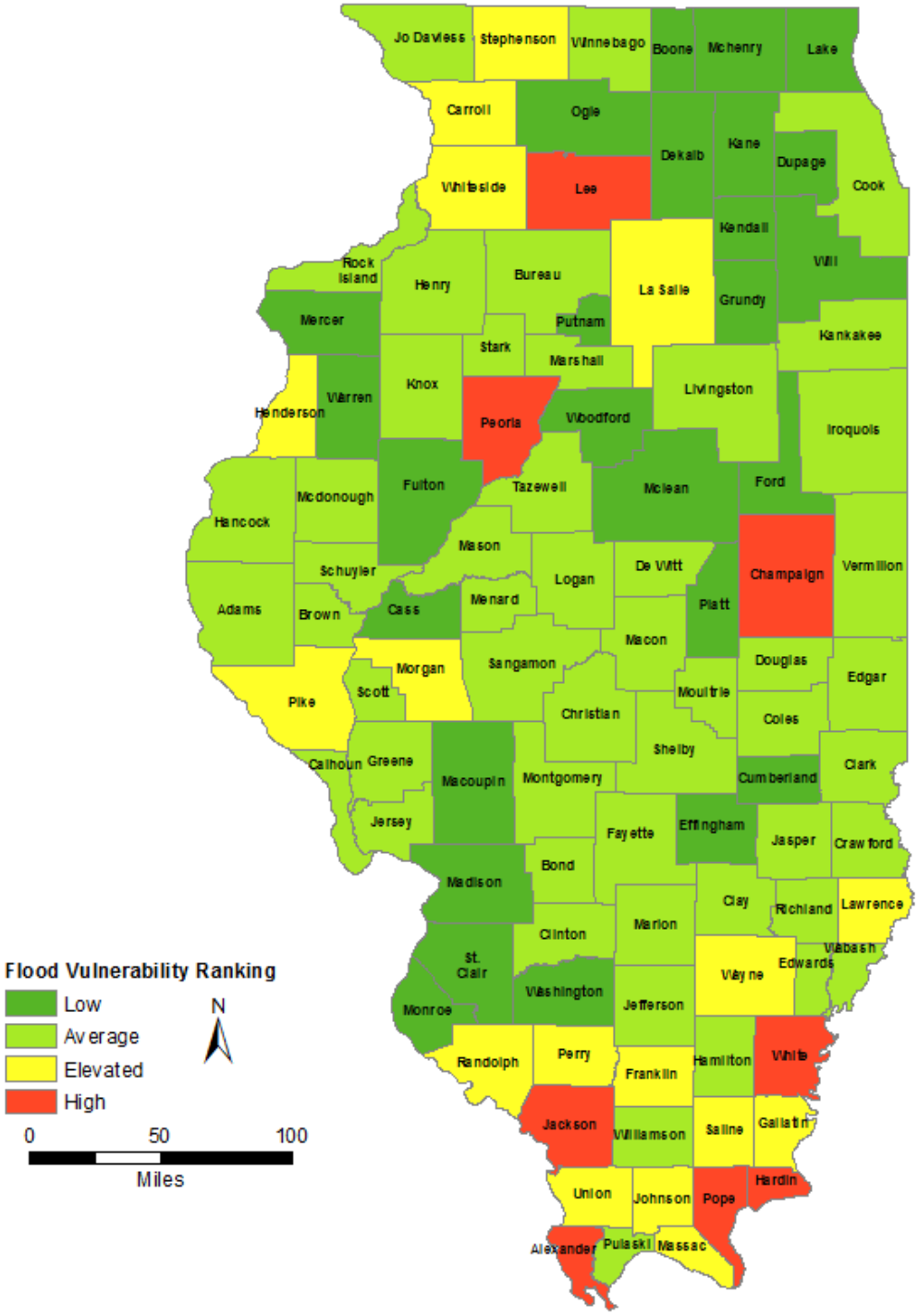
The 2013 Illinois Hazard Mitigation Plan analyzed a variety potential natural hazards including vulnerability to flooding. A Flood Vulnerability Index (FVI) was calculated for all counties and jurisdictions in Illinois. FVI combines Hazus-based estimates of flood exposure and loss with the widely utilized Social Vulnerability Index (SoVI). The highest vulnerability scores and vulnerability ratings were generally in rural counties and communities located along Illinois's large rivers (i.e., Mississippi, Green, Illinois, Kaskaskia, Rock and Ohio Rivers). Figure 4-18 displays the Flood Vulnerability Ratings for the 102 Counties in Illinois. The vulnerability ratings are categorically representations (low, average, elevated, or high) of the flood vulnerability index. Franklin County has an Elevated Flood Vulnerability Rating and ranks 20 out of the 102 Counties in Illinois in terms of loss estimation according to Hazus-MH for floods.

Table 4-32 lists the jurisdictional Flood Vulnerability Ratings for Franklin County. The jurisdictions of Franklin County all surpass an average Flood Vulnerability Rating.

Table 4-32. Jurisdictional Flood Vulnerability Ranking for Franklin County

Jurisdiction	State Ranking	Flood Vulnerability Rating
Benton	81	Elevated
Buckner	77	Elevated
Christopher	83	Elevated
Freeman Spur	33	Elevated
North City	69	Elevated
Orient	47	Elevated
Royalton	60	Elevated
Thompsonville	86	Elevated
Valier	75	Elevated
West City	82	Elevated
West Frankfort	57	Elevated
Zeigler	59	Elevated

Figure 4-18. County Flood Vulnerability Rating for Illinois



Because all floodplains are susceptible to flooding in Franklin County; therefore, the population and all buildings located within the floodplain are vulnerable to flooding. To accommodate this risk, this plan considers all buildings located within 100-year flood plain as vulnerable.

Risk Identification for Flood Hazard

Based on historical information and the Flood Vulnerability Rating, future occurrence of flooding in Franklin County is likely. According to the Risk Priority Index (RPI) and County input, flooding is ranked as the number five hazard.

Risk Priority Index

Probability	x	Magnitude	=	RPI
3	x	2	=	6

Critical Facilities

All critical facilities within the floodplain are vulnerable to floods. An essential facility will encounter many of the same impacts as other buildings within the flood boundary. These impacts can include structural failure, extensive water damage to the facility, and loss of facility functionality (e.g., a damaged police station cannot serve the community). Appendix E include a list of the critical facilities in Franklin County and Appendix F displays a large format map of the locations of all critical facilities within the county.

Building Inventory

All buildings within the floodplain are vulnerable to floods. These impacts can include structural failure, extensive water damage to the facility, and loss of facility functionality (e.g., damaged home will no longer be habitable, causing residents to seek shelter). This plan considers all buildings located within 100-year flood plain as vulnerable.

Infrastructure

The types of infrastructure potentially impacted by a flood include roadways, utility lines/pipes, railroads, and bridges. Since an extensive inventory of the infrastructure is not available for this plan, it is important to emphasize that a flood could damage any number of these items. The impacts to these items include: broken, failed, or impassable roadways; broken or failed utility lines (e.g., loss of power or gas to community); or railway failure from broken or impassable railways. Bridges could also fail or become impassable, causing risk to motorists.

Hazus-MH Flood Analysis

Hazus-MH was utilized to generate the flood depth grid for a 100-year return period and made calculations by clipping the USGS one-third-arc-second DEM (~10 m) to the flood boundary. Next, Hazus-MH was used to estimate the damages for Franklin County by utilizing a detailed building inventory database created from assessor and parcel data.

According to this analysis, there are 445 buildings located in the Franklin County 100-year floodplain. The estimated damage to these structures is $482 million. It should be noted that the results should be interpreted as degrees of loss rather than exact number of buildings exposed to flooding. Figure 4-19 depicts the building inventory within the 100-year floodplain and Table 4-33 shows the loss estimates by occupancy class.

Figure 4-19. Building Inventory Located within the 100-year Floodplain in Franklin County

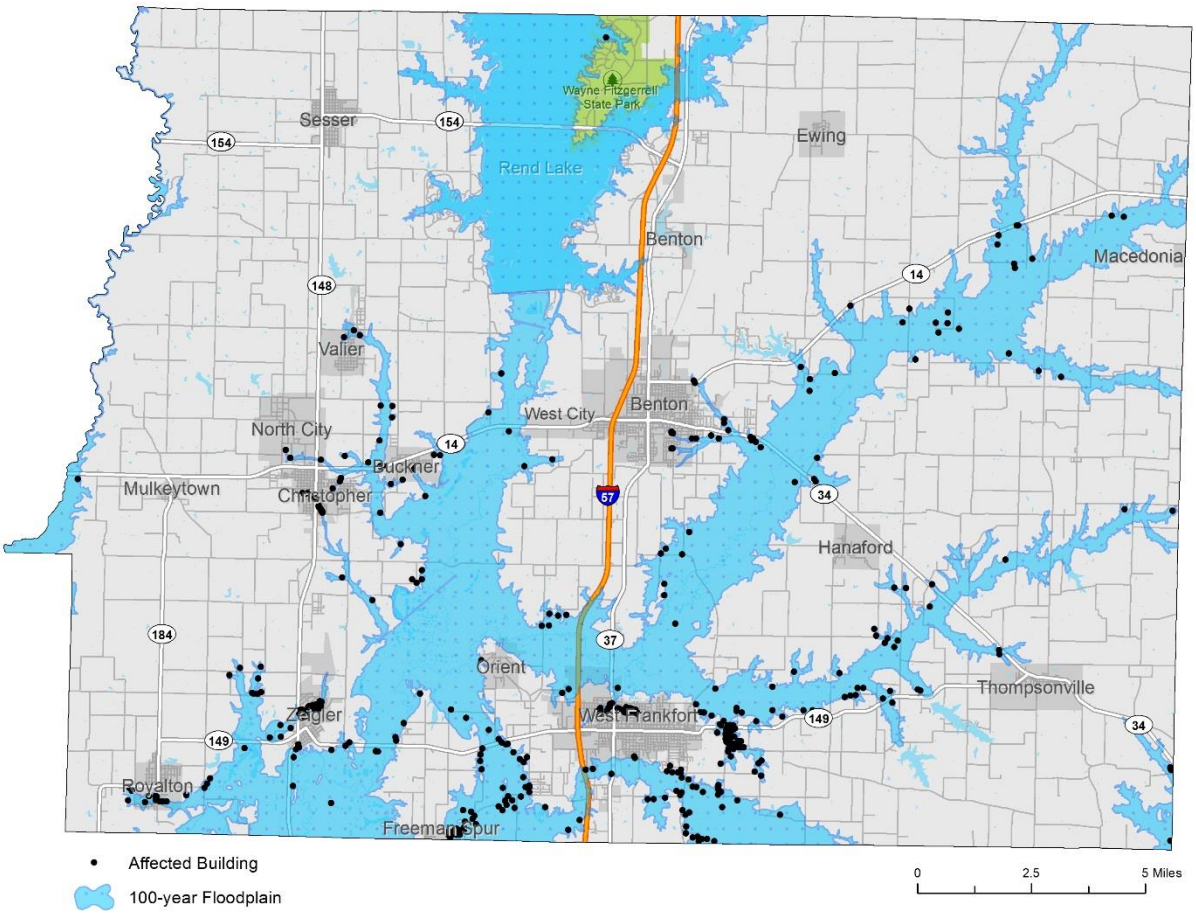


Table 4-33. Estimated Flood Losses within the 100-year Floodplain

Occupancy Class	Number of Structures	Estimated Building Related Losses
Residential	378	$10,823,759
Commercial	29	$438,637,156
Industrial	10	$32,129,883
Agricultural	28	$409,599
Total:	**445**	**$482,000,397**

Essential Facilities Damage

The analysis identified zero essential facilities that are subject to flooding.

Vulnerability Analysis to Future Assets/Infrastructure

Flooding may affect nearly any location within the county; there for all buildings and infrastructure are vulnerable. Table 4-8 includes the building exposure for Franklin County. All essential facilities in the county are at risk. Appendix E include a list of the essential facilities in Franklin County and Appendix F displays a large format map of the locations of all critical facilities within the county. Currently, the municipal planning commission reviews new developments for compliance with the local flood zoning ordinance. At this time no new construction is planned with the 100-year floodplain.

Suggestions for Community Development Trends

Reducing floodplain development is crucial to reducing flood-related damages. Areas with recent development may be more vulnerable to drainage issues. Storm drains and sewer systems are usually most susceptible to drainage issues. Damage to these can cause back-up of water, sewage, and debris into homes and basements, causing structural and mechanical damage as well as creating public health hazards and unsanitary conditions.

4.3.7 Ground Failure Hazard

Hazard Definition

According to the USGS, the term ground failure is generally referred to landslides, liquefaction, lateral spreads, and any other consequence of shaking that affects the stability of the ground. In Illinois, ground failure is typically associated with subsidence of the land surface related to soluble rock (karst), sink holes, or underground mining.

Subsidence Related to Karst Features

Subsidence can occur on land located over soluble bedrock. The land over such bedrock often has topography characteristic of past subsidence events. This topography is termed "karst." Karst terrain has unique landforms and hydrology found only in these areas. Bedrock in a karst areas are typically limestone, dolomite, or gypsum. In Illinois, limestone and dolomite (carbonate rocks) are the principle karst rock types. 9% of Illinois has carbonate rock types close enough to the ground surface to have a well-developed karst terrain. The area in Illinois in which the karst terrain is most developed is the southern and southwestern part of the state (Panno, et al., 1997). The karst feature most associated with subsidence is the sinkhole.

Sinkhole Formation and Collapse

A sinkhole is an area of ground that has no natural external surface drainage—when it rains, all of the water stays inside the sinkhole and typically drains into the subsurface. Sinkholes can vary from a few feet to hundreds of acres and from less than one to more than 100 feet deep. Typically, sinkholes form slowly, so that little change is seen during a lifetime, but they also can form suddenly when a collapse occurs. Such a collapse can have a dramatic effect if it occurs in a populated setting.

Sinkholes form where rainwater moves through the soil and encounters soluble bedrock. The bedrock begins to dissolve along horizontal and vertical cracks and joints in the rock. Eventually, these cracks become large enough to start transporting small soil particles. As these small particles of soil are carried off, the surface of the soil above the conduit slump down gradually, and a small depression forms on the ground surface. This depression acts like a funnel and gathers more water, which makes the conduit still larger and washes more soil into the conduit.

Sudden collapse of a sinkhole occurs where the soil close to the ground surface does not initially slump down, but instead forms a bridge. Beneath that surface cover, a void forms where the soil keeps washing into the conduit. These voids are essentially shallow caves. Over time, the void enlarges enough that the weight of the overlying bridge can no longer be supported. The surface layer then suddenly collapses into the void, forming a sinkhole.

The process of forming a conduit and a soil bridge usually takes years to decades to form. However this natural process can be aggravated and expedited by human activates. Since the

process of forming a sinkhole depends on water to carry soil particle down into the karst bedrock, anything that increases the amount of water flowing into the subsurface can accelerate sinkhole formation process. Parking lots, streets, altered drainage from construction, and roof drainage are a few of the things that can increase runoff.

Collapses are more frequent after intense rainstorms. However, drought and altering of the water table can also contribute to sinkhole collapse. Areas where the water table fluctuates or has suddenly been lowered are more susceptible to sinkhole collapse. (White, 1988)

Underground Mining and Subsidence

Underground mines have been used extensively in Illinois to extract coal, lead, zinc, fluorites, shale, clay stones, limestone, and dolomite. When mining first began in Illinois, land over mined areas was sparsely populated. If the ground subsided, homes or other structures were seldom damaged. As towns and cities expanded over mined-out areas, subsidence damage to structures became increasingly more common. The most common underground mines in Illinois are coal mines. A recent study in Illinois has found that about 333,100 housing units were located over or adjacent to 839,000 acres mined for coal (Bauer, 2008).

Illinois has abundant coal resources. All or parts of 86 of 102 counties in the state have coal-bearing strata. As of 2007, about 1,050,400 acres (2.8% of the state) have been mined. Of that total, 836,655 acres are underground mines (Bauer, 2008). Illinois ranks first among all U.S. states for reserves of bituminous coal (Illinois Coal Association, 1992).

There are two fundamental underground mining methods used in Illinois: high-extraction methods such as long-wall and low-extraction room-and pillar mining. High-extraction methods remove almost all of the coal in localized areas. For modern mining practices, subsidence associated with high-extraction methods is planned and regulated by state and federal authorities. The subsurface subsides above the mine within several days or weeks after the coal has been removed. Subsidence of the over-burden above the mined-out area can continue up to seven years after subsurface removal, depending on the local geologic conditions (Bauer, 2008). The initial ground movements associated with this mining, which tend to be the largest, diminish rapidly after a few months. After subsidence has decreased to a level that no longer causes damage to structures, the land may be suitable for development. The maximum amount of subsidence is proportional to the amount of material extract and the depth between the mining and the surface. In general, over the centerline of the mine panel, subsidence can be 60 to 70% of the extract material (e.g., 10ft of material extracted would cause a maximum subsidence of six to seven feet; Bauer, 2006).

For low-extraction techniques such a room-and-pillar mining, miners create openings (rooms) as they work. Enough of the coal layer is left behind in the pillars to support the ground surface. In Illinois this system of mining extracts 40% to 55% of the coal resources in modern mines and up to 75% is some older mines. Based on current state regulations, room-and-pillar mines in operation after 1983 that do not include planned subsidence must show that they have a stable design. Although these permitting requirements have improved overall mine stability, there are no guarantees that subsidence will not occur above a room-and-pillar mine in the future. In general, if coal or other mined resources has been removed from an area, subsidence of the overlying material is always a possibility (Bauer, 2006).

In Illinois, subsidence of the land surface related to underground mining undertakes two forms: pit subsidence or trough (sag) subsidence. Pit subsidence structures are generally six to eight feet deep and range from two to 40 feet in diameter. Pit subsidence mostly occurs over shallow mines that are <100 feet deep and where the overlying bedrock is <50 feet thick and composed of weak rock materials such as shale. The pit is produced when the mine roof collapses and the roof fall void works its way to the surface. These structures form rapidly. If the bedrock is only a few feet thick and the surface material are unconsolidated (loose), these material may fall into adjacent mine voids, producing a surface hole deeper than the height of the collapse mine void. Pit subsidence can cause damage to a structure if it develops under the corner a building or support post of a foundation or other critical location. Subsidence pits should be filled to ensure that people or animals don't fall into these structures (Bauer, 2006).

Trough (or "sag") subsidence forms a gentle depression over a broad area. Some trough subsidence may be as large as a whole mine panel (i.e. several hundred feet long and a few hundred feet wide). Several acres of land may be affected by a single trough event or feature. As discussed above, the maximum vertical settlement is 60% to 70% of the height of material removed (e.g., two to six feet). Significant troughs may develop suddenly (in a few hours or days) or gradually over a period of years. Troughs originate over places in mines where pillar have collapsed, producing downward movement at the ground surface. These failures can develop over mines of any depth. Trough subsidence produce an orderly pattern of tensile features (tension cracks) surrounding a central area of possible compression features. The type and extent of damage to surface structures relate to their orientation and position within a trough. In the tension zone, the downward-bending movements that develop in the ground may damage buildings, roads, sewer and water pipes, and other utilities. The downward bending of the ground surface causes the soil to crack, forming the tension cracks that pull structures apart. In the relatively smaller compression zone, roads my buckle and foundation walls may be pushed inward. Buildings damaged by compressional forces typically need their foundations rebuilt and leveled (Bauer, 2006).

Previous Occurrences of Ground Failure

In Franklin County, undermined areas are generally located throughout the entire center portion of the County. Throughout the history of mining in Southern Illinois, there have been numerous mining accidents. More recently on November 4, 2013 at approximately 1:50 p.m. (CST), a miner was fatally injured when shoveling coal and loose rock between the coal face and the longwall panline. The accident occurred at the MC#1 Mine located near Macedonia in Franklin County. The miner received crushing injuries when a solid piece of coal and cap rock fell from the coal face, striking his mid to lower back, pinning him against the working face side of the panline. The mine operator did not have effective policies, programs, procedures, or controls in place to protect miners from a fall of the longwall roof or face while miners are positioned on the panline or between the panline and the longwall face (U.S. Department of Labor Mine Safety and Health Administration, 2015)

Geographic Location for Ground Failure

Illinois is usually associated with either underground mining or collapse of soil into crevice in underling soluble bedrock. Areas at risk for subsidence can be determined from detailed mapping of geologic conditions or detailed mine maps.

Hazard Extent for Ground Failure

The extent of ground failure hazard in Franklin County is a function of where current development is located relative to (1) areas of past and present underground mining, and (2) areas of soluble bedrock.

Risk Identification for Ground Failure

Based on historical information and the underlying geology of Franklin County, the occurrence of future ground failure is likely. According to the Franklin County Planning Team's assessment, ground failure is ranked as the number six hazard.

Risk Priority Index

Probability	x	Magnitude	=	RPI
3	x	2	=	6

Vulnerability Analysis for Ground Failure

The Southern Illinois region has a rich history in coal mining. Nearly two-thirds of Franklin County is underlain by rock units which potentially contain coal and therefore subsidence from sinkholes should not be a concern. However, ground failure due to mine subsidence has potential. To accommodate this risk, this plan considers all buildings located within the county as vulnerable. Tables 4-7 and 4-8 display the existing buildings and critical infrastructure in Franklin County.

Critical Facilities

Any critical facility built above highly soluble bedrock could be vulnerable to ground failure. A critical facility will encounter the same impacts as any other building within the affected area. These impacts include damages ranging from cosmetic to structural. Buildings may sustain minor cracks in walls due to a small amount of settling, while in more severe cases, the failure of building foundations can cause cracking of critical structural elements. Table 4-7 lists the types and number of critical facilities for the entire county and Appendix F displays a large format map of the locations of all critical facilities within the county.

Building Inventory

Table 4-8 lists the building exposure in terms of types and numbers of buildings for the entire county. The buildings within the county can expect similar impacts to those discussed for critical facilities, ranging from cosmetic to structural. Buildings may sustain minor cracks in walls due to a small amount of settling, while in more severe cases, the failure of building foundations causes cracking of critical structural elements.

Infrastructure

In the area of Franklin County potentially affected by ground failure, the types of infrastructure that could be impacted include roadways, utility lines/pipes, railroads, and bridges. The risk to these structures is primarily associated with land collapsing directly beneath them in a way that undermines their structural integrity. The impacts to these items include broken, failed, or impassable roadways; broken or failed utility lines (i.e. loss of power or gas to community); and railway failure from broken or impassable railways. In addition bridges could fail or become impassable causing risk to traffic.

GIS-based Analysis of Ground Failure

This section provides an overview of the ground failure hazards in Illinois in general and a discussion of the potential subsidence risk for Franklin County. Ground failure in Illinois is usually associated with either underground mining or collapse of soil into crevice in underling soluble bedrock. Areas at risk for ground failure can be determined from detailed mapping of geologic conditions or detailed mine maps. Figure 4-20 displays data sources that compiled from the Illinois State Geologic Survey (ISGS) and Illinois Department of Natural Resources (IDNR) to assess the risk of ground failure in Franklin County.

Figure 4-20. Distribution of Bedrock with Potential Coal Bearing Strata, Karst, Sinkholes and Mining Efforts

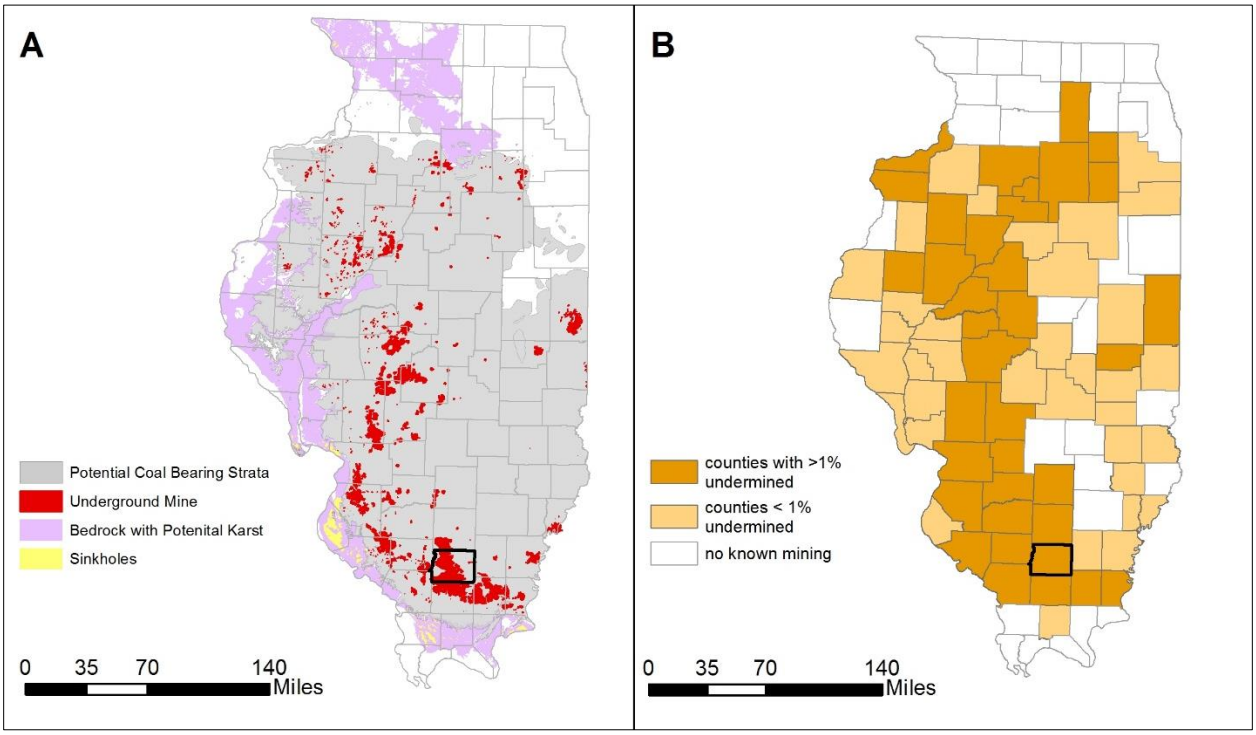
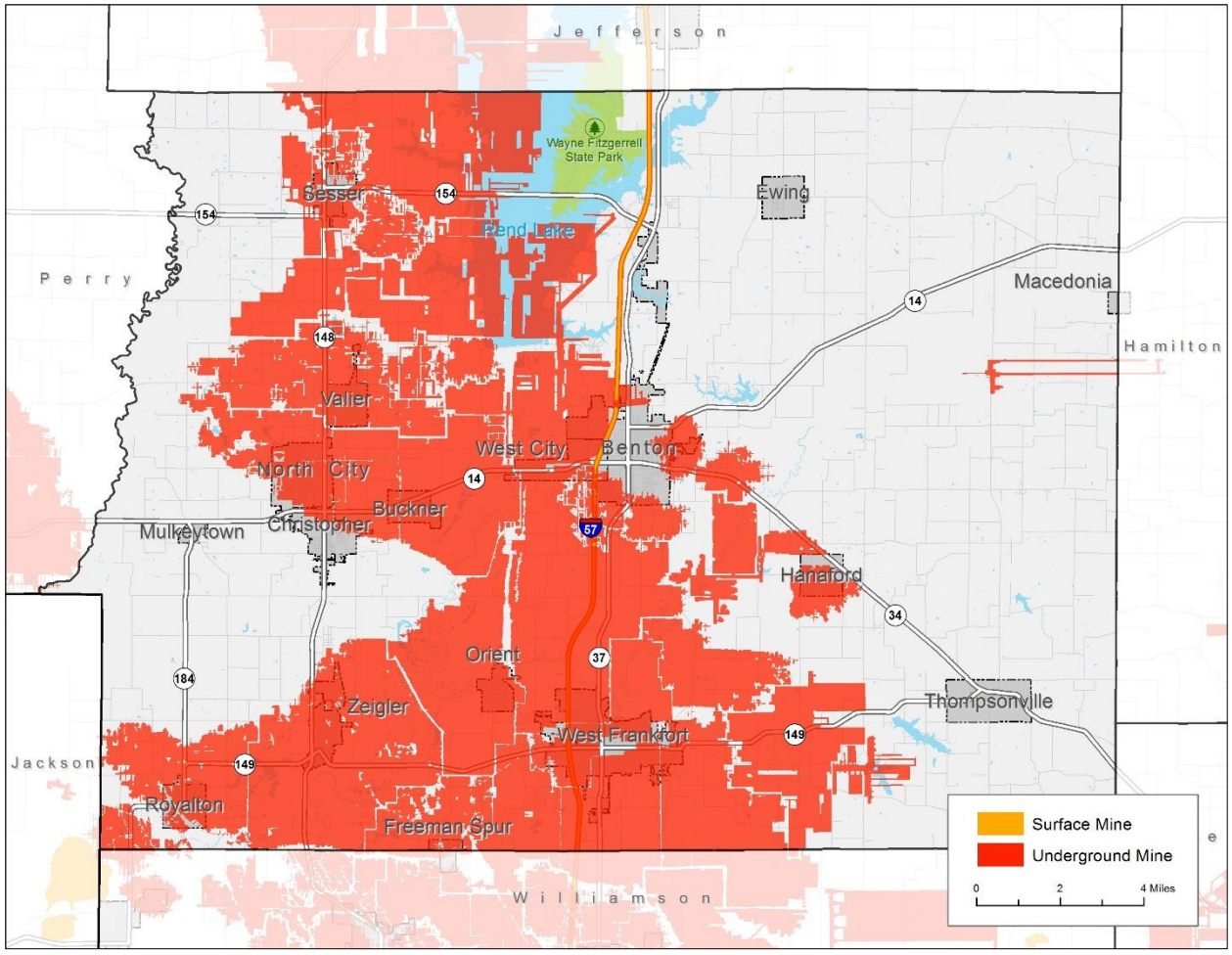


Figure 4-20(A) shows statewide distribution of bedrock with karst potential, coal bearing strata, sink holes. Figure 4-20(B) shows the counties which are 0, <1% and >1% undermined. Nearly all of Franklin County is underlain by rock units which contain coal and is >1% undermined. The Mine Subsidence Insurance Act of 1979 created subsidence insurance as part of an Illinois homeowner's policy. Homeowners in any of the Illinois counties undermined by approximately 1% or more automatically have mine subsidence insurance as a part of their policy, unless coverage is waived in writing. Mine subsidence insurance is especially important for homes located near or over mines that operated before the 1977 Surface Mine Control and Reclamation Act. The companies that operated these mines may no longer be in business (Bauer, 2006).

Figure 4-21 shows the distribution of bedrock with karst potential, coal bearing strata, sink holes, and underground mines in Franklin County. Analysis of the GIS data layer of active and abandoned coal mines in Illinois obtained from the IDNR revealed that 159 mi^2 out of Franklin County's total 432 mi^2 (~37%) have been undermined. The undermined areas are ground throughout the entire center portion of the county. Comparison of Franklin County local assessment and parcel data with IDNR GIS layer of active and abandoned underground-coal mines was performed. This analysis revealed that 10,435 buildings or ~56% of the buildings in the county are located above undermined areas.

In addition to mine subsidence, subsidence can also occur on land located over soluble bedrock. The land over such bedrock is termed “karst.” The karst feature most associated with subsidence is the sinkhole. Nearly all of Franklin County is insoluble bedrock, and therefor subsidence from this mechanism should not be a concern.

Figure 4-21. Distribution of potential sinkholes and underground mines in Franklin County



Vulnerability to Future Assets/Infrastructure for Ground Failure

New buildings and infrastructure placed on undermined land or on highly soluble bedrock will be vulnerable to ground failure.

Suggestions of Community Development Trends

Abandoned underground mine subsidence may affect several locations within the county; therefore buildings and infrastructure are vulnerable to subsidence. Continued development will occur in many of these areas. Currently, Franklin County reviews new development for compliance with the local zoning ordinance. Newly planned construction should be reviewed with the historical mining maps to minimize potential subsidence structural damage.

4.3.8 Winter Storm Hazard

Hazard Definition of Winter Storm Hazard

Severe winter weather consists of various forms of precipitation and weather conditions. This may include one or more of the following: freezing rain, sleet, heavy snow, blizzards, icy roadways, extreme low temperatures, and strong winds. These conditions can cause human health risks such as frostbite, hypothermia, or death and cause property damage and disrupt economic activity.

Ice or sleet, even in small quantities, can result in hazardous driving conditions and can cause property damage. Sleet involves raindrops that freeze completely before reaching the ground. Sleet does not stick to trees and wires. Ice storms, on the other hand, involve liquid rain that falls through subfreezing air and/or onto sub-freezing surfaces, freezing on contact with those surfaces. The ice coats trees, buildings, overhead wires, and roadways, sometimes causing extensive damage.

Ice storms are some of the most damaging winter storms in Illinois. Ice storms occur when moisture-laden Gulf air converges with the northern jet stream causing freezing rain that coats power and communication lines and trees with heavy ice. Strong winds can cause the overburdened limbs and cables to snap; leaving large sectors of the population without power, heat, or communication.

Rapid accumulation of snow, often accompanied by high winds, cold temperatures, and low visibility, characterize significant snowstorms. A blizzard is categorized as a snow storm with winds of 35 miles per hour or greater and/or visibility of less than one-quarter mile for three or more hours. Strong winds during a blizzard blow falling and fallen snow, creating poor visibility and impassable roadways. Blizzards potentially result in property damage.

Blizzards repeatedly affect Illinois. Blizzard conditions cause power outages, loss of communication, and transportation difficulties. Blizzards can reduce visibility to less than one-quarter mile, and the resulting disorientation makes even travel by foot dangerous if not deadly.

Severe cold involves ambient air temperatures that drop to 0˚F or below. These extreme temperatures can increase the likelihood of frostbite and hypothermia. High winds during severe cold events can enhance the air temperature's effects. Fast winds during cold weather events can lower the wind chill factor (how cold the air feels on your skin). As a result, the time it takes for frostbite and hypothermia to affect a person's body will decrease.

Previous Occurrences of Winter Storm Hazard

The NCDC database reported 131 winter storm and extreme cold events for Franklin County since 1950. The most recent reported event occurred in February 2016 when a combination of heavy wet snow and strong winds during the morning hours produced major impacts in parts of southern Illinois. About 4 inches of heavy wet snow fell north and west of a line from Mount Vernon to Murphysboro, including most of Perry County. The highest impacts were in Perry and Jefferson Counties, where scattered power outages occurred. More than 3,000 people lost power in Jefferson County alone. A church in Mount Vernon opened as a shelter for those without power or heat. Sustained north winds ranged from 20 to 30 mph, with gusts up to 40 mph. The peak wind gust at the Carbondale airport was 40 mph. A few trees were uprooted in Perry County, causing spotty power outages in Du Quoin and Pinckneyville. Table 4-34 identifies NCDC-recorded winter storm events that caused damage, death, or injury in Franklin County.

Table 4-34. NCDC-Recorded Winter Storms that Caused Damage, Death, or Injury in Franklin County

Location or County*	Date	Deaths	Injuries	Property Damage
Franklin County	1/1/1999	0	0	$50,000
Franklin County	3/3/2008	0	0	$30,000
Franklin County	1/26/2009	0	0	$250,000
Franklin County	2/20/2015	0	0	$20,000
Total:		**0**	**0**	**$350,000**

Geographic Location of Winter Storm Hazard

Severe winter storms are regional in nature. Most of the NCDC data are calculated regionally or in some cases statewide.

Hazard Extent of Winter Storm Hazard

The extent of the historical winter storms varies in terms of storm location, temperature, and ice or snowfall. A severe winter storm can occur anywhere in the county.

Risk Identification of Winter Storm Hazard

Based on historical information, the probability of future winter storms in Franklin County is highly likely. The county should expect winter storms with varying magnitudes to occur in the future. Winter storms ranked as the number seven hazard according to the Franklin County Planning Team's risk assessment.

Risk Priority Index

Probability	x	Magnitude	=	RPI
4	x	1	=	4

Vulnerability Analysis of Winter Storm Hazard

Winter storm impacts are equally likely across the entire county; therefore, the entire county is vulnerable to a winter storm and can expect impacts within the affected area. To accommodate this risk, this plan considers all buildings located within the county as vulnerable. Tables 4-7 and 4-8 display the existing buildings and critical infrastructure in Franklin County.

Critical Facilities

All critical facilities are vulnerable to winter storms. A critical facility will encounter many of the same impacts as other buildings within the county. These impacts include loss of gas or electricity from broken or damaged utility lines, damaged or impassable roads and railways, broken water pipes, and roof collapse from heavy snow. Table 4-7 lists the types and number of critical facilities for the entire county and Appendix F displays a large format map of the locations of all critical facilities within the county.

Building Inventory

Table 4-8 lists the building exposure in terms of types and numbers of buildings for the entire county. The impacts to the general buildings within the county are similar to the damages expected to the critical facilities. These include loss of gas or electricity from broken or damaged utility lines, damaged or impassable roads and railways, broken water pipes, and roof collapse from heavy snow.

Infrastructure

During a winter storm, the types of potentially impacted infrastructure include roadways, utility lines/pipes, railroads, and bridges. Since the county's entire infrastructure is vulnerable, it is important

to emphasize that a winter storm could impact any structure. Potential impacts include broken gas and/or electricity lines or damaged utility lines, damaged or impassable roads and railways, and broken water pipes.

Potential Dollar Losses from Winter Storm Hazard

According to the NDCD, Franklin County has incurred approximately $330,000 in damages relating to winter storms since 1950. NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event. As a result, the potential dollar losses for a future event cannot be reliably constrained; however, based on average property damage in the past decade, SIU estimates that Franklin County incurs property damages of approximately $5,000 per year related to winter storms, including sleet/ice and heavy snow.

Vulnerability to Future Assets/Infrastructure for Winter Storm Hazard

Any new development within the county will remain vulnerable to these events.

Suggestions for Community Development Trends

Because winter storm events are regional in nature, future development across the county will also face winter storms.

4.3.9 Dam and Levee Failure

Hazard Definition for Dam and Levee Failure

Dams are structures that retain or detain water behind a large barrier. When full or partially full, the difference in elevation between the water above the dam and below creates large amounts of potential energy, creating the potential for failure. The same potential exists for levees when they serve their purpose, which is to confine flood waters within the channel area of a river and exclude that water from land or communities land-ward of the levee. Dams and levees can fail due to either: 1) water heights or flows above the capacity for which the structure was designed; or 2) deficiencies in the structure such that it cannot hold back the potential energy of the water. If a dam or levee fails, issues of primary concern include loss of human life/injury, downstream property damage, lifeline disruption (of concern would be transportation routes and utility lines required to maintain or protect life), and environmental damage.

Many communities view both dams and levees as permanent and infinitely safe structures. This sense of security may well be false, leading to significantly increased risks. Both downstream of dams and on floodplains protected by levees, security leads to new construction, added infrastructure, and increased population over time. Levees in particular are built to hold back flood waters only up to some maximum level, often the 100-year (1% annual probability) flood event. When that maximum is exceeded by more than the design safety margin, then the levee will be overtopped or otherwise fail, inundating communities in the land previously protected by that levee. It has been suggested that climate change, land-use shifts, and some forms of river engineering may be increasing the magnitude of large floods and the frequency of levee-failure situations.

In addition to failure that results from extreme floods above the design capacity, levees and dams can fail due to structural deficiencies. Both dams and levees require constant monitoring and regular maintenance to assure their integrity. Many structures across the U.S. have been under-funded or

otherwise neglected, leading to an eventual day of reckoning in the form either of realization that the structure is unsafe or, sometimes, an actual failure. The threat of dam or levee failure may require substantial commitment of time, personnel, and resources. Since dams and levees deteriorate with age, minor issues become larger compounding problems, and the risk of failure increases.

Previous Occurrences of Dam and Levee Failure

According to Franklin County historical records, there are no records or local knowledge of any dam or certified levee failure in the county.

Geographic Location of Dams and Levees in Franklin County

A review of the US Army Corps of Engineers National Levee Database and IDNR records revealed no levees within Franklin County.

The U.S. Army Corps of Engineers maintains the National Inventory of Dams (NID) which identified 32 dams in Franklin County. According to NID records, four dams in Franklin County are classified as high hazard and eight dams have Emergency Action Plans (EAP). Table 4-35 list of the dams located in Franklin County and their respective classification level.

Table 4-35. Franklin County Dam Inventory

Dam Name	Stream/River	Hazard Rating	EAP
New West Frankfort Dam	Stevens Creek, Tributary Ewing Creek	High	Yes
Zeigler City Lake Dam	Tributary Big Muddy River	Significant	No
Valier Lake Dam	Andy Creek	High	No
Freeman United/Lake Dam	Tributary Middle Fork Big Muddy River	Significant	No
Old West Frankfort Dam	Tilley Creek	Significant	Yes
Cambon Lake Dam	Tributary Big Muddy River	Significant	No
Sesser Reservoir Dam	Tributary Sandusky Creek	Low	No
Cristopher Old Reservoir Dam	Tributary Andy Creek	Significant	No
Beaver Lake Dam	Tributary Big Muddy River	Significant	No
Buckner Reservoir Dam	Off Stream	Significant	No
Lake Hamilton Dam	Marcum Branch	Significant	No
Lake Moses Dam	Tributary Drummond Branch	Significant	No
Christopher New Reservoir Dam	Tributary Andy Creek	Low	No
Lake Benton Dam	Marcum Branch	Significant	No
Old Ben/Mine 21/Slurry Cell 2 Dam	Tributary Jackie Branch	Low	No
Old Ben/Mine 21/Slurry Cell 3 Dam	Tributary Jackie Branch	Low	Yes
Old Ben/Mine 24/Sediment And Slurry Dam	Tributary Big Muddy River	Low	No
Old Ben/Mine 24/North Pond Dam	Tributary Sugar Creek	Low	No
Old Ben/Mine 21/Reservoir Dam	Jackie Branch	Significant	No
Old Ben/Mine 21/Slurry Cell 4 Dam	Tributary Jackie Branch	Significant	Yes
Old Ben/Mine 26/Slurry Cell 4 Dam	Sandusky Creek	Low	No
Old Ben/24/Freshwater Lake Dam	Tributary Big Muddy River	Low	No
Old Ben/Mine 24/Slurry Cell 2 Dam	Tributary Big Muddy River	Low	No
Old Ben/Mine 26/Slurry Cell 3 Dam	Tributary Rend Lake	Significant	Yes
Old Ben/John Ross Plant/Slurry Cell 2	Tributary Tilley Creek	High	Yes
Old Ben Coal Co/John Ross/Sediment Pond	Tributary Tilley Creek	Significant	Yes
Rend Lake Dam	Big Muddy River	High	Yes
Mine No.21		Significant	No
Mine No.24		Significant	No
Mine No.25		Significant	No

Dam Name	Stream/River	Hazard Rating	EAP
Mine No.26		Significant	No
Consol/Rend Lake Mine/Sediment	Tributary Silver Creek	Low	No

Hazard Extent for Dam and Levee Failure

Dams are assigned a low hazard potential classification means that failure or incorrect operation of the dam will result in no human life losses and no economic or environmental losses. Losses are principally limited to the owner's property. A significant hazard classification means that failure or incorrect operation results in no probable loss of human life; however, dam or levee failure can cause economic loss, environmental damage, and disruption of lifeline facilities. Significant hazard potential dams are often located in predominantly rural or agricultural areas, but could be located in populated areas with a significant amount of infrastructure. A high hazard potential classification means that failure or incorrect operation has the highest risk to cause loss of human life and to significantly damage buildings and infrastructure.

According to NID records, four dams in Franklin County are classified as high hazard and eight dams have Emergency Action Plans (EAP). An EAP is not required by the State of Illinois but is recommended in the 2003 Illinois Dam Safety & Inspection Manual.

Risk Identification for Dam and Levee Failure

Based on operation and maintenance requirements and local knowledge of the dams and levees in Franklin County, the probability of failure is possible. However, if a high-hazard dam failed, the magnitude and severity of the damage could be great. The warning time and duration of the dam failure event would be very short. Based on input from the Planning Team, future occurrence of dam failure in Franklin County is unlikely. According to the Risk Priority Index (RPI) and County input, flooding is ranked as the number eight hazard.

Risk Priority Index

Probability	x	Magnitude	=	RPI
1	x	4	=	4

Vulnerability Analysis for Dam and Levee Failure

An Emergency Action Plan (EAP) is required to assess the effect of dam failure on these communities. In order to be considered creditable flood protection structures on FEMA's flood maps, levee owners must provide documentation to prove the levee meets design, operation, and maintenance standards for protection against the 1% annual probability flood.

Because all floodplains are susceptible to flooding in Franklin County; therefore, the population and all buildings located within the floodplain are vulnerable to dam and levee failure. To accommodate this risk, this plan considers all buildings located within 100-year flood plain as vulnerable.

Critical Facilities

All critical facilities within the floodplain are vulnerable to dam and levee failure. An essential facility will encounter many of the same impacts as other buildings within the flood boundary. These impacts can

include structural failure, extensive water damage to the facility, and loss of facility functionality (e.g., a damaged police station cannot serve the community). Table 4-7 lists the types and number of critical facilities for the entire county and Appendix F displays a large format map of the locations of all critical facilities within the county.

Building Inventory

All buildings within the floodplain are vulnerable to floods as a result of dam and/or levee failure. These impacts can include structural failure, extensive water damage to the facility, and loss of facility functionality (e.g., damaged home will no longer be habitable, causing residents to seek shelter). This plan considers all buildings located within 100-year flood plain as vulnerable.

Infrastructure

The types of infrastructure potentially impacted by a flood include roadways, utility lines/pipes, railroads, and bridges. Since an extensive inventory of the infrastructure is not available for this plan, it is important to emphasize that a flood could damage any number of these items. The impacts to these items include: broken, failed, or impassable roadways; broken or failed utility lines (e.g., loss of power or gas to community); or railway failure from broken or impassable railways. Bridges could also fail or become impassable, causing risk to motorists.

Hazus-MH Flood Analysis

See section 4.3.6 Flooding Hazard for the results of the Hazus-MH Flood Analysis.

Vulnerability to Future Assets/Infrastructure for Dam and Levee Failure

Flooding as a result of dam or levee failure may affect nearly any location within the county; there for all buildings and infrastructure are vulnerable. Table 4-8 includes the building exposure for Franklin County. All essential facilities in the county are at risk. Appendix E include a list of the essential facilities in Franklin County and Appendix F displays a large format map of the locations of all critical facilities within the county. Currently, the municipal planning commission reviews new developments for compliance with the local flood zoning ordinance. At this time no new construction is planned with the 100-year floodplain.

Suggestions for Community Development Trends

Reducing floodplain development is crucial to reducing flood-related damages. Areas with recent development may be more vulnerable to drainage issues. Storm drains and sewer systems are usually most susceptible to drainage issues. Damage to these can cause back-up of water, sewage, and debris into homes and basements, causing structural and mechanical damage as well as creating public health hazards and unsanitary conditions.

4.3.10 Disease Outbreaks, Epidemics, and Pandemics

Hazard Definition

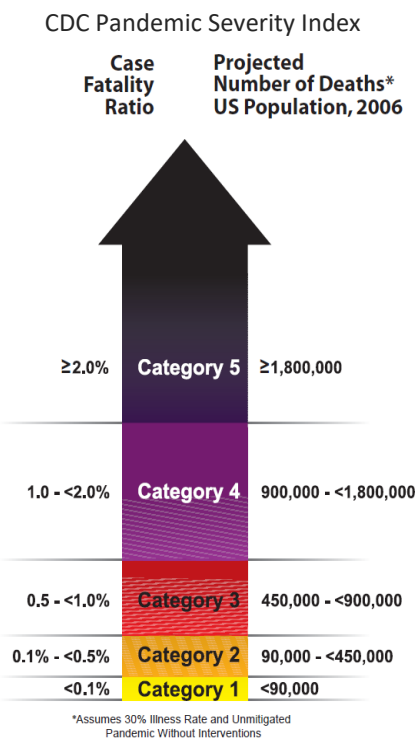
Disease outbreaks, epidemics, and pandemics can have devastating consequences on people and the community at large. These types of hazards have the potential of affecting a large number of people and posing significant harm with its ability to seriously diminish people's health and cause death. Dependent upon the situation, these public health hazards can last from days to years.

Disease Outbreaks occur when there is a sudden rise in a disease experienced by a community, region or during a season, despite measures to deter disease spread. Outbreaks could be a single case of a

contagious disease, particularly if it is a novel disease or new to a community or remerges after a long absence. An outbreak may be isolated to a single community or cover several countries.

Epidemics occur when an infectious disease spreads rapidly affecting people in several countries. Disease outbreaks have the potential of becoming epidemics. Epidemics are common occurrences in the world of the 21st century. According to the World Health Organization (WHO), every country on earth as experienced at least one epidemic since the year 2000. The 2003 Severe Acute Respiratory Syndrome (SARS) in Asia and the 2014-15 Ebola Virus Disease (EVD) both started out as outbreaks, but became epidemics. SARS ended up spreading to two dozen counties, infecting 8,098 people in which 774 people died. Some public health incidents start out as epidemics, such as Swine Flu (H1N1) and Avian Flu (H5N1) but result in global exposure (see Pandemic, below). Far more often, however, and with increasing regularity, epidemics strike at lesser geographic levels.

Pandemics are disease outbreaks/epidemics that spread worldwide. HIV/Aids is an example of one of the most destructive global pandemics in history. The number of people affected by a pandemic depends upon how severe the pandemic is. Pandemics are generally classified by severity level: mild, moderate, or severe. Pandemics can significantly impact segments of the population not usually affected by seasonal flu, for instance, healthy adults between the ages of 20 – 50, (see more information on difference between pandemic and seasonal flu later in this section). By infecting and causing death in large numbers of people, pandemics can also cause significant economic disruption and loss. Public health experts say it's not a matter of "if" an influenza pandemic will happen, but "when."



CDC Pandemic Severity Index -The number of people affected by a pandemic depends upon the severity of the pandemic. The Centers of Disease Control and Prevention (CDC) has developed a Pandemic Severity Index, with categories of increasing severity (Category 1 to Category 5). The Pandemic Severity Index uses a ratio to estimate the number of expected deaths. This index helps communities with pandemic preparedness and planning.

Previous Occurrences of Disease Outbreak, Epidemics, and Pandemic Hazard

Recently, the 2014 outbreak of the Ebola virus disease in several West African counties has prompted changes in the way the public health industry mitigates and responds to epidemics and pandemics. It is important to note that as of December 2014, only two imported cases, including one death, and two locally acquired cases in healthcare workers have been reported in the United States. Common epidemic and pandemic threats include (but not limited to) HIV/Aids, smallpox, tuberculosis, influenza, non-polio enteroviruses, and foodborne outbreaks. This plan will only highlight the most recent non-polio enteroviruses, influenza and foodborne illness records.

Non-Polio Enteroviruses are very common viruses that cause about 10 to 15 million infections in the United States each year. All populations are susceptible to non-polio enteroviruses, however there is an increased risk for infants, children, and teenagers due to a lack of immunity from previous exposures to

the viruses. The infection is spread via close contact or touching surfaces with the infection. Those who become infected with the viruses do not get sick or come down with mild illnesses. Severe cases have the potential to infect the heart, brain or even paralyze.

One of the most recent non-polio enteroviruses cases occurred from mid-August to December 11th, 2014. The CDC confirmed a total of 1,149 people in 48 states and the District of Columbia with respiratory illness caused by Enterovirus D68 (EV-D68). This virus was first identified in California in 1962 and is one of the more than 100 non-polio enteroviruses. EV-D68 has been the most common type of enterovirus identified in 2014, leading to increases in illnesses among children and affecting those with asthma most severely.

Influenza Pandemics (pandemic flu) occurs when a new type of influenza (flu) virus emerges, affecting the health and lives of many people. As a serious respiratory illness, pandemic flu spreads quickly from person to person because people have not been exposed to the new flu strain. Once exposed, individuals may have little or no bodily resistance for fighting off the new, contagious type of flu. During the 20th century, there were three major influenza pandemics.

The 1918 Spanish flu was the deadliest flu pandemic, infecting 20% to 40% of the world's population. An estimated 50 million died from the Spanish flu, 675,000 of which were from the United States. This was a viral pandemic in which people could die quite suddenly. Instances occurred in which people reported being well in the morning, felt sick during the day and had died by evening. Many individuals fighting this virus succumbed to complications, such as pneumonia. Those most affected were adults between the ages of 20-50, health individuals that typically are not the hardest hit by influenza.

"Asian flu" of 1957 and "Hong Kong flu" of 1968 caused approximately 1 - 4 million deaths. The 1957 pandemic originated in China and was a category 2 on the pandemic severity index. Eventually, the Asian flu strain evolved, shifting initiating a milder 1968-69 Hong Kong flu pandemic infecting 500,000 people

The most recent pandemic was the H1N1 Flu Pandemic. On August 10th, 2010 the World Health Organization announced that the world is now in a post-pandemic period where the 2009 flu pandemic flu is expected to continue to circulate seasonally worldwide, causing variable levels of disease and outbreaks. Table 4-25 displays the influenza pandemics since 1918.

Table 4-10. Influenza Pandemics since 1918

Name	Date	Subtype	Deaths in the United States
1918-1919	Spanish Flu	H1N1	675,000
1957-1958	Asian Flu	H2N2	69,800
1986-1969	Hong Kong Flu	H3N2	33,800
2009-2010	2009 Flu Pandemic / Swine Flu	H1N1/09	8,870 - 18,300
		Total:	**787,470 – 796,900**

Source: U.S. Department of Health & Human Services

Seasonal Flu and Pandemic Flu are both influenza viruses that affect the upper respiratory system of people. Seasonal flu is the more common type of flu, emerging each year during the fall, winter, and spring months. Seasonal flu continually circulates among people during each flu season, changing slightly from year to year. Because of seasonal flu's continual presence among people, individuals are more likely to have acquired some bodily resistance, allowing them to fight off this flu strain better. Despite having acquired some immunity, the CDC estimates that from the 1976-77 season to the 2006-07 flu season, flu-associated deaths ranged from a low of about 3,000 to a high of about 49,000. FWBCHD and other health

organizations offer seasonal flu vaccinations annually to protect people from this changing virus. Pandemic flu is a new type of virus, which means that people have little or no immunity to it. Pandemic flu spreads quickly from person to person and can produce serious illness, usually significantly more severe than seasonal flu.

Foodborne Disease is a common public health problem. The CDC estimates that each year roughly 1 in 6 Americans get sick by consuming contaminated foods or beverages. Many different disease-causing microbes, pathogens, or harmful toxins or chemicals can contaminate foods. There are eight known pathogens that account for the vast majority of illnesses, hospitalizations, and deaths. Nontyphoidal Salmonella, Toxoplasma, Listeria, and norovirus caused the most deaths. Table 4-26 identifies CDC-recorded death related foodborne outbreaks with reported cases in Illinois. Reported hospitalizations and deaths are national statistics for a given outbreak. Additional details of individual hazard events are on the CDC website.

The most severe confirmed outbreak of foodborne disease occurred in 2011 after a multistate outbreak of *Listeria monocytogenes* food poisoning linked to whole cantaloupes from Jensen Farms of Holly, Colorado. A total of 33 deaths and 143 hospitalizations were reported to the CDC from 28 States. Additionally, one woman pregnant at the time of illness had a miscarriage. Four people were infected in the State of Illinois.

Table 4-11. Confirmed Foodborne Disease Outbreaks with reported cases in Illinois. Hospitalizations and Deaths are National Statistics for a given outbreak.

Year	Genus Species	Food Vehicle	Total Hospitalizations	Total Deaths
2011	Listeria monocytogenes	Cantaloupe	143	33
2008	Salmonella enterica	Peanut Butter; Peanut Paste	166	9
2006	E.coli, Shiga toxin-producing	Spinach	103	5
2012	Salmonella enterica; Salmonella enterica	Cantaloupe	94	3
2007	Salmonella enterica	Pot Pie	108	3
1998	Salmonella enterica	Tomato, Unspecified	16	3
2008	Salmonella enterica	Pureed Food Diet	1	2
2008	Salmonella enterica	Peppers, Jalapeno; Peppers, Serrano; Tomato, Unspecified	308	2
2003	Salmonella enterica	Honeydew Melon	13	2
2012	Salmonella enterica	Cantaloupe	11	1
2011	Salmonella enterica	Ground Turkey, Unspecified	50	1
2010	Shigella sonnei	Bread, Nine Grain; Tomatoes	13	1
2009	Salmonella enterica	Melon	4	1
2008	Norovirus Genogroup II	Lettuce Based Salads	3	1
2000	Salmonella enterica	Salmon, Unspecified; Seafood Dish, Unspecified	10	1
		Total:	**1,043**	**68**

*CDC Foodborne Outbreak Online Database was last updated on 5/28/2014 to include 2012 outbreak data. Reporting agencies (state, local, territorial, and tribal health departments, and CDC) can modify their reports at any time, even months or years after an outbreak. Therefore, results from Foodborne Outbreak Online Database are subject to change.

Geographic Location for Disease Outbreak, Epidemics, and Pandemic Hazard

Because of the nature of pandemic disease, the entire country, continent, or whole world is at risk. An epidemic can occur over a short period of time and strike at lesser geographic levels. Therefore the entire county has the same risk of disease outbreak, epidemic, or pandemic hazard.

Hazard Extent for Disease Outbreak, Epidemics, and Pandemic Hazard

The extent of the hazard varies in terms of the physical characteristics of the disease outbreak, epidemic or the pandemic (e.g., the number of people infected and strength of the virus).

Risk Identification for Disease Outbreak, Epidemics, and Pandemic Hazard

Disease outbreaks, epidemics, and pandemics can occur within any area in the county; therefore, the entire county population and all critical infrastructure are vulnerable. To accommodate this risk, this plan considers all buildings located within the county as vulnerable. Tables 4-7 and 4-8 display the existing buildings and critical infrastructure in Franklin County. The Franklin County Planning Team identified disease outbreak, epidemic, and pandemic as a prioritized public health hazard. This plan includes a section devoted to disease outbreak, epidemic, and pandemic but it should be noted that it is not included in the ranked list of hazards.

Vulnerability Analysis

A less severe pandemic and/or more severe epidemic would likely result in dramatic increases in the number of hospitalizations and deaths. A severe pandemic would likely overwhelm the nation's critical healthcare services and impose significant stress on our nation's critical infrastructure (including but not limited to the airline and travel industry). Epidemic and pandemics can create a shortage of staff, facilities, equipment, hospital beds, and other supplies needed to cope with the number of people who get the pandemic flu. Alternative sites, such as schools, may serve as medical facilities.

Suggestions for Community Development Trends

The U.S. Department of Health & Human Services and the State of Illinois Department of Public Health provides guidance to communities, individuals, health professionals, businesses and schools on epidemic and pandemic mitigation. Planning and preparedness information is disseminated via Flu.gov. Various Fact sheets, tool kits, check lists and pre-pandemic planning guides are available. It is important that all entities in the county are prepared because the federal government cannot prepare for or respond to the challenge of a pandemic alone.

The Centers of Disease Control and Prevention (CDC) developed the 2007 Interim Pre-pandemic Planning Guide for local communities to mitigation against pandemic influenza. The goals are to limit the spread of a pandemic; mitigate disease, suffering, and death; and sustain infrastructure and lessen the impact on the economy and the functioning of society. A pandemic influenza mitigation framework was created and includes four mitigation interventions to help offset the effect on communities. Implementing these interventions require advance planning. As such, the CDC warns of second- and third-order consequence of the interventions which may require additional planning. Interventions include, but are not limited to:

1. Isolation and treatment (as appropriate) with influenza antiviral medications of all persons with confirmed or probable pandemic influenza. Isolation may occur in the home or healthcare setting, depending on the severity of an individual's illness and /or the current capacity of the healthcare infrastructure.
2. Voluntary home quarantine of members of households with confirmed or probable influenza case(s) and consideration of combining this intervention with the prophylactic use of antiviral

medications, providing sufficient quantities of effective medications exist and that a feasible means of distributing them is in place.

3. Dismissal of students from school (including public and private schools as well as colleges and universities) and school-based activities and closure of childcare programs, coupled with protecting children and teenagers through social distancing in the community to achieve reductions of out-of-school social contacts and community mixing.
4. Use of social distancing measures to reduce contact between adults in the community and workplace, including, for example, cancellation of large public gatherings and alteration of workplace environments and schedules to decrease social density and preserve a healthy workplace to the greatest extent possible without disrupting essential services.
5. Additionally, one of the best and most effective mitigation strategies available to everyone is simply utilizing good hygiene practices, e.g., effectively washing hands frequently, effectively covering coughs and sneezes, and wiping down surfaces frequently shared by people, e.g., door knobs, counter surfaces, bathroom/kitchen faucet sink handles and bathroom toilet handles, etc.

4.3.11 Drought and Extreme Heat Hazard

Hazard Definition for Drought Hazard

Drought is a normal climatic phenomenon that can occur across the state of Illinois and within Franklin County. The meteorological condition that creates a drought is below-normal rainfall. However, excessive heat can lead to increased evaporation, which enhances drought conditions. Droughts can occur in any month. Drought differs from normal arid conditions found in low-rainfall areas. Drought is the consequence of a reduction in the amount of precipitation over an undetermined length of time (usually a growing season or longer).

The severity of a drought depends on location, duration, and geographical extent. Additionally, drought severity depends on the water supply, usage demands by human activities, vegetation, and agricultural operations. Droughts will affect the quality and quantity of crops, livestock, and other agricultural assets. Droughts can adversely impact forested areas leading to an increased potential for extremely destructive forest and woodland fires that could threaten residential, commercial, and recreational structures.

Drought conditions are often accompanied by extreme heat, which is defined as temperatures that exceed the average high for the area by 10°F or more for the last for several weeks. Such extreme heat can have severe implications for humans. Below are common terms associated with extreme heat:

Heat Wave

Prolonged period of excessive heat often combined with excessive humidity.

Heat Index

A number, in degrees Fahrenheit, which estimates how hot it feels when relative humidity is added to air temperature. Exposure to full sunshine can increase the heat index by 15°F.

Heat Cramps

Muscular pains and spasms due to heavy exertion. Although heat cramps are the least severe, they are often the first signal that the body is having trouble with heat.

Heat Exhaustion

Typically occurs when people exercise heavily or work in a hot, humid place where body fluids are lost through heavy sweating. Blood flow to the skin increases, causing blood flow to decrease to

the vital organs, resulting in a form of mild shock. If left untreated, the victim's condition will worsen. Body temperature will continue to rise, and the victim may suffer heat stroke.

Heat and Sun Stroke

A life-threatening condition. The victim's temperature control system, which produces sweat to cool the body, stops working. The body's temperature can rise so high that brain damage and death may result if the body is not cooled quickly.

Previous Occurrences for Drought and Extreme Heat

The NCDC database reported 71 drought/heat wave events in Franklin County since 1950. The most recent recorded event occurred one midday in August 2016 The highest heat indices occurred on the afternoon of the 5th, when the heat index peaked at 114 degrees at Metropolis, 112 at Cairo, and 107 at Harrisburg. Actual air temperatures reached the lower to mid-90's. Table 4-37 identifies NCDC-recorded drought/heat wave events that caused damage, death, or injury in Franklin County.

Table 4-37. NCDC-recorded Extreme Heat Events that caused Death, Damage or Injury in Franklin County

Location or County*	Date	Deaths	Injuries	Property Damage
Franklin County	7/21/2005	0	5	$0
Franklin County	8/5/2016	1	0	$0
	Total:	**1**	**5**	**$0**

Geographic Location for Drought and Extreme Heat

Droughts are regional in nature. Most areas of the United States are vulnerable to the risk of drought and extreme heat.

Hazard Extent for Drought and Extreme Heat

The extent of droughts or extreme heat varies both depending on the magnitude and duration of the heat and the range of precipitation.

Vulnerability Analysis for Drought and Extreme Heat

Drought and extreme heat are a potential threat across the entire county; therefore, the county is vulnerable to this hazard and can expect impacts within the affected area. According to FEMA, approximately 175 Americans die each year from extreme heat. Young children, elderly, and hospitalized populations have the greatest risk. The entire population and all buildings are at risk. To accommodate this risk, this plan considers all buildings located within the county as vulnerable. Tables 4-7 and 4-8 display the existing buildings and critical infrastructure in Franklin County. Even though the exact areas affected are not known, a discussion of the potential impact are detailed below.

Critical Facilities

All critical facilities are vulnerable to drought. A critical facility will encounter many of the same impacts as any other building within the jurisdiction, which should involve little or no damage. Potential impacts include water shortages, fires as a result of drought conditions, and residents in need of medical care from the heat and dry weather. Table 4-7 lists the types and number of critical facilities for the entire county and Appendix F displays a large format map of the locations of all critical facilities within the county.

Building Inventory

Table 4-8 lists the building exposure in terms of types and numbers of buildings for the entire county. The buildings within the county can expect similar impacts to those discussed for critical facilities. These

impacts include water shortages, fires as a result of drought conditions, and residents in need of medical care from the heat and dry weather.

Infrastructure

During a drought, the types of potentially impacted infrastructure include roadways, utility lines/pipes, railroads, and bridges. The risk to these structures is primarily associated with fire, which could result from hot, dry conditions. Since the county's entire infrastructure is vulnerable, damage to any infrastructure is possible. The impacts to these items include: impassable roadways; broken or failed utility lines (e.g., loss of power or gas to community); or impassable railways. Bridges could become impassable, causing risk to motorists.

Potential Dollar Losses from Drought and Extreme Heat

According to the NDCD, Franklin County has not incurred damages relating to drought and extreme heat events storms since 1950. NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event. As a result, the potential dollar losses for a future event cannot be reliably constrained.

Vulnerability to Future Assets/Infrastructure from Drought/Extreme Heat Hazard

Future development will remain vulnerable to droughts. Typically, some urban and rural areas are more susceptible than others. For example, urban areas are subject to water shortages during periods of drought. Excessive demands of densely populated areas put a limit on water resources. In rural areas, crops and livestock may suffer from extended periods of heat and drought. Dry conditions can lead to the ignition of wildfires that could threaten residential, commercial, and recreational areas.

Suggestion of Community Development Trends

Because droughts and extreme heat are regional in nature, future development is susceptible to drought. Although urban and rural areas are equally vulnerable to this hazard, those living in urban areas may have a greater risk from the effects of a prolonged heat wave. The atmospheric conditions that create extreme heat tend to trap pollutants in urban areas, adding contaminated air to the excessively hot temperatures and creating increased health problems. Furthermore, asphalt and concrete store heat longer, gradually releasing it at night and producing high nighttime temperatures. This phenomenon is known as the "urban heat island effect."

Local officials should address drought and extreme heat hazards by educating the public on steps to take before and during the event—for example, temporary window reflectors to direct heat back outside, staying indoors as much as possible, and avoiding strenuous work during the warmest part of the day.

Section 5. Mitigation Strategies

The goal of mitigation is to reduce the future impacts of a hazard, including property damage, disruption to local and regional economies, and the amount of public and private funds spent to assist with recovery. Throughout the planning process, the Franklin County Planning Team worked to identify existing hazard mitigation policies, develop mitigation goals, and a create a comprehensive range of mitigation strategies specific to each jurisdiction. This work provides a blueprint for reducing the potential loses identified in the risk assessment (section 4).

5.1 Existing Hazard Mitigation Policies, Programs and Resources

This section documents each jurisdictions existing authorities, policies, programs and resources related to hazard mitigation and the ability to improve these existing policies and programs. It is important to highlight the work that has been completed in Franklin County that pertains to hazard mitigation. In addition, the following information also provides an evaluation of these abilities to determine whether they can be improved in order to more effectively reduce the impact of future hazards.

5.1.1 Successful Mitigation Projects

To be successful, mitigation must be a recurrent process that is continually striving to lessen the impact of natural hazards within the county. The following are projects that have been successfully completed after Franklin County's 2009 Multi-Hazard Mitigation Plan was formally adopted.

Rend Lake Water Main Bypass

Rend Lake Conservancy District applied for HMGP funds to establish a bypass water main to protect service to Mount Vernon and several nearby communities. The water main runs underneath Rend Lake and is vulnerable to seismic disturbance. In the event of a major earthquake repairs will be difficult, costly, and time-consuming, leaving a large number of residents without water service for an extended period. The total cost of the project was $2,486,240. The new bypass main provides a backup in case the primary main is damaged, and will be much easier to access and repair in an emergency as it will avoid the lake.

West Frankfort Waste Water Treatment Plant Relocation

The City of West Frankfort applied for HMGP funds to relocate critical components of a flood prone wastewater treatment plant. The nearby site also has some wastewater treatment components but is above the floodplain. Moving the vulnerable components to the other location protects the plant from flood damage. The total cost of the project was $8,554,250.

Community Development Assistance Program

Community Development Assistance Program (CDAP) grants are awarded to units of local government with populations of 50,000 or less that are not located within one of the six large urban counties that receive funds directly from the U.S. Department of Housing and Urban Development. The CDAP is a grant program that assists Illinois communities by providing grants to local governments to help them in financing economic development projects, public facilities and housing rehabilitation. Since 2009, Franklin County has received fifty-one CDAP grants totaling $12,606,702 and were used for various hazard mitigation projects.

Of the fifty-three CDAP grants, one grant was an emergency public infrastructure grant that was used to replace an 18" sewer main that collapsed in March, 2012 and three grants were used to install storm warning systems. Twenty-three of the CDAP projects were to improve water, sanitary and storm-sewer systems. The remaining twenty-five grants were used to rehabilitate homes for low income families or housing units occupied by persons with mobility impairments.

Emergency Solutions Grant

The Illinois Emergency Solutions Grant (ESG) program provides funding to: (1) engage homeless individuals and families living on the street; (2) improve the number and quality of emergency shelters for homeless individuals and families; (3) help operate these shelters; (4) provide essential services to shelter residents, (5) rapidly re-house homeless individuals and families, and (6) prevent families and individuals from becoming homeless. Since 2009, Franklin County received three ESG grants totaling $89,402 to aid in shelter/services in Franklin County, including essential services and operations.

Grant Management Program

The Illinois Grant Management Program provides grants to specific local governments, units of government, educational facilities and not-for-profit organizations by members of the General Assembly and the Governor for specific purposes to bolster the State's economy, promote a clean environment and improve the overall quality of life throughout the State of Illinois. Since 2009, Franklin County received nine grants under the Grant Management Program totaling $1,469,255. The following communities utilized the Grant Management Program funds to complete hazard mitigation projects:

- The City of Benton used grant funds for all costs associated with sewer main replacement located between Iowa St and North Du Quoin Street, which travels underneath Interstate 57 and ends at the sewage treatment plant off of Petroff Road.
- The City of Christopher used grants funded for renovation of the Grantee's water tower, located near the corner of West Sylvia Avenue and North Jesse Street in Christopher.
- The Village of Royalton or a combination of municipal improvement projects involving the demolition of an existing vacant school building; the replacement of a large culvert; and the purchase of a dump truck for the Village.
- The City of Sesser used the grant funds for a municipal project involving improvements to the City's sanitary sewer system.
- The City of Zeigler used the grant funds for installing a new chlorination system at the Water Treatment Plant and installation of a lift station and hookups for Larry's Trailer Sales.

5.1.2 National Flood Insurance Program (NFIP)

In 1968, Congress created the National Flood Insurance Program (NFIP) to help provide a means for property owners to financially protect themselves. The NFIP offers flood insurance to homeowners, renters, and business owners if their community participates in the NFIP. Participating communities agree to adopt and enforce ordinances that meet or exceed FEMA requirements to reduce the risk of flooding. This section covers the County's NIFP status, flood insurance policy and claim statistics, repetitive loss structures, and Community Rating System status.

NFIP Status

In Franklin County, all but three out of the thirteen listed communities participate in the NFIP. Table 5-1 includes a summary of information for Franklin County participation in the NFIP. Three communities in

Franklin County are mapped with a flood risk but were sanctioned: Buckner on August 19, 1985; North City on November 18, 2010; Orient on April 4, 1976. Sanctioned communities do not qualify for flood-related Federal disaster assistance for acquisition, construction, or reconstruction purposes in Special Flood Hazard Areas. This may have serious consequences for the community's real estate market and economic viability, as each federally regulated lender must notify the purchaser or lessee that Federal disaster assistance is not available for that property in the event of a flood. Franklin County will continue to provide information to its non-participating jurisdictions regarding the benefits of the National Flood Insurance Program.

Two communities, Hanaford and Sesser, have an effective FIRMs and participates in the NFIP. However, these communities are mapped as Non-Special Flood Hazard Areas (NSFHA). NSFHA areas have a moderate-to-low risk flood zone and is not in any immediate danger from flooding caused by overflowing rivers or hard rains. However, it's important to note that structures within a NSFHA are still at risk. In fact, nearly 1 in 4 NFIP flood claims occur in these moderate- to low-risk areas.

Table 5-1. Information on Franklin County's Participation in the NFIP

Community	Participate in the NFIP	Initial Flood Hazard Boundary Map Identified	Initial FIRM Identified	Current Effective FIRM Date
Franklin County	Yes	01/13/78	11/18/09	11/18/09
Benton	Yes	06/28/74	12/14/79	11/18/09(M)
Buckner	No	03/22/74	08/19/85	11/18/09
Christopher	Yes	03/29/74	08/19/87	11/18/09(M)
Freeman Spur	Yes	10/20/78	08/04/08	11/18/09(M)
Hanaford	Yes	-	11/18/09	NSFHA
North City	No	-	11/18/09	11/18/09
Orient	No	04/04/75	11/18/09	11/18/09
Royalton	Yes	03/21/74	11/18/09	11/18/09(M)
Sesser	Yes	03/21/75	11/18/09	NSFHA
Valier	Yes	03/21/75	07/02/87	11/18/09(M)
West City	Yes	03/28/75	11/18/09	11/18/09(M)
West Frankfort	Yes	03/08/74	05/16/83	11/18/09
Zeigler	Yes	02/25/77	08/05/85	11/18/09(M)

NFIP status and information are documented in the Community Status Book Report updated on 06/06/2015.
(M) – No Elevation Determined – All Zone A, C and X

Maintenance of participation in NFIP

To maintain participation in NFIP the county has adopted an Ordinance in 2009 to Regulate Development in Floodplain Areas in unincorporated areas. The county has a building permit and a floodplain permit process to assist the county with compliance of the NFIP. County Highway also is the depository for the floodplain. This includes Floodplain maps, certificate elevations, Base floodplain determinations, building and floodplain permits, and any other important information. The county has also done extensive work with subdivision regulations to also assist in compliance of the NFIP. The County Engineers office also assist in questions from residents and other local entities about Floodplains. The County Engineer also makes the determination whether the property is in the floodplain and also the base floodplain elevations in unincorporated areas. The county will continue these activities to maintain participation in the future: to stay in compliance with new regulations, floodplain management requirements, and standards for ordinances, building permits, and floodplain permits; to ensure the floodplain map is updated if any local

requests are made to check its veracity; and to reach out to communities to educate about flood hazards and encourage non-participating communities to fulfill requirements of participation.

Flood Insurance Policy and Claim Statistics

As of March 2015, 119 households paid flood insurance, insuring $13,446,600 in property value. The total premiums collected for the policies amounted to $93,316. Since the establishment of the NFIP in 1978, 53 flood insurance claims were filed in Franklin County, totaling in $413,365.94 in payments. Table 5-2 summarizes the claims since 1978.

Table 5-2. Flood Insurance Claim Statistics for Franklin County

Community	Total Losses	Closed Losses	Open Losses	CWOP Losses	Payments
Franklin County	4	2	0	2	$17,324.97
Benton	4	3	0	1	$8,848.52
Christopher	1	0	0	1	$0
Freeman Spur	1	0	0	1	$0
West Frankfort	43	32	0	11	$387,192.45

NFIP policy and claim statistics since 1978 until the most recently updated date of 03/31/2015. Closed Losses refer to losses that are paid; open losses are losses that are not paid in full; CWOP losses are losses that are closed without payment; and total losses refers to all losses submitted regardless of status. Lastly, total payments refer to the total amount paid on losses.

Repetitive Loss Structures

There are several structures in Franklin County that have experienced repetitive losses due to flooding. FEMA defines a repetitive loss structure as a structure covered by a contract of flood insurance issued under the NFIP that has suffered flood loss damage on two or more occasions during a 10-year period that ends on the date of the second loss, in which the cost to repair the flood damage is ≥ 25% of the market value of the structure at the time of each flood loss. Currently there are over 122,000 Repetitive Loss properties nationwide.

The Illinois Emergency Management Agency and Illinois Department of Natural Resources was contacted to determine the location of repetitive loss structures in Franklin County. Records indicate that there are two repetitive loss structures within the county. The total amount paid for building replacement and building contents for damage to these repetitive loss structures is $23,333.28. Table 5-3 describes the repetitive loss structures for each jurisdiction.

Table 5-3. Repetitive Loss Structures for each Jurisdiction in Franklin County

Jurisdiction	Number of Properties	Number of Losses	Total Paid
West Frankfort	1	3	$14,484.76
West Frankfort	1	3	$8,848.52
Total:	**2**	**6**	**$23,333.28**

Community Rating System Status

The CRS is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions meeting the three goals of the CRS: (1) reduce flood losses; (2) facilitate accurate insurance rating; and (3) promote the awareness of flood insurance. More than 1,200 communities from all 50 states participate in the CRS. In Illinois, 51 communities participate in the CRS. Although joining the CRS is free, completing CRS activities and maintain a CRS rating will require a degree of commitment from the community,

including dedicating staff. Franklin County does not have any communities that participate in the CRS Program.

5.1.3 Jurisdiction Ordinances

Hazard Mitigation related ordinances, such as zoning, burning, or building codes, have the potential to reduce the risk from known hazards. These types of regulations provide many effective ways to address resiliency to known hazards. Table 5-5 list Franklin County's current ordinances that directly pertain, or can pertain, to hazard mitigation. It is important to evaluate the local building codes and ordinances to determine if they have the ability to reduce potential damages caused by future hazards. The Franklin County Planning Team worked to identify gaps in the current list of ordinances and suggested changes/additions in Section 5.3.

Table 5-4: Franklin County Jurisdictional Ordinances

Community	Comp Plan	Zoning Ord	Subd Control Ord	Erosion Control	Storm Water Mgmt	Burning Ord	Seismic Ord	Bldg Standards
Franklin Co.	03/1965	N/A	04/2008	N/A	N/A	N/A	N/A	N/A
Benton	03/1979	09/1965	05/1972	N/A	05/1972	10/1988	N/A	01/1969
Buckner	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Christopher	07/1964	12/1966	N/A	N/A	N/A	10/1992	N/A	05/1963
Ewing	07/1967	N/A	N/A	N/A	N/A	05/2001	N/A	N/A
Freeman Spur	N/A	N/A	N/A	N/A	N/A	2005	N/A	2005
Hanford	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Macedonia	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
North City	N/A	1986	N/A	N/A	N/A	1986	N/A	1986
Orient	08/1968	N/A	N/A	N/A	N/A	03/1998	N/A	N/A
Rend Lake Conservancy Dist	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Royalton	07/1964	N/A	N/A	N/A	N/A	N/A	N/A	03/2007
Sesser	07/1964	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Thompsonville	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Valier	05/1968	10/1973	N/A	N/A	N/A	08/1993	N/A	N/A
West City	07/1964	10/1970	N/A	N/A	N/A	11/1990	N/A	2003
Frankfort	01/1961	1962	1992	N/A	1992	1972	N/A	1992
Zeigler	07/1964	12/1972	12/1972	N/A	N/A	11/1986	N/A	12/1972

The adoption of new ordinances, including the adoption of new development standards or the creation of hazard-specific overlay zones tied to existing zoning regulations, present opportunities to discourage hazardous construction and manage the type and density of land uses in areas of known natural hazards. Adopting and enforcing higher regulatory standards for floodplain management (i.e., those that go beyond the minimum standards of the NFIP) is another effective method for minimizing future flood losses, particularly if a community is experiencing growth and development patterns that influence flood hazards in ways that are not accounted for on existing regulatory floodplain maps. Revisions to existing building codes also present the opportunity to address safe growth. Many state and local codes are based off national or industry standard codes which undergo routine evaluations and updates. The adoption of revised code requirements and optional hazard-specific standards may help increase community resilience.

5.1.4 Fire Insurance Ratings

By classifying communities' ability to suppress fires, the Insurance Service Office (ISO) Public Protection Classification Program helps communities evaluate their public fire-protection services. The program provides a countrywide standard that helps fire departments in planning and budgeting for facilities,

equipment, and training. Information is collected on municipal fire-protection efforts in communities throughout the United States. In each of those communities, ISO analyzes the relevant data using a Fire Suppression Rating Schedule. Rating are assigned from 1 to 10 where Class 1 generally represents superior property fire protection, and Class 10 indicates that the area's fire-suppression program doesn't meet ISO's minimum criteria. Table 5-6 displays each Fire Department's insurance rating and total number of employees.

Table 5-5: Franklin County Fire Departments, Insurance Ratings, and Number of Employees/Volunteers

Fire Department	Fire Insurance Rating	Number of Employees
Benton Fire Department	ISO 4	23
Buckner Fire Department	ISO 7	30
Cave Eastern FPD Station 1	ISO 7	N/A
Cave Eastern FPD Station 2	ISO 7	23
Christopher Fire Department	ISO 6	24
Coello Fire Department	ISO 7	20
Ewing-Northern FPD Station 1	ISO 7	11
Ewing-Northern FPD Station 3	ISO 7	10
Royalton Fire Department	ISO 6	15
Sesser FDP Station 1	ISO 4/8	26
Valier Fire Department	ISO 6/9	18
West City Fire Department	ISO 5/8	13
West Frankfort Fire department	ISO 4	20
Zeigler Fire Department	ISO 4	20

5.2 Mitigation Goals

In Section 4 of this plan, the risk assessment identified Franklin County as prone to several hazards. The Planning Team members understand that although they cannot eliminate hazards altogether, Franklin County can work towards building disaster-resistant communities. Below is a generalized list of goals, objectives, and actions. The goals represent long-term, broad visions of the overall vision the county would like to achieve for mitigation. The objectives are strategies and steps that will assist the communities in attaining the listed goals.

Goal 1: Lessen the impacts of hazards to new and existing infrastructure

Objective: Retrofit critical facilities and structures with structural design practices and equipment that will withstand natural disasters and offer weather-proofing.

Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards.

Objective: Minimize the amount of infrastructure exposed to hazards.

Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.

Objective: Improve emergency sheltering in Franklin County.

Goal 2: Create new or revise existing plans/maps for Franklin County

Objective: Support compliance with the NFIP for each jurisdiction in Franklin County.

Objective: Review and update existing, or create new, community plans and ordinances to support hazard mitigation.

Objective: Conduct new studies/research to profile hazards and follow up with mitigation strategies.

Goal 3: Develop long-term strategies to educate Franklin County residents on the hazards

Objective: Raise public awareness on hazard mitigation.
Objective: Improve education and training of emergency personnel and public officials.

5.3 Multi-Jurisdictional Mitigation Strategies

After reviewing the Risk Assessment, the Mitigation Planning Team was presented with the task of individually listing potential mitigation activities using the FEMA STAPLEE evaluation criteria (see table 5-7). FEMA uses their evaluation criteria STAPLEE (stands for social, technical, administrative, political, legal, economic and environmental) to assess the developed mitigation strategies. Evaluating possible natural hazard mitigation activities provides decision-makers with an understanding of the potential benefits and costs of an activity, as well as a basis upon which to compare alternative projects. The Planning Team brought their mitigation ideas to Meeting 3.

Table 5-7. FEMA's STAPLEE Evaluation Criteria

Social	Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the population, do not cause relocation of lower income people, and if they are compatible with the community's social and cultural values.
Technical	Mitigation actions are technically most effective if they provide a long-term reduction of losses and have minimal secondary adverse impacts.
Administrative	Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
Political	Mitigation actions can truly be successful if all stakeholders have been offered an opportunity to participate in the planning process and if there is public support for the action.
Legal	It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action.
Economic	Budget constraints can significantly deter the implementation of mitigation actions. Hence, it is important to evaluate whether an action is cost-effective, as determined by a cost benefit review, and possible to fund.
Environmental	Sustainable mitigation actions that do not have an adverse effect on the environment, comply with federal, state, and local environmental regulations, and are consistent with the community's environmental goals, have mitigation benefits while being environmentally sound.

Table 5-8 contains a comprehensive range of specific mitigation actions and projects for each jurisdiction, with an emphasis on new and existing buildings and infrastructure. At least two identifiable mitigation action items have been addressed for each hazard listed in the risk assessment. Each of the incorporated communities within and including Franklin County was invited to participate in brainstorming sessions in which goals, objectives, and strategies were discussed and prioritized. Each participant in these sessions was armed with possible mitigation goals and strategies provided by FEMA, as well as information about mitigation projects discussed in neighboring communities and counties.

All potential strategies and goals that arose through this process are included in Table 5-8. The mitigation strategies are arranged by hazard they directly address. In some cases, certain mitigation strategies can address all hazards. If provided by the jurisdiction, each mitigation strategy contains specific details pertaining to the implementation, responsible and/or organizing agency, and potential funding source. Potential funding sources are identified by Federal, State, Local, or Private. A code is assigned to each

mitigations strategy for ease of reference when reviewing the prioritization of each mitigations strategies in Section 5.4

Table 5-6: Franklin County Multi-Jurisdictional Mitigation Strategies

Code	Mitigation Strategy	Jurisdictions Involved	Status	Funding Source*	Responsible Organization or Agency
	ALL HAZARDS				
AH1	**Promote Disaster Resilience Through Workshops, Education Materials, and Planning Guides** *Various agencies have implemented forms of this strategy. Local resources have been used to target and inform the resident population. Pandemic education and outreach was conducted the year prior to the 2009 H1N1 pandemic and continued heavily throughout the response by Franklin-Williamson Bi-County Health Dept. (FWBCHD). Education and outreach continues by FWBCHD and various community partners. Local, state and federal sources have been used in past and current pandemic and other disaster education. Additional funding will be sought from local, state and federal sources.*	All	Ongoing	L, S, F	Franklin-Williamson Bi-County Health Dept., Franklin County EMA, Schools
AH2	**Continue liaison groups that meet regularly to discuss hazard mitigation** *These groups meet on a regular basis to discuss hazard mitigation. Local funding will be used to continue these groups which help prepare Franklin Hospital for a hazard.*	Franklin Hospital	Ongoing	L	LEPC, SPARC, Franklin Hospital
AH3	**Establish local emergency planning committee** *LEPC meets on quarterly basis to incorporate all organizations in hazard planning. Local funding will be used to organize these groups which help prepare Franklin Hospital for a hazard.*	Franklin County	Ongoing	L	LEPC
AH4	**Enhance emergency communication system infrastructure** *RLCD will seek funding to improve communications between pump stations and the control room at the plant. This communication has been frequently disrupted during severe weather.*	RLCD	Proposed	L, S, F	RLCD
AH5	**Warning system expansions** *Plan and construct additional locations of public warning and information. Outdoor warning stations and information locations*	Franklin County	Proposed	L, S, F	Franklin County EMA
AH6	**Improve Emergency Response Training, staff, resources, and equipment** *Franklin County EMA and other jurisdictions will oversee the implementation of this plan. If appropriate funding is found, training will begin within two years.*	RLCD, Franklin County EMA, Franklin Hospital	Proposed	L, S, F	RLCD, Franklin County EMA, Franklin Hospital, LEPC, SPARC, state, and private agencies
AH7	**Develop a Vulnerable Population List** *Franklin County does not have a comprehensive vulnerable population list, which was deemed too labor-intensive to compile and to keep updated. The Franklin-Williamson Bi-County Health Dept. (FWBCHD) has a list of resources identified within the community that may be helpful in addressing functional/access needs. FWBCHD shall explore the vulnerable population list project underway with the Disaster Risk Reduction Steering Committee in Jackson County with assistance from Southern Illinois University.*	Franklin-Williamson Bi-County Health Dept.	Ongoing	L	Franklin-Williamson Bi-County Health Dept.
AH8	**City Hall/ Police Department update** *City of Sesser will seek funding to update City Hall which houses the PD and unified command center. Facility will have a community safe room, well equipped emergency operations center, and new tornado sirens.*	City of Sesser	Proposed	L, S, F	City of Sesser
AH9	**Mulkeytown water tower** *Mulkeytown will seek funding to replace old tower which is unable to hold the recommended 3 days' worth of water. The community is unable to maintain and keep up the existing 40 year old tower. The new, larger water tower will better serve the community. Funding will mainly be sought from outside sources.*	Mulkeytown Water District, Franklin County	Proposed	L, S, F	Mulkeytown Water District, Franklin County EMA
AH10	**Secure Critical Infrastructure** *City of Sesser will seek funding to improve critical facilities including the outdated sewer system, inadequate police station, and City Hall. The county will also seek funding to improve structures elsewhere. This may include infrastructure located above and below ground.*	Franklin County, City of Sesser, USDA, DCEO	Proposed	L, S, F	Franklin County EMA, City of Sesser, USDA, DCEO

Code	Mitigation Strategy	Jurisdictions Involved	Status	Funding Source*	Responsible Organization or Agency
AH11	**Retrofit/Harden Critical Facilities and Utilities** The *Franklin-Williamson Bi-County Health Dept. (FWBCHD) will seek federal funding to harden the FWBCHD* building. Franklin Hospital will procure federal funding to sustain or harden critical building infrastructure of hospital. Sesser will harden the Public Works Facility. SIH would like to retrofit existing facilities to serve surge healthcare needs in the event of mass casualties. Funding has not been secured as of 2015. Implementation, if funding is available from PDM or HMGP, is forecasted to be initiated within approximately one year. Franklin County will seek to harden critical government facilities.	All	Proposed	L, S, F	Franklin-Williamson Bi-County Health Dept., LEPC, and Hospital, Franklin County EMA
AH12	**Equip critical facilities with back-up generators** *RLCD will seek funding for a back-up generator for the water and sewer plant and a portable back-up generator to be shared between pump stations. Thompsonville CUSD will seek funding to equip each building with a back-up generator. Franklin Hospital will obtain needed generators and fuel to sustain the facility. Franklin County will seek to obtain generators and fuel to sustain facilities.*	RLCD, Thompsonville CUSD #174, Franklin Hospital, Franklin County	Proposed	L, S, F	RLCD, Thompsonville CUSD #174, Franklin Hospital
AH13	**Supply all critical facilities with basic survival gear, food, and water.** *Thompsonville CUSD will seek funding to replace some items in emergency backpacks distributed throughout the school in the classrooms. Franklin Hospital will seek funding to have adequate supplies for employees and patients.*	Rend Lake College, Thompsonville CUSD #174, Franklin Hospital, Franklin County	Proposed	F	Rend Lake College, Thompsonville CUSD #174 Franklin Hospital, Franklin County EMA
AH14	**Construct bypass water main around swamps, rivers, and interstate** *RLCD will seek funding to build a water main bypass to allow better access for repairs in emergency situations. The current location of the water main has limited access.*	RLCD	Ongoing	L, S, F	RLCD
AH15	**Stockpile and create an inventory of emergency parts and pipe to respond to sudden failures** *RLCD will seek funding to establish a stockpile of parts along with a mutual aid agreement to supply emergency parts and pipe for sudden and high priority failures.*	RLCD, all local communities, and Water District	Proposed	L, S, F	RLCD
AH16	**Develop mutual aid agreements** *Franklin Hospital will seek funding to maintain existing and add new mutual aid agreements between various public and private entities to be used in disasters.*	Franklin Hospital	Ongoing	L, S, F, P	LEPC, private and public entities, and hospital
AH17	**Identify and procure backup water supply** *Ensure water supply for laboratory equipment and facility public usage by mutual aid agreements*	Franklin Hospital	Ongoing	L, S, P	LEPC and hospital
	TORNADO / SEVERE THUNDERSTROMS				
ST1	**Install lightning detection system** *RLCD will seek funding for and oversee the installation of lightning detection systems to better monitor severe weather.*	RLCD	Proposed	L, S, F	RLCD
ST2	**Require the construction of safe rooms within new public buildings** *Rend Lake College will seek funding to enact a requirement for new buildings to have safe rooms.*	Rend Lake College	Proposed	F	Rend Lake College
ST3	**Construct new safe rooms** The *County EMA will oversee the implementation of this project. The Franklin-Williamson Bi-County Health Dept. (FWBCHD) will seek federal funding to install a tornado safe room in the FWBCHD building. Rend Lake College would like to use funding for the creation of shelters. Local resources will be used to evaluate the cost benefit of the shelters and define specific locations. Funding has not been secured as of 2015. Implementation, if HMA funding is available, is forecasted to be initiated within approximately 3-5 years. Rend Lake College and Benton CHSD #103 will each seek funding to construct new safe rooms in their buildings for the protection of their students.*	Rend Lake College, Benton CHSD #103, Franklin County	Proposed	L, S, F	Rend Lake College, Benton CHSD #103, Franklin County EMA, Franklin-Williamson Bi-County Health Dept.
ST4	**Equip critical facilities with lightning protection devices** *RLCD will seek funding for and oversee the installation of lightning protection devices on critical facilities.*	RLCD	Proposed	L, S, F	RLCD

Code	Mitigation Strategy	Jurisdictions Involved	Status	Funding Source*	Responsible Organization or Agency
ST5	**Retrofit structures to withstand high winds** *Benton* CHSD #103 will *oversee the implementation of this project. Funding has not been secured as of 2015. Implementation, if HMA funding is available, is forecasted to be initiated within approximately 3-5 years.*	Benton CHSD #103	Proposed	F	Benton CHSD #103
	FLOODING / DAM AND LEVEE FAILURE				
F1	**Institute a buy-out plan for repetitive loss properties** *RLCD and Franklin County will* oversee *the implementation of various projects. Funding has not been secured as of 2015. Implementation, if* HMA funding is available*, is forecasted to be initiated within approximately 3-5 years.*	RLCD, Franklin County	Proposed	L, S, F	RLCD, Franklin County EMA
F2	**Regularly perform drainage system maintenance** *Rend Lake College will oversee the implementation of this project. Funding has not been secured as of 2015. Implementation, if HMA funding is available, is forecasted to be initiated within approximately 3-5 years.*	Rend Lake College	Proposed	S	Rend Lake College
F3	**Culvert replacement** *Benton CHSD #103, City of Benton, City of West Frankfurt, and Rend Lake College will oversee the implementation of this project. Funding has not been secured as of 2015. Implementation, if HMA funding is available, is forecasted to be initiated within approximately 3-5 years.*	Rend Lake College, Benton CHSD #103, City of Benton	Proposed	S, F	Rend Lake College, Benton CHSD #103, City of Benton, City of West Frankfurt
F4	**Increase capacity of storm water infrastructure** *RLCD will seek funding to improve the frequently overwhelmed sewer plant to be better able to handle major rains and flooding.* City of Benton and City of West Frankfurt will seek funding to improve storm water management.	RLCD, City of Benton, City of West Frankfurt	Proposed	L, S, F	RLCD, City of Benton, City of West Frankfurt
	WINTER STORMS				
WS1	**Purchase deicing chemicals** *Rend Lake College will oversee the implementation of this project. Funding has not been secured as of 2015. Implementation, if HMA funding is available, is forecasted to be initiated within approximately 1-2 years.*	Rend Lake College	Proposed	S	Rend Lake College
WS2	**Purchase snow fences** *Rend Lake College will oversee the implementation of this project. Funding has not been secured as of 2015. Implementation, if HMA funding is available, is forecasted to be initiated within approximately 3-5 years.*	Rend Lake College	Proposed	S	Rend Lake College
	EARTHQUAKES				
EQ1	**Provide information to residents on structural and non-structural retrofitting** *Rend Lake College will oversee the implementation of this project. Funding has not been secured as of 2015. Implementation, if HMA funding is available, is forecasted to be initiated within approximately 3-5 years.*	Rend Lake College	Proposed	F	Rend Lake College
EQ2	**Develop earthquake emergency action plan** *Rend Lake College will oversee the implementation of this project. Funding has not been secured as of 2015. Implementation, if HMA funding is available, is forecasted to be initiated within approximately 3-5 years.*	Rend Lake College	Proposed	S	Rend Lake College
EQ3	**Construct new safe rooms** *RLCD will seek funding for and oversee the construction of earthquake-ready safe rooms*	RLCD	Proposed	L, S, F	RLCD
EQ4	**Install Automatic Shutoff Valves** *The Franklin-Williamson Bi-County Health Dept. (FWBCHD) will seek federal funding to install automatic shutoff valves in the FWBCHD buildings. RLCD will seek funding to install shutoff valves elsewhere in the county.*	Franklin-Williamson Bi-County Health Dept., RLCD	Proposed	L, S, F	Franklin-Williamson Bi-County Health Dept., RLCD
EQ5	**Install 2nd water main from Plant to distribution system** *RLCD will seek funding to construct an additional water main to serve communities to mitigate loss in the event an earthquake disrupts the current main lying under I-57.*	RLCD	Proposed	L, S, F	RLCD
	HAZARDOUS MATERIALS RELEASE				

Code	Mitigation Strategy	Jurisdictions Involved	Status	Funding Source*	Responsible Organization or Agency
HAZ1	**Acquire protective gear** *Rend Lake College will oversee the implementation of this project. Funding has not been secured as of 2015. Implementation, if HMA funding is available, is forecasted to be initiated within approximately 3-5 years.*	Rend Lake College	Proposed	S	Rend Lake College
HAZ2	**Develop hazmat emergency response** *Rend Lake College will oversee the implementation of this project. Funding has not been secured as of 2015. Implementation, if HMA funding is available, is forecasted to be initiated within approximately 3-5 years.*	Rend Lake College	Ongoing	S	Rend Lake College
HAZ3	**Equip critical facilities with centralized positive-pressure HVAC systems** *RLCD will oversee the implementation of this project. Funding has not been secured as of 2015. Implementation, if HMA funding is available, is forecasted to be initiated within approximately 3-5 years.*	RLCD	Proposed	L, S, F	RLCD
DROUGHT / EXTREME HEAT					
H1	**Reduce urban heat island effect** *Rend Lake College will oversee the implementation of this project. Funding has not been secured as of 2015. Implementation, if HMA funding is available, is forecasted to be initiated within approximately 3-5 years.*	Rend Lake College	Proposed	P	Rend Lake College
H2	**Retrofit water supply systems** *RLCD will oversee the implementation of this project. Funding has not been secured as of 2015. Implementation, if HMA funding is available, is forecasted to be initiated within approximately 3-5 years.*	RLCD	Proposed	L, S, F	RLCD
H3	**Establish fire/landslide/erosion preventative vegetation management techniques** *Rend Lake College* will *oversee the implementation of this project. Funding has not been secured as of 2015. Implementation, if HMA funding is available, is forecasted to be initiated within approximately 3-5 years.*	Rend Lake College	Proposed	P	Rend Lake College
GROUND FAILURE					
GF1	**Maintain a list of buildings constructed over underground mines** *Rend Lake College will oversee the implementation of this project. Funding has not been secured as of 2015. Implementation, if HMA funding is available, is forecasted to be initiated within approximately 3-5 years.*	Rend Lake College	Proposed	S	Rend Lake College
GF2	**Develop/improve mining regulations** *Rend Lake College will oversee the implementation of this project. Funding has not been secured as of 2015. Implementation, if HMA funding is available, is forecasted to be initiated within approximately 3-5 years.*	Rend Lake College	Proposed	S	Rend Lake College
DISEASE EPIDEMICS / PANDEMICS					
DEP1	**Enhance pandemic surveillance reporting systems (schools and sentinel computers, etc.)** *County Health Department and Hospitals will oversee implementation of this project. Will seek local, state, and federal funding for project.*	Franklin County	Proposed	L, S, F	Franklin County
DEP2	**Continue non-pharmaceutical intervention program** *County Health Department and Hospitals will oversee implementation of this project. Will seek local, state, and federal funding for project.*	Franklin County	Ongoing	L, S, F	Franklin County
DEP3	**Build a robust strategic stockpile** *County Health Department and Hospitals will oversee implementation of this project. Will seek local, state, and federal funding for project.*	Franklin County	Proposed	L, S, F	Franklin County
DEP4	**Develop plan for local healthcare mass care situations** *FWBCHD is currently working with American Red Cross to enhance mass care capability through MRC volunteer shelter support. FWBCHD is also leading the region in developing a Mass Fatality Family Assistance Center plan and has secured equipment which should reduce surge to hospitals and coroner's offices and lessen the burden by other community response agencies. County Health Department and Hospitals will oversee implementation of this project. Will seek local and state for project.*	Franklin County	Proposed	L, S, F	Franklin County

Code	Mitigation Strategy	Jurisdictions Involved	Status	Funding Source*	Responsible Organization or Agency
DEP5	**Portable morgue and mutual aid agreement and response plan** *County Coroner has a portable morgue and access to trailer in the event of mass casualties. Mutual aid agreements with surrounding counties and internal departments. Coroner has a 7-year-old response plan but it has been updated twice.*	Franklin County	Proposed	L	Franklin County
DEP6	**Educate Community on Pandemics and How to Mitigation their Impacts** *Potential funding sources includes: Illinois Department of Public Health, U.S. Dept. of Health and Human Services, and various Private foundations*	Franklin County	Ongoing	S, F	Franklin-Williamson Bi-County Health Dept.
DEP7	**Purchase technical assistance and develop website to enhance medical countermeasure capability** *Potential funding sources includes: Illinois Department of Public Health, U.S. Dept. of Health and Human Services, and various Private foundations*	Franklin County	Proposed	S, F, P	Franklin-Williamson Bi-County Health Dept.

*F – Federal, S – State, L – Local, P – Private

5.4 Prioritization of Multi-Jurisdictional Mitigation Strategies

Implementation of the mitigation strategies is critical to the overall success of the mitigation plan. It is important to decide, based upon many factors, which action will be undertaken first. In order to pursue the top priority first, an analysis and prioritization of the actions is vital. It is important to note that some actions may occur before the top priority due to financial, engineering, environmental, permitting, and site control issues. Public awareness and input of these mitigation actions can increase knowledge to capitalize on funding opportunities and monitoring the progress of an action. It is also critical to take into account the amount of time it will take the community to complete the mitigation project.

Table 5-9 displays the priority ranking for each mitigation strategy. Each code refers to a specific mitigations strategy listed in Table 5-8. For each participating jurisdiction a rating (high, medium, or low) was assessed for each mitigation item. The ranking is the result of the STAPLEE evaluation and the timeframe the community is interested in completing the strategy: H - High 1-3 years; M - Medium 3-5 years; and L - Low 5+years

Table 5-9. Prioritization of the Franklin County Multi-Jurisdictional Mitigation Strategies

	Priority Ranking*						
Codes	Franklin County	Benton	Mulkeytown	Sesser	Franklin Hospital	Rend Lake Conservancy Dist.	Rend Lake College
AH1	H	-	-	-	H	-	-
AH2	-	-	-	-	H	-	-
AH3	-	-	-	-	H	-	-
AH4	-	-	-	-	-	M	-
AH5	M	-	-	-	-	-	-
AH6	-	-	-	-	H	M	-
AH7	M	-	-	-	-	-	-
AH8	-	-	-	H	-	-	-
AH9	-	-	M	-	-	-	-
AH10	H	-	-	H	-	-	-
AH11	-	-	-	H	H	-	-
AH12	M	-	-	-	H	M	-
AH13	-	-	-	-	H	-	H
AH14	-	-	-	-	-	H	-
AH15	-	-	-	-	-	H	-
AH16	-	-	-	-	H	-	-
AH17	-	-	-	-	H	-	-
ST1	-	-	-	-	-	L	-
ST2	-	-	-	-	-	-	H
ST3	M	H	-	-	-	-	H
ST4	-	-	-	-	-	L	-
ST5	-	H	-	-	-	-	-

	Priority Ranking*						
Codes	Franklin County	Benton	Mulkeytown	Sesser	Franklin Hospital	Rend Lake Conservancy Dist.	Rend Lake College
F1	-	-	-	-	-	L	-
F2	-	-	-	-	-	-	M
F3	-	H	-	-	-	-	M
F4	-	-	-	-	-	H	-
WS1	-	-	-	-	-	-	H
WS2	-	-	-	-	-	-	L
EQ1	-	-	-	-	-	-	H
EQ2	-	-	-	-	-	-	H
EQ3	-	-	-	-	-	L	-
EQ4	H	-	-	-	-	L	-
EQ5	-	-	-	-	-	H	-
HAZ1	-	-	-	-	-	-	H
HAZ2	-	-	-	-	-	-	M
HAZ3	-	-	-	-	-	L	-
H1	-	-	-	-	-	-	L
H2	-	-	-	-	-	-	-
H3	-	-	-	-	-	-	L
H4	-	-	-	-	-	-	L
H5	-	-	-	-	-	M	L
GF1	-	-	-	-	-	-	H
GF2	-	-	-	-	-	-	H
DEP1	-	-	-	-	-	-	-

*Ranking based on STAPLEE evaluation and estimated timeframe: H – High, M – Medium, and L – Low

Section 6. Plan Implementation and Maintenance

6.1 Implementation through Existing Programs

Throughout the planning process, the Franklin County Planning Team worked to identify existing hazard mitigation policies, develop mitigation goals, and a create a comprehensive range of mitigation strategies specific to each jurisdiction. This work provides a blueprint for reducing the potential loses identified in the Risk Assessment (Section 4). The ultimate goal of this plan is to incorporate the mitigation strategies proposed into ongoing planning efforts within the County. The Franklin County Emergency Management Agency will be the local champion for the mitigation actions. The Franklin County Board and the city and village councils will be an integral part of the implementation process. Federal and state assistance will be necessary for a number of the identified action.

Continued public involvement is also critical to the successful implementation of the MHMP. Comments from the public on the MHMP will be received by the Franklin County Emergency Management Agency and forwarded to the Planning Team for discussion. Education efforts for hazard mitigation will be an ongoing effort of Franklin County. The public will be notified of periodic planning meetings through notices in the local newspaper. Once adopted, a copy of the MHMP will be maintained in each jurisdiction and in the Franklin County Emergency Management Agency.

6.2 Monitoring, Evaluation, and Updating the MHMP

Throughout the five-year planning cycle, the Franklin County Emergency Management Agency will reconvene the Planning Team to monitor, evaluate, and update the plan on an annual basis. Additionally, a meeting will be held in 2020 to address the five-year update of this plan. Members of the planning committee are readily available to engage in email correspondence between annual meetings. If the need for a special meeting, due to new developments or the occurrence of a declared disaster in the county, the team will meet to update mitigation strategies. Depending on grant opportunities and fiscal resources, mitigation projects may be implemented independently by individual communities or through local partnerships.

As part of the update process, the Planning Team will review the county goals and objectives to determine their relevance to changing situations in the county. In addition, state and federal policies will be reviewed to ensure they are addressing current and expected conditions. The team will also review the risk assessment portion of the plan to determine if this information should be updated or modified. The plan revision will also reflect changes in local development and its relation to each hazard. The parties responsible for the various implementation actions will report on the status of their projects, and will include which implementation processes worked well, any difficulties encountered, how coordination efforts are proceeding, and which strategies should be revised.

Updates or modifications to the MHMP during the five-year planning process will require a public notice and a meeting prior to submitting revisions to the individual jurisdictions for approval. The plan will be updated via written changes, submissions as the committee deems appropriate and necessary, and as approved by the Franklin County Board.

The GIS data used to prepare the plan was obtained from existing county GIS data as well as data collected as part of the planning process. This updated Hazus-MH GIS data has been returned to the county for use and maintenance in the county's system. As newer data becomes available, these updated data will be used for future risk assessments and vulnerability analyses.

Definitions

100-year Floodplain	Areas subject to inundation by the 1-percent-annual-chance flood event.
Critical Facility	A structure, because of its function, size, service area, or uniqueness, that has the potential to cause serious bodily harm, extensive property damage, or disruption of vital socioeconomic activities if it is destroyed or damaged or if its functionality is impaired. This includes, but are not limited to, water and wastewater treatment facilities, municipal buildings, educations facilities, and non-emergency healthcare facilities.
Community Rating System (CRS)	A voluntary program for National Flood Insurance Program (NFIP) participating communities. The goals of the CRS are to reduce flood damages to insurable property, strengthen and support the insurance aspects of the NFIP, and encourage a comprehensive approach to floodplain management.
Comprehensive Plan	A document, also known as a "general plan," covering the entire geographic area of a community and expressing community goals and objectives. The plan lays out the vision, policies, and strategies for the future of the community, including all the physical elements that will determine the community's future developments.
Disaster Mitigation Act of 2000 (DMA 2000)	The largest legislation to improve the planning process. It was signed into law on October 30, 2000. This new legislation reinforces the importance of mitigation planning and emphasizes planning for disasters before they occur.
Critical Facility	A subset of essential facilities that represent a substantial hazard to human life in the event of failure. This includes (but not limited to) hospital and fire, rescue, ambulance, emergency operations centers, and police stations.
Federal Emergency Management Agency	An independent agency created in 1979 to provide a single point of accountability for all federal activities related to disaster mitigation and emergency preparedness, response, and recovery.
Hazard	A source of potential danger or adverse condition.
Hazard Mitigation	Any sustained action to reduce or eliminate long-term risk to human life and property from hazards.

Hazard Mitigation Grant Program (HMPG)	Authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, HMGP is administered by FEMA and provides grants to states, tribes, and local governments to implement hazard mitigation actions after a major disaster declaration.
Hazus-MH	A geographic information system (GIS)-based disaster risk assessment tool.
Multi-Hazard Mitigation Planning	Identify policies and actions that can be implemented over the long term to reduce risk and future losses from various hazardous events.
National Flood Insurance Program	Administered by the Federal Emergency Management Agency, which works closely with nearly 90 private insurance companies to offer flood insurance to property owners and renters. In order to qualify for flood insurance, a community must join the NFIP and agree to enforce sound floodplain management standards.
Planning Team	A group composed of government, private sector, and individuals with a variety of skills and areas of expertise, usually appointed by a city or town manager, or chief elected official. The group finds solutions to community mitigation needs and seeks community acceptance of those solutions.
Risk Priority Index	Quantifies risk as the product of hazard probability and magnitude so Planning Team members can prioritize mitigation strategies for high-risk-priority hazards.
Risk Assessment	Quantifies the potential loss resulting from a disaster by assessing the vulnerability of buildings, infrastructure, and people.
Strategy	A collection of actions to achieve goals and objectives.
Vulnerability	Describes how exposed or susceptible to damage an asset is. Vulnerability depends on an asset's construction, contents, and the economic value of its functions.

Acronyms

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

A

AEGL – Acute Exposure Guideline Levels
ALOHA – Areal Locations of Hazardous Atmospheres

C

CERI – Center for Earthquake Research and Information
CRS – Community Rating System

D

DEM – Digital Elevation Model
DFIRM – Digital Flood Insurance Rate Map
DMA – Disaster Mitigation Act of 2000

E

EMA – Emergency Management Agency
EPA – Environmental Protection Agency

F

FEMA – Federal Emergency Management Agency
FIRM – Flood Insurance Rate Map

G

GIS – Geographic Information System

H

Hazus-MH – Hazards USA Multi-Hazard
HMGP – Hazard Mitigation Grant Program
HUC – Hydrologic Unit Code

I

IA – Individual Assistance
IDOT – Illinois Department of Transportation
IEMA – Illinois Emergency Management Agency

M

MHMP – Multi-Hazard Mitigation Plan

N

NCDC – National Climatic Data Center

NEHRP – National Earthquake Hazards Reduction Program
NFIP – National Flood Insurance Program
NOAA – National Oceanic and Atmospheric Administration

P

PA – Public Assistance
PPM – Parts Per Million

R

RPI – Risk Priority Index

S

SIU – Southern Illinois University Carbondale
SPC – Storm Prediction Center

U

USGS – United States Geological Survey

Appendices

Appendix A. MHMP Meeting Minutes

Appendix B. Local Press Release and Newspaper Articles

Appendix C. Adopting Resolutions

Appendix D. Historical Hazards

Appendix E. List of Essential Facilities

Appendix F. Critical Facilities

Appendix A. MHMP Meeting Minutes

Formal Mitigation Planning Meetings

Meeting 1 – September 2nd, 2014

Meeting 2 – December 8th, 2014

Meeting 3 – May 18th, 2015

Meeting 4 – November 17th, 2015

Meeting 1 – September 26th, 2014

IEMA Multi-Hazard Mitigation Plan

Assembly of the Franklin County Planning Team Meeting 1
Chairman: Ryan Buckingham
Plan Directors: Southern Illinois University and Greater Egypt Region Planning and Development Commission

Meeting Date: September 26th, 2014

Meeting Time: 2:00pm

Place: Franklin Hospital, 201 Bailey Ln, Benton, IL 62812

Planning Team/Attendance: 14

Introduction to the Multi-Hazard Mitigation Planning Process and Risk Assessment

The meeting is called to order

Prof. Nicholas Pinter opened the meeting by explaining that the planning team is here today to update the 2009 Franklin County Multi-Hazard Mitigation Plan. He introduced the planning partners: Franklin County, Southern Illinois University and Greater Egypt Regional Planning and Development Commission.

A PowerPoint presentation was given by Prof. Nicholas Pinter and Amanda Damptz. Prof. Pinter explained that this project is in response to the Disaster Mitigation Act of 2000. The project is funded by a grant awarded by FEMA. Once the project is completed, it opens the County and its participating jurisdictions up to additional Hazard Mitigation Assistance Funds. Prof. Pinter divided the planning process into four meetings. During Meeting 1, the focus will be on natural disasters that are relevant to the County. As a group, the planning team will complete a hazard ranking exercise. Identified hazards will be given a probability rating and ranked by their occurrence and potential level of risk. At Meeting 2, the public meeting, SIU will present historic accounts of natural disasters that have affected the area. The results from the risk assessment report will also be presented. Meeting 3 will consist of a brain storming session focused on disasters that were analyzed in the risk assessment report. FEMA requires that for every identified hazard, two strategies to mitigate the loss and damage must be in place. At Meeting 4, the planning team will review the plan prior to sending it to IEMA. IEMA will review the plan and make recommendation to it as they see fit, then it is submitted to FEMA for review and approval. Once approved by FEMA, the Planning Team will present the Mitigation Plan to the County Board for adoption. Participating Jurisdictions must either adopt the county plan or prepare its own plan, in order to access mitigation assistance from FEMA.

3000 West DeYoung Street · Suite 800B-3 · Marion, IL 62959 · Phone: 618.997.9351 · Fax: 618.997.9354 · www.greateregypt.org

SIU Staff Researcher, Amanda Damptz, presented historic accounts of natural disasters that have affected the County. During her presentation, she fielded any questions relevant to each hazard. She stressed that this information should help guide the planning team when completing the hazard ranking exercise.

Prof. Pinter provided the planning team with a Hazard Ranking Exercise handout. The Planning Team was then asked to assess and rank the hazards that could potentially befall Franklin County using the risk priority index (RPI). The identified hazards were ranked as followed for Franklin County:

1. Tornadoes
2. Earthquakes
3. Hazmat
4. Severe Storms (Thunderstorm, High Winds, Hail, Lightning)
5. Flooding
6. Ground Failure
7. Winter Storms
8. Dam / Levee Failure
9. Pandemics

During the Hazard Ranking Exercise, Pandemics / Communicable Diseases were identified by the planning team as a potential hazard. SIU and Greater Egypt Planning Commission explained that threat for these hazards are real. However, the purpose of this process is to develop and maintain a mitigation/risk management plan in order to be eligible for FEMA's Hazard Mitigation Assistance funds. The additional hazards will be identified in the Mitigation Plan but not ranked.

Finally, representative from each jurisdiction present at the meeting completed the Hazard Ranking Exercise for their respective jurisdiction.

Meeting was adjourned

Franklin County Multi-Hazard Mitigation Planning Meeting 1 Attendance

Name and Contact Information (email or phone)	Your Initials	Your Reason for Attending (check only ONE box)	Job Title(s)	Employer(s)	Roundtrip Mileage to attend this meeting
Clodi, Robert		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Project Manager	Rend Lake Conservancy District	
Damptz, Amanda	AD	☑ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Staff Researcher & Project Manager	Natural Hazards Research and Mitigation Group - SIU	Ø
Davis, Hervey		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	CEO	Franklin Hospital	
Goins, Gregory		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Superintendent	Frankfort C.U.S.D. #168	
Harland, Dennis		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Village President	Village of North City	
Harris, James		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Mayor	Village of Thompsonville	
Henry, Jason D.		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Superintendent	Sesser- Valier Community Unit School	

Franklin County Multi-Hazard Mitigation Planning Meeting 1 Attendance

Please print clearly

Name and Contact Information (email or phone)	Your Initials	Your Reason for Attending (check only ONE box)	Job Title(s)	Employer(s)	Roundtrip Mileage to attend this meeting
Ashmore, Chad Jason	CJA	☑ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Mayor	City of Sesser	30
Banks, Timothy	TOB	☑ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Senior Emergency Response Specialist	Ameren Illinois	160
Bartolotti, Gary		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Mayor	City of Christopher	
Brandon, Charles		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Mayor	Village of Royalton	
Buchanan, Martin H.		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Village President	Village of Valier	
Carpenter, Tyler	TMC	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Regional Planner	Greater Egypt	
Clark, Kelly		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Principal	Akin C.C.S.D. #91	

Franklin County Multi-Hazard Mitigation Planning Meeting 1 Attendance

Name and Contact Information (email or phone)	Your Initials	Your Reason for Attending (check only ONE box)	Job Title(s)	Employer(s)	Roundtrip Mileage to attend this meeting
~~McCormick, Brad~~ DARREN Pulley	DP	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	DEAN ~~Vice President of Business Services~~	John A. Logan College	John A. Logan
Mitchell, Dennis	DM	☒ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Mayor	City of Ziegler	24
Moehring, Cathy		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Director of Quality Improvement	The H Group, B.B.T., Inc.	
Mosley, Mary		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Village President	Village of Hanaford	
Nielsen, Chris		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Dean of Applied Science & Technology	Rend Lake College	
Overturf, Steven		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Board of Trustees	Browning Township	
Pinter, Nicholas (Prof.)	NP	☑ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Project Director	Natural Hazards Research and Mitigation Group - SIU	

Franklin County Multi-Hazard Mitigation Planning Meeting 1 Attendance

Name and Contact Information (email or phone)	Your Initials	Your Reason for Attending (check only ONE box)	Job Title(s)	Employer(s)	Roundtrip Mileage to attend this meeting
Hood, Kay		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Supervisor	Ewing Township	
Ing, Kristen	KI	☑ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Superintendent	Ewing-Northern CCSD #115	12
Jordan, Tom		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Mayor	City of West Frankfort	
Koch, Ronda		☑ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Director of Emergency Preparedness	F.W. Bi-County Health Department	
Kraft, Gary		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Mayor	City of Benton	
Little, Gary		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Deputy Director of Emergency Management	Franklin County EMA	
McBride, Cletus		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Chief	Sesser FPD	

Franklin County Multi-Hazard Mitigation Planning Meeting 1 Attendance

Name and Contact Information (email or phone)	Your Initials	Your Reason for Attending (check only ONE box)	Job Title(s)	Employer(s)	Roundtrip Mileage to attend this meeting
Lori Hall Lori Hall, Adm. Assistant	LH	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Adm. Assistant	Franklin Hospital	
GOOD, RICK	RG	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Chief	ABBOTT	
		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			
		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			
		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			
		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			
		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			

Franklin County Multi-Hazard Mitigation Planning Meeting 1 Attendance

Name and Contact Information (email or phone)	Your Initials	Your Reason for Attending (check only ONE box)	Job Title(s)	Employer(s)	Roundtrip Mileage to attend this meeting
Smith, Shirley		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Village Clerk	Village of West City	
Spaven, Curt		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Mayor	Village of Freeman Spur	
Steinsultz, Erin		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Library Director	Benton Public Library	
Stewart, Kelly A. Z. Mills	ARM	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Superintendent	Benton Consolidated High School Dist. # 103	4
Thorne, Woody		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Vice President of Community Affairs	Southern Illinois Healthcare	
Chris Pulley	CP	☒ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Regional Coordinator	IEMA	
RYANN Buckingham	(RB)	☒ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Director of EM	County of Franklin, IL.	0

Meeting 2 – March 26th, 2015

GREATER EGYPT REGIONAL PLANNING & DEVELOPMENT COMMISSION

IEMA Multi-Hazard Mitigation Plan

Assembly of the Franklin County Planning Team Meeting 2
Chairman: Ryan Buckingham
Plan Directors: Southern Illinois University and Greater Egypt Region Planning and Development Commission

Meeting Date: March 26th, 2015

Meeting Time: 6:00pm

Place: 208 N. Thomas St., Christopher, IL 62822

Planning Team/Attendance: 23

Public Meeting and County Risk Assessment

The meeting is called to order

Amanda Damptz opened the meeting by explaining that the planning team is here today to update the 2009 Franklin County Multi-Hazard Mitigation Plan. She introduced the planning partners: Southern Illinois University and Greater Egypt Regional Planning and Development Commission. A PowerPoint presentation was present that included: historic accounts of natural disasters that have affected Franklin County and the results from the risk assessment report.

A draft of the Franklin County Mitigation Plan was also given to each planning team member for review. It was explained by Ms. Damptz that the each planning team member should review the plan and consider the risk assessment before attending the next meeting. The next meeting will take place in April/May. This meeting will involve developing mitigation strategies to address each ranked hazard.

Ms. Damptz then asked the audience for questions and comments. Ms. Damptz thanked those who came and closed the presentation.

Meeting was adjourned

3000 West DeYoung Street · Suite 800B-3 · Marion, IL 62959 · Phone: 618.997.9351 · Fax: 618.997.9354 · www.greateregypt.org

Franklin County Multi-Hazard Mitigation Planning Meeting Attendance

Please print clearly

Name and Contact Information (email or phone)	Your Initials	Your Reason for Attending (check only ONE box)	Job Title(s)	Employer(s)	Roundtrip Mileage to attend this meeting
Sean Dobbins Sean.Dobbins@franklincountyema.com	SD	X As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Bureau Chief of Emergency Preparedness	Franklin County EMA	30 mi.
Keith Hetterstein khetterstein@gmail.com	KH	☐ As a Public Employee ☐ As a Private Employee X As an Interested Citizen	Jefferson Cnty EMA		33 mi.
Marsha Lucker Mlucker27@bellsouth.com		☐ As a Public Employee ☐ As a Private Employee X As an Interested Citizen			
Steve Lueker sluekerx@jpfcc.us	SL	☐ As a Public Employee ☐ As a Private Employee X As an Interested Citizen	Jefferson Cty EMA	Jefferson Co	3
David H. Semmx, Jr		X As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Perry Co. EMA Coordinator	Perry County	32
Patrick A. Queek pat@illema.com 425-4400		X As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Williamson Co. EMA Assist. Coordinator	Williamson County	96
Ryan A. Buckingham		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Director Franklin Co. EMA	Franklin County	

(March 26, 2015)

Franklin County Multi-Hazard Mitigation Planning Meeting Attendance

Name and Contact Information (email or phone)	Your Initials	Your Reason for Attending (check only ONE box)	Job Title(s)	Employer(s)	Roundtrip Mileage to attend this meeting
Christina Douglas 724-2842 218-1468	CLD	☐ As a Public Employee ☐ As a Private Employee ☑ As an Interested Citizen	Bank Examiner	FDIC	4
Brandon Pdle		☒ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Ops	FCEMA	10
Shawn Talbot 618 937 3502	CLT	☒ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Chief W.F Police	City of W. Frankfort	15
		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			
		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			
		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			
		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			

(March 26, 2015) Page 3

Franklin County Multi-Hazard Mitigation Planning Meeting Attendance

Name and Contact Information (email or phone)	Your Initials	Your Reason for Attending (check only ONE box)	Job Title(s)	Employer(s)	Roundtrip Mileage to attend this meeting
Gary Knopf	GK	☑ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Mayor City of Benton		14 mile
Cindy Webb	CW	☐ As a Public Employee ☐ As a Private Employee ☑ As an Interested Citizen	Ema Emer. Preparedness mtown Neighborhood Watch	Fr. Co. Emergency Preparedness	6 mile
Lori Hall	LH	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Adm. Assistant	Franklin Hospital	20 mile
Kyle Nicholson	KN	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Information Technology	Franklin Hospital	20 mile
Jonathan Rene	JR	☑ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Assistant Prof	SIUC	26 mile
Valerie Eaden	VE	☐ As a Public Employee ☐ As a Private Employee ☒ As an Interested Citizen	Disaster Service	American Red Cross	230
Bill Bruto		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	SCU		

(March 26, 2015) Page 2

Franklin County Multi-Hazard Mitigation Planning Meeting Attendance

Name and Contact Information (email or phone)	Your Initials	Your Reason for Attending (check only ONE box)	Job Title(s)	Employer(s)	Roundtrip Mileage to attend this meeting
Julie Patera 618-924-0740	JP	☑ As a Public Employee ☑ As a Private Employee ☐ As an Interested Citizen	Grant Coordinator	SIH	52
Tom Vaughn 218-3623	TV	☑ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	County Bd. member	Franklin Co.	
Ronda Koch	RK	☑ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Frank-Will Health Dept	→	16
Jody Allen		☑ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Fire Chief	West Frankfort	
Tyler Carpenter	T.C	☑ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	G.C.	–	.
Dennis Mitchell	DM	☑ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Mayor	City of Zeigler	12
		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			

(March 26, 2015) Page 4

Meeting 3A – June 24th, 2015

IEMA Multi-Hazard Mitigation Plan

Assembly of the Franklin County Planning Team Meeting 3A
Chairman: Ryan Buckingham
Plan Directors: Southern Illinois University and Greater Egypt Regional Planning and Development Commission

Meeting Date: June 24th, 2015

Meeting Time: 10:00am

Place: Rend Lake Visitor's Center, 11981 Rend City Road, Benton, IL

Planning Team/Attendance: 9

Developing Mitigation Strategies

The meeting is called to order.

Amanda Damptz opened the meeting by explaining that the planning team is here today to update the 2009 Franklin County Multi-Hazard Mitigation Plan. She introduced the planning partners: Southern Illinois University and Greater Egypt Regional Planning and Development Commission. A PowerPoint presentation was present that included: the current status of the mitigation planning efforts, FEMA's Hazard Mitigation Assistance Program, Hazard Mitigation Ideas and other potential funding sources.

During the PowerPoint, Ms. Damptz explained that regionally Southern Illinois has received $87 million in Hazard Mitigation Assistance Grants as a result of the Hazard Mitigation Planning Efforts. A few examples include: Jackson County's Reed Station Mobile Home Acquisition, SIH's Seismic Retrofit, Creal Springs School Hardening, Rend Lake Water Main Bypass, and West Frankfort Treatment Plant Relocation.

In addition to FEMA's HMA program, there are several granting agencies the County and its municipalities can investigate to help offset the cost of future hazard mitigation projects. A few examples include: USDA Rural Development Grants, Illinois Department of Commerce and Economic Opportunity, and Illinois Dept. of Natural Resources.

Finally, the County and its municipalities broke out into their respective groups to develop mitigation strategies specific to their jurisdiction. SIU will gather the information and compile it into the plan draft. At the next meeting, the planning team will be able to review and make any changes necessary to the listed mitigation strategies.

Meeting was adjourned.

3000 West DeYoung Street · Suite 800B-3 · Marion, IL 62959 · Phone: 618.997.9351 · Fax: 618.997.9354 · www.greateregypt.org

Franklin County Multi-Hazard Mitigation Planning Meeting Attendance

Please print clearly

Name and Contact Information (email or phone)	Your Initials	Your Reason for Attending (check only ONE box)	Job Title(s)	Employer(s)	Roundtrip Mileage to attend this meeting
Shirley Spaeniger shirley.spaeniger@franklin hospital.net	SS	☐ As a Public Employee ☒ As a Private Employee ☐ As an Interested Citizen	RD EM Director	Franklin Hospital	
Amanda Damptz	AD	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Research II	SIU	0
Rob Closh	RC	☑ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Project Manager	Rend Lake Conservancy Dist.	7
Tyler Carpenter	TC	☒ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Regional Planner	Greater Egypt	0
John Gardner frankfortjtp@frontier.com	JG	☒ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Township Supervisor	Frankfort Twp	10 miles
Ronda Koch	RK	☑ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	EM Director	FWBCHD	0
Art Creek	AC	☒ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	WCEMA Asst. Coord.	WCEMA	

(June 24, 2015)

Page 1

Franklin County Multi-Hazard Mitigation Planning Meeting Attendance

Name and Contact Information (email or phone)	Your Initials	Your Reason for Attending (check only ONE box)	Job Title(s)	Employer(s)	Roundtrip Mileage to attend this meeting
Kelly Huddleston	KH	☑ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Director	WCEMA	
Ryan White	RW	☑ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Chief of Police	City of Sesser rwhite@sesser.org mayor@sesser.org	
		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			
		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			
		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			
		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			
		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			

(June 24, 2015) Page 2

Meeting 3B – July 22nd, 2015

IEMA Multi-Hazard Mitigation Plan

Assembly of the Franklin County Planning Team Meeting 3B
Chairman: Ryan Buckingham
Plan Directors: Southern Illinois University and Greater Egypt Regional Planning and Development Commission

Meeting Date: July 22nd, 2015

Meeting Time: 1:00 pm

Place: Rend Lake Visitor's Center, 11981 Rend City Road, Benton, IL

Planning Team/Attendance: 8

Developing Mitigation Strategies

The meeting is called to order.

Amanda Damptz opened the meeting by explaining that the planning team is here today to update the 2009 Franklin County Multi-Hazard Mitigation Plan. She introduced the planning partners: Southern Illinois University and Greater Egypt Regional Planning and Development Commission. A PowerPoint presentation was present that included: the current status of the mitigation planning efforts, FEMA's Hazard Mitigation Assistance Program, Hazard Mitigation Ideas and other potential funding sources.

During the PowerPoint, Ms. Damptz explained that regionally Southern Illinois has received $87 million in Hazard Mitigation Assistance Grants as a result of the Hazard Mitigation Planning Efforts. A few examples include: Jackson County's Reed Station Mobile Home Acquisition, SIH's Seismic Retrofit, Creal Springs School Hardening, Rend Lake Water Main Bypass, and West Frankfort Treatment Plant Relocation.

In addition to FEMA's HMA program, there are several granting agencies the County and its municipalities can investigate to help offset the cost of future hazard mitigation projects. A few examples include: USDA Rural Development Grants, Illinois Department of Commerce and Economic Opportunity, and Illinois Dept. of Natural Resources.

Finally, the municipalities broke out into their respective groups to develop mitigation strategies specific to their jurisdiction. SIU will gather the information and compile it into the plan draft. At the next meeting, the planning team will be able to review and make any changes necessary to the listed mitigation strategies.

Meeting was adjourned.

3000 West DeYoung Street · Suite 800B-3 · Marion, IL 62959 · Phone: 618.997.9351 · Fax: 618.997.9354 · www.greateregypt.org

Franklin County Multi-Hazard Mitigation Planning Meeting Attendance

Please print clearly

Name and Contact Information (email or phone)	Your Initials	Your Reason for Attending (check only ONE box)	Job Title(s)	Employer(s)	Roundtrip Mileage to attend this meeting
Curtis Dewees (618)570-1533	C.D.	X As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Trustee	Village of Mulkeytown	
Curtis.Dewees@yahoo.com					
GARY MCGILL		X As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	CHIEF OF POLICE	RENO LAKE COUNTY	8 miles
mcgillg@rlc.edu	GM				
Casey Lyle		X As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Deputy Director of Emergency Management	Franklin Co EMA	
Gary.Little@franklincounty.com	GL				
Rich Hood		X As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Asst. Utility Dept. Director	City of West Frankfort	10 miles
RHughes.hood@hma.net	RHH				
Tyler Computer	TC	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Planner	Creal Springs	-
Allan Mathy	AM	X As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Superintendent	Benton High School	-
BJ Brunk	BJB	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen		EMA Franklin	6 mi

(July 22, 2015)

Franklin County Multi-Hazard Mitigation Planning Meeting Attendance

Name and Contact Information (email or phone)	Your Initials	Your Reason for Attending (check only ONE box)	Job Title(s)	Employer(s)	Roundtrip Mileage to attend this meeting
Rob Clodi rclodi@rendlake.org	[illegible]	☒ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Project Manager	Rend Lake Conservancy Dist	14
		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			
		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			
		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			
		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			
		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			
		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			

(July 22, 2015) Page 2

Meeting 4 –

IEMA Multi-Hazard Mitigation Plan

Assembly of the Franklin County Planning Team Meeting 4A
Chairman: Ryan Buckingham
Plan Directors: Southern Illinois University and Greater Egypt Regional Planning and Development Commission

Meeting Date: November 17th, 2015

Meeting Time: 1:00 PM

Place: Rend Lake Visitor's Center, 11981 Rend City Rd, Benton, IL 62812

Planning Team/Attendance: 12

Developing Mitigation Strategies

The meeting is called to order.

Timothy Kropp and Levi Milliron opened the meeting by explaining that the planning team is here today to review the final draft of the 2015 Franklin County Multi-Hazard Mitigation Plan Update. He introduced the planning partners: Southern Illinois University and Greater Egypt Regional Planning and Development Commission.

Planning members were given time to review the plan document and note any corrections that they want to be made for the final plan. SIU staff will make all changes and return the digital version of the plan to the County.

Meeting was adjourned.

3000 West DeYoung Street · Suite 800B-3 · Marion, IL 62959 · Phone: 618.997.9351 · Fax: 618.997.9354 · www.greateregypt.org

IEMA Multi-Hazard Mitigation Plan

Assembly of the Franklin County Planning Team Meeting 4B
Chairman: Ryan Buckingham
Plan Directors: Southern Illinois University and Greater Egypt Regional Planning and Development Commission

Meeting Date: December 11th, 2015

Meeting Time: 2:00 PM

Place: Rend Lake Visitor's Center, 11981 Rend City Rd, Benton, IL 62812

Planning Team/Attendance: 8

Developing Mitigation Strategies

The meeting is called to order.

Timothy Kropp and Levi Milliron opened the meeting by explaining that the planning team is here today to review the final draft of the 2015 Franklin County Multi-Hazard Mitigation Plan Update. He introduced the planning partners: Southern Illinois University and Greater Egypt Regional Planning and Development Commission.

Planning members were given time to review the plan document and note any corrections that they want to be made for the final plan. SIU staff will make all changes and return the digital version of the plan to the County.

Meeting was adjourned.

3000 West DeYoung Street · Suite 800B-3 · Marion, IL 62959 · Phone: 618.997.9351 · Fax: 618.997.9354 · www.greateregypt.org

Franklin County Multi-Hazard Mitigation Planning Meeting 4A Attendance

Name and Contact Information (email or phone)	Your Initials	Your Reason for Attending (check only ONE box)	Job Title(s)	Employer(s)	Roundtrip Mileage to attend this meeting
Daniell Weinhoffer Franklin Hospital	DW	As a Public Employee X As a Private Employee As an Interested Citizen	Director of Imaging	Franklin Hospital	8
Richard Hartke RHartke@bicountyhealth.org	RH	As a Public Employee ✓ As a Private Employee As an Interested Citizen	Emergency Preparedness	Bi-City Health Dept.	50
MARK HALL Franklin Hospital	MH	As a Public Employee As a Private Employee As an Interested Citizen	Director of Safety	Franklin Hospital	8
Aaron Matter	AM	As a Public Employee ✓ As a Private Employee As an Interested Citizen	Superintendent	Benton High School	
CALVIN STEARNS 618-559-4763	CS	As a Public Employee ✓ As a Private Employee As an Interested Citizen	OPERATIONS MANAGER	IHEAS	68
		As a Public Employee As a Private Employee As an Interested Citizen			
		As a Public Employee As a Private Employee As an Interested Citizen			

Franklin County Multi-Hazard Mitigation Planning Meeting 4A Attendance

Please print clearly

Name and Contact Information (email or phone)	Your Initials	Your Reason for Attending (check only ONE box)	Job Title(s)	Employer(s)	Roundtrip Mileage to attend this meeting
Tim Kropp	TK	As a Public Employee As a Private Employee As an Interested Citizen	Grad Student	SIU	/
Myles Carpenter	MC	As a Public Employee As a Private Employee As an Interested Citizen	Regional Planner	G. Crypt	-
Lev. Milliron	KLM	As a Public Employee X As a Private Employee As an Interested Citizen	Project Manager	SIU	/
Rich Boos	RB	As a Public Employee As a Private Employee As an Interested Citizen	CHIEF	Franklin County	4
Judy Courter	JC	As a Public Employee X As a Private Employee As an Interested Citizen	Lab Manager / Disaster Chair	FRANKLIN Hospital	8
Linda Brazell linda.brazell@franklin-hospital.net	LB	As a Public Employee As a Private Employee As an Interested Citizen	Quality Director	Franklin Hospital	8
DENNIS O'CONNOR FRANKLIN HOSP.	DO	As a Public Employee As a Private Employee As an Interested Citizen	SPECIAL PROJECTS COORD.	FRANKLIN HOSP.	8

Appendix B. Local Press Release and Newspaper Articles

PUBLIC MEETING PLANNED ON HAZARD MITIGATION

Staff report

The Franklin County Multi-Hazard Mitigation Plan (MHMP) Steering Committee will host a public information meeting at 6 p.m. Feb. 17 at the Christopher Civic Center, 208 N Thomas St.

Through a grant funded by FEMA, the county has partnered with SIU and the Greater Egypt Regional Planning and Development Commission to identify potential natural hazards and produce an update to the 2009 MHMP.

The public is invited to attend this meeting to learn about the MHMP process and provide input regarding natural hazards that occur in Franklin County. For more information, refer to the Franklin County EMA website (www.franklincountyema.com).

The Benton Evening News

Wednesday, February 4, 2015

www.bentoneveningnews.com

West City considers creatin new liquor license for gami

By Kelsey Landis
Contributing writer

West City may see more video gaming terminals in the coming months as the village board is considering requests for liquor licenses by several businesses in the city.

Under Illinois law, businesses must have a so-called "pour" liquor license to offer video gaming. Currently, there are two businesses in West City that offer gaming, Nikki's Place and Capese Pizza and Pasta.

However, village board members are being cautious about the liquor license expansion, said West City Mayor Charles Cockrum.

"Our board is kind of reserved on the fact that we don't want West City to be full of bars," said Cockrum. "West City was mostly taverns up until the 90s. We want to promote family volunteerism, a healthy lifestyle and transparency in government. Having a bunch of taverns isn't the way to do that."

At their Monday meeting, village board members voted to instruct Village Attorney Ron Giacomo to draft an ordinance that would create a new classification for liquor licenses specifically for video gaming parlors.

Giacomo told board members the ordinance could be modified after one passed last month in Carbondale, which created that city's liquor licenses.

Carbondale requires that holders of the new license get at least 51 percent of their revenue from video gaming, rather than from alcohol or food sales. The license does permit the sale of alcohol by the drink.

QUICK WEATHER

Tonight: Snow likely, mainly before mid night. Cloudy, then gradually becoming partly cloudy, with a low around 15. North wind 9 to 13 mph, with gusts as high as 18 mph. Chance of precipitation is 70%.

Thursday: Sunny, with a high near 27. North wind 3 to 8 mph.

Friday: Mostly sunny, with a high near 40. South southwest wind 6 to 13 mph, with gusts as high as 20 mph.

PUBLIC MEETING PLANNED ON HAZARD MITIGATION

Staff report

The Franklin County Multi-Hazard Mitigation Plan (MHMP) Steering Committee will host a public information meeting at 6 p.m. Feb. 17 at the Christopher Civic Center, 208 N. Thomas St.

Through a grant funded by FEMA, the county has partnered with SIU and the Greater Egypt Regional Planning and Development Commission to identify potential natural hazards and produce an update to the 2009 MHMP.

The public is invited to attend this meeting to learn about the MHMP process and provide input regarding natural hazards that occur in Franklin County. For more information, refer to the Franklin County EMA website (www.franklincountyema.com).

Daily American

Wednesday, February 4, 2015

W.F. CONDEMNS BUILDING

The city moves to condemn a building on South Anna Street, just north of the Kelly's Lounge building that collapsed in September.

PUBLIC MEETING PLANNED ON HAZARD MITIGATION

Staff report

The Franklin County Multi-Hazard Mitigation Plan (MHMP) Steering Committee will host a public information meeting at 6 p.m. Feb. 17 at the Christopher Civic Center, 208 N. Thomas St.

Through a grant funded by FEMA, the county has partnered with SIU and the Greater Egypt Regional Planning and Development Commission to identify potential natural hazards and produce an update to the 2009 MHMP.

The public is invited to attend this meeting to learn about the MHMP process and provide input regarding natural hazards that occur in Franklin County. For more information, refer to the Franklin County EMA website (www.franklincountyema.com).

GOT NEWS?

Email editor@dailyamericannews.com with your story ideas, announcements and community

Appendix C. Adopting Resolutions

See Attached Adopting Resolutions

Appendix D. Historical Hazards

See Attached Large Format Map

The following images were provided by local newspapers documenting historical hazards.

These images are from Zeigler around the time of the Feb. 9, 1909, blizzard.

http://thesouthern.com/gallery/looking-back-a-photo-gallery/collection_ea904e28-a6b5-11e2-a2fd-001a4bcf887a.html#50

Rend Lake Spillway July 2, 2013; Flow over the spillway is normal with flood warnings throughout the region.

http://thesouthern.com/news/mother-nature-is-very-confused/article_f53e77dc-e396-11e2-a0b4-001a4bcf887a.html

Heavy rain falls on the field at Sesser-Valier High School as the track surrounding it floods on Friday, September 7, 2012

http://thesouthern.com/svww-hamco-foot/image_9676d282-f96b-11e1-bee5-001a4bcf887a.html

July, 2012: A 2,200 square foot section of the Christopher Elementary School roof was ripped off of the building during storms Sunday. As a result a number of classrooms were damaged by flooding.

http://thesouthern.com/news/local/damage-pushes-christopher-elementary-school-to-renovate/article_3b9e3840-e1c5-11e1-bc48-0019bb2963f4.html

A house and car at the corner of Johnson and Washington Streets in Valier were damaged by a downed tree. 2011

http://thesouthern.com/gallery/news/severe-weather-and-floods/collection_fc8dc646-8f19-11e1-908d-001a4bcf887a.html#61

Strong winds felled a tree at the corner of Johnson and Washington Streets in Valier. 2011 http://thesouthern.com/gallery/news/severe-weather-and-floods/collection_fc8dc646-8f19-11e1-908d-001a4bcf887a.html#62

A newly remodeled kitchen in this house on Gelston Street in Valier was destroyed when a tree crashed through the roof. 2011

http://thesouthern.com/gallery/news/severe-weather-and-floods/collection_fc8dc646-8f19-11e1-908d-001a4bcf887a.html#63

http://thesouthern.com/gallery/news/severe-weather-and-floods/collection_fc8dc646-8f19-11e1-908d-001a4bcf887a.html#64

A maple tree crashed through the roof of this house on Gelston Street in Valier. 2011

This carport belonging to Eunice and Jack Smith of Royalton and the truck that was beneath it were the victims of Tuesday's storms. According to Eunice, the same thing happened to their previous carport during the May 8 derecho. However, the only difference was that her car was damaged then, while her husband's truck was damaged this time around. 2011

http://thesouthern.com/gallery/news/severe-weather-and-floods/collection_fc8dc646-8f19-11e1-908d-001a4bcf887a.html#65

Water flows over the entire spillway at Rend Lake Tuesday. Several boat ramps are closed because of the high water. 2011

http://thesouthern.com/gallery/news/severe-weather-and-floods/collection_fc8dc646-8f19-11e1-908d-001a4bcf887a.html#66

Chuck Jackanicz of Zeigler drives his ATV over a slightly flooded portion of Illinois 149 near the Big Muddy River in Franklin County. Members of the Illinois National Guard were stationed at the road which was closed Friday morning. 2011

http://thesouthern.com/gallery/news/severe-weather-and-floods/collection_fc8dc646-8f19-11e1-908d-001a4bcf887a.html#67

A stretch of Illinois 149 is covered by water on Friday, April 29 east of Zeigler. Flooding has also closed portions of other major roads near Zeigler, including Illinois 148 south of town. 2011

http://thesouthern.com/gallery/news/severe-weather-and-floods/collection_fc8dc646-8f19-11e1-908d-001a4bcf887a.html#68

Trucks make their way through standing water Wednesday on Freeman Spur Blacktop near its intersection with Deason Road. The Franklin County Highway Department has been allowing drivers access through the flooded area via one lane since Monday. This is the only way in or out of Freeman Spur. 2011

http://thesouthern.com/gallery/news/severe-weather-and-floods/collection_fc8dc646-8f19-11e1-908d-001a4bcf887a.html#69

As of Wednesday, water has risen up to the porch on this house at the corner of Berry and 6th Streets in Freeman Spur. 2011

http://thesouthern.com/gallery/news/severe-weather-and-floods/collection_fc8dc646-8f19-11e1-908d-001a4bcf887a.html#70

Part of this house and its garage sit submerged along with most of 6th Street Wednesday in Freeman Spur. 2011

http://thesouthern.com/gallery/news/severe-weather-and-floods/collection_fc8dc646-8f19-11e1-908d-001a4bcf887a.html#72

2011 Floodwaters has halted traffic along Illinois 149 between Deason and Pershing Road near West Frankfort.

Trucks make their way through standing water Wednesday on Freeman Spur Blacktop near its intersection with Deason Road. The Franklin County Highway Department has been allowing drivers access through the flooded area via one lane since Monday. This is the only way in or out of Freeman Spur. 2011 http://thesouthern.com/gallery/news/severe-weather-and-floods/collection_fc8dc646-8f19-11e1-908d-001a4bcf887a.html#74

Flooding in Freeman Spur has nearly made the town inaccessible. The only route into the town is from the Franklin County side of town on Pershing Road. 2011

http://thesouthern.com/gallery/news/severe-weather-and-floods/collection_fc8dc646-8f19-11e1-908d-001a4bcf887a.html#245

Benton Firefighter Jeff Coleman helped block traffic on a flooded North Main Street in Benton. 2009

http://thesouthern.com/benton/image_f8c8eedd-e8c2-54ea-9cf3-dd45697dc59a.html

A tanker truck hauling liquid epoxy resin overturned Wednesday near the intersection of Illinois 37 and Main Street in West Frankfort. The resin was deemed non-hazardous by emergency personnel. JULY 2014

http://thesouthern.com/news/local/communities/westfrankfort/update-all-roads-open-in-west-frankfort-after-tanker-accident/article_f36d4e38-50f3-5c35-8ce9-7073c68fd33b.html

A seven-vehicle fiery crash on Interstate 57 on Thursday afternoon claimed the lives of two people, caused a third victim to be airlifted to a hospital and closed the highway for about five hours. Hazmat teams were called out, as four of the vehicles involved were semitrailers, two carrying loads of asphalt and another carrying a load of vehicle batteries. Fuel and vehicle batteries were exploding in the fire, challenging firefighters to keep the fire in check. JULY 2010

http://thesouthern.com/news/local/carnage-on-i/article_d2ba9b7a-9090-11df-b22a-001cc4c002e0.html

Appendix E. List of Essential Facilities

Not all data is available for every facility. Other facility specifics may be available upon request.

Emergency Operations Center Facilities

Facility Name	Address	City
Franklin County Jail Facility	403 East Main Street	Benton
West Frankfort Police Department	201 East Nolen Street	West Frankfort

Fire Station Facilities

Facility Name	Address	City
Benton Fire Department	107 North Maple Street	Benton
Christopher Fire Department	211 North Thomas Street	Christopher
Coello Fire Department	9095 Main Street	Coello
Ewing-Northern FPD Station 1	115 West Main Street	Ewing
Royalton Fire Department	311 North Main Street	Royalton
Sesser FDP Station 1	910 South Park Street	Sesser
Valier Fire Department	217 West Main Street	Valier
West Frankfort Fire department	201 East Main Street	West Frankfort
Zeigler Fire Department	301 Church Street	Zeigler
Cave Eastern FPD Station 2	Summer Road	Akin
Buckner Fire Department	207 East Main Street	Buckner
Ewing-Northern FPD Station 3	Main Street and IL 34	Steel City
West City Fire Department	1000 Blakely Street	West City
Cave Eastern FPD Station 1	3504 Main Street	Thompsonville

Police Station Facilities

Facility Name	Address	City
Christopher Police Department	208 North Thomas Street	Christopher
West Frankfort Police Department	201 East Nolen Street	West Frankfort
West City Police Department	201 South Browning Street	West City
Valier Police Department	6 Adams Street	Valier
Sesser Police Department	302 West Franklin Street	Sesser
Zeigler City Police Department	303 Church Street	Zeigler
Franklin County Sheriff	403 East Main Street	Benton
Benton City Police Department	500 West Main Street	Benton
Royalton Police Department	311 South Main Street	Royalton
Ewing Police Department	Village Hall	Ewing
Thompsonville Police Department	21289 Division Street	Thompsonville
Orient Police Department	404 South Lincoln Street	Orient
Buckner Police Department	209 East Main Street	Buckner

School Facilities

Facility Name	Address	City
Sesser-Valier High School	4626 State Highway 154	Sesser
Sesser-Valier Elementary School	4626 State Highway 154	Sesser
Sesser-Valier Junior High School	4626 State Highway 154	Sesser
Zeigler-Royalton Junior High School	PO BOX 87	Zeigler
Zeigler-Royalton High School	4877 Illinois 148	Zeigler
Zeigler-Royalton Elementary School	PO BOX 87	Zeigler
St. John-Baptist Catholic Elementary School	702 East Poplar Street	West Frankfort
Ezra Christian School	1345 Ezra Street	West Frankfort
Starquest Academy	410 West 5th Street	Benton
Christopher High School	1 Bearcat Drive	Christopher
Christopher Elementary School	501 South Snider Street	Christopher
Benton Elementary School	1000 McKinzie Street	Benton

Facility Name	Address	City
Benton Middle School	1000 Forest Street	Benton
Benton Consolidated High School	511 East Main Street	Benton
Thompsonville Grade School	21165 Shawneetown Road	Thompsonville
Ewing-Northern CCSD #115	51 North Main Street	Ewing
Thompsonville High School	21135 Shawneetown Road	Thompsonville
Central Junior High School	1500 East 9th Street	West Frankfort
Denning Elementary School	1401 West 6th Street	West Frankfort
Frankfort High School	601 East Main Street	West Frankfort
AKIN CCSD #91	21962 Akin Blacktop	Thompsonville
Franklin Co. Regional Vocational System	202 West Main Street	Benton
Franklin-Jefferson Special Ed. Cooperative	409 East Park Street	Benton
Frankfort Intermediate School	800 North Cherry	West Frankfort
Morthland College	202 E Oak Street	West Frankfort

Medical Care Facilities

Facility Name	Address	City
St. Anthony's Memorial Hospital	503 North Maple Street	Effingham
Franklin Hospital	201 Bailey Lane	Benton
The H Group	902 West Main Street	West Frankfort
Highlander House	904 East Main Street	Benton
Homestead House	905 North Jefferson	West Frankfort
Hopes Corner	1600 North Main Street	Benton
Midway Group Home	1102 East St. Louis Street	West Frankfort
West City Apartment	409 South George Street	West City
Fifth Seasons Residential	401 North Du Quoin Street	Benton
Frankfort Care Center	2500 East St. Louis Street	West Frankfort
Helia Healthcare	1310 Mark Franklin Street	Benton
Heritage Woods of Benton	1305 Bailey Lane	Benton
Redwood Manor	802 West Franklin Street	Sesser
Stonebridge	902 South Mc Leansboro Street	Benton
Westside Care Center	601 North Columbia	West Frankfort
Miners Memorial Health Center	2553 Ken Gray Boulevard	West Frankfort
Heartland Women's Healthcare	201 Bailey Lane	Benton
Heartland Specialty Group	215 North Logan Street	West Frankfort
Christopher Rural Health Planning Group	4241 Highway 14 West	Christopher
Franklin Rural Health Clinic III	309 West St. Louis Street	West Frankfort
Sesser Community Health Center	6294 State Highway 154	Sesser

Appendix F. Critical Facilities Map

See Attached Large Format Map of Critical Facilities.