Multi-Hazard Mitigation Plan
Scott County, Indiana

Multi-Hazard Mitigation Plan

Scott County, Indiana

Original Adoption Date: 2008
Updated: 2015

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Acknowledgments

Scott County's multi-hazard mitigation plan was developed in 2008 by The Polis Center Indiana University Purdue University Indianapolis (IUPUI), and River Hills EDD & RPC. The two collaborated once again to develop this 2015 update. The Scott County Emergency Management Agency would like to thank The Polis Center and the planning team for their contributions and assistance in development of a plan that will help the county to continue to build its capacity to prevent, protect against, respond to, and recover from disasters.

Acronyms

AEGL - Acute Exposure Guideline Levels
ALOHA - Areal Locations of Hazardous Atmospheres
BFE - Base Flood Elevation
CAMEO – Computer-Aided Management of Emergency Operations
CAPI – Community Action Potential Index
CEMP – Comprehensive Emergency Management Plan
CRS – Community Rating System
DEM – Digital Elevation Model
DFIRM – Digital Flood Insurance Rate Map
DHS – Department of Homeland Security
DMA – Disaster Mitigation Act
EAP – Emergency Action Plan
EMA – Emergency Management Agency
EPA – Environmental Protection Agency
FEMA – Federal Emergency Management Agency
FIRM – Flood Insurance Rate Maps
GIS – Geographic Information System
Hazus-MH – Hazards USA Multi-Hazard
HUC – Hydrologic Unit Code
IDEM – Indiana Department of Environmental Management
IDHS – Indiana Department of Homeland Security
INDOT – Indiana Department of Transportation
IDNR – Indiana Department of Natural Resources
IEAP- Incident and Emergency Action Plan
IGS – Indiana Geological Survey
MHMP – Multi-Hazard Mitigation Plan
NCDC – National Climatic Data Center
NEHRP – National Earthquake Hazards Reduction Program
NFIP – National Flood Insurance Program
NOAA – National Oceanic and Atmospheric Administration
NWS – National Weather Service
PPM – Parts Per Million
RPC – Regional Planning Commission
SPC – Storm Prediction Center
USACE – United States Army Corps of Engineers
USDA – United States Department of Agriculture
USGS – United States Geological Survey

Table of Contents

List of Figures

List of Tables

Executive Summary

The Scott County Multi-Hazard Mitigation Plan was developed to guide the county in a risk-based approach to preventing, protecting against, responding to, and recovering from disasters that may threaten the county's citizens, infrastructure, and economy. The plan is hazard- and community-specific. It documents historical disasters, assesses probabilistic disasters through Hazus-MH and GIS analyses, and addresses specific strategies to mitigate the potential impacts of these disasters.

This update was a collaborative effort among the Scott County planning team, River Hills EDD & RPC and The Polis Center of Indiana University Purdue University-Indianapolis

The team updated the following content in the plan:

- Historical hazards: Each hazard section within this plan documents the most current data about NCDC-reported hazards since the 2008 plan.
- Profile hazards: The planning team revised the hazard priority rankings and plotted each hazard on a risk grid according to probability (y-axis) and potential impact (x-axis). County planning documents, e.g. CEMP, and hazard-specific reports were integrated into this plan update.
- Community profile: Demographics, social, and economic data, as well as existing and future land use descriptions were updated to reflect the current status of the county and its jurisdictions.
- NFIP: The plan includes the effective date of the DFIRM.
- Planning description: The new planning team and updated planning process were described and documented.
- Risk assessment: Hazus-MH and GIS analyses were updated using site-specific data from the county. Updated loss estimation is provided for tornadoes, floods, earthquakes, and hazardous materials releases.
- Mitigation: The team reviewed and updated mitigation goals, objectives, and strategies.

Section

1

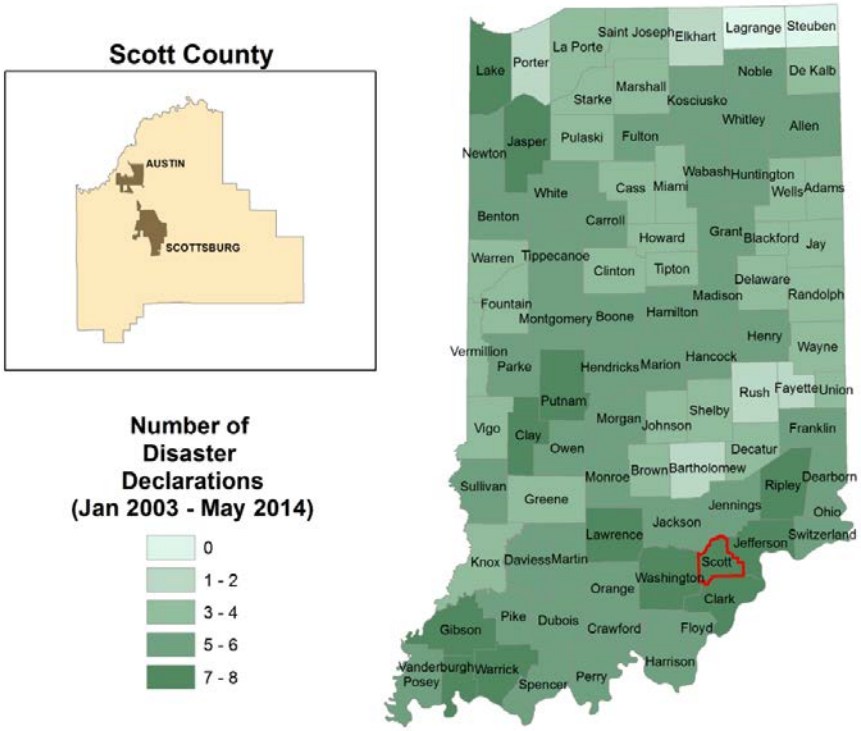
Introduction

Hazard mitigation is defined as any sustained action to reduce or eliminate long-term risk to human life and property from hazards. The Federal Emergency Management Agency (FEMA) has made reducing hazards one of its primary goals. Hazard Mitigation Planning and the subsequent implementation of the projects, measures, and policies developed as part of this plan, is a primary mechanism in achieving FEMA's goal.

The federal Disaster Mitigation Act of 2000 requires jurisdictions to develop and maintain a Multi-Hazard Mitigation Plan (MHMP) to remain eligible for certain federal disaster assistance and hazard mitigation funding programs. Renewal of the plan every five years is required to encourage the continual awareness of mitigation strategies. In order for the National Flood Insurance Program (NFIP) communities to be eligible for future mitigation funds, they must adopt the MHMP.

In the past decade, FEMA has declared 17 emergencies and disasters for the state of Indiana.

Figure 1: Disaster Declarations for Indiana[1]



[1] Source: Federal Emergency Management Agency, 2014

In the event of a federally declared disaster, individuals, families, and businesses may apply for financial assistance to help with critical expenses. Assistance may be categorized as Individual Assistance (IA), Public Assistance (PA), or Hazard Mitigation Assistance.

The following types of assistance may be available in the event of a disaster declaration.

Individuals & Household Program: Provides money and services to people in presidentially declared disaster areas.

Housing Assistance: Provides assistance for disaster-related housing needs.

Other Needs Assistance: Provides assistance for other disaster-related needs such as furnishings, transportation, and medical expenses.

Public Assistance: Disaster grant assistance available for communities to quickly respond to and recover from major disasters or emergencies declared by the president.

Emergency Work (Categories A-B): Work that must be performed to reduce or eliminate an immediate threat to life, to protect public health and safety, and to protect improved property that is significantly threatened due to disasters or emergencies declared by the president.

Permanent Work (Categories C-G): Work that is required to restore a damaged facility, through repair or restoration, to its pre-disaster design, function, and capacity in accordance with applicable codes and standards.

Hazard Mitigation Assistance: Provides assistance to states and local governments through the Hazard Mitigation Grant Program (HMGP) to implement long-term hazard mitigation measures after a major disaster declaration.

Scott County has received federal aid for six declared disasters since 2004, and four declared disasters since the last Scott County Multi-Hazard Mitigation Plan was adopted.

Table 1: Disaster Declarations for Scott County Indiana

Disaster Number	Date of Incident	Date of Declaration	Disaster Description	Type of Assistance
DR-4058	2/29/2012 – 3/3/2012	3/9/2012	Severe Storms, Straight-line Winds and Tornadoes	IA, PA, HMGP
DR-1997	4/19/2011 – 6/6/2011	6/23/2001	Severe Storms, Tornadoes, Straight-line Winds and Flooding	PA, HMGP
DR-1828	1/26/2009 –1/28/2009	3/5/2009	Severe Winter Storm	PA, HMGP
DR-1795	9/12/2008 –10/6/2008	9/23/2008	Severe Storms and Flooding	IA, PA, HMGP
DR-1573	1/1/2005 –2/11/2005	1/21/2005	Severe Winter Storms and Flooding	IA, HMGP
DR-1572	7/3/2004 – 7/18/2004	9/1/2004	Tornadoes and Flooding	PA, HMGP

Section 2

Prerequisites

The 2015 Scott County Multi-Hazard Mitigation Plan meets the requirements of the Disaster Mitigation Act of 2000, which amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act to require state, local, and tribal entities to closely coordinate mitigation planning and implementation efforts. It also meets the requirements of the Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance (FMA) grant program, Pre-Disaster Mitigation (PDM) grant program, and other National Flood Insurance Program (NFIP) grants.

2.1 Multi-Jurisdictional Plan Adoption

This plan represents a comprehensive description of Scott County commitment to significantly reduce or eliminate the potential impacts of disasters through planning and mitigation. Adoption by the local governing bodies within the county legitimizes the plan and authorizes responsible agencies to implement mitigation responsibilities and activities.

To be eligible for federal mitigation funding, each participating jurisdiction must adopt the plan. After thorough review, the Scott County Board of Commissioners adopted the plan on <date adopted>. Additional adoptions are included in Appendix G.

2.2 Jurisdiction Participation

The Scott County EMA invited representatives from each jurisdiction to participate in the planning process. All communities were encouraged participate in meetings, comment on issues and actions, and review the draft plan. Jurisdictions were also invited to come to the Scott County EMA office to review and discuss the plan at their convenience. Distribution information is included in Appendix B. Table 2 lists each jurisdiction and describes its participation status in 2008 and 2015.

Table 2: Participating Jurisdictions

Jurisdiction Name	Jurisdiction Type	Participated 2008 Plan	Participated 2015 Plan
Austin	City	Yes	Yes
Scottsburg	City	Yes	Yes
Scott County	County	Yes	Yes

The county also invited representatives from local businesses and organizations to participate in the plan. Table 3 lists additional team members with a description of their participation. The invitations are included in Appendix A.

Table 3: Organizations Invited to Participate

Organization Name	Organization Type	Representative	Description of Participation
American Red Cross of Southern Indiana	Disaster Relief	Amy Canterbury, Executive Director	Attended meeting(s) and reviewed draft plan
Scott County School District 1	Education	Robert Anderson, Superintendent	Attended meeting(s) and reviewed draft plan
Scott County School District 2	Education	Mark Slaton, Superintendent	Attended meeting(s) and reviewed draft plan
Scottsburg Middle School	Education	Kevin Smith, Assistant Principal	Attended meeting(s) and reviewed draft plan
Scott Memorial Hospital	Health and Medical	Michael Everett, CEO	Attended meeting(s) and reviewed draft plan
Stucker Fork Water	Utility	Larry McIntosh, CEO	Invited to attend meetings and request draft plan; no revisions provided
Allen Machine and Tool Works	Manufacturing	Stanley Allen, Owner	Invited to attend meetings and request draft plan; no revisions provided
American Plastics Molding	Manufacturing	Anne Coates, President	Invited to attend meetings and request draft plan; no revisions provided
Austin Tri-Hawk Automotive, Inc.	Automotive	Tetsuo Kikuchi, President	Invited to attend meetings and request draft plan; no revisions provided
Baldwin Recycling	Environmental	Mark Baldwin, Owner	Invited to attend meetings and request draft plan; no revisions provided
GarTech Enterprise	Manufacturing	Don Hounshell, President	Invited to attend meetings and request draft plan; no revisions provided
Genpak	Manufacturing	Rich Rosenberg, Mfg Executive	Invited to attend meetings and request draft plan; no revisions provided
Genesis Plastics and Engineering	Manufacturing/Engineering	James Gladden, President	Invited to attend meetings and request draft plan; no revisions provided
Ilpea Industries	Manufacturing	Wayne Heverly, President	Invited to attend meetings and request draft plan; no revisions provided
Indiana Bottle Company	Manufacturing	Lesa Dossett, Customer Service	Invited to attend meetings and request draft plan; no revisions provided
Indianapolis Wood Products	Manufacturing	Sig Ostertag, Owner	Invited to attend meetings and request draft plan; no revisions provided
Inson Tool & Machine	Manufacturing	David Ingalls, Owner	Invited to attend meetings and request draft plan; no revisions provided
JAR Welding and Machine	Manufacturing	Joe Stewart, Owner	Invited to attend meetings and request draft plan; no revisions provided
Max Powder Coating	Manufacturing	Susan Hill, President	Invited to attend meetings and request draft plan; no revisions provided

Merrill Manufacturing	Manufacturing	Jeff Merrill, Owner	Invited to attend meetings and request draft plan; no revisions provided
Morgan Foods	Food Industry	John Morgan, CEO	Invited to attend meetings and request draft plan; no revisions provided
Multi-Color Corp	Industry	Darin Brown, Manager	Invited to attend meetings and request draft plan; no revisions provided
Pepsi	Food Industry	Scott DeVries, Mfg Executive	Invited to attend meetings and request draft plan; no revisions provided
Southern Mold & Tool	Manufacturing	Floyd Coates, Owner	Invited to attend meetings and request draft plan; no revisions provided
Thomas Plastic Machinery	Manufacturing	Mark Thomas, President	Invited to attend meetings and request draft plan; no revisions provided
Total Concepts of Design	Engineering	Gene & Charlie Mayer, Owners	Invited to attend meetings and request draft plan; no revisions provided

Section 3

Planning Process

The Scott County Emergency Management Agency (EMA) and The Polis Center (Polis) have joined efforts to develop this plan update. The planning process consisted of the following tasks:

Task 1: Organize Resources

The Scott County EMA created a planning team to attend meetings, gather data and historical information, and participate in mitigation brainstorming sessions.

Task 2: Risk Assessment

The planning team identified the natural and technological hazards to include in this plan, and Polis developed hazard event profiles to address the possible magnitudes and severities associated with each hazard. The team then used local resources to inventory the county's assets and estimate losses.

Task 3: Public Involvement

The public was invited to attend a meeting to review the risk assessment results and discuss mitigation strategies. The county EMA sent distributed the meeting announcement to the local media via press release and also sent email notification to community leaders. Copies of the advertisement materials are available in Appendix B.

Task 4: Develop Mitigation Strategies

At the beginning of the planning process, the Scott County EMA office provided a comprehensive list of mitigation projects that have been proposed and for which action has been taken since 2008. During the public meeting, The Polis Center used this as a framework for the mitigation brainstorming session with the planning team. The team provided status on incomplete strategies and also developed and prioritized several new strategies that would reduce the costs of disaster response and recovery, protect people and infrastructure, and minimize overall disruption to the county in the event of a disaster. Table 63 in Section 6 of this plan lists mitigation and the status of each.

Task 5: Complete the Plan

Polis compiled all of the planning team documentation and research with the risk assessment and mitigation strategies to produce a draft plan for review. The Scott County planning team had multiple opportunities to review and revise the plan before submitting to the Indiana Department of Homeland Security and FEMA for approval.

Task 6: Plan Adoption

The Scott County EMA coordinated the effort to collect adoptions from each participating jurisdiction.

3.1 Planning Team Information

The planning team is headed by the Scott County EMA. Other members of the planning team include representatives from various county departments, cities and towns, and public and private utilities. All members of the planning committee were actively involved in attending the MHMP meetings, providing available Geographic Information Systems (GIS) data and historical hazard information, reviewing and providing comments on the draft plans, coordinating and participating in the public input process, and coordinating the county's formal adoption of the plan.

Table 4 identifies the planning team individuals and the organization that they represent.

Table 4: Multi-Hazard Mitigation Planning Team Members

Name	Title	Organization	Jurisdiction
Linda Dawson	Director	Scott County Emergency Management Agency	Scott County
Kelley Robbins	Commissioner	Scott County Commissioners	Scott County
Larry Blevins	Commissioner	Scott County Commissioners	Scott County
Dillo Bush	Clerk-Treasurer	City of Austin	Austin
William Graham	Mayor	City of Scottsburg	Scottsburg
Chelsea Crump	Charitable Financial Specialist	River Hills EDD & RPC	Scott County Regional Area
Dan McClain	Sheriff	Scott County Sheriff Dept.	Scott County
Joetta Brown	Interim Director	Scott County 911	Scott County
Greg Ramon	Director	Scott County 911	Scott County
Lt. Eric James	Fire Trainer	Scottsburg Fire Department	Scottsburg

The planning team held three meetings to support the planning team. The dates and goals of these meetings are as follows.

Meeting 1, June 30, 2015, 2:00 p.m.

- Introduce/overview of project
- Review and update facility data
- Review and prioritize hazards
- Determine modeling scenarios
- Distribute 2008 mitigation strategies/draft plan

Meeting 2, October 14, 2015, 1:00 p.m.

- Public meeting
- Introduction and overview for new attendees
- Review risk assessment
- Review draft plan
- Discuss mitigation strategies
- Solicit public input

Meeting 3, November 18, 2015, 1:00 p.m. (Public Meeting)

- Review final draft plan
- Add/modify/update mitigation strategies

3.2 Review of Existing Plans

Scott County and the local communities utilize land use plans, emergency response plans, municipal ordinances, and building codes to direct community development. The planning process also incorporated the existing natural hazard mitigation elements from these previous planning efforts. The development of the plan utilized the following plans, studies, reports, and ordinances. Table 5 on the following page lists the plans, studies, reports, and ordinances used in the development of the plan.

Table 5: Planning Documents Used for 2015 MHMP Planning Process

Title	Year	Description	Where Used
Scott County Multi-Hazard Mitigation Plan	2008	Federal Disaster Mitigation Act requirement	Throughout
Scott County Comprehensive Emergency Management Plan	2003	Countywide mitigation, preparedness, and response-and-recovery activities appropriate for the hazards faced by the citizens of Scott County	Section 4: County Profile Section 5: Risk Assessment Section 6: Mitigation Strategies
Scott County Comprehensive Plan	2001	Manage growth and economy of current and future land use	Section 4: County Profile Section 6: Mitigation Strategies
Community Action Potential Index	2013	FEMA Region V Risk Analysis Branch of the Mitigation Division methodology for ranking communities for Risk MAP Actions	Section 5: Risk Assessment; Section 6: Mitigation Strategies
Risk MAP Resilience Report	2013	FEMA report	Section 5: Risk Assessment; Section 6: Mitigation Strategies

The planning team and Polis reviewed the 2008 MHMP to determine which areas of the plan needed to be updated. Much of the information contained in this document comes from the original plan, which was developed by The Polis Center with support from River Hills EEDC and RPC. A description of updated sections is available in the Executive Summary.

3.3 Review of Technical and Fiscal Resources

The MHMP planning team has identified representatives from key agencies to assist in the planning process. Technical data, reports, and studies were obtained from these agencies. The organizations and their contributions are summarized in Table 6.

Table 6: Key Agency Resources Provided

Resources Provided	Source
Repetitive loss information	FEMA Region V
Digital flood maps, dam and levee information	FEMA Region V
GIS data, digital elevation models (DEM), earthquake modeling scenarios	Indiana Geological Survey
2008 Scott County Multi-Hazard Mitigation Plan	Scott County Emergency Management Agency
Critical Facility GIS data and GIS basemap data	Scott County GIS Department
Community Action Potential Index (CAPI) data	FEMA
Buyout/Retrofitting information and planning data	FEMA/IDHS
Provided flood, dam and levee, information	Indiana Dept of Natural Resources, Division of Water
Topography, waterway and land use information	United States Department of Natural Resources
Identified programs and projects for economic development and community development	River Hills EDD & RPC

3.4 Public Involvement

The planning team invited the public to a meeting on November 18, 2015 in order to encourage the public to actively participate in the planning process. During this meeting the County and RPC reiterated the purpose of the plan and goals of the meeting. The draft plan was reviewed and mitigation strategies were discussed. All attendees were given the opportunity to actively participate. Appendix A includes meeting minutes and invitations to participate. Appendix B includes the published announcement of the meeting.

3.5 Neighboring Community Involvement

The Scott County planning team invited neighboring counties to attend the public meeting on November 18, 2015, to review the draft plan and provide input on content, including mitigation strategies. A digital copy of the Scott County Multi-Hazard Mitigation Plan Update was also distributed to the EMA Directors of the neighboring counties. Details of neighboring stakeholders' involvement are summarized in Table 7 and documented in Appendix A.

Table 7: Neighboring Community Participation

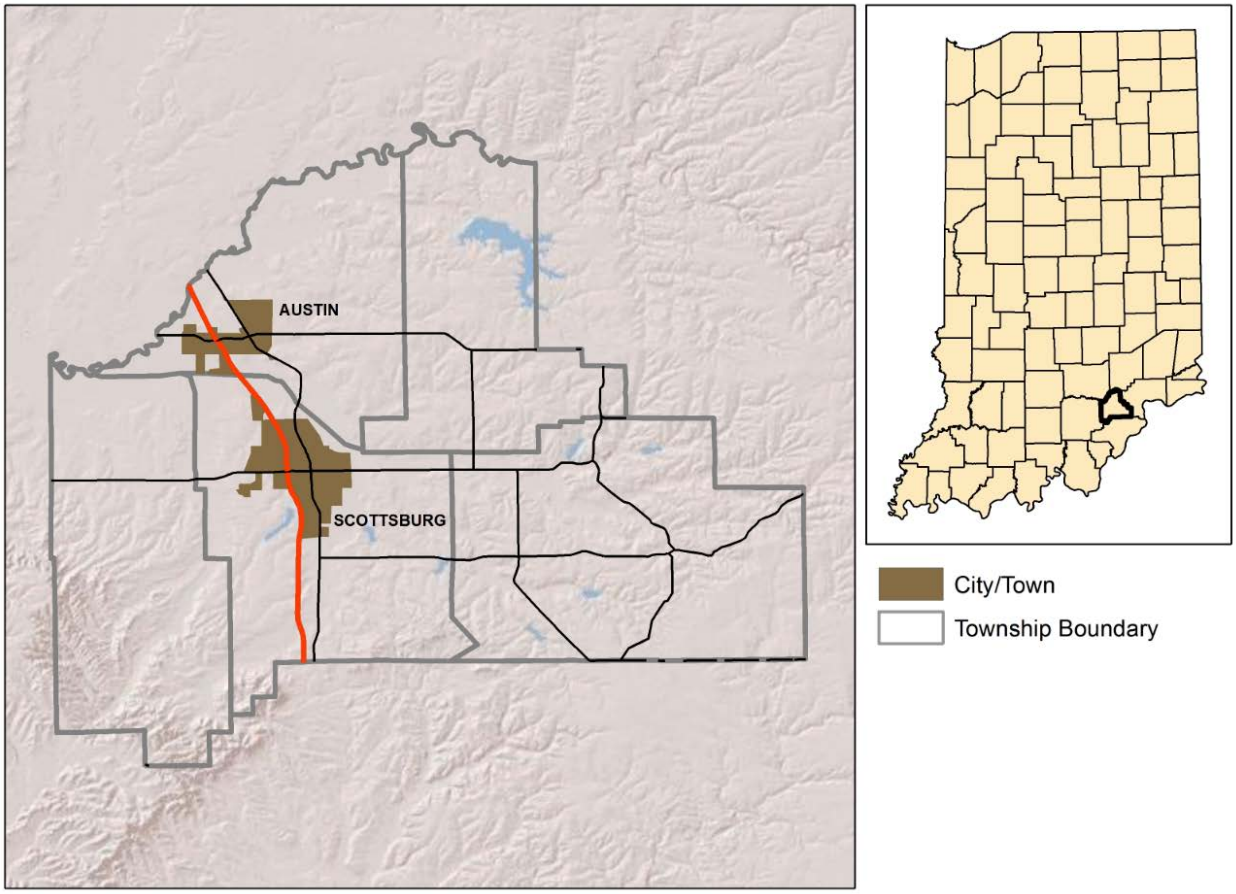
Person Participating	Neighboring Jurisdiction	Organization	Participation Description
Les Kavanaugh	Clark County	Clark, IN EMA	Opportunity to review plan and provide comments
Terry Herthel	Floyd County	Floyd County, IN EMA	Opportunity to review plan and provide comments
Desi Alexander	Washington County	Washington County, IN EMA	Opportunity to review plan and provide comments
Duane Davis	Jackson County	Jackson County, IN EMA	Opportunity to review plan and provide comments
Dave Bell	Jefferson County	Jefferson County, IN EMA	Opportunity to review plan and provide comments

Section

4 County Profile

As shown in Figure 2, Scott County is located in south central Indiana, adjacent to the Indiana/ Ohio state line. The county is comprised of two cities—Austin and Scottsburg —and no incorporated towns. Scottsburg is the county seat. The County is further divided into five civil townships, which include Finley, Jennings, Johnson, Lexington and Vienna Townships. Scottsburg is the county seat.

Figure 2: Scott County, Indiana



4.1 Geography, Topography, and Climate

Scott County is located in the southern portion of Indiana, just north of Clark County, Indiana. Other neighboring Indiana counties include Floyd, Washington, Jennings, Jackson and Jefferson. Scott County has a total area of 192.75 square miles of which 190.40 square miles is land and 2.35 square miles (1.22%) is water.

On the western side of the county, near the Scott-Washington County line is the highest elevation in the county at about 1,017 feet above sea level. The lowest elevation, about 520 feet above sea level, is located at the point where the East Fork Muscatatuck River leaves Scott County. The topography is characterized by a low relief landscape, largely flat and open with small patches of trees scattered throughout. The shale bedrock that underlies much of this region offers little resistance to erosion. Wetlands are located in low areas. The relief varies greatly across Scott County Most of the county generally has narrow or moderately wide bottom lands, narrow, flat ridgetops, and sloping hillsides.[2]

Scott County's climate is typical of Southern Indiana with hot humid summers and cold damp winters. A well-defined north-south climatic gradient across Indiana results in a cool, temperate, continental climate in the north and a warm, temperate, continental climate in the south. Precipitation patterns in Indiana vary gradually, both geographically and seasonally. Precipitation, which is greatest from March through July, is received each month of the year.

The variables of temperature, precipitation, and snowfall can vary greatly from one year to the next. Scott County, Indiana, gets 44 inches of rain per year compared to the US average of 37 inches. Snowfall is below the US average, although winter temperatures can fall below freezing starting as early as October and extending as late as April.

Table 8 on the following page provides detailed information on the climate of Scott County.

[2] http://www.nrcs.usda.gov/

Table 8: Scott County Average Temperatures [3]

Month	Average Temperature	Daily Maximum	Daily Minimum	Average Precipitation
January	30.8˚	39.6˚	22.0˚	3.1”
February	34.6˚	44.8˚	24.5˚	2.8”
March	43.2˚	55.0˚	31.3	4.1”
April	53.8˚	66.3˚	41.3˚	4.4”
May	63.4˚	75.4˚	51.5˚	4.8”
June	72.7˚	83.9˚	61.6˚	4.2”
July	75.7˚	86.8˚	64.6˚	4.4”
August	74.3˚	86.3˚	62.3˚	4.4”
September	66.7˚	79.7˚	53.7˚	3.1”
October	55.3˚	68.3˚	42.2˚	2.9”
November	44.5˚	55.7˚	33.4˚	3.7”
December	33.8˚	42.9˚	24.7˚	3.4”

Indiana is prone to strong thunderstorms that can produce strong winds, lightning, hail, and sometimes tornadoes. Historically, these storms can occur at almost any time throughout the year, but are most common in the spring and summer months.

4.2 Demography

Scott County consists of a largely rural, agricultural population. As of the 2010 US Census, there were 24,181 people residing in Scott County, with a population density of 127 people per square mile. The US Census estimates 23,712 residents as of 2014. Of the 92 counties in Indiana, Scott County ranks 65th in total population.

More than half of the Scott County population resides in the unincorporated areas of the County. Table 9 shows the distribution of population for Scott County.

Table 9: Population by Community

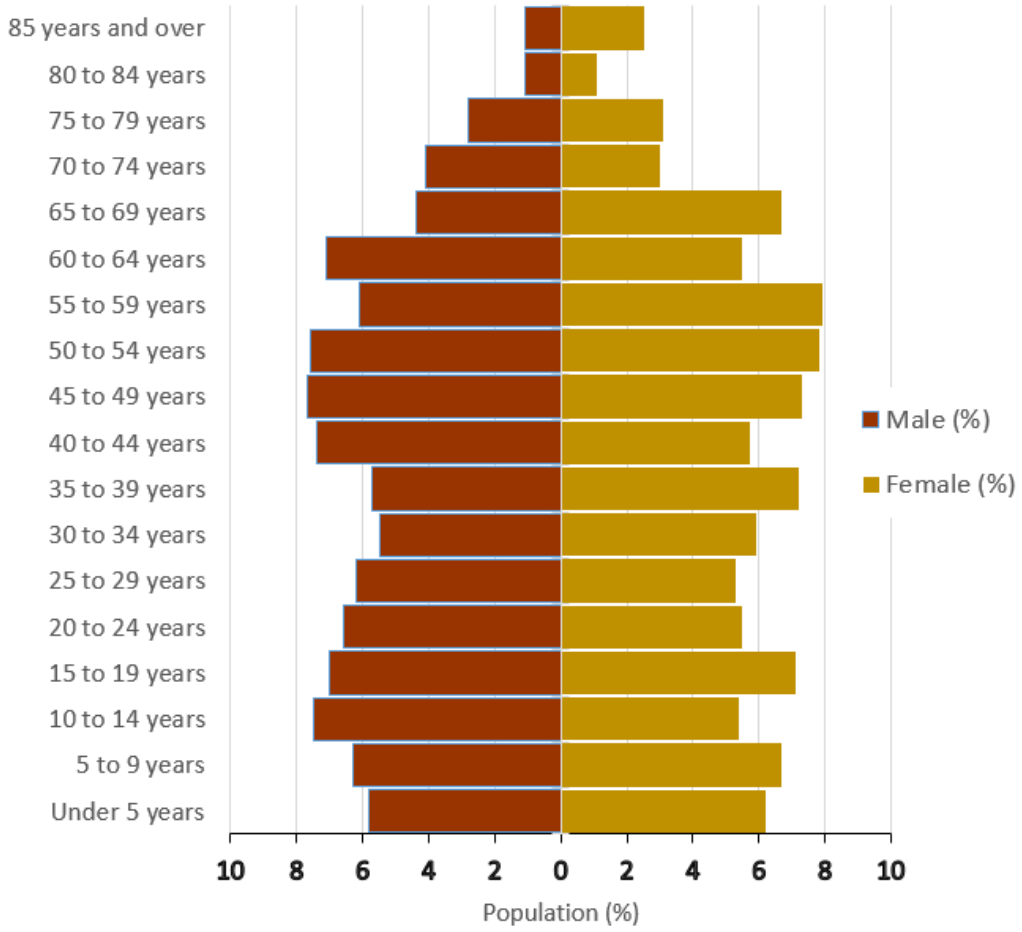
Community	2014 Population
Austin	4,163
Scottsburg	6,662
Unincorporated Scott County	12,889
Scott County Total	24,035

The median age of Scott County residents is 40 years old compared to the Indiana median age of 37.4. Figure 3 shows Scott County’s population pyramid, which illustrates the distribution of the county’s

[3] Source: http://www.ncdc.noaa.gov/cdo-web/datatools/normals

population in terms of age groups and gender. Population pyramids are used to analyze growth or decline of fertility, mortality, and migration within the specified area.

Figure 3: Scott County Population Pyramid[4]



Scott County's population pyramid is relatively stable indicating slow population growth, long life expectancy (particularly females), and low infant mortality. It shows the same general shape as the population pyramid for both Indiana and the United States.

4.3 Population Change

Populations grow or decline through migration and natural increase, and often these two components offset each other, a positive natural increase (meaning more people were born than died) and a negative net in-migration (meaning more people moved out of the county than into the county). [5]

[4] Source: 2013 American Community Survey estimate

[5] STATS Indiana; US Census Bureau

In the most recent census estimate, Scott County's estimated 2013 population represents less than a 1% increase over the past nine years. Based on a 1990 Scott County population of 20,991, the county has seen a 15% population increase in the past 25 years. Stats Indiana projects a 2020 Scott County population of 25,210. The breakdown of recent population change by incorporated areas is documented in Table 10.

Table 10: Population Change by Community

Community	2005 Population[6]	2014 Population[7]	Population Change
Austin	4,694	4,163	-11.31%
Scottsburg	6,060	6,662	+9.9%
Unincorporated Scott County	13,066	12,889	-1.4%
Scott County Total	23,820	24,035	+.9%

Migration trends impact hazard mitigation by highlighting areas of population growth and decline, revealing immigration and emigration patterns, and informing public officials of changes in net adjusted gross income (AGI) as a result of migration. Because international migration data was not as consistent as domestic migration data, this plan references net domestic trends.

Table 11: Components of Population Change

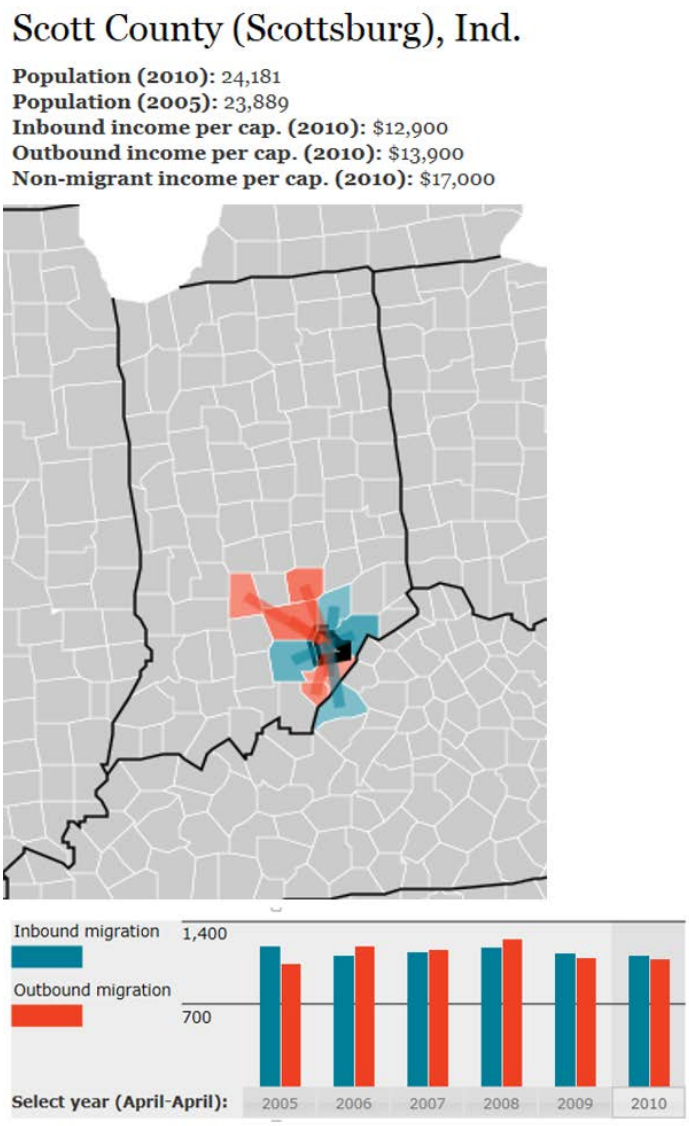
Component of Population Change	Number	Rank	Indiana
Net Domestic Migration	-134	61	-7,849
Net International Migration	0	82	+10,472
Natural Increase (births minus deaths)	-9	77	+24,994

The map on the following page, generated via Forbes American Migration Map, shows Scott County's migration patterns between 2005 and 2010 in terms of inbound and outbound domestic migration. Although outbound migration has remained relatively constant, inbound migration has tapered off in recent years.

[6] STATS Indiana, 2005

[7] STATS Indiana, 2014

Figure 4: Scott County Migration Patterns[8]



[8] http://www.forbes.com/special-report/2011/migration.html

4.4 Special Needs Populations

Certain populations require special attention in mitigation planning because they may suffer more severely from the impacts of disasters. It is important to identify these populations and develop mitigation strategies to help them become more disaster-resilient. Although there are numerous types of vulnerable populations, Scott County has identified five significant groups, which include low-income citizens, older adults, people who don't speak English at home, people with disabilities, and people without high school diplomas.

We compared Scott County to nearby counties, as well as to Indiana, by averaging the percent population of each special needs category within the county/state. Of the seven geographies we compared (one state and six counties), Scott County ranks first, meaning it has a higher special needs population, comparatively, of the assessed area. Table 6 shows how each county/state compares overall and per special needs indicator. The purpose of this comparative analysis is to highlight special needs populations for further analysis. It does not necessarily mean that those communities are the most vulnerable.

Overall, Scott County has a significant special needs population. Although the percent of non-English speakers is lower than most of the surrounding communities, the other special needs indicators are disproportionately high. In particular, the percent of population in poverty represent almost 20% of the county's total population. In the event of a disaster, the least affluent citizens have particular challenges and concerns. With varied levels of income, communication and transportation may be limited. As a general rule, these residents are also less likely to have strong support structures.

Figure 5 indicates Scott County also has an above average number of disabled residents. As with the population in poverty, this subset of Scott County residents may require life-sustaining medication, electricity-operated medical equipment, and special mobility assistance. They may also require special temporary housing needs that can accommodate physical disabilities/limitations.

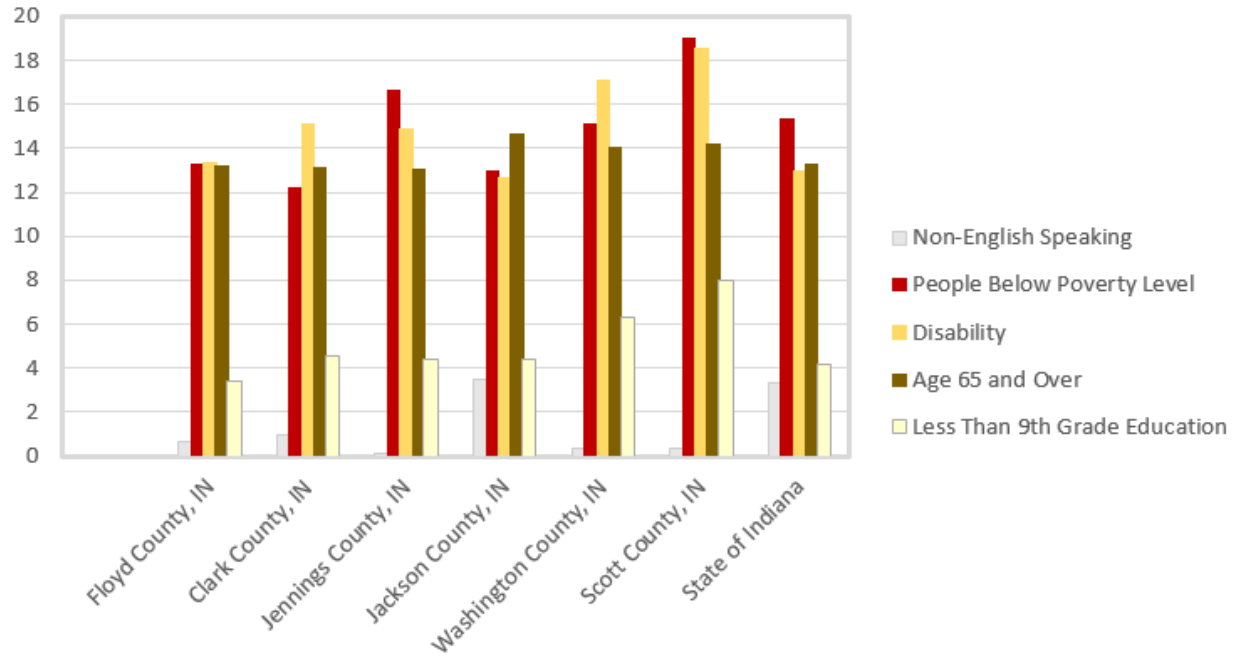
Scott County emergency management and personnel can help to mitigate these vulnerabilities by being aware of the needs and locations of the special needs populations. The County can proactively offer resources to these special needs populations to empower them with knowledge and tools that could help them save their own lives. Examples of activities to improve emergency mitigation and preparedness for special needs populations include the following:

- Evacuation exercises for inmate communities and elderly care facilities
- Public materials on when and how to shelter in place
- Training for emergency shelter staff
- Development of resource guide for seniors with available housing, medical, and basic needs services
- Development of accessible media announcements

Table 12: Regional Comparison of Special Needs Populations[9]

County	Average	Non-English Speaking Household	People Below Poverty Level	Disability	Age 65 and Over	Less Than 9th Grade Education
Floyd County, IN	8.7962	0.615	13.324	13.396	13.249	3.397
Clark County, IN	9.1928	0.939	12.209	15.16	13.123	4.533
Jennings County, IN	9.8526	0.122	16.652	14.889	13.067	4.413
Jackson County, IN	9.6248	3.494	12.999	12.655	14.688	4.378
Washington County, IN	10.5944	0.367	15.102	17.146	14.071	6.286
Scott County, IN	12.0486	0.348	19.049	18.608	14.188	8.014
State of Indiana	9.84	3.3	15.4	13.0	13.3	4.2

Figure 5: Special Needs Ranking Overall and by Indicator



[9] US Census Bureau, 2013 5-year estimates

Explanation of Special Needs Indicators:

- Percent household speaking language other than English and linguistically isolated
- Percent of all people whose income in the last 12 months is below poverty level
- Percent of population with a disability within the civilian non-institutionalized population
- Percent of population age 65 and over
- Percent of population aged 25 and older with less than 9th grade educational attainment

4.5 Economy, Industry, Income

Scott County has an economy based primarily on manufacturing. The manufacturing activities are spread throughout the County and based on durable goods and new tchnology oriented companies. In 2014, STATS Indiana reported that almost 80% of the workforce in Scott County was employed in the private sector. The sector breakdown is included in Table 13.

Table 13: Employment by Sector[10]

Employment Sector	% of County Workforce
Manufacturing	27.5%
Education, Health Care, Social Services	19.1%
Retail Trade	14.4%
Arts, Entertainment, Recreation, Food Service	6.8%
Trans., Warehousing & Utilities	6.3%
Public Administration	5.3%
Construction	4.9%
Professional, Management, Tech. Services	4.3%
Finance and Insurance	4.3%
Other Services	4.2%
Wholesale Trade	1.3%
Agriculture, Forestry, & Mining	1.2%

The top ten employers of Scott County are documented below in Table 14.

[10] http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk

Table 14: Major Employers of Scott County[11]

Company Name	Location	Type of Business
Walmart Supercenter	Scottsburg	Retail
Morgan Foods, Inc.	Austin	Food Service
Scott Memorial Hospital	Scottsburg	Health Care
Austin Tri-Hawk Automotive, Inc.	Austin	Manufacturing /Automotive
Ilpea Industries, Inc.	Scottsburg	Manufacturing/Production
Pepsi Beverages, Inc.	Austin	Manufacturing / Production
Rubber Products Division	Scottsburg	Manufacturing/Production
Multi-Color Corporation, Inc.	Scottsburg	Manufacturing/Production
Genpak LLC	Scottsburg	Manufacturing/Production
Genesis Plastics and Engineering	Scottsburg	Manufacturing/Production

The 2014 estimated median per capita income in Scott County is $30,051, compared to an Indiana average of $24,048.[12] The cost of living in Scott County is historically less than the US average. The financial crisis of recent years has had an impact on Scott County as it did in Indiana and the US. Since 2005 the unemployment rate in Scott County, Indiana has ranged from 4.7% in September 2007 to 14.2% in June 2009. STATS Indiana reported the August 2015 Scott County unemployment rate to be 4.9%, the Indiana unemployment rate to be 4.4%, and the U.S. unemployment rate to be 5.1%. The percent unemployed population in Scott County has historically been greater than both the state and the nation.

Table 15: Scott County Unemployment Rates and Earnings[13]

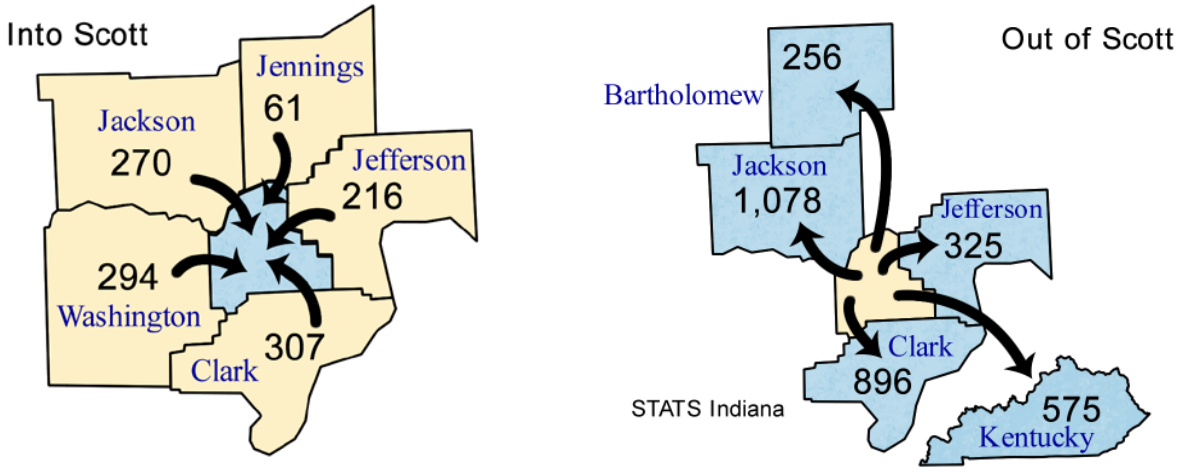
Year	Unemployment Rate	Individual Earnings	Household Income
2010	5.8%	$26,875	$39,588
2011	8.1%	$26,960	$40,532
2012	8.1%	$26,952	$41,610
2013	8.9%	$27,459	$42,898
2014	6.9%	N/A	$43,650
2015	4.9%	N/A	N/A

4.6 Commuter Patterns

According to the 2013 U.S. tax returns, there are 14,464 people who live in Scott County and work. 3,888 of these workers leave Scott County for employment, while 1,484 come to the County to work. County-to-county commuting patterns provide a gauge of the economical connectivity of neighboring communities. The US Census reports that over 27% of US workers travel outside their residential county to travel to work.

[11] hoosierdata.in.gov
[12] Bureau of Economic Analysis
[13] http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk

Figure 6: Commuting Patterns



The average travel time to work in Scott County is 26.7 minutes compared to a 25-minute average in the US[14]. Commuter safety is an important consideration in disaster mitigation and planning. Employers can help their employees prepare by encouraging the development of Commuter Emergency Plans, such as the template developed by FEMA and available for download at http://www.fema.gov/media-library/assets/documents/90370.

4.7 Transportation

Located between Indianapolis and Louisville, Kentucky, Scott County is bisected by Interstate 65. This heavily traveled highway brings a significant amount of traffic through the County. Other major routes running through southern Indiana and Scott County include U.S. Route 31, State Roads 3, 56, 160, 203, 256, 356 and 362. Commercial development is expected to continue on SR-56 west of Scottsburg; it is a well-traveled route and is easily accessible from I-65.[15]

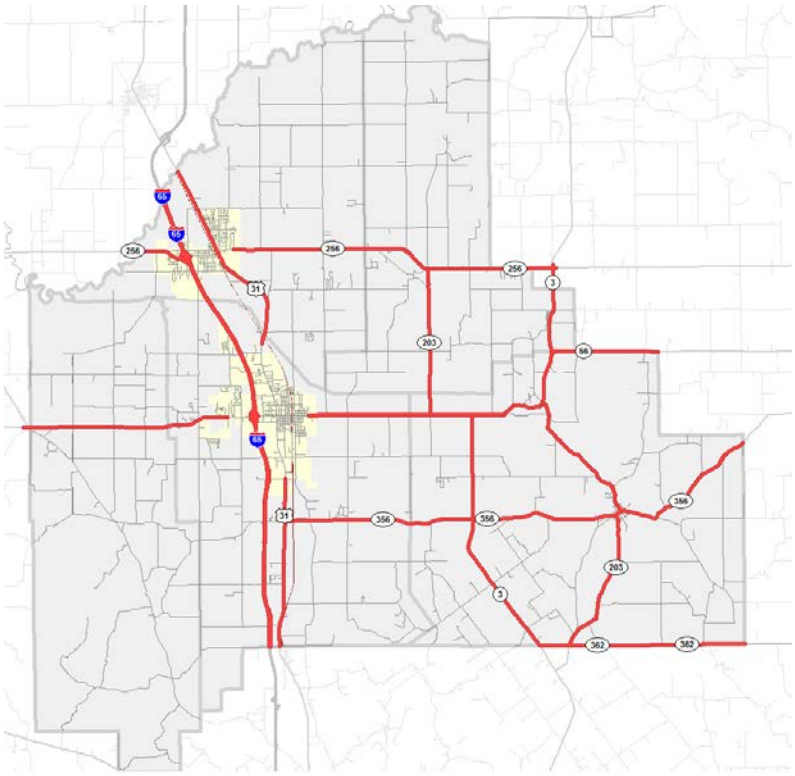
Major transportation projects planned for this area include construction of an I65/SR356 interchange, development of an outer loop around Austin and Scottsburg, and improvements to SR56, US31 and numerous county roads. Policy makers in Scott County have begun planning the development of a by-pass around the City of Scottsburg. This loop would help deter heavy traffic from downtown Scottsburg.

Public transportation in Scott County is currently limited. The County would like to develop public transportation, between Austin and Scottsburg

[14] 2006-2011 US Census American Community Survey 5-year estimate
[15] http://www.bestplaces.net/transportation/county/indiana/scott

Figure 7 depicts the major transportation routes through Scott County.

Figure 7: Major Transportation Routes of Scott County[16]



4.8 Major Waterways and Watersheds

The most significant body of water in Scott County is Hardy Lake. With 741 acres of surface area, it is the smallest reservoir maintained by the State of Indiana. Hardy Lake is the only state reservoir not created of the lake. Other water sources located in Scott County are listed in Table 16.

http://scott.in.wthgis.com/

Table 16: Significant Lakes and Streams of Scott County[17]

Bowen Lake	Stucker Fork Lake No. 3	Sting Brook
Hardy Lake	Stucker Fork Lake No. 4	Little Joe Creek
Iola Lake	Stucker Fork Lake No. 5	Rock Creek
Marysville	Stucker Fork Lake No. 7	Scottsburg Drain
Pine Lake	Stucker Fork Lake No. 12	Plow Drain
Scottsburg Reservoir	Stucker Fork Lake No. 13	Plain Drain
Shaw Lake	Stucker Fork Lake No. 15	Little Carney Fork
Thomas J. Miller Lake	Stucker Fork Lake No. 16-A	South Fairview Run
Wilcox Lake	Muscatatuck River	Pine Run

Scott County shares over 10 miles of jurisdictional boundary with Jackson County, all of it along the Muscatatuck River. Since much of that borderland is in the floodplain, very little development is expected. The river flows through a rather sparsely populated agricultural region through Scott County.

Although only 1.2% of Scott County is surface water, the Scott County Drainage Board is committed to responsible management of topography, geology and hydrology. The County recognizes that future development may cause adverse drainage effects and subsequent flooding.

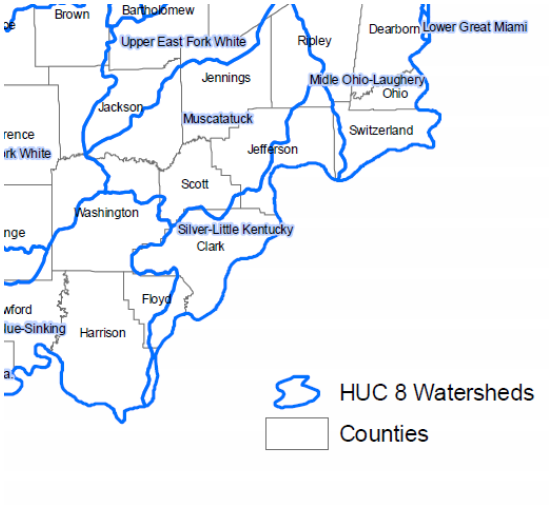
There are three HUC 8 watersheds in Scott County. The largest watershed, the Muscatatuck, encompasses over 95% of the county. HUC 8 watersheds are listed below in Table 17 and displayed in Figure 8.

Table 17: HUC 8 Watersheds of Scott County[18]

Watershed	HUC 8
Muscatatuck	05120207
Silver-Little Kentucky	05140101
Blue Sinking	05140104

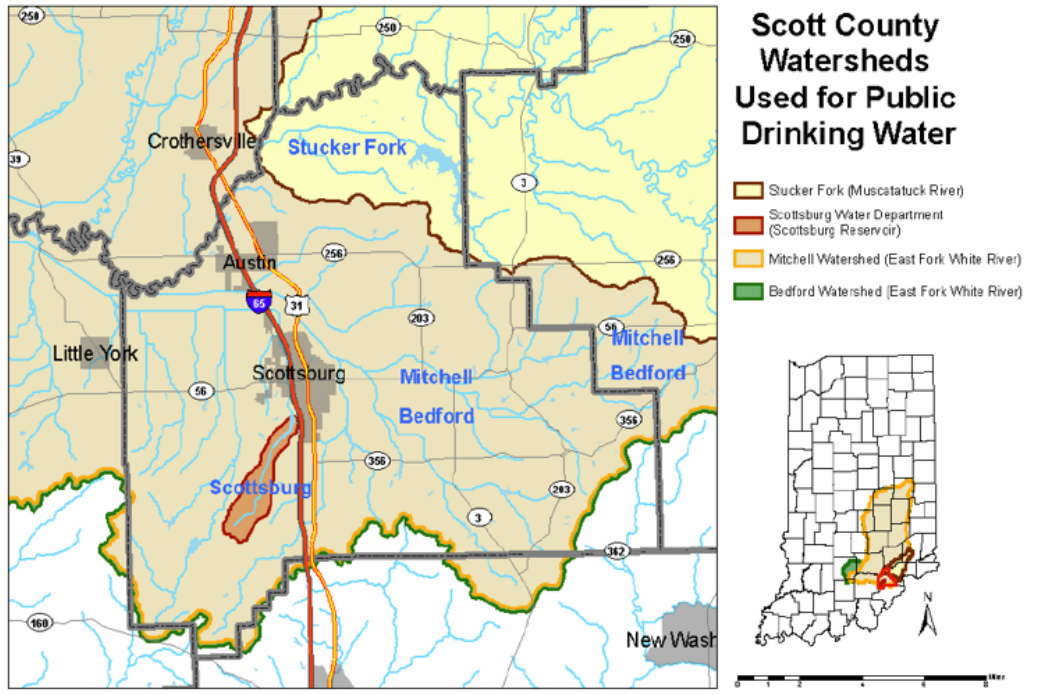
[17] http://www.in.gov/dnr/fishwild/files/Indiana_Lakes_Listing_By_County_March_2007.pdf
[18] U.S. Geological Survey HUC14 Watersheds, 2006

Figure 8: HUC 8 Watersheds of Scott County[19]



Stream corridors run generally north to south through the County and much of the county is dissected by drainage water. The East Fork Muscatatuck River and its tributaries form the primary network of drainage within Scott County. Most of the county water supply comes from Hardy Lake.

Figure 9: Scott County Watersheds of Drinking Water[20]



[19] U.S. Geological Survey HUC14 Watersheds, 2006
[20] https://engineering.purdue.edu/SafeWater/Maps/County_watershed_maps.pdf

4.9 Land-Use and Development Trends

The inevitable expansion of Scott County in population and work force can be managed to ensure that the growth is orderly, that the public costs are minimized, residents are safe and the quality of life is maintained. Scott County intends to concentrate future development in, or adjacent to, developed areas and to encourage the systematic development of industrial and commercial corridors so that development can take advantage of existing infrastructure while preserving of the county's communities. The areas around the Scottsburg and Austin I-65 interchanges are currently targeted for commercial development.

Future residential development is encouraged to develop adjacent to existing residential areas. The Scott County Comprehensive Plan prohibits residential development in the floodway of the 100-year flood plain. Although these floodplain areas prohibit development, they can provide fertile farmland and opportunities for recreation corridors.

Although agriculture is the predominant land use in Scott County, land that has farmed has been turned into residential areas. Farming in Scott County consists of livestock, primarily hogs and beef cattle, and grain crops including corn, soybeans, winter wheat, hay, and oats.

Section 5

Risk Assessment

The goal of mitigation is to reduce the future impacts of a hazard including loss of life, property damage, disruption to local and regional economies, and the expenditure of public and private funds for recovery. Sound mitigation must be based on sound 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 of the community could be affected by a disaster, and the impact on community assets. A risk assessment consists of three components: 1) Hazard Identification, 2) Vulnerability Assessment, and 3) Risk Analysis and Hazard Profiling.

5.1 Identifying Hazards

5.1.1 Existing Plans

To facilitate the planning process, the planning team reviewed existing plans and data, including the 2008 Scott County Multi-Hazard Mitigation Plan and the current effective FEMA Flood Insurance Flood Maps (FIRMs). The 2008 Scott County identified the following principal hazards ranked from most to least severe:

1) Flooding/Dam Failure
2) Tornado
3) Hazardous Materials Release
4) Thunderstorms/High Winds/ Hail
5) Drought/ Extreme Heat
6) Earthquake
7) Severe Winter Storms

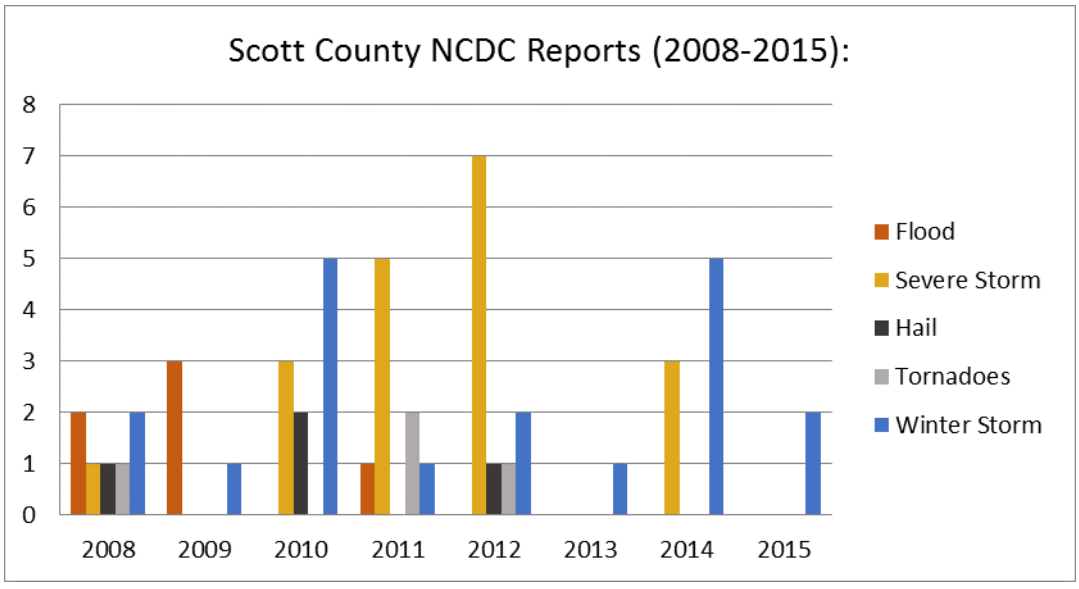
In 2015, the planning team updated the county's top hazards to:

1) Tornado
2) Severe Storms
3) Flood
4) Flash Flood
5) Dam Failure
6) Winter/Ice Storm
7) Hazardous Material Release
8) Drought
9) Earthquake
10) Subsidence

5.1.2 Historical Hazards Records

To assist the planning team, historical storm-event data from the past five years was compiled from the National Climatic Data Center (NCDC). The NCDC Storm Events Database includes events related to tornadoes, severe storms, floods, winter storms, droughts, and extreme temperatures. NCDC records are estimates of damage reported to the National Weather Service from various local, state, and federal sources. These estimates, however, are often preliminary in nature and may not match the final assessment of economic and property losses related to given weather events. The NCDC data included 52 reported events in Scott County between January 1, 2008 and May 31, 2015.

Figure 10: NCDC Events in Scott County (2008-2015)



5.1.3 Hazard-Ranking Methodology

During Meeting 1, held on June 30, 2015, the planning team reviewed historical hazard information and participated in a risk analysis exercise to rank hazards by community and severity of risk. The hazards are ranked using the Calculated Priority Risk Index (CPRI) criteria. The CPRI is calculated through four categories: probability, impact, warning time, and duration.

The team calculated the probability rating (Highly Likely, Likely, Possible, or Unlikely) of each hazard, based on the number of events that have occurred in the county historically, and since the previous Scott County MHMP. Throughout the planning process, the MHMP team had the opportunity to update the NCDC data with more accurate local information. For example, the NCDC records often list the locations of hazards, such as floods, under the county, not accounting for how the individual communities were affected. In such situations, the probability rating assigned to the county was applied to all jurisdictions within the county.

Team consensus also was important in determining the probability of hazards not recorded by NCDC, for example, subsidence, earthquakes, and hazardous materials spills. The probabilities for these hazardous events were determined by the planning team's estimation, derived from local experience and records, of the number of events that have occurred since the previous plan. After improving the NCDC data with additional local data, the team determined each hazard's potential impact on the communities (Catastrophic, Critical, Limited, or Negligible). The impact rating captures the potential magnitude and severity of the hazard. Table 18 lists the criteria used to determine both probability and impact.

Table 18: Guidelines for Determining Probability and Impact

PROBABILITY	IMPACT
Highly Likely 10+ events in 10 years	**Catastrophic** >Incident results in multiple fatalities >Damage to critical infrastructure and property over a large area of community >Up to 50% of community facilities are damaged, destroyed, or inaccessible >Complete shutdown of community facilities and loss of services for more than 2 weeks; community operations must be cancelled or relocated for an extended period of time.
Likely 6-9 events in 10 years	**Critical** >Incident results in a number of minor injuries, limited serious injuries, and few, if any fatalities >Damage to critical infrastructure and property over a moderate area of community >Up to 25% of community facilities are damaged, destroyed, or inaccessible >Complete shutdown of community facilities and loss of services for 2 weeks; some community operations must be cancelled or relocated temporarily
Possible 2-5 events in 10 years	**Limited** >Incident results in a number of minor injuries, limited serious injuries, and few, if any, fatalities >Damage to critical infrastructure and property over a small area of community >Up to 25% of community facilities are damaged, destroyed, or inaccessible >Complete shutdown of community facilities and loss of services for 1-2 weeks; some community operations must be cancelled or relocated temporarily
Unlikely 0-1 events in 10 years	**Negligible** >Incident results in only minor injuries and no fatalities >Damage contained to a single incident scene and immediate area >Less than 10% of community facilities are damaged, destroyed, or inaccessible >Complete shutdown of community facilities and loss of services for 24 hours or less; community operations may be cancelled or relocated temporarily

The overall hazard risk is calculated determined by weighting each CPRI category, and then combining them for a total value. Table 19 lists the CPRI categories and assigned weight values.

Table 19: CPRI Categories and Weighting

.45 Probability	.30 Magnitude/Severity	.15 Warning Time	.10 Duration
4 - Highly Likely	4 - Catastrophic	4 - Less Than 6 Hours	4 - More Than 1 Week
3 - Likely	3 - Critical	3 - 6-12 Hours	3 - Less Than 1 Week
2 - Possible	2 - Limited	2 - 12-24 Hours	2 - Less Than 1 Day
1 - Unlikely	1 - Negligible	1 - 24+ Hours	1 - Less Than 6 Hours

CPRI VALUE = [(PROBABILITY X .45) + (MAGNITUDE X .30) + (WARNING TIME X .15) + (DURATION X .10)]

Table 20 identifies the CPRI values for each hazard facing Scott County.

Table 20: Scott County CPRI and Hazard Ranking

Hazard	Probability	Magnitude/ Severity	Time Warning	Duration	Risk Index Priority
Flood	4 Highly Likely	2 Limited	3 6-12 Hours	3 - Less Than 1 Week	3.15
Tornado	4 Highly Likely	2 Limited	4 < 6 Hours	1 - Less Than 6 Hours	3.1
Thunderstorms/ High Winds/Hail/Lightning	4 Highly Likely	2 Limited	4 < 6 Hours	1 - Less Than 6 Hours	3.1
Transportation Hazardous Material Release	4 Highly Likely	1 Negligible	4 < 6 Hours	2 - Less Than 1 Day	3
Winter Storms	4 Highly Likely	1 Negligible	3 6-12 Hours	3 - Less Than 1 Week	2.95
Earthquake	2 Possible	2 Limited	4 < 6 Hours	2 - Less Than 1 Day	2.3
Ground Failure/ Landslide	2 Possible	1 Negligible	4 < 6 Hours	2 - Less Than 1 Day	2.1
Fire	2 Possible	1 Negligible	4 < 6 Hours	1 - Less Than 6 Hours	2
Droughts/ Extreme Heat	2 Possible	1 Negligible	1 24+ Hours	4 - More Than 1 Week	1.85

The planning teams plotted each hazard on a risk grid according to probability (y-axis) and potential impact (x-axis). The following figure describes the methodology of plotting hazards by risk. In this example, an earthquake has a medium probability of occurring but a significant potential impact, while a tornado has a high probability of occurring in a given year with a significant potential impact.

Figure 11: Risk Grid Methodology

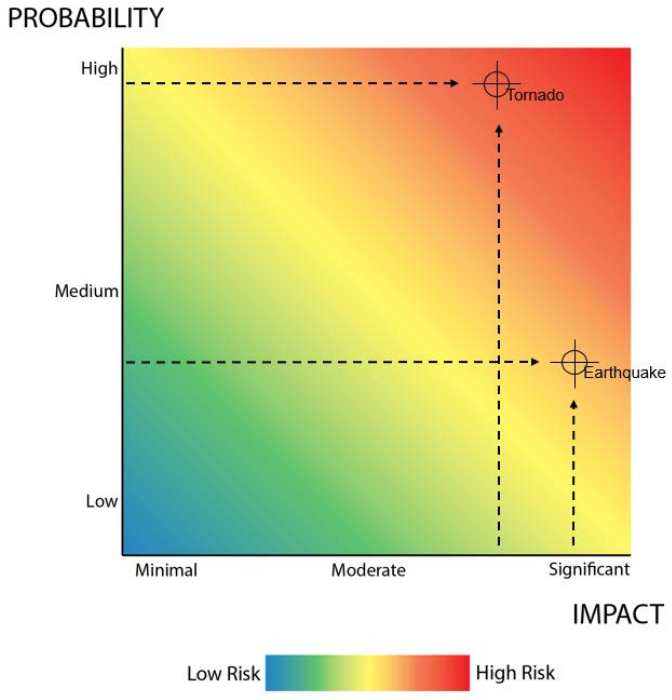
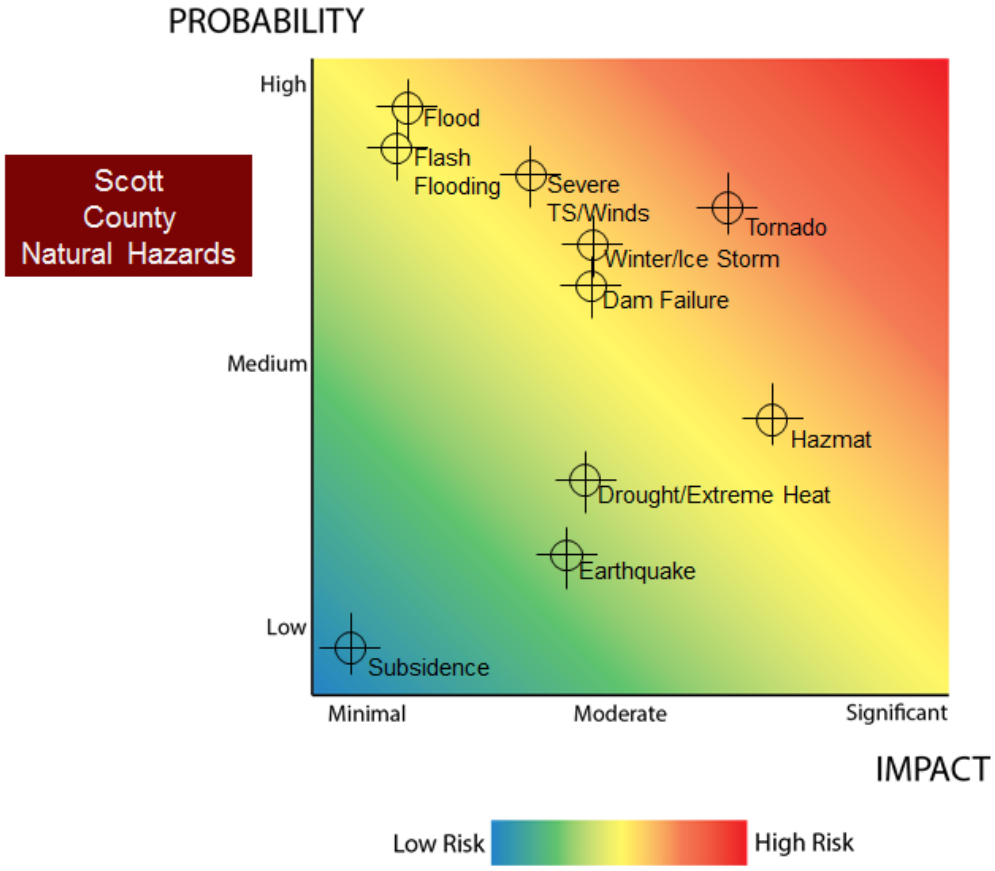


Figure 11 illustrates the Risk Grid Methodology. In this example, a tornado has a high probability (y-axis) and a significant impact (x-axis). Overall, Indiana is at high risk for a tornado.

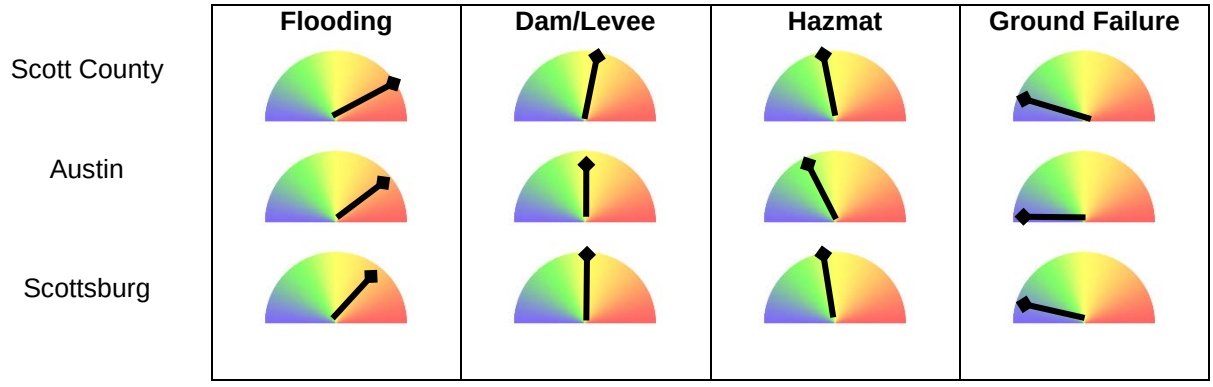
Scott County listed tornadoes, severe storms, and floods as the highest-risk disasters. Figure 12 illustrates the county's risk for each hazard.

Figure 12: Scott County Risk Matrix



While some hazards are widespread and will impact communities similarly, e.g. winter storms, others are localized leaving certain communities at greater risk than others. The following diagrams in Figure 13 illustrate each community's risk to flooding, dam/levee failure, hazmat incidents, and subsidence.

Figure 13: Community Risk to Localized Events



5.1.4 GIS and Hazus-MH Modeling

FEMA's Pre-Disaster Mitigation (PDM) program is designed to provide assistance to local communities to develop and implement their hazard mitigation plan, thereby reducing risk to property and lives. The initial multi-hazard mitigation plan (MHMP) for Scott County, Indiana was submitted to FEMA and approved in 2008. Existing Hazus-MH technology was used in the development of the vulnerability assessment for flooding and earthquakes. With the implementation of new technology and locally available parcel datasets, more accurate results are now available. Multi-hazard mitigation plan updates may document significant variances from the original MHMP.

For this analysis, Hazus-MH generated a combination of site-specific (flood) and aggregated loss (earthquake) estimates. Aggregate inventory loss estimates, which include building stock analysis, are based upon the assumption that building stock is evenly distributed across census blocks/tracts. With this in mind, total losses tend to be more reliable over larger geographic areas than for individual census blocks/tracts. Site-specific analysis is based upon loss estimations for individual structures. For flooding, analysis of site-specific structures takes into account the depth of water in relation to the structure. Hazus-MH also takes into account the actual dollar exposure to the structure for the costs of building reconstruction, content, and inventory. Damages are based upon the assumption that each structure will fall into a structural class, and structures in each class will respond in a similar fashion to a specific depth of flooding. Site-specific analysis also is based upon a point location rather than a polygon; therefore the model does not account for the percentage of a building that is inundated.

It is important to note that Hazus-MH is not intended to be a substitute for detailed engineering studies. Rather, it is intended to serve as a planning aid for communities interested in assessing their risk to flood, earthquake, and hurricane-related hazards. This documentation does not provide full details on the processes and procedures completed in the development of this project. It is only intended to highlight the major steps that were followed during the project.

5.2 Assessing Vulnerability

The Indiana Department of Homeland Security (IDHS), through IndianaMap, provided 2015 parcel boundaries to The Polis Center, and the Indiana Department of Local Government and Finance provided the Scott County assessor records. Polis revised the Hazus-MH default data tables to reflect these updates prior to performing the risk assessment in order to improve the accuracy of the model predictions.

The default Hazus-MH data has been updated as follows:

- The Hazus-MH general building stock (to include building count, building square footage, content and structure exposure), Hazus-MH critical facilities, and Hazus-MH essential facilities have been updated based on the most recent available data sources. Hazus-MH critical and essential point facilities have been reviewed, revised as necessary, and approved by local subject matter experts.

- The essential facility updates (schools, medical care facilities, fire stations, police stations, and EOCs) have been applied to the Hazus-MH model data. Hazus-MH reports of essential facility losses reflect updated data.

5.2.1 Identify Facilities

This plan includes three types of facilities: critical facilities, essential facilities, and community assets.

CRITICAL FACILITIES are buildings that are deemed economically or socially viable to the county. Scott County has the following categories of critical facilities.

Transportation Systems –*114 bridges* - necessary for transport of people and resources including airports, highways, railways, and waterways.

Lifeline Utility Systems – *2 wastewater treatment plants, 2 potable water systems, 2 communications facilities* – vital to public health and safety including potable water, wastewater, oil, natural gas, electric power, and communication systems.

High Potential Loss Facilities – 36 *dams* – failure or mal-operation may have significant physical, social, and/or economic impact to neighboring community including nuclear power plants, high hazard dams, and military installations.

Hazardous Material Facilities – *6 hazardous materials facilities* – involved in the production, storage, and/or transport of corrosives, explosives, flammable materials, radioactive materials, and toxins.

Scott County's critical facilities are listed and mapped in Appendix C.

ESSENTIAL FACILITIES are defined as those that are vital to the county in the event of a hazard. These include emergency operations centers, police departments, fire stations, schools, and care facilities. Essential facilities are a subset of critical facilities.

Table 21 identifies the essential facilities that were verified, added or updated for the analysis. Scott County's essential facilities are listed and mapped in Appendix C.

Table 21: Essential Facilities of Scott County

Category	Number of Facilities
Care Facilities	19
Emergency Operations Centers	1
Fire Stations	7
Police Stations	3
Schools	11
Total	**51**

5.2.2 Building Replacement Costs

The total building exposure for Scott County is identified in Table 22 along with the estimated number of buildings within each occupancy class. These counts and costs were derived from the county assessor and parcel data.

Table 22: Building Exposure

General Occupancy	Estimated Total Buildings	Total Building Exposure
Agricultural	1,154	$154,049,526
Commercial	439	$128,878,563
Education	1	$19,090
Government	23	$9,622,430
Industrial	59	$104,927,694
Religious/Non-Profit	121	$53,502,364
Residential	7,893	$875,096,184
Total	**9,690**	**$1,326,095,851**

5.3 Profiling Hazards

5.3.1 Tornadoes

Tornadoes can occur at any time during the day or night and within any month of the year. The unpredictability of tornadoes makes them one of Indiana's most dangerous hazards. Their extreme winds are violently destructive when they touch down in the region's developed and populated areas. Current estimates place the maximum potential velocity of tornados at about 300 miles per hour, but higher and lower values can occur. A wind velocity of 200 miles an hour will result in a wind pressure of 102.4 pounds per square foot of surface area; a load that exceeds the tolerance limits of most buildings.

Tornadoes are defined as 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 very 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 classified according to the Enhanced Fujita tornado intensity scale shown in Table 23.

Table 23: Enhanced Fujita Tornado Rating[21]

Fujita Number	Estimated Wind Speed	Path Width	Path Length	Description of Destruction
EF0 *Gale*	65-85 mph	6-17 yards	0.3-0.9 miles	Light damage, some damage to chimneys, branches broken, sign boards damaged, shallow-rooted trees blown over.
FE1 *Moderate*	86-110 mph	18-55 yards	1.0-3.1 miles	Moderate damage, roof surfaces peeled off, mobile homes pushed off foundations, attached garages damaged.
EF2 *Significant*	111-135 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.
EF3 *Severe*	136-165 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.
EF4 D*evastating*	166-200 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.
EF5 *Incredible*	Over 200 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 for Tornadoes

There have been four tornadoes reported to NCDC in Scott County since January 2008 and a total of 13 in the past 50 years. In March of 2012, a one-third mile wide EF-4 tornado after exiting Clark County tracked six-tenths of a mile across southeastern Scott County in the area of Nabb. Despite its limited distance near Scott County, it caused significant damage and took the life of 1 man. Total damages were in excess of $500,000 following the 170 mph winds that came from this tornado.

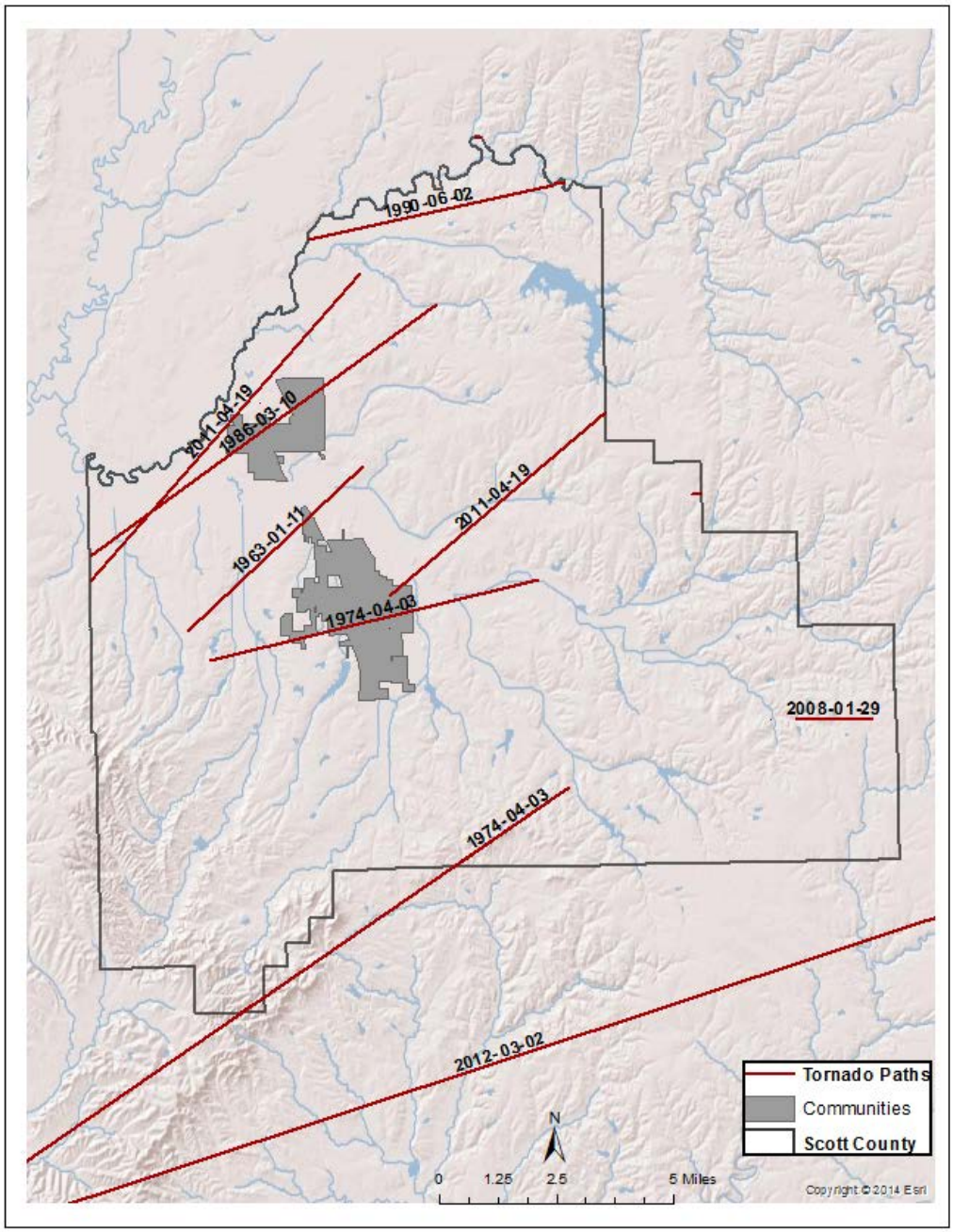
[21] NOAA Storm Prediction Center, http://www.srh.noaa.gov

NCDC-reported tornado activity in Scott County is documented in Table 24 below and Figure 14 shown on the next page.

Table 24: Scott County NCDC-Reported Tornadoes – 50 Years

Location	Date	F-Scale	Death	Injuries	Property Damage	Crop Damage
Scott Co.	8/9/1968	F2	0	0	$25,000	-
Scott Co.	4/3/1974	F5	0	10	-	-
Scott Co.	4/3/1974	F4	1	15	-	-
Scott Co.	4/5/1985	F2	0	0	$2,500	-
Scott Co.	3/10/1986	F2	0	25	$2,500,500	-
Scott Co.	6/2/1990	F3	0	0	$250,000	-
Blocher	3/28/1997	F1	0	0	-	-
Lexington	1/29/2008	EF1	0	0	$70,000	-
Leota	4/19/2011	EF0	0	0	-	-
Scottsburg	4/19/2011	EF0	0	0	-	-
Nabb	3/2/2012	EF4	1	0	$500,000	-

Figure 14: Scott County Tornado Tracks



Geographic Location for Tornado Hazard

The entire county has the same risk for tornadoes because they can occur at any location.

Hazard Extent for Tornadoes

The historical tornadoes generally moved from west to east across the county. The extent of the hazard varies in terms of the extent of the path and the wind speed. Tornadoes can occur at any location within the county.

Risk Identification for Tornadoes

Based on historical information, the probability of a tornado in Scott County is high and the potential impact of a tornado is significant; therefore the overall risk of a tornado in Scott County is high.

Vulnerability Analysis for Tornadoes

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 will consider all buildings within the county as vulnerable.

Essential and Critical Facilities

All essential and critical facilities are vulnerable to tornadoes. These facilities will encounter many of the same impacts as any other building within the jurisdiction. The impacts will 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. For example, a damaged police station will no longer be able to serve the community.

Building Inventory

The same risks to facilities are shared by other buildings within the county. The impacts can include structural failure, damaging debris (trees or limbs), roofs blown off or windows broken by hail or high winds, and loss of building function, such as a damaged home which will no longer be habitable causing residents to seek shelter.

Infrastructure

During a tornado, the types of infrastructure that could be impacted include roadways, utility lines and pipes, railroads, and bridges. Because the county's entire infrastructure is equally vulnerable, it is important to emphasize that many of these structures could become damaged during a tornado. The potential impacts to these structures include broken, failed, or impassable roadways, broken or failed utility lines, such as loss of power or gas to community, and railway failure from broken or impassable tracks. Bridges could fail or become impassable, causing risk to traffic.

GIS Tornado Analysis

2008 Tornado Analysis

For the 2008 MHMP, an F4 tornado was modeled running through the city of Austin in the northeast portion of Scott County. The analysis estimated that 544 buildings (primarily residential) would be damaged with losses totaling $75 million (within the .3 mile buffer zone).

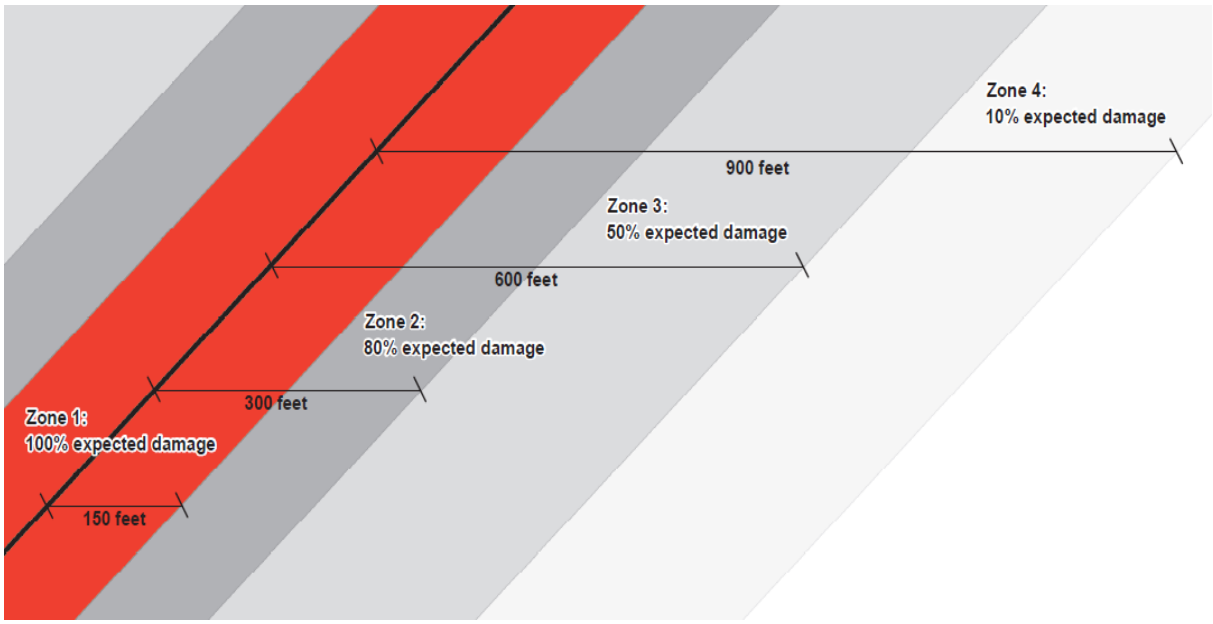
GIS overlay modeling was used to determine the potential impact of a F4 tornado. The analysis used hypothetical tornado paths running across the county from south-west to north-east through Scottsburg. The modeled path ran for 8 miles. The selected widths were modeled after a recreation of the Fujita-Scale guidelines based on conceptual wind speeds, path widths, and path lengths. There is no guarantee that every tornado will fit exactly into one of these five categories. Table 25 depicts tornado damage curves, as well as path widths.

Table 25: Tornado Path Widths and Damage Curves

Enhanced Fujita Scale	Path Width (feet)	Maximum Expected Damage
EF5	2,400	100%
EF4	1,800	100%
EF3	1,200	80%
EF2	600	50%
EF1	300	10%

Within any given tornado path there are degrees of damage. The most intense damage occurs within the center of the damage path with a decreasing amount of damage away from the center of the path. This natural process was modeled in GIS by adding damage zones around the hypothetical tornado path. Figure 15 and Table 26 describe the zone analysis.

Figure 15: F4 Tornado Analysis, Using GIS Buffers



Once the hypothetical route is digitized on a map, several buffers are created to model the damage functions within each zone.

An F4 tornado has four damage zones. Total devastation is likely to occur within 150 feet of the tornado path (the darker-colored Zone 1). The outer buffer is 900 feet from the tornado path (the lightest colored Zone 4), within buildings will be damaged by approximately 10%.

Table 26: F4 Tornado Zones and Damage Curves

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

Tornado Scenario

The hypothetical tornado path is intended to replicate a hypothetical tornado and is depicted in Figure 16. The damage curve buffers for this hypothetical tornado path are shown in Figure 17.

Figure 16: Hypothetical F4 Tornado Path in Scott County

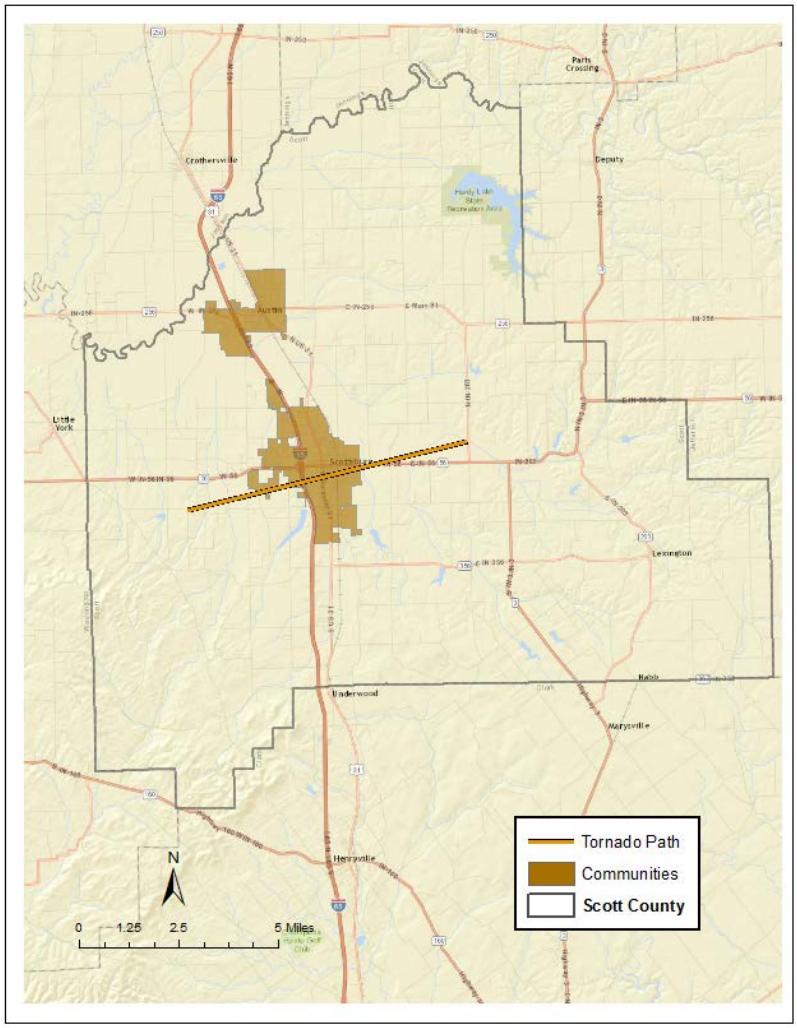
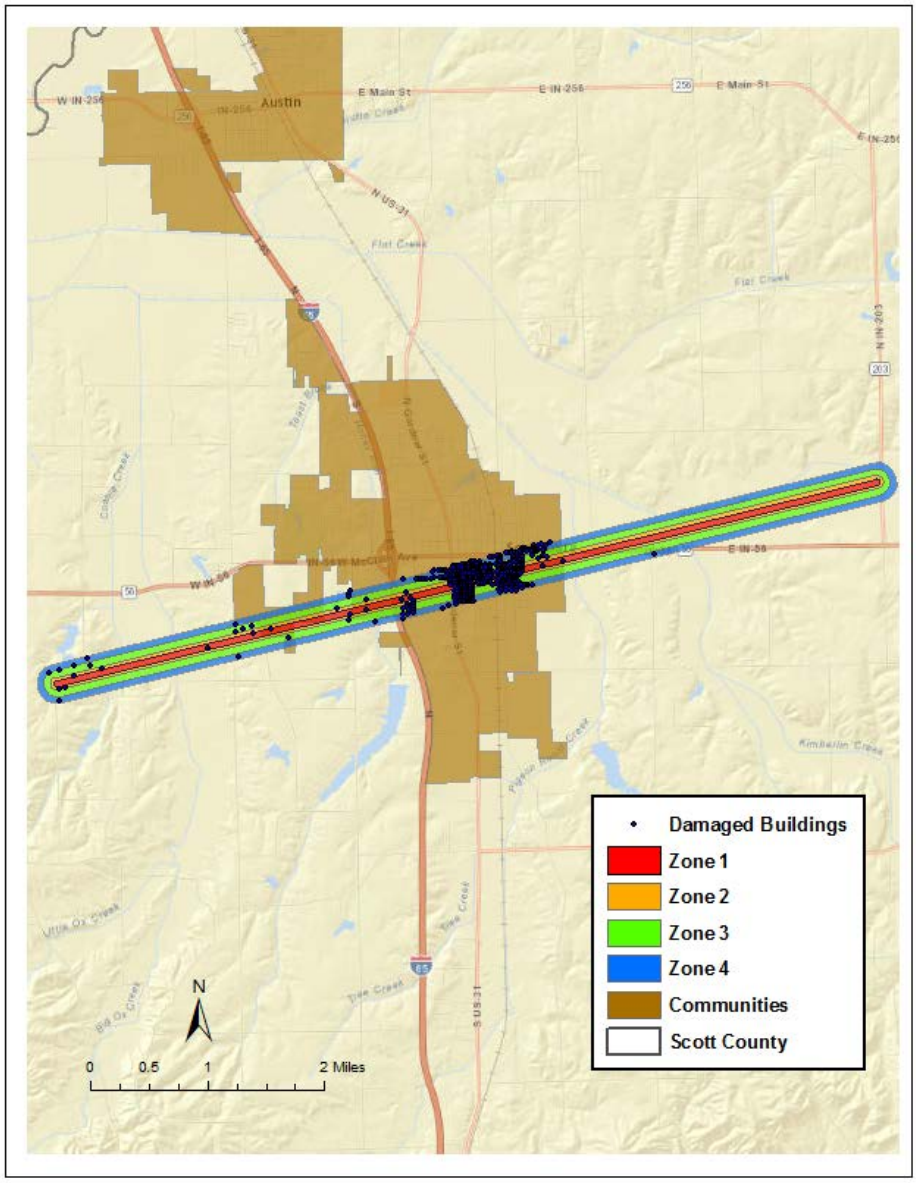


Figure 17: Modeled F4 Tornado Damage Buffers in Scott County



The results of this analysis are depicted in Table 27. The GIS analysis estimates 481 buildings could be damaged. The estimated potential building losses would be $36.2 million. The building losses are an estimate of building costs multiplied by the percentages of damage. The overlay was performed against parcels provided by Scott County (through IDHS and IndianaMap) that were joined with assessor records showing property improvement.

The Assessor records often do not distinguish parcels by occupancy class when the parcels are not taxable; therefore, the total number of buildings and the building replacement costs for government, religious, including non-profit, and education may be underestimated.

Table 27: Estimated Building Losses by Occupancy Type

General Occupancy	Buildings Damaged	Building Losses
Agricultural	5	$418,312
Commercial	77	$7,820,988
Government	5	$3,819,792
Industrial	8	$1,932,894
Religious	9	$2,790,864
Residential	377	$19,394,830
Total	**481**	**$36,177,680**

Essential Facility Damage

There are six essential facilities located within 600 feet of the hypothetical tornado path. The model predicts that two medical care centers, one school, one police station, one emergency care facility and one fire station would experience damage. Although other structures would be impacted, the affected essential facilities are identified in in Table 28.

Table 28: Damaged Essential Facilities

Name
Scott Civil Defense Director
Scottsburg Volunteer Fire Department
Home Care Assistants LLC
Home Helpers Location #58207
Scott County Sheriff
Scottsburg Senior High School

Future Development Trends and Vulnerability to Future Assets/Infrastructure for Tornado Hazard

Due to the unpredictability of this hazard, all buildings and infrastructure in Scott County are at risk of damage including temporary or permanent loss of function. For tornadoes, it is not possible to isolate specific essential or non-essential facilities that would be more or less likely to be located in a tornado impact zone.

5.3.2 Flood Hazard

Flooding is a significant natural hazard throughout the US. The type, magnitude, and severity of flooding are functions of the amount and distribution of precipitation over a given area, the rate at which precipitation infiltrates the ground, the geometry of the catchment, and flow dynamics and conditions in and along the river channel. Floods in Scott County can be classified as one of two types: Flash floods or riverine floods. Both types of floods are common in Indiana.

Flash floods generally 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, flash floods cause damage over relatively localized areas, but they can be quite severe in the areas in which they occur. Urban flooding is a type of flash flood. Urban flooding involves the overflow of storm drain systems and can be the result of inadequate drainage combined with heavy rainfall or rapid snowmelt. Flash floods can occur at any time of the year in Indiana, but they are most common in the spring and summer months.

Riverine floods refer to floods on large rivers at locations with large upstream catchments. Riverine 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 riverine floods than for flash 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 Indiana generally occurs during either the spring or summer.

Previous Occurrences for Flooding

The NCDC database reported 6 flood events in Scott County since 2008. In April 2011, heavy rainfall caused some flooding across the area. This flooding resulted in the closure of US 31.

Table 29: Scott County NCDC-Reported Flood Events (2008-2015)

Location	Date	Type	Deaths	Injuries	Property	Crop
Austin	3/18/2008	Flash Flood	0	0	$0	$0
Austin	4/4/2008	Flood	0	0	$0	$0
Scottsburg	8/4/2009	Flash Flood	0	0	$0	$0
Scottsburg	8/4/2009	Flash Flood	0	0	$0	$0
Scottsburg	10/9/2009	Flash Flood	0	0	$0	$0
Vienna	4/23/2011	Flash Flood	0	0	$0	$0

Geographic Location for Flooding

Most riverine flooding occurs in the spring and is the result of excessive rainfall and/or the combination of rainfall and snowmelt. Severe thunderstorms may cause flooding during the summer or fall, but tend to be localized.

Flash floods, brief heavy flows in small streams of normally dry creek beds, also occur within the county. Flash flooding is typically characterized by high-velocity water, often carrying large amounts of debris. Urban flooding involves the overflow of storm drain systems and is typically the result of inadequate drainage following heavy rainfall or rapid snowmelt.

In Scott County, Austin has the greatest overall exposure to flooding with 139 residential units in the 1% annual chance flood risk area (AKA 100 year floodplain). There are 125 residential units located within the floodplain in Scottsburg.

Hazard Extent for Flooding

The Federal Emergency Management Agency (FEMA) provided the Digital Flood Insurance Rate Map (DFIRM) that identifies studied streams. The Special Flood Hazard Area (SFHA), which represents the modeling of the 1%-annual-chance flood, was used in the analysis to identify specific stream reaches for analysis.

Flood hazard scenarios were modeled using GIS analysis and Hazus-MH. The existing DFIRM maps were used to identify the areas of study. Planning team input and a review of historical information provided additional information on specific flood events.

Risk Identification for Flood Hazard

Based on historical information, the probability of a flood is high, and the potential impact of a flood is negligible; therefore the overall risk of a flood in Scott County is medium-high.

Vulnerability Analysis

2008 Flood Analysis

For the 2008 MHMP, a Hazus-MH analysis of the 100-year flood was modeled. That analysis estimated losses totaling $17.4 million. Data collected for the 2015 plan update resulted in a more accurate estimation of damage, which is described in the following section.

The planning team analyzed vulnerability to flooding with an enhanced Hazus-MH analysis and an analysis of community participation in the National Flood Insurance Program (NFIP). It is important to note that the losses to buildings, particularly essential facilities and state-owned properties, extend beyond physical damage. The economic and social impacts associated with loss of governmental, public safety, and health care infrastructures are far more significant for a community. When assessing the cost of building construction, it is important for government agencies to consider these impacts.

Hazus-MH Analysis

Hazus-MH was used to generate a flood depth grid for a 100-year return period based upon the DFIRM boundary and a 1/3 ArcSecond DEM provided by the Indiana Geological Survey. Hazus-MH was then used to perform a user-defined facility analysis of Scott County. This was accomplished by creating points representing building locations that were generated from IDLGF-provided assessor data linked to parcel data provided by the county (through IDHS and IndianaMap). These data were then analyzed to determine the depth of water at the location of each building point and then related to depth damage curves to determine the building losses for each structure.

Hazus-MH estimates the 1%-annual-chance flood (100-year floodplain) would damage 278 buildings county-wide at a cost of $48.3 million. In the modeled scenario, Scottsburg sustained the most damage with 125 buildings damaged at a cost of $30.5 million. The total estimated numbers and cost of damaged buildings by community are given in Tables 30 and 31. Figure 18 depicts the Scott County buildings that fall within the 1% annual chance flood risk area. Figures 19 through 21 highlight damaged buildings within the floodplain areas in each flood prone jurisdiction.

Table 30: Number of Buildings Damaged by Community and Occupancy

Community	Total Buildings Damaged	Building Occupancy Class						
		Agriculture	Commercial	Education	Govt.	Industrial	Religious	Residential
Scott County Unincorporated	97	23	8	0	0	1	0	65
Austin	55	2	3	0	0	0	0	50
Scottsburg	31	0	6	0	1	4	1	19
Total	183	25	17	0	1	5	1	134

Table 31: Cost of Buildings Damaged by Community and Occupancy

Community	Total Buildings Damaged	Building Occupancy Class						
		Agricultu re	Commercial	Education	Govt.	Industrial	Religious	Residential
Scott County Unincorporated	$4,731,307	$598,983	$259,093	$0	$0	$34,863	$0	$3,838,368
Austin	$2,050,960	$35,543	$77,553	$0	$0	$0	$0	$1,937,864
Scottsburg	$2,121,208	$0	$181,442	$0	$2,828	$464,593	$55,425	$1,416,920
Total	$8,903,475	$634,526	$518,088	$0	$2,828	$499,456	$55,425	$7,193,152

Figure 18: Scott County Buildings in Floodplain (1% Annual Chance Flood)

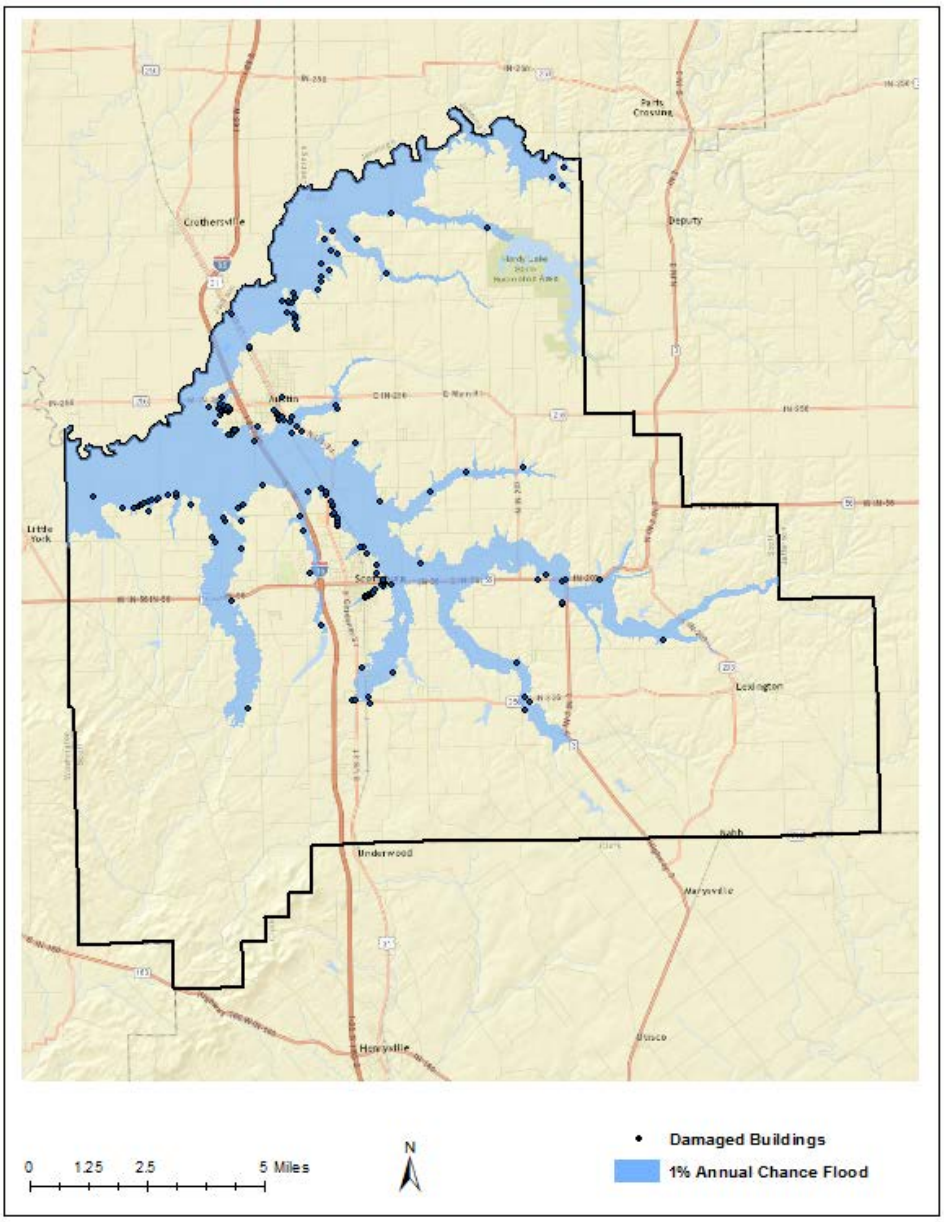


Figure 19: Scottsburg Flood-Prone Areas (1% Annual Chance Flood)

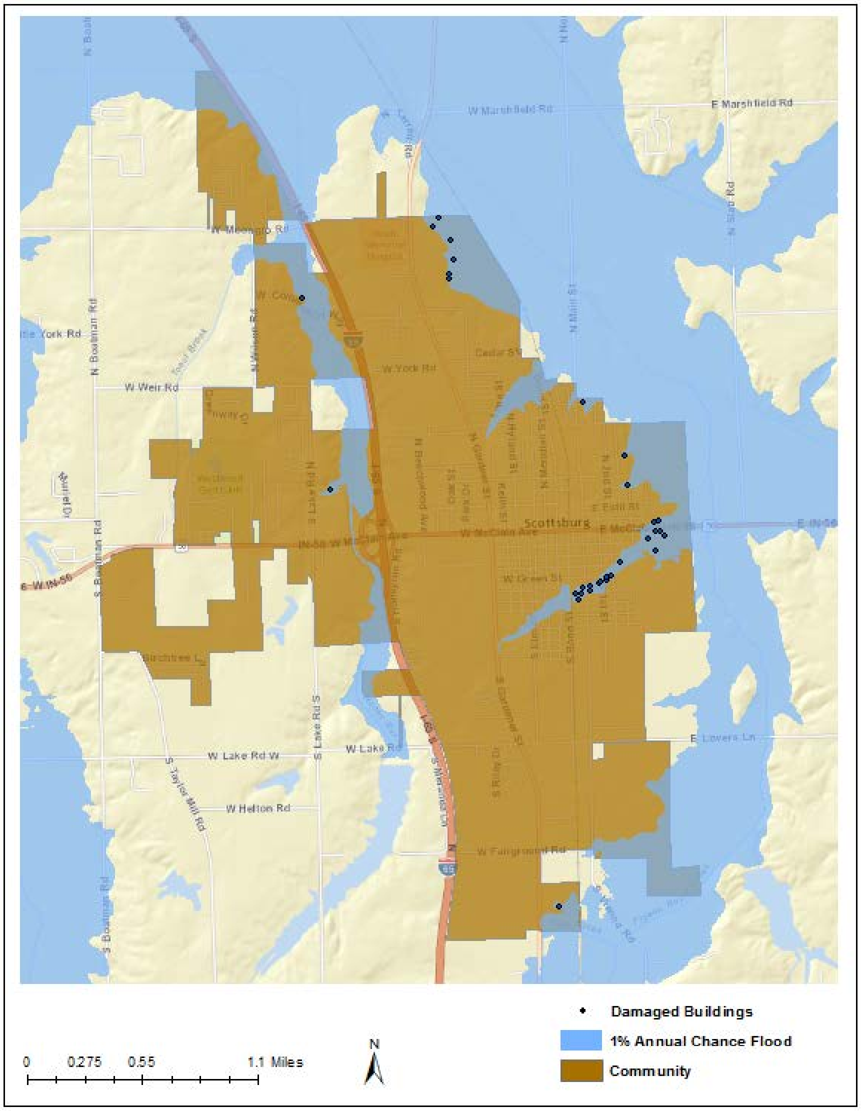


Figure 20: Austin Flood-Prone Areas (1% Annual Chance Flood)

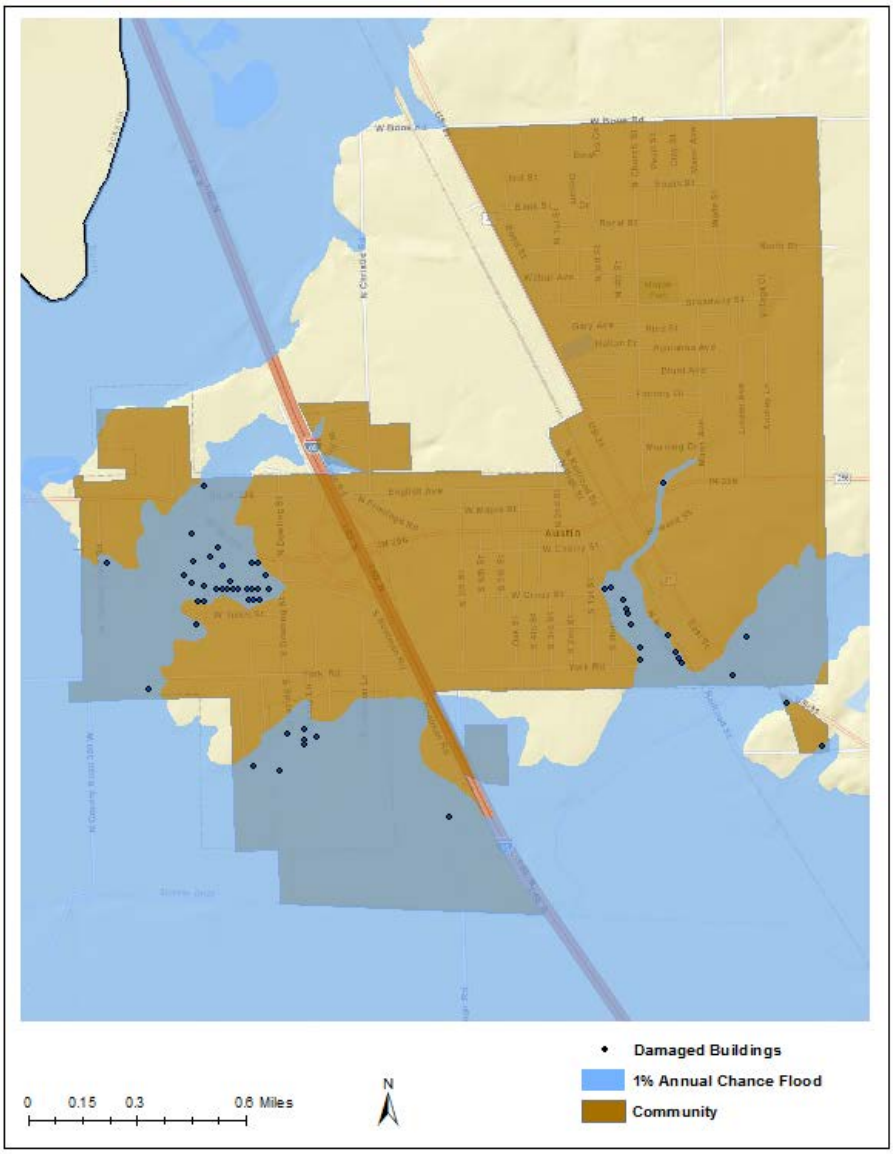
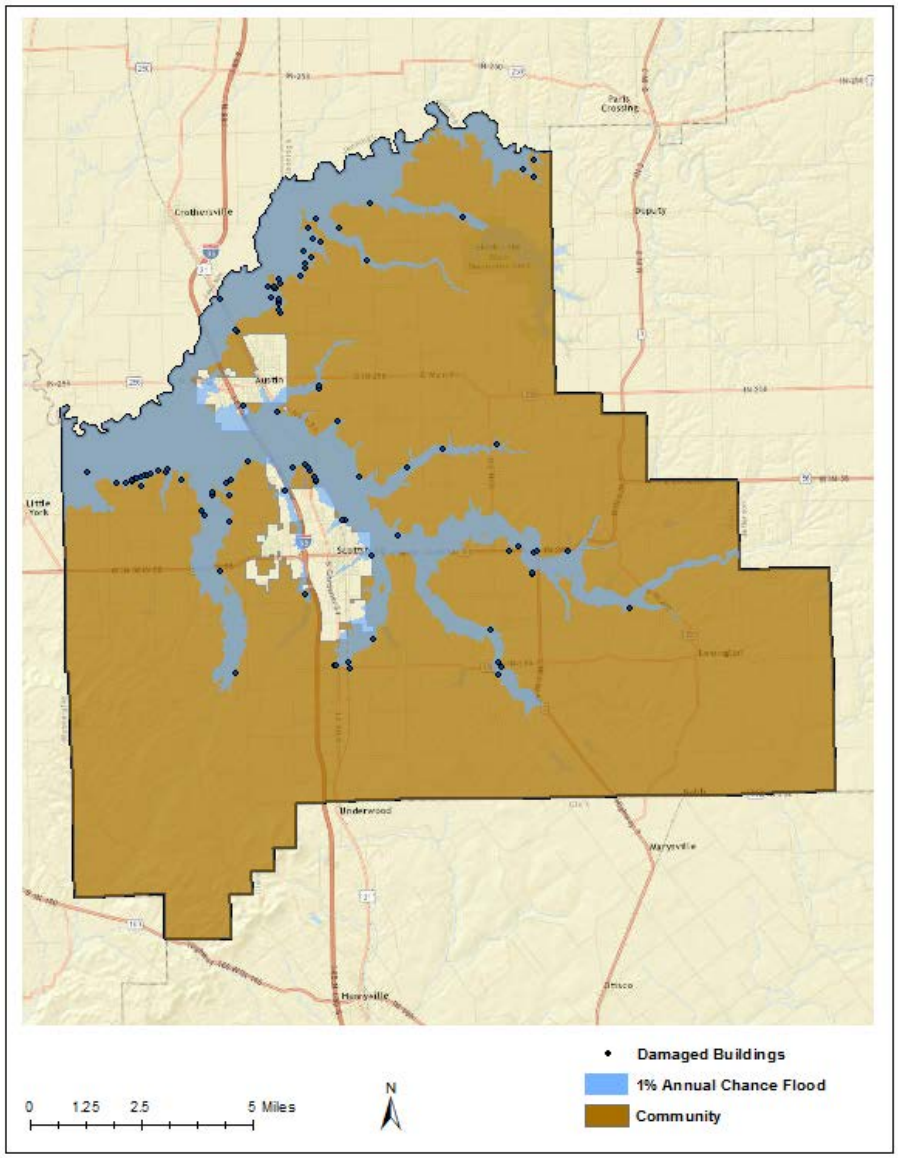


Figure 21: Scott County Unincorporated Flood-Prone Areas (1% Annual Chance Flood)



Overlay Analysis of Essential Facilities

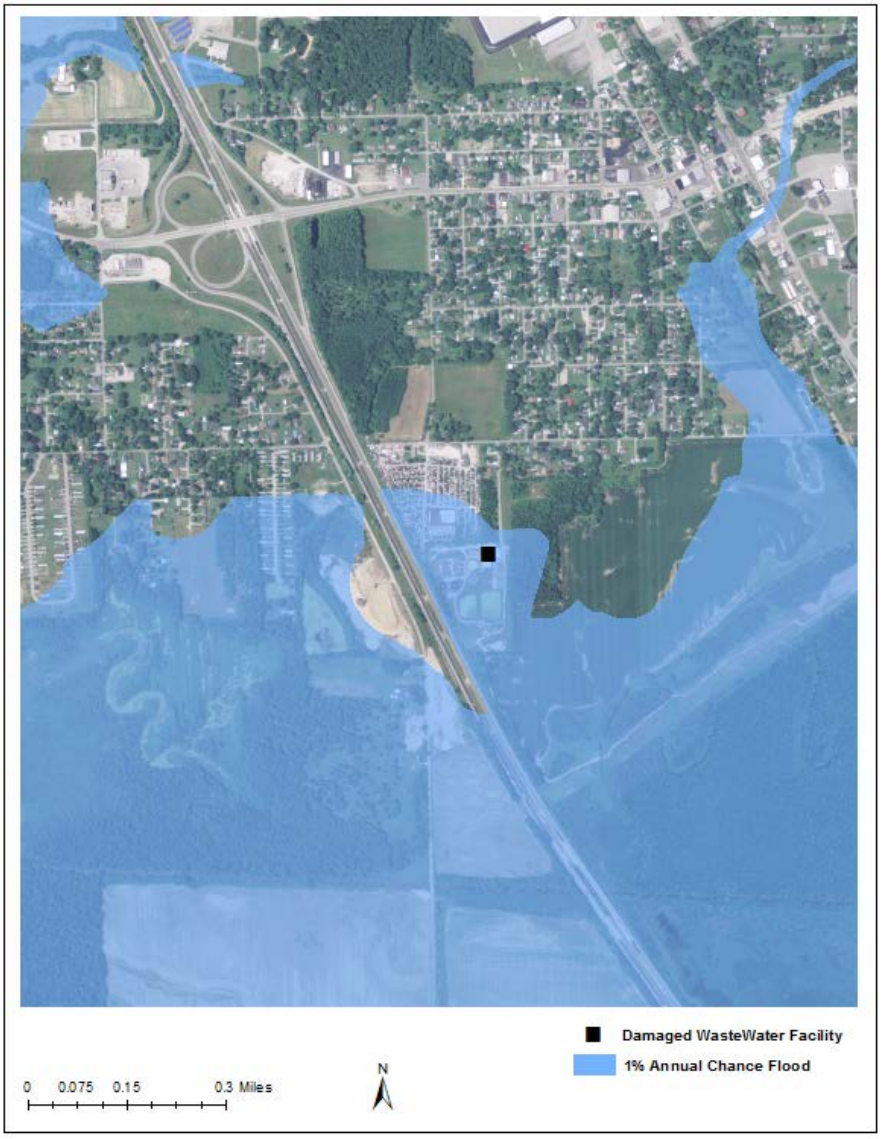
An essential facility will encounter many of the same impacts as other buildings within the flood boundary. These impacts can include structural failure, extensive water damage to the facility and loss of facility functionality (e.g. a damaged police station will no longer be able to serve the community). The overlay analysis estimates that none of the essential facilities in Scott County are located within the 1% Annual Chance floodplain.

Overlay Analysis of Critical Facilities

A critical 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. As an example, a damaged wastewater facility would no longer be able to serve the community.

The results of the overlay analysis indicate that there are 66 highway bridges in Scott County within the 1% annual chance flood area. As shown in Figure 22, there is one wastewater facility located in Austin within the 1% annual chance flood area.

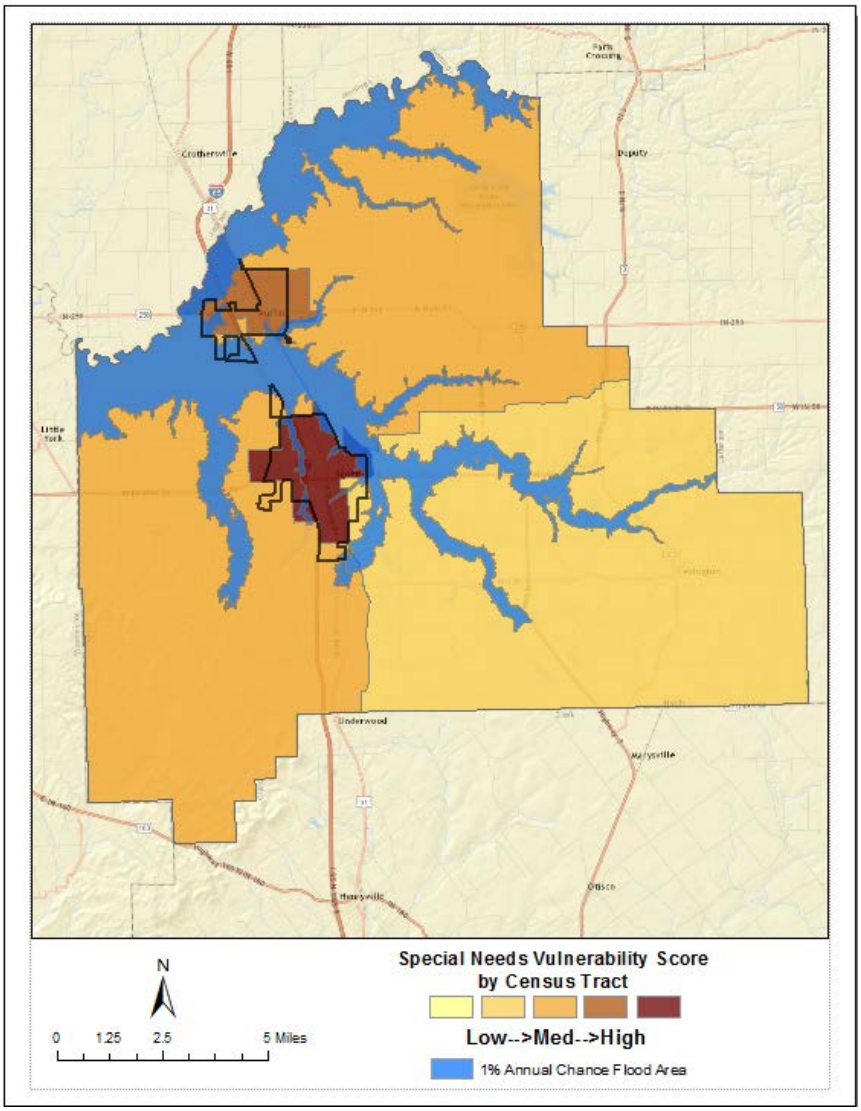
Figure 22: Austin Flood-Prone Critical Facilities



Flood Dangers to Special Needs/Vulnerable Populations

Certain populations require special attention in the event of a disaster. As previously noted, Scottsburg and Austin have a high number of flood prone buildings. These communities are also located in area with a high Special Needs Vulnerability Score. These particular census tracts have a relatively higher proportion of the population with special needs when compared to the rest of the county. The tract which includes Scottsburg has 22.2% of its residents living in poverty and 19.5% age 65 years and over. In addition, 21.4% of its population has a disability. The census tract including Austin also has a high proportion of its population in these groups – 21.4% living in poverty, 12.1% age 65 years and over, and, additionally, 24.4% of its population has a disability. These populations will need particular attention in the event of a disaster. Figure 23 compares the 1% Annual Chance Flood Area with those areas of the county which have a higher Special Needs Vulnerability Scores.

Figure 23: Flood Dangers to Special Needs/Vulnerable Populations



NFIP Analysis

FEMA provides annual funding through the National Flood Insurance Fund (NFIF) to reduce the risk of flood damage to existing buildings and infrastructure. These grants include Flood Mitigation Assistance (FMA), Repetitive Flood Claims (RFC), and the Severe Repetitive Loss (SRC) program. The long-term goal is to significantly reduce or eliminate claims under the NFIP through mitigation activities.

FEMA defines a repetitive loss structure as a structure covered by a contract of flood insurance issued under the National Flood Insurance Program (NFIP), which has suffered flood loss damage on two 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 Indiana State NFIP Coordinator and FEMA Region V were contacted to determine the location of repetitive loss structures. Scott County has no repetitive losses reported.

Table 32: NFIP Claims Data

Community	% of Community in SFHA	Num. Insurance Claims/ Losses	Value of Insurance Claims/Pymts	Num. Repetitive Losses	Repetitive Losses in Dollars
Scott Co. (Unincorporated)	16.04%	3	$33,370	0	-
Austin	20.60%	2	$7,150	0	-
Scottsburg	11.44%	1	$938	0	-

Table 33: Comparison of Building Exposure to Insured Buildings

Community	Buildings in 100-yr Floodplain	Exposure of Buildings in Floodplain	Number of Policies	Insured Value of Policies	Approximate Percent of Buildings Insured	Percent of Exposure Insured
Scott Co.	14	$2,625,245	18	$2,151,900	129%	82%
Austin	139	$15,207,616	5	$888,900	3.6%	5.9%
Scottsburg	125	$30,539,436	20	3,426,500	16%	11.2%

Table 34 identifies each community and the date each participant joined the NFIP.

Table 34: Additional Information on Communities Participating in the NFIP

Community	Participation Date
Scott County	11/01/1995
Austin	09/01/1988
Scottsburg	08/19/1985

The NFIP'S Community Rating System (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. Scott County and its incorporated areas do not participate in the CRS.

Future Development Trends and Vulnerability to Future Assets/Infrastructure for Flooding

The Scott County 2004-2009 Comprehensive Plan discourages new construction in the defined floodplains through the implementation of floodplain ordinances. The Comprehensive Plan also encourages the conservation of natural areas including wetlands and floodplains by limiting development in those areas.

5.3.3 Earthquake Hazard

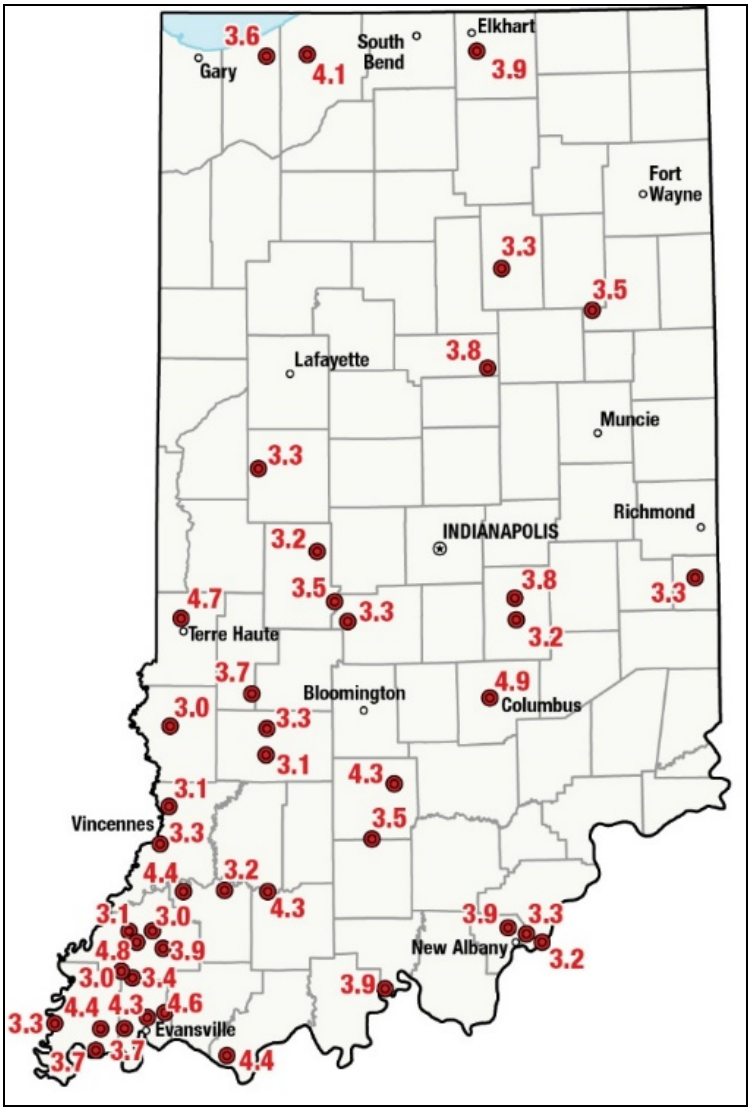
An earthquake is a sudden, rapid shaking of the earth caused by the breaking and shifting of rock beneath the earth's surface. For hundreds of millions of years, the forces of plate tectonics have shaped Earth as the huge plates that form the Earth's surface move slowly over, under, and past each other. Sometimes the movement is gradual. At other times, the plates are locked together, unable to release the accumulating energy. When the accumulated energy grows strong enough, the plates break free, causing the ground to shake.

Ninety-five percent of earthquakes occur at the plate boundaries; however, some earthquakes occur in the middle of plates, as is the case for seismic zones in the Midwestern US. The most seismically active area in the Central US is referred to as the New Madrid Seismic Zone. Scientists have learned that the New Madrid fault system may not be the only fault system in the central US capable of producing damaging earthquakes. The Wabash Valley Fault System in Indiana shows evidence of large earthquakes in its geologic history, and there may be other currently unidentified faults that could produce strong earthquakes. Figure 24 depicts Indiana's historical earthquake epicenters. Tables 35 and 36 provide guidance on how to interpret the modified Mercalli intensity scale.

Ground shaking from strong earthquakes can collapse buildings and bridges; disrupt gas, electric, and communication (e.g. phone, cable, Internet) services; and sometimes trigger landslides, flash floods, and

fires. Buildings with foundations resting on unconsolidated landfill and other unstable soil, and trailers or homes not tied to their foundations are at risk because they can be shaken off their mountings during an earthquake. When an earthquake occurs in a populated area, it may cause deaths, injuries, and extensive property damage.

Figure 24: Indiana Historical Earthquake Epicenters[22]



[22] Indiana Geological Survey

Table 35: 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 motor cars 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 motor cars 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.
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, 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.

Table 36: Earthquake Magnitude vs. Modified Mercalli Intensity Scale

Earthquake Magnitude	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

Previous Occurrences for Earthquake Hazard

At least 43 earthquakes, M3.0 or greater, have occurred in Indiana since 1817. The last such event was a M3.1 centered just north of Vincennes on May 10, 2010. A M3.8 earthquake occurred near Kokomo in December later that same year with approximately 10,390 individuals submitting felt reports to the USGS.

Geographic Location for Earthquake Hazard

The majority of seismic activity in Indiana occurs in the southwestern region of the state. Earthquakes originate just across the boundary in Illinois and can be felt in Indiana. The M5.2 Mt. Carmel event on April 19, 2008 was felt by residents in Indiana, Kentucky, and many more states across the central US.

Hazard Extent for Earthquake Hazard

The extent of an earthquake is countywide. One of the most critical sources of information that is required for accurate assessment of earthquake risk is soils data. Soils along rivers and other bodies of water have higher water tables and higher sand content. As a result, these areas are more susceptible to liquefaction and land shaking. Liquefaction is a phenomenon in which the strength and stiffness of a soil is reduced by earthquake shaking as a result of water filling the space between individual soil particles. This can cause buildings to tilt or sink into the ground, slope failures, lateral spreading, surface subsidence, ground cracking, and sand blows.

Risk Identification for Earthquake Hazard

Based on historical information, the probability of an earthquake is medium, and the potential impact of an earthquake is moderate; therefore the overall risk of an earthquake in Scott County is medium.

Vulnerability Analysis for Earthquake Hazard

This hazard could impact the entire jurisdiction equally; therefore the entire county's population and all buildings are vulnerable to an earthquake and can expect the same impacts within the affected area. To accommodate this risk, this plan will consider all buildings within the county as vulnerable.

Facilities

All facilities are vulnerable to earthquakes. These would encounter many of the same impacts as any other building within the county. These impacts include structural failure and loss of facility functionality, such as a damaged police station would no longer be able to serve the community. Names and locations of essential and critical facilities, as well as community assets, are in Appendix C.

Building Inventory

Impacts similar to those discussed for the facilities can be expected for the other buildings within the county. These impacts include structural failure and loss of building function that 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 could be impacted include roadways, runways, utility lines and pipes, railroads, and bridges. Because an extensive inventory of the infrastructure is not available to this plan, it is important to emphasize that any number of these structures could become damaged in the event of an earthquake. The impacts to these structures include broken, failed, or impassable roadways and runways; broken or failed utility lines, such as loss of power or gas to a community; and railway failure from broken or impassable tracks. Bridges also could fail or become impassable, causing traffic risks and ports could be damaged which would limit the shipment of goods. Typical scenarios are described to gauge the anticipated impacts of earthquakes in the county in terms of numbers and types of buildings and infrastructure.

Hazus-MH Earthquake Analysis

2008 Earthquake Analysis

For the 2008 MHMP, a Hazus-MH analysis of several earthquake scenarios including a 7.1 magnitude earthquake centered in the Wabash Valley, a 5.5 magnitude earthquake with the epicenter in Scott County, a 500-year return period event, and an annualized earthquake loss. Similar to the flood and tornado models, the 2015 analyses revealed more accurate building damages and losses because the quality and completion of data collected was significantly better than in 2008.

The Polis team reviewed existing geological information and recommendations for earthquake scenarios and ran four modeling scenarios—two deterministic, one probabilistic, and an annualized loss.

The deterministic scenarios included a 7.7-moment magnitude epicenter along the New Madrid fault zone and a 7.1-moment magnitude epicenter along the Wabash Valley Fault zone. Shake maps provided by FEMA were used in Hazus-MH to estimate losses for Scott County based on these events.

Additionally, the analysis included a probabilistic scenario. This type of scenario is based on ground-shaking parameters derived from US Geological Survey probabilistic seismic hazard curves. The probabilistic scenario was a 500-year return period scenario. This analysis evaluates the average impacts of a multitude of possible earthquake epicenters with a magnitude that would be typical of that expected for a 500-year return period. These analysis options were chosen because they are useful for prioritization of seismic reduction measures and for simulating mitigation strategies.

Modeling a deterministic scenario requires user input for a variety of parameters. One of the most critical sources of information required for accurate assessment of earthquake risk is soils data.

Fortunately, a National Earthquake Hazards Reduction Program (NEHRP) soil classification map exists for Indiana. NEHRP soil classifications portray the degree of shear-wave amplification that can occur during ground shaking. The Indiana Geological Survey (IGS) supplied the soils map used for the analysis. FEMA provided a map for liquefaction potential that was used in the Hazus-MH analysis.

An earthquake depth of 10.0 kilometers was selected for all deterministic scenarios based on input from IGS. Hazus-MH also requires the user to define an attenuation function unless ground motion maps are supplied. Because Indiana has experienced smaller earthquakes, the decision was made to use the Central Eastern US (CEUS) attenuation function.

The building losses are broken into two categories: 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.

The probabilistic scenario was based on ground-shaking parameters derived from US Geological Survey probabilistic seismic hazard curves. The probabilistic scenario was a 500-year return period scenario. This analysis evaluates the average impacts of a multitude of possible earthquake epicenters with a magnitude that would be typical of that expected for a 500-year return period. These analysis options were chosen because they are useful for prioritization of seismic reduction measures and for simulating mitigation strategies.

Results for 7.7 Magnitude- New Madrid, Kentucky Earthquake Scenario

Hazus estimates that the damages incurred from the 7.7 magnitude New Madrid earthquake scenario would be county-wide in scope.

Building Damages

Hazus estimates that about 232 buildings in Scott County would be at least moderately damaged. This is a very small percentage of the buildings in the county. One building would be damaged beyond repair. The model estimates that the aggregate building related losses would total $6.38 million; 32% of the estimated losses would be related to the business interruption of the region. Residential occupancies would sustain the largest level of loss – over 54% of the total.

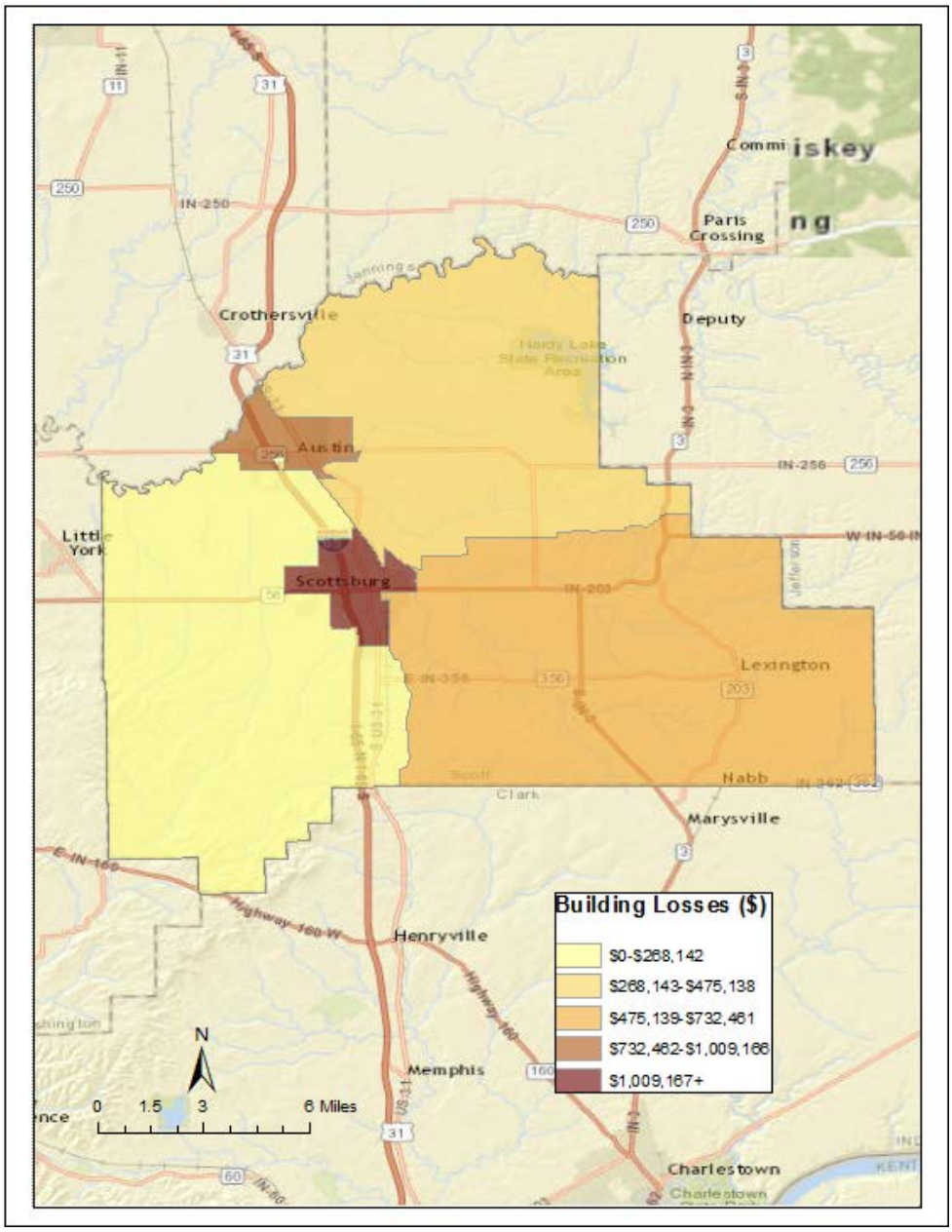
Table 37: New Madrid Scenario -- Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	51	0.51	3	0.52	1	0.69	0	1.15	0	0.78
Commercial	391	3.91	26	4.19	11	4.98	2	8.26	0	6.84
Education	10	0.10	1	0.11	0	0.14	0	0.22	0	0.30
Government	23	0.23	2	0.24	1	0.30	0	0.40	0	0.57
Industrial	147	1.47	9	1.50	4	1.90	1	3.13	0	2.22
Other Residential	2,705	27.04	245	38.72	105	49.61	6	29.51	0	21.17
Religion	54	0.54	4	0.57	1	0.70	0	1.19	0	1.21
Single Family	6,625	66.21	342	54.15	88	41.68	11	56.13	1	66.92
Total	**10,006**		**632**		**211**		**20**		**2**	

Table 38: New Madrid Scenario - Building Losses in Millions of Dollars

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses							
	Wage	0.00	0.03	0.28	0.02	0.03	0.36
	Capital-Related	0.00	0.01	0.23	0.02	0.01	0.26
	Rental	0.12	0.09	0.14	0.02	0.01	0.38
	Relocation	0.43	0.15	0.22	0.13	0.08	1.00
	Subtotal	**0.54**	**0.28**	**0.87**	**0.19**	**0.12**	**2.01**
Capital Stock Losses							
	Structural	0.61	0.19	0.22	0.25	0.08	1.35
	Non_Structural	1.21	0.39	0.33	0.35	0.12	2.40
	Content	0.17	0.04	0.12	0.21	0.04	0.58
	Inventory	0.00	0.00	0.00	0.04	0.00	0.04
	Subtotal	**1.99**	**0.62**	**0.68**	**0.85**	**0.24**	**4.37**
	Total	**2.53**	**0.90**	**1.55**	**1.03**	**0.36**	**6.38**

Figure 25: New Madrid Scenario - Building Losses in Thousands of Dollars



Essential Facility Damage

Before the earthquake, the county would have an estimated 850 medical care facility beds available for use. On the day of the earthquake, the model estimates that 729 beds (86.0%) would be available for use by patients already in these facilities along with those injured by the earthquake. After one week, 93% of the beds would likely be back in service.

Table 39: New Madrid Scenario -- Essential Facility Damage

Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	19	0	0	19
Schools	11	0	0	11
EOCs	1	0	0	1
PoliceStations	3	0	0	3
FireStations	7	0	0	7

Results for 6.8 Magnitude- Mt. Carmel, Illinois Earthquake Scenario

Hazus estimates that the damages incurred from the 6.8 magnitude Mt. Carmel earthquake scenario would be county-wide in scope.

Building Damages

Hazus estimates that about 524 buildings in Scott County would be at least moderately damaged. This is a very small percentage (5%) of the buildings in the county. S5 buildings would be damaged beyond repair.

The model estimates that the aggregate building related losses would total $16.49 million; 29% of the estimated losses would be related to the business interruption of the region. Residential occupancies would sustain the largest level of loss – over 53% of the total.

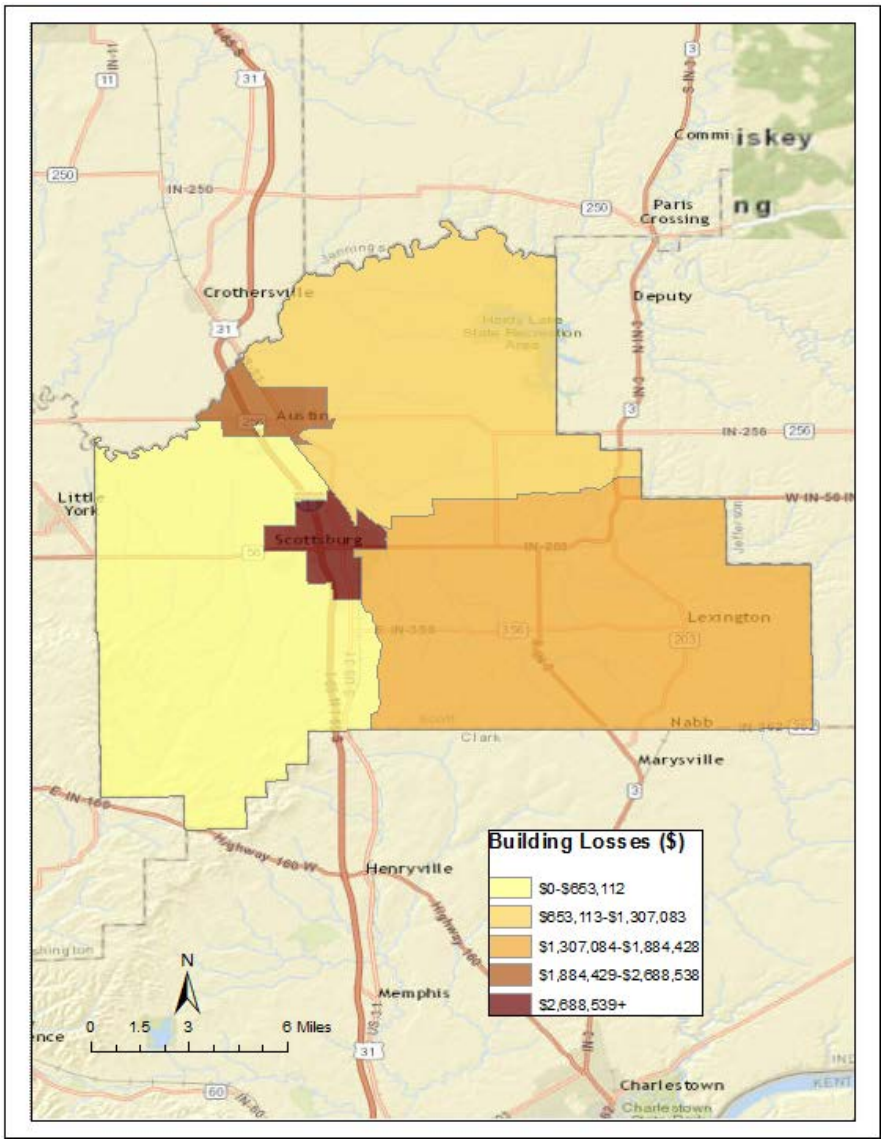
Table 40: Mt. Carmel Scenario -- Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	46	0.50	6	0.51	3	0.72	1	1.19	0	0.82
Commercial	353	3.84	48	4.16	24	5.17	5	8.45	0	6.76
Education	9	0.10	1	0.10	1	0.14	0	0.20	0	0.28
Government	20	0.22	3	0.24	1	0.32	0	0.40	0	0.56
Industrial	133	1.44	17	1.48	9	1.98	2	3.26	0	2.27
Other Residential	2,422	26.37	402	34.68	216	46.85	19	33.17	1	22.35
Religion	49	0.53	6	0.55	3	0.68	1	1.13	0	1.15
Single Family	6,155	67.00	676	58.28	204	44.15	30	52.21	4	65.82
Total	9,186		1,160		462		57		6	

Table 41: Mt. Carmel Scenario - Building Losses in Millions of Dollars

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses							
	Wage	0.00	0.07	0.68	0.06	0.06	0.87
	Capital-Related	0.00	0.03	0.55	0.04	0.01	0.64
	Rental	0.28	0.19	0.34	0.05	0.03	0.90
	Relocation	1.04	0.33	0.54	0.30	0.19	2.41
	Subtotal	**1.32**	**0.63**	**2.11**	**0.46**	**0.29**	**4.82**
Capital Stock Losses							
	Structural	1.44	0.41	0.53	0.60	0.19	3.17
	Non_Structural	3.27	0.96	0.91	1.03	0.31	6.49
	Content	0.59	0.13	0.38	0.66	0.12	1.87
	Inventory	0.00	0.00	0.01	0.12	0.00	0.14
	Subtotal	**5.30**	**1.50**	**1.83**	**2.41**	**0.63**	**11.67**
	Total	**6.63**	**2.13**	**3.94**	**2.87**	**0.92**	**16.49**

Figure 26: Mt. Carmel Scenario - Building Losses in Thousands of Dollars



Essential Facility Damage

Before the earthquake, the county would have an estimated 850 medical care facility beds available for use. On the day of the earthquake, the model estimates that 643 beds (76.0%) would be available for use by patients already in these facilities along with those injured by the earthquake. After one week, 86.0% of the beds would likely be back in service.

Table 42: Mt. Carmel Scenario -- Essential Facility Damage

Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	19	0	0	19
Schools	11	0	0	11
EOCs	1	0	0	1
PoliceStations	3	0	0	3
FireStations	7	0	0	7

Results for Probabilistic 500-Year Earthquake Scenario

The results of the probabilistic 500-year analysis are depicted in Tables 41 through 43 and Figure 28. Hazus-MH estimates that approximately 268 buildings will be at least moderately damaged. This is a very small percentage of the total number of buildings in the region. Two buildings will be damaged beyond repair.

The model estimates that the aggregate building-related losses would total over $8.36 million; 29% of the estimated losses would be related to the business interruption of the region. Residential occupancies would sustain the largest level of loss – 54% of the total.

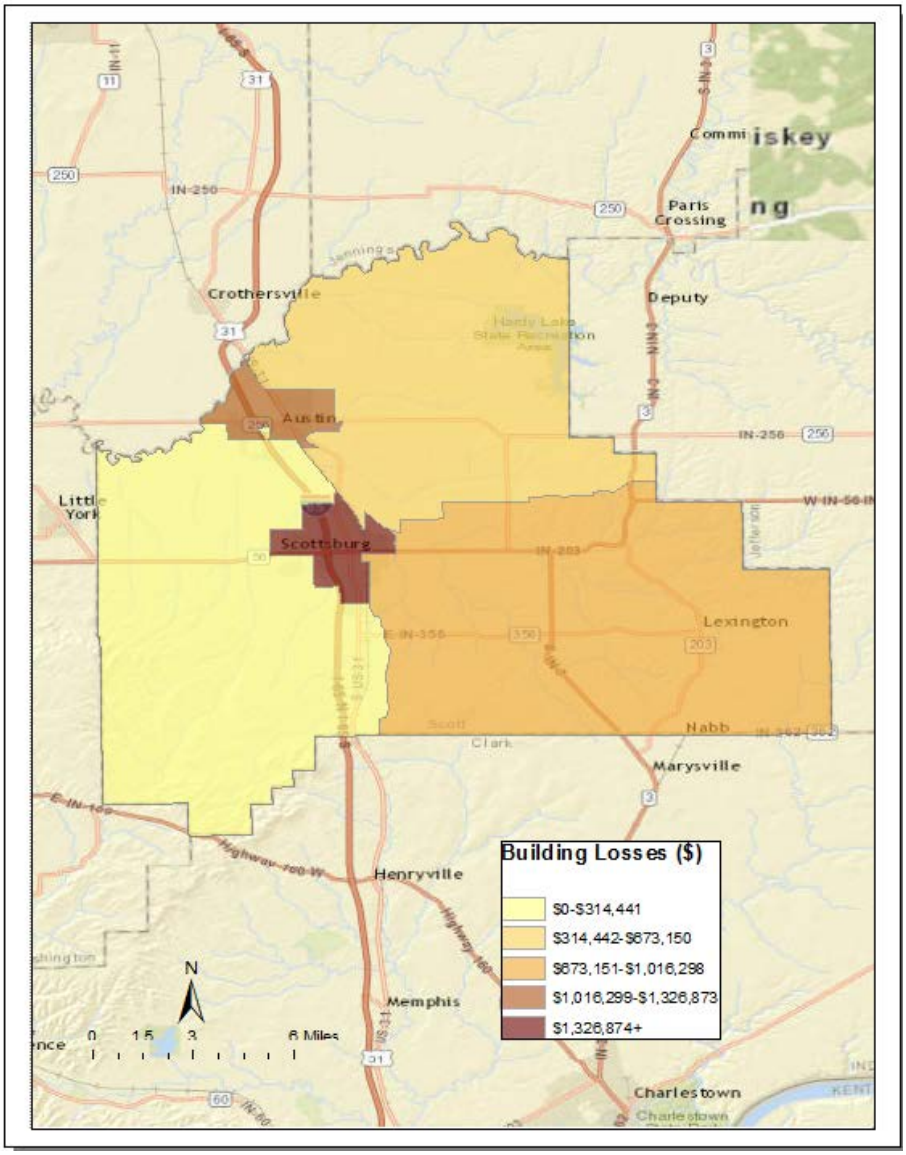
Table 43: Probabilistic 500-Year Scenario-Damage Counts by Building Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	50	0.51	4	0.53	2	0.74	0	1.24	0	0.83
Commercial	385	3.90	30	4.17	12	5.17	2	8.49	0	6.77
Education	10	0.10	1	0.11	0	0.14	0	0.22	0	0.29
Government	23	0.23	2	0.23	1	0.29	0	0.39	0	0.51
Industrial	145	1.46	11	1.49	5	1.97	1	3.23	0	2.20
Other Residential	2,682	27.14	262	36.23	110	45.65	7	27.02	0	19.61
Religion	53	0.53	4	0.58	2	0.73	0	1.21	0	1.22
Single Family	6,533	66.13	410	56.67	109	45.32	14	58.19	2	68.57
Total	9,879		723		241		25		2	

Table 44: Probabilistic 500-Year Scenario-Building Losses in Millions of Dollars

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses							
	Wage	0.00	0.04	0.33	0.03	0.03	0.43
	Capital-Related	0.00	0.02	0.27	0.02	0.01	0.31
	Rental	0.15	0.10	0.17	0.03	0.01	0.46
	Relocation	0.54	0.16	0.26	0.15	0.10	1.21
	Subtotal	**0.68**	**0.31**	**1.04**	**0.22**	**0.15**	**2.41**
Capital Stock Losses							
	Structural	0.77	0.21	0.26	0.29	0.10	1.63
	Non_Structural	1.67	0.48	0.46	0.53	0.16	3.29
	Content	0.31	0.07	0.20	0.34	0.06	0.98
	Inventory	0.00	0.00	0.01	0.06	0.00	0.07
	Subtotal	**2.74**	**0.76**	**0.93**	**1.23**	**0.32**	**5.97**
	Total	**3.42**	**1.07**	**1.97**	**1.45**	**0.47**	**8.38**

Figure 27: Probabilistic 500-Year Scenario-Building Losses in Thousands of Dollars



Essential Facility Damage

Before the earthquake, the analysis estimated that region would have 850 care beds available for use. On the day of the earthquake, the model estimates that 714 care beds (84%) would be available for use by patients already in medical care facilities, as well as those injured by the earthquake. After one week, 92% of the beds would be back in service.

Table 45: Probabilistic 500-Year Scenario - Essential Facility Damage

Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	19	0	0	19
Schools	11	0	0	11
EOCs	1	0	0	1
PoliceStations	3	0	0	3
FireStations	7	0	0	7

Results for Annualized- Earthquake Scenario

The results of the annualized analysis are depicted in Tables 46 through 48 and Figure 28. Hazus-MH estimates that no buildings will be at least moderately damaged. No buildings will be damaged beyond repair.

The model estimates that the aggregate building-related losses would total over $0.11 million; 27% of the estimated losses would be related to the business interruption of the region. Residential occupancies would sustain the largest level of loss – 42% of the total.

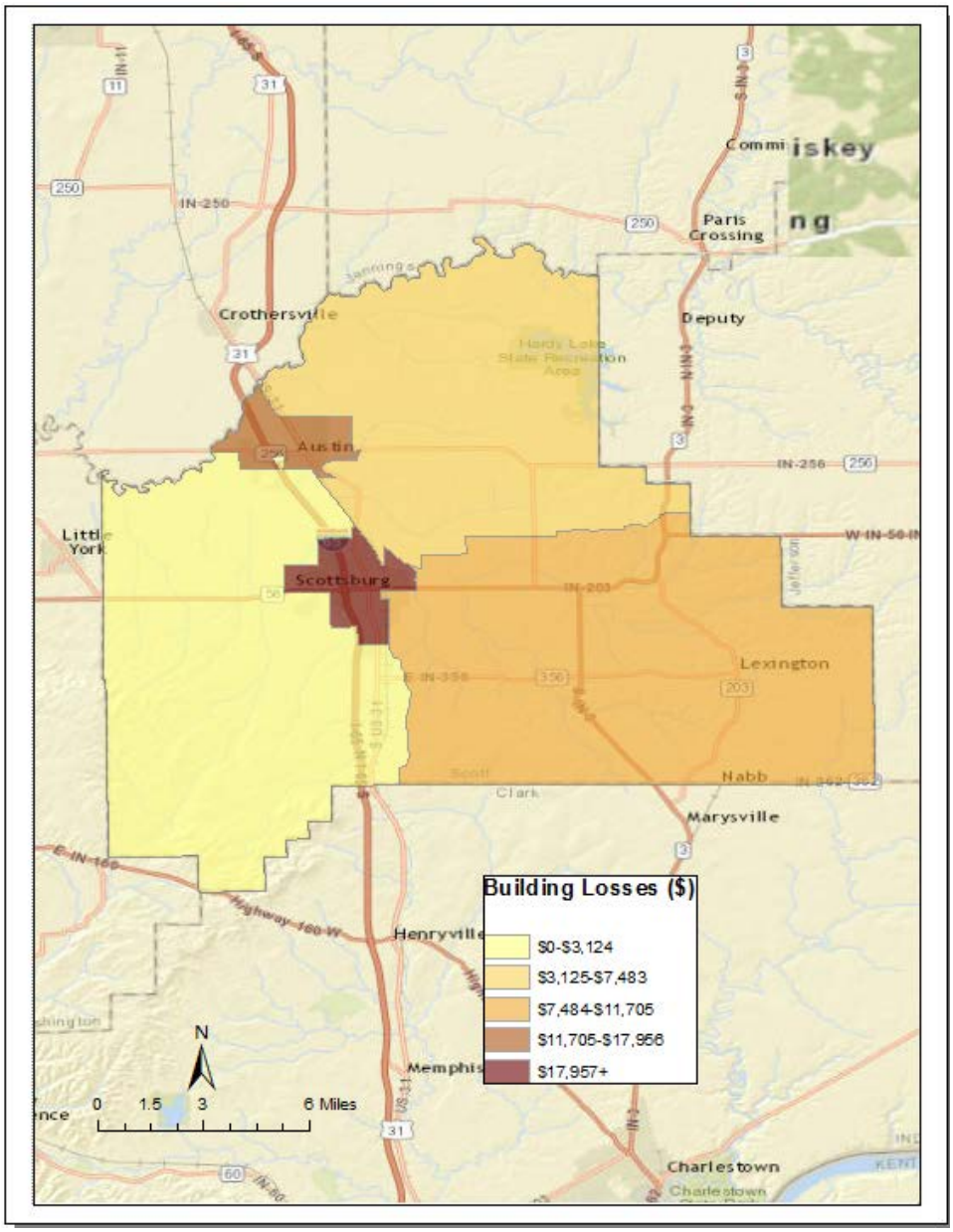
Table 46 Annualized Scenario-Damage Counts by Building Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	20	0.19	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	218	2.10	0	0.00	0	0.00	0	0.00	0	0.00
Education	1	0.01	0	0.00	0	0.00	0	0.00	0	0.00
Government	2	0.02	0	0.00	0	0.00	0	0.00	0	0.00
Industrial	71	0.68	0	0.00	0	0.00	0	0.00	0	0.00
Other Residential	2,993	28.80	0	0.00	0	0.00	0	0.00	0	0.00
Religion	32	0.31	0	0.00	0	0.00	0	0.00	0	0.00
Single Family	7,057	67.89	0	0.00	0	0.00	0	0.00	0	0.00
Total	10,394		0		0		0		0	

Table 47: Annualized Scenario-Building Losses in Millions of Dollars

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses							
	Wage	0.00	0.00	0.01	0.00	0.00	0.01
	Capital-Related	0.00	0.00	0.00	0.00	0.00	0.00
	Rental	0.00	0.00	0.00	0.00	0.00	0.00
	Relocation	0.00	0.00	0.00	0.00	0.00	0.01
	Subtotal	**0.01**	**0.00**	**0.02**	**0.00**	**0.00**	**0.03**
Capital Stock Losses							
	Structural	0.01	0.00	0.00	0.00	0.00	0.02
	Non_Structural	0.01	0.01	0.01	0.01	0.00	0.04
	Content	0.00	0.00	0.00	0.01	0.00	0.01
	Inventory	0.00	0.00	0.00	0.00	0.00	0.00
	Subtotal	**0.02**	**0.01**	**0.02**	**0.02**	**0.00**	**0.08**
	Total	**0.03**	**0.02**	**0.03**	**0.02**	**0.01**	**0.11**

Figure 28: Annualized Scenario-Building Losses in Thousands of Dollars



Essential Facility Damage

Before the earthquake, the analysis estimated that region would have 850 care beds available for use. On the day of the earthquake, the model estimates that 846 care beds (100%) would be available for use by patients already in medical care facilities, as well as those injured by the earthquake. After one week, 100% of the beds would be back in service.

Table 48: Annualized Scenario - Essential Facility Damage

Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	19	0	0	19
Schools	11	0	0	11
EOCs	1	0	0	1
PoliceStations	3	0	0	3
FireStations	7	0	0	7

Future Development Trends and Vulnerability to Future Assets/Infrastructure for Earthquake Hazard

Due to the unpredictability of this hazard, all buildings and infrastructure in Scott County are at risk of damage including temporary or permanent loss of function. For earthquakes, non-reinforced structures are more vulnerable to damages. New development vulnerability will be minimal due to new construction codes coupled with the low earthquake probability.

5.3.4 Severe Thunderstorm Hazard

Severe thunderstorms are defined as thunderstorms with one or more of the following characteristics: strong winds, large damaging hail, or frequent lightning. Severe thunderstorms most frequently occur in Indiana during the spring and summer but can occur any month of the year at any time of day. 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 of diameter 0.75 inches or higher
- Frequent and dangerous lightning
- Wind speeds equal to or greater than 58 miles an hour

Hail

Hail is a product of a strong thunderstorm. Hail usually falls near the center of a storm; however, 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, but hailstones larger than softballs have been reported on rare occasions.

There have been 4 NCDC reported hail events in Scott County since January 1, 2008 and these are outlined in Table 49.

Table 49: Scott County Hail Events Reported to NCDC (2008-May 31, 2015)

Location	Date	Death	Injuries	Property Damage	Crop Damage
Austin	06/04/2008	0	0	$0	$0
Scottsburg	07/17/2010	0	0	$0	$0
Leota	07/17/2010	0	0	$0	$0
Nabb	03/02/2012	0	0	$0	$0

Lightning

Lightning is a discharge of atmospheric electricity from a thunderstorm. It can travel at speeds up to 140,000 mph and reach temperatures approaching 54,000 degrees Fahrenheit. Lightning often is perceived as a minor hazard; in reality, lightning causes damage to many structures and can kill, or severely injure, numerous people in the US. It is estimated that there are 16 million lightning storms worldwide every year.

Although numerous storms have been reported in Scott County in the past five years, there have not been any lightning events recorded by NCDC.

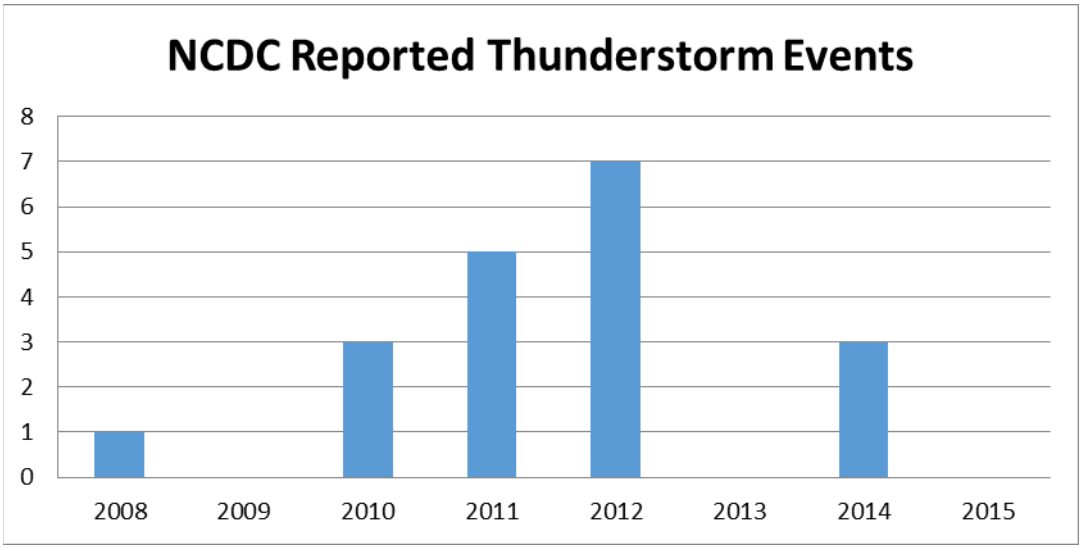
Severe Winds (Straight-Line Winds)

Straight-line winds from thunderstorms are a fairly common occurrence across Indiana. 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 for Thunderstorm Hazards

The NCDC database reported 19 severe storms in Scott County since January 1, 2008 as shown in Figure 29. A severe thunderstorm in early June 2008 caused $20,000 in property damage. Officials reported a barn roof that had been blown off and damages to a corn silo near the county line.

Figure 29: Scott County Storms Events Reported to NCDC (2008-May 31, 2015)



** NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. These estimates, however, 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 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 historical thunderstorms varies in terms of 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 probability of severe thunderstorms is high, and the potential impact is moderate; therefore the overall risk of a severe thunderstorm in Scott County is medium to high.

Vulnerability Analysis for Thunderstorm Hazard

Severe thunderstorms are an equally distributed threat across the entire jurisdiction; therefore the entire county's population and all buildings are vulnerable to a severe thunderstorm, and the same impacts can be expected within the affected area. This plan will therefore consider all buildings within the county as vulnerable.

Facilities

All facilities are vulnerable to severe thunderstorms. These facilities will encounter many of the same impacts as any other building within the jurisdiction including 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, such as a damaged police station would no longer be able to serve the community. Names and locations of critical and essential facilities, as well as community assets, are provided in Appendix C.

Building Inventory

Impacts similar to those discussed for the facilities can be expected for the other buildings within the county. 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, for example, a damaged home will no longer be habitable, causing residents to seek shelter.

Infrastructure

During a severe thunderstorm, the types of infrastructure that could be impacted include roadways, utility lines and pipes, railroads, and bridges. Because the county's entire infrastructure is equally vulnerable, it is important to emphasize that any number of these structures could become damaged during a severe thunderstorm. The impacts to these structures include impassable roadways; broken or failed utility lines, such as loss of power or gas to community; or railway failure from broken or impassable tracks. Bridges could fail or become impassable, causing risk to traffic.

Future Development Trends and Vulnerability to Future Assets/Infrastructure for Thunderstorm Hazard

Due to the unpredictability of this hazard, all new buildings and infrastructure in Scott County are at risk of damage including temporary or permanent loss of function. For hailstorms, thunderstorms, and windstorms, it is not possible to isolate specific essential or non-essential facilities that would be more or less vulnerable to damages. NCDC data for the past ten years reports property damage of $27,000. These totals derive mainly from storms in 2008 and 2012. It should also be noted that property owners often do not report damages caused by the events recorded by the NCDC. Therefore, damages to property should be expected to be significantly higher than the stated range.

5.3.5 Winter Storm Hazard

Severe winter weather consists of various forms of precipitation and strong 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, and death.

Ice (Glazing) and Sleet Storms

Ice or sleet, even in the smallest quantities, can result in hazardous driving conditions and can be a significant cause of property damage. Sleet can be easily identified as frozen raindrops. Sleet does not stick to trees and wires. The most damaging winter storms in Indiana have been ice storms. Ice storms are the result of cold rain that freezes on contact with objects having a temperature below freezing. Ice storms occur when moisture-laden gulf air converges with the northern jet stream, causing strong winds and heavy precipitation. This precipitation takes the form of freezing rain, coating power lines, communication lines, and trees with heavy ice. The winds then will cause the overburdened limbs and cables to snap, leaving large sectors of the population without power, heat, or communication. Falling trees and limbs also can cause building damage during an ice storm. In the past few decades, numerous ice-storm events have occurred in Indiana.

Snowstorms

Significant snowstorms are characterized by the rapid accumulation of snow, often accompanied by high winds, cold temperatures, and low visibility. A blizzard is categorized as a snowstorm with winds of 35 miles an hour or greater and/or visibility of less than one-quarter mile for three or more hours. The strong winds during a blizzard blow about falling and already existing snow, creating poor visibility and impassable roadways. Blizzards have the potential to result in property damage.

Indiana has been struck repeatedly by blizzards. Blizzard conditions not only cause power outages and loss of communication but can also make transportation difficult. The blowing of snow can reduce visibility to less than one-quarter mile, and the resulting disorientation makes even travel by foot dangerous, if not deadly.

Previous Occurrences for Winter-Storm Hazard

Winter weather hazards are prevalent natural events that can be expected to occur every winter in Indiana. The winter of 2013-2014 ranked among the coldest on record throughout the Midwest. The National Weather Service reported this season as “one of the coldest and snowiest winter seasons on record and certainly one of the most extreme winter seasons in several decades.” NOAA’s National Climatic Data Center stated that the period from December 2013 through February 2014 was the 34th coldest for the contiguous 48 states since 1895.

NCDC began recording winter storm events in 1996; therefore, historical NCDC Winter Storm data from prior years is not available. Table 50 documents the NCDC reported winter storm events of the past 25 winters. While there have been relatively few winter storms over this timeframe, it should be noted that precipitation types vary significantly throughout the course of each storm. Each type of precipitation carries its own dangers which are combined when multiple types occur in an individual storm.

Table 50: Scott County Winter Storm Events (January 1, 1996-May 31, 2015)

Date	Type	Deaths	Injuries	Property Damage	Crop Damage
1/6/1996	Heavy Snow	0	0	$0	$0
3/19/1996	Heavy Snow	0	0	$0	$0
2/4/1998	Heavy Snow	0	0	$0	$0
2/15/2003	Ice Storm	0	0	$0	$0
12/22/2004	Heavy Snow	0	0	$0	$0
2/11/2008	Winter Storm	0	0	$0	$0
2/21/2008	Ice Storm	0	0	$0	$0
3/7/2008	Heavy Snow	0	0	$0	$0
1/27/2009	Winter Storm	0	0	$0	$0
1/7/2010	Winter Storm	0	0	$0	$0
2/6/2010	Heavy Snow	0	0	$0	$0
2/9/2010	Heavy Snow	0	0	$0	$0
2/15/2010	Heavy Snow	0	0	$0	$0
12/4/2010	Heavy Snow	0	0	$0	$0
1/20/2011	Heavy Snow	0	0	$0	$0
12/26/2012	Heavy Snow	0	0	$0	$0
12/28/2012	Heavy Snow	0	0	$0	$0
12/6/2013	Heavy Snow	0	0	$0	$0
1/20/2014	Heavy Snow	0	0	$0	$0
2/4/2014	Winter Storm	0	0	$0	$0
2/14/2014	Heavy Snow	0	0	$0	$0
3/2/2014	Winter Storm	0	0	$0	$0
11/16/2014	Heavy Snow	0	0	$0	$0
2/16/2015	Heavy Snow	0	0	$0	$0
3/4/2015	Heavy Snow	0	0	$0	$0

Geographic Location for 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 for 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 jurisdiction.

Risk Identification for Winter-Storm Hazard

Based on historical information, the probability of a winter storm is likely, and the potential impact is limited; therefore the overall risk of a winter storm in Scott County is medium.

Vulnerability Analysis for Winter-Storm Hazard

Winter-storm impacts are distributed equally across the entire jurisdiction; therefore the entire county is vulnerable to a winter storm and can expect the same impacts within the affected area.

Facilities

All facilities are vulnerable to a winter storm. These facilities will encounter many of the same impacts as other buildings within the jurisdiction including 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. Names and locations of critical and essential facilities, as well as community assets are in Appendix C.

Building Inventory

The impacts to other buildings within the county are similar to the damages expected to the 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 infrastructure that could be impacted include roadways, runways, utility lines and pipes, railroads and bridges. Since the county's entire infrastructure is equally vulnerable, it is important to emphasize that any number of these structures could become damaged during a winter storm. Potential impacts include broken gas and electricity lines, damaged utility lines, damaged or impassable roads, runways and railways, and broken water pipes.

Future Development Trends and Vulnerability to Future Assets/Infrastructure for Winter Storm Hazard

Because winter-storm events are regional in nature, future development will be impacted equally across the county. Any new development within the county will remain vulnerable to these events.

5.3.6 Hazardous Materials Release Hazard

The state of Indiana has numerous active transportation lines that run through many of its counties. Active railways transport harmful and volatile substances between our borders every day. The transportation of chemicals and substances along interstate routes is commonplace in Indiana. The rural areas of Indiana have considerable agricultural commerce, creating a demand for fertilizers, herbicides, and pesticides to be transported along rural roads. Finally, Indiana is bordered by two major rivers and Lake Michigan. Barges transport chemicals and substances along these waterways daily. These factors increase the chance of hazardous material releases and spills throughout the State of Indiana.

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 and chemicals, dust, and bombs. An explosion potentially can 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 and law enforcement, search and rescue, and hazardous materials units.

Previous Occurrences for Hazardous Materials Hazard

Scott 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. However, there have been minor releases that have put local firefighters, hazardous materials teams, emergency management, and local law enforcement into action to try to stabilize these incidents and prevent or lessen harm to Scott County residents.

Geographic Location for Hazardous Materials Hazard

The hazardous material release hazards are countywide and primarily are associated with the transport of materials by highway and/or railroad. US-31 and Interstate 65 runs north and south through the middle of Scott County passing near the communities of Scottsburg, Austin, and Vienna. SR-56, SR-256, and SR-356 run east and west through the county as well.

There is one major rail line running through the county. Louisville and Indiana Railroad Co. runs from the Indiana and Kentucky state line through Scottsburg and Austin in the central part of the county.

Hazard Extent for Hazardous Materials Hazard

The extent of the hazardous material (referred to as hazmat) hazard varies in terms of the quantity of material being transported as well as the specific content of the container.

Risk Identification for Hazardous Materials Release

Based on historical information, the probability of a hazardous materials release is medium, and the potential impact is critical; therefore the overall risk of a hazardous materials release in Scott County is medium.

Vulnerability Analysis for Hazardous Materials

Hazardous material impacts are an equally distributed threat across the entire jurisdiction; therefore the entire county is vulnerable to a hazardous material release and can expect the same impacts within the affected area. The main concern during a release or spill is the population affected. This plan will therefore consider all buildings located within the county as vulnerable.

Facilities

All facilities within the county are at risk. These facilities will encounter many of the same impacts as any other building within the jurisdiction including structural failure due to fire or explosion and loss of function of the facility, for example a damaged or chemically-contaminated police station will no longer be able to serve the community. Names and locations of critical and essential facilities, as well as community assets are in Appendix C.

Infrastructure Components

During a hazardous material release, the types of infrastructure that could be impacted include roadways, utility lines/pipes, railroads and bridges. 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 potentially can cause death, injury, and property damage. In addition, a fire routinely follows an explosion, which may cause further damage and inhibit emergency response.

GIS Hazardous Materials Release Analysis

2008 Hazmat Analysis

For the 2008, a chlorine release just South of Scottsburg near I-65 was modeled. That analysis estimated that 1,610 buildings would be impacted at a potential loss of over $200 million. Data collected for the 2015 plan update resulted in a more accurate estimation of damage, which is described in the following section.

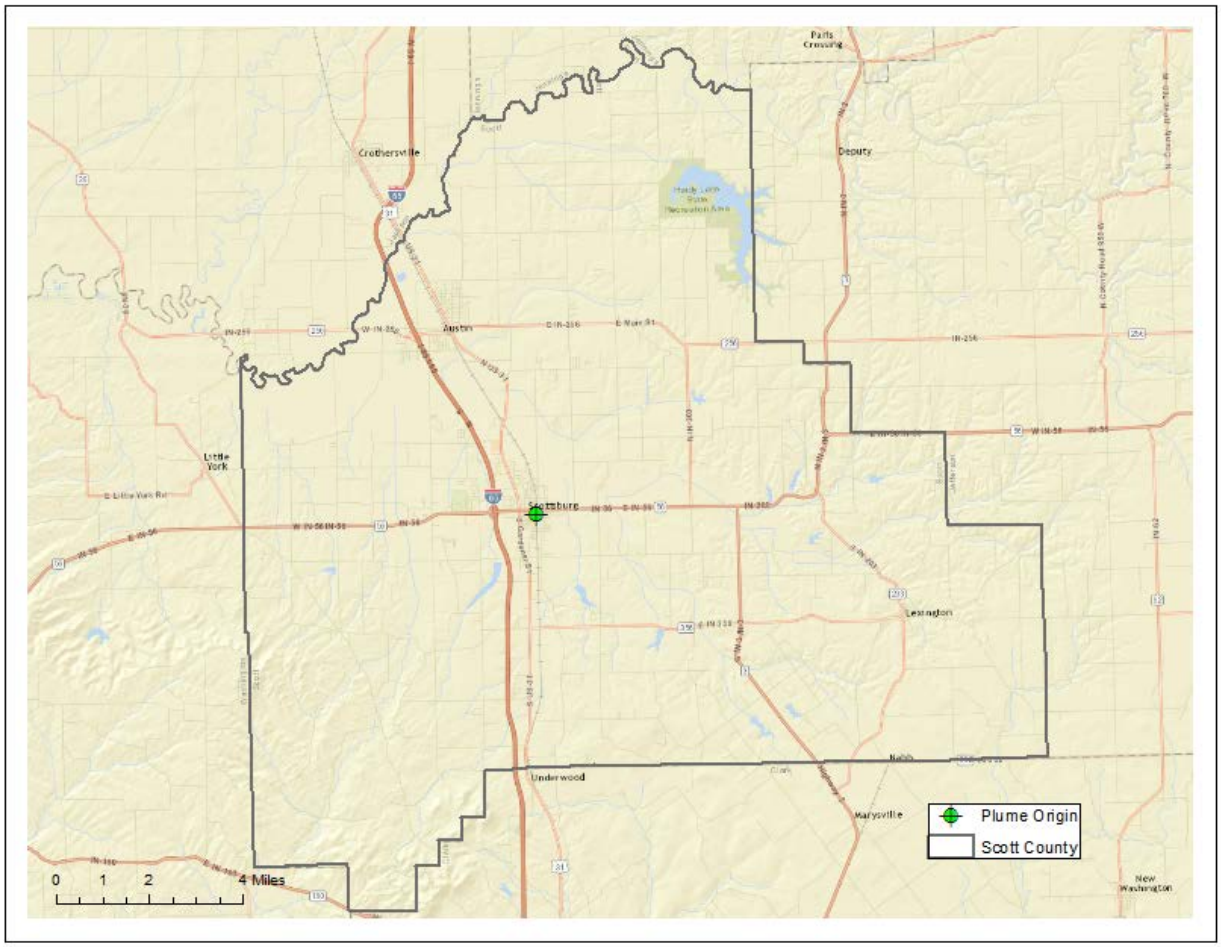
The EPA's ALOHA (Areal Locations of Hazardous Atmospheres) model was utilized to assess the area of impact for a chlorine release on just south of I-65 near Scottsburg.

Chlorine is a greenish yellow gas with a pungent suffocating odor. The gas liquefies at -35°C and room pressure or will liquefy from pressure applied at room temperature. Contact with unconfined liquid

chlorine can cause frostbite from evaporative cooling. Chlorine does not burn, but, like oxygen, supports combustion. The toxic gas can have adverse health effects from either long-term inhalation of low concentrations of vapors or short-term inhalation of high concentrations. Chlorine vapors are much heavier than air and tend to settle in low areas. Chlorine is commonly used to purify water, bleach wood pulp, and make other chemicals

ALOHA is a computer program designed especially for use by people responding to chemical accidents, as well as for emergency planning and training. Chlorine is a common chemical used in industrial operations and can be found in either liquid or gas form. For this scenario, moderate atmospheric and climatic conditions with a slight breeze from the north were assumed. The target area was chosen due to its proximity to densely populated areas. The geographic area covered in this hypothetical analysis is depicted in Figure 30.

Figure 30: Location of Chemical Release



The ALOHA atmospheric modeling parameters, depicted in Figure 31, were based upon the actual conditions at the location when the model was run including a northern wind speed of 7 mph. The temperature was 77.6°F with 56% humidity and clear skies. The modeled source of the chemical spill

was a tanker with a diameter of 8 feet and a length of 33 feet (12,408 gallons). The model incorporated a tank that was 100% full with the chlorine in its liquid state at the time of its release.

This modeled release was based on a leak from 2.5 feet-diameter hole. According to the ALOHA parameters, approximately 4,390 pounds of material would be released per minute.

Figure 31: ALOHA Plume Modeling Parameters

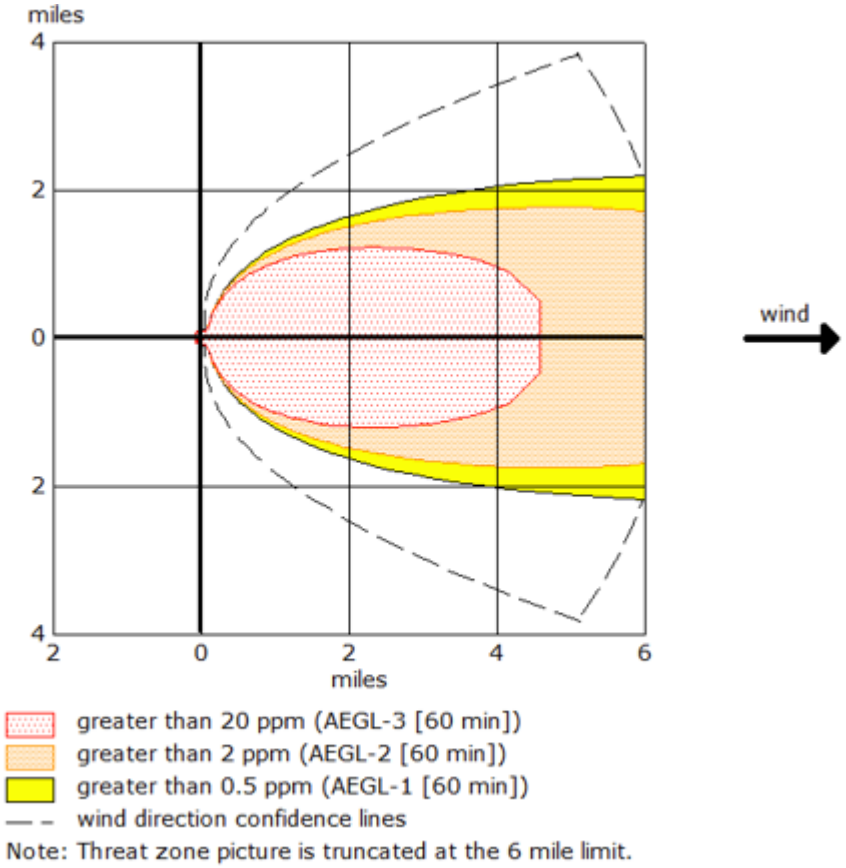
```
SITE DATA:
  Location: SCOTTSBURG, INDIANA
  Building Air Exchanges Per Hour: 0.54 (sheltered single storied)
  Time: September 24, 2015  1249 hours EST (using computer's clock)

CHEMICAL DATA:
  Chemical Name: CHLORINE                 Molecular Weight: 70.91 g/mol
  AEGL-1 (60 min): 0.5 ppm   AEGL-2 (60 min): 2 ppm   AEGL-3 (60 min): 20 ppm
  IDLH: 10 ppm
  Ambient Boiling Point: -30.0° 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: 7 miles/hour from N at 3 meters
  Ground Roughness: open country          Cloud Cover: 0 tenths
  Air Temperature: 77.6° F                Stability Class: C
  No Inversion Height                     Relative Humidity: 56%

SOURCE STRENGTH:
  Leak from hole in horizontal cylindrical tank
  Non-flammable chemical is escaping from tank
  Tank Diameter: 8 feet                   Tank Length: 33 feet
  Tank Volume: 12,408 gallons
  Tank contains liquid                    Internal Temperature: 77.6° F
  Chemical Mass in Tank: 72.1 tons        Tank is 100% full
  Circular Opening Diameter: 2.5 feet
  Opening is 12 inches from tank bottom
  Release Duration: 2 minutes
  Max Average Sustained Release Rate: 144,000 pounds/min
     (averaged over a minute or more)
  Total Amount Released: 144,200 pounds
  Note: The chemical escaped as a mixture of gas and aerosol (two phase flow).

THREAT ZONE:
  Model Run: Heavy Gas
  Red    : 4.6 miles --- (20 ppm = AEGL-3 [60 min])
  Orange: greater than 6 miles --- (2 ppm = AEGL-2 [60 min])
  Yellow: greater than 6 miles --- (0.5 ppm = AEGL-1 [60 min])
```

Acute Exposure Guideline Levels (AEGLs) are intended to describe the health effects on humans due to once-in-a-lifetime or rare exposure to airborne chemicals. The National Advisory Committee for AEGLs is developing these guidelines to help both national and local authorities, as well as private companies, deal with emergencies involving spills or other catastrophic exposures.

- AEGL 1: Above this airborne concentration of a substance, it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic non-sensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure.
- AEGL 2: Above this airborne concentration of a substance, 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: Above this airborne concentration of a substance, it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death.

According to the ALOHA parameters, approximately 2,400 pounds of material would be released per second. The image in Figure 32 depicts the plume footprint generated by ALOHA.

Figure 32: Plume Footprint Generated by ALOHA

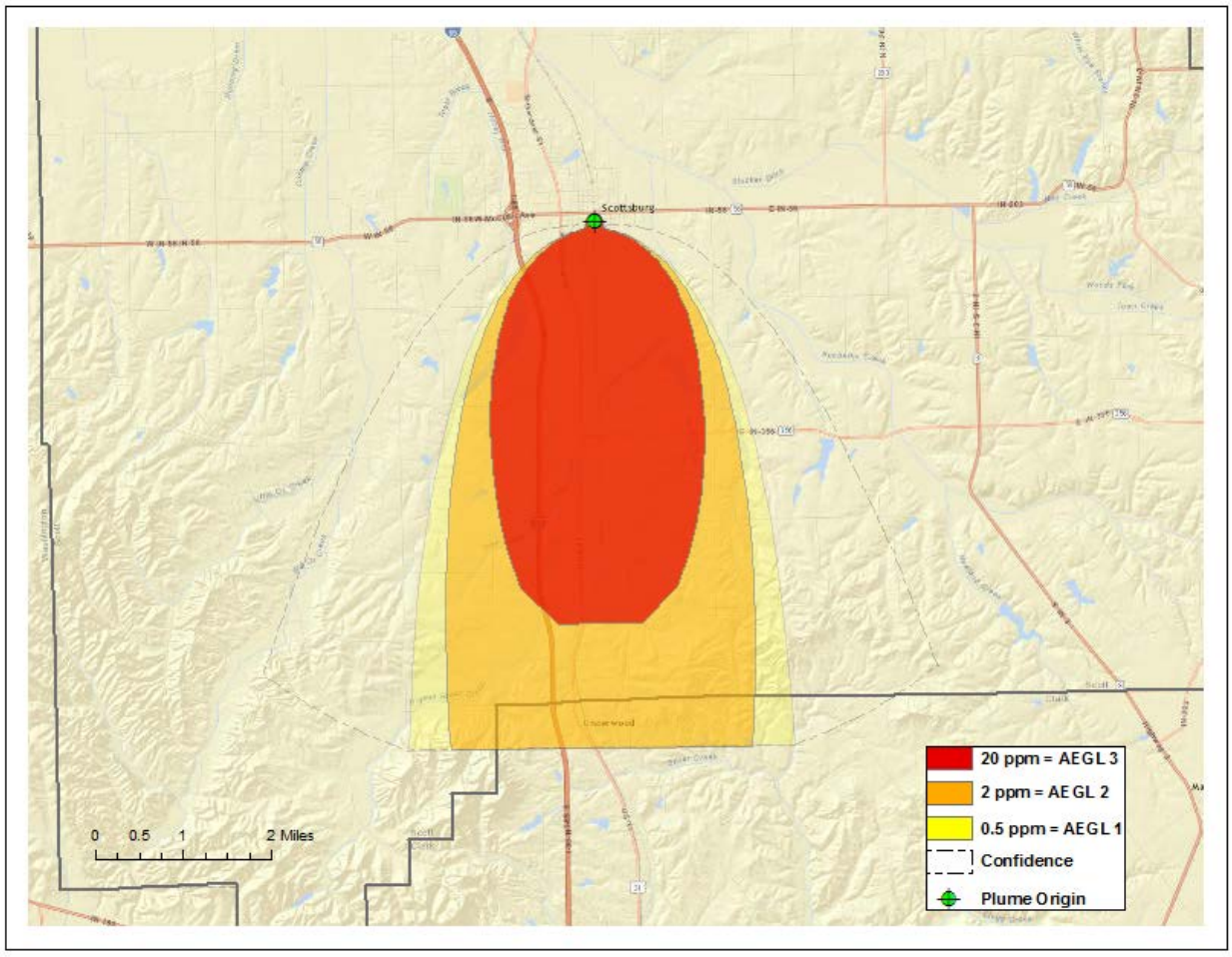


As the substance moves away from the source, the level of substance concentration decreases. Each color-coded area depicts a level of concentration measured in parts per million (ppm). For the purpose of clarification, this report will designate each level of concentration as a specific zone. The zones are as follows:

- **Zone 1** (AEGL-3): The red buffer (>=20 ppm) extends approximately 4 miles from the point of release after one hour.
- **Zone 2** (AEGL-2): The orange buffer (>=2 ppm) extends more than 6 miles from the point of release after one hour.
- **Zone 3** (AEGL-1): The yellow buffer (>=0.5 ppm) extends more than 6 miles from the point of release after one hour.
- **Confidence Lines**: The dashed lines depict the level of confidence in which the exposure zones will be contained. The ALOHA model is 95% confident that the release will stay within this boundary.

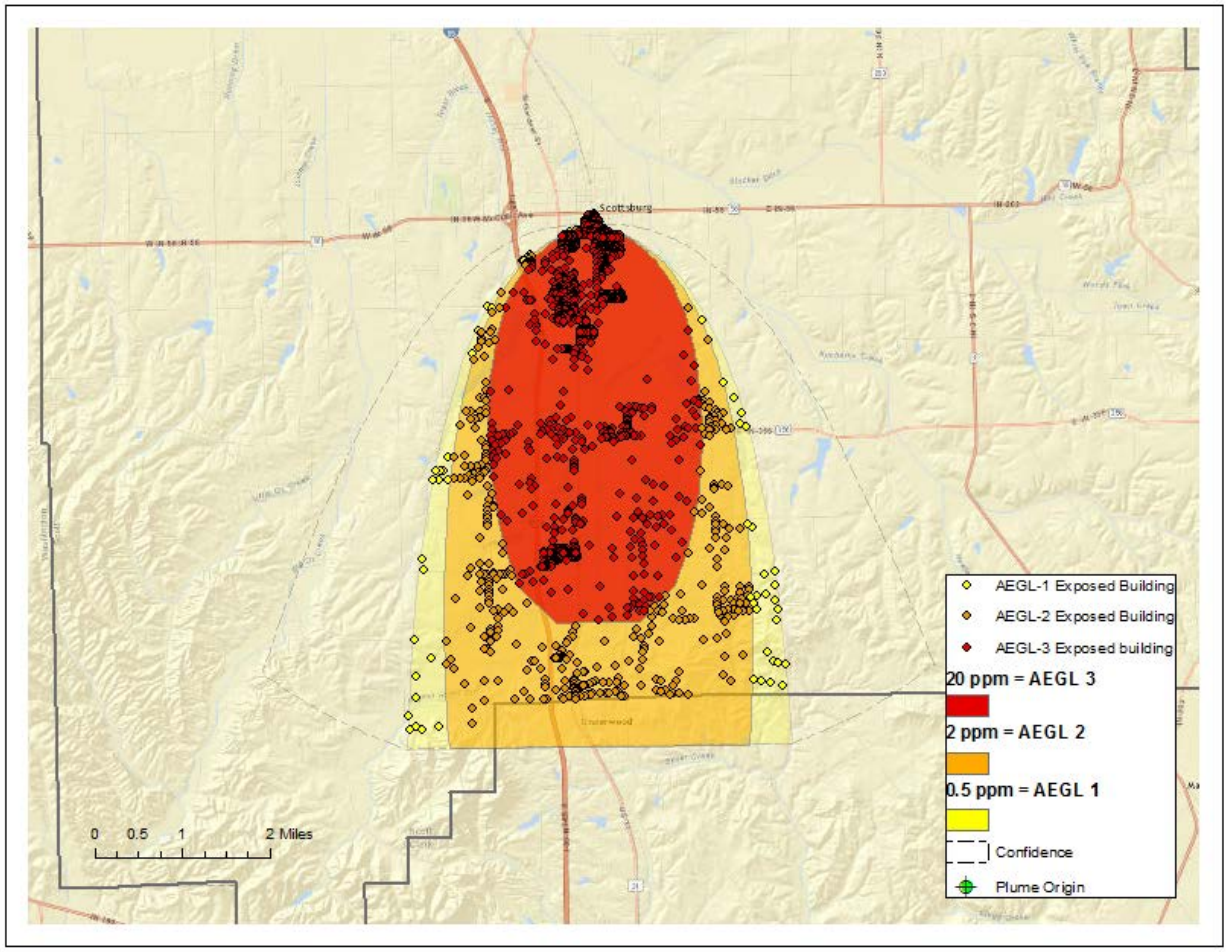
The image in Figure 33 depicts the plume footprint generated by ALOHA. The modeling program, however, does not account for terrain. In portions of southern Indiana, the terrain is very hilly. Because chlorine vapor is a very heavy gas, the vapor cloud will follow the contours of the land rather than flowing over the hills as depicted below.

Figure 33: ALOHA Plume Footprint Overlaid in ArcGIS



The Scott County Building Inventory was added to ArcMap and overlaid with the plume footprint. The Building Inventory was then intersected with each of the four footprint areas to classify each point based upon the plume footprint in which it is located. Figure 34 depicts the Scott County Building Inventory after the intersect process.

Figure 34: Scott County Building Inventory Classified By Plume Footprint



Results

By summing the building inventory within all AEGL zones (Zone 1: 0.5 ppm, Zone 2: 2 ppm, and Zone 3: 20 ppm); the GIS overlay analysis predicts that as many as 1,374 buildings and 3,435 people could be exposed. The population is estimated based on 2.5 people per residence within Scott County. The plume extends in to the next county; however, the results of the analysis are based on the population affected within Scott County.

Building Inventory Exposure

The results of the analysis against the Building Inventory counts are depicted in Tables 50 through 52. Table 51 summarizes the results of the chemical spill by combining all AEGL zones.

Table 51: Estimated Exposure for all AEGL Zones (all ppm)

Occupancy	Population	Building Counts	Building Exposure
Agriculture	0	138	$19,831,949
Commercial	0	70	$18,163,188
Education	0	0	$0
Government	0	4	$565,890
Industrial	0	30	$33,414,724
Religious	0	13	$5,431,550
Residential	2,798	1,119	$120,230,479
Total	**2,798**	**1,374**	**$197,637,780**

Tables 52 through 54 summarize the results of the chemical spill for each zone separately. Values represent only those portions of each zone that are not occupied by other zones.

Table 52: Estimated Exposure for Zone 3 (20 ppm)

Occupancy	Population	Building Counts	Building Exposure
Agriculture	0	58	$8,565,996
Commercial	0	67	$17,874,742
Education	0	0	$0
Government	0	4	$565,890
Industrial	0	28	$32,618,794
Religious	0	12	$5,157,600
Residential	2,010	804	$82,843,345
Total	**2,010**	**973**	**$147,626,367**

Table 53: Estimated Exposure for Zone 2 (2 ppm)

Occupancy	Population	Building Counts	Building Exposure
Agriculture	0	60	$8,231,293
Commercial	0	3	$288,446
Education	0	0	$0
Government	0	0	$0
Industrial	0	2	$795,930
Religious	0	1	$273,950
Residential	700	280	$33,295,153
Total	**700**	**346**	**$42,884,772**

Table 54: Estimated Exposure for Zone 1 (0.5 ppm)

Occupancy	Population	Building Counts	Building Exposure
Agriculture	0	20	$3,034,660
Commercial	0	0	$0
Education	0	0	$0
Government	0	0	$0
Industrial	0	0	$0
Religious	0	0	$0
Residential	88	35	$4,091,981
Total	**88**	**55**	**$7,126,641**

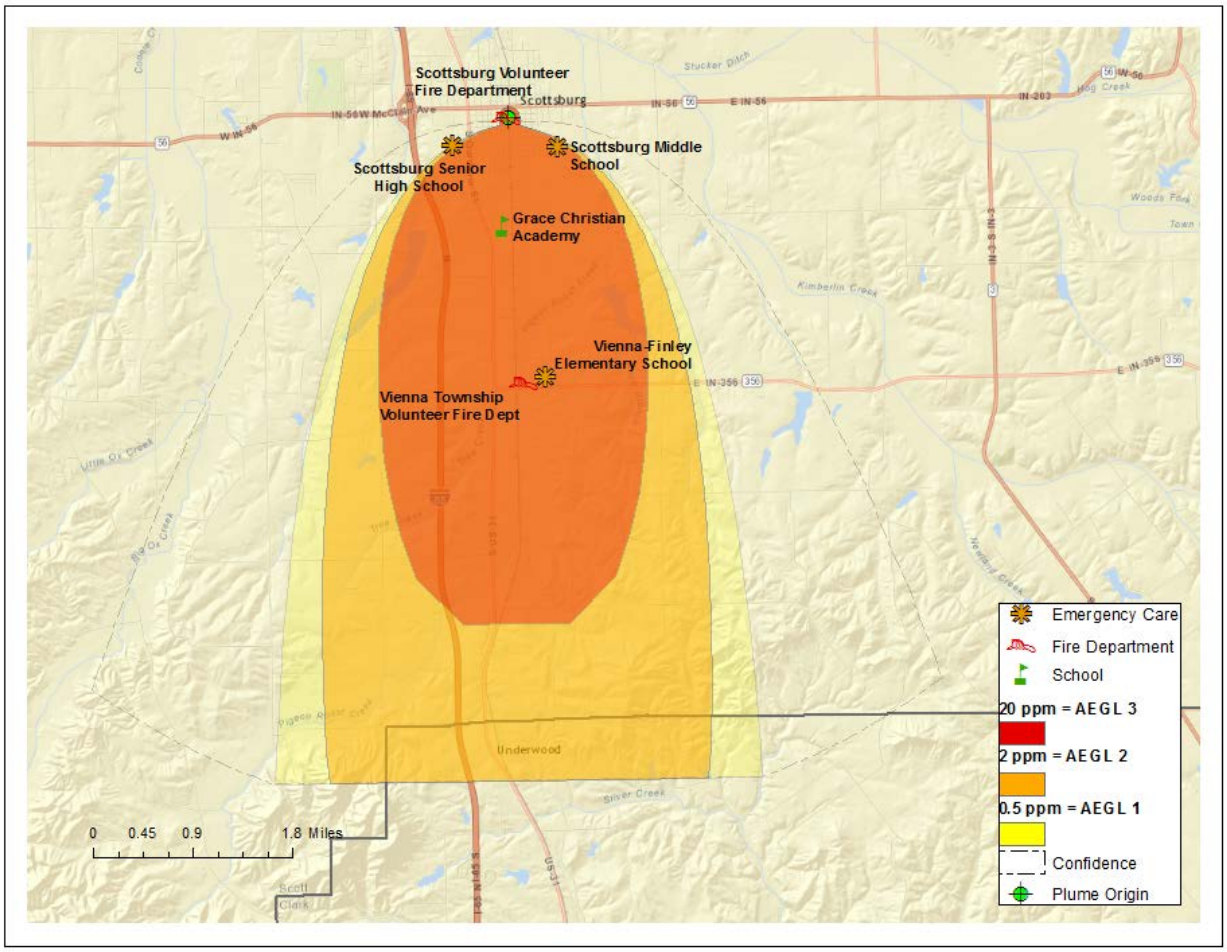
Essential Facilities Exposure

There are six essential facilities within the limits of the chemical spill plume. The affected facilities are identified in Table 55. Their geographic locations are depicted in Figure 35.

Table 55: Essential Facilities within Plume Footprint

Name
Scottsburg Volunteer Fire Department
Scottsburg Senior High School
Scottsburg Middle School
Grace Christian Academy
Vienna-Finley Elementary School
Vienna Township Volunteer Fire Department

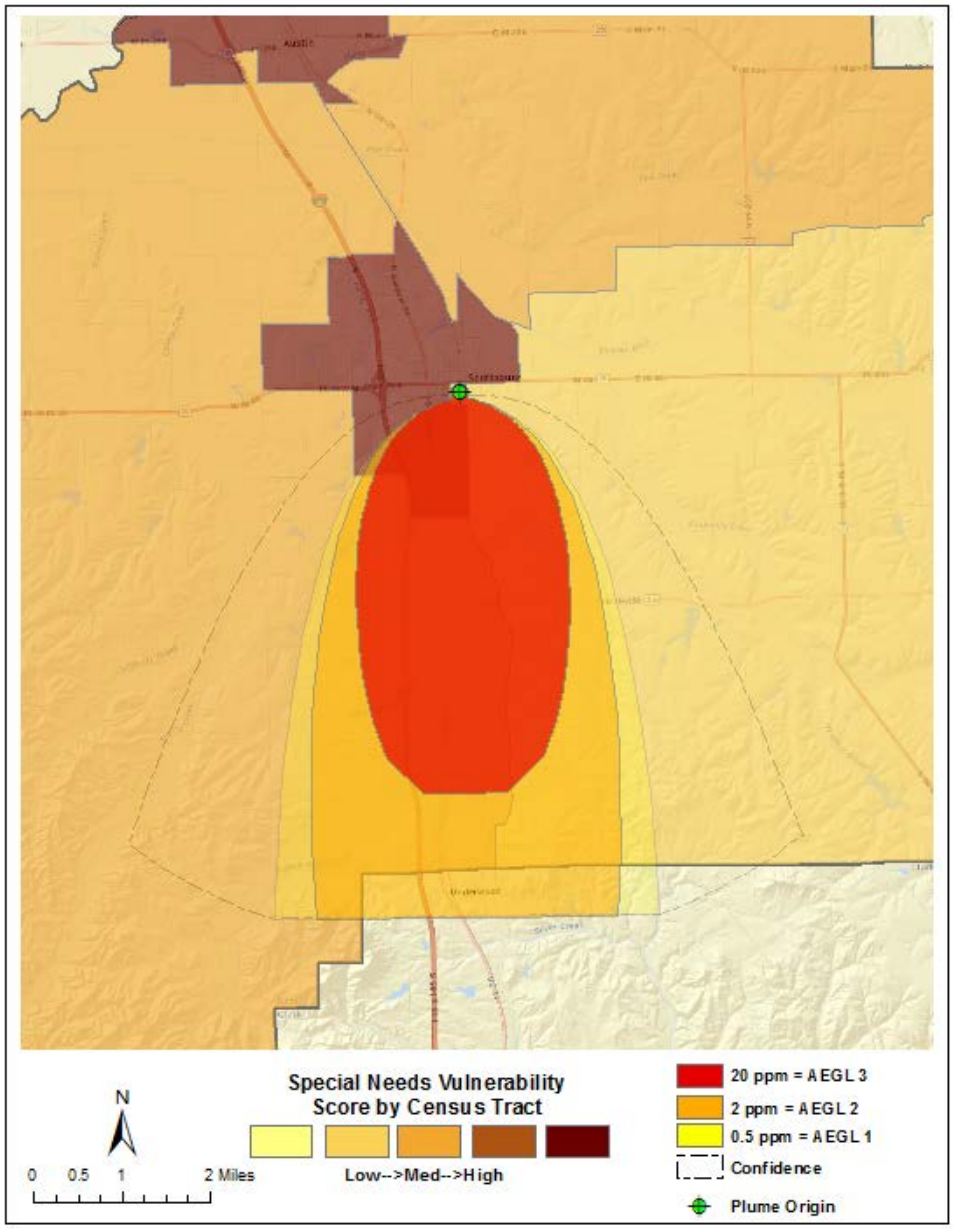
Figure 35: Essential Facilities at Greatest Risk



Hazmat Dangers to Vulnerable Populations

Certain populations require special attention in the event of a disaster. The particular scenario modeled involves a chlorine vapor plume in Scottsburg. This community is also located in area with a high Special Needs Vulnerability Score. This particular census tract has a relatively higher proportion of the population with special needs when compared to the rest of the county. The tract which includes Scottsburg has 22.2% of its residents living in poverty and 19.5% age 65 years and over. In addition, 21.4% of its population has a disability. Figure 36 compares the ALOHA-generated plume with those areas of the county which have a higher Special Needs Vulnerability Scores.

Figure 36: Hazmat Dangers to Special Needs/Vulnerable Populations



Future Development Trends and Vulnerability to Future Assets/Infrastructure for Hazardous Material Release Hazard

Due to the unpredictability of this hazard, all buildings and infrastructure in Scott County are at risk of damage including temporary or permanent loss of function.

5.3.7 Extreme Temperatures

Severe Cold Hazard Definition

What constitutes an extreme cold event, and its effects, varies by region across the US. In areas unaccustomed to winter weather, near freezing temperatures are considered “extreme cold.” Extreme cold temperatures are typically characterized by the ambient air temperature dropping to approximately 0 degrees Fahrenheit or below.

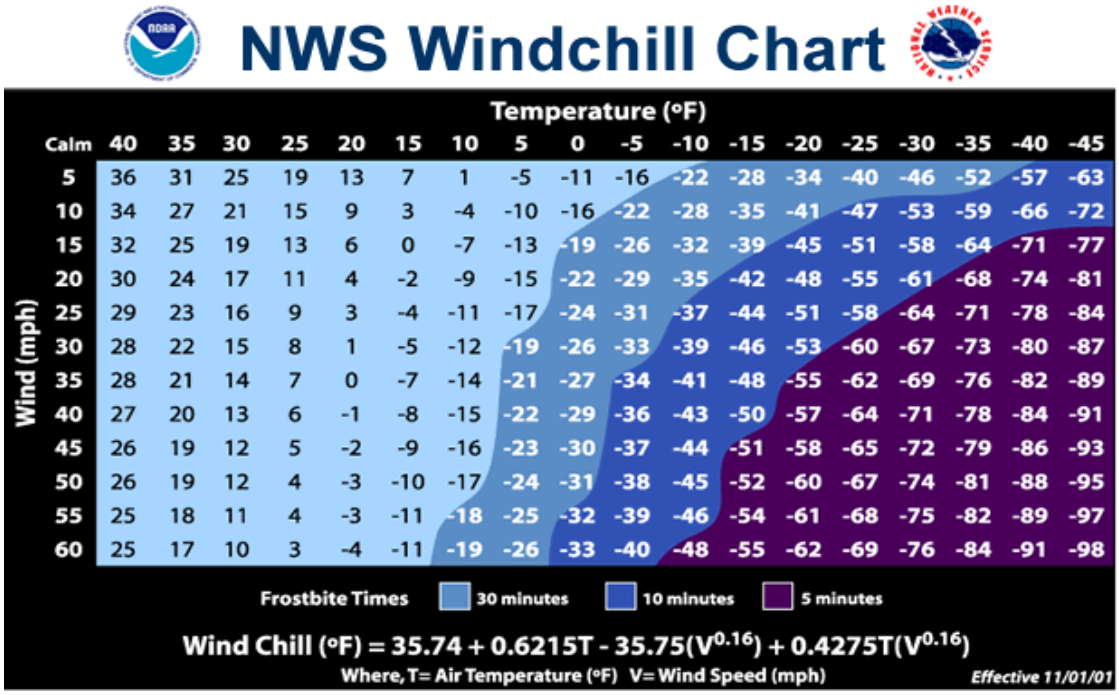
Exposure to cold temperatures—indoors or outdoors—can lead to serious or life-threatening health problems, including hypothermia, cold stress, frostbite or freezing of the exposed extremities, such as fingers, toes, nose, and earlobes. Certain populations—such as seniors age 65 or older, infants and young children under five years of age, individuals who are homeless or stranded, or those who live in a home that is poorly insulated or without heat (such as mobile homes) — are at greater risk to the effects of extreme cold.

Extremely cold temperatures often accompany a winter storm, so individuals may also have to cope with power failures and icy roads. Although staying indoors can help reduce the risk of vehicle accidents and falls on the ice, individuals are susceptible to indoor hazards. Homes may become too cold due to power failures or inadequate heating systems. The use of space heaters and fireplaces to keep warm increases the risk of household fires, as well as carbon monoxide poisoning.

The magnitude of extreme cold temperatures is generally measured through the Wind Chill Temperature (WCT) Index. Wind Chill Temperature is the temperature that is felt when outside and is based on the rate of heat loss from exposed skin by the effects of wind and cold. As the wind increases, the body is cooled at a faster rate causing the skin’s temperature to drop.

In 2001, the NWS implemented a new WCT Index, designed to more accurately calculate how cold air feels on human skin. The index, shown in Figure 37, includes a frostbite indicator, showing points where temperature, wind speed, and exposure time will produce frostbite in humans.

Figure 37: NWS Wind Chill Temperature Index



Each National Weather Service Forecast Office may issue the following wind chill-related products as conditions warrant:

- **Wind Chill Watch**: Issued when there is a chance that wind chill temperatures will decrease to at least 24° F below zero in the next 24-48 hours.
- **Wind Chill Advisory**: Issued when the wind chill could be life threatening if action is not taken. The criteria for this advisory are expected wind chill readings of 15° F to 24° F below zero.
- **Wind Chill Warning**: Issued when wind chill readings are life threatening. Wind chill readings of 25° F below zero or lower are expected.

Summary Vulnerability Assessment

Excessive cold affects mostly humans, particularly special needs populations, and animals. These events may be exacerbated by power loss. For this planning effort, it was not possible to analyze the number of lives or amount of property exposed to the impacts of extreme cold.

Previous Occurrences for Extreme Cold

Although the NCDC database does not include any reported past occurrences of extreme cold, residents of Scott County should be prepared for such an event in any given year.

Geographic Location for Extreme Cold Hazard

Extreme cold events are regional in nature. All areas of the state are vulnerable to the risk of excessive cold.

Hazard Extent for Extreme Cold Hazard

Extreme cold events typically occur in the winter months. The extent of extreme cold varies in terms of the Wind Chill Temperature and duration of the event.

Risk Identification for Extreme Cold Hazard

The planning team determined that although the probability of an excessive cold hazard is medium in Scott County, the impact of such an event is moderate, resulting in an overall calculated risk of moderate.

Vulnerability Analysis for Extreme Cold Hazard

Extreme cold can result in damages to buildings, utilities, and infrastructure, due to the strong winds that often accompany these events. Additionally, extreme cold events often lead to severe short and long term health conditions, or even death. Extreme cold events can occur within any area in the county; therefore, the entire county population and all buildings are vulnerable to extreme cold hazards.

Extreme Heat Hazard Definition

Temperatures that hover 10 degrees Fahrenheit or more above the average high temperature for a region, and last for several weeks, constitute an extreme heat event (EHE). An extended period of extreme heat of three or more consecutive days is typically referred to as a heat wave. Most summers see EHEs in one or more parts east of the Rocky Mountains. They tend to combine both high temperatures and high humidity; although some of the worst heat waves have been catastrophically dry.

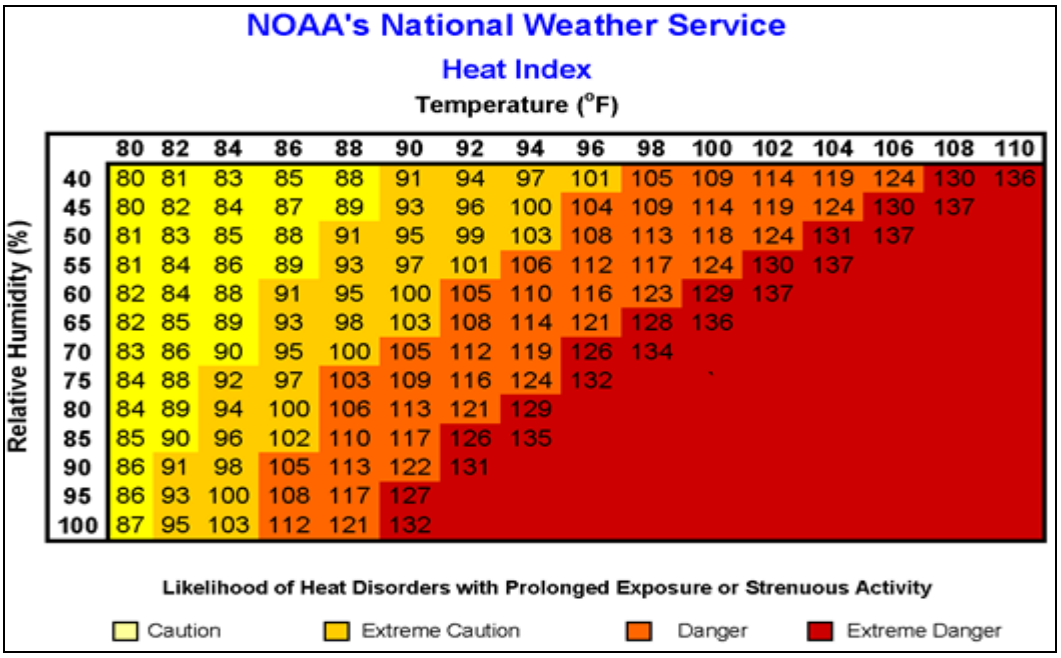
Prolonged exposure to extreme heat may lead to serious health problems, including heat stroke, heat exhaustion, or sunburn. Certain populations — such as seniors age 65 and over, infants and young children under five years of age, pregnant women, the homeless or poor, the obese, and people with mental illnesses, disabilities, and chronic diseases — are at greater risk to the effects of extreme heat. Depending on severity, duration, and location, EHEs can also trigger secondary hazards, including dust storms, droughts, wildfires, water shortages, and power outages.

Criteria for EHE typically shift by location and time of year, and are dependent on the interaction of multiple meteorological variables (i.e., temperature, humidity, cloud cover). While this makes it difficult to define EHEs using absolute, specific measures, there are ways to identify conditions. Some locations evaluate current and forecast weather to identify conditions with specific, weather-based mortality

algorithms. Others identify and forecast conditions based on statistical comparison to historical meteorological baselines that are the criteria for EHE conditions could be an actual or forecast temperature that is equal to or exceeds the 95th percentile value from a historical distribution for a defined time period.

Heat alert procedures are based primarily on Heat Index Values. The Heat Index—given in degrees Fahrenheit—is often referred to as the apparent temperature and is a measure of how hot it really feels when the relative humidity is factored with the actual air temperature. The National Weather Service Heat Index Chart can be seen in Figure 38.

Figure 38: National Weather Service Heat Index



Source: Office of Atmospheric Programs. (2006). Excessive Heat Events Guidebook. Unites States Environmental Protection Agency. Washington, D.C.

Each National Weather Service Forecast Office may issue the following heat-related products as conditions warrant:

- **Excessive Heat Outlooks**- issued when the potential exists for an EHE in the next 3-7 days. An Outlook provides information to those who need considerable lead time to prepare for the event, such as public utility staff, emergency managers, and public health officials.
- **Excessive Heat Watches**- issued when conditions are favorable for an EHE in the next 24 to 72 hours. A Watch is used when the risk of a heat wave has increased but its occurrence and timing is still uncertain. A Watch provides enough lead time so that those who need to prepare can do so, such as city officials who have excessive heat mitigation plans.

- **Excessive Heat Warnings/Advisories**- issued when an EHE is expected in the next 36 hours. These products are issued when an excessive heat event is occurring, is imminent, or has a very high probability of occurring. The warning is used for conditions posing a threat to life or property. An advisory is for less serious conditions that cause significant discomfort or inconvenience and, if caution is not taken, could lead to a threat to life and/or property.

Summary Vulnerability Assessment

Excessive heat affects mostly humans, particularly special needs populations, and animals. These events may be exacerbated by power loss. For this planning effort, it was not possible to analyze the number of lives or amount of property exposed to the impacts of extreme heat.

Previous Occurrences for Excessive Heat

Although the NCDC database does not include any reported past occurrences of excessive heat, residents of Scott County should be prepared for such an event in any given year.

Geographic Location for Excessive Heat Hazard

Excessive heat events are regional in nature. All areas of the state are vulnerable to the risk of excessive heat.

Hazard Extent for Excessive Heat Hazard

Excessive heat events typically occur in the summer months. The extent of excessive heat events varies in terms of the Heat Index and duration of the event. The duration will vary although it could span up to several months.

Risk Identification for Excessive Heat Hazard

The planning team determined that although the probability of an excessive heat hazard is low in Scott County, the impact of such an event is minimal to moderate, resulting in an overall calculated risk of moderately low.

Vulnerability Analysis for Excessive Heat Hazard

Extreme heat may lead to severe short and long term health conditions, or even death. Extreme heat events are widespread and can occur within any area in the county; therefore, the entire county population and all buildings are vulnerable to extreme heat hazards. The elderly are particularly vulnerable to the effects of extreme heat; approximately 19.5% of Scott County's population is age 65 and over. A secondary hazard that may be produced by extreme heat is drought.

Future Development Trends and Vulnerability to Future Assets/Infrastructure for Excessive Heat Hazard

Unlike other natural hazard events, extreme heat events leave little to no physical damage to communities; however, they can lead to severe short and long-term health conditions, or even death. Extreme heat events can also impact environmental and economic vulnerabilities as a result of water shortages and drought.

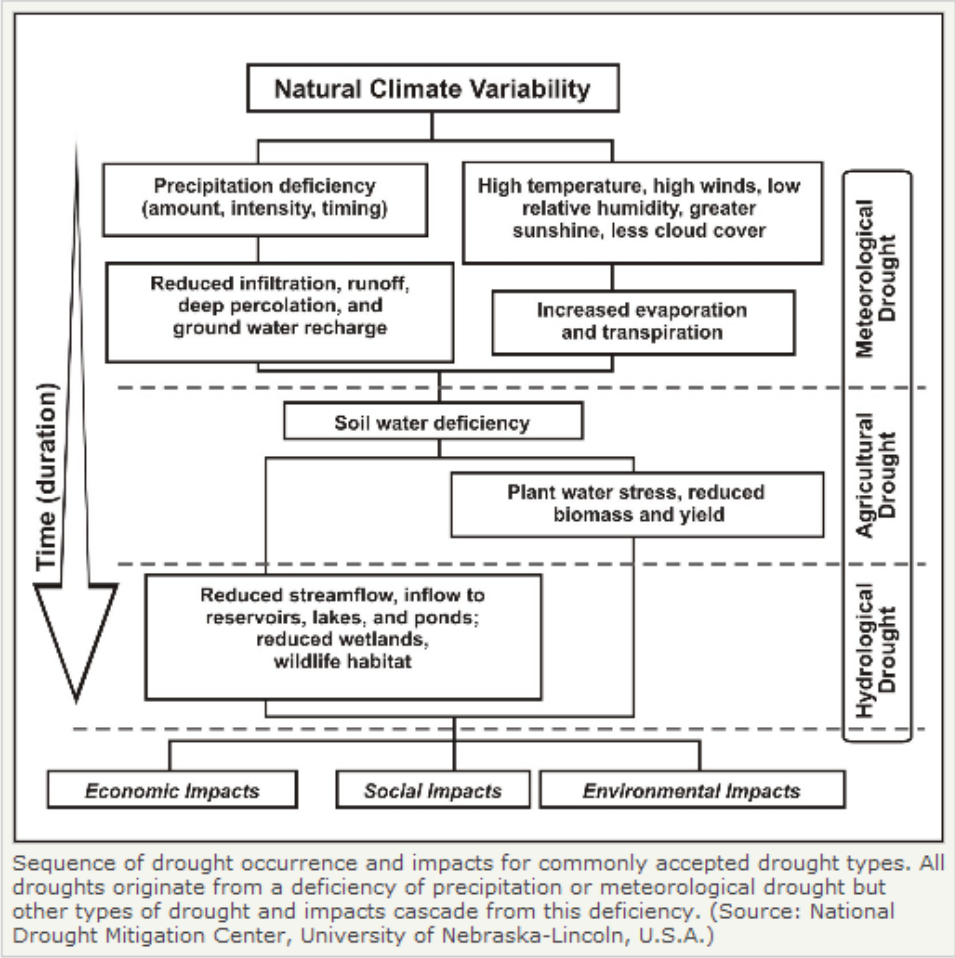
5.3.8 Drought Hazard

The meteorological condition that creates a drought is below normal rainfall. However, excessive heat can lead to increased evaporation, which will enhance 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 more).

There are several common types of droughts including meteorological, hydrological, agricultural, and socioeconomic. Figure 39 describes the sequence of drought occurrence and impacts of drought types.

- **Meteorological:** Defined by the degree of dryness (as compared to an average) and the duration of the dry period. These are region-specific and only appropriate for regions characterized by year-round precipitation.
- **Hydrological:** Associated with the effects of periods of precipitation shortfalls (including snow) on surface or subsurface water supply, including stream flow, reservoir and lake levels, and groundwater. Impacts of hydrological droughts do not emerge as quickly as meteorological and agricultural droughts. For example, deficiency on reservoir levels may not affect hydroelectric power production or recreational uses for many months.
- **Agricultural:** Links characteristics of meteorological or hydrological drought to agricultural impacts. An agricultural drought accounts for the variable susceptibility of crops during different stages of crop development from emergence to maturity.
- **Socioeconomic:** Links the supply and demand of some economic good, e.g. water, forage, food grains, and fish, with elements of meteorological, hydrological, or agricultural droughts. This type of drought occurs when demand for an economic good exceeds supply as a result of weather-related shortfall in water supply.

Figure 39: Sequence of Drought Occurrence and Impacts



Sequence of drought occurrence and impacts for commonly accepted drought types. All droughts originate from a deficiency of precipitation or meteorological drought but other types of drought and impacts cascade from this deficiency. (Source: National Drought Mitigation Center, University of Nebraska-Lincoln, U.S.A.)

Drought is a climatic phenomenon that occurs in Scott County. The meteorological condition that creates a drought is below-normal rainfall. Excessive heat, however, can lead to increased evaporation, which will enhance 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 more).

In the past decade, the US has continued to consistently experience drought events with economic impacts greater than $1 billion; FEMA estimates that the nation's average annual drought loss is $6 billion to $8 billion. For Indiana alone, the National Drought Mitigation Center reported hundreds of drought impacts from June 2010 through October 2010 ranging from water shortage warnings to reduced crop yields and wild fires.

The severity of a drought depends on location, duration, and geographical extent. Additionally, drought severity depends on the water supply, usage demands made by human activities, vegetation, and agricultural operations. Drought brings several different problems that must be addressed. The quality and quantity of crops, livestock, and other agricultural assets will be affected during a drought. Drought

adversely can 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 hover 10° F or more above the average high for the area and last for several weeks. Extreme heat can occur in humid conditions when high atmospheric pressure traps the damp air near the ground or in dry conditions, which often provoke dust storms.

The Palmer Drought Severity Index (PDSI), developed by W.C. Palmer in 1965, is a soil moisture algorithm utilized by most federal and state government agencies to trigger drought relief programs and responses. The PDSI—shown in Table 56is based on the supply-and-demand concept of the water balance equation, taking into account more than just the precipitation deficit at specific locations. The objective of the PDSI is to provide standardized measurements of moisture, so that comparisons can be made between locations and periods of time—usually months. The PDSI is designed so that a -4.0 in South Carolina has the same meaning in terms of the moisture departure from a climatological normal as a -4.0 does in Indiana.

Table 56: Palmer Drought Severity Classifications

Classification Rating	Classification Description
4.0 or greater	Extremely Wet
3.0 to 3.99	Very Wet
2.0 to 2.99	Moderately Wet
1.0 to 1.99	Slightly Wet
0.5 to 0.99	Incipient Wet Spell
0.49 to -0.49	Near Normal
-0.5 to -0.99	Incipient Dry Spell
-1.0 to -1.99	Mild Drought
-2.0 to -2.99	Moderate Drought
-3.0 to -3.99	Severe Drought
-4.0 or less	Extreme Drought

Previous Occurrences for Drought Hazard

Although the NCDC database reports numerous drought events that affected Indiana in the past five years, there are no reports of drought directly impacting Scott County.

Geographic Location for Drought Hazard

Droughts are regional in nature. All areas of the US are vulnerable to the risk of drought.

Hazard Extent for Drought

Droughts can be widespread or localized events. The extent of droughts varies both in terms of the extent of the heat and range of precipitation.

Risk Identification for Drought Hazard

The planning team determined that although the probability of drought hazard is low to medium in Scott County, the impact of such an event is minimal to moderate, resulting in an overall calculated risk of moderately low.

Vulnerability Analysis for Hazard

Droughts affect mostly humans, particularly special needs populations, and animals. These events may be exacerbated by power loss. For this planning effort, it was not possible to analyze the number of lives or amount of property exposed to the impacts of drought.

Drought impacts can be an equally distributed threat across the entire jurisdiction; therefore the county is vulnerable to this hazard and can expect the same impacts within the affected area. The entire population and all buildings have been identified as at risk.

Facilities

All facilities included in this plan are vulnerable to drought. These facilities will encounter many of the same impacts as any other building within the jurisdiction, which should involve only minor damage. 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. A complete list of essential and critical facilities and their locations is included as Appendix C.

Building Inventory

The other buildings within the county can all expect the same impacts similar to those discussed for the essential and 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 infrastructure that could be impacted include roadways, utility lines/pipes, railroads, and bridges. The risk to these structures is primarily associated with a fire that could result from the hot, dry conditions. Since the county's entire infrastructure is equally vulnerable, it is important to emphasize that any number of these infrastructure components could be impacted during a drought.

Future Development Trends and Vulnerability to Future Assets/Infrastructure for Drought Hazard

Future development will remain vulnerable to these events. 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 the populated area place 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.

Because droughts are regional in nature, future development will be impacted across the county. 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. According to FEMA, 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 hazards by educating the public on steps to take before and during the event. For example, temporary window reflectors can be used to direct heat back outside, the public should be advised to stay indoors as much as possible and avoid strenuous work during the warmest part of the day.

5.3.9 Dam/Levee Failure Hazard

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, this false sense of 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, the levee will be overtopped or otherwise fail, inundating communities occupying 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 for Dam and Levee Failure

There are no records or local knowledge of any dam or certified levee failure in the county.

Geographic Location for Dam Failure

The Indiana Department of Natural Resources identified 36 dams in Scott County. Table 57 summarizes the dam information.

Table 57: Indiana Department of Natural Resources Dams

Dam Name	River/Stream	City	Hazard Level	EAP
Scottsburg Waterworks Dam	Honey Run Creek	Scottsburg	H	N
Thomas J. Miller Lake Dam	Tr-Kimberlin Creek	Austin Area	H	N
Stucker Fork Dam No. 15	Little Joe Cr,Weddell Cr	Little York-Offstream	H	N
Arthur S. Klingman Lake Dam	Tr-Rock Branch,Town Creek	Lexington	H	N
Quick Cr. Reservoir	Quick Creek	Austin	H	N
Stucker Fork Dam No. 1	Flat Creek	Austin Area	S	N
Stucker Fork Dam No. 2	Tr-Hog Cr, Stucker Fork	Scottsburg	S	N
Pine Lake Dam	Tr-Stuck Fk. Hog Creek	Scottsburg	S	N
Don Reid Lake Dam	Zion Run,Little Joe Creek	Little York-Offstream	S	N
Stucker Fork Dam No. 16a	White Eye Br,Hog Cr,Stucker	Scottsburg	S	N
Hamilton & Ridlen Lake Dam	Dog Run,Coonie Cr,Big Ox Creek	Austin-Offstream	S	N
Stucker Fork Dam No. 9	Newland Creek	Scottsburg	S	N
Forrest Helton Lake Dam	Sting Brook, Honey Run	Scottsburg	S	N
Stucker Fork Dam No. 6	Tr-Town Creek	Lexington	S	N
Stucker Fork Dam No. 7	Tr-Woods Fk, Stucker Fk	Scottsburg	S	N
Stucker Fork Dam No. 4	Hog Cr,Stucker Fk	Scottsburg	S	N
Stucker Fork Dam No. 8	Kimberlin Cr,Stucker Fork	Scottsburg	L	N
Bowen Lake Dam	Tr-Pigeon Roost Creek	Scottsburg	L	N
Kenninger Lake Dam	Tr-Woods Fork	Lexington-Offstream	L	N
Stucker Fork Dam No. 53	Unt-Woods Fork	Scottsburg	L	N
Marshall King Lake	Toast Brook, Honey Run	Scottsburg	L	N
United Presbyterian Ministries Dam	Tr-Town Cr,Woods Fk Stucker	Lexington-Offstream	L	N
Christie Lake Dam	Tr-Stucker Fork	Scottsburg	L	N
Stucker Fork Dam No. 69	Stick Run	Underwood Area	L	N
Marysville Lake Dam	Tr-Kimberlin Cr,Stucker Fork	Scottsburg	L	N
David Garriott Lake Dam	Tr-Calf Cr, Big Ox Creek	Austin-Offstream	L	N
Stucker Fork Dam No. 13	Little Ox Creek, Big Ox Creek	Austin-Offstream	L	N
Stucker Fork Dam No. 56	Unt-Woods Fork	Scottsburg	L	N
Smith Lake Dam	Tr-Woods Fk, Stucker Fk	Scottsburg	L	N
Stucker Fork Dam No. 10	Hopewell Drain,Pigeon Roost	Scottsburg	L	N
Hosea Lake Dam	Offstream-Big Ox Cr	Austin-Offstream	L	N
Stucker Fork Dam No. 90	Pigeon Roost Creek	Underwood	L	N
Stucker Fork Dam No. 12	Big Ox Creek	Austin-Offstream	L	N
Stucker Fork Dam No. 5	Woods Fk, Stucker Fk	Scottsburg	L	N
Stucker Fork Dam No. 14	Coonie Cr,Big Ox Cr,Stucker	Austin-Offstream	L	N
Stucker Fork Dam No. 54	Unt-Woods Fork	Scottsburg	L	N

Hazard Extent for Dam and Levee Failure

When dams are assigned the low (L) hazard potential classification, it 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. Dams assigned the significant (S) hazard classification are those dams in which failure or incorrect operation results in no probable loss of human life; however it can cause economic loss, environment damage, and disruption of lifeline facilities. Dams

classified as 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. Dams assigned the high (H) hazard potential classification are those dams in which failure or incorrect operation has the highest risk to cause loss of human life and significant damage to buildings and infrastructure.

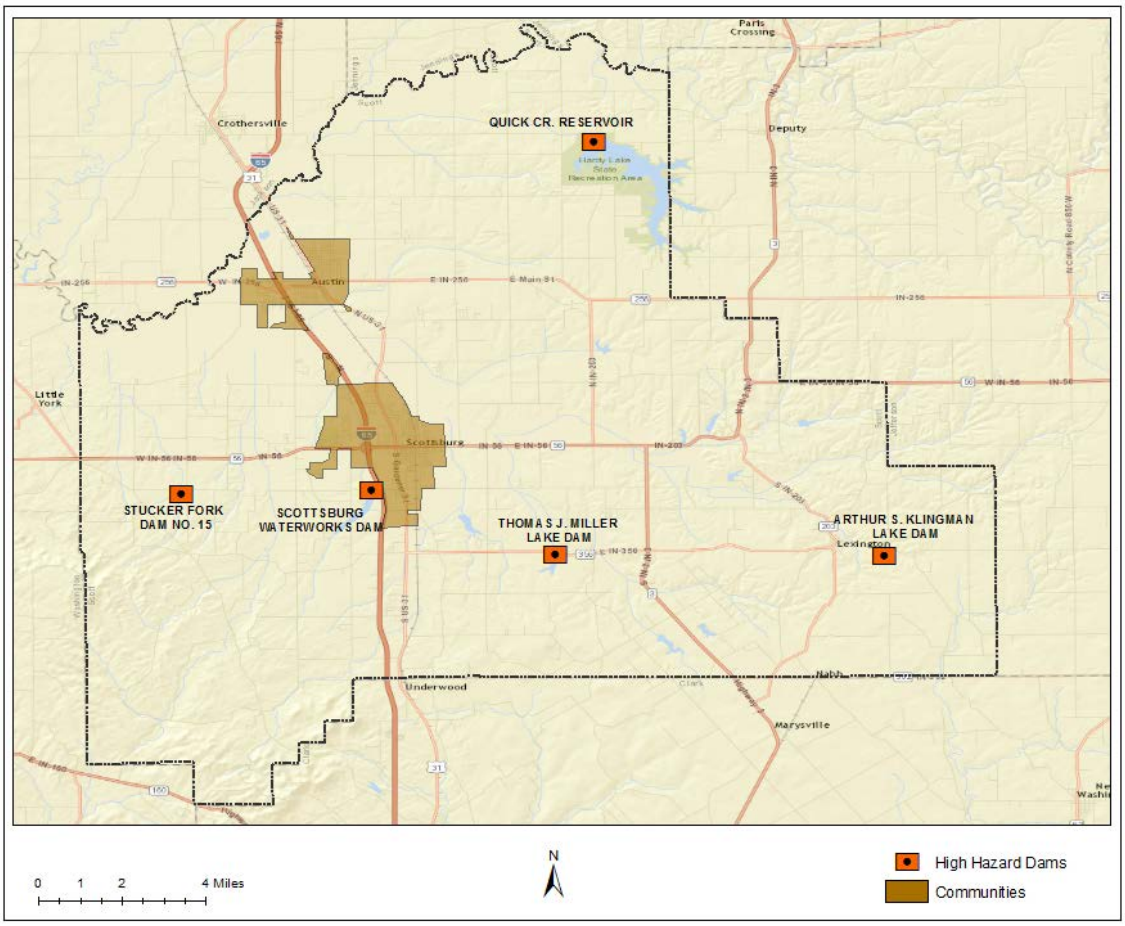
According to IDNR, there are five dams in Scott County which are classified as high hazard. Table 58 below lists high hazard dams.

Table 58: High Hazard Dam –Scott County

Dam Name	River/Stream	Location	Hazard Level	EAP
Quick Cr. Reservoir	Quick Creek	Austin	H	N
Thomas J. Miller Lake Dam	Tr-Kimberlin Creek	Austin Area	H	N
Arthur S. Klingman Lake Dam	Tr-Rock Branch,Town Creek	Lexington	H	N
Stucker Fork Dam No. 15	Little Joe Cr,Weddell Cr	Little York-Offstream	H	N
Scottsburg Waterworks Dam	Honey Run Creek	Scottsburg	H	N

The Scottsburg Waterworks Dam is a high hazard dam located within 2 miles upstream of Scottsburg community. The dam is on the south-west of Scottsburg community. Figure 40 shows the dam in relation to the town.

Figure 40: High Hazard Dams – Near Austin and Scottsburg communities, Scott County



None of the dams in Scott County have an Emergency Action Plan (EAP). An EAP is not required by the State of Indiana, but is strongly recommended in the 2003 Indiana Dam Safety & Inspection Manual.

Risk Identification for Dam/Levee Failure

Based on historical information, the probability of a dam failure that would impact Scott County is medium to high. The planning team determined that the potential impact of a dam failure is moderate; therefore, the overall risk of a flood hazard for Scott County is medium.

Future Development Trends and Vulnerability to Future Assets/Infrastructure for Dam and Levee Failure

The county recognizes the importance of maintaining its future assets, infrastructure, and residents. Inundation maps can highlight the areas of greatest vulnerability in each community.

5.3.10 Landslide Hazard/Ground Failure

According to the USGS, the term ground failure is a general reference to landslides, liquefaction, lateral spreads, and any other consequence of land shaking that affects ground stability. For ground failure this plan will only address land subsidence and landslides.

Landslides are a serious geologic hazard common to almost every state in the US. It is estimated that nationally they cause up to $2 billion in damages and from 25 to 50 deaths annually. Globally, landslides cause billions of dollars in damage and thousands of deaths and injuries each year.

The term landslide is a general designation for a variety of downslope movements of earth materials. Some landslides move slowly and cause damage gradually, whereas others move so rapidly that they can destroy property and take lives suddenly and unexpectedly. Gravity is the force driving landslide movement. Factors that allow the force of gravity to overcome the resistance of earth material to landslide movement include: saturation by water, steepening of slopes by erosion or construction, alternate freezing or thawing, earthquake shaking, and volcanic eruptions. There are three main types of landslides that occur in Indiana: rotational slump, earthflow, and rockfall.

Land Subsidence

Southern Indiana has a network of underground caves formed by what is known as karst landscape. According to the Indiana Geological Survey, karst landscapes usually occur where carbonate rocks (limestone and dolostone) underlie the surface. Freely circulating, slightly acidic water in the soil slowly dissolves the bedrock causing karst formations. These karst formations have the potential to collapse under the weight of the ground above them creating a sinkhole. Ground failure of this nature is known as land subsidence. Any structures built above a karst formation could potentially be subject to land subsidence and collapse into a resulting sinkhole. Scott County is not particularly impacted by karst landscapes.

Landslides

A landslide is a rapid movement of surface land material down a slope. The main causes of landslides include:

- Earthquake or other significant ground vibration
- Slope failure due to excessive downward movement, gravity
- Groundwater table changes (often due to heavy rains)

Preventive and remedial measures include modifying the landscape of a slope, controlling the groundwater, constructing tie backs, spreading rock nets, etc.

The USGS claims that landslides are a significant geologic hazard in the US causing $1-2 billion in damage and over 25 fatalities per year. The expansion of urban and recreational development into hillside areas has resulted in an increasing number of properties subject to damage as a result of landslides.

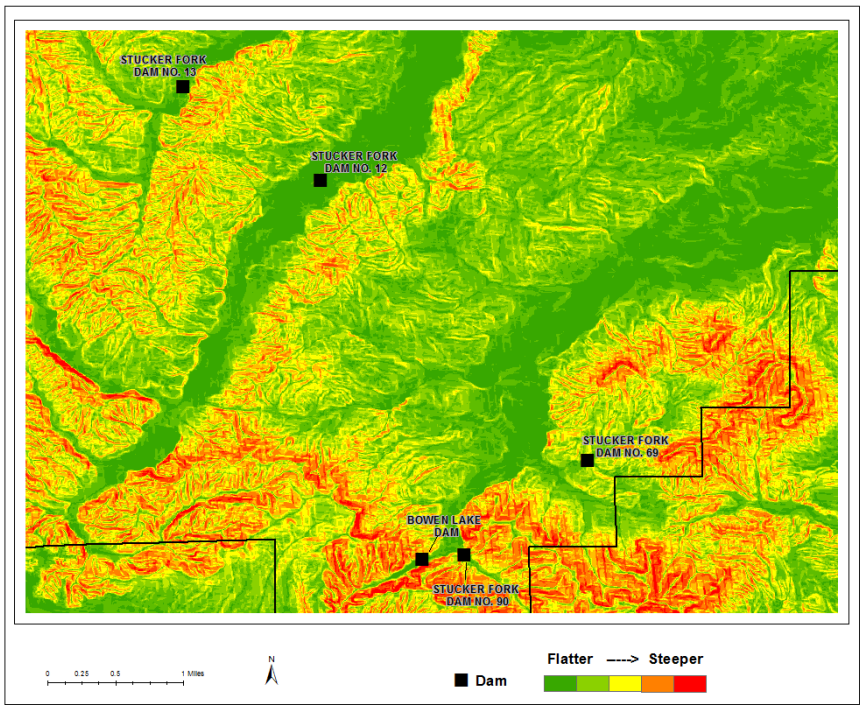
Landslides commonly occur in connection with other major natural disasters such as earthquakes, wildfires, and floods.

Although landslides may not be preventable, their effect on people and property can be mitigated. Mitigation includes any activities that prevent an emergency, reduce the chance of an emergency happening, or lessen the damaging effects of unavoidable emergencies. Investing in preventive mitigation steps now such as planting ground cover (low growing plants) on slopes, or installing flexible pipe fittings to avoid gas or water leaks, will help reduce the impact of landslides and mudflows in the future.[23]

Previous Occurrences for Landslide/Ground Failure

There have been no recorded events of landslides in Scott County.

Figure 41: Slope Map Unincorporated Scott County



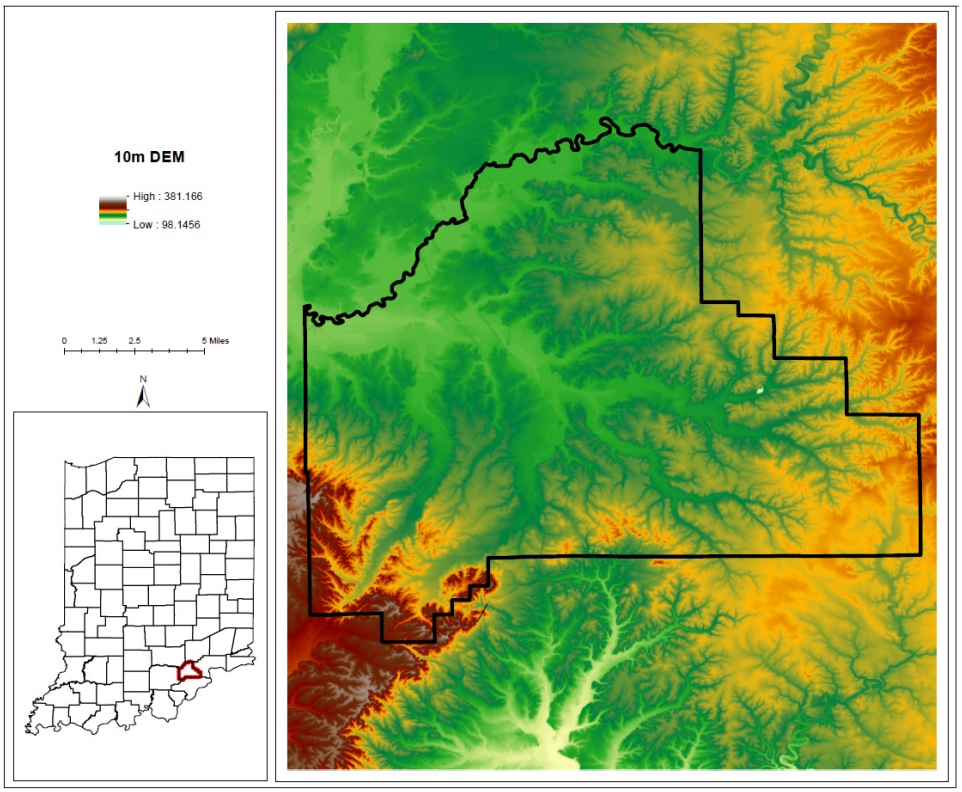
Geographic Location for Landslide/Ground Failure

The southwestern part of Scott County is primarily in the hilly areas underlain with Mississippian bedrock formations. These bedrock formations support very little karst development and therefore present very little threat from karst induced ground failure.

[23] http://earthquake.usgs.gov/learn/glossary/?termID=105

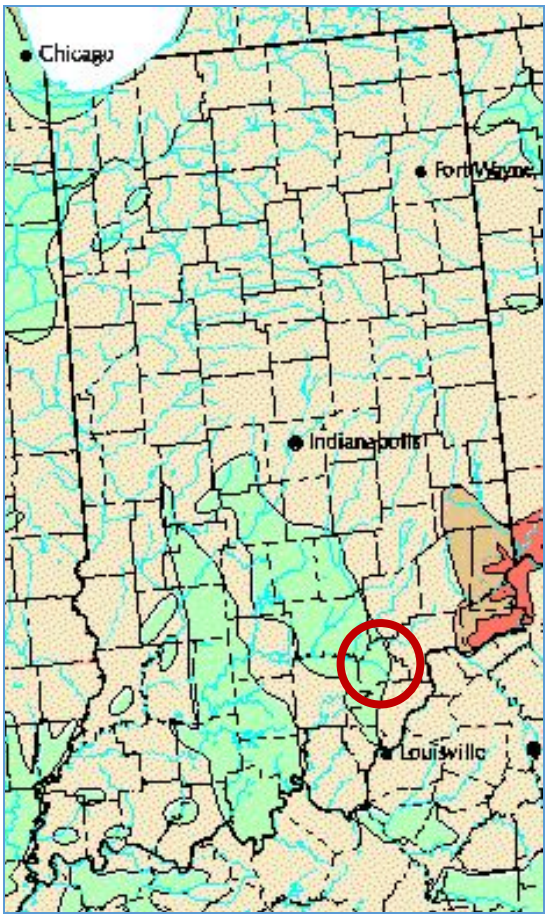
[23] http://www.wlwt.com/news/sr-262-in-indiana-closed-for-month-after-landslide/25369526

Figure 42: Elevation Map – Scott County



The US Geological Survey's Landslide Overview Map of the Conterminous United States shows two large zones in south-central Indiana as having moderate susceptibility for landslides, but with low incidence of landslides. As seen in Figure 43, Scott County does not lie in one of those zones.

Figure 43: USGS Landslide Overview Map (Indiana)



Hazard Extent for Landslide/Ground Failure

The extent of the ground failure hazard is closely related to development near the regions that are at risk. The extent will vary within these areas depending on the potential of elevation change, as well as the size of the underground structure. The hazard extent of ground failure is spread throughout the county in various concentrated areas.

Risk Identification for Landslide/Ground Failure

Low Risk  High Risk

Based on historical information, the probability of ground failure is medium. In Meeting 1, the planning team determined that the potential impact of a ground failure event is low; therefore, the overall risk of ground failure for Scott County is low.

Facilities

Any facility built on steep slope could be vulnerable to landslides. An essential or critical facility will encounter many of 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 causes cracking of critical structural elements. Critical and essential facilities are included in Appendix C.

Building Inventory

The buildings within the county can all anticipate the same impacts, similar to those discussed for critical facilities. 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 causes cracking of critical structural elements.

Infrastructure

In the area of Scott County affected by landslides, 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. Since all infrastructure in the affected area are equally vulnerable, it is important to emphasize that any number of these items could become damaged as a result of significant landslides. The impacts to these items include broken, failed, or impassable roadways; broken or failed utility lines such as loss of power or gas to a community; and railway failure from broken or impassable tracks. In addition, bridges could fail or become impassable causing risk to traffic.

Future Development Trends and Vulnerability to Future Assets/Infrastructure for Ground Failure

All future communities, buildings, and infrastructure will remain vulnerable to landslides. The geologic makeup of the area around Cincinnati, OH, including southeastern Indiana and northern Kentucky, makes it particularly prone to landslides. Cracks or depressions in the soil and tilted trees or utility poles may be signs that the soil is unstable.

Section 6

Mitigation Strategies

The goal of mitigation is to reduce the future impacts of a hazard including loss of life, property damage, disruption to local and regional economies, and the expenditure of public and private funds for recovery. Mitigation actions and projects should be based on a well-constructed risk assessment, provided in Section 5 of this plan. Mitigation should be an ongoing process, adapting over time to accommodate a community's needs.

6.1 Community Action Potential Index (CAPI)

FEMA Region V mitigation planners developed the Community Action Potential Index (CAPI) in 2013 as a tool to prioritize communities for Risk MAP initiatives and mitigation activities. CAPI includes a number of indicators that, when weighted, sum to a total score for each community in the state. This helps federal and state planners determine which communities would be most likely to advance mitigation strategies through the Risk MAP program.

CAPI currently includes index scores for every Indiana community, a total of 661. Of those communities, slightly more than half (325) have been deployed, which means that Risk MAP activities have occurred or are in the process of occurring. All of Scott County's communities are currently deployed.
Table 59 lists the Indiana communities with the highest CAPI scores (highest possible score is 131). The higher the score, the higher the potential risk the community faces in the event of a disaster. But also, a high score indicates that the community has the potential to move mitigation activities forward. For example, communities that participate in the NFIP's Community Rating System and/or have approved local mitigation plans will be assigned a higher CAPI score.

Table 59: Indiana Communities with Highest CAPI Scores

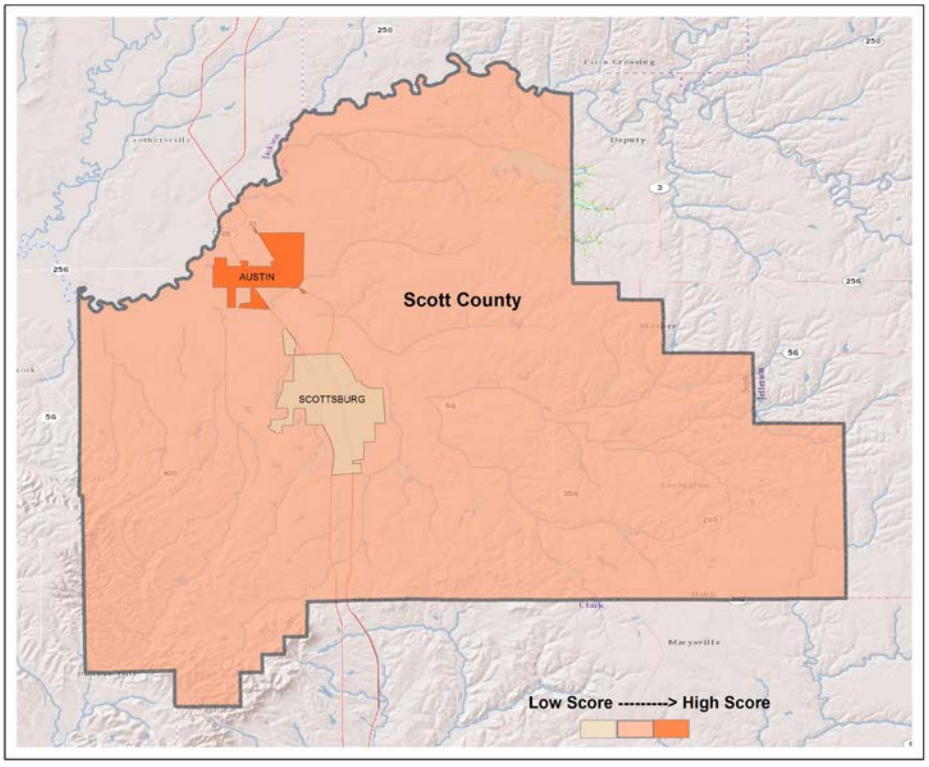
County Name	Community	Deployed?	CAPI Score
Marion	City of Indianapolis	Yes	92.24
Vanderburgh	Vanderburgh County	No	85.14
Allen	City of Fort Wayne	No	83.62
Bartholomew	City of Columbus	Yes	83.20
Hamilton	City of Noblesville	Yes	79.43

Table 60 lists Scott County communities' high risk factors as well as their composite CAPI scores. The arrows illustrate how the community compares to the state average. As shown in Table 60 and Figure 44, Scott County has the highest CAPI score.

Table 60: Scott County Communities' CAPI Scores

Community Name	Total CAPI Score		% Community within SFHA		Insurance claims $		Insurance claims #		Repetitive loss $		Repetitive loss #		Individual Assistance $ per Capita	
Scott County	▲	36.59	▲	16.04	▲	33,370.00	▲	3	▲	0.00	▲	0		
Scottsburg	▲	25.07	▼	11.44	▲	938.00	▲	1	▼	0.00	▲	0	▼	18.17
Austin	▲	24.08	▼	20.60	▼	7,150.00	▼	2	▼	0.00	▼	0	▼	17.05
KEY: **Better than State Average** ▼														
Worse than State Average ▲														

Figure 44: CAPI Scores for Scott County and Jurisdictions



While the vulnerability map and special needs population data are not definitive or conclusive, this information points to geographic areas and population groups that could benefit from further analysis in mitigation planning. The locations of vulnerable populations in Scott County are based on census tracts. The scores for each tract are totaled to create the Special Needs Vulnerability Score. The score pertains to the degree of vulnerability (low to high) of the population in the tract.

6.2 Plans and Ordinances

Zoning ordinances define what land uses can legally exist in community. Their purpose is to promote public health, safety, general welfare and to facilitate orderly development. Scott County enforces several ordinances, listed below in Table 61, that are relevant to emergency management and disaster planning.

Table 61: Scott County Plans and Ordinances

Community	Ordinance/Year
Scott County	Scott County Comprehensive Plan, 2001 Subdivision Drainage Ordinance, 2005 Zoning Ordinances of Scott County, Indiana, 2004
Scottsburg	Scott County Comprehensive Plan Zoning Ordinances of Scott County, Indiana, 2004

Scott County and Scottsburg have a joint Zoning Ordinance and Board of Zoning Appeals. The town of Austin has its own Planning Commission and Board of Zoning Appeals.

6.3 Mitigation Goals

The MHMP planning team members understand that although hazards cannot be eliminated altogether, Scott County can work toward building disaster-resistant communities. Following are a 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, residents, and responders

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

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

Objective C: Minimize the amount of infrastructure exposed to hazards.

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

Objective E: Improve emergency sheltering in the community.

Goal 2: Create new or revise existing plans/maps for the community
Objective A: Support compliance with the NFIP.

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

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

Goal 3: Develop long-term strategies to educate community residents on the hazards affecting their county
Objective A: Raise public awareness on hazard mitigation.

Objective B: Improve education and training of emergency personnel and public officials.

6.4 Mitigation Actions and Projects

Upon completion of the risk assessment and development of the goals and objectives, the planning committee was provided a list of the six mitigation measure categories from the *FEMA State and Local Mitigation Planning How to Guides*. The measures are listed as follows:

- **Prevention:** Government, administrative, or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, building codes, capital improvement programs, open space preservation, and stormwater management regulations.
- **Property Protection:** Actions that involve the modification of existing buildings or structures to protect them from a hazard or removal from the hazard area. Examples include acquisition, elevation, structural retrofits, storm shutters, and shatter-resistant glass.
- **Public Education and Awareness:** Actions to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.
- **Natural Resource Protection:** Actions that, in addition to minimizing hazard losses, preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- **Emergency Services:** Actions that protect people and property during and immediately after a disaster or hazard event. Services include warning systems, emergency response services, and protection of critical facilities.
- **Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, levees, floodwalls, seawalls, retaining walls, and safe rooms.

MHMP members were presented with the task of individually listing potential mitigation activities using the FEMA evaluation criteria. The MHMP members presented their mitigation ideas to the team. The evaluation criteria (STAPLE+E) involved the following categories and questions.

Social:

- Will the proposed action adversely affect one segment of the population?
- Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower income people?

Technical:

- How effective is the action in avoiding or reducing future losses?
- Will it create more problems than it solves?
- Does it solve the problem or only a symptom?
- Does the mitigation strategy address continued compliance with the NFIP?

Administrative:

- Does the jurisdiction have the capability (staff, technical experts, and/or funding) to implement the action, or can it be readily obtained?
- Can the community provide the necessary maintenance?
- Can it be accomplished in a timely manner?

Political:

- Is there political support to implement and maintain this action?
- Is there a local champion willing to help see the action to completion?
- Is there enough public support to ensure the success of the action?
- How can the mitigation objectives be accomplished at the lowest cost to the public?

Legal:

- Does the community have the authority to implement the proposed action?
- Are the proper laws, ordinances, and resolution in place to implement the action?
- Are there any potential legal consequences?
- Is there any potential community liability?
- Is the action likely to be challenged by those who may be negatively affected?
- Does the mitigation strategy address continued compliance with the NFIP?

Economic:

- Are there currently sources of funds that can be used to implement the action?
- What benefits will the action provide?
- Does the cost seem reasonable for the size of the problem and likely benefits?
- What burden will be placed on the tax base or local economy to implement this action?
- Does the action contribute to other community economic goals such as capital improvements or economic development?

- What proposed actions should be considered but be "tabled" for implementation until outside sources of funding are available?

Environmental:

- How will this action affect the environment (land, water, endangered species)?
- Will this action comply with local, state, and federal environmental laws and regulations?
- Is the action consistent with community environmental goals?

Implementation of the mitigation plan is critical to the overall success of the mitigation planning process. The first step is 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 important. 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.

The planning team prioritized mitigation actions based on a number of factors. A rating of high, medium, or low was assessed for each mitigation item and is listed next to each item in Table 63. The factors were the STAPLE+E (Social, Technical, Administrative, Political, Legal, Economic, and Environmental) criteria listed in Table 62.

Table 62: STAPLE+E Planning Factors

S – 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.
T – Technical	Mitigation actions are technically most effective if they provide a long-term reduction of losses and have minimal secondary adverse impacts.
A – Administrative	Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
P – 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.
L – Legal	It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action.
E – Economic	Budget constraints can significantly deter the implementation of mitigation actions. It is important to evaluate whether an action is cost-effective, as determined by a cost benefit review, and possible to fund.
E – 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.

6.5 Multi-Jurisdictional Mitigation Strategy and Actions

As a part of the multi-hazard mitigation planning requirements, at least two identifiable mitigation action items have been addressed for each hazard listed in the risk assessment and for each jurisdiction covered under this plan.

Each of the three incorporated communities, within and including Scott County, was invited to participate in a brainstorming session in which goals, objectives, and strategies were discussed and prioritized. Each participant in this session was armed with possible mitigation goals and strategies provided by FEMA, as well as information about mitigation projects discussed in neighboring communities. All potential strategies and goals that arose through this process are included in this section.

This section includes a comprehensive list of all mitigation strategies from the 2008 plan, as well as new strategies developed for the 2015 update. We categorized the progress of each strategy using the following symbols and guidelines.

Mitigation action has been identified and prioritized. Funding has not yet been secured.

Mitigation action is in early phase of implementation. Community has identified source of funding and submitted project proposal. Implementation will begin once funding is secured.

Mitigation project is in progress or ongoing. Funding and/or resources are available to complete it.

Mitigation project is complete.

Table 63 on the following pages lists completed strategies followed by incomplete and new mitigation strategies in order of priority. Assuming funding is available, it is the intention that high priority strategies will be implemented within one year of plan adoption, medium priorities will be implemented within three years, and low priorities will be implemented within five years.

The Scott County Emergency Management Agency will be the local champion for the mitigation actions. The County Commissioners and the city and town councils will be an integral part of the implementation process. Federal and state assistance will be necessary for a number of the identified actions.

Table 63: Mitigation Strategies and Projects

Mitigation Action	Priority	Status	Hazard	Community	Collaborator(s)	Funder(s)
Roadway Clearance *City and County do a good job of keeping roads clear in winter weather.*	**Completed**	 *Completed*	☐ Tornado ☐ Flood ☐ Earthquake ☐ Thunderstorm ☒ Winter Storm ☐ Hazmat ☐ Drought ☐ Subsidence ☐ Dam/Levee	☒ Austin ☒ Scottsburg ☒ Scott County	Scott County Highway Dept. Scott County EMA	
Guarantee Scottsburg current water supply and provide for alternate water source *Scottsburg uses city water Monday through Friday and pulls water from Stucker Fork Saturday and Sunday.*	**Completed**	 *Completed*	☐ Tornado ☒ Flood ☐ Earthquake ☐ Thunderstorm ☐ Winter Storm ☒ Hazmat ☒ Drought ☐ Subsidence ☐ Dam/Levee	☐ Austin ☒ Scottsburg ☐ Scott County	Scott County Commissioners Local Utility Companies Scott County EMA	
Guarantee current water supply and provide for alternate water source *Scott County EMA is currently working on a water run-off plan.*	**High**	 *In progress*	☐ Tornado ☒ Flood ☐ Earthquake ☐ Thunderstorm ☐ Winter Storm ☒ Hazmat ☒ Drought ☐ Subsidence ☐ Dam/Levee	☐ Austin ☐ Scottsburg ☒ Scott County	Scott County Commissioners Local Utility Companies Scott County EMA	Local Utility Companies

Mitigation Action	Priority	Status	Hazard	Community	Collaborator(s)	Funder(s)
Provide the community with outreach information /education brochures *Scott County EMA coordinates on-going education through monthly newsletters. Local CERT is active in Scott County*	**High**	 *In progress*	☒ Tornado ☒ Flood ☒ Earthquake ☒ Thunderstorm ☒ Winter Storm ☒ Hazmat ☒ Drought ☒ Subsidence ☒ Dam/Levee	☒ Austin ☒ Scottsburg ☒ Scott County	Scott County EMA	FEMA PDM Local Volunteers
Provide Warning Sirens for Austin and Unincorporated Scott County *Sirens to be installed on volunteer fire departments and schools. Scottsburg currently has three warning sirens within the city limits*	**High**	 *Proposed*	☒ Tornado ☐ Flood ☐ Earthquake ☒ Thunderstorm ☐ Winter Storm ☐ Hazmat ☐ Drought ☐ Subsidence ☐ Dam/Levee	☒ Austin ☐Scottsburg ☒ Scott County	Scott County Commissioners Scott County EMA	FEMA PDM Scott County Planning Homeowners
Implement the U.S. Army Corps of Engineers FPMS Special Study for Scott County *A study has been funded but Scott County has not secured further funding for implementation.*	**High**	.  *In progress*	☐ Tornado ☒ Flood ☐ Earthquake ☐ Thunderstorm ☐ Winter Storm ☐ Hazmat ☐ Drought ☐ Subsidence ☐ Dam/Levee	☒ Austin ☒ Scottsburg ☒ Scott County	USACE Scott County EMA	USACE

Mitigation Action	Priority	Status	Hazard	Community	Collaborator(s)	Funder(s)
Draft local enforceable drainage ordinances (including debris removal and log jam clearance)	**High**	 *In progress*	☐ Tornado ☒ Flood ☐ Earthquake ☒ Thunderstorm ☐ Winter Storm ☐ Hazmat ☐ Drought ☐ Subsidence ☒ Dam/Levee	☒ Austin ☒ Scottsburg ☒ Scott County	Scott County Commissioners Local Utility Companies Scott County Drainage Board	Local Funds
Develop evacuation plan *Historic flooding events have shown that evacuations are necessary for the continued safety of all residents. Scott County EMA has a plan in progress which will be submitted to the Scott County Commission in the near future.*	**High**	 *In progress*	☒ Tornado ☒ Flood ☒ Earthquake ☐ Thunderstorm ☐ Winter Storm ☒ Hazmat ☐ Drought ☐ Subsidence ☐ Dam/Levee	☐ Austin ☒ Scottsburg ☐ Scott County	Scott County EMA Scott County LEPC	Local Support
Flat Creek Debris Removal *Debris has accumulated in Flat Creek that creates blockages and exacerbates flooding from the stream mouth up to Howard Lake. The Drainage Board performs periodic debris removal, but currently there is no funding allocated to clear this stream.*	**High**	 *Proposed*	☐ Tornado ☒ Flood ☐ Earthquake ☐ Thunderstorm ☐ Winter Storm ☐ Hazmat ☐ Drought ☐ Subsidence ☐ Dam/Levee	☐ Austin ☐ Scottsburg ☒ Scott County	Scott County Planning Scott County Drainage Board	FEMA IDNR

Mitigation Action	Priority	Status	Hazard	Community	Collaborator(s)	Funder(s)
Stucker Ditch Silt Removal *Siltation in Stucker Ditch has resulted in reduced capacity, caused upstream flooding on this stream and its tributaries from its mouth to approximately 1.5 mi. upstream of Scottsburg. Silt removal needs to be performed from stream's mouth at Muscatatuck River to confluence of Flat Creek.*	**High**	 *Proposed*	☐ Tornado ☒ Flood ☐ Earthquake ☐ Thunderstorm ☐ Winter Storm ☐ Hazmat ☐ Drought ☐ Subsidence ☐ Dam/Levee	☒ Austin ☒ Scottsburg ☒ Scott County	Scott County Drainage Board	USDA - NRCS
Develop a plan to improve emergency communications in Scott County. This plan should include appropriate school administrators.	**High**	 *Proposed*	☒ Tornado ☒ Flood ☒ Earthquake ☐ Thunderstorm ☒ Winter Storm ☒ Hazmat ☐ Drought ☐ Subsidence ☐ Dam/Levee	☒ Austin ☒ Scottsburg ☒ Scott County	Scott County EMA Scott County Schools	Local Resources
Secure a secondary notification program to insure distribution of disaster information. Back up notification should include Reverse 911 (or similar), continued distribution of weather radios and training on how to use the radios.	**High**	 *Proposed*	☒ Tornado ☒ Flood ☒ Earthquake ☒ Thunderstorm ☒ Winter Storm ☒ Hazmat ☒ Drought ☒ Subsidence ☒ Dam/Levee	☒ Austin ☒ Scottsburg ☒ Scott County	Scott County EMA IDHS	Scott County EMA IDHS

Mitigation Action	Priority	Status	Hazard	Community	Collaborator(s)	Funder(s)
Use Think Map as a tool to provide schools with real-time road conditions	**High**	*Proposed*	☒ Tornado ☒ Flood ☒ Earthquake ☒ Thunderstorm ☒ Winter Storm ☒ Hazmat ☒ Drought ☒ Subsidence ☒ Dam/Levee	☒ Austin ☒ Scottsburg ☒ Scott County	Scott County EMA Scott County Schools	IDHS
Replace and repair damaged culverts throughout the county *Recent heavy rains have damaged numerous culverts, in particular the York Road Bridge.*	**High**	*Proposed*	☐ Tornado ☒ Flood ☐ Earthquake ☒ Thunderstorm ☐ Winter Storm ☐ Hazmat ☐ Drought ☐ Subsidence ☐ Dam/Levee	☒ Austin ☒ Scottsburg ☒ Scott County	Scott County EMA IDNR	Scott County
Develop and maintain ongoing coordination of disaster plans and disaster training	**High**	*Proposed*	☒ Tornado ☒ Flood ☒ Earthquake ☒ Thunderstorm ☒ Winter Storm ☒ Hazmat ☒ Drought ☒ Subsidence ☒ Dam/Levee	☒ Austin ☒ Scottsburg ☒ Scott County	Scott County EMA Scott County First Responders	Scott County EMA

Mitigation Action	Priority	Status	Hazard	Community	Collaborator(s)	Funder(s)
Organized Emergency Transportation; for the delivery of medicine, food, services, essential items *Life Span currently handles the emergency transportation needs of Scott County, but their resources are limited. Scott County has formal mutual aid agreements with neighboring communities.*	**Medium**	 *Proposed*	☐ Tornado ☐ Flood ☐ Earthquake ☐ Thunderstorm ☒ Winter Storm ☐ Hazmat ☐ Drought ☐ Subsidence ☐ Dam/Levee	☒ Austin ☒ Scottsburg ☒ Scott County	Scott County EMA Scott County First Responders Life Span	Local Volunteers Red Cross
Harden existing critical facilities; build new and retrofit existing public shelters *Many critical facilities in Scott County have been hardened and can be used for public shelters. Scott County Planning Team recognizes this as an on-going process.*	**Medium**	 *In progress*	☒ Tornado ☐ Flood ☒ Earthquake ☐ Thunderstorm ☐ Winter Storm ☐ Hazmat ☒ Drought ☐ Subsidence ☐ Dam/Levee	☒ Austin ☒ Scottsburg ☒ Scott County	Scott County Commissioners Scott County EMA Red Cross	Scott County Commissioners
Elevate particular roadways in the County. Completing a Transportation Flood Vulnerability Analysis, would help identify priority areas at specific locations. *Due to the undulating terrain of Scott County, many roads are under water after rain or winter storms. In particular, Spicertown and Boatman Road. Also, Slab Road and Slate Cut Road, north of State Highway 56, are frequently flooded by Stucker Ditch. (Removing silt from Stucker Ditch may also mitigate this flooding.)*	**Medium**	 *Proposed*	☐ Tornado ☒ Flood ☐ Earthquake ☒ Thunderstorm ☒ Winter Storm ☐ Hazmat ☐ Drought ☐ Subsidence ☐ Dam/Levee	☒ Austin ☒ Scottsburg ☒ Scott County	Scott County Highway Department	Scott County Highway Department FEMA

Mitigation Action	Priority	Status	Hazard	Community	Collaborator(s)	Funder(s)
Flood Study of Unnamed Tributary to Hutto Creek *Development pressure along the unnamed tributary to Hutto Creek that flows through northwestern edge of Town of Austin causes frequent flooding. A flood study of this stream would help to guide safe development of this area. The success of this potential project is contingent on the on-going maintenance of Stucker Ditch.*	**Medium**	 *Proposed*	☐ Tornado ☒ Flood ☐ Earthquake ☒ Thunderstorm ☐ Winter Storm ☐ Hazmat ☐ Drought ☐ Subsidence ☐ Dam/Levee	☒ Austin ☐ Scottsburg ☐ Scott County	Scott County Planning	IDNR FEMA
Develop Emergency Action Plan for high hazard dams, in particular Scottsburg Reservoir Dam and Iola Lake Dam *Key transportation infrastructure and residences lie downstream of the Iola Lake Dam. Hardy Lake Dam is a high hazard dam in Scott County with an IEAP.*	**Medium**	 *Proposed*	☐ Tornado ☒ Flood ☐ Earthquake ☐ Thunderstorm ☐ Winter Storm ☐ Hazmat ☐ Drought ☐ Subsidence ☒ Dam/Levee	☒ Austin ☒ Scottsburg ☒ Scott County	Scott County EMA Dam Owner IDNR	Dam Owners
Identify and publicize evacuation routes	**Medium**	 *In progress*	☒ Tornado ☒ Flood ☐ Earthquake ☐ Thunderstorm ☐ Winter Storm ☒ Hazmat ☐ Drought ☐ Subsidence ☐ Dam/Levee	☒ Austin ☒ Scottsburg ☒ Scott County	Scott County Commissioners LEPC	Scott County Commissioners Local support

Mitigation Action	Priority	Status	Hazard	Community	Collaborator(s)	Funder(s)
Improve flood study of Honey Run *Current mapping is Special Flood Hazard Area Zone A, the community would benefit from having elevations published, or available for reference in this area.*	**Medium**	 *Proposed*	☐ Tornado ☒ Flood ☐ Earthquake ☐ Thunderstorm ☐ Winter Storm ☐ Hazmat ☐ Drought ☐ Subsidence ☐ Dam/Levee	☐ Austin ☒ Scottsburg ☒ Scott County	Scott County Planning Scott County Drainage Board	FEMA IDNR
Secure funding for a commodity flow study to include major roadways and railways, in particular known routes of hazardous materials transportation	**Medium**	 *Proposed*	☐ Tornado ☐ Flood ☐ Earthquake ☐ Thunderstorm ☐ Winter Storm ☒ Hazmat ☐ Drought ☐ Subsidence ☐ Dam/Levee	☒ Austin ☒ Scottsburg ☒ Scott County		
Strengthen the LEPC *Although the current LEPC has a strong membership, Scott County leaders recognize the need to maintain a strong LEPC and see this as an on-going process.*	**Low**	 *In progress*	☐ Tornado ☐ Flood ☐ Earthquake ☐ Thunderstorm ☐ Winter Storm ☒ Hazmat ☐ Drought ☐ Subsidence ☐ Dam/Levee	☒ Austin ☒ Scottsburg ☒ Scott County	Scott County EMA Scott County LEPC Local Industry	Scott County EMA Scott County LEPC IDHS

Mitigation Action	Priority	Status	Hazard	Community	Collaborator(s)	Funder(s)
Establishment of a County Storm Water Utility *Scott County is working on plans to separate storm water. Scottsburg has already installed a storm water system*	**Low**	 *Proposed*	☐ Tornado ☒ Flood ☐ Earthquake ☒ Thunderstorm ☐ Winter Storm ☐ Hazmat ☐ Drought ☐ Subsidence ☐ Dam/Levee	☒ Austin ☐ Scottsburg ☒Scott County	Scott County Commissioners Local Utility Companies	Local Utility Companies Grants

Section

7

Plan Maintenance

7.1 Monitoring, Evaluating, and Updating the Plan

Relevant data, information, maps, and tables developed for this local mitigation plan will be integrated as appropriate into other planning efforts to include zoning, floodplain management, and land use planning. Many of the planning team members, representing the county as well as participating jurisdictions, will integrate these data as part of their roles as floodplain enforcers, zoning officers, and community administrators.

Throughout the past five-year planning cycle, Scott County Emergency Management Agency and the MHMP planning committee will monitor, evaluate, and update the plan on an annual basis.

Additionally, a meeting is proposed to be held in June of 2019 to address the next 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 a declared disaster occurs 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.

The committee will then 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 committee will also review the risk assessment portion of the plan to determine if this information should be updated or modified. 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 county commissioners.

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, this updated data will be used for future risk assessments and vulnerability analyses.

7.2 Implementation through Existing Programs

The results of this plan will be incorporated into ongoing planning efforts since many of the mitigation projects identified as part of this planning process are ongoing. Scott County and its incorporated jurisdictions will update the zoning plans and ordinances as necessary and as part of regularly scheduled updates. Each community will be responsible for updating its own plans and ordinances.

7.3 Continued Public Involvement

Continued public involvement is critical to the successful implementation of the MHMP. Comments from the public on the MHMP will be received by the Scott County EMA director and forwarded to the MHMP planning committee for discussion. Education efforts for hazard mitigation will be ongoing through the Scott County EMA. The public will be notified of any periodic planning meetings through notices in the local newspaper. Once adopted, a copy of this plan will be available on the Scott County website, in each jurisdiction and in the Scott County EMA Office.

APPENDICES

Appendix A: Meetings

Appendix B: News Articles

Appendix C: List and Locations of Scott County Facilities

Appendix D: Historical Disaster Photographs

Appendix E: Mitigation Photographs

Appendix F: THIRA Checklist

Appendix G: Adopting Resolutions

Appendix A
Meetings

MEETING #1, JUNE 30, 2015

SCOTT COUNTY MHMP MEETING #1

NAME	TITLE	COMMUNITY	TOTAL HOURS INVESTED (Include transportation, research, and 1.5 hours for this meeting)
Kelley Robbins	County Commissioner	~~Scott Co.~~	1.5
Chelsea Crump	Charitable Fin. Specialist	River Hills EDD+RPC	1.5
William H. Graham	Scottsburg Mayor		250
Linda Dawson	EMA Director	Scott	1.5
Dan McClain	Sheriff	Scott	1.5
Jaetta Brown	Interim 911 Director	Scott	1.5
Dillo Bush	CLERK TREASURER	AUSTIN	1

MEETING #1 MINUTES
SCOTICOUNTY
MULTI-HAZARD MITIGATION PLAN UPDATE
June 30, 2015- 2:00PM (local time)

Karen Comer, The Polis Center, introduced herself and explained that the last Scott County MHMP was adopted in 2008 and is now expired. In order to apply for any new mitigation funding, the County must update and adopt a new plan. She stated that the process should take around 6 months.

Ms. Comer gave background information on The Polis Center and introduced her colleagues, Kavya Beerval Ravichandra and Lacy Duncan. The following participants were also present: Kelly Robbins, Scott County; Chelsea Crump, River Hills EDD & RPC; Mayor William Graham, City of Scottsburg; Linda Dawson, Scott County EMA; Sheriff Dan McClain, Scott County Sheriffs Office, Joetta Brown, Scott County 911; and Dillo Bush, City of Austin.

Ms. Comer discussed the meeting's agenda, which included the following items:
1. Review process and expectations
2. Prioritize hazards
3. Determine modeling scenarios
4. Review critical facilities map
5. Discuss "homework" and upcoming meeting plans

Ms. Comer stated that this meeting is the first of three meetings. During the second meeting the committee will review risk assessment results and brainstorm mitigation strategies. The second meeting will be open to the public and should be advertised in the local paper. Ms. Crump stated that she would take care of setting up the advertisement. Ms. Comer explained that the third meeting will consist of a final review of the draft plan. Ms. Comer shared Scott County's history of disasters since January 2008, which include 54 severe weather reports and four federal disaster declarations. She then described the equation to be used to determine risks and prioritize hazards, and explained that they would be putting together a risk profile for the County. Mayor Graham noted that the County faced a major flooding event in 1992. Ms. Comer stated that although the flood occurred before the last plan, the event could still be mentioned in the new plan. She added that any other information on major events, such as newspaper reports, pictures, and damage reports, would be beneficial to the plan. The committee looked at the risk profile graph pulled from the last MHMP. Mr. Robbins suggested moving Drought/Extreme Heat up in both probability and impact. He also suggested moving Hazmat over in impact. Sheriff McClain added that the County experienced two train derailments in the last year. Mayor Graham stated that the rail, interstate and airport all create a greater possibility for a hazmat event. Mr. Robbins brought up the topic of dam failures. Ms. Duncan asked if any of the dams were in need of an emergency action plan. Mayor Graham stated that he wasn't sure about that, but the City of Scottsburg consists of low land and is at high risk of severe flooding.Mayor Graham suggested moving Winter/Ice Storm over to significant impact. Flash Flooding is also an issue, but it should stay where it is on the chart as it has minimal impact. Sheriff McClain stated that Tornado should be moved over to medium impact. Ms. Ravichandra asked if Earthquake is in an appropriate place on the chart. Mr. Robbins suggested the probably of an earthquake stay at minimum, yet the impact should be moved over to moderate. Mayor Graham asked where disease control would fit into the plan. Ms. Comer replied that biological hazards are not eligible for mitigation funding. However, the subject could still be included in the plan. She added that FEMA does have recommendations for human health hazard events. Mayor Graham asked about terrorist events. Ms. Ravichandra stated that although such events are not eligible for funding, it may be beneficial to mention them in the plan. Ms. Comer stated that they would take all suggestions back to their office and update the chart. Ms. Ravichandra explained that they created a map of the County using collected GIS data and a list of critical facilities. She directed the attendees to the map and explained that The Polis Center can create a model of hazard scenarios. The committee chose the following hazards to model: 1) F4 tornado through the center of Scottsburg and 2) chlorine chemical spill at a railroad crossing on State Road 56. Ms. Comer tasked each community with completing the following items before the next meeting: 1) review the 2008 mitigation strategies handout and send any comments to Ms. Dawson at the County EMA office 2) gather articles, photos, damage summaries, etc. related to hazards since the last update. Ms. Comer reminded everyone that the next meeting would be open to the public. She also asked participants to keep track of all hours worked on the plan to use as local match. Ms. Comer asked if anyone in attendance had any questions or comments. There were none. Ms. Comer thanked everyone for coming.
The meeting was adjourned at 3:20pm (local time).

MEETING #2, OCTOBER 14, 2015

SCOTT COUNTY MHMP MEETING #2

NAME	TITLE	COMMUNITY	TOTAL HOURS INVESTED (Include transportation, research, and 1.5 hours for this meeting)
Eric Jones	Lt. Training Scottsburg Fire	Scottsburg	
GREG RAMONI	DIRECTOR EMERGENCY COMM	Scott	
Chelsea Crump	Charitable Financial Specialist	River Hills	1.5
LARRY BLEVINS	Commissioner	Scott	
Kelly Robbins	Commissioner	Scot	
Linda Dawson	EMA Director	Scott	
Dan McClain	Sheriff	Scott	

MEETING #2 MINUTES

SCOTT COUNTY
MULTI-HAZARD MITIGATION PLAN UPDATE

October 14, 2015 – 1:00PM (local time)

Lacey Duncan, The Polis Center, thanked everyone for attending and introduced herself and her colleague, Christine Schmitz. The following participants were also present: Eric Jones, City of Scottsburg; Greg Ramoni, Scott County; Chelsea Crump, River Hills EDD & RPC; Larry Blevins, Scott County; Kelley Robbins, Scott County; Linda Dawson, Scott County; and Sheriff Dan McClain, Scott County.

Ms. Duncan stated that this meeting is the second of three meetings. She explained that the goal of the meeting was to briefly go over the draft plan and mitigation strategies.

Ms. Duncan then went on to review the first five chapters of the draft MHMP plan, which includes:

- Information on jurisdiction, community, and neighboring county participation
- A profile of Scott County
- Risk assessment information
- Historical hazards records
- Guidelines for determining probability and impact
- Previous hazards and their rankings
- Modeled disasters: tornado, flood, earthquake, and hazmat

During the review, participants explained that they would like emergency siren coverage for all townships, as well as a Reverse 911 system. Ms. Duncan stated that she would note these requests as mitigation strategies.

The committee then looked over the 2008 Mitigation Strategies spreadsheet and made the following comments:

1. Provide the community with outreach information/education brochures
    a. Change status to Complete
    b. County sends out newsletter twice a month and has established a C.E.R.T. team
2. Construct bridge to replace culvert at Finley Firehouse Road
    a. Change action to Culvert replacement assistance
    b. The community should be changed to Scott County and Collaborators should include FEMA
3. Provide lightning detectors and warning signals
    a. Remove lighting detectors
4. Implement U.S. Army Corps of Engineers FPMS Special Study for Scott County
    a. Change status to In Progress
5. Implement ordinances that mandate tie downs and anchors for large propane tanks and identify and publicize evacuation routes
    a. Change Priority to Medium
    b. Add LEPC as a Collaborator
6. Draft and implement local construction ordinance requiring new construction to be earthquake resistant

From: linda.dawson@scottcounty.in.gov [mailto:linda.dawson@scottcounty.in.gov]
Sent: Wednesday, November 04, 2015 11:46 AM
To: Clark.in.ema@Gmail.com; ema@jacksoncounty.in.gov; jeffersonema@Hotmail.com; jls8541@gmail.com; emawashintoncounty.in.gov@scottcounty.in.gov
Cc: Duncan, Lacey <lardunca@iupui.edu>
Subject: FW: Scott County MHMP update, final pending items

Good Afternoon Fellow Directors.

Scott County is in it's final phase of the Multi Hazard Mitigation Plan Update, I have been requested to Distribute a copy of the draft plan to the neighboring county EMA Directors (table 7) and organizations invited to participate (table 3). Scott County MHMP:
You can download the latest version of the report here: https://iu.box.com/Scott

Please let me know if you would like to attend our final meeting, scheduled for November 18th, 1:00pm at the EOC. Located in the Scott County Courthouse, 1 E McClain Ave, Scottsburg, Indiana 47170

Thank You,
Linda Dawson
Scott Co EMA Director

Scott Co. Journal

11/7/15

Legal Notice

Scott County Multi-Hazard Mitigation Plan
Public Meeting Announcement

The Scott County Hazard Mitigation Steering Committee will host a public information and strategy planning session at 1:00PM on November 18, 2015 at the Scott County Emergency Operations Center, 1 East McClain Avenue, Scottsburg, IN 47170.

Over the last several months, a planning committee consisting of community members has worked with The Polis Center at Indiana University-Purdue University Indianapolis (IUPUI) to develop a Multi-Hazard Mitigation Plan for Scott County. Once the plan is completed, the committee will submit it to FEMA for approval. The committee will also work to develop funding for any mitigation activities that are identified.

The steering committee is interested in receiving public input on the plan. Anyone who has questions or would like to provide input should contact Linda Dawson, Scott County Emergency Management Director, (812) 752-0564.

hspaxlp INOV7SJ

RIVER HILLS
ECONOMIC DEVELOPMENT DISTRICT
& REGIONAL PLANNING COMMISSION
Serving the Indiana Counties of: Clark, Floyd, Harrison, Scott and Washington

November 4, 2015

American Red Cross of Southern Indiana
Attn: Amy Canterbury, Executive Director
29 Stockwell Road
Evansville, IN 47714

Ms. Canterbury:

The Polis Center IUPUI and River Hills Economic Development District & Regional Planning Commission are partnering with the Scott County Emergency Management Agency to update their Multi-Hazard Mitigation Plan (MHMP). The plan is unique in that it will utilize state-of-the-art FEMA modeling software to provide casualty and damage estimates, corresponding to predetermined disaster scenarios. The finished plan will then be reviewed and accepted by the County and sent to FEMA for federal approval. Once FEMA approves, Scott County will be eligible for emergency relief funding in the event of a natural disaster. The County will also be eligible for federal funding to implement the mitigation measures defined in the plans to minimize the effects of a natural disaster.

We held a committee meeting in Scottsburg, IN on October 14, 2015 and discussed mitigation strategies for the Scott County MHMP. We would love your input on the draft plan, as well as to note any current or future mitigation strategies that your organization is involved in within Scott County. At your request, I would be more than happy to forward the draft document for your review.

You and your staff are also invited to attend a public meeting being held on **Wednesday, November 18 at 1:00 pm** at the **Scott County EOC** located at **1 East McClain Avenue, Scottsburg, IN** to review Scott County's draft plan before submittal to FEMA. We greatly appreciate any input on the plan. Local participation is the key to our success.

Please do not hesitate to call me at (812) 725-3854 or send an email to ccrump@riverhills.cc should you have any questions.

Thank you,

Chelsea Crump
Charitable Financial Specialist

Note: This is a sample of the invitation sent for the Scott County Public Meeting. A full list of invitees can be found in Section 2, Table 3

MEETING #3, NOVEMBER 18, 2015

SCOTT COUNTY MHMP MEETING #3

NAME	TITLE	COMMUNITY	TOTAL HOURS INVESTED (Include transportation, research, and 1.5 hours for this meeting)
Chelsea Crump	charitable Fin. Specialist	River Hills	1.5+
Kevin Smith	SMS Asst. Principal	KSmith@SCSD2.K12.IN.US	
Marc Slaton	Superintendent	Scott 2	
GREG RAMON	DIRECTOR E911	South County	
Linda Dawson	EMA Director	Scott Co	1.5+
Eric Jones	City Fire Dept. Scottsburg	City of Scottsburg FD	
Kelley Robbins	[illegible]	[illegible]	
Larry Blevins	Commissioner	Scott County	

Appendix B
News Articles

28 dead as 'enormous outbreak' of tornadoes tears through U.S.

By the CNN Wire Staff
Updated 11:41 PM ET, Fri March 2, 2012

A devastating storm system moved across the United States on Friday, spawning a slew of tornadoes that contributed to at least 28 fatalities in Indiana, Kentucky and Ohio.

National Weather Service meteorologist John Gordon reported Friday afternoon the agency had about "half a dozen reports of tornadoes on the ground," as well as reports of "significant damage" -- making his comments before some of the worst twisters were reported. "This is an enormous outbreak that's going on right now across Kentucky and the South," Gordon said. "It's crazy. It's just nuts right here."

Southern Indiana was particularly hard hit, with Indiana Department of Homeland Security spokesman John Erickson saying three had died in Jefferson County as a result. Sgt. Rod Russell with the Indiana State Police said later that three people also were killed in Scott County.

In addition, Emergency Management Director Leslie Cavanaugh of Clark County -- which has about 110,000 people -- reported one death. Sheriff's Department Maj. Chuck Adams added that a man was found dead in his car several miles outside Henryville.

"We've got total devastation in the north-central part of the county (and) widespread damage from the west to the east," added Adams. "We are inundated with calls."

At least 15 people were killed across Indiana, authorities said.

Aerial footage from CNN affiliate WLKY showed structures torn to shreds and large swaths of trees knocked down in Henryville, about 20 miles north of Louisville, Kentucky. Other aerial images showed similar devastation in St. Paul, Indiana. Several officials -- including Jeffersonville, Indiana, Mayor Mike Moore, U.S. Sen. Dan Coats and Adams -- indicated that the town of Marysville suffered especially significant damage.

Cavanaugh also said that the local high school, Henryville Junior-Senior High School, had been "demolished."

According to Sara Reschar, an administrative assistant for the West Clark Community Schools, "students were already out of the school when the storm hit" -- having been dismissed about 15 minutes earlier. Adams said there were some "scrapes and scratches," but no serious injuries as a result. Authorities used thermal imaging equipment, search dogs and other means Friday night to look for a 9-year-old boy in Henryville whose whereabouts was unknown after the tornadoes came through, Adams said.

Amid the devastation, there was also some hope -- in the form of a 20-month-old girl found alone, and without identification, in a field in Salem, about 20 miles from Henryville. Adam said the girl was intubated and then flown to Kosair Children's Hospital in Louisville. He said that people since had called in to identify the girl, while adding he did not know her current condition.

About four hours after the National Weather Service said a twister touched down in Indiana's Posey County, Gov. Mitch Daniels said crews "are racing the nightfall" to assess the damage and help those in need. Sgt. First Class Tina Eichenour of the Indiana National Guard said that roughly 250 troops have been called to duty, destined for towns such as Henryville and Marysville.

"I am constantly amazed by both the unpredictability and the ferocity that Mother Nature can unleash, when she chooses to," Daniels said of the severe weather. His counterpart in Kentucky, Gov. Steve Beshear, on Friday declared a statewide emergency to facilitate local authorities' access to state resources. The governor has authorized the deployment of 50 National Guard troops to go to Morgan County to join a 12-person search and rescue team out of Lexington.

Source: http://www.cnn.com/2012/03/02/us/severe-weather/index.html

October 7, 2013

News Release

The Indiana Homeland Security Foundation has approved $373,804.72 in grant funding to local fire departments, law enforcement agencies and emergency medical services (EMS).

The focus of the foundation is to support the future of the public safety and to provide grant funding to local agencies for critical public safety needs across Indiana. Grants are provided up to $4,000. Public safety agencies are eligible to apply for projects such as:

• Equipping emergency responders with personal protective equipment
• Acquiring equipment for use by emergency responders
• Providing radios and technology equipment
• Training for emergency responders

Below is the county and department breakdown of the grant funding amount and purpose of those funds. Information provided is from each agency's application.

Scott
• The Scott County Sheriff received $4,000 to purchase electronic devices to better equip their mobile command center. This will include radios, antennas, kits and connection cable.

Indiana to buy 25,600 acres along Muscatatuck River in Southern Indiana

Posted: Friday, June 11, 2010 8:09 pm
Associated Press |

The state will buy and preserve more than 25,600 acres along the Muscatatuck River in southern Indiana in partnership with the federal government and private conservation groups, Gov. Mitch Daniels said Friday.

The Indiana Department of Natural Resources described the area as holding one of the largest and least-fragmented complexes of bottomland forest remaining in the state, with oak, hickory and sweet gum trees.

“This is one of those opportunities of a decade,” said John Goss, executive director of the Indiana Wildlife Federation and a former state DNR director.

The state will use $21.5 million from a state conservation trust fund and $10 million from the U.S. Fish & Wildlife Service to begin buying the land in Scott, Jackson and Washington counties, Daniels said.

The announcement was the second in as many days involving huge conservation projects in Indiana. Daniels announced Thursday that the state would acquire a 43,000-acre swath of west-central Indiana flood plains for wetlands preservation in the largest project ever undertaken by the IDNR.

The Muscatatuck Bottoms project will be the second largest. The Nature Conservancy, the U.S. Department of Agriculture’s Natural Resources Conservation Service and the Ducks Unlimited conservation group also are providing money for both projects.

“We’re out to create something of lasting and large importance for our state and protect its natural beauty,” Daniels said in announcing the Muscatatuck Bottoms project at Hardy Lake State Recreation Area, about 35 miles north of Louisville, Ky.

He said he wanted Indiana “to become a national leader in wetlands and wildlife protection.”

Muscatatuck Bottoms provides habitat for birds including the least bittern, yellow-crowned night heron, red-shouldered hawk and Cerulean warbler. Two state-endangered reptiles, the Kirtland’s snake and copperbelly watersnake, also are found there, as is featherfoil, a state-endangered plant.

Source: http://www.newsandtribune.com/news/local_news/indiana-to-buy-acres-along-muscatatuck-river-in-southern-indiana/article_5466eb1c-c283-55df-8c4c-ea5cbde71dec.html

Appendix C

List and Locations of Scott County Facilities

ESSENTIAL FACILITIES OF SCOTT COUNTY

Facility Name	Facility Type	City
Home Helpers Home Health	Care Facility	Scottsburg
Scottsburg Dialysis	Care Facility	Scottsburg
Scott County WIC Program	Care Facility	Scottsburg
Fresenius Medical Care Scott County	Care Facility	Scottsburg
Wal Mart 1142 Pharmacy	Care Facility	Scottsburg
Jay C 1 Pharmacy	Care Facility	Scottsburg
Hickory Creek At Scottsburg	Care Facility	Scottsburg
Waters Of Scottsburg	Care Facility	Scottsburg
St Luke's Medical Ministry	Care Facility	Scottsburg
Home Care Assistants LLC	Care Facility	Scottsburg
Home Helpers Location #58207	Care Facility	Scottsburg
CVS 6780	Care Facility	Scottsburg
Save-A-Lot Scottsburg Pharmacy	Care Facility	Scottsburg
Scott Memorial Hospital	Care Facility	Scottsburg
Hampton Oaks Health Campus	Care Facility	Scottsburg
Scott Villa Nursing And Rehabilitation	Care Facility	Scottsburg
Austin Market	Care Facility	Austin
Foundations Family Medicine	Care Facility	Austin
Northside Grocery Pharmacy	Care Facility	Austin
Scott Civil Defense	EOC	Scottsburg
Lexington Fire Dept	Fire Station	Lexington
Jennings Twp Fire Dept	Fire Station	Austin
Finley Township Volunteer Fire Dept	Fire Station	Scottsburg
Vienna Township Volunteer Fire	Fire Station	Scottsburg
Johnson Township Volunteer Fire	Fire Station	Lexington
Scottsburg Volunteer Fire Department	Fire Station	Scottsburg
Scottsburg Volunteer Fire Department	Fire Station	Scottsburg
Scott County Sheriff	Police	Scottsburg
Scottsburg Police Dept	Police	Scottsburg
Austin Police Dept	Police	Austin
Grace Christian Academy	School	Scottsburg
Scottsburg Senior High School	School	Scottsburg
Vienna-Finley Elem Sch	School	Scottsburg
Scottburg Middle School	School	Scottsburg
Scottsburg Elem School	School	Scottsburg
Scottsburg Academy	School	Scottsburg
Austin Elementary School	School	Austin
Austin High School	School	Austin
Austin Middle School	School	Austin
Johnson Elementary School	School	Scottsburg
Lexington Elementary School	School	Lexington

CRITICAL FACILITIES OF SCOTT COUNTY

Facility Name	Facility Type	City
WMPI 105.3 MHz	Communication	Scottsburg
WMPI 105.3 MHz	Communication	Scottsburg
Stucker Fork Dam No. 1	Dam	Austin Area
Stucker Fork Dam No. 8	Dam	Scottsburg
Bowen Lake Dam	Dam	Scottsburg
Stucker Fork Dam No. 2	Dam	Scottsburg
Kenninger Lake Dam	Dam	Lexington
Stucker Fork Dam No. 53	Dam	Scottsburg
Pine Lake Dam	Dam	Scottsburg
Marshall King Lake	Dam	Scottsburg
Scottsburg Waterworks Dam	Dam	Scottsburg
Don Reid Lake Dam	Dam	Little York
Thomas J. Miller Lake Dam	Dam	Austin Area
Stucker Fork Dam No. 16a	Dam	Scottsburg
United Presbyterian Ministries Dam	Dam	Lexington
Christie Lake Dam	Dam	Scottsburg
Stucker Fork Dam No. 69	Dam	Underwood Area
Marysville Lake Dam	Dam	Scottsburg
David Garriott Lake Dam	Dam	Austin
Stucker Fork Dam No. 13	Dam	Austin
Hamilton & Ridlen Lake Dam	Dam	Austin
Stucker Fork Dam No. 56	Dam	Scottsburg
Smith Lake Dam	Dam	Scottsburg
Stucker Fork Dam No. 10	Dam	Scottsburg
Hosea Lake Dam	Dam	Austin
Stucker Fork Dam No. 90	Dam	Underwood
Stucker Fork Dam No. 15	Dam	Little York
Stucker Fork Dam No. 12	Dam	Austin
Arthur S. Klingman Lake Dam	Dam	Lexington
Stucker Fork Dam No. 9	Dam	Scottsburg
Forrest Helton Lake Dam	Dam	Scottsburg
Stucker Fork Dam No. 5	Dam	Scottsburg
Quick Cr. Reservoir	Dam	Austin
Stucker Fork Dam No. 6	Dam	Lexington
Stucker Fork Dam No. 7	Dam	Scottsburg
Stucker Fork Dam No. 4	Dam	Scottsburg
Stucker Fork Dam No. 14	Dam	Austin
Stucker Fork Dam No. 54	Dam	Scottsburg
Freudenberg-Nok Scottsburg Plant	Hazmat	Scottsburg
Multi-Color Corp.	Hazmat	Scottsburg
American Steel Cord	Hazmat	Scottsburg
Scottsburg Water Department	Potable Water	Scottsburg
Stucker Fork Water Plant	Potable Water	Austin
Austin Municipal Sewage Treatment	Wastewater Facility	Austin
City Of Scottsburg WWTP	Wastewater Facility	Scottsburg

Appendix D

Historical Disaster Photographs

Photo #1: Tornado touchdown in Naab, IN, March 2012

Photo #2 Tornado touchdown in Naab, IN, March 2012

Photo #3: Flooding in Scott County

Photo #4: Flooding in Scott County

Photo #5: Flooding in Scott County

Photo #6: Flooding in Scott County

Photo #7: Flooding in Scott County

Photo #8: Flooding in Scott County

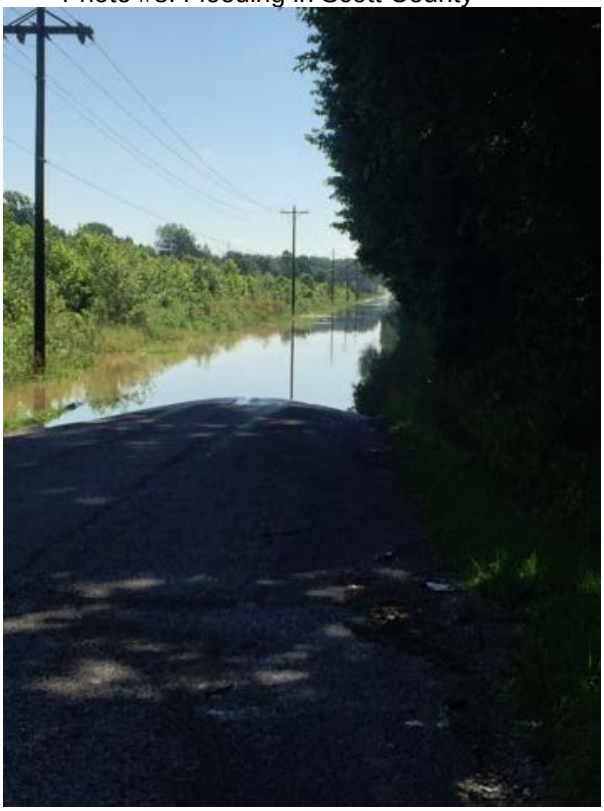


Photo #9: Road Damage Caused By Flooding in Scott County

Photo #10: Road Damage Caused By Flooding in Scott County

Appendix E
Mitigation Photographs

Appendix F

Threats and Hazard Identification and Risk Assessment (THIRA)

Please check any of the following threats of concern to your county.

Man-Made International Threats

International Terrorism
- ☐ Al-Qa'ida
- ☐ Al-Qa'ida in the Arabian Peninsula (AQAP)
- ☐ Islamic State of Iraq and the Levant (ISIL)
- ☐ Hezbollah
- ☐ Al-Shabaab
- ☐ Boko Haram
- ☐ Homegrown Violent Extremists

Domestic Terrorism
- ☐ White Supremacists
- ☐ Separatist Groups
- ☐ Anarchists
- ☐ Environmental Extremists
- ☐ Animal Rights Extremists
- ☐ Lone Offenders
- ☐ Other Violent Offenders

Technological Hazards

- ☐ Communication Systems Failure

Transportation
- ☑ Highway Transportation Incident
- ☑ Commercial Air Transportation Incident
- ☑ Rail Transportation Incident
- ☑ Marine Transportation Incident

Hazardous Materials
- ☑ Hazardous Materials Transportation Incident
- ☑ Hazardous Materials Fixed-Facility

- ☑ High Hazard Dam Failure
- ☑ Major Levee Failure
- ☑ Public Utility Failure
- ☐ Explosion
- ☐ Large Fire/Conflagration
- ☑ Pipeline Transportation Incident
- ☐ Structural Collapse

Natural Hazards

Severe Storms
- ☑ Wind
- ☑ Lightning
- ☑ Hail
- ☐ Derecho

- ☐ Tropical Cyclone Remnants
- ☑ Flash Flood
- ☑ Major Flood
- ☑ Tornado

Winter Storm
- ☑ Heavy Snow
- ☐ Blizzard
- ☐ Lake Effect Snow

- ☑ Ice Storm
- ☑ Temperature Extremes
- ☐ Drought

Earthquake
- ☑ Magnitude 5.0 and Higher
- ☐ Magnitude 4.9 and Lower

- ☐ Animal Disease Outbreak
- ☑ Human Disease Outbreak

Invasive Species
- ☐ Plant
- ☐ Animal
- ☐ Insect

- ☐ Wildland Fire
- ☐ Geomagnetic Storm
- ☐ Ground Failure

Other Hazards Not Listed

- ☐ Click here to enter text.
- ☐ Click here to enter text.
- ☐ Click here to enter text.

Please list your top 5 hazards of concern

1. Click here to enter text.
2. Click here to enter text.
3. Click here to enter text.
4. Click here to enter text.
5. Click here to enter text.

Appendix G
Adopting Resolutions

Resolution #_____

ADOPTING THE SCOTT COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, Scott County recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS, Scott County participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Scott County Commissioners hereby adopt the Scott County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Scott County Department of Homeland Security will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Indiana Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____ Day of _____, 2015.

_____
County Commissioner Chairman

_____
County Commissioner

_____
County Commissioner

_____
County Commissioner

_____
Attested by: County Clerk

Resolution #_____

ADOPTING THE SCOTT COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the City of Scottsburg recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS, the City of Scottsburg participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the City of Scottsburg hereby adopt the Scott County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Scott County Department of Homeland Security will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Indiana Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____ Day of _____, 2015.

_____
City Mayor

_____
City Council Member

_____
City Council Member

_____
City Council Member

_____
Attested by: City Clerk

Resolution #_____

ADOPTING THE SCOTT COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the Town of Austin recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS, the Town of Austin participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Town of Austin hereby adopt the Scott County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Scott County Department of Homeland Security will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Indiana Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____ Day of _____, 2015.

_____
Town President

_____
Town Council Member

_____
Town Council Member

_____
Town Council Member

_____
Attested by: Town Clerk